



Alberni-Clayoquot Regional District

BEAVER CREEK WATER ADVISORY COMMITTEE MEETING THURSDAY, MAY 20, 2021, 1:00 PM

Due to COVID-19, the meeting will be held via Zoom Video Conferencing and will be livestreamed on the ACRD website at:

<https://www.acrd.bc.ca/events/20-5-2021/>

Public Attendance: the public are welcome to attend the meeting via Zoom Webinar by registering at:

https://portalberni.zoom.us/webinar/register/WN_LQqiUhgZSS-BIvE4V5C7QQ

AGENDA

	PAGE #
1. <u>CALL TO ORDER</u>	
Recognition of Territories.	
Notice to attendees and delegates that this meeting is being recorded and livestreamed to YouTube on the Regional District Website.	
2. <u>APPROVAL OF AGENDA</u>	
<i>(motion to approve, including late items requires 2/3 majority vote)</i>	
3. <u>MINUTES</u>	
a. Beaver Creek Water Advisory Committee Meeting held November 18, 2020	3-5
<i>THAT the minutes of the Beaver Creek Water Advisory Committee meeting held on November 18, 2020 be received.</i>	
4. <u>REQUEST FOR DECISIONS & BYLAWS</u>	
a. REQUEST FOR DECISION	6-15
Beaver Creek Water Advisory Committee Terms of Reference & Bylaw Update, 2021	
<i>THAT the Beaver Creek Water Advisory Committee recommend that the Alberni-Clayoquot Regional District Board of Directors give three readings and adoption to Bylaw A1079-1, Beaver Creek Water Advisory Committee Amendment, 2021 and approve the revised Committee Terms of Reference.</i>	

- b. **REQUEST FOR DECISION**
Beaver Creek Water System 2020 Annual Report

THAT the Beaver Creek Water Advisory Committee receive the 2020 Beaver Creek Water System Annual Report.

THAT the Beaver Creek Water Advisory Committee recommend that the ACRD Board of Directors increase water rates to \$57 per month in the Beaver Creek Water System effective July 1, 2021.

5. **LATE BUSINESS**
(requires 2/3 majority vote)

6. **QUESTION PERIOD**

Questions/Comments from the public participating in the Zoom meeting.

Questions/Comments from the Public, respecting an agenda item, can be emailed to the ACRD at responses@acrd.bc.ca and will be read out by the Corporate Officer at the meeting.

7. **ADJOURN**



Alberni-Clayoquot Regional District

MINUTES OF THE BEAVER CREEK WATER ADVISORY COMMITTEE MEETING HELD ON WEDNESDAY, NOVEMBER 18, 2020, 10:00 AM

Due to COVID-19 pandemic, meeting conducted via Zoom video/phone conferencing

MEMBERS John McNabb, Chairperson, Director, Electoral Area "E" (Beaver Creek)

PRESENT: Pam Craig
Gord Blakey
Harold Carlson

STAFF PRESENT: Jenny Brunn, Interim General Manager of Community Services
Wendy Thomson, General Manager of Administration
Matt McLeod, Leadhand Maintenance Technician
Janice Hill, Executive Assistant

The meeting can be viewed on the Alberni-Clayoquot Regional District website at <https://www.acrd.bc.ca/events/18-11-2020/>.

1. **CALL TO ORDER**

The Chairperson called the meeting to order at 10:02 am.

The Chairperson recognized the meeting today is being held throughout the Nuu-chah-nulth territories.

The Chairperson reported this meeting is being recorded and livestreamed to YouTube on the Regional District website.

2. **APPROVAL OF AGENDA**

MOVED: P. Craig

SECONDED: G. Blakey

THAT the agenda be approved as circulated.

CARRIED

3. **MINUTES**

a. **Beaver Creek Water Advisory Committee Meeting held January 28, 2020**

MOVED: P. Craig

SECONDED: G. Blakey

THAT the minutes of the Beaver Creek Water Advisory Committee Meeting held on January 28, 2020 be received.

CARRIED

4. REQUEST FOR DECISIONS

a. Request for Decision regarding Local Service Area Boundary Amendment.

MOVED: G. Blakey

SECONDED: P. Craig

THAT the Beaver Creek Water Advisory Committee recommend that the Alberni-Clayoquot Regional District Board of Directors amend the boundaries of the Beaver Creek Water System Local Service area to include District Lot 30, Alberni Land District, Except Plan 9787, THAT PT LYING E OF BEAVER CRK RD & S OF BAINBRIDGE Road, 7685 and 7620 Bainbridge Road.

CARRIED

b. Request for Decision regarding McKenzie Road Pump Station.

MOVED: P. Craig

SECONDED: G. Blakey

THAT the Beaver Creek Water Advisory Committee receive this report.

CARRIED

c. Request for Decision regarding Unidirectional Flushing Program.

MOVED: P. Craig

SECONDED: G. Blakey

THAT the Beaver Creek Water Advisory Committee support the development and implementation of a unidirectional flushing program.

CARRIED

d. Request for Decision regarding Beaver Creek Water – Capital Replacement Plan.

MOVED: P. Craig

SECONDED: H. Carlson

THAT the Beaver Creek Water Advisory Committee recommend to the ACRD Board of Directors that the Beaver Creek Water System proposed capital plan be included in the 2021-2025 Alberni-Clayoquot Regional District Financial Plan.

CARRIED

5. **REPORTS**

- a. **Report For Information – Fayette and Lamarque Watermain Project Update – J. Brunn**
- b. **Report For Information – Development Cost Charges for Renovations – J. Brunn**

MOVED: G. Blakey

SECONDED: P. Craig

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

CARRIED

6. **LATE BUSINESS**

a. **Committee Membership**

The Committee discussed their current membership of four individuals from the Beaver Creek area. The Committee can have a maximum of seven members. ACRD staff will include an expression of interest for volunteers to sit on the Beaver Creek Water Advisory Committee on the next Beaver Creek mail out. The Chairperson will touch base with the Beaver Creek Volunteer Fire Department to see if there is any interest in one of their members sitting on the Committee.

7. **QUESTION PERIOD**

The Corporate Officer reported there are no questions or comments from the public respecting this meeting.

8. **ADJOURN**

MOVED: H. Carlson

SECONDED: P. Craig

THAT this meeting be adjourned at 11:08 am.

CARRIED

Certified Correct:



John McNabb,
Chairperson



Wendy Thomson,
General Manager of Administrative Services



REQUEST FOR DECISION

To: Beaver Creek Water Advisory Committee

From: Wendy Thomson, General Manager of Administrative Services

Meeting Date: May 20, 2021

Subject: **Beaver Creek Water Advisory Committee Terms of Reference & Bylaw Update, 2021**

Recommendation:

THAT the Beaver Creek Water Advisory Committee recommend that the Alberni-Clayoquot Regional District Board of Directors give three readings and adoption to Bylaw A1079-1, Beaver Creek Water Advisory Committee Amendment, 2021 and approve the revised Committee Terms of Reference.

Desired Outcome:

To review and re-confirm the terms of reference for the Beaver Creek Water Advisory Committee for 2021 and amend the Committee Bylaw to reflect the updated terms of reference.

Background:

The *Local Government Act* enables Regional District's to establish and appoint members to standing committees to deal with matters the Board considers would be better dealt with by a Committee.

The Beaver Creek Water Advisory Committee (BCWAC) is a standing committee of the Alberni-Clayoquot Regional District (ACRD) that advises the ACRD Board of Directors on matters relating to the Beaver Creek Water service including budgeting, future capital planning and other matters relating to the service such as regulations and policies. The BCWAC was established by the ACRD Board of Directors in 2012 by bylaw.

At the first Committee meeting each year, all ACRD Committee's review their terms of reference and consider any amendments. Regional District staff recommend one change to the BCWAC terms of reference for 2021 with the addition Section 8.3 (Reporting to the Board) to include the Committee's consideration of the ACRD's Strategic Plan during all deliberations and recommendations respecting the Beaver Creek Water Service. The ACRD's Strategic Plan can be viewed on the ACRD website at <https://www.acrd.bc.ca/>. The amended terms of reference are attached with the amended section highlighted for review and consideration by the Committee. All amendments to a Committee's terms of reference require approval by the ACRD Board of Directors.

The amendment to the BCWAC terms of reference also triggers an amendment to section 7 of Bylaw A1079, *Beaver Creek Water Advisory Committee, 2015* (attached). Bylaw A1079-1, *Beaver Creek Water Advisory Committee Amendment, 2021* is attached for review and consideration by the Committee. Upon recommendation of the Committee, this amending Bylaw will be forwarded for consideration of three readings and adoption by the ACRD Board of Directors at their next meeting along with the revised Committee terms of reference.

Time Requirements – Staff & Elected Officials:

Minimal

Financial:

n/a

Strategic Plan Implications:

These amendments will support the committees of the ACRD in aligning their recommendations with the Board’s Strategic Plan.

Policy or Legislation:

Local Government Act and Bylaw A1079, Beaver Creek Water Advisory Committee Bylaw, 2015 apply.



Submitted by: _____
Wendy Thomson, General Manager of Administrative Services



Alberni-Clayoquot Regional District

Terms of Reference Beaver Creek Water Advisory Committee

1. Introduction

- 1.1 The Alberni-Clayoquot Regional District (ACRD) has formed, by bylaw, the Beaver Creek Water Advisory Committee to advise the Board on matters relating to the Beaver Creek Water Service.
- 1.2 The Beaver Creek Water Advisory Committee is a Standing (Advisory) Committee of the ACRD Board of Directors.

2. Objective

- 2.1 The Beaver Creek Water Advisory Committee advises the Board on matters relating to the Beaver Creek Water System, including but not limited to system planning, annual budgets and capital works.

3. Scope of Work

- 3.1 To achieve this objective, the Beaver Creek Water Advisory Committee will undertake the following activities:
 - Budgeting for the Beaver Creek Water System
 - Future capital planning and budget implications
 - Matters relating to the service such as regulations and policy

4. Membership

- 4.1 In order to provide representation from the Beaver Creek Water Service area, membership on the Committee is as follows:
 - A maximum of Seven (7) Members at-large from the Beaver Creek Community nominated by the Director for the Electoral Area “E” (Beaver Creek)
 - The Director for Electoral Area “E” (Beaver Creek) or his/her alternate.

5. Appointment and Term

- 5.1 Committee Members shall be appointed by the ACRD Board of Directors for a three (3) year term.
- 5.2 Members of the Committee may stand for re-appointment by the ACRD Board at the conclusion of their term.
- 5.3 The ACRD Board may, at any time, remove any Member of the Committee and any Member of the Committee may resign at any time upon sending written notice to the Chairperson of the Committee.
- 5.4 The ACRD Board may dissolve the Committee and rescind this Bylaw, following written notice being provided to all Members.
- 5.5 Committee Member appointments will be confirmed by the Chair of the ACRD Board at the regular ACRD Board of Directors meeting in January of each year.
- 5.6 Members of the Committee shall serve without remuneration.

6. Committee Chair

- 6.1 The Director for Electoral Area “E” (Beaver Creek) or his/her alternate shall be the Chairperson of the Committee.

7. Meeting Procedures

- 7.1 Meetings of the Committee shall be held at the call of the Committee Chairperson, time and location to be determined by the Chairperson of the Committee.
- 7.2 A majority of the Committee Members present shall represent a quorum, one of whom must be the Director of Electoral Area “E” (Beaver Creek) or his/her alternate.
- 7.3 Meetings of the Committee shall be conducted and held in accordance with the Regional District’s Procedures Bylaw.

8. Reporting to the Board

- 8.1 The Committee Chairperson will report to the Board on the activities of the Committee.

- 8.2 Recommendations from the Committee to the Board must be adopted by the Committee prior to presentation to the Board.
- 8.3 All Committee deliberations and recommendations to the Board respecting the Beaver Creek Water service will be guided by the ACRD's Strategic Plan.

9. Resources

- 9.1 On behalf of the Committee, ACRD staff will provide advice and professional assistance to the Committee including writing letters, correspondence and preparing reports to the ACRD Board.
- 9.2 ACRD staff will provide support to the Committee including preparing agendas, recording the minutes of all meetings and ensuring Committee agendas, minutes etc. are circulated electronically to all Committee Members and the ACRD Board.

Revised by the ACRD Board:	May 13, 2015
Revised by the ACRD Board:	February 13, 2019



Alberni-Clayoquot Regional District

Bylaw A1079

**A BYLAW TO ESTABLISH A STANDING COMMITTEE KNOWN AS
THE BEAVER CREEK WATER ADVISORY COMMITTEE**

WHEREAS the Alberni-Clayoquot Regional District has been granted the authority to operate the Beaver Creek Water local service area;

AND WHEREAS the Board of Directors wishes to appoint a standing committee known as the Beaver Creek Water Advisory Committee to advise on matters relating to the service, including but not limited to system planning, annual budgets and capital works;

AND WHEREAS the *Local Government Act* permits the Board of Directors to delegate administrative duties to a standing committee and to set terms, conditions and restrictions on its activities;

NOW THEREFORE the Board of Directors of the Alberni-Clayoquot Regional District enacts as follows:

1. TITLE

This Bylaw may be cited as **“Beaver Creek Water Advisory Committee Bylaw No. A1079, 2015.”**

2. INTERPRETATION

ACRD means the Alberni-Clayoquot Regional District.

Board means the Alberni-Clayoquot Regional District Board of Directors.

CAO means the Chief Administrative Officer of the Alberni-Clayoquot Regional District or his/her designate.

Director means a Director of the Alberni-Clayoquot Regional District Board of Directors.

Committee means the Beaver Creek Water Advisory Committee.

Member means representative appointed by the ACRD Board to the Beaver Creek Water Advisory Committee.

Service means the Beaver Creek Water service.

3. ESTABLISHMENT OF COMMITTEE & MEMBERSHIP

- a. The Committee shall be comprised of the following Members:
 - i. Seven (7) Members at-large from the Beaver Creek Community nominated by the Director for Electoral Area “E” (Beaver Creek);
 - ii. The Director for Electoral Area “E” (Beaver Creek) or his/her alternate;
- b. One (1) ex-officio non-voting Member being the CAO or his/her designate.

4. APPOINTMENT AND TERM

- a. Members shall be appointed by the Board for a three year term. In order to ensure continuity of experience among the Members, the initial appointment of Members shall be staggered with four (4) Members appointed for a three (3) year term and three (3) Members for a two (2) year term.
- b. Members of the Committee may stand for re-appointment by the Board at the conclusion of their term. Members may not serve on the Committee for more than two (2) consecutive terms.
- c. The Board may, at any time, remove any Member of the Committee and any Member of the Committee may resign at any time upon sending written notice to the Chairperson of the Committee.
- d. The Board may dissolve the Committee and rescind this Bylaw, following written notice being provided to all Members.
- e. Members of the Committee shall serve without remuneration.

5. MEETING PROCEDURES

- a. The Director for Electoral Area “E” (Beaver Creek) or his/her alternate shall be the Chairperson of the Committee.
- b. Meetings of the Committee shall be held quarterly or at the call of the Committee Chairperson, time and location to be determined by the Chairperson of the Committee.
- c. A majority of the Committee Members present shall represent a quorum, one of whom must be the Director of Electoral Area “E” (Beaver Creek) or his/her alternate.
- d. Meetings of the Committee shall be conducted and held in accordance with the Regional District’s Procedures Bylaw.

Bylaw A1079, Beaver Creek Water Advisory Committee, 2015

- e. The ACRD secretarial staff will provide support to the Committee including preparing agendas, recording the minutes of all meetings and ensuring Committee agendas, minutes etc. are circulated electronically to all Members and the Board.

6. ACTIVITIES/DUTIES OF THE COMMITTEE

- a. The Committee may undertake a review and advise on the following:
 - i. Budgeting for the Beaver Creek Water System;
 - ii. Future capital planning and budget implications;
 - iii. Matters relating to the service such as regulations and policy.

7. REPORTING TO THE BOARD OF DIRECTORS

- a. The Chairperson will report to the Board on the activities of the Committee.
- b. Recommendations from the Committee to the Board must be adopted by the Committee prior to presentation to the Board.
- c. On behalf of the Committee, the CAO or his/her designate will provide advice and professional assistance to the Committee including writing letters, correspondence and preparing reports to the Board.

8. RESPONSIBILITY OF THE BOARD

- a. The Board shall consider any recommendation from the Committee and either approve, modify or reject it.

9. RESCINDED

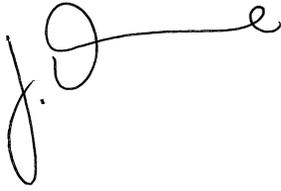
- a. Bylaw 1076, Beaver Creek Water Advisory Committee, 2012 and Bylaw A1076-1, Beaver Creek Water Advisory Committee Amendment, 2013 are hereby rescinded.

Read a first time this 22nd day of April, 2015.

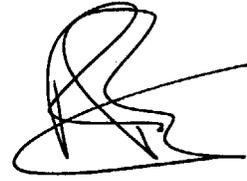
Read a second time this 22nd day of April, 2015.

Read a third time this 22nd day of April, 2015.

Reconsidered and adopted this 22nd day of April, 2015.



Chairperson



Chief Administrative Officer



Regional District of Alberni-Clayoquot

Bylaw No. A1079-1

**A bylaw to amend Bylaw A1079, Beaver Creek Water
Advisory Committee**

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

1. CITATION

This bylaw may be cited for all purposes as *“Bylaw A1079-1, Beaver Creek Water Advisory Committee Amendment, 2021.”*

2. AMENDMENT

Bylaw No. A1079, *Beaver Creek Water Advisory Committee, 2015* is hereby amended as follows:

Addition to Section 7 – Reporting to the Board of Directors

7.d All Committee deliberations and recommendations to the Board respecting the Beaver Creek Water Service will be guided by the ACRD’s Strategic Plan.

Read a first time this day of , 2021.

Read a second time this day of , 2021.

Read a third time this day of , 2021.

Adopted this day of , 2021.

Chairperson

General Manager of Administrative Services



REQUEST FOR DECISION

To: Beaver Creek Water Advisory Committee
From: Eddie Kunderman, Manager of Operations
Meeting Date: May 20, 2021
Subject: Beaver Creek Water System 2020 Annual Report

Recommendation:

THAT the Beaver Creek Water Advisory Committee receive the 2020 Beaver Creek Water System Annual Report.

THAT the Beaver Creek Water Advisory Committee recommend that the ACRD Board of Directors increase water rates to \$57 per month in the Beaver Creek Water System effective July 1, 2021.

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 2020, the BCWS met most targets with a few exceptions as shown in the table below.

	Target	2020 BCWS
Bacteria Results	0	0
Chlorine Residual	>0.20 mg/l	>0.20 mg/l
Turbidity	< 1.0 NTU	<1.0 NTU
CDWQG	< 100%	100%
Average Demand	<350	342 liters per capita per day
Peak Demand Ratio	<2	1.26
Cost per customer	\$300-\$400	\$550
Water Loss	<15%	23%
Breaks	<5	8
Contribution to Capital	\$768	\$344

All of the water quality targets continue to be met throughout the year. The disinfection byproducts graph in the report shows a leveling off for Haloacetic Acids (HAA). This is the result of sampling procedure changes to random grab sampling, instead of the previous targeting of high rain fall events. When the City of Port Alberni uses the back-up water source, Bainbridge Lake, higher levels of HAA's are found.

Average demand has dropped to 342 liters per capita per day (lpcd) from 374 lpcd in 2019. This is likely connected to the reduction of minimum allowable volume to 90 m³ from 155 m³ in February 2020. Other reasons may be changes in activities related to Covid-19 or cooler weather events. This reduction is significant as we now have reached our target average water demand.

The cost per customer rate has come down slightly from \$556 to \$550. This is likely due to the replacement of chronic water main break areas including Fayette, Lamarque and Walker Road. This also contributed to a

reduction in water loss from 29% in 2019 to 23% for 2020 and a reduction in the number of breaks from 17 in 2019 to 8 in 2020. However, we are likely to see this number go up in 2021 as we have experienced a number of breaks already this year on Karen Place which will not be able to be replaced until 2022 due to a lack of funds.

A new target for contributions to the Capital Reserve was established for the 2020 Annual Report. The Beaver Creek Asset Management Plan recommended an annual contribution of \$796,416 which when divided by the number of parcels equates to \$768 per parcel per year. The contributions were \$344 per parcel in 2020. This contribution to capital cost does not include operational and maintenance costs.

In 2020, we were able to complete a number of projects including the Stamp River Intake/McKenzie Pumpstation Assessment and a significant watermain renewal project on Fayette and Lamarque which replaced 1,645 meters of 4-inch water mains installed in the 1960's with 6-inch PVC. The Compton/Beaver Creek Project completed a transfer of water services to a parallel City owned main in order to abandon a failing portion of watermain. This project created an estimated saving of \$220,000 by transferring services instead of replacing this line. The Karen Place Watermain Design was completed and is the highest priority waterman project slated for construction in 2022.

The priority focus for the water system is the continued renewal and replacement of failing water mains which will have the greatest benefit for the water system and reduce system costs over time. The capital reserve isn't adequate to continue aggressive replacement and the contribution to capital needs to be increased to meet our Asset Management Plan's target. Staff are recommending that the current funding gap from \$344 to \$768 per parcel per year be reduced with a nominal rate increase.

The most recent rate increase was in 2015 and set a rate of \$51.67/month, which if adjusted for CPI would be \$57.54 in 2021. An increase of monthly rates from \$51.67/month to \$57.54/month mid-way through the year would result in approximately \$31,885 in additional funding in 2021.

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

Strategic Plan Implications:

A rate increase is in line with Strategy 3.1 Appropriate Capital Reserves which has the objective to ensure sustainable capital reserve balances for infrastructure repair and replacement.

Policy or Legislation:

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

Submitted by: 
Eddie Kunderman, Manager of Operations

Reviewed by: 
Jenny Brunn, General Manager of Environmental Services

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

BEAVER CREEK WATER SYSTEM

ANNUAL REPORT
2020



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

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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 Community 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 watermains 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: 997 (9 new connections in 2020)
- Number of water parcels: 1,037
- Population: 2,873 (BC Stats 2016)
- Total length of mains: 46.3 kilometers
- Total number of fire hydrants: 121
- 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 2020: 358,153 cubic meters
- The average daily flow for 2020: 981 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.

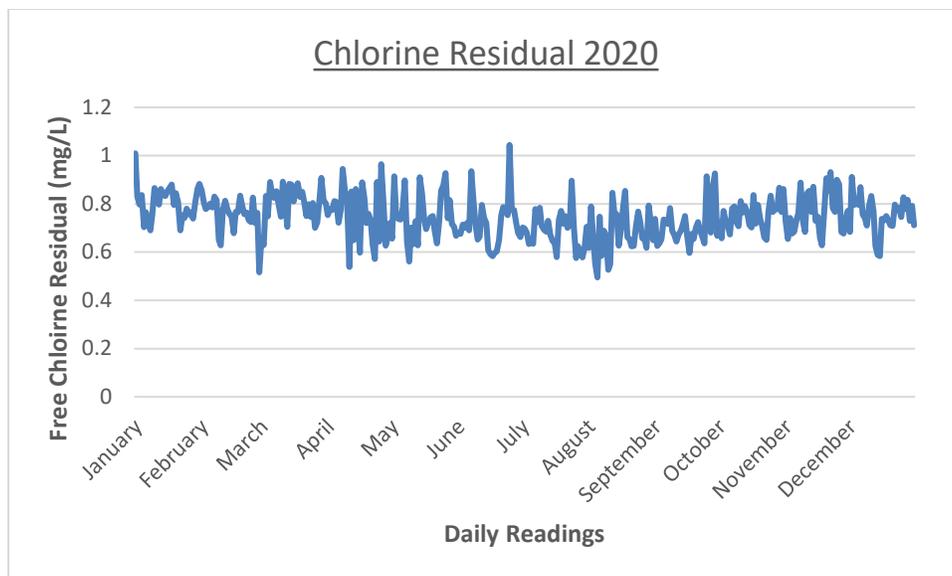
Potable Target 1 – No E.coli and No Total Coliform in any water samples

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 2020 tested negative for Total Coliforms and E.coli.

Potable Target 2 - Minimum 0.20 mg/L Chlorine Residual

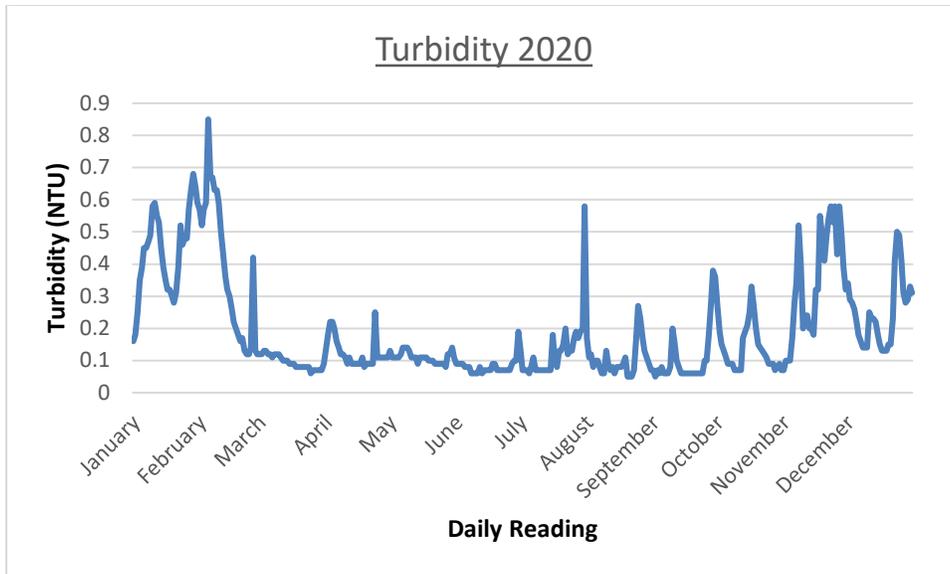
To ensure good water quality throughout the distribution system, water mains are regularly flushed to remove any accumulated silt in the water mains by creating an increase in velocity to scour the pipes. As water flows within a distribution system, the chlorine is slowly eaten up by organics in the 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

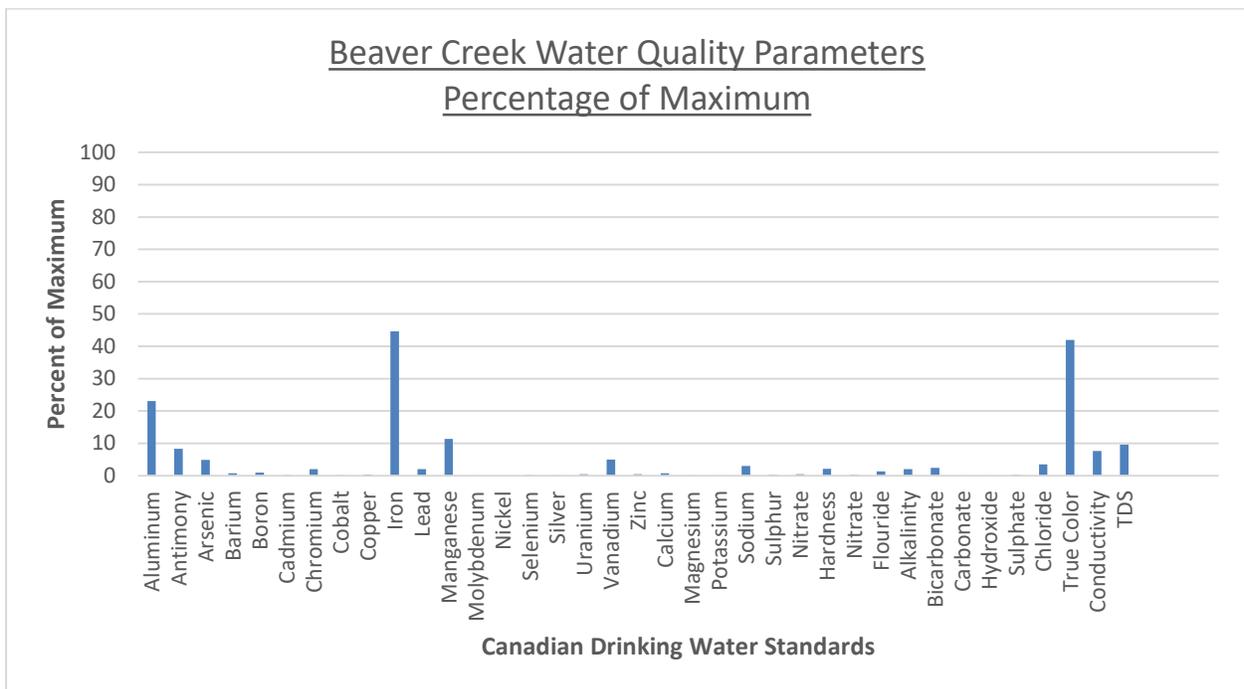
Turbidity is the cloudiness or haziness of a fluid caused by particles in the water. It is often increased in lakes and rivers after a heavy rain when soils enter the water body. This parameter is continually monitored as it negatively effects the ability of chlorine to disinfect.



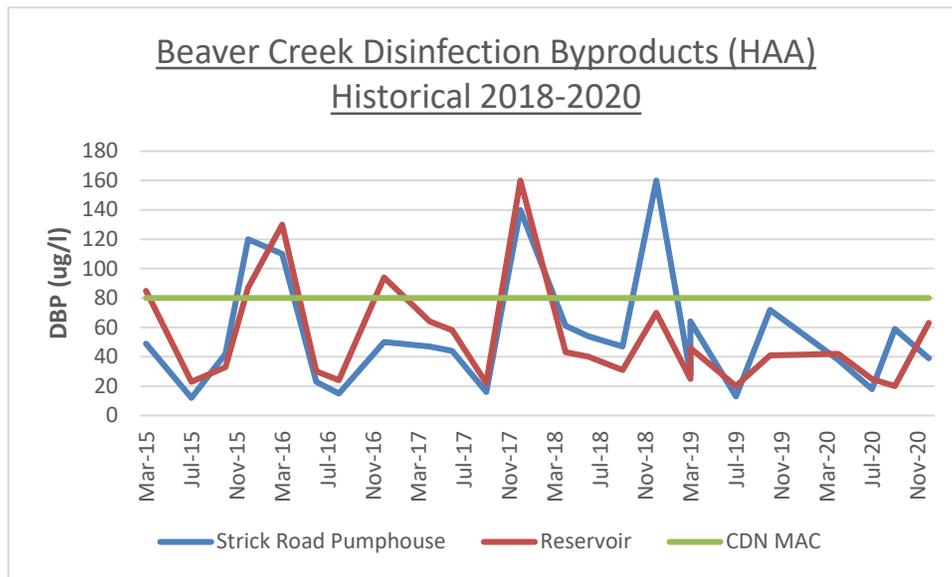
The turbidity readings are taken from the Strick Road Pump Station as water enters the system. The turbidity can have some variability due to events in the City’s water system such as water line breaks or source water changes. In the event of high turbidity entering the system, the automation in the 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 2020.



Two of the CDWQG parameters are for disinfection byproducts (Trihalomethanes (THM) and Haloacetic acids (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 it can create higher levels of HAA's as seen in the graph below. When samples are taken during a heavy rain event the higher HAA results are found. It is clear that the last two November samples were elevated but not taken during a high rain fall event.



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 2020 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.

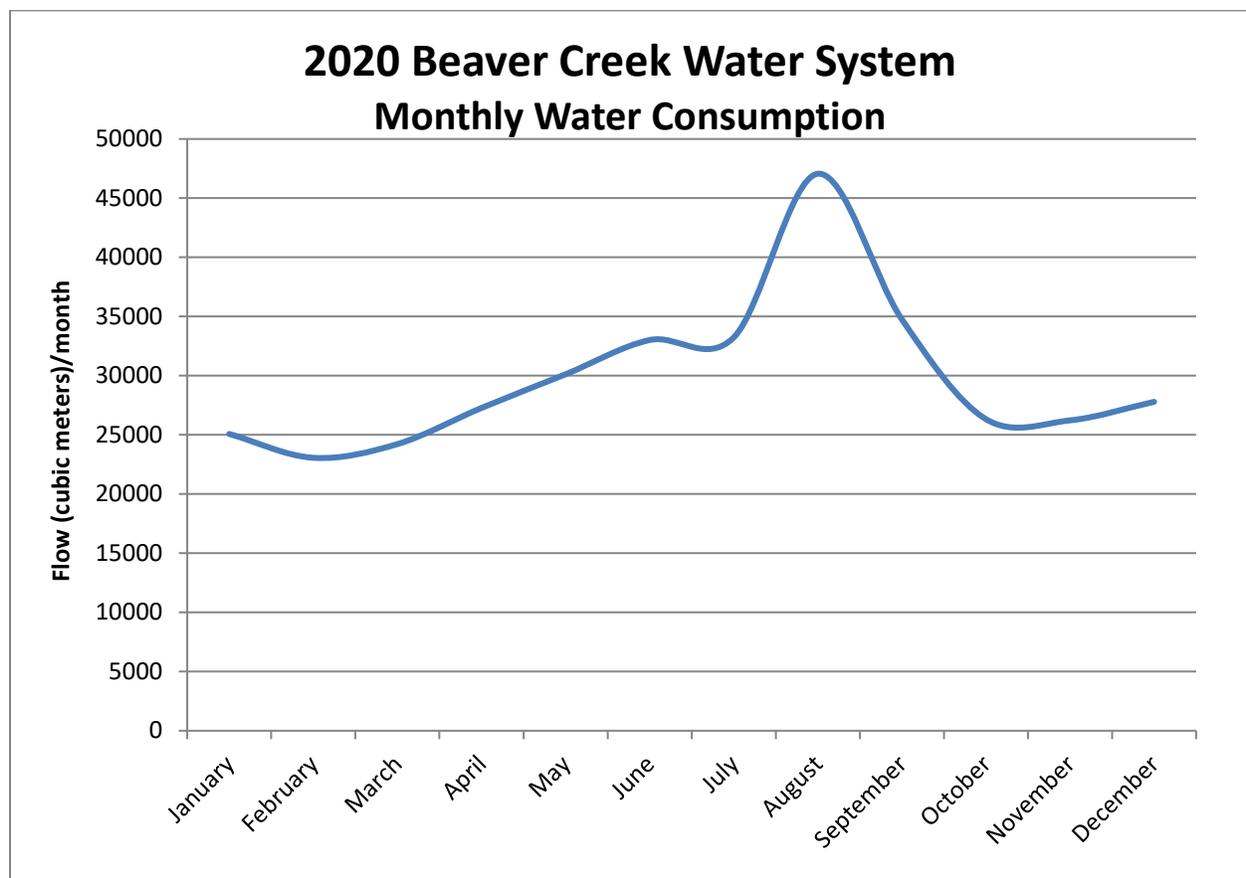
Cost Effective Target 1 - Average Water Demand less than 350 lpcd

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 358,153 cubic meters, this produces a daily average of 342 liters per person per

day (lpcd). This is just below the target of 350 lpcd and lower than last year's daily average at 374 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 1,232 m³/day compared to the average daily demand of approximately 981 m³/day. This is approximately 1.26 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 2020, the total operating costs for the system were \$548,313 this excludes capital costs, bulk water and costs to install new services. Divided by the 997 water connections, this results in a \$550 cost per customer. This is slightly less than the costs in 2019, where the total operating costs were \$549,292 with 982 connections for a cost of \$556 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 watermain 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.
- 3) Annual contribution to capital meets AMP targets of \$768/year

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

In 2020, the City of Port Alberni provided 358,153 cubic meters of water to Beaver Creek through a bulk water agreement. The total water consumed in Beaver Creek through all water meters for 2020 was 275,469 m³ resulting in a total unaccounted water loss of 82,684 m³ which made up 23% of all water entering the system. This is down from 29% in 2019. This loss can be attributed to meter error, watermain breaks, flushing, unauthorized consumption and leaks. This also means that 82,684 cubic meters of water was purchased from the city and generated no revenue, a potential loss of \$33,074. 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 2020 was 4,400 m³ down significantly from the 10,005 m³ in 2019.

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

In 2020, the BCWS had three watermain breaks and five service line repairs, compared to six and eleven respectively in 2019. 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.

Reliability Target 3 – Annual contribution to capital meets AMP targets

The first version of the Beaver Creek Water System Asset Management Plan (AMP) was adopted in 2019. This is a long-term replacement plan to ensure that we are renewing our infrastructure to minimize service interruption, risks and overall costs. The plan has assessed the age and condition of all of the system's assets to determine the replacement costs and schedule to calculate an annual amount that is required to be invested in capital infrastructure. This target will inform us to whether we are collecting enough money to proactively replace failing infrastructure replacement costs can be offset through the savings though the reduction in non-revenue water loss and a reduction in corrective and emergency repair costs.

In 2020 there were 1,037 water parcels contributing \$356,520 per year towards capital. This works out to be \$344 per parcel. Based on the Asset Management Plan required funding for future renewal the per parcel rate needs to be \$768.

Summary of Target Results for 2020

All of the water quality targets continued to be met throughout the year. Average demand has dropped to 342 liters per capita per day (lpcd) from 374 lpcd in 2019. This is likely connected to the reduction of minimum allowable volume from 155 m3 in February 2020. Other reasons may be changes in activities related to Covid-19 or cooler weather events. This reduction is significant as we now have reached our target.

The cost per customer rate has come down slightly from \$556 to \$550. This is likely due to the replacement of chronic water main break areas including Fayette, Lamarque and Walker Road. These water main renewals also contributed to a reduction in water loss from 29% in 2019 to 23% for 2020 and a reduction in the number of breaks from 17 in 2019 to 8 in 2020. A new target for the amount of money that should be contributed to the Capital Reserve was established at \$768 per parcel. In 2020 we were only contributing \$344 which means that Beaver Creek will require additional contributions.

	Target	2020 BCWS
Bacteria Results	0	0
Chlorine Residual	>0.20 mg/l	>0.20 mg/l
Turbidity	< 1.0 NTU	<1.0 NTU
CDWQG	< 100%	100%
Average Demand	<350	342 liters per capita day
Peak Demand Ratio	<2	1.26
Cost per customer	\$300-\$400	\$550
Capital Contribution	\$768	\$344
Water Loss	<15%	23%
Breaks	<5	8

3.0 Improvement Plan

2020 Projects Completed

Fayette and Lamarque Water Main Replacement – Fayette and Lamarque water main replacement project was completed in 2020. This was a replacement of approximately 1,645 lineal meters of 150 mm dia. PVC water main on Fayette and Lamarque Roads, including 47 water services, 11 hydrants, appurtenances and surface restoration. These water mains were installed in the early 1960s and were approaching the end of their life expectancy. This project replaced the 4-inch AC mains with 6-inch PVC main and increase hydrant locations, reducing emergency repairs/loss of water and improving fire flows.

Vehicle Replacement – The 2001 GMC Sierra utility truck was replaced with a new Ford F-350 SuperCab 4wd with a dump box.

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

Minor Capital Works – There where 2 auto flushing devices installed in 2020 which brings the number up 3. These auto flushers 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 updated the rates and regulation bylaw to provide clearer definitions as well as improved language and organization. The allowable volume within the base rates was also reduced from 108 m³ to 90 m³ to encourage water conservation and provide a minor increase in revenues to support the renewal and replacement program developed in the Asset Management Plan.

Stamp River Intake/McKenzie Pumpstation Assessment – This study determined the cost estimates to decommission or reactive the facility as a back-up water system. The study recommends a long-term strategy of decommissioning due to the high cost of reactivating and existence of 3 other back-up supplies for the City of Port Alberni Water Supply. This facility has now been operationally decommissioned.

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 342 liters per person per day (lpcd) which is just below the target of 350 lpcd. A strategic plan to reduce water usage will reduce costs to the system and benefit users.

Compton/Beavercreek Project – The transfer of 9 services and one hydrant onto a parallel city watermain, allowed a 400 meter section of watermain from the Strick Road pump station on Beaver Creek Road to the corner and along Compton Road to be abandoned. This section was a high priority area that had 3 major breaks in the past 2 years. There was an estimated cost savings of approximately \$220,000 by transferring services instead of installing new but redundant water infrastructure in this area. This reduced cost also allowed this project to be fast-tracked, saving emergency repair costs that would have been incurred.

Karen Road Watermain Design - The design of the highest priority watermain project was completed in order to allow the capital works to get underway. The current capital reserve may require this project to be delayed to 2022.

Upcoming Projects

North Reservoir Pump Repairs – Vibration analysis has indicated that one of the motors is operating erratically. Staff will assess the best options for addressing this issue including potential rebuild or replacement of one or both motors.

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.

Unidirectional Flushing Plan – will be developed and begin to be implemented in 2021. Unidirectional Flushing (UDF) is an excellent, water-efficient method of cleaning water distribution pipes to improve water quality, reduce the demand for chlorine and restore capacity of the water mains. The intent is to achieve high velocity flow in the pipes which acts to scour the inside of the pipes, removing build-up.

Karen Road Watermain Renewal Project - This is the next scheduled watermain renewal project which is anticipated to be completed in 2022 with capital reserve funds.

Falls/Georgia Renewal Project - An application under the ICIP program was made for this project which is slated for completion in 2024 without additional grant funding. If the application is successful, this project will be fast tracked to meet grant deadlines.

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.