Asset Replacement Schedule

Updates to unit rates for asset replacements was completed as part of the rate review in light of rising construction costs to ensure the developed asset replacement schedule more accurately reflects current construction costs. The unit rates were developed based on current unit rates for recent construction projects within the Comox Valley Regional District (CVRD). Units rates developed include engineering, contingencies and construction costs.

The Graham Lake and Denman Island WLSAs are comprised of the Graham Lake Dam, an intake, a pumphouse, valves, hydrants and watermains. Watermains are the largest asset group and represent 83 per cent of the current asset replacement costs for the service. Table No.1 below summarizes the water system assets and estimated replacement values in today's dollars.

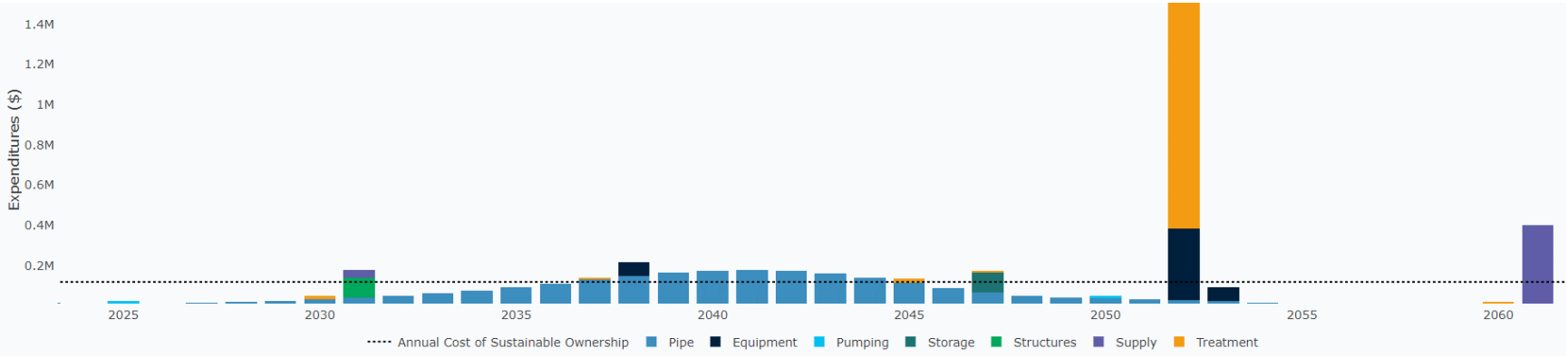
Table No.1: Summary of Current Assets for the Graham Lake and Denman Island WLSAs

Asset Group	Quantity	Total Estimated Replacement Value (Today's Dollars)
Storage (Dam)	1	$400,000
Intake	1	$40,000
Pumphouse	1	$267,000
Watermains (incld. Services, hydrants and meters)	3.63km	$3,466,650
Total		**$4,173,650**

For the Graham Lake WLSA, 61 per cent of the watermains are asbestos cement and installation occurred around 1971. From the asset management planning work done with AECOM, the recommended industry standard service life for asbestos cement pipe is 50-70 years. For the purposes of developing the asset replacement schedule an estimated service life of 60 years was selected for asbestos cement. However, following a high-level assessment of the watermain condition in 2023, staff are anticipating that the Graham Lake watermains could last another 10 years longer before replacement. Consistent with other service areas, an asset replacement schedule was developed based on a Weibull distribution, and estimated service lives of assets. However, given that this is a very

small system, it is likely that replacement of the watermain would be broken into larger chunks rather than annual projects over 20 years as shown in Figure No.1 the asset replacement schedule for both Graham Lake and Denman Island WLSAs.

Figure No.1: Asset Replacement Schedule (2020-2062)



Long-Term Financial Model

If the CVRD began implementing the asset replacement schedule with no change to the current rates, and no new borrowing, reserves within the service would be drawn to a negative balance in the first year of construction of the new water treatment plant, now anticipated to be 2026 due to the extension of the grant deadline. Keeping all these varying components in mind CVRD staff have developed a long-term financial model that tries to strike a balance between borrowing, use of reserves and rate increases as described below and shown in Figure No.2. Key assumptions that were incorporated within development of the model are:

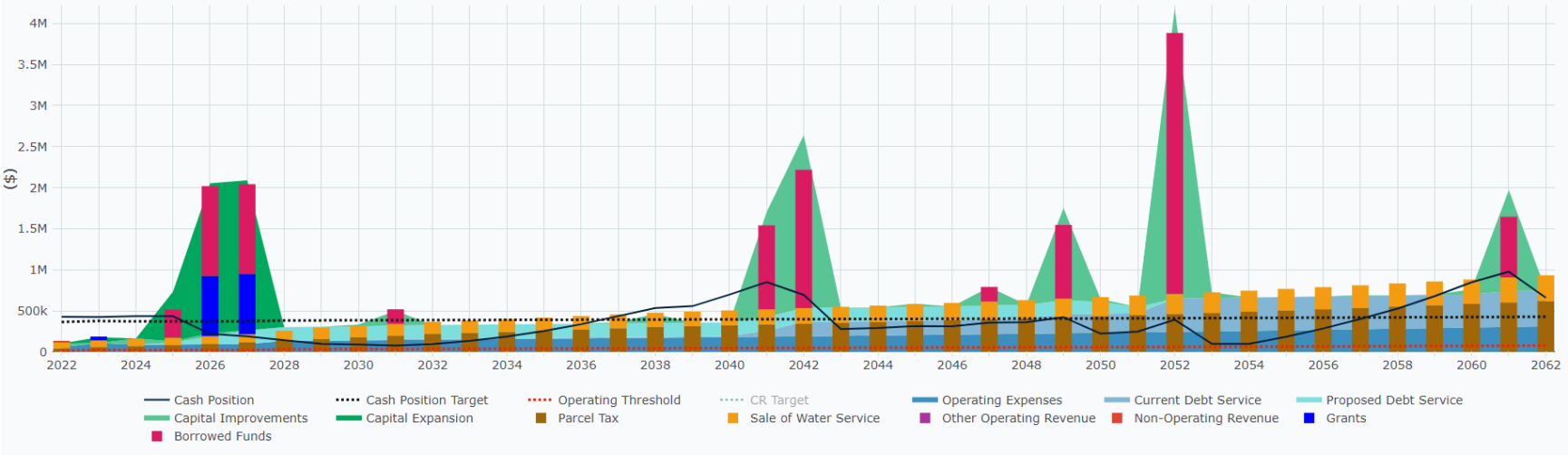
- Given the construction of the water treatment plant will occur in the near term, 100 per cent borrowing for all water treatment plant expenses not covered by the existing grant is necessary in order to avoid larger step changes in rates as previously contemplated in the April 14 staff report.
- Near term capital costs for the repair of the dam spillway, and eventual replacement given an estimated 80-year service life (2061).
- Near term capital costs for the replacement of the intake structure given a 60-year estimated service life
- Replacement of major components of the new water treatment plant given their 25-year estimated service life (2052).

- No growth was assumed in the service accounting for development in the service area.
- A conservative estimate for the new Water Treatment Plant, Asset replacements and borrowing over the modelled period (2022-2062) are summarized in Table No.2.

Table No.2: Borrowing Assumptions for Long-Term Financial Model

Estimated Water Treatment Plant Costs	$4.3M
Total Asset Replacement Costs	$10.0M
Proposed Debt	$10.4M
Average % Borrowing for Projects over Term	73%
Interest Costs (total for proposed debt)	$30.3M

Figure No.2: Long-Term Financial Model for the GL and DI WLSA (2022-2062)



Rate Increase Scenarios

Following development of the asset replacement schedule and long-term financial model, modelling of rate increases was completed. There are two main components of water rates for the service as described below:

- User Rates: Cover all operating and maintenance expenses for the service.

    - Changes to user rates are the same for all scenarios for the GL WLSA. Increases include a two-year 8.5 per cent increase including inflation in 2024 and 2025, followed by no net increase above inflation until the construction of the Water Treatment Plant. Two years of 20 per cent increases following the construction of the water treatment plant are attributed to the estimated additional operations and maintenance attributed to operating the facility, followed by no net increase above inflation.
- Parcel Taxes: Cover all asset replacement costs including debt servicing costs for any required borrowing. Parcel taxes can be deferred for those residents that meet the parcel tax deferral requirements.
    - A review of increases to the parcel tax over a 5-, 10- and 15-year time period was completed. Following the substantive increases parcel taxes are increasing at inflation thereafter.
- For the Graham Lake and Denman Island WLSAs, no increases are being attributed to growth. i.e. new connections improving the economies of scale for the service.

Using the above principles for user rates and parcel taxes, Table No.3 illustrates the annual percent increases to rates needed to meet the revenue requirements for the service.

Table No.3: Annual Percentage Increases to Rates

Rate Component	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
User Rates (same for all parcel tax options)	8.5%	8.5%	2.5%	2.5%	20%	20%	2.5% per year								
Parcel Tax															
Option 1- 5 Year	27.4%	27.4%	27.4%	27.4%	27.4%	3.0% per year									
Option 2- 10 Year	18.5%	18.5%	18.5%	18.5%	18.5%	18.5%	10%	10%	10%	10%	3.0% per year				
Option 3- 15 Year	18%	18%	18%	18%	18%	7.9%	7.9%	7.9%	7.9%	7.9%	7.9%	7.9%	7.9%	7.9%	7.9%

The percent increases as listed in Table No.3 result in the following increases to user rates and parcel taxes. Rates are structured to be sustainable while considering fairness and achieving full cost recovery for the service.

User Rates

To achieve the required revenue from user rates as described above, the actual increases to user rates would be as follows.

Table No.4: Actual User Rate Increases and Impact to Average Residential User

	Current Rates	2024	2025	2026	2027	2028
Annual Cost of Water to Residential Users	**$900**	**$976**	**$1059**	**$1086**	**$1113**	**$1336**

Parcel Tax

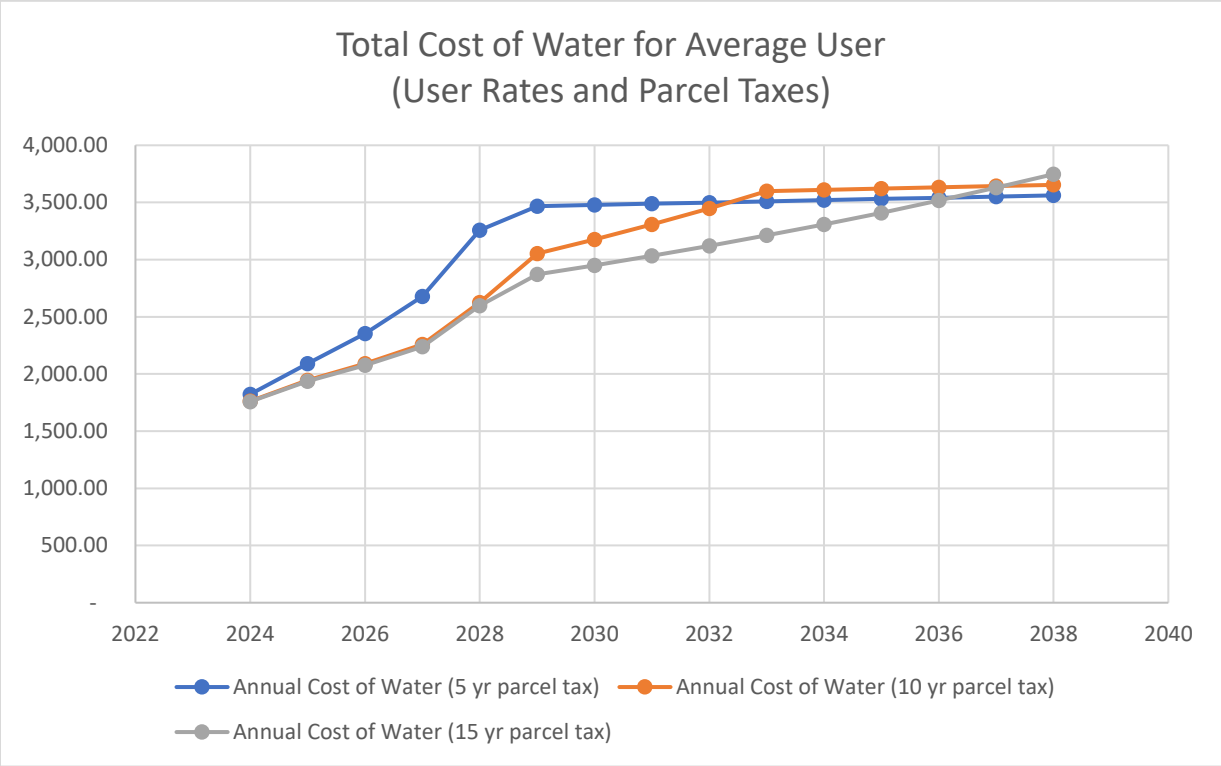
Three options have been developed for the parcel tax, increases over 5 years, 10 years and 15 years, as outlined in Table No.5.

Table No.5: Cost Per Parcel (in 2023 Dollars) for Varying Parcel Tax Increase Options

Parcel Tax Increase Options	Current Rates	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Option 1-5 Year	$700	$870	$1,081	$1,344	$1,671	$2,076	$2,087	$2,097	$2,107	$2,117	$2,128	$2,138	$2,148	$2,159	$2,169	$2,180
Option 2-10 Year		809	$936	$1,082	$1,250	$1,446	$1,671	$1,794	$1,925	$2,066	$2,217	$2,228	$2,239	$2,249	$2,260	$2,271
Option 3-15 Year		806	$928	$1,068	$1,230	$1,415	$1,490	$1,568	$1,651	$1,738	$1,830	$1,926	$2,028	$2,134	$2,247	$2,365

The quicker the rate increases the less overall impact on rates, however, the most immediate impact to users. The longer the rate increases the greater the overall increase to rates, however, it is more gradual and over time. Figure No.3 shows the total annual cost of water (in 2023 dollars) for the three different parcel tax options, for all three options user rates are increasing the same amount as detailed in Table No.3.

Figure No.3: Total Annual Cost (in 2023 Dollars) of Water for Average User



Recommended Rate Increases

At the September 26, 2023 special Electoral Areas Services (EAS)/ Black Creek-Oyster Bay (BCOB) Committee Workshop, the principles of asset management and the process used to develop the comprehensive rate adjustment scenarios for the CVRD's other WLSAs were discussed. The recommended rate increases for the Graham Lake and Denman Island WLSAs proposed below follow this same methodology.

For the Graham Lake and Denman Island WLSAs, residents are facing a number of cost pressures attributed to both new and aging infrastructure. Acknowledging that significant increases to water rates are required, a slower more gradual increase to rates, per Option 3, over a 15-year time period for the service is recommended. User rates over this time period will increase as illustrated within Table No.3, in addition to increases to parcel taxes.

The total cost of water with inflation over the next five years for the recommended scenario is presented in Table No.6.

Table No.6: Actual Cost of Water Over Next 5 Years for Recommended Rate Increases (Option 3)

User Rate + 15 Year Parcel Tax Increase	**Total Cost of Water (with Inflation)**					
	Current	**2024**	**2025**	**2026**	**2027**	**2028**
Residential User	$1600	$1803	$2034	$2236	$2470	$2937