Alberni-Clayoquot Regional District

BEAVER CREEK WATER ADVISORY COMMITTEE MEETING
TUESDAY, JANUARY 28, 2020, 1:30 PM

Regional District Board Room, 3008 Fifth Avenue, Port Alberni, BC

AGENDA

PAGE #

1. CALL TO ORDER

Recognition of Territories.

2. APPROVAL OF AGENDA

(motion to approve, including late items required ALL VOTE 2/3 majority vote)

3. MINUTES

a. Beaver Creek Water Advisory Committee Meeting held July 16, 2019 **3-5**

THAT the minutes of the Beaver Creek Advisory Committee meeting held on July 16, 2019 be received.

4. REPORTS

a. Beaver Creek Water System 2019 Annual Report **6-18**
b. Beaver Creek Water Advisory Committee – Water Emergency Response Plan **19-59**

THAT the Beaver Creek Advisory Committee receives reports a-b for information.

5. REQUEST FOR DECISIONS & BYLAWS

a. **REQUEST FOR DECISION** **60-61**
Investing in Canadian Infrastructure Grant Opportunity

THAT the Beaver Creek Water Advisory Committee recommend to the ACRD Board of Directors to approve submission of a grant application to the Investing in Canadian Infrastructure Program (ICIP) Green Infrastructure for design and construction of the Falls/Georgia Watermain Project.

b. **REQUEST FOR DECISION** **62-69**
Beaver Creek Water Conservation Plan

THAT the Beaver Creek Water Advisory Committee recommend that the ACRD Board of Directors endorse the 2020 Beaver Creek Water Conservation Plan.

c. **REQUEST FOR DECISION** **70-83**
Beaver Creek Water System Rates and Regulation Bylaw

THAT the Beaver Creek Water Advisory Committee recommend that the Alberni-Clayoquot Regional District Board of Directors approve a reduction in the allowable water consumption for basic water charge from 108 cubic meters per quarter to 60 cubic meters per quarter, effective July 1, 2020.

THAT the Beaver Creek Water Advisory Committee recommend that the Alberni-Clayoquot Regional District Board of Directors give three readings and adopt Bylaw No. F1146, 2020 – Beaver Creek Water Local Service Area Rates and Regulations.

6. LATE BUSINESS
(requires 2/3 majority vote)

7. ADJOURN

Alberni-Clayoquot Regional District

MINUTES OF THE BEAVER CREEK WATER ADVISORY COMMITTEE MEETING HELD ON TUESDAY, JULY 16, 2019 AT 2:00PM

Regional District Board Room, 3008 Fifth Avenue, Port Alberni, BC

MEMBERS PRESENT: John McNabb, Chairperson, Director, Electoral Area "E" (Beaver Creek)
Gord Blakey
Harold Carlson
Pam Craig

REGRETS: Patty Edwards
Dwight Nass

STAFF PRESENT: Rob Williams MSc, General Manager of Environmental Services
Jenny Brunn, Manager of Operations

1. CALL TO ORDER

The Chairperson called the meeting to order at 2:17 pm.

The Chairperson recognized the meeting this afternoon is being held in the Tseshaht First Nation and the Hupacasath First Nation Territories.

2. APPROVAL OF AGENDA

MOVED: *P. Craig*
SECONDED: *G. Blakey*

THAT the agenda be approved as circulated.

CARRIED

3. ADOPTION OF MINUTES

a. **Beaver Creek Water Advisory Committee Meeting held January 24, 2019.**

MOVED: *H. Carlson*
SECONDED: *P. Craig*

THAT the minutes of the Beaver Creek Water Advisory Committee Meeting held on January 24, 2019 be adopted.

CARRIED

4. REQUEST FOR DECISIONS & BYLAWS

a. **Request for Decision regarding updating the Leak Policy to include maximum overage charges.**

MOVED: P. Craig
SECONDED: G. Blakey

THAT the Beaver Creek Water Advisory Committee recommend to the ACRD Board of Directors that the leak policy be updated to include a maximum overage charge of $1,500.

CARRIED

5. REPORTS

a. Beaver Creek Annual Report.

MOVED: P. Craig
SECONDED: H. Carlson

THAT the Beaver Creek Advisory Committee receives the 2019 Beaver Creek Annual Report.

CARRIED

6. IN CAMERA

MOVED: P. Craig
SECONDED: H. Carlson

Motion to close the meeting to the public as per the Community Charter, sections:

90 (1) (K) negotiations and related discussions respecting the proposed provision of a municipal service that are at their preliminary stages and that, in the view of the council, could reasonably be expected to harm the interests of the municipality if they were held in public.

CARRIED

The meeting was closed to the public at 2:58 pm.

The meeting was re-opened to the public at 3:59 pm.

8. ADJOURN

MOVED: H. Carlson
SECONDED: P. Craig

THAT this meeting be adjourned at 4:05 pm.

CARRIED

Certified Correct:

John McNabb,
Chairperson

Douglas Holmes,
Chief Administrative Officer

ALBERNI-CLAYOQUOT
REGIONAL DISTRICT
3008 Fifth Avenue, Port Alberni, B.C. CANADA V9Y 2E3 Telephone (250) 720-2700 FAX: (250) 723-1327

REPORT FOR INFORMATION

To: Beaver Creek Water Advisory Committee

From: Jenny Brunn, Manager of Operations

Meeting Date: January 28, 2020

Subject: **Beaver Creek Water System 2019 Annual Report**

Recommendation:

THAT the Beaver Creek Water Advisory Committee receive the 2018 Water System Annual Report.

Summary:

This report provides an overview of the Alberni-Clayoquot Regional District's (ACRD) Beaver Creek Water System (BCWS) operations for the year and how it has met the targets to ensure provision of potable, cost-effective and reliable water.

In 2019, the BCWS met most targets with a few exceptions. The first exception was in meeting the target of having no E.coli and no Total Coliform in any water samples. These bacteria are good indicator organisms as they can be correlated with the potential contamination level and are not present in unpolluted waters. All of samples taken in 2019 tested negative for Total Coliforms and E.coli with one exception due to a sampling or lab error.

	Target	**2019 BCWS**
Bacteria Results	0	1
Chlorine Residual	>0.20 mg/l	>0.20 mg/l
Turbidity	< 1.0 NTU	<1.0 NTU
CDWQG	< 100%	100%
Average Demand	<350	374 liters per capita day
Peak Demand Ratio	<2	1.32
Cost per customer	$300-$400	$530
Water Loss	<15%	29%
Breaks	<5	17

The other targets that were not met in 2019 were the *Average Demand*, *Cost per Customer*, the *Number of Breaks,* and *Water Loss*. These four targets are related as breaks increase costs due to machine time, parts and labor and result in water loss and a higher total average demand. In an effort to reduce costs associated with system failures, staff are working to create and implement a preventative maintenance program as well as continue and accelerate the renewal and replacement of aging infrastructure. This is also a comparatively high

cost water system to operate due to the size of the water department which is too small to achieve economies of scale for staffing, equipment and building costs.

The priority focus for the water system is renewal and replacement of failing water mains which will have the greatest benefit for the water system and reduce system costs over time. Both Fayette and Lamarque Roads are scheduled to be replaced next and grant funding will be sought to begin engineering design on the next high priority replacement section of Falls/Georgia.

This report will be provided to the local Environmental Health Officer from Island Health and made available to the community.

Policy or Legislation:

The Province of British Columbia's Drinking Water Protection Act and Health Canada's Canadian Drinking Water Guidelines.

Submitted by: _____
Jenny Brunn, Manager of Operations

Reviewed by: _____
Rob Williams, General Manager of Environmental Services

Approved by: _____
Douglas Holmes, BBA, CPA, CA, Chief Administrative Officer

BEAVER CREEK WATER SYSTEM

ANNUAL REPORT
2019

ALBERNI-CLAYOQUOT
REGIONAL DISTRICT

Prepared by: John Thomas
Environmental Services Department
3008 Fifth Avenue, Port Alberni, BC, Canada, V9Y 2E3, Phone 250-720-2700

Table of Contents **Page #**

1.0 Background

Purpose of the Annual Report

This annual report provides an overview of the Alberni-Clayoquot Regional District's (ACRD) Beaver Creek Water System. It is the ACRD's responsibility to the community and provincial health authority to share this information. This report is for the water consumers to review their individual water systems in order to be aware of the service provided and of the annual activities.

Regulating Authority

The Province of British Columbia's Drinking Water Protection Act and Regulation prescribes the required performance of drinking water suppliers. The Island Health Authority (IH) is the body that oversees water systems in the ACRD, with the mission to minimize health risks to the public and to assist with providing safe drinking water to our communities. As part of IH regulations, water systems are required to have operators qualified by the Environmental Operators Certification Program to the same classification level as the system.

Management

The ACRD's Environmental Services Department is responsible for the overall management of the Beaver Creek Water System. The Beaver Creek Water System has an advisory committee made up of the Beaver Creek Electoral Director and volunteer members from the community. This committee provides guidance and advice to the ACRD management regarding infrastructure improvements, bylaws and costs.

Beaver Creek Water System Overview

Beaver Creek is a community of 2,873 (2016 Census) which borders the City of Port Alberni on the south, the Beaufort Electoral Area on the north and east, and the Sproat Lake Electoral Area on the west. The Stamp and Somass Rivers form the western boundary of Beaver Creek. The Beaver Creek Improvement District converted into a local service area of the ACRD on June 1st, 2012.

The majority of the Beaver Creek Water System was constructed in the 1960's. The water mains were originally constructed with asbestos cement pipe and more recent improvements with polyvinyl pipe (PVC). Historically, the source water was from the Stamp River but it is now from the City of Port Alberni through a bulk water agreement. The City's water is treated with chlorine and enters Beaver Creek at the Strick Road Booster Pump station where it is rechlorinated and distributed.

The water system is certified by the Environmental Operators Certificate Program (EOCP) as a Level Two Water Distribution System. There are two full time staff members that maintain and operate the system who are both certified as Level 2 Operators.

The Beaver Creek Water System includes:

- Concrete reservoir on Kitsuksis Road, Volume of 1,135 cubic meters

- Bolted steel reservoir on Beaver Creek Road, Volume of 273 cubic meters
- Glass fused reservoir on Kitsuksis Road, Volume of 1,135 cubic meters
- Strick Road Pump Station
- Darnley Road Pump Station
- North Reservoir Pump Station
- Stamp River Pump Station and Intake (currently not active)
- Service connections: 988 (6 new connections in 2019)
- Number of water parcels: 1,037
- Population: 2,873 (BC Stats 2016)
- Total length of mains: 46.3 kilometers
- Total number of fire hydrants: 114
- The majority (67.5%) of the distribution system is Asbestos Cement (AC)
- The remainder is made up of polyvinyl chloride (PVC)
- The total bulk water consumption was for 2019: 392,193 cubic meters
- The average daily flow for 2019: 1,075 cubic meters

2.0 Goal and Targets

It is our mission to provide potable, cost effective and reliable drinking water through continuous improvements

---

In order to achieve this mission, measurable targets for potability, cost-effectiveness, and reliability have been set.

Potable Targets:

1) No E.coli, no total coliform in any water samples
2) Minimum 0.20 mg/L chlorine residual throughout the distribution system
3) Less than 1 NTU turbidity in the water
4) Meet the Canadian Drinking Water Quality Guidelines for all parameters (including DBPs)

Regular potability sampling of drinking water is conducted for physical, chemical and biological parameters. This sampling is to ensure that the drinking water meets the Canadian Drinking Water Quality Guidelines and is safe to drink. Each water system is provided with an Operational Certificate by IH that may outline specific testing and frequency requirements.

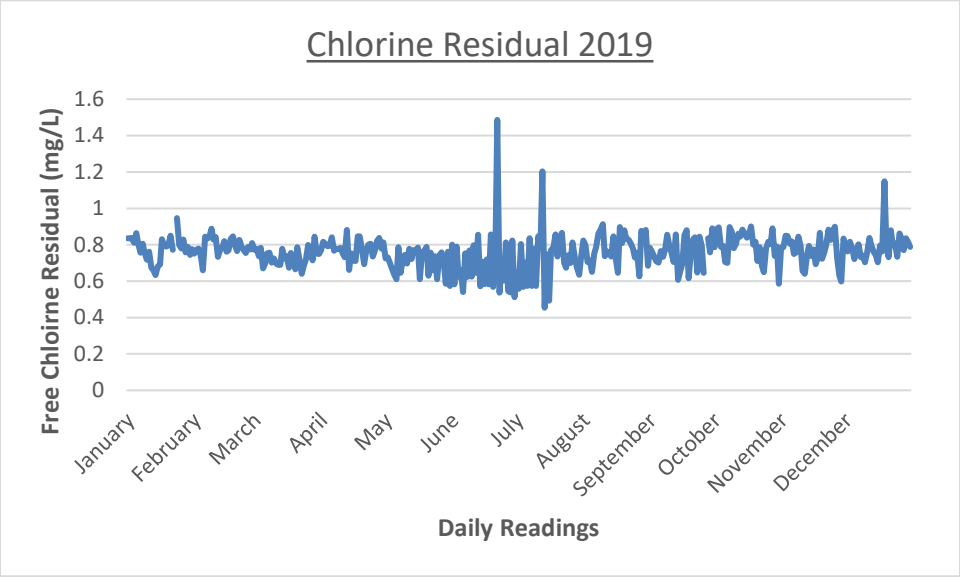
Potable Target 1 – No E.coli and No Total Coliform in any water samples

Bacteria testing is performed once a week at multiple locations for Total Coliforms and Fecal Coliforms (E.Coli). The locations are spread throughout the distribution system for broad representation. The Total Coliforms and Fecal Coliforms are tested as they are good indicator organisms. Indicator organisms are

easy and inexpensive to test for, can be correlated with the potential contamination level and are not present in unpolluted waters. IH's Facility Sampling History shows that all of samples taken in 2019 tested negative for Total Coliforms and E.coli with only one exception that was considered a sampling or lab error.

Potable Target 2 - Minimum 0.20 mg/L Chlorine Residual

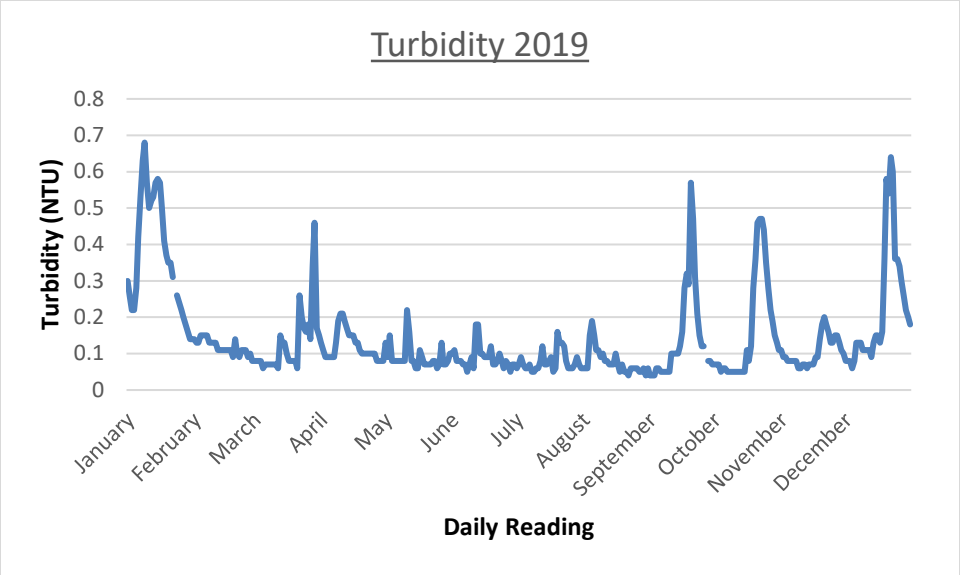
To ensure good water quality throughout the distribution system, water mains are regularly flushed to remove any accumulated silt in the water mains by creating an increase in velocity to scour the pipes. As water flows within a distribution system, the chlorine is slowly eaten up by organics in the water or any material built up in the pipes. Residual chlorine is an immediate test to measure if the water is safe to drink, although water without a chlorine residual is not necessarily unsafe, other tests to ensure safety (such as bacterial testing) require 3 to 4 days for results. Low to no chlorine residual in the water system can indicate poor circulation of water and a need to increase flushing. The Chlorine graph below illustrates the chlorine residual entering the water system from the Strick Road Pump House.



The water system operators continually check the free chlorine disinfection levels with the aim to keep the free chlorine levels between 0.4 mg/l and 0.6 mg/l in the reservoirs and 0.2 mg/l at all the ends of the distribution system. Winter months see a more consistent chlorine residuals than the summer as the chlorine reacts faster with the warmer water and higher flow rates.

Potable Target 3 - Less than 1 NTU Turbidity in the water

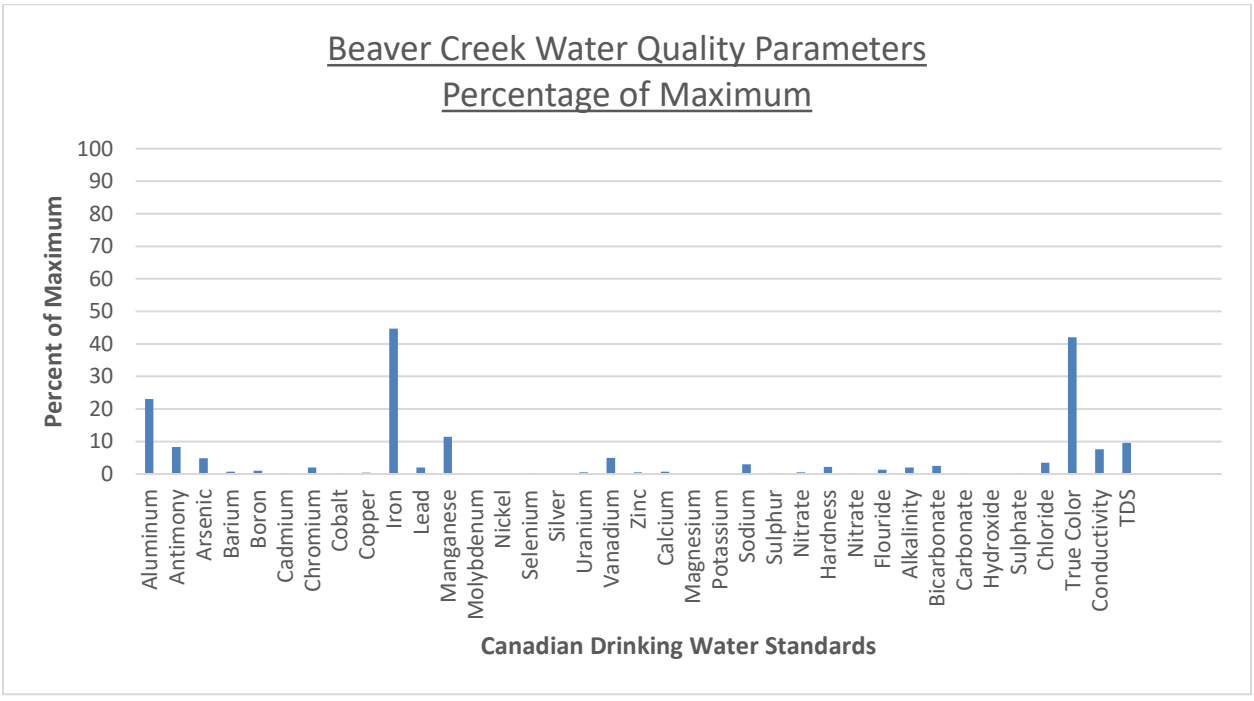
Turbidity is the cloudiness or haziness of a fluid caused by particles in the water. It is often increased in lakes and rivers after a heavy rain when soils enter the water body. This parameter is continually monitored as it negatively effects the ability of chlorine to disinfect.



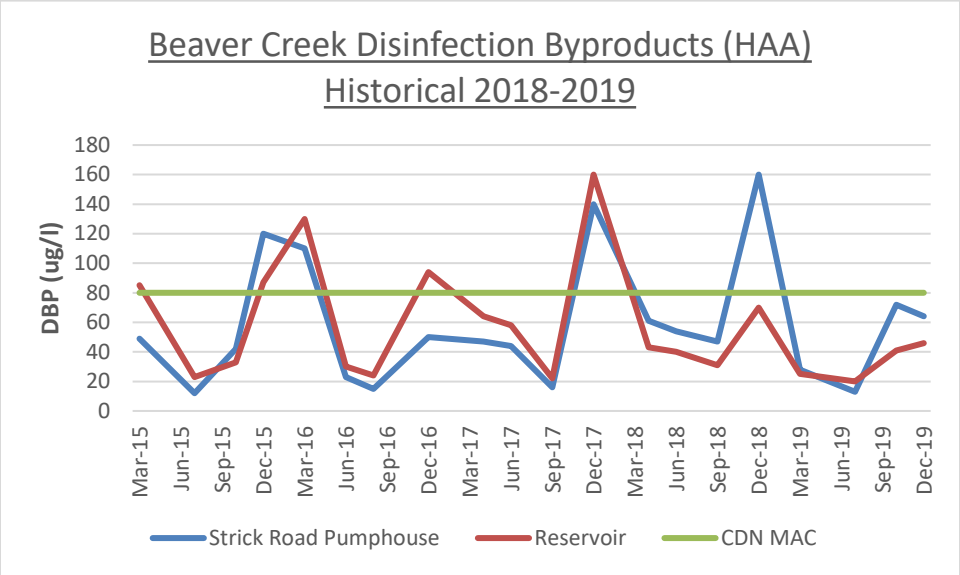
The turbidity readings are taken from the Strick Road Pump Station as water enters the system. The turbidity can have some variability due to events in the City's water system such as water line breaks or source water changes. In the event of high turbidity entering the system, the automation in the pump house can stop pumping to protect the system.

Potable Target 4 - Meet the Drinking Water Quality Guidelines

The ACRD regularly performs tests to ensure that water in the system meets or exceeds the Canadian Guidelines for Drinking Water Quality. The most recent water sampling testing results are shown in the graph below. There are over 40 parameters in the guidelines, all of which were met in 2019.



Two of the CDWQG parameters are for disinfection byproducts (THM and HAA) and in past years we have seen individual results exceed the guidelines. These disinfection byproducts occur when chlorine combines with dissolved organics from the water source. China Creek, the main source of water, has low dissolved organics and turbidity for the majority of the year. However, during heavy rain events, the turbidity increases above the maximum acceptable limit of 1 NTU, requiring the use of the back-up water source, Bainbridge Lake. This lake has higher dissolved organics than China Creek and when it is used for the source water can create higher levels of THMs as seen in the graph below.



The Total Haloacetic Acids (HAA) maximum acceptable concentrations (MAC) by the Canadian Drinking Water Guidelines are 80 ug/L based on a running average of a minimum quarterly sampling. The 2019 values obtained at the reservoirs and pump house were all under the MAC running average.

Cost-Effective Targets:

1) Average Water Demand less than 350 lpcd
2) Peak Demand Ratio of less than 2:1 PDD:ADD
3) O&M cost per customer less than $400

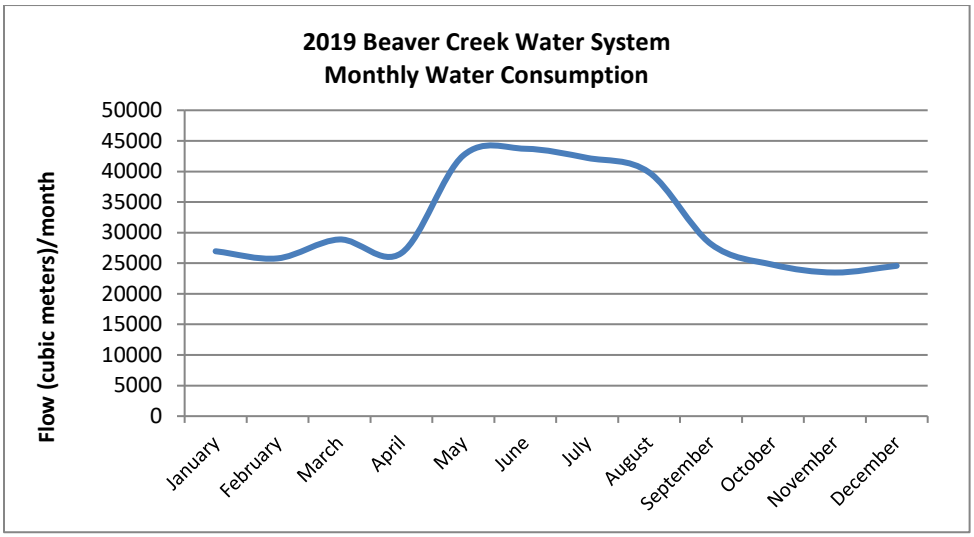
There are many factors that affect how cost effective a system is running. Effective management and planning, bulk water purchase and water demands can all affect system costs.

Cost Effective Target 1 - Average Water Demand less than 350 lpcd

The BCWS purchases bulk water from the City of Port Alberni at $0.40/m3. It must also treat and distribute water to meet the demands of the system. With a service area population of 2,873 and total water consumption of 392,193 cubic meters, this produces a daily average of 374 liters per person per day (lpcd). This is just above the target of 350 lpcd and higher than last year's daily average at 363 lpcd but well below the 2016 UBC Survey's provincial average of 494 lpcd.

Cost Effective Target 2 - Peak Demand Ratio of less than 2:1 PDD:ADD

A water system must be designed to provide the peak water demand and fire flows. If peak demands are excessively high, then the water pipes are required to be oversized which is expensive and causes operational challenges in keeping water fresh in the lower flow time periods. Peak summer demand is approximately 1,367 m3/day compared to the average daily demand of approximately 1,075 m3/day. This is approximately 1.32 to 1 ratio of peak to average demand. This is under the target of 2:1.



Cost Effective Target 3 – O&M cost per customer less than $400

In 2019, the total operating costs for the system were $549,292 excluding bulk water purchase and capital investment. Divided by the 988 water connections, this results in a $556 cost per customer. This is less than the costs in 2018, where the total operating costs were $563,833 with 982 connections for a cost of $574 per customer. Similar sized water systems typically have an operating cost per customer of between $300 and $400 per customer. The BCWS has a higher operating cost per customer because of water system failures and the small size of the system. Emergency breaks and repairs are costly and directly impact this number due to water main breaks. These costs can be reduced by replacing aging infrastructure. The BCWS also has a comparatively high cost as operations require a minimum of two operators to provide holiday and on-call coverage, meet safety requirements and complete activities that require two people. Whereas other systems of similar size are often operated by a water department that runs multiple systems, allowing efficiencies of scale to occur.

Reliability Targets:

1) Unaccounted water loss to be less than 15%.
2) Maximum # of breaks less than 5/year.

Reliability Target 1 – Unaccounted water loss to be less than 15%.

In 2019, the City of Port Alberni provided 392,193 cubic meters of water to Beaver Creek through a bulk water agreement. The total water consumed in Beaver Creek through all water meters for 2019 was 280,230 m3 resulting in a total unaccounted water loss of 111,963 m3 which made up 29% of all water entering the system. This is about the same percentage as in 2018. This loss can be attributed to meter error, water main breaks, flushing, unauthorized consumption and leaks. This also means that 111,963 cubic meters of water was purchased from the city and generated no revenue, a potential loss of $44,785. A certain amount of this volume is unavoidable loss including water lost due to main breaks and the flushing program. The estimated volume used for flushing in 2019 was 10,005 m3 or 3% of all water used.

Reliability Target 2 - Maximum # of breaks less than 5/year.

In 2019, the BCWS had six water main breaks and eleven service line repairs, compared to two and eight respectively in 2018. Through the water main replacement program, the number of total breaks should eventually be reduced as the mains that are breaking get priority in replacement. Often a service line will break at the water main connection due to the asbestos cement pipe being fragile. Operating the pumps and subsequently increasing pressure during the night results in an increased likelihood of breaks as water consumption is at its lowest. Therefore, all efforts are made to operate the pumps and fill the reservoirs during higher consumption periods.

Summary of Target Results for 2019

This past year, the BCWS met most targets with a few exceptions. The system was successful in meeting the water quality targets with the exception one bacteria sampling that was suspected to be an error. The other targets that were not met were the cost per customer, the number of water breaks and the water loss. These two targets are related as breaks increase costs due to machine time, parts and labor.

	Target	2019 BCWS
Bacteria Results	0	1
Chlorine Residual	>0.20 mg/l	>0.20 mg/l
Turbidity	< 1.0 NTU	<1.0 NTU
CDWQG	< 100%	100%
Average Demand	<350	374 liters per capita day
Peak Demand Ratio	<2	1.32
Cost per customer	$300-$400	$530
Water Loss	<15%	29%
Breaks	<5	17

3.0 Improvement Plan

2019 Projects Completed

In 2019, the water crew installed 6 new services, attended and repaired 6 main and 11 service breaks

Asset Management Plan - In February 2019, the Board adopted the Beaver Creek Water System Asset Management Plan. This plan identified a capital contribution gap of $532 per parcel to meet the upcoming 20 years of projected renewal costs.

Engineering Design Projects – Design of the Walker Road Watermain renewal project was completed in the summer 2019. Design of Fayette and Lamarque watermains was brought to 90% completion at the end of the 2019..

Walker Road Watermain Capital Upgrade – this project began in late October to replace the failing 4 inch AC main with 6 inch PVC main and increase hydrant locations. This project will reduce emergency repairs, improve overall fire flows and help to reduce the number of breaks and water loss within the system.

WERP Update – the Water System Emergency Response Plan was updated to include practical and realistic response plans for all potential emergency situations. During the development, some system vulnerabilities were identified and recommendations for system improvements will be addressed in 2020. The plan has updated maps, action plans and contact numbers.

Preventative Maintenance Review and Plan – Staff developed and implemented a comprehensive preventive maintenance plan and schedule to reduce corrective and emergency work as well as ensure adequate/appropriate resources are planned for the system. Staff were able to complete all scheduled maintenance within the year including 226 line valves, 26 air valves, and 57 hydrants. The schedule will be adjusted to improve efficiencies.

Water Systems Review – was completed to identify options to reduce the Operations Cost per customer. This has looked at staffing allocation and other cost saving measures. The biggest challenge with the BCWS is the relatively small size and minimum staffing requirements needed which can only be addressed by combining services with the operation of other water systems.

Upcoming Projects

Minor Capital Works – There are 4 autoflushing devices scheduled to be installed in 2020. These autoflushers will measure the water used for flushing, and reduce the time required by staff to flush the system while still maintaining water quality throughout the system.

Rates and Bylaw Review – Staff will be updating the rates and regulation bylaw to provide clearer definitions as well as improved language and organization. Staff will also be reviewing the current rates to address the need for adequate revenues to be collected to support the renewal and replacement program developed in the Asset Management Plan.

Engineering Design Project – Fayette and Lamarque watermain replacement designs will be completed early 2020. An application under the ICIP program will be made to begin design work on the next highest

priority replacement project which is the Falls/Georgia Renewal Project. Design of this project will begin in 2020 or 2021 depending on grants and construction proceeding the following year.

Fayette and Lamarque Watermains Capital Upgrade – this project will replace the failing 4 inch AC mains with 6 inch PVC main and increase hydrant locations. This project will also reduce emergency repairs for this main and improve overall fire flows. The asset management plan has highlighted the need to fast track watermain renewal in an effort to address the large sum of aging and failing watermains.

Vehicle Replacement – the Fleet Asset management plan adopted in 2019 identified the secondary Beaver creek water system utility truck, 2001 GMC Sierra, as the highest priority replacement item.

North Reservoir Emergency Generator – the lack of back-up power at the North Reservoir Pump Station results in frequent loss of water to 54 homes and high costs for call-out response. This can be rectified with the installation of a generator which will also improve the reliability and integrity of the system.

Stamp River Intake/McKenzie Pumpstation Assessment – This facility has not been used or maintained in recent years. An assessment needs to be completed to determine the costs to upgrade and maintain the facility to keep as an emergency back-up supply against the cost to decommission the facility.

Water System Audit – All water connections are charged based on the number of units serviced on each property. There may be properties with secondary suits or shops connected to the water system that are not being charged for their portion of the water system. A system audit would identify all existing connections and ensure rates are consistently and equitably applied throughout the system.

Water Conservation Plan – All water systems must have adopted water conservation plans in order to be eligible any provincial or federal grant programs. Water consumption is an average of 363 liters per person per day (lpcd) which is above the target of 350 lpcd. A strategic plan to reduce water usage will reduce costs to the system and benefit users.

Water Loss Investigation – Staff will be reviewing water use records, meter accuracy, and flushing volumes to get a more accurate estimation of the leakage in the water system. Once this has been determined, leak detection and reduction options will be assessed and a plan to reduce leakage to below 15% will be developed.

ALBERNI-CLAYOQUOT
REGIONAL DISTRICT

3008 Fifth Avenue, Port Alberni, B.C. CANADA V9Y 2E3 Telephone (250) 720-2700 FAX: (250) 723-1327

REPORT FOR INFORMATION

To: Beaver Creek Water Advisory Committee

From: Jenny Brunn, Manager of Operations

Meeting Date: January 28, 2020

Subject: **Beaver Creek Water Advisory Committee – Water Emergency Response Plan**

Recommendation:

THAT the Beaver Creek Water Advisory Committee receive the 2020 Water Emergency Response Plan.

Background:

As required by the Drinking Water Protection Act, the Alberni Clayoquot Regional District (ACRD) is required to have up-to-date Water Emergency Response Plan (WERP) for all of its water systems. The updated WERP, which is attached for your information, is a useful tool to minimize disruption and negative impacts during emergency events. It is a living document that will be reviewed and updated on a regular basis. The WERP includes the names and telephone numbers of the management personnel, drinking water officer, medical health officer and environmental health officer. Included are the steps required to follow in the event of an emergency and the protocols respecting public notices and reporting.

During the update, there were a couple of vulnerabilities and opportunities identified for improving the existing system that staff are endeavoring to undertake:

Assessment of the McKenzie Pump Station/Back up Stamp water supply: Prior to connection with the City of Port Alberni Water system, raw water was pumped from the Stamp River and treated with chlorine gas at the McKenzie Pump Station. The facility has not been used or maintained in recent years. In order to use this facility as a back-up system, the building requires some upgrades including the installation of liquid chlorine dosing and an injection system. There will also need to be an altitude valve replaced at the North Reservoir in order to allow reverse water flow. A review is underway to determine the capital costs to bring the facility up to working order, as well as the annual maintenance and asset renewal costs in comparison with the cost to decommission the facility. This review will be brought back to the committee to consider whether this facility should be kept or decommissioned.

Purchase Back-up Generator for North Reservoir: In the event of power loss at the north reservoir, the pumps will no longer operate causing the loss of water to 54 homes and significant overtime from operators to monitor the situation as detailed in the attached operator report. This can be rectified with the installation of a back-up generator which will also improve the reliability and integrity of the water system.

Time Requirements – Staff & Elected Officials:

There will be staff time involved in undertaking these initiatives, the majority of which can be completed by the Beavercreek Water Leadhand.

Financial:

The cost to have an engineering firm complete the McKenzie/Stamp Facility Assessment will be approximately $2,000. The cost to purchase and install a back-up generator at the North reservoir is approximately $60,000. The back-up generator costs have been included in the 2020-2024 capital plan for consideration and approval by the Board.

Policy or Legislation:

The Province of British Columbia's Drinking Water Protection Act and Regulation

Submitted by: 

Jenny Brunn, Manager of Operations

Reviewed by: 

Rob Williams, General Manager of Environmental Services

Approved by: 

Douglas Holmes, BBA, CPA, CA, Chief Administrative Officer

Proposal: North Reservoir Generator Install

Upon completion of the Alberni-Clayoquot Regional Districts Water Emergency Response Plan (WERP), we have determined a backup generator should be installed at the North Reservoir. In all scenarios related to the loss of power, approximately 54 homes would be at a loss of water for an extended period during a power outage including Kackaamin Family Development Centre. A generator installed at the North Reservoir would be a crucial component to improve our WERP plan and provide water to the residents at the north end of the system in an emergency. In addition to the generator, we would also need to install a transfer switch as well as update some of the programming.

Not only will the generator help us provide water in a power outage, it will also allow our operators to run the system safely and efficiently in an emergency. The pump controls for the system rely on the North Reservoir water level to have the pumps come on automatically when the level is low and turn off automatically when levels are reaching full capacity. The installation of a backup generator will help system components run automatically with an operator on call in the event of an extended power outage.

If the power is going to be down for an extended period not only at the North Reservoir but system wide, the operator on call can take the system out of reservoir mode and put the system into boost mode. This allows water to be provided throughout the system in many different scenarios that could arise. Our operators have found this to be ineffective because the pressure is not constant. Sometimes the pressure suddenly drops for extended periods of time because the lower parts of the system are using the water. Sometimes the pressure spikes uncontrollably due to consumption in the lower parts of the system. These types of pressure surges can cause our old infrastructure to fail and result in another emergency on top of the original one.

If a generator is installed at the North Reservoir, it will also reduce the number of callouts for our operators. Anytime the power goes out at the north end of the system the pumps fault and shutdown. This results in no pressure and no water for the 54 properties

beyond the reservoir. It also results in a callout to an operator on call to monitor power supply until power is restored. Once power is restored, the operator can reset the pumps to resume operation. If the operator was to reset the pumps before power was restored the pumps would fault again resulting in another callout. This results in continuous monitoring until power is restored so water can be provided to the north end as quickly as possible following a power outage. Sometimes these callouts are quick fixes, and sometimes the callouts result in long nights waiting for power to be restored so an operator can turn the pumps back on to provide water.

In the last year, we have had 15 power outages resulting in pump faults at the North Reservoir. The loss of power is something we as an organization cannot control. The power could be out a few hours or it could be out a few days depending on the emergency. Our recommendation as the operators is to install a backup generator and transfer switch. To supply an 87KW/109KVA, 3 phase 600-volt Standby Generator c/w an ACO Series 300 Automatic Transfer Switch would cost $46,845.00 as per quote number 012020. The quote is good for 30 days. The installation of this generator will cost up to an additional $10,000 for wiring, concrete, excavation and man time. The North Reservoir has an existing chain link fence around the property for security and safety measures. The installation of a backup generator at the North Reservoir will continuously provide water to the north end of the system in the event of a power outage, it will allow the operators to maintain a constant pressure and supply of water to preserve old infrastructure and it will reduce the number of callouts to an operator on call.

Prepared by:

Matt McLeod

BCWS Water Leadhand

ALBERNI CLAYOQUOT REGIONAL DISTRICT

BEAVER CREEK WATER SYSTEM

WATER EMERGENCY PREPAREDNESS PLAN

Updated by:

ACRD

Environmental Services Department

December 2019

X _____

Jenny Brunn, Manager of Operations

Table of Contents

1.0 INTRODUCTION

Mission Statement

The core objectives of the Beaver Creek Water System during emergency situations are to:

1. Protect human health.
2. Control and prevent the loss of water.
3. Provide an adequate supply of potable water
4. Prevent damage to property
5. Restore the system to full operation

The Plan

What is the Water System Emergency Response Plan?

The Alberni-Clayoquot Regional District is responsible for providing adequate supplies of clean potable water to its citizens, even in the event of an emergency or disaster. Disruptions in water quality and delivery may result from emergencies such as natural disasters, accidents, or intentional acts. The goal of the Alberni-Clayoquot Regional District is to minimize all adverse impacts resulting from disruptions in the water system. This is achieved through sound emergency planning and thorough communication coordination.

This plan has been prepared to guide the Alberni-Clayoquot Regional District to respond to a water system emergency in the Beaver Creek Water Distribution System. This water system relies on the City of Port Alberni for the safe supply and delivery of potable water. This Plan can only address emergencies within the distribution system, the ACRD can only assist the CPA with any watershed and potable water emergencies.

The purpose of the ERP is to:

- Provide the earliest response to an emergency condition.
- Ensure that water quality and public health are not compromised.
- Ensure that water for firefighting is available.
- Restore normal water system operation.
- Protect the natural environment from impacts associated with the system operation in the event of an emergency

How to Use This Plan

The Water System Emergency Response Plan is to act as a guide in the event of a water system emergency. Within the section labeled “Actions” many potential water system emergencies are anticipated and listed. Each potential emergency contains a guide for the persons involved to reference in an attempt to avert further damage.

Another component of the ERP is the post emergency response. We ask that an internal document referred to as the post incident report (Appendix B) be filled out after each water system emergency.

In addition, tabletop exercises and regular updates should be conducted to enhance our emergency response capacity. We ask all plan holders to attend meetings and to participate and make recommendations so that the Water System Emergency Response Plan will become more effective. It is important to note that an emergency response plan is of little or no value if individuals do not review it, know how to use it, or participate in its creation and evolution.

Determination of Emergency

Possible water system events:	Emergency	Action Plan:
Extended Loss of BC Hydro at:		
Strick Road Pump Station	No	
Kitsuksis Reservoirs	No	
Darnley Pump House	No	
North Reservoir	No	
Extended Loss of City of Port Alberni water supply	Yes	No Water Available
Water main failure in system (>10 homes)	Yes	Transmission Main Failure
Extended Loss North Reservoir	No	
Extended Loss of Kitsuksis Reservoir (s)	Yes	Loss of Reservoirs
Chlorine Disinfection Failure:		
Strick Road Pump House	No	
Kitsuksis Reservoir	No	
North Reservoir	No	
Contamination of Water System	Yes	Contamination of Water
General SCADA Control System Failure	No	
SCADA Control System Failure of North Reservoir	Yes	Go to Operational Procedures
Loss of Strick Road Pump Station	Yes	No Water Available

2.0 COMMUNICATIONS

Communication and Identification of Emergency

The Manager of Operations (MO) or delegate will provide communication and coordination support for the emergency. This involves ensuring safety for those involved, providing information to external and internal stakeholders and maintaining liaison with other agencies with the incident.

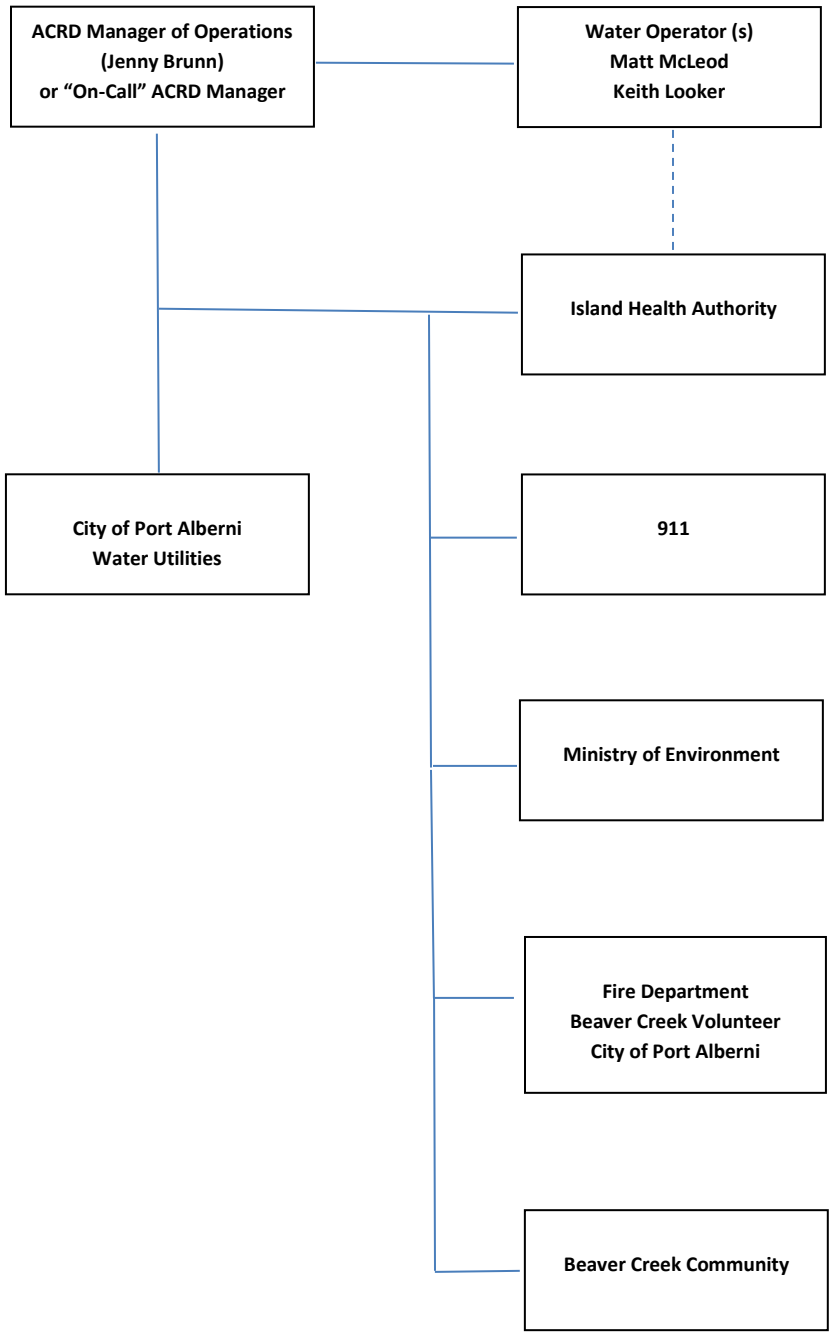
Once an emergency has been identified in the Beaver Creek Water System an emergency meeting via telephone with the MO should occur. If no answer call, Stericycle (former Tigertel) to inform them there is a Beaver Creek Water System Emergency and to call an ACRD Manager from the list.

An emergency meeting will determine the severity of an emergency, extent of affected areas, need for external resources, response strategy and action plan, communications/media relations strategy, communication updates and further emergency meetings.

Information to be provided to the assigned communication person include:

- What the emergency is.
- When it began.
- Where it is.
- Who is affected by the emergency.
- What is being done to correct the situation.
- How long is it expected to last, if known.
- Where to direct calls that require more information.
- When the next update will be received.

Communication Flow Chart



3.0 WATER ADVISORIES

Issuing a Water Notice

It is the responsibility of the Alberni-Clayoquot Regional District to contact the Drinking Water Officer (DWO), whenever there is a possibility that public health may be at risk due to compromised water system conditions.

Situations where public health may be at risk include but are not limited to:

- Contamination of water source compromising potability (biological, physical or chemical);
- Failure of treatment or disinfection systems;
- Vandalism/terrorism;
- Prolonged loss of water source/supply;
- Possibility of bacteria or organisms are present in the water system;
- Disinfecting equipment (chlorine) failure resulting in the lack of disinfection in the water;
- Possibility of a backflow event or contaminants entering the system (soil or other contaminants);
- Any other situation that may pose a risk to the users from contamination of the system or on the requirement of the DWO.

Protocol

Once a possible risk to public health has been perceived to be present, identify the extent of the affected area with the Manager of Operations and collect all pertinent information.

The Manager of Operations or Water Operators will contact the DWO and inform them of the situation.

The DWO will assess the situation and determine whether a Water Notice is required. The Alberni-Clayoquot Regional District will issue the notice and communicate a public advisory. The Manager of Operations will further communicate with organizations or persons depending on the emergency.

Signs on public notice boards may need to be posted informing users of the risk.

Once the water system has returned to normal operations, water quality testing must be performed to the satisfaction of the DWO before any Water Notice is to be removed.

If the Water Notice is related to a loss of disinfection prior to rescinding a boil water advisory. Two consecutive representative samples or sample sets taken a minimum of 24 hours apart show no E.coli or total coliform bacteria.

The water supplier and DWO will be working together during a boil water advisory and the DWO will advise the water supplier of the requirement that need to be met to lift an advisory.

Complete post incident report.

4.0 EMERGENCY RESPONSE PLAN ACTIONS

Extended Loss of BC Hydro Power Supply

Description of Emergency:

The loss of power will automatically activate the standby generator at the Strick Road Pump House. The generator will provide power to all equipment within the pump house. The North Reservoir and Darnley booster pumps don't have generators so the ends will have water but at a reduced pressure. The McKenzie Pump House generator is not in service but is only to be used in an unlikely emergency where there is no water from the City of Port Alberni.

The reservoir filling is controlled using the internet based communication system and this may not be available due to a power interruption. If this is the case the Strick Road Pump House will need to operate in manual to fill the reservoirs.

Component	Type of Generator	Run-time	Fuel Capacity
Strick Road Pump House	150 kw Diesel	2 Days	375 US Gallon

Action Items:

- Call ACRD Manager of Operations and describe emergency.
- Ensure generator is running properly and check operating parameters of generator (ex. oil pressure, water temperature, fuel or coolant leaks)
- Ensure all other equipment is running properly in the Strick Road Pump House
- Top up fuel on a regular basis

Until communication between the reservoirs and the Strick Road Pump House is restored, automatic operation is unavailable. The Strick Road Pump House will have to be run in "Manual" mode, meaning the pumps will have to be run in manual to keep the reservoirs full. When the reservoirs are full, the pumps will have to be turned off manually.

Once power is reestablished, ensure all equipment is placed into Automatic control and the power source has changed backed to BC Hydro. Order fuel and check generator(s) condition.

No Water Available

Description of Emergency:

The failure of the system means that there is NO water available to the community. The BCWS receives treated water only from the City of Port Alberni (CPA). The CPA primary source of water is from China Creek and the CPA has an emergency untreated backup source from the Somass River (near the Paper Mill Dam).

The failure of the CPA to supply the BCWS could be caused by many different factors including earthquake, tsunami, and a loss of intake or anything causing the complete breakdown of the water system to provide any water. This type of an event will require the coordination with many different agencies to effectively deal with the situation.

The original BCWS McKenzie Street Pump Station would be the last resort for a backup untreated water source before supplying the community with bottled water. If there is no BC Hydro available this source may not be available as the backup generator is not regularly serviced.

Action Items:

- Call ACRD Manager of Operations and describe the emergency.
- Attempt to identify, assess and correct the problem with the CPA
- Visit the Strick Road Pump House and turn off all electrical switches and valves feeding the pumps (to isolate and protect water system)
- Call Fire Department to inform them of no water

Arrange Alternate Water Supply

- The Manager of Operations or Water Operators will contact the DWO and inform them of the situation
- If possible start the pumps at the McKenzie Pump House water and initiate a Boil Water Notice
- Arrange to transport water bottles from Port Alberni if possible
- Conduct a thorough inspection of all system facilities for damage and record findings
- Once water supply is reestablished issue a water advisory as directed by IH. Please refer to page 9: Issuing a Water Notice and Appendix C: “Mandatory Conservation Notice”
- Prepare a plan to transition back to CPA water source and identify a schedule to resumption of normal service

Contamination of the Water Supply

Description of Emergency:

The City of Port Alberni's watershed is susceptible to contamination by many sources and factors. These include the introduction of hydrocarbons (fuel spill) or other chemicals related to the forestry industry. Slope or bank failure within the watershed would create increased turbidity levels or bacteria contamination. Other possible contamination would come from a forest fire where fire retardants are used or the subsequent runoff of material.

Action Items:

- Call ACRD Manager of Operations and describe the emergency
- The Manager of Operations or Water Operators will contact the DWO and inform them of the situation
- Stop the entry of contaminated raw water into the system until an assessment of risk can be made
- The City of Port Alberni will be called by the ACRD Manager of Operations advising of the contamination of the water and the issuing of the Advisory if necessary.
- If hydrocarbons or other chemicals were spilled in the watershed this would create a need to inform with a "Do Not Use Water Notification" and arrange alternate potable water supply. Please refer to page 9: Issuing a Water Notice and Appendix C: "Do not use Water Notification"
- With advice from Island Health, water testing for chemical contaminants will take place
- Once the water quality in the watershed is back to normal, ask IH for advice as to when the Advisory can be removed.

Loss of Reservoirs

Description of Emergency:

The BCWS has three reservoirs, the two main reservoirs on Kitsuksis Road and one on Beaver Creek Road to service the North end of the distribution system. The potential is to lose one or all three reservoirs which may be caused be many different factors including a structural failures due to an earthquake or a significant water main break. A significant water break has the possibility of draining reservoirs or isolating the reservoirs from the distribution system. Each reservoir is unique and the response will be different for each one.

Reservoirs:

North Reservoir (7656 Beaver Creek Road) - with a loss of only the North Reservoir this may not necessitate an emergency as water could still flow to the northern section of the distribution albeit at a low pressure.

Kitsuksis New Reservoir & Kitsuksis Concrete Reservoir (5950 Kitsuksis Road) - with the loss of only one of the two reservoirs does not necessitate an emergency as these can operate independently as long as the valves or water main are not damaged.

If both reservoirs are inoperable this would be an emergency as the water pumping system would have to be operated in manual and there would be limited ability to fight fires.

Action Items:

- Call ACRD Manager of Operations and describe the emergency.
- Attempt to identify, assess and correct the problem.
- Call Fire Department to inform them when hydrants are in or out of service.
- Close valves feeding the reservoirs or the closest valves to isolate the reservoirs
- Install a pressure relief valve on the fire hydrant closest to the North Reservoir. This may be borrowed from the City of Port Alberni
- Monitor pressure to ensure the distribution system doesn't over pressurize
- Install dechlorination chemicals instream of the discharging water (sodium thiosulphate)
- Run pump in Manual to supply water to the distribution system
- Conduct a thorough inspection of both reservoirs for damage and record findings
- Prepare a plan to begin repairs and identify a schedule to resumption of normal service

Transmission Main Failure

Description of Emergency:

In the event of a main failure, there will be the potential for loss of water to the community, backflow (biological and or chemical) into the distribution system and flooding of properties. The type of failure will have to be assessed and the appropriate action taken on an individual basis. The transmission main runs from the Strick Road Pump House up Strick and Gordon Roads to the Kitsuksis Reservoirs with a branch running all the way up Beaver Creek Road to the North Reservoir.

Action Items:

- Call ACRD Manager of Operations and describe the emergency.
- Stop the flow of water by closing valves on each side of the failure
- Make the site safe by implementing traffic control.
- Provide a bypass or use an alternative supply loop if possible.
- Repair the damage and disinfect the affected areas.
- Put sediment control measures in place and de-chlorinated water released.
- If there is a potential that the system has been contaminated the ACRD Manager of Operations will contact Island Health for issuing a Water Advisory or Boil Water
- If a backflow or siphonage of a chemical contamination occurs and represents a threat a “Do not use Notice” may be required.
- Make a damage assessment and prepare plans to begin repairs and identify a schedule to resume normal operations.
- Contact the Ministry of Environment R.A.P.P. line if there is significant sediment or unchlorinated water in streams and the Department of Fisheries and Oceans
- Assess downstream damage, prepare a plan and schedule to remediate any flooding damage.
- Call Fire Department to inform them when hydrants are in or out of service.

5.0 EMERGENCY CONTACT LIST

BEAVER CREEK WATER SYSTEM

Emergency Contacts List

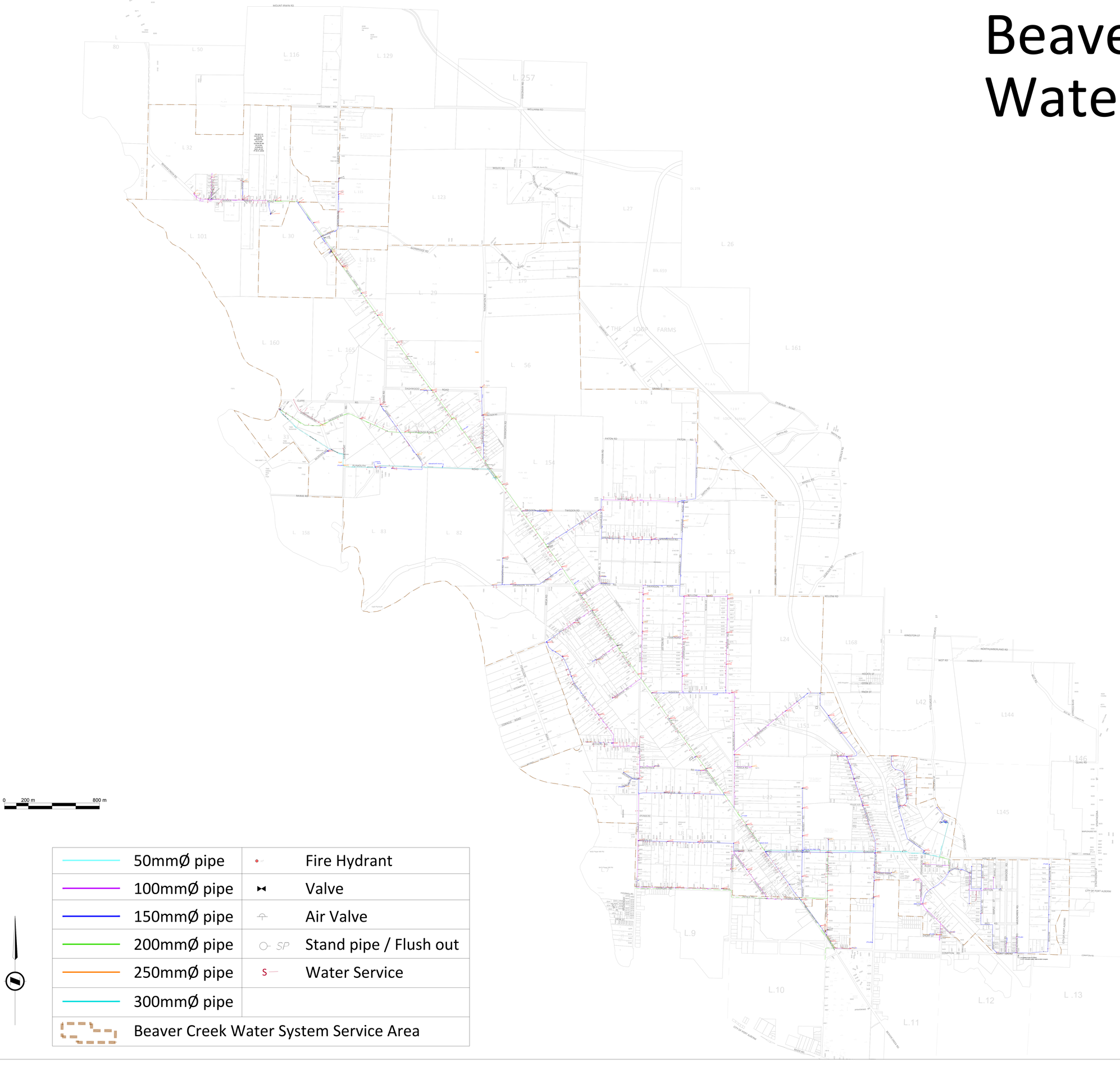
ORGANIZATION	NAME	TELEPHONE
Stericycle (former Tigertel)	**24 hr ACRD Management Contact**	**1-800-853-8483**
On Call Maintenance Technician	**24 hr ACRD Water System Contact**	**250-206-0021 (cell)**
ACRD Maintenance Technician	Matt McLeod	**250-720-5540 (cell)**
ACRD Maintenance Technician	Keith Looker	**250-206-0023 (cell)**
Regional District of Alberni-Clayoquot	Office	250-720-2700
ACRD GM of Environmental Services	Rob Williams	250-735-8885 (cell)
ACRD Manager of Operations	**Jenny Brunn**	**250-202-0513 (cell)**
ACRD CAO	Doug Holmes	250-720-7051 (cell)
ACRD Protective Services Manager		250-720-9010 (cell)
BC-one-Call		1-800-474-6886 ID #1292
Island Health (VIHA)	Emergency Contact	1-877-370-8699 (24 hrs.)
Environmental Health Officer (VIHA)	Jackie Chui	250-731-1315 ext 41021
Public Health Engineering (VIHA)	Murray Sexton	250-755-6215
Medical Health Officer	Dr.Paul Hasselback	250-755-6215
ACRD BCWS Consulting Engineer	Koers & Ass. - Chris Downey	250-248-3151
		250-951-8551 (cell)
City of Port Alberni Waterworks	Amar Giri	250-720-2845
		250-206-0048 (cell)
R.C.M.P.	Emergency - 911	250-723-2424
Hospital Port Alberni	West Coast General	250-731-1370
Ministry of Environment	Nanaimo Branch	250-751-3100
	Water Protection	250-751-3149
	R.A.P.P	1-877-952-7277
	Environmental Emergency Reporting	1-800-663-3456
Ministry of Transportation	24 hour line	1-800-661-2324
Department of Fisheries and Oceans	Port Alberni	250-720-4440
Fire Departments	Beaver Creek Volunteer Fire Dept.	250-723-2313
	Charles Starratt, Fire Chief	
	City of Port Alberni	250-724-1351
	Mike Owens, Fire Chief	
B.C. Hydro Emergencies	24 hour line	1-888-POWERON
		911- electrical emergency

Fortis BC Emergency	24 hour line	1-800-663-9911
Electrical Services	Gord Blakey	250-723-9717
		250-720-9529
WL Solutions (Instrumentation)	Willis Marsh	250-720-7380
Confined Space, water hauling	Walco Industries	250-723-6919
Flaggers	Ace Flagging	250-723-0679
Rentals	Handy Andy	250-723-8877
	LB Woodchoppers	250-723-5841
Water Works Suppliers	Andrew Sheret	250-713-4153
	Corix Water Products	250-334-3200
	Four Star	250-616-7299
Excavation Services	McCoy Lake Exc.	250-720-7596
	Hornet Exc.	250-730-1699
	B.Van Vliet Exc.	250-724-6762
	Roc-Star Enterprises	250-724-3351

APPENDIX A

WATER SYSTEM MAP

Beaver Creek Water System



0 200 m 800 m

50mmØ pipe		Fire Hydrant
100mmØ pipe		Valve
150mmØ pipe		Air Valve
200mmØ pipe	SP	Stand pipe / Flush out
250mmØ pipe	S	Water Service
300mmØ pipe		
Beaver Creek Water System Service Area		

APPENDIX B

FORMS

Incident Report

This form was created so that technicians and the persons responsible for executing Action lists during water system emergencies can create a detailed account of their actions along with the respective date and time each action was taken. In addition, there is a section labeled Post Incident Comments in which statements concerning the protocol followed in the respective Action List can be reviewed. The following information provided by this form will aid in improving the Alberni-Clayoquot Regional District water system emergency response in the upcoming years. After the form is completed, please make a copy for yourself and send the original to the Manager of Operations. Thank you for your cooperation.

Action List Referenced:_____

Date:_____ Time:_____

ActionTaken:_____
_____
_____
_____
_____

Date:_____ Time:_____

ActionTaken:_____
_____
_____
_____
_____

Date:_____ Time:_____

ActionTaken:_____
_____
_____
_____
_____

Date:_____ Time:_____

ActionTaken:_____
_____
_____
_____
_____

Date:_____ Time:_____

ActionTaken:_____
_____
_____
_____
_____

Date:_____ Time:_____

ActionTaken:_____
_____
_____
_____
_____

Date:_____ Time:_____

ActionTaken:_____
_____
_____
_____
_____

Date:_____ Time:_____

ActionTaken:_____
_____
_____
_____
_____

Date:_____ Time:_____

ActionTaken:_____
_____
_____
_____
_____

Post Incident Report

To: ACRD Manager of Operations

From:_____

Date:_____

Details

Type of emergency:_____

Location of emergency:_____

Duration of emergency:_____

Emergency Information

Description of Emergency:

_____
_____
_____
_____
_____

Procedures/Actions Taken during Emergency:

_____
_____
_____
_____
_____

Emergency Evaluation

(Include areas of strength and recommendations for improvement)

Emergency Action Team Response Evaluation:

_____
_____
_____
_____

Communications Response Evaluation:

_____
_____
_____
_____

Recommendations:

_____
_____
_____
_____

Suggested Amendments to the Emergency Response Plan:

_____
_____
_____
_____

APPENDIX C

Notices

Beaver Creek Water System

IMPORTANT NOTICE

TO ALL WATER CUSTOMERS

Because of the system's inability to adequately disinfect water at this time and for your safety, it is recommended that you boil your drinking water prior to consumption. Water should be subject to a rolling boil for at least 1 minutes prior to cooling and consumption.

BOIL WATER ADVISORY

EFFECTIVE_____UNTIL FURTHER NOTICE

Enquires?

Jenny Brunn, Manager of Operations

Alberni Clayoquot Regional District 250-720-2700

Beaver Creek Water System Operators

Keith Looker 250-206-0023

Matt McLeod 250-720-5540

PLEASE SPREAD THE WORD TO YOUR NEIGHBOURS

Beaver Creek Water System

IMPORTANT NOTICE

TO ALL WATER CUSTOMERS

Bacteria sampling of the water system indicates that it is no longer necessary to boil water prior to consumption. You may notice elevated levels of chlorine (smell and taste) for a short period. Levels of disinfection will be reduced as soon as possible.

Thank you for your patience and co-operation

EFFECTIVE_____

Enquires?

Jenny Brunn, Manager of Operations

Alberni Clayoquot Regional District 250-720-2700

Beaver Creek Water System Operators

Keith Looker 250-206-0023

Matt McLeod 250-720-5540

PLEASE SPREAD THE WORD TO YOUR NEIGHBOURS

Beaver Creek Water System

IMPORTANT NOTICE

TO ALL WATER CUSTOMERS

Pumping systems have been repaired and are operating normally. While the system is recovering to operating levels, your assistance with conservation over the next two or three days would be appreciated.

Thank you for your patience and co-operation

EFFECTIVE_____

Enquires?

Jenny Brunn, Manager of Operations

Alberni Clayoquot Regional District 250-720-2700

Beaver Creek Water System Operators

Keith Looker 250-206-0023

Matt McLeod 250-720-5540

PLEASE SPREAD THE WORD TO YOUR NEIGHBOURS

Beaver Creek Water System

IMPORTANT NOTICE

TO ALL WATER CUSTOMERS

As a result of _____the main pumping system is inoperative – there is no water entering the system. Please refrain from using faucets and fixtures and please use stored or bottles water for household use. If this situation persists for more than 24 hours, you may wish to contact your plumber for advice or assistance with your hot water tank

MANDATORY CONSERVATION NOTICE

EFFECTIVE_____UNTIL FURTHER NOTICE

Enquires?

Jenny Brunn, Manager of Operations

Alberni Clayoquot Regional District 250-720-2700

Beaver Creek Water System Operators

Keith Looker 250-206-0023

Matt McLeod 250-720-5540

PLEASE SPREAD THE WORD TO YOUR NEIGHBOURS

Beaver Creek Water System

IMPORTANT NOTICE

TO ALL WATER CUSTOMERS

As a result of _____there is a strong probability that pumping systems will have to be shut down. Residents are asked to reduce water consumption immediately and to be prepared for a temporary water shortage. It is recommended that you store a small quantity of water for consumption and general use.

VOLUNTARY CONSERVATION NOTICE

EFFECTIVE_____UNTIL FURTHER NOTICE

Enquires?

Jenny Brunn, Manager of Operations

Alberni Clayoquot Regional District 250-720-2700

Beaver Creek Water System Operators

Keith Looker 250-206-0023

Matt McLeod 250-720-5540

PLEASE SPREAD THE WORD TO YOUR NEIGHBOURS

Bamfield Water System

IMPORTANT NOTICE

TO ALL WATER CUSTOMERS

Pumping systems have been repaired and are operating normally. While the system is recovering to operating levels, your assistance with conservation over the next two or three days would be appreciated.

Thank you for your patience and co-operation

EFFECTIVE_____

Enquires?

Jenny Brunn, Manager of Operations

Alberni Clayoquot Regional District 250-720-2700

Bamfield Water System Operator

Les Butler 250-735-2148

PLEASE SPREAD THE WORD TO YOUR NEIGHBOURS

Beaver Creek Water System

IMPORTANT NOTICE

TO ALL WATER CUSTOMERS

As a result of _____the water is non potable
and we are asking that everyone not to use the water

DO NOT USE WATER

EFFECTIVE_____UNTIL FURTHER NOTICE

Enquires?

Jenny Brunn, Manager of Operations

Alberni Clayoquot Regional District 250-720-2700

Beaver Creek Water System Operators

Keith Looker 250-206-0023

Matt McLeod 250-720-5540

PLEASE SPREAD THE WORD TO YOUR NEIGHBOURS

Beaver Creek Water System

IMPORTANT NOTICE

TO ALL WATER CUSTOMERS

Date: _____

WATER SAFE TO USE NOW

The "Do Not Use" Advisory issued on _____

has been removed your water is safe to use

Enquires?

Jenny Brunn, Manager of Operations

Alberni Clayoquot Regional District 250-720-2700

Beaver Creek Water System Operators

Keith Looker 250-206-0023

Matt McLeod 250-720-5540

PLEASE SPREAD THE WORD TO YOUR NEIGHBOURS

WATER SHUTOFF NOTIFICATION

The Beaver Creek Water System will be turning the water off in your area in order to make necessary repairs to the system.

Area to be shut off _____

_____

Date (s) of shutoff _____

_____

Time (s) of shutoff _____

_____

Reason for shutoff _____

_____

_____

Date of notice _____

If you have any questions about the above information, please call

Jenny Brunn, Manager of Operations

Alberni Clayoquot Regional District 250-720-2700

Beaver Creek Water System Operators

Keith Looker 250-206-0023

Matt McLeod 250-720-5540

ALBERNI-CLAYOQUOT
REGIONAL DISTRICT

3008 Fifth Avenue, Port Alberni, B.C. CANADA V9Y 2E3 Telephone (250) 720-2700 FAX: (250) 723-1327

REQUEST FOR DECISION

To: Beavercreek Water Advisory Committee

From: Jenny Brunn, Manager of Operations

Meeting Date: January 28, 2020

Subject: Investing in Canadian Infrastructure Grant Opportunity

---

Recommendation:

THAT the Beaver Creek Water Advisory Committee recommend to the ACRD Board of Directors to approve submission of a grant application to the Investing in Canadian Infrastructure Program (ICIP) Green Infrastructure for design and construction of the Falls/Georgia Watermain Project.

Background:

The Investing in Canadian Infrastructure Program (ICIP) for BC grant program is accepting applications for the second intake of the Green Infrastructure – Environmental Quality section. The grant is focused on supporting projects that increase access to potable water or increase capacity to treat wastewater and stormwater or reduce soil and air pollutants. Regional Districts are permitted to submit one application per electoral area or current/proposed service area. The grant application deadline for this program is February 26, 2020.

The recently adopted Beavercreek Water System asset management plan has identified a number of high priority watermain replacement projects. The proposed 2020-2024 capital plan has set the following high priority replacement schedule:

	2019	2020	2021	2022	2023	2024
Walker Road Watermain Upgrade	$425,000					
Fayette Road Watermain Upgrade		$437,000				
Lamarque Rd Watermain Upgrade			$448,000			
Falls/Georgia Road Watermain Upgrade				$750,000		
Chapman/Pierce Road Watermain Upgrade					$380,000	
South Beavercreek Road Watermain Upgrade						$525,000

The upcoming Fayette and Lamarque Watermain Upgrades have 90% design completed with construction possible to begin as early as Spring 2020. The next project scheduled to be completed is the Falls/Georgia/Seymour section that will replace failing 100 mm AC main with 150 PVC main, install additional fire hydrants and loop the Seymor section that is currently dead-ended. This project would be eligible for funding under this grant program as it will improve water quality and remove the risk of watermain failure and loss of access to water in the area. Under this funding program, the project could begin as late as February 2022 and must be completed by March 31, 2026.

Time Requirements – Staff & Elected Officials:

This initiative will require sufficient staff time to apply for the grant and if successful, time to submit reports and claims.

Financial:

The high level cost estimate for completion of this project is $750,000. The Investing in Canadian Infrastructure Program (ICIP) for BC covers 73.33% of eligible project costs for local government which will require a remaining $200,025 from the Beavercreek capital fund. With current scheduled capital contributions, there will be adequate funding available to complete design of this project in 2021 and construction in 2022.

Options Considered:

That this opportunity not be pursued at this time.

Submitted by: _____
Jenny Brunn, Manager of Operations

Reviewed by: _____
Rob Williams, General Manager of Environmental Services

Approved by: _____
Douglas Holmes, BBA, CPA, CA, Chief Administrative Officer

ALBERNI-CLAYOQUOT
REGIONAL DISTRICT

3008 Fifth Avenue, Port Alberni, B.C. CANADA V9Y 2E3 Telephone (250) 720-2700 FAX: (250) 723-1327

REQUEST FOR DECISION

To: Beaver Creek Water Advisory Committee

From: Jenny Brunn, Manager of Operations

Meeting Date: January 28, 2020

Subject: Beaver Creek Water Conservation Plan

Recommendation:

THAT the Beaver Creek Water Advisory Committee recommend that the ACRD Board of Directors endorse the 2020 Beaver Creek Water Conservation Plan.

Background:

As a requirement for applications to the Investing in Canadian Infrastructure Program (ICIP), water systems must have a completed water conservation plan that is endorsed by their board or council. Attached is a water conservation plan for the Beaver Creek Water System, which when endorsed, will make the BCWS eligible for grant funding. This plan has reviewed the historical and current water demands, determined where the demand is from and reviewed the available conservation strategies available to meet the targets.

Water demand in the Beaver Creek Water System has been stable for the past four years with the yearly average higher than the targeted amount but the seasonal peak demands below the targeted amount. Leakage is significant at 29% of the total demand. The average water demands can be reduced by implementing water conservation measures to change customer behavior. It can also be reduced by addressing system leakage. The 2020 Beaver Creek Water Conservation Plan reviewed the available water conservation strategies and has recommended 1) focusing financial investment on replacing old leaking infrastructure, 2) adjusting water rates to encourage conservation and 3) supporting water use reductions through education efforts.

Time Requirements – Staff & Elected Officials:

These initiatives will require time and resources to develop water conservation education information for the website and newsletters, update software programs to the new rate structure and time to respond to customer inquiries and complaints.

Financial:

If the basic threshold is reduced and consumption habits do not change, the result will be an increase in revenues by up to an estimated $108,000 per year. Therefore, if the new rate structure is ineffective in reducing demands, it would have the benefit of increasing revenues which would be dedicated to infrastructure renewal to reduce failing and leaking infrastructure. However, it is expected that some customer habits will change and result in a reduction in water usage, especially those that are sensitive to price changes. The reduction in water usage would also result in a direct cost savings as the water system pays $0.40 per m3 to the City of Port Alberni.

Options Considered:

That the water conservation plan not be adopted and the grant opportunity not be pursued at this time.

Submitted by: 

Jenny Brunn, Manager of Operations

Reviewed by: 

Rob Williams, General Manager of Environmental Services

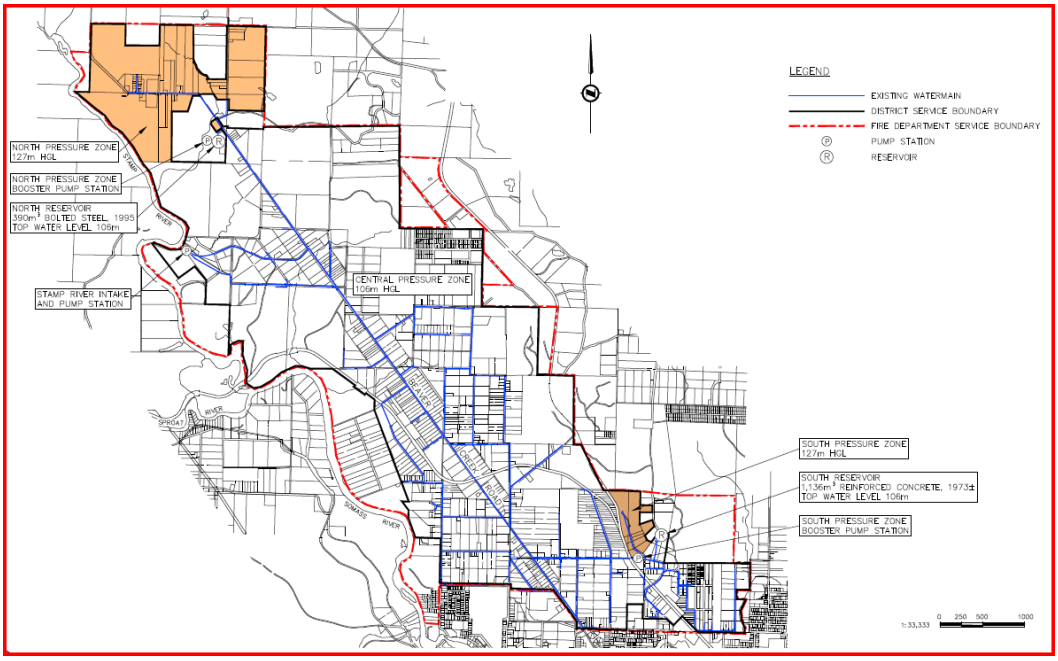
Approved by: 

Douglas Holmes, BBA, CPA, CA, Chief Administrative Officer

2019 Beaver Creek Water Conservation Plan

Background

The Beaver Creek Water System (BCWS) is a service provided by the ACRD to the residents in the Electoral Area E (Beaver Creek). This is a community of 2,873 (2016 Census) which borders the City of Port Alberni (CPA) on the south, the Beaufort Electoral Area on the north and east, and the Sproat Lake Electoral Area on the west. The Stamp and Somass Rivers form the western boundary of Beaver Creek. The water system has over 46 km of watermain with 988 service connections.



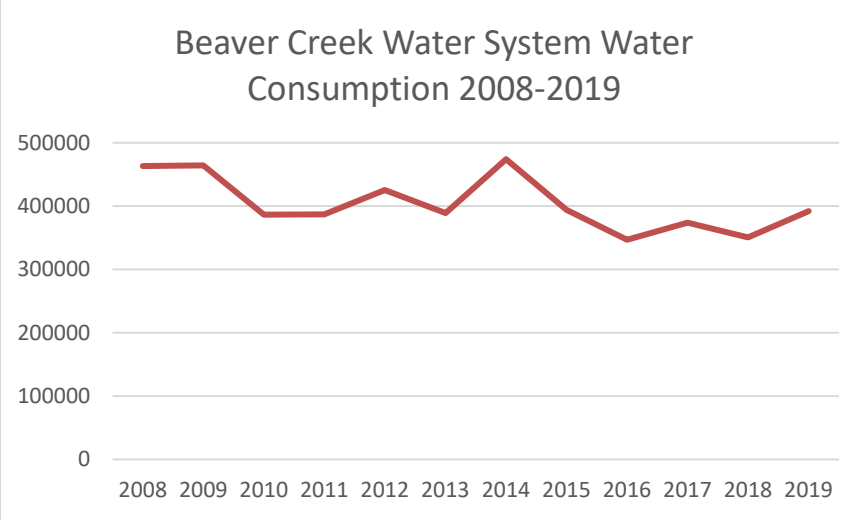
The source water for the BCWS comes from the CPA as a bulk water provider. The City's water has a multi-barrier approach by treating the water with two disinfection systems including ultraviolet light and chlorination. The CPA raw water sources are China Creek and Bainbridge Lake both feeding the system by gravity and there is an emergency water supply from the Somass River. The CPA system has capacity for anticipated growth in the community until at least 2050. The Beaver Creek Water System Infrastructure Assessment 2017 Report provides for a potential increase of service connections from 988 to a full build out of 1314 connections. This was determined using the average growth rate of 0.54% and would be reached in approximately 50 years.

Water Conservation Targets

Maintain Average Consumption below 350 lpcd
Water Loss less than 15%
Peak Demand Ration of Less than 2:1 PDD:ADD

Water Consumption

The following graph shows the annual total water consumption from 2008 to 2019 demonstrating a gradual decrease from 2008. The BCWS changed source water from the Stamp River to the CPA in 2014. The new source included a new pump station in order to boost pressure and provide reliable flow. The commissioning period caused leaks and the consumption to increase in 2014. Once the startup period of the pump station was complete and with a reduction in water pressure and water flushing, the water use decreased the following years.



Average Water Demand

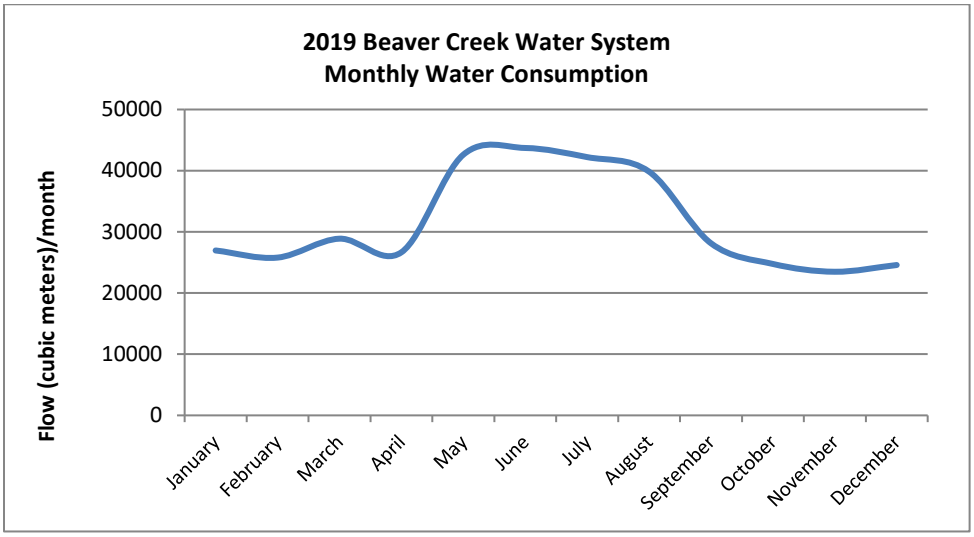
The total demand for the BCWS in 2019 was 392,193 cubic meters and an estimated population of 2873. This gives a per capita annual use of 137 cubic meters per year or 374 liters per capita per day (lpcd). This is above the target of 350 lpcd and higher than 2018's daily average demand of 363 lpcd but below the 2016 UBC Survey's provincial average of 494 lpcd.

	Consumption (liters per person per day)
Canadian average in 2016	330[1]
Average Annual consumption	490[1]
Beaver Creek Average consumption	374

Peak Demand Ratio

Peak demands during summer periods can cause stress on the infrastructure capacity and source water during periods of drought. In 2019, peak summer demand was approximately 1,367 m3/day compared to the average daily demand of approximately 1,075 m3/day. This is a ratio of 1.32 to 1 for peak to average demand. This is under the target of 2:1.

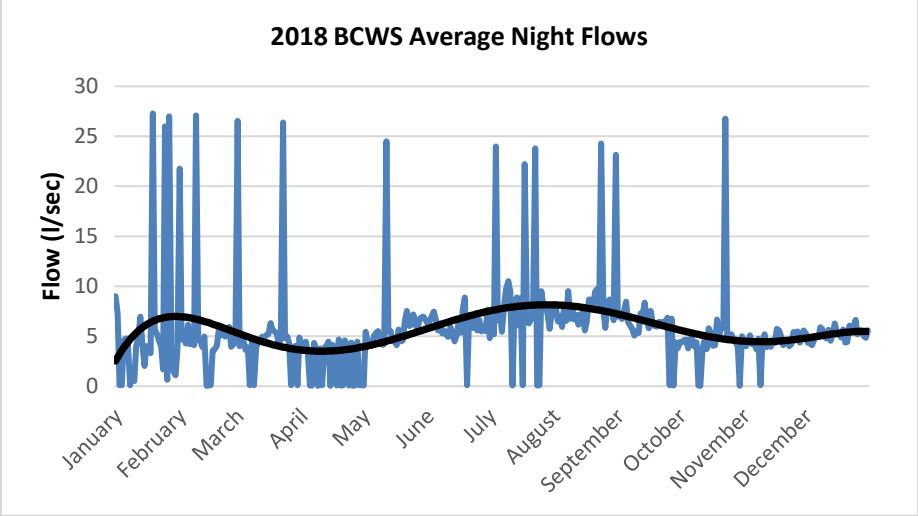
[1] Source: Living Smart BC 2016



Leakage/ Unaccounted for Water

All systems experience some water loss as an ordinary part of operation. Water leakage is also called 'unaccounted for water' to distinguish it from losses that occur for known reasons, such as hydrant flushing. In 2011 the BCWS completed a Water Infrastructure Assessment and found the unaccounted for water from system leakage to be high, varying between 23% and 38%. A reduction in pressure and an operational leak detection program is believed to have reduced the leakage from 2011.

In 2019, the CPA provided 392,193 cubic meters of water to the BCWS. The total water delivered to customers through all water meters for 2019 was 280,230 m3 resulting in a water loss of 111,963 m3 which made up 29% of all water entering the system. This is about the same percentage as in 2018. This loss can be attributed to meter error, water main breaks, flushing, unauthorized consumption and leaks. The estimated volume used for flushing in 2019 of 10,005 m3 or 3% of all water demand. The graph below shows that average night flows in the system are approximately 5 l/s. As household demand is typically nothing during the night in the winter, the flow is attributed mostly to leakage due to failing infrastructure. This is confirmed when commissioning new watermains causing a reduction in nighttime flows.



Current Conservation Measures in Place

Beaver Creek currently meters all water use and bills for water based on consumption. At each quarterly reading, consumption is reviewed and unusually high readings are investigated. This often results in the identification and repair of homeowner leaks. Further to identifying leaks, meters also provide incentives for conservative water use. Residents are allowed a threshold of 108 m3 per quarter of water each quarter. Above this amount, residents pay $2/m3. This is an effective tool for motivating changes in water use behavior with approximately 93% of users under this threshold in the winter and 80% of customers under this threshold in the summer.

The BCWS receives bulk water from the City of Port Alberni and is required to follow their water restrictions program. The water restrictions are set up with four stages, increasing restrictions as the stages increase. Stage One Restrictions are put in place every summer even if there is no shortage of water as it provides education and awareness to the consumer for further restrictions during a water shortage. The BCWS installs sandwich board signs on the main arterial roads coming into Beaver Creek indicating the Stage of water restrictions. Other methods is to include water conservation status new letters to educate users of status of water restriction and conservation. City promotion and education in the local paper and media are typically also received by the Beavercreek customers.

Water Conservation Strategy Options

The following programs were assessed for their expected costs and potential savings:

Water Conservation Strategy Options			
	Reduction	***Total Cost Annually***	***Potential Savings (m3) and $ per year***
Financial			
Increasing Block Rate Structure	15%	minimal	59,610 m3 and $23,844
Increasing Basic Consumption Rates	5%	minimal	19,870 m3 and $7,948
Reduce Volume in Basic Charge	10%	minimal	39,740 m3 and $15,896
Education			
School Programs	1%	$10,000	3,922m3 and $1,569
Community events	1%	$5,000	3,922m3 and $1,569
Advertising	1%	$5,000	3,922m3 and $1,569
Conservation tips on the ACRD website	0.5%	minimal	1,961 m3 and $784
Website/Newsletters	2%	minimal	3,922 m3 and $1,568
Workshops	0.5%	$5,000	1,961 m3 and $784
Regulation			
Outdoor Water Bylaw/ ticketing	1%	$5,000	3,922m3 and $1,569
Rebates for High Efficiency		**per household**	
Shower head rebates	5%	$25	19,870 m3 and $7,948
Toilet rebates	6%	$212	23,532 m3 and $9,413
Appliance rebate	1.50%	$59-$147	5,883 m3 and $2,353

The primary focus of this plan will be to focus on conservation efforts and programs to reduce summer demand as this will reduce the peak ratio and the overall water consumption. Summer use is significantly higher than winter consumption as a result of the outdoor water use. Of the available conservation strategies, the most two cost effective options for the BCWS are Conservation Focused Rate Structures and Education:

Financial Conservation Measures

Increasing Block Rate Structure: Increasing block rates divide a customer's consumption into blocks but charge less for initial units of consumption and more for later units of consumption. These rate structures are considered to promote efficiency because of the price signal that conveys higher costs for higher volumes of use. This also can be used to reduce the average and peak demands. A block rate structure for the BCWS would reduce the allowable volume of water in the basic charge from 108 m3 per quarter to 60 m3 with the addition of 3 more rate blocks including: a rate of $1.40/m3 be charged for water up to the 108 m3, $2.00/m3 be charged for water over 108 m3 and $2.80/m3 be charged for consumption over 180 m3 per quarter. This is summarized in the following chart

Block	Volume	Rate
First Block	Under 60 m3	Included in basic charge
Second Block	60 m3 - 108 m3	$1.40/m3
Third Block	108 m3 – 180 m3	$2.00/m3
Fourth Block	Above 180 m3	$2.80/m3

Increasing Basic Consumption Rates: Consumption rates are charges for each unit of water and by increasing this rate provides financial incentive for people to reduce overall water use. Other communities have implemented a seasonal rate where the rates for water consumption are cheaper in the winter and higher in the summer. This can be effective in reducing summer water use. When using conservation rate structures, an education component should also be used to inform the users of why the structure is being used and what the billing system is. It is important to let the consumers know the reasons behind water conservation, what the infrastructure benefits are to the water system, and how they can reduce their water consumption and consequently their water bills.

In the BCWS, only 7% of users are over the basic volume in the winter and 20% in the summer. Therefore increasing the consumption rates would have a limited affect on the majority of water users and is not expected to result in an average reduction above 5%.

Reducing Volume in the Basic Charge: The current block rate for each water connection is described in the ACRD bylaw F1119 as $51.67 for 108 cubic meters per quarter, which equates to a rate of $0.70 per m3. After this first block is exceeded the charge is $2 per cubic meter. This is a large volume of water to be included in the basic charge followed by a very significant jump in rates for all water used above this volume. This volume of water is typically much higher than a conservative water use home which uses on average 40 - 60 m3 per quarter. If 108 m3 was used by each water connection, it would result in a consumption rate of 415 lpcd. This is above our actual rate of 374 lpcd and much higher than the target of 350 lpcd. The average volume of water that should be used per connection to meet our targets would be 64 m3 per quarter. If the majority of customers would use under this volume, the water system would meet it's goal.

Discussion:

An increasing block rate can be a very effective way to affect consumer habits resulting in an average water use reduction of 15%. This is also a complicated system that takes effort to implement in billing software, can seem confusing to customers if adequate engagement and education is not undertaken prior to implementing. Increasing consumption rates would also be expected to reduce water use, but the impact is only likely to reduce consumption by 5% as the majority of water use is under the basic threshold. Reducing the volume allowed in the basic charge is expected to have a larger reduction of over 10%. Changing the consumption rate or the allowable volume in the basic charge are both systems that are easy to implement and educate the public on. The BCWS has seen that the existing rate structure is an effective tool in keeping the majority of users below the threshold. Reducing the allowable volume in the basic charge to under 64 m3 is expected to have a significant impact on water usage resulting in at least a 10% reduction in consumption.

Education

The water conservation education program proposed for the BCWS includes the creation and use of brochures, newsletters and sandwich boards. The ACRD website is a good method of providing education as to the reasons why the water system needs a conservation plan and to provide the most up to date incentives. These are cost-effective options to provide education to the community. Although, this type of passive education program would not be effective as a stand-alone effort, coupled with conservation rate structures, is likely to produce an effective result in reducing water use. Future education initiatives could include outreach programs promoting water savings, providing free household water audits, demonstration presentations at community events (ex. Fall Fair) or a school program. However, this later group is expensive and difficult to target the customer of the BCWS.

Water Loss Minimization

The majority of the Beaver Creek Water System was constructed in the 1960's with asbestos cement pipe which is coming to the end of its useful life. As a result, this infrastructure is beginning to fail resulting in high water loss in the system and high costs for emergency repairs. The BCWS Asset Management plan has highlighted the need to fast track watermain renewal in an effort to address the large sum of aging and failing watermains. This will reduce water loss and overall water demand.

Recommendations

The recommendations are to; 1) focus financial investment on replacing old leaking infrastructure, 2) adjust water rates to encourage conservation and 3) support water use reductions through education efforts.

ALBERNI-CLAYOQUOT
REGIONAL DISTRICT

3008 Fifth Avenue, Port Alberni, B.C. CANADA V9Y 2E3 Telephone (250) 720-2700 FAX: (250) 723-1327

REQUEST FOR DECISION

To: Beaver Creek Water Advisory Committee

From: Jenny Brunn, Manager of Operations

Meeting Date: January 28, 2020

Subject: Beaver Creek Water System Rates and Regulation Bylaw

---

Recommendation:

THAT the Beaver Creek Water Advisory Committee recommend that the Alberni-Clayoquot Regional District Board of Directors approve a reduction in the allowable water consumption for basic water charge from 108 cubic meters per quarter to 60 cubic meters per quarter, effective July 1, 2020.

THAT the Beaver Creek Water Advisory Committee recommend that the Alberni-Clayoquot Regional District Board of Directors give three readings and adopt Bylaw No. F1146, 2020 - Beavercreek Water Local Service Area Rates and Regulations.

Desired Outcome:

To update the Beavercreek Water System bylaw and adjust fixed rate consumption volumes.

Summary:

The proposed bylaw changes are intended to provide clearer definitions, improved organization, added language for future conditions and updated fixed rate consumption volumes. The application for new water services has been removed from the bylaw as it is an administrative process and forms may need updating from time to time. The regulations that dictate the terms of connection have been clarified in the bylaw and will remain constant. Staff have conducted a thorough review and update with the intent to create a comprehensive user-friendly bylaw that is easy to understand and implement. This is the same template that was recently used for updating the Millstream Water Bylaw and will act as a template for the soon to be updated Bamfield Water Bylaw to provide consistency throughout ACRD systems.

Allowable Consumption for the Minimum Rate

The allowable volume of water included in the basic charge for each connection is currently 108 m3 per quarter. This is a large allotted volume in comparison to the Bamfield Water system which allows 42 m3 and the City of Port Alberni which has its differential rate set at 60 m3. The 2020 Beaver Creek Water Conservation Plan established that the average quarterly consumption rates would need to be below 64 m3 per quarter to achieve the conservation target of 350 litres per capita per day and recommended reducing the threshold in the basic charge.

Staff have analyzed the impacts of reducing the allowable volume to 60 m3 or 42 m3 based on last year's consumption records. The chart below shows the percentage of users over different thresholds each quarter:

	108 m3/qrt	60 m3/qrt	42 m3/qrt
July -September	21%	51%	67%
April - June	19%	51%	68%
Jan-Mar	7%	21%	38%
Oct-Dec	7%	22%	40%

This demonstrates that consumption habits vary by time of year. In the summer months, half of the users are over 60 m3 and half are under. In the winter, most residents are well under 60 m3. Based on this information, a reduction to 42 m3 for the basic volume would result in increased charges to almost 70% of the customers in the summer months and 40% of customers in the winter months. However, a reduction to 60 m3 would only affect half of the customers in the summer and about 20% in the winter. On average this will result in new overage charges to 23% of the customers in the system. These customers will have the opportunity to reduce their consumption to below the 60 m3 threshold to reduce their overage charges.

Staff are recommending a reduction in the allowable volume for basic water charge from 108 cubic meters per quarter to 60 cubic meters per quarter. If the bylaw is adopted, these new consumption volumes will become effective July 1, 2020. This will give adequate time to inform residents of the changes.

Financial:

The recently adopted Beaver Creek Asset Management Plan (AMP) requires an annual contribution of $800,000 to the capital fund in order to fully fund the needed infrastructure upgrades for the next 20 years. The average capital contributions over the past five years have been $350,000, an annual shortfall of $450,000. The recently completed water conservation plan recommends reducing the allowable consumption for fixed rates in order to achieve water conservation targets. This can also have an added benefit of generating additional revenues which are targeted at customers with higher water use.

If the allowable volume in the basic charge is reduced to 60 m3, revenues could increase by an estimated $108,000 per year. However, it is expected that some customer habits will change and result in a reduction in water usage, especially those that are sensitive to price changes. Any reduction in water usage would result in a direct cost savings as the water system pays $0.40 per m3 to the City of Port Alberni.

Time Requirements – Staff & Elected Officials:

Staff time will be required to fully execute the bylaw, such as updating the accounting software program to set the new volume and bill accordingly. The public will receive an education package on the upcoming changes and information on water conservation in April with their quarterly water bill. This is prior to summer consumption and will allow residents time to change their behavior if they wish to keep their usage under the basic volume threshold. Staff will follow-up with more conservation information on a regular basis.

Policy or Legislation:

Local Government Act – Section 397 – Imposition of Fees and Charges is the authority used for this bylaw.

Options:

a) Adopt the bylaw without any changes to the rate structure.

b) Adopt the bylaw and reduce minimum volume from 108 m3 to another reduced volume.

c) Seek public input on the potential changes to the allowable consumption volume prior to adopting changes. There is not available staff time to do public engagement and the ACRD would need to hire a company to engage the community on its behalf. The estimated cost for this is $7,000.

Submitted by: 

Jenny Brunn, Manager of Operations

Reviewed by: 

Teri Fong, CPA, CGA, Chief Financial Officer

Approved by: 

Douglas Holmes, BBA, CPA, CA, Chief Administrative Officer

REGIONAL DISTRICT OF ALBERNI-CLAYOQUOT

BYLAW NO. F1146

A BYLAW OF THE REGIONAL DISTRICT OF ALBERNI-CLAYOQUOT TO ESTABLISH RATES AND REGULATIONS FOR THE BEAVER CREEK WATER SYSTEM LOCAL SERVICE AREA

WHEREAS the Board of the Regional District of Alberni-Clayoquot, operates and maintains a water system in the Beaver Creek Water Local Service Area established by Bylaw No. E1054 cited "Beaver Creek Water System Local Service Area Establishment, 2012"; of the Regional District, (hereinafter called the "Local Service Area").

AND WHEREAS it is deemed necessary and expedient that provisions be made for the regulation and management of the water system and for terms and conditions upon which water services shall be provided and to establish rates and charges for such services;

NOW THEREFORE the Board of the Regional District of Alberni-Clayoquot in open meeting assembled enacts as follows:

PART 1 - INTERPRETATION

Definitions

1. In this bylaw, unless the context otherwise requires:

"Applicant" means a Person who applies for a connection, disconnection, system extension or other permission contemplated by the bylaw;

"Backflow Preventer" means a mechanical apparatus installed in a water system to prevent the backflow of contaminants into the system;

"Commercial Use" means that a property or consumer unit is used for any undertaking intended for profit including but not limited to selling goods and services, commercial office functions, entertainment, recreational or tourism services, or short-term vacation rentals.

"Consumer" means a Person to whom water is supplied under this bylaw;

"Consumer Unit" means an independent residential dwelling unit including, but not so as to restrict the generality of the foregoing, a detached dwelling house, a basement or other independent dwelling unit contained in a detached dwelling house, each dwelling unit of a duplex or other multiplex, each dwelling unit of an apartment building, and each unit in a

mobile home park; An independent commercial unit including, but not so as to restrict the generality of the foregoing, a detached commercial building, each independent commercial unit of a duplex or other commercial multiplex, and each commercial unit of an office building proved that each such commercial unit has water supplied to it from the water system for the exclusive use of the occupants of such commercial unit and their customers; or any other structure requiring water;

"Disconnection" means the removal of a Service Connection;

"Engineering Specifications" means the design and construction specifications approved by the Manager and required to be met for any part of the water system including connections to the water system;

"Manager" means the Person appointed by the Regional District to manage the water system or that person's designate;

"Owner" means the Person or persons registered under the *Land Title Act* as the owner of the Parcel or any other Person who is in lawful possession of the Parcel or who is in lawful possession or occupancy of any dwelling or other building situated on the Parcel;

"Parcel" means any lot, block or other area, created under the *Land Title Act*, the *Strata Property Act* or the *Land Act,* in which land is held or into which it is subdivided but does not include a highway;

"Premises" includes land, buildings or structures, or any part thereof;

"Regional District" means the Alberni-Clayoquot Regional District;

"Service Area" means the area of land included within the Beaver Creek Water Local Service Area;

"Service Connection" means the system of pipes, valves, connectors and other appurtenances used for connecting a Water Main to a Shut off valve at or near a property boundary;

"Shut off" means to turn off the supply of water at the property boundary by closing the connection valve, or by some other means approved by the Regional District;

"System" or **"Water System"** means the community water system or any portion thereof provided within the service area;

"Water Main" means a water distribution pipeline located within a highway, statutory right of way, public easement or other public area and which forms part of the water system.

PART 2 – PROHIBITIONS

1. An Owner or Consumer must not:

   (a) Use, interfere with, change, tamper, connect to or obstruct the Water System or any part of the Water System, unless authorized by the Manager;

(b) Destroy or damage or in any manner interfere with any fire hydrant, standpipe, valve, Shut Off valve, meter, Backflow Preventer, meter vault or other fixture or equipment of the Water System;

(c) Obstruct at any time or in any manner, the access to any fire hydrant, standpipe, valve, Shut Off valve, meter, meter vault or other fixture or equipment of the Water System;

(d) Connect, cause to be connected, or allow to remain connected to the Water System, or to any private water service, any piping, fixture, fitting, container or appliance which may cause pressure surges, or any other disturbance which may, in the opinion of the Manager, result in annoyance to any other customer, damage to any private water service, or damage to the water System;

(e) Connect additional consumer units to an existing Service Connection without submitting an application and receiving approval by the Manager.

(f) Permit the introduction of any contaminant or foreign matter whatsoever into any private water service that is connected to the Water System;

(g) Sell, give or convey water beyond the Premises to which the water is supplied under this bylaw, except with the written authority of the Manager.

(h) Use water from the System to generate power or operate machinery.

(i) Connect to an auxiliary Water System in any manner that may allow water to enter the water System or customer's private water service unless such auxiliary water System and the method of connection and use of such System have been approved by the Manager.

PART 3 – SYSTEM CONNECTIONS

2. Except as provided elsewhere in this bylaw, the Manager may prescribe standards for the connection or attachment of any private water service to the Water System, and for the repair or alteration of any private water service including engineering specifications for Service Connections.

3. The Manager may determine into which main of the Water System a private water service must be connected.

4. Where the Manager deems it necessary, an Applicant may be required to provide a certificate from a professional engineer to confirm that adequate quantity and pressure is available for the new Service Connection.

5. Where the water quantity or pressure are not adequate for the Service Connection, the Applicant will be required to upgrade the System prior to connecting and the regulations for System extensions shall apply.

6. By authorizing a water Service Connection under this bylaw, the Regional District undertakes no duty of care to ensure that the capacity of that connection is sufficient for the future development potential of a Parcel.

7. An Owner who applies for a supply of water from the water System must pay the applicable fees for the installation of any necessary water Service Connection to that Owner's Premises as outlined in Schedule 'A'.

8. Where the water pressure in a Water Main exceeds 80 pounds per square inch, an Owner whose private water service is supplied by that main, or applies for a water Service Connection to that main, must:

   (a) Install as part of that private water service, and at the owner's sole cost, a pressure reducing valve of a type approved by the Building Inspector; and

   (b) Carry out that installation in the manner required by the Building Inspector.

9. Every Owner must ensure that all pipes, taps, Backflow preventer fittings and other things forming part of that Owner's private water service are installed in accordance with the provisions of all applicable bylaws and regulations and approved by the Manager.

10. Every Owner must maintain the private water service on that Owner's Premises in good order and repair and must protect that private water service from frost and injury at that Owner's own expense.

11. The Manager, upon written notice to an Owner, occupier or customer of any Premises as provided in this section, may direct that the water Service Connection to that Premises be disconnected and the Regional District shall not be liable for damages by reason of discontinuing the supply of water to those Premises.

PART 4 - APPLICATIONS FOR SERVICE

12. The Manager may prescribe the form of application for:

   (a) The Disconnection of a water service from the water System;

   (b) The attachment to or connection with the water System;

   (c) Adding consumer units to an additional Service Connection.

   (d) The temporary use of a fire hydrant.

(e) The location of a property box or curb-stop so that it is made visible and accessible

(f) The turn-on or turn-off of a water service at the property boundary.

13. All applications must be signed by the Applicant and delivered to the Manager and must be accompanied by the payment of the applicable fees and charges. Each application, when duly signed by the potential consumer, shall be an agreement whereby the consumer agrees to abide by the terms and conditions of the Bylaw.

PART 5 – METERED ACCOUNTS

14. All connections to the water distribution System are required to be metered.

15. The Manager shall determine the size and location of any meter required to be installed and shall determine the Engineering Specifications for the meter installation.

16. Once installed, meters become the property of the Regional District.

PART 6 – ACCESS

17. An owner must not obstruct or impede access to the water System or any part or component of the water System.

18. The Manager, or any other employee or agent of the Regional District with the authorization of the Manager, may remove any material or thing that obstructs or impedes access to the water System and the expense of such removal shall be charged to and paid by the Owner responsible for the obstruction or the property Owner of the property serviced.

19. The Owner of a Parcel supplied with water under this bylaw must ensure that the property box and curb-stop for their property remains visible and accessible at all times.

PART 7 – SYSTEM EXTENSIONS

20. An Owner of land located within the Service Area may complete and submit an application to the Regional District in the prescribed form to extend the water System to serve the land and, upon receipt of the application and any fees payable in respect thereof, the application will be processed by the Regional District in accordance with this bylaw.

21. Where an application to extend the water System has been received and the Manager believes that;

    (a) The water pressure within all parts of the proposed extension will be at least 275 kilopascals (40 pounds per square inch) during peak day demand situations; and

    (b) The supply of water to other areas within the Service Area will not be negatively affected by the proposed extension; then the Manager may approve the extension.

22. Where the Manager deems it necessary, an Applicant will be required to provide a certificate from a professional engineer to confirm that the requirements of this bylaw can be met with respect to the proposed extension.

23. System extensions shall meet the Engineering Specifications and be designed and constructed to extend from the closest Water Main having sufficient capacity to serve the extension to the furthest edge of the property of the last Parcel proposed to be served or as otherwise determined by the Manager.

24. The entire cost of a System extension shall be borne by the Applicant whether the extension is constructed by the Regional District or by the Applicant.

25. Where an extension is constructed by the Applicant, the extension must be:

    (a) Designed by a professional engineer registered to practice in the Province of British Columbia;

    (b) Constructed by a qualified contractor in accordance with the plans, policies and Engineering Specifications approved by the Regional District;

    (c) Inspected and approved by the Regional District prior to backfilling any of the works; and

    (d) Transferred to the ownership of the Regional District together with any rights of way, easements or other tenures required for the ongoing operation of the extension.

26. Where an extension is constructed by the Regional District, the costs of the extension shall be reimbursed to the Regional District by the Applicant within 30 days following the issuance of an invoice.

27. The submission of an application for an extension does not impose an obligation on the Manager to approve the extension application.

PART 8 – WATER USE RESTRICTIONS

28. The Regional District may impose restrictions on the use or consumption of water and, in the event such restrictions are imposed, every premise that is served by the water System and every Consumer shall be subject to the terms, conditions and restrictions.

29. Upon notice of such restriction, no Consumer shall use water for the purpose forbidden by, or in excess of the limits imposed by, such restrictions.

PART 9 – FEES AND CHARGES

30. Premises with Service Connections shall be subject to payment of such fees and charges as may be prescribed by Schedule 'A', attached to and forming part of this bylaw.

31. Where applicable, the fees charged for water service shall be prorated to the beginning of the month following the commencement or termination of service.

32. Fees charged for water service shall be billed quarterly and shall be due and payable on the due date stated on the invoice, no less than thirty (30) days after the issuance of the bills.

33. Where a Service Connection has been disconnected, the Service Connection shall not be reconnected until all outstanding fees and charges and the required reconnection and water turn on fees have been paid.

34. When any rates or charges for water services are overdue for a period of six (6) months, such water services may be turned off from the Premises and shall not be turned on again until payment has been received for the following:

    (a) The rates and charges overdue;

    (b) The rate as set out in Schedule "A" to cover the cost of turning the water on;

    (c) Any additional cost incurred in order to prevent the improper use of water after the source has been turned off.

35. The Manager may assess an interest rate of 2% on outstanding rates and charges, from the prior period, which are overdue.

36. The rates and charges specified in Schedule "A" and any assessed interest charges on the outstanding balance are due and payable by December 31st of each year and if unpaid on that date shall be deemed to be taxes in arrears and shall be so entered on the tax roll by the Surveyor of Taxes.

PART 10 – GENERAL

Right of Entry

37. Regional District staff may, at all reasonable times, enter upon any property subject to this bylaw to ascertain whether the provisions of this bylaw are being contravened.

No Obligation Assumed by Regional District

38. Nothing in this bylaw shall be interpreted as imposing a duty or obligation on the Regional District to provide a continuous supply of water to any Consumer or premise and it is a condition of supply of water that the Regional District is not liable for any injury, damage, or economic loss to any party:

    (a) Arising or occurring from the use of water or the water System;

    (b) Resulting from the failure to supply water of a specific quantity or quality to a Consumer;

    (c) Resulting from any impurity, lack of pressure, increased or fluctuating pressure, or any other condition affecting the supply of water from the System.

Water System Ownership

39. All water pipes, connections, appurtenances of facilities required for water distribution in public highways, or within Beaver Creek Water System Service Area right-of-ways or property, shall be the property of the Regional District.

Penalties

40. The Regional District may, on written notice, disconnect or turn off the supply of water to any Consumer in contravention of this bylaw.

41. Any Consumer who violates a provision of this bylaw or permits any act or thing to be done in contravention of this bylaw shall be deemed to have committed an offence under this Bylaw and shall be liable on summary conviction to penalty in accordance with the *Offence Act*.

Severability

42. If any part of this bylaw is held to be invalid by a court of competent jurisdiction, that part of the bylaw may be severed from the remainder of the bylaw without affecting the validity or enforceability of the remainder.

Repeal

43. The following bylaw is hereby repealed:

1. Bylaw No. F1119 cited as "Beaver Creek Water System Rates and Regulations, 2015".

Citation

44. This Bylaw may be cited as the "F1146 Beaver Creek Water Local Service Area Rates and Regulations Bylaw, 2020".

45. Effective Date

46. This Bylaw comes into effect on July 1, 2020.

Read a first time this	day of	,	2020.
Read a second time this	day of	,	2020.
Read a third time this	day of	,	2020.
ADOPTED this	day of	,	2020,

by an affirmative vote of at least two-thirds the votes cast.

Certified true and correct copy of
"Beaver Creek Water Local Service Area Rates and Regulations Bylaw No. F1146, 2020"

The Corporate seal of the Regional District of Alberni-Clayoquot was hereto affixed in the presence of:

_____
Wendy Thomson,
General Manager of
Administrative Services

_____
John Jack,
Chairperson

WATER RATES

SCHEDULE "A"

1. WATER RATES

(a) All Consumer Units are subject to the following basic charge per month:

Classification	Rate per Month
Single Family Residential	$51.67
Each additional water use on same lot	$58.67
Trailer Courts each unit	$51.67
Commercial	$58.67

(b) An additional charge or $2.00 per cubic meter (m3) shall be calculated on consumption that exceeds 60 cubic meters (m3) per quarter.

(c) If a meter fails to register or to properly indicate the flow of water, consumption will be estimated and billed based on the average previous consumption. This estimate will take into account seasonal variations and other factors, such as ownership changes, that may affect the consumption of water.

(d) The Alberni-Clayoquot Regional District reads the meters once every quarter. If access is not provided to the meter during the regular quarterly readings, return visits to read the meter are $25.00 per call.

2. GENERAL CHARGES

A charge under this bylaw shall be paid by the Owner of a serviced property for:

(a) Application for new water service or extension $200.00

(b) Water turn-on - $50.00 each

(c) Service locate fee – at cost

(d) Emergency water turn-off – at cost

(e) Services related to the identification and repair of a water leak on the property side of a water line – at cost

(f) Reconnection of any water service disconnected pursuant to this Bylaw – at cost

(g) Water connection & meter - $3,800.00 per connection or cost of construction as determined by the Regional District, whichever is larger. If a Connection requires a line extension the cost of this construction is to be paid by the Applicant. Cost of connection is to be paid by the Applicant once the Application for Service is reviewed and approved and an invoice is issued.

3. HOURLY RATE

The hourly rate for services completed and billed out at cost shall be:

(a) $50.00/hr.