VILLAGE OF SAYWARD
REGULAR COUNCIL MEETING AGENDA
JUNE 6, 2023 - 7:00 PM
COUNCIL CHAMBERS

The Village of Sayward respectfully acknowledges that the land we gather on is on the unceded territory of the K'ómoks First Nation, the traditional keepers of this land.

1. **Call to Order**
2. **Public Input (Maximum of 2 minutes per speaker, 15 minutes total)**

   Mayor: "Public input is for the purpose of permitting people in the gallery to provide feedback and shall be no longer than 15 minutes unless approved by majority vote of Council; each speaker may provide respectful comment on any topic they deem appropriate and not necessarily on the topics on the agenda of the meeting. Each speaker may not speak longer than 2 minutes but may have a second opportunity if time permits. Each speaker must not be allowed to speak regarding a bylaw in respect of which a public hearing has been held. For the record, please state your name and address."
3. **Introduction of Late Items**
4. **Approval of Agenda**

   Recommended Resolution:

   THAT the agenda for the Regular Meeting of Council for June 6, 2023, be approved.
5. **Minutes of Previous Meetings**

   Recommended Resolutions:

   THAT the minutes from the Regular Council meeting held on May 16, 2023, be adopted.
6. **Petitions and Delegations - None**
7. **Correspondence**

   a) Island Health RE: 2023 Wildfire Smoke Information for Community Health Partners and Local Governments

   b) District of Coldstream RE: Homes for People Action Plan (Action Plan located in Village office, Council Office and here: https://news.gov.bc.ca/files/Homes_For_People.pdf)

   c) Community Share Shed RE: April 2023 Report

   d) K'omoks First Nation RE: National Indigenous People's Day Request for Support

   e) K'omoks First Nation RE: Invitation to Celebrate National Indigenous People's Day

f) BC Hydro RE: Vancouver Island – Sunshine Coast Community Relations Annual Report

g) Strathcona Regional District RE: Strathcona Accessibility and Inclusion Advisory Committee

h) Strathcona Regional District RE: Strathcona Community Health Network (SCHN) Hires New Coordinator and Is Actively Seeking New Members

Recommended Resolution:

THAT correspondence a) to h) be received.

8. **Council Reports - None**

9. **Reports of Committees - None**

10. **Mayor's Report - None**

11. **Unfinished Business - None**

12. **Staff Reports**

a) **Summer Water Restrictions – Keir Gervais, CAO**

Recommended Resolutions:

THAT Council receive the Summer Water Restrictions staff report for information and discussion.

THAT Staff be directed to implement water restrictions as outlined in the Staff Report effective June 15, 2023; and,

THAT Staff be directed to research and/or review best practices for the types of properties to be included in summer water restrictions and report back with possible options.

b) **Sewer and Water Capacity Studies - John Sorenson, P.Eng., McElhanney Ltd. & John Manson, P.Eng., Approving Officer**

Recommended Resolutions:

THAT Council receive the Sewer and Water Capacity Studies staff report for information and discussion.

THAT Council instruct staff to examine options for funding the water metering and recording work recommended in the Water Study to more accurately determine the current maximum day flows, to facilitate future consideration of the impact of future development on the capacity of the water treatment system to provide for maximum day flows; and

THAT Council instruct staff to continue to record daily flows at the Treatment Plant and Log sort until such time as automated flow recording is in place; and

with respect to item 3 c) in the staff report,

THAT Council consider allowing development applications to proceed to a limit of 77 residential lots as an interim measure until such time as additional flow recording data is available, upon which the matter can be re-evaluated; and

FINALLY THAT recognizing that in terms of subdivision approvals, which is solely within the purview of the Approving Officer, Council wishes to advise the Approving Officer that on an interim basis, Council would consider subdivisions consistent with a 77 lot equivalent increase in density in the Public Interest.

c) Land Exchange Agreement Extension – Lisa Clark, CFO/CO

Recommended Resolutions:

THAT Council receive the Land Exchange Agreement Extension staff report for information and discussion.

THAT the land exchange agreement amendment be approved; and,

THAT the Mayor and Corporate Officer be authorized to execute the agreement.

d) Sayward Clinic Renewal Lease – Lisa Clark, CFO/CO

Recommended Resolutions:

THAT Council receive the Sayward Clinic Renewal Lease staff report for information and discussion.

THAT the Renewal Lease between the Village of Sayward and the Sayward Community Health Society be approved; and,

THAT the Mayor and Chief Administrative Officer be authorized to execute the agreement.

e) Permissive Tax Exemptions 2024 – Lisa Clark, CFO/CO

Recommended Resolutions:

THAT Council receive the Permissive Tax Exemptions 2024 staff report for information and discussion.

THAT Staff be directed to advertise the tax exemption process as outlined in this report.

13. Emergency Services/Public Works/Recreation Department Reports

a) SRD Emergency Support Team Volunteer Opportunity – Tom Tinsley, EPC

Recommended Resolutions:

THAT Council receive the SRD Emergency Support Team Volunteer Opportunity staff report for information and discussion.

THAT Council appoint _____ and/or _____ as the Village of Sayward volunteer representative(s) for the SRD Emergency Support Team, as described herein.

14. Bylaws

a) Public Nuisance Bylaw No. 502, 2023

Recommended Resolution:

THAT Public Nuisance Bylaw No. 502, 2023 be given fourth and final reading.

15. New Business

16. Public Question Period (maximum 15 minutes)

Mayor: "The purpose of the public question period is to enable citizens to ask questions of Council about issues that are important to the citizen asking the question. Speakers are asked to limit their questions to one each and, if time permits after everyone has had an opportunity to ask questions, speakers may ask a second question. Citizens will be asked to state their name and address."

17. In Camera

18. Adjournment

VILLAGE OF SAYWARD
REGULAR COUNCIL MEETING MINUTES
MAY 16, 2023
COUNCIL CHAMBERS

The Village of Sayward respectfully acknowledges that the land we gather on is on the unceded territory of the K'ómoks First Nation, the traditional keepers of this land.

Present: Mayor Mark Baker
Councillor Scott Burchett
Councillor Kohen Gilkin
Councillor Sue Poulsen
Councillor Tom Tinsley

In Attendance: Keir Gervais, CAO
Lisa Clark, CFO/Corporate Officer
Jennifer Redshaw, Finance/Admin Clerk

1. **Call to Order**

   The meeting was called to order at 7:00pm.

2. **Public Input**

   a) Mark Agnew of 754 Sayward Rd: requested an update on the review of zoning RU1 and R1 zones in the current zoning bylaw as well as his subdivision application.

   b) Lorna Agnew of 754 Sayward Rd: requested an update on her request to reduce the speed limit on Sayward Road.

3. **Introduction of Late Items**

   a) Mark Baker requested that Staff Report 12.b) be removed from the agenda.

4. **Approval of Agenda**

   MOTION R23/132
   MOVED AND SECONDED

   THAT the agenda for the Regular Meeting of Council for May 16, 2023, be approved, as amended.

   CARRIED

5. **Minutes of Previous Meetings**

MOTION R23/133
MOVED AND SECONDED

THAT the minutes from the Regular Council meeting held on May 2, 2023, be adopted.

THAT the minutes from the Special Council meeting held on May 3, 2023, be adopted.

THAT the minutes from the Special Council meeting held on May 9, 2023, be adopted.

CARRIED

6. **Petitions and Delegations - None**
7. **Correspondence**
   a) Campbell River Chamber of Commerce – 2023 membership
   b) Sayward Volunteer Fire Department – Call Report, 1st QTR of 2023

MOTION R23/134
MOVED AND SECONDED

THAT correspondence a) be received, and

THAT membership to the Campbell River Chamber of Commerce be renewed.

Opposed Cllr Poulsen **CARRIED**

MOTION R23/135
MOVED AND SECONDED

THAT correspondence b) be received.

CARRIED

8. **Council Reports - None**
9. **Reports of Committees - None**
10. **Mayor's Report - None**
11. **Unfinished Business - None**
12. **Staff Reports**
    a) **Official Community Plan Bylaw – Keir Gervais, CAO**

MOTION R23/136
MOVED AND SECONDED

THAT Council receive the Official Community Plan Bylaw staff report for information and discussion.

CARRIED

b) **Village of Sayward 2023 Strategic Plan – Keir Gervais, CAO**

MOTION R23/137
MOVED AND SECONDED

THAT Council receive the Village of Sayward 2023 Strategic Plan staff report for information and discussion.

CARRIED

MOTION R23/138
MOVED AND SECONDED

THAT Council adopt the Village of Sayward 2023 Strategic Plan.

CARRIED

c) **Kelsey Centre Operating Season – Keir Gervais, CAO**

MOTION R23/139
MOVED AND SECONDED

THAT Council receive the Kelsey Centre Operating Season staff report for information and discussion.

CARRIED

d) **Tax Notice Letter to Residents – Keir Gervais, CAO**

MOTION R23/140
MOVED AND SECONDED

THAT Council receive the Tax Notice Letter to Residents staff report for information and discussion.

CARRIED

MOTION R23/141
MOVED AND SECONDED

THAT Council Approve the Tax Notice Letter to Residents for inclusion in the annual tax notice mailout.

CARRIED

e) **Tenure 1409269 – Triangle – Lisa Clark, CFO/CO**

MOTION R23/142
MOVED AND SECONDED

THAT Council receive the Provincial Tenure/Licence of Occupation File #1409269 staff report for information and discussion.

CARRIED

MOTION R23/143
MOVED AND SECONDED

THAT the Village renew the Provincial tenure lease of the Triangle property, and,

THAT after confirmation of the renewal is received, Staff be directed to contact the owner of Kelsey Bay Organic Resources to determine their current level of interest in the property, and request a presentation to Council with their new plan, should there be one.

Opposed Cllr Poulsen, Cllr Burchett **CARRIED**

f) **Public Nuisance Bylaw – Lisa Clark, CFO/CO**

MOTION R23/144
MOVED AND SECONDED

THAT Council receive the Public Nuisance Bylaw staff report for information and discussion.

CARRIED

g) Governance Training Workshop – Keir Gervais, CAO

MOTION R23/145
MOVED AND SECONDED

THAT Council receive the Governance Training Workshop report for information and discussion.

CARRIED

MOTION R23/146
MOVED AND SECONDED

THAT Council approves the proposal from Allison Habkirk for $5,401 plus applicable taxes and the proposed dates, June 2 (6:00pm-9:00pm) and June 3 (9:00am-3:00pm).

CARRIED

MOTION R23/147
MOVED AND SECONDED

THAT Council provide staff with any feedback regarding the proposed draft questions, process, objectives, deliverables, etc. to provide back to the consultant.

CARRIED

13. Emergency Services/Public Works/Recreation Department Reports - None

14. Bylaws

a) Village of Sayward Official Community Plan Bylaw No. 501, 2023

MOTION R23/148
MOVED AND SECONDED

THAT Official Community Plan Bylaw No. 501, 2023 be given first reading.

CARRIED

b) Public Nuisance Bylaw No. 502, 2023 – Lisa Clark, CFO/CO

MOTION R23/149
MOVED AND SECONDED

THAT Public Nuisance Bylaw No. 502, 2023 be given first, second, and third reading.

CARRIED

15. New Business - None

16. Public Question Period - None

17. In Camera – None

18. Adjournment

MOTION R23/150
MOVED AND SECONDED

THAT the Regular Meeting of Council for May 16, 2023, be adjourned.

CARRIED

The meeting was adjourned at 7:54pm.

_____
Mayor

_____
Corporate Officer

HEMBC Health Emergency Management

First Nations Health Authority
Health through wellness

island health

WILDFIRE SMOKE INFORMATION FOR COMMUNITY HEALTH PARTNERS AND LOCAL GOVERNMENTS

STATEMENT:
Wildfire smoke is a complex mixture of different air pollutants and is an important health concern for our region. Reducing exposure to wildfire smoke protects our health.

Over the last decade a BC Health and Smoke Exposure Coordination Committee has coordinated planning and response efforts related to public health impacts for significant wildfire smoke events.

You can follow air quality by monitoring the Air Quality Health Index and signing up for WeatherCAN custom notifications

THOSE MOST VULNERABLE TO WILDFIRE SMOKE:

People with chronic respiratory conditions (e.g., asthma, COPD)	Pregnant people
People with heart disease, diabetes, and other chronic health conditions	Infants and young children
Older adults	People with physically demanding jobs and those who work outdoors

SIGNS OF WILDFIRE SMOKE-RELATED ILLNESS:

Mild	More Severe
Eye irritation, runny nose, sore throat, wheezing, mild cough, headaches	Shortness of breath, bad cough, dizziness, chest pain, fast beating/fluttering heart
	SEEK MEDICAL ATTENTION

HOW TO PREPARE FOR WILDFIRE SEASON:

1. Consider developing a wildfire smoke response plan and provide training to staff and volunteers to ensure they know what to do to protect their clients, students, the public and themselves during wildfire smoke events.
2. Prepare staff and volunteers to recognize the signs of illness from wildfire smoke exposure and to know when to seek medical care.
3. Check the Air Quality Health Index (AQHI) or other real-time air quality data such as Smoky Skies Bulletin, interactive smoke forecast mapping and AQHI maps.

4. Improve the indoor air quality of your facility:
    a. Ensure the building's Heating, Ventilation and Air Conditioning (HVAC) system is well-maintained and functioning, and that the filters are in good working order. Use the highest-rated minimum efficiency reporting value (MERV) filter possible; ideally MERV 13 or higher. Consider making building ventilation systems High Efficiency Particulate Air (HEPA) filter-ready, so that during a wildfire smoke event existing filters can switch to the upgraded filter for the event's duration. Ensure all filters are properly maintained and replaced.
    b. Portable air cleaners with HEPA filtration are also an option, especially in older buildings. Ensure the filter is suitable for the room size and avoid air cleaners that produce ozone.
    c. Filtration in institutional settings can be considered to support clients in the community.
    d. Air cleaners work best when windows and doors are closed, so heat may become an issue on days that are also hot. Energy efficient active cooling systems (e.g. ductless heat pumps or air conditioners) may be needed in addition to the air cleaner to create a cool space with clean air.
5. Consider what actions you can take to reduce your own property's fire risk.

WHAT DO TO DURING A WILDFIRE SMOKE EVENT

1. Smoke levels differ from place to place and can change quickly, so monitor the AQHI closely through the provincial page or the WeatherCAN app.
2. Monitor clients / students for signs of illness, and ensure everyone drinks plenty of water and stays cool.
3. Ensure clients / students with chronic health conditions (e.g., asthma) follow their care plan, have any necessary medications on hand and seek additional advice from their physician if needed.
4. Reduce activity during periods of poor air quality, especially outdoors.
    a. When the AQHI is in the VERY HIGH category, consider moving activities requiring intense physical activity (e.g. physical education classes, outdoor sports, outdoor workers) to indoor spaces or canceling them.
    b. When it is smoky outside, generally clients / students should be permitted to remain indoors if they wish, but low-intensity outdoor time is typically safe.
5. Improve indoor air quality as much as possible.
    a. Consider keeping windows and doors closed during high smoke times; however, make sure that indoor temperatures can be maintained at a comfortable level to prevent heat-related illnesses.
    b. Ensure the building's HVAC is well-maintained and functioning, and filters are in good working order. Use the highest rated MERV filter possible (MERV 13 or higher).

c. Consider using appropriately sized portable HEPA filters for individual rooms if suitable HVAC is not available.

6. While respirators and multilayer face masks can provide some protection if well-fitted, simple one-layer cloth masks bandanas, gaiters, etc., offer no protection whether wet or dry.

DUAL WILDFIRE SMOKE AND EXTREME HEAT EVENT

Overheating is generally a bigger risk to health than smoke inhalation. Many people are at risk of potential severe injury and death if they overheat, while a much smaller proportion are at risk of severe acute respiratory or cardiovascular attack. Many individuals most at risk from smoke are also at risk from heat. Therefore, most people should prioritize staying as cool as possible in very hot weather.

Both heat and smoke are important environmental exposures and their risks may be compounding when they co-occur. Seek cooler, cleaner indoor air – at home if possible, and elsewhere if not, such as a shopping mall or community cooling / clean air centre.

Working together to protect the public's health.

Ryan Kuhn
Director, HEM – Island Health
Health Emergency Management BC (HEMBC)

Chris Jancowski
Director, HEM – Vancouver Island Region
First Nations Health Authority

Réka Gustafson MD FRCPC
Vice President Population and Public Health &
Chief Medical Health Officer

DISTRICT OF COLDSTREAM

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Email: info@coldstream.ca Website: www.coldstream.ca
"Rural Living At Its Best"

OFFICE OF THE MAYOR

File: 0410-01
May 9, 2023

Honourable Ravi Kahlon
Minister of Housing
Room 248 Parliament Buildings
Victoria BC V8V 1X4

VIA EMAIL: ravi.kahlon.MLA@leg.bc.ca

Dear Honourable Kahlon:

Re: Homes for People Action Plan

At their Regular meeting held on May 8, 2023, the District of Coldstream passed the following resolution:

> *"THAT the Mayor be authorized to send a letter to the Minister of Housing, with copies to the MLA for Vernon-Monashee and all members of the Union of British Columbia Municipalities, regarding the recently announced action plan "Homes for People" and request that the Minister take into consideration the following:*
>
> 1. *the diversity and size of communities throughout the province and their unique housing needs;*
> 2. *the differences between rural and urban communities and their availability of infrastructure; and*
> 3. *the significant impact on existing local infrastructure capacity to service increased development and density;*
>
> *AND THAT the Minister be further advised that the District of Coldstream is concerned that broad legislative changes may curtail the local planning authority vested in local governments and expressed in their Official Community Plans and Zoning bylaws, for which significant public input has been received and accounted for in these important planning instruments.*

In addition to the points enumerated above, we would also bring to your attention that a large portion of Coldstream is served by septic systems, which are not equipped to manage the type of densification the Homes for People Action Plan contemplates. To provide the appropriate infrastructure would have a considerable financial impact to our residents without guaranteed and predictable funding/grants from the Province.

.../2

A good portion of Coldstream is in the Agricultural Land Reserve (ALR); as such, we have concerns regarding the potential conflict between residential and agricultural land use. We have struggled with this very issue in recent years as have other communities surrounded with rural areas and have experienced development pressure.

The portion of Coldstream that would be characterized as urban is very much residential and we lack access to local services such as shopping, health care, employment, and transit. These types of services and amenities are located in Vernon, a neighbouring community which acts as a the commercial 'hub' for many of our residents.

The District of Coldstream values and is known for our carefully managed growth which has always respected the wishes of the members of this community. Our Official Community Plan and Zoning Bylaws have been developed with considerable input from the residents. Coldstream is a desirable place to live, farm and enjoy the abundance of natural amenities we are fortunate to have. We have worked diligently to balance the need for a variety of housing types and density with moderate growth while preserving the much sought after rural lifestyle that Coldstream is known for.

Respectfully, we request you consider that there are other communities, just as unique as ours, for which a province-wide, "one-size-fits-all", approach to increasing housing supply may not be in their best interest and may result in communities that no longer resemble the ones that people chose to live in. If the Province targeted support to communities either better suited or desirous of increased density, British Columbians would have the ability to choose the housing type and the community that is the best fit for them.

We thank you for your thoughtful consideration of our concerns on this very important initiative.

Sincerely,

Ruth Hoyte
Mayor

cc: Council, District of Coldstream (via email)
MLA Harwinder Sandhu (Harwinder.sandhu.MLA@leg.bc.ca)
Members of the Union of British Columbia Municipalities

Community Share Shed Report
April 2023

Total Donation intake:	$ 242.00
20% to Village:	$ 48.40
80% to Legion:	$ 193.60

The Share Shed has seen a considerable decrease of volume this month both in customers and donated items.
This was somewhat expected as the "newness" wears off. We will continue to advertise and request items.
Other than this, there is nothing new to report.

Any questions or concerns can be forwarded to me at
dbbgrill@gmail.com

Thank you,
Debbie Grill

K'ómoks First Nation

3330 Comox Rd., Courtenay BC, V9N 3P8 | Ph: 250.339.4545 | F: 250.339.7053 | E: reception@komoks.ca

Mayor Mark Baker & Council
Village of Sayward
652 H'Kusam Way,
Sayward, BC V0P 1R0
May 10, 2023

Requesting your support: please help our communities celebrate National Indigenous People's Day

Dear Mayor Baker and Council,

It is my pleasure to share that we are hosting our annual National Indigenous People's Day celebrations again this year on Wednesday June 21. This event provides an opportunity to celebrate and honour all Indigenous communities, recognizing our strength, sharing in cultural knowledge and diversity, and celebrating our resilience.

This year, we are excited to expand our efforts to accommodate for larger crowds, more parking, and vendors. As a result, we are moving the festivities to a new location, across from the Puntledge RV Campground. Morning activities will include key note speakers Joanna Recalma of Qualicum/Pentlatch, Letitica Pokiak from Tuktoyuktuk, and Dr. Dorothy Kennedy. These presentations will be closed for K'ómoks members, Chief & Council, and invited guests and elected officials. In the afternoon, the agenda will open to the general public, with storytelling, drumming and singing on stage, as well as fun for the family with kids' zone activities, a carver's corner, and food vendors.

Seeking community support and donations

With our expanded offerings come expanded costs. While K'ómoks First Nation is providing important contributions for this event, we are looking to raise an additional $35,000 and secure donations in-kind from our valued community partners. Partner support could take the form of:

- Contributing financially
- Providing volunteer assistance (day-of event support)
- Supplying event, signage, or stage equipment
- Promoting the event in media channels
- Donating food, swag and/or door prizes

If your organization would be interested in supporting this important community event, please reach out as soon as possible to Katherine Frank, our event lead at 250 650 7271 (cell) or katfrank4@hotmail.ca. Your contribution will provide a unique opportunity to promote cross-cultural awareness and understanding.

Respectfully,

Ken Price
Elected Chief Councillor
K'ómoks First Nation

K'ómoks First Nation

3330 Comox Rd., Courtenay BC, V9N 3P8 | Ph: 250.339.4545 | F: 250.339.7053 | E: reception@komoks.ca

Mayor Mark Baker & Council
Village of Sayward
652 H'Kusam Way,
Sayward, BC V0P 1R0

June 2, 2023

Please join us to help our communities celebrate National Indigenous People's Day

Dear Mayor Baker, Council and Staff,

It is my pleasure to share that we are hosting our annual National Indigenous People's Day celebrations again this year on Wednesday June 21. This event provides an opportunity to celebrate and honour all Indigenous communities, recognizing our strength, sharing in cultural knowledge and diversity, and celebrating our resilience.

I would like to formally invite you to attend our closed community celebration and lunch, which will take place from 9 am to 1 pm. Full agenda below.

This year, we are excited to expand our efforts to accommodate for larger crowds, more parking, and vendors. As a result, we are **moving the festivities to a new location, across from the Puntledge RV Campground**. Morning presentations and lunch will be closed for K'ómoks members, Chief & Council, invited guests, and elected officials. In the afternoon, the agenda will open to the general public, with storytelling, drumming and singing on stage, as well as fun for the family with kids' zone activities, a carver's corner, and food vendors.

Event Agenda	
9:00 AM	Welcome by the K'ómoks Dance Group
9:10 AM	Official welcome by Elected Chief Councillor Ken Price and Council
9:15 AM	**Keynote speaker: Joanna Recalma**, Pentlatch and 'Namgis lawyer: *Reconciliation and Reckoning within the Canadian legal system*
10:00 AM	Catered break
10:15 AM	Letitia Pokiak, Inuvialuk, MA in Anthropology:

	Climate Change
11:00 AM	Stretch break
11:15AM	Dr. Dorothy Kennedy: *Merging of the Two Place Names & Stories: History of the Merging of Two Indigenous Cultures*
12:00 PM	Lunch break
12:30 PM	Closing remarks
1 to 3:30 PM	Indigenous Education Panel: Uvic, NIC, KFN, SD#71 Trustee
3:30 to 7:00 PM	Open to the Public: Storytelling, drumming, singing, fashion shows, live artists, traditional dancing, Kids' Zone, vendors, artists

Please RSVP by June 9 to Katherine Frank, our event lead at 250 650 7271 (cell) or katfrank4@hotmail.ca**.** We look forward to celebrating with you.

Respectfully,

Ken Price
Elected Chief Councillor
K'ómoks First Nation

Vancouver Island – Sunshine Coast Community Relations 2022 Annual Report

March 2023

Sunrise in Powell River. Photo courtesy of Greg Williams, North Vancouver Island Design Manager, BC Hydro.

Active Pass Submarine Cable Replacement Project

Many coastal communities are reliant on submarine cables for their electrical service. About 40% of our power is generated on Vancouver Island, with the remainder supplied by two transmission submarine cable systems crossing the Strait of Georgia. The older of the two systems, built in the 1980s, crosses from the Sunshine Coast, over Texada Island and lands at Qualicum Bay. In 2008, new transmission cables replaced the 1950s cable system between Tsawwassen and Duncan. In addition to those two transmission crossings, over 250 kilometres of distribution submarine cables provide power to islands off Vancouver Island.

A team of specialized crew installing submarine cables in Active Pass.

The Active Pass submarine cable system, between Galiano Island and Mayne Island is a short but significant section of the Gulf Island Loop, a submarine cable system that provides electricity to Salt Spring, Pender, Saturna, Mayne and Galiano Islands. Following years of planning, in April 2022, the Active Pass Submarine Cable Replacement Project concluded with the testing and energization of four new cables. The four new cables, spanning a length of 1680 metres installed in the existing right-of-way between Galiano and Mayne Islands, replaced the three-cable system that existed previously and had reached end-of-life.

Powered by Water

BC Hydro provides clean, reliable and affordable electricity to British Columbians. We generate about 98% clean energy for the province, mostly from our hydroelectric resources.

In addition to the fourth submarine cable acting as a spare cable for redundancy and load growth, the quality of the new cables surpasses the old ones. They are larger in size to offer greater capacity, heavier to provide greater stability, and more robust for additional corrosion and abrasion resistance, with an expected lifespan of 40-50 years.

Vancouver Island has more trees per kilometre of utility power line than any place else in North America; add to that more than 250 kilometres of submarine cables that connect the Island and smaller islands to the provincial grid and it results in many challenges for our crews and planning engineers. We'll never eliminate outages completely, but with the work we do above and below the water we can lessen the impacts on our customers.

Message from Chris O'Riley, President & CEO

Hi everyone,

BC Hydro is pleased to share our Community Relations annual report highlighting some of our work in your region. We're proud to serve communities in all parts of the province.

BC Hydro is one of the largest electric utilities in Canada. We generate and provide electricity to 95 per cent of B.C.'s population and serve approximately five million people. We are powered by water. We have 30 hydroelectric plants, which provide the foundation for our clean, reliable, low-cost power system. This ensures our hydroelectric supply can be used to help B.C. reduce its carbon footprint and mitigate the impacts of climate change both today and for future generations.

Climate change, technological advances, and evolving customer energy needs continue to transform our business. While we navigate these ongoing developments, we have the important responsibility of keeping electricity rates affordable for our customers and funding necessary investments in our system.

Within this report, you'll find many examples of how we're working with your communities on a range of initiatives – from regional capital projects and corporate programs, to our Electrification Plan. The plan has us pursuing electrification opportunities in three sectors that account for the most emissions in our province: homes and buildings, transportation, and industry. You can read more at: bchydro.com/electrificationplan.

We'll continue to encourage conservation as it's an important part of the Province of B.C.'s climate plan. At the same time, we'll be offering new programs and incentives to help British Columbians make the switch from fossil fuels to clean hydroelectricity to power their homes, vehicles, and businesses. We'll also help attract new energy-intensive industries to B.C. and offer programs to reduce the time and costs for new customers to get connected to our grid.

We'll continue working closely with you to support your community. If you have any questions, please reach out to our Community Relations representatives in your region. We'd be pleased to help.

Sincerely,

Chris O'Riley

President & CEO
BC Hydro

Quick Facts

PROVINCE-WIDE:

Approximately 5 million customers

Electricity is delivered through a network of:

- approximately 80,000 kilometres of transmission and distribution lines
- over 300 substations
- 1 million plus utility poles

VANCOUVER ISLAND-SUNSHINE COAST GENERATING CAPACITY

Ash River	**28 MW**
Clowhom	**33 MW**
John Hart	**136 MW**
Jordan River	**170 MW**
Ladore	**47 MW**
Puntledge	**24 MW**
Strathcona	**64 MW**

MW = megawatt

Site C update

Located in northeast British Columbia, BC Hydro's Site C Clean Energy Project will be the third dam and hydroelectric generating station on the Peace River.

Construction on the Site C project began in July 2015. The project is more than two-thirds complete and on schedule to have all six generating units fully in-service in 2025.

The Site C powerhouse building structure is finished, the new substation and transmission lines are already in-service and work on the earthfill dam is about 70 per cent complete. Over the next year, work will continue on the earthfill dam to reach the necessary elevation gains in preparation for reservoir filling.

The project hit peak construction in the summer of 2022 with more than 5,000 workers. Nearly 70 per cent of workers are from British Columbia and about 1,000 workers are from the local Peace region.

BC Hydro also continued to deliver on several commitments in the region this year. For example, we continued to provide grants to support non-profit organizations in the Peace region through the Generate Opportunities (GO) Fund. As of fall 2022, 73 projects had received more than $638,000 since the fund was launched in 2016.

The Site C project plays a key role in British Columbia's plan to electrify its economy by encouraging customers to choose clean electricity powered by water over fossil fuels.

Once the project is up and running, Site C will provide British Columbians with 1,100 megawatts of firm capacity and produce about 5,100 gigawatt hours of clean electricity each year. This is the equivalent amount of energy needed to reliably power about 450,000 homes or 1.7 million electric vehicles per year in British Columbia.

Our Plan to Electrify B.C.

BC Hydro will be instrumental in building a sustainable economy in B.C. We'll continue to support conservation efforts, while also offering new programs and incentives to help British Columbians make the switch from fossil fuels to clean hydroelectricity to power their homes, businesses, fleets, and vehicles.

We'll also help to attract new energy-intensive industries to B.C. and offer programs to reduce the time and costs for new customers to get connected to our grid.

Our business-to-business website, **choose.bchydro.com**, is now live!

This aerial view shows Site C's spillways, penstocks, powerhouse and operations building for BC Hydro's third dam along the Peace River.

The Why Choose B.C.? site was created to promote the Load Attraction Program with businesses and industry – one of the key pillars of our Electrification Plan.

The site is geared towards clean tech and high-tech businesses interested in establishing operations in the province. BC Hydro is offering eligible new customers support and access to favourable industrial rates and funding/incentives for their businesses, as well as support to identify potential industrial sites.

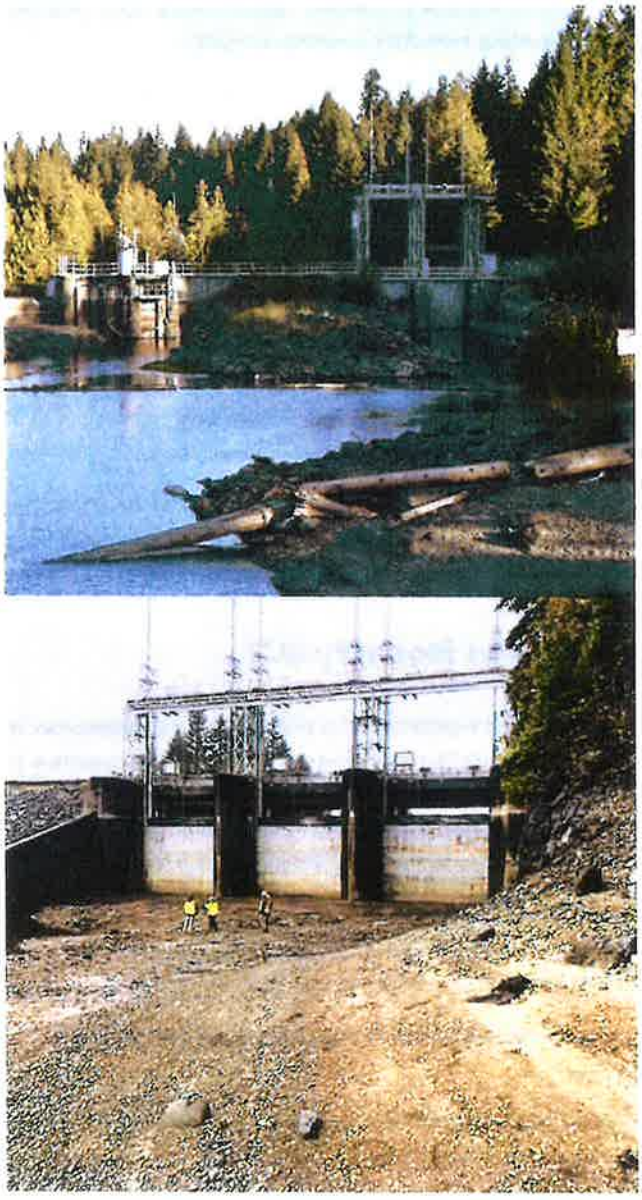
At the same time, we are working with existing customers and municipalities to find capacity and identify suitable industrial sites for these customers. If you have questions about the Load Attraction Program, please contact **Business & Economic Development**.

Regional Information

Generating Stations adapt to extreme weather

Weather in British Columbia over the last few years has proven to be unusual, thanks in part to worldwide climate change. In 2021, our province powered through a heat dome, and an atmospheric river with record-breaking rainfall and floods. In 2022, we tackled widespread droughts, affecting water levels in the Lower Mainland and Vancouver Island. However, our teams have proven to be ready for this new normal.

Extended heat and little rain through the summer and fall in 2022 forced us to adjust our operations to reduce impacts on our communities and the environment. We found that while there was adequate water at our larger facilities and we could easily meet the demand for power, inflows into reservoirs at some of our smaller facilities in the Lower Mainland and on Vancouver Island were at near, or record-breaking, low levels.



Low water levels at Comox Dam and Strathcona Dam last year

Our reservoirs play an important role in managing these dry and hot conditions by using storage and planning releases to provide protection to downstream river flows. While the dry conditions have had an impact on our watersheds, several unregulated natural river systems – not related to BC Hydro – have fared worse, with rivers drying up and thousands of fish killed. Last year, the conditions at many South Coast facilities forced our teams to conserve water in order to protect the fish habitats downstream. In anticipation of these conditions, we began holding back water in July and August to ensure that we would have water storage for later summer and early fall salmon spawning.

The most significant impacts on operations occurred at Puntledge and Campbell River on Vancouver Island, as well as Coquitlam and Stave/Ruskin in the Lower Mainland. Campbell River, for example, broke a 53-year-old record for the month of September with the lowest inflows. To help manage water levels on Vancouver Island, we reduced Puntledge River flows by one-third. By adjusting flows proactively and gradually to conserve the water, we manage the risk of running out of storage and having more sudden or severe drops in flow that can have greater environmental risk.

While many of our smaller systems in the Lower Mainland and on Vancouver Island are under some pressure, there are no concerns about continued power delivery, thanks to our province-wide, integrated system. Most of the electricity generated and used in B.C. is produced by larger facilities in the north and southeast of the province – and while inflows in some of those areas are below normal, there is enough water to meet the province's power needs.

Unusual weather patterns related to climate change are expected to continue in the years ahead and we are constantly adapting to these evolving conditions. Our system is designed and operated to perform safely across a wide range of conditions and extreme events. Some of the ways that we have been preparing for climate change impacts, include:

- Continuously working to improve our weather and inflow forecasting. For example, all coastal watersheds can now be forecasted down to the hour, which improves the forecast accuracy for extreme events.
- Expanding our hydroclimate monitoring technology. This includes custom-made solutions that have been designed inhouse, as well as upgrading snow survey stations to automated, real-time snow and climate stations.
- Investing in capital projects – like spillway gate replacements – that will increase resiliency of the system to climate change.

As we power through the next few years, including the risks and uncertainties of climate change, we will continue the work to protect our services and the environment.

Island Time

When an area is islanded, it is isolated from the rest of the grid and uses local generation that is set up to serve the local load. The system operates with minor variation in frequency, just over or under 60 Hertz, but well within the operating standards.

Islanding happens from time to time and is one of the ways BC Hydro keeps the power on during planned work and power outages. Twice in 2022, we islanded West Coast customers for several days to allow crews to safely replace end-of-life structures on the transmission line near Port Alberni. While islanded, customers in Tofino, Ucluelet, Ahousaht, Salmon Beach, Toquaht Bay and Port Albion were supplied with electricity directly from our Ash River Generating Station, a 28 megawatt (MW) hydroelectric facility located on the north shore of Great Central Lake, near Port Alberni.

A side effect of islanding for customers is that they can experience minor inaccuracy in clocks plugged into electrical power outlets; a loss or gain of about 5 minutes a day until the transmission system is reconnected back into the system. Proving true that time really does slow down on Vancouver Island.

Ash River Generating Station is an important resource that contributes about 6% of BC Hydro's Vancouver Island hydroelectric generation.

Gas vs Electricity

Not surprisingly, the cost of energy is causing growing concern for British Columbians. Home heat is often one of the biggest household expenses. Recent increases in natural gas prices means it's now cheaper to heat with an electric heat pump than a natural gas furnace and a recent **report** finds most British Columbians (56 per cent) aren't aware of this cost difference.

Energy costs are soaring in Europe due to the ongoing war in Ukraine and the cost of natural gas in B.C. is also on the rise – up about 31 per cent since the spring of 2022 – with prices set to go even higher for some customers. Despite a rise in cost, nearly half still think it is more expensive to heat with an electric heat pump than with a natural gas furnace, and many who do not use a heat pump said they would not consider switching – often listing the cost of purchase and installation as a top concern. For the average household in B.C., it is less expensive to heat with an electric heat pump than a natural gas furnace. A natural gas furnace costs around $731/year to operate, compared to $642/year for an electric heat pump. Switching to an electric heat pump in B.C. where about 98 per cent of the power is from water, the average household's GHG emissions can be reduced by about two tonnes per year.

BC Hydro offers **up to $3,000 in rebates** for switching from a fossil fuel based system, which can be combined with provincial and federal rebates for a total savings of up to $11,000 on cost and installation with some municipalities adding additional rebates on top of that. Up to $2,000 in rebates are available for customers switching from electric baseboard heating.

Facetime

It's ironic that the result from a period of forced isolation, our opportunities for engagement with each other have increased. Conference calls have been replaced with virtual meetings and, while not in person, Microsoft Teams or Zoom meetings have proven to still be personal and inclusive.

At the annual UBCM convention, BC Hydro traditionally met with elected officials in-person on important community issues. During the pandemic, meetings at UBCM were still held albeit virtual with us all ensconced in a corner of our house or office. Now a hybrid model and likely a better product has emerged. BC Hydro still holds meetings with elected officials and other stakeholders, but it has become evident that not everyone needs to be in the same room. It is now easier for our senior leaders and subject matter experts with tight schedules to participate with those unable to travel to the meeting location.

BC Hydro Executives and Community Relations staff meet with local government representatives at the 2022 UBCM Convention in Whistler.

The clear result is that we no longer need to wait for the annual UBCM convention to have our subject matter experts and senior leaders meet with municipal leaders. With the pandemic in the rear-view mirror and new technology at our disposal, we can meet throughout the year. Therefore, I invite all local government officials to not wait for the annual UBCM convention to request a meeting with BC Hydro on issues important for your community. Please do not hesitate to contact **Ted Olynyk** or **Karla Louwers** to arrange a meeting.

Site work has begun to prepare the area around the John Hart Dam in Campbell River for the upcoming John Hart Dam Seismic Upgrade Project. The Project includes seismic upgrades to strengthen the dam so it can withstand a severe earthquake. For more information on this project, as well as the Ladore and Strathcona projects, visit majorprojects.ca

Supporting Communities

Trees and Vegetation Management

Our electrical system is complex and highly efficient, with approximately 80,000 kilometres of overhead transmission and distribution power lines throughout the province. Managing trees and plants around these lines is important for safety and service reliability.

B.C. has some of the tallest and fastest-growing trees in North America. Our vegetation management team regularly inspects trees and other tall vegetation growing under or adjacent to our overhead system to identify potential problems.

Tall, diseased or dead trees can fall or grow into power lines, causing electrical outages.

Vegetation management contractors – we employ professional arborists and foresters that follow strict environmental guidelines – prune or remove trees and vegetation in areas where the lines may be impacted. Furthermore, when an area experiences reliability issues, we assess the local distribution lines for potential tree-related causes.

Even with a proactive management program, more than half of all outages in B.C. are caused by adverse weather causing trees and vegetation to come into contact with our system. For more information, please select **bchydro.com/trees.**

Recreation sites

We maintain a wide range of recreation areas as one part of our efforts to balance the province's energy needs with the preservation of the natural environment.

BC Hydro reservoirs make it possible to provide clean energy to the province. Those reservoirs also serve as recreational sites that many people enjoy for things like hiking, boating, camping and swimming. For more information, please select **bchydro.com/recreation.**

A BC Hydro transmission line near Upper Campbell Lake

Community ReGreening Program

BC Hydro is proud to assist local governments through our Community ReGreening Program which supports the planting of trees and other vegetation that help enhance ecological networks across the province. The program also helps to ensure the right trees are planted near our powerlines.

Our ReGreening grants fund small-scale community planting projects and are open to all municipal and Indigenous Nations' governments within BC Hydro's service area. All applications are accepted through our online form.

The application intake for 2023 grant funding closed on January 31, 2023. All applicants will be notified of funding decisions by email within approximately four to six weeks. For more information, please select **bchydro.com/regreening**. Check back in November for updates on next year's funding cycle.

This past year, successful applications included:

Community	Project	Funding
Campbell River	Lilelana Park Rejuvenation and Nodales Street Tree Replacement	$7,500
Langford	Willing Pond Enhancement	$5,525

Courtenay (Comox Valley Regional District)	Seal Bay Park, Bates Entrance Reforestation	$6,887
Port Hardy	Granville Street Tree Planting	$4,560
Chemainus (Municipality of North Cowichan)	Kin Beach Park	$2,974
Texada Island (qathet Regional District)	Texada Island Green Space Beautification	$7,369
Cumberland	Village Park Tree Planting and Preservation	$4,875
Victoria	Enhancing Pollinator Habitat at the Welland Orchard	$1,900
Victoria (District of Saanich)	Cedar Hill Golf Course Planting Phase 2	$7,500
Courtenay	2022 Tree and Restoration Planting	$7,200
Victoria (District of Oak Bay)	Midland Road Restoration	$6,000
Sechelt	Adopt-a-Street Tree	$7,500
Ladysmith	Kinsmen Park Reforestation	$3,500
Esquimalt	Esquimalt ReGreening Project	$7,500

Decorative Wrap Grant Program

Our Decorative Wrap Grant Program provides financial assistance to municipal governments, regional districts and First Nations communities looking to improve the visual aesthetics of a neighbourhood by installing decorative wraps on BC Hydro-owned pad-mounted equipment boxes.

Eligible applicants can receive grant funding of $350 or $700 per unit, depending on the size of the equipment box to be wrapped. The funding amount will be determined by BC Hydro during the application review.

This past year, successful applicants for decorative wraps included:

- Cowichan Valley Regional District
- District of Sechelt

The application closing date for each year is September 30. For more information, please select **bchydro.com/wraps**.

The Town of Sidney added decorative wraps to BC Hydro equipment in their community.

Graffiti removal

Graffiti vandalism is a crime that affects everyone. BC Hydro prioritizes the removal of graffiti that is socially offensive (e.g. obscenities, racial or religious slurs) as well as graffiti that is located in high-profile or sensitive areas (e.g. adjacent to schools, churches, and community centres).

We rely on the public around B.C. to report graffiti on everything from pad-mounted transformer boxes to our buildings. As an alternative, graffiti removal agreements offer financial support to local governments or community groups to remove graffiti on our behalf. For more information on graffiti removal agreements, please contact your local Community Relations office (see last page of this report).

Fish & Wildlife Compensation Program

Wei Wai Kum Nation Guardians use traditional techniques to help restore the Campbell River estuary and its vital habitats. Photo courtesy of: D. Leowinata, Coast Funds

The Fish & Wildlife Compensation Program (FWCP) is a partnership between BC Hydro, the Province of B.C., Fisheries and Oceans Canada, First Nations, and public stakeholders to conserve and enhance fish and wildlife in watersheds impacted by BC Hydro dams.

BC Hydro has water licence obligations in the Columbia and Peace regions and has made voluntary commitments to address the impacts of dams in the Coastal Region. BC Hydro fulfills these obligations through the work of the FWCP.

In 2021–2022, the FWCP's Coastal Region board approved 13 projects on Vancouver Island and the Sunshine Coast, for nearly $700,000 in funding.

These projects are improving salmon spawning habitat in the Campbell River, restoring riparian habitat for salmon at a site of cultural significance to the K'omoks First Nation, enhancing western screech-owl habitat, supporting recovery of endangered Vancouver Island marmots, and using eco-cultural restoration techniques in the Puntledge and Campbell River watersheds.

Since 1999, the FWCP has committed more than $43 million to conserve and enhance fish and wildlife in its Coastal Region. Learn more at **fwcp.ca.**

Grants-in-lieu

We pay net property tax and grant payments to local governments. The grant program is a provincial government initiative and the amounts paid are determined under the current legislation. Listed below are the grants paid to each community in the Vancouver Island – Sunshine Coast region as of December 31, 2022.

Municipality/District	School taxes*	Grants	Other taxes	Total payments
Regional District of Alberni-Clayoquot	0	$66,673.00	0	$66,673.00
Village of Alert Bay	$3,859.66	$8,595.41	$1.18	$12,456.25
City of Campbell River	$2,749,377.86	$1,012,332.80	0	$3,761,710.66
Capital Regional District	0	$404,807.00	0	$404,807.00
District of Central Saanich	$339,757.73	$277,414.03	$8,703.10	$625,874.86
City of Colwood	$42,764.64	$147,261.22	0	$190,025.86
Town of Comox	$39,610.08	$118,357.36	0	$157,967.44
Regional District of Comox Valley	0	$57,149.00	0	$57,149.00
City of Courtenay	$225,661.22	$443,634.53	$9,076.08	$678,371.83
Village of Cumberland	12,096.72	$35,660.70	0	$47,757.42
City of Duncan	$8,853.12	$58,638.96	0	$67,492.08
Township of Esquimalt	$215,858.40	$313,924.47	0	$529,782.87
Town of Gibsons	$67,821.77	$123,303.03	$699.42	$191,824.22
Village of Gold River	$12,084.00	$17,634.44	0	$29,718.44
District of Highlands	$93,410.59	$31,906.34	0	$125,316.93
Town of Ladysmith	$67,585.01	$118,721.07	0	$186,306.08
Village of Lake Cowichan	$29,278.89	$37,922.98	$550.00	$67,751.87

Municipality/District	School taxes*	Grants	Other taxes	Total payments
City of Langford	$221,705.79	$398,883.74	0	$620,589.53
District of Lantzville	$106,961.21	$72,824.62	0	$179,785.83
District of Metchosin	$58,939.39	$59,813.31	0	$118,752.70
City of Nanaimo	$830,057.53	$2,017,091.46	0	$2,847,148.99
Municipality of North Cowichan	$902,661.07	$905,492.07	$2,101.00	$1,810,254.14
District of North Saanich	$123,276.09	$188,208.51	$400.00	$311,884.60
District of Oak Bay	$37,231.44	$136,688.52	0	$173,919.96
City of Parksville	$42,891.84	$138,825.53	0	$181,717.37
City of Port Alberni	$193,132.97	$659,768.68	$136.96	$853,038.61
Village of Port Alice	$6,782.35	$10,481.71	0	$17,264.06
District of Port Hardy	$71,491.01	$94,827.23	$(0.29)	$166,317.95
Town of Port McNeill	$10,048.80	$42,908.63	0	$52,957.43
City of Powell River	$176,946.71	$203,136.79	$2,554.00	$382,637.50
Town of Qualicum Beach	$119,134.25	$223,132.26	$245.00	$342,511.51
District of Saanich	$1,137,746.73	$1,905,594.46	0	$3,043,341.19
Village of Sayward	$2,874.72	$3,832.01	0	$6,706.73
District of Sechelt	$69,680.07	$159,366.23	0	$229,046.30
Town of Sidney	$23,411.78	$123,477.44	0	$146,889.22
District of Sooke	$111,018.89	$161,643.12	0	$272,662.01
Regional District of Strathcona	0	$152,399.00	0	$152,399.00
Regional District of Sunshine Coast	0	$78,580.00	0	$78,580.00
Village of Tahsis	$16,492.75	$14,861.11	0	$31,353.86
District of Tofino	$10,392.24	$48,943.49	0	$59,335.73
District of Ucluelet	$12,325.68	$39,986.39	0	$52,312.07
City of Victoria	$753,641.15	$1,693,849.55	$854.86	$2,448,345.56
Town of View Royal	$121,851.24	$154,826.31	0	$276,677.55
Village of Zeballos	$2,153.50	$3,997.04	0	$6,150.54

** Local governments collect school taxes which are then forwarded to the provincial government to help fund school districts.*

Community Grants

By supplying electricity to the people and businesses of this province, we provide an essential and important service. But we also believe in doing more than that. We're offering two types of grants to support non-profit organizations and registered charities that are making a difference in their communities. In 2022, we supported over 60 community-based projects across every region of the province.

Our grants are given out in three focus areas: building the STEM workforce of tomorrow, safety education, and developing a clean and sustainable future. When planning for your project, please keep in mind that our grants have set criteria and application deadlines.

To learn more, please select **bchydro.com/grants.**

Some of the organizations that we supported in the region this past year included:

Applicant	Project	Community	Grant
Epic Exeo	Beach Cleaning Safety Capacity Enhancement	North Vancouver Island	$2,000
Discovery Island Emergency Preparedness Association (DIEPA)	Discovery Island Emergency Preparedness Awareness Program	Quadra Island	$2,500
South Quadra Fire Protection District	Quadra Island Neighbourhood Emergency Response Planning	Quadra Island	$2,000
Hornby Island Resident's and Ratepayers Association	Reception Centre Upgrades	Hornby Island	$1,000
Strawberry Isle Marine Research Program	Youth in Marine Sciences Program	Tofino	$2,000
Nanaimo Area Land Trust	Northfield Marsh Riparian Restoration Project	Nanaimo	$2,000
Salt Spring Elementary	Solar Pump and Rainwater Collection Project	Salt Spring Island	$1,000
Saanich Legacy Foundation	Restoration of Kings Road Community Nature Green Space	Greater Victoria	$1,500

Reliability Performance

We recognize how important the reliable supply of electricity is to our customers. We'll continue to improve, reinforce and maintain the electrical system.

The information below provides a comparison between Fiscal 2021 and Fiscal 2022 for communities in the Vancouver Island–Sunshine Coast region. These statistics include interruptions due to planned outages.

Community	Fiscal 2022 average customer interruption duration (hours)	Fiscal 2021 average customer interruption duration (hours)	Fiscal 2022 average number of interruptions per customer	Fiscal 2021 average number of interruptions per customer
Campbell River	4.88	3.03	4.37	3.17
Courtenay	3.68	2.68	3.78	3.55
Duncan	2.00	5.13	2.94	3.82
Islands Trust	2.48	3.28	8.73	8.91
Nanaimo	1.00	2.15	1.24	1.10
Parksville	1.85	1.64	1.00	1.70
Port Alberni	1.13	2.16	4.51	2.21
Port Hardy	6.56	7.12	16.37	11.02
Powell River	2.11	2.20	4.56	3.93
Qualicum Beach	1.26	2.01	5.64	4.91
Sechelt	3.13	2.56	9.14	4.83
Victoria	1.36	2.21	1.31	0.71

BC Hydro Community Relations

At BC Hydro we build strong relationships to support the unique needs and strengths of the communities we serve. Our Community Relations team does this by listening, providing information and working together with communities. Community Relations is the point of contact for local government, media, local business and community groups. Whether it's for regional capital projects, corporate initiatives and programs, local BC Hydro activities, significant planned outages, emergency response or unplanned power outages, we work hard to meet the needs of our stakeholders and ensure communities are kept informed.

Vancouver Island–Sunshine Coast

If you have questions or comments for us, please contact:

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BC Hydro Guide for Local Government

Quick access to key information on **bchydro.com**

My Hydro and Energy Savings initiatives	
My Hydro bchydro.com/myhydro/	Log in to manage your account.
Energy Savings Programs bchydro.com/energysavings	Learn how you can be smart with your power. Take advantage of rebates and programs.
Projects	
Capital Projects bchydro.com/projects	Learn more about major projects taking place in your region.
Programs	
Decorative Wrap Grant Program bchydro.com/wraps	Learn about our program that provides financial assistance to municipal governments looking to install decorative wraps on BC Hydro pad-mounted equipment boxes.
Community ReGreening Program bchydro.com/regreening	The regreening program assists municipalities with urban tree planting while helping to make sure appropriate trees are planted around power lines.
Community Giving	
Grants for community groups bchydro.com/grants	Learn about our grants for community groups and how to apply for them.
Scholarships & Endowments bchydro.com/scholarships	We look to build the next generation of engineers, electricians, and many other key roles who will help us deliver clean energy to our customers. Learn about our scholarships and endowments.
Electric vehicles	
Fast charging stations bchydro.com/ev	Learn more about how clean and affordable power makes B.C. a great fit for electric vehicles.
Report an outage	
How to report a power outage bchydro.com/outages	Check the outage map or list to see if we know your power is out. If not, call us at 1 800 BCHYDRO (1 800 224 9376) or *HYDRO (*49376) on your mobile phone to report it.
Report graffiti	
How to report graffiti on our equipment bchydro.com/graffiti	We rely on the public to report graffiti on everything from our pad-mounted transformer boxes to our buildings.

facebook.com/bchydro @bchydro instagram.com/bchydro youtube.com/bchydro

BC Hydro
Power smart

Strathcona
REGIONAL DISTRICT

NEWS RELEASE

990 Cedar St. Campbell River, BC V9W 7Z8
250-830-6700 • 1-877-830-2990
info@srd.ca • www.srd.ca

May 26, 2023

Now Recruiting: Volunteer Members for the Regional Accessibility and Inclusion Committee

May 28 to June 3, 2023, marks National AccessAbility Week in Canada. National AccessAbility Week is a time to raise awareness of the critical need for accessibility and inclusion for all in our communities and workplaces and to celebrate the contributions of persons with disabilities.

In recognition of National AccessAbility Week, the Strathcona Regional District (SRD) is announcing the volunteer recruitment for a new Strathcona Accessibility and Inclusion Committee (the Committee). In partnership with its member municipalities (City of Campbell River, Village of Gold River, Village of Sayward, Village of Tahsis, and Village of Zeballos), Vancouver Island Regional Library, School Districts, and other public sector organizations, a joint regional accessibility committee is being developed to help improve accessibility and inclusion. A joint regional approach was pursued to encourage collaboration between organizations, reduce duplication, and respect volunteer members' time.

The Committee will provide advice on identifying and removing barriers to accessibility and inclusion throughout the region. Barriers may be present in the built environment, information and communications, or the delivery of programs or services delivered by the partnering organizations. The Committee will also help guide the development of an Accessibility Plan, which will act as a road map for continual progress toward accessibility and inclusion for all.

The regional partners are seeking Strathcona area residents with disabilities, disability advocates and support workers, and people who reflect the diversity of the region to participate and volunteer on the committee.

The Committee will consist of at least seven (7), and up to twelve (12) voting members, representing partnering organizations, the public, businesses, and community interests within the Strathcona region, and will strive to include at least one (1) Indigenous member, one (1) Strathcona Regional District Director, be geographically representative of the Strathcona region and reflect the diversity of persons with disabilities in BC. Reimbursement for pre-approved reasonable expenses related to travel, meals, accommodation, and out-of-pocket costs while performing Committee responsibilities will be made in accordance with SRD Travel Expense Policy. The Committee Terms of Reference can be viewed at srd.ca/accessibility for more details.

Advisory committee applications will be accepted until Friday, June 23, 2023.

If you are interested in helping improve accessibility and inclusion in the region, please apply to join the Committee by visiting srd.ca/accessibility, emailing accessibility@srd.ca, or calling 250-830-6711.

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Media Contact:
Renée Laboucane - SRD Manager, Strategic Initiatives | 250-830-6711 | rlaboucane@srd.ca

Strathcona REGIONAL DISTRICT

NEWS RELEASE

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May 26, 2023

The Strathcona Community Health Network (SCHN)
Hires New Coordinator and Is Actively Seeking New Members.

Campbell River, BC - After a brief hiatus during Covid-19, the Strathcona Regional District (SRD) has hired a new Coordinator, tasked to bring in new Table of Partners members and reinvigorate the Strathcona Community Health Network (SCHN).

Developed in 2015, following a community forum with over 170 participants, the Heath Network strives to collaborate and intervene on issues impacting health and wellness. The main focus of the SCHN is to address the social determinants of health at a systems level with eight priority areas including: network development, First Nations and cultural safety, healthy children, food security, housing, ageing & caregiver support, and connectivity.

"The SRD is pleased to have filled the coordinator role and be in a position to bring on additional support at the table level to move forward the many initiatives addressing the social determinants of health within the region," says Aniko Nelson, SRD Senior Manager, Community Services. "We are hopeful that we will receive interest from a wide spectrum of individuals throughout the SRD that can lend their experience and passion to improve the overall health of our residents".

From now until June 15, 2023, community members throughout the Strathcona Region are invited to apply for a seat at the Table of Partners. The role of the Table of Partners is to ensure diverse regional voices are represented and heard. The Table of Partners meets monthly to engage, mobilize and leverage action beyond what one organization or individual cannot achieve alone and they will lead the Network by determining a way forward through Strategic Planning and working together cooperatively to make best use of the human and financial resources available.

To learn more about the Strathcona Community Health Network, please visit www.strathcona-chn.net.

Inquiries regarding membership should be directed to the SCHN Coordinator, Madison Stewart at mstewart@srd.ca.

-##-

Media contact:
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SRD Senior Manager Community Services
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STAFF REPORT

For: Mayor and Council
Prepared by: Keir Gervais, CAO
Subject: **Summer Water Restrictions**
Meeting date: June 6, 2023

BACKGROUND

In recent years, the Village has implemented water restrictions in response to climate change patterns that have led to increasingly dry summers and a corresponding increase in the risk of wildfire.

Water Regulation Bylaw No. 391 provides the authority for Council to restrict water use, as follows:

14.7 Sprinkling restrictions may be enforced from time to time by the Village.

DISCUSSION

Staff is seeking Council approval to establish water restrictions, effective June 15, 2023 to September 30, 2023. The Village of Sayward water supply has experienced very low water levels during the last several summers and, as a result, summer water restrictions are normally put in place early in the summer to alleviate the pressure on our water supply. Such restrictions during the summer months are now common practices for most municipalities and regional districts on Vancouver Island and throughout B.C.

Water Regulation Bylaw No. 391 provides the authority for Council to restrict water use. Staff are recommending that, as in other years, the following water restrictions be applied, effective June 15, 2023 to September 30, 2023;

1) No watering between 10:00 am and 4:00 pm.
2) Residences with address numbers ending in an even number (e.g., 110 Dyer Dr.) would be permitted to water on even days of the month (June 20, 24, 26, etc.).
3) Residences with address numbers ending in an odd number (e.g., 111 Dyer Dr.) would be permitted to water on odd days of the month (June 21, 23, 25, etc.).
4) The washing of parking lots, driveways, automobiles, boats etc. and such activities be discouraged, and if pursued, only be permitted on the resident's designated days before 10:00 am and after 4:00 pm.

Water restrictions would apply to all outdoor watering activities including lawn sprinkling, watering of gardens, trees, and shrubs as well as washing parking lots, driveways, automobiles, boats etc.

Staff believes these restrictions are necessary to ensure all users have adequate water during the summer and that sufficient reserve supplies are available should they be required for emergency firefighting purposes.

Staff would like to point out to Council that previous staff reports about this subject have focused on '*residences*' in reference to water restrictions. While there are numerous variations of how '*residence*' is defined depending on the dictionary, the common theme across them all is *the act or fact of living in a place...the place where one actually lives...the act or fact of residing...* The actual Water Restriction Notices posted in 2016, 2017, 2018, 2019, specifically identified the following types of residences: *Homes, Apartment and Condo Buildings, Mobile Homes, etc.*

The following reasons for the water restrictions as found in the Public Notice is as follows:

> **These restrictions are intended to ensure that ALL residents receive an adequate supply of water throughout the summer months and that sufficient reserve supplies are available should they be required for emergency fire fighting purposes.**

To staff, there is a noticeable absence of 'other' property types besides residential. So far as staff can determine, there is no clear indication whether the water restrictions were intended to apply to all property owners or only to properties where there are residences.

Given the rationale for the summer water restrictions, staff believe that inclusion of other types of properties in the summer water restrictions should be considered. With Council's direction, staff will research what other property types should be considered for inclusion (or not) in the summer water restrictions and on what merit(s).

STAFF RECOMMENDATIONS

THAT Council receives the Summer Water Restrictions staff report for information and discussion.

THAT Staff be directed to implement water restrictions as outlined in the Staff Report effective June 15, 2023; and,

THAT Staff be directed to research and/or review best practices for the types of properties to be included in summer water restrictions and report back with possible options.

Respectfully submitted,

Keir Gervais, CAO

STAFF REPORT

To: Mayor and Council
From: John Manson, P.Eng., Approving Officer
Subject: **Sewer and Water Capacity Studies**
Meeting date: June 6, 2023

BACKGROUND

The Village retained McElhanney Engineering Services Ltd to complete Sewer and Water capacity studies to determine the ability of the Village's sewer and water systems to accommodate existing as well as future development. Copies of these studies are enclosed in tonight's Council agenda, namely:

1. Sayward Sanitary System Assessment, dated June 2, 2023;
2. Sayward Water System Assessment (Rev 1), dated June 2, 2023.

This report provides staff's perspective on the recommendations arising from these studies with respect to the ability of these system to accommodate future 'near term' development (< 5 Year Time Frame).

It should be noted that the purpose of these studies was primarily to assess the capacity of the respective systems, with less focus on the condition of the system, particularly the issue of useful lifetime and replacement requirements, which is more the focus of Asset Management reporting. The Village has separately retained a number of reports and studies which focus on ensuring that adequate funding is in place to replace system components at the end of their useful lifetime. Funding for this work typically comes from the respective utility and is paid for by those that pay utility rates.

DISCUSSION

1. Development Assumptions and Considerations

The Consultants used the existing Official Community Plan to determine future growth within the community, together with existing zoning information that provides an indication of potential allowable densities on properties within the Village. This information is used to model future development impacts on the existing systems. Both Sewer and Water models were developed. Model calibration was also carried out to verify that model results assuming existing development could be compared favorable to existing flows, where such data was available.

While the study did not take into account the proposed OCP as it has not yet been adopted by Council, it is not felt that the densities proposed in the new OCP differ substantially from the existing OCP.

2. Sanitary Sewer Capacity

The Sanitary System Assessment reviewed the capacity of the Village's sanitary sewer collections system and treatment lagoons and outfall systems with respect to existing and future development. There was little existing flow data available for the sewer system, so the Consultants had to rely on fairly conservative per capita flows to model system capacity.

The modelling did not identify any particular capacity issue in either the sewer collection system, treatment system (lagoons), or outfall resulting from future development consistent with the OCP. The recommendations primarily focused on a number of maintenance related issues such as sewer mains with insufficient grade, the need to replace a large number of Asbestos Concrete sewer mains which were commonly used in systems installed in the 1970's, and pump station maintenance related recommendations.

There were no specific recommendations that can be attributed to development pressures.

3. Water System Capacity

The Water System Assessment reviewed the capacity of the Village's water treatment, storage, and distribution system with respect to existing and future development. This study builds on other previous studies which address issues of water storage and treatment process improvements which were recommended to provide additional water storage for fire protection purposes, and to reduce water consumption.

There are a number of system deficiencies that have been identified with respect to the water system, as follows:

a) Reservoir Storage

The existing reservoir is sized sufficiently to accommodate residential single family fire flows, but there is insufficient storage to supply fire flows to industry standards (MMCD, Fire Underwriters Society) for the higher fire flow requirements of Commercial, Industrial, large Institutional, and potentially also Multi Family residential.

An additional reservoir (twining) is recommended to deal with this issue.

The cost of an additional reservoir is significant, and likely would be excessive to any developer wishing to propose any of the higher building types which require the higher fire flows. It may be possible for a developer to construct a building in a way that reduces the fire flow requirement – this may be an option for some developments – commercial/multi family developments can also register restrictive covenants that similarly restrict building on the property to a configuration that can be accommodated within existing fire flow capabilities.

This will eventually become an issue when new commercial/industrial developments make application to development – this may require a significant contribution from a developer to fund the work and/or a significant expenditure that would have to recovered from water user rates.

b) Requirement for a future Upper Pressure Zone

Essentially all of the existing development within the Village is contained within the Village's single lower pressure zone. However, there is a significant portion of the Village that is at an elevation

that cannot be serviced from the existing reservoir (above an approximate elevation of 35 meters). Development in these areas will require the establishment of a new pressure zone, which requires additional water pump stations, storage, and provision for fire protection.

It may be possible for smaller developments to be able to afford to undertake these works at the developer's cost, but it is likely that this will not be occurring for some time due to the extra cost of servicing. The Village also needs to consider if they wish to take over these additional systems, particularly if the developments are relatively small. Bare Land Strata developments may be feasible in this situation, where the residents of the development pay for the extra cost of servicing, including the maintenance of the systems, but this can lead to scattered independent systems that are expensive to maintain.

The report recommends additional engineering work be undertaken if development is to be extended into this upper pressure zone. This can be a condition of a rezoning application in these areas, however Council should be aware that there is a significant property located in the upper pressure zone that is already zoned for R-1 (single family residential) use, that would need to provide a solution to this issue if it was to develop (subdivide).

c) Maximum Day Flows

As Council is aware from previous studies and Engineering work done over the last 2-3 years, during the summer months, maximum daily water consumption on certain days has been recorded to reach close to the daily treatment plant capacity of 20 liters per second. This study examined a range of flow records during the years 2020-2022 and concludes that there is spare capacity to accommodate anywhere between 77 and 248 additional single family dwelling unit equivalents (Table 2 of the study, Page 13). The uncertainty in this calculation relates to the lack of accurate flow monitoring equipment at the Treatment Plant, along with equipment to record flows on a frequent basis during the critical summer months.

The report recommends the expenditure of approximately $10,000-$15,000 for additional flow measuring and recording equipment to better determine the exact remaining capacity in the system. Additional flow recording equipment is also recommended to be placed at the log sort water meter to record those flows at the same time, which contributes significantly to the maximum day water demands.

The significance of the maximum daily flow limit is that if daily flows exceed the capacity of the treatment plant, reservoir levels will drop during the period of peak demand, which cannot be recovered over night or when flows reduce (sprinklers are turned off etc.). If this situation is allowed to worsen, it could lead to a lack of water in the system, or more likely insufficient water for fire protection purposes, both of which are serious issues.

Notwithstanding this, due to the lack of definitive flow data, staff consider it pre-mature to conclude that immediate development restrictions are required in the short term, however, it is recommended that the additional flow measuring and recording equipment be obtained and installed by the Village as soon as reasonably possible , and in the meantime, staff should also continue to record flow data manually once every 24 hours during the summer of 2023 to provide additional flow data for this analysis.

d) Deficiencies in System Pressure residuals during Fire flows

The study analyzed the existing network to determine if sufficient residual pressures exist in the system during fire flow demands – the typical standard is that every service shall have at least 20 psi residual pressure at the property line during fire flow situations to prevent negative pressures in the system or the homes being serviced for health reasons.

There are a number of areas, mostly at the extremes of the system (north and south ends of the system) that suffer from low residuals fire flow pressures. It is recommended that developments in these areas conduct fire flow testing prior to approval to verify that adequate pressures exist during fire flow situations prior to approval of the development. Additional watermains or upsizing of watermains typically resolve this issue. Placing commercial/industrial and other uses which require the higher fire flows closer to the reservoir (centre of the Village) will also assist with this issue.

e) High flow velocities during fire flows

In addition to the lower residual pressures during a fire flow situation, high flow velocities also occur if pipe sizes are too small. Upsizing pipes similar to the previous recommendation will often resolve this issue.

STAFF RECOMMENDATIONS

THAT Council receive the Sewer and Water Capacity Studies staff report for information and discussion.

THAT Council instruct staff to examine options for funding the water metering and recording work recommended in the Water Study to more accurately determine the current maximum day flows, to facilitate future consideration of the impact of future development on the capacity of the water treatment system to provide for maximum day flows; and

with respect to item 3 c) in the staff report,

THAT Council consider allowing development applications to proceed to a limit of 77 residential lots as an interim measure until such time as additional flow recording data is available, upon which the matter can be re-evaluated; and

FINALLY THAT recognizing that in terms of subdivision approvals, which is solely within the purview of the Approving Officer, Council wishes to advise the Approving Officer that on an interim basis, Council would consider subdivisions consistent with a 77 lot equivalent increase in density in the Public Interest.

Respectfully submitted,

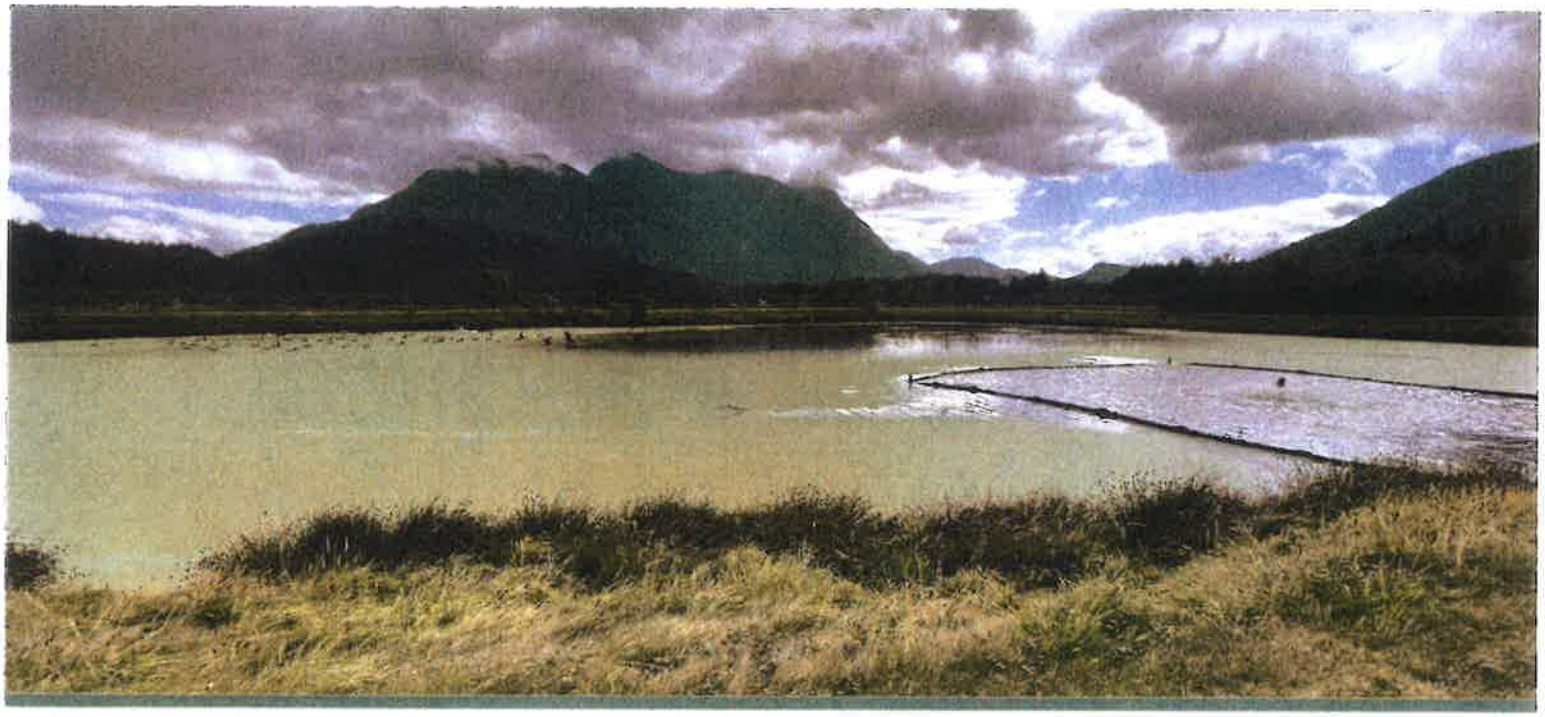
John Manson, P.Eng.
Approving Officer

Attachments:

- ***Sayward Sanitary System Assessment, dated June 2, 2023;***
- ***Sayward Water System Assessment (Rev 1), dated June 2, 2023.***

McElhanney

BEST MANAGED COMPANIES CANADA



Sayward Sanitary System Assessment

June 2, 2023

Submitted to: Village of Sayward
Prepared by McElhanney

Contact
Dwayne
Project Manager
250-287-7799
dcybak@mcelhanney.com

Address
1196 Dogwood Street,
Campbell River BC
Canada, V9W 3A2

Our file: 2221-49513-00

Your Challenge.
Our Passion.

Our File: 2221-49513-00

June 2, 2023

The Village of Sayward
652 H'Kusan Way, PO Box 29,
Sayward, BC, V0P 1R0

Attention: Keir Gervais

Sayward Sanitary System Assessment

Find enclosed a copy of the report for the Sayward Sanitary System Assessment. Please contact the undersigned should you have any questions regarding this report.

Sincerely,

Prepared by:

gWatson

Gabrielle Watson, EIT
gwatson@mcelhanney.com
250-287-7799

Reviewed by:

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
D. R. CYBAK
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2023-06-02

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PERMIT TO PRACTICE
McElhanney Ltd.
PERMIT NUMBER: 1003299
Engineers and Geoscientists of BC

Contents

1. Introduction

The Village of Sayward retained McElhanney Ltd. to develop a Sanitary Master Plan, which included building a detailed sanitary model of the Village's sanitary collection system and performing hydraulic analyses for both existing and future growth scenarios. The study aimed to review the existing sanitary sewer system and identify any potential current or future deficiencies in terms of capacity and performance. In addition to the hydraulic analyses, a lift station assessment and a lagoon capacity assessment (Appendix B) were conducted to confirm acceptable performance. The overall goal of the study was to provide the Village with a comprehensive assessment of the sanitary sewer system and ensure that it meets the needs of the community for both the present and future growth scenarios.

2. Existing Sanitary System

Sayward's sanitary system consists of approximately 6635 meters of gravity sewer, approximately 1845 meters of force main, five lift stations, and a lagoon (see **Figure 1** below).

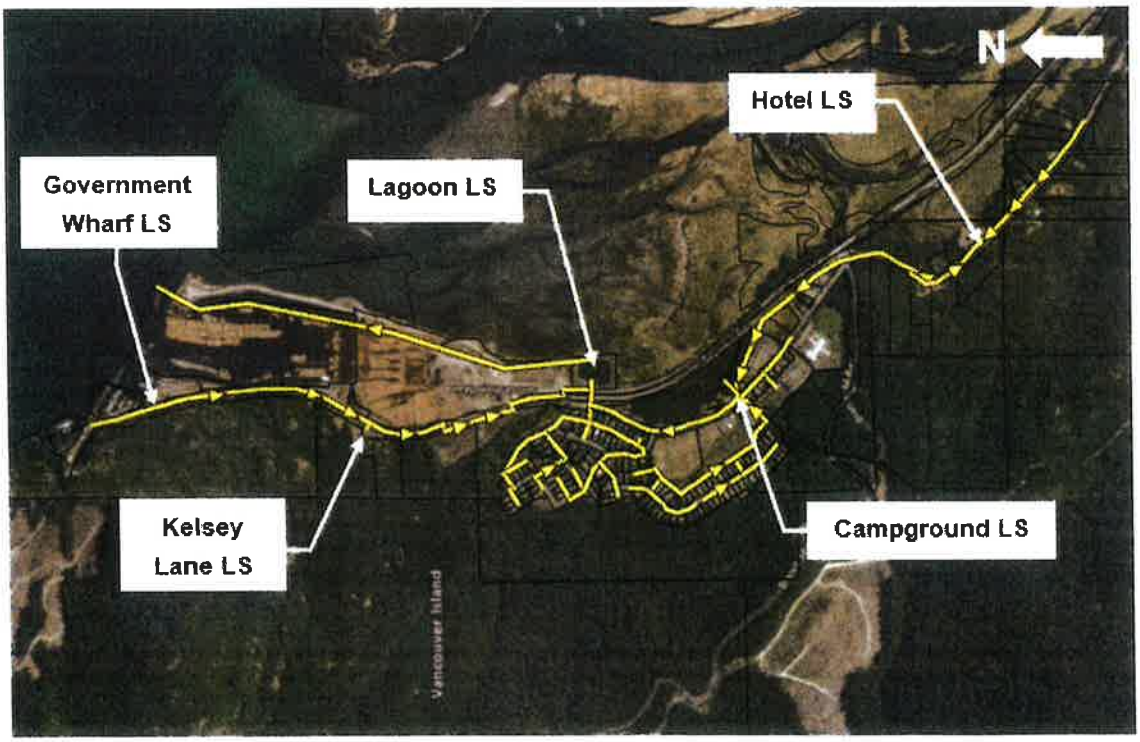

Figure 1: Sayward Sanitary Network

2.1. GRAVITY SEWERS

Between 1968 and 1974, when the Village saw a surge in residential development, the majority of the sanitary system was installed using 150mm and 200mm diameter asbestos concrete (AC) pipe. Additional pipes were added to the system in 1990 and 2004 along Sayward Road at both the south and north ends of town using 200mm diameter polyvinyl chloride (PVC) pipe. Overall, the sanitary system is primarily comprised of AC pipes with some PVC pipes at the south and north ends of the town.

2.2. LIFT STATIONS AND FORCE MAINS

The locations of the five lift stations in the sanitary network of the Village of Sayward are shown in Figure 2. In 1968 and 1974, as part of the sanitary network expansion, two lift stations, namely the campground lift station and the lagoon lift station, were built. At that time, a 200mm diameter AC force main was constructed along Kelsey Way, which connects to the gravity sewer located just north of the lagoon. The hotel lift station was constructed in 1990, as part of the sanitary sewer extension down Sayward Road south of the Village. The hotel lift station uses a 100mm PVC force main to pump sewage into a 200mm PVC gravity main that discharges into the campground lift station. The last two lift stations were built in 2004 at the north end of the Village along Sayward Road. A 100mm high density polyethylene (HDPE) force main connects the two lift stations to the existing sanitary system. The sewage is conveyed through gravity sewer mains into the lagoon. Each lift station has different pump sizes and models. The size and model of each lift stations pumps are as follows:

1. Campground Lift Station: 2 x 2.2 HP – Flygt NT 3085.182
2. Lagoon Lift Station: 1 x 5 HP – Flygt NP 3102.180
3. Hotel Lift Station: 2 x 2.2 HP – Flygt 3085.181
4. Government Wharf Lift Station: 2 x 7.5 HP – Flygt CP 3127
5. Kelsey Lane Lift Station: 2 x 2.4 HP – Flygt CP 3085

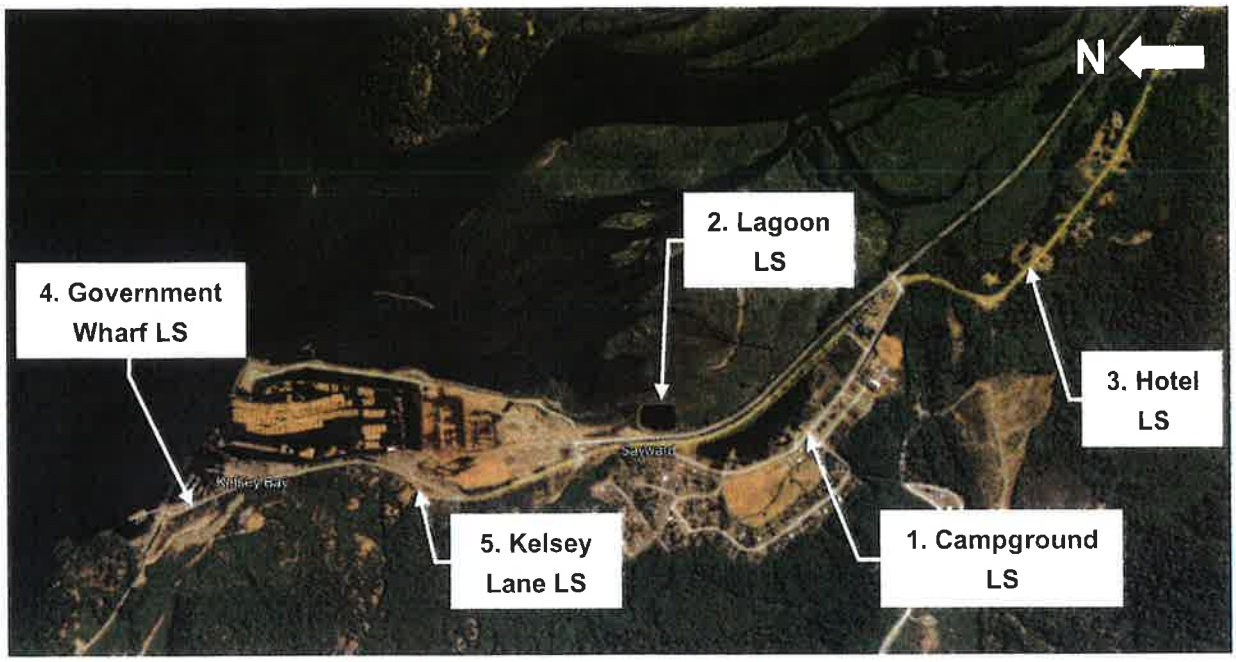

Figure 2: Location of Lift Stations

2.3. LAGOON

A partial-mix aerated lagoon, constructed in 1964, is responsible for treating the sanitary waste generated by the Village. The lagoon has a total area of 7600m2 and can process between 11700m3 and 12750m3 of wastewater. To discharge the treated wastewater, the Village has a permit to release a maximum annual average of 350m3/day from the lagoon into a marine outfall, as shown in **Figure 3**. A technical memo by McElhanney Ltd was completed to evaluate the lagoon's capacity and regulatory compliance. This memo, which is included as Appendix B, provides further details on the lagoon's specifications. The conclusions from the technical memo are summarized in the following section.

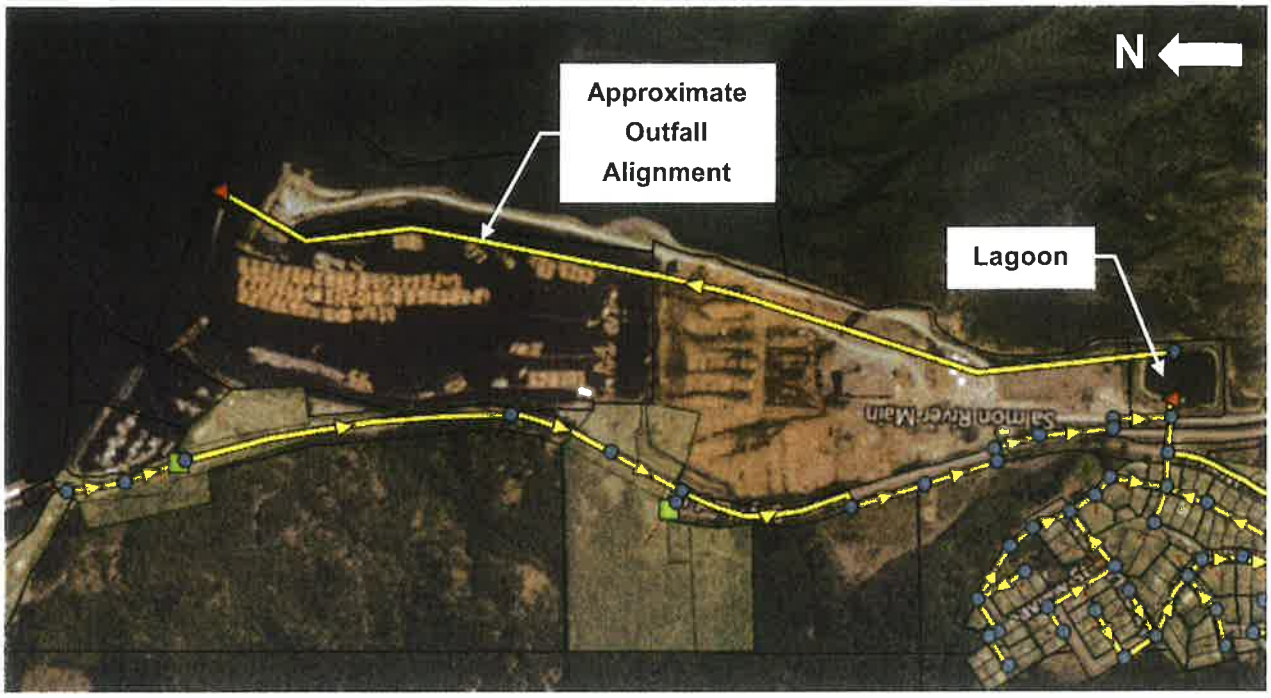

Figure 3: Lagoon and Outfall Locations

3. Lagoon Capacity Analysis

A technical memo detailing the lagoon capacity analysis completed by McElhanney Ltd. can be found attached as **Appendix B**. The conclusions from the report are as follows:

- Permitted flow is not expected to be exceeded due to the planned developments in Sayward if the ratio of average annual flow to ADWF (Average Dry Weather Flow) remains at the current level.
- The projected organic loadings, oxidation requirements, and detention times in the Sayward lagoon are in general compliance with the recommended design guidelines.
- The aeration system is sufficient to meet projected aeration requirements. There is a provision for an additional aerator in the lagoon design should it be required.
- Based on the historical effluent quality data, the lagoon treatment has been consistently meeting permit criteria. Although the system was not originally designed to meet Federal *Wastewater Systems Effluent Regulations* (WSER) criteria, the lagoon treatment also consistently meets WSER criteria in terms of TSS and BOD treatment.
- Effluent toxicity data is insufficient and additional testing is required to confirm compliance with WSER regulation that will be required in the future.
- In 2021, the lagoon treatment operated at approximately 67% (235 m^3/day) of the permitted average annual flow (350 m^3/day).

- The existing Sayward lagoon treatment in its current configuration is considered adequate to accommodate the planned growth in the community (see memo for details on planned growth accounted for).
- The existing discharge permit is limited to a maximum annual average of 350m^3/day. However, the Village can apply to amend the permit by an additional 10% without triggering a requirement for compliance with the MWR, resulting in an ultimate discharge of 385m^3/day.

4. Lift Station Condition assessments

On September 16th, 2022, an inspection of all five lift stations in Sayward was carried out by McElhanney. These lift stations had previously undergone inspection by North Island Pumps in 2020, and the inspection sheets for all five pumps have been provided in Appendix C. The aim of McElhanney's inspections was to assess the conditions of the lift stations and identify any immediate deficiencies.

4.1. GOVERNMENT WHARF LIFT STATION

The government wharf lift station, located in the northernmost part of the Village, serves a limited number of properties and the wharf area. It has been designed to be the outlet location for any potential future land development in that area. The lift station features a duplex pumping system, which includes two Flygt 3127~180 7.5 hp pumps, an emergency backup generator, and a modern control panel.

During the inspection, the public works crew reported no issues with the lift station, which cycles very infrequently due to the low demand levels. A surface review of the wet well and associated equipment revealed that the station was in good operating condition. However, due to the lack of inflow to the station, it was not possible to complete an inflow or pumping flow assessment at the time of inspection.

A strong odour was detected when the hatch of the wet well was opened. This is likely due to the extended time periods between pumping events. Additionally, North Island Pumps had inspected the pumps at the station in 2020 and identified that some of the plastic coating from the impeller was separating from the cast iron, causing debris to accumulate in the impeller.

4.2. KELSEY LANE LIFT STATION

The Kelsey Lane lift station, which services a few single-family properties, is equipped with a duplex pumping system consisting of two (2) Flygt 3085.182 2.4 hp pumps, an emergency backup generator, and a modern control panel. During the inspection conducted by the public works crew, no issues were observed with the lift station.

The station operates infrequently due to the low demand levels, and a surface review of the wet well and associated equipment indicated that the station was in good operating condition. However, an inflow or pumping flow assessment could not be performed due to the low inflow to the station. The run frequency of the station is typically 2-3 days, as noted by the public works crew. When the hatch was opened, a

strong odor was present at the wet well, which is believed to be caused by the long duration between pumping events.

The North Island Pump inspection revealed multiple mechanical and electrical issues with the station, including the improper seating of pump #1, which caused some overloads at the station, and some problems with the breakers in the panel. The inspection reports from North Island Pump are included as an appendix to this memorandum.

4.3. CAMPGROUND LIFT STATION

The Campground Lift Station is distinguished from other Village lift stations by its utilization of a dry well area for the pumps and valves, which are still considered to be contained within a confined space area, and surface observations were the only means of field review. No issues were noted by the public works crew during the inspection. The lift station is equipped with a duplex pumping system, consisting of two (2) Flygt 3085~182 2.2 hp pumps, and it is furnished with an emergency backup generator and modern control panel. As the largest lift station in the community, it serves the largest demand and is downstream from the Hotel Lift station, servicing the majority of the Village area. During the field investigation conducted by McElhanney, inflow and pump down measurements were taken. Onsite measurements determined that the wet well diameter was 6' and the total wet well depth was 13'. The existing PLC was utilized to track the wet well level over time, which can then be used to estimate flow rates. The following results were obtained:

- The inflow rate was measured at 1.1 L/s
- The pumping rate was measured at 12.2 L/s

In 2021, a minor buildup of grease at the high-level mark in the wet well was noted, and a small amount of water on the floor of the dry well was also observed. North Island Pumps conducted a mechanical/electrical inspection in 2020 and found that the pumps were in good operating condition. However, an electrical anomaly with the breakers in the control panel was noted. The inspection reports by North Island Pumps have been appended to this memorandum.

4.4. HOTEL LIFT STATION

The lift station is equipped with a duplex pumping system, consisting of two (2) Flygt 3085~181 2.2 hp pumps. According to the North Island Pumps inspection, the pumps were found to be in good condition, although the pump handles were found to be in poor condition. As a result, it was recommended by North Island Pumps that the pumps be rebuilt in the near future. The inspection also revealed that the concrete wet well was in good condition. Since there was a lack of inflow to the station, an inflow or pumping flow assessment could not be conducted during the inspection. However, the public works staff noted that there is more flow into the Hotel Lift Station than at the Government Wharf and Kelsey Lane lift stations. Therefore, this station does not experience the same odor issues as those locations.

4.5. LAGOON LIFT STATION

The Lagoon Lift Station is a simplex operating setup, with the controls located on the west side of the Lagoon and the wet well and pump on the west side. According to the North Island Pump Mechanical inspection, the pump is in good operating condition. The civil inspection also determined that the concrete in the wet well, the guide rails, and other visible lift station opportunities were in good operating condition at the time of inspection. No issues were reported to McElhanney during the inspection, and the pump has sufficient capacity to maintain proper levels in the lagoon.

5. Sanitary System Modelling

The PCSWMM software was used to configure a hydraulic model of the sewer collection system, which includes the lift stations and force mains. PCSWMM is a hydrodynamic pipe network modelling program based on the United States Environmental Protection Agency (USEPA) Stormwater Management Model (SWMM). In addition to its ability to model storm runoff and flows through a storm collection system, it can also simulate sanitary sewer flows with inflow and infiltration (I&I) parameters. The inputs used to create the PCSWMM model are detailed in the following sections.

5.1. DATA SOURCES

The following data sources were used by McElhanney Ltd. in the creation of the *PCSWMM* based sanitary model used for this study:

- **MacMillan Bloedel Limited Record Drawings:** Existing record drawings developed by MacMillan Bloedel Limited were obtained by McElhanney Ltd. These drawings included the following information on the water infrastructure installed as part of the Kelsey Bay Townsite Development:
    - Pipe main and service locations;
    - Pipe elevation profile;
    - Pipe sizes; and
    - Pipe material.
- **Highland Record Drawings:** Existing record drawings developed by Highland Engineering and Surveying were obtained by McElhanney Ltd. These drawings included the following information on the sanitary infrastructure installed along Sayward Road from the Log Sort to Kelsey Bay and along Kelsey Lane and Sayward Road south of the city center:
    - Pipe locations;
    - Pipe elevation profile;
    - Pipe sizes; and
    - Pipe material.

- **Village of Sayward GIS Mapping:** Data from the Village of Sayward's GIS Mapping system was provided to McElhanney Ltd. Data included:
    - Parcels;
    - Current zoning; and
    - Locations of sanitary mains and lift stations.
- **Site Visit:** A site visit was completed on September 16, 2022. At this time lift station condition assessments were completed for all five lift stations.
- **LidarBC Data:** Lidar data was obtained through the British Columbia's Open LiDAR Data Portal to estimate ground elevations and obtain assumed water main elevations.

5.2. SYSTEM ANALYSIS SCENARIOS

Two different scenarios were considered when modelling the Sayward sanitary system:

1. The system as it currently exists; and
2. The existing system with predicted future development.

The existing scenario considered the existing infrastructure and demands based on what was physically in place at the time of this report. The future growth scenario, also known as a build-out scenario, took into account higher density for future development based on current zoning and known planned developments. The purpose of analyzing the future growth scenario was to determine if the capacity of the existing infrastructure would be exceeded by increasing the demands on the system. It was not determined if the planned developments were feasible, only if adding the additional demands from the development would trigger upgrades on existing infrastructure.

5.3. MODEL SETUP

After adding the gravity sewers, force mains, and lift stations to the PCSWMM model, various factors are incorporated to reflect the physical attributes of the system, such as pipe friction factors that are dependent on the pipes' material and age.

The PCSWMM model is based on the following assumptions:

- All inflow is inserted into the model at manholes;
- Under existing scenario conditions, vacant parcels do not contribute to the existing sanitary system analysis;
- Sewer systems are free of dams, clogs, sags and/or collapsed (failed) structures; and
- Sewer systems are uninhibited by fats, oils, and grease (FOG) buildup.

5.4. MODEL INPUTS

Flows within the sanitary sewers are generally the result of two sources:

1. Flows from residential, commercial, institutional, and industrial system users which is referred to as the average daily dry weather flow (ADWF).

2. Ground water infiltration and system inflows (I&I).

In the absence of detailed sanitary flow records, flows have been estimated based on the Master Municipal Construction Documents (MMCD) design guidelines to calculate I&I and ADWF for the Village of Sayward.

Appendix D contains detailed information for the Village on sanitary demands and **Appendix E** contains a map showing where in the system demands were applied.

The ADWF was estimated for residential properties based on an assumed unit inflow rate per user (per capita). For commercial, institutional, and industrial properties the ADWF is estimated based on an equivalent population unit inflow rate per hectare. ADWF unit rates used for the Village of Sayward model are shown in **Table 1** below.

Table 1: PCSWMM Model Parameters

Parameter	Value used in Existing Scenario	Value used in Buildout Scenario
Residential ADWF	350 L/d/c	350 L/d/c
Commercial, Institutional, and Industrial ADWF	25,000 L/ha/day	25,000 L/ha/day
Peaking Factor	3.2	2.84
Average Population Density per Household	2.0	3.0
I & I	**0.12 L/s/ha**	**0.12 L/s/ha**

The maximum flow in sanitary sewage that can occur in a day is estimated using a peaking factor. The formula provided in the MMCD design guidelines, which is based on the residential and non-residential equivalent population, serves as the basis for determining the peaking factor. The PDWF is obtained by multiplying the peaking factor with the ADWF. It is noteworthy that, in the buildout scenario, the peaking factor is slightly lower than in the existing scenario due to the increase in population.

Two components of the sewage discharges during wet weather are provided by the I&I values for discharge:

1. Baseline flow throughout the Village, which takes into account leaky mains, leaking water fixtures, and groundwater ingress through pipe joints, breaks, and/or manholes.

2. Inrush of rainwater through storm cross-connections, broken manhole lids, and various other sources that allow rainwater to enter the system of pipes.

I&I typically varies across a sanitary sewer shed, as older neighbourhoods tend to produce higher levels of I&I than newer neighbourhoods. Given that the majority of the Village's sanitary infrastructure is older pipe (>25 years or older), an I&I unit rate of 0.12 L/s/ha based on the gross tributary area was used as given in the MMCD design guidelines to estimate inflow to the sanitary sewer system.

In addition to analyzing the existing demands on the water network, the build-out scenario was examined by increasing the demands for each property to the maximum allowable as per the current zoning. This included increasing the population density from 2.0 to 3.0 persons per single family residence to account for accessory uses such as bed and breakfasts, secondary suites, and boarding houses included in the residential zoning. Vacant properties were added, assuming demand based on the zoning, as well as any planned developments (rezoning or subdivision applications) that are known to likely be built (see **Figure 4**). Known planned developments that were included in the model are:

1. The proposed rezoning and subdivision of 18 Sayward Road,

2. Subdivision of District Lot 1604, which is zoned for residential development (R-1), and

3. Subdivision 779 Sayward Road, which is also zoned R-1.

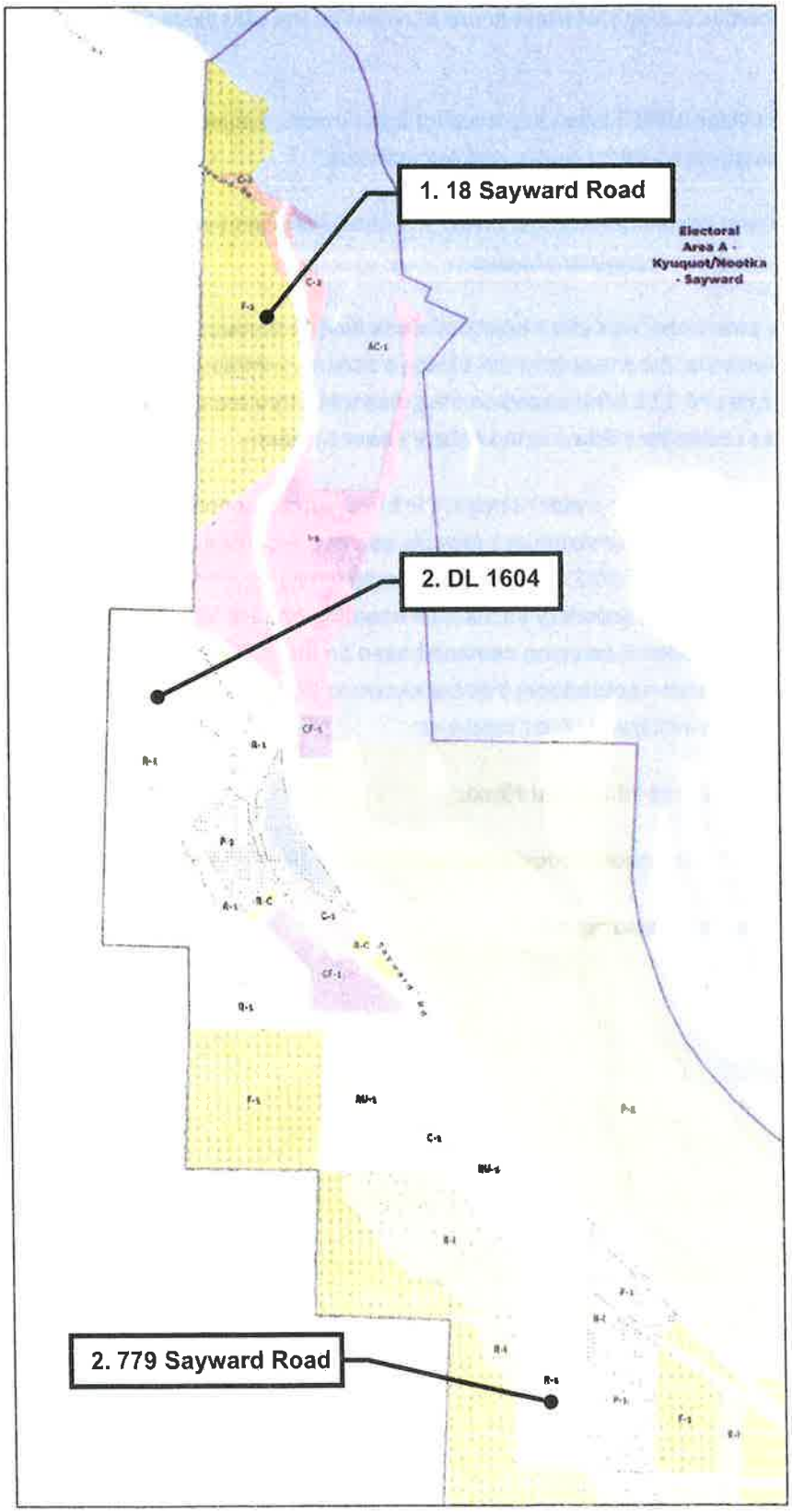

Figure 4: Planned Developments in Sayward

Demands for 18 Sayward Road were estimated based on a preliminary site plan that has been developed in support of the rezoning application currently underway for the property. An estimated 65 dwelling units were allocated for development.

Demands for DL 1604 were estimated based on the minimum lot size allowed by Sayward's residential (R-1) zoning of 668m^2 and a factor of 0.8 to account for roads. Based on this, a maximum of 255 lots is estimated, and the demand for these was divided between three possible connection points to the existing water network.

An estimate of 25 dwelling units was assigned for 779 Sayward Road in the model, which was based on information provided by the Village.

5.5. MODEL CALIBRATION & VERIFICATION

As the physical data used in the model is based on record drawings and demand data has been estimated using MMCD Design Guidelines, the model is inherently conservative in nature. Therefore, recommendations based on the model results should only be used for planning applications. Future calibration would be necessary with measured data before commencing with detailed design and physical upgrades.

However, some degree of model verification was possible at the campground lift station and lagoon outfall. At the campground lift station, the measured pumping rate was compared to the model pumping rate, which estimated the average pumping rate at 14.56 L/s, relatively comparable to the measured rate of 12.2 L/s, with a reasonable level of error (19.2%). The lower measured pump rate is likely due to wear of the pump over time.

The lagoon outfall has volume readings of treated effluent released each day. In 2021, an annual average flow of 235 m3/day and a peak daily flow of 345 m3/day were recorded, which differs from the model's estimate of a daily volume of 665 m3/day (not applying the peaking factor) at the outfall to the lagoon. The large discrepancy between the average measured daily flow volume (183%) is likely due in part to the conservative nature of the MMCD demand estimates. The ADWF and I&I unit estimates are probably higher compared to reality. Additionally, some properties are connected to individual septic systems, but it is not known which or how many properties this represents. Therefore, there is an overestimation in the number of users on the system.

To refine and calibrate the sanitary model further, flow monitoring data would be necessary to better determine the ADWF and I&I rates for the Sayward sanitary system.

5.6. PERFORMANCE CRITERIA

To evaluate the performance of the system, the PDWF and I&I inflows are applied throughout the sanitary system at manholes, and based on this information, the PCSWMM model can be used to determine capacity deficiencies.

The MMCD design guidelines state that sewers flowing more than 80% full are considered to be very near capacity and should be closely monitored. The guidelines also recommend upgrading pipes showing conditions of surcharging levels. The HGL in the model was utilized to determine these maximum flow depth ratios, and for this assessment, exceedance of the flow depth ratio is considered a minor deficiency, while surcharging condition indicates a major deficiency in the system.

Regarding capacity and surcharging, the sanitary system sewers should be designed and constructed with pipe grades that ensure the minimum velocity of 0.60 m/s is met, as per the MMCD design guidelines. Poorly graded sewers can settle and end up with sags. Additionally, when the minimum velocity is not met, excessive FOG build-up can occur, which can restrict flows and lead to backing up or even blocking the system.

6. Sanitary System Analysis

6.1. DEFICIENCIES

Despite the conservative flows used in the modeling due to a lack of measured data, no capacity or surcharging issues were identified in either the existing or buildout scenario models. Thus, Sayward's sanitary network has adequate capacity to accommodate current and future development. However, some minor maintenance and geometric deficiencies were identified.

Based on record drawings, several locations where the sanitary sewers are believed to be poorly graded were identified. Poorly graded sewers can result in maintenance issues and may require frequent flushing or unplugging. Sanitary sewer pipes with a grade of less than one percent were identified and are shown in purple in **Figure 5**.

Figure 5: Sanitary Sewers with less than 1 percent grade shown in purple

As noted earlier, AC pipe constitutes the bulk of the sanitary system, and it is susceptible to cracking, which can lead to I&I entering the sanitary system. An I&I study previously conducted by the Village has identified areas in poor condition that require upgrading. It is recommended that the system be improved as funds become available.

7. Recommendations

In light of the identified deficiencies, the following recommendations have been made to improve the sanitary system's performance and ensure its long-term sustainability:

- It is recommended that sewers identified as poorly graded should be monitored regularly and flushed or vacuumed as necessary to prevent maintenance issues.
- AC pipes should be abandoned and upgraded to more durable materials as funding becomes available to reduce the risk of I&I entering the system.
- To comply with MMCD design guidelines, any 150mm pipe that needs to be replaced should be upgraded to a 200mm diameter where appropriate.
- Implementation of additional flow monitoring throughout the system and at pump stations would improve the accuracy of the sanitary model and facilitate future calibration.

- It is also recommended to conduct additional testing to obtain effluent toxicity data for the lagoon to ensure compliance with WSER regulations.
- Lift stations should be repaired as per the comments provided in North Island Pumps inspection sheets to maintain their functionality and prevent potential issues.

By implementing these recommendations, the Sayward sanitary system will be better equipped to meet the needs of its users, minimize the risk of failures, and ensure compliance with regulatory requirements.

8. Cost

In order to provide the Village with an estimate of the cost to replace pipes and repair lift stations, a class C cost estimate was completed as shown in **Table 2** below. This allows the Village to calculate the cost of replacement that can be done based on funding available or per desired staging.

Table 2: Unit Cost to Upgrade Sanitary Sewer Pipes and Manholes

	Quantity	Unit	Unit Price	Cost
Gravity Sewer[1]	6636	LM	$1000	$6.6M
Force Mains[2]	1881	LM	$900	$1.7M
Manholes	84	EA	$10,000	$840,000
Lift Station Repairs	1	LS	$112,200	$112,500
			Construction Cost Subtotal	$9.3M
			General Contingency (30%)	$2.8M
			Engineering and administration allowance (20%)	$1.9M
			Total Cost	$14M

[1] *Assuming replacement pipe size of 200mm*
[2] *Assuming replacement pipe size of 100mm to 150mm*

9. Conclusion

The sanitary pipe system in Sayward was found to have no major capacity or performance deficiencies, nor are any expected when accounting for the possibility of significant development. It is recommended that infrastructure spending in Sayward be focused on the replacement of aging AC pipes and the maintenance of poorly graded sewers. The lagoon was found to have adequate capacity for existing and near future development needs, although the current discharge permit, which limits the size of the lagoon, will eventually be the limiting factor for future development. All pumps and wet wells in the lift stations were determined to be functioning properly. Some electrical and mechanical issues were noted in the North Island inspections completed previously, and it is recommended that these issues be addressed.

Appendix A

Statement of Limitations

Statement of Limitations

Use of this Report. This report was prepared by McElhanney Ltd. ("**McElhanney**") for the particular site, design objective, development and purpose (the "**Project**") described in this report and for the exclusive use of the client identified in this report (the "**Client**"). The data, interpretations and recommendations pertain to the Project and are not applicable to any other project or site location and this report may not be reproduced, used or relied upon, in whole or in part, by a party other than the Client, without the prior written consent of McElhanney. The Client may provide copies of this report to its affiliates, contractors, subcontractors and regulatory authorities for use in relation to and in connection with the Project provided that any reliance, unauthorized use, and/or decisions made based on the information contained within this report are at the sole risk of such parties. McElhanney will not be responsible for the use of this report on projects other than the Project, where this report or the contents hereof have been modified without McElhanney's consent, to the extent that the content is in the nature of an opinion, and if the report is preliminary or draft. This is a technical report and is not a legal representation or interpretation of laws, rules, regulations, or policies of governmental agencies.

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Effect of Changes. All evaluations and conclusions stated in this report are based on facts, observations, site-specific details, legislation and regulations as they existed at the time of the site assessment/report preparation. Some conditions are subject to change over time and the Client recognizes that the passage of time, natural occurrences, and direct or indirect human intervention at or near the site may substantially alter such evaluations and conclusions.. McElhanney should be requested to re-evaluate the conclusions of this report and to provide amendments as required prior to any reliance upon the information presented herein upon any of the following events: a) any changes (or possible changes) as to the site, purpose, or development plans upon which this report was based, b) any changes to applicable laws subsequent to the issuance of the report, c) new information is discovered in the future during site excavations, construction, building demolition or other activities, or d) additional subsurface assessments or testing conducted by others.

Independent Judgments. McElhanney will not be responsible for the independent conclusions, interpretations, interpolations and/or decisions of the Client, or others, who may come into possession of this report, or any part thereof. This restriction of liability includes decisions made to purchase, finance or sell land or with respect to public offerings for the sale of securities.

Appendix B

Lagoon Capacity Assessment Memo

Our File: 2221-49513-00

TECHNICAL MEMO

To	From
Internal Memo	Dragan Rokic, P.Eng. McElhanney Ltd., Victoria
Re	**Date**
Sayward Wastewater Treatment Lagoon Capacity Assessment	October 14, 2022

The purpose of this technical memorandum is to provide a review and capacity assessment of the wastewater treatment lagoon servicing the Village of Sayward with consideration for planned future developments.

1. Introduction

The Village of Sayward is located on the east coast of Vancouver Island, approximately 75 km north of the City of Campbell River on Highway 19 and within the Sayward Valley. The Village is situated at the mouth of the Salmon River, within the traditional territories of the K'ómoks First Nation, We Wai Kai First Nation, and Wei Wai Kum First Nation. The Village boundary encompasses 4.72 km^2 of land (Figure 1, *Urban Systems, OCP Draft, 2020*).

Figure 1 Boundary Map of the Village of Sayward (Urban Systems, OCP Draft, 2020)

2. Population

Sayward's population has remained relatively stable over the last few censuses fluctuating between 311 and 334 people, as summarized in Table 1.

Table 1 Sayward Population (Census Canada, 2006-2021)

Year	Population
2021	334
2016	311
2011	317
2006	311

According to the most recently published census data, Sayward had a population of 334 people in 2021 (*Statistics Canada, Census Data, 2021*). That is an increase of 7.4% in comparison to 2016 when there were 311 people in the village. The Census data indicate that there are 182 private dwellings in Sayward, 166 of which are occupied by usual (permanent) residents and 16 occupied by seasonal residents. The ratio of permanently occupied homes to the total number of homes is 91.2%. The average home occupancy is estimated at 2.0 people per home based on permanently occupied homes (*Statistics*

Canada, Census Data, 2021). Single-detached houses make up 80% of the total private dwellings in Sayward.

If we assume that 16 homes with seasonal residents are primarily occupied during summer months and average seasonal occupancy of 4 people/home, then the seasonal population is estimated at approximately 64 people.

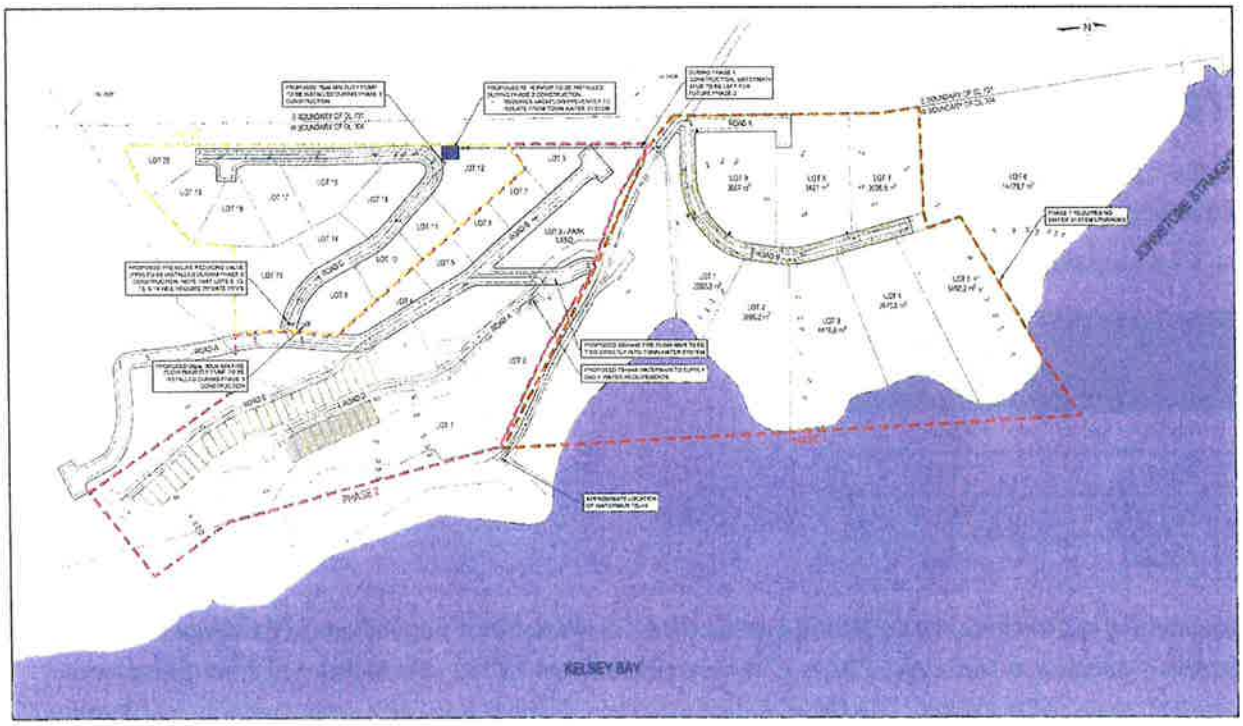
The maximum population of the Village at any given time, based on both permanent and seasonal residents, is currently estimated at 398 people.

3. Planned Developments

There is a new multi-phase, mixed residential development planned in Kelsey Bay (Figure 2, *McElhanney, 2020*). Preliminary plans from October 2022 indicate that the development may include:

- 9 lots ranging in size from 2,553 m^2 to 5,450 m^2 (Phase 1);
- 39 multi-family lots, and potentially more (Phase 2); and
- 20 lots of unknown size (Phase 3).

Figure 2 Planned Kelsey Bay Development (McElhanney, 2020)



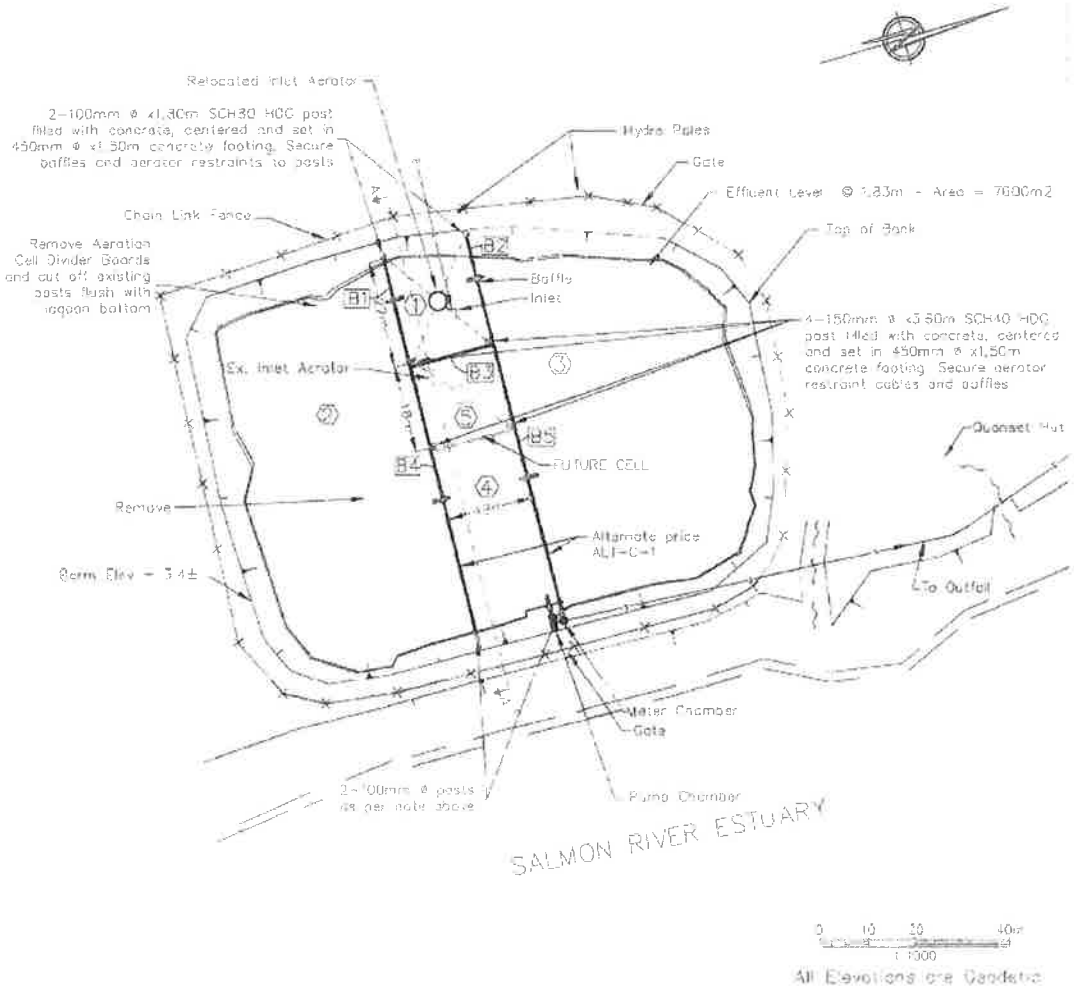
The total number of lots, based on current preliminary plans, is 68. If we assume that detached homes will be developed on each lot, the same ratio of permanent to seasonal population, and home occupancy from Section 2, the Kelsey Bay development might have the total population of 150 people at full buildout.

4. Wastewater Management

Most properties in the Village are serviced by a sanitary sewer system while the remaining properties rely on traditional septic systems and ground disposal fields *(Urban Systems, OCP Draft, 2020)*. The ratio of serviced properties and those on septic systems is unknown.

Collected wastewater from the serviced properties is treated in a wastewater lagoon prior to effluent marine discharge into Johnstone Straight. The Sayward lagoon is a partial-mix, aerated lagoon of earthen construction, built in 1964, consisting of a single cell currently partitioned in two sections by baffle curtains (Figure 3). These baffle curtains separate aerated cell from the quiescent cell where the final solids separation takes place prior to effluent discharge. The baffle curtains were installed around 2011 to replace the original divider boards (*Environetics, 2011*).

Figure 3 Sayward Lagoon (HES, 2011)



The aerated cell occupies approximately 5% of the total lagoon surface while the quiescent cell occupies the balance of 95% (refer to Figure 3). The quiescent cell, due its size and depth of 1.9 m (refer to Table 2), may also function as a facultative cell.

Aerated, partial-mix lagoons are commonly used to treat residential or mixed residential, commercial, and industrial wastewater (sewage) in Canada. A partial-mix system provides only enough aeration to satisfy the oxygen requirements of the treatment but does not provide sufficient energy to maintain all suspended solids in suspension in order to provide cost-effective treatment. The existing aeration system consists of a single 5 HP (3.73 kW) surface aerator (*HES, 2011*); however, the aerator model is unknown. There is a provision for addition of an additional aerator in the lagoon design (Figure 3)

The Sayward wastewater lagoon has the characteristics as outlined in Table 2 (*HES, 1998, 2011*).

Table 2 Sayward Lagoon Geometry (HES, 1998, 2011)

Parameter	Value
Lagoon Area (m^2)	7,600
Top of Berm Level (m) – relative to bottom	3.4
Freeboard (m)	1.5
Max. Water Level (m) – relative to bottom	1.9
Bottom Level (m) – relative	0.0
Lagoon Volume (m^3)	11,700

The Official Community Plan (OCP) states that the lagoon volume is 12,750 m^3 and a design flow of 180 m^3/day based on 500 people, or 360 L/capita/day (*Urban Systems, OCP Draft, 2020*). A discrepancy of approximately 9% is noted between the two lagoon volume estimates.

According to the (*HES, 1998*) report, there was about 1,300 m^3 of sludge at the bottom of the lagoon in 1998, i.e., approximately 11% of the lagoon volume. The lagoon seems to have been desludged around 2010/2011 when the new baffle curtains were installed (*ENV, 2017*).

5. Discharge Permit

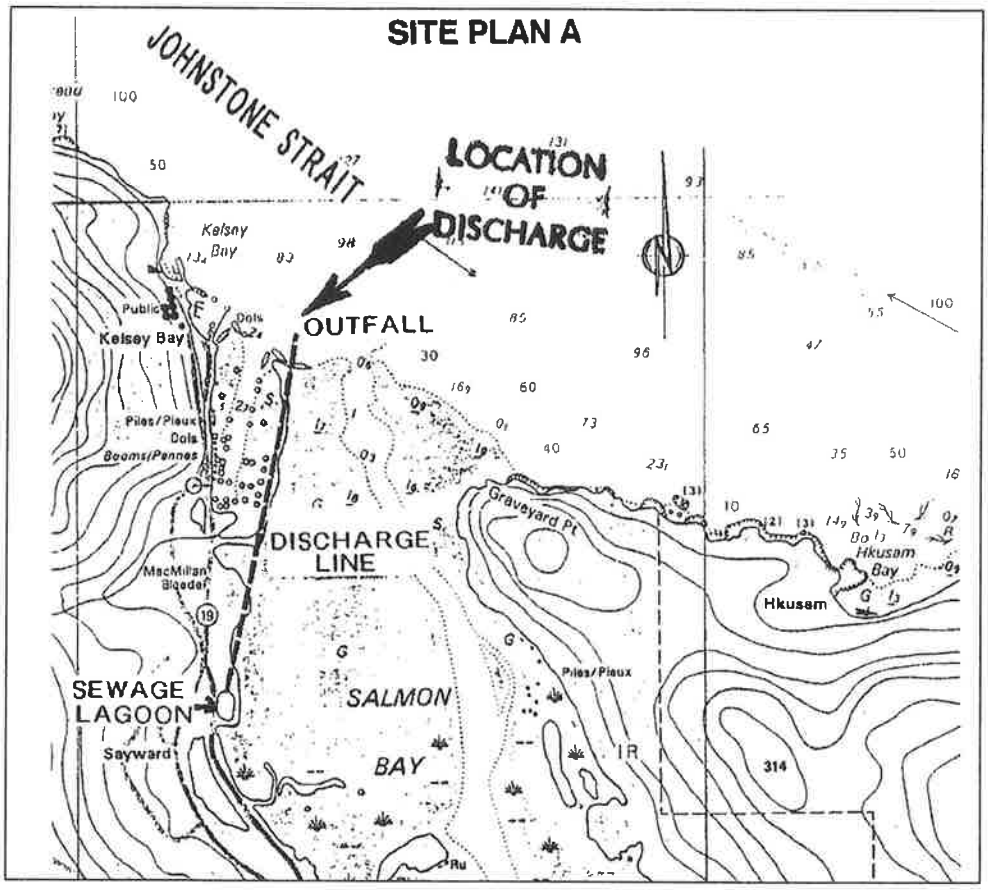
The Village of Sayward is authorized by the provincial Ministry of Environment and Climate Change Strategy (ENV) (formerly Ministry of Environment, Lands, and Parks) Permit No. PE-00101 to discharge effluent from a municipal sewage treatment facility (lagoon) through a marine outfall, subject to the following conditions:

- The maximum annual average authorized rate of discharge is 350 m^3/day or less.
- 5-Day Biochemical Oxygen Demand (BOD_5) is 45 mg/L or less.
- Total Suspended Solids (TSS) are 60 mg/L or less.

The effluent discharge is continuous all year round. The authorized discharge works are:

- a pump chamber and flow meter at the lagoon outlet; and
- a 1,400 m long outfall with diffuser extending to a depth of 13 m below mean water level (*ENV, 1998*), as shown in Figure 4.

Figure 4 Sayward Lagoon Discharge (ENV, 1998)



The Permit was originally issued in 1964 and most recently updated in 1998. While existing discharges are typically grandfathered and exempted from having to meet new regulatory requirements, the decision by the BC government, with consideration for the Federal *Wastewater Systems Effluent Regulations (WSER)* requirements, to register all discharges under the Provincial *Municipal Wastewater Regulation (MWR)*, and/or increases in average annual wastewater flows greater than 10% of the current authorized flows of 350 m^3/d are expected to trigger a requirement for compliance with the MWR.

The existing Permit requires weekly flow monitoring and quarterly effluent quality monitoring by collecting grab samples.

The wastewater treatment facility is classified under the Environmental Operators Certification Program (EOCP) as Class I facility (*Certificate No. 378 issued on December 20, 2009*).

6. Regulatory Requirements

6.1. KEY LEGISLATION

In Canada, treated municipal wastewater effluent is regulated by Federal, Provincial/Territorial, and Municipal governments. Federal, Provincial, and Territorial governments are responsible for regulating the wastewater treatment facilities and setting wastewater effluent discharge limits. Municipalities (or regional governments) are responsible for the operation of municipal wastewater treatment facilities. They also regulate the substances that are discharged into the sewer system through sewer use bylaws.

The regulations and standards that have bearing on the discharge of treated effluent to the aquatic environment from the Sayward lagoons are:

- *Federal Wastewater Systems Effluent Regulations (WSER, 2015); and*
- *BC Ministry of Environment (MOE) Municipal Wastewater Regulation (MWR, 2012).*

They are both reviewed hereunder.

6.2. FEDERAL WASTEWATER SYSTEMS EFFLUENT REGULATIONS (WSER)

The *Federal Wastewater Systems Effluent Regulations* establishes minimum effluent criteria for all discharges to water bodies with average flows greater than 100 m^3/day. The WSER does not apply to ground discharges and discharges to water bodies with average flows less than 100 m^3/day. The WSER also does not consider any site-specific characteristics of the receiving environment for the effluent quality criteria.

The WSER stipulates that effluent discharges exceeding average day flow (volume) of 100 m^3/day to any water body shall meet the following criteria:

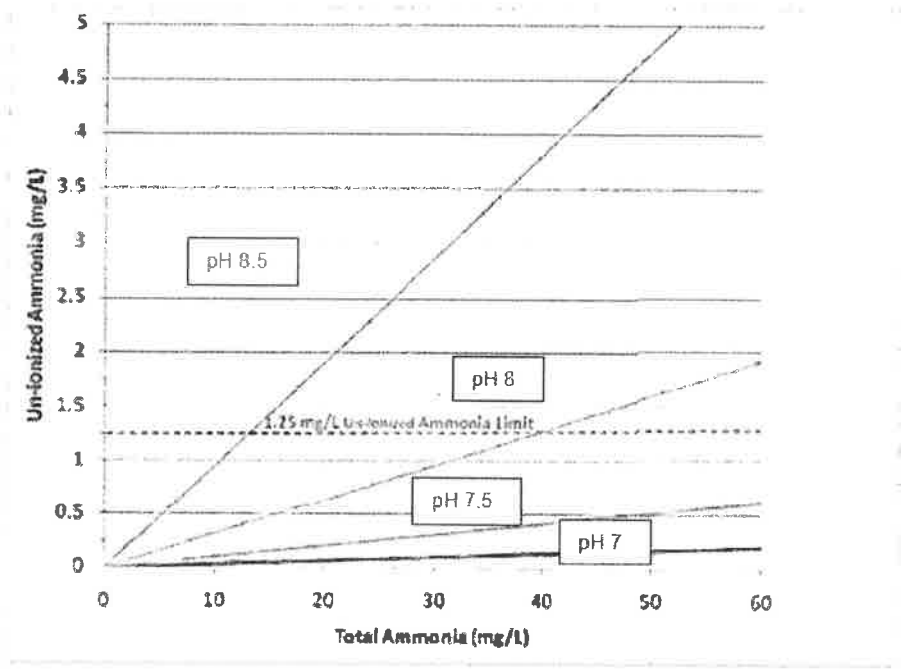
- average carbonaceous biochemical oxygen demand (cBOD) of 25 mg/L or less;
- average total suspended solids (TSS) of 25 mg/L or less;
- maximum concentration of un-ionized ammonia of 1.25 mg/L-N at 15°C; and
- average concentration of total residual chlorine of 0.02 mg/L or less, if the effluent is disinfected by chlorination.

For lagoon systems, TSS exceedances above 25 mg/L between July 1 and October 31 are not to be included in the annual average and reported.

For systems with average flow discharges less than 2,500 m^3/day, such as the case of the Sayward lagoon (refer to Section 7.1), the Federal regulation defines the "averages" above for lagoon systems as the annual average, i.e., the average of the quarterly samples collected in each quarter of the year.

The relationship between the total ammonia and un-ionized (free) ammonia is dependent on both temperature and pH (Figure 5). However, the regulation mandates that the un-ionized ammonia portion be calculated at a constant temperature of 15°C.

Figure 5 Total vs. Un-ionized Ammonia



WSER also requires that all discharges be not acutely lethal to rainbow trout. However, testing for acute fish lethality to rainbow trout is not required for discharges with flows under 2,500 m^3/day. Therefore, ammonia removal and/or nitrification of the wastewater is not required to comply with WSER at flows under 2,500 m^3/day as long as the treated effluent has an un-ionized (i.e., free) ammonia concentration below 1.25 mg/L-N at 15°C.

The effluent maximum concentration of un-ionized (i.e., more toxic) ammonia of 1.25 mg/L-N at 15°C can be controlled by maintaining pH below 8 and the total ammonia concentration below 35 mg/L (refer to Figure 5). The range of ammonia concentrations in raw sewage and effluent from the Sayward lagoon is unknown; however, it can be expected to be typical for weak to medium strength residential sewage, i.e., between 20 mg/L and 35 mg/L (*Metcalf & Eddy, 1991, 2003, 2014*). If that is the case, the maximum concentration of un-ionized ammonia of 1.25 mg/L-N at 15°C is not expected to be exceeded.

WSER allows ammonia to be removed from the sample tested for acute toxicity (at flows less than 2,500 m^3/day) or alternatively allows the pH to be lowered to reduce the portion of free ammonia, to reduce ammonia toxicity.

6.3. BC MUNICIPAL WASTEWATER REGULATION (MWR)

In BC, the *Municipal Wastewater Regulation* is a comprehensive regulation that governs all aspects of municipal wastewater management. The BC MWR has set minimum standards for effluent discharge into different receiving bodies (environment), as well as minimum requirements for wastewater treatment facility (WWTF) effluent quality monitoring, design and construction standards, and management and operations of WWTFs. MWR specifies that domestic wastewater discharges to marine waters shall receive, as a minimum, secondary treatment complying with the 45/45 mg/L TSS/BOD standard.

However, the level of treatment is dependent on the method and location of the effluent discharge, and on the findings of an Environmental Impact Study (EIS). An EIS is typically undertaken to determine if a more stringent effluent quality is required.

As stated in Section 5, the Village is currently authorized to discharge treated effluent from the community lagoon in accordance with the provincial Permit PE-00101 (*ENV, 1998*). As that discharge was grandfathered from now obsolete regulation, the provincial ministry may request compliance with WSER and MWR in the future under scenarios explained in Section 5.

7. Historical Flow and Effluent Quality Data

7.1. HISTORICAL FLOW DATA

Available historical daily flow records for the period from 2017 to 2021 are summarized in Table 3 (*Village of Sayward Annual Reports, 2017, 2018, 2019, 2020, 2021*).

Table 3 Summary of Historical Flow Records (Village of Sayward Annual Reports, 2017, 2018, 2019, 2020, 2021)

Year	Average Annual Flow (m^3/day)	ADWF (m^3/day) (Note 1)	AWWF (m^3/day) (Note 2)	Sewage Generation Rate at ADWF (L/capita/day)	No. of Permit Exceedances
2021	235	136	281	342	0
2020	201	116	269	292	0
2019	165	108	212	288	0
2018	196	96	283	256	2 weeks
2017	173	81	223	216	0

Notes:
Note 1: ADWF - Average Dry Weather Flow
Note 2: AWWF – Average Wet Weather Flow

The "Average Annual Flow" column in Table 3 represents the average of all daily flows in each year. In 2021, the lagoon treatment operated at approximately 67% of the permitted average annual flow. Also, the ratio of average annual flow to ADWF remained stable at 1.73 in 2020 and 2021.

The ADWF is the flow averaged over dry weather months, typically between May and September, while the AWWF is the flow averaged over the remainder of each year. The Sewage Generation Rate (SGR) for 2020 and 2021 is calculated based on the population of 398 people while the population of 375 was used from 2017 to 2019. The SGR assumes that the entire Sayward population is connected to the sewerage system as it might be the case in the future. The estimated population includes both permanent and seasonal residents (refer to Section 2).

As the hydraulic residence time (HRT) in lagoons is measured in days, flows averaged over monthly periods are more representative of the lagoon performance than daily flows. Lagoon systems, because of their characteristically long HRT, are much less susceptible to wide variations in wastewater flows and loadings, resulting in a stable effluent water quality. Based on the average annual flow from 2021, the HRT in the lagoon is approximately 50 days. At ADWF, the HRT is 86 days (i.e., approximately 3 months) while during AWWF, the HRT is estimated at 42 days (i.e., approximately month and a half).

The data in Table 3 shows flow trending towards progressive annual increase. The average annual flow in 2021 increased by approximately 35% over the last five years in comparison to 2017. The ratio of AWWF to ADWF is approximately 2 from 2019 to 2021. The sewage generation rate over dry weather periods in the last three years ranged from 288 L/capita/day in 2019 to 342 L/capita/day in 2021.

For comparison, *BC Design Guidelines for Rural Residential Community Water Systems* recommend an average indoor water usage of 230 L/capita/day for design purposes (*MFLNRO, 2012*). A recent study undertaken in several rural communities across southern Vancouver Island established a typical residential wastewater generation range of 220 – 250 L/capita/day during dry weather conditions based on historical flow records (*McElhanney, 2020* and *CVRD, 2019-2021). INAC Design Guidelines for Wastewater Systems, British Columbia Region, 3rd Edition, 2008* recommend average dry weather wastewater flow of 320 L/capita/day for design purposes in communities without historical flow records.

Hence, the average wastewater generation rates in Sayward homes correlate relatively well with BC Design Guidelines and/or other similar BC communities located in rural setting, although the current trending exceeds a typical range expected in rural communities. This could be attributed to the aging community sanitary sewer system, estimated to be between 12 and 48 years old (*Urban Systems, OCP Draft, 2020*). According to OCP, approximately 35% of the system is in poor condition with widespread signs of advanced deterioration and high risk of failure that are likely contributing to progressively increased groundwater infiltration into the system even during dry weather.

The permitted flow was exceeded over two weeks in 2018 although it was not exceeded as an annual average, as stipulated in the permit. There were no exceedances between 2019 and 2021. According to past correspondence between the Village and ENV, the permitted flow was also exceeded over four weeks in 2016 and five weeks in 2015 (*ENV, 2017*).

7.2. HISTORICAL EFFLUENT QUALITY DATA

Available historical effluent quality data are summarized in Table 4 (*Village of Sayward Annual Reports, 2017, 2019, 2020, 2021*).

Table 4 Summary of Historical Effluent Quality Records (Village of Sayward Annual Reports, 2017, 2019, 2020, 2021)

Sampling Date	TSS (mg/L) (Note 1)	BOD (mg/L) (Note 2)	Permit Exceedance
16-Dec-21	8.8	8.8	No
1-Oct-21	30	2	No
29-Jun-21	50	21	No
11-Mar-21	22	19	No
6-Jan-21	8.8	3	No
13-Oct-20	16	5.7	No
8-Jul-20	22	16	No
18-Mar-20	24	21	No
16-Dec-19	22	15	No
30-Sep-19	10.8	5.5	No
5-Jun-19	23	30	No
13-Mar-19	9	11	No
11-Dec-17	15	8	No
21-Sep-17	9	5	No
7-Jun-17	20	16	No
17-May-17	24	12	No
19-Apr-17	29	22	No
23-Mar-17	6	7	No

Notes:
Note 1: TSS – Total Suspended Solids
Note 2: BOD – Biochemical Oxygen Demand

Based on the historical effluent quality data, the lagoon treatment has been consistently meeting permit criteria. Although the system was not originally designed to meet WSER criteria, the lagoon treatment also consistently meets WSER criteria in terms of TSS and BOD treatment. Effluent toxicity data are insufficient; however, based on effluent sampling in March 2017 (i.e., the only available sample), un-ionized ammonia concentration in effluent was 0.026 mg/L at 15°C, hence meeting the WSER.

Operational experience and historical data from 10 aerated lagoons serving First Nations' communities in BC indicate the ability of all lagoon systems to meet the cBOD average annual limit of 25 mg/L imposed by the Federal regulation (*Golder, 2015*). Hence, operational experience of the Sayward lagoon-based WWTF is similar to observed performance at other lagoon systems of similar construction in BC.

However, past correspondence with the Village indicates that occasional spikes of the effluent quality were observed following power outages (affecting aeration) and maintenance work (*HES, 2011*). Seasonal algal growth was also observed during summer months that affected the treatment performance in the past.

8. Lagoon Capacity Assessment

8.1. LAGOON DESIGN PHILOSOPHY

As recommended in the *Water Pollution Control Federation Manual, Natural Systems for Wastewater Treatment (WPCF, 1990) and US Environmental Protection Agency, Design Manual for Municipal Wastewater Stabilization Ponds (EPA, 1983)*, design of lagoon systems should be based on detention time required to meet BOD_5 removal requirements. Though some empirical models exist to predict effluent TSS, they are not reliable due phenomena such as spring and fall water overturns, and vegetation and algae growth that are difficult to model.

In Canada, lagoon design standards are not consolidated in a single document. Federal and Provincial authorities have published a wealth of guidance material with a significant degree of exchange with the USA.

8.1.1. Aerated Lagoons

The design of aerated lagoons for BOD removal is based on the complete-mix hydraulics model and first-order kinetics. Detention times in aerated lagoons typically range from 10 to 30 days with 20^+ days being more common (*EPA, 2002*). Shorter detention times would require more intense aeration and higher energy consumption. A typical detention time in polishing cells where the biological floc settling (i.e., sedimentation) occurs ranges from two to five days with shorter times used to prevent algae growth.

Another technical guidance source, *INAC Design Guidelines for Wastewater Systems, British Columbia Region, 2008* requires minimum detention time of 30 days in the aerated cells and five days in polishing cells.

Mechanical surface aerators that are used for lagoon aeration in Sayward are typically rated at 1.5 to 2.1 kg O_2/kW-hr (*EPA, 2002*). Oxygen requirements for BOD oxidation are generally 1.5 kg O_2/kg BOD removed. Typical organic loadings in aerated cells range from 0.008 to 0.32 kg BOD/m^3/d (*NRC-CNRC Canada, 2004*). Lagoon depths typically range from 1.8 to 6.0 m with 3 m being the most typical depth.

8.1.2. Facultative Lagoons

Facultative lagoons are usually 1.2 to 2.4 m deep and are not mechanically mixed or aerated. The layer of water near the surface contains dissolved oxygen due to atmospheric reaeration and algal respiration, a condition that supports aerobic and facultative organisms. The bottom layer of the lagoon includes

sludge deposits and supports anaerobic organisms. The intermediate anoxic layer, termed the facultative zone, ranges from aerobic near the top to anaerobic at the bottom.

Typical organic loadings in facultative cells range from 15 to 80 kg BOD/ha/d (*EPA, 2002*) while typical detention times range from 20 to 180 days depending on the location.

8.2. SAYWARD LAGOON FLOW PROJECTIONS

In 2021, the lagoon treatment operated at approximately 67% (235 m^3/day) of the permitted average annual flow (350 m^3/day). The projected ADWF is estimated at approximately 193 m^3/day based on:

- the total future population of 550 people including existing and projected population due to planned developments (refer to Sections 2 and 3); and
- per capita sewage generation rate rounded up to 350 L/capita/day (refer to Table 3);

If we assume that the current ratio of average annual flow to ADWF of approximately 1.75 is not going to significantly change, then the projected average annual flow is estimated at 338 m^3/day, and therefore it is not expected to exceed the permitted flow.

8.3. SAYWARD LAGOON AERATION SYSTEM CAPACITY

The existing aeration system consists of a single 5 HP (3.73 kW) surface aerator (*HES, 2011*). As mechanical surface aerators are typically rated at 1.5 to 2.1 kg O_2/kW-hr (*EPA, 2002*), the capacity of the existing aeration system is somewhere between 134 and 188 kg O_2/day.

8.4. PROJECTED ORGANIC LOADINGS AND OXYGEN REQUIREMENTS

If we assume the following:

- the total future population of 550 people including existing and projected population due to planned developments (refer to Sections 2 and 3);
- per capita sewage generation rate of 350 L/capita/day, as in Section 8.2 (refer to Table 3);
- raw sewage strength ranging from 250 to 300 mg/L BOD for medium strength residential sewage;
- maximum day organic loading peak factor of 1.2 (typically used for lagoon systems with long residence time); and
- 100% connection rate to the wastewater management system;

then, the BOD load during maximum day would be between 58 and 70 kg BOD/day with oxygen requirements ranging between 87 and 105 kg O_2/day. Hence, the aeration system will be sufficient to meet projected aeration requirements.

Organic loadings over the entire lagoon surface are estimated at 63 to 76 kg BOD/ha/day during average day loading conditions and at 76 to 92 kg BOD/ha/day during maximum day loading conditions. Organic loadings in the aerated cell are estimated at 0.08 to 0.1 kg BOD/m^3/day during average day loading conditions and at 0.1 to 0.12 kg BOD/m^3/ day during maximum day loading conditions.

At ADWF, the HRT in the lagoon is estimated 60 days (i.e., approximately 2 months) while during AWWF, the HRT is estimated at 30 days (1 month) assuming that the ratio of AWWF to ADWF will remain at the current level of approximately 2.0.

9. Conclusions

We offer the following conclusions:

- Permitted flow is not expected to be exceeded due to the planned developments in Sayward if the ratio of average annual flow to ADWF remains at the current level.
- The projected organic loadings, oxidation requirements, and detention times in the Sayward lagoon are in general compliance with the recommended design guidelines.
- The aeration system is sufficient to meet projected aeration requirements. There is a provision for addition of an additional aerator in the lagoon design should it be required.
- Based on the historical effluent quality data, the lagoon treatment has been consistently meeting permit criteria. Although the system was not originally designed to meet WSER criteria, the lagoon treatment also consistently meets WSER criteria in terms of TSS and BOD treatment.
- Effluent toxicity data are insufficient and additional testing is required to confirm compliance with WSER regulation that will be required in the future.
- The existing Sayward lagoon treatment in its current configuration is considered adequate to accommodate the planned growth in the community.

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PERMIT TO PRACTICE
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Appendix C

North Island 2020 Pump Inspection Sheets

Pump Station Inspection Sheet:

North Island Pumps
1651 Petersen Road, Campbell River, BC V9W 3J7
Ph: (250) 286-6020 | Fax: (250) 286-8037

Date: *December 11, 2020*
Customer: *Village of Sayward*
Station Location: *Village Office*

Pump Position #:	#1	#2
Brand:	Flygt	Flygt
Model #:	NT 3085.182	NT 3085.182
S/N:		0251467
HP:	2.2 HP	2.2 HP
Voltage:	230/3/60	230/3/60
RPM:	1670	1670
Impeller Info:	463	463
Max Amps:	6.7	6.7
Hour Meter:	418	14728
Amps:	3.8	6
Megger Reading:	2.2G	2.2G
Oil Plug:	GOOD	GOOD
Stator Plug:		

Stator Casing Condtion:	GOOD	GOOD
Impeller Condition:	MEDIUM	MEDIUM
Wear Ring Condition:		
Main Cable Condition:		
Control Cable Conditon:		
KIOSK Condition:		
Float Switch Condtion:		

Inspection Summary:

- Some sort of electrical anomaly exists with the breakers that control pump 3 phase power. Breaker 1 and breaker 2 share function swith both pumps and fail to completely isolate the electrical components.
- Milltronics are somehow powered through pump #1's breaker. Should be on its own power supply.

Recommendations:

Pump Station Inspection Sheet:

North Island Pumps
1651 Petersen Road, Campbell River, BC V9W 3J7
Ph: (250) 286-6020 | Fax: (250) 286-8037

Date: *December 11, 2020*
Customer: *Village of Sayward*
Station Location: *Hotel*

Pump Position #:	#1	#2
Brand:	Flygt	Flygt
Model #:	3085.181	3085.181
S/N:	9040483	9040482
HP:	2.2	2.2
Voltage:	208/3/60	208/3/60
RPM:	1800	1800
Impeller Info:	440	440
Max Amps:	7.4	7.4
Hour Meter:	13213	12680
Amps:	6.8	6.2
Megger Reading:	70	3.8
Oil Plug:	SLIGHT WATER	SLIGHT WATER
Stator Plug:		
Stator Casing Condtion:		
Impeller Condition:	GOOD	GOOD
Wear Ring Condition:	GOOD	GOOD
Main Cable Condition:		
Control Cable Conditon:		
KIOSK Condition:		
Float Switch Condtion:		

Inspection Summary:

- Lifting handles are rotten. Need replacement when the pumps get rebuilt.
- Pumps should be pulled for a rebuild in the near future.

Recommendations:

Pump Station Inspection Sheet:

North Island Pumps
1651 Petersen Road, Campbell River, BC V9W 3J7
Ph: (250) 286-6020 | Fax: (250) 286-8037

Date: *December 11, 2020*
Customer: *Village of Sayward*
Station Location: *Government Warf*

Pump Position #:	#1	#2
Brand:	Flygt	Flygt
Model #:	CP 3127	CP 3127
S/N:		
HP:	7.5 HP	7.5 HP
Voltage:	230/1/60	230/1/60
RPM:	1745	1745
Impeller Info:	462	462
Max Amps:	30	30
Hour Meter:	739	1011
Amps:	17	17
Megger Reading:	605	890
Oil Plug:	GOOD	GOOD
Stator Plug:		

Stator Casing Condtion:	GOOD	GOOD
Impeller Condition:	GOOD	GOOD (PLUGGED)
Wear Ring Condition:		
Main Cable Condition:		
Control Cable Conditon:		
KIOSK Condition:		
Float Switch Condtion:		

Inspection Summary:

• Pump #2 impeller plastic coating is seperating from the cast iron. This is causing debris to catch in the seperating plastic. Removed as much of the coating as possible while onsite.

Recommendations:

Pump Station Inspection Sheet:

North Island Pumps
1651 Petersen Road, Campbell River, BC V9W 3J7
Ph: (250) 286-6020 | Fax: (250) 286-8037

Date: *December 11, 2020*
Customer: *Village of Sayward*
Station Location: *Kelsey Lane*

Pump Position #:	#1	#2
Brand:	Flygt	Flygt
Model #:	CP 3085	CP 3085
S/N:		
HP:	2.4	2.4
Voltage:	230/1/60	230/1/60
RPM:	1710	1710
Impeller Info:	463	463
Max Amps:	10	10
Hour Meter:	181	105
Amps:	GOOD	GOOD
Megger Reading:	5	108
Oil Plug:	GOOD	SLIGHT WATER
Stator Plug:		
Stator Casing Condtion:		
Impeller Condition:	GOOD	GOOD
Wear Ring Condition:	GOOD	GOOD
Main Cable Condition:		
Control Cable Conditon:		
KIOSK Condition:		
Float Switch Condtion:		

Inspection Summary:

- Pump #1 not seated, just hanging above discharge. Pump trips overloads.
- Pulled stators and they look fine. Suspect starting system problem. Needs new switch and caps.
- This station also seems to have some problems with breakers. Simular problem to the Village PS. Both breakers share functions in regards to powering the pumps. Proper, safe electrical isolation is not available.

Recommendations:

Pump Station Inspection Sheet:

North Island Pumps
1651 Petersen Road, Campbell River, BC V9W 3J7
Ph: (250) 286-6020 | Fax: (250) 286-8037

Date: *December 11, 2020*
Customer: *Village of Sayward*
Station Location: *Sewer Lagoon*

	#1
Pump Position #:	
Brand:	*Flygt*
Model #:	*NP 3102.180*
S/N:	*13-9480061*
HP:	*5 HP*
Voltage:	*208/3/60*
RPM:	*1730*
Impeller Info:	*464*
Max Amps:	*14*
Hour Meter:	*17737*
Amps:	*8.8*
Megger Reading:	*3*
Oil Plug:	*SLIGHT WATER*
Stator Plug:	

Stator Casing Condtion:	
Impeller Condition:	*GOOD*
Wear Ring Condition:	*GOOD*
Main Cable Condition:	
Control Cable Conditon:	
KIOSK Condition:	
Float Switch Condtion:	

Inspection Summary:

Recommendations:

- This station has some build up in the sump. A flush valve would help fix this problem.

Appendix D

MMCD Demand Estimates

Existing Sanitary Demands

Estimated based on MMCD 2014 Design Guidelines

	Parameter	Value	Units	
	Existing Peaking Factor	3.2		(MMCD 2014 Design Guidelines)
	Buildout Peaking Factor	2.84		(MMCD 2014 Design Guidelines)
	Inflow and Infiltration Allowance	0.12	L/s/ha	(MMCD 2014 Design Guidelines)
Non-Residential	Dry Weather Demand	25000	L/ha/day	(MMCD 2014 Design Guidelines)
	Dry Weather Demand	0.2894	L/ha/s	
Residential	Dry Weather Demand	350	L/Cap/day	(MMCD 2014 Design Guidelines)
	Dry Weather Demand	0.0041	L/cap/s	

Sanitary Demand = Peak Dry Weather Demand (PDWF) + Inflow & Infiltration Allowance

Civic Address	Zoning	Current/Actual Use	Notes	Utilized Area (ha)	Node	Existing Population	I & I (L/s)	ADWF Existing (L/s)	Existing Demand (L/s)
210 Kelsey Way	Residential One (R-1)	Single Family		0.08	2	2	0.01	0.01	0.04
200 Kelsey Way	Residential One (R-1)	Single Family		0.1	2	2	0.01	0.01	0.04
211 Spar St	Residential One (R-1)	Single Family		0.08	3	2	0.01	0.01	0.04
220 Spar St	Residential One (R-1)	Single Family		0.11	3	2	0.01	0.01	0.04
230 Spar St	Residential One (R-1)	Single Family		0.15	3	2	0.02	0.01	0.04
240 Spar St	Residential One (R-1)	Single Family		0.16	3	2	0.02	0.01	0.05
190 Kelsey Way	Residential One (R-1)	Single Family		0.13	4	2	0.02	0.01	0.04
201 Spar St	Residential One (R-1)	Single Family		0.08	4	2	0.01	0.01	0.04
191 Spar St	Residential One (R-1)	Single Family		0.16	4	2	0.02	0.01	0.05
210 Spar St	Residential One (R-1)	Single Family		0.21	5	2	0.03	0.01	0.05
230 Kelsey Way	Residential One (R-1)	Single Family		0.08	6	2	0.01	0.01	0.04
220 Kelsey Way	Residential One (R-1)	Single Family		0.09	6	2	0.01	0.01	0.04
241 Spar St	Residential One (R-1)	Single Family		0.09	6	2	0.01	0.01	0.04
231 Spar St	Residential One (R-1)	Single Family		0.09	6	2	0.01	0.01	0.04
221 Spar St	Residential One (R-1)	Single Family		0.09	6	2	0.01	0.01	0.04
280 Kelsey Way	Residential One (R-1)	Single Family		0.08	7A	2	0.01	0.01	0.04
270 Kelsey Way	Residential One (R-1)	Single Family		0.08	7A	2	0.01	0.01	0.04
260 Kelsey Way	Residential One (R-1)	Single Family		0.08	7A	2	0.01	0.01	0.04
250 Kelsey Way	Residential One (R-1)	Single Family		0.08	7A	2	0.01	0.01	0.04
240 Kelsey Way	Residential One (R-1)	Single Family		0.08	7A	2	0.01	0.01	0.04
291 Ambleside Dr	Residential One (R-1)	Single Family		0.07	7A	2	0.01	0.01	0.03
281 Ambleside Dr	Residential One (R-1)	Single Family		0.07	7A	2	0.01	0.01	0.03
271 Ambleside Dr	Residential One (R-1)	Single Family		0.08	7A	2	0.01	0.01	0.04
261 Ambleside Dr	Residential One (R-1)	Single Family		0.09	7A	2	0.01	0.01	0.04
251 Spar St	Residential One (R-1)	Single Family		0.1	7A	2	0.01	0.01	0.04
290 Kelsey Way	Residential One (R-1)	Single Family		0.1	7B	2	0.01	0.01	0.04
290 Ambleside Dr	Residential One (R-1)	Single Family		0.12	9	2	0.01	0.01	0.04
280 Ambleside Dr	Residential One (R-1)	Single Family		0.11	9	2	0.01	0.01	0.04
270 Ambleside Dr	Residential One (R-1)	Single Family		0.1	9	2	0.01	0.01	0.04
260 Ambleside Dr	Residential One (R-1)	Single Family		0.09	10	2	0.01	0.01	0.04

Civic Address	Zoning	Current/Actual Use	Notes	Utilized Area (ha)	Node	Existing Population	I & I (L/s)	ADWF Existing (L/s)	Existing Demand (L/s)
250 Ambleside Dr	Residential One (R-1)	Single Family		0.11	10	2	0.01	0.01	0.04
250 Spar St	Residential One (R-1)	Single Family		0.08	11	2	0.01	0.01	0.04
200 Sayward HTS	Residential One (R-1)	Single Family (Vacant)		0	12	0	0.00	0.00	0.00
201 Sayward Hts	Residential One (R-1)	Single Family		0.08	12	2	0.01	0.01	0.04
210 Sayward HTS	Residential One (R-1)	Single Family		0.08	13	2	0.01	0.01	0.04
220 Sayward HTS	Residential One (R-1)	Single Family		0.09	13	2	0.01	0.01	0.04
230 Sayward HTS	Residential One (R-1)	Single Family		0.09	13	2	0.01	0.01	0.04
560 Kelsey Way	Park One (PA-1)	Civic Recreational (Campground)		1.19	SU3	85	0.14	0.34	1.24
611 MacMillan Dr	Residential / Commercial (R-C)	Strata Residence (32 Units)		0.28	16	64	0.03	0.26	0.86
581 MacMillan Dr	Residential / Commercial (R-C)	Commercial (Vacant)		0	16A	0	0.00	0.00	0.00
531 MacMillan Dr	Residential One (R-1)	Single Family		0.08	16B	2	0.01	0.01	0.04
541 MacMillan Dr	Residential One (R-1)	Single Family		0.07	16B	2	0.01	0.01	0.03
551 MacMillan Dr	Residential One (R-1)	Single Family		0.07	16B	2	0.01	0.01	0.03
561 MacMillan Dr	Residential One (R-1)	Single Family		0.09	16B	2	0.01	0.01	0.04
501 MacMillan Dr	Residential One (R-1)	Single Family		0.08	17	2	0.01	0.01	0.04
511 MacMillan Dr	Residential One (R-1)	Single Family		0.07	17	2	0.01	0.01	0.03
521 MacMillan Dr	Residential One (R-1)	Single Family		0.07	17	2	0.01	0.01	0.03
441 MacMillan Dr	Residential One (R-1)	Single Family		0.07	18	2	0.01	0.01	0.03
451 MacMillan Dr	Residential One (R-1)	Single Family		0.07	18	2	0.01	0.01	0.03
461 MacMillan Dr	Residential One (R-1)	Single Family		0.07	18	2	0.01	0.01	0.03
471 MacMillan Dr	Residential One (R-1)	Single Family		0.07	18	2	0.01	0.01	0.03
481 MacMillan Dr	Residential One (R-1)	Single Family		0.07	18	2	0.01	0.01	0.03
491 MacMillan Dr	Residential One (R-1)	Single Family		0.07	18	2	0.01	0.01	0.03
341 MacMillan Dr	Residential One (R-1)	Single Family		0.1	19	2	0.01	0.01	0.04
391 MacMillan Dr	Residential One (R-1)	Single Family		0.09	19	2	0.01	0.01	0.04
401 MacMillan Dr	Residential One (R-1)	Single Family		0.07	19	2	0.01	0.01	0.03
411 MacMillan Dr	Residential One (R-1)	Single Family		0.07	19	2	0.01	0.01	0.03
421 MacMillan Dr	Residential One (R-1)	Single Family		0.07	19	2	0.01	0.01	0.03
431 MacMillan Dr	Residential One (R-1)	Single Family		0.07	19	2	0.01	0.01	0.03
321 MacMillan Dr	Residential One (R-1)	Single Family		0.09	20	2	0.01	0.01	0.04
331 MacMillan Dr	Residential One (R-1)	Single Family		0.1	20	2	0.01	0.01	0.04
271 MacMillan Dr	Residential One (R-1)	Single Family (Vacant)		0	20B	-	0.00	-	-
281 MacMillan Dr	Residential One (R-1)	Single Family (Vacant)		0	20B	-	0.00	-	-
291 MacMillan Dr	Residential One (R-1)	Single Family (Vacant)		0	20B	-	0.00	-	-
301 MacMillan Dr	Residential One (R-1)	Single Family (Vacant)		0	21	-	0.00	-	-
311 MacMillan Dr	Residential One (R-1)	Single Family		0.1	21	2	0.01	0.01	0.04
280 MacMillan Dr	Residential One (R-1)	Single Family (Vacant)		0	22	-	0.00	-	-
290 MacMillan Dr	Residential One (R-1)	Single Family		0.1	22	2	0.01	0.01	0.04
300/320 MacMillan Dr	Residential One (R-1)	Single Family		0.16	22	2	0.02	0.01	0.05
350 MacMillan Dr	Residential One (R-1)	Single Family (vacant)		0	23	-	0.00	-	-
360 MacMillan Dr	Residential One (R-1)	Single Family		0.07	23	2	0.01	0.01	0.03
370 MacMillan Dr	Residential One (R-1)	Single Family		0.09	23	2	0.01	0.01	0.04
390 MacMillan Dr	Residential One (R-1)	Single Family (Vacant)		0	23	-	0.00	-	-
400 MacMillan Dr	Residential One (R-1)	Single Family (Vacant)		0	23	-	0.00	-	-
410 MacMillan Dr	Residential One (R-1)	Single Family		0.07	23	2	0.01	0.01	0.03

Site Address	Zoning	Current/Actual Use	Notes	Utilized Area (ha)	Node	Existing Population	I & I (L/s)	ADWF Existing (L/s)	Existing Demand (L/s)
231 Sayward Hts	Residential One (R-1)	Single Family		0.07	24	2	0.01	0.01	0.03
270 MacMillan Dr	Residential One (R-1)	Single Family		0.09	24	2	0.01	0.01	0.04
261 MacMillan Dr	Residential One (R-1)	Single Family		0.07	24	2	0.01	0.01	0.03
420 MacMillan Dr	Residential One (R-1)	Single Family		0.07	26	2	0.01	0.01	0.03
430 MacMillan Dr	Residential One (R-1)	Single Family		0.07	26	2	0.01	0.01	0.03
440 MacMillan Dr	Residential One (R-1)	Single Family		0.07	26	2	0.01	0.01	0.03
450 MacMillan Dr	Residential One (R-1)	Single Family (Vacant)		0	26	-	0.00	-	-
460 MacMillan Dr	Residential One (R-1)	Single Family		0.07	26	2	0.01	0.01	0.03
470 MacMillan Dr	Residential One (R-1)	Single Family		0.07	26	2	0.01	0.01	0.03
480 MacMillan Dr	Residential One (R-1)	Single Family		0.07	26	2	0.01	0.01	0.03
490 MacMillan Dr	Residential One (R-1)	Single Family		0.07	26	2	0.01	0.01	0.03
271 Bloedel Dr	Residential One (R-1)	Single Family (Vacant)		0	26	-	0.00	-	-
500 MacMillan Dr	Residential One (R-1)	Single Family		0.07	27	2	0.01	0.01	0.03
510 MacMillan Dr	Residential One (R-1)	Single Family (Vacant)		0	27	-	0.00	-	-
520 MacMillan Dr	Residential One (R-1)	Single Family		0.07	27	2	0.01	0.01	0.03
530 MacMillan Dr	Residential One (R-1)	Single Family		0.08	27	2	0.01	0.01	0.04
540 MacMillan Dr	Residential One (R-1)	Single Family		0.07	28	2	0.01	0.01	0.03
550 MacMillan Dr	Residential One (R-1)	Single Family		0.07	28	2	0.01	0.01	0.03
560 MacMillan Dr	Residential One (R-1)	Single Family		0.07	28	2	0.01	0.01	0.03
570 MacMillan Dr	Residential One (R-1)	Single Family		0.08	28	2	0.01	0.01	0.04
601 Kelsey Way	Commercial One (C-1)	Commercial (Office Building)		0.22	31	16	0.03	0.06	0.23
641 Kelsey Way	Commercial One (C-1)	Commercial (Library & Shopping Mall)	Not in current use	0	31	0	0.00	0.00	0.00
121 Seaview St	Residential One (R-1)	Single Family		0.07	36	2	0.01	0.01	0.03
131 Seaview St	Residential One (R-1)	Single Family		0.07	36	2	0.01	0.01	0.03
141 Seaview St	Residential One (R-1)	Single Family		0.07	36	2	0.01	0.01	0.03
151 Seaview St	Residential One (R-1)	Single Family		0.06	36	2	0.01	0.01	0.03
120 Seaview St	Residential One (R-1)	Single Family		0.07	37	2	0.01	0.01	0.03
101 Seaview St	Residential One (R-1)	Single Family		0.08	37	2	0.01	0.01	0.04
111 Seaview St	Residential One (R-1)	Single Family		0.07	37	2	0.01	0.01	0.03
151 Hemlock St	Residential One (R-1)	Single Family		0.07	39	2	0.01	0.01	0.03
161 Hemlock St	Residential One (R-1)	Single Family		0.07	39	2	0.01	0.01	0.03
140 Hemlock St	Residential One (R-1)	Single Family		0.07	39	2	0.01	0.01	0.03
150 Hemlock St	Residential One (R-1)	Single Family		0.07	39	2	0.01	0.01	0.03
160 Hemlock St	Residential One (R-1)	Single Family		0.07	39	2	0.01	0.01	0.03
100 Dyer Dr	Residential One (R-1)	Single Family		0.08	40	2	0.01	0.01	0.04
110 Dyer Dr	Residential One (R-1)	Single Family		0.08	40	2	0.01	0.01	0.04
120 Dyer Dr	Residential One (R-1)	Single Family		0.08	40	2	0.01	0.01	0.04
160 Seaview St	Residential One (R-1)	Single Family		0.07	41	2	0.01	0.01	0.03
170 Seaview St	Residential One (R-1)	Single Family		0.07	41	2	0.01	0.01	0.03
160 Balsam St	Residential One (R-1)	Single Family		0.07	42	2	0.01	0.01	0.03
150 Balsam St	Residential One (R-1)	Single Family		0.07	42	2	0.01	0.01	0.03
130 Seaview St	Residential One (R-1)	Single Family		0.07	42	2	0.01	0.01	0.03
241 Ambleside Dr	Residential One (R-1)	Single Family		0.09	44	2	0.01	0.01	0.04
231 Ambleside Dr	Residential One (R-1)	Single Family		0.08	44	2	0.01	0.01	0.04
221 Ambleside Dr	Residential One (R-1)	Single Family		0.12	44	2	0.01	0.01	0.04
230 Ambleside Dr	Residential One (R-1)	Single Family		0.09	44	2	0.01	0.01	0.04
200 Ambleside Dr	Residential One (R-1)	Single Family		0.1	44	2	0.01	0.01	0.04

Civic Address	Zoning	Current/Actual Use	Notes	Utilized Area (ha)	Node	Existing Population	I & I (L/s)	ADWF Existing (L/s)	Existing Demand (L/s)
220 Ambleside Dr	Residential One (R-1)	Single Family		0.08	44	2	0.01	0.01	0.04
151 Balsam St	Residential One (R-1)	Single Family		0.07	46	2	0.01	0.01	0.03
161 Balsam St	Residential One (R-1)	Single Family		0.07	46	2	0.01	0.01	0.03
171 Balsam St	Residential One (R-1)	Single Family		0.07	46	2	0.01	0.01	0.03
201 Ambleside Dr	Residential One (R-1)	Single Family		0.07	46	2	0.01	0.01	0.03
211 Ambleside Dr	Residential One (R-1)	Single Family		0.07	47	2	0.01	0.01	0.03
170 Dyer Dr	Residential One (R-1)	Single Family		0.07	47	2	0.01	0.01	0.03
160 Dyer Dr	Residential One (R-1)	Single Family		0.07	47	2	0.01	0.01	0.03
150 Dyer Dr	Residential One (R-1)	Single Family		0.07	47	2	0.01	0.01	0.03
701 Kelsey Way	Residential / Commercial (R-C)	Single Family		0.11	49	2	0.01	0.01	0.04
721 Kelsey Way	Commercial One (C-1)	Single Family		0.21	49	2	0.03	0.01	0.05
711 Kelsey Way	Residential / Commercial (R-C)	Commercial (Manufactured Home Park - 6 Units)		0.29	49	12	0.03	0.05	0.19
714 Sayward Rd	Commercial One (C-1)	Commercial (Abandoned Motel)		0	52	0	0.00	0.00	0.00
721 Sayward Rd	Rural One (RU-1)	Acreage (Single family/duplex)		0.4	52	2	0.05	0.01	0.07
735 Sayward Rd	Residential / Industrial (R-I)	Acreage (Single family/duplex)		0.86	53	2	0.10	0.01	0.13
743 Sayward Rd	Residential / Industrial (R-I)	Acreage (Single family/duplex)		0.43	53	2	0.05	0.01	0.08
744 Sayward Rd	Rural One (RU-1)	Single Family		0.34	53	2	0.04	0.01	0.07
748 Sayward Rd	Rural One (RU-1)	Single Family		0.43	54	2	0.05	0.01	0.08
753 Sayward Rd	Residential / Industrial (R-I)	Acreage (Single family/duplex)		0.68	54	2	0.08	0.01	0.11
754 Sayward Rd	Rural One (RU-1)	Single Family (Manufactured home)		0.14	54	2	0.02	0.01	0.04
761 Sayward Rd	Residential / Industrial (R-I)	Acreage (Single family/duplex)		0.33	54	2	0.04	0.01	0.07
709 Sayward Rd	Rural One (RU-1)	Acreage (Outbuilding)		0.36	55	2	0.04	0.01	0.07
710 Sayward Rd	Rural One (RU-1)	Single Family		0.2	55	2	0.02	0.01	0.05
693 Sayward Rd	Rural One (RU-1)	Acreage (Vacant)		0	57	0	0.00	0.00	0.00
699 Sayward Rd	Rural One (RU-1)	Commercial (Community Hall)		0.3	57	21	0.04	0.09	0.31
130 Dyer Dr	Industrial (I-1) / Residential One (R-1)	Industrial (Hub City Fisheries)		0.2	63	14	0.02	0.06	0.21
90 Sayward Hwy	Industrial (I-1)	Industry (Logging Operations)		0.15	65	11	0.02	0.04	0.16
77 Kelsey Lane	Industrial (I-1)	Acreage (Single family)		0.22	SU2	2	0.03	0.01	0.05
79 Kelsey Lane	Industrial (I-1)	Single Family		0.17	SU2	2	0.02	0.01	0.05
83 Kelsey Lane	Industrial (I-1)	Acreage (Single family)		0.39	SU2	2	0.05	0.01	0.07
600 Kelsey Way	Commercial One (C-1)	Government Buildings		0.07	70	5	0.01	0.02	0.07
610 Kelsey Way	Commercial One (C-1)	Government Building (RCMP)		0.07	70	5	0.01	0.02	0.07
620 Kelsey Way	Commercial One (C-1)	Fire Hall		0.14	70	10	0.02	0.04	0.15
652 Hkusam Way	Community Facility (CF-1)	Recreational & Cultural (Curling Rink)		1.48	71	106	0.18	0.43	1.55
630 Kelsey Way	Commercial One (C-1)	Ambulance Building		0.07	72	5	0.01	0.02	0.07
650 Kelsey Way	Commercial One (C-1)	Commercial (Vacant)		0	72	0	0.00	0.00	0.00

Civic Address	Zoning	Current/Actual Use	Notes	Utilized Area (ha)	Node	Existing Population	I & I (L/s)	ADWF Existing (L/s)	Existing Demand (L/s)
660 Kelsey Way	Commercial One (C-1)	Commercial (Vacant)		0	72	0	0.00	0.00	0.00
670 Kelsey Way	Commercial One (C-1)	Single Family		0.07	72	2	0.01	0.01	0.03
690 Kelsey Way	Community Facility (CF-1)	School		2.42	73	173	0.29	0.70	2.53
681 Kelsey Way	Commercial One (C-1)	Commercial (Vacant)		0	73	0	0.00	0.00	0.00
691 Kelsey Way	Residential / Commercial (R-C)	Commercial (Vacant)		0	73	0	0.00	0.00	0.00
40 Sayward Rd	Commercial Two (C-2)	Commercial (Store, Café, RV Sites)		0.98	74	70	0.12	0.28	1.03
14 Sayward Rd		Vacant	Adama Subdivision	0	75	0	0.00	0.00	0.00
16 Sayward Rd	Commercial Two (C-2)	Commercial (Port of Kelsey Bay - Gift store & tourist info)		0.16	75	11	0.02	0.05	0.17
18 Sayward Rd	Commercial Two (C-2)	Vacant		0	75	0	0.00	0.00	0.00
23 Sayward Rd	Commercial Two (C-2)	Kelsey Bay RV Campground		0.64	75	46	0.08	0.19	0.67
30 Sayward Rd	Commercial Two (C-2)	Commercial (Marina)		0.61	75	44	0.07	0.18	0.64
762 Sayward Rd	Rural One (RU-1)	Single Family		0.58	77	2	0.07	0.01	0.10
765 Sayward Rd	Residential / Industrial (R-I)	Single Family		0.24	77	2	0.03	0.01	0.05
772 Sayward Rd	Rural One (RU-1)	Single Family		0.44	77	2	0.05	0.01	0.08
780 Sayward Rd	Rural One (RU-1)	Single Family		0.9	77	2	0.11	0.01	0.13
794 Sayward Rd	Rural One (RU-1)	Single Family		0.39	77	2	0.05	0.01	0.07
DL 1604	Residential One (R-1)	Vacant	Demand divided to nodes 25 (35%) and 45 (65%)	0	25	0	0.00	0.00	0.00
DL 1604	Residential One (R-1)	Vacant	Demand divided to nodes 25 (35%) and 45 (65%)	0	45	0	0.00	0.00	0.00

Developed Sanitary Demands

Estimated based on MMCD 2014 Design Guidelines

	Parameter	Value	Units	
	Existing Peaking Factor	3.2		(MMCD 2014 Design Guidelines)
	Buildout Peaking Factor	2.84		(MMCD 2014 Design Guidelines)
	Inflow and Infiltration Allowance	0.12	L/s/ha	(MMCD 2014 Design Guidelines)
Non-Residential	Dry Weather Demand	25000	L/ha/day	(MMCD 2014 Design Guidelines)
	Dry Weather Demand	0.2894	L/ha/s	
Residential	Dry Weather Demand	350	L/Cap/day	(MMCD 2014 Design Guidelines)
	Dry Weather Demand	0.0041	L/cap/s	

Sanitary Demand = Peak Dry Weather Demand (PDWF) + Inflow & Infiltration Allowance

Civic Address	Zoning	Current/Actual Use	Notes	Developable Area (ha)	Node	Build Out Population	I & I Developed (L/s)	ADWF Developed (L/s)	Build Out Demand (L/s)
210 Kelsey Way	Residential One (R-1)	Single Family		0.08	2	3	0.01	0.01	0.04
200 Kelsey Way	Residential One (R-1)	Single Family		0.1	2	3	0.01	0.01	0.05
211 Spar St	Residential One (R-1)	Single Family		0.08	3	3	0.01	0.01	0.04
220 Spar St	Residential One (R-1)	Single Family		0.11	3	3	0.01	0.01	0.05
230 Spar St	Residential One (R-1)	Single Family		0.15	3	3	0.02	0.01	0.05
240 Spar St	Residential One (R-1)	Single Family		0.16	3	3	0.02	0.01	0.05
190 Kelsey Way	Residential One (R-1)	Single Family		0.13	4	3	0.02	0.01	0.05
201 Spar St	Residential One (R-1)	Single Family		0.08	4	3	0.01	0.01	0.04
191 Spar St	Residential One (R-1)	Single Family		0.16	4	3	0.02	0.01	0.05
210 Spar St	Residential One (R-1)	Single Family		0.21	5	3	0.03	0.01	0.06
230 Kelsey Way	Residential One (R-1)	Single Family		0.08	6	3	0.01	0.01	0.04
220 Kelsey Way	Residential One (R-1)	Single Family		0.09	6	3	0.01	0.01	0.05
241 Spar St	Residential One (R-1)	Single Family		0.09	6	3	0.01	0.01	0.05
231 Spar St	Residential One (R-1)	Single Family		0.09	6	3	0.01	0.01	0.05
221 Spar St	Residential One (R-1)	Single Family		0.09	6	3	0.01	0.01	0.05
280 Kelsey Way	Residential One (R-1)	Single Family		0.08	7A	3	0.01	0.01	0.04
270 Kelsey Way	Residential One (R-1)	Single Family		0.08	7A	3	0.01	0.01	0.04
260 Kelsey Way	Residential One (R-1)	Single Family		0.08	7A	3	0.01	0.01	0.04
250 Kelsey Way	Residential One (R-1)	Single Family		0.08	7A	3	0.01	0.01	0.04
240 Kelsey Way	Residential One (R-1)	Single Family		0.08	7A	3	0.01	0.01	0.04
291 Ambleside Dr	Residential One (R-1)	Single Family		0.07	7A	3	0.01	0.01	0.04
281 Ambleside Dr	Residential One (R-1)	Single Family		0.07	7A	3	0.01	0.01	0.04
271 Ambleside Dr	Residential One (R-1)	Single Family		0.08	7A	3	0.01	0.01	0.04
261 Ambleside Dr	Residential One (R-1)	Single Family		0.09	7A	3	0.01	0.01	0.05
251 Spar St	Residential One (R-1)	Single Family		0.1	7A	3	0.01	0.01	0.05
290 Kelsey Way	Residential One (R-1)	Single Family		0.1	7B	3	0.01	0.01	0.05
290 Ambleside Dr	Residential One (R-1)	Single Family		0.12	9	3	0.01	0.01	0.05
280 Ambleside Dr	Residential One (R-1)	Single Family		0.11	9	3	0.01	0.01	0.05
270 Ambleside Dr	Residential One (R-1)	Single Family		0.1	9	3	0.01	0.01	0.05
260 Ambleside Dr	Residential One (R-1)	Single Family		0.09	10	3	0.01	0.01	0.05

Civic Address	Zoning	Current/Actual Use	Notes	Developable Area (ha)	Node	Build Out Population	I & I Developed (L/s)	ADWF Developed (L/s)	Build Out Demand (L/s)
250 Ambleside Dr	Residential One (R-1)	Single Family		0.11	10	3	0.01	0.01	0.05
250 Spar St	Residential One (R-1)	Single Family		0.08	11	3	0.01	0.01	0.04
200 Sayward HTS	Residential One (R-1)	Single Family (Vacant)		0.09	12	3	0.01	0.01	0.05
201 Sayward Hts	Residential One (R-1)	Single Family		0.08	12	3	0.01	0.01	0.04
210 Sayward HTS	Residential One (R-1)	Single Family		0.08	13	3	0.01	0.01	0.04
220 Sayward HTS	Residential One (R-1)	Single Family		0.08	13	3	0.01	0.01	0.04
230 Sayward HTS	Residential One (R-1)	Single Family		0.09	13	3	0.01	0.01	0.05
560 Kelsey Way	Park One (PA-1)	Civic Recreational (Campground)		1.19	SU3	85	0.14	0.34	1.12
611 MacMillan Dr	Residential / Commercial (R-C)	Strata Residence (32 Units)		0.28	16	64	0.03	0.26	0.77
581 MacMillan Dr	Residential / Commercial (R-C)	Commercial (Vacant)		0.12	16A	9	0.01	0.03	0.11
531 MacMillan Dr	Residential One (R-1)	Single Family		0.08	16B	3	0.01	0.01	0.04
541 MacMillan Dr	Residential One (R-1)	Single Family		0.07	16B	3	0.01	0.01	0.04
551 MacMillan Dr	Residential One (R-1)	Single Family		0.07	16B	3	0.01	0.01	0.04
561 MacMillan Dr	Residential One (R-1)	Single Family		0.09	16B	3	0.01	0.01	0.05
501 MacMillan Dr	Residential One (R-1)	Single Family		0.08	17	3	0.01	0.01	0.04
511 MacMillan Dr	Residential One (R-1)	Single Family		0.07	17	3	0.01	0.01	0.04
521 MacMillan Dr	Residential One (R-1)	Single Family		0.07	17	3	0.01	0.01	0.04
441 MacMillan Dr	Residential One (R-1)	Single Family		0.07	18	3	0.01	0.01	0.04
451 MacMillan Dr	Residential One (R-1)	Single Family		0.07	18	3	0.01	0.01	0.04
461 MacMillan Dr	Residential One (R-1)	Single Family		0.07	18	3	0.01	0.01	0.04
471 MacMillan Dr	Residential One (R-1)	Single Family		0.07	18	3	0.01	0.01	0.04
481 MacMillan Dr	Residential One (R-1)	Single Family		0.07	18	3	0.01	0.01	0.04
491 MacMillan Dr	Residential One (R-1)	Single Family		0.07	18	3	0.01	0.01	0.04
341 MacMillan Dr	Residential One (R-1)	Single Family		0.1	19	3	0.01	0.01	0.05
391 MacMillan Dr	Residential One (R-1)	Single Family		0.09	19	3	0.01	0.01	0.05
401 MacMillan Dr	Residential One (R-1)	Single Family		0.07	19	3	0.01	0.01	0.04
411 MacMillan Dr	Residential One (R-1)	Single Family		0.07	19	3	0.01	0.01	0.04
421 MacMillan Dr	Residential One (R-1)	Single Family		0.07	19	3	0.01	0.01	0.04
431 MacMillan Dr	Residential One (R-1)	Single Family		0.07	19	3	0.01	0.01	0.04
321 MacMillan Dr	Residential One (R-1)	Single Family		0.09	20	3	0.01	0.01	0.05
331 MacMillan Dr	Residential One (R-1)	Single Family		0.1	20	3	0.01	0.01	0.05
271 MacMillan Dr	Residential One (R-1)	Single Family (Vacant)		0.07	20B	3	0.01	0.01	0.04
281 MacMillan Dr	Residential One (R-1)	Single Family (Vacant)		0.07	20B	3	0.01	0.01	0.04
291 MacMillan Dr	Residential One (R-1)	Single Family (Vacant)		0.11	20B	3	0.01	0.01	0.05
301 MacMillan Dr	Residential One (R-1)	Single Family (Vacant)		0.12	21	3	0.01	0.01	0.05
311 MacMillan Dr	Residential One (R-1)	Single Family		0.1	21	3	0.01	0.01	0.05
280 MacMillan Dr	Residential One (R-1)	Single Family (Vacant)		0.11	22	3	0.01	0.01	0.05
290 MacMillan Dr	Residential One (R-1)	Single Family		0.1	22	3	0.01	0.01	0.05
300/320 MacMillan Dr	Residential One (R-1)	Single Family		0.16	22	3	0.02	0.01	0.05
350 MacMillan Dr	Residential One (R-1)	Single Family (vacant)		0.08	23	3	0.01	0.01	0.04
360 MacMillan Dr	Residential One (R-1)	Single Family		0.07	23	3	0.01	0.01	0.04
370 MacMillan Dr	Residential One (R-1)	Single Family		0.09	23	3	0.01	0.01	0.05
390 MacMillan Dr	Residential One (R-1)	Single Family (Vacant)		0.08	23	3	0.01	0.01	0.04
400 MacMillan Dr	Residential One (R-1)	Single Family (Vacant)		0.07	23	3	0.01	0.01	0.04
410 MacMillan Dr	Residential One (R-1)	Single Family		0.07	23	3	0.01	0.01	0.04

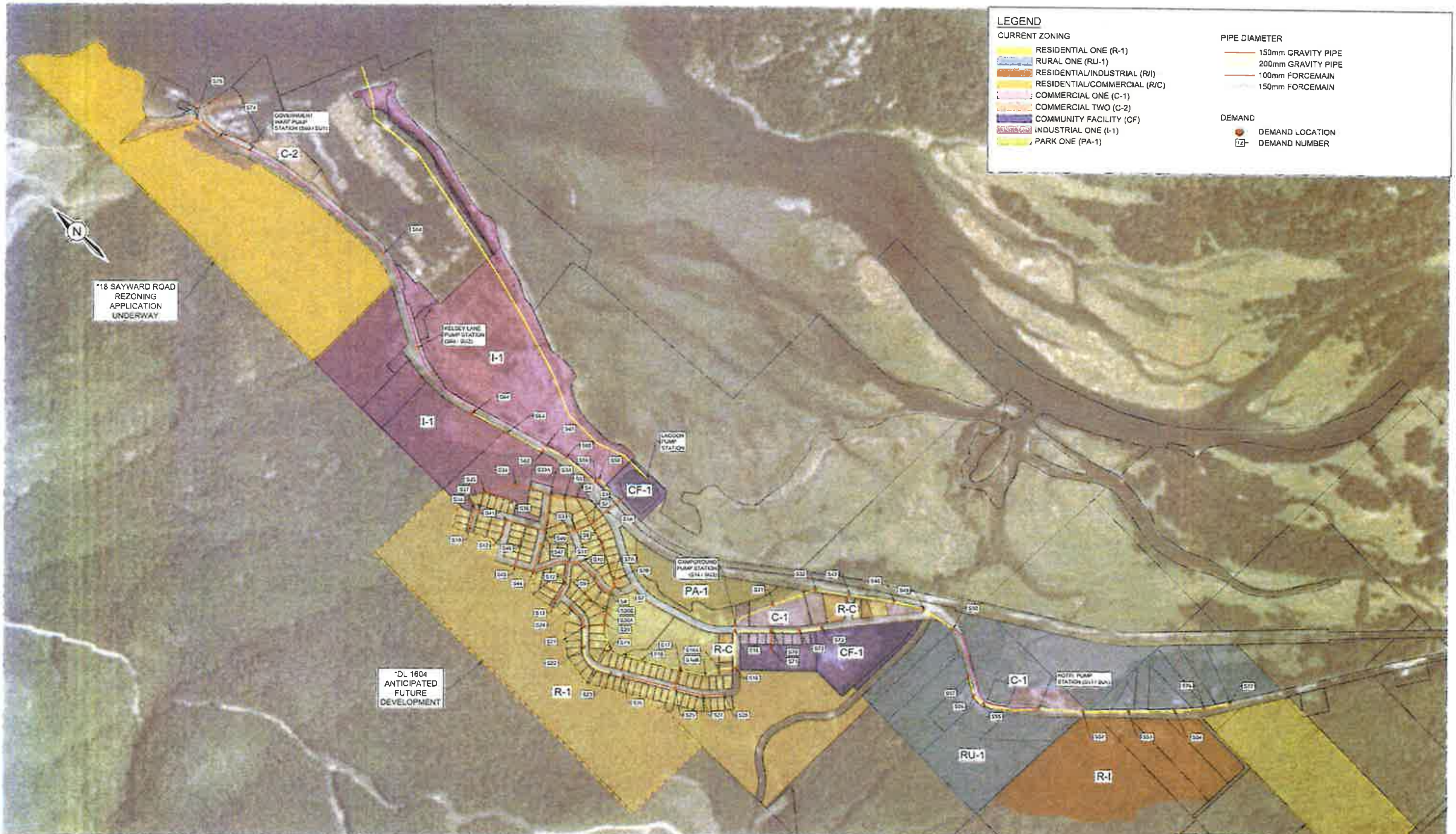
Node Address	Zoning	Current/Actual Use	Notes	Developable Area (ha)	Node	Build Out Population	I & I Developed (L/s)	ADWF Developed (L/s)	Build Out Demand (L/s)
231 Sayward Hts	Residential One (R-1)	Single Family		0.07	24	3	0.01	0.01	0.04
270 MacMillan Dr	Residential One (R-1)	Single Family		0.09	24	3	0.01	0.01	0.05
261 MacMillan Dr	Residential One (R-1)	Single Family		0.07	24	3	0.01	0.01	0.04
420 MacMillan Dr	Residential One (R-1)	Single Family		0.07	26	3	0.01	0.01	0.04
430 MacMillan Dr	Residential One (R-1)	Single Family		0.07	26	3	0.01	0.01	0.04
440 MacMillan Dr	Residential One (R-1)	Single Family		0.07	26	3	0.01	0.01	0.04
450 MacMillan Dr	Residential One (R-1)	Single Family (Vacant)		0.07	26	3	0.01	0.01	0.04
460 MacMillan Dr	Residential One (R-1)	Single Family		0.07	26	3	0.01	0.01	0.04
470 MacMillan Dr	Residential One (R-1)	Single Family		0.07	26	3	0.01	0.01	0.04
480 MacMillan Dr	Residential One (R-1)	Single Family		0.07	26	3	0.01	0.01	0.04
490 MacMillan Dr	Residential One (R-1)	Single Family		0.07	26	3	0.01	0.01	0.04
271 Bloedel Dr	Residential One (R-1)	Single Family (Vacant)		0.07	26	3	0.01	0.01	0.04
500 MacMillan Dr	Residential One (R-1)	Single Family		0.07	27	3	0.01	0.01	0.04
510 MacMillan Dr	Residential One (R-1)	Single Family (Vacant)		0.07	27	3	0.01	0.01	0.04
520 MacMillan Dr	Residential One (R-1)	Single Family		0.07	27	3	0.01	0.01	0.04
530 MacMillan Dr	Residential One (R-1)	Single Family		0.08	27	3	0.01	0.01	0.04
540 MacMillan Dr	Residential One (R-1)	Single Family		0.07	28	3	0.01	0.01	0.04
550 MacMillan Dr	Residential One (R-1)	Single Family		0.07	28	3	0.01	0.01	0.04
560 MacMillan Dr	Residential One (R-1)	Single Family		0.07	28	3	0.01	0.01	0.04
570 MacMillan Dr	Residential One (R-1)	Single Family		0.08	28	3	0.01	0.01	0.04
601 Kelsey Way	Commercial One (C-1)	Commercial (Office Building)		0.22	31	16	0.03	0.06	0.21
641 Kelsey Way	Commercial One (C-1)	Commercial (Library & Shopping Mall)	Not in current use	1.42	31	101	0.17	0.41	1.34
121 Seaview St	Residential One (R-1)	Single Family		0.07	36	3	0.01	0.01	0.04
131 Seaview St	Residential One (R-1)	Single Family		0.07	36	3	0.01	0.01	0.04
141 Seaview St	Residential One (R-1)	Single Family		0.07	36	3	0.01	0.01	0.04
151 Seaview St	Residential One (R-1)	Single Family		0.06	36	3	0.01	0.01	0.04
120 Seaview St	Residential One (R-1)	Single Family		0.07	37	3	0.01	0.01	0.04
101 Seaview St	Residential One (R-1)	Single Family		0.08	37	3	0.01	0.01	0.04
111 Seaview St	Residential One (R-1)	Single Family		0.07	37	3	0.01	0.01	0.04
151 Hemlock St	Residential One (R-1)	Single Family		0.07	39	3	0.01	0.01	0.04
161 Hemlock St	Residential One (R-1)	Single Family		0.07	39	3	0.01	0.01	0.04
140 Hemlock St	Residential One (R-1)	Single Family		0.07	39	3	0.01	0.01	0.04
150 Hemlock St	Residential One (R-1)	Single Family		0.07	39	3	0.01	0.01	0.04
160 Hemlock St	Residential One (R-1)	Single Family		0.07	39	3	0.01	0.01	0.04
100 Dyer Dr	Residential One (R-1)	Single Family		0.08	40	3	0.01	0.01	0.04
110 Dyer Dr	Residential One (R-1)	Single Family		0.08	40	3	0.01	0.01	0.04
120 Dyer Dr	Residential One (R-1)	Single Family		0.08	40	3	0.01	0.01	0.04
160 Seaview St	Residential One (R-1)	Single Family		0.07	41	3	0.01	0.01	0.04
170 Seaview St	Residential One (R-1)	Single Family		0.07	41	3	0.01	0.01	0.04
160 Balsam St	Residential One (R-1)	Single Family		0.07	42	3	0.01	0.01	0.04
150 Balsam St	Residential One (R-1)	Single Family		0.07	42	3	0.01	0.01	0.04
130 Seaview St	Residential One (R-1)	Single Family		0.07	42	3	0.01	0.01	0.04
241 Ambleside Dr	Residential One (R-1)	Single Family		0.09	44	3	0.01	0.01	0.05
231 Ambleside Dr	Residential One (R-1)	Single Family		0.08	44	3	0.01	0.01	0.04
221 Ambleside Dr	Residential One (R-1)	Single Family		0.12	44	3	0.01	0.01	0.05
230 Ambleside Dr	Residential One (R-1)	Single Family		0.09	44	3	0.01	0.01	0.05

Civic Address	Zoning	Current/Actual Use	Notes	Developable Area (ha)	Node	Build Out Population	I & I Developed (L/s)	ADWF Developed (L/s)	Build Out Demand (L/s)
200 Ambleside Dr	Residential One (R-1)	Single Family		0.1	44	3	0.01	0.01	0.05
220 Ambleside Dr	Residential One (R-1)	Single Family		0.08	44	3	0.01	0.01	0.04
151 Balsam St	Residential One (R-1)	Single Family		0.07	46	3	0.01	0.01	0.04
161 Balsam St	Residential One (R-1)	Single Family		0.07	46	3	0.01	0.01	0.04
171 Balsam St	Residential One (R-1)	Single Family		0.07	46	3	0.01	0.01	0.04
201 Ambleside Dr	Residential One (R-1)	Single Family		0.07	46	3	0.01	0.01	0.04
211 Ambleside Dr	Residential One (R-1)	Single Family		0.07	47	3	0.01	0.01	0.04
170 Dyer Dr	Residential One (R-1)	Single Family		0.07	47	3	0.01	0.01	0.04
160 Dyer Dr	Residential One (R-1)	Single Family		0.07	47	3	0.01	0.01	0.04
150 Dyer Dr	Residential One (R-1)	Single Family		0.07	47	3	0.01	0.01	0.04
701 Kelsey Way	Residential / Commercial (R-C)	Single Family		0.11	49	3	0.01	0.01	0.05
721 Kelsey Way	Commercial One (C-1)	Single Family		0.21	49	3	0.03	0.01	0.06
711 Kelsey Way	Residential / Commercial (R-C)	Commercial (Manufactured Home Park - 6 Units)		0.29	49	12	0.03	0.05	0.17
714 Sayward Rd	Commercial One (C-1)	Commercial (Abandoned Motel)		0.94	52	67	0.11	0.27	0.89
721 Sayward Rd	Rural One (RU-1)	Acreage (Single family/duplex)		1.32	52	3	0.16	0.01	0.19
735 Sayward Rd	Residential / Industrial (R-I)	Acreage (Single family/duplex)		16.64	53	12	2.00	0.05	2.13
743 Sayward Rd	Residential / Industrial (R-I)	Acreage (Single family/duplex)		2.01	53	6	0.24	0.02	0.31
744 Sayward Rd	Rural One (RU-1)	Single Family		0.34	53	3	0.04	0.01	0.08
748 Sayward Rd	Rural One (RU-1)	Single Family		0.43	54	3	0.05	0.01	0.09
753 Sayward Rd	Residential / Industrial (R-I)	Acreage (Single family/duplex)		1.87	54	3	0.22	0.01	0.26
754 Sayward Rd	Rural One (RU-1)	Single Family (Manufactured home)		0.72	54	3	0.09	0.01	0.12
761 Sayward Rd	Residential / Industrial (R-I)	Acreage (Single family/duplex)		1.26	54	3	0.15	0.01	0.19
709 Sayward Rd	Rural One (RU-1)	Acreage (Outbuilding)		4.7	55	3	0.56	0.01	0.60
710 Sayward Rd	Rural One (RU-1)	Single Family		0.2	55	3	0.02	0.01	0.06
693 Sayward Rd	Rural One (RU-1)	Acreage (Vacant)		2.09	57	6	0.25	0.02	0.32
699 Sayward Rd	Rural One (RU-1)	Commercial (Community Hall)		0.83	57	59	0.10	0.24	0.78
130 Dyer Dr	Industrial (I-1) / Residential One (R-1)	Industrial (Hub City Fisheries)		0.2	63	14	0.02	0.06	0.19
90 Sayward Hwy	Industrial (I-1)	Industry (Logging Operations)		0.15	65	11	0.02	0.04	0.14
77 Kelsey Lane	Industrial (I-1)	Acreage (Single family)		4.02	SU2	3	0.48	0.01	0.52
79 Kelsey Lane	Industrial (I-1)	Single Family		0.17	SU2	3	0.02	0.01	0.05
83 Kelsey Lane	Industrial (I-1)	Acreage (Single family)		1.31	SU2	3	0.16	0.01	0.19
600 Kelsey Way	Commercial One (C-1)	Government Buildings		0.07	70	5	0.01	0.02	0.07
610 Kelsey Way	Commercial One (C-1)	Government Building (RCMP)		0.07	70	5	0.01	0.02	0.07
620 Kelsey Way	Commercial One (C-1)	Fire Hall		0.14	70	10	0.02	0.04	0.13

Civic Address	Zoning	Current/Actual Use	Notes	Developable Area (ha)	Node	Build Out Population	I & I Developed (L/s)	ADWF Developed (L/s)	Build Out Demand (L/s)
652 Hkusam Way	Community Facility (CF-1)	Recreational & Cultural (Curling Rink)		1.48	71	106	0.18	0.43	1.39
630 Kelsey Way	Commercial One (C-1)	Ambulance Building		0.07	72	5	0.01	0.02	0.07
650 Kelsey Way	Commercial One (C-1)	Commercial (Vacant)		0.07	72	5	0.01	0.02	0.07
660 Kelsey Way	Commercial One (C-1)	Commercial (Vacant)		0.08	72	6	0.01	0.02	0.08
670 Kelsey Way	Commercial One (C-1)	Single Family		0.07	72	3	0.01	0.01	0.04
690 Kelsey Way	Community Facility (CF-1)	School		3.04	73	217	0.36	0.88	2.86
681 Kelsey Way	Commercial One (C-1)	Commercial (Vacant)		0.39	73	28	0.05	0.11	0.37
691 Kelsey Way	Residential / Commercial (R-C)	Commercial (Vacant)		0.39	73	28	0.05	0.11	0.37
40 Sayward Rd	Commercial Two (C-2)	Commercial (Store, Café, RV Sites)		2.74	74	196	0.33	0.79	2.58
14 Sayward Rd		Vacant	Adama Subdivision	7.74	75	195	0.93	0.79	3.17
16 Sayward Rd	Commercial Two (C-2)	Commercial (Port of Kelsey Bay - Gift store & tourist info)		0.16	75	11	0.02	0.05	0.15
18 Sayward Rd	Commercial Two (C-2)	Vacant		0.61	75	44	0.07	0.18	0.57
23 Sayward Rd	Commercial Two (C-2)	Kelsey Bay RV Campground		0.64	75	46	0.08	0.19	0.60
30 Sayward Rd	Commercial Two (C-2)	Commercial (Marina)		1.13	75	81	0.14	0.33	1.06
762 Sayward Rd	Rural One (RU-1)	Single Family		0.58	77	3	0.07	0.01	0.10
765 Sayward Rd	Residential / Industrial (R-I)	Single Family		0.24	77	3	0.03	0.01	0.06
772 Sayward Rd	Rural One (RU-1)	Single Family		0.44	77	3	0.05	0.01	0.09
779 Sayward Rd	Residential One (R-1)	Vacant	Possible 25 lot development	8	77	75	0.96	0.30	1.82
780 Sayward Rd	Rural One (RU-1)	Single Family		0.9	77	3	0.11	0.01	0.14
794 Sayward Rd	Rural One (RU-1)	Single Family		0.39	77	3	0.05	0.01	0.08
DL 1604	Residential One (R-1)	Vacant	Demand divided to nodes 25 (35%) and 45 (65%)	7.4725	25	268	0.90	1.08	3.98
DL 1604	Residential One (R-1)	Vacant	Demand divided to nodes 25 (35%) and 45 (65%)	13.8775	45	497	1.67	2.01	7.39

Appendix E

Sanitary Network Map



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SITE PLAN
SCALE: 1:5000

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1196 Dogwood Street
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T 250 287 7799

PERMIT TO PRACTICE
McElhanney Ltd.
PERMIT NUMBER: 1003299
Engineers and Geoscientists of BC

PRELIMINARY
NOT FOR
CONSTRUCTION

VILLAGE OF SAYWARD
SANITARY NETWORK MAP
SANITARY MODEL
SAYWARD BC

DRAWN: DW
DATE: 2022-09-06

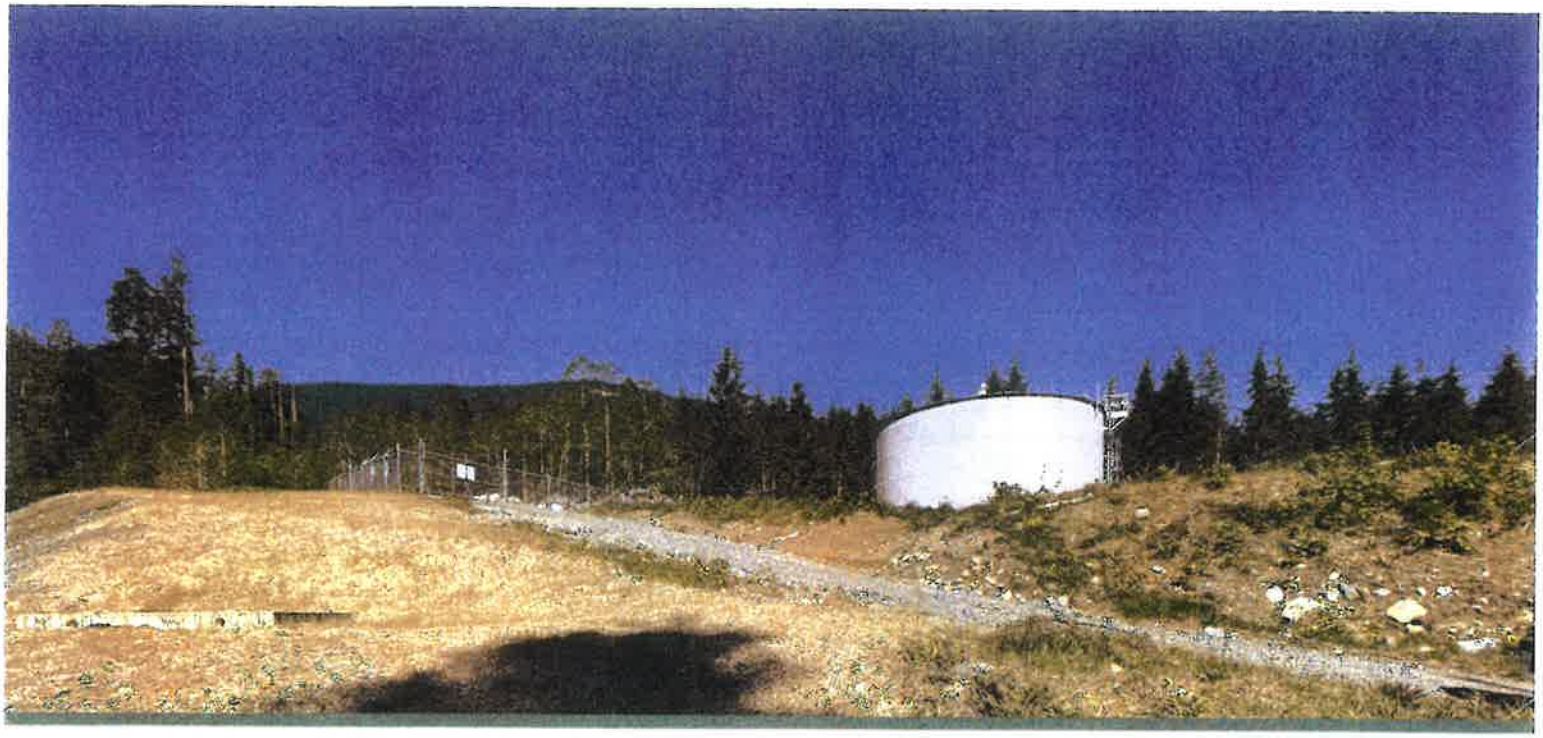
Contact
Dwayne Cybak
250-287-7799
dcybak@mcelhanney.com

McElhanney

CANADA BEST MANAGED COMPANIES

McElhanney

BEST MANAGED COMPANIES CANADA



Sayward Water System Assessment (Rev 1)

June 2, 2023

Submitted to: Village of Sayward
Prepared by McElhanney

Contact
Dwayne Cybak
Project Manager
250-287-7799
dcybak@mcelhanney.com

Address
1196 Dogwood Street,
Campbell River BC Canada,
V9W 3A2

Our file: 2221-49513-00

Sayward Water System Assessment

Your Challenge.
Our Passion.

Our File: 2221-49513-00

June 2, 2023

The Village of Sayward
652 H'Kusan Way, PO Box 29,
Sayward, BC, V0P 1R0

Attention: Keir Gervais

Sayward Water System Assessment

Find enclosed a copy of the report for the Sayward Water System Assessment. Please contact the undersigned should you have any questions regarding this report.

Sincerely,

Prepared by:

gWatson

Gabrielle Watson, EIT
gwatson@mcelhanney.com
250-287-7799

Reviewed by:

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
D. R. CYBAK
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2023-06-02

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McElhanney Ltd.
PERMIT NUMBER: 1003299
Engineers and Geoscientists of BC

Contents

1. Introduction

A comprehensive water model of the distribution system in the Village of Sayward was commissioned by McElhanney Ltd. The scope of the project encompassed present and future growth scenarios. MMCD design guidelines and sophisticated water modeling technology were utilized to identify deficiencies and make recommendations for future upgrades. Furthermore, the incorporation of details from the recent McElhanney Ltd. Pre-Design Report for Water System Supply and Conservation Improvements (Pre-Design Report) dated August 29, 2022, which specifically addressed treatment plant deficiencies and reservoir requirements, was included in the report as Appendix B.

2. Existing Water System

The water distribution system of the Village of Sayward covers approximately 6.7 kilometers of water mains and is situated within a 4.4 square kilometer area. The community's drinking water is sourced from Newcastle Creek under a Conditional Water License (Licence No. 501276), which permits the diversion of 844,595 m^3/year of water. Once the water is diverted, it undergoes treatment at the recently constructed treatment facility with a capacity of 10-20 L/s for treating raw water or up to a maximum of 1728 m^3/day, as reported in the Pre-Design Report. The treated water is then stored in the Village's only reservoir with a capacity of 1436 m^3, as depicted in **Figure 1**.

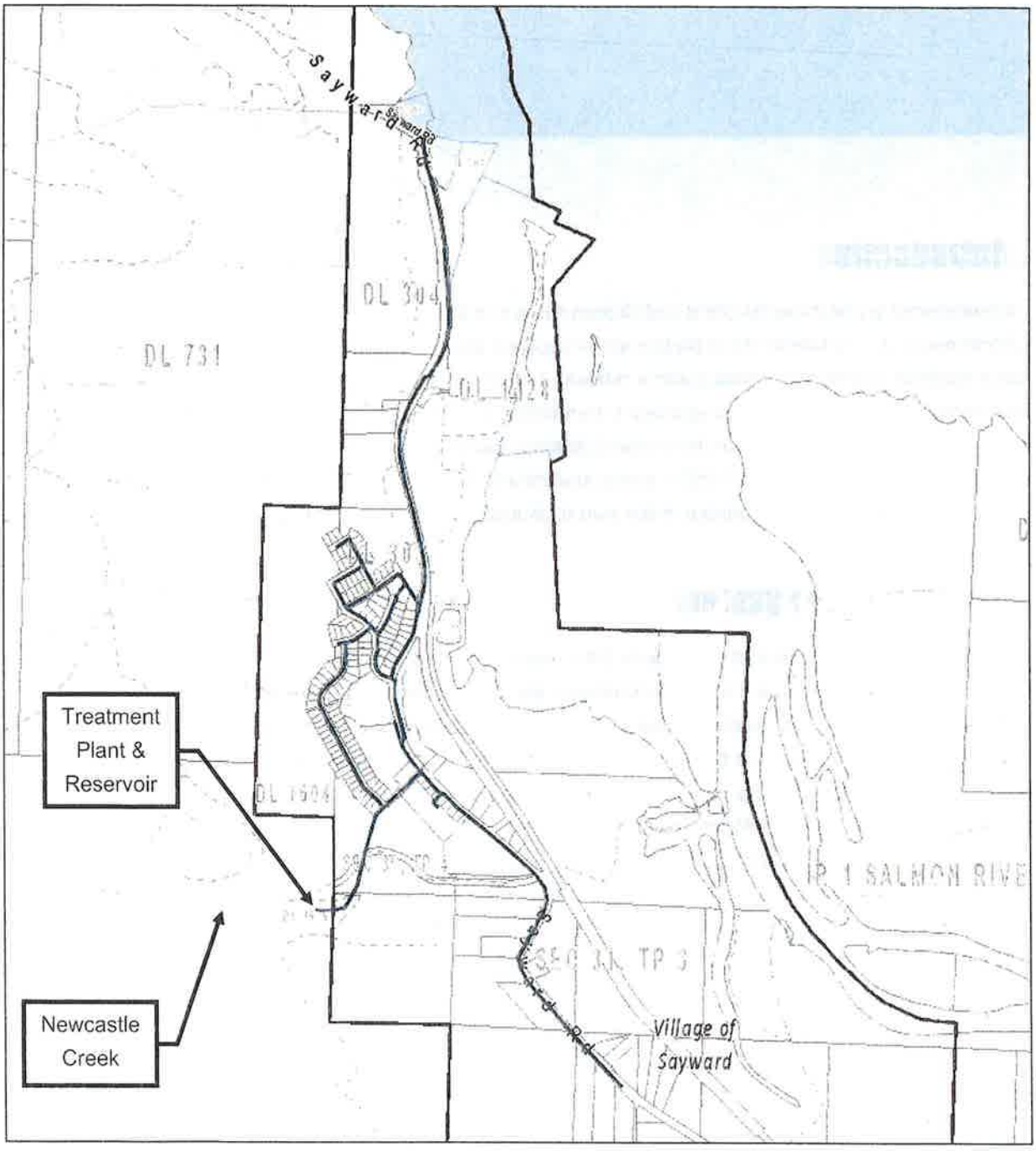


Figure 1: Village of Sayward Treatment Plant & Reservoir Locations

3. Water System Modelling

3.1. DATA SOURCES

The following data sources were used by McElhanney Ltd. in the creation of the *WaterCAD* based water model used for this study:

- **MacMillan Bloedel Limited Record Drawings:** Existing record drawings developed by MacMillan Bloedel Limited were obtained by McElhanney Ltd. These drawings included the following information on the water infrastructure installed as part of the Kelsey Bay Townsite Development:
    - Pipe main and service locations;
    - Pipe elevation profile;
    - Pipe sizes; and
    - Pipe material.
- **Highland Record Drawings:** Existing record drawings developed by Highland Engineering and Surveying were obtained by McElhanney Ltd. These drawings included the following information on the water infrastructure installed along Sayward Road from the Log Sort to Kelsey Bay and along Kelsey Lane and Sayward Road south of the city center:
    - Pipe locations;
    - Pipe elevation profile;
    - Pipe sizes; and
    - Pipe material.
- **Village of Sayward GIS Mapping:** Data from the Village of Sayward's GIS Mapping system was provided to McElhanney Ltd. Data included:
    - Parcels;
    - Current zoning; and
    - Locations of water mains, hydrants, and valves.
- **LidarBC Data:** Lidar data was obtained through the British Columbia's Open LiDAR Data Portal to estimate ground elevations and obtain assumed water main elevations.
- **Urban Systems Water Conservation Plan (WCP)** dated June 10, 2022, addresses how water is consumed in Sayward and recommendations on how to reduce usage to ensure adequate water supply. This report has been included as **Appendix C**.

- **McElhanney Ltd. Pre-design Report for Water System and Conservation Improvements:** Background information regarding the treatment facility and reservoir as well as suggested improvements were included in the Pre-design Report for Water System and Conservation Improvements by McElhanney Ltd. dated August 29, 2022. This report has been included as **Appendix B**.

3.2. WATER MODEL SETUP

The hydraulic modeling for the Village of Sayward water system was completed using WaterCAD software, a water distribution modeling and analysis tool that evaluates the performance of a water distribution system under various flow scenarios. The model utilized known physical parameters of the system, such as pipe material and diameter, other parameters, such as pipe length and elevation, had to be estimated. The software applied different usage scenarios to determine flows, velocities, and pressures at specific node locations within the pipe network, which allowed for the identification of deficiencies and determination of appropriate upgrades.

The physical parameters of the water network were obtained from various sources, including record drawings, Village of Sayward GIS mapping, and lidar data. Record drawings provided information on pipe diameter, material, and location relative to property lines for certain sections of the Village. However, pipe elevation data was mostly unavailable, so lidar data was used to estimate ground elevations, with a pipe depth assumed to be approximately 1.0 meter. In addition, the Village's GIS mapping data was utilized to supplement missing information on pipe location, diameter, and material, and also included the locations of water valves and hydrants.

3.2.1. Model Scenarios

When modelling the Sayward water system, two scenarios were considered:

1. The system as it currently exists; and
2. The existing system with predicted future development.

The existing scenario considered the existing infrastructure and demands based on what is physically in place at the time of this report. The future growth scenario, also called a build-out scenario, was based on higher density for future development, taking into account current zoning and known planned developments such as rezoning or subdivision applications. The purpose of the analysis of the future growth scenario was to determine if the increased demands on the existing infrastructure would exceed the capacity of the system. It was not determined if the proposed developments were feasible, only if the additional demands from the development would trigger upgrades on existing infrastructure.

Both model scenarios were based on the existing zoning (refer to **Figure 2** below). It is important to note that a new OCP is currently in development, but it was not taken into account in this report as it is only at the draft stage.

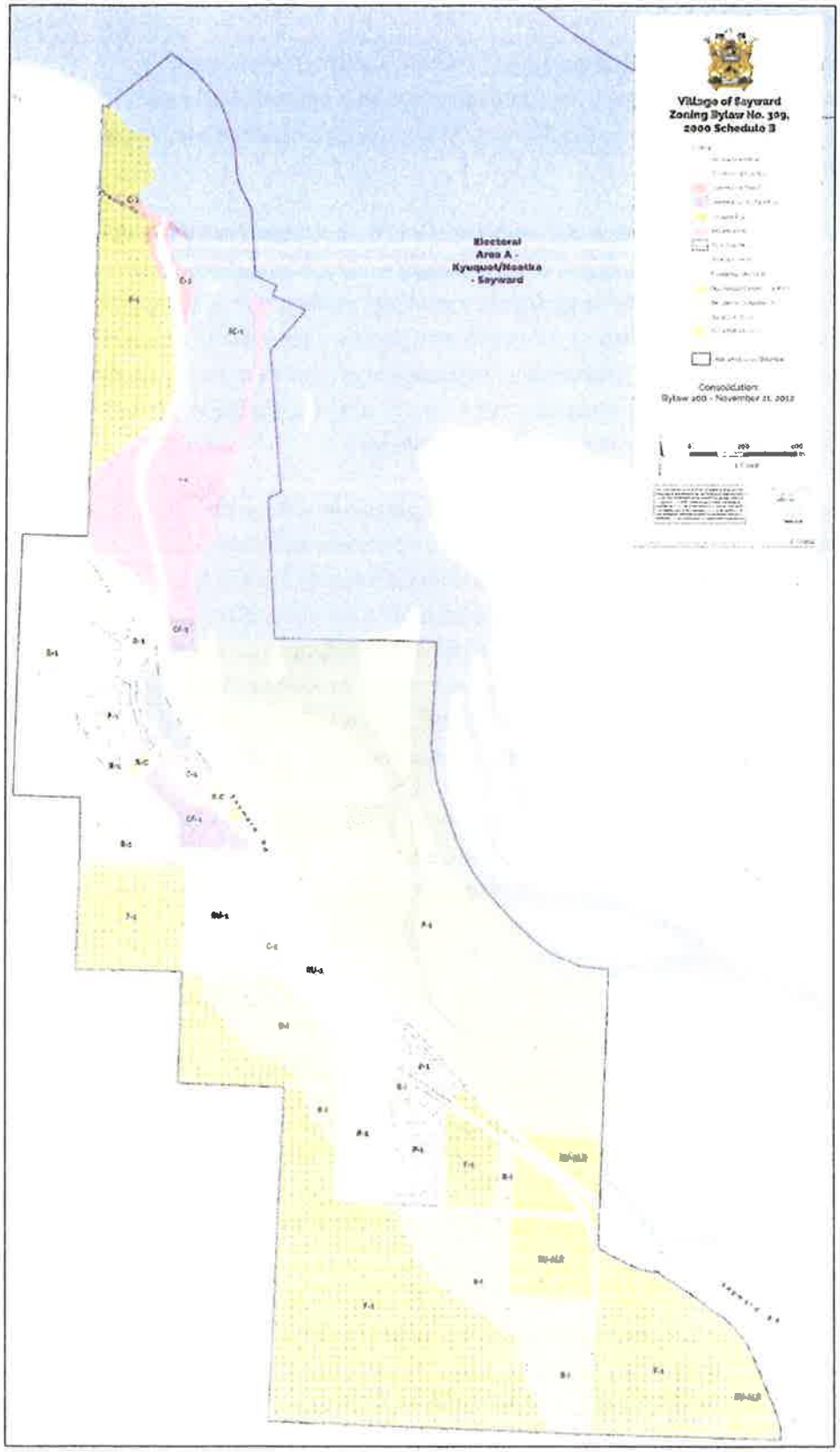


Figure 2: Existing Zoning Map of the Village of Sayward

3.2.2. Water System Demands

The model was set up by determining the physical parameters, and the water demands were subsequently determined and input into the model. The data used to develop the demands were referenced from the Master Municipal Construction Document (MMCD) design guidelines, which are based on population and zoning.

To properly simulate real-world conditions, various water demands must be applied across the water system at multiple nodes within the model. The majority of the Village's water services are unmetered, and as such, demands have to be estimated. The demands are estimated based on the existing property zoning classification and their corresponding MMCD per capita/area unit flow rates. MMCD demands generally tend to provide conservative results. Therefore, the purpose of this model will be to provide approximate results related to the design criteria discussed further on. Further accuracy would require a more extensive flow monitoring program to be implemented by the Village.

Demands are classified into per capita demands and non-residential demands. Per capita demands are used for residential water use, while non-residential demands refer to commercial, industrial, and institutional demands. Commercial, industrial, and institutional demands remain constant when modeling water systems and are estimated using a unit rate based on the property area in hectares. Per capita demands for residential water usage take into account that usage will vary throughout the day and month of the year. Three demand scenarios are utilized to simulate the range of which water usage can vary and impact the performance of the water system. Detailed information on demands for residential, commercial, industrial, and institutional properties can be found in Appendix D.

The Average Annual Daily Demand (ADD) refers to the total volume of water required in a year averaged out over 365 days. The Maximum Day Demand (MDD) is the largest volume of water expected in a single day. The Peak Hour Demand (PHD) is the largest volume of water expected in a single hour. All three demands (ADD, MDD, PHD) are provided as an average rate in liters per capita per day.

Residential Water Demands[1]:

- Average Annual Daily Demand (ADD) Flow = 450 litres/capita/day
- Maximum Day Demand (MDD) Flow = 900 litres/capita/day
- Peak Hour Demand (PHD) Flow = 1350 litres/capita/day

Commercial, Industrial, and Institutional Water Demands:

- Commercial or Institutional = 22,500 litres/hectare/day
- Industrial = 10,000 – 100,000 litres/hectare/day

Previous reports (WCP, Pre-Design Report) have identified the dry land log sort (log sort) operated by Western Forest Products as a significant water user. The log sort utilizes deck sprinklers for fire protection from a metered service on the Village's water system. Water meter readings from 2015 for the log sort

[1] Demands for Unmetered Developments

have been recorded by the Village, with a maximum demand of 1080m^3/day (12.5 L/s) reported. It is unknown when this reading was recorded and if it corresponds with reported instances of the sprinklers accidentally being left on overnight. The Village has indicated that it will be implementing regular meter readings of the log sort going forward to better ascertain its water usage.

Figure 3 below displays where the model demands were distributed throughout the system, a full-sized map has also been attached as **Appendix E.**

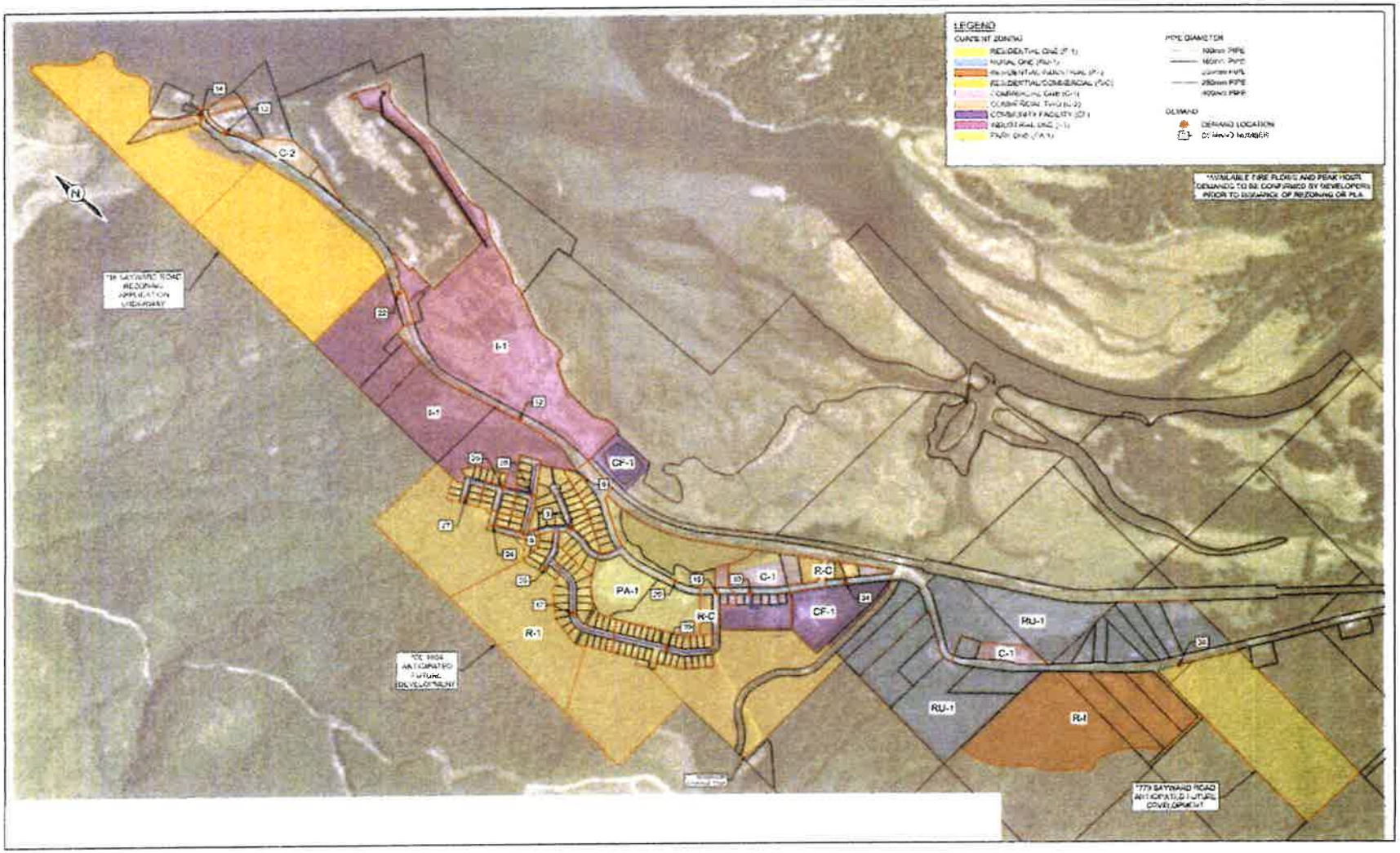


Figure 3: Sayward Water Model Demand Distribution Map

3.2.3. Population Estimate

The population of the Village of Sayward is estimated to be approximately 334 people, according to the Census conducted in 2021. Over the past few years, the population in the Village has declined, except for the most recent data collected in 2021, which saw an increase of 7.4% from 2016 (**Figure 4**). It is anticipated that a number of new developments within the Village will be moving ahead in the foreseeable future. This, combined with the recent population increase, underscores the importance of assessing the water infrastructure capacity for both existing and future conditions.

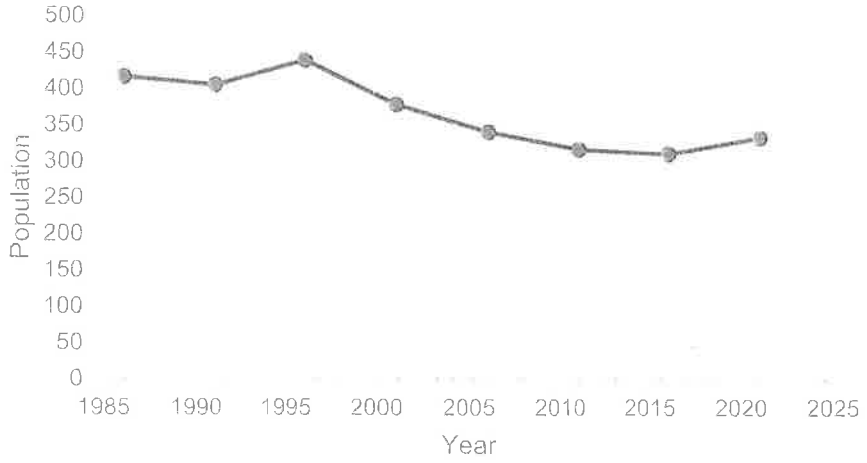


Figure 4: Population Growth/Decline

The existing demands on the water network were based on a population distribution of 2.0 persons per single family residence, which was derived from the census conducted in 2021. Population estimates for residentially zoned properties were determined using parcel counts and specific unit counts for multi-family buildings.

In addition to analyzing the existing demands on the water network, the build-out scenario was examined by increasing the demands for each property to the maximum allowable as per the current zoning. This included increasing the population density from 2.0 to 3.0 persons per single family residence to account for accessory uses such as bed and breakfasts, secondary suites, and boarding houses included in the residential zoning. Vacant properties were added, assuming demand based on the zoning, as well as any planned developments (rezoning or subdivision applications) that are known to likely be built (see **Figure 5**). Known planned developments that were included in the model are:

1. The proposed rezoning and subdivision of 18 Sayward Road,
2. Subdivision of District Lot 1604, which is zoned for residential development (R-1), and
3. Subdivision 779 Sayward Road, which is also zoned R-1.

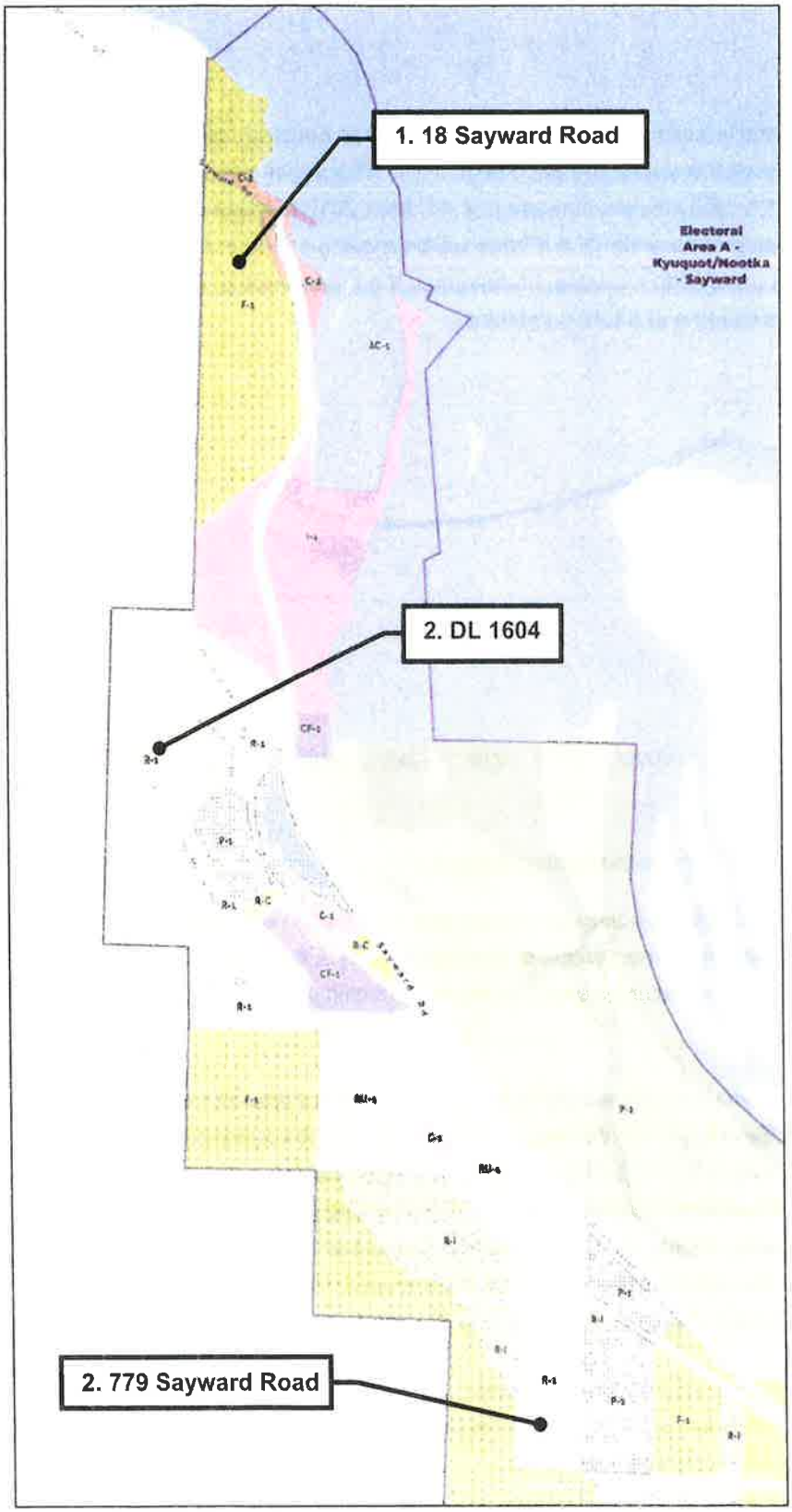


Figure 5: Planned Developments in Sayward

Demands for 18 Sayward Road were estimated based on a preliminary site plan that has been developed in support of the rezoning application currently underway for the property. An estimated 65 dwelling units were allocated for development.

Demands for DL 1604 were estimated based on the minimum lot size allowed by Sayward's residential (R-1) zoning of 668m^2 and a factor of 0.8 to account for roads. Based on this, a maximum of 255 lots is estimated, and the demand for these was divided between three possible connection points to the existing water network.

An estimate of 25 dwelling units was assigned for 779 Sayward Road in the model, which was based on information provided by the Village.

3.2.4. Performance Criteria

Several performance criteria were examined to determine if the water system is operating at an acceptable level under daily and fire flow demands. The required fire flows based on the MMCD guidelines are listed below.

Required Fire Flows Based on Zoning:

- Single Family Residential = 60 L/s
- Multi-Family Residential = 90 L/s
- Commercial = 150 L/s
- Institutional = 150 L/s
- Industrial = 225 L/s

It should be noted that the guidelines for commercial and industrial fire flows depend heavily on the exact land use, and fire flow requirements for such developments must be assessed on a case-by-case basis. The minimum required flow and pressure, as well as the maximum allowable velocity within each section of pipe, are governed by the following scenarios applied to the water system. Furthermore, a deficiency will be reported if any of these requirements are not met, and the maximum pressure in the system at any time should not exceed 850 kPa.

Maximum Daily Demand + Fire Flows (MDD+FF):

During the Maximum Daily Demand flow scenario, the above noted "required fire flows" must be available for each respective zoning, while maintaining a minimum system pressure of 150 kPa (~ 20 psi).

Peak Hour Demand (PHD):

During the PHD flow scenario, system pressures must be maintained at a minimum of 300 kPa (~ 40 psi). Peak Hour Demand flow velocities should also not exceed 2.0 m/s.

Fire Flow Velocities:

As a general design guideline, flow velocities during fire flow events should not exceed 3.5 m/s during a fire flow event. This is to reduce the risk of surge pressures damaging the watermain.

3.3. MODEL VERIFICATION AND CALIBRATION

The Village of Sayward provided flow records for the water treatment plant for 2021. The months of January, July, and August were analyzed as they are representative of the lowest (January) and highest (July and August) water usage periods in a year. The average daily demand (ADD) and maximum daily demand (MDD) were determined from this data.

Table 1: Estimated Demands based on MMCD vs. Actual Demands from Flow Data

Demand	MMCD	2020 Flow Data			2021 Flow Data			
		January	July	August	January	July	August	Yearly
Average Day Demand (L/s)	18.57	3.65	9.47	10.65	3.74	6.45	5.79	5.48[1]
Maximum Day Demand (L/s)	20.40	9.59	16.26	17.99	9.59	10.84	10.36	13.54[2]

[1] *Average Annual Day Demand*

[2] *Maximum Day Demand recorded on September 25, 2021*

As shown in **Table 1** above, the MMCD demands are conservative compared to the recorded actual usage. It was also observed that demands were significantly lower in 2021 compared to 2020. It was assumed that the high water usage in 2020 was largely due to reported instances of site sprinklers being left on overnight at the Western Forest Products log sort. Based on the assumption that the 2021 water data accurately reflects normal water use, the ADD and MDD values were used to calibrate the water model. Reduction factors of 0.295 and 0.664 were applied universally to the ADD and MDD MMCD demands estimates, respectively. These reduction factors were produced by dividing the yearly 2021 ADD and MDD by the MMCD design values.

The use of water meters throughout the system is recommended to confirm the assumptions noted above. Yearly monitoring of water usage by the Village is also recommended to determine if there is a significant increase in usage from 2021 data. Recommendations based on model results should only be used for planning applications, given the assumptions made. Before commencing with detailed design and physical upgrades, future calibration with measured data for residential and commercial users would be required.

3.4. INCONSISTENCIES IN FLOW DATA

A previous presentation was made to staff in 2021 by McElhanney regarding the abnormally high flows leaving the treatment plant as recorded by District Staff. Specifically, in July and August of 2021, the maximum daily demands were 16.26 and 17.99 liters per second respectively. These values are significantly higher than the 2021 maximum day demand of 13.54 liters per second as presented above.

Based on good design practices, the maximum day demand should not exceed the maximum output of the water treatment plant (20 litres per second). Therefore, the number of additional residential units that can be accommodated by the water treatment plant is essentially based on the plant capacity (20 litres per second) minus the maximum day demand. As there are such large discrepancies between the July and August 2021 maximum day demands and the 2021 yearly average maximum daily demand, the number of additional residents that can be accommodated by the existing system varies greatly. **Table 2** summarizes the number of people that can be accommodated on the existing system in relation to the maximum day demands.

Table 2: Additional Units Accommodated by System

Demand	l/s	MMCD MDD Per Capita (l/s)	Additional People Which Can be Accommodated	Number of Houses Based on 2.5 PPH
2021 Average MDD	13.54	0.010	620.16	248
July 2021 MDD	16.26	0.010	359.04	144
August 2021 MDD	17.99	0.010	192.96	77

As per Table 2 above, the capability of the existing water system to accommodate additional development is directly related to the referenced maximum day demand and based on the maximum day demand selected, the number of additional people that can be accommodated by the system varies greatly.

As per previous recommendations, the Village should install a flow meter that is capable of providing and monitoring continuous flow data. This flow data can then be analyzed to give the Village further certainty on the available system capacity during peak operating periods.

Additionally, confirmation of the users contributing to the high water use should be identified and be consulted with to determine if there are ways to reduce their usage.

4. Water System Analysis

4.1. WATER NETWORK DEFICIENCIES

4.1.1. Maximum Daily Demand Plus Fire Flow (MDD+FF) Scenario

When completing the MDD+FF scenario in *WaterCAD* for the existing scenario, two major deficiencies were identified. Under fire flow conditions, two areas in Sayward were found to not meet the fire flow requirements based on the zoning requirements listed in Section 3.2.4 above. The deficiencies are summarized in **Table 3** below. The same deficiencies were also observed for the build-out scenario.

Table 3: Deficiencies identified in existing water system.

Deficiency Number	Deficiency Description	Fire Flow Available for Existing Scenario	Fire Flow Available for Build Out Scenario
1	Inadequate available fire flow for the commercial and industrial zones at the north end of the Village along Sayward Road.	Node J12 Industrial (log sort) = 169 L/s Node J13 Commercial (Government Warf) = 115 L/s	Node J12 Industrial (log sort) = 160 L/s Node J13 Commercial (Government Warf) = 110 L/s
2	Inadequate available fire flow for the commercial and residential/industrial zones at the south end of the Village along Sayward Road	Node J37 Commercial (Motel) = 130 L/s Node J38 Industrial (South end of water system on Sayward Road) = 116 L/s	Node J37 Commercial (Motel) = 129 L/s Node J38 Industrial (South end of water system on Sayward Road) = 114 L/s

MMCD recommended minimum fire flow for Industrial = 225 L/s
Commercial MMCD recommended minimum fire flow for = 150 L/s

Figure 6 below displays available fire flow at each node and deficiency locations throughout the system, a full-sized map has also been attached as **Appendix F**.

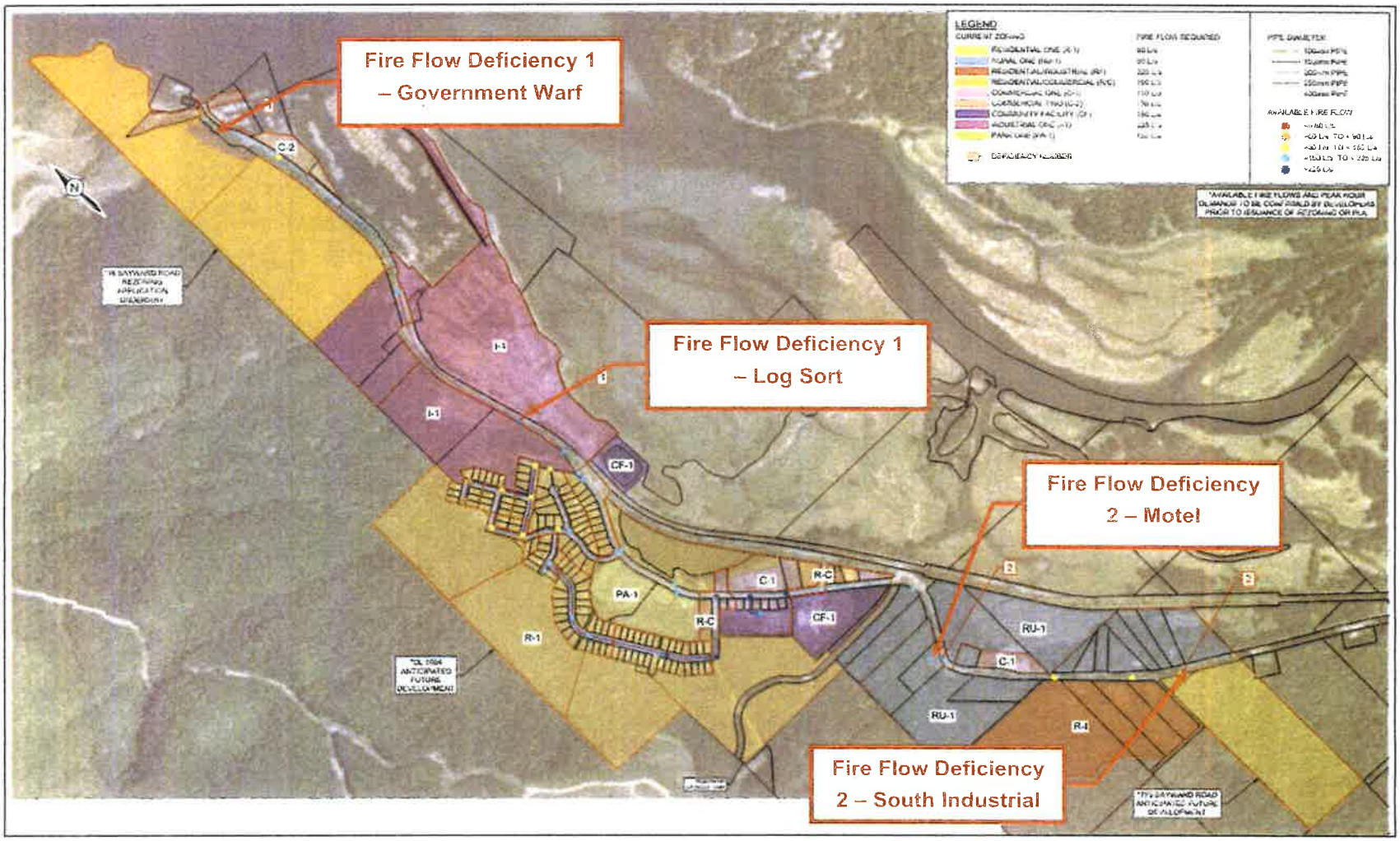


Figure 6: Existing Pipe Network Available Fire Flow and Deficiencies

Potential solutions to address the inadequate fire flow at the north and south ends of the water system include the installation of booster pumps and/or upsizing of water mains. However, more detailed analysis is required to optimize any solutions.

4.1.2. Peak Hour Demand (PHD) Scenario

No deficiencies were found for the PHD scenario in the water system. Pressures remained above the required 300 kPa (~40 psi) and velocities remained below the maximum allowable of 2.0 m/s for both the existing and build out scenarios.

4.1.3. Fire Flow Velocities

Detailed *WaterCAD* output screenshots showing the pipe's water velocities for the existing scenario, for a given zone's corresponding fire flow (see Section 3.2.4 for detail), are provided in **Figure 7** through **11** below. The fire flows were applied independently of each other and situated near 5 existing hydrant locations throughout the pipe network. Each fire flow scenario shows the effects of the given flow on the entire system. If the modeled water system was unable to provide the minimum required fire flow for a given node, the velocity was calculated based on the maximum fire flow available in the system. Pipes shown in blue below have a velocity less than 3.5 m/s, while those highlighted in red have velocities exceeding the MMCD recommended maximum of 3.5 m/s.

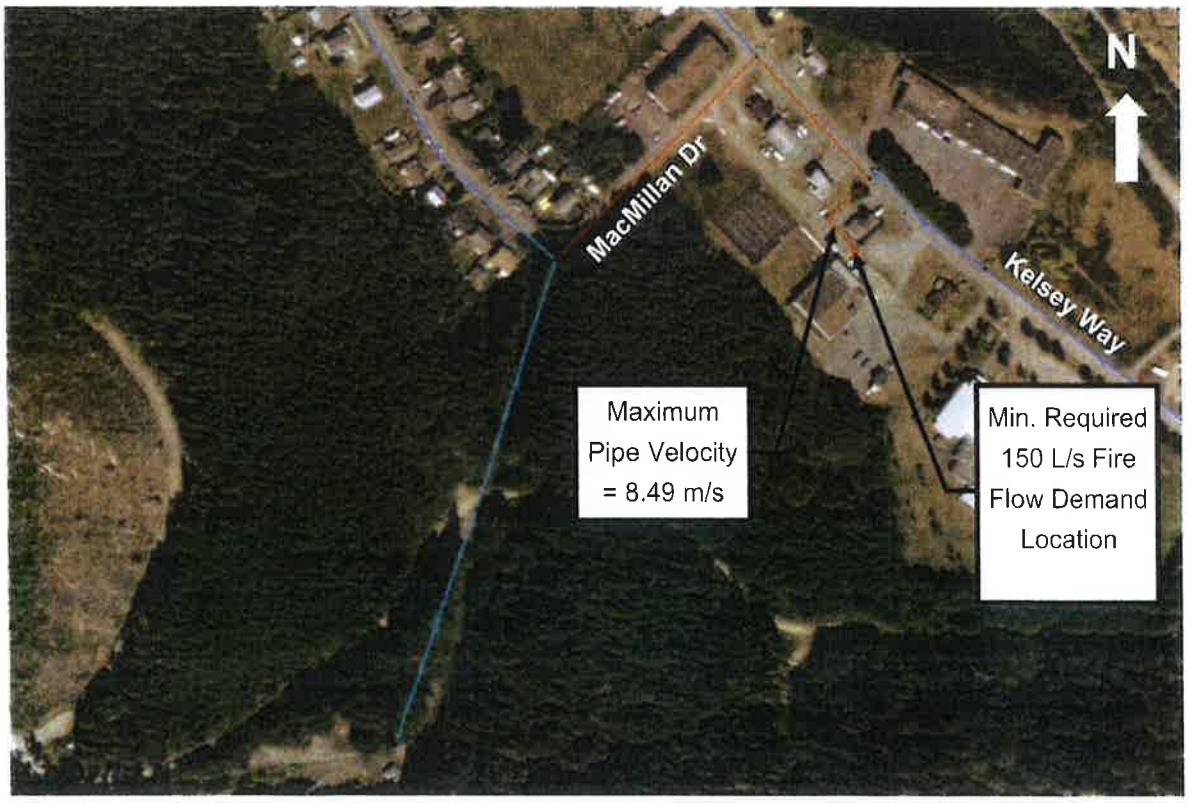


Figure 7: 150 L/s Fire Flow demand applied at Node J31 near Kelsey Recreation Centre

Figure 8: 130 L/s Fire Flow (maximum available) demand applied at Node J32 near Motel

Figure 9: 112 L/s Fire Flow (maximum available) demand applied at Node J13 near Government Warf at north end of Sayward Road

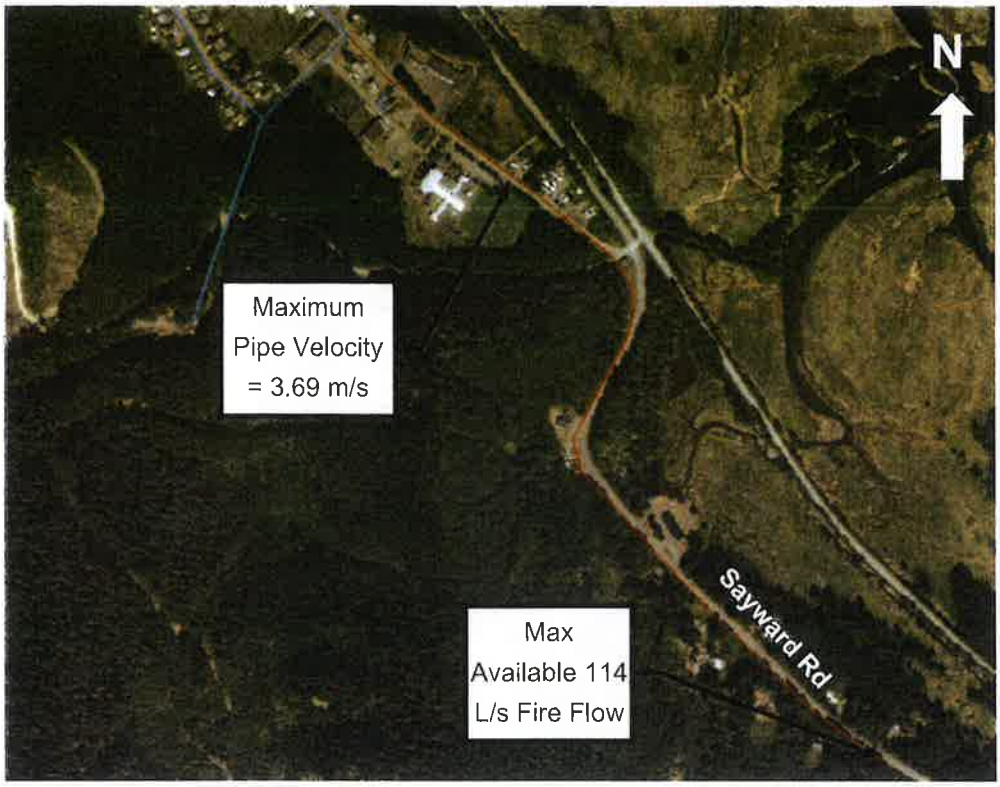


Figure 10: 114 L/s Fire Flow (maximum available) demand applied at Node J38 at South end of Water System

Figure 11: 160 L/s Fire Flow (maximum available) demand applied at Node J12 near Western Forest Products Logsort Facility

As previously mentioned, the risk of surge pressures damaging the watermain increases with high velocities. Although this is less of a concern with PVC pipes, some portions of the water system noted for having velocities exceeding 3.5 m/s in the figures above are AC pipes. Over time, AC pipes can degrade, reducing their structural strength. During a fire flow scenario, high velocities could cause a collapse of an AC pipe, depending on its condition.

4.2. DEFICIENCIES IN TREATMENT PLANT & RESERVOIR

In McElhanney's Pre-Design Report (Appendix B), several deficiencies regarding the Village's single reservoir were noted. The first deficiency is related to operations and maintenance, as the reservoir cannot be cleaned or maintained without isolating it from the system and issuing a boil water advisory.

Secondly, adequate fire flow storage is not provided by the existing reservoir, as it is only capable of providing approximately 6000 L/min (100 L/s) for 2 hours. This is only sufficient for residential and multi-family fire flow requirements based on MMCD Design Guidelines.

The third deficiency identified is that the pre-screening strainer unit (6mm coarse screen) has not been performing adequately. Frequent cleaning is required by Public Works staff due to organic debris blocking the screen and reducing flow into the treatment facility. Organic matter (coniferous needles, etc.) can also pass through the screen and clog the sand filters, which then require additional cleaning and maintenance.

Lastly, there is not adequate flow monitoring in place to ascertain detailed usage rates and patterns for the community, specifically, there is no flow metering on the outlet side of the reservoir. As to the recording of flow data for the log sort, a meter exists but it would need to be manually read multiple times a day for it to be utilized to calculate maximum day flows as there is no device installed to record the flows. As the log sort is a significant user of the overall water supply, at a minimum, having the flow manually recorded on a daily would be highly beneficial.

5. Cost

As part of the Pre-Design report for the water treatment plant and reservoir upgrades, a class C cost estimate was completed. The estimated total cost, including a 30% contingency, was $3,053,208, and the cost estimate is attached to the Pre-Design report in Appendix B. A summary has also been included in **Table 4** below.

As detailed design solutions are not being provided for the fire flow issues at the north and south end of town in this report, a cost has not been included.

To provide the Village with an estimate of the cost to upsize pipes with velocity issues, a unit cost per meter of pipe has been included in **Table 4** below. This will allow the Village to calculate the cost of replacement based on funding available or per desired staging.

Table 4: Unit Cost to Upgrade Water Mains

	Quantity	Unit	Unit Price	Cost
Water Main Pipes[1]	2768	LM	$1250	$3.5M
Upgrades to Treatment Plant	1	LS	$790,000	$790,000
Upgrades to Reservoir	1	LS	$1.1M	$1.1M
Data Logger for Log Sort Water Meter	1	LS	$60,000	$60,000
Flow Monitoring of Reservoir Outflow	1	LS	15,000	15,000
			Construction Cost Subtotal	$5.5M
			General Contingency (30%)	$1.6M
			Engineering and administration allowance (20%)	$1.1M
			Total Cost	**$8.2M**

[1] *Assuming replacement pipe size of 250mm to 300mm*

6. Recommended System Upgrades

6.1. WATER NETWORK

Based on the water system analysis the following recommendations to system upgrades are as follows:

1. Add flow meter with monitoring capability at reservoir outlet.
2. Add flow meter recording capability at log sort.
3. Require water meters for any new water service connections.
4. Conduct hydrant testing which can be used to calibrate and improve accuracy of fire flow water modelling results.
5. Explore using booster pumps or upsizing water pipes to increase available fire flow to north and south end of water system.

6. Upsize water pipes where reported velocity issues have been identified as funding streams become available.

Until such time as the flow monitoring listed in Items 1 and 2 above are installed, staff should manually record flows entering the reservoir as well as those at the log sort a minimum of once daily and ideally, once in the am and once in the pm.

6.2. TREATMENT PLANT & RESERVOIR

A pre-design report was completed by McElhanney Ltd. to review the Village's water distribution and treatment systems. Several deficiencies were determined, and recommendations were made in the report, a summary of the recommended upgrades are as follows:

- Twin the reservoir near the treatment facility to allow for cleaning/maintenance without the Village having to issue a boil water advisory. This will also provide for greater balancing storages, fire flow protection capabilities (for single family, multi-family, commercial, and institutional) and will allow for growth in the region.
- Upgraded strainer system upstream of the Water Treatment Plant to eliminate the intrusion of fine sediment and organics (needles, etc.,)
- A backup chlorination connection to the water system for emergency bypass events
- Addition of a washdown/bathroom area to the water treatment building
- Connection of the filter DAF effluent pond to the sanitary sewer system
- Addition of on hand supply of spare parts/equipment to ensure redundancy in the single treatment train plant.
- The addition of water meters at the Reservoir, Village Campground and Log Sort.

7. Future Development Considerations

In addition to the deficiencies and recommendations, concerns have been expressed by the Village regarding future development in Sayward. It is anticipated that future development will occur at higher elevations in Sayward, which may not be adequately serviced by the existing reservoir, in terms of available fire flow and minimum required pressures. Therefore, it is recommended that a qualified engineer be engaged by the respective developer to provide a detailed analysis to verify the existing system's capacity for any new development located in areas above the current pressure zone boundary. It is recommended that any proposed upgrades be reviewed by the Village to ensure that they are implemented in a wholistic manner which ensures flows to adjacent areas above the existing pressure zone are adequate.

In the event that the existing system lacks sufficient fire flow and minimum water pressure, either a new reservoir must be constructed at a higher elevation and a second pressure zone created, or pumping must be implemented.

The Village is concerned about industrial and commercial development, as constructing a second reservoir would not suffice to provide the required fire flow for industrial use (225 L/s as per MMCD) for

the necessary duration (2.5 hours). Furthermore, the modelling reveals that the land at the south and north ends of Sayward Road cannot achieve the required fire flow for both commercial (150 L/s as per MMCD) and industrial purposes.

Therefore, it is recommended that a qualified engineer be engaged to provide a detailed analysis for any industrial or commercial development. This analysis should either demonstrate the system's capacity or provide design solutions, such as sprinklers or fire walls, to ensure adequate fire protection. Alternatively, the OCP could be amended to restrict land uses requiring higher fire flows (commercial and industrial) at the south and north ends of the Village.

Based on the 2021 flow date provided by the Village, the system is capable of handling additional development in the range of 77 units to 248 units.

8. Conclusion

The existing and build-out scenarios of Sayward's water system reveal fire flow deficiencies at both the north and south ends of the town, particularly with respect to non-residential fire flow demands. Moreover, during fire flow scenarios, high water velocities were detected, which is a significant concern since older pipes in the system are made of asbestos concrete (AC). To address these issues, it is recommended that the Village increase fire flow in the north and south ends of the water system, where commercial and industrial fire flows are not being met and replace aging AC pipes.

The Village boundary includes land within the current pressure zone boundary, and potentially areas above the current zone boundary. Development should not occur above the current pressure zone boundary until such time as a plan is in place to provide adequate water supply and flow to this area, consistent with the OCP.

Existing maximum day flow capacity is close to the treatment plant capacity, although more detailed flow measuring and recording is recommended to further confirm this. The Village should consider the implications of this in approving new developments in the short term. One approach could be to consider allowing the 77 additional residential units outlined in **Table 2** until such time as more accurate maximum daily flow measurements are obtained. The addition of water meters and recording devices to the system is critical in clarifying the water usage of residential versus commercial/industrial consumers on the system.

Appendix A

Statement of Limitations

Statement of Limitations

Use of this Report. This report was prepared by McElhanney Ltd. ("**McElhanney**") for the particular site, design objective, development and purpose (the "**Project**") described in this report and for the exclusive use of the client identified in this report (the "**Client**"). The data, interpretations and recommendations pertain to the Project and are not applicable to any other project or site location and this report may not be reproduced, used or relied upon, in whole or in part, by a party other than the Client, without the prior written consent of McElhanney. The Client may provide copies of this report to its affiliates, contractors, subcontractors and regulatory authorities for use in relation to and in connection with the Project provided that any reliance, unauthorized use, and/or decisions made based on the information contained within this report are at the sole risk of such parties. McElhanney will not be responsible for the use of this report on projects other than the Project, where this report or the contents hereof have been modified without McElhanney's consent, to the extent that the content is in the nature of an opinion, and if the report is preliminary or draft. This is a technical report and is not a legal representation or interpretation of laws, rules, regulations, or policies of governmental agencies.

Standard of Care and Disclaimer of Warranties. This report was prepared with the degree of care, skill, and diligence as would reasonably be expected from a qualified member of the same profession, providing a similar report for similar projects, and under similar circumstances, and in accordance with generally accepted engineering and scientific judgments, principles and practices. McElhanney expressly disclaims any and all warranties in connection with this report.

Information from Client and Third Parties. McElhanney has relied in good faith on information provided by the Client and third parties noted in this report and has assumed such information to be accurate, complete, reliable, non-fringing, and fit for the intended purpose without independent verification. McElhanney accepts no responsibility for any deficiency, misstatements or inaccuracy contained in this report as a result of omissions or errors in information provided by third parties or for omissions, misstatements or fraudulent acts of persons interviewed.

Effect of Changes. All evaluations and conclusions stated in this report are based on facts, observations, site-specific details, legislation and regulations as they existed at the time of the report preparation. Some conditions are subject to change over time and the Client recognizes that the passage of time, natural occurrences, and direct or indirect human intervention at or near the site may substantially alter such evaluations and conclusions. Construction activities can significantly alter soil, rock and other geologic conditions on the site. McElhanney should be requested to re-evaluate the conclusions of this report and to provide amendments as required prior to any reliance upon the information presented herein upon any of the following events: a) any changes (or possible changes) as to the site, purpose, or development plans upon which this report was based, b) any changes to applicable laws subsequent to the issuance of the report, c) new information is discovered in the future during site excavations, construction, building demolition or other activities, or d) additional subsurface assessments or testing conducted by others.

Independent Judgments. McElhanney will not be responsible for the independent conclusions, interpretations, interpolations and/or decisions of the Client, or others, who may come into possession of this report, or any part thereof. This restriction of liability includes decisions made to purchase, finance or sell land or with respect to public offerings for the sale of securities.

Construction Cost Estimates. This construction cost estimate has been prepared using the design and technical information currently available, and without the benefit of survey or geotechnical information. Furthermore, McElhanney cannot predict the competitive environment, weather or other unforeseen conditions that will prevail at the time that contractors will prepare their bids. The cost estimate is therefore subject to factors over which McElhanney has no control, and McElhanney does not guarantee or warranty the accuracy of such estimate

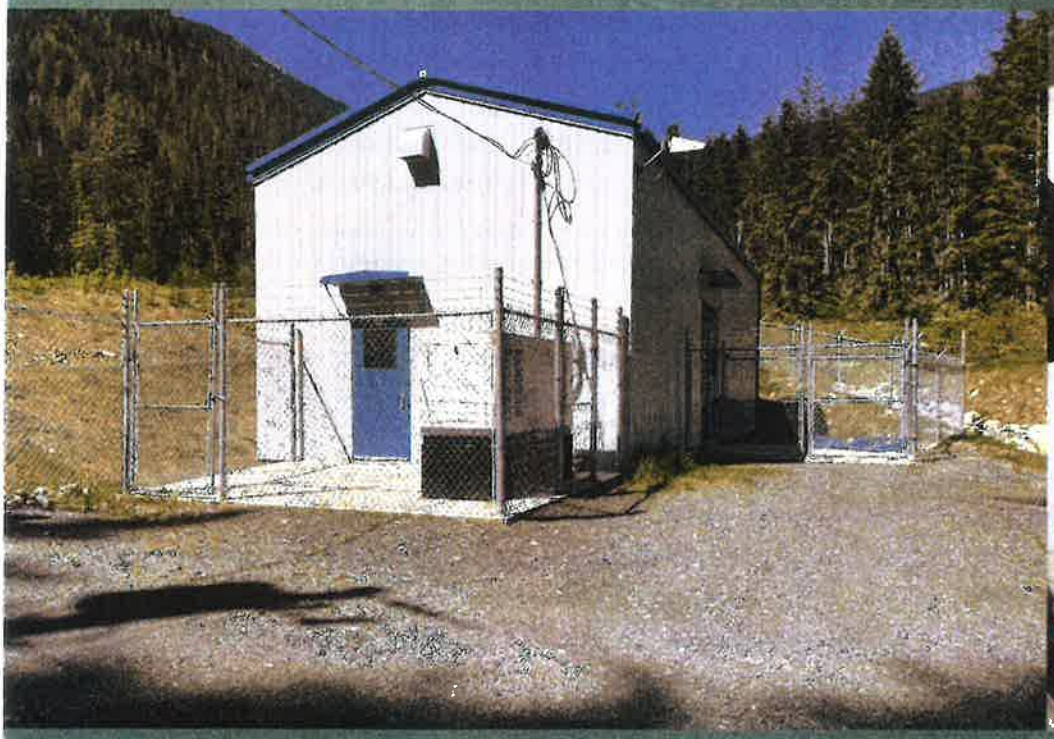
Appendix B

Pre-Design Report for Water System Supply and Conservation Improvements by McElhanney Ltd.

Village of Sayward

McElhanney

CANADA BEST MANAGED COMPANIES



Village of Sayward Grant Application

Pre-Design Report for Water System Supply and Conservation Improvements

August 29, 2022

Revision 1

Prepared for the Village of Sayward | Prepared by McElhanney

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ML Project # 2221-49518-00

1. INTRODUCTION

McElhanney Ltd. has been retained by the Village of Sayward (VoS) to review the Village's water distribution and treatment systems, to determine the deficiencies in the existing system and to propose recommended improvements. The scope of work also included the review of the Village's Water Conservation Plan (WCP) dated June 10, 2022. The VoS water system is unique as usage highly depends on one significant user; the Western Forest Products dry land log sort (Log Sort). The Log Sort utilizes deck sprinklers for onsite fire protection and these sprinklers can generate significant demand on the VoS water treatment system. The intent of this application is to continue the original objective of the previous (2018) grant application, which was utilized for the construction of the new intake, water treatment plant and reservoir. Based on supply and construction costs, the previous grant application work was completed on a design build basis and subsequent scope reductions were required to meet budgetary constraints. Due to the Village's size, they are not able to fund these types of capital projects and were not able to makeup budget shortfalls based on the original design. Therefore, this application pertains to the optimization of the treatment process and ensuring the system has redundancy of critical systems.

The Village of Sayward currently has a Conditional Water Licence (Licence No. 501276 dated July 5, 2019) for the source (Newcastle Creek), which allows for the diversion of 844,595 m^3/year (2313 m^3/day average). As per the WCP, and including the log sort, current maximum daily demand is estimated to the 18 L/s (1555 m^3/day). The current treatment facility was constructed in 2019 and has been in continuous operation to the present day. The treatment facility utilizes a dissolved air floatation (DAF) system complete with anthracite/sand filter and a chlorination system. The potable water network consists of one service area, which is serviced by a 1456 m^3, bolted steel reservoir located adjacent to the treatment facility. The treatment facility is capable of treating the raw water at 10-20 L/s or up to a maximum of 1728 m^3/day.

One of the main recommendations from this review is to twin the reservoir near the treatment facility. The intent behind this recommendation is to allow for the shutdown of one reservoir for cleaning/maintenance purposes without putting the Village on a boil water advisory. The proposed second water reservoir will also provide the Village with greater balancing storages, fire flow protection capabilities and will allow for growth in the region. As per the WCP, the intent of the second reservoir, and subsequent increase to storage capacity, is not intended to allow for an increase in per capita domestic water usage or for loosening of water restrictions during the dry seasons. Further through this project, infrastructure will be put in place to allow the Village to work towards metered service, and better understand flows and commercial usage. A preliminary design drawing (overall development plan and site plan) has been produced and is included with this pre-design report as **Appendix B**.

Other proposed water treatment upgrades include:

- Upgraded strainer system upstream of the Water Treatment Plant to eliminate the intrusion of fine sediment and organics (needles, etc.,)
- A backup chlorination connection to the water system for emergency bypass events

- Addition of a washdown/bathroom area to the water treatment building
- Connection of the filter DAF effluent pond to the sanitary sewer system
- Addition of on hand supply of spare parts/equipment to ensure redundancy in the single treatment train plant.
- The addition of water meters at the Village Campground and Log Sort.

2. WATER TREATMENT REVIEW

2.1. WATER SYSTEM STORAGE

2.1.1. OPERATIONAL FLEXIBILITY AND MAINTENANCE

The main benefit to the added of a second reservoir, is that it would give the VoS the ability to shut down one reservoir for cleaning and maintenance purposes without bypassing the treatment plant and therefore putting the Village on a boil water advisory. The reservoir, which was installed as part of a recent plant upgrade project in 2019, does not provide the VoS with the ability to complete maintenance or cleaning, without completely isolating the reservoir, and therefore would initiate a boil water advisory during these periods.

However, provisions for the 2nd reservoir were included in the 2019 works with 2 stubs (one off the supply from the water treatment building and one off the main distribution pipe) being provided to the proposed reservoir location. An overview of the design for the 2018 works, as designed by Koers and Associates Engineering Ltd, is shown in **Figure 1** below.

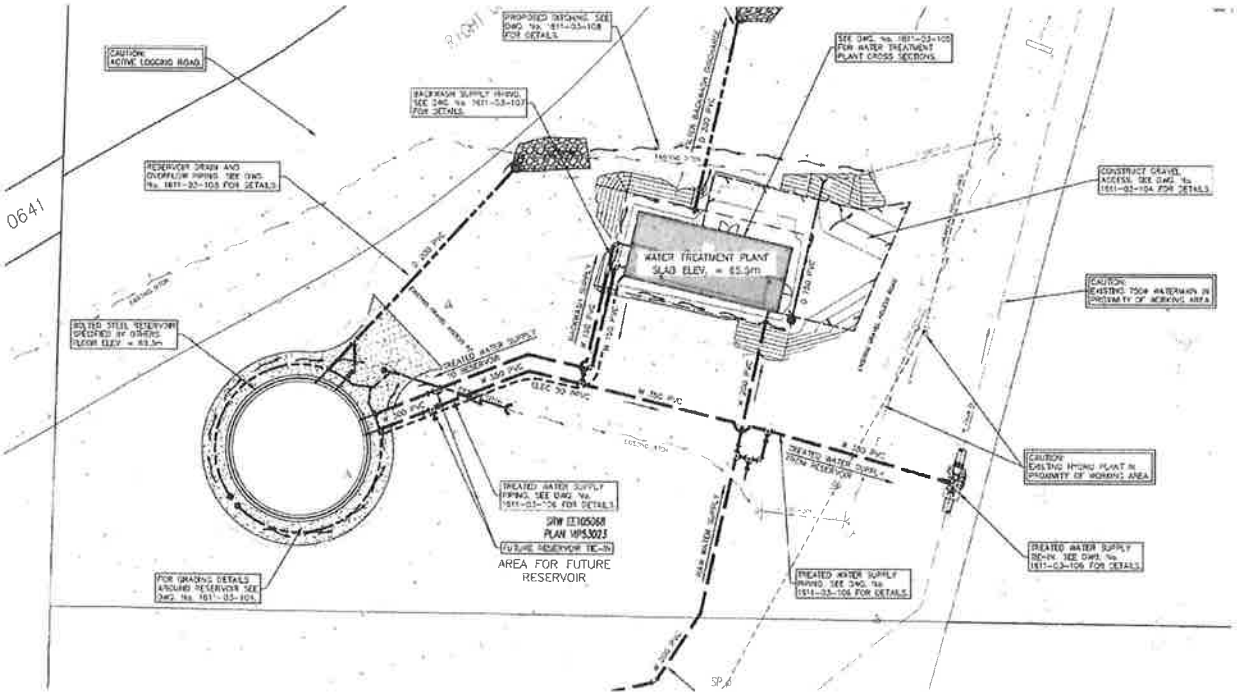


Figure 1: Reservoir Area from Koers Site Plan Drawing 1611-03-103

Therefore, it is proposed to construct an equally sized reservoir, in the dedicated area as shown in **Figure 1.**

2.1.2. INCREASED STORAGE CAPACITY

Currently, the VoS supplies the Log Sort with potable water for sprinkling (fire protection) purposes and is a major contributor to the maximum daily demands (MDD) rates of 18 l/s. Although, standard operating procedures at the sort instruct operators to shut off sprinklers in the overnight period (when no work is happening), instances of overnight sprinkling have occurred. These occurrences, significantly draw down the reservoir at the plant and stress the treatment system. As discussed further on in this Pre-Design Report, it is recommended to install flow meters at both the Log Sort and the treated water effluent line from the reservoirs to accurately track this usage.

Doubling the reservoir capacity would provide 2912 m^3 of total storage. Detail design considerations will be given to the pad elevation of the twin reservoir, so that it's storage capacity can be 100% utilized while ensuring each reservoir can be taken offline for maintenance without the disruption of the treatment process. The proposed reservoir would be situated adjacent to the existing reservoir.

As per the 2014 Master Municipal Construction Documents Association (MMCD) Design Guidelines, reservoirs should be sized to suit the particular circumstances that drive the water system. For this VoS system the calculation for total storage volume is as follows:

- Total Storage Volume = A + B + C; where
    - A = Fire Storage (from Fire Underwriters Survey Guide 2020)
    - B = Equalization Storage (25% of the MDD)
    - C= Emergency Storage (25% of A +B)

The total storage volume can therefore be calculated at various fire flow rates to determine the level of service provided by the system. The calculations are given in **Table 1**, below

Table 1: Total Storage Calculations

A - Fire Storage	B- MDD x 25%	C – 25% of A + B	Total = A + B + C
@ 6000 L/min for 2 Hrs = 720 m^3		277 m^3	1386 m^3
@ 10,000 L/min for 2 Hrs = 1200 m^3		397 m^3	1986 m^3
@ 12,000 L/min for 2.5 Hrs = 1800 m^3	**18 L/s = 389 m^3**	**547 m^3**	**2736 m^3**
@ 14,000 L/min for 3 Hrs = 2520 m^3		727 m^3	3,636 m^3

*Existing storage volume 1456 m^3 / Proposed storage volume 2912 m^3

Based on the Fire Underwriters Survey Guide, the proposed reservoir would approximately double the level of service to the VoS and be able to provide the 12,000 L/min (200 L/s) for the required 2.5 hours. This fire flow rate approaches the MMCD minimum fire flow requirement for industrial areas. It does however cover the MMCD commercial and institutional (schools) fire flow requirements, which are not currently being satisfied with the single existing reservoir.

Utilizing these fire flow rates, allowances for the log sort usage as per the WCP, and the existing/proposed reservoir capacities, estimated maximum design populations at varying fire flow service levels can be calculated. Design populations are calculated based on the total remaining storage, minus allowances for the emergency storage requirement, for unmetered service areas. As per the WCP any new development in the Village would be required to have metered water service connections. This calculation is shown in **Table 2**.

Table 2: Design Service Population Calculations

Storage	Total Storage Required for Fire Flow	25% of Fire Flow For Emergency Storage	Storage for Log Sort (Incl. 25% Charge for Emergency)	Remainder of Storage for MDD w/ Allowance for Emergency	MDD Available for Domestic Usage	Max Design Population – 900 L/cap/day x 25% for MDD Storage
Existing 1456 m^3	@ 6000 L/min for 2 Hrs = 720 m^3	180 m^3	332 m^3	224 m^3	179 m^3	796
	@ 6000 L/min for 2 Hrs = 720 m^3	180 m^3		1680 m^3	1344 m^3	5973
w/ Proposed Reservoir 2912 m^3	@ 10,000 L/min for 2 Hrs = 1200 m^3	300 m^3	332 m^3	1080 m^3	864 m^3	4267
	@ 12,000 L/min for 2.5 Hrs = 1800 m^3	450 m^3		330 m^3	264 m^3	1173

As can be determined from the table, the estimated design populations for each fire flow service level scenario are much greater than the current population in Sayward. This is due to the significant weighting of fire flow storage requirements in the total storage calculation. Excess storage above this is most significant in terms of regular domestic usage.

As shown above, with the addition of the proposed reservoir, the Village would be able to provide a high fire flow rate (>12,000 L/min) and still have sufficient capacity to allow for future growth.

2.1.3. OTHER BENEFITS

Increasing the active balancing storage in the reservoirs also provides multiple other benefits with respect to the operation of the potable water system. Firstly, it allows for fewer pumping cycles, therefore reducing wear on the pumps in the treatment system. Filling cycles can be completed over longer durations, which allow for more efficient chemical usage at the plant and reduced operational costs.

The increase of balancing/emergency storage also gives the VoS the ability to reduce water production during high colour/turbidity events in their raw water source. These short-term events tend to happen during the first large rainfall after an extended dry period.

2.2. UPGRADED PRE-SCREENING

Upstream of the DAF is a static pre-screening strainer with a coarse screen opening of 6mm. It is, located in a concrete valve chamber between the new control weir/intake and the water treatment plant. This strainer unit has not been performing adequately and Public Works staff are routinely called upon to clean the screen, due to lack of flow to the treatment facility. In addition, the coarse screen allows organic mater (coniferous needles, etc.,) to pass through to the DAF system and plug the sand filters. This causes increase backflushing events of the sand screen and takes the plant offline. **Figure 2** shows the material being found in the DAF system.

Figure 2: Pine Needles Found In DAF System

It is proposed to upgrade the existing unit with an Eaton Automatic Self-Cleaning Strainer (model 2596). This automatic strainer is intended for water treatment applications, and it is recommended to install the 200mm (8") model with the DuraWedge screening element. The automatic strainer does require a power source, and there is easy access to power in the strainer vault area. The strainer can be controlled via the Eaton Easy 719 Control Unit, which can be housed in the existing treatment building. In addition, the

automatic backwashing occurs before the treatment process and can therefore be directed to Newcastle Creek.

2.3. CONNECTION OF BACKWASH SYSTEM TO SANITARY SYSTEM

Currently, the backwash effluent is directed to a surface pond. This pond detains and slowly infiltrates the effluent during the backwash cycles and is pumped out twice a year by VoS staff. The pumped effluent is stored on a truck and transported to the VoS sanitary treatment lagoon. The connection of the backwash effluent to the sanitary system will remove the need for the surface storage area and the semi-annual pumping requirements. The connection of the pond to the VoS sanitary sewer system will also allow for the monitoring and treatment of the effluent and will allow for the connection of the proposed washdown/bathroom area.

The connection to the sanitary sewer system will require the construction of approximately 270m of gravity sewer, a tie in at an existing manhole on MacMilan Drive, the installation of proposed sanitary manholes (1050mm and 1200mm in diameter) and the connection of the existing backwash system to the gravity sewer via a control structure. The controlled release is required to ensure the existing Village lift stations are not overwhelmed by the backwashing event.

The VoS already owns a ROW over the proposed alignment as the existing watermain to the Village is aligned on the same route. The design will ensure the offset between the two mains to meet VIHA separation requirements. The proposed alignment is shown in **Figure 3**.

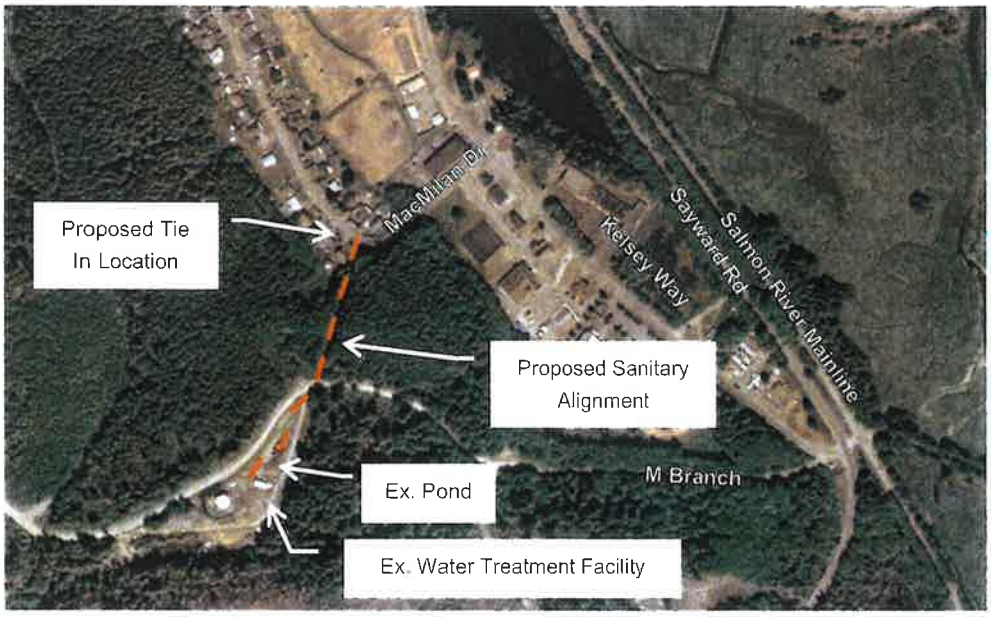


Figure 3: Plan View of Proposed Sanitary Sewer

It is proposed to install a detention tank in the existing pond area to prevent rain water from entering the sanitary sewer system. The detention structure will be required to be sized in conjunction with the control structure and is estimated to have a required volume of 42 m^3. This is based on a control outlet flow of

approximately 5 l/s and the backwash flow rate of 40.4 l/s per filter (20.2 L/s per filter during air scour). Utilizing the current backwash durations in the PLC, it is calculated that approximately 50 m^3 of treated water is used to backwash in each filter in approximately 27 mins. During the backwash interval, it is estimated that the control structure would be capable of releasing approximately 8 m^3. This assumes that the backwash cycles can be programmed so that they do not occur back-to-back and detailed calculations will be required to be completed at time of detailed design.

2.4. CONNECTION OF FORMER CHLORNINE BUILDING FOR BACKUP TREATMENT

It is proposed to reinstate the line from the previous treatment building to the main distribution line as a source of emergency backup treatment during times of extended water treatment plant shutdown. This will ensure that during any catastrophic failure in the treatment system, the Village will have some emergency source of disinfection in the water system.

2.5. ADDITION OF FLOW METER TO TREATED WATER OUTLET

A flow meter on the outlet side of the reservoirs, downstream of the filter backwash connection, is vital to monitor usage rates for the community system. The flow meter will be a key indicator of leaks in the VoS water system and when combined with the proposed flow meter at the Log Sort, Campground and the existing flow meter data, will provide key domestic water usage statics. These statistics can be utilized, with respect to the Water Conservation Report, to assist the Village in the determination of existing system capacities and direct decisions for sustainable development in the Village area. It is recommended to install an electromagnetic type of flow meter in a concrete valve chamber with a 4-20mA output that can be delivered to the control unit inside the treatment building.

2.6. FLOW METERS AT LOG SORT AND VILLAGE CAMPGROUND

As per the WCP, flow meters are recommended at the Campground and Log Sort. The Log Sort is the largest consumer of potable water on the VoS potable water system. Currently, the Log Sort, owned by Western Forest Products, currently pays a flat rate for the potable water, and therefore is not incentivised to limit or closely monitor their water usage. Accurate measurement of this service is critical in the overall understanding of the potable water usage in the Village.

The second location noted for water meter installation is the VoS campsite. This campsite is fully serviced and sees continuous use throughout the summer months. The campsite is a significant commercial user on the water system and combined with the Log Sort, the proposed meters provide good insight to the Village's commercial usage.

2.7. PROPOSED AUTOMATION UPGRADES AT TREATMENT FACILITY.

The Village Public Works Department recently engaged a chemical supplier (Kate Simpson, Alumichem) and the contractor (John Sainas, AWC) to review the current plant performance and the installed coagulant feed system. In general, the recommendations include revisions to the applied chemicals for controlling pH in the water, and the addition of components to better monitor the water chemistry, coagulant addition, and overall system performance. The following is a summary list of recommendations:

1. Conversion of the Caustic Soda addition system to a soda ash system, which requires a change in the chemical addition complete with a new mixing barrel and mixer for converting the dry soda ash to a liquid material. Soda Ash will enhance the alkalinity of the water without significant increasing the pH and is the preferred chemical for this part of the process. It is also recommended to add a second treated water control loop. This will require another pump and injection point post filter.

2. Automated Coagulant Addition: The plant incudes an existing Streaming Current Meter (SCM), which is intended to read the conductivity of the incoming water and adjust the rate of injected coagulant automatically. This SCM is currently not functioning. Allowances for a new SCM have been made, which is likely cheaper than trying to repair the existing. A new SCM will allow for the immediate automation of the process, and the existing one could be returned to the supplier for repair, and then used as a backup if it can be fixed. As a redundant process efficacy check, it has been recommended to install UV transmittance sensors on the raw water line into the plant and to the treated water effluent line out of the plant. This will allow operators to trend and correlate treatment efficacy to coagulant addition, thus optimizing the process chemical requirements. Auto coagulation control is essential as Newcastle Creek is a highly variable raw water source.

2.8. SPARE PARTS/EQUIPMENT FOR TREATMENT FACILITY.

It is proposed to include the procurement of spare parts at the treatment facility. Items included as part of this scope of work do not have built in redundancy in the treatment plant and would cause a shut down to complete repairs. Currently delays in procurement, delivery and installation have potential to further impact times to bring the facility back online, solved by keeping critical parts on hand. These items include:

- Air Compressor for the DAF unit
- Mixer Motor(s)
- Butterfly valves for each size in the plant, and at least one actuator motor of each type.
- Recycle Pump
- Sludge Scraper Paddles x2, and sludge motor.
- Assorted Pressure Gauges
- Coagulant, Flocculant Injector and Chlorine Pump, and Injectors
- PLC Spares
- Pressure relief valve

DAF Aeration Assembly

- Poly Flow Tubing
- 90 Deg Elbow FNPT x FNPT Fittings
- NPT Straight Fittings
- Close Nipple Fittings

Skimmer Assembly

- Sprockets
- Pillowblock Bore Bearing
- Drive Motor
- Conveyor Chain (assembled)
- Conveyor Chain (links)
- Hinge Pins

Auger Assembly

- Drive Motor
- Gland Packing

3. SITE SAFETY IMPROVEMENTS

The existing water treatment facility utilizes soda ash, chlorine, and caustic materials as part of the treatment process. These materials are hazardous, especially to eye exposure. Currently, there are portable eyewash stations at the water treatment facility, but no permanent eyewash. Therefore, a proposed heated eye wash station with heated water is proposed. Additionally, since there is no washroom at the facility, one is proposed as part of the upgrade. Effluent from this proposed area will be directed to the proposed sanitary gravity sewer that is to be constructed to service the DAF/filter backwash effluent.

4. COSTING

Where available, budgetary costs were derived via supplier quotation. As discussed with the reservoir manufacturer, quotations for reservoir materials are only valid for a 2-week period as the raw steel material is volatile at present and has seen significant variables in recent months. Therefore, reasonable allowances have been added to the cost estimates to allow for future changes to these quotations at time of construction, which is assumed to be at least a year away.

The detailed cost estimate as per the Investing in Canada Community-Building Fund in British Columbia template is provided as **Appendix A**.

The total eligible cost of these upgrades is estimated to be $3,053,280.

5. CLOSING

This pre-design report proposing high level improvements for the proposed water system supply and safety improvements is intended to highlight the enhancements to the existing VoS water system. The proposed works are also intended to be the continuation of previous grant application works, which were not able to be completed due to budgetary constraints at the time. The VoS does not have the resources to complete these enhancements without the assistance of funds.

The proposed duplication of treated water reservoir will help VoS public works staff operate the treatment facility more efficiently and will allow for cleaning and maintenance of storage system. The additional will ensure that fire flow protection levels of service exceed the MMCD standards for schools and allow for the future growth in the Village area. The increased balancing storage will allow for fewer pumping cycles, reduce chemical usage during high colour/turbidity events and increase chlorination mixing efficiency.

The addition of the automatic strainer and the completion of automation recommendations will reduce shutdowns of the treatment facility and reduce the burden on Public Works staff. In addition, the proposed sanitary sewer connection will allow for the removal of the backwash pond and will allow for the addition of a permanent washdown area to the treatment facility.

Sincerely,
McElhanney Ltd

Prepared by	Reviewed by
M de Hart	
Michael de Hart, P.Eng.	John Sorenson, P.Eng.
Project Engineer	Project Manager

2022-08-29

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
M. J. de HART
30240

PERMIT TO PRACTICE
McElhanney Ltd.
PERMIT NUMBER: 1003299
Engineers and Geoscientists of BC

APPENDIX A - COST ESTIMATE

Canada | British Columbia

Canada Community-Building Fund in British Columbia

Strategic Priorites Fund
Detailed Cost Estimate

Canada Community-Building Fund BC | UBCM

Applicant Name: Village of Sayward
Project Number: 2221-49518-00
Project Title: Water System Upgrades
Cost Estimate Developed By: McElhanney Engineering Ltd
Date of Cost Estimate (DD-MM-YYYY): 21-06-2022
Cost Estimate Class - A,B,C,D *(see guidance below)* : C
Optional: Phase of Project (if phases identified as part of application):

Please Note: If the project can be phased and each phase can independently meet program outcomes and requirements use the additional tab(s) to provide costs estimate for each phase identified in the application on an individual sheet. Only include the works and the associated costs of the stand-alone phase(s) on the new sheet(s).
This should present a breakdown of overall project costs, with totals corresponding with the amounts in the Project Cost section of the Application Form.

ELIGIBLE COSTS				
	Description	Quantity	Per Unit Amount	Total Cost
Design / Engineering				
Please separate cost associated with project management and project design/engineering	Engineering Fees (15% of Construction Materials & Eligible Costs)	0.15	#########	293,584.65
	Project Management (5% of Construction Materials & Eligible Costs)	0.05	#########	97,861.55
	Design / Engineering Sub-Total:			**$391,446.20**
Construction / Materials				
Items should reflect the major components in your project and align with the works described in the application without going into specific detail, add lines as necessary	Reservoir Addition and Connection to Existing System	1.00	#########	1,069,500.00
	Automatic Strainer	1.00	70,560.00	70,560.00
	Sanitary Sewer Connection to Treatment Facility	1.00	#########	253,000.00
	Backup Chlorination Connection	1.00	40,000.00	40,000.00
	Flow metering on Treated Water Effluent, Log Sort and Campground	1.00	75,000.00	75,000.00
	Automation Upgrades	1.00	89,171.00	89,171.00
	Spare Parts	1.00	75,000.00	75,000.00
	Safety Improvements	1.00	#########	225,000.00
	Construction / Materials Sub-Total:			**$1,897,231.00**
Other Eligible Costs				
Items could include communications, surveying, testing, consultation, environmental assessments etc.	Survey of water treatment facility area including record drawing survey of previous works, existing ROW, existing sanitary manhole, and pond area.	1.00	25,000.00	25,000.00
	Materials Testing (Quality Assurance) during resevoir installation and for import backfill materials under active roadways	1.00	20,000.00	20,000.00
	Environmental Assessment	1.00	15,000.00	15,000.00
	Other Eligible Costs Sub-Total:			**$60,000.00**
Contingency				
Contingency is generally reflective of the Class of Cost Estimate	Class C Estimate - 30% Contingency	0.30	#########	704,603.16
	Contingency Sub-Total:			**$704,603.16**
	TOTAL ELIGIBLE COSTS*:			**$3,053,280**

INELIGIBLE COSTS				
	Description	Quantity	Per Unit Amount	Total Cost
Land Acquisition Cost				
Legal Fees				
Own Force Equipment and Employee costs				
Direct or indirect operating or administrative costs				
Tax rebate				
Routine repair and maintenance costs				
Other				
	TOTAL INELIGIBLE COSTS:			**$0**
	TOTAL PROJECT COSTS (Eligible + Ineligible):			**$3,053,280**

*Totals must match totals in the Project Costs section of the Application Form and Project Record.

Cost Estimate Comments

Please add any information that you feel is relevant to your cost estimate

Cost Estimate Classes - definitions & assumptions *(sourced from the Association of Professional Engineers and Geoscientists of British Columbia (APEGBC)]*

Cost estimate class	Features & Uses	Suggested Contingency for Associated Class
Class A	Detailed estimate based on final drawings and specifications Used to evaluate tenders	±10-15%
Class B	Prepared after completing site investigations and studies, and after defining major systems Based on a project brief and preliminary design Used for project approvals and budgetary control	±15-25%
Class C	Prepared with limited site information and based on probable conditions Captures major cost elements Used to refine project definition and for preliminary approvals	±25-40%
Class D	Preliminary estimate based on little or no site information Represents the approximate magnitude of cost, based on broad requirements Used for preliminary discussion and long-term capital planning	±50%

APPENDIX B – PRELIMINARY DESIGN DRAWINGS

CLIENT: VILLAGE OF SAYWARD

DESCRIPTION: GRANT APPLICATION
SAYWARD, BC

LEGAL: -

McElhanney Project No.: 2221-49518

City Project No.:

PROJECT LOCATION

0 100 200 300 400 500

SCALE 1:10 000

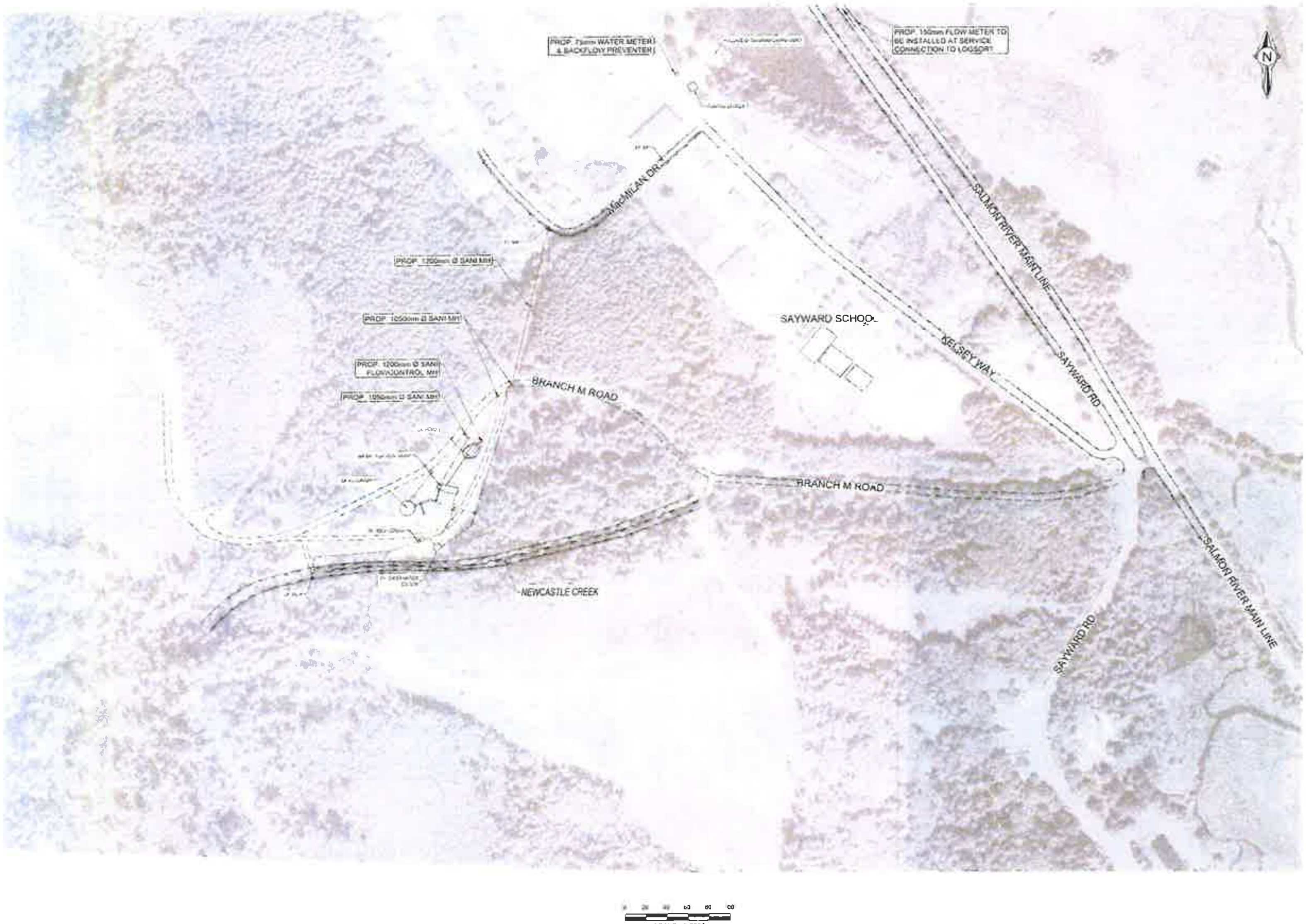
SHEET LIST TABLE				
REFERENCE	DRAWING TITLE		PAGE	REVISION
C101	OVERALL DEVELOPMENT PLAN		1	PA
C102	SITE PLAN		2	PA

NOT FOR CONSTRUCTION

McElhanney

1196 Dogwood Street
Campbell River BC
Canada V9W 3A2
T 250 287 7799

PROJECT:
McElhanney 2221-49518
City



NOT FOR CONSTRUCTION

INFORMATION ON EXISTING UTILITIES MAY NOT BE COMPLETE OR ACCURATE. PRIOR TO CONSTRUCTION CONTRACTOR SHALL EXPOSE LOCATIONS OF ALL EXISTING UTILITIES AND ADVISE THE ENGINEER OF POTENTIAL CONFLICTS.

THIS DRAWING HAS BEEN PREPARED FOR THE CLIENT IDENTIFIED, TO MEET THE STANDARDS AND REQUIREMENTS OF THE APPLICABLE PUBLIC AGENCIES. MCELHANNEY LTD., ITS EMPLOYEES, SUBCONSULTANTS AND AGENTS ACCEPT NO RESPONSIBILITY TO ANY OTHER PARTY, INCLUDING CONTRACTORS, SUPPLIERS, CONSULTANTS AND STAKEHOLDERS, OR THEIR EMPLOYEES OR AGENTS, FOR LOSS OR LIABILITY INCURRED AS A RESULT OF THEIR USE OF THESE DRAWINGS.

McElhanney

1196 Dogwood Street
Campbell River BC
Canada V9W 3A2
T 250 287 7799

PERMIT TO PRACTICE

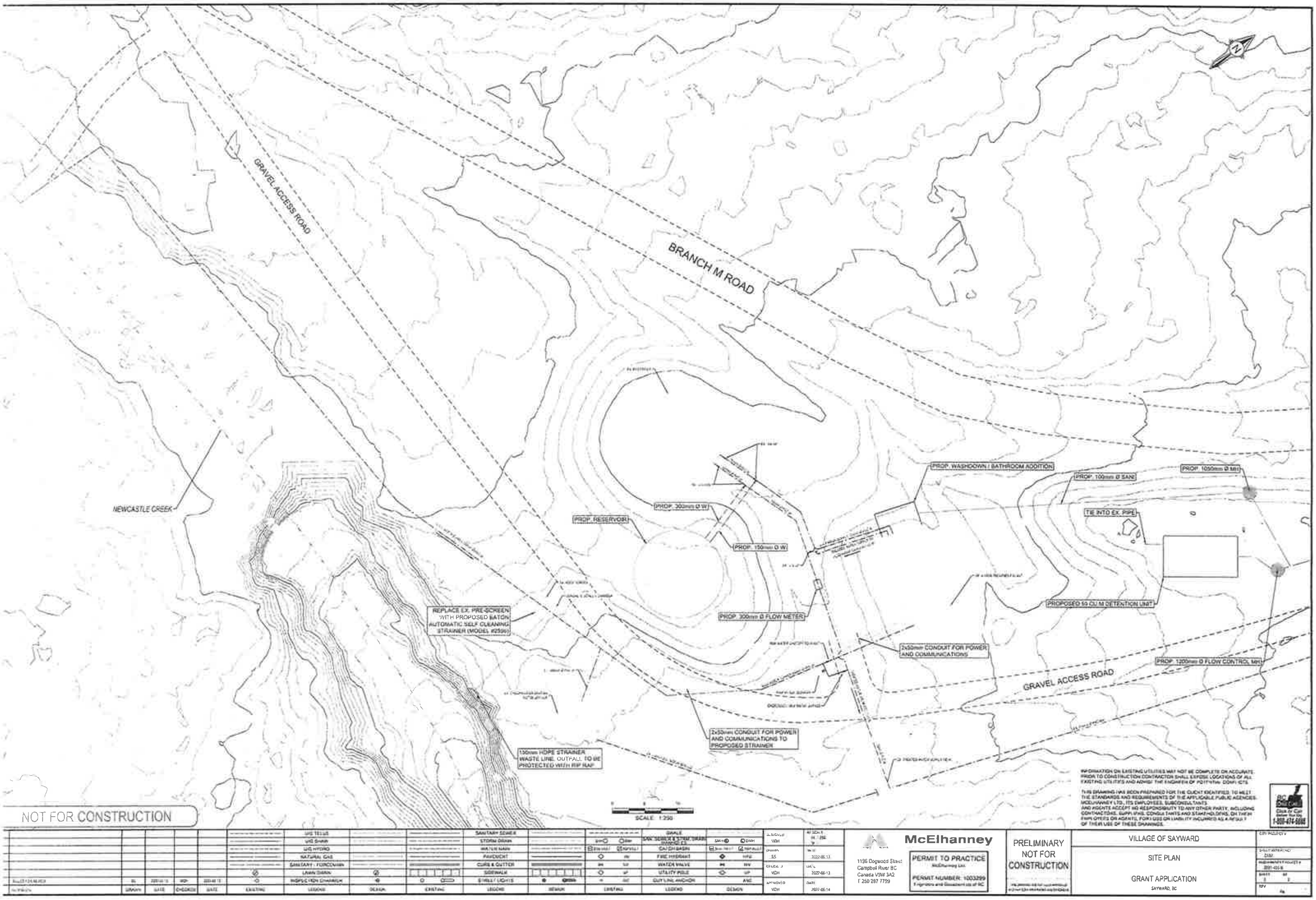
PERMIT NUMBER: 1003299
Engineers and Geoscientists of BC

PRELIMINARY
NOT FOR
CONSTRUCTION

VILLAGE OF SAYWARD

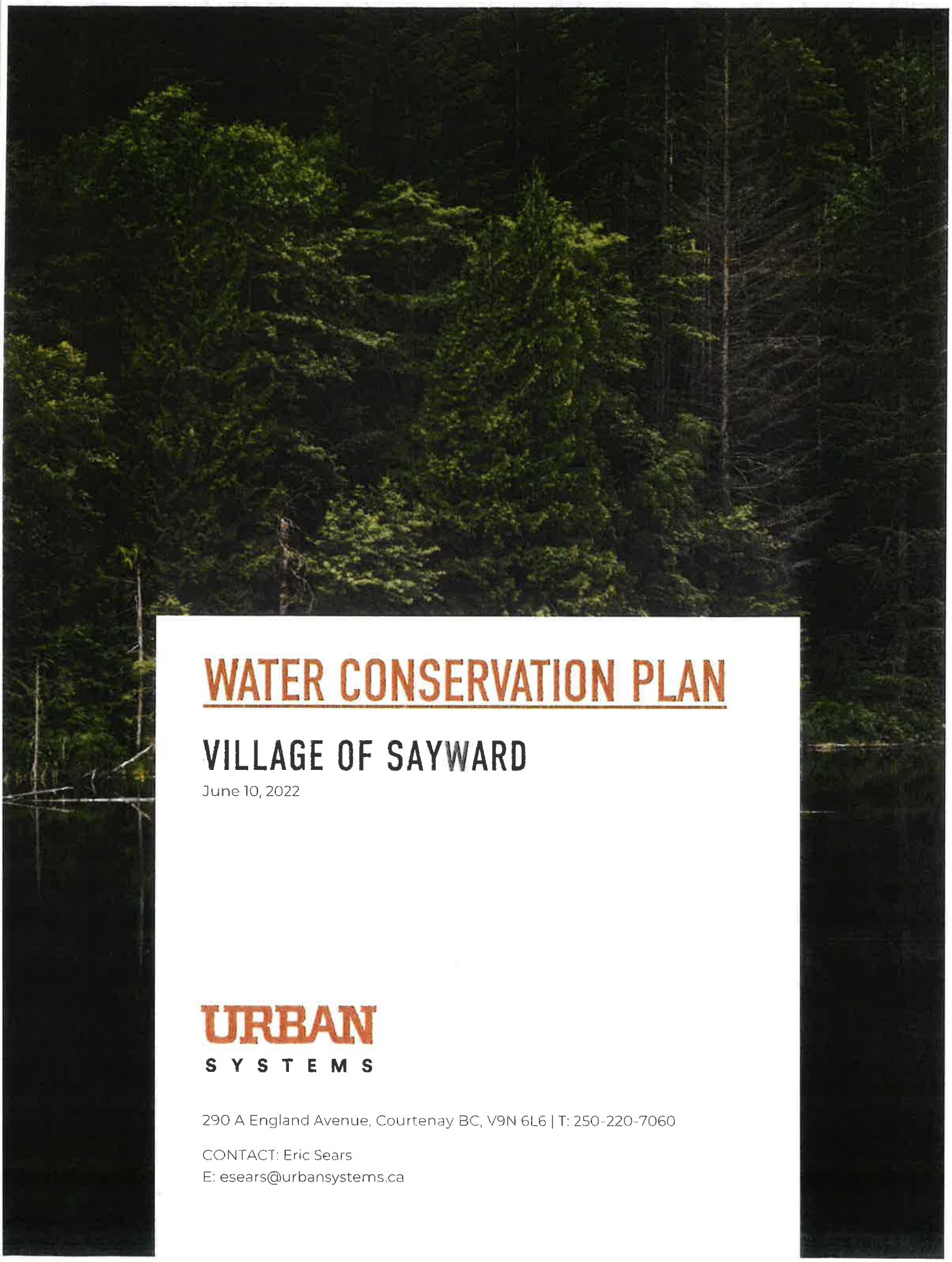
OVERALL DEVELOPMENT PLAN

GRANT APPLICATION
SAYWARD, BC


BRANCH M ROAD
GRAVEL ACCESS ROAD
GRAVEL ACCESS ROAD
NEWCASTLE CREEK
PROP. WASHDOWN / BATHROOM ADDITION
PROP. 100mm Ø SAN
PROP. 1050mm Ø MH
TIE INTO EX. PIPE
PROP. 300mm Ø W
PROP. RESERVOIR
PROP. 150mm Ø W
PROPOSED 50 CU M DETENTION UNIT
PROP. 300mm Ø FLOW METER
REPLACE EX. PRE-SCREEN WITH PROPOSED BATON AUTOMATIC SELF CLEANING STRAINER (MODEL #2536)
2x50mm CONDUIT FOR POWER AND COMMUNICATIONS
PROP. 1200mm Ø FLOW CONTROL MH
2x50mm CONDUIT FOR POWER AND COMMUNICATIONS TO PROPOSED STRAINER
150mm HDPE STRAINER WASTE LINE, OUTFALL TO BE PROTECTED WITH RIP RAP
SCALE 1:250
NOT FOR CONSTRUCTION
McElhanney
1196 Dogwood Street
Campbell River BC
Canada V9W 3A2
T 250 287 7799
PERMIT TO PRACTICE
PERMIT NUMBER: 1003299
PRELIMINARY
NOT FOR
CONSTRUCTION
VILLAGE OF SAYWARD
SITE PLAN
GRANT APPLICATION
SAYWARD, BC
1-800-474-6886

Appendix C

Water Conservation Plan by Urban Systems



WATER CONSERVATION PLAN

VILLAGE OF SAYWARD

June 10, 2022

URBAN SYSTEMS

290 A England Avenue, Courtenay BC, V9N 6L6 | T: 250-220-7060

CONTACT: Eric Sears
E: esears@urbansystems.ca

PREPARED FOR:

Jason Johnson, Chief Administrative Officer
Village of Sayward
652 H'Kusam Way, PO Box 29
Sayward, BC V0P 1R0

290 A England Avenue, Courtenay BC, V9N 6L6 | T: 250-220-7060

File: 2906.0007.01

CONTENTS

TABLES

FIGURES

1.0 BACKGROUND

The Village of Sayward is a small community of approximately 330 residents, located at the mouth of Salmon River in Kelsey Bay, British Columbia. Sayward resides on the unceded Traditional Territory of the K'ómoks, Wei Wai Kai, and Wei Wai Kum First Nations. The population within the Village is served by a community water system, owned and operated by the Village. Along with residential, commercial and community buildings, the community water system also services the log sort and Village Campground.

The purpose of the Village of Sayward's Water Conservation Plan is to first identify the drivers and implications of the Water Conservation Plan then to outline various techniques and methods to provide adequate water quality and quantity to the community now and in the future. This Plan also sets up a framework for the Village to utilize in future water infrastructure planning and upgrades.

Water conservation is important to ensure that the future community of Sayward has access to enjoy clean and safe drinking water, as well as take steps toward environmental sustainability and climate change mitigation.

2.0 CURRENT WATER USE

2.1 WATER USE CUSTOMER BREAKDOWN

Each type of water use customer will have a different water use profile, therefore the breakdown of the water use customers can have a significant impact in water consumption trends. Each community has a different water use customer profile, depending on its makeup and primary industries.

Previous servicing reports analyzed recent (2020/2021) water usage data to determine the water usage broken up by each type of user category. Figure 1 below illustrates the estimated proportion each user category contributes to the system Maximum Daily Demand (MDD).

As noted, there is a significant amount of water that is not accounted for. Currently, the log sort is unmetered, and its exact water usage is therefore unknown. However previous reports have estimated individual water demands for the residential, institutional/commercial, and log sort based on analysis of previous records. There is an understanding that the log sort is a primary user of the water system, as historic water records show that during run periods, there is a significant spike in usage.

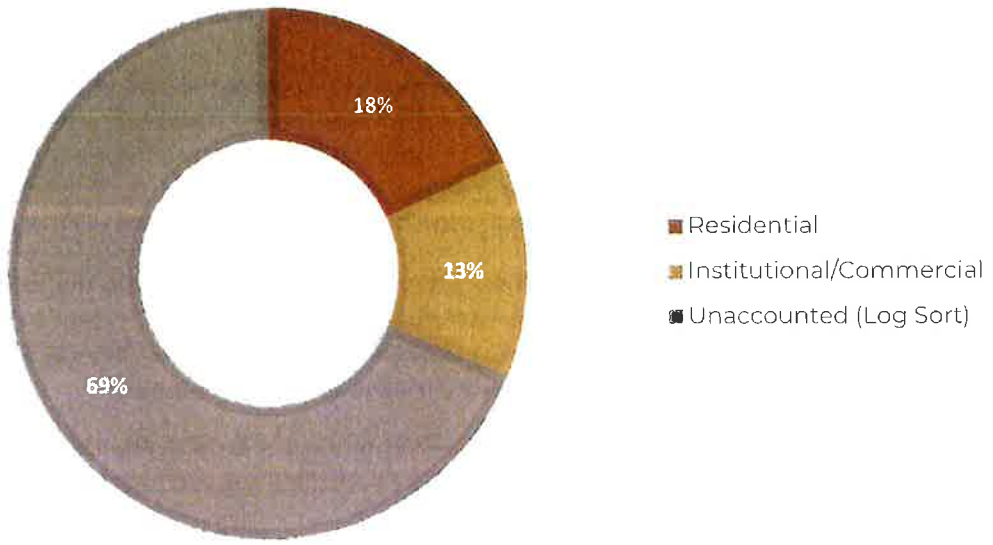


Figure 1: Water System Customer Breakdown of Maximum Daily Demand

2.1.3 INDUSTRIAL, COMMERCIAL, AND INSTITUTIONAL

Industrial, Commercial, and Institutional (ICI) demands are unique to each community and their number of facilities in each sector. The Sayward water system services several ICI facilities such as the Village Campground, the log sort, Sayward Elementary, and the Kelsey Recreation Centre. ICI demands are best determined through metering data. In the case of Sayward, there is no current metering in the system, therefore these demands have been estimated in previous studies analyzing system demand trends. As the log sort is the largest contributor to the MDD, its demands have been separated from the ICI demands to be discussed individually.

Commercial and industrial water uses tend to have a lower seasonal peaking factor than residential users, since they typically use less water for outdoor uses. However, the Village Campground, also an unmetered user currently, would be expected to place seasonal demands on the water system, specifically in the summer months.

Potential primary institutional users in Sayward include the Kelsey Recreation Centre and Sayward Elementary School. The Kelsey Recreation Centre is likely a high-water user, with the majority of its water use being indoor usage, as the Centre includes a pool. Indoor usage of the Sayward Elementary School during the winter will be reflective of plumbing needs in the school. Schools typically have a high outdoor water use during the summer months as irrigation needs can be significant.

It is important to note that these users are active businesses in the community. By understanding where high water use occurs, one can identify opportunities to reduce demands. These opportunities that are easier to achieve can result in significant reductions quickly if the water use can be better understood. However, some industries have high water use but little capacity for water conservation as their water needs are also quite high.

2.1.2 RESIDENTIAL

The Sayward water system services 146 single family homes and 32 strata titles. Residential users in non-agricultural communities are typically the largest water users, accounting for approximately 18% of the community's MDD in Sayward. The increase in water use in the summer months is largely attributed to changing behaviours in residential users that result in outdoor water use, such as irrigation.

2.1.3 UNACCOUNTED WATER USE

Unaccounted for water use is generally caused by leakage in the system, faulty water meters, unmetered services, etc. and can significantly impact total water usage. The Village currently has a significant amount of unaccounted for water.

In Sayward, the log sort is currently unmetered and based on treatment plant records during times of high log sort usage, has been estimated to account for a large portion of the unaccounted 69% of the Maximum Daily Demand (MDD) as shown in Figure 1 above. However, it is important to note that this value was determined through interpolating historic Village water usage data, meaning that this is not an exact value. Regardless, this a high proportion of the total water produced; a typical target in North America for unaccounted for water is often in the "less than 10%" range. The following reasons or combination thereof could additionally contribute the high unaccounted-for water use:

- **System Leakage** – Leaks could be smaller continual leaks at joints, or larger like an old service that was not properly decommissioned. Approximately 45% of the Village's water system assets are classified as poor condition, with reported signs of noticeable deterioration. This increases the probability of leaks present in the system.
- **Village Parks** (e.g., irrigation roadway boulevards and parks).
- **Water System Operation and Maintenance** (e.g., system flushing).
- **Fire Department** (e.g., annual training, emergency events).

2.2 CURRENT AND HISTORIC WATER USE

2.2.1 AVERAGE AND MAXIMUM DAILY DEMAND

Previous technical reports reviewed daily usage volumes that were provided by the Village. This information determined that the total system Average Daily Demand (ADD) and Maximum Daily Demand (MDD) was 10.7 L/s and 18 L/s respectively, based on July 2020, August 2020, and January 2021 data.

The log sort, serviced by the community water system and currently unmetered, as mentioned has been identified as a primary user of the water system, contributing approximately 12.35 L/s to the system MDD when in use. The log sort only uses water at certain times, primarily in the summer to reduce fire hazards. The residential MDD was similarly estimated in the previous report to be 3.28 L/s, leaving the contribution to demand from institutional/commercial 2.35 L/s. Together these demands make up the system MDD illustrated in Figure 1. Utilizing the customer breakdown proportions of the MDD, the ADD was determined under the assumption that these proportions would remain the same due to the lack of available data.

From the residential ADD and MDD with the 2021 Census population data for the Village of Sayward of 334 residents, the approximate per capita demand is then 504 L/c/d and 848 L/c/d, respectively.

2.2.2 CAPACITY ASSESSMENT

The systems water treatment plant was upgraded in 2018 with a design capacity of 20 L/s. From the findings of previous reports, the Village's MDD is nearing the stated design capacity of the treatment plant. Additionally, there are records of comments from Public Works staff noting that the reservoir has been drained below fire protection levels during events of major water usage from the log sort. This suggests that the treatment plant capacity may not be able to be provided for 24 hours continuous demands with the log sort demands and a detailed analysis on the treatment plant capacity should be conducted.

3.0 FUTURE DEMANDS

Accurately estimating the future population based on historical numbers is difficult, however, an allowance for growth must be made within future infrastructure planning to accommodate the possibility of growth, which relies heavily on resource activity within the area. The Village is currently addressing future demands through a Water Master Plan, Sewage Capacity Study, and Asset Management Plan which will be incorporating new and existing infrastructure.

3.1 SERVICE POPULATION GROWTH

A review of the growth trends in Sayward over the last 10 years would reveal that there has been little overall increase in the population within the community over the past few years. The total population as reported by Statistics Canada has hovered around 311 to-334 between 2011 and 2021. However, recently there has been an increase in interest for development of parcels around the Village. The development of 6 lots as a part of the first phase of a larger development has begun. A rezoning application for 30 residential lots and 30 RV sites for another development was also recently submitted, in addition to other interests in rezoning applications currently underway. As a result, there could be an estimated population growth of 150 residents within the next 5 years.

4.0 WATER CONSERVATION PLAN

The purpose of this conservation plan for the Village of Sayward is to provide a key step in the commitment to reduce overall water usage throughout the community, while supporting system efficiency and upgrades. The following sections will first discuss what other communities around BC are doing to conserve water and their future usage targets.

4.1 COMPARISONS WITH OTHER MUNICIPALITIES

The Village of Sayward's ADD, based on the 2021 Census population of 334 and estimated residential water use, is 504 L/c/d. A comparison to other municipalities Average Daily Demand (ADD) is included below in Figure 2.

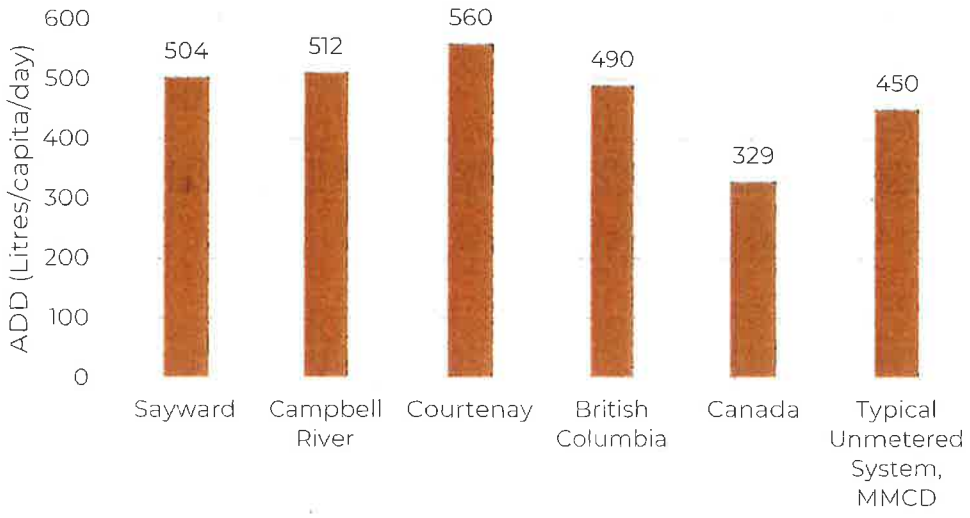


Figure 2: Comparison of Sayward Average Daily Water Demands to Others

Figure 2 indicates that Sayward's water use is slightly higher than the provincial and federal average, however, is in the range of other communities nearby. The Master Municipal Construction Document (MMCD) Association assigns the theoretical water demands to unmetered systems to be 450 L/c/d, slightly lower than the estimated ADD for Sayward's unmetered system.

4.2 WATER REDUCTION TARGET

Due to the lack of metering in Sayward's water system, an accurate target future water usage cannot be quantified for the Village at this time. First, water usage data should be gathered for each customer category, which could be done through installing water meters at primary system users, such as residential areas and industrial users such as the log sort. Once current usages are determined, Sayward can better establish water consumption targets for the future and be able to monitor how to meet targets. Having the monitoring in the system will also allow the Village to adjust this Water Conservation Plan to better suit the community. Table 1 below summarizes water conservation targets other communities in BC have set for themselves.

Table 1: Water Conservation Targets for Others

Municipality/Regional District	Water Conservation Objective/Target
Campbell River	Reduce peak demand to less than twice the winter ADD.
Courtenay	43% reduction in the ADD from 2017 to 2050.
Vancouver	Reduce per capita water consumption by 33% from 2006 levels.
Granisle	Become 33% more efficient from 2015 to 2020.
Squamish	15% reduction in water demand (ADD and MDD) between 2014 and 2031
Comox Valley Regional District	Reduce non-agricultural per capita consumption by 50% by 2050 from 2008 levels.
Capital Regional District	Ensure programs are in place to defer source water expansion for 50 years.
British Columbia Living Water Smart Campaign	33% in water use between 2008 and 2020.

Once the Village of Sayward has quantified their current water consumption, a water conservation target or objective can be set likewise.

4.3 PRINCIPLES IN GUIDING WATER CONSERVATION IN SAYWARD

The Village of Sayward has identified the following drivers for water conservation:

- Climate change resilience,
- Environmental stewardship,
- Reduction of industrial potable water consumption,
- Reduction in operational and maintenance costs.

4.3.1 CLIMATE CHANGE RESILIENCE

A water conservation plan can create an awareness of water and energy waste and its impact on the environment. Reducing water use results in reduced treatment and delivery of water, reduced wastewater treatment, and reduced energy resources necessary for these actions. Lower energy consumption helps to reduce greenhouse gas emissions and decrease the carbon footprint of the Village, thereby addressing climate change.

Climate change has resulted in more extreme weather patterns on both ends of the spectrum. By reducing water consumption, Sayward is less susceptible to adverse impacts in the event of a drought or intense rainfall event.

4.3.2 ENVIRONMENTAL STEWARDSHIP

Environmental stewardship from the perspective of watershed is a driver for Sayward, as the prosperity and growth of a community is dependent on a safe and clean water source. Reduced water use will result in less water being extracted from Newcastle Creek, leaving more baseflow for the natural environment and aquatic habitat.

4.3.3 REDUCTION OF INDUSTRIAL POTABLE WATER CONSUMPTION

The industrial demands placed on the water system have been identified as the primary drivers of the high MDD for the Village. Most industrial water uses do not even require potable water quality, therefore alternative water sources may be considered, significantly decreasing water demands from the water treatment plant.

4.3.4 REDUCTION IN OPERATIONAL AND MAINTENANCE COSTS

Prolonging the life of the water system infrastructure collectively reduces operational and maintenance costs. Reducing water consumption also has an inherent positive benefit by reducing the operational and maintenance costs. The reduction in water consumption means that less water is required to be treated, and in turn, reduce energy costs.

4.4 WATER CONSERVATION MEASURES

There are many actions the Village of Sayward can take to promote water conservation throughout the community. However, it most efficient to first determine focus points based on primary users and how their demands can be reduced. The three primary problem categories identified by the BC Water Conservation Guide (2013) include:

- High seasonal demand
- High year-round demand
- High water shortage risk

For the Village of Sayward, Institutional, Commercial, and Industrial (ICI) has been identified of having the largest demand on the system primarily through the log sort. In general, ICI typically imposes high year-round demands on the water system, however the log sort runs only in the summer months. This would contribute to high seasonal demands during the summer, similarly the Village Campground. Therefore, high seasonal demand has been identified as the primary challenge for the Sayward water system.

4.4.1 LEAKAGE ASSESSMENT

There are many potential reasons for the high unaccounted for water usage, and it cannot be concluded given the data if there is significant leakage or not in the system. Potential leakage within the system should be further explored as data becomes available to obtain more reliable information for future planning. To obtain further information on unaccounted water, additional water meters (such as at the PRV stations) could be installed to define where in the system the water is being lost.

Metering

Installing additional meters at different points in the distribution system would allow for an accurate understanding on which areas are drawing more water from the system. Once the meters have been installed it is significantly easier to determine areas of high usage or leakage. Adequate metering also reduces or eliminates unaccounted water use in the system and gives a proper understanding of the overall system demand, which is optimal when developing a water conservation plan.

In the case of Sayward, metering the log sort would be extremely helpful to quantify and analyse the real demands it has imposed on the system to then be able to effectively determine steps the facility should take to reduce and manage its water usage.

As Sayward's water system is relatively smaller scale, installing source water meters and customer meters would be effective to gather individualized water usage data opposed to zone metering typically used in larger systems. A starting point would be to conduct a cost benefit analysis for water metering, while also exploring opportunities to meter larger users.

System Audit

Water system audits provide an effective measure of keeping record on overall functionality of the system. Exercising audits periodically, typically done on an annual basis, would allow the Village to gather and record important data of their system. Data over longer periods of time can be used to analyze several water usage factors including system depreciation. As the water system infrastructure ages, efficiency declines and leakage can occur, contributing greatly to unaccounted water use.

This water loss management tool can also be utilized at the user end on a demand basis to quantify and mitigate deficiencies in their systems such as irrigation systems. Water use audits can be used for high water users to provide information about how water is used and how usage can be reduced through specific strategies. Audits can be completed for large volume users and large landscaped areas. Audits can be particularly effective for industrial users as their water consumption can often be a significant portion of a community's total water demand like in the case of the Sayward log sort.

4.4.2 WATER REUSE AND RECYCLE

As stated in the BC Water Conservation Guide, more than two thirds of municipal water uses do not require water of drinking quality on average. This brings many opportunities for the Village to reuse "used" water for these needs – such as industrial or environmental needs. Alternatively, treated wastewater could be utilized in these cases instead of drinking water.

For Sayward, water reuse could be an opportunity to reduce drinking water usage at the log sort and other industrial facilities. Specific water reuse systems are available for other needs such as irrigation and other outdoor uses. Rainwater collection through barrels and other means could also be an opportunity.

4.4.3 FIXTURE RETROFITS

Retrofitting household water fixtures (toilets, shower heads, sprinklers, and taps) reduces residential water consumption without jeopardising user comfort or habits. New technologies such as low-flow toilets, faucet aerators, or water recycling systems are exceptional options that could be easily implemented in the community.

4.4.4 WATERSHED MANAGEMENT AND SOURCE PROTECTION

Watershed management can be viewed as a collection of strategies and programs intended to positively influence the activities and land characteristics within a drainage basin. This approach aims to preserve key ecological features that the community relies upon for a consistent safe supply of drinking water. This protection of the water source through a watershed lens has proven effective in reducing the impacts of industry activity which operate within the source water of the municipal water system.

The Village works closely with industry proponents including Western Forest Products, Island Timberlands, and Mosaic on strategies around eliminating potential risks such as limited harvesting in key areas, improved drainage projects, policies, and other key initiatives to protect the watershed that the community relies on.

4.5 CONSERVATION EDUCATION AND AWARENESS

Providing communities with an understanding of water management and consumption concerns helps promote thoughtful conservation practices and builds community sentiment towards the value of water. Information and education are critical to the success of any conservation program as they can directly produce water savings by changing customers' water use habits.

The objective of this conservation measure is for Village staff to build community awareness and most importantly how individuals can help contribute to reductions and improvement in overall conservation and protection of water resources. This awareness building should:

- Describe the source, and sustainability of Village's water resource to support current and future populations
- Identify where areas of highest usage occur and quantify/qualify their impacts in terms of water usage and future capital improvements
- Describe assessment tools to identify high users
- Encourage community members to stay alert for signs of leakage
- Provide contacts for more information on water conservation measures

Opportunities for Village staff to engage with community members and build awareness could include:

1. Publishing digital content on the Village of Sayward Website and social medias (i.e., videos, infographics etc.)
2. Distributing pamphlets to residents
3. Public/school education programs
4. Displaying advertisements at the Municipal Office (i.e., posters)
5. Developing an awareness committee
6. Announcements at community events or individual events to promote awareness

5.0 IMPLEMENTATION STRATEGY

The following table details some initiatives the Village could implement to act towards water conservation.

Table 2: Water Conservation Initiatives

Initiative	Goal	Recommendations
Monitor Water Usage Expenditures	Develop a system to track/monitor system expenditures	• Install flow meters at the water treatment plant • Implement water metering at key areas in the Village, all new residential builds, all existing and corporate/industrial zones.
Monitor Water Usage	Monitor how much water is being pumped/treated for the total community to determine ADD and MDD then assess per capita values and assess leakage	• Install meters throughout system • Once installed, periodically analyze usage trends for user trends, leakages, etc.
Use Water Monitoring Data to inform/adjust the WCP	Monitor how water consumption changes over time to then target the water conservation program to address the highest consumption period	• Gather and analyze meter data and monitor how water usage changes to gain information on the system, including leakage or other repair requirements
Address high industrial water consumption	Reduce high water demands imposed on system from log sort	• The Village and Western Forest Products should enter conversations about exploring alternate water sources for the log sort
Re-evaluate Annual Water Restrictions	Increase community water efficiency through limiting water consumption by imposing restrictions on consumers such as irrigation and summer water use	• Renew "no water" policy for municipal fields • Introduce summer watering restrictions

Add water conserving devices to system	Replace all old, wasteful water fixtures with new conserving designs (low flow toilets, faucet aerators, etc.)	• Explore municipal grants for funding opportunities • Explore the opportunity to develop a fixture replacement rebate program, if older water fixtures are commonly found in the system • Modify bylaws to require low flow fixtures for new developments and renovations

5.1 NEXT STEPS

In addition to the steps required to implement a successful long-term Water Conservation Plan, there are several specific tasks that should be completed as soon as possible. These tasks will provide valuable information on current water use and will help to identify opportunities to reduce water use with minimal investment, to allow the Village set water usage reduction targets. The recommended next steps are as follows:

- Install a water meter at the log sort and Village Campground,
- Explore the possibility of using alternative water sources for the log sort with the owner (Western Forest Products),
- Add water meters to the distribution system to better track specific usages,
- Once metering data is received, investigate system leakages and the need to review the treatment plant capacity,
- Initiate a public consultation process on water conservation, using the information obtained from this report and metering data,
- Develop an annual water restriction plan and schedule,
- Undertake appropriate planning measures to require metering to new and existing properties, prioritizing new development.

Appendix D

MMCD Estimated Demands

Existing Residential Water Demands

Estimated based on MMCD 2014 Design Guidelines

Sayward			
Population	334	capita	(2021 Census)
Dwellings	182	dwellings	(2021 Census)
Density	2.0	Cap/Dwelling	(2021 Census)

Per Capita Demands (MMCD)		
Average Daily Demand (ADD)	450	L/Capita/Day
Maximum Day Demand (MDD)	900	L/Capita/Day
Peak Hour Demand (PHD)	1350	L/Capita/Day

Per Dwelling Demands (MMCD)		
Average Daily Demand (ADD)	0.0104	L/s
Maximum Day Demand (MDD)	0.0208	L/s
Peak Hour Demand (PHD)	0.0313	L/s

Civic Address	Number of Demand Units	Node	ADD (L/s)	MDD (L/s)	PHD (L/s)
140 Hemlock Street 150 Hemlock Street 160 Hemlock Street 161 Hemlock Street 151 Hemlock Street 101 Seaview Street 111 Seaview Street 120 Seaview Street 121 Seaview Street 131 Seaview Street 141 Seaview Street 151 Seaview Street	12	J-27	0.125	0.250	0.375

Civic Address	Number of Demand Units	Node	ADD (L/s)	MDD (L/s)	PHD (L/s)
130 Seaview Street 150 Balsam Street 160 Balsam Street 160 Seaview Street 151 Balsam Street 161 Balsam Street	6	J-25	0.063	0.125	0.188
100 Dyer Drive 110 Dyer Drive 120 Dyer Drive 150 Dyer Drive 160 Dyer Drive 170 Seaview Street	6	J-28	0.063	0.125	0.188
171 Balsam Street 201 Ambleside Drive 211 Ambleside Drive 170 Dryer Drive 200 Ambleside Drive 220 Ambleside Drive	6	J5	0.063	0.125	0.188
230 Ambleside Drive 200 Sayward Heights 210 Sayward Heights 220 Sayward Heights 230 Sayward Heights 231 Sayward Heights 201 Sayward Heights	7	J-29	0.073	0.146	0.219

Civic Address	Number of Demand Units	Node	ADD (L/s)	MDD (L/s)	PHD (L/s)
291 Ambleside Drive 281 Ambleside Drive 271 Ambleside Drive 261 Ambleside Drive 251 Spar Street 241 Spar Street 231 Spar Street 221 Spar Street 211 Spar Street 201 Spar Street 191 Spar Street 210 Spar Street 220 Spar Street 230 Spar Street 240 Spar Street 250 Spar Street 241 Ambleside Drive 231 Ambleside Drive 221 Ambleside Drive 290 Ambleside Drive 280 Ambleside Drive 270 Ambleside Drive 260 Ambleside Drive 250 Ambleside Drive	24	J3	0.250	0.500	0.750

Civic Address	Number of Demand Units	Node	ADD (L/s)	MDD (L/s)	PHD (L/s)
270 MacMillan Drive 290 MacMillan Drive 320 MacMillan Drive 350 MacMillan Drive 360 MacMillan Drive 370 MacMillan Drive 410 MacMillan Drive 420 MacMillan Drive 430 MacMillan Drive 261 MacMillan Drive 311 MacMillan Drive 321 MacMillan Drive 331 MacMillan Drive 341 MacMillan Drive 391 MacMillan Drive 401 MacMillan Drive 411 MacMillan Drive 421 MacMillan Drive	18	J17	0.188	0.375	0.563
190 Kelsey Way 200 Kelsey Way 210 Kelsey Way 220 Kelsey Way 230 Kelsey Way 240 Kelsey Way 250 Kelsey Way 260 Kelsey Way 270 Kelsey Way 280 Kelsey Way 290 Kelsey Way	11	J6	0.115	0.229	0.344

Civic Address	Number of Demand Units	Node	ADD (L/s)	MDD (L/s)	PHD (L/s)
431 MacMillan Drive 441 MacMillan Drive 451 MacMillan Drive 461 MacMillan Drive 471 MacMillan Drive 481 MacMillan Drive 491 MacMillan Drive 501 MacMillan Drive 511 MacMillan Drive 521 MacMillan Drive 531 MacMillan Drive 541 MacMillan Drive 551 MacMillan Drive 561 MacMillan Drive 440 MacMillan Drive 460 MacMillan Drive 470 MacMillan Drive 480 MacMillan Drive 490 MacMillan Drive 500 MacMillan Drive 520 MacMillan Drive 530 MacMillan Drive 540 MacMillan Drive 550 MacMillan Drive 560 MacMillan Drive 570 MacMillan Drive 271 Bloedel Drive	27	J-39	0.281	0.563	0.844
611 MacMillan Drive (Sayward Towers)	32	J15	0.333	0.667	1.000
670 Kelsey Way	1	J-30	0.010	0.021	0.031

Civic Address	Number of Demand Units	Node	ADD (L/s)	MDD (L/s)	PHD (L/s)
701 Kelsey Way 711 Kelsey Way (6 Mobile Homes) 721 Kelsey Way	8	J-34	0.083	0.167	0.250
709 Sayward Rd 710 Sayward Rd 721 Sayward Rd 735 Sayward Rd 743 Sayward Rd 744 Sayward Rd 748 Sayward Rd 753 Sayward Rd 754 Sayward Rd 761 Sayward Rd 762 Sayward Rd 765 Sayward Rd 772 Sayward Rd 780 Sayward Rd 794 Sayward Rd	15	J-38	0.156	0.313	0.469
77 Kelsey Lane 79 Kelsey Lane 83 Kelsey Lane	3	J-22	0.031	0.063	0.094
Total	**176**		**1.83**	**3.67**	**5.50**

Build Out Residential Water Demands

= added to buildout scenario

Estimated based on MMCD 2014 Design Guidelines

Sayward			
Population	334	capita	(2021 Census)
Dwellings	182	dwellings	(2021 Census)
Density	3.0	Cap/Dwelling	*increased to account for allowance of secondary suite/bed & business/boarding*

Per Capita Demands (MMCD)		
Average Daily Demand (ADD)	450	L/Capita/Day
Maximum Day Demand (MDD)	900	L/Capita/Day
Peak Hour Demand (PHD)	1350	L/Capita/Day

Per Dwelling Demands (MMCD)		
Average Daily Demand (ADD)	0.0160	L/s
Maximum Day Demand (MDD)	0.0310	L/s
Peak Hour Demand (PHD)	0.0470	L/s

Civic Address	Number of Demand Units	Node	ADD (L/s)	MDD (L/s)	PHD (L/s)
140 Hemlock Street 150 Hemlock Street 160 Hemlock Street 161 Hemlock Street 151 Hemlock Street 101 Seaview Street 111 Seaview Street 120 Seaview Street 121 Seaview Street 131 Seaview Street 141 Seaview Street 151 Seaview Street	12	J-27	0.192	0.372	0.564

Civic Address	Number of Demand Units	Node	ADD (L/s)	MDD (L/s)	PHD (L/s)
130 Seaview Street 150 Balsam Street 160 Balsam Street 160 Seaview Street 151 Balsam Street 161 Balsam Street	6	J-25	0.096	0.186	0.282
100 Dyer Drive 110 Dyer Drive 120 Dyer Drive 150 Dyer Drive 160 Dyer Drive 170 Seaview Street	6	J-28	0.096	0.186	0.282
171 Balsam Street 201 Ambleside Drive 211 Ambleside Drive 170 Dryer Drive 200 Ambleside Drive 220 Ambleside Drive	6	J5	0.096	0.186	0.282
230 Ambleside Drive 200 Sayward Heights 210 Sayward Heights 220 Sayward Heights 230 Sayward Heights 231 Sayward Heights 201 Sayward Heights	7	J-29	0.112	0.217	0.329

Civic Address	Number of Demand Units	Node	ADD (L/s)	MDD (L/s)	PHD (L/s)
291 Ambleside Drive 281 Ambleside Drive 271 Ambleside Drive 261 Ambleside Drive 251 Spar Street 241 Spar Street 231 Spar Street 221 Spar Street 211 Spar Street 201 Spar Street 191 Spar Street 210 Spar Street 220 Spar Street 230 Spar Street 240 Spar Street 250 Spar Street 241 Ambleside Drive 231 Ambleside Drive 221 Ambleside Drive 290 Ambleside Drive 280 Ambleside Drive 270 Ambleside Drive 260 Ambleside Drive 250 Ambleside Drive	24	J3	0.384	0.744	1.128

Civic Address	Number of Demand Units	Node	ADD (L/s)	MDD (L/s)	PHD (L/s)	
270 MacMillan Drive 280 MacMillan Drive 290 MacMillan Drive 300 MacMillan Drive 320 MacMillan Drive 350 MacMillan Drive 360 MacMillan Drive 370 MacMillan Drive 390 MacMillan Drive 400 MacMillan Drive 410 MacMillan Drive 420 MacMillan Drive 430 MacMillan Drive 261 MacMillan Drive 271 MacMillan Drive 281 MacMillan Drive 291 MacMillan Drive 301 MacMillan Drive 311 MacMillan Drive 321 MacMillan Drive 331 MacMillan Drive 341 MacMillan Drive 391 MacMillan Drive 401 MacMillan Drive 411 MacMillan Drive 421 MacMillan Drive	26	J17	0.416	0.806	1.222	*Vacant undeveloped lots as of 2022*

Civic Address	Number of Demand Units	Node	ADD (L/s)	MDD (L/s)	PHD (L/s)
190 Kelsey Way 200 Kelsey Way 210 Kelsey Way 220 Kelsey Way 230 Kelsey Way 240 Kelsey Way 250 Kelsey Way 260 Kelsey Way 270 Kelsey Way 280 Kelsey Way 290 Kelsey Way	11	J6	0.115	0.229	0.344

Civic Address	Number of Demand Units	Node	ADD (L/s)	MDD (L/s)	PHD (L/s)	
431 MacMillan Drive 441 MacMillan Drive 451 MacMillan Drive 461 MacMillan Drive 471 MacMillan Drive 481 MacMillan Drive 491 MacMillan Drive 501 MacMillan Drive 511 MacMillan Drive 521 MacMillan Drive 531 MacMillan Drive 541 MacMillan Drive 551 MacMillan Drive 561 MacMillan Drive 440 MacMillan Drive 450 MacMillan Drive 460 MacMillan Drive 470 MacMillan Drive 480 MacMillan Drive 490 MacMillan Drive 500 MacMillan Drive 510 MacMillan Drive 520 MacMillan Drive 530 MacMillan Drive 540 MacMillan Drive 550 MacMillan Drive 560 MacMillan Drive 570 MacMillan Drive 271 Bloedel Drive	29	J-39	0.464	0.899	1.363	*Vacant undeveloped lots as of 2022*
611 MacMillan Drive (Sayward Towers)	32	J15	0.512	0.992	1.504	
670 Kelsey Way	1	J-30	0.016	0.031	0.047	

Civic Address	Number of Demand Units	Node	ADD (L/s)	MDD (L/s)	PHD (L/s)	
701 Kelsey Way 711 Kelsey Way (6 Mobile 721 Kelsey Way	8	J-34	0.128	0.248	0.376	
693 Sayward Road (up to two dwellings permitted) 709 Sayward Rd 710 Sayward Rd 721 Sayward Rd 735 Sayward Rd (up to 4 dwellings permitted) 743 Sayward Rd (up to two dwellings permitted) 744 Sayward Rd 748 Sayward Rd 753 Sayward Rd 754 Sayward Rd 761 Sayward Rd 762 Sayward Rd 765 Sayward Rd 772 Sayward Rd 780 Sayward Rd 794 Sayward Rd	21	J-38	0.336	0.651	0.987	*Vacant undeveloped lots as of 2022 and lots that allow for higher density than current use*
77 Kelsey Lane 79 Kelsey Lane 83 Kelsey Lane	3	J-22	0.048	0.093	0.141	
Total	192		3.01	5.84	8.85	

Known Planned Developments (Rezoning and Subdivision)

18 Sayward Road

Density	3.0	Cap/Dwelling

to account for allowance of secondary suite/bed & business/boarding

Single Family and Campground					
	Estimated Number of Dwellings	**ADD (L/s)**	**MDD (L/s)**	**PHD (L/s)**	**Node**
TOTAL	**65**	**1.02**	**2.03**	**3.05**	J14

DL 1604

Density	3.0	Cap/Dwelling

to account for allowance of secondary suite/bed & business/boarding

Single Family					
Lot Portion	**Estimated Number of Dwellings**	**ADD (L/s)**	**MDD (L/s)**	**PHD (L/s)**	**Node**
Upper Portion	75	1.18	2.36	3.54	J24
Middle Portion	98	1.53	3.06	4.59	J29
Bottom Portion	82	1.27	2.55	3.82	J39
TOTAL	**255**	**3.98**	**7.97**	**11.95**	

779 Sayward Road

Density	3.0	Cap/Dwelling	*to account for allowance of secondary suite/bed & business/boarding*

Single Family					
	Estimated Number of Dwellings	**ADD (L/s)**	**MDD (L/s)**	**PHD (L/s)**	**Node**
TOTAL	25	0.39	0.78	1.17	J38

Existing Commercial, Industrial & Institutional Water Demands

Estimated based on MMCD 2014 Design Guidelines

Commercial or Institutional	22500 L/ha/d	(MMCD 2014 Design Guidelines)
Industrial	10,000-100,000 L/ha/d	(MMCD 2014 Design Guidelines)

Civic Address	Dwelling Type/Lot Use	Area (ha)	Demand (L/ha/d)	Demand (L/s)	Node	Subtotal (L/s)
300 Kelsey Way	Civic Recreational (Park & Playing Field)	2.12	28000	0.687	J-20	1.733
560 Kelsey Way	Civic Recreational (Park & Playing Field)	2.27	28000	0.736		
560 Kelsey Way	Civic Recreational (Campground)	1.19	22500	0.310		
600 Kelsey Way	Government Buildings (Post Office)	0.07	22500	0.018	J-15	0.063
601 Kelsey Way	Commercial (Sayward Community Health Society)	0.10	22500	0.026		
610 Kelsey Way	Government Buildings	0.07	22500	0.018		
620 Kelsey Way	Government Buildings (Fire Hall)	0.14	22500	0.036	J-30	0.810
630 Kelsey Way	Government Buildings (Ambulance Station)	0.07	22500	0.018		
652 Hkusam Way	Recreational & Cultural	1.48	22500	0.385		
641 Kelsey Way	Commercial (Library/Shopping Mall)	1.42	22500	0.370		
690 Kelsey Way	School	2.42	22500	0.630	J-34	0.630
699 Sayward Rd	Commercial (Community Hall)	0.3	22500	0.078	J-38	0.323
714 Sayward Rd	Commercial Motel (~25 Units)	0.94	22500	0.245		

Civic Address	Dwelling Type/Lot Use	Area (ha)	Demand (L/ha/d)	Demand (L/s)	Node	Subtotal (L/s)
130 Dyer Dr	Industrial (Hub City Fisheries)	0.2	22500	0.052	J-12	12.552
90 Sayward Hwy	Industry (Logging Operations)	14.72	-	12.500		
16 Sayward Rd	Commercial (Port of Kelsey Bay - Gift store & tourist	0.16	22500	0.042	J-14	0.208
23 Sayward Rd	Kelsey Bay RV Campground	0.64	22500	0.167		
30 Sayward Rd	Commercial (Marina)	0.61	22500	0.159	J-13	0.414
40 Sayward Rd	Commercial (Store, Café, RV Sites)	0.98	22500	0.255		
Total (L/s)						**16.733**

Build Out Commercial, Industrial & Institutional Water Demands

[ ] = added to buildout scenario

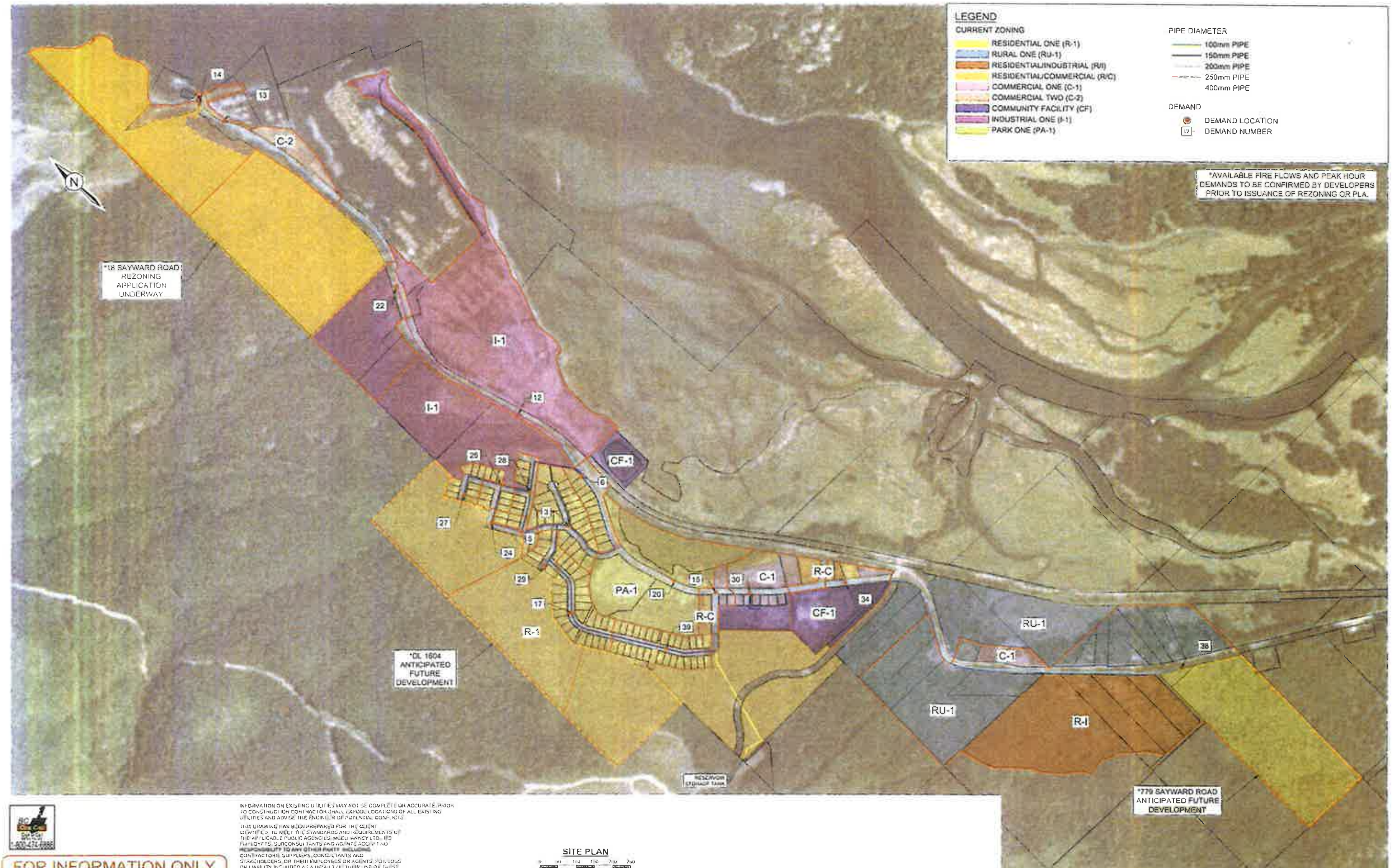
Commercial or Institutior 22,500 L/ha/d
Industrial 10,000-100,000 L/ha/d

Civic Address	Current/Actual Use	Zoning	Area (ha)	Demand (L/ha/d)	Demand (L/s)	Node	Subtotal (L/s)
300 Kelsey Way	Civic Recreational (Park & Playing Field)	Park One (PA-1)	2.12	28000	0.687	J-20	1.733
560 Kelsey Way	Civic Recreational (Park & Playing Field)	Park One (PA-1)	2.27	28000	0.736		
560 Kelsey Way	Civic Recreational (Campground)	Park One (PA-1)	1.19	22500	0.310		
600 Kelsey Way	Government Buildings (Post Office)	Commercial One (C-1)	0.07	22500	0.018	J-15	0.063
601 Kelsey Way	Commercial (Sayward Community Health Society)	Commercial One (C-1)	0.10	22500	0.026		
610 Kelsey Way	Government Buildings (RCMP)	Commercial One (C-1)	0.07	22500	0.018		
620 Kelsey Way	Government Buildings (Fire Hall)	Commercial One (C-1)	0.14	22500	0.036	J-30	1.052
630 Kelsey Way	Government Buildings (Ambulance Station)	Commercial One (C-1)	0.07	22500	0.018		
650 Kelsey Way	Vacant	Commercial One (C-1)	0.07	22500	0.018		
660 Kelsey Way	Vacant	Commercial One (C-1)	0.08	22500	0.021		
652 Hkusam Way	Recreational & Cultural	Community Facility (CF-1)	1.48	22500	0.385		
641 Kelsey Way	Commercial (Library/Shopping Mall)	Commercial One (C-1)	1.42	22500	0.370		
681 Kelsey Way	Vacant	Commercial One (C-1)	0.39	22500	0.102		
691 Kelsey Way	Vacant	Residential / Commercial (R-C)	0.39	22500	0.102		
690 Kelsey Way	School	Community Facility (CF-1)	3.04	22500	0.792	J-63	0.792
699 Sayward Rd	Commercial (Community Hall)	Rural One (RU-1)	0.3	22500	0.078	J-67	0.323
714 Sayward Rd	Commercial (Motel, ~25 Units)	Commercial One (C-1)	0.94	22500	0.245		

Civic Address	Current/Actual Use	Zoning	Area (ha)	Demand (L/ha/d)	Demand (L/s)	Node	Subtotal (L/s)
130 Dyer Dr	Industrial (Hub City Fisheries)	Industrial (I-1) / Residential One (R-1)	4.09	22500	1.065	J-12	13.565
90 Sayward Hwy	Industry (Logging Operations)	Industrial (I-1)	14.72	-	12.500		
14 Sayward Rd	Adama Subdivision Commercial	Commercial Two (C-2)	0.7873	22500	0.205	J-14	0.572
16 Sayward Rd	Commercial (Port of Kelsey Bay - Gift store & tourist info)	Commercial Two (C-2)	0.16	22500	0.042		
18 Sayward Rd	Vacant	Commercial Two (C-2)	0.61	22500	0.159		
23 Sayward Rd	Kelsey Bay RV Campground	Commercial Two (C-2)	0.64	22500	0.167		
30 Sayward Rd	Commercial (Marina)	Commercial Two (C-2)	1.13	22500	0.294	J-13	1.008
40 Sayward Rd	Commercial (Store, Café, RV Sites)	Commercial Two (C-2)	2.74	22500	0.714		
Total (L/s)							**19.107**

Appendix E

Sayward Water Model Demand Distribution Map



FOR INFORMATION ONLY

INFORMATION ON EXISTING UTILITIES MAY NOT BE COMPLETE OR ACCURATE. PRIOR TO CONSTRUCTION CONTRACTOR SHALL EXPOSE LOCATIONS OF ALL EXISTING UTILITIES AND ADVISE THE ENGINEER OF POTENTIAL CONFLICTS.

THIS DRAWING HAS BEEN PREPARED FOR THE CLIENT IDENTIFIED, TO MEET THE STANDARDS AND REQUIREMENTS OF THE APPLICABLE PUBLIC AGENCIES. MCELHANNEY LTD., ITS EMPLOYEES, SUBCONSULTANTS AND AGENTS ACCEPT NO RESPONSIBILITY TO ANY OTHER PARTY, INCLUDING CONTRACTORS, SUPPLIERS, CONSULTANTS AND STAKEHOLDERS, OR THEIR EMPLOYEES OR AGENTS, FOR LOSS OR LIABILITY INCURRED AS A RESULT OF THEIR USE OF THESE DRAWINGS.

SITE PLAN

SCALE: 1:5000

No.	REVISION	DRAWN	DATE	CHECKED	DATE
1	ISSUED FOR INFORMATION	DH	2023-05-31	DC	2023-05-31

McElhanney

1196 Dogwood Street
Campbell River BC
Canada V9W 3A2
1 250 287 7799

PERMIT TO PRACTICE
McElhanney Ltd.
PERMIT NUMBER: 1003299
Engineers and Geoscientists of BC

PRELIMINARY
NOT FOR
CONSTRUCTION

VILLAGE OF SAYWARD

MODEL DEMANDS DISTRIBUTION

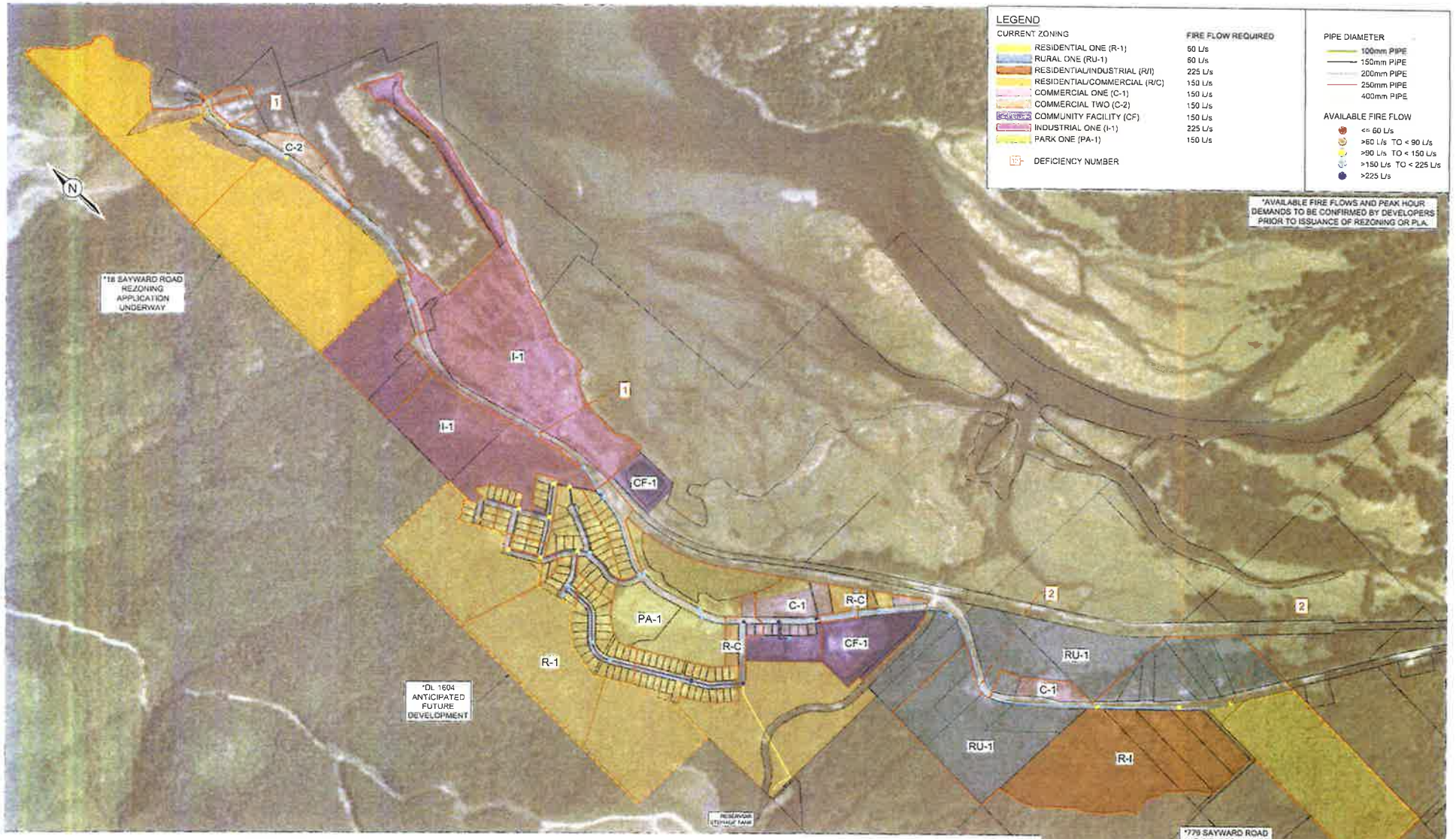
WATER MODEL

SAYWARD, BC

FIGURE 1

Appendix F

Existing Pipe Network Available Fire Flow and Deficiencies



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FOR INFORMATION ONLY

SITE PLAN

SCALE: 1:5000

McElhanney
1199 Dogwood Street
Campbell River BC
Canada V9W 3A2
T 250 287 7159

PERMIT TO PRACTICE
McElhanney Ltd.
PERMIT NUMBER: 1003299
Engineers and Geoscientists of BC

PRELIMINARY NOT FOR CONSTRUCTION

VILLAGE OF SAYWARD

NETWORK AVAILABLE FIRE FLOWS

WATER MODEL

SAYWARD, BC

FIGURE 1

Contact
Dwayne Cybak
250-287-7799
dcybak@mcelhanney.com

McElhanney

CANADA BEST MANAGED COMPANIES

STAFF REPORT

To: Mayor and Council
From: Lisa Clark, CFO/CO
Subject: **Land Exchange Agreement Extension**
Meeting date: June 6, 2023

BACKGROUND

At the March 21, 2023 Council meeting, Council considered a land exchange agreement extension related to encroachment issues at 765 Sayward Rd. The following resolution was passed by Council at this meeting:

> **MOTION R23/70**
> **MOVED AND SECONDED**
>
> THAT Council receive the Land Exchange Agreement Extension staff report for information and discussion; and,
>
> THAT the land exchange agreement amendment be approved; and,
>
> THAT the Mayor and Corporate Officer be authorized to execute the agreement.
>
> **CARRIED**

DISCUSSION

At the request of the Village's solicitor, additional time is needed to satisfy certain subject conditions of the agreement. Staff are seeking Council's approval of an amendment to the agreement which modifies the date in section 8.1 from March 31, 2023, to June 22, 2023.

STAFF RECOMMENDATIONS

THAT Council receive the Land Exchange Agreement Extension staff report for information and discussion.

THAT the land exchange agreement amendment be approved; and,

THAT the Mayor and Corporate Officer be authorized to execute the agreement.

Respectfully submitted,

Lisa Clark, CFO/CO

Attachment:

- **Addendum to Land Exchange Agreement**

ADDENDUM TO
LAND EXCHANGE AGREEMENT

THIS AGREEMENT dated for reference as of the 6th day of June 2023.

BETWEEN:

ERIC JAMES LIND and
ALANNA KIM FRANKS
761 SAYWARD ROAD
SAYWARD, BC V0P 1R0

(the "**761 Owner**")

OF THE FIRST PART

AND:

ROBERT NEIL VAN BROCKLIN
P.O. BOX 174
MERVILLE, BC V0R 2M0

(the "**765 Owner**")

OF THE SECOND PART

AND:

VILLAGE OF SAYWARD
652 H'KSUSAM WAY
SAYWARD, BC V0P 1R0

(the "**Village**")

OF THE THIRD PART

WHEREAS:

A. The Parties entered into an agreement dated December 17, 2022 for the subdivision, sale and consolidation of lands in the vicinity of Sayward, British Columbia (the "Agreement").

B. The Agreement provided for several subject conditions to be waived or fulfilled on or before February 28, 2023 (the "Subject Conditions"), which date was extended to March 31, 2023 by mutual agreement, however the Parties still require additional time to satisfy certain of those Subject Conditions.

C. The Parties wish to extend the date for satisfaction of certain of the Subject Conditions and to continue the Agreement by way of the addendum that follows (the "Addendum").

NOW THEREFORE, in consideration of the premises and covenants contained herein, the sufficiency of which is acknowledged by the parties, the parties agree as follows:

1.0 AMENDMENT TO AGREEMENT

1.1 The Parties agree to amend the date described in paragraph 8.1 of the Agreement to read "June 22, 2023", as it relates to the Subject Conditions in sections 8.1(c), (d) and (e), and the parties confirm that the Subject Conditions in sections 8.1(a) and (b) have been fulfilled.

1.2 The Parties agree that all other terms of the Agreement remain in force and are not amended or waived by this Addendum.

2.0 COUNTERPART

2.1 This Addendum may be executed in counterparts and such counterparts together shall constitute a single instrument. Delivery of an executed counterpart of this Agreement by electronic means, including by facsimile transmission or by electronic delivery in portable document format (".pdf"), whether containing signatures by hand of the signatory or computer or machine-generated signatures, shall be equally effective as delivery of a manually executed counterpart hereof, and will constitute delivery of an original document.

The Parties have executed this Addendum as of the 6th day of June, 2023.

_____	)	
Signature of Witness	)	
_____	)	
Printed Name	)	
_____	)	_____
Address (Street)	)	**ERIC JAMES LIND**
_____	)	
City	)	
_____	)	
Occupation	)	

_____
Signature of Witness

_____
Printed Name

_____
Address (Street)

_____
City

_____
Occupation

_____
ALANNA KIM FRANKS

_____
Signature of Witness

_____
Printed Name

_____
Address (Street)

_____
City

_____
Occupation

_____
ROBERT NEIL VAN BROCKLIN

VILLAGE OF SAYWARD, by its authorized signatories,

_____
Mark Baker, Mayor

_____
Lisa Clark, Corporate Officer

STAFF REPORT

To: Mayor and Council
From: Lisa Clark, CFO/CO
Subject: **Sayward Clinic Renewal Lease**
Meeting date: June 6, 2023

BACKGROUND

The Village of Sayward (Landlord) entered into a lease agreement with the Sayward Community Health Society (Tenant) on February 1, 2018, for the purpose of leasing the building located at 601 Kelsey Way to the Tenant for the purpose of operating a community health clinic. The term of the lease was for a period of 5 years ending on February 1, 2023, with the option for renewal of two (2) additional terms of five (5) years by mutual agreement of the Landlord and the Tenant.

DISCUSSION

The Tenant has indicated their desire to exercise the option to renew the lease for the first renewal term of five (5) years. No changes to the original lease are recommended by staff at this time and the renewal will have the same conditions as outlined in the original lease. Considering the community service that the clinic provides to Sayward residents, staff recommend Council support this renewal.

STAFF RECOMMENDATIONS

THAT Council receive the Sayward Clinic Renewal Lease staff report for information and discussion.

THAT the Renewal Lease between the Village of Sayward and the Sayward Community Health Society be approved; and,

THAT the Mayor and Chief Administrative Officer be authorized to execute the agreement.

Respectfully submitted,

Lisa Clark, CFO/CO

Attachment:

- ***Lease Renewal 2023***

RENEWAL LEASE

THIS RENEWAL LEASE AGREEMENT is dated for reference the 1st day of February, 2023.

BETWEEN:

VILLAGE OF SAYWARD
652A H'Kusam Way
PO BOX 29
Sayward, BC V0P 1R0

(the "**Landlord**")

OF THE FIRST PART

AND:

SAYWARD COMMUNITY HEALTH SOCIETY
601 Kelsey Way
Sayward, BC V0P 1R0

(the "**Tenant**")

OF THE SECOND PART

WHEREAS: The Landlord and the Tenant, on February 1, 2018, entered into a lease agreement which is attached to this Renewal Lease as Schedule "A" (the "Original Lease") for the lease to the Tenant of a building (the "Building") situated on the land that is legally described as:

PID: 001-120-484

Lot 1, Section 31, Township 3, District Lot 305, Sayward Land District, Plan 31878

(the "**Land**");

AND WHEREAS the Original Lease included the grant of a non-exclusive licence to the Tenant to use those parts of the Land surrounding the Building;

AND WHEREAS the Original Lease provided in section 4.1 that the Lease may be renewed for two additional terms of five years by mutual agreement of the Landlord and Tenant;

AND WHEREAS the parties have agreed to renew the Original Lease for the first renewal term of five years as provided for in section 4.1;

NOW THEREFORE in consideration of the grants, rents, and mutual covenants hereinafter reserved and contained, the parties covenant and agree as follows:

1. The Landlord hereby grants to the Tenant a lease of the Building for a renewal term of five years commencing February 1, 2023 (the "First Renewal Term").

2. This Renewal Lease is expressly made a part of the Original Lease to the same extent as if incorporated in the Original Lease, and the parties agree that all agreements, covenants, conditions, and provisos contained in the Original Lease (including the payment of rent, and the grant to the Tenant of a non-exclusive licence to use those parts of the Land surrounding the Building), except as amended or altered in this Renewal Lease, will be and remain unaltered and in full force and effect during the First Renewal Term. For greater certainty, this Renewal Lease does not include any further or additional rights of renewal than are set out in the Lease, and the Landlord and Tenant both agree that in accordance with section 4.1 of the Lease, the Lease may be renewed by mutual agreement for one additional five-year renewal term commencing at the end of the First Renewal Term.

3. The Landlord and the Tenant acknowledge and agree to perform and observe, respectively, the obligations of the Landlord and the Tenant under the Original Lease as renewed and modified hereby. The Landlord and the Tenant hereby confirm and ratify the Original Lease and renewal of it as hereby further renewed and amended.

IN WITNESS WHEREOF the parties have executed this modification agreement to be effective on the date first written above.

VILLAGE OF SAYWARD, by its authorized signatories:

_____

Chief Administrative Officer

_____

Mayor

[Execution continued on following page]

SAYWARD COMMUNITY HEALTH SOCIETY, by
its authorized signatories:

_____

Authorized Signatory

_____

Authorized Signatory

Schedule "A"
Original Lease

LEASE OF BUILDING

THIS LEASE is dated for reference the 1 day of February, 2018.

BETWEEN:

VILLAGE OF SAYWARD
652A H'Kusam Way
PO BOX 29
Sayward, BC V0P 1R0

(the "**Landlord**")

OF THE FIRST PART

AND:

SAYWARD COMMUNITY HEALTH SOCIETY
601 Kelsey Way
Sayward, BC V0P 1R0

(the "**Tenant**")

OF THE SECOND PART

WHEREAS:

A. The Landlord is the registered owner in fee simple of a parcel of land located in Sayward, British Columbia and legally described as:

PID: 001-120-484

Lot 1, Section 31, Township 3, District Lot 305, Sayward Land District, Plan 31878

(the "**Land**");

B. The Landlord is the owner of a building on the Land (the "**Building**");

C. The Landlord wishes to lease to the Tenant and the Tenant wishes to lease from the Landlord the Building; and

D. The Landlord wishes to grant the Tenant a non-exclusive license to use those parts of the Land surrounding the Building (the "**License Area**").

NOW THEREFORE in consideration of the rents, covenants and agreements contained herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties covenant and agree as follows:

1.0 LEASE

1.1 The Landlord leases the Building to the Tenant on the terms and conditions set out in this Lease.

2.0 TERM

2.1 This Lease shall be for a term of five (5) years, commencing on the 1 day of February, 2018 and ending on the 1 day of February, 2023 (the "**Term**").

3.0 RENT

3.1 The Tenant shall pay the Landlord rent of ONE DOLLAR ($1.00) for the Term (the "**Rent**").

3.2 The Tenant shall pay all rents and additional rents reserved under this Lease.

4.0 RENEWAL

4.1 The Lease may be renewed for two (2) additional terms of five (5) years by mutual agreement of the Landlord and Tenant.

5.0 USE

5.1 The Tenant shall use the Building for the purpose of a community health clinic, and for no other purpose without the advance written consent of the Landlord.

6.0 OPERATING EXPENSES, TAXES AND UTILITIES

6.1 The Tenant is responsible for all operating and maintenance expenses in relation to its use of the Building, except as expressly provided otherwise in this Lease.

6.2 The Tenant shall pay all applicable taxes, rates – **water, sewer, and garbage**, duties, and assessments whatsoever, whether municipal, provincial, federal, or otherwise, including GST, charged upon the Building or the Tenant on account of the Tenant's use of the Building.

6.3 The Tenant shall pay as they become due all charges for utilities used at or in the Building, including without limitation, charges for all gas, oil, telephone, electricity and internet used in the Building.

7.0 REPAIRS, MAINTENANCE, AND ALTERATIONS

7.1 The Tenant shall at all times maintain the Building to an excellent standard of repair and maintenance.

7.2 The Tenant shall not alter the Building, or construct or place any signs on the exterior of the Building without first obtaining the written consent of the Landlord, and any permits and inspections required by law.

7.3 Any construction, placement, addition, or alteration carried out in or on the Building must be carried out at the Tenant's sole cost.

7.4 The issuance of any permit or the performance of any inspection by the Landlord in its capacity as a local government does not constitute the granting of consent in its capacity as Landlord under this Lease.

7.5 The Tenant is not responsible for replacing the Building's envelope (excluding doors and windows), foundation, mechanical, plumbing, heating, or utility systems, or for carrying out major structural repairs on the Building.

7.6 The Tenant shall be responsible for regular and proper maintenance of all paved **and grass** surfaces on the Licence Area, which maintenance includes snow, ice, and leaf removal. **The Landlord will provide snow removal for the parking area**.

8.0 TRANSFER

8.1 The Tenant shall not assign, sublet, licence, sub-licence or grant any other right or interest in the Building or Licence Area without the Landlord's prior written consent.

8.2 The Landlord's consent to assignment, subletting, licensing or sub-licensing does not release or relieve the Tenant from any of its obligations to perform all the terms, covenants and conditions under this Lease.

8.3 The Tenant shall not permit any lien, charge, mortgage, or security interest to be registered against the Land, Building, or License Area for any purpose without prior written consent of the Landlord.

8.4 The Tenant shall pay the Landlord's reasonable costs incurred in connection with the Tenant's request for consent under this Article 8.0.

9.0 COMPLIANCE WITH LAWS

9.1 The Tenant shall comply promptly at its own expense with all statutes, regulations, bylaws and other legal requirements (collectively, "**Laws**") of all federal, provincial or local authorities, including an association of fire insurance underwriters or agents, with respect to the Building and Licence Area and all notices issued under them that are served upon the Landlord or the Tenant.

10.0 NUISANCE

10.1 The Tenant shall not carry on or do or allow to be carried on or done in or on the Building or Licence Area anything that:

(a) may be or become a nuisance to the Landlord or the public;

(b) increases the hazard of fire or liability of any kind;

(c) increases the premium rate of insurance against loss by fire or liability upon the Building or Licence Area;

(d) invalidates any policy of insurance for the Building or Licence Area; or

(e) directly or indirectly causes damage to the Building or Licence Area.

11.0 INSURANCE

11.1 The Tenant shall take out and maintain during the Term:

(a) for all property owned by the Tenant (or for which the Tenant is legally liable) located within the Building and Licence Area, a policy of all risks property insurance, inclusive of loss or damage by fire and other perils now or hereafter from time to time included in the usual extended coverage endorsement effected in the Province of British Columbia by prudent tenants from time to time during the Term, including, without limiting the generality of the foregoing, the hazards of earthquake, flood, theft, and smoke, in an amount equal to the full replacement value of the property being insured, or in such other amounts as the Landlord, acting reasonably, may from time to time require; and

(b) a policy of commercial general liability insurance against claims for bodily injury, death or property damage arising out of the use and occupancy of the Building and Licence Area by the Tenant in the amount of not less than TWO MILLION DOLLARS ($2,000,000.00) per single occurrence or such greater amount as the Landlord may from time to time require.

11.2 The Tenant shall provide the Landlord with a certified copy of such policy or policies required under section 11.1.

11.3 All policies of insurance required by this Lease must name the Landlord as an additional insured party thereto, and contain a waiver of subrogation clause in favour of the Landlord and shall also contain a clause requiring the insurer not to cancel or change the insurance without first giving the Landlord thirty (30) days prior written notice.

11.4 If the Tenant does not provide or maintain in force the insurance required by this Lease, the Landlord may take out the necessary insurance and pay the premium for periods of one year at a time, and the Tenant shall pay to the Landlord as additional rent the amount of the premium immediately on demand.

11.5 If both the Landlord and the Tenant have claims to be indemnified under any insurance required by this Lease, the indemnity will be applied first to the settlement of the claim of the Landlord and the balance, if any, to the settlement of the claim of the Tenant.

11.6 The Landlord, acting in its sole discretion, may, but will in no way be obligated to, take out and maintain at any time during the Term any policy of insurance insuring the Land, Building, or Licence Area against any risk or peril against which the Landlord normally insures.

12.0 INDEMNIFICATION

12.1 The Tenant shall release and indemnify the Landlord from and against all lawsuits, damages, losses, costs or expenses that the Landlord may incur by reason of the Tenant's use or occupation of the Building or Licence Area or the carrying on, in or upon the Building or Licence Area of any activity in relation to the Tenant's use or occupation of the Building or Licence Area, the release of any Contaminants at or from the Land related to the Tenant's use of the Building and Licence Area, and in respect of any loss, damage or injury sustained by the Tenant, or by any person while in or on the Building or Licence Area for the purpose of doing business with the Tenant, receiving healthcare services from the Tenant, or otherwise dealing with the Tenant, or by reason of non-compliance by the Tenant with Laws or by reason of any defect in the Building or Licence Area, including all costs and legal

costs, taxed on a solicitor and own client basis, and disbursements and this indemnity shall survive the expiry or sooner termination of this Lease.

12.2 For the purposes of section 12.1, "Tenant" includes any assignee, sub-tenant, licensee or sub-licensee of the Tenant.

13.0 BUILDERS LIENS

13.1 The Tenant shall release and indemnify the Landlord from and against all claims for liens for wages or materials or for damage to persons or property caused during the making of or in connection with any excavation, construction, repairs, alterations, installations and additions the Tenant may make or cause to be made to the Building, and the Tenant shall promptly take all legal action necessary to cause any lien to be discharged. The Landlord is at liberty to file a notice of interest against title to the Land pursuant to the *Builders Lien Act*.

14.0 POSSESSION

14.1 The Tenant shall, upon the expiration or earlier termination of this Lease peaceably surrender and give up possession of the Building and Licence Area without notice from the Landlord, any right to notice to quit or vacate being hereby expressly waived by the Tenant, despite any law or custom to the contrary.

15.0 CONDITION OF BUILDING OR LICENCE AREA

15.1 The Tenant acknowledges that it has with due diligence investigated and satisfied itself with respect to the condition of the Building and Licence Area and its suitability for the uses permitted by this Lease, including without limitation with respect to its size, dimensions, state, condition, environmental condition or impact, presence or absence of any substances or conditions (whether hazardous or not), soil and water condition, usefulness, topography, legal access, services and zoning.

16.0 ENVIRONMENTAL MATTERS

16.1 Definitions

For the purposes of this Lease:

(a) "**Contaminants**" means any pollutants, contaminants, deleterious substances, underground or above-ground tanks, lead, asbestos, asbestos-containing materials, hazardous, corrosive, or toxic substances, hazardous waste, waste, polychlorinated biphenyls ("**PCBs**"), PCB-containing equipment or materials, pesticides, defoliants, fungi, including mould and spores arising from fungi, or any other solid, liquid, gas, vapour, odour, heat, sound, vibration, radiation, or combination of any of them, which is now or hereafter prohibited, controlled, or regulated under Environmental Laws; and

(b) "**Environmental Laws**" means any statutes, laws, regulations, orders, bylaws, standards, guidelines, protocols, criteria, permits, code of practice, and other lawful requirements of any government authority having jurisdiction over the Land now or hereafter in force relating in any way to the environment, environmental assessment,

health, occupational health and safety, protection of any form of plant or animal life or transportation of dangerous goods, including the principles of common law and equity.

16.2 Tenant's Covenants

The Tenant covenants and agrees not to use or permit to be used all or any part of the Building or Licence Area for any dealing with any Contaminants, without the prior written consent of the Landlord, to strictly comply, and cause any person for whom it is in law responsible to comply, with all Environmental Laws regarding the use and occupancy of the Building or Licence Area, and to promptly notify the Landlord in writing of any release of a Contaminant or any other occurrence or condition on the Building, Licence Area, or any adjacent property that could contaminate the Land or subject the Landlord or the Tenant to any fines, penalties, orders, investigations, or proceedings under Environmental Laws.

17.0 QUIET ENJOYMENT

17.1 The Landlord covenants with the Tenant for quiet enjoyment.

18.0 LICENSE OF USE

18.1 The Landlord, subject to the performance and observance by the Tenant of the terms, conditions, covenants and agreements contained in this Lease and to earlier termination as provided in this Lease, grants to the Tenant a non-exclusive right by way of licence for the Tenant, its servants, agents, employees, licensees and invitees to:

(a) pass over the License Area in order to have reasonable access to the Building, and

(b) use the parking lot located on the License Area for the parking of vehicles.

18.2 The Tenant covenants and agrees to use the License Area in accordance with the terms of use attached to this Lease as Schedule "A".

18.3 The Landlord hereby reserves to itself from the grant and the covenants made by it to the Tenant under section 18.1 the right for the Landlord, its agents, employees, contractors and subcontractors to have full and complete access to the License Area to carry out any operations associated with the Landlord's use of the Land.

19.0 TERMINATION AND RE-ENTRY

19.1 If the Tenant fails to perform any covenant under this Lease and if such default shall continue for sixty (60) days after the giving of written notice by the Landlord to the Tenant, then the Landlord may terminate this Lease and may re-enter the Building and the rights of the Tenant with respect to the Building shall lapse and be absolutely forfeited.

19.2 In the event that the Tenant loses its funding, it may terminate this Lease on ninety (90) days' prior written notice to the Landlord.

20.0 FORFEITURE

20.1 The Landlord, by waiving or neglecting to enforce the right to termination and forfeiture of this Lease or the right of re-entry upon breach of any covenant, condition or agreement in

it, does not waive the Landlord's rights upon any subsequent breach of the same or any other covenant, condition or agreement in this Lease.

21.0 DISTRESS

21.1 If the Landlord is entitled to levy distress against the goods and chattels of the Tenant, the Landlord may use enough force necessary for that purpose and for gaining admittance to the Building, and the Tenant releases the Landlord from liability for any loss or damage sustained by the Tenant as a result.

22.0 DESTRUCTION

22.1 If the Building, at any time during the Term, is damaged or destroyed by fire, flood, or other casualty, if the Landlord does not, within sixty (60) days of the damage or destruction, elect to undertake restoration, repair or replacement, this Lease shall terminate immediately without any further act or notice of the Landlord.

23.0 FIXTURES

23.1 Unless the Tenant, upon notice from the Landlord, removes them, all structures or improvements constructed, placed or installed in or on the Building by the Tenant, save and except for moveable trade fixtures of the Tenant, shall, at the termination or expiry of this Lease, become the sole property of the Landlord at no cost to the Landlord.

24.0 OWNERSHIP OF BUILDING

24.1 The Landlord and Tenant agree that at all times during the Term and upon the expiration or earlier termination of this Lease, title to and ownership of the Building and all alterations or additions made to the Building, vest and will remain vested in the Landlord.

25.0 HOLDING OVER

25.1 If the Tenant holds over following the Term and the Landlord accepts rent, this Lease becomes a tenancy from month to month subject to those conditions in this Lease applicable to a tenancy from month to month.

26.0 LANDLORD'S PAYMENTS

26.1 If the Landlord incurs any damage, loss or expense or makes any payment for which the Tenant is liable or responsible under this Lease, then the Landlord may add the cost or amount of the damage, loss, expense or payment to the rent and may recover the cost or amount as additional rent.

27.0 LANDLORD'S REPAIRS

27.1 If the Tenant fails to repair or maintain the Building or Licence Area as required under this Lease, the Landlord, its agents, employees or contractors may, upon twenty-four (24) hours' notice or without notice in the event of an emergency, enter the Building or Licence Area and make the required repairs or do the required maintenance and recover the cost from the Tenant.

27.2 In making the repairs or doing the maintenance under section 27.1, the Landlord may bring and leave upon the Building and Licence Area all necessary materials, tools and equipment, and the Landlord will not be liable to the Tenant for any inconvenience, annoyance, loss of business or injury suffered by the Tenant by reason of the Landlord effecting the repairs or maintenance.

28.0 INSOLVENCY

28.1 If:

(a) the Term or any of the goods or chattels in the Building or Licence Area are at any time seized or taken in execution or attachment by any creditor of the Tenant;

(b) a writ of execution issues against the goods or chattels of the Tenant;

(c) the Tenant makes any assignment for the benefit of creditors;

(d) the Tenant becomes insolvent;

(e) proceedings are begun to wind up the Tenant; or

(f) the Building becomes vacant and unoccupied for a period of thirty (30) days or is used by any other person or persons for any purpose other than permitted in this Lease without the written consent of the Landlord,

the Term shall, at the option of the Landlord, immediately become forfeited and the then current month's rent for the three months next following shall immediately become due and payable to the Landlord, and the Landlord may re-enter and repossess the Building despite any other provision of this Lease.

28.2 If the Tenant becomes bankrupt this Lease shall terminate immediately without any further act or notice of the Landlord.

29.0 REMOVAL OF GOODS

29.1 If the Tenant removes its goods and chattels from the Building, the Landlord may follow them for thirty (30) days.

30.0 TIME

30.1 Time is of the essence of this Lease.

31.0 NOTICES

31.1 Any notice required to be given under this Lease shall be deemed to be sufficiently given:

(a) if delivered, at the time of delivery; and

(b) if mailed from any government post office in the Province of British Columbia by prepaid, registered mail addressed as follows:

If to the Landlord: **VILLAGE OF SAYWARD**
652A H'Kusam Way
PO BOX 29
Sayward, BC V0P 1R0

If to the Tenant: **SAYWARD COMMUNITY HEALTH SOCIETY**
601 Kelsey Way
Sayward, BC V0P 1R0

or at the address a party may from time to time designate, then the notice shall be deemed to have been received five (5) days after the time and date of mailing. If, at the time of the mailing the notice, the delivery of mail in the Province of British Columbia has been interrupted in whole or in part by reason of a strike, slow-down, lock-out or other labour dispute then the notice may only be given by actual delivery of it.

32.0 FITNESS OF BUILDING AND LICENCE AREA

32.1 The Landlord has made no representation or warranties as to the condition, fitness or nature of the Building or Licence Area and by executing this Lease, the Tenant releases the Landlord from any and all claims which the Tenant now has or may in future have in that respect.

33.0 NET LEASE

33.1 This Lease shall be a complete carefree net lease to the Landlord as applicable to the Building and the Landlord shall not be responsible during the Term for any cost, charges, expenses or outlays of any nature whatsoever in respect of the Building or the contents thereof except those mentioned in this Lease.

34.0 BINDING EFFECT

34.1 This Lease enures to the benefit of and is binding upon the parties hereto and their respective heirs, executors, successors, administrators and permitted assignees.

35.0 AMENDMENT

35.1 Any amendments to this Lease must be evidenced in writing and executed by both parties.

36.0 LAW APPLICABLE

36.1 This Lease will be construed in accordance with and governed by the laws applicable in the Province of British Columbia.

37.0 REGISTRATION

37.1 Despite section 5 of the *Property Law Act*, the Landlord is not obligated to deliver this Lease to the Tenant in registrable form. The Tenant may, at its own expense, present to the Landlord for execution an instrument rendering this Lease registrable and register the same.

38.0 INTERPRETATION

38.1 When the singular or neuter are used in this Lease they include the plural or the feminine or the masculine or the body politic or corporate where the context or the parties require.

38.2 All provisions of this Lease are to be construed as covenants and agreements as though the words importing covenants and agreements were used in each separate paragraph.

38.3 The headings to the clauses in this Lease have been inserted as a matter of convenience and for reference only and in no way define, limit or enlarge the scope or meaning of this Lease or any provision of it.

38.4 Unless expressly stated otherwise, any reference in this Lease to a requirement for the consent or permission of the Landlord is deemed to be a reference to the consent or permission of the Landlord granted or withheld in the Landlord's sole, arbitrary and unfettered discretion.

IN WITNESS WHEREOF the parties have executed this Lease on the day and year first above written.

VILLAGE OF SAYWARD, by its authorized signatories:

John France, Chief Administrative Officer

John MacDonald, Mayor

SAYWARD COMMUNITY HEALTH SOCIETY, by its authorized signatories:

Authorized Signatory

Authorized Signatory

Schedule "A"

Terms of Use

1. The Tenant shall ensure that the License Area is clean and litter free after every use of the License Area.

2. The Landlord may, in its sole discretion, prohibit any use of the License Area that it deems to be detrimental to the physical condition of the Land or any use that is contrary to the operating policies or bylaws of the Landlord.

3. The Landlord may from time to time establish rules for the use of the License Area and may regulate access to it.

STAFF REPORT

To: Mayor and Council
From: Lisa Clark, CFO
Subject: **Permissive Tax Exemptions 2024**
Meeting date: June 6, 2023

BACKGROUND

In accordance with Policy #300-01, Council is tasked with considering applications for permissive tax exemptions annually. The Policy outlines the process for applicants and staff have attached it to this report for reference.

Section 224 of the *Community Charter* outlines the authority for permissive tax exemptions. A bylaw under this section must come into force on or before October 31st for the exemption to be valid for the following year.

DISCUSSION

Five permissive tax exemptions granted by Council in prior years are due to expire in 2023 as follows:

a) **Nature Trust of BC**, Salmon River Main, Lot 1, Section 31, Township 3, Plan 46435 Land District 51 Roll No. 706.100

b) **Nature Trust of BC**, Salmon River Main, Section 31, Township 3, Land District 51, FR S 1/2 of FR SE 1/4 Roll No. 600.000

c) **Nature Trust of BC**, Salmon River Main, Section 30, Township 3, Land District 51, Except Plan 280RW & EXC PL 149 E 20 CHNS of NE Roll No. 550.140

d) **Nature Trust of BC**, Salmon River Main, Section 30, Township 3, Land District 51, Except Plan 280RW, W20 CHNS OF NE / EXC E 10 Roll No. 550.125

e) **Royal Canadian Legion Sayward Valley Branch 147**, 699 Sayward Rd., Lot 2, Plan 14387 Sayward District Roll No. 704.022

Information on the value of the permissive tax exemptions for 2022 for these properties is listed in the chart below:

Legal Description	Civic Address	Organization	Value of Permissive Exemption (2023)
Lot 1, Section 31, Township 3, Plan 46435 Land District 51 Roll No. 706.100	Salmon River Main	Nature Trust of BC	$913.61
Section 31, Township 3, Land District 51, FR S 1/2 of FR SE 1/4 Roll No. 600.000	Salmon River Main	Nature Trust of BC	$2,661.40
Section 30, Township 3, Land District 51, Except Plan 280RW & EXC PL 149 E 20 CHNS of NE Roll No. 550.140	Salmon River Main	Nature Trust of BC	$6,461.51
Section 30, Township 3, Land District 51, Except Plan 280RW, W20 CHNS OF NE / EXC E 10 Roll No. 550.125	Salmon River Main	Nature Trust of BC	$2,145.01
Lot 2, Plan 14387 Sayward District Roll No. 704.022	699 Sayward Rd	Royal Canadian Legion Sayward Valley Branch 147	$3,008.31

The following property was provided a partial permissive tax exemption (75%) by Council in 2021, for the years 2022 to 2024:

Legal Description	Civic Address	Organization	Value of Permissive Exemption (2023)
District Lot 304, Sayward Land District, PT DL 304 AS SHOWN IN RED ON DD 39449I	16 Sayward Rd	Sayward Futures Society	$3,792.42

There may be additional organizations/entities without a current exemption that also wish to apply for the 2024 tax year.

Staff propose the following:

Schedule	Action
Late June 2023	Advertise that Council will consider additional exemptions in the July Sayward Newsletter and post notice on the website, public notice places, and social media.
August 1, 2023	Deadline for applications.
September 5, 2023	Staff Report to Council to consider exemptions.
September 26, and Oct 3, 2022	Bylaw, if required, brought to Council.
October 31, 2023	Deadline for Staff to advise BC Assessment Authority of any permissive tax exemptions for 2024.

STAFF RECOMMENDATIONS

THAT the Permissive Tax Exemptions 2024 Staff Report be received for information and discussion.

THAT Staff be directed to advertise the tax exemption process as outlined in this report.

Respectfully submitted,

Lisa Clark, CFO

Attachments:

- ***Permissive Tax Exemption Policy #300-01***
- ***Bylaw No. 406 Tax Exemption Nature Trust***
- ***Bylaw No. 460 Tax Exemption Royal Canadian Legion Branch No. 147***
- ***Bylaw No. 477 Tax Exemption Sayward Futures Society***

	Village of Sayward	
	Title: Permissive Property Tax Exemption Policy	**Policy # 300-01**
	Category: Finance	

1.0 PURPOSE

A permissive tax exemption is a means for Council to support organizations within the community which further Council's objectives of enhancing quality of life (economic, social, cultural) and delivering services economically. This policy guides identification of organizations meeting Council's objectives.

Division 7 of Part 7 of the *Community Charter* provides for permissive tax exemptions for Land and Improvements owned or held by a variety of not-for-profit organizations providing services which Council considers directly related to the purposes of the organization. It also provides for permissive exemptions for some properties which are additional to statutory exemptions under Section 220, such as church halls or land surrounding places for public worship.

2.0 POLICY

This policy is intended to provide guidance in the evaluation of applications for exemption from property taxes pursuant to the *Community Charter*. The total amount of revenue to be set aside to finance permissive tax exemptions will be discussed by Council annually during the development of the Financial Plan.

3.0 DEFINITIONS

a. Statutory Property Tax Exemption: non-discretionary exemption from payment of property taxes pursuant to Section 220, Division 6, Part 7 of the *Community Charter*;

b. Permissive Property Tax Exemption: discretionary exemption from payment of property taxes pursuant to Sections 224-226, Division 7, Part 7 of the *Community Charter* and granted by Council bylaw.

4.0 PROCEDURES

4.1 Process

Council will consider applications for permissive tax exemptions annually. The opportunity to apply will be advertised 2 times in Sayward News and letters will be mailed to tax exemption recipients designated in the preceding tax year.

Applications must be submitted to the Chief Administrative Officer using the prescribed application form (Appendix "A") before August 1st of each year, to be considered for the following taxation year. The CAO will review the applications for completeness and arrange contact with applicants for additional information as necessary.

Application submissions must include:

- Copy of Audited Financial Statements or Financial Statements prepared by an accountant for last 3 years,
- Copy of state of title certificate or lease agreement, as applicable,
- Description of programs/services/benefits delivered from the subject lands/improvements including participant numbers, volunteer hours, benefiting groups/individuals/special needs populations, fees charged for participation,
- Description of any 3rd party use of the subject land/improvements including user group names, fees charged, conditions of use.

The CAO will present a summary report of the applications, relative to the eligibility criteria, to Council and arrange for delegations to attend Council meeting if necessary.

Staff will draft a Permissive Tax Exemption Bylaw for the year incorporating Council's direction regarding the year's applicants. To apply to taxation in a particular year, the bylaw must be passed on or before October 31st of the preceding year.

Appendix "B" provides a template for advertising the Permissive Tax Exemption Bylaw as required by Section 227 of the *Community Charter*.

4.2 Eligibility Criteria

(a) Subject Property must be one of:
- Land and/or improvements eligible for tax exemption under Division 7 of Part 7 of the *Community Charter*;
- Land and/or improvements ancillary to a statutory exemption under Divisions 6 of Part 7 of the *Community Charter*.

(b) Nature of organization must be:
- Non-profit organization,
- Charitable/philanthropic organization,
- Athletic or Service Club/Associations,
- Care facility/licensed private hospital,
- Partner of the municipality by agreement under s. 225 of the *Community Charter*,
- Other local authority,
- Organization eligible for exemption under s. 220 or 224.

(c) The applicant organization's use of the land/improvements must benefit the community in one or more of the following ways:
- provides recreational facilities for public use,
- provides recreation programs to the public,
- provides programs to and/or facilities used by youth, seniors or other special needs groups,
- preserves heritage important to the community character,
- preserves an environmentally, ecologically significant area of the community,
- offers cultural or educational programs to the public which promote community spirit, cohesiveness and/or tolerance,
- offers services to the public in formal partnership with the municipality.

4.3 Duration of Exemption

Tax exemption bylaws must specify the period to which the exemption applies and any other conditions applicable to the exemption. Eligible organizations may be considered for tax exemptions exceeding one year (to a maximum of 10 years) where it is demonstrated that the services/benefits they offer to the community are of a duration exceeding one-year (i.e. for the period of the tax exemption).

4.4 Extent, Conditions, and Penalties

(a) Council may designate only a portion of the land/improvements as exempted where the following circumstances exist:
- A portion of the land/improvements is used by the private sector and/or organizations not meeting Council's exemption criteria.

(b) Council may impose **conditions** on the exempted land/improvements with the applicant organization, including but not limited to:
- registration of a covenant restricting use of the property,
- an agreement committing the organization to continue a specific service/program,
- an agreement committing the organization to have field/facilities open for public use for certain times or a total amount of time,
- an agreement committing the organization to offer use of the field/facility to certain groups free of charge or at reduced rates,
- an agreement committing the organization to immediately disclose any substantial increase in the organization's revenue or anticipated revenue (e.g. receives large operating grant from senior government).

(c) Council may impose **penalties** on an exempted organization for knowing breach of conditions of exemption, including but not limited to:
- revoking exemption with notice,
- disqualifying any future application for exemption for specific time period,
- requiring repayment of monies equal to the foregone tax revenue.

5.0 REFERENCES / POLICY INTEGRATION

Community Charter:
Part 7 – Municipal Revenue:
- Division 6 — Statutory Exemptions:
  - Section 220 General statutory exemptions

- Division 7 – Permissive Exemptions:
  - Section 224 General authority for permissive exemptions
  - Section 225 Partnering, heritage, riparian and other special exemption authority
  - Section 226 Revitalization tax exemptions
  - Section 227 Notice of permissive tax exemptions

Government of BC Ministry of Community, Sport and Cultural Development website:
http://www.cscd.gov.bc.ca/lgd/gov_structure/community_charter/finance/permissive_exemptions.htm

6.0 APPROVAL HISTORY

ISSUED BY: CAO	**APPROVED BY:** Mayor & Council	**RESOLUTION NO:**	**DATE:** July 2004
REVISED BY: CFO	**APPROVED BY:** Mayor & Council	**RESOLUTION NO:** R19/92	**DATE:** April 16, 2019

Signed by:

Mayor: Original signed by "J. MacDonald"	CAO: Original signed by "L. Clark"
Date: 19 November 2019	Date: 19 November 2019

Appendix "A" – Permissive Tax Exemption Application Form

APPLICATION FOR PERMISSIVE TAX EXEMPTION

1.) Full name or title of organization:

_____

2.) Society number/non-profit number, or registered charity number:

_____

3.) Mailing address of the organization (including Postal Code):

_____

4.) Application contact (name, phone, e-mail address):

_____

5.) Name and phone number of two other officials in organization (i.e. Pastor, President, Manager, Director, etc.)

1. Name: _____
   Title: _____
   Phone No.: _____
   E-maill: _____

2. Name: _____
   Title: _____
   Phone No.: _____
   Email: _____

6.) Property address:

_____

7.) Folio number:

_____

8.) The lands are registered in the name of:

_____

_____

(In the case of a Society, Corporation, Association, please include a copy of the Certificate of Title)

9.) The exemption claimed under Section 224 –226 is pursuant to Subsection 1, Clause

(_____) *(Please supply the relevant clause designation from Section 224-226, see attached)*

10.)The gross floor area of the building: _____

11.)**We require a current site plan of the property** indicating the grounds and buildings and their uses. This would include buildings, storage buildings, walkways, parking lot, playgrounds, bush areas, etc. Show dimensions.

12.)What is the principal use of the property?

_____

_____

13.)Is any part of the building or of the property used or rented by commercial or private operators or by any group other than your organization? If yes, please disclose below:

_____

_____

_____

14.)Please provide details of other activities on your property; such as daycare centres, catering and hall rental, thrift/gift shop.

The following information is required for each activity:

- Hours per day and/or days per week of operation
- Fees or charges
- Approximate number of participants/patrons
- Is the activity operated by a church or by an outside organization?

_____

_____

_____

15.) a.) How is your organization non-profit?

_____

_____

_____

b.) How is your organization a complementary extension to Village services and programs?

_____

_____

_____

c.) How is your organization accessible to the public?

_____

_____

_____

d.) How is your organization used primarily by Sayward residents?

_____

_____

16.) Other activities which may be pertinent to your application:

_____

_____

_____

17.) Has there been any change in the status or use of the buildings or property in the last 12 months?

_____

_____

_____

18.) CHURCHES ONLY complete the following additional questions:

(i) What is the seating capacity of the church?

Permanent: _____

Portable: _____

(ii) What is the gross floor area of the

Church: _____

Hall: _____

Other Buildings: _____

Total Gross Floor Area: _____

(iii) Every building on the lands is in use and continues to be set aside for public worship or for a Church Hall. Yes _____ No _____

On behalf of _____, I/we hereby declare that all the information presented and provided with this application is true and correct.

Should a permissive tax exemption be granted on the above listed property, I am agreeable to the following terms:

1.) If the property is sold prior to the exemption expiration, the organization will remit to the Village an amount equal to the taxes that would have otherwise been payable to the Village by a non-exempt owner.

2.) The property use will be in compliance with applicable municipal policies and bylaws.

3.) The organization will publicly acknowledge the permissive tax exemption granted by the Village.

DATED THIS ____ DAY OF _____20_____.

Authorized Signature: _____

NOTE:

1. The personal information on this form is collected for the purpose of an operating program of the Corporation of the Village of Sayward as noted in Section 26 (c) of the Freedom of Information and Protection of Privacy Act (FOIPPA). If you have any questions about the collection and use of this information, please contact the CAO at 250-282-5512

2. The Application for Permissive Tax Exemption must be received by 1st of August in the year prior to the taxation year(s) for which exemption is requested in order to be included on the applicable annual Permissive Tax Exemption Bylaw. i.e. An application for a permissive tax exemption for the year 2020 or years 2020 to 20__ must be received by the 1st of August of 2019, the year prior to year one of the tax exemption period.

3. Permissive Tax Exemption Applications are to be submitted to: Village of Sayward, Box 29, 652 H'Kusam Way, Sayward, B.C. V0P IR0

EXCERPT FROM SECTION 4 OF THE *COMMUNITY CHARTER* (ATTACHMENT TO APPLICATION)

General Statutory Tax Exemptions

Section 220
(see full text in the *Community Charter*)
Unless otherwise provided in this Act or the Local Government Act, the following property is exempt from taxation to the extent listed:

a) land, improvements or both vested in or held by Provincial Government,
b) land, improvements or both vested in or held by municipality (i) the municipality, or the municipality jointly with another municipality or regional district,
c) land, improvements or both exempt from municipal taxation by another Act,
d) land, improvements or both (i) of a public library under the *Library Act,* or vented in or held by a municipality and occupied by a public library under the *Library Act*,
e) land, improvements or both of an Indian ... except for municipal taxes,
f) land, improvements or both held in trust (i) by Crown for Indian band and (ii) are not leased or occupied by non-band member,
g) land actually used an occupied for the internment of the dead and improvements used by cemetery, mausoleum and columbarium (municipal portion only) ....,
h) a building set apart for public worship owned and used by church (municipal portion only),
i) a building that was constructed with the assistance of aid granted by the Provincial government after Jan 1, 1947 but before April 1, 1974 owned and used by non-profit society for elderly citizens home (municipal portion only),
j) a building set apart and used solely as a hospital,
k) land and improvements for future hospital requirements,
l) land and improvements owned by private schools,
m) fruit trees,
n) farm improvements to a maximum of assessed value of $50,000,
o) dwellings, fixtures and machinery used to operate a farm,
p) improvements used for emergency protection,
q) sewage treatment plants, manure storage facilities, effluent reservoirs, effluent lagoons, deodorizing equipment, dust and particulate matter eliminating equipment,
r) floating dry dock if the dry dock has lift capacity of greater than 20000 tonnes.

Section 221
(see full text in the *Community Charter*)
Grandparented pollution abatement exemptions

Section 221.1
(see full text in the *Community Charter*)
Grandparented dust and particulate matter eliminator exemptions

Section 222

(see full text in the *Community Charter*)
Phased farm property tax exemption – for property that has been newly incorporate into a municipality that was prior to incorporation exempt from taxes under the Taxation Rural Area Act. Exempt from taxes for five years on sliding scale that is reduced by 20% per year.

Section 223
(see full text in the *Community Charter*)
Exemptions under regulations (see full text in the *Community Charter*)
Land and Improvements assessment classification 4, 5, or 6

Division 7 Permissive Exemptions
(see full text in the *Community Charter*)

Section 224
(see full text in the *Community Charter*)
A council may by bylaw exempt land and improvements from the municipal portion of taxes, subject to conditions and for a specific period, the following:

(a) land or improvements that are owned or held by a charitable, philanthropic or other not for profit corporation and that Council considers are used for a purpose that is directly related to the purposes of the corporation
(b) land or improvements that are owned or held by a municipality, regional district or other local authority and that council considers are use for a purpose of the local authority
(c) land or improvements that council considers would be exempt under section 220 were it not for a secondary use
(d) the interest of a public authority, local authority or any other corporation or organization in land or improvements that are used or occupied by a corporation or organization if the land and improvements are owned by a public or local authority and the land and improvements are used by the corporation or organization for a purpose for which a tax exemption could be provided if the land and improvements were owned by that organization or corporation
(e) the interest of a public authority, local authority or any other corporation or organization in land or improvements that are used or occupied by a corporation or organization if the land and improvements are owned by a person providing a municipal service under a partnering agreement, an exemption under section 225 would be available, the partnering agreement contemplates a tax exemption and the land and improvements are used by the corporation or organization for a purpose for which a tax exemption could be provided if the land and improvements were owned by that organization or corporation
(f) land surrounding a building that is used for a church; a church hall and the land surrounding the hall
(g) land or improvements used or occupied by a religious organization for public worship or hall
(h) land surrounding seniors homes, hospitals and private schools
(i) land or improvements owned or held by athletic or service club, and used as a public park, recreation ground or for public athletic or recreational purposes
(j) land or improvements owned, held and operated as a private hospital, licensed community care facility, or registered assisted living residence.

Section 225
(see full text in the *Community Charter*)
Authority to exempt eligible partnering, heritage, riparian, cemetery or golf course property for any period. Must have the ability to make agreements with property owners regarding the extent of the exemption and

the conditions under which it may be offered. – maybe required to register a restrictive covenant against the property or repay the exemption under specific conditions

Section 226
(see full text in the *Community Charter*)
Revitalization tax exemptions. Must be a designated revitalization area under the OCP with set objectives. The exemptions are limited to an increase in assessed value that are due to new or altered improvement and are for a maximum 5 years.

Appendix "B" - Example Ad for posting and advertising

NOTICE OF TAX EXEMPTION BYLAW NO. XXX, 20XX

Take notice that the Council of the Village of Sayward intends to adopt Tax Exemption Bylaw No. XXX, 20XX.

The purpose of the Tax Exemption bylaw is to exempt the following properties from taxation:

Lot x, Plan xxxxx, Sayward District, Roll No. xxx.xxx, owned by _____

Estimate of the amount of taxes that would be imposed on the properties if they were not exempt:

			Value of Permissive Tax Exemption		
Legal description	Civic Address	Name of Organization	20XX	20XX	20XX

Any person who wishes to review a copy of the proposed Tax Exemption Bylaw may do so by coming to the Village Office at 652 H'Kusam Way, Monday to Friday 9:00 am to 4:00 pm, excluding holidays.

Name, CAO
Village of Sayward
652 H'Kusam Way
Sayward, B. C. V0P IR0

This notice is given in accordance with Section 227 of the *Community Charter*.

Dated this _____day of _____, 20XX

VILLAGE OF SAYWARD

BYLAW NO. 406

A BYLAW TO EXEMPT THE NATURE TRUST OF BC FROM TAXATION FOR THE YEARS 2014 TO 2023

WHEREAS Section 224 of the *Community Charter* empowers Council, by bylaw, to exempt from taxation imposed under Section 197 (1) of the *Community Charter* any land or improvements or both land and improvements, owned or held by a charitable, philanthropic or other not for profit corporation, the Council considers are used for a purpose that is directly related to the purposes of the corporation;

AND WHEREAS in the opinion of the Council, the property owned by the Nature Trust of BC qualifies under Section 224 (1) and (2) of the *Community Charter*;

NOW THEREFORE, the Council of the Village of Sayward in open meeting assembled ENACTS as follows:

1. In the first year following the adoption of this bylaw, 10% of the assessed value of the following Land shall be exempt from property taxes under Section 197(1)(a) of the *Community Charter.*

2. In the second and subsequent years following the adoption of this Bylaw, the exemption referred to in subsection (1) shall extend each year to an additional 10% of the assessed value of the following Land, until the tenth year following the adoption of this Bylaw, in which 100% of the assessed value of the Land shall be exempt from taxation under section 197(1)(a) of the *Community Charter*."

    a) Section 30, Township 3, Land District 51, Except Plan 280RW, W 20 CHNS OF NE ¼ EXC E 10.

    b) Section 30, Township 3, Land District 51, Except Plan 280RW & 14956, E 20 CHNS OF NE ¼.

    c) Section 31, Township 3, Land District 51, FR S ½ OF FR SE ¼.

    d) Lot 1, section 31, Township 3, Plan 46435, Land District 51.

3. This bylaw may be cited as the "**Permissive Tax Exemption Bylaw No. 406, 2013**."

READ a first time by the Municipal Council this 1st day of October, 2013.

READ a second time by the Municipal Council this 1st day of October, 2013.

READ a third time by the Municipal Council this 1st day of October, 2013.

READ a fourth time by the Municipal Council this 15th day of October, 2013.

Certified a true copy of Bylaw No. 406
this ___ day of _____, 20___

_____
Chief Administrative Officer
Village of Sayward

Original signed by "J. MacDonald"
Mayor

Original signed by "D. Kiedyk"
Corporate Officer

VILLAGE OF SAYWARD

BYLAW NO. 460

A BYLAW TO EXEMPT THE THE ROYAL CANADIAN LEGION BRANCH NO. 147 FROM THE MUNICIPAL PORTION OF TAXATION FOR THE YEARS 2020 to 2023

WHEREAS Section 224 of the Community Charter empowers Council, by bylaw, to exempt from taxation imposed under Section 197 (1) of the Community Charter any land or improvements or both land and improvements, owned or held by a charitable, philanthropic or other not for profit corporation the Council considers are used for a purpose that is directly related to the purposes of the corporation;

AND WHEREAS in the opinion of the Council, the property owned by the Royal Canadian Legion No. 147 qualifies under Section 224 (1) and (2) of the Community Charter;

NOW THEREFORE, the Council of the Village of Sayward in open meeting assembled ENACTS AS FOLLOWS:

1. This Bylaw may be cited as **"Royal Canadian Legion No. 147 Permissive Tax Exemption Bylaw No. 460, 2019".**

2. The following lands and improvements thereon are exempted from the taxation imposed under Section 197(1) (a) of the Community Charter for the years 2020 to 2023:

    a) The Royal Canadian Legion, Sayward Valley Branch No. 147, 699 Sayward Road, Lot 2, Plan VIP14387, Section 31, Township 3, Sayward Land District PID 004-412-044

Read a first time on the 8th day of October 2019.

Read a second time on the 8th day of October2019.

Read a third time on the 8th day of October 2019.

Adopted on the 22nd day of October 2019.

Certified a true copy of Bylaw No. 460 this ____ day of _____, 20___

_____
Chief Administrative Officer
Village of Sayward

Original signed by "J. MacDonald"
Mayor

Original signed by "L. Clark"
Corporate Officer

VILLAGE OF SAYWARD

BYLAW NO. 477

A BYLAW TO AUTHORIZE THE TAX EXEMPTION OF CERTAIN LANDS AND IMPROVEMENTS FOR THE YEARS 2022-2024

WHEREAS Section 224 of the *Community Charter* empowers Council, by bylaw, to exempt from taxation imposed under Section 197 (1) of the *Community Charter* any land or improvements or both land and improvements, owned or held by a charitable, philanthropic or other not for profit corporation the Council considers are used for a purpose that is directly related to the purposes of the corporation;

AND WHEREAS in the opinion of the Council, the property owned by the Sayward Futures Society qualifies under Section 224 (1) and (2) of the *Community Charter*;

NOW THEREFORE, the Council of the Village of Sayward in open meeting assembled enacts as follows:

1.0 CITATION

1.1 This Bylaw may be cited for all purposes as **"Permissive Tax Exemption Bylaw No. 477, 2021".**

2.0 EXEMPTIONS

2.1 75% of the assessed value of the following lands and improvements are exempted from the taxation imposed under Section 197(1) (a) of the *Community Charter* for the years 2022 to 2024:

a) Sayward Futures Society, 16 Sayward Rd., PID 009-664-599 District Lot 304, Sayward Land District, PT DL 304 AS SHOWN IN RED ON DD 39449I

Read a first time on the 5th day of October 2021.

Read a second time on the 5th day of October 2021.

Read a third time on the 5th day of October 2021.

Adopted on the 19th day of October 2021.

Certified a true copy of Bylaw No. 477 this ____ day of _____, 20_____

_____
Chief Administrative Officer
Village of Sayward

Original signed by "M. Baker"
Mayor

Original signed by "A. MacDonald"
Corporate Officer

STAFF REPORT

To: Mayor and Council
From: Tom Tinsley, Emergency Program Coordinator
Subject: **SRD Emergency Support Team Volunteer Opportunity**
Meeting date: June 6, 2023

DISCUSSION

The SRD Emergency Support Team will at some point in about 3 weeks be looking to the Village to provide the name and email address of a contact person or persons that would be able to monitor their email 24/7 in case of a marine incident related to Fisheries and Oceans. This person would be the Sayward first point of contact to help coordinate local resources for assistance to the other specialized teams (one example – Coast Guard) should an emergency of this nature occur in our area.

The SRD Emergency Support Team will also be seeking the same from other applicable local governments so all points of contact relative to the topic can be updated.

RECOMMENDATIONS

THAT Council receive the SRD Emergency Support Team Volunteer Opportunity staff report for information and discussion.

THAT Council appoint _____ and/or _____ as the Village of Sayward volunteer representative(s) for the SRD Emergency Support Team, as described herein.

Respectfully submitted,

_____
Tom Tinsley, EPC

Attachment:

- ***Email from SRD RE: Marine Environmental & Spill Response***

Lisa Clark

From: Edith Watson <EWatson@srd.ca>
Sent: Tuesday, May 30, 2023 3:49 PM
To: David Leitch; Elle Brovold (City Clerk-Campbell River); Keir Gervais; Mark Tatchell - Village of Tahsis (mtatchell@villageoftahsis.com); Mike Roy - Village of Gold River; Pete Nelson-Smith - Village of Zeballos (cao@zeballos.com)
Cc: Tom Yates; skoopman@srd.ca; Casey-Faye Longhurst
Subject: Marine Environmental & Spill Response

Good afternoon,

The following message is being forwarded on behalf of Casey Longhurst, Protective Services Assistant:

I recently attended a Canadian Coast Guard call for the West Coast Working Group and noticed some key members of our Regional District absent. On looking into this matter further, it turns out that some communities are not included in the Coast Guard's contact lists.

In June/July a new draft of the revised Marine Spills Contingency Plan will be sent out to members for review and feedback will be requested in August. I believe it would be important that your community is involved in this review.

Currently, in an emergency event you will not get notifications of spills, hazards, or other marine emergencies. The Coast Guard will only send you email notifications about an incident or any meetings to discuss an incident. If you do not monitor the emails, you will not know about the incident, its impacts, or resolutions until it becomes public knowledge through media.

I would like to assist your community by making sure that the appropriate contacts are included on the Coast Guard contact lists.
Please provide the contact info for your organization to clonghurst@srd.ca which I will share with the Coast Guard.

If you have any further questions, please don't hesitate to contact me by email at clonghurst@srd.ca or by phone at 250-914-9230.

Casey Longhurst
Protective Services Assistant

Regards,

Strathcona Regional District
Edith Watson, CMC
Manager, Corporate Operations
990 Cedar Street, Campbell River, BC V9W 7Z8
e. ewatson@srd.ca | t. 250.830.6712

VILLAGE OF SAYWARD
BYLAW NO. 502

A BYLAW TO PREVENT AND PROHIBIT NUISANCES AND DISTURBANCES

WHEREAS the Village of Sayward wishes to promote a safe, comfortable and inviting community for all of its citizens, businesses and visitors.

AND WHEREAS the small minority of persons that create nuisances and disturbances and that, in general, engage in uncivil behaviour threaten the quality of life desired by the population as a whole.

AND WHEREAS it is in the public interest for the Village to take the necessary measures to eliminate nuisances, disturbances and occurrences of uncivil behaviour.

NOW THEREFORE the Council of the Village of Sayward in open meeting assembled hereby enacts as follows:

PART 1 - TITLE

1. This bylaw may be cited for all purposes as "Public Nuisance Bylaw No. 502, 2023".

PART 2 - DEFINITIONS

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

Arterial Road	means an Arterial Highway as classified under the British Columbia *Highway Act*;
Boulevard	means the area of a Highway between the edge of the pavement or curb of the Roadway and the adjacent property line of the Highway;
Bylaw Enforcement Officer	means a Peace Officer, as defined in the British Columbia *Interpretation Act* and those Persons designated by Council as a Bylaw Enforcement Officer to enforce the provisions of this Bylaw;
Chief Administrative Officer	means the Chief Administrative Officer duly appointed by Council;

Continuous Noise	means any Noise or sound continuing for a period of five (5) minutes or more in any 15-minute period;
Council	means the Council of the Village of Sayward;
Discarded Materials	includes but is not limited to all materials not in use for the construction or maintenance of a building situated on that property, appliances, furniture, cans, containers, bottles, glass, circulars, pamphlets, handbills, paper or other litter or rubbish, unlicensed or inoperable motor vehicles or motor vehicle parts, boats or boat parts, machinery, animal carcasses, vegetation cuttings or debris, solid or liquid waste, firewood, unless it is neatly piled or stacked against a wall or fence, and all other chattels in a dismantled state or not in use for the purpose for which the manufacturer intended;
Drainage Facility	includes Boulevard drainage inlet, catch basin grate, culvert headwall or lawn basin inlet;
Graffiti	includes one or more letters, symbols, writing, pictures or marks, however made, posted, scratched, acid etched, painted or drawn on any structure or thing but does not include any of the following; a. a sign, public notice, or traffic control mark authorized by a Village Bylaw or Provincial or Federal legislation; or b. in the case of private property, a letter, symbol, or mark for which the Owner of the property on which the letter, symbol, or mark appears has been given prior, written authorization.
Herbicide	means any kind of material that is used to control Noxious Weeds;
Highway or Other Public Place	includes every Street, road, Boulevard, sidewalk, Lane, square, parking lot, courtyard, bridge, viaduct and any other way open to public use and any land, park, green space, building, conveyance, private place or passageway to which the public has, or is permitted to have access or is invited;
Independent Sound Consultant	means a professional engineer, licensed to practice in the Province of British Columbia, with acoustical expertise;

Intersection	means the area embraced within the prolongation or connection of the lateral curb lines, or if none, then the lateral boundary lines of the Roadways of the 2 Highways which join one another at or approximately at right angles, or the area within which vehicles traveling on different Highways joining at any other angle may come in conflict; and, for the purpose of this definition "Highway" does not include a Lane or way less than 5 meters in width separating the rear property lines of parcels of land fronting on highways running more or less parallel to and on each side of the Lane or way;
Lane	means a Street with a right of way not exceeding 8 metres in width;
Noise	includes any loud outcry, clamour, shouting, disturbance or movement or any sound that is loud or harsh or undesirable;
Noxious Weed	means any weed designated as noxious pursuant to the *Weed Control Act*;
Occupier	means a Person who occupies Real Property but does not include the Occupier of a unit in an apartment, hotel or institution;
Owner	means the Owner of Real Property;
Panhandle	means to beg for, or, without consideration ask for, money, donations, goods, or other things of value whether by spoken, written or printed word or bodily gesture for oneself or for any other Person but does not include soliciting by the holder of a permit issued by the Village of Sayward;
Peace Officer	has the same meaning as in the British Columbia *Interpretation Act* and includes a Bylaw Enforcement Officer;
Pedestrian Facility	means a structure for pedestrian use including a walkway, sidewalk, stairs, ramp, and curb letdown;
Person	includes a natural Person, a company, corporation, partnership, firm, association, society, or party and the personal or other legal representatives of a Person to whom the context can apply according to law;
Pesticide	means any kind of material that is used to control pests, fungi, and insects;
Real Property	means land, with or without improvements so affixed to the land as to make them in fact and in law a part of the Real Property;

Residential Premises, Residential Property and Tenancy Agreement	shall have the same meanings as in the *Residential Tenancy Act* of British Columbia;
Road Surface	means gravel, asphalt, cement, concrete or material of any kind whatsoever placed upon any Street, road, Highway, bridge, viaduct, Lane, or any other way designed or intended for use by the general public for the passage of vehicles, and every private place or passageway to which the public, for the purpose of the parking or servicing of vehicles, has access or is invited;
Roadway	means a portion of a Highway approved for use for vehicular travel;
Sight-Distance	means a clear line of vision between conflicting motorists, cyclists and pedestrians that allows sufficient time for safe maneuvers to be made without significantly affecting the conflicting traffic;
Special Event Permit	means a permit issued by the Village authorizing the use of a Highway or Other Public Place for the purposes of a special event;
Street	means any Highway, Roadway, sidewalk, Boulevard, place or way which the public is ordinarily entitled or permitted to use for the passage of vehicles or pedestrians and includes all structures located in any of those areas;
Traffic Control Signal	means a Traffic Control Signal as defined in the British Columbia *Motor Vehicle Act;*
Utility Company	means any utility company that has structures, including but not limited to, postal boxes, lamp posts, telecommunication and power boxes and poles, situated on any Highway or Other Public Place within the Village;
Village	means the Village of Sayward.

PART 3 - INTERPRETATION

3.0 Words or phrases defined in the British Columbia *Interpretation Act*, *Motor Vehicle Act* or *Community Charter* (or any successor legislation), shall have the same meaning when used in this Bylaw unless otherwise defined in this Bylaw or the context otherwise requires.

3.1 In this Bylaw, unless the context otherwise requires, the singular shall include the plural and the masculine includes the feminine gender.

3.2 The headings contained in the Bylaw are for convenience only and are not to be construed as defining, or in any way limiting, the scope or the intent of the provisions of this Bylaw.

3.3 If any part of this Bylaw is for any reason held invalid by any court of competent jurisdiction, the invalid portion shall be severed, and the severance shall not affect the validity of the remainder.

PART 4 – STREET NUISANCES

Restrictions on Panhandling

4.0 No Person shall Panhandle after sunset on any given day.

4.1 No Person shall sit or lie on a street for the purpose of Panhandling.

4.2 No Person shall continue to Panhandle from a person, or follow a person, after that person has made a negative response.

Use of Highways

4.3 No Person shall:

a. urinate or defecate on a Highway or other public place;

b. impede or obstruct any other person on a Highway or other public place, excluding lawful picketing as provided in the *BC Labour Code*;

c. stand or congregate on a Highway or other public place in such a manner as to impede or obstruct the free movement of other persons or vehicular traffic;

d. camp or erect a tent or other camping facilities on a Highway or other public place;

e. sleep in any vehicle located on a Highway or other public place;

f. swear or use indecent, obscene, blasphemous or grossly insulting language on or about a Highway or other public place; or

g. carry on any obscene, lewd or indecent activity on a Highway or other public place.

PART 5 – LITTERING

5.0 No Person shall deliver circulars, pamphlets, handbills or papers to or within any Real Property or building located on the Real Property, unless such deliveries are deposited within a receptacle provided by the owners or occupiers of the Real Property or building.

5.1 No Person shall deposit or throw any discarded materials, in or on any Highway or other public place.

PART 6 – NOISE REGULATION

Exemptions

6.0 This Part shall not apply to:

a. the operation of emergency vehicles;
b. the emergency repair of a public Highway;
c. operations of a public utility;
d. Peace Officers acting in the course of their duties;
e. the operation of farm vehicles during planting or harvesting;
f. snow clearing;
g. the sound of emergency backup power generators during a community wide power outage event. Within thirty minutes of the power being restored, generator noise will not be permitted;
h. events held under authority of a Special Event Permit issued by the Chief Administrative Officer or their designate; and
i. any person functioning within the limits imposed by a permit issued by the Chief Administrative Officer or their designate;

6.1 An application for a permit referred to in Sections 6.0(h) and 6.0(i) of this Bylaw may have a decision under this Bylaw reconsidered by Council by applying in writing for such reconsideration, specifying the decision which the applicant wishes reconsidered and the reason supporting the request for reconsideration.

6.2 The permit referred to in Sections 6.0(h) and 6.0(i) will be in a form prescribed by the Chief Administrative Officer or their designate.

6.3 Every applicant for a permit referred to in Section 6.0(h) and 6.0(i) shall pay the permit fee prescribed in the Fees and Charges Bylaw.

Regulations

6.4 No Person shall make or cause, or permit to be made or caused, any noise, in or on any Highway or other public place or private place which disturbs or tends to disturb the quiet, peace, rest, enjoyment, comfort, or convenience of any person or persons in the neighbourhood or vicinity.

6.5 No Person, who is the Owner or Occupier of real property, shall allow or permit such real property to be used in such a manner that noise emanating from the real property disturbs or tends to disturb the quiet, peace, rest, enjoyment, comfort, or convenience of a person or persons in the neighbourhood or vicinity.

6.6 No Person shall operate any radio, stereophonic equipment or other instrument, or any apparatus for the production or amplification of sound either in or on private premises or in any highway or other public place in such a manner as to disturb the quiet, peace,

rest, enjoyment, comfort, or convenience of the neighbourhood or of persons in the vicinity.

6.7 No Person shall own, keep, or harbor any animal or bird which, by its cries, unduly disturbs the peace, quiet, rest, enjoyment, comfort, convenience or tranquility of the surrounding neighbourhood, Persons in the vicinity, or the public at large.

Construction and Garbage Collection Noise

6.8 No Person shall, before 7:00 am on any day from Monday to Saturday when such day is not a Statutory Holiday, or before 8:00 am on any Sunday or Statutory Holiday, and after 10:00 pm on any day, construct, erect, reconstruct, alter, repair or demolish any building, structure or thing or excavate or fill in land in any manner which disturbs or tends to disturb the quiet, peace, rest, enjoyment, comfort, or convenience of the neighbourhood or of persons in the vicinity.

6.9 No Person shall, before 7:00 am on any day from Monday to Saturday, or before 8:00 am on any Sunday or Statutory Holiday and after 10:00pm on any day, operate a garbage truck which disturbs or tends to disturb the quiet, peace, rest, enjoyment, comfort, or convenience of the neighbourhood or of Persons in the vicinity.

Power Tools and Model Airplanes

6.10 No Person shall, before 8:00 am and after 10:00 pm on any day, use or operate any power gardening tool or other power tool or machine or any model airplane, boat or car powered by an internal combustion, turbine or rocket engine.

Public Address Systems

6.11 No person shall operate any outdoor public address system at any time from any vehicle, real property, place or premises without the permission of the Chief Administrative Officer or their designate.

Commercial or Industrial Operations

6.12 Every Owner or operator of an industrial or commercial business which generates a Continuous Noise of a level that disturbs the occupants of the neighbourhood or Persons in the vicinity shall, at the request of the Village, supply the Village with:

a. a report prepared by an independent sound consultant recommending methods to abate the Noise; and

b. a letter of certification sealed by the independent sound consultant that the methods approved by the Chief Administrative Officer for the abatement of noise have been fully implemented.

Motor Vehicle Noise

6.13 The following noises are, in the opinion of Council unnecessary, objectionable or liable to disturb the quiet, peace, rest, enjoyment, comfort or convenience of individuals or the public:

a. the squeal of a tire on a Road Surface made by a motor vehicle which is accelerating, stopping or changing direction;

b. a loud, roaring or explosive sound emitted by a motor vehicle;

c. the amplified sound of a radio or other sound playback device or amplification equipment, or the sound of a musical instrument, that emanates from a motor vehicle and can easily be heard by someone outside the motor vehicle;

d. the sound of the diesel engine of a bus, truck or other vehicle which has been idling or otherwise running continuously for more than five minutes at the same location, except that this clause shall not apply where the bus or truck is located within a garage or depot approved by Village Bylaws and Permits for its long-term parking;

e. the sound of an automobile security system which is made, either continuously or intermittently, for a period exceeding five (5) minutes or the sound of an automobile security system, but not including its activation status signal, which is made more than three (3) times in a 24-hour period;

f. the sound of a horn or other warning device on a motor vehicle used for any purpose other than as an audible warning incidental to the safe operation of the motor vehicle;

g. the sound of a brake or other type of engine brake on a motor vehicle used or operated for any purpose other than as an emergency braking device incidental to the safe operation of the motor vehicle;

h. the sound of a vehicle for which the muffler has been cut out, disconnected, modified by the removal of baffle or other part or which has been opened or widened creating a greater noise than is standard.

6.14 No person shall make or cause or permit to be made or caused, any objectionable, unnecessary or disturbing Noise set forth in Section 6.12 or operate a motor vehicle so as to cause any objectionable, unnecessary or disturbing Noise set forth in Section 6.13 contrary to the *Motor Vehicle Act Regulations* in effect at that time.

PART 7 – PROPERTY MAINTENANCE

Graffiti

7.0 No Person shall place graffiti, or cause graffiti to be placed, on any wall, fence or other structure or thing in any Highway or other public place.

7.1 No person shall place graffiti, or cause graffiti to be placed, on any wall, fence, building or structure that is located on Real Property and adjacent to a Highway or other public place.

7.2 Every owner of Real Property shall remove graffiti that is located on the Real Property adjacent to a Highway or other public place within five (5) working days of the placement of the graffiti.

a. Every Utility Company shall remove graffiti that is located on any Utility Company structure that is situated on any Highway or other public place within five (5) working days after receiving notification of the graffiti from the Village;

b. A Utility Company is exempt from the requirement in Section 7.2(a) if the Utility Company has entered into an agreement with the Village regarding the removal of graffiti from the Utility Company structures.

Boulevard Maintenance

7.3 Every Owner or Occupier of Real Property shall maintain in a clean, tidy and well-kept condition every Boulevard fronting on the Real Property and, without limiting the generality of the foregoing, shall:

a. remove accumulations of filth, rubbish, discarded materials, hazardous objects and other materials which obstruct a drainage facility;

b. keep grassed areas trimmed and free of noxious weeds;

c. keep landscaping trimmed so that driveway and intersection vision clearances are unobstructed;

d. keep landscaping from encroaching over paved roadways or gravel shoulders.

e. not foul, obstruct or impede, or permit the fouling, obstructing or impeding of the flow of any waterway or culvert within the municipality.

Sidewalks and Pedestrian Facilities

7.4 Every Owner or Occupier of Real Property shall:

a. remove rubbish from every pedestrian facility bordering the Real Property;

b. keep landscaping from encroaching over a sidewalk, or walkway, from ground level to a height of 2.4 metres.

7.5 No person shall:

a. willfully injure or damage any Boulevard or any tree, shrub, plant, bush or hedge on any boulevard;

b. erect any sign, fence, wall or other structure on any Boulevard, except with written permission of the Village;

c. apply a Pesticide or Herbicide to any Boulevard; or

d. dispose of any vegetation cuttings, rubbish, discarded materials or any liquid or solid waste on any Boulevard or in any Drainage Facility.

e. section 7.5(c) does not apply to the Village or any other public utility.

Fences

7.6 Every Owner or Occupier of Real Property shall:

a. In any zone, where an Owner or Occupier of property adjacent to a Highway has erected a fence adjacent to that Highway, the Owner or Occupier shall not allow that fence to fall into a state of disrepair;

b. An Owner or Occupier of Real Property whose fence erected adjacent to a Highway has fallen into a state of disrepair shall repair it forthwith upon receipt of notice given pursuant to this Bylaw;

c. In every zone where the keeping of livestock is permitted, every Owner or Occupier of Real Property abutting upon any Highway shall forthwith, upon receipt of notice given pursuant to this Bylaw, erect fences along the boundary of that property abutting on the Highway for the purpose of preventing livestock from straying upon said Highway.

Intersection Vision Clearance

7.7 No Person who owns or occupies Real Property located at any Intersection, shall place or permit to be placed or grow a tree, shrub, plant, fence or other structure with horizontal dimension exceeding 0.46 metres (1.5 feet) within the triangular area formed by two intersecting lot lines and the line joining the points on such lot lines 2.4 metres (7.87 feet) from the point of intersection, between an elevation such that an eye 1.0 to 2.4 metres (3.28 feet to 7.87 feet) above the surface elevation of one road, cannot see an object 1.0 to 2.4 metres (3.28 feet to 7.87 feet) above the surface of the other road.

Street Signs

7.8 No Person shall remove, deface or damage any street name sign or any other sign or marker erected upon any Highway by or at the direction of the Village.

Hazardous Trees and Shrubs

7.9 a. If in the opinion of the Village, any trees, hedges, bushes, or shrubs growing or standing on any Real Property are:

(i) a hazard to the safety of persons on any Highway or other public place;

(ii) likely to damage public property, or

(iii) seriously inconveniencing persons on any Highway or other public place

the Village may order the Owners or Occupiers of the Real Property on which they grow or stand to trim, remove, or cut down such trees, hedges, bushes or shrubs.

b. If the Person so ordered does not take the required action referred to in Section 7.9(a), the Village may proceed pursuant to Sections 7.19 to 7.21 of this Part.

House Numbering

7.10 All Owners and Occupiers of buildings shall display in a conspicuous place on the Real Property on which the building is located, the street number assigned by the Village to such building so that the same is of contrasting colour to its background and readable from the Highway.

Birds

7.11 No person shall keep or feed within the Village, birds so that they congregate in such numbers so as to constitute a nuisance or disturb, or tend to disturb, the quiet, peace, rest, enjoyment, comfort, or convenience of the neighbourhood or of persons in the vicinity.

Demolition Sites

7.12 On any property where the demolition of any building or structure has taken place;

a. all debris and material whether to be discarded or retained shall be removed forthwith;
b. any basement or other excavation shall be filled in or covered over to lot grade level forthwith, upon receipt of notice served pursuant to the Bylaw.

Unsightly Premises

7.13 No Owner or Occupier of Real Property shall permit the Real Property to become or remain unsightly or permit water, rubbish, Discarded Materials or noxious, offensive, or unwholesome matter to collect or accumulate around that real property.

7.14 Every Owner or Occupier of Real Property shall:

a. keep the Real Property clear of Noxious weeds and unsightly and unkempt brush, trees, or other growths;
a. keep ground cover vegetation from exceeding 30 cm in height; and
b. prevent infestation by caterpillars and other noxious or destructive insects and clear the Real Property of such insects.

7.15 Every Owner or Occupier of Real Property shall remove or cause to be removed from the property any unsightly accumulations of filth, discarded materials, brush, trees, vines, Noxious Weeds or other growths, of any kind on a regular basis, or when ordered to do so by the Village.

7.16 Every Owner or Occupier of Real Property shall maintain the physical condition and structural repair of the residential premises or residential property to the health, life safety, and fire protection standards of the *British Columbia Building Code and* the Village of Sayward Fire Prevention Bylaw.

7.17 Every Owner or Occupier of Real Property shall maintain the general appearance and repair of the Real Property to the standards of other similar properties in the neighbourhood.

Vacant Premises

7.18 No Owner of Real Property shall cause or create a nuisance or permit a nuisance to be caused or created by allowing a vacant building on the Real Property to fall into such a state of disrepair that it becomes unsightly or creates a hazard, danger, nuisance or inconvenience to the general public.

Default and Remedial Action Notices

7.19 Where an Owner of Real Property or other responsible person fails to comply with the requirements of this Part, Council may make a declaration requiring that the Owner or other responsible person bring the Real Property into compliance with the provisions of this Part within a specified time frame. A Bylaw Enforcement Officer may issue a notice in relation to Council's declaration.

7.20 If the Owner or other responsible person fails to comply with the notice requirement within the time limit specified in the notice, the Village by its workers, or others authorized by the Chief Administrative Officer, may, at all reasonable times and in a reasonable manner, enter the Real Property and affect such compliance at the cost of the defaulting Owner or other responsible person. Such cost shall consist of all costs and expenses incurred by the Village in affecting compliance with this Part including, without limitation, administrative costs, costs of attendance at the property by Village employees or its contractors and the costs of removal, clean up and disposal.

7.21 If an Owner or other responsible person defaults in paying the cost referred to in Section 7.20 to the Village within 30 days of a demand for payment from the Village, the Village may recover from the Owner or other responsible person, in any court of competent jurisdiction, the cost as a debt due to the Village. If an Owner has not paid the debt by December 31 in the year in which the debt was incurred, the Village may direct that the amount of the cost be added to the Real Property tax roll as a charge imposed in respect of work or service provided to the Real Property of the Owner.

Reconsideration

7.22 An Owner or other responsible Person who has been issued a notice pursuant to Sections 7.19, 7.20 and 7.21 of this Part may make representations to Council to have the decision reconsidered by applying in writing for such reconsideration within 14 days of receipt of

the notice, or lesser time if specified in the notice.

PART 8 – ENFORCEMENT AND PENALTY

Right of Entry

8.0 A Bylaw Enforcement Officer may, at all reasonable times, enter upon any Real Property in the Village in order to ascertain whether the regulations contained within this Bylaw are being complied with.

Enforcement

8.1 The provisions of this Bylaw may be enforced by any Bylaw Enforcement Officer.

Offences and Penalties

8.2 Any person who contravenes, violates or fails to comply with any provision of this Bylaw, or who suffers or permits any act or thing to be done in contravention of this Bylaw, or who fails to do anything required by this Bylaw, commits an offence and shall be liable, upon conviction, to a fine of not more than $10,000 (and not less than the fines prescribed in the Village of Sayward Ticketing Offence Bylaw), the cost of prosecution and any other penalty or order imposed pursuant to the *Community Charter* (British Columbia) or the *Offence Act* (British Columbia). Each violation against this Bylaw shall be deemed to be a separate and distinct offence, and, where the offence is a continuing one, each day that the offence is continued constitutes a separate offence.

PART 9 – SEVERABILITY

9.0 If any section, subsection, paragraph, clause, phrase or word within this Bylaw is for any reason held to be invalid by the decision of a court or competent jurisdiction, such decision does not affect the validity of the remaining portions of this Bylaw.

PART 10 – REPEAL

10.0 Property Maintenance Bylaw No. 384, 2010; Noise Control Bylaw No. 342, 2005; No-Idling Bylaw No. 389, 2011 and Liquor Consumption Bylaw No. 77, 1977 are hereby repealed.

Read a first time on the 16th day of May 2023

Read a second time on the 16th day of May 2023

Read a third time on the 16th day of May 2023

Adopted on the ___day of _____ 2023

Certified a true copy of Bylaw No. 502
this ____ day of _____, _____

_____
Chief Administrative Officer
Village of Sayward

_____
Mayor

_____
Corporate Officer