

DATE: January 9, 2023  
TO: Kiel Wilke, District of Lake Country  
CC: Steve Brubacher, Urban Systems  
FROM: Joel Short, Urban Systems  
FILE: 1577.0104.01  
SUBJECT: Financial Strategy

## 1.0 INTRODUCTION

This memo sets out the increases in water rates in order to set the stage for financial sustainability in meeting directions in the Water Master Plan. There are some key initiatives required to implement the Water Master Plan and the District should continue on the path of increasing rates to ensure that it is moving in the direction needed to generate the revenues required to pay for the improvements and continued sustainable service delivery.

## 2.0 MAJOR PROJECTS AND COSTS

We conducted a financial analysis that assumes specific capital projects will be required and that the major projects such as the Beaver Lake Water Treatment plant and Kalamalka Lake Treatment will receive grants to pay for a significant portion of the projects. We also assumed that operating and maintenance cost will be increasing with the addition of new components.

The specific projects included in the financial analysis are set out in table 2.1 below:

**Table 2.1 - Major Water Project Timing and Costs**

Project Title	Water System	Year	Cost (Before grants)
<b>Long Term Projects</b>			
Annual System Improvements (Beyond Small Diam) – 25% grant	Any	ongoing	\$11,000,000
<b>Treatment Facilities</b>			
Beaver Lake WTP (50MLD) – 66% grant	Beaver	2025	\$80,000,000
Kalamalka Lake Treatment (12.5MLD) – 66% grant	Kalamalka/ Oyama	2030	\$30,000,000
<b>Major Capital Projects</b>			
Irvine Booster Station	Kalamalka	2022/2023	\$2,000,000
Vernon Creek Intake Screen	Beaver	2023	\$550,000
Carrs Landing Small Diameter Upgrades Phase 1	Beaver	2024	\$1,424,500
Beaver Lake Tower Replacement	Beaver	2024	\$2,750,000
Camp Road Operations Shop Expansion	Beaver/Okanagan	2023	\$1,100,000
Okanagan Centre SD - Phase 1	Beaver	2022/2023	\$2,354,000

DATE: January 9, 2023  
SUBJECT: Financial Strategy

FILE: 1577.0104.01

PAGE: 2 of 11

Project Title	Water System	Year	Cost (Before grants)
Kalamalka Lake Intake	Kalamalka	2024	\$1,265,000
Kelowna Bulk Water Outlet	Beaver/Okanagan	2025	\$1,100,000
Lakepine Connection to Beaver System	Beaver	2026	\$632,500
Carrs Landing Small Diameter Upgrades Phase 2	Beaver	2026	\$2,139,500
Okanagan Centre SD - Phase 2	Beaver	2027	\$1,562,000
Oyama Road and Isthmus Area Upgrades	Kalamalka	2028	\$1,479,500
Cornwall Road Improvements	Kalamalka	2031	\$1,721,500
Oyama System Separation - Reservoir	Oyama	2034	\$1,842,500
Oyama System Separation - Watermains	Oyama	2035	\$22,297,000
Irvine Boosted Zone Watermains	Kalamalka	2038	\$1,375,000
Capital Program Total			\$166,593,000

Grants are assumed for a few projects, as noted in the table above:

- Annual System Improvements (Beyond Small Diameter) – 25% grant
- Beaver Lake WTP (50MLD) – 50% grant
- Kalamalka Lake Treatment (12.5MLD) – 50% grant
- Oyama System Separation – Reservoir – 50% grant
- Oyama System Separation – Watermains – 50% grant

For all other projects we assumed that the District would need to pay for the projects directly without any grants.

The model assumes that the District will need to borrow money for the following large projects:

- Beaver Lake WTP (50MLD) in 2025
- Kalamalka Lake Treatment (12.5MLD) in 2030
- Oyama System Separation – Watermains in 2035

In order to sustain the long term health of the water reserve funds (and depending on the funding scenario chosen), the model also assumes that funds may need to be borrowed due to the timing and cost of the following projects:

- Okanagan Centre SD - Phase 1 in 2022/2023 (note that \$1.1M of this cost is paid out of the reserve funds directly in 2022, and the remaining \$1.254M is assumed to be borrowed in 2023)
- Carrs Landing Small Diameter Upgrades Phase 2 in 2026
- Okanagan Centre SD – Phase 2 in 2027

For these Okanagan Centre and Carrs Landing projects, the use of reserve funds, internal municipal borrowing, or external borrowing will need to be evaluated at the time of the expense.

Borrowing is assumed through the Municipal Finance Authority at 4.61% over 20 years (the MFA rate when preparing this memo). The borrowing rate will need to be monitored as rate changes will impact finances.

The model assumes that the Beaver Lake Water Treatment Plant is constructed as one large project, but the finances could be improved if IHA accepted a phasing plan for construction of the Beaver Lake Water Treatment Plant. This would allow the District to spread the costs over a longer time period providing more time to generate and recover funds.

The model assumes that Development Cost Charges (DCCs) are collected to pay for a portion of some projects and the funds come from the DCC reserve fund. The projects are required partially to serve new growth and the percentages of allocation to growth are as follows:

- Beaver Lake WTP (50MLD) – 42% of costs attributed to growth - for recovery by DCCs
- Beaver Lake Tower Replacement – 42% of costs attributed to growth - for recovery by DCCs
- Kalamalka Lake Treatment (12.5MLD) – 50% of costs attributed to growth - for recovery by DCCs
- Kalamalka Lake Intake - 50% of costs attributed to growth - for recovery by DCCs

The model assumes that the benefit allocation is applied to the entire cost of the project, before applying grants, because the Ministry will not allow unconfirmed grants to be included in calculating DCCs. As noted below, the District will need to update the water DCCs based on the new Water Master Plan. If the District receives grants for DCC projects, then the grant amount will need to be considered in relation to the DCC change, and determine if DCC charges need to be recalculated.

Another cost that is included in the analysis is for asset renewal for the water treatment plants – about half the plant cost is recovered at 2% per year (this assumes an average 50-year life for some components) and half at 1% per year (this assumes an average 100-year life for some other components) with collection starting once the project is constructed.

Operations and maintenance costs are assumed to increase for the new treatment plants as set out in the table below.

**Table 2.2 – Operations and Maintenance costs for New Treatment Plants**

<b>Beaver Lake WTP (50MLD)</b>	
• Power/Heat	\$250,000
• Chemicals	\$240,000
• Parts	\$30,000
• Staff – 2x FTE	\$240,000
<b>Kalamalka Lake Treatment (13.5MLD)</b>	
• Power/Heat (25% of Beaver Lake)	\$62,500
• Chemicals (25% of Beaver Lake)	\$60,000
• Parts (25% of Beaver Lake)	\$7,500
• Staff (25% of Beaver Lake)	\$60,000

The District will need to monitor these costs and may need to make adjustments to cost recovery as the actual costs are determined.

Regular operations and maintenance costs are based on 2022 costs for Salaries, wages, and benefits; Contract services; Materials and supplies; Utilities; Interest Expense; and Administration, plus an estimated 10% increase for 2023.

Costs and revenues for the Coral Beach System are excluded from this analysis and will need to be analyzed as part of the ongoing Carr's Landing expansion. Costs and revenues for the Lakepine system are included, as this system will be integrated with the overall system in the long term.

## 3.0 INCREASES IN WATER RATES

The increases in water rates are set out in the following scenarios:

1. Scenario 1: Significant initial increase in 2023 followed by another increase in 2025 with another potential increase in 2029. Inflation is not factored into this scenario and would need to be considered with each subsequent rate adjustment.
2. Scenario 2: A significant initial increase in 2023 followed by another increase in 2025 with another potential increase in 2029, including assumed inflationary values listed below.
3. Scenario 3a: Equal increases spread over 5 years that includes assumed inflationary values listed below.
4. Scenario 3b: Increases spread over 5 years, but with higher increases early in order to reduce negative impact on reserve funds. Includes assumed inflationary values listed below.

To illustrate changes with inflation added under Scenario 2, 3a and 3b, the increases are shown with assumed inflation amounts added. The District will need to monitor inflation and add the actual inflation amounts to the rates. In all scenarios, the rates have been established in order to meet a goal of generating approximately 40% of the revenue from variable rates (per cubic metre of consumption) and 60% of the revenue from fixed base rates.

For illustrative purposes, the assumed inflation rates are as follows:

- 2023: inflation 5%
- 2024: inflation 3%
- 2025: inflation 2%
- 2026: inflation 2%
- 2027 onwards: inflation 2%

The water rates under **Scenario 1**, without inflation, are set out in table 3.1 below

**Table 3.1 – Scenario 1 - Water Rates  
Without Inflation**

Category	Rate in 2022	2023	2025
Rate per cubic metre of consumption (all uses)	\$ 0.86	\$1.12	\$1.29
Single Detached Residential base rate	\$ 468	\$565	\$630
Multifamily Residential base rate	\$ 374.40	\$455	\$510
Commercial – Varies depending on connection size (percentage increase shown)		21%	12%
Seasonal Irrigation	\$ 150	\$185	\$210
Agricultural Charge per Acre	\$ 125	\$145	\$165
Non Connected charges	\$ 100	\$240	\$270
Percentage increase over previous year (average)*		<b>22.9%</b>	<b>12.9%</b>

\*except Non Connected charges, which had a higher increase from 2022 to 2023

DATE: January 9, 2023  
SUBJECT: Financial Strategy

FILE: 1577.0104.01

PAGE: 5 of 11

Under Scenario 1 the rates are increased in 2023 with another increase in 2025. The initial increase in rates of about 23% in 2023 help to generate funds required for major projects starting in 2024. The approximately 13% rate increase in 2025 is required to generate more funding for upcoming projects. Under Scenario 1 another increase of about 3% is required in 2029.

The water rate increases under **Scenario 2**, including inflation, are set out in Table 3.2 below.

**Table 3.2 – Scenario 2 - Water Rates  
Including Assumed Inflation**

Category	Rate in 2022	2023	2025	2027
Rate per cubic metre of consumption (all uses)	\$ 0.86	\$1.18	\$1.42	\$1.48
Single Detached Residential base rate	\$ 468	\$593	\$695	\$723
Multifamily Residential base rate	\$ 374.40	\$478	\$563	\$585
Commercial – Varies depending on connection size (percentage increase shown)		27.1%	14.2%	4%
Seasonal Irrigation	\$ 150	\$194	\$232	\$241
Agricultural Charge per Acre	\$ 125	\$152	\$182	\$189
Non Connected charges	\$ 100	\$240	\$298	\$310
Percentage increase over previous year (average)*		<b>29.3%</b>	<b>15.2%</b>	<b>4%</b>

\*except Non Connected charges, which had a higher increase from 2022 to 2023

Scenario 2 is similar to Scenario 1 except that it includes assumed inflation. The rates are increased in 2023 and 2025. The initial increase in rates of about 29% in 2023 cover recent inflation and help to generate funds required for major projects starting in 2024. The approximately 15% rate increase in 2025 is required to generate more funding for upcoming projects with inflation. Under Scenario 2, another rate increase of about 10% is required in 2029.

The water rate increases under **Scenario 3a** are set out in Table 3.3 below.

**Table 3.3 – Scenario 3a - Water Rates  
Including Assumed Inflation**

Category	Rate in 2022	2023	2024	2025	2026	2027
Rate per cubic metre of consumption (all uses)	\$ 0.86	\$0.98	\$1.13	\$1.29	\$1.42	\$1.56
Single Detached Residential base rate	\$ 468	\$511	\$558	\$610	\$670	\$737
Multifamily Residential base rate	\$ 374.40	\$408	\$446	\$488	\$536	\$590
Commercial – Varies depending on connection size (percentage increase shown)		9.1%	9.3%	9.2%	10.0%	10.0%
Seasonal Irrigation	\$ 150	\$164	\$179	\$195	\$215	\$236
Agricultural Charge per Acre	\$ 125	\$131	\$143	\$156	\$172	\$189
Non Connected charges	\$ 100	\$240	\$275	\$301	\$331	\$364

DATE: January 9, 2023  
SUBJECT: Financial Strategy

FILE: 1577.0104.01

PAGE: 6 of 11

Percentage increase over previous year (average)*		10.0%	10.0%	10.0%	10.0%	10.0%
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\*except Non Connected charges, which had a higher increase from 2022 to 2023

Under Scenario 3a there are 5 equal 10% rate increases spread over 5 years, including assumed inflation. The rates need to continue upwards towards 2027 in Scenario 3a because the rates need to make up for the lower rates in 2023 and the gradual phase-in. Aside from regular inflationary increases, no additional jumps in rates are required in 2029. While the average rate increase is 10%, the increases for consumption are higher than the increases to the base rates in order to keep the 40/60 split for consumption vs base rates.

The water rate increases under **Scenario 3b** are set out in Table 3.4 below.

**Table 3.4 – Scenario 3b - Water Rates  
Including Assumed Inflation**

Category	Rate in 2022	2023	2024	2025	2026	2027
Rate per cubic metre of consumption (all uses)	\$ 0.86	\$1.03	\$1.19	\$1.36	\$1.49	\$1.59
Single Detached Residential base rate	\$ 468	\$531	\$590	\$650	\$703	\$739
Multifamily Residential base rate	\$ 374.40	\$425	\$472	\$520	\$563	\$591
Commercial – Varies depending on connection size (percentage increase shown)		13.4%	11.2%	10.2%	8.1%	5.1%
Seasonal Irrigation	\$ 150	\$170	\$189	\$208	\$225	\$237
Agricultural Charge per Acre	\$ 125	\$136	\$151	\$167	\$180	\$189
Non Connected charges	\$ 100	\$240	\$280	\$309	\$334	\$351
Percentage increase over previous year (average)*		14.5%	11.8%	10.7%	8.4%	5.2%

\*except Non Connected charges, which had a higher increase from 2022 to 2023

Under Scenario 3b the rate increases are spread over 5 years and include inflation. The increase is somewhat higher in the earlier years in order to reduce the negative impact on the reserve funds while addressing the higher assumed rate of inflation in the earlier years. The rates need to continue upwards towards 2027 in Scenario 3b because the rates need to make up for the lower rates in 2023 and the gradual phase-in. Aside from regular inflationary increases, no additional jumps in rates are required in 2029.

The growth in users on the system combined with the increases in rates help to generate the revenue to pay for the system if the assumed grants and DCC revenues are available.

## 4.0 INCREASES IN REVENUES

Another way to view the increases is to consider the overall percentage increase in annual revenues. In order to pay for the capital projects required along with the increases in operations and maintenance costs, the District will need to generate additional revenues on an annual basis. The amounts of revenues required under each

scenario are set out in the Tables 3.5 to 3.8 below for Scenarios 1, 2, 3a, and 3b, along with the percentage changes in revenues.

**Table 3.5 – Scenario 1 - Required Increases in Revenues – Without Inflation**

Year	Funding From Rates	% Increase in Revenues
2022	\$4.6M	4.5% (Complete)
2023	\$5.68M	23.4%
2025	\$6.79M	19.5%
2029	\$7.53M	10.9%

**Table 3.6 – Scenario 2 - Required Increases in Revenues - Including Assumed Inflation**

Year	Funding From Rates	% Increase in Revenues
2022	\$4.6M	4.5% (Complete)
2023	\$5.96M	29.6%
2025	\$7.49M	25.6%
2029	\$8.99M	20.0%

**Table 3.7 – Scenario 3a - Required Increases in Revenues - Including Assumed Inflation**

Year	Funding From Rates	% Increase in Revenues
2022	\$4.6M	4.5% (Complete)
2023	\$5.09M	10.6%
2024	\$5.81M	14.2%
2025	\$6.64M	14.2%
2026	\$7.43M	11.9%
2027	\$8.35M	12.3%

**Table 3.8 – Scenario 3b - Required Increases in Revenues - Including Assumed Inflation**

Year	Funding From Rates	% Increase in Revenues
2022	\$4.6M	4.5% (Complete)
2023	\$5.30M	15.1%
2024	\$6.14M	15.9%
2025	\$7.05M	14.8%
2026	\$7.81M	10.9%
2027	\$8.41M	7.7%

In Scenario 3a and 3b only inflationary amounts are required after 2027, and the revenues required in 2029 are about \$9M.

Because of the projected increase in the number of connections, the rates noted in tables 3.1, 3.2, 3.3 and 3.4 further above do not need to increase quite as much as the required increase in revenues shown in tables 3.5, 3.6, 3.7 and 3.8.

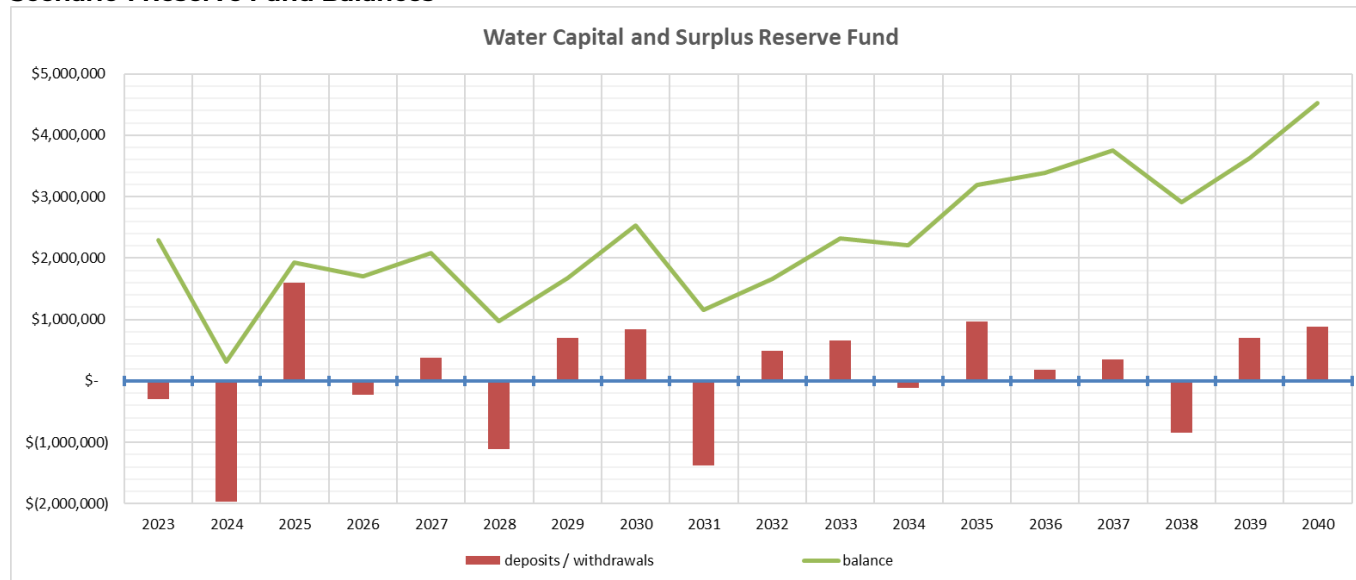
Under the current capital plan and model, the analysis indicates that further rate increases will not be required in the future beyond 2029, other than increases to keep up with inflation. The revenue generated compared to the costs incurred should be regularly monitored to ensure that increases to account for inflation are actually generating the revenues required. Furthermore, the District may need to re-evaluate the later rate increases based on IHA acceptance of a phasing plan for construction of the Beaver Lake Water Treatment Plant.

## 5.0 RESERVE FUND BALANCES

These rate increases aim to maintain a positive balance in the Water Capital Reserve Fund and the Water Surplus Reserve Fund combined.

The resulting reserve fund balances under **Scenario 1** are shown in the following chart. The reserve fund balance ranges between about \$0.3M and \$4M, but generally fit in the \$1M to \$3M range until 2035.

### Scenario 1 Reserve Fund Balances



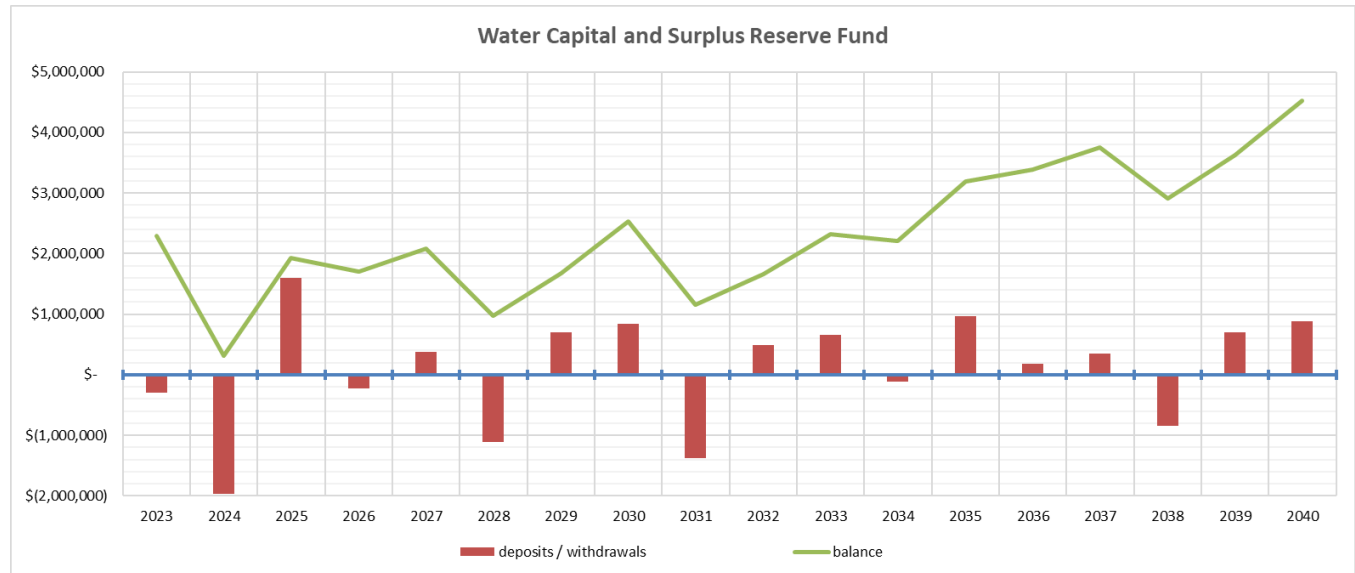
The reserve fund is drawn down to a level of about \$300,000 in 2024 because of the projects required in both 2023 and 2024. After 2024 the reserve fund recovers until more significant expenditures in 2028, but still remains positive.

The reserve fund balances are shown in 2022 dollars and the balances for Scenario 1 and Scenario 2 are virtually the same since Scenarios 1 and 2 are the same except that Scenario 2 includes inflation for costs and revenues. Since both the costs and the revenues are inflated by the same percentage the impact on the reserve fund for Scenarios 1 and 2 are similar. However, if in Scenario 1 the costs were inflated, but the water rates were not inflated, the reserve fund would quickly run into a deficit.



The resulting reserve fund balances under **Scenario 2** are shown in the following chart. The reserve fund balance ranges between about \$0.3M and \$4M, but generally fit in the \$1M to \$3M range until 2035.

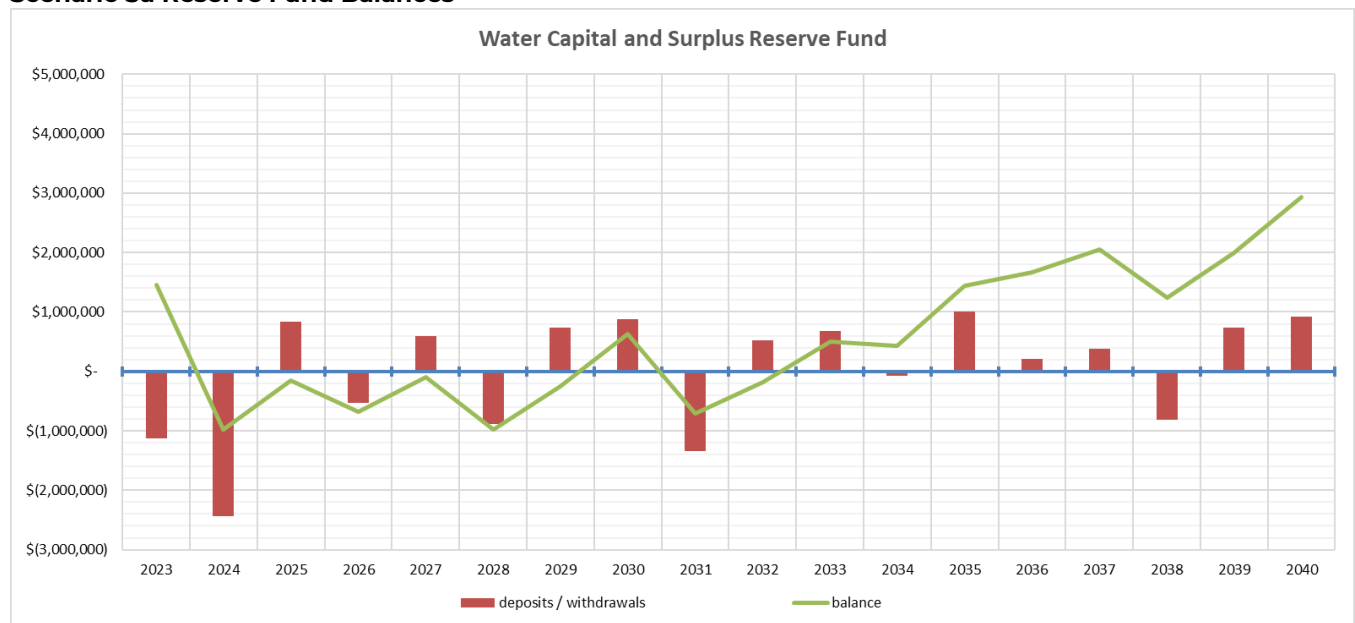
## Scenario 2 Reserve Fund Balances



Similar to Scenario 1, the reserve fund is drawn down to a level of about \$300,000 in 2024 because of the projects required in both 2023 and 2024. After 2024 the reserve fund recovers until more significant expenditures in 2028, but still remains positive.

The resulting reserve fund balances under **Scenario 3a** are shown in the next chart. The reserve fund balance ranges between about negative \$1M and positive \$3M, but generally fit in the zero to negative \$1M range until about 2033.

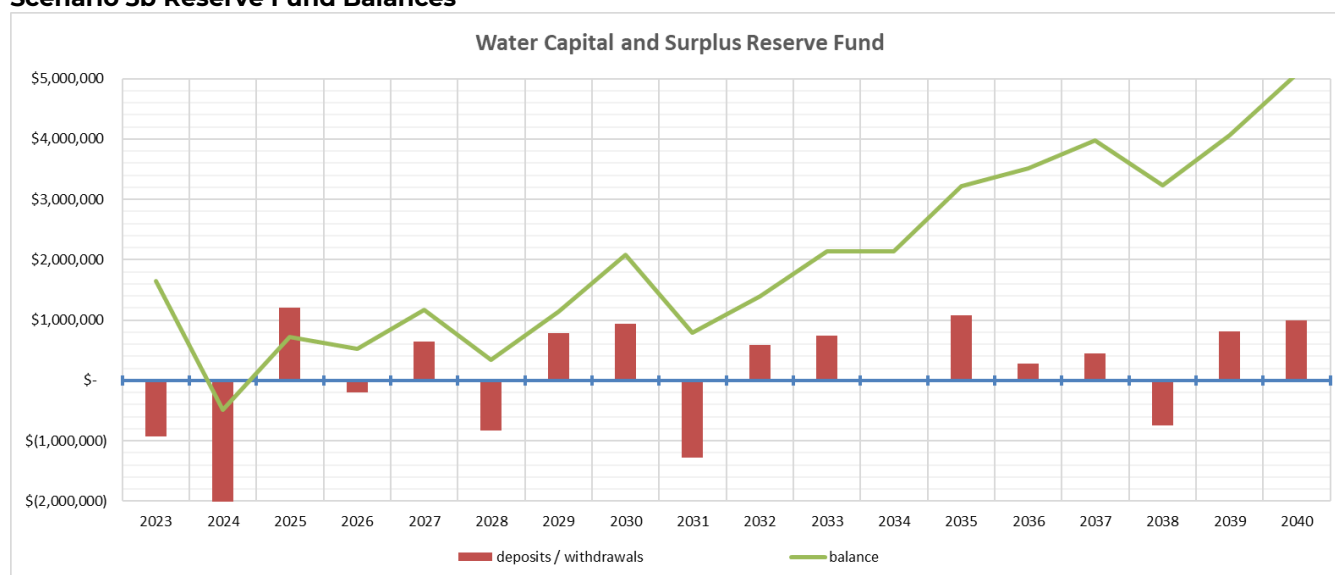
## Scenario 3a Reserve Fund Balances



Scenario 3a, with the equal increase in rates over 5 years, results in negative reserve fund balances most years until 2033, with it dipping to negative \$1 million in 2024 and 2028. This is because of significant projects required in 2024 and other years. This means the District may need to borrow from other reserve funds for those years to address the negative balances or deliver the identified projects on alternate timelines.

The resulting reserve fund balances under **Scenario 3b** are shown in the next chart. The reserve fund balance ranges between about negative \$0.5M and positive \$4M, but generally fit in the \$0.5M to \$3M range until about 2035.

## Scenario 3b Reserve Fund Balances



Scenario 3b, with the gradual increase in rates over 5 years and with higher increases early in the 5 year period, sees the reserve fund dip to below zero to about negative \$500,000 in 2024. This is because of significant projects required in 2024. This means the District may need to borrow from other reserve funds for that year to address the negative balance, and the fund recovers the next year in 2025. Scenarios 1 and 2 avoid this dip in the reserve funds by having a more significant increase in the rates in 2023. Compared to Scenario 2, Scenario 3b reaches about the same point in reserve fund balances by about 2033.

For all scenarios borrowing is required for some specific projects in order to smooth out the impacts on the reserve funds. As noted in the assumptions in Section 2 above, borrowing is assumed for Beaver Lake WTP; Okanagan Centre Small Diameter mains; Carrs Landing Small Diameter Upgrades Phase 2; Kalamalka Lake Treatment; and the Oyama System Separation.

## 6.0 DEVELOPMENT COST CHARGES

The analysis indicates the Water DCCs would need to increase significantly. The current single family water DCCs are at about \$7500, and this rate would likely need to increase to about the \$20,000 range in order for new development to pay for the impact that new growth has on the water system. The District Water DCCs will need to be analyzed in detail to determine the exact increases required to address projects required due to growth. With significant increases in the water DCCs, the initial analysis indicates that the DCC reserve fund can be sustained without going into a deficit. This is possible if funds are borrowed to cover the amounts allocated to

DATE: January 9, 2023  
SUBJECT: Financial Strategy

FILE: 1577.0104.01

PAGE: 11 of 11

growth and recoverable through DCCs. This spreads the costs out and allows the District to collect DCCs to pay the debt servicing costs. If the District aims to take cash directly from the DCC reserve funds to pay for the DCC recoverable amounts, then the reserve fund goes into a deficit. This analysis does not include the past projects constructed that will continue to be funded from DCCs as this would require a full DCC analysis to complete. The District should conduct a detailed review and update the Water Development Cost Charges based on the capital projects and benefit allocations set out in the Water Master Plan.

## 7.0 RECOMMENDATIONS

Based on the analysis set out in this memo and the discussions held throughout the master planning process, the financial recommendations are as follows:

- Choose a rate scenario and update the water rates in 2023, and then re-evaluate future increases based on:
  - regular inflationary changes.
  - rate increases based on IHA acceptance of a phasing plan for construction of the Beaver Lake Water Treatment Plant.
- Monitor actual capital costs and ongoing operations and maintenance costs and update the analysis every 5 to 10 years or if significant changes occur in costs.
- Conduct a detailed review and update the Water Development Cost Charges based on the capital projects and benefit allocations set out in the Water Master Plan.

## 8.0 CLOSING

There are many variables and assumptions to be considered in conducting the financial analysis and determining the appropriate rate increases. It will be necessary to monitor revenues, reserve fund balances, and actual project costs on a regular basis to ensure financial sustainability of the system. Adjustments in the future are inevitable as situations change. The identified rate increases are based on the information we have available and our understanding of the projects and the approach the District wishes to use.

Sincerely,

**URBAN SYSTEMS LTD.**



Joel Short, MCIP, RPP  
Senior Planner / Principal

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