November 2019

Canoe Road Wastewater Local Service Asset Management Plan

SUNSHINE COAST REGIONAL DISTRICT

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Version Log

This document was carefully prepared so that it can be maintained as a living document; a document that is continually edited and updated. Through the various edits and updates, this document may evolve and be expanded as needed. This may be as a result of infrastructure replacement or could be due to changes in regulatory requirements, technology, staffing, or environmental conditions. Regardless of the reason, updates to this asset management plan will be key to the ongoing operation of the Canoe Road wastewater local service.

Version	Revised By	Date	Description
1	D. Joseph	November 28, 2019	Final report for Board of Directors approval

Acknowledgements

Completion of this Asset Management Plan would not have been possible without contributions and support from the following staff:

Darren Joseph	Asset Management Coordinator	Corporate Services
Brad Wing	Financial Analyst	Corporate Services
Tina Perreault	General Manager, Corporate Services	Corporate Services
Cheryl Trent	GIS Administrator	Corporate Services
Emilia Walton	GIS Technician	Corporate Services
Shane Walkey	Manager, Utility Services	Infrastructure Services
Bobby Rebner	Operations Support Technician	Infrastructure Services
Codi Abbott	Utility Operations Superintendent	Infrastructure Services
Ashley Gray	Utility Technician	Infrastructure Services

1. Local Service Information

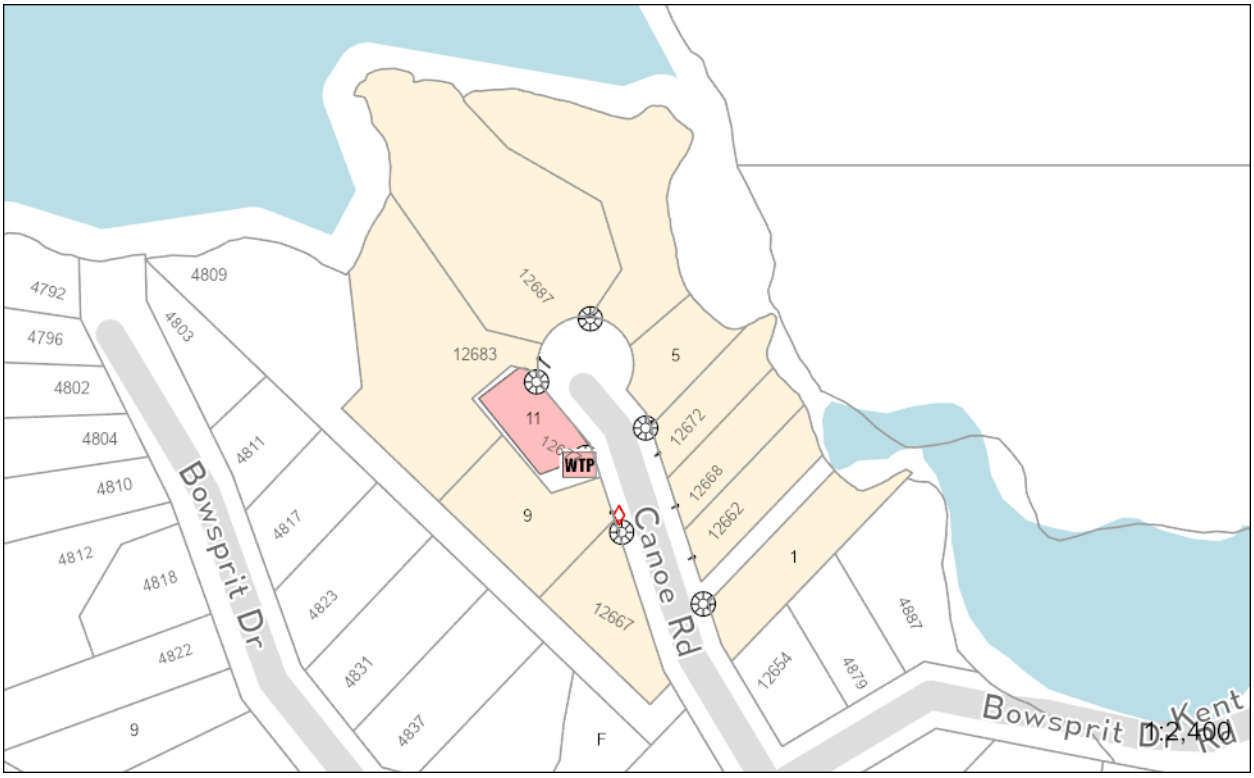

Figure 1 – Map of Wastewater Local Service Area and Infrastructure

- Address: 12677 Canoe Road
- Original Construction: 1982
- Taken over by Sunshine Coast Regional District (SCRD): 1994
- Establishment of Local Service: 1996
- Major Upgrades: 2018 (Replacement of treatment and disposal systems)
- Treatment System Owner: SCRD
- Number of Fronting Parcels: 10 Residential
- Number of Users: 5
- Treatment Process: EcoFlo® Coco Filters
- Treatment Permit #: Not required
- Permitted Discharge Amount: < 22.7 m^3/day
- Regulatory Authority: Public Health Act
- Effluent Receiving: Ground
- EOCP Classification: Unclassified
- Statutory Right of Ways: None required

1.1. Development Details

The Canoe Road wastewater local service area is located in the Egmont / Pender Harbour Electoral Area (Area A) of the SCRD. The treatment and disposal systems are located in a vacant parcel of land used exclusively for the processing of wastewater.

The community wastewater systems were constructed in 1982 to assist with the development of new single-family dwellings in the neighbourhood. The parcels in this service area were identified as having insufficient land to construct an onsite drainfield. The system was managed by the developer until 1994 when the SCRD began overseeing the service.

1.2. Established Bylaws

There have been various bylaws adopted by the SCRD Board of Directors that are relevant to the Canoe Road wastewater local service, as listed in Table 1.

Table 1 – Established Bylaws Pertaining to the Wastewater Local Service

Bylaw No.	Bylaw Name	Purpose
232A.4	Package Plants Service Unit (1994)	Established a designated area for the purpose of providing sewage collection, treatment and disposal within Areas A, B and E.
1026	Sewage Treatment Facilities Local Service (1996)	Converted the Package Plants Service Unit to a local service.
428	Sewage Treatment Facilities Service Unit (2019)	Establishment of, and subsequent updates thereto, sewage treatment facilities frontage and user charges.
512	Sewage Treatment Facilities Reserve Fund (2001)	Established a capital reserve fund for sewage treatment facilities.
608	Sewage Treatment Facilities Service Operating Reserve Fund (2007)	Established an operating reserve fund for sewage treatment facilities.

2. Description of Assets

The following sections outline the current state of the wastewater systems by providing answers to the following questions:

- What do we own?
- Where is it?
- What is its condition?
- What is its useful life?
- What is its value?

2.1. Treatment and Disposal Systems

Primary treatment of the influent takes place in individual household septic tanks located on the residents' properties. Each property's grey water is individually pumped directly to a distribution box on the wastewater treatment property, which then flows into the community treatment tank.

The community treatment tank, which acts as secondary treatment, is an underground concrete septic tank located in south side of the lot. The pump chamber sends the wastewater to a diverter, which evenly distributes to the three coconut husk treatment modules. After being processed through the filter media, the effluent is disposed of in an open (trenchless) drainfield.

Additional modules can be installed on the wastewater treatment property should they be required to accommodate an expansion of the existing number of users.

2.2. Collection System

A collection system has been in place since the original construction however it has never been operational.

There have been several issues with the privately installed lines that the SCRD has repaired over the years. In the Proposed Capital Budget section later in this plan, there is a recommendation to install a single line collection system. The main would be approximately 65 m with two manholes, one on either end of the line. This collection system would provide a reliable and safer service to the users.

2.3. Asset Accessibility

There are no accessibility concerns regarding the assets at Canoe Road

2.4. Asset Condition

Wastewater treatment system condition was determined by staff based on several factors.

- Previous or immanent failure of the system;
- Frequency of system repairs;
- Age of system; and
- Ability to regularly meet effluent quality regulations.

Based on these factors each system in the local service area was assigned a condition rating from excellent to poor. An excellent condition is assigned to systems in near new condition, good to systems with few minor defects, fair to systems with moderate defects or signs of aging, and poor to systems that cannot currently function as designed, or will soon cease functioning without repair, due to flow volumes, defects, or aging.

Both the new treatment and disposal systems have been operating in accordance with the design parameters. The treatment and disposal systems are in excellent condition.

The existing service connections, installed by the homeowners, are in poor condition and need to be replaced with a reliable collection system.

2.5. Asset Replacement Value

The treatment and disposal systems at Canoe Road were replaced and put into service in 2019. It is assumed that this method of treatment and disposal will continue to be acceptable in future years.

Replacement value for the collection system was estimated based on individual component replacement values.

Table 2 – Asset Replacement Value Summary

Asset Type	Replacement Cost (2018 $)	Year Installed	Estimated Useful Life	Remaining Useful Life
Treatment System	$ 77,800	2019	50	50
Drainfield	$ 0[1]	2019	50	50
Collection System	$ 139,753	N/A[2]	85	N/A

3. Operations and Maintenance (O&M) Plan

Operations and maintenance (O&M) are the activities that ensure the wastewater systems are able to continue to function as designed throughout their EUL. These activities include routine inspections and readings, unforeseen repairs, effluent sampling, and ongoing condition assessments. User fees and parcel taxes are collected annually to fund these activities.

As discussed in the Wastewater Service Review, the current fees and taxes are combined and can be used to fund the operational expenditures for the year. The recommendation in the Wastewater Service Review is for user fees to provide sufficient revenue for operational expenditures and for parcel taxes to be invested in capital renewal and replacement.

3.1. Current O&M Fees

The users of the Canoe Road wastewater local service are charged user fees of $218.75 per year (including a 25% increase in user fees in 2019) and those properties within the service area boundary as outlined in Bylaw No. 1026 are charged $153.00 in parcel tax per year (including a 2% parcel tax increase in 2019).

3.2. Current O&M Budget

The budgeted and actual expenditures of the Canoe Road wastewater local service from 2015 to 2018 are shown in Table 3.

[1] The treatment system and drainfield have been assigned a single replacement cost. Both systems were constructed at the same time and it is anticipated that both will be replaced at the same time and have the same estimated useful life.
[2] Collection system installation date is still to be determined.

Table 3 – Budgeted and Actual Operations and Maintenance Expenditures

Expenditures	2015	2016	2017	2018	Average
Budget	$ 994.00	$ 952.00	$ 872.00	$ 949.00	$ 941.75
Actual	$ 4,658.00	$ 409.00	$ 3,418.00	$ 3,190.53	$ 2,918.88
Variance	$ (3,664.00)	$ 543.00	$ (2,546.00)	$ (2,241.53)	$ (1,977.13)

Overall, the operations budget decreased by 5% between 2015 and 2018. The actual expenditure averaged in excess of three times the budgeted amount during the same period of time. The majority of the actual expenditure (92%) was to pay for staffing expenses of operational and administrative staff.

Actual expenditure overages in the last four years all relate to the replacement of the treatment and disposal systems. It was in 2015 that it was first noticed that the drainfield had failed and work was completed to temporarily resolve the problem. Then, in 2017 and 2018, preliminary work began to design and prepare for the construction of the new systems.

3.3. Potential O&M Budget

The potential O&M budget was created based on an optimal level of service for the systems at Canoe Road local service area. Similar to the existing O&M budget, staff wages account for the majority of the potential annual O&M budget for Canoe Road. The required monthly and annual tasks are primarily completed by a Utility Technician. Due to the relative simplicity of the infrastructure, the hours required to complete an optimal level of service are much less than other treatment systems with mechanical equipment.

Significant expenses in the potential operating budget include:

- Staffing expenses, consisting of:
  - O&M staffing requirement;
  - Administration of the wastewater system by Utilities Services staff;
  - SCRD Administration Services contribution;
- Proportioned charges for non-annual materials and supplies replacement;
- Proportioned charges for non-annual contracted services;
- B.C. Hydro utility charges; and
- Proportioned share of service vehicles, tools, and miscellaneous expenses.

With the inclusion of ancillary charges, the potential operating budget for Canoe Road wastewater local service is $5,736. The potential user fee for the five users in this local service area is $956, a 337% increase from 2019 rates. This increase is primarily attributed to the separation of property tax revenue from the operating budget and the newly installed treatment system requiring a greater amount of effort to maintain than the system it replaced.

4. Capital Plan

Capital expenditure is required for the periodic renewal or replacement of wastewater systems or system components. A capital plan considers many of the topics already covered in this plan including asset replacement values and EULs, asset condition, and following a well-developed O&M plan.

The SCRD does not have a long-term capital funding plan in place for the wastewater infrastructure at Canoe Road.

4.1. Investment of Reserves

As of the end of 2018, there was $3,126.07 in capital reserves and $197.58 contributed to operating reserves. Under the existing method of revenue collection and use, these reserves could be combined to invest in capital renewal or replacement projects if required.

There is currently no requirement for Canoe Road to have a set level, by either denomination or percentage, of reserves in place. Based on the current reserve balance, 2019 budget transfers, and short-term debt required to pay for the treatment and disposal systems, Canoe Road's reserves are 2% of the estimated replacement value of the infrastructure.

4.2. Potential Capital Budget

Budget models considering four different time frames (10, 20, 50, and 80 year periods) were prepared for consideration, each with varying impact on parcel tax and with different systems requiring replacement over the selected time frame. For each model two plans were prepared: a 10% parcel tax increase every five years, or a fixed parcel tax throughout the model time frame.

Each model factors in funding the full cost of the infrastructure requiring replacement within the life of the model. Any debt incurred during the timeframe of the model is paid off in full with interest and the model terminates with a

reserve balance equal to 10% of the projected value of the infrastructure in the last year of the model.

The highlighted budget plans represent the shortest term in which all infrastructure (i.e. the treatment, disposal, and collection systems) will need to be replaced.

Table 4 – Potential Capital Budget Options Based on Model and Payment Method

Capital Budget	Model	Infrastructure Replaced	Payment Method	Total Revenue	Parcel Tax (Year 1)
Plan 1	80-Year	Treatment System (1) Drainfield (1) Collection System (1)	Even Annual Contribution	$ 1,234,400	$ 1,543
Plan 2	80-Year	Treatment System (1) Drainfield (1) Collection System (1)	10% Increase Every Five Years	$ 1,779,512	$ 990
Plan 3	50-Year	Treatment System (1) Drainfield (1) Collection System (1)	Even Annual Contribution	$ 826,000	$ 1,652
Plan 4	50-Year	Treatment System (1) Drainfield (1) Collection System (1)	10% Increase Every Five Years	$ 957,839	$ 1,202
Plan 5	20-Year	Treatment System (0) Drainfield (0) Collection System (1)	Even Annual Contribution	$ 305,600	$ 1,528
Plan 6	20-Year	Treatment System (0) Drainfield (0) Collection System (1)	10% Increase Every Five Years	$ 312,803	$ 1,348
Plan 7	10-Year	Treatment System (0) Drainfield (0) Collection System (1)	Even Annual Contribution	$ 251,700	$ 2,517
Plan 8	10-Year	Treatment System (0) Drainfield (0) Collection System (1)	10% Increase Every Five Years	$ 252,840	$ 2,408

In addition to the replacement of the wastewater systems, other items that appear in the capital budget include:

- Payment of the short-term debt, between 2020 and 2024, to cover the SCRD's share of eligible project expenditures, and the project's ineligible expenditures, relating to the replacement of the treatment and disposal

systems. (The Clean Water and Wastewater Fund grant funded 83% of the project.); and

- Proportioned short-term debt payments for the purchase and replacement of two service vehicles.

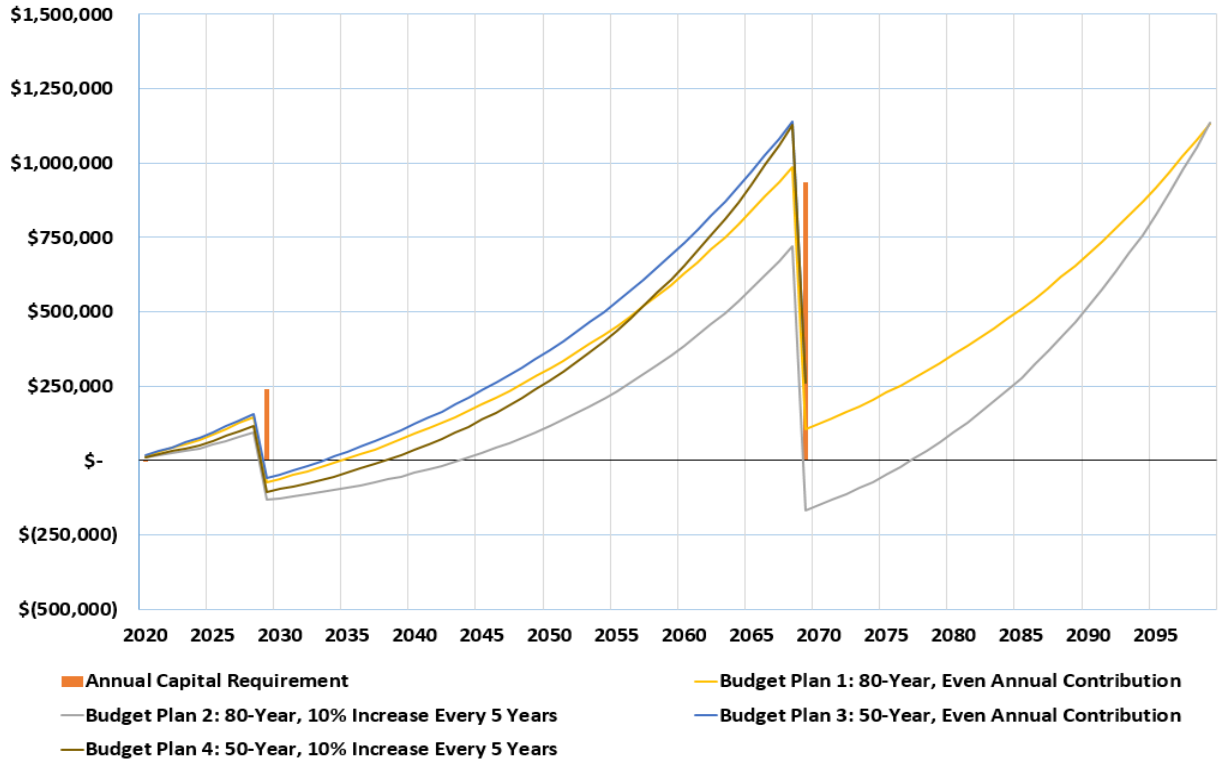

Figure 2 – Wastewater Local Service 50-Year and 80-Year Capital Plans

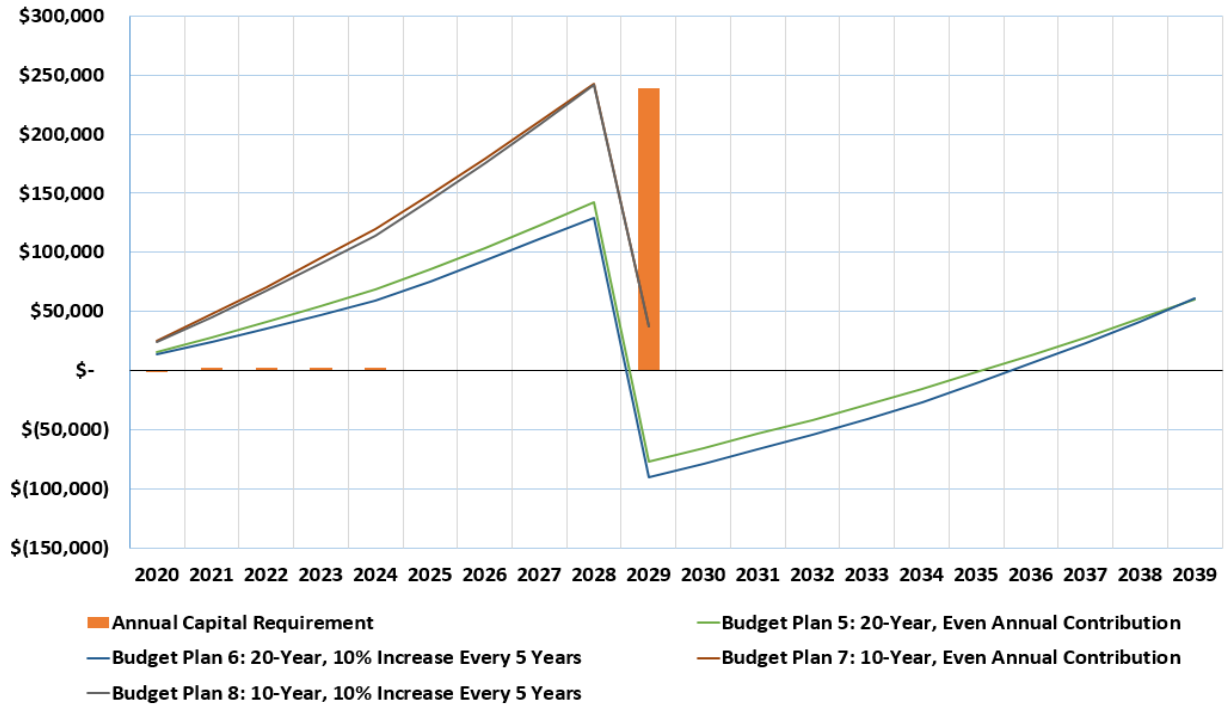

Figure 3 – Wastewater Local Service 10-Year and 20-Year Capital Plans

5. Additional Local Service Improvement Actions

There are no local service improvement actions regarding the assets at Canoe Road at this time.