November 2019

Roberts Creek Co-Housing 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 Roberts Creek Co-Housing 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:

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1. Local Service Information

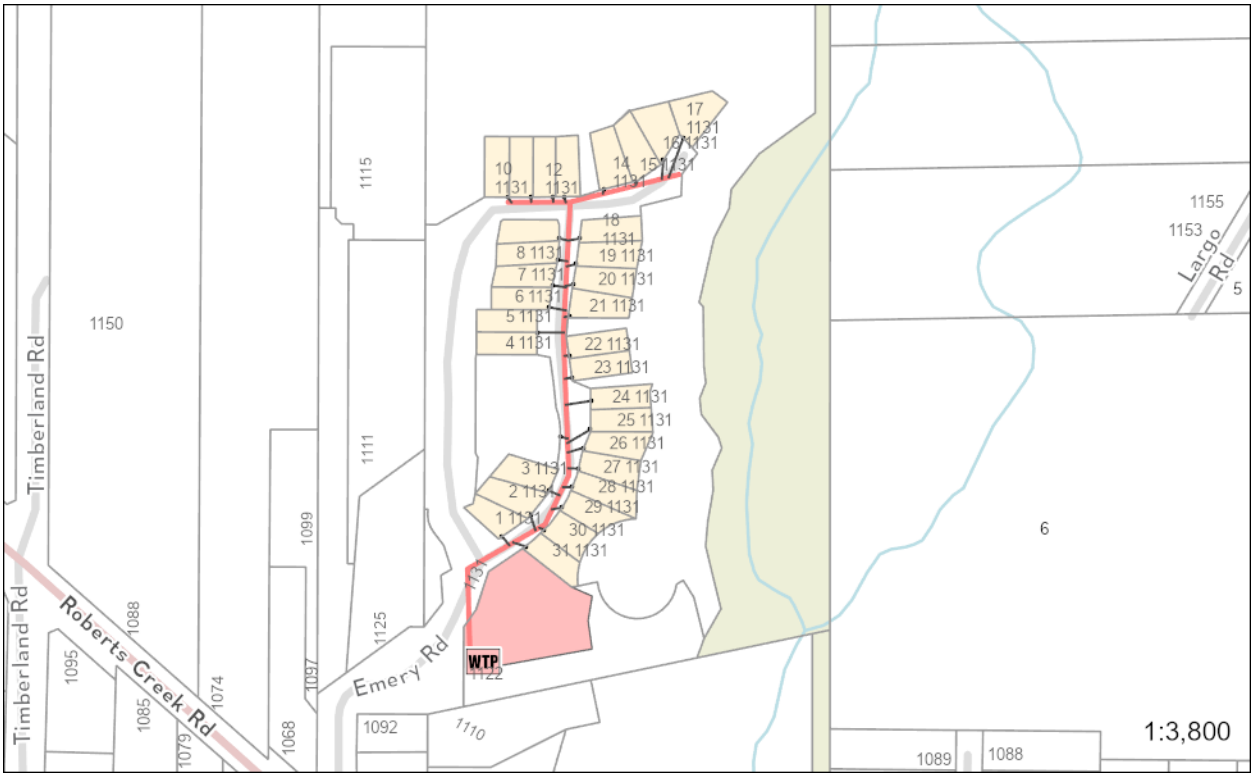

Figure 1 – Map of Wastewater Local Service Area and Infrastructure

- Address: 1122 Emery Road
- Original Construction: 2003
- Major Upgrades: None to date
- Taken over by Sunshine Coast Regional District (SCRD): 2004
- Establishment of Local Service: 2004
- Treatment System Owner: SCRD
- Number of Fronting Parcels: 31 Residential
- Number of Users: 31
- Treatment Process: BioMicrobics FAST® 9.0 (1) and 4.5 (1) plants
- Treatment Permit #: RE-17518
- Permitted Discharge Amount: 51 m^3/day
- Regulatory Authority: Municipal Wastewater Regulation (MWR)
- Effluent Receiving: Ground
- EOCP Classification: SWWS-M (Small Wastewater Systems – Mechanical)
- Statutory Right of Ways: BW4949 (registered January 7, 2004, for access to the collection system located within strata common property)

1.1. Development Details

The Roberts Creek Co-Housing wastewater local service area is located in the Roberts Creek Electoral Area (Area D) of the SCRD. The treatment and disposal systems are located in a parcel of land used for the processing of wastewater, and are located to the south of the houses within the service area. Over time, the residents of the co-housing development have built raised gardens on top of a section of the fields.

The community wastewater systems were constructed in 2003 to assist with the development of new single-family dwellings in the strata development. The individual strata parcels in the Roberts Creek Co-housing development are too small for an onsite septic system. The systems were taken over by the SCRD immediately upon construction completion and occupancy of the houses.

1.2. Established Bylaws

There have been various bylaws adopted by the SCRD Board of Directors that are relevant to the Roberts Creek Co-Housing wastewater local service, as listed in Table 1.

Table 1 – Established Bylaws Pertaining to the Wastewater Local Service

Bylaw No.	Bylaw Name	Purpose
1026.3	Sewage Treatment Facilities Local Service (2004)	Converted the Package Plants Service Unit to a local service.
428.19	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

Treatment of the influent takes place in an underground cast-in-place concrete tank with a series of divider walls forming individual treatment sections within. The top of the tank is concrete with built-in ground level access lids. Adjacent to the tank is a site building that houses the electrical and mechanical equipment.

Wastewater enters the septic tanks where primary solids settle. Aeration occurs as aerated water is cascaded over honeycomb media. Effluent from the trickle filter is pumped through sand filters into the final clarifier before discharge to the drainfield.

The final pumps provide treated effluent to be sent to one of four fields. The fields provide effluent disposal through a combined 450 m of perforated drainage pipe.

2.2. Collection System

The collection system has approximately 340 m of 200 mm diameter, polyvinyl chloride (PVC), gravity mains, and eight manholes. The infrastructure depth varies between 0.60 m and 2.95 m below grade.

2.3. Asset Accessibility

There are no accessibility issues with the infrastructure at Roberts Creek Co-Housing.

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.

Even though there are no issues with the treatment process or equipment, the treatment plant has not been performed to regulatory requirements since its conception. The community is visibly aware of what they dispose of which reduces the household flows below design. Due to an insufficient amount of wastewater to process, the system has never been able to meet the established effluent criteria. The treatment plant is in poor condition until a solution to this problem can be reached.

There have been no performance issued noted with the drainfield. The drainfield is in good condition.

The condition of the collection system was assessed in 2018 through CCTV inspections. During the inspection two pipe segments and one manhole observed to have moderate defects with minor defects in the system noted. The collection system is good condition.

2.5. Asset Replacement Value

It is expected that the treatment process and drainfield configuration that were installed 16 years ago will still meet regulatory regulations once they are due for replacement.

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	$ 613,569	2003	50	34
Drainfield	$ 163,566	2003	40	24
Collection System	$ 575,720	2003	85	69

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 Roberts Creek Co-Housing wastewater local service are charged user fees of $562.50 per year (including a 25% increase in user fees in 2019) and are charged $204.00 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 Roberts Creek Co-Housing wastewater local service from 2015 to 2018 are shown in Table 3. The breakdown between expenditure related to the collection system and the treatment and disposal systems has not been recorded. As there have been no recent issues identified with the collection system, all expenditures are assumed to have been allocated to the treatment and disposal systems.

Table 3 – Budgeted and Actual Operations and Maintenance Expenditures

Expenditures	2015	2016	2017	2018	Average
Budget	$ 18,956.00	$ 18,450.00	$ 17,647.00	$ 18,274.00	$ 18,331.75
Actual	$ 14,781.00	$ 13,806.00	$ 11,777.00	$ 12,791.10	$ 13,288.78
Variance	$ 4,175.00	$ 4,644.00	$ 5,870.00	$ 5,482.90	$ 5,042.97

Overall, the operations budget decreased by 4% between 2015 and 2018, while the actual expenditure decreased by 16% during the same period of time. The majority of the actual expenditure (56%) was to pay for staffing expenses of operational and administrative staff, while other significant expenditures include B.C. Hydro utility charges (20%) and contracted services (10%).

3.3. Potential O&M Budget

The potential O&M budget was created based on an optimal level of service for the systems at Roberts Creek Co-Housing local service area. Similar to the existing O&M budget, staff wages account for the majority of the potential annual O&M budget for Roberts Creek Co-Housing. The required semi-weekly, weekly, monthly, quarterly, semi-annual, and annual tasks are primarily completed by a Utility Technician.

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 contracted services;
- B.C. Hydro utility charges; and
- Proportioned share of service vehicles, tools, and miscellaneous expenses.

With the inclusion of all ancillary charges, the potential operating budget for Roberts Creek Co-Housing wastewater local service is $41,509.00. The potential user fee for the 31 users in this local service area is $1,339.00, a 138% increase from 2019 rates. This increase is primarily attributed to the separation of property tax revenue from the operating budget and improving the level of service delivered to this local service area.

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 Roberts Creek Co-Housing.

4.1. Reserve Balances

As of the end of 2018, there was $2,461.33 in capital reserves and $31,945.19 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 Roberts Creek Co-Housing to have a set level, by either denomination or percentage, of reserves in place. Based on the current reserve balance and 2019 budget transfers, Roberts Creek Co-Housing's reserves are 2.7% 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 model in which all infrastructure (i.e. the treatment, disposal, and collection systems) will all 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 (2) Collection System (1)	Even Annual Contribution	$ 10,144,000	$ 4,090
Plan 2	80-Year	Treatment System (1) Drainfield (2) Collection System (1)	10% Increase Every Five Years	$ 14,520,096	$ 2,606

Capital Budget	Model	Infrastructure Replaced	Payment Method	Total Revenue	Parcel Tax (Year 1)
Plan 3	50-Year	Treatment System (1) Drainfield (1) Collection System (0)	Even Annual Contribution	$ 3,180,000	$ 2,052
Plan 4	50-Year	Treatment System (1) Drainfield (1) Collection System (0)	10% Increase Every Five Years	$ 3,677,561	$ 1,489
Plan 5	20-Year	Treatment System (0) Drainfield (0) Collection System (0)	Even Annual Contribution	$ 231,000	$ 373
Plan 6	20-Year	Treatment System (0) Drainfield (0) Collection System (0)	10% Increase Every Five Years	$ 236,459	$ 329
Plan 7	10-Year	Treatment System (0) Drainfield (0) Collection System (0)	Even Annual Contribution	$ 162,400	$ 524
Plan 8	10-Year	Treatment System (0) Drainfield (0) Collection System (0)	10% Increase Every Five Years	$ 163,065	$ 501

In addition to the replacement of the wastewater systems, the capital budget also includes 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

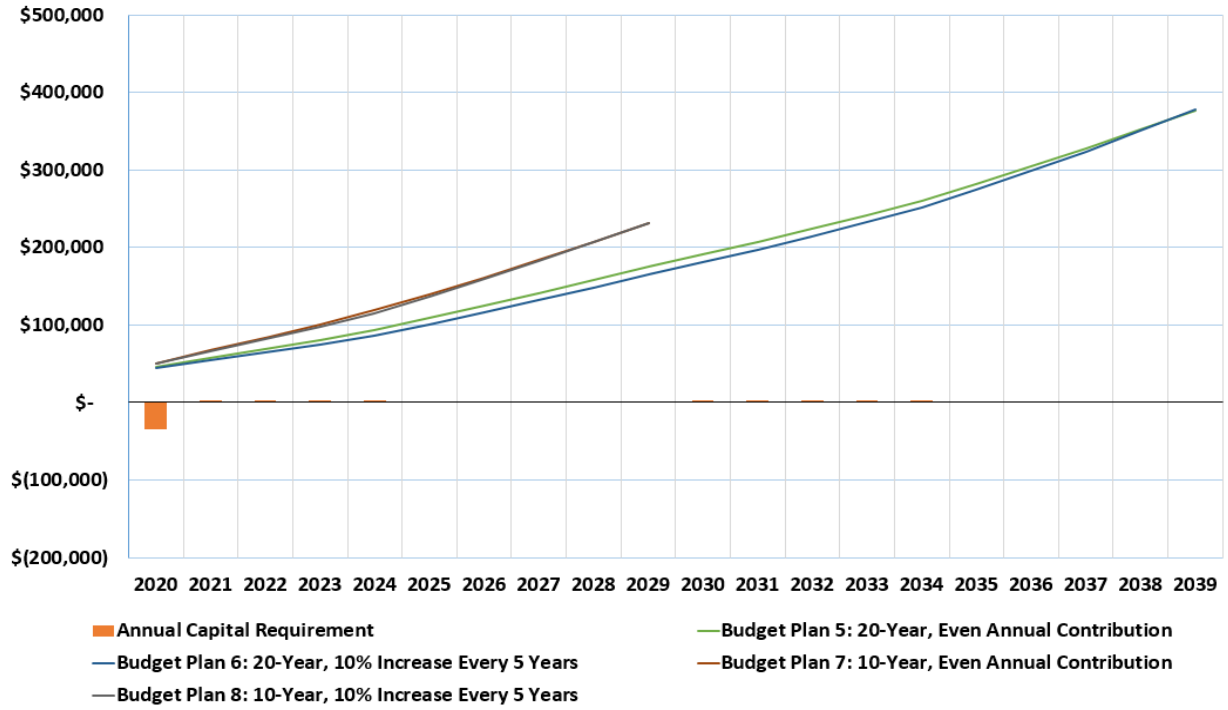

Figure 3 – Wastewater Local Service 10-Year and 20-Year Capital Plans

5. Additional Local Service Improvement Actions

Additional operational work is required in the Roberts Creek Co-Housing wastewater local service area that falls outside of the typical operational and maintenance plan. These items have been listed due to the potential impact that they may have on the users and fronting properties of the local service.

Table 5 – Local Service Improvement Actions

Action Item	Target Year	Cost Estimate	Result
Repair the moderate rated defects in the collection system noted in the CCTV inspection.	2021-2023	$ 1,100	To be determined.