Capital Regional District

625 Fisgard St.,
Victoria, BC V8W 1R7

Notice of Meeting and Meeting Agenda
Regional Water Supply Commission

Wednesday, October 16, 2024 | **11:30 AM** | **6th Floor Boardroom, 625 Fisgard St., Victoria, BC V8W 1R7**

MEMBERS:
G. Baird (Chair); K. Harper (Vice Chair); J. Caradonna; N. Chambers; C. Coleman; Z. de Vries; S. Duncan; C. Graham; S. Gray; C. Green; K. Guiry; S. Hammond; K. Jordison; S. Kim; D. Lajeunesse; T. Morrison; T. Phelps Bondaroff; J. Rogers; C. Stock; M. Wagner; M. Westhaver; A. Wickheim

1. TERRITORIAL ACKNOWLEDGEMENT

2. APPROVAL OF THE AGENDA

3. ADOPTION OF MINUTES

3.1. 24-998 Adoption of the Minutes of the September 25, 2024 Meeting

Recommendation: That the minutes of the September 25, 2024 Regional Water Supply Commission meeting be adopted.

Attachments: Draft Minutes: September 25, 2024

4. CHAIR'S REMARKS

5. PRESENTATIONS/DELEGATIONS

Delegations will have the option to participate electronically. Please complete the online application for "Addressing the Board" on our website located here https://www.crd.bc.ca/about/board-committees/addressing-the-board and staff will respond with details.

Alternatively, you may email your comments on an agenda item to the Regional Water Supply Commission at iwsadministration@crd.bc.ca. Delegation requests must be received no later than 4:30 p.m. two calendar days prior to the meeting.

6. GENERAL MANAGER'S REPORT

7. CONSENT AGENDA

7.1. 24-1001 Summary of Recommendations from Other Water Commissions

Recommendation: There is no recommendation. This report is for information only.

Attachments: Summary of Recommendations from Other Water Commissions

7.2. 24-1002 Water Watch Report

Recommendation: There is no recommendation. The report is for information only.

Attachments: Water Watch Report

8. COMMISSION BUSINESS

8.1. 24-999 Regional Water Supply Service 2025 Operating and Capital Budget

Recommendation: The Regional Water Supply Commission recommends that the Committee of the Whole recommend that the Capital Regional District Board:

1. Approve the 2025 Operating and Capital Budget and the Five Year Capital Plan;
2. Approve the 2025 wholesale water rate of $0.8631 per cubic metre;
3. Approve the 2025 agricultural water rate of $0.2105 per cubic metre;
4. Direct staff to balance the 2024 actual revenue and expense on the transfer to the water capital fund;
5. Direct staff to update carry forward balances in the 2025 Capital Budget for changes after year end; and
6. Direct staff to amend the Water Rates Bylaw accordingly.

(WA)

Attachments: Staff Report: RWS 2025 Operating and Capital Budget

Presentation: RWS 2025 Budget Review

Appendix A: 2025 RWS Service Budget

Appendix B: Long Term Debt Obligations Summary

Appendix C: Agricultural Water Volumes and Rate Payments for 2011-2023

Appendix D: Wholesale Water Rate History and Projection

Appendix E: 2025 Initiative Business Case Summary

8.2. 24-934 Water Quality Summary Report for Greater Victoria Drinking Water System - May to August 2024

Recommendation: There is no recommendation. This report is for information only.

Attachments: Staff Report: Water Quality Summary Report for GVDWS - May to August 2024

Appendix A: Water Quality Summary Report for GVDWS - May to August 2024

8.3. 24-1000 Dam Safety Program Update

Recommendation: There is no recommendation. This report is for information only.

Attachments: Staff Report: Dam Safety Program Update

Appendix A: CRD Managed Dams Map

Appendix B: Summary of RWS Dams

Appendix C: Application of the Dam Safety Regulation

Appendix D: Dam Failure Consequence Classification

Appendix E: Dam Safety Program – Major Project Descriptions

8.4. 24-997 Greater Victoria Water Supply Area 2024 Wildfire Management Update

Recommendation: There is no recommendation. This report is for information only.

Attachments:
- Staff Report: GVWSA 2024 Wildfire Management Update
- Appendix A: 2024 Wildfire Management Activity Photos
- Appendix B: Wildfire Management Map
- Appendix C: Letter from CRD Board Chair

9. NOTICE(S) OF MOTION

10. NEW BUSINESS

11. ADJOURNMENT

Votinq Key:
NWA - Non-weighted vote of all Directors
NWP - Non-weighted vote of participants (as listed)
WA - Weighted vote of all Directors
WP - Weighted vote of participants (as listed)

Capital Regional District

625 Fisgard St.,
Victoria, BC V8W 1R7

Meeting Minutes

Regional Water Supply Commission

Wednesday, September 25, 2024 **11:30 AM** **6th Floor Boardroom**
625 Fisgard St.
Victoria, BC V8W 1R7

PRESENT:
G. Baird (Chair); K. Harper (Vice Chair); J. Caradonna; N. Chambers; C. Coleman; S. Duncan (EP); C. Graham (EP); S. Gray; C. Green; K. Guiry; S. Hammond (EP); S. Kim (EP); T. Morrison; K. Pearson (for D. Lajeunesse); T. Phelps Bondaroff (EP); J. Rogers; M. Wagner (EP); M. Westhaver (EP); A. Wickheim (EP)

STAFF:
T. Robbins, CAO; A. Fraser, General Manager, Integrated Water Services; A. Constabel, Senior Manager, Watershed Protection; G. Harris, Senior Manager, Environmental Protection; J. Marr, Senior Manager, Infrastructure Engineering; S. Irg, Senior Manager, Water Infrastructure Operations; J. Kelly, Manager, Capital Projects; P. Stephens, Project Engineer, Integrated Water Services; J. Zimmerman, Communications Coordinator; D. Dionne, Manager, Business Support Services; M. Risvold (recorder)

Also Present: Shaun Heffernan, Urban Systems

REGRETS: Z. de Vries; K. Jordison; C. Stock

EP = Electronic Participation

The meeting was called to order at 11:30 am

1. TERRITORIAL ACKNOWLEDGEMENT

The Chair provided a Territorial Acknowledgement.

2. APPROVAL OF THE AGENDA

MOVED by Commissioner Coleman and SECONDED by Commissioner Rogers,
That the agenda be approved as circulated.
CARRIED

3. ADOPTION OF MINUTES

Adoption of the Minutes of the July 17, 2024 Meeting

Attachments: Draft Minutes - July, 17 2024

MOVED by Commissioner Green and SECONDED by Commissioner Gray,
That the Minutes of the July 17, 2024 meeting be adopted.
CARRIED

4. REPORT OF THE CHAIR

The Chair provided the following remarks:
- Welcomed the Commission back after summer
- Thanked staff for their work
- New item on today's agenda: Item 7 - Consent Agenda

5. PRESENTATIONS/DELEGATIONS

There were none.

6. GENERAL MANAGER'S REPORT

A. Fraser spoke to the following:
- Welcomed the commission back after summer
- Strategic plan public engagement survey phase 1 update
- Advised that a staff report summarizing the strategic plan feedback will be provided in the future
- Old Man Lake wildfire update
- August 17, 2024 lightning strike in the Leech Water Supply Area, resulting in a wildfire
- Wildfire and associated risks to the Water Supply Area

7. CONSENT AGENDA

MOVED by Commissioner Rogers, SECONDED by Commissioner Green,
That the consent agenda items 7.1. through 7.4. be approved.
CARRIED

7.1. 2025 Regional Water Supply Strategic Plan Engagement Update

Attachments: Staff Report: 2025 RWS Strategic Plan Engagement Update

Appendix A: Summary of Workshop Feedback

Appendix B: 2025 Draft Strategic Plan Outline

1. That the revised draft 2025 Strategic Plan for the Greater Victoria Water Supply System be endorsed; and
2. That staff be directed to proceed with the engagement plan.
CARRIED

7.2. Designation of Watershed Security Officers

Attachments: Staff Report: Designation of Watershed Security Officers

The Regional Water Supply Commission recommends that the Capital Regional District Board:
Appoint Nathan Prenger as Watershed Security Officer for the purpose of Section 233 of the Local Government Act and Section 28(3) of the Offence Act, and in accordance with Capital Regional District Bylaw No. 2681.
CARRIED

7.3. Recommendations from Other Water Commissions

Attachments: Summary of Recommendations from Other Water Commissions

This report was received for information.

7.4. Water Watch Report

Attachments: Water Watch Report

This report was received for information.

8. COMMISSION BUSINESS

8.1. Proposed Regional Water Supply - Development Cost Charge Program and Bylaw Update

Attachments: Staff Report: Proposed RWS - DCC Program and Bylaw Update

Appendix A: Urban Systems – CRD RWS DCC: Engagement Summary
Appendix B: Urban Systems – Draft RWS DCC Background Report

Appendix C: Urban Development Letter and CRD Response

J. Marr spoke to item 8.1.

Staff responded to questions regarding:
- Feedback received on the proposed DCC program
- Engaging more groups and additional ways of advertising
- Transparency and feedback results
- Percentages of each groups identified in the survey
- How to reach the younger demographic
- Potential financial impact assessment
- Housing prices in comparison
- Benefiter pay principle
- Determining why people may disapprove of the program

MOVED by Commissioner Rogers, SECONDED by Commissioner Harper,
That staff be directed to complete further public and development community engagement related to the draft Regional Water Supply Development Cost Charges Background Report, attached as Appendix B, prior to drafting the Regional Water Supply Development Cost Charge Bylaw.
CARRIED

8.2. Regional Water Supply Service 2025 Budget Requirement for Bear Hill Extension Project

Attachments: Staff Report: RWS Service 2025 Budget Requirement for Bear Hill Extension Project
Appendix A: SPW/RWS Transmission Main Project Coordination Schematic

J. Marr spoke to item 8.2.

Staff responded to questions regarding:
- Impact on 2025 budget
- Loan authorization and mid-level estimate
- Coordination with Districts of North Saanich and Central Saanich for road upgrade projects

MOVED by Commissioner Rogers, SECONDED by Commissioner Green,
That the cost of the Bear Hill Trunk Watermain Extension capital project No. 21-05 be cost-shared between the Regional Water Supply and Saanich Peninsula Water services, with up to 50% of the total cost being included in the 2025 Regional Water Supply Capital Plan.
CARRIED

8.3. Demand Management Program Update

Attachments: Staff Report: Demand Management Program Update
Appendix A: Demand Management Research & Planning
Appendix B: Demand Management Outreach & Education

G. Harris spoke to item 8.3.

Staff responded to questions regarding:
- Agricultural water rate
- Water Advisory Committee input on Agricultural water rates
- Water conservation education opportunities
- Smart water leak detectors and education
- Ability to determine increase per capita
- Food security and water consumption
- Potential interconnectivity for surrounding rural communities

This report was received for information.

9. NOTICE(S) OF MOTION

There were none.

10. NEW BUSINESS

There was no new business.

11. MOTION TO CLOSE THE MEETING

11.1. Motion to Close the Meeting

The Commission moved into closed session at 12:43 pm.

MOVED by Commissioner Guiry, SECONDED by Commissioner Coleman,
That the meeting be closed for Intergovernmental Relations in accordance with the Community Charter, Part 4, Division 3, Section 90 (2)(b).
CARRIED

12. RISE AND REPORT

The Commission rose from its closed session at 1:09 pm without report.

13. ADJOURNMENT

MOVED by Commissioner Chambers, SECONDED by Commissioner Green,
That the meeting be adjourned at 1:10 pm.
CARRIED

_____
CHAIR

_____
SECRETARY

Capital Regional District

HOTSHEET AND ACTION LIST

Juan de Fuca Water Distribution Commission

Tuesday, October 1, 2024 **12 PM** **Goldstream Meeting Room**
479 Island Highway
Victoria, BC

The following is a quick snapshot of the FINAL Juan de Fuca Water Distribution Commission decisions made at the meeting. The minutes will represent the official record of the meeting. A name has been identified beside each item for further action and follow-up.

3. ADOPTION OF MINUTES

The minutes of the July 2, 2024 meeting were adopted as circulated.

7. COMMISSION BUSINESS

7.1 Juan de Fuca Water Distribution Service 2025 Operating and Capital Budget

Recommendation: The Juan de Fuca Water Distribution Commission recommends the Committee of the Whole recommend that the Capital Regional District Board:

1. Approve the 2025 Operating and Capital Budget and the Five Year Capital Plan;
2. Approve the 2025 Juan de Fuca Water Distribution Service retail water rate of $2.8395 per cubic metre, adjusted if necessary, by any change in the Regional Water Supply wholesale water rate;
3. Direct staff to balance the 2024 actual operating deficit or surplus on the 2024 capital fund transfer;
4. Direct staff to update carry forward balances in the 2025 Capital Budget for changes after year end; and
5. Direct staff to amend the Water Distribution Local Service Conditions, Fees and Charges Bylaw accordingly

CARRIED

The following reports were received for information

7.2. Process Improvement and Customer Experience Strategies for CRD Water Billing
7.3 Summary of Recommendations from Other Water Commissions
7.4 Water Watch Report

8. NOTICE(S) OF MOTION

8.1 **[Same day consideration was given]** That staff report back on the placement and financial implications of a new bulk water station to service Metchosin, inclusive with the feasibility of completion for the summer of 2025. **S. Donaldson**

CARRIED

8.2 That the Juan de Fuca Water Distribution Commission direct staff to prepare a report outlining the implications related to amending the Board Remuneration and Travel Expense Reimbursement Policy, to include remuneration for meeting attendance for Juan de Fuca Water Distribution Commissioners, for the Commission's consideration. **J. Rogers**

8.3 That staff investigate options to replicate Nanaimo's water user rate calculation where consumption is split among three tiers to encourage water conservation with a 2026 implementation. **J. Rogers**

CAPITAL REGIONAL DISTRICT - INTEGRATED WATER SERVICES
Water Watch for October 06, 2024

Water Supply System Summary:

1. Useable Volume in Storage:

Reservoir	October 31 5 Year Ave		October 31/23		October 6/24		% Existing Full Storage
	ML	MIG	ML	MIG	ML	MIG	
Sooke	63,645	14,002	59,343	13,055	60,892	13,396	65.7%
Goldstream	6,793	1,494	7,371	1,622	7,928	1,744	80.0%
Total	70,438	15,496	66,714	14,677	68,820	15,140	67.0%

2. Average Daily Demand:

For the month of October	125.8 MLD	27.67 MIGD
For week ending October 06, 2024	126.4 MLD	27.81 MIGD
Max. day October 2024, to date:	132.8 MLD	29.22 MIGD

3. Average 5 Year Daily Demand for October

Average (2019 - 2023)	117.7 MLD [1]	25.90 MIGD [2]

[1]MLD = Million Litres Per Day [2]MIGD = Million Imperial Gallons Per Day

4. Rainfall October:

Average (1914 - 2023):	169.7 mm
Actual Rainfall to Date	11.7 mm (7% of monthly average)

5. Rainfall: Sep 1- Oct 6

Average (1914 - 2023):	84.2 mm
2023/2024	64.1 mm (76% of average)

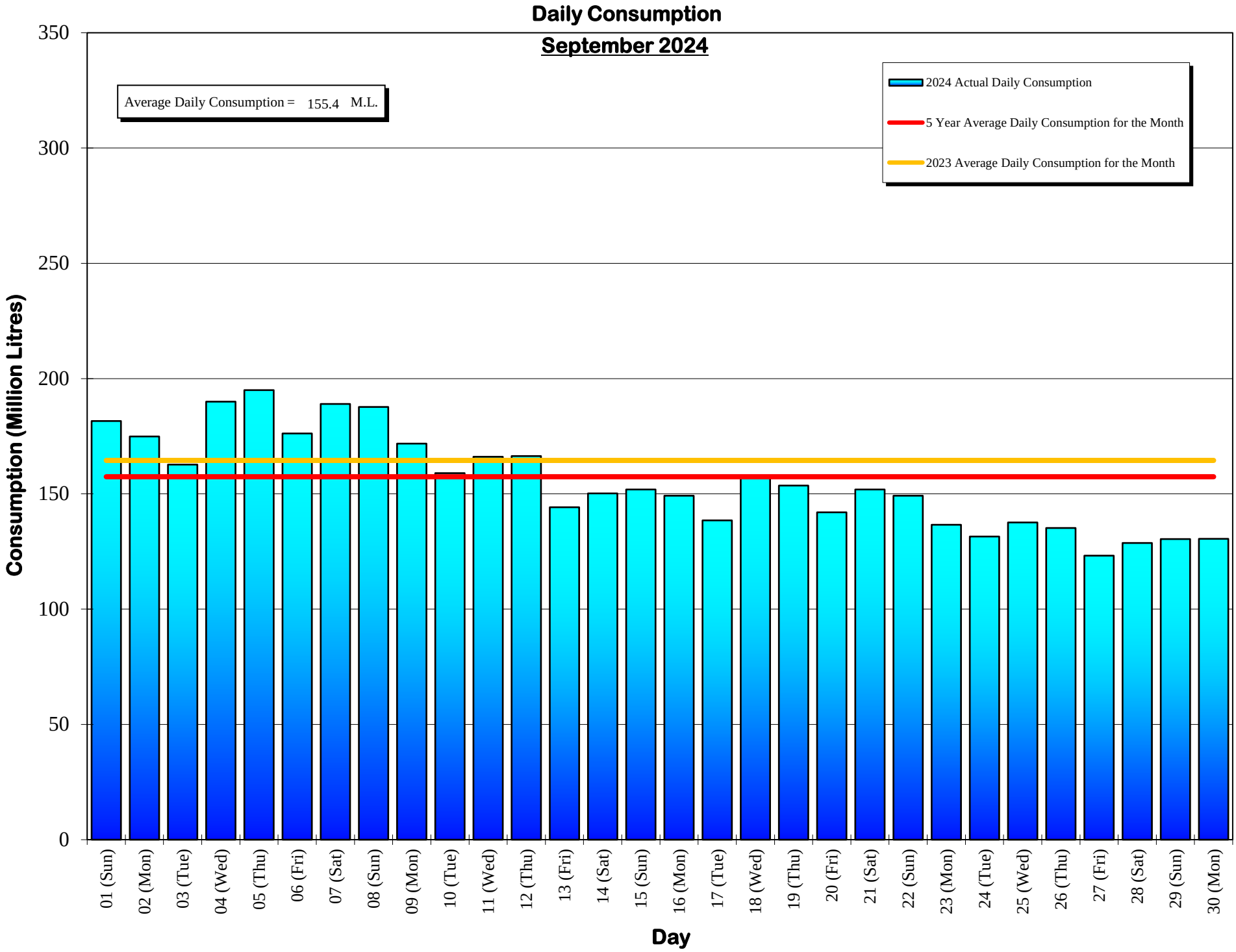
6. Water Conservation Action Required:

To avoid possible leaks this spring, now is the time to winterize your sprinkler system.
Visit our website at www.crd.bc.ca/water for more information.

If you require further information, please contact:

Alicia Fraser, P. Eng.
General Manager, CRD - Integrated Water Services
or
Glenn Harris, Ph D., RPBio
Senior Manager - Environmental Protection

Capital Regional District Integrated Water Services
479 Island Highway
Victoria, BC V9B 1H7
(250) 474-9600



J:\WATERENG\HYDROLGY\AMRIT\MONTHEND.24\H2o watch 2024Cons. Chart

Daily Consumptions: - September 2024

Date	Total Consumption (ML) [1.]		Total Consumption (MIG) [2.]	Air Temperature @ Japan Gulch High (°C)	Air Temperature @ Japan Gulch Low (°C)	Weather Conditions	Precipitation @ Sooke Res.: 12:00am to 12:00am Rainfall (mm)	Snowfall [3.] (mm)	Total Precip.
01 (Sun)	181.6		39.9	28	15	Cloudy / P. Sunny	0.0	0.0	0.0
02 (Mon)	174.9		38.5	24	13	Sunny / P. Cloudy	0.0	0.0	0.0
03 (Tue)	162.7		35.8	21	12	Cloudy / P. Sunny	0.0	0.0	0.0
04 (Wed)	190.0		41.8	25	12	Sunny / P. Cloudy	0.0	0.0	0.0
05 (Thu)	195.0	<=Max	42.9	30	14	Sunny	0.0	0.0	0.0
06 (Fri)	176.2		38.8	30	16	Sunny	0.0	0.0	0.0
07 (Sat)	189.0		41.6	27	16	Cloudy	0.0	0.0	0.0
08 (Sun)	187.7		41.3	23	15	Cloudy / P. Sunny	0.0	0.0	0.0
09 (Mon)	171.8		37.8	21	13	Sunny / P. Cloudy	0.0	0.0	0.0
10 (Tue)	159.0		35.0	21	11	Sunny / P. Cloudy / Showers	1.8	0.0	1.8
11 (Wed)	166.1		36.5	16	11	Cloudy / Showers	1.3	0.0	1.3
12 (Thu)	166.4		36.6	20	10	Sunny / P. Cloudy	0.0	0.0	0.0
13 (Fri)	144.2		31.7	19	10	Cloudy / Showers	13.5	0.0	13.5
14 (Sat)	150.2		33.0	18	10	Sunny / P. Cloudy / Showers	0.3	0.0	0.3
15 (Sun)	151.9		33.4	18	9	Sunny / P. Cloudy	0.0	0.0	0.0
16 (Mon)	149.2		32.8	21	9	Cloudy / P. Sunny / Showers	0.3	0.0	0.3
17 (Tue)	138.5		30.5	18	10	Cloudy	0.0	0.0	0.0
18 (Wed)	156.9		34.5	19	12	Cloudy	0.0	0.0	0.0
19 (Thu)	153.6		33.8	19	10	Sunny / P. Cloudy	0.0	0.0	0.0
20 (Fri)	142.0		31.2	17	10	Cloudy / P. Sunny	0.0	0.0	0.0
21 (Sat)	151.9		33.4	19	10	Sunny / P. Cloudy	0.0	0.0	0.0
22 (Sun)	149.2		32.8	20	10	Cloudy / Showers	0.3	0.0	0.3
23 (Mon)	136.6		30.0	20	14	Sunny / P. Cloudy / Showers	0.3	0.0	0.3
24 (Tue)	131.5		28.9	23	13	Sunny / P. Cloudy / Showers	4.1	0.0	4.1
25 (Wed)	137.6		30.3	15	9	Cloudy / Rain	18.8	0.0	18.8
26 (Thu)	135.2		29.7	14	9	Cloudy / Showers	11.7	0.0	11.7
27 (Fri)	123.2	<=Min	27.1	17	9	Cloudy / P. Sunny	0.0	0.0	0.0
28 (Sat)	128.7		28.3	16	8	Cloudy	0.0	0.0	0.0
29 (Sun)	130.4		28.7	15	7	Cloudy / P. Sunny	0.0	0.0	0.0
30 (Mon)	130.5		28.7	15	6	Cloudy / P. Sunny	0.0	0.0	0.0
TOTAL	4661.7 ML		1025.61 MIG				52.4	0	52.4
MAX	195.0		42.91	30	16		18.8	0	18.8
AVG	**155.4**		34.19	20.3	11.1		1.7	0	1.7
MIN	123.2		27.11	14	6		0.0	0	0.0

1. ML = Million Litres 2. MIG = Million Imperial Gallons 3. 10% of snow depth applied to rainfall figures for snow to water equivalent.

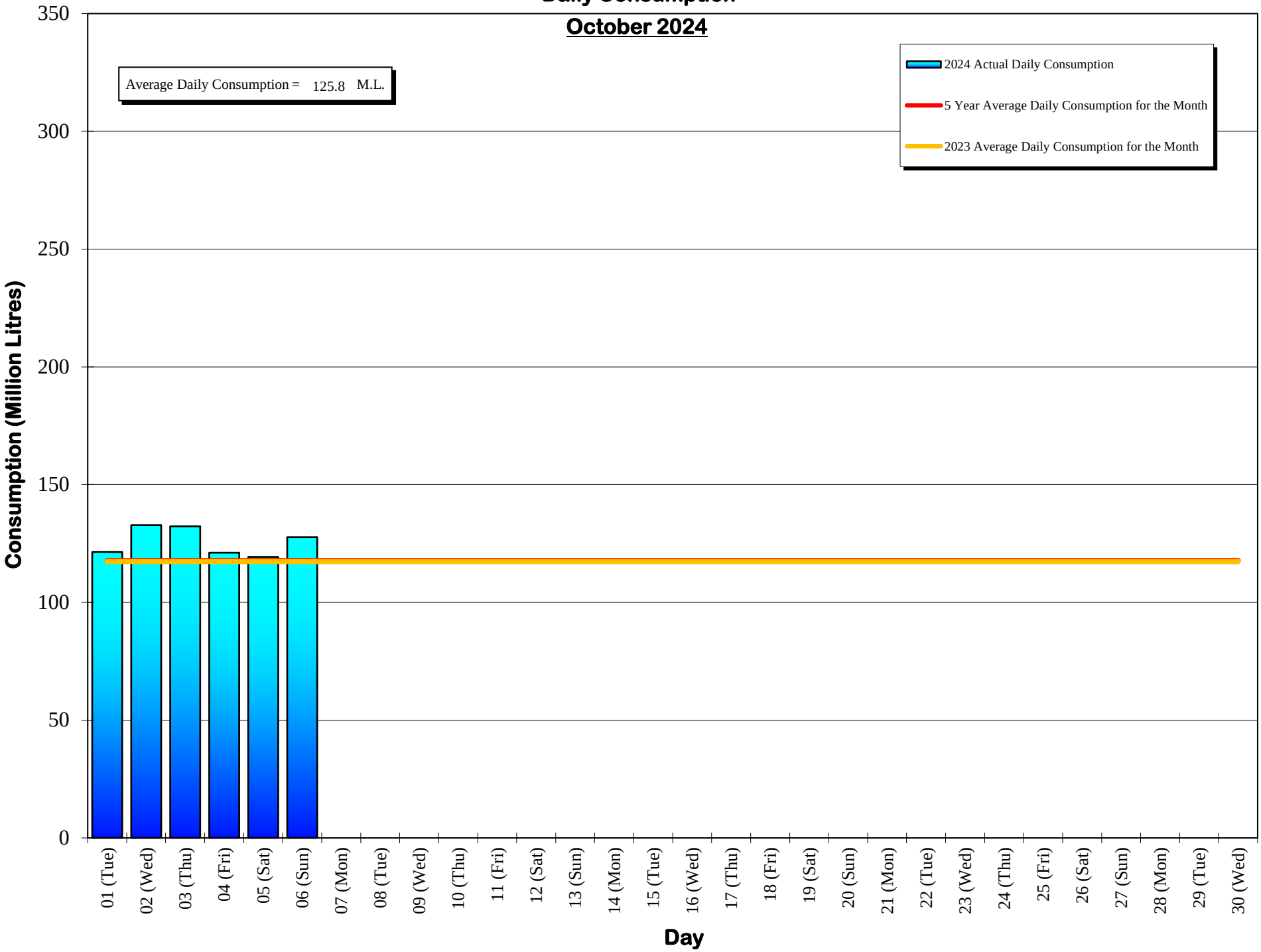
Average Rainfall for September (1914-2023)	65.5 mm
Actual Rainfall: September	52.4 mm
% of Average	80%
Average Rainfall (1914-2023): Sept 01 - Oct 06	84.2 mm
Actual Rainfall (2023/24): Sept 01 - Oct 06	64.1 mm
% of Average	76%

Number days with precip. 0.2 or more
10

Water spilled at Sooke Reservoir to date (since Sept. 1) = 0.00 Billion Imperial Gallons
= 0.00 Billion Litres

Daily Consumption

October 2024



J:\WATERENG\HYDROLGY\AMRIT\MONTHEND.24\H2o watch 2024Cons. Chart

Daily Consumptions: - October 2024

Date	Total Consumption (ML) [1.]		(MIG) [2.]	Air Temperature @ Japan Gulch High (°C)	Low (°C)	Weather Conditions	Precipitation @ Sooke Res.: 12:00am to 12:00am Rainfall (mm)	Snowfall [3.] (mm)	Total Precip.
01 (Tue)	121.4		26.7	15	7	Cloudy / P. Sunny / Showers	0.3	0.0	0.3
02 (Wed)	132.8	<=Max	29.2	16	5	Sunny / P. Cloudy	0.0	0.0	0.0
03 (Thu)	132.3		29.1	14	6	Cloudy / P. Sunny	0.0	0.0	0.0
04 (Fri)	121.1		26.7	13	8	Showers / P. Cloudy	11.4	0.0	11.4
05 (Sat)	119.3	<=Min	26.2	14	8	Cloudy	0.0	0.0	0.0
06 (Sun)	127.7		28.1	17	9	Sunny / P. Cloudy	0.0	0.0	0.0
07 (Mon)									
08 (Tue)									
09 (Wed)									
10 (Thu)									
11 (Fri)									
12 (Sat)									
13 (Sun)									
14 (Mon)									
15 (Tue)									
16 (Wed)									
17 (Thu)									
18 (Fri)									
19 (Sat)									
20 (Sun)									
21 (Mon)									
22 (Tue)									
23 (Wed)									
24 (Thu)									
25 (Fri)									
26 (Sat)									
27 (Sun)									
28 (Mon)									
29 (Tue)									
30 (Wed)									
31 (Thu)									
TOTAL	754.6 ML		166.04 MIG				11.7	0	11.7
MAX	132.8		29.22	17	9		11.4	0	11.4
AVG	**125.8**		27.67	14.8	7.2		2.0	0	2.0
MIN	119.3		26.24	13	5		0.0	0	0.0

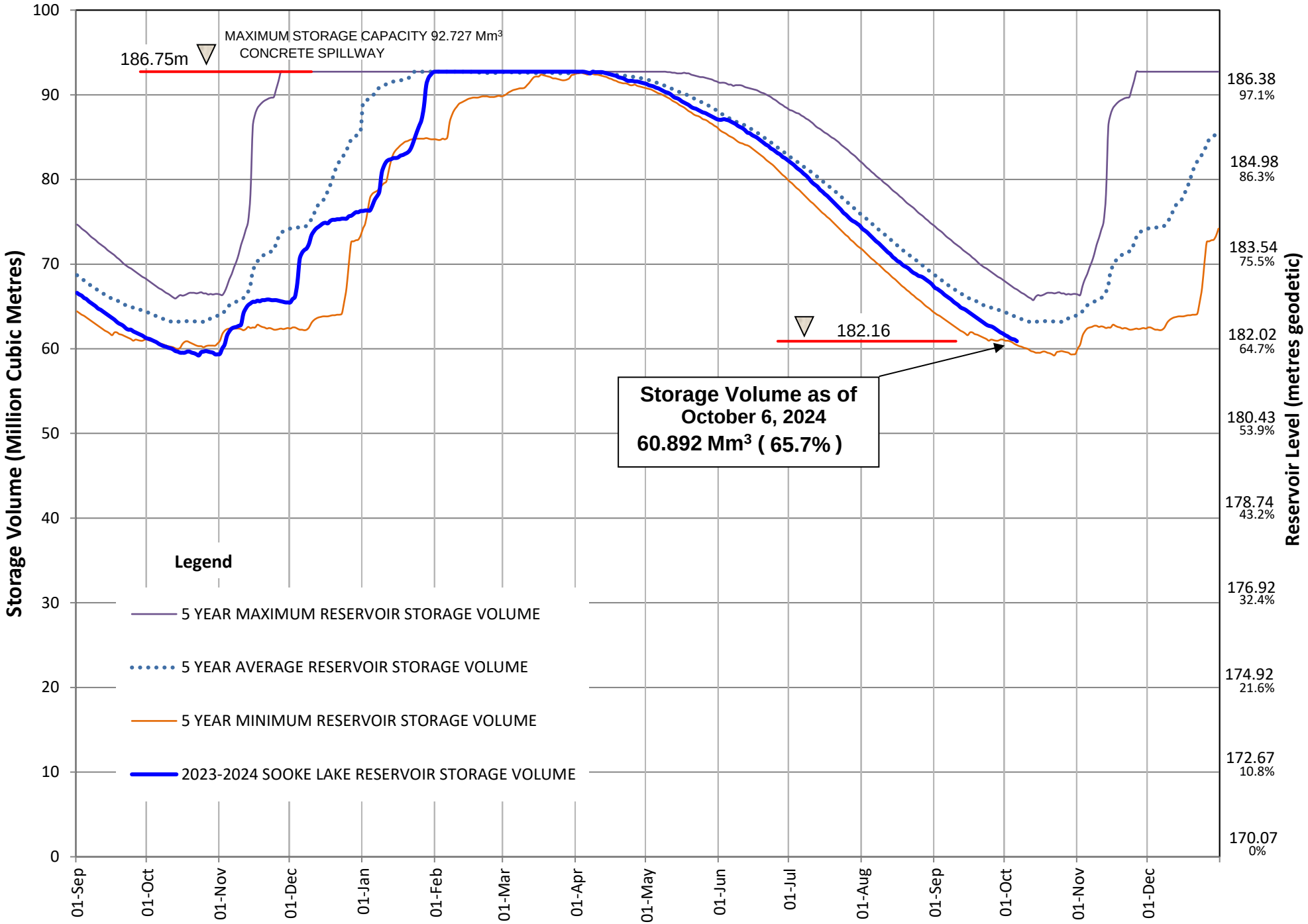
1. ML = Million Litres
2. MIG = Million Imperial Gallons
3. 10% of snow depth applied to rainfall figures for snow to water equivalent.

Average Rainfall for October (1914-2023)	169.7 mm
Actual Rainfall: October	11.7 mm
% of Average	7%
Average Rainfall (1914-2023): Sept 01 - Oct 06	84.2 mm
Actual Rainfall (2023/24): Sept 01 - Oct 06	64.1 mm
% of Average	76%

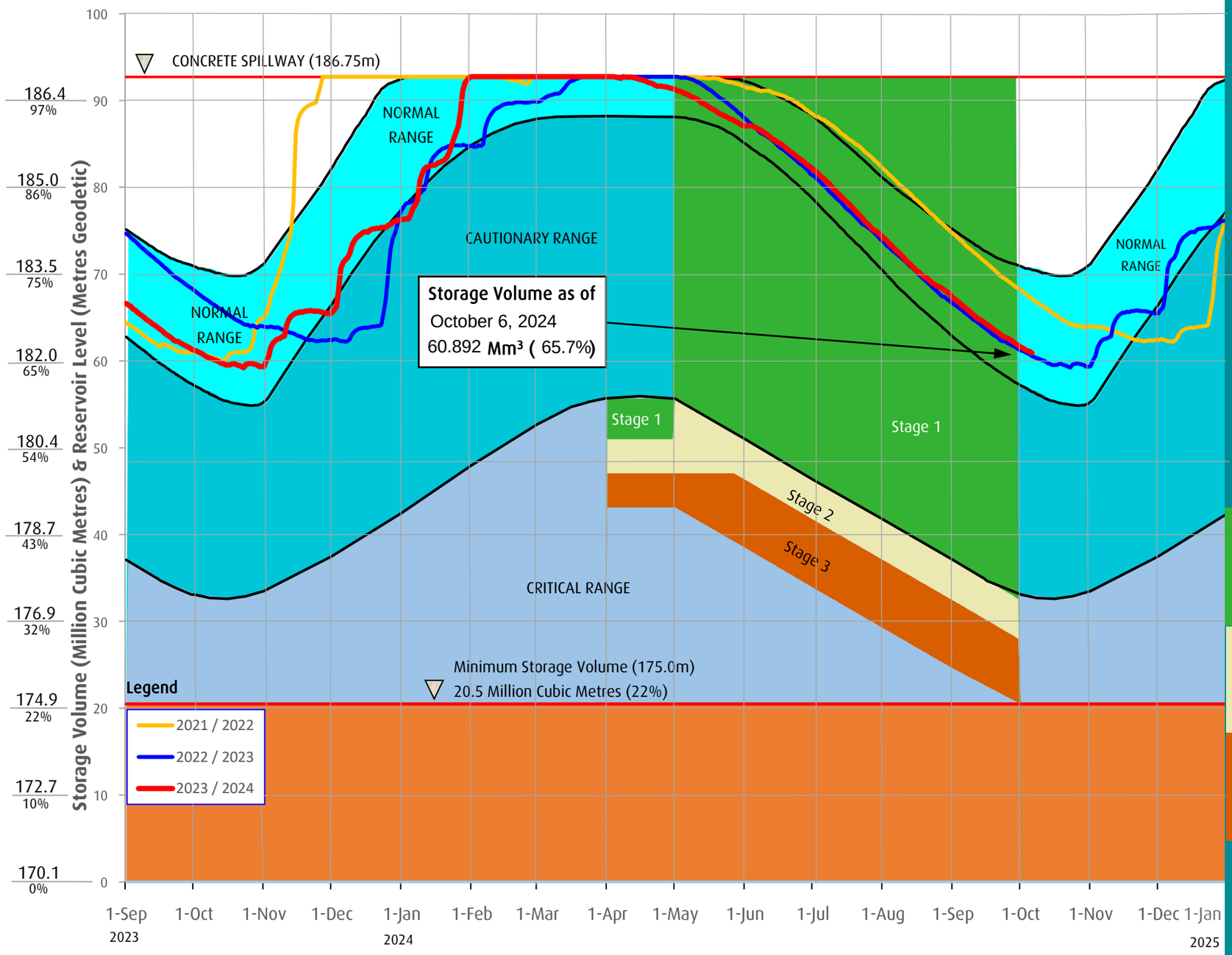
Number days with precip. 0.2 or more
2

Water spilled at Sooke Reservoir to date (since Sept. 1) = 0.00 Billion Imperial Gallons
= 0.00 Billion Litres

SOOKE LAKE RESERVOIR STORAGE SUMMARY
2023 / 2024



Sooke Lake Reservoir Storage Level
Water Supply Management Plan



FAQs

How are water restriction stages determined?

Several factors are considered when determining water use restriction stages, including,

1. Time of year and typical seasonal water demand trends;
2. Precipitation and temperature conditions and forecasts;
3. Storage levels and storage volumes of water reservoirs (Sooke Lake Reservoir and the Goldstream Reservoirs) and draw down rates;
4. Stream flows and inflows into Sooke Lake Reservoir;
5. Water usage, recent consumption and trends; and customer compliance with restriction;
6. Water supply system performance.

The Regional Water Supply Commission will consider the above factors in making a determination to implement stage 2 or 3 restrictions, under the Water Conservation Bylaw.

At any time of the year and regardless of the water use restriction storage, customers are encouraged to limit discretionary water use in order to maximize the amount of water in the Regional Water Supply System Reservoirs available for nondiscretionary potable water use.

Stage 1 is normally initiated every year from May 1 to September 30 to manage outdoor use during the summer months. During this time, lawn watering is permitted twice a week at different times for even and odd numbered addresses.

Stage 2 Is initiated when it is determined that there is an acute water supply shortage. During this time, lawn water is permitted once a week at different times for even and odd numbered addresses.

Stage 3 Is initiated when it is determined that there is a severe water supply shortage. During this time, lawn watering is not permitted. Other outdoor water use activities are restricted as well.

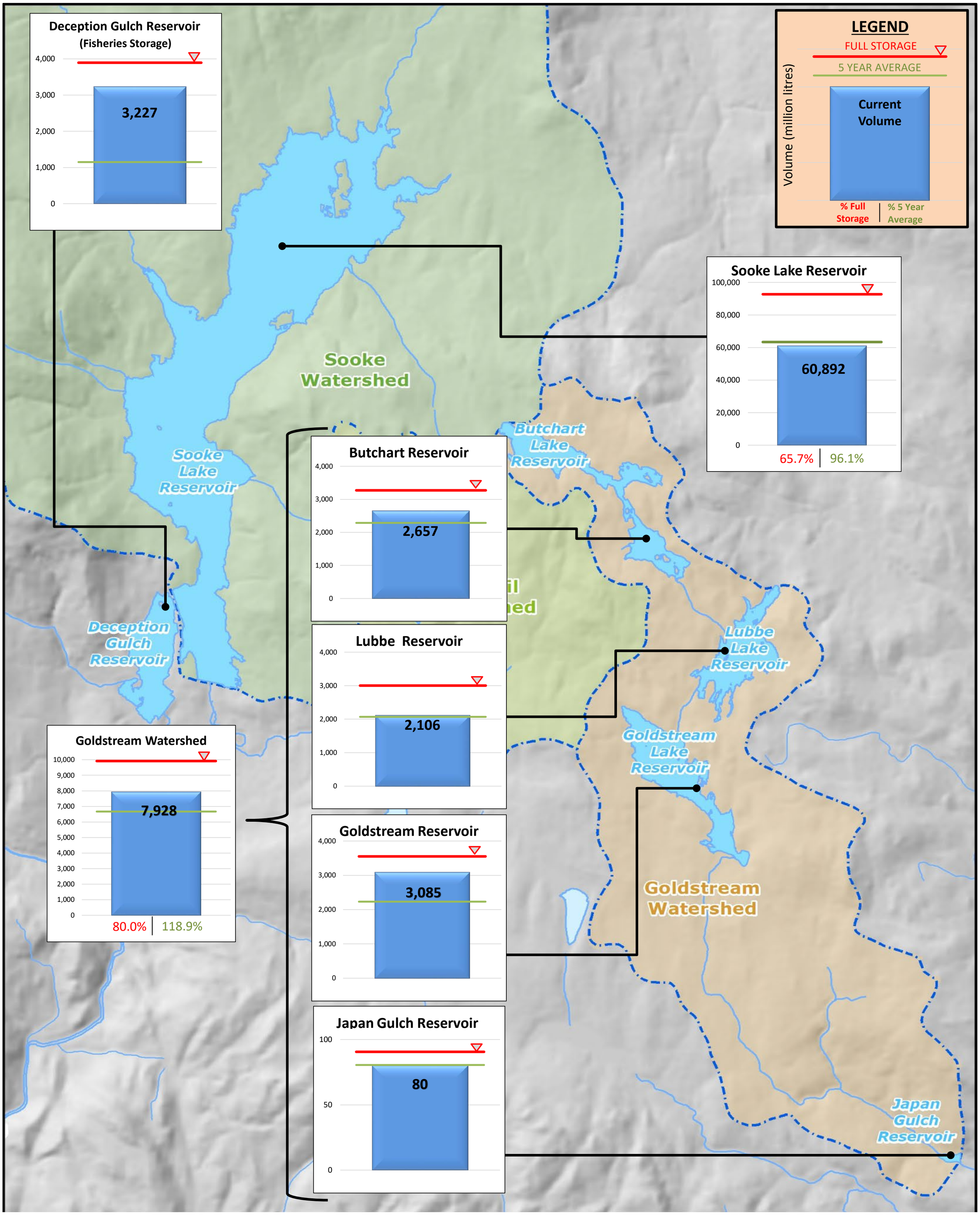
For more information, visit www.crd.bc.ca/drinkingwater

Making a difference...together

Capital Regional District Integrated Water Services

Making a difference...together

Useable Reservoir Volumes in Storage for October 06, 2024



Making a difference...together

RWSC 24-15

REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, OCTOBER 16, 2024

SUBJECT **Regional Water Supply Service 2025 Operating and Capital Budget**

ISSUE SUMMARY

To provide an overview of the draft 2025 Regional Water Supply Service budget, highlighting the 2024 budget variance and the proposed 2025 budget figures. The report generally follows the information provided in the attached draft budget document (Appendix A).

BACKGROUND

The draft 2025 Regional Water Supply Service budget has been prepared for the Regional Water Supply Commission's (Commission) consideration. The Commission will make budget recommendations to the Capital Regional District (CRD) Board through the Committee of the Whole in October. The budget recommendations are also necessary to establish the wholesale water rate and approve the rate by year end through adopting a rate bylaw. As in previous years, the draft 2025 Regional Water Supply Service budget has been prepared considering the CRD Board's 2025 service planning and financial expectations, which include identifying opportunities to realign or reallocate resources and seek potential efficiencies between departments and services, reviewing service levels and adjustments related to regulatory compliance, and undertaking infrastructure improvements and upgrades to maintain service levels within the Region. The following sets out the key components of the budget.

2024 Year End Financial Projections

Year-end revenue and expenditure projections have been established and estimated variances, including the proposed capital fund transfer, are summarized as follows:

Budget Item	Projected Variance Exceed/(Below) Budget($)	Projected Variance (%)
Operating Expenditures	-$47,506	-0.26%
Conveyance Fee for Service to First Nations	-$450,000	-50.0%
Capital Fund Transfers	$763,025	4.37%
Debt servicing - principal and interest expenditures	-$73,000	-67.57%
Revenue	$171,071	0.41%

The lower than budgeted operating expenditures are primarily due to temporary vacancies, partially offset by inflationary cost increases of chemical supplies related to water operations. There is also a projected reduction in the Conveyance Fee for Service to First Nations as the flows have been refined during water service agreement negotiation. The additional revenue is a result of higher water demand than budgeted. It is proposed to transfer the net surplus to the capital fund and reduce the borrowing requirement in 2025.

2025 Budget

Rate Base

The rate base includes facilities, equipment, infrastructure, and other assets used in providing the Regional Water Supply service. 2025 rate base increased by $1,523,800 compared with 2024 rate. This increase relates to physical plant additions, offset by current year depreciation and the change in prior year estimates of additions and disposals. This indicator highlights that we are continuing to invest in our infrastructure at a greater rate than the existing infrastructure is depreciating. The changes in physical plant and work in progress are listed on page 5 of the budget document (Appendix A) and are used to project the 2024 year-end total physical plant value and determine the 2025 rate base.

Revenue Requirement

The revenue requirement for 2025 increased by $2,912,455. This is resulting from an increase in operational expenses of $927,687 (explained further in the next section, Operating Budget), an increase in depreciation expenses of $140,968 and an increase in the return on the rate base of $1,843,800.

Operating Budget

The 2025 operating budget reflects an inflationary increase in non-discretionary expenses such as estimated wage/salary increases, corporate support service allocation increases, chemical and electricity costs, vehicle costs and other operating expense adjustments. The net core 2025 operating budget increase is $1,297,687.

As detailed in the 2025 Community Needs Summary there are five proposed Initiative Business Cases with 6.1 Full Time Equivalent (FTE) associated positions incorporated within the 2025 budget. The following new positions have been added to support continued wildfire preparedness, growth in Capital Plan activity and sampling requirements, and increasing regulatory pressures related to the Dam Safety Program. Further details of the rational for these additions and service level improvements are included in Appendix E, while the full 2025 Community Needs Summary will be presented at the Committee of the Whole on October 30, 2025.

Initiative	Staff impacts (2025)	Business Driver - Rational	Incremental cost (2025)	Funding source
2a-5.1 Seasonal Watershed Operator 2s	1.5 Auxiliary conversion (Q1 Start)	To sustain current levels of wildfire preparedness and vegetation management to the Watershed Protection division. These positions were previously covered by auxiliary hours.	$ 18,635	Fee-for-service
2a-8.2 Water Quality Sampling Technician	0.6 New ongoing (Q1 Start)	To enhance capacity to meet the sampling demands of the growing system.	$ 19,122	Fee-for-service
2b-2.2 Capital Projects Resource	1 New ongoing (Q3 Start)	Advancing backlog of watershed capital projects that mitigate risks in the watershed include wildfire, extreme weather, flooding, contamination, and power failures.	$98,500	Capital & Fee-for-service

Initiative	Staff impacts (2025)	Business Driver - Rational	Incremental cost (2025)	Funding source
2b-1.1 Dam Safety Program – Integrated Water Services	3 New Ongoing (Q1 Start)	Includes two new engineers and a new operator to support the operation, maintenance, and surveillance of the dams, as well as regulatory compliance activities and resolving safety issues through capital and operational safety improvements.	$539,450	Capital, Fee-for-service & Requisition

In addition, there are three new Initiative Business Cases that are proposed as part of the 2025 Water Community Needs; the associated positions provide support to various water and wastewater services and are partially funded through the Regional Water Supply Service. The associated costs have been incorporated within the 2025 budget. A summary of the rational for these positions is provided below and expanded on in Appendix E.

Initiative	Staff impacts (2025)	Business Driver - Rational	Incremental Cost (2025)	Funding Source	Funding Allocation
2b-2.3 Systems Maintenance Electronics Technologist	1 New ongoing (Q2 start)	To support the growing preventative maintenance and capital programs within the system, as well as support cyber security improvements.	$231,000	Requisition, Reserves & Fee-for-service	50% Core Area 25% JdF, 25% RWS
2b-2.4 Systems Maintenance Electrician	1 New ongoing (Q3 start)	To support the growing preventative maintenance and capital programs within the system.	$180,500	Fee-for-service & Reserve	50% JdF and 50% RWS
2a-8.3 Laboratory Assistant	1 New ongoing (Q2 start)	As the population grows, the demand for water increases, requiring additional capacity in the CRD's accredited internal laboratory to handle expanded testing.	$72,000	Requisition & Fee-for-service	50%Core Area and 50% RWS

The IBCs result in ongoing additional budget request of $346,920 in the operating budget for 2025.

In 2024 the Corporate Enterprise Asset Management team was transferred from Financial Services to Integrated Water Services (IWS) and merged with the existing IWS Customer and Technical Services to create a new Corporate Asset and Maintenance Management (CAMM) division. As the focus of Corporate Enterprise Asset Management has transitioned from a financial corporate function, these resources under CAMM in 2025 will initially be focusing on supporting water and wastewater infrastructure, as the services with the largest percent of engineered assets. Historically, Corporate Enterprise Asset Management division was funded through requisition. Given the focus on water/wastewater infrastructure in 2025, the funding for this division has been split among the water and wastewater services based on asset value and criticality. In 2026, asset management standards and programs will be expanded to all services across with engineered assets and funding will be realigned to reflect this focus.

There are several environmental programs that are critical for the successful operation of the Regional Water Supply, these programs are summarized below.

- **Water Quality Operations Program** – As the core component of the Water Quality portfolio, the Program designs and executes the water quality monitoring and reporting for the source water as well as the treated water in the transmission system and across the CRD-owned and municipal distribution systems. The program also provides technical and scientific support to operations, planning and engineering in the Greater Victoria Drinking Water System.
- **Cross Connection Control Program** – Also part of the overall Water Quality portfolio, this Program reduces the risk of drinking water contamination by identifying potential cross connections and enforcing national and provincial plumbing code requirements.
- **Laboratory Services Program** – Provides a wide range of laboratory services for the CRD drinking water and wastewater operations. Lab services for drinking water operations are integral to the Regional Water Supply.
- **Demand Management Program** – Researches and tracks the various water uses in the Greater Victoria Drinking Water System to design and execute targeted initiatives and campaigns aimed at influencing residential, industrial, institutional or agricultural water demand.

Operating budget forecasts for 2026-2029 are presented in Appendix A for information, they are projections which will need to be refined in future years.

It is anticipated that the Regional Water Supply Service will become the direct service provider to the seven First Nations who historically received water from the Regional System. In 2024, two bulk water services agreements have been signed and the associated two First Nations are in the process of transitioning to be direct customers of the Regional Water Supply. The budget has been prepared to reflect 'conveyance fee' payments, in the amount of $480,000 for 2025, that will fund operating expenses for those water systems required to convey water from the Regional Water Supply system to First Nations Reserve boundaries across Greater Victoria. The conveyance fee payments are subject to the completion of water service agreements with the participating Nations and operating agreements with the 'conveyors' that could include the Juan de Fuca Water Distribution Service, the Saanich Peninsula Water Service, the District of Central Saanich and the District of North Saanich. Agreements will all be applied retroactively to January 1, 2023, meaning that the Nations will receive a credit commensurate with the difference between the Juan de Fuca Water Distribution retail rate it paid during this period and the Regional Water Supply bulk water rate it would have paid.

<u>Capital Budget</u>
There are several capital projects planned for 2025 with a total value of $106,074,750, including $32,536,000 in carry forward projects, with the majority of the total budget being attributed to large initiatives and in-stream, multi-year projects such as:

- Greater Victoria Water Supply Area Land Acquisition
- Watershed Field Office building project
- Water Treatment Plant UV and Controls Upgrades
- Transmission main upgrade projects
- Storage Tank Assessments/Improvements
- Dam safety upgrades

There is also $1,480,000 in projects cost-shared with the Juan de Fuca Water Distribution Service (pages 10 to 37 of the budget document).

There are numerous projects in the 2025 that have been reviewed and consolidated with similar works with the intent of finding efficiencies in delivery. Any new projects or newly consolidated projects/programs are shown in **bold** on the Capital Plan.

The five-year capital plan is presented for consideration. The value of the five-year (2025-2029) capital plan is currently $349,407,750, plus $3,751,000 in projects cost-shared with the Juan de Fuca Water Distribution Service.

The CRD is continuing with Phase 2 of the Regional Water Development Cost Charge (DCC) Program with the goal of implementation in 2025. The need for such a program was identified in the CRD 2023-2026 Corporate Plan and the 2022 RWS Master Plan and will be used to fund growth-related regional water supply system improvements.

A strategy for delivering and implementing the projects identified in the 2022 RWS Master Plan will be started in 2024 and continue into 2025. This strategy will look for efficiencies and provide more detailed timelines of the major projects such as the future filtration plant and the deep northern intake over the next 30 years.

Capital and Debt Expenditures

The 2025 capital expenditures will be partially funded through a transfer to the water capital fund budgeted at $19,500,000, with the balance funded from existing cash reserves and borrowed funds (pages 10 and 11 of the budget document, Appendix A). The 2025 debt expenditures for existing debt servicing are budgeted to be $2,587,255. Debt servicing expenditures will decrease by $308,987 from 2024 due to reduced principal and interest payments on debt issues maturing in 2024. Additional projected water sales revenue and corresponding capital reserve fund transfer will reduce the borrowing needs in 2025. There is an existing loan authorization of $46,000,000 (approved in 2021) of which $42,000,000 will be used to fund the five-year capital plan. A new loan authorization will be required in 2026. The upcoming debt retirements on existing borrowings are summarized as follows:

Loan Number	Retirement Date	Loan Amount
LA3661-112	October 2025	$6,500,000
LA3661-116	April 2026	$1,500,000
LA3661-118	April 2027	$4,500,000
LA3661-124	April 2028	$1,700,000
LA3902-131	April 2030	$3,000,000
LA3902-137	April 2031	$1,500,000
LA3902-145	April 2033	$5,000,000
LA4382-159	June 2039	$4,000,000
LA4382-15X	April 2040 to 2041	$42,000,000

When assessing key financial health indicators, the service has historically maintained an affordable level of debt, with the percentage of revenue dedicated to debt cost traditionally falling well below the 25% benchmark. The current 5-year Operating and Capital budget is forecasting the percentage of revenue dedicated to debt costs to exceed the 25% benchmark in 2029.

Additionally, the debt funding for capital investment is projected to exceed the 40% benchmark for years 2026 – 2029. While the capital plan includes projects forecasted to occur in the later years for informational purposes, the costs provided are Class D estimates and are refined as part of the capital planning process.

A summary indicator table is provided below:

Year	% Revenue for Debt	Capital Funded by Debt
2025	5.85%	37.93%
2026	9.93%	54.53%
2027	16.56%	65.22%
2028	21.38%	71.74%
2029	25.85%	50.12%

The Regional Water Supply five-year capital plan and 2022 Master Plan reflect a capital program developed to meet today's service requirements and growth needs while also ensuring the future resilience of the utility for generations to come. Through development of the DCC program and long-term asset management plan completions, the future debt needs will be refined. Capital and debt funding decisions are made in alignment with the life span of the assets to address inter-generational equity, balancing the cost of infrastructure between past, current and future users. The current long-term debt obligations are summarized on the attached graphs (Appendix B).

A $577,541 transfer to the vehicle/equipment replacement fund is planned in 2025. The reserve fund balance is estimated at $ 2,572,649 at year-end 2024 (See reserve schedule – Page 38 of the budget document, Appendix A).

Agricultural Water Rate Funding

The total budget for the agricultural water rate funding has been increased by $50,000 to $1,850,000. The 2025 agricultural water rate has been maintained at the 2024 rate of $0.2105 per cubic metre. The Regional Water Supply agricultural water rate budget funds the difference between the municipal retail water rate and the CRD agricultural water rate. While the bulk water rate has increased annually, the agricultural rates has been held at $0.2105 per cubic metre since the rates was assessed in 2010. As directed by the Commission, Phase 1 of an agricultural water rate review and options study was conducted in undertaken in 2022/2023. A further study, Phase 2, is postponed to 2025 at the direction of the Regional Water Supply Commission, which will consider options for the rates structure that best reflect the agricultural value.

A summary of the agricultural water volumes and agricultural water rate payments for 2011 to 2023 is attached as Appendix C.

Water Demand

Total water demand across the Region has generally continued to increase year over year primarily due to the continued rate of development and growth. These factors are expected to result in actual demand exceeding budget demand in 2024; the 2024 year-end demand is projected to be 300,000 cubic metres over budget of 51,000,000 cubic metres.

The recommended 2025 water rate has been calculated using a budget demand of 51,200,000 cubic metres (Page 6 of the budget document, Appendix A), which is 200,000 cubic metres more than the volume used in the 2024 budget.

Proposed 2025 Wholesale Water Rate

The recommended wholesale water rate takes into consideration the revenue required to meet operating and capital expenditures, including debt obligations and the budget demand volume established for 2025. The proposed 2025 wholesale rate is $0.8631 per cubic metre, a 6.63% increase over the 2024 rate. The increase in annual bulk water cost for the average household using 239 cubic metres per year would be $12.83 (Page 7 of the budget document, Appendix A).

Wholesale Water Rate History and Projection

The wholesale water rate history and projection is attached as Appendix D. The rates may be adjusted in the future to reflect actual revenue and expenditure circumstances and water demand volumes.

ALTERNATIVES

Alternative 1

The Regional Water Supply Commission recommends that the Committee of the Whole recommend that the Capital Regional District Board:

1. Approve the 2025 Operating and Capital Budget and the Five Year Capital Plan;
2. Approve the 2025 wholesale water rate of $0.8631 per cubic metre;
3. Approve the 2025 agricultural water rate of $0.2105 per cubic metre;
4. Direct staff to balance the 2024 actual revenue and expense on the transfer to the water capital fund;
5. Direct staff to update carry forward balances in the 2025 Capital Budget for changes after year end; and
6. Direct staff to amend the Water Rates Bylaw accordingly.

Alternative 2

The Regional Water Supply Commission recommends that the Committee of the Whole recommend that the Capital Regional District Board:

1. Approve the 2025 Operating and Capital Budget and the Five Year Capital Plan as amended;
2. Approve the 2025 wholesale water rate as amended (amended rate);
3. Approve the 2025 agricultural water rate of $0.2105 per cubic metre;
4. Direct staff to balance the 2024 actual revenue and expense on the transfer to the water capital fund;
5. Direct staff to update carry forward balances in the 2025 Capital Budget for changes after year end; and
6. Direct staff to amend the Water Rates Bylaw accordingly.

IMPLICATIONS

If the proposed budget is amended, the implications could vary depending on how the budget is amended and the impact on specific initiatives (i.e., new initiatives), on-going operations, or the capital work program. One-time reductions in reserve fund contributions could be considered by

the Commission to help mitigate the budget and rate increases, but additional capital financing could result in the longer term.

Any changes in the recommended wholesale water rate would have to be incorporated in the Juan de Fuca Water Distribution Service and Saanich Peninsula Water Service budgets and rates.

CONCLUSION

The draft 2025 Regional Water Supply Service budget is presented for the Regional Water Supply Commission's consideration. The Commission will make budget recommendations to the Capital Regional District Board through the Committee of the Whole in October. The draft 2025 Regional Water Supply Service budget was prepared considering the Commission and Capital Regional District Board's 2025 service planning and financial expectations. A proposed increase in operating and capital funding combined with an adjusted revenue budget, is resulting in a recommended wholesale water rate of $0.8631 per cubic metre, a 6.63% increase over the 2024 rate.

RECOMMENDATION

The Regional Water Supply Commission recommends that the Committee of the Whole recommend that the Capital Regional District Board:

1. Approve the 2025 Operating and Capital Budget and the Five Year Capital Plan;
2. Approve the 2025 wholesale water rate of $0.8631 per cubic metre;
3. Approve the 2025 agricultural water rate of $0.2105 per cubic metre;
4. Direct staff to balance the 2024 actual revenue and expense on the transfer to the water capital fund;
5. Direct staff to update carry forward balances in the 2025 Capital Budget for changes after year end; and
6. Direct staff to amend the Water Rates Bylaw accordingly.

Submitted by:	Alicia Fraser, P. Eng., General Manager, Integrated Water Services
Concurrence:	Russ Smith, Acting General Manager, Parks, Recreation & Environmental Services
Concurrence:	Varinia Somosan, CPA, CGA, Acting CFO, Finance and IT
Concurrence:	Ted Robbins, B. Sc., C. Tech., Chief Administrative Officer

ATTACHMENT(S)

Presentation: Regional Water Service 2025 Budget Review
Appendix A: Draft 2025 Regional Water Supply Service Budget
Appendix B: Long Term Debt Obligations Summary
Appendix C: Agricultural Water Volumes and Rate Payments for 2011-2023
Appendix D: Wholesale Water Rate History and Projection
Appendix E: 2025 Initiative Business Case Summary

Regional Water Supply Service 2025 Budget Review

Regional Water Supply Commission
October 16, 2024

Budget Process Overview

2025 Budget Considerations

- 2024 Budget – year end budget projections
- Community Needs Summary
- Existing Asset Condition, Infrastructure Growth and Resiliency Needs
- Operating budget adjustments
- Capital funding & debt servicing
- Water demand projection and trends

Current System Overview

Treat over 50,450 ML/yr

122.5 kilometers of Transmission Main

26 RWS Operations Staff

Manage 15 Dams

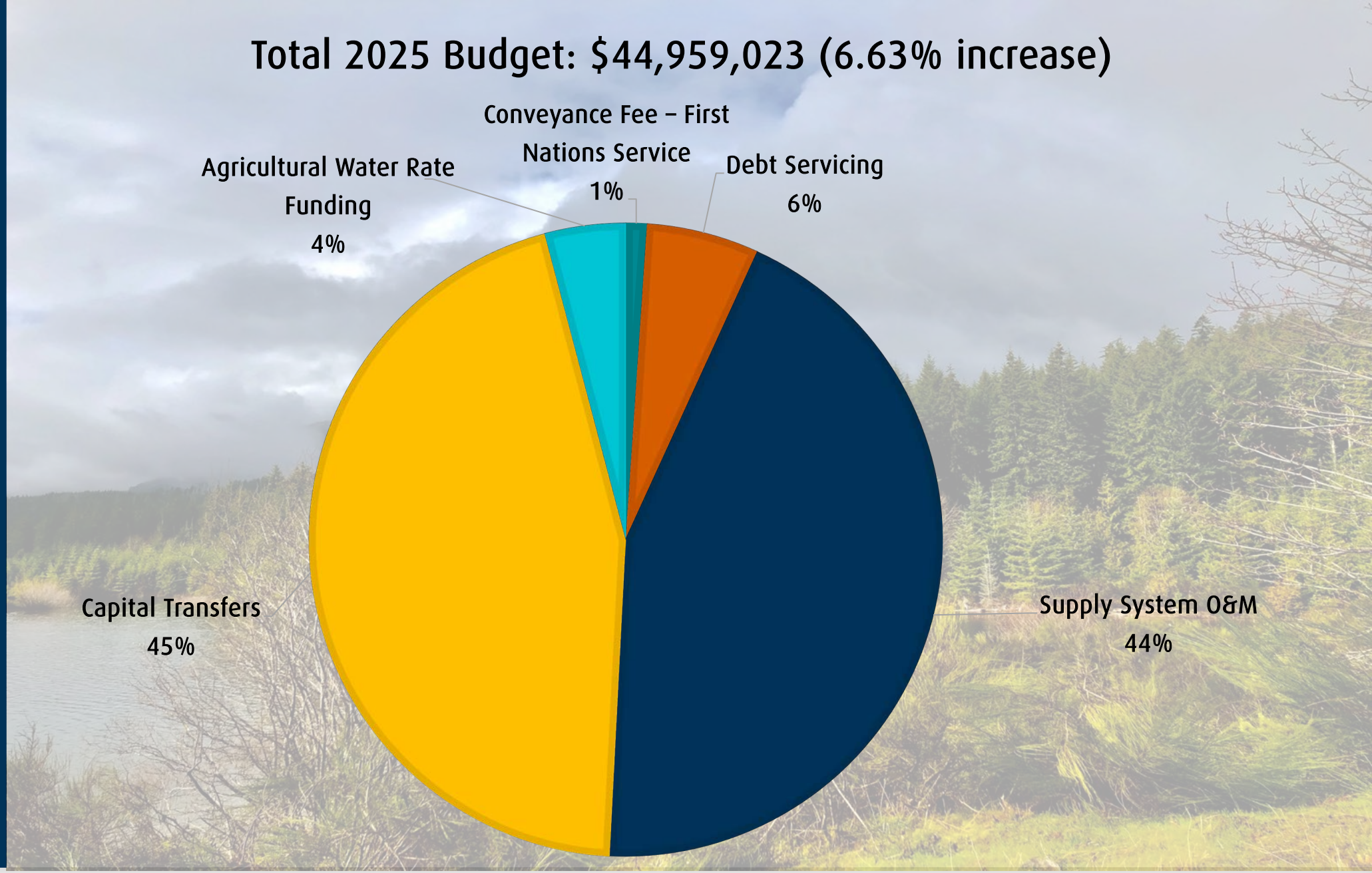
20,611 ha of Protected Watershed

2024 Year End Projections

Budget Item	Variance ($)	Variance (%)
Operating expenditures	-$47,506	-0.26%
Conveyance Fee for Service to First Nations	-$450,000	-50.0%
Capital fund transfers	$763,025	4.37%
Debt servicing - principal and interest expenditures	-$73,000	-67.57%
Revenue	$171,071	0.41%

2025 Budget Overview

Breakdown of Expenditures



2025 Rate Base & Revenue Requirement

2025 Rate Base: $1,523,800 increase	
2024 new assets capitalized (projected)	$5,647,739
2024 depreciation & asset value adjustments	-$8,610,831
Resulting 2024 change in physical plant	-$2,963,092
2024 construction work in progress (projected)	$19,411,782

2025 Revenue Requirement: $2,912,455 Increase	
2024 - 2025 O&M expense (change)	$927,687
2024 - 2025 depreciation (change)	$140,968
Return on rate base (change)	$1,843,800

2025 Budget Overview

Operating Expenditures

Overview:

Core Operations: $19,777,854 (7.02%)

Highlights:

- Increases resulting from inflationary pressures, chemical costs and collective agreement obligations
- Reallocation of funding for Enterprise Assessment Management to reflect focus
- Increased funding for Demand Management Public Engagement

2025 Budget Overview

Water Community Need Initiatives

Overview:

- Water Community Need Summary includes four proposed Initiative Business Cases which are fully supported by the Regional Water Supply services. Funding for the positions area a mixture of operation and capital budgets

Initiative Reference	Program Area	Business Driver - Rational	Staff impacts (2025)	Funding source
2a-5.1	Seasonal Watershed Operator 2s	To sustain current levels of wildfire preparedness and vegetation management to the Watershed Protection division. These positions were previously covered by auxiliary hours	1.5 Auxiliary conversion (Q1 Start)	Fee-for-service
2a-8.2	Water Quality Sampling Technician	To enhance capacity to meet the sampling demands of the growing system.	0.6 New ongoing (Q1 Start)	Fee-for-service
2b-2.2	Capital Projects Resource	Advancing backlog of watershed capital projects that mitigate risks in the watershed include wildfire, extreme weather, flooding, contamination, and power failures	1 New ongoing (Q3 Start)	Capital & Fee-for-service
2b-1.1	Dam Safety Program – Integrated Water Services	Includes two new engineers and a new operator to support the operation, maintenance, and surveillance of the dams, as well as regulatory compliance activities and resolving safety issues through capital and operational safety improvements.	3 New Ongoing (Q1 Start)	Capital, Fee-for-service & Requisition

2025 Budget Overview

Water Community Need Initiatives

Overview:

- Community Need Summary includes three new Initiative Business Cases which provide support to multiple services including Regional Water Supply

Initiative Reference	Program Area	Business Driver - Rational	Staff impacts (2025)	Funding source	Funding Allocation
2b-2.3	Systems Maintenance Electronics Technologist	To support the growing preventative maintenance and capital programs within the system, as well as support cyber security improvements	1 New ongoing (Q2 start)	Requisition, Reserves & Fee-for-service	50% Core Area 25% JdF, 25% RWS
2b-2.4	Systems Maintenance Electrician	To support the growing preventative maintenance and capital programs within the system.	1 New ongoing (Q3 start)	Fee-for-service & Reserve	50% JdF and 50% RWS
2a-8.3	Laboratory Assistant	As the population grows, the demand for water increases, requiring additional capacity in the CRD's accredited internal laboratory to handle expanded testing	1 New ongoing (Q2 start)	Requisition & Fee-for-service	50%Core Area and 50% RWS

The new positions result in ongoing additional operating budget request of $346,920.

2025 Budget Overview

Capital Plan

Overview	RWS (millions)	50% of JDF/RWS Combo (millions)	Total (millions)
Projects in Progress	$ 32.54	$ 0.38	$ 32.92
2025 Capital Budget	$106.08	$ 1.48	$107.55
5-Year Capital Budget	$349.41	$ 3.75	$353.16

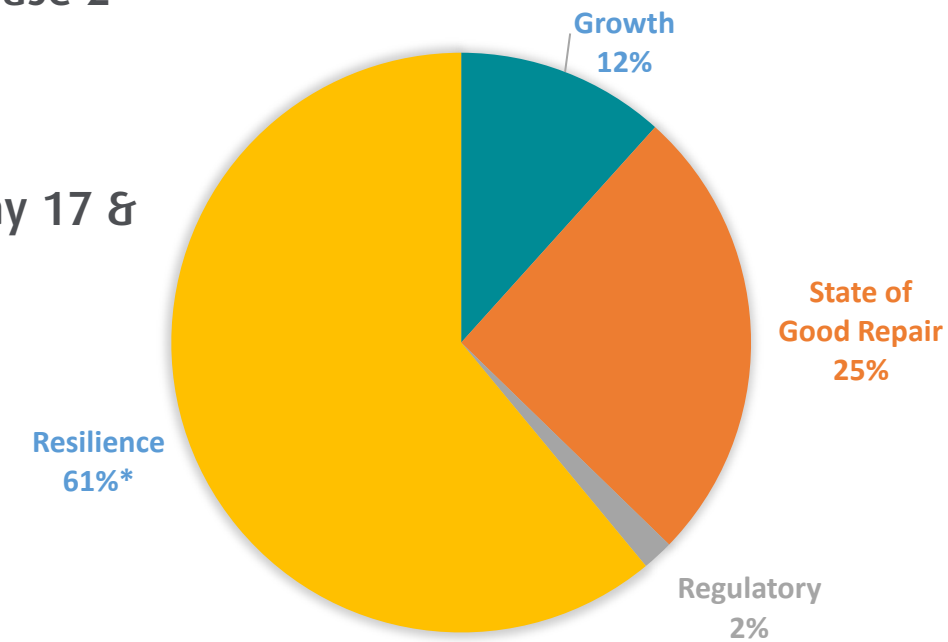
2025 Key Projects:

- Goldstream Field Office
- Seismic Assessment of Critical Facilities - Phase 2
- Project Delivery Strategy Study
- UV System Replacement
- Transmission Main 4 (Mt Newton to Highway 17 & Bear Hill Trunk Extension)
- Mount Tolmie Tank Improvements

Future Years:

- Transmission Main Upgrades (on going)
- Deep Northern Intake (2026)

RWS 2025 TOTAL $106,074,750

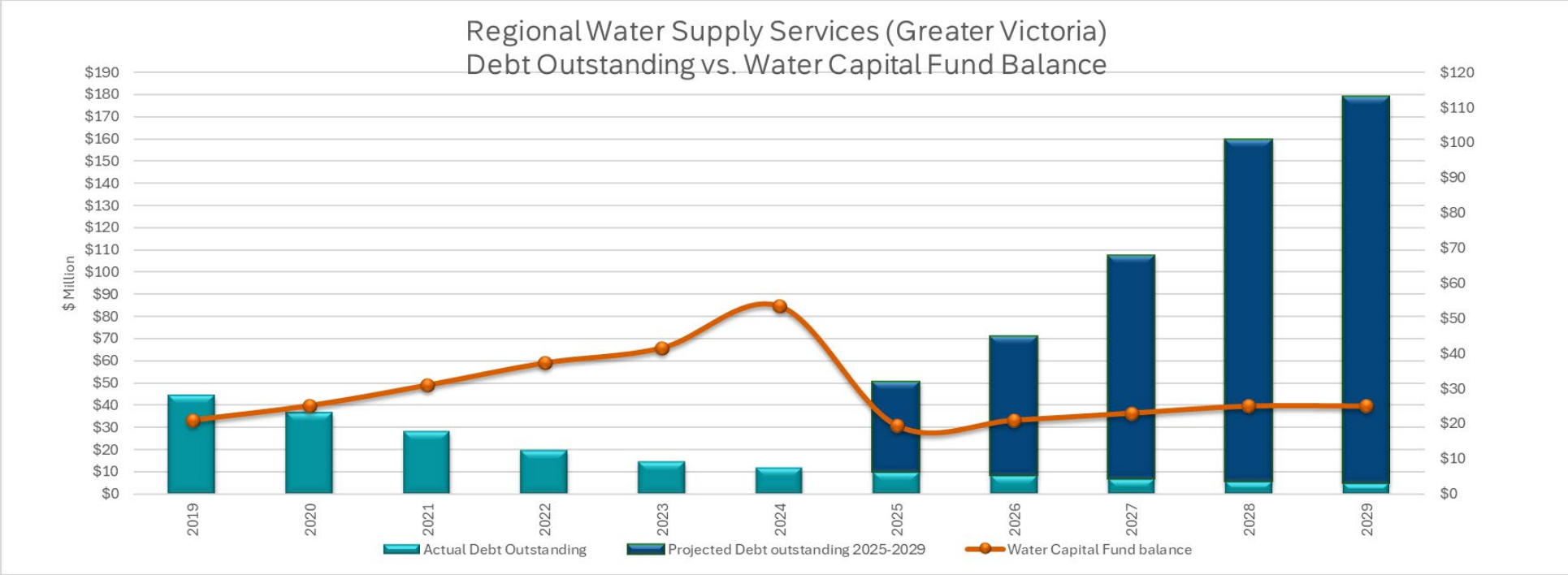


*skewed by 2025 Land Acquisition

2025 Budget Overview

Outstanding Debt & Capital Funding

2025 Transfer	2025 Budget	Budget change (over 2024)
Water Capital Fund	$19,500,000	$2,050,000
Debt Reserve Fund	$186,373	$78,333
Equipment Replacement Fund	$577,541	$97,786
Total Capital Transfers	**$20,263,914**	**$2,226,119**
Debt Servicing	**$2,587,255**	**$(308,987)**



2025 Budget Overview

Water Rate Funding

First Nations Regional Water Service

2025 Conveyance Fee Budget

$480,000 (-46.67%)

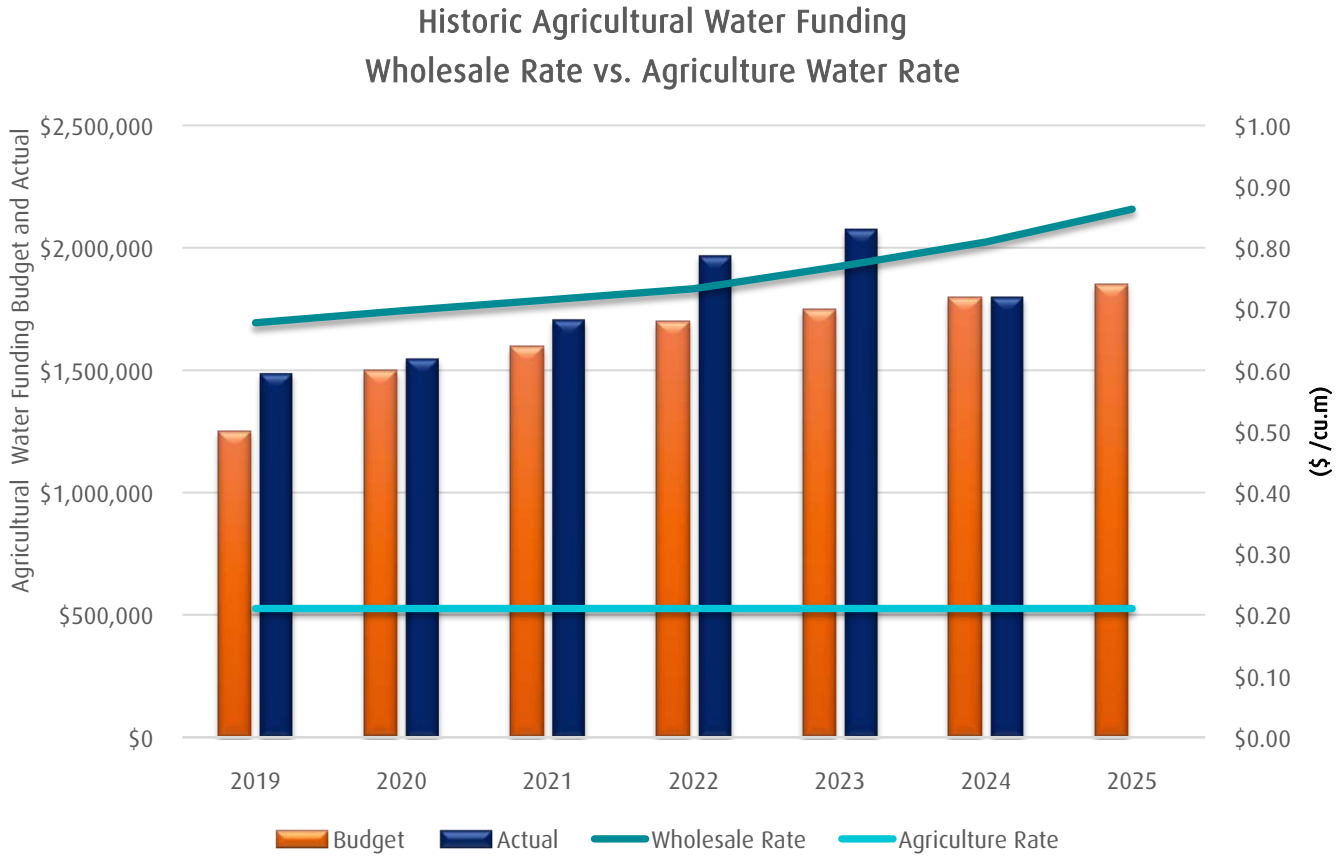
Agricultural Water Rate

2025 Agricultural Water Rate

$0.2105 / m³ (0%)

2025 Agricultural Water Rate Budget

$1,850,000 (+2.78%)



2025 Budget Overview

Wholesale Rate History & Projection

Overview:

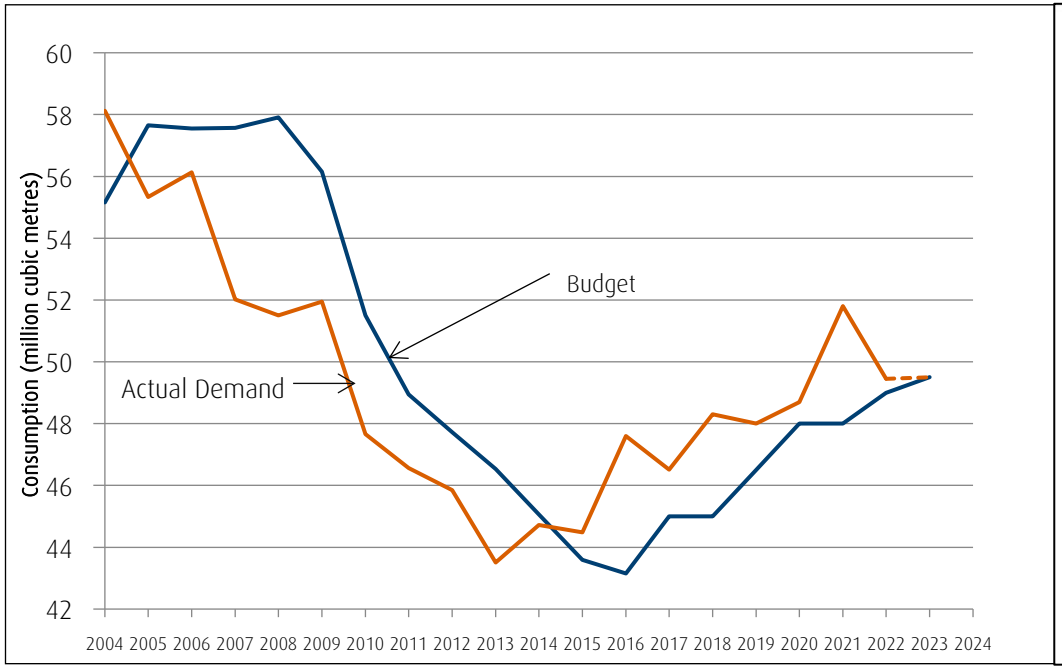
2024 Projected Actual Demand:
51,300,000 cubic metres

2025 Projected Water Demand:
51,200,000 cubic metres
(+ 200,000 cubic metres)

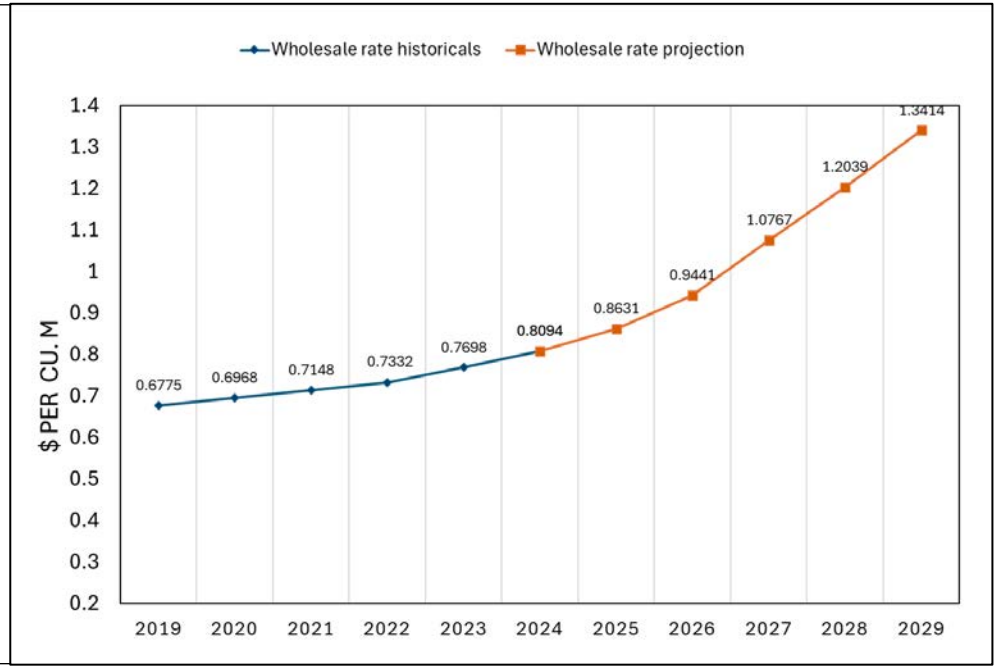
2024 Wholesale Rate: $0.8094
2025 Wholesale Rate: $0.8631 (+6.63%)

2025 rate is below rate indicated for 2025 in 2024 budget ($0.8711)

Regional Water Supply Annual Demand



Regional Water Supply Service (Greater Victoria)
Wholesale Water Rate Historicals & Projections



2025 Budget Overview

Water Demand and Rates

2025 Total Revenue Budget: $44,959,023

- **2025 Budget Water Demand:**
  51,200,000 cubic metres (+200,000 cubic metres)
- **2025 Regional Water Supply Wholesale Rate:**
  $0.8631 / cubic metre (+6.63%)
- **2025 Agricultural Rate:**
  $0.2105 / cubic metre (0%)
- **Annual cost increase to average residential consumption:**
  $12.83

Budget Overview

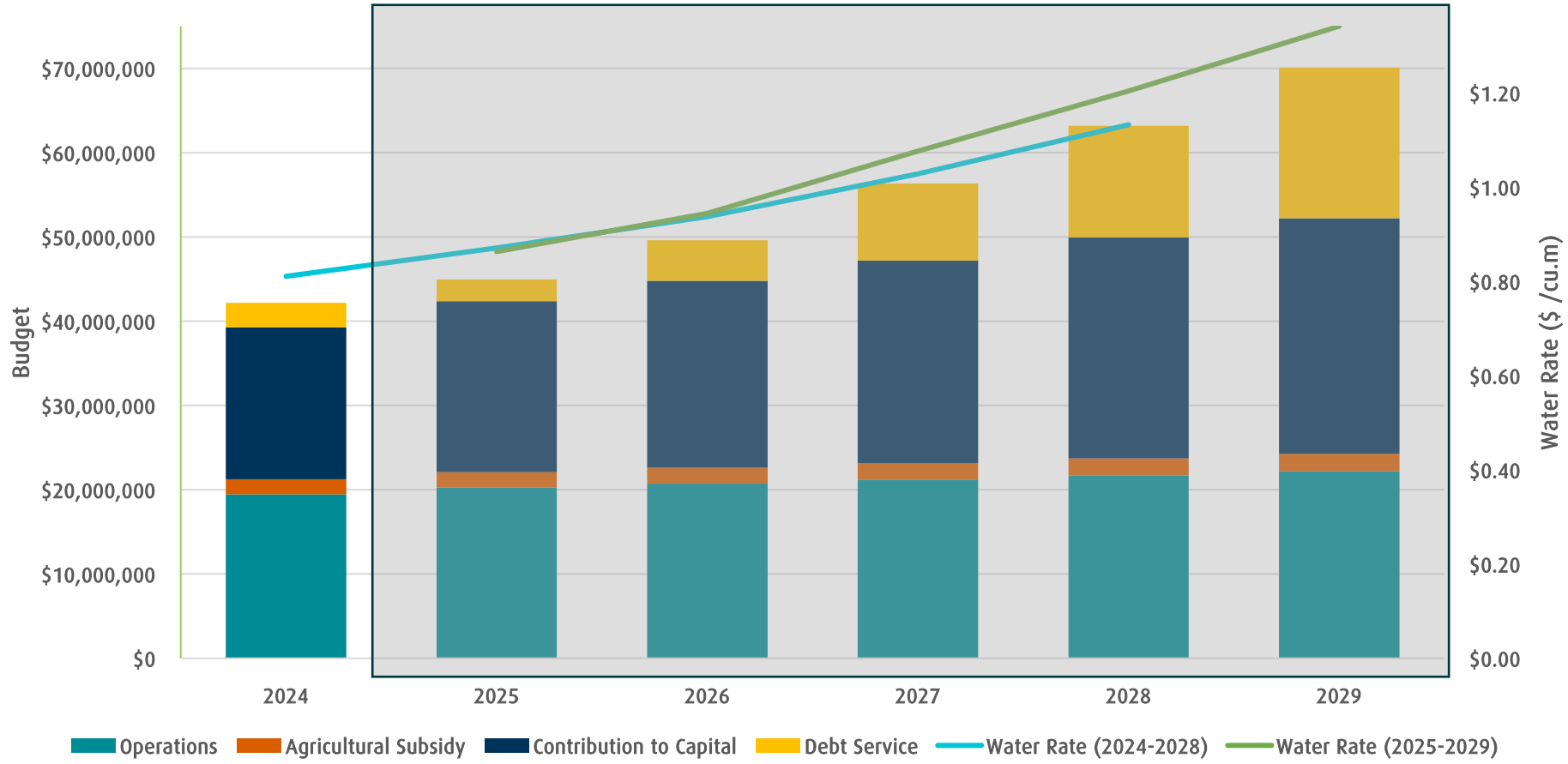
Multi-Year Projection

Overview:

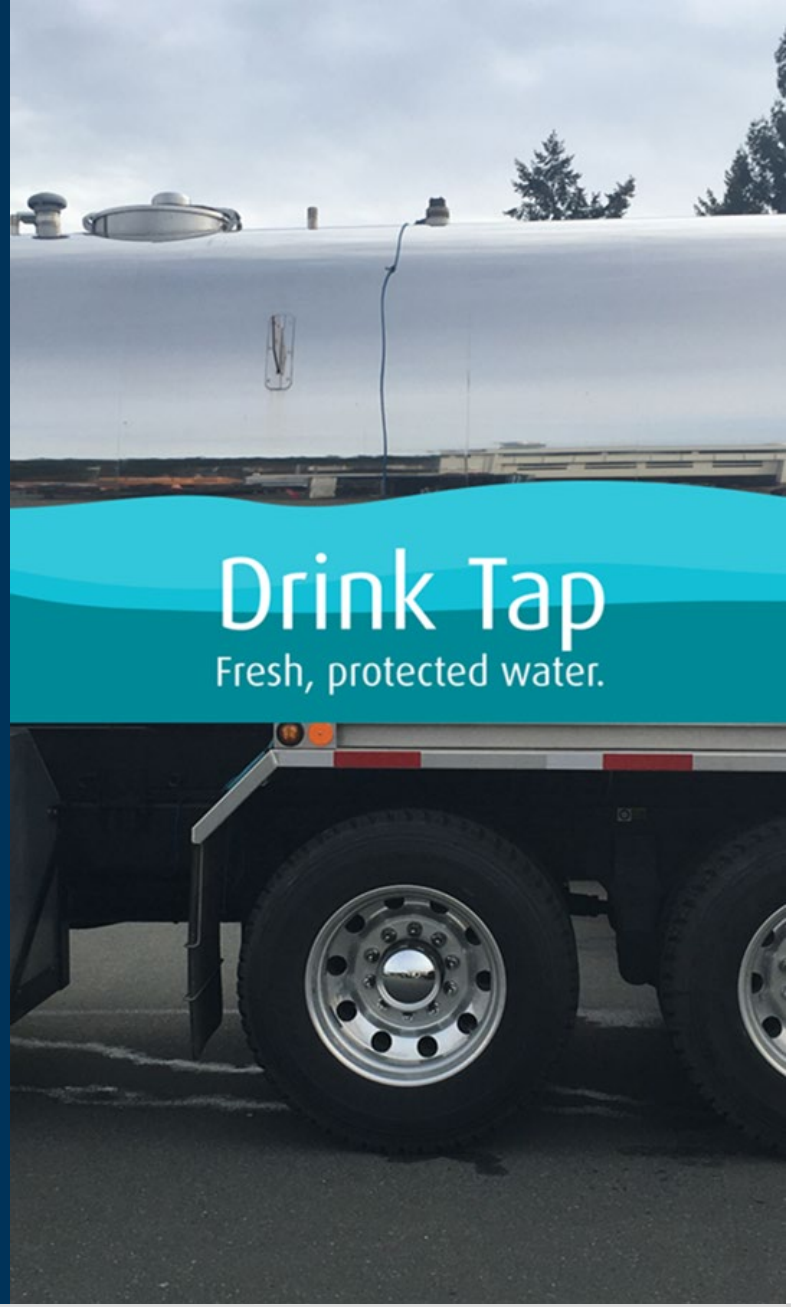
2024 RWS budget: $42,114,204
2025 RWS budget: $44,959,023 (+6.33%)
2025-2029 Average Water Rate Increase: 6.63%

Drivers:

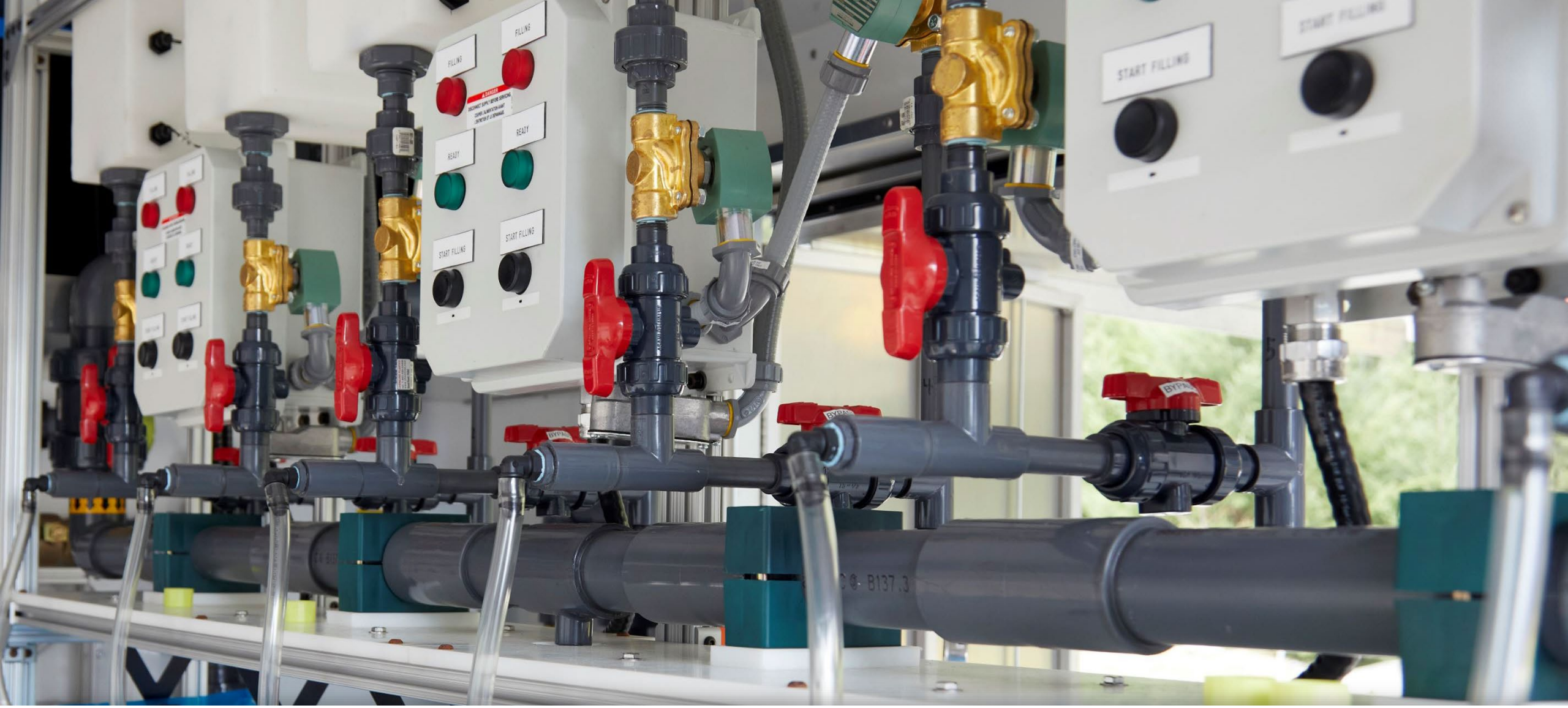
Growing Capital Program linked to development, Master Plan and aging infrastructure



Budget Recommendations



1. Approve the 2025 Operating & Capital Budget & Five Year Capital Plan;
2. Approve the 2025 wholesale water rate of $0.8631 per cubic metre;
3. Approve the 2025 agricultural water rate of $0.2105 per cubic metre;
4. Direct staff to balance the 2024 actual revenue and expense on the transfer to the water capital fund;
5. Direct staff to update carry forward balances in the 2025 Capital Budget for changes after year end; and
6. Direct staff to amend the water rates bylaw accordingly.



Thank You

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Capital Regional District

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CAPITAL REGIONAL DISTRICT

2025 BUDGET

Regional Water Supply

COMMISSION REVIEW

OCTOBER 2024

Service: 2.670 **Regional Water Supply** **Commission: Regional Water Supply**

DEFINITION:

To finance, install, operate and maintain a water supply local service in the Capital Regional District, as per the Water Supply Local Service Establishment Bylaw No. 2537.

The establishment and operation of a Regional Water Supply Commission is done by Bylaw No. 2539.

SERVICE DESCRIPTION:

Regional Water Supply is responsible for the water supply, treatment and transmission system for the Greater Victoria region, providing wholesale water to municipalities that operate municipal distribution systems. The service administration and operation is provided by the Integrated Water Services Department.

PARTICIPATION:

City of Victoria	Town of Sidney	District of Metchosin
District of Oak Bay	District of North Saanich	District of Sooke
District of Saanich	Town of View Royal	Juan de Fuca Electoral Area
Township of Esquimalt	City of Colwood	District of Highlands
District of Central Saanich	City of Langford	

MAXIMUM LEVY:

No stated limit in establishment bylaw and no ability to requisition.

MAXIMUM CAPITAL DEBT:

Authorized:	Pre Consolidated MFA Loan Authorizations - Regional Water Supply Water Works Facilities		$137,700,000
Borrowed:			$91,400,000
Remaining:	Expired		$46,300,000
Authorized:	LA Bylaw No. 3451 - Regional Water Supply Land Acquisition		$60,000,000
Borrowed:			$60,000,000
Remaining:			$0
Authorized:	LA Bylaw No. 3902 - Regional Water Supply Water Works Facilities	2014	$12,500,000
Borrowed:			$9,500,000
Remaining:	Expired		$3,000,000
Authorized:	LA Bylaw No. 4382 - Regional Water Supply Water Works Facilities	2021	$46,000,000
Borrowed:			$4,000,000
Remaining:	Active		$42,000,000

FUNDING:

Costs are recovered through the sale of bulk water.

Change in Budget 2024 to 2025 Service: 2.670 Regional Water Supply		Total Expenditure	Comments
2024 Budget		**42,114,204**	
Change in Salaries:			
Salaries and Benefits		400,300	Inclusive of estimated collective agreement changes
IBCs:			
2.0 FTE	Engineers - Dam Safety	301,000	2024 IBC 2b-1.1 Dam Safety Program (2025 start) - 2 Engineer (using existing budget)
1.0 FTE	Utility Operator	126,350	2024 IBC 2b-1.1 Dam Safety Program (2025 start) - 1 Utility Operator (RWS)
1.0 FTE	Capital Project Engineer	66,700	2025 IBC 2b-2.2 Capital Project Engineer - Q3 2025 start
1.5 FTE	Seasonal Watershed Operators	166,430	2025 IBC 2a-5.1 Watershed Protection - Seasonal Watershed Operator - 2 x 9 month positions
		(158,680)	Existing Operating budgets: Dam Safety Engineer; Seasonal Watershed Operators
		(211,180)	Funded through Capital Program: Capital Project Engineer; Dam Safety Engineers
		290,620	
Total Change in Salaries		690,920	
Other Changes:			
Transfer to Capital		2,050,000	Increase in Capital Fund Transfers
Asset and Maintenance Management		145,260	Asset Management transferred from Corporate to IWS
		56,300	Additional maintenance trade support
Chemical Supplies		191,410	Increased cost of chemicals and increased budgeted demand
Contracts for Services		123,490	
Demand Management		98,570	Increased funding for Demand management public engagement
Agriculture Water Rate Funding		50,000	
Insurance Costs		35,940	Recognize growing insurance premiums
Principal & Interest Payments		(308,990)	Principal and Interest Savings for debt retirement of: LA3419-105 of $9m; LA3419-106 of $1m
Vehicle Recovery		(97,786)	Increased Vehicle recovery to fund growth of Reserve Transfers
Other Costs		(190,295)	
Total Other Changes		2,153,899	
2025 Budget		**44,959,023**	

Summary of % Expense Increase

Change between capital and debt funding	4.1%
Change in labour costs	1.6%
Change in asset and maintenance management	0.5%
Change in chemical supplies	0.5%
Balance of increase	0.5%
% expense increase from 2024:	***6.8%***

Overall 2024 Budget Performance
(expected variance to budget and surplus treatment)

Water demand is forecasted in line with budget, while operational costs are forecasted below budget due to temporary vacancies ($200k), partially offset by chemical supply costs expected to exceed budget ($160k). The forecasted net surplus of $500k will be transferred to the service's Water Capital Fund.

Rate Base for 2025 Revenue Year

	2023 Application	2024 Application	End of 2024 for '25 Applic.	Change	
Wholesale System					
Physical Plant	$ 235,712,793	$ 232,362,092	$ 229,399,000	$ (2,963,092)	Note 1
Construction Work In Progress	11,671,851	11,685,562	19,411,782	7,726,221	Note 1
Cash Working Capital	2,627,965	2,611,253	2,725,626	114,373	
Inventory	225,000	225,000	225,000	-	
Total Wholesale Rate Base	$ 246,233,078	$ 250,237,609	**$ 251,761,408**	$ 1,523,800	

Note 1: Refer to the Schedule of Change in Physical Plant & work in Progress for details.

Revenue Requirements for 2025 Year

	2023 Application	2024 Application	2025 Application	Change	
Wholesale					
Operations & maintenance	$ 19,407,361	$ 21,180,167	$ 22,107,854	$ 927,687	
Depreciation	8,090,249	7,159,519	7,543,987	$ 384,468	
Return on rate base	10,532,300	13,520,100	15,120,400	$ 1,600,300	Note 1
Subtotal of above	$ 38,029,910	$ 41,859,786	$ 44,772,241	$ 2,912,455	
Non-rate revenue including unaccounted water revenue	(582,060)	(582,060)	(582,060)	$ -	
Total wholesale	$ 37,447,850	$ 41,277,726	$ 44,190,181	$ 2,912,455	

Note 1: Return on rate base is calculated with reference to the long term Canada bond rate & the average debt rate.

APPENDIX A

Schedule of Change in Physical Plant & Work In Progress

Wholesale

Projected Asset Additions	Projected Assets Capitalized
Dam Improvements	$ 902,134
Transmission System Component Replacement	201,000
Meter Replacement	530,969
Road Upgrade	301,384
Replace disinfection equipment	389,522
SCADA	380,139
Watershed Culvert Replacement	215,517
Computer Equipment	297,500
Valve Chamber Uprgrades	272,333
Hydrology Equipment	204,397
IT Infrastructure	254,331
Watershed Security Enhancements	204,988
Leech Watershed initiatives	179,964
Land Improvements	131,725
Tunnel/ Culvert Replacement	120,147
Sooke Spillway Gate Power	103,009
GWTP Emergency Automation	81,000
PIPES	89,382
SAMP Improvements	89,232
Land Acquisition or Exchange	80,000
Water Quality Program	74,346
Water Supply Equipment Upgrades	70,000
Goldstream Gatehouse Upgrade	68,250
GVWSA Land Exchange/Acquisition program	60,056
Vehicles	60,000
Corrosion Protection	50,000
Other Projects (10 minor projects below $50k)	236,414
Total projected assets capitalized	$ 5,647,739
Less: current year's depreciation	(6,697,724)
Less: change in prior year forecast addition estimates, & disposals	(1,913,107)
Change in Physical Plant	$ (2,963,092)

Projected Construction Work In Progress (CWIP)	Projected Assets CWIP
UV System Replacement	$ 4,808,507
Meter Replacement	1,463,580
Dam Safety Program	1,571,856
Land Acquisition or Exchange	1,300,000
PIPES	1,210,574
Major Main Repairs	998,709
Mt Tolmie Reservoirs	850,000
Post Disaster Emergency Water Supply	753,910
Supply System	729,754
Forest Health/Resilience	632,905
Radio Upgrades	477,983
Goldstream Field Operations Centre	458,036
Sooke Dam Safety Improvements	417,307
Road Upgrades	404,555
SCADA Upgrades	401,171
Site Decommissioning	331,869
Segment Replacement	298,868
Cathodic Protection Program	295,949
IT Infrastructure	222,726
Critical Equip Storage Building	210,429
Goldstream Treatment Plant Drainage Improvements	200,666
Portable Pump Station	190,382
GVWSA Road Rehabilitation	112,034
Valve Replacement	110,578
Critical Facilities Program	108,953
Cross Connection	102,022
Strategic Asset Management Plan	100,081
Hydrology Equipment	92,100
Transmission system component upgrades	89,726
Tunnel Humpback Channel	80,422
Office Upgrades	80,000
Bridge Enhancements	73,200
Spill Management Plan	70,000
Watershed Security Enhancements	64,059
Other Projects (8 minor projects under 50k)	98,871
Projected CWIP	$ 19,411,782
Less Prior year's projected CWIP	(11,685,562)
Change in CWIP	$ 7,726,221

2025 Demand Estimate

Wholesale Demand

Years	Actual Demand cu.metre		Budgeted Demand cu.metre
2019	47,734,121		46,500,000
2020	48,730,475		48,000,000
2021	51,797,082		48,000,000
2022	50,297,409		49,000,000
2023	51,886,834		49,500,000
2024	51,300,000	1	51,000,000
2025 Demand Estimate	**51,200,000**		

1. Projected consumption for 2024

APPENDIX A

Summary of Wholesale Water Rates

	2021	2022	2023	2024	2025	Change $ per cu.m.	Change %
Wholesale water rate							
Unit cost per cu.m.	$0.7148	$0.7332	$0.7698	$0.8094	$0.8631	$0.0537	6.63%

Wholesale Water Rate Increase
Impact on Residential Water Bill

Average Annual Consumption * : 239.0 cubic metres

Charge for Twelve Months Consumption		Annual Charge	2025 Annual Change $
Average Consumption	2024 Year	$ 193.45	
	2025	$ 206.28	$ 12.83
Half Average Consumption	2024 Year	$ 96.72	
	2025	$ 103.14	$ 6.42
Twice Average Consumption	2024 Year	$ 386.89	
	2025	$ 412.56	$ 25.67

* Average Annual Consumption based on 2.303 people per household, per BC Stats 2024 projection

Schedule A
Asset Useful Life Assignments - PSAB

Classes:	Code	Asset Categories	Useful Life, Years
Land	LAND	Land & Rights of Way * (Note 1)	N/A
Building	BLDG	Building, Permanent	50
	BLOT	Building, Temporary/ Portable	20
	BLFX	Building fixture (*sprinklers)*	20
Equipment	BOAT	Boats & Marine Equipment	10
	COMP	Computer Equipment (*includes software*)	5
	ELEC	Electronic Equipment(*hydromet, weather stn eqpt)*	5
	FIRE	Fire & Safety Equipment	10
	GENT	Generator	20
	HYDR	Hydrants and Standpipes	20
	HYDY	Hydrology	10
	MTRS	Meters	20
	OFFE	Office Equipment	5
	OFFF	Office Furniture	10
	SCDA	SCADA Equipment	10
	SCRN	Intake Screens/Membranes *(stop logs)*	20
	SHOP	Shop Equipment	10
	TELE	Telecommunication Eqpt (*radios, phone systems*)	10
	WEQP	Water Works Eqpt(*W.Quality lab, Wshed eqpt)*	10
	NEW GRP	Weather stn & communication tower	15
Vehicle	VEHC	Vehicles	8
Engineering Structure	BRDG	Bridge	50
	CANL	Canal	50
	DAMS	Dam Structures	100
	PIPE	Pipelines, includes Vaults, Kiosks, Valve chambers	75
	PIPF	Pipelines, fittings	20
	PLPV	Parking lot paved	40
	PSEQ	Pump Station Equipment	20
	PSHS	Pump Station Housing	50
	PRVS	Valves, Flushes & PRV's	20
	RDGR	Roads gravel	20
	RDPV	Roads paved	40
	RESS	Reservoirs (steel & concrete)	50
	REST	Reservoirs (tower/tank)	35
	TANK	Storage tank	40
	TELP	Telephone and Power Lines	50
	TUNN	Tunnel, Culvert and Diversions	50
	WATP	Water Treatment Plant	25
	WELL	Wet well/ Well	50
Other Assets	CSTU	Capital Management Studies	5
	FENC	Fences	15
	LIMP	Land & Yard Improvements	20

Note 1: Land is not depreciated so a useful life assignment is not applicable.

APPENDIX A

CAPITAL REGIONAL DISTRICT

Program Group: CRD-Regional Water Supply

SUMMARY	2024 BOARD BUDGET	2024 ESTIMATED ACTUAL	2025 BUDGET REQUEST: 2025 CORE BUDGET	2025 ONGOING	2025 ONE-TIME	TOTAL (COL 4, 5 & 6)	FUTURE PROJECTIONS: 2026	2027	2028	2029
1	2	3	4	5	6	7	8	9	10	11
GENERAL PROGRAM EXPENDITURES:										
WATERSHED PROTECTION	6,787,022	6,721,464	6,879,383	52,342	-	6,984,067	7,123,748	7,266,223	7,411,548	7,559,779
WATER OPERATIONS	7,385,305	7,568,379	7,842,702	295,839	-	8,138,541	8,322,590	8,533,263	8,753,440	8,979,453
WATER QUALITY	2,045,342	2,047,559	2,133,179	-	-	2,133,179	2,176,457	2,220,606	2,265,668	2,311,647
CROSS CONNECTION	800,530	797,456	836,509	-	-	836,509	862,038	886,837	913,347	939,791
DEMAND MANAGEMENT	761,302	763,011	859,872	-	-	859,872	878,943	900,088	923,930	946,867
INFRASTRUCTURE ENGINEERING	577,530	577,530	595,345	-	-	595,345	613,320	625,600	638,094	650,894
FLEET OPERATION & MAINTENANCE	(479,755)	(479,755)	(577,541)	-	-	(577,541)	(589,092)	(600,874)	(612,892)	(625,149)
ASSET & MAINTENANCE MANAGEMENT & GM SUPPORT *	602,891	437,017	807,882	-	-	807,882	828,617	849,363	871,169	893,602
TOTAL OPERATING EXPENDITURES	18,480,167	18,432,661	19,377,331	348,181	-	19,777,854	20,216,621	20,681,106	21,164,304	21,656,885
Percentage increase over prior year's board budget			4.85%			7.02%	2.22%	2.30%	2.34%	2.33%
CONVEYANCE FEE FOR SERVICE TO FIRST NATIONS	900,000	450,000	480,000	-	-	480,000	500,000	525,000	550,000	575,000
AGRICULTURAL WATER RATE FUNDING	1,800,000	1,800,000	1,850,000	-	-	1,850,000	1,900,000	1,950,000	2,000,000	2,050,000
			2.78%			2.78%	2.70%	2.63%	2.56%	2.50%
CAPITAL EXPENDITURES &TRANSFERS										
TRANSFER TO WATER CAPITAL FUND	17,450,000	18,213,025	19,500,000	-	-	19,500,000	21,000,000	23,000,000	25,000,000	27,000,000
TRANSFER TO EQUIPMENT REPLACEMENT FUND	479,755	479,755	577,541	-	-	577,541	589,092	600,874	612,892	625,149
TRANSFER TO DEBT RESERVE FUND	108,040	35,040	186,373	-	-	186,373	580,090	422,090	597,890	301,090
TOTAL CAPITAL EXPENDITURES & TRANSFERS	18,037,795	18,727,820	20,263,914	-	-	20,263,914	22,169,182	24,022,964	26,210,782	27,926,239
DEBT SERVICING										
DEBT - INTEREST & PRINCIPAL	2,896,242	2,874,791	2,587,255	-	-	2,587,255	4,809,274	9,166,280	13,256,825	17,889,131
TOTAL DEBT EXPENDITURES	2,896,242	2,874,791	2,587,255	-	-	2,587,255	4,809,274	9,166,280	13,256,825	17,889,131
DEFICIT TRANSFERRED TO FOLLOWING YR										
TRANSFER TO FOLLOWING YEAR DEFICIT CARRY FORWARD										
TOTAL EXPENDITURES	42,114,204	42,285,272	44,558,500	348,181	-	44,959,023	49,595,077	56,345,350	63,181,911	70,097,255
SOURCES OF FUNDING										
REVENUE - SALES	(41,278,152)	(41,522,220)	(43,842,409)	(348,181)	-	(44,190,590)	(48,432,927)	(55,341,200)	(62,001,961)	(69,214,105)
REVENUE - OTHER	(836,052)	(763,052)	(768,433)	-	-	(768,433)	(1,162,150)	(1,004,150)	(1,179,950)	(883,150)
TOTAL SOURCE OF FUNDING FROM OPERATIONS	(42,114,204)	(42,285,272)	(44,610,842)	(348,181)	-	(44,959,023)	(49,595,077)	(56,345,350)	(63,181,911)	(70,097,255)
TRANSFER FROM PRIOR YEAR	-	-	-	-	-	-	-	-	-	-
TRANSFER TO FOLLOWING YEAR SURPLUS CARRY FORWARD										
TOTAL SOURCES OF FUNDING	(42,114,204)	(42,285,272)	(44,610,842)	(348,181)	-	(44,959,023)	(49,595,077)	(56,345,350)	(63,181,911)	(70,097,255)
Percentage increase over prior year's board budget			5.93%			6.76%	10.31%	13.61%	12.13%	10.95%
Water Rate $ per cu. m.	$ 0.8094					$ 0.8631	$ 0.9441	$ 1.0767	$ 1.2039	$ 1.3414
Percentage increase over prior year	5.14%					6.63%	9.39%	14.04%	11.82%	11.42%

CAPITAL REGIONAL DISTRICT

FIVE YEAR CAPITAL EXPENDITURE PLAN SUMMARY - 2025 to 2029

Service No. 2.670 Regional Water Supply	Carry Forward from 2024	2025	2026	2027	2028	2029	TOTAL
EXPENDITURE							
Buildings	$8,000,000	$11,050,000	$500,000	$0	$0	$0	$11,550,000
Equipment	$8,550,000	$14,643,500	$3,690,000	$3,425,000	$2,015,000	$2,565,000	$26,338,500
Land	$320,000	$33,580,000	$4,080,000	$975,000	$2,645,000	$865,000	$42,145,000
Engineered Structures	$14,785,000	$44,875,000	$35,980,000	$57,585,000	$76,510,000	$50,020,000	$264,970,000
Vehicles	$881,000	$1,926,250	$773,000	$855,000	$495,000	$355,000	$4,404,250
	$32,536,000	**$106,074,750**	**$45,023,000**	**$62,840,000**	**$81,665,000**	**$53,805,000**	**$349,407,750**
SOURCE OF FUNDS							
Capital Funds on Hand	$21,220,000	$52,468,000	$19,150,000	$20,560,000	$22,390,000	$26,150,000	$140,718,000
Debenture Debt (New Debt Only)	$0	$40,500,000	$24,700,000	$41,200,000	$58,780,000	$27,100,000	$192,280,000
Equipment Replacement Fund	$691,000	$1,376,250	$773,000	$855,000	$495,000	$355,000	$3,854,250
Grants (Federal, Provincial)	$6,000,000	$6,000,000	$0	$0	$0	$0	$6,000,000
Donations / Third Party Funding	$4,625,000	$5,730,500	$400,000	$225,000	$0	$200,000	$6,555,500
Reserve Fund	$0	$0	$0	$0	$0	$0	$0
	$32,536,000	**$106,074,750**	**$45,023,000**	**$62,840,000**	**$81,665,000**	**$53,805,000**	**$349,407,750**

CAPITAL REGIONAL DISTRICT

FIVE YEAR CAPITAL EXPENDITURE PLAN SUMMARY - 2025 to 2029

Service No.	2.670/2.680 Regional Water Supply & JDF Wate	Carry Forward from 2024	2025	2026	2027	2028	2029	TOTAL
EXPENDITURE								
Buildings		$0	$250,000	$80,000	$200,000	$80,000	$80,000	$690,000
Equipment		$380,000	$1,180,000	$435,000	$450,000	$431,000	$425,000	$2,921,000
Land		$0	$0	$0	$0	$0	$0	$0
Engineered Structures		$0	$50,000	$30,000	$20,000	$20,000	$20,000	$140,000
Vehicles		$0	$0	$0	$0	$0	$0	$0
		$380,000	**$1,480,000**	**$545,000**	**$670,000**	**$531,000**	**$525,000**	**$3,751,000**
SOURCE OF FUNDS								
Capital Funds on Hand		$380,000	$1,480,000	$545,000	$670,000	$531,000	$525,000	$3,751,000
Debenture Debt (New Debt Only)		$0	$0	$0	$0	$0	$0	$0
Equipment Replacement Fund		$0	$0	$0	$0	$0	$0	$0
Grants (Federal, Provincial)		$0	$0	$0	$0	$0	$0	$0
Donations / Third Party Funding		$0	$0	$0	$0	$0	$0	$0
Reserve Fund		$0	$0	$0	$0	$0	$0	$0
		$380,000	**$1,480,000**	**$545,000**	**$670,000**	**$531,000**	**$525,000**	**$3,751,000**

CAPITAL REGIONAL DISTRICT

5 YEAR CAPITAL PLAN

2025 - 2029

Service #: 2.670

Service Name: Regional Water Supply

PROJECT DESCRIPTION				PROJECT BUDGET & SCHEDULE									
Project Number	Capital Expenditure Type	Capital Project Title	Capital Project Description	Total Project Budget	Asset Class	Funding Source	Carryforward from 2024	2025	2026	2027	2028	2029	5 - Year Total
WATERSHED PROTECTION													
Planning													$ -
25-01	**Study**	**Forest Resilience Studies and Assessments**	**Modelling, studies and assessments of forest fuels, forest health and efficacy of forest treatments in promoting forest resilience.**	**$ 495,000**	**L**	**WU**	**$ -**	**$ 160,000**	**$ 100,000**	**$ 45,000**	**$ 45,000**	**$ 45,000**	**$ 395,000**
25-02	**New**	**Public Engagement for Regional Water Supply**	**Public engagement plans and products.**	**$ 130,000**	**L**	**WU**	**$ -**	**$ 30,000**	**$ -**	**$ -**	**$ 50,000**	**$ 50,000**	**$ 130,000**
25-03	**Study**	**GVWSA Risk Assessments & Procedures**	**Risk assessments and updating procedures for security, biosecurity, spills**	**$ 200,000**	**L**	**WU**		**$ 10,000**	**$ 60,000**	**$ -**	**$ 70,000**	**$ -**	**$ 140,000**
25-04	**Study**	**North Basin Intake Siting Studies**	**Data collection and studying stream flows and water quality entering the North Basin to inform location of a North Basin Intake**	**$ 450,000**	**S**	**WU**	**$ -**	**$ 145,000**	**$ 150,000**	**$ 155,000**	**$ -**	**$ -**	**$ 450,000**
25-05	**Study**	**Forest Management Plan for the GVWSA**	**Development of a forest management plan for the GVWSA to enhance forest resilience and mitigate climate change.**	**$ 180,000**	**S**	**WU**	**$ -**	**$ 20,000**	**$ 55,000**	**$ 55,000**	**$ 50,000**	**$ -**	**$ 180,000**
Capital													
17-01	Renewal	Historic Goldstream Powerhouse Building	Repairs of historic Goldstream Powerhouse building and work toward making the site accessible to the public	$ 196,000	B	WU	$ -	$ 50,000	$ -	$ -	$ -	$ -	$ 50,000
25-06	**New**	**Forest Resilience Treatments**	**Thinning, juvenile spacing, and forest fuel management treatments to mitigate climate change, reduce wildfire risk and enhance forest resilience.**	**$ 2,000,000**	**L**	**WU**	**$ -**	**$ 400,000**	**$ 200,000**	**$ 400,000**	**$ 200,000**	**$ 400,000**	**$ 1,600,000**
25-06					L	Other	$ -	**$ 200,000**	$ -	**$ 200,000**	$ -	**$ 200,000**	**$ 600,000**
09-01	Renewal	Leech River Watershed Restoration	A 17 year project to restore the Leech WSA lands for water supply.	**$ 5,576,000**	L	WU	$ 220,000	$ 40,000	$ 180,000	**$ 200,000**	$ -	$ -	$ 420,000
16-06	Renewal	Goldstream IWS Field Office	Renewal of Water Quality field office/lab and equipment storage and Watershed Protection office, yard, training space and equipment storage, replacing longstanding temporary facilities.	**$ 12,500,000**	B	WU	$ 4,000,000	$ 6,000,000	**$ 500,000**	$ -	$ -	$ -	$ 6,500,000
16-06	Renewal				B	Other	$ 4,000,000	$ 5,000,000	$ -	$ -			$ 5,000,000
25-07	**New**	**Hydromet Upgrades**	**New and upgraded hydrological and weather sensors and stations.**	**$ 872,000**	**E**	**WU**	**$ -**	**$ 300,000**	**$ -**	**$ 100,000**	**$ -**	**$ 100,000**	**$ 500,000**
20-01	Replacement	Kapoor Main Mile 1 Bridge and Asphalt Upgrade	Replacement of the existing undersized culvert with a large bridge as well as subsequent 500 m road asphalt replacement.	**$ 1,140,000**	S	WU	$ 840,000	$ 840,000	**$ 250,000**	$ -	$ -	$ -	$ 1,090,000
25-08	**Renewal**	**Road Improvements**	**Gravel crushing, road deactivation and road upgrades to service water supply and watershed protection infrastructure and activities in the GVWSA**	**$ 1,670,000**	**L**	**WU**	**$ -**	$ 260,000	**$ 460,000**	**$ 110,000**	**$ 260,000**	**$ 150,000**	**$ 1,240,000**
25-09	**New**	**Climate Change Mitigations**	**Equipment, infrastructure and upgrades to harden water supply infrastructure from climate related risks in the GVWSA**	**$ 400,000**	**E**	**WU**	**$ -**	**$ 160,000**	**$ -**	**$ 80,000**	**$ -**	**$ 100,000**	**$ 340,000**
25-10	**Renewal**	**Property Management - Assessments and Upgrades**	**Assessments, planning and implementation of upgrades aimed at newly acquired GVWSA lands.**	**$ 658,000**	**E**	**WU**	$ -	**$ 258,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 658,000**
25-11	**Renewal**	**GVWSA Bridge Supply & Installation**	**Replacement of undersized culverts with climate ready bridges which allow for fish passage.**	**$ 1,755,000**	**S**	**WU**	**$ -**	**$ 30,000**	**$ 400,000**	**$ 425,000**	**$ 450,000**	**$ 450,000**	**$ 1,755,000**
25-12	**New**	**GVWSA Land Acquisition**	**Acquisition of priority lands for Regional Water Supply**	**$ 33,300,000**	**L**	**Debt**	$ -	**$ 32,300,000**	**$ -**	**$ -**	$ -	$ -	**$ 32,300,000**
													$ -
Watershed Protection Sub-Total				**$ 61,522,000**			**$ 9,060,000**	**$ 46,203,000**	**$ 2,455,000**	**$ 1,870,000**	**$ 1,225,000**	**$ 1,595,000**	$ 53,348,000
INFRASTRUCTURE ENGINEERING AND OPERATIONS													
Planning													
16-10	New	Post Disaster Emergency Water Supply	Identify and procure emergency systems for post disaster preparedness.	$ 2,250,000	S	WU	$ -	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ -	$ 800,000
17-13	New	Asset Management Plan	Development of a plan to inform future areas of study and highlight critical infrastructure improvements.	$ 400,000	S	WU	$ 300,000	$ 300,000	$ -	$ -	$ -	$ -	$ 300,000

Service #: 2.670

Service Name: Regional Water Supply

PROJECT DESCRIPTION				PROJECT BUDGET & SCHEDULE									
Project Number	Capital Expenditure Type	Capital Project Title	Capital Project Description	Total Project Budget	Asset Class	Funding Source	Carryforward from 2024	2025	2026	2027	2028	2029	5 - Year Total
19-04	Study	Seismic Assessment of Critical Facilities Phase 2	Second phase seismic assessment of critical facilities will now be undertaken.	$ 275,000	S	WU	$ 100,000	$ 100,000	$ -	$ -	$ -	$ -	$ 100,000
19-15	New	Hydraulic Capacity Assessment and Transient Pressure Analysis	Detailed level-of-service assessment for the RWSC transmission system and transient pressure analysis.	$ 250,000	S	WU	$ 100,000	$ 100,000	$ -	$ -	$ -	$ -	$ 100,000
20-08	Study	Regional Water DCC Program	Design of a Regional DCC Program	**$ 650,000**	S	WU	$ -	**$ 200,000**	**$ 40,000**	$ -	$ -	**$ 10,000**	$ 250,000
20-10	Study	Condition & Vulnerability Assessment	Conduct a condition assessment of critical supply infrastructure and assess its possibility of risk.	$ 200,000	S	WU	$ 150,000	$ 150,000	$ -	$ -	$ -	$ -	$ 150,000
21-05	Study	Level of Service and Transfer Agreements	Develop level-of-service agreements for participating municipalities to address hydraulic capacity of infrastructure.	**$ 400,000**	S	WU	$ 140,000	$ 50,000	**$ 100,000**	**$ 100,000**	**$ 50,000**	$ -	$ 300,000
22-14	Study	Sooke River Intake Feasibility	A feasibility study for an intake from Sooke River to replace the Main No. 15 salmon fishery contribution, for a variety of reasons.	$ 50,000	S	WU	$ 40,000	$ 40,000	$ -	$ -	$ -	$ -	$ 40,000
27-01	**Study**	**Regional Water Master Plan Update**	**Future update to the Regional Water Master Plan**	**$ 500,000**	**S**	**WU**	**$ -**	**$ -**	**$ -**	**$ 250,000**	**$ 250,000**	**$ -**	**$ 500,000**
23-12	Study	Project Delivery Strategy and Planning Studies	Develop a strategy to deliver the identified projects from the 2022 RWS Master Plan.	**$ 700,000**	S	WU	$ 50,000	**$ 350,000**	**$ 300,000**	$ -	$ -	$ -	$ 650,000
23-13	Study	Filtration Plant Planning & Design	Conduct a siting, conceptual design and detailed design for a filtration plant (identified as T2, T4 & M2 in the 2022 Master Plan)	$ 16,300,000	S	WU	$ -	$ -	$ 400,000	$ 500,000	$ 5,400,000	$ 10,000,000	$ 16,300,000
23-24	New	East-West Connector (Filtration Plant to District of Sooke)	Planning and Conceptual Design of the East- West Supply Main from the proposed filtration plant to the District of Sooke (identified as M12 in the 2022 Master Plan)	$ 400,000	S	WU	$ -	$ -	$ -	$ -	$ 200,000	$ 200,000	$ 400,000
23-25	New	Deep Northern Intake and Sooke Lake Pump Station	Planning and Design of the Deep Northern Intake and Sooke Lake Pump Station (identified as S3 in the 2022 Master Plan)	$ 12,200,000	S	WU	$ -	$ -	$ 600,000	$ 3,600,000	$ 4,000,000	$ 4,000,000	**$ 12,200,000**
23-26	New	Transmission Main - Sooke Lake Pump Station to Head Tank	Planning and Design of the Transmission Main from the Sooke Lake Pump Station to Head Tank (identified as M3 in the 2022 Master Plan)	$ 3,400,000	S	WU	$ -	$ -	$ 200,000	$ 1,000,000	$ 1,200,000	$ 1,000,000	$ 3,400,000
23-27	New	Gravity Main - Sooke Lake to Head Tank	Planning and Design of a Gravity Transmission Main (redundancy) from Sooke Lake to Head Tank (identified as M4 in the 2022 Master Plan)	$ 1,400,000	S	WU	$ -	$ 150,000	$ 150,000	$ 400,000	$ 700,000	$ -	$ 1,400,000
23-28	New	Goldstream Reservoir Connector	Planning and Design of the Goldstream Reservoir Connector transmission main (identified as M3 & M6 in the 2022 Master Plan)	$ 4,600,000	S	WU			$ 400,000	$ 2,000,000	$ 2,200,000	$ -	$ 4,600,000
24-09	Study	Agricultural Water Rate Review	Phase 2	$ 100,000	S	WU	$ 100,000	$ 100,000	$ -	$ -	$ -	$ -	$ 100,000
Capital													
18-07	New	Replacement of UV System and Controls Upgrades	Replacement of the UV system and other electrical upgrades at the Goldstream Water Treatment Plant	**$ 11,830,346**	E	WU	$ 5,000,000	$ 5,500,000	$ -	$ -	$ -	$ -	$ 5,500,000
18-07	New			**$ -**	**E**	**Other**	**$ -**	**$ 330,500**	$ -	$ -	$ -	$ -	$ 330,500
18-08	Replacement	Bulk Supply Meter Replacement and Backflow Prevention Program	Planned replacement of aging bulk meter replacement based upon a condition assessment and water audit.	$ 3,700,000	E	WU	$ 750,000	$ 750,000	$ 100,000	$ 1,000,000	$ 100,000	$ 1,000,000	$ 2,950,000
18-15	Renewal	Corrosion Protection Program	Study deficiencies in the current material protection and implement recommendations.	$ 1,450,000	S	WU	$ 100,000	$ 250,000	$ 150,000	$ 100,000	$ 100,000	$ 100,000	$ 700,000
18-18	Replacement	Main No.3 Segment Replacement	Replacement of segments of Main No. 3 based upon previous studies.	$ 15,600,000	S	WU	$ 650,000	$ 650,000	$ 500,000	$ 10,590,000	$ 3,000,000	$ 200,000	$ 14,940,000
19-05	Renewal	Repairs - Kapoor Shutdown	Repair items such as defects in the Kapoor tunnel, replacement of critical valves, intake exterior inspection and actuator replacement while the Kapoor tunnel is shutdown.	$ 700,000	S	WU	$ 100,000	$ 200,000	$ -	$ -	$ -	$ -	$ 200,000
19-23	New	Critical Spare Equipment Storage & Pipe Yard	Plan, design and construct a critical equipment storage building.	$ 1,200,000	S	WU	$ 100,000	$ 1,000,000	$ -	$ -	$ -	$ -	$ 1,000,000
20-16	Replacement	Cecelia Meter Replacement	Replacement of the Cecelia billing meter as well as its enclosure.	$ 1,500,000	S	WU	$ 500,000	$ 500,000	$ -	$ -	$ -	$ -	$ 500,000
20-17	Replacement	Decommission & Conceptual Design of the Smith Hill Site	Plan for decommission the conceptual design for the replacement of the Smith Hill reservoir site.	$ 1,450,000	S	WU	$ 400,000	$ 400,000	$ 1,000,000	$ -	$ -	$ -	$ 1,400,000
21-09	New	Goldstream Water Chlorination Gas System Removal	Plan and construct provisions for removal of chlorination system	$ 200,000	S	WU	$ 50,000	$ 50,000	$ -	$ -	$ -	$ -	$ 50,000
21-10	Replacement	SCADA Masterplan and System Upgrades	Update the SCADA Master Plan in conjunction with the Juan de Fuca Water Distribution, Saanich Peninsula Water and Wastewater, and Core Area Wastewater Services.	$ 2,150,000	E	WU	$ 1,000,000	$ 1,000,000	$ 725,000	$ 600,000	$ 300,000	$ -	$ 2,625,000

Service #: 2.670

Service Name: Regional Water Supply

PROJECT DESCRIPTION				PROJECT BUDGET & SCHEDULE									
Project Number	Capital Expenditure Type	Capital Project Title	Capital Project Description	Total Project Budget	Asset Class	Funding Source	Carryforward from 2024	2025	2026	2027	2028	2029	5 - Year Total
21-11	Replacement	RWS Supply Main No. 4 Upgrade & Main No. 1 High Pressurizing	Upgrade vulnerable sections of the RWS Supply Main No. 4 and Main No. 1 to a resilient system to better able to withstand a seismic event. Vulnerable sections are Concrete Cylinder pipe material which is susceptible to failure during a seismic event. This is part of project partnered with the Saanich Peninsula Water system.	$ 93,000,000	S	WU	$ 2,750,000	$ 2,750,000	$ 14,000,000	$ 35,000,000	$ 40,000,000	$ 400,000	$ 92,150,000
22-15	New	Microwave Radio Upgrades	To provide a high bandwidth communications backbone to the RWS system, a microwave communications system will be installed.	$ 1,300,000	S	WU	$ 440,000	$ 640,000	$ 200,000	$ 100,000	$ 100,000	$ -	$ 1,040,000
23-16	Renewal	Humpback Channel Assessment and Upgrades	Hydraulically assess the Humpback Overflow channel and conduct a condition assessment of the culverts at the Gatehouse.	$ 200,000	S	WU	$ 125,000	$ 125,000	$ -	$ -	$ -	$ -	$ 125,000
23-17	Replacement	Main No. 4 - Mt Newton to Highway 17 **& Bear Hill Trunk Extension (RWS Contribution to SPWS Project)**	Approximately 2.9km of Main No. 4 concrete cylinder tranmission main to replacement from Mt Newton Cross Rd/Central Saanich Rd to Island View Rd and Lochside Drive. This project is also being expanded to partially fund the extension of the Bear Hill Tunk Sewer on East Saanich Road from Wallace Drive to Dean Lower Tank.	$ 39,000,000	S	WU	$ 1,750,000	$ 21,750,000	$ 10,200,000	$ -	$ -	$ -	$ 31,950,000
23-17	Replacement				S	Grant	$ 6,000,000	$ 6,000,000	$ -	$ -	$ -	$ -	$ 6,000,000
28-01	**Renewal**	**Transmission Main Upgrade Program**	**Identify, conceptually design, detail design and construct transmission main upgrades.**	**$ 160,000,000**	**S**	**WU**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 10,000,000**	**$ 30,000,000**	**$ 40,000,000**
24-11	Replacement	IT Core Infrastructure Replacement and cyber security upgrades.	Replacement and upgrades to Core IT infrastructure such as servers, network switches, UPS, etc for equipment end of life and cyber security upgrades. Includes IT equipment located at tower sites within the RWS system.	$ 420,000	E	WU	$ -	$ 15,000	$ -	$ 130,000	$ 250,000	$ -	$ 395,000
24-12	Renewal	Head Tank Valve & Main No. 4&5 Valve Replacement	Supply and installation of valves and actuators at Head Tank and Main #4&5. Includes flushing plan and coordination efforts.	$ 950,000	E	WU	$ 450,000	$ 950,000	$ -	$ -	$ -	$ -	$ 950,000
24-19	Renewal	Mount Tolmie Tank Improvements	Structural and infiltration improvements, as well as improvements to controls, piping and other deficiencies.	$ 5,500,000	E	WU	$ 200,000	$ 3,200,000	$ 1,500,000	$ 150,000	$ -	$ -	$ 4,850,000
Infrastructure Engineering and Operations Sub-Total				**$ 384,225,346**			**$ 21,345,000**	**$ 47,800,500**	**$ 30,765,000**	**$ 55,720,000**	**$ 68,050,000**	**$ 46,910,000**	**$ 249,245,500**
DAM SAFETY PROGRAM													
25-13	**Study**	**Sooke Lake & Deception Water Supply Area Dams - Regulatory Compliance, Dam Safety Planning & Analyses**	**Ongoing projects involving studies, dam safety planning and regulatory requirements activities for the various dams within the Sooke Lake Watershed. Outcomes from the various studies will inform future capital improvements.**	**$ 3,500,000**	**S**	**WU**	**$ -**	**$ 900,000**	**$ 1,350,000**	**$ 750,000**	**$ 250,000**	**$ 250,000**	**$ 3,500,000**
25-14	**Renewal**	**Sooke Lake & Deception Water Supply Area Dams - Upgrades and Improvements Program**	**Ongoing program to complete dam upgrades and improvements from the Dam Safety Risk Register, which have been identified through the Sooke Lake Water Supply Area Dams - Regulatory, Planning & Analysis Program.**	**$ 7,250,000**	**S**	**WU**	**$ -**	**$ 4,000,000**	**$ 1,500,000**	**$ 250,000**	**$ 1,000,000**	**$ 500,000**	**$ 7,250,000**
25-15	**Study**	**Goldstream Water Supply Area Dams - Regulatory Compliance, Dam Safety Planning & Analyses**	**Ongoing projects involving studies, dam safety planning and regulatory requirements activities for the various dams within the Goldstream Watershed. Outcomes from the various studies will inform future capital improvements.**	**$ 7,200,000**	**S**	**WU**	**$ -**	**$ 700,000**	**$ 1,000,000**	**$ 250,000**	**$ 5,000,000**	**$ 250,000**	**$ 7,200,000**
25-16	**Renewal**	**Goldstream Water Supply Area Dams - Upgrades and Improvements Program**	**Ongoing program to complete dam upgrades and improvements from the Dam Safety Risk Register, which have been identified through the Goldstream Water Supply Area Dams - Regulatory, Planning & Analysis Program.**	**$ 4,000,000**	**S**	**WU**	**$ -**	**$ 500,000**	**$ 1,200,000**	**$ 250,000**	**$ 750,000**	**$ 900,000**	**$ 3,600,000**
25-17	**Study**	**Charters Dam - Regulatory Compliance, Dam Safety Planning & Analyses**	**Ongoing projects involving studies, dam safety planning and regulatory requirements activities for Charters Dam. Outcomes from the various studies will inform future capital improvements.**	**$ 100,000**	**S**	**WU**	**$ -**	**$ 100,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 100,000**
25-18	**Renewal**	**Charters Dam - Upgrades and Improvements Program**	**Ongoing program to complete dam upgrades and improvements from the Dam Safety Risk Register, which have been identified through the Charters Dam - Regulatory, Planning & Analysis Program.**	**$ 200,000**	**S**	**WU**	**$ -**	**$ 25,000**	**$ 25,000**	**$ -**	**$ -**	**$ 150,000**	**$ 200,000**
Dam Safety Program Sub-Total				**$ 22,250,000**				**$ 6,225,000**	**$ 5,075,000**	**$ 1,500,000**	**$ 7,000,000**	**$ 2,050,000**	**$ 21,850,000**
WATER QUALITY													
20-04	New	Sooke Lake HyDy Model Development	Critical data collection, model building+calibration, model utilization for 3 different scenarios	**$ 520,000**	E	WU	$ 100,000	**$ 200,000**	$ -	$ -	$ -	$ -	$ 200,000
25-19	**Study**	**WQ Studies and Research Projects**	**Ongoing program budget for water quality studies and operation of Sooke Lake Hydrodynamic Model.**	**$ 1,000,000**	**S**	**WU**	**$ -**	**$ 200,000**	**$ 200,000**	**$ 200,000**	**$ 200,000**	**$ 200,000**	**$ 1,000,000**
25-20	**Replacemen**	**Lab and WQ Equipment Maintenance and Replacement**	**Ongoing program budget for water quality lab equipment and maintenance.**	**$ 1,000,000**	**S**	**WU**	**$ -**	**$ 200,000**	**$ 200,000**	**$ 200,000**	**$ 200,000**	**$ 200,000**	**$ 1,000,000**
Water Quality Sub-Total				**$ 2,520,000**			**$ 100,000**	**$ 600,000**	**$ 400,000**	**$ 400,000**	**$ 400,000**	**$ 400,000**	**$ 2,200,000**
													$ -

APPENDIX A

Service #: 2.670

Service Name: Regional Water Supply

PROJECT DESCRIPTION				PROJECT BUDGET & SCHEDULE									
Project Number	Capital Expenditure Type	Capital Project Title	Capital Project Description	Total Project Budget	Asset Class	Funding Source	Carryforward from 2024	2025	2026	2027	2028	2029	5 - Year Total
ANNUAL PROVISIONAL													$ -
17-27	Replacement	Watershed Culvert Replacement	Replacement of small culverts throughout the GVWSA.	**$ 1,300,000**	S	WU	$ -	**$ 260,000**	**$ 260,000**	**$ 260,000**	**$ 260,000**	**$ 260,000**	**$ 1,300,000**
17-28	Replacement	Watershed Security Infrastructure Upgrade & Replacement	New, upgrade and replacement of security infrastructure in the GVWSA.	**$ 1,500,000**	E	WU	$ -	**$ 300,000**	**$ 300,000**	**$ 300,000**	**$ 300,000**	**$ 300,000**	**$ 1,500,000**
17-29	Replacement	Water Supply Area Equipment & Replacement	Hydrometeorological, fireweather and wildfire suppression equipment replacement.	**$ 720,000**	E	WU	$ -	**$ 180,000**	**$ 140,000**	**$ 140,000**	**$ 140,000**	**$ 140,000**	**$ 740,000**
17-30	Replacement	Transmission Main Repairs	Emergency repairs to the transmission mains.	$ 1,000,000	S	WU	$ -	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 1,000,000
17-31	Replacement	Transmission System Components Replacement	Replacement and repair of transmission components.	$ 400,000	S	WU	$ -	$ 80,000	$ 80,000	$ 80,000	$ 80,000	$ 80,000	$ 400,000
17-33	Replacement	Disinfection Equipment and other Water Treatment Components and Parts Replacement	Replacement of incidental equipment and parts associated with the water treatment facilities.	$ 1,000,000	E	WU	$ -	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 1,000,000
17-34	Renewal	Supply System Computer Model Update	Annual update of the regional hydraulic model.	$ 100,000	S	WU	$ -	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 100,000
19-16	Replacement	Dam Improvements	Items not covered by Dam Safety Reviews, but brought up in Dam Safety Inspections and Dam Safety Reviews and address items in the dam safety database/risk registry and to support operations.	$ 1,675,000	S	WU	$ -	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 1,500,000
19-22	Replacement	SCADA Repairs, Equipment Replacement and Comms upgrades	Items not covered by the SCADA Replacement and SCADA Master Plan, but integral in maintaining the SCADA System and revenue meter system.	$ 750,000	E	WU	$ -	$ 200,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 800,000
21-15	Replacement	Corrosion Protection	Replace corrosion protection assets, such as coatings, for the transmission system when identified.	$ 250,000	S	WU	$ -	.	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 200,000
21-16	Replacement	Valve Chamber Upgrades	Replace failing valves and appurtenances along the RWS supply system.	**$ 1,500,000**	S	WU	$ -	**$ 300,000**	**$ 300,000**	**$ 300,000**	**$ 300,000**	**$ 300,000**	**$ 1,500,000**
21-17	Replacement	Water Quality Equipment Replacement	Replacement of water quality equipment for the water quality lab and water quality operations	$ 250,000	E	WU	$ -	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 250,000
21-18	Renewal	LIMS support	Support for LIMS database	$ 125,000	E	WU	$ -	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 125,000
23-20	Study	Land Exchange/Acquisition	Land surveys, appraisals to support decisions regarding land exchange to increase catchment area, buffer water supply areas and other possible land exchange and acquisition within the RWS system.	**$ 220,000**	L	WU	$ -	$ 80,000	$ 80,000	**$ 20,000**	**$ 20,000**	**$ 20,000**	**$ 220,000**
													$ -
Annual Provisional Sub-Total				**$ 10,790,000**			**$ -**	**$ 2,195,000**	**$ 2,155,000**	**$ 2,095,000**	**$ 2,095,000**	**$ 2,095,000**	**$ 10,635,000**
													$ -
CORPORATE ASSET AND MAINTENANCE MANAGEMENT (CAMM)													$ -
17-35	Replacement	Vehicle & Equipment Replacement (Funding from Replacement Fund)	This is for replacement of vehicles and equipment used by CRD Water Services for the day-to-day operation and maintenance of the supply system.	$ 4,169,250	V	ERF	$ 691,000	$ 1,376,250	$ 773,000	$ 855,000	$ 495,000	$ 355,000	$ 3,854,250
23-21	New	EV Charging Stations Electrical Infrastructure	Electrical System upgrades at 479 Island Hwy to power up 44 charging stations	$ 1,255,000	E	WU	$ 100,000	$ 500,000	$ -	$ -	$ -	$ -	$ 500,000
23-22	New	Fuel Truck	Fuel tender truck	$ 325,000	E	WU	$ 325,000	$ 325,000	$ -	$ -	$ -	$ -	$ 325,000
23-31	New	Purchase of land	Purchasing of land near 479 for future office space or other land acquisition opportunities relative to Regional Water Supply Service	**$ 6,500,000**	L	WU	$ 100,000	**$ 100,000**	**$ 3,000,000**	$ -	**$ 2,000,000**	$ -	**$ 5,100,000**
24-17	New	Pool Vehicles	2 new EV Pickups	$ 180,000	V	WU	$ 90,000	$ 90,000					$ 90,000
24-18	New	Vehicle for Watershed Hydrology Program	Replacement pickup truck for watershed hydrology program	$ 100,000	V	WU	$ 100,000	$ 100,000	$ -	$ -	$ -	$ -	$ 100,000
25-22	**New**	**New Vehicles - Watershed & Water Operations**	**4 New Electric Vehicles for Watershed & Water Operations**	**$ 360,000**	**V**	**WU**	**$ -**	**$ 360,000**	**$ -**	**$ -**	**$ -**	$ -	$ 360,000
25-23	**New**	**Enterprise Asset Management System**	**Development of EAM system, including software and process implementation, for services to maintain assets and report on asset performance.**	**$ 4,600,000**	**E**	**WU**	**$ -**	**$ -**	**$ -**	**$ 375,000**	**$ 400,000**	**$ 400,000**	**$ 1,175,000**
25-23	**New**	**Enterprise Asset Management System**			**E**	**Other**	**$ 625,000**	**$ 200,000**	**$ 400,000**	**$ 25,000**	**$ -**	$ -	$ 625,000
													$ -
CAMM Sub-Total				**$ 12,529,250**			**$ 2,031,000**	**$ 3,051,250**	**$ 4,173,000**	**$ 1,255,000**	**$ 2,895,000**	**$ 755,000**	**$ 12,129,250**
			GRAND TOTAL	**$ 493,836,596**			**$ 32,536,000**	**$ 106,074,750**	**$ 45,023,000**	**$ 62,840,000**	**$ 81,665,000**	**$ 53,805,000**	**$ 349,407,750.00**

Service:	2.670	Regional Water Supply

Project Number	25-01		Forest Resilience Studies and Assessments	**Capital Project Description**	Modelling, studies and assessments of forest fuels, forest health and efficacy of forest treatments in promoting forest resilience.
Project Rationale	Watershed Protection is undertaking, or working collaboratively with academic institutions and federal and provincial agencies on a variety of assessments and research studies relating to the health of forests and other ecosystems in the GVWSA, how projected climate change could affect forest health and wildfire in the GVWSA, how forest management could reduce potential threats to forests, and the effects of existing forest thinning trials and fuel management activities. The results of these assessments and studies will be used to inform the forest management plan for the GVWSA (Project 25-02).				

Project Number	25-02	**Capital Project Title**	Public Engagement for Regional Water Supply	**Capital Project Description**	Public engagement plans and products.
Project Rationale	The Watershed Protection division provides educational tours of the GVWSA and Regional Water Supply infrastructure and is seeking new ways to making this information available to a broader portion of the service area population. In future years, enhanced public engagement on the master plan will be undertaken.				

Project Number	25-03	**Capital Project Title**	GVWSA Risk Assessments & Procedures	**Capital Project Description**	Risk assessments and updating procedures for security, biosecurity, spills
Project Rationale	Assessments relating to security, biosecurity, spill response are required to determine how best to reduce risks to water quality in supply reservoirs and facilitate effective emergency response. The results of these assessments will be used to develop and implement plans and procedures.				

Project Number	25-04	**Capital Project Title**	North Basin Intake Siting Studies	**Capital Project Description**	Data collection and studying stream flows and water quality entering the North Basin to inform location of a North Basin Intake
Project Rationale	Determining the location of the North Basin water intake in Sooke Lake Reservoir requires an understanding of the quality and volumes of water inflows to the reservoir and how these inflows relate to reservoir circulation and water quality. This project will fast track the data collection and analyses needed to establish stream rating curves for inflow modelling and how water quality parameters vary with stream flow. These data will inform both the reservoir inflow and reservoir circulation models and how these models can be linked.				

Service:	2.670	Regional Water Supply

Project Number	Capital Project Title	Capital Project Description
25-05	Forest Management Plan for the GVWSA	Development of a forest management plan for the GVWSA to enhance forest resilience and mitigate climate change.

Project Rationale Development of a forest management plan for the GVWSA to enhance forest resilience and mitigate climate change based on modelling, risk assessment, input from subject matter experts, First Nations and the public.

Project Number	Capital Project Title	Capital Project Description
17-01	Historic Goldstream Powerhouse Building	Repairs of historic Goldstream Powerhouse building and work toward making the site accessible to the public

Project Rationale Located near the Goldstream Treatment Plant and the Sooke Hills Wilderness Trail (Trans Canada Trail), is an 1897 brick hydroelectric powerplant that served Victoria (notably the streetcars) for approx. 60 years. The Powerhouse has its own Wikipedia entry: http://en.wikipedia.org/wiki/Lubbe_Powerhouse and has captured public interest as a unique structure in BC history. An engineering condition assessment including engineered drawings, site plan and approximate cost of repairs was conducted in 2017. A major repair in the masonry on the north side of the building was completed in 2018. Further masonry and major crack repair was completed on the south side in 2019 ($10,000). A successful grant application ($76,000) was used in 2022 to replace the roof membrane/envelope. Future funds are to implement basic security around the facility until such time as future interpretation and access from the Sooke Hills Wilderness Trail can be secured in coordination with any planning for the siting of a filtration plant.

Project Number	Capital Project Title	Capital Project Description
25-06	Forest Resilience Treatments	Thinning, juvenile spacing, and forest fuel management treatments to mitigate climate change, reduce wildfire risk and enhance forest resilience.

Project Rationale This project will be used to fund a variety of forest and fuel management treatments to reduce risks and enhance the resilience of forests in the GVWSA in a changing climate. The specific approaches and methologies will be informed by the results of a variety of landscape level inventories and assessments and learnings from the evaluation of the effectiveness and effects of forest and fuel management to date.

Project Number	Capital Project Title	Capital Project Description
09-01	Leech River Watershed Restoration	A 17 year project to restore the Leech WSA lands for water supply.

Project Rationale A 17 year project to restore the Leech WSA lands for water supply. An update of projects completed and planned was provided in June 2019 (RWSC Report #19-13). Recent years funding has been used predominantly to upgrade the permanent road network. A review will be undertaken and the final years of funding assigned to ensure substantial completion of the recommendations of the Leech River Watershed Assessment.

Service:	2.670	Regional Water Supply

Project Number	16-06	**Capital Project Title**	Goldstream IWS Field Office	**Capital Project Description**	Renewal of Water Quality field office/lab and equipment storage and Watershed Protection office, yard, training space and equipment storage, replacing longstanding temporary facilities.

Project Rationale Watershed Protection staff (27 FTE and 8 seasonal auxiliaries) are currently located in 2 trailers and a house at the Goldstream Gate entrance to the water supply area, and in office space at the Integrated Water Services office in View Royal. The trailers were considered temporary office space since their implementation over 15 years ago. The trailers are old, prone to leaks and a concern for mold. Water Quality field staff are located in another temporary facility, since their field office was on the gravel pit property that was sold to Langford. In addition, there are insufficient facilities for operational training, equipment storage, emergency management and public education. The separation of staff between various Goldstream facilities and the View Royal location causes inefficiencies and organizational difficulties. The IWS office is also above capacity and moving Watershed Protection staff out will extend the existing office space. 2024: A design build procurement process has been selected to deliver the project with a rough total project cost of $12 million. Funding of $ 5 million to the project is guaranteed through the completion of sale of the IWS gravel pit to Langford. Additional funding of $5 million from other CRD service areas will fund an additional floor of the planned new building.

Project Number	25-07	**Capital Project Title**	Hydromet Upgrades	**Capital Project Description**	New and upgraded hydrological and weather sensors and stations.

Project Rationale Watershed Protection manages a network of nine (soon to be 10) weather stations and 22 hydro-metric (stream monitoring) stations in the GVWSA. Data from these stations are used to inform decision making relating to reservoir inflows, reservoir management, wildfire restrictions and wildfire response, flood and emergency repnse, and for assessments, modelling, analyses, and strategic and operational planning. The existing network has been building since 1995 and new standards, technologies, and data needs require new stations and the upgrade and expansion of existing stations and data download, management, and distribution capabilities for continual improvement.

Project Number	20-01	**Capital Project Title**	Kapoor Main Mile 1 Bridge and Asphalt Upgrade	**Capital Project Description**	Replacement of the existing undersized culvert with a large bridge as well as subsequent 500 m road asphalt replacement.

Project Rationale The existing culvert at Mile 1 on Kapoor Main (which is the primary access road to Sooke Lake Reservoir and Dam) is undersized, has evidence of buried organics in the fill material and has oversteepend, unstable banks. The culvert will be removed and a bridge installed to improve water carrying capacity at peak flows, fish passage and bank stability. The asphalt section uphill of the bridge will also be repaired or replaced as a component of the project. 2024: Consulting engineer design work indicates a total construction cost of $868,000 for the bridge. A cost driver is the significant amount of fill to remove. The 2024 budget has been increased to reflect the engineered cost estimate and to move the asphalt budget forward to 2025.

Project Number	25-08	**Capital Project Title**	Road Improvements	**Capital Project Description**	Gravel crushing, road deactivation and road upgrades to service water supply and watershed protection infrastructure and activities in the GVWSA

Project Rationale The network of roads within the GVWSA provide access to water supply facilities and infrastructure and for emergency response, security patrols, watershed management activities as well as research and monitoring. It is important that these roads be upgraded to accommodate the increased intensity, frequency, duration of major rainfall events with projected climate change, that new roads are developed where needed, and that unneccessary an/or poorly located roads are deactivated to reduce maintenance costs and reduce environmental concerns.

Service:	2.670	Regional Water Supply

Project Number	25-09	**Capital Project Title**	Climate Change Mitigations	**Capital Project Description**	Equipment, infrastructure and upgrades to harden water supply infrastructure from climate related risks in the GVWSA
Project Rationale	This fund consolidates a number of smaller projects to purchase equipment and develop or update infrastructure within the GVWSA to improve response to extreme weather events, adapt to increased variation in the level of Sooke Lake Reservoir, and reduce risk to key infrastructure.				

Project Number	25-10	**Capital Project Title**	Property Management - Assessments and Upgrades	**Capital Project Description**	Assessments, planning and implementation of upgrades aimed at newly acquired GVWSA lands.
Project Rationale	When new properties are aquired, there are assessments that need to be carried out to determine the condition of roads and drainage structures, identify security needs, and other land/forest management issues, and then plan and implement improvements to meet CRD requirements and integrate these lands into Watershed Protection management programs.				

Project Number	25-11	**Capital Project Title**	GVWSA Bridge Supply & Installation	**Capital Project Description**	Replacement of undersized culverts with climate ready bridges which allow for fish passage.
Project Rationale	Watershed Protection has inventoried all drainage structures (culverts) within the GVWSA and is systematically replacing undersized structures on major watercourses with bridges to meet current environmental and flow standards and accommodate the projected increases in stream flows with a changing climate. This fund will be used for the costs associated with assessments, engineering, construction and installation of bridge projects in the GVWSA.				

Project Number	25-12	**Capital Project Title**	GVWSA Land Acquisition	**Capital Project Description**	Acquisition of priority lands for Regional Water Supply
Project Rationale	Funds in 2025 will be used for the purchase of a major property adjacent to the GVWSA. Reports on this property have been brought to the Regional Water Supply Commission *in camera.*				

Project Number	16-10	**Capital Project Title**	Post Disaster Emergency Water Supply	**Capital Project Description**	Identify and procure emergency systems for post disaster preparedness.
Project Rationale	In the event of a disaster, it is proposed to have in place the ability to source, treat (if required) and distribute drinking water during the initial and sustained response and recovery phases to the public. This item will see the study of the issue in 2016 and 2017 with the anticipated purchase of one or more emergency distribution systems in 2017. Initial investigation has highlighted areas, such as having hardened hydrants/standpipes that the CRD should be investing in. Additional funds are required to continue implementing these additional works and equipment.				

Service:	2.670	Regional Water Supply

Project Number	17-13	**Capital Project Title**	Asset Management Plan	**Capital Project Description**	Development of a plan to inform future areas of study and highlight critical infrastructure improvements.
Project Rationale	Asset Management Planning necessary to effectively manage asset life cycles and plan for future improvement works.				

Project Number	19-04	**Capital Project Title**	Seismic Assessment of Critical Facilities Phase 2	**Capital Project Description**	Second phase seismic assessment of critical facilities will now be undertaken.
Project Rationale	Initially identified as a priority froman earlier iteration of the Strategic Plan, a second phase seismic assessment of critical facilities will now be undertaken.				

Project Number	19-15	**Capital Project Title**	Hydraulic Capacity Assessment and Transient Pressure Analysis	**Capital Project Description**	Detailed level-of-service assessment for the RWSC transmission system and transient pressure analysis.
Project Rationale	Determine the existing level-of-service for the RWSC transmission system and conduct a transient pressure analysis to better determine vulernabilities and future upgrades.				

Project Number	20-08	**Capital Project Title**	Regional Water DCC Program	**Capital Project Description**	Design of a Regional DCC Program
Project Rationale	Development and implementation of a Developer Cost Charge (DCC) program for the Regional Water Supply system. This program will help identified where projects are required for future growth and help fund those costs from developments.				

Project Number	20-10	**Capital Project Title**	Condition & Vulnerability Assessment	**Capital Project Description**	Conduct a condition assessment of critical supply infrastructure and assess its possibility of risk.
Project Rationale	The RWSC is a large system with infrastructure of various ages and condition. Funding is required to conduct a condition assessment of critical infrastructure, ass their risk of failure, and provide a high level timeline for replacement/renewal.				

Service:	2.670	Regional Water Supply

Project Number	21-05	**Capital Project Title**	Level of Service and Transfer Agreements	**Capital Project Description**	Develop level-of-service agreements for participating municipalities to address hydraulic capacity of infrastructure.
Project Rationale	Develop level-of-service agreements for participating municipalities to address hydraulic capacity of infrastructure.				

Project Number	22-14	**Capital Project Title**	Sooke River Intake Feasibility	**Capital Project Description**	A feasibility study for an intake from Sooke River to replace the Main No. 15 salmon fishery contribution, for a variety of reasons.
Project Rationale	A feasibility study for an intake from Sooke River to replace the Main No. 15 salmon fishery contribution, for a variety of reasons.				

Project Number	27-01	**Capital Project Title**	Regional Water Master Plan Update	**Capital Project Description**	Future update to the Regional Water Master Plan
Project Rationale	Placeholder budget for 2027 update to the Regional Master Plan.				

Project Number	23-12	**Capital Project Title**	Project Delivery Strategy and Planning Studies	**Capital Project Description**	Develop a strategy to deliver the identified projects from the 2022 RWS Master Plan.
Project Rationale	Funding for staff and consultant time in the initial efforts toward developing a project delivery strategy for the RWS Master Plan.				

Project Number	23-13	**Capital Project Title**	Filtration Plant Planning & Design	**Capital Project Description**	Conduct a siting, conceptual design and detailed design for a filtration plant (identified as T2, T4 & M2 in the 2022 Master Plan)
Project Rationale	Identified in the 2022 Master Plan, planning, design and future construction of a Filtration Plant is required. Initial steps will include confirming site requirements, overview of integration with other system components, review of current and future technologies and preliminary engineering studies such as geotechnical once a site is confirmed.				

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Project Number	23-24	**Capital Project Title**	East-West Connector (Filtration Plant to District of Sooke)	**Capital Project Description**	Planning and Conceptual Design of the East- West Supply Main from the proposed filtration plant to the District of Sooke (identified as M12 in the 2022 Master Plan)
Project Rationale	Identified in the 2022 Master Plan, planning and conceptual design of an East- West Supply Main from the proposed filtration plant to the District of Sooke to maintain level of service and to account for growth.				

Project Number	23-25	**Capital Project Title**	Deep Northern Intake and Sooke Lake Pump Station	**Capital Project Description**	Planning and Design of the Deep Northern Intake and Sooke Lake Pump Station (identified as S3 in the 2022 Master Plan)
Project Rationale	Identified in the 2022 Master Plan, planning and design of the Deep Northern Intake and Sooke Lake Pump Station is required to provide water supply and transmission capability from currently inaccessible parts of Sooke Lake into the water supply and treatment systems.				

Project Number	23-26	**Capital Project Title**	Transmission Main - Sooke Lake Pump Station to Head Tank	**Capital Project Description**	Planning and Design of the Transmission Main from the Sooke Lake Pump Station to Head Tank (identified as M3 in the 2022 Master Plan)
Project Rationale	In the event of a disaster, it is proposed to have in place the ability to source, treat (if required) and distribute drinking water during the initial and sustained response and recovery phases to the public. This item will see the study of the issue in 2016 and 2017 with the anticipated purchase of one or more emergency distribution systems in 2017. Initial investigation has highlighted areas, such as having hardened hydrants/standpipes that the CRD should be investing in. Additional funds are required to continue implementing these additional works and equipment.				

Project Number	23-27	**Capital Project Title**	Gravity Main - Sooke Lake to Head Tank	**Capital Project Description**	Planning and Design of a Gravity Transmission Main (redundancy) from Sooke Lake to Head Tank (identified as M4 in the 2022 Master Plan)
Project Rationale	Identified in the 2022 Master Plan, planning and design of a gravity transmission main from Sooke Lake to the Head Tank to provide redundant water supply to the system.				

Project Number	23-28	**Capital Project Title**	Goldstream Reservoir Connector	**Capital Project Description**	Planning and Design of the Goldstream Reservoir Connector transmission main (identified as M3 & M6 in the 2022 Master Plan)
Project Rationale	Identified in the 2022 Master Plan, planning and design of a transmission main to connect the Goldstream Reservoir to the Sooke system to ensure transmission safety and reliability when using the Goldstream system to supplement flows to the Sooke system.				

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Project Number	24-09	**Capital Project Title**	Agricultural Water Rate Review	**Capital Project Description**	Phase 2
Project Rationale	Review of agricultural water rates.				

Project Number	18-07	**Capital Project Title**	Replacement of UV System and Controls Upgrades	**Capital Project Description**	Replacement of the UV system and other electrical upgrades at the Goldstream Water Treatment Plant
Project Rationale	Replacement of UV Equipment at the Goldstream Water Treatment Plant with eight (8) new UV trains. Equipment being supplied are 8 TrojanUVSwift units designed for a combined 532 MLD flow rate with one unit out of service, minimum 85% UVT & 3.0-log inactivation of cryptosporidium and giardia. This project also includes electrical equipment replacements and controls upgrades for the entire disinfection facility. Design is complete, UV Equipment delivery is scheduled for Q3/Q4 2024 and installation and implementation works are scheduled to occur in the low demand period between Q4 2024 and Q1 2025, with the option to defer a portion of work to the subsequent winter if necessary.				

Project Number	18-08	**Capital Project Title**	Bulk Supply Meter Replacement and Backflow Prevention Program	**Capital Project Description**	Planned replacement of aging bulk meter replacement based upon a condition assessment and water audit.
Project Rationale	This item is to replace, upgrade and install new bulk water meters and related equipment that measure flow and volumes of water delivered to the wholesale customers. Many of the meter stations are in need of upgrading. Funding is required to replace the flow meter and appurtenances.				

Project Number	18-15	**Capital Project Title**	Corrosion Protection Program	**Capital Project Description**	Study deficiencies in the current material protection and implement recommendations.
Project Rationale	This item is to assess, design and implement cathodic protection for the various infrastructure, including steel pipes, that are susceptible to corrosion. The supply system has various implementations of cathodic protection ranging from interior/exterior coatings for pipe and passive anodes to impressed current systems with variable results and condition. Funding is required for ongoing improvements as recommended by a cathodic protection specialist.				

Project Number	18-18	**Capital Project Title**	Main No.3 Segment Replacement	**Capital Project Description**	Replacement of segments of Main No. 3 based upon previous studies.
Project Rationale	The existing Main No. 3 is approximately 70 years old. Some section of the 22 km main are steel pipe in known potentially corrosive soils. It is proposed to eventually replace a segment or Main #3 on Wale Road, Island Hwy. and Adams Place in Colwood and View Royal. Conceptual design and options analysis will start in 2023 with detailed design and construction commencing in 2024 to 2027. Funding is required to retain a consultant to undertake design and to construct a replacement to Main No. 3.				

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Project Number	19-05	**Capital Project Title**	Repairs - Kapoor Shutdown	**Capital Project Description**	Repair items such as defects in the Kapoor tunnel, replacement of critical valves, intake exterior inspection and actuator replacement while the Kapoor tunnel is shutdown
Project Rationale	Project for ongoing inspections and repairs of the Kapoor tunnel. CRD is assessing future options for remove inspections that may reduce the frequency of dewatering the tunnel.				

Project Number	19-23	**Capital Project Title**	Critical Spare Equipment Storage & Pipe Yard	**Capital Project Description**	Plan, design and construct a critical equipment storage building.
Project Rationale	Additional and accessible storage is required at the pipe yard for critical spare equipment such as repair bands and clamps. Funds are required to pland, design and construct an equipment storage building accessible by loading vehicles.				

Project Number	20-16	**Capital Project Title**	Cecelia Meter Replacement	**Capital Project Description**	Replacement of the Cecelia billing meter as well as its enclosure.
Project Rationale	Project to replace Cecelia Water Meter, which was identified in a previous consultant report as in need of replacement for end of life and accuracy. This is RWS' largest billing meter.				

Project Number	20-17	**Capital Project Title**	Decommission & Conceptual Design of the Smith Hill Site	**Capital Project Description**	Plan for decommission the conceptual design for the replacement of the Smith Hill reservoir site.
Project Rationale	The Smith Hill reservoir has not been in operation for many years. Consideration for decommissioning now has to be factored in with recent suggestions in the 2022 Master Plan.				

Project Number	21-09	**Capital Project Title**	Goldstream Water Chlorination Gas System Removal	**Capital Project Description**	Plan and construct provisions for removal of chlorination system
Project Rationale	The Goldstream Water Treatment Plant has undergone numerous upgrades and updates, both large and small since its initial construction. There are numerous vestigial mechanical and electrical assets that require planned removal. Funds are required to plan and remove unused assets that affect maintenance of the system.				

Project Number	21-10	**Capital Project Title**	SCADA Masterplan and System Upgrades	**Capital Project Description**	Update the SCADA Master Plan in conjunction with the Juan de Fuca Water Distribution, Saanich Peninsula Water and Wastewater, and Core Area Wastewater Services
Project Rationale	The SCADA and radio system utilized by the RWS comprises of components ranging from 2-25 years in age. A planned replacement of assets, to be coordinated with the Juan de Fuca Water Distribution and Saanich Peninsula Water & Wastewater Systems is required to create a more resilient and cohesive communications system				

Service:	2.670	Regional Water Supply

Project Number	21-11	**Capital Project Title**	RWS Supply Main No. 4 Upgrade & Main No. 1 High Pressurizing	**Capital Project Description**	Upgrade vulnerable sections of the RWS Supply Main No. 4 and Main No. 1 to a resilient system to better able to withstand a seismic event. Vulnerable sections are Concrete Cylinder pipe material which is susceptible to failure during a seismic event. This is part of project partnered with the Saanich Peninsula Water system.
Project Rationale	Sections of RWS Supply Main No. 4 have been identified as being vulnerable due to age and material type during a seismic event and require replacement. To support replacement of the Goldstream section of Main No. 4, improvements to RWS Supply Main No. 1 are required, such as replacement of approximately 40 m of transmission Main #1 at Watkiss Way and upgrade of the Watkiss PRV, upgrade of the Millstream PRV, modifications to the Humpback PRV and construction of five new pressure control stations. This project is part of a project partnered with the Saanich Peninsula Water System to increase the resilience of the water system by replacing vulnerable sections of transmission mains.The budget breakdown of the works: Goldstream section of Main #4 $21,975,000; Watkiss Way section of Main #1 $950,000; Watkiss PRV $1,250,000; Millstream PRV $1,350,000; Humpback PRV improvements $825,000; Five new PRVs $9,050,000.				

Project Number	22-15	**Capital Project Title**	Microwave Radio Upgrades	**Capital Project Description**	To provide a high bandwidth communications backbone to the RWS system, a microwave communications system will be installed.
Project Rationale	To provide a high bandwidth communications backbone to the RWS system, a microwave communications system will be installed. Supports current and future fire detection cameras.				

Project Number	23-16	**Capital Project Title**	Humpback Channel Assessment and Upgrades	**Capital Project Description**	Hydraulically assess the Humpback Overflow channel and conduct a condition assessment of the culverts at the Gatehouse.
Project Rationale	Hydraulically assess the overflow system to determine what upgrades or alterations may be required to avoid system failure in extreme weather events. Previous system failures have resulted in damage to the adjacent roadway and significant erosion at the outlet, exposing main No. 4.				

Service:	**2.670**	**Regional Water Supply**

Project Number	23-17	**Capital Project Title**	Main No. 4 - Mt Newton to Highway 17 & Bear Hill Trunk Extension (RWS Contribution to SPWS Project)	**Capital Project Description**	Approximately 2.9km of Main No. 4 concrete cylinder tranmission main to replacement from Mt Newton Cross Rd/Central Saanich Rd to Island View Rd and Lochside Drive. This project is also being expanded to partially fund the extension of the Bear Hill Tunk Sewer on East Saanich Road from Wallace Drive to Dean Lower Tank.
Project Rationale	Main No. 4 project portion: Replacement of concrete cylinder pipe on Main No. 4 is deemed critical for resiliency of the water supply to the Saanich Peninsula. A Strategic Priorities Fund grant was approved to fund a portion of this work. CRD have since expanded the scope and adjusted the alignment so that approximately 450meters of additional concrete cylinder pipe can be removed under a single contract private property and environmental impacts can be better mitigated through alignment adjustment. Bear Hill Trunk project portion: This project portion is to be shared with Saanich Peninsula Water Supply but is proposed to be partially funded by RWS, since this will provide better water supply redundancy to the Saanich Peninsula and will also reduce some of the future scope requirements for RWS to proceed with Project M11 as identified in the Master Plan.				

Project Number	28-01	**Capital Project Title**	Transmission Main Upgrade Program	**Capital Project Description**	Identify, conceptually design, detail design and construct transmission main upgrades.
Project Rationale	Transmission mains that are nearing end of life due to long service require condition assessments and then design and construction of replacement mains where needed. Budget is a future placeholder but project details and budgets will be further refined as the delivery year approaches.				

Project Number	24-11	**Capital Project Title**	IT Core Infrastructure Replacement and cyber security upgrades.	**Capital Project Description**	Replacement and upgrades to Core IT infrastructure such as servers, network switches, UPS, etc for equipment end of life and cyber security upgrades. Includes IT equipment located at tower sites within the RWS system
Project Rationale	Replacement of Core IT infrastructure such as servers, network switches, UPS, etc for equipment end of life. Includes IT equipment located at tower sites within the RWS system.				

Project Number	24-12	**Capital Project Title**	Head Tank Valve & Main No. 4&5 Valve Replacement	**Capital Project Description**	Supply and installation of valves and actuators at Head Tank and Main #4&5. Includes flushing plan and coordination efforts.
Project Rationale	Supply and installation of valves and actuators at Head Tank and Main #4&5. Includes flushing plan and coordination efforts.				

Service:	2.670	Regional Water Supply

Project Number	24-19	**Capital Project Title**	Mount Tolmie Tank Improvements	**Capital Project Description**	Structural and infiltration improvements, as well as improvements to controls, piping and other deficiencies.

Project Rationale Initial budget for multiple improvements to Mount Tolmie Tank, including structural repairs to address leakage and structural repairs discovered at Mount Tolmie Tank in Q4 2023, control valve and piping upgrades, assessment of adjacent buried pipe work.

Project Number	25-13	**Capital Project Title**	Sooke Lake & Deception Water Supply Area Dams - Regulatory Compliance, Dam Safety Planning & Analyses	**Capital Project Description**	Ongoing projects involving studies, dam safety planning and regulatory requirements activities for the various dams within the Sooke Lake Watershed. Outcomes from the various studies will inform future capital improvements.

Project Rationale Capital funding will be used to resolve a prioritized list of issues from the Dam Safety Risk Register, identified during dam surveillance activities, Dam Safety audits, and legislated Dam Safety Reviews. The issues to be resolved relate to dam safety analyses, dam safety planning and program work, and regulatory compliance.

Project Number	25-14	**Capital Project Title**	Sooke Lake & Deception Water Supply Area Dams - Upgrades and Improvements Program	**Capital Project Description**	Ongoing program to complete dam upgrades and improvements from the Dam Safety Risk Register, which have been identified through the Sooke Lake Water Supply Area Dams - Regulatory, Planning & Analysis Program.

Project Rationale This is an ongoing program to be adaptable to addressing projects in the Sooke Lake Watershed Dams from the Dam Safety Risk Register. Some key projects in the near term include:

Sooke Lake Dam (SLD) Instrumentation Improvements, SLD Spillway crack repairs (wet side), SLD Spillway crack repairs (Ogee/Wing Walls), Deception Dam Low Level Overflow Replacement, SLD Gate Controls/automation, SLD Stop Logs Replacements, SLD Log Booms (Narrows and Main Dam), future butressing of Deception Dam and various other improvements that may be prioritized based on risk.

Project Number	25-15	**Capital Project Title**	Goldstream Water Supply Area Dams - Regulatory Compliance, Dam Safety Planning & Analyses	**Capital Project Description**	Ongoing projects involving studies, dam safety planning and regulatory requirements activities for the various dams within the Goldstream Watershed. Outcomes from the various studies will inform future capital improvements.

Project Rationale Capital funding will be used to resolve a prioritized list of issues from the Dam Safety Risk Register, identified during dam surveillance activities, Dam Safety audits, and legislated Dam Safety Reviews. The issues to be resolved relate to dam safety analyses, dam safety planning and program work, and regulatory compliance.

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Project Number	25-16	**Capital Project Title**	Goldstream Water Supply Area Dams - Upgrades and Improvements Program	**Capital Project Description**	Ongoing program to complete dam upgrades and improvements from the Dam Safety Risk Register, which have been identified through the Goldstream Water Supply Area Dams - Regulatory, Planning & Analysis Program
Project Rationale	This is an ongoing program to be adaptable to addressing projects in the Goldstream Watershed Dams from the Dam Safety Risk Register. Some key projects in the near term include: Goldstream gates (High Level and 3 Low Level) being assessed and potentially replaced, Concrete repairs, instrumentation implementation and project management efforts at the program level to prioritize capital works as studies are being completed.				

Project Number	25-17	**Capital Project Title**	Charters Dam - Regulatory Compliance, Dam Safety Planning & Analyses	**Capital Project Description**	Ongoing projects involving studies, dam safety planning and regulatory requirements activities for Charters Dam. Outcomes from the various studies will inform future capital improvements.
Project Rationale	Capital funding will be used to resolve a prioritized list of issues from the Dam Safety Risk Register, identified during dam surveillance activities, Dam Safety audits, and legislated Dam Safety Reviews. The issues to be resolved relate to dam safety analyses, dam safety planning and program work, and regulatory compliance.				

Project Number	25-18	**Capital Project Title**	Charters Dam - Upgrades and Improvements Program	**Capital Project Description**	Ongoing program to complete dam upgrades and improvements from the Dam Safety Risk Register, which have been identified through the Charters Dam - Regulatory, Planning & Analysis Program.
Project Rationale	Budget to addredss capital improvements identified through the dam safety risk register.				

Project Number	20-04	**Capital Project Title**	Sooke Lake HyDy Model Development	**Capital Project Description**	Critical data collection, model building+calibration, model utilization for 3 different scenarios
Project Rationale					

Service:	2.670	Regional Water Supply

Project Number	25-19	**Capital Project Title**	WQ Studies and Research Projects	**Capital Project Description**	Ongoing program budget for water quality studies and operation of Sooke Lake Hydrodynamic Model.
Project Rationale	Managing WQ Studies and Research projects under a program will allow CRD more operational flexibility managing priorities and adapting to changing operational needs.				

Project Number	25-20	**Capital Project Title**	Lab and WQ Equipment Maintenance and Replacement	**Capital Project Description**	Ongoing program budget for water quality lab equipment and maintenance.
Project Rationale	Managing lab and water quality equipment replacements under a program will allow CRD more operational flexibility managing priorities and adapting to changing operational needs.				

Project Number	17-27	**Capital Project Title**	Watershed Culvert Replacement	**Capital Project Description**	Replacement of small culverts throughout the GVWSA.
Project Rationale	This provides annual funding for the replacement of culverts that have reached end of life and/or are undersized given present knowledge of potential peak water flows and anticipated climate change effects. With the completion of peak flow modelling of all major structures in the Sooke and Goldstream WSAs in 2017, additional funds are required beginning in 2018 to upgrade identified structures to current standards. Costs of upgrades have increased significantly in the last 5 years.				

Project Number	17-28	**Capital Project Title**	Watershed Security Infrastructure Upgrade & Replacement	**Capital Project Description**	New, upgrade and replacement of security infrastructure in the GVWSA.
Project Rationale	The outer boundary of the Leech, Sooke and Goldstream Water Supply Areas is approximately 119 kilometers in length. Main access roads are gated and there are 11 kilometers of existing security fencing. A constant effort is needed to maintain a closed watershed. Through monitoring, high incident areas are identified, security plans are developed, and security infrastructure (fencing, gates and signage) is installed or upgraded where required. An uplift in provisional funding is requested due to increased costs of fencing and gates.				

Project Number	17-29	**Capital Project Title**	Water Supply Area Equipment & Replacement	**Capital Project Description**	Hydrometeorological, fireweather and wildfire suppression equipment replacement.
Project Rationale	This provides annual funding for the replacement or upgrading of equipment for wildfire suppression and spill response, fire weather stations, hydro-meteorological monitoring and water quality sampling and monitoring equipment. Given an expansion of the hydrology and meteorology network of stations and sensors, an additional $50,000 per year is added in 2020 and going forward. In 2021 and going forward, funding is reduced by $20,000 as water quality equipment will be funded under a separate line item (21-17). A revised level of funding is requested beginning in 2023 that reflects forecasted needs.				

Project Number	17-30	**Capital Project Title**	Transmission Main Repairs	**Capital Project Description**	Emergency repairs to the transmission mains.
Project Rationale	Each year a visual inspection of this critical supply tunnel is carried out by CRD staff. This capital item allows for minor repairs that are discovered during these inspections. This also allows for annual funding for repair of emergency breaks on large diameter supply mains.				

Service:	2.670	Regional Water Supply

Project Number	17-31	**Capital Project Title**	Transmission System Components Replacement	**Capital Project Description**	Replacement and repair of transmission components.
Project Rationale	This is an annual allowance for the capital costs for the replacement and repair of supply system components that fail under normal operation and maintenance during the year.				

Project Number	17-33	**Capital Project Title**	Disinfection Equipment and other Water Treatment Components and Parts Replacement	**Capital Project Description**	Replacement of incidental equipment and parts associated with the water treatment facilities.
Project Rationale	The annual work includes the replacement of the plastic gas feed piping that has become very brittle, installing air valves on the ammonia solution lines, installing and replacing shut off valves on the booster pumps supply piping, installing indicator stems on UV cooling water valves, relocating the UV cooling water feed pipes, improving the landscaping around the UV building to reduce dust and other minor upgrades.				

Project Number	17-34	**Capital Project Title**	Supply System Computer Model Update	**Capital Project Description**	Annual update of the regional hydraulic model.
Project Rationale	This item is to allow for staff and consultant time each year to keep the hydraulic computer model current.				

Project Number	19-16	**Capital Project Title**	Dam Improvements	**Capital Project Description**	Items not covered by Dam Safety Reviews, but brought up in Dam Safety Inspections and Dam Safety Reviews and address items in the dam safety database/risk registry and to support operations
Project Rationale	Dam Safety Inspections are carried out throughout the year and result in minor improvements at each dam annually. This budget is intended for smaller scale improvements, typically to be completed by operations staff in a short duration and which are not captured under the larger "Term" programs.				

Project Number	19-22	**Capital Project Title**	SCADA Repairs, Equipment Replacement and Comms upgrades	**Capital Project Description**	Items not covered by the SCADA Replacement and SCADA Master Plan, but integral in maintaining the SCADA System and revenue meter system.
Project Rationale	This item is to allow for unplanned SCADA repairs and equipment replacement not covered by the capital projects SCADA Replacement.				

Project Number	21-15	**Capital Project Title**	Corrosion Protection	**Capital Project Description**	Replace corrosion protection assets, such as coatings, for the transmission system when identified.
Project Rationale	There are numerous assets with varying levels of corrosion protection throughout the RWS system. Funds are required to ensure that corrosion protection assets are replaced or rehabilitated when identified.				

Service:	2.670	Regional Water Supply

Project Number	21-16	**Capital Project Title**	Valve Chamber Upgrades	**Capital Project Description**	Replace failing valves and appurtenances along the RWS supply system.
Project Rationale	The RWS system has numerous isolation and air valves along the transmission system, usually in underground chambers. Funds are required for replacement of valves and chamber upgrades as they are identified.				

Project Number	21-17	**Capital Project Title**	Water Quality Equipment Replacement	**Capital Project Description**	Replacement of water quality equipment for the water quality lab and water quality operations
Project Rationale	This provides annual funding for the replacement or upgrading of equipment for the water quality lab, sampling, and operations. Of this provisional budget, $20,000 was previously included in item 17-29 (Water Supply Area annual provisional budget)				

Project Number	21-18	**Capital Project Title**	LIMS support	**Capital Project Description**	Support for LIMS database
Project Rationale	Provides for support for the laboratory information management system				

Project Number	23-20	**Capital Project Title**	Land Exchange/Acquisition	**Capital Project Description**	Land surveys, appraisals to support decisions regarding land exchange to increase catchment area, buffer water supply areas and other possible land exchange and acquisition within the RWS system
Project Rationale	There are opportunities to increase the catchment and critical buffer areas of Sooke, Goldstream and the Leech WSA by purchase or land exchange with surrounding land owners. From time to time, the RWS System requires acquisition of lands for infrastructure purposes. Funds will be used when needed to undertake appraisals, legal surveys, and legal fees for work to develop agreements to purchase or exchange lands for the Regional Water Supply Area or System.				

Project Number	17-35	**Capital Project Title**	Vehicle & Equipment Replacement (Funding from Replacement Fund)	**Capital Project Description**	This is for replacement of vehicles and equipment used by CRD Water Services for the day-to-day operation and maintenance of the supply system.
Project Rationale	This is for replacement of vehicles and equipment used by CRD Water Services for the day-to-day operation and maintenance of the supply system. The Equipment Replacement Fund is used to fund the expenditure. The requests have been adjusted to align with the pricing for electric vehicles.				

Service:	2.670	Regional Water Supply

Project Number	23-21	**Capital Project Title**	EV Charging Stations Electrical Infrastructure	**Capital Project Description**	Electrical System upgrades at 479 Island Hwy to power up 44 charging stations
Project Rationale	In support of the CRD's Climate Action Strategy to reduce the corporate GHG emissions. The CRD Fleet of vehicles is one of the larger contributors to the generation of GHG's. Integrated Water Services identified 44 of the approx. 100 vehicles that operate out of the 479 Island location for replacement with Electrical Vehicles by 2030. I preparation for providing the proper charging network at 479 an Electric Vehicle Fleet Conversion Study was completed in 2021.The results of the study was to upgrade the electrical infrastructure to accommodate the power needs of 44 charging points. It is proposed that phase 1 is started in 2023 to upgrade the electrical distribution system and provide 17 charging points. The larger portion of the costs will be to upgrade the electrical system. Phase 2 to allow for a further 27 charging points can be planned to accommodate the balance of EV vehicles pending their purchasing and delivery.				

Project Number	23-22	**Capital Project Title**	Fuel Truck	**Capital Project Description**	Fuel tender truck
Project Rationale	New fuel truck.				

Project Number	23-31	**Capital Project Title**	Purchase of land	**Capital Project Description**	Purchasing of land near 479 for future office space or other land acquisition opportunities relative to Regional Water Supply Service
Project Rationale	Land acquisition required to addess future needs for CRD to support the RWS.				

Project Number	24-17	**Capital Project Title**	Pool Vehicles	**Capital Project Description**	2 new EV Pickups
Project Rationale	Two new EV pickups.				

Project Number	24-18	**Capital Project Title**	Vehicle for Watershed Hydrology Program	**Capital Project Description**	Replacement pickup truck for watershed hydrology program
Project Rationale	Replacement pickup truck for watershed hydrology.				

Service:	2.670	Regional Water Supply

Project Number	25-22	**Capital Project Title**	New Vehicles - Watershed & Water Operations	**Capital Project Description**	4 New Electric Vehicles for Watershed & Water Operations
Project Rationale	1 New EV AWD SUV for water treatment ops 2 Replacement EV Pickup trucks for Watershed Prot. Ops, Security & Emerg Response 1 New EV Pickup truck for Watershed Prot. Resource Planning, Wildlife Program				

Project Number	25-23	**Capital Project Title**	Enterprise Asset Management System	**Capital Project Description**	Development of EAM system, including software and process implementation, for services to maintain assets and report on asset performance.
Project Rationale	Develop of EAM system, including software and process implementation, for services to maintain assets and report on asset performance.				

CAPITAL REGIONAL DISTRICT

5 YEAR CAPITAL PLAN

2025 - 2029

Service #: 2.670/2.680

Service Name: Regional Water Supply & JDF Water Distribution Combo

PROJECT DESCRIPTION				PROJECT BUDGET & SCHEDULE									
Project Number	Capital Expenditure Type	Capital Project Title	Capital Project Description	Total Project Budget	Asset Class	Funding Source	Carryforward from 2024	2025	2026	2027	2028	2029	5 - Year Total
SYSTEM REPLACEMENT AND UPGRADES THAT BENEFIT REGIONAL WATER SUPPLY AND JUAN DE FUCA DISTRIBUTION													$ -
16-01	Renewal	Upgrades to Buildings at 479 Island Highway	Maintenance and changes to buildings, office layouts, meeting rooms, yard improvements, lab improvements and technology upgrades.	$ 1,330,000	B	WU	$ -	$ 250,000	$ 80,000	$ 200,000	$ 80,000	$ 80,000	$ 690,000
17-01	Renewal	Voice Radio Upgrade	Replacement of end of life voice radio system repeaters, office, vehicle and handheld radios.	$ 2,125,000	E	WU	$ 380,000	$ 430,000	$ -	$ -		$ -	$ 430,000
24-01	Replacement	IT Core Infrastructure Replacement	Replacement of Core IT infrastructure such as servers, network switches, UPS, etc for equipment end of life	$ 250,000	E	WU		$ 125,000	$ 10,000	$ 25,000	$ 6,000	$ -	$ 166,000
25-XX	Replacement	Laboratory Upgrades	Improvements to water quality lab facilities	$ 200,000	E	WU	$ -	$ 200,000.00					$ 200,000.00
													$ -
Sub-Total System Replacement and Upgrades That Benefit Regional Water Supply and Juan de Fuca Distribution				**$ 3,705,000**				**$ 1,005,000**	**$ 90,000**	**$ 225,000**	**$ 86,000**	**$ 80,000**	**$ 1,486,000**
													$ -
ANNUAL PROVISIONAL CAPITAL ITEMS													$ -
17-03	Replacement	Office Equipment, Upgrades and Replacements	Upgrade and replacement of office equipment as required.	$ 450,000	E	WU	$ -	$ 90,000	$ 90,000	$ 90,000	$ 90,000	$ 90,000	$ 450,000
17-04	Replacement	Computer Upgrades	Annual upgrade and replacement program for computers, copiers, printers, network equipment as required.	$ 950,000	E	WU	$ -	$ 190,000	$ 190,000	$ 190,000	$ 190,000	$ 190,000	$ 950,000
17-05	New	Development of the Maintenance Management Systems	Develop maintenance management system.	$ 150,000	E	WU	$ -	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 150,000
17-06	Replacement	Small Equipment & Tool Replacement (Water Operations)	Replacement of tools and small equipment for Water Operations as required.	$ 500,000	E	WU	$ -	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 500,000
17-07	Replacement	Small Equipment & Tool Replacement (Corporate Fleet)	Replacement of tools and small equipment for Fleet as required.	$ 85,000	E	WU	$ -	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 75,000
24-02	Study	Capital Projects Delivery Optimization	Ongoing internal improvement of templates, tools and processes used in the delivery of capital projects.	$ 160,000	S	WU	$ -	$ 50,000	$ 30,000	$ 20,000	$ 20,000	$ 20,000	$ 140,000
													$ -
Sub-Total for Annual Provisional Capital Items				**$ 2,295,000**				**$ 475,000**	**$ 455,000**	**$ 445,000**	**$ 445,000**	**$ 445,000**	**$ 2,265,000**
x			**GRAND TOTAL**	**$ 6,000,000**				**$ 1,480,000**	**$ 545,000**	**$ 670,000**	**$ 531,000**	**$ 525,000**	**$ 3,751,000**
													$ -

Service:	2.670/2.680	Regional Water Supply & JDF Water Distribution Combo

Project Number	16-01	**Capital Project Title**	Upgrades to Buildings at 479 Island Highway	**Capital Project Description**	Maintenance and changes to buildings, office layouts, meeting rooms, yard improvements, lab improvements and technology upgrades.

Project Rationale The budget includes the following funds to upgrade and renew the buildings at 479 Island Highway, including:
- Improvements,Repairs, upgrades and changes to the buildings
- Painting of the buildings
- Repair and replacement of carpets, floors and walls
- Climate Action initiatives and feasibility studies
- Improvements to Meeting Rooms, including technology upgrades

Project Number	17-01	**Capital Project Title**	Voice Radio Upgrade	**Capital Project Description**	Replacement of end of life voice radio system repeaters, office, vehicle and handheld radios.

Project Rationale Service Life and projected replacement:
- The service life of the mobile and portable units was forecast as 10 years at minimum, 15 years at maximum in 2005.
- The present radio models used in the system have just been taken out of production by the manufacturer, there will be no new units available for purchase as of July 1, 2015.
- Support for repairs and maintenance of the present radio will continue for the next 3 years at least.
- There are no pressing issues with equipment maintenance or repairs, present repair rates suggest we can maintain the system for the next few years, and perhaps reach a 12-15 year lifespan on the present equipment.

Project Number	20-01	**Capital Project Title**	#N/A	**Capital Project Description**	#N/A

Project Rationale The RWS and JdF operation numerous water mains and pump stations. There are situations, when a pump station fails, construction of a pump station or bypassing a section of pipe, where a portable pump station with a generator is required to maintain the level of service. Portable PS was delivered in 2023 but some deficiencies, including the associated generator remain and may carry into 2024 to fully address.

Service:	2.670/2.680	Regional Water Supply & JDF Water Distribution Combo

Project Number	17-03	**Capital Project Title**	Office Equipment, Upgrades and Replacements	**Capital Project Description**	Upgrade and replacement of office equipment as required.
Project Rationale	Funds will be used for the replacement and upgrading of office equipment and furniture, as required.				

Project Number	17-04	**Capital Project Title**	Computer Upgrades	**Capital Project Description**	Annual upgrade and replacement program for computers, copiers, printers, network equipment as required.
Project Rationale	This is an annual upgrading and replacement program of computers, photocopiers, network, monitoring and associated equipment, as required. This item has been increased from $160,000 to $170,000 annually to reflect actual costs. Capital Budget Network Switch Maintenance $10,000 Additional Wireless Access Points and Maintenance $15,000 Photocopier Replacement $20,000 Additional Data Storage $15,000 Replacement Computers $75,000 Equipment Maintenance (contingency) $23,000 Replace Access Control System - Gates/ Video Cameras $12,000 Total Capital $170,000				

Project Number	17-05	**Capital Project Title**	Development of the Maintenance Management Systems	**Capital Project Description**	Develop maintenance management system.
Project Rationale	The maintenance management system needs further development to meet user needs and to facilitate reporting. It is proposed that funds be approved for the following projects:- Develop and Asset onboarding process and a fault code reporting process for the CMMS.				

Service:	2.670/2.680	Regional Water Supply & JDF Water Distribution Combo

Project Number	17-06	**Capital Project Title**	Small Equipment & Tool Replacement (Water Operations)	**Capital Project Description**	Replacement of tools and small equipment for Water Operations as required.
Project Rationale	Funds will be used for replacement of a variety of Operations and Welding equipment such as cutting saws, portable generators, gas detectors, Hilti drills,plasma cutter, wire welder, etc.				

Project Number	17-07	**Capital Project Title**	Small Equipment & Tool Replacement (Corporate Fleet)	**Capital Project Description**	Replacement of tools and small equipment for Fleet as required.
Project Rationale	Funds will be used for replacement of a variety of Fleet small equipment and tools as required. This includes provision to replace the Vehicle OBD reader for reading engine codes and the shop air compressor.				

Project Number	24-01	**Capital Project Title**	IT Core Infrastructure Replacement	**Capital Project Description**	Replacement of Core IT infrastructure such as servers, network switches, UPS, etc for equipment end of life
Project Rationale	Ongoing end of life replacement program for IT Core Infrastructure, including servers, network switches, UPS', and other equipment.				

Project Number	24-02	**Capital Project Title**	Capital Projects Delivery Optimization	**Capital Project Description**	Ongoing internal improvement of templates, tools and processes used in the delivery of capital projects.
Project Rationale	Ongoing program for small scale optimization of project delivery methods and tools.				

2.670 Regional Water Supply
Asset/ Reserve Schedule
2025 - 2029 Financial Plan

Asset Profile

Regional Water Supply

System assets include the lands, dams and source water reservoirs within the water supply areas, intake and source conduits, two water treatment plants, pressure regulating facilities, nine supply mains, three balancing reservoirs and revenue water meters in the water transmission system.

Equipment Replacement Reserve Schedule

Reserve Fund: 2.670 Regional Water Supply Equipment Replacement Reserve (covered by CRD-ERF Bylaw)

Fund: 1022 Fund Center: 101454	**Estimated**	**Budget**				
	2024	**2025**	**2026**	**2027**	**2028**	**2029**
Beginning Balance	2,647,394	2,572,649	1,980,378	1,912,420	1,786,544	1,978,686
Equipment purchases (Based on Capital Plan)	(670,000)	(1,376,250)	(773,000)	(855,000)	(495,000)	(355,000)
Transfer	-					
Transfer from Operating Budget	479,755	577,541	589,092	600,874	612,892	625,149
Proceeds on disposals	100,500	206,438	115,950	128,250	74,250	53,250
Interest Income*	15,000					
Ending Balance $	**2,572,649**	**1,980,378**	**1,912,420**	**1,786,544**	**1,978,686**	**2,302,085**

General Comments:
Reserve Fund is used for the purpose of replacing fleet vehicles including heavy equipment and associated mobile components, as outlined in the capital plan. Proceeds from disposals are estimated at 15% of replacement equipment purchases. Note not all vehicles are sold within the year in which they are replaced.

* Interest should be included in determining the estimated ending balance for the current year. Interest in planning years nets against inflation which is not included.

Appendix B – Summary of Regional Water Supply Dams

	Name	Consequence Classification Rating *(see Appendix E)*	Year Constructed - Original / Upgraded	Dam Crest Width	Dam Crest Length	Dam Crest Elevation / Height	Maximum Useable Water Storage (ML)
1	Sooke Lake Dam	Extreme	1970 / 2002	7.3m to 10m	533m (includes 63m spillway)	El. 190.75m / 24.75m	92,700
2	Saddle Dam	Very High	1970 / 2002	5m to 14m	1080m	El. 190.75m / varies up to 16m	n/a
3	Deception Gulch Dam	Very High	1979 / 1981 / 2002	7m	460m	El. 190.75m / 24m	4,050
4	Japan Gulch Dam	High	1900 / 1995	6.1m	97.5m	El. 134.6m / 12.5m	80
5	Charters River Dam	High	1976 / n/a	0.91m	30.48m (includes spillway)	El. 83.23m / 16.76m	19
6	Goldstream Lake Dam	Very High	1892 / 1995	NA	302m	El. 459.96m / 12.0m	3,550
7	Lubbe Lake Dam 1	High	1900 / 1995	NA	44m	El. 482.34m / 12.2m	3,000
8	Lubbe Lake Dam 2	Significant	1900 / n/a	4m	15.2m	El. 481.1m / 3.0m	3,000
9	Lubbe Lake Dam 3	Significant	1900 / n/a	4m	15.2m	El. 481.1m / 3.0m	3,000
10	Lubbe Lake Dam 4	Significant	1900 / 2019	5m	30m	El. 481.1m / 5.8m	3,000
11	Butchart Lake Dam 1	High	1900 / 1995	5m	60m	El. 546.6m / 11m	3,250
12	Butchart Lake Dam 2	High	1900 / 1995	NA	40.2m	El. 546.6m / 14.6m	3,250
13	Butchart Lake Dam 3	Low	1900 / n/a	NA	17.4m	El. 545.1m / 1.8m	3,250
14	Butchart Lake Dam 4	Significant	1900 / n/a	NA	48.5m	El. 545.2m / 7.3m	3,250
15	Butchart Lake Dam 5	Significant	1900 / 1995	NA	157m	El. 545.4m / 7.3m	3,250

APPENDIX C

REGIONAL WATER SUPPLY COMMISSION
Agricultural Water Rate Funding Comparisons 2011 - 2023

		No. of AR Accounts	No. of AG Accounts	AR Volume m3	AG Volume m3	Avg AR Volume m3 (Vol/Accts)	Avg AG Volume m3	Agri Rate Consumption Costs	Agri Fixed Charge Costs	Total Agri Subsidy Paid out (Cons + Fixed)	Avg Agri Cost $ (Paid/Accts)	%age of Total Paid out	Rate Differential: Municipal Rate m3	Rate Differential: Agri Rate m3	Rate Differential: Muni-CRD Diff m3
Western Communities & Sooke *													A	B	A - B
	2023	86	16	46,589	62,912	542	3,932	$ 255,805	$ -	$ 255,805	$ 2,508	11.6%	$ 2.5466	$ 0.2105	$ 2.3361
	2022	85	17	45,564	37,292	536	2,194	$ 181,612	$ -	$ 181,612	$ 1,781	10.6%	$ 2.4024	$ 0.2105	$ 2.1919
	2021	84	16	53,773	63,222	640	3,951	$ 245,409	$ -	$ 245,409	$ 2,454	12.3%	$ 2.3081	$ 0.2105	$ 2.0976
	2020	84	15	42,432	51,118	505	3,408	$ 187,605	$ -	$ 187,605	$ 1,895	11.9%	$ 2.2159	$ 0.2105	$ 2.0054
	2019	86	14	36,598	50,277	426	3,591	$ 165,297	$ -	$ 165,297	$ 1,653	11.1%	$ 2.1132	$ 0.2105	$ 1.9027
	2018	95	18	40,657	19,669	428	1,093	$ 112,411	$ -	$ 112,411	$ 995	7.9%	$ 2.0739	$ 0.2105	$ 1.8634
	2017	81	11	33,458	11,628	413	1,057	$ 76,754	$ -	$ 76,754	$ 834	5.6%	$ 1.9129	$ 0.2105	$ 1.7024
	2016	80	11	41,248	8,652	516	787	$ 84,950	$ -	$ 84,950	$ 934	5.9%	$ 1.9129	$ 0.2105	$ 1.7024
	2015	79	11	33,537	7,078	425	643	$ 64,968	$ -	$ 64,968	$ 722	5.1%	$ 1.8101	$ 0.2105	$ 1.5996
	2014	79	11	29,419	9,074	372	825	$ 60,769	$ -	$ 60,769	$ 675	5.6%	$ 1.7892	$ 0.2105	$ 1.5787
	2013	80	11	25,532	5,578	319	507	$ 46,438	$ -	$ 46,438	$ 510	4.7%	$ 1.7032	$ 0.2105	$ 1.4927
	2012	79	13	23,617	5,932	299	456	$ 40,828	$ -	$ 40,828	$ 444	4.3%	$ 1.5922	$ 0.2105	$ 1.3817
	2011	75	11	27,910	4,893	372	445	$ 43,641	$ -	$ 43,641	$ 507	5.2%	$ 1.5409	$ 0.2126	$ 1.3283
Central Saanich															
	2023	266	48	539,888	283,819	2,030	5,913	$ 1,269,148	$ 6,674	$ 1,275,822	$ 4,063	57.8%	$ 1.9240	$ 0.2105	$ 1.7135
	2022	277	50	398,069	279,385	1,437	5,588	$ 1,005,694	$ 7,050	$ 1,012,744	$ 3,097	59.3%	$ 1.8600	$ 0.2105	$ 1.6495
	2021	277	50	466,809	307,970	1,685	6,159	$ 1,150,198	$ 7,050	$ 1,157,248	$ 3,539	57.9%	$ 1.8600	$ 0.2105	$ 1.6495
	2020	278	49	375,646	233,214	1,351	4,759	$ 873,579	$ 6,768	$ 880,347	$ 2,692	56.0%	$ 1.8047	$ 0.2105	$ 1.5942
	2019	276	47	421,804	210,499	1,528	4,479	$ 862,430	$ 2,162	$ 864,592	$ 2,677	58.0%	$ 1.7260	$ 0.2105	$ 1.5155
	2018	278	49	378,593	297,433	1,362	6,070	$ 866,699	$ 7,003	$ 873,702	$ 2,672	61.3%	$ 1.6350	$ 0.2105	$ 1.4245
	2017	296	49	398,087	298,522	1,345	6,092	$ 792,125	$ 7,003	$ 799,128	$ 2,316	58.7%	$ 1.5575	$ 0.2105	$ 1.3470
	2016	297	51	446,241	303,419	1,502	5,949	$ 879,396	$ 7,191	$ 886,587	$ 2,548	61.1%	$ 1.5139	$ 0.2105	$ 1.3034
	2015	294	51	412,060	246,292	1,402	4,829	$ 739,282	$ 7,144	$ 746,426	$ 2,164	58.4%	$ 1.4582	$ 0.2105	$ 1.2477
	2014	294	49	361,801	190,895	1,231	3,896	$ 596,515	$ 6,808	$ 603,323	$ 1,759	55.7%	$ 1.4033	$ 0.2105	$ 1.1928
	2013	296	45	321,518	194,848	1,086	4,330	$ 542,837	$ 4,186	$ 547,023	$ 1,604	55.7%	$ 1.3799	$ 0.2105	$ 1.0525
	2012	280	41	325,663	210,906	1,163	5,144	$ 518,454	$ 5,658	$ 524,112	$ 1,633	55.6%	$ 1.2841	$ 0.2105	$ 0.9662
	2011	210	38	312,702	169,206	1,489	4,453	$ 462,183	$ 5,244	$ 467,427	$ 1,885	56.1%	$ 1.2867	$ 0.2126	$ 0.9667
North Saanich **															
	2023	103	20	56,716	119,706	551	5,985	$ 281,923	$ -	$ 281,923	$ 2,292	12.8%	$ 1.8085	$ 0.2105	$ 1.5980
	2022	107	19	52,167	107,838	488	5,676	$ 235,367	$ -	$ 235,367	$ 1,868	13.8%	$ 1.6815	$ 0.2105	$ 1.4710
	2021	105	18	62,904	126,579	599	7,032	$ 265,276	$ -	$ 265,276	$ 2,157	13.3%	$ 1.6105	$ 0.2105	$ 1.4000
	2020	102	16	57,433	108,453	563	6,778	$ 223,532	$ -	$ 223,532	$ 1,894	14.2%	$ 1.5580	$ 0.2105	$ 1.3475
	2019	94	15	58,278	95,030	620	6,335	$ 201,370	$ -	$ 201,370	$ 1,847	13.5%	$ 1.5240	$ 0.2105	$ 1.3135
	2018	100	16	97,574	70,726	976	4,420	$ 220,982	$ -	$ 220,982	$ 1,905	15.5%	$ 1.5240	$ 0.2105	$ 1.3135
	2017	100	13	151,773	53,551	1,518	4,119	$ 245,456	$ -	$ 245,456	$ 2,172	18.0%	$ 1.4643	$ 0.2105	$ 1.2538
	2016	100	12	148,450	36,774	1,485	3,065	$ 230,697	$ -	$ 230,697	$ 2,060	15.9%	$ 1.4560	$ 0.2105	$ 1.2455
	2015	106	14	151,656	38,066	1,431	2,719	$ 230,948	$ -	$ 230,948	$ 1,925	18.1%	$ 1.4278	$ 0.2105	$ 1.2173
	2014	98	14	133,853	30,372	1,366	2,169	$ 194,919	$ -	$ 194,919	$ 1,740	18.0%	$ 1.3974	$ 0.2105	$ 1.1869
	2013	102	13	141,845	30,647	1,391	2,357	$ 200,004	$ -	$ 200,004	$ 1,739	20.4%	$ 1.3700	$ 0.2105	$ 1.1595
	2012	99	13	117,497	45,227	1,187	3,479	$ 188,679	$ -	$ 188,679	$ 1,685	20.0%	$ 1.3700	$ 0.2105	$ 1.1595
	2011	101	13	106,393	34,921	1,053	2,686	$ 163,558	$ -	$ 163,558	$ 1,435	19.6%	$ 1.3700	$ 0.2126	$ 1.1574
Saanich															
	2023	76	54	47,961	168,198	631	3,115	$ 382,061	$ 10,230	$ 392,291	$ 3,018	17.8%	$ 1.9780	$ 0.2105	$ 1.7675
	2022	66	56	36,146	129,467	548	2,312	$ 267,879	$ 11,330	$ 279,209	$ 2,289	16.3%	$ 1.8280	$ 0.2105	$ 1.6175
	2021	74	55	49,933	158,309	675	2,878	$ 318,923	$ 11,050	$ 329,973	$ 2,558	16.5%	$ 1.7420	$ 0.2105	$ 1.5315
	2020	68	53	40,416	144,443	594	2,725	$ 268,877	$ 10,867	$ 279,745	$ 2,312	17.8%	$ 1.6650	$ 0.2105	$ 1.4545
	2019	68	51	37,086	140,512	545	2,755	$ 249,436	$ 10,278	$ 259,714	$ 2,182	17.4%	$ 1.6150	$ 0.2105	$ 1.4045
	2018	70	49	37,503	111,896	536	2,284	$ 208,786	$ 9,996	$ 218,782	$ 1,839	15.3%	$ 1.5910	$ 0.2105	$ 1.3805
	2017	80	50	38,201	132,092	478	2,642	$ 229,604	$ 9,719	$ 239,324	$ 1,841	17.6%	$ 1.5600	$ 0.2105	$ 1.3495
	2016	71	53	36,409	139,764	513	2,637	$ 237,745	$ 10,056	$ 247,802	$ 1,998	17.1%	$ 1.5600	$ 0.2105	$ 1.3495
	2015	75	51	74,841	129,225	998	2,534	$ 226,276	$ 9,727	$ 236,003	$ 1,873	18.5%	$ 1.5420	$ 0.2105	$ 1.3315
	2014	72	53	46,230	177,633	642	3,352	$ 213,981	$ 9,883	$ 223,863	$ 1,791	20.7%	$ 1.4560	$ 0.2105	$ 1.2455
	2013	65	50	35,745	122,456	550	2,449	$ 179,004	$ 9,655	$ 188,659	$ 1,641	19.2%	$ 1.3420	$ 0.2105	$ 1.1315
	2012	68	47	38,212	138,455	562	2,946	$ 180,466	$ 9,235	$ 189,701	$ 1,650	20.1%	$ 1.2320	$ 0.2105	$ 1.0215
	2011	71	46	101,235	121,896	1,426	2,650	$ 149,584	$ 9,118	$ 158,703	$ 1,356	19.0%	$ 1.1530	$ 0.2126	$ 0.9404
Totals															
	2023	531	138	691,154	634,635	1,302	4,599	$ 2,188,937	$ 16,904	$ 2,205,842	$ 3,297	99%			
	2022	535	142	531,946	553,982	994	3,901	$ 1,690,553	$ 18,380	$ 1,708,933	$ 2,524	99%			
	2021	540	139	633,419	656,080	1,173	4,720	$ 1,979,806	$ 18,100	$ 1,997,906	$ 2,942	99%			
	2020	532	133	515,927	537,228	970	4,039	$ 1,553,594	$ 17,635	$ 1,571,229	$ 2,363	99%			
	2019	524	127	553,766	496,318	1,057	3,908	$ 1,478,533	$ 12,440	$ 1,490,973	$ 2,290	100%			
	2018	543	132	554,327	499,724	1,021	3,786	$ 1,408,879	$ 16,999	$ 1,425,878	$ 2,112	100%			
	2017	557	123	621,519	495,793	1,116	4,031	$ 1,343,940	$ 16,722	$ 1,360,663	$ 2,001	100%			
	2016	548	127	672,348	488,609	1,227	3,847	$ 1,432,788	$ 17,247	$ 1,450,036	$ 2,148	100%			
	2015	554	127	672,094	420,661	1,213	3,312	$ 1,261,474	$ 16,871	$ 1,278,344	$ 1,877	100%			
	2014	543	127	571,304	407,973	1,052	3,212	$ 1,066,184	$ 16,691	$ 1,082,874	$ 1,616	100%			
	2013	543	119	524,640	353,529	966	2,971	$ 968,283	$ 13,841	$ 982,124	$ 1,484	100%			
	2012	526	114	504,989	400,520	960	3,513	$ 928,426	$ 14,893	$ 943,320	$ 1,474	100%			
	2011	457	108	548,240	330,916	1,200	3,064	$ 818,967	$ 14,362	$ 833,329	$ 1,475	100%			

* **Western Communities do not charge a fixed charge**

** **North Saanich charges the fixed charge on property taxes**

*** **AR - Agriculture/Residential customers receive a rebate on consumption over 455 cubic meters annual as the meter feeds both premise and land.**
AG - Agriculture customers receive a rebate on the entire consumption annually as the meter is dedicated only for land.

APPENDIX D


REGIONAL WATER SUPPLY SERVICE (GREATER VICTORIA) WHOLESALE WATER RATE PROJECTIONS
Wholesale rate historicals
Wholesale rate projection
$ PER CU M
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.6775
0.6968
0.7148
0.7332
0.7698
0.8094
0.8631
0.9441
1.0767
1.2039
1.3414
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029

Initiative Business Case (IBC) Summaries

2a-5.1 Seasonal Watershed Operator 2s

Over the past fifteen years, the capital region has experienced a steady increase in both the length and severity of wildfire seasons. This has necessitated extended periods of wildfire preparedness to maintain the expected levels of response capability. The recent Old Man Lake wildfire in the Sooke Hills was a reminder of the difficulty and resources required to suppress wildfires in our region. Investing in prevention and initial attack strategies remains cost-effective compared to the expenses and consequences of a large-scale wildfire in the water supply area. The initiative aims to sustain wildfire preparedness and vegetation management by adding two regular seasonal operators (each working nine-month terms annually) to the Watershed Protection division. These positions were previously covered by auxiliary hours, so the cost will be offset by reducing the auxiliary budget, resulting in a small funding increase to be covered through fee-for-service.

2a-8.2 Water Quality Sampling Technician

The CRD regularly monitors the Greater Victoria drinking water system to meet provincial regulatory requirements and uphold our commitment to providing high-quality and safe drinking water to the region. As the population grows, so does the demand for water, necessitating additional water sampling. The CRD Board approved an increase in staff hours for existing positions in 2024; however, changes to workplanning prevented implementation. This year, the initiative is being resubmitted to request an additional part-time (0.6 FTE) regular position to enhance capacity in the Environmental Protection division. A small funding adjustment is included, compared to the 2024 initiative, to be covered by fee-for-service.

2b-2.2 Capital Projects Resource

Capital projects for the Regional Water Supply system infrastructure are essential for mitigating various risks that can affect system efficiency and reliability. According to the 2022 Regional Water Supply Risk and Resilience Study, risks in the watershed include wildfire, extreme weather, flooding, contamination, and power failures. The number of planned projects in the watershed has increased from 13 in 2021 to 37 in 2024, amidst ongoing efforts to maintain operations. Capital projects encompass active forest management treatments, powerline risk mitigation, and security and restoration projects. This initiative seeks to create a new full-time position dedicated to advancing watershed capital projects. The role will report to the Corporate Capital Project Services division, a new unit to be established through the CRD Evolves 2024-2025 organizational reorganization plan. Funding for this initiative be covered through capital plans and fee-for-services.

2b-1.1 Dam Safety Program - Integrated Water Services (IWS)

IWS manages 23 water supply dams, 15 of which are directly related to the Regional Water Supply System. The remaining eight dams are located within three other water services: Magic Lake Estates on North Pender Island (4), Lyall Harbour/Boot Cove on Saturna Island (1), and Wilderness Mountain near East Sooke (3). IWS is responsible for the operation, maintenance, and surveillance of the dams, as well as regulatory compliance activities and resolving safety issues through capital and operational safety improvements. Dams are essential for storing water for delivery to customers, but they are inherently risky. The failure of a dam can result in catastrophic consequences, including loss of life, economic impacts (e.g., property damage), and environmental and social impacts.

The Dam Safety program within IWS has historically been led by the Infrastructure Engineering division, with support from various divisions in IWS and other parts of the organization. In accordance with regulatory requirements, staff conduct regular safety reviews and studies to

assess the state of the infrastructure and compare the CRD's dam management approaches against best management practices. This monitoring has highlighted that the number of safety issues has been trending up since 2017. To successfully manage dam-related risks moving forward, the department enacted a proactive strategy in 2024 with dedicated, experienced staff with a robust understanding of the complexities of dam safety projects.

This is the second year of implementation for initiative 2b-1.1. The initiative seeks to consolidate resources and create a dedicated Dam Safety division with operational and engineering staff to operate, maintain, and monitor dams in a 'safe condition,' prioritize and resolve known deficiencies, identify and manage new risks, adapt to changing climatic conditions, and ensure compliance with the Dam Safety Regulation and *Water Sustainability Act*. As a starting point, IWS created two new regular ongoing positions in 2024 in the Infrastructure Engineering and Water Infrastructure Operations divisions to start this process. An additional three new regular ongoing positions will be created in 2025 in the Infrastructure Engineering and Water Infrastructure Operations divisions to further bolster this new group. Additional resource requests are expected in 2026 as the function becomes established.

2b-2.3 Systems Maintenance Electronics Technologist and 2b-2.4 Systems Maintenance Electrician

Population growth in the region has increased demand, putting pressure on the water and wastewater systems. Preventative maintenance and new capital projects are crucial for ensuring reliable infrastructure, improving efficiency by reducing after-hours and emergency repairs, and optimizing equipment performance. These efforts also extend the lifespan of assets, decrease unplanned downtime, and build resilience to climate change impacts. Currently, the demand for preventative maintenance and project support exceeds the staffing in two critical areas of the Wastewater Infrastructure Operations division:

- The Systems Maintenance team: in 2023, the team had approximately 910 hours of unfinished preventative maintenance work and a backlog of 1,750 hours for capital project support, equivalent to more than a full-time employee's workload. To maintain critical systems for which we forecast an increased workload in 2024, this initiative seeks to create a new regular full-time electronics technician position. Funding for this initiative will come from requisition and fee-for-service, with operating reserves used for one-time equipment purchases.

- The Industrial Automation team: in 2023, the team was unable to complete approximately 3,400 hours of work, equivalent to almost two full-time employees' workload. This shortfall was partly due to difficulties in filling vacancies and partly due to insufficient staffing capacity. To address this issue, the initiative seeks to create a new regular full-time electrician position. Funding for this initiative will come from fee-for-service, with operating reserves used for one-time equipment purchases.

2a-8.3 Laboratory Assistant

The CRD regularly monitors the Greater Victoria drinking water system to meet provincial regulatory requirements and uphold our commitment to providing high-quality and safe drinking water to the region. As the population grows, the demand for water increases, requiring additional capacity in the CRD's accredited internal laboratory to handle expanded testing (see 2a-8.2 Water Quality Sampling Technician). This initiative seeks to create a new full-time position focused on non-analytical duties in the labs within the Environmental Protection division, which provides lab support to several services. This strategy provides more efficiency by freeing up senior lab staff to take on more analytical responsibilities. Funding for this initiative will come from requisition and fee-for-service.

Making a difference...together

EEP 24-56

REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, OCTOBER 16, 2024

SUBJECT **Water Quality Summary Report for Greater Victoria Drinking Water System – May to August 2024**

ISSUE SUMMARY

Staff provide regular updates on the monitoring results for water quality conditions observed in the Greater Victoria Drinking Water System in between annual reporting to the regulator.

BACKGROUND

The Capital Regional District (CRD) supplies drinking water to the water distribution systems across Greater Victoria via the Regional Water Supply System. As a requirement under the *BC Drinking Water Protection Act*, the CRD monitors and reports on water quality to ensure the region's drinking water supply is safe and potable. The results are presented on a regular basis directly to the Commission and Island Health, and to the general public through the CRD website.

All public drinking water systems in BC must comply with the *BC Drinking Water Protection Act* and the *BC Drinking Water Protection Regulation*. In addition, the CRD relies upon water quality parameters in the Guidelines for Canadian Drinking Water Quality and guidelines developed by the US Environmental Protection Agency to inform the CRD's water quality monitoring program.

Water quality monitoring is one of the cornerstones of the multi-barrier approach to providing safe potable drinking water to the region's residents. The monitoring program ensures proper integration of source water information, treatment processes, distribution infrastructure and delivery of water to customers. The program also ensures that potential risks are effectively managed to ensure a safe drinking water supply.

Appendix A summarizes the monitoring results for raw water in Sooke Lake Reservoir, the treated water at the two water treatment plants, and for the treated water in various parts of the supply and distribution systems for the summer period from May to August 2024. In the past, quarterly update reports have been provided to the Commission. Starting in 2024, the water quality summary report interval increased to every four months.

IMPLICATIONS

Environmental Implications

The system is monitored for physical, chemical and biological water quality parameters. Monitoring results indicate that the CRD continues to meet guidelines for maintaining an unfiltered source water supply. Data from within the distribution systems also indicate a good balance between managing bacterial growth and ensuring good water quality with low concentrations of disinfection byproducts. Metal concentrations, including lead, are very low within the distribution systems, and physiochemical parameters indicate a low metal corrosion potential of the drinking water.

For the second time since 2017, the Greater Victoria Drinking Water System experienced an episode with high total coliform concentrations in the raw water coming from Sooke Lake

Reservoir. This event in late July to early August prompted the Goldstream Water Treatment Plant (WTP) to increase the UV and chlorination dosage to the maximum settings. Treated water quality requirements were maintained and the risk to the public was low.

Based on the experiences from an almost identical event in 2017, it is assumed that a wind-induced internal seiche in Sooke Lake was the cause of this event. Further investigations are ongoing. Goldstream WTP is an unfiltered facility making it susceptible to these events.

Intergovernmental Implications

The CRD provides compliance monitoring and reporting of the municipal systems, in addition to its regional commitments, to deliver effective and efficient oversight of water quality within the overall water system. Any issues that may arise within the municipal system remain the responsibility of the municipalities.

Social Implications

The full disclosure of water quality monitoring data maintains public confidence in the CRD to effectively manage the regional drinking water supply. The data and reports are available online through the CRD public website. Staff respond to direct customer concerns and questions, and work with CRD operational staff, municipal staff, small system operators and Island Health officials to ensure good communication and support for the overall system.

CONCLUSION

The water quality monitoring program remains an essential component in the delivery of a safe and abundant drinking water supply to the region. Monitoring results for summer 2024 indicate generally good water quality in the source water and treated drinking water except for the effects and implications during the total coliform event in Sooke Lake. Other than the total coliform bacteria concentrations during the two-week event, all critical parameters indicate stable conditions. Staff are providing this report to share the latest water quality monitoring results with the Commission.

RECOMMENDATION

There is no recommendation. This report is for information only.

Submitted by:	Glenn Harris, Ph.D., R.P.Bio., Senior Manager, Environmental Protection
Concurrence:	Russ Smith, Acting General Manager, Parks, Recreation & Environmental Services
Concurrence:	Alicia Fraser, P. Eng., General Manager, Integrated Water Services
Concurrence:	Ted Robbins, B. Sc., C. Tech., Chief Administrative Officer

ATTACHMENT

Appendix A: Water Quality Summary Report for the Greater Victoria Drinking Water System – May to August 2024

WATER QUALITY SUMMARY REPORT
FOR THE GREATER VICTORIA DRINKING WATER SYSTEM
MAY TO AUGUST 2024

October 2024

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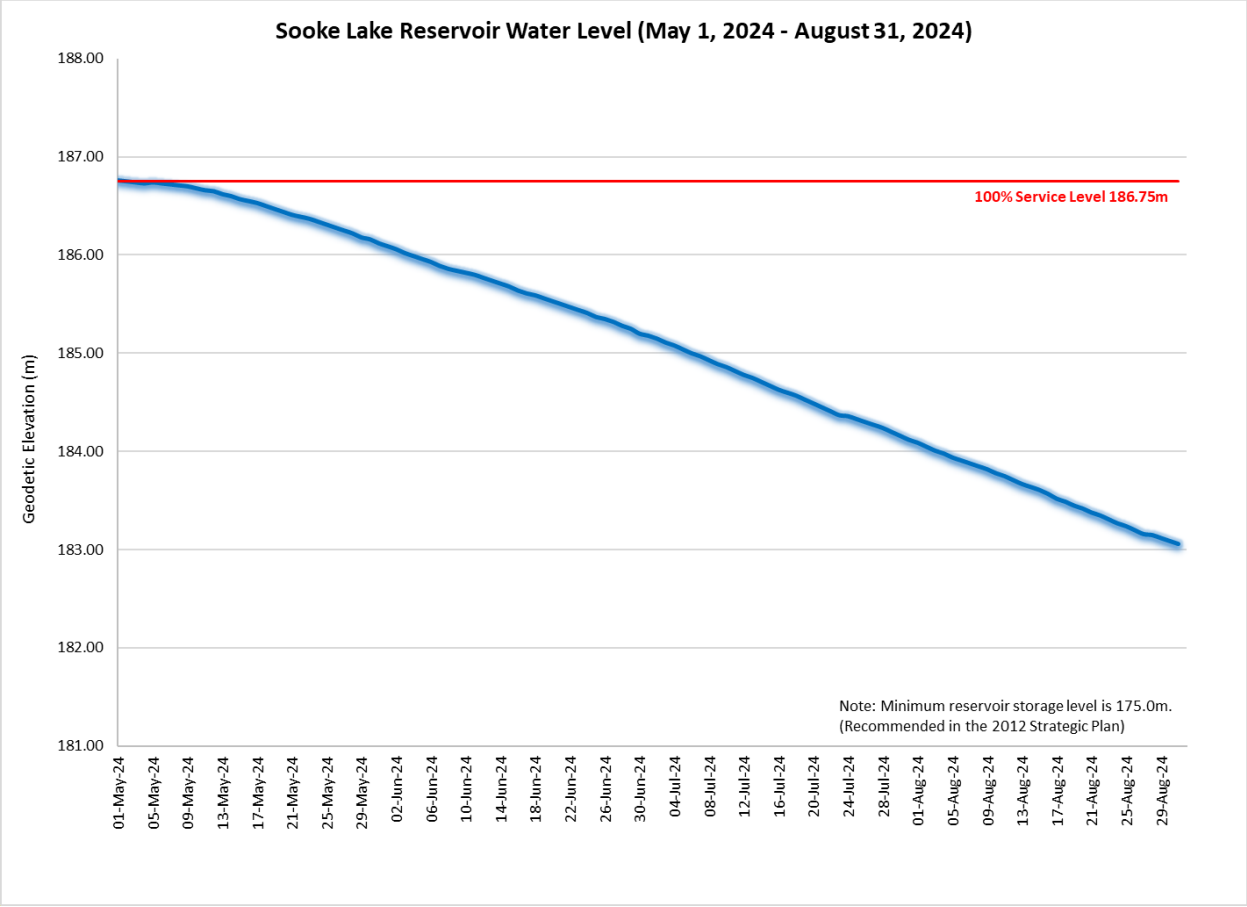
1. SOURCE WATER – SOOKE LAKE RESERVOIR

(a) Physical Parameters

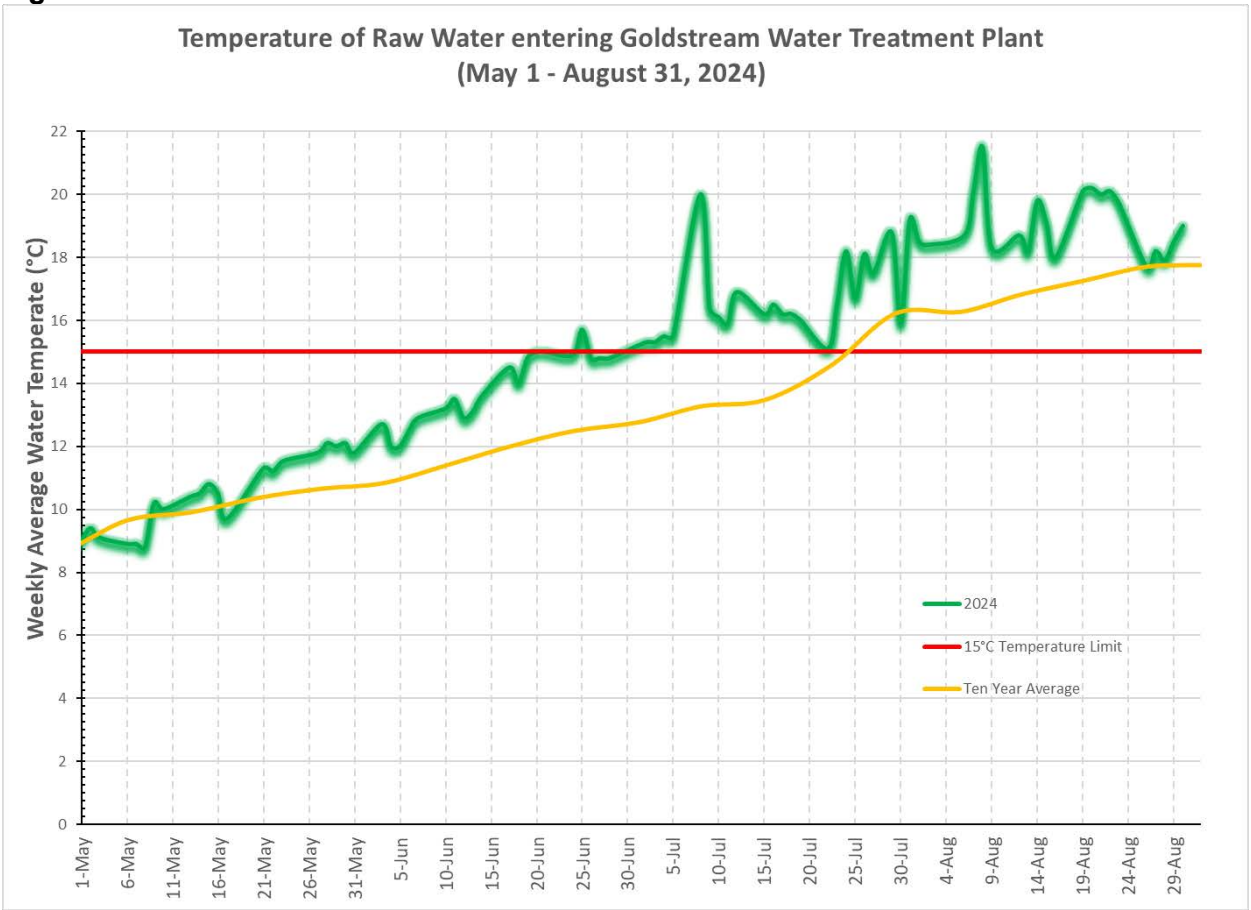
Water Levels. Sooke Lake Reservoir remained at 100% capacity until May 2, 2024 (see Figure 1). After May 2, reservoir levels continuously fell until the end of the reporting period. Significant precipitation in the middle of August did not generate any runoff into the reservoir and had therefore no impact on the declining level trend. On August 31, the reservoir had 72% of its full storage capacity. This is within the historical average range since the raising of the dam in 2004.

Figure 1



Water Temperature. The raw water temperature measured at the Goldstream Water Treatment Plant tracked above the long-term average trend for most of the reporting period (see Figure 2). The first part of August saw the highest water temperature of the year with >20°C, which has been a common short-term occurrence over the last few years.

Figure 2



Turbidity. Turbidity in the lake near the intake tower remained well below the 1.0 Nephelometric Turbidity Unit (NTU) limit and was very consistent for the entire reporting period (Table 1). There were no major algal events with significant impact on the raw water turbidity. Also, spring rainfall and runoff events did not affect the turbidity. This demonstrates the robustness of the Sooke Lake Reservoir in terms of turbidity impacts. The low turbidity of the raw water allows the ultraviolet disinfection stage to remain effective at inactivating parasites and bacteria.

Table 1

Sooke Reservoir, South Basin (1m) - SOL-00-01					
	Samples Collected	**Unit of Measure**	**Minimum**	**Maximum**	**Mean**
Turbidity	8	NTU	0.20	0.35	0.27

Water Transparency. The transparency of the lake water measured with the Secci Disc in the lake was high (between 6 and 9 m) and consistent with the long-term average. Higher algal abundance during parts of the reporting period accounted for the slightly lower transparency around 6-7 m, but with no measurable impact on the treatability of the water. The average Secci Disc depth during this reporting period was around 7.7 m.

Dissolved Oxygen. New lake profiler sensor technology allowed staff to generate detailed dissolved oxygen depth profiles in three parts of Sooke Lake. The data shows that Sooke Lake remained well oxygenated throughout the summer in all depths. Even the deep part of the North Basin exhibited dissolved oxygen concentration greater than 7 mg/L throughout the summer. The lowest dissolved oxygen concentrations were measured in the upper water column of the North Basin in August at 6.6-7.0 mg/L. This state prevents internal nutrient loading or metal releases in anoxic zones and is another indicator of the oligotrophic status of Sooke Lake.

(b) Bacteria

Total Coliform Bacteria and E. coli. The total coliform concentrations in the raw source water entering the Goldstream Water Treatment Plant were low from May until the middle of July (see Figure 3). Typically, the total coliform concentrations increase during the summer period from July to September when warm water temperatures increase bioactivity in the lake and the breakdown of the stratification in the South Basin causes a mixing effect. This typical summer increase in total coliform bacteria may reach concentrations of up to several hundred CFU/100 mL and is not cause for any concerns for the disinfection treatment process at both treatment plants. This summer the total coliform concentrations saw a first spike to nearly 6,000 CFU/100 mL in mid-July, which was followed up by a very unusually high spike of over 15,000 CFU/100 mL on July 25. In 2017 a similar severe total coliform event was recorded, and during both the 2017 and 2024 events, low concentrations of total coliform bacteria were found downstream of the Goldstream Water Treatment Plant. In both cases, the breakthrough seemed to be limited to short periods in the mornings of a few days with the highest total coliform concentrations in the source water. Also, the spread of any viable bacteria was limited to a narrow range just downstream of the treatment plant.

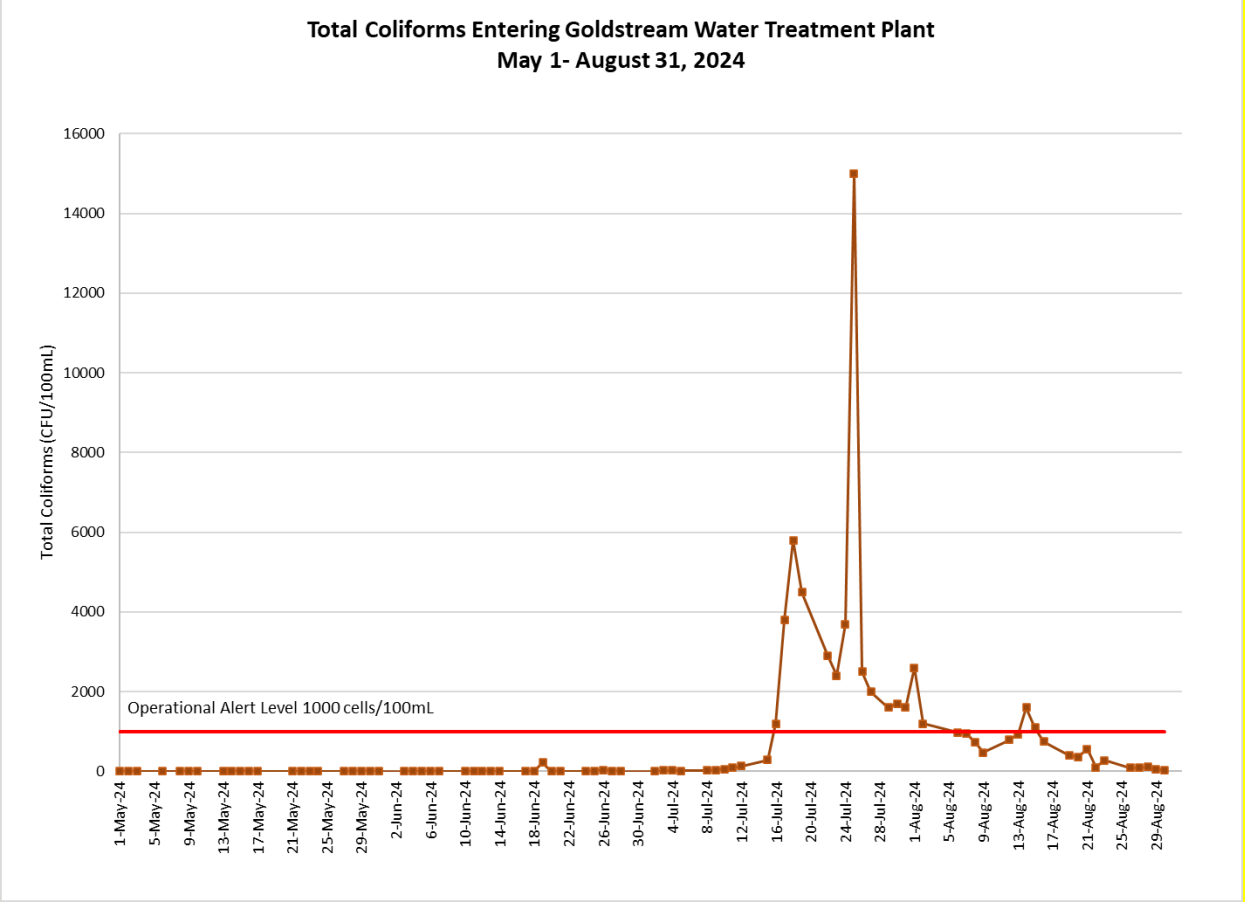
It appears that during peak water demand periods (typically 4-9 am) minor breakthroughs occurred. Sampling and testing confirmed that the bacteria breakthroughs were limited to low concentrations, only during morning hours and only within a short radius downstream of the Goldstream Water Treatment Plant. It is likely that these low concentrations of bacteria detected in the treated water at the two first customer sampling stations never reached any customer taps due to the continued disinfection through chlorine residuals in the treated water. No total coliform positive test result was recorded deeper into the system throughout this event. In 2017, a post-event investigation concluded that a strong internal seiche in Sooke Lake likely caused the sudden total coliform spike. Because of the exact timing and very similar appearance of this year's total coliform spike, it is assumed to have the same origin.

Since the group of total coliform bacteria includes a wide range of species, some pathogenic to humans and many not, CRD staff collected samples from Sooke Lake and the Goldstream Water Treatment Plant during the peak of the total coliform event. Genomic analyses in a University of Victoria microbiology laboratory confirmed conclusively that the particular bacteria species (*Enterobacter* sp. *Lelliottia nimipressuralis)* is a non-pathogenic lake dweller that is typically associated with consuming plants. That correlates well with the fact that the highest concentrations of these bacteria were found at the lake bottom near the water extraction site at the Intake Tower. It is assumed at this time that due to a wind-induced internal seiche event during a time when the thermocline was very near the lake bottom in the South Basin, the bacteria-rich benthic boundary layer was disturbed and high concentrations of naturally present decomposers of dead algae and other organic detritus got pushed into the water intake stream and also high in the water column as the stratification finally broke down and mixing occurred.

By the end of August, this event had subsided, and the total coliform concentrations were back to normal levels (see Figure 3).

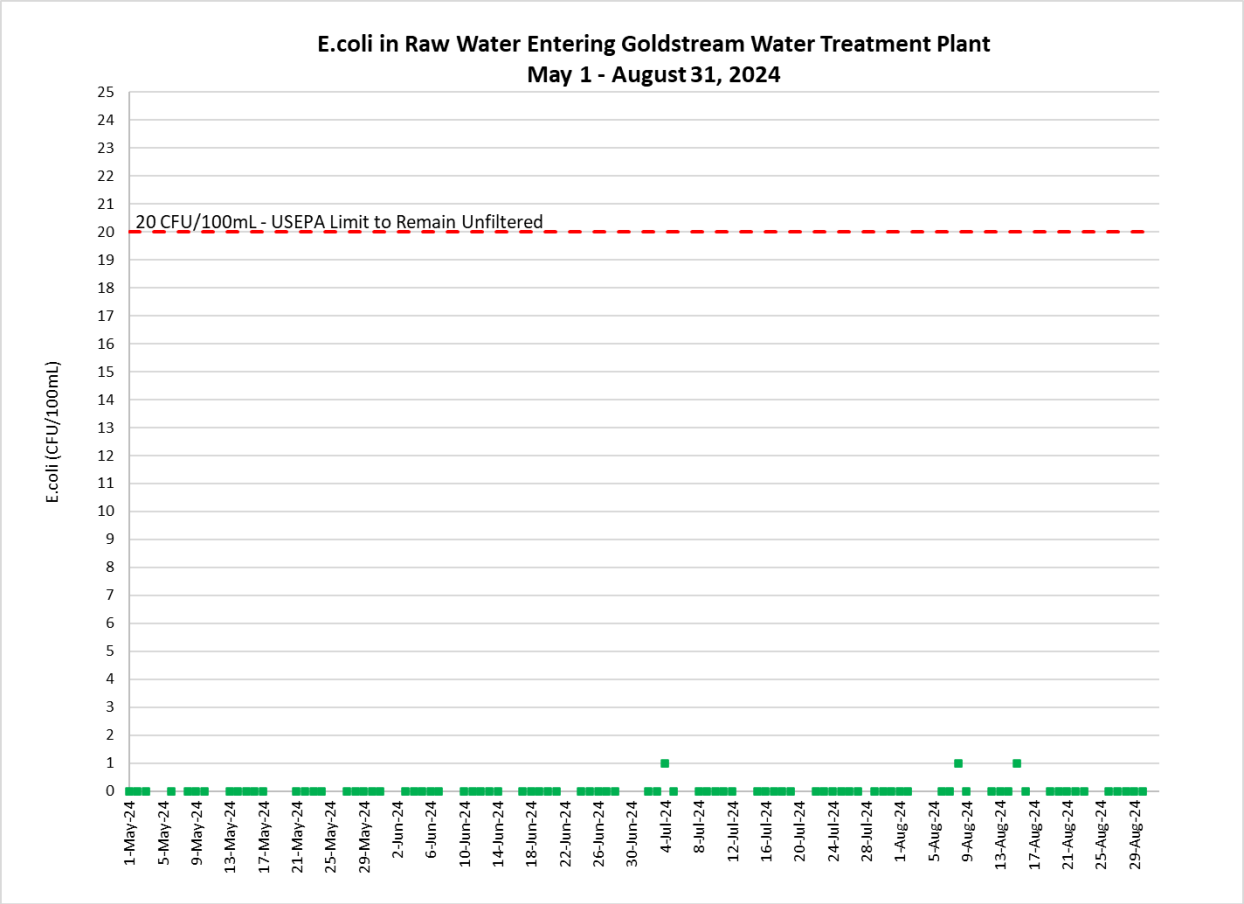
The United States Environmental Protection Agency (USEPA) Surface Water Treatment Rule for avoiding filtration has a non-critical total coliform criterion of maximum 100 CFU/100 mL at the 90th percentile of a six-month sample set. The 90th percentile of total coliform concentrations in the raw water between May and August 2024 was 1,850 CFU/100 mL and was therefore not compliant with this non-critical USEPA filtration exemption criterion.

Figure 3



E. coli concentrations during the reporting period, including during the total coliform event, were mostly non-detected or extremely low, and therefore, consistently well under the limit for meeting the critical USEPA filtration exemption criteria for surface water used for drinking water supply (Figure 4). Meeting this criterion means compliance with the USEPA Surface Water Treatment Rule for avoiding filtration. The E. coli concentrations were also well below the benchmark used in the *2020 BC Source Drinking Water Quality Guidelines* (90th percentile E. coli ≤10 CFU/100 mL). These results are typical for Sooke Lake Reservoir during the summer season and also demonstrate that the total coliform event in late July was not caused by a fecal contamination of the source water.

Figure 4



(c) Nutrients

In general, the nutrient concentrations during the reporting period confirmed the ultra-oligotrophic status of Sooke Lake Reservoir, which is indicative of very low productivity in an upland lake with a virtually undisturbed catchment. This lake status is demonstrated by very low overall nutrient concentrations with a high nitrogen/phosphorus ratio and dissolved organic nitrogen being the dominant constituent of the total nitrogen. In particular, total nitrogen concentrations have been very low this summer. These conditions allow only limited biological activity in the lake, thus ensuring a good quality source for unfiltered drinking water. Slight temporary upticks were recorded in the total phosphorus concentrations, particularly in the South Basin. Since there was no rain-induced runoff introducing new nutrients to the lake during this reporting period, these episodes of increased phosphorus are likely the result of nutrient recycling from decomposing algal or planktonic matter. These recycled nutrients are then quickly consumed by aquatic organisms. This natural cycle is an indication of a healthy and functioning food chain in the lake's ecosystem (Tables 2 and 3).

Table 2

Sooke Reservoir, South Basin (1m) - SOL-00-01					
	Samples Collected	Unit of Measure	Minimum	Maximum	Mean
Total Nitrogen	3	ug/L	84	109	96.7
Total Phosphorus	3	ug/L	<1	6.40	3.20

Table 3

Sooke Reservoir, North Basin (1m) - SOL-04-01					
	Samples Collected	Unit of Measure	Minimum	Maximum	Mean
Total Nitrogen	3	ug/L	87	143	114
Total Phosphorus	3	ug/L	1.40	2.30	1.80

(d) Protozoan Parasites

In two test sets during this reporting period on the raw water entering the Goldstream Water Treatment Plant, no *Cryptosporidium* oocysts and no *Giardia* cysts were found.

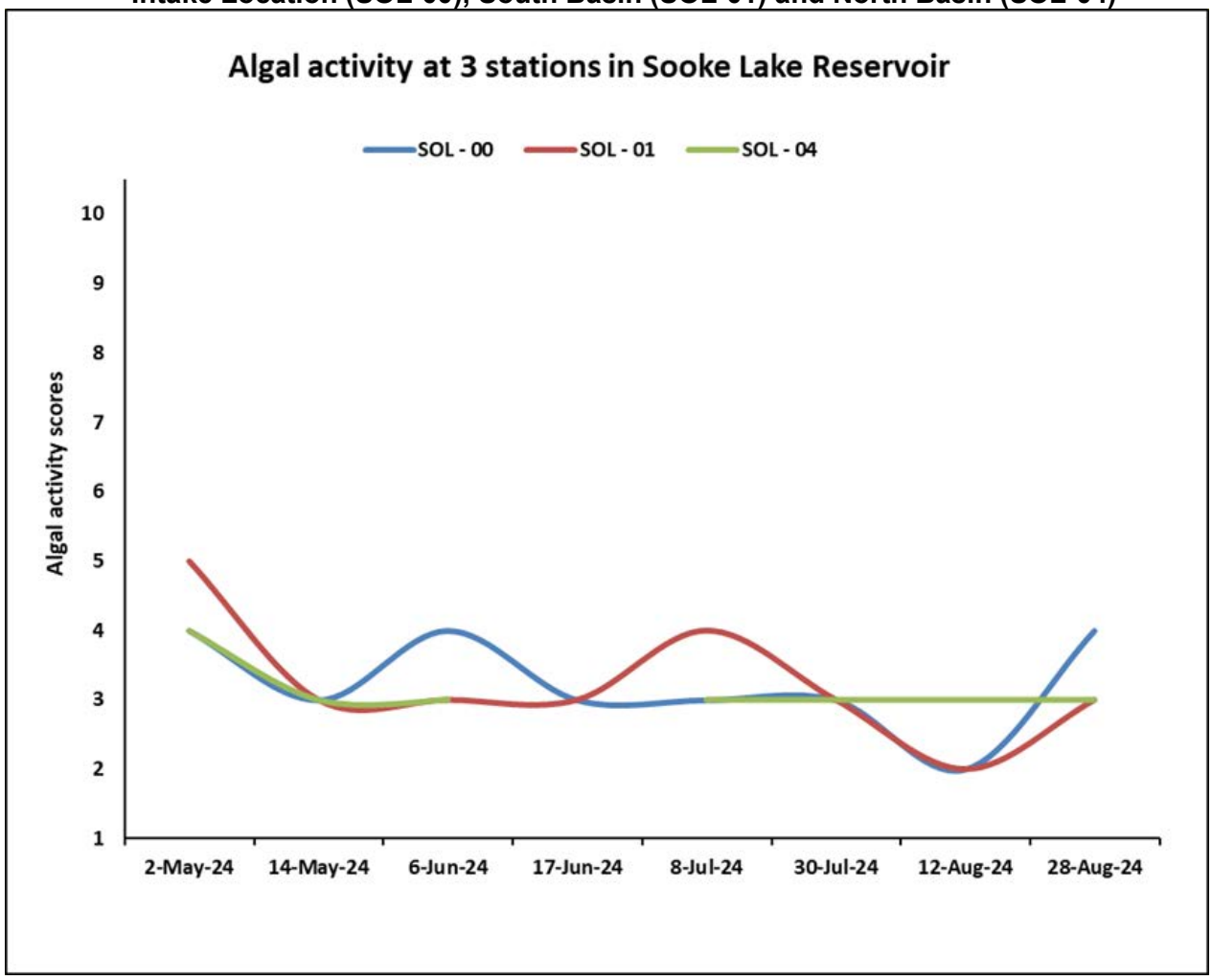
(e) Algae

To assess the algal activity and dynamics in Sooke Lake Reservoir, an algal activity index (AA Index) was applied, ranging from 1-10. This AA Index is derived from analyzing towed samples collected biweekly at three stations. This tow-sample methodology utilizes a 64-micron mesh-size net and aims to capture and quickly identify any algal taxa with immediate adverse potential. The AA Index fluctuated only very slightly and remained at a low average value of 3.2 from May to August and across the different parts of the reservoir (Figure 5). The algal composition during this period was dominated by common taxa such as the colonial diatom, *Asterionella formosa*, which normally contains eight cells per colony, or the colonial golden algae, e.g. *Dinobryon* spp., with each colony containing dozens of cells. Both species are common in Sooke Lake and can cause taste, odour and/or clogging issues when they are in bloom, but as demonstrated by the low AA Index during the reporting period, their population never reached a bloom level. The low nutrient concentrations did not allow for proliferated growth.

A potential cyanotoxin producer, i.e., *Dolichospermum* sp. also featured prominently in the algal composition during this summer period. This cyanobacterium can outcompete other algae under limited nutrient input and recycled-nutrient conditions in the middle of summer. But as with other species, lake conditions prevented any significant population growth so that cyanobacteria concentrations remain low, which impeded any potential toxin production.

In June, several customers (irrigators, Jubilee Hospital, customers with tap filters) reported filter clogging issues. Also, during that time, CRD water system operators had to frequently clean screens and strainers that protect certain infrastructure components. This clogging issue was mainly caused by the diatom of *Lindavia/Cyclotella bodanica*. The density of this diatom peaked in June, decreased significantly in early July and did not pose any further risks to the drinking water quality.

Figure 5: Algal Activity Index (AA Index) from May to August 2024, Sooke Lake Reservoir, Intake Location (SOL-00), South Basin (SOL-01) and North Basin (SOL-04)



2. WATER TREATMENT PLANTS

(a) Goldstream Water Treatment Plant

Turbidity. The raw water entering the Goldstream Water Treatment Plant was consistently well below 1 Nephelometric Turbidity Unit (NTU) during the reporting period (Table 4). On three consecutive Wednesday mornings (June 19, June 26 and July 3) the turbidity increased to peaks of up 3.3 NTU. These turbidity exceedances were a result of high watering demand and peak flows that mobilized pipe sediments in the mains just upstream of the treatment plant. These early summer turbidity excursions are known to staff and the regulator and are typically mitigated annually through springtime flushing of the responsible main sections. Since introducing this flushing procedure, the number and severity of these summer turbidity excursions had significantly decreased. 2023 was the first year that saw no turbidity excursions in exceedance of 1 NTU. Unfortunately, this springtime flushing procedure could not be fully completed in 2024 due to operational challenges.

Table 4

Goldstream Water Treatment Plant Turbidity - Raw Water	
Samples Collected	85
Minimum	0.20 NTU
Maximum	3.3 NTU
Mean	0.44 NTU

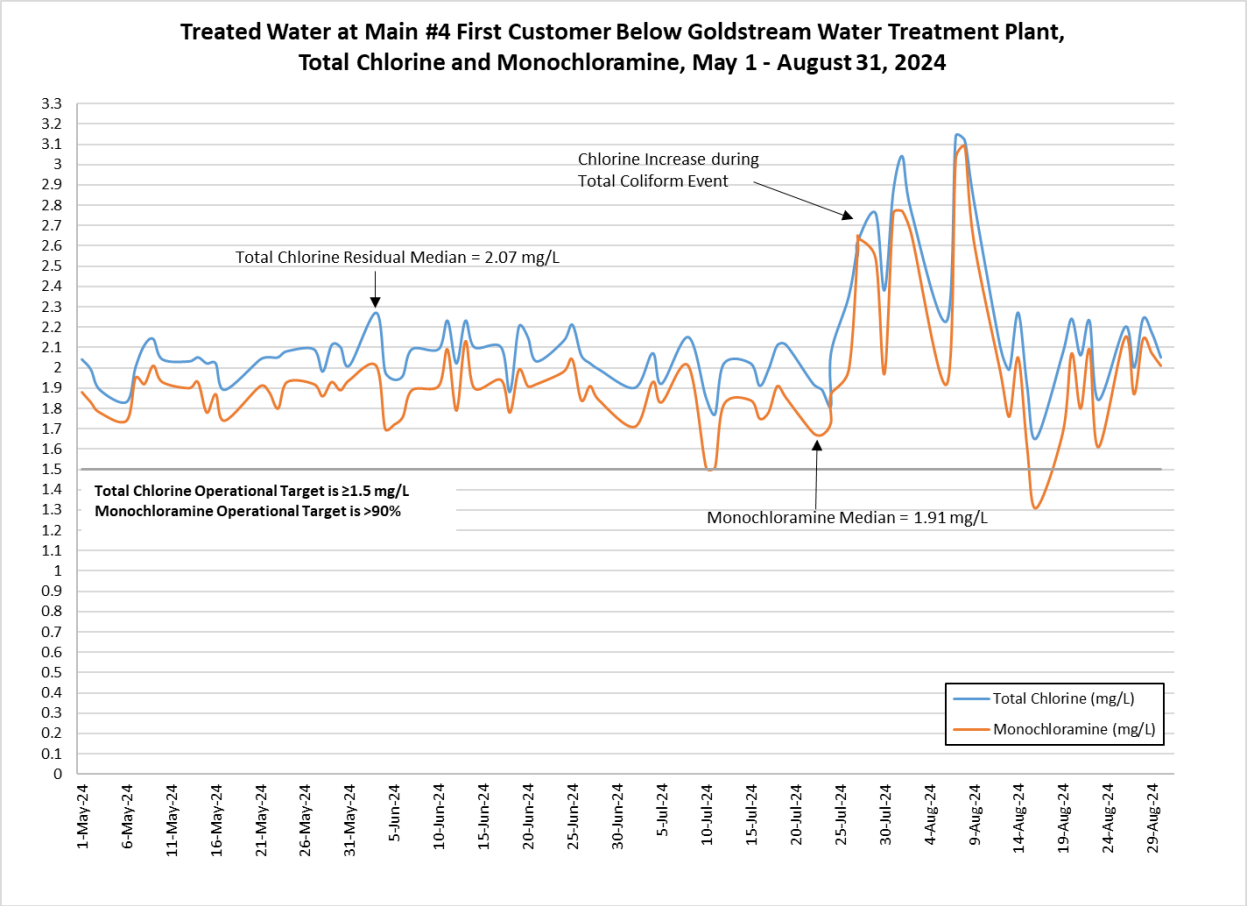
Main #4 First Customer Sampling Station Total Coliform Bacteria and E.coli. The Main #4 First Customer Sampling Station immediately downstream of the Goldstream Water Treatment Plant is sampled daily to monitor the efficacy of the disinfection treatment process. On seven days within this reporting period, a sample tested positive for total coliform bacteria (July 22, July 23, July 25, July 26, July 30, August 13 and August 14). The highest total coliform concentrations recorded were on July 30 with 330 CFU/100 mL. These total coliform positive results indicate a limited breakthrough at the Goldstream Water Treatment Plant in the wake of the total coliform event described in Section 1(b) above. Based on the nature of the bacteria species involved in this event and the narrow range of the affected area just below the treatment plant, the risk to public health was low throughout this event. The UV and chlorination dosage at the Goldstream Water Treatment Plant was increased to the maximum setting during this event until August 9, when total coliform concentrations in the raw water receded below the operational alert level of 1,000 CFU/100 mL for consecutive days. No E.coli bacteria were found in any sample collected from this site.

Main #5 First Customer Sampling Station Total Coliform Bacteria and E.coli. The Main #5 First Customer Sampling Station immediately downstream of the Goldstream Water Treatment Plant is also sampled daily to monitor the efficacy of the disinfection treatment process. On two days within this reporting period, a sample tested positive for total coliform bacteria (July 25 and August 6). The highest total coliform concentrations recorded were on July 25 with 2 CFU/100 mL. These total coliform positive results indicate a limited breakthrough at the Goldstream Water Treatment Plant in the wake of the total coliform event described in Section 1(b) above. Based on the nature of the bacteria species involved in this event and the narrow range of the affected area just below the treatment plant, the risk to public health was low throughout this event. The UV and chlorination dosage at the Goldstream Water Treatment Plant was increased to the maximum setting during this event until August 9, when total coliform concentrations in the raw water receded below the operational alert level of 1,000 CFU/100 mL for consecutive days. No E.coli bacteria were found in any sample collected from this site.

The results indicate a vulnerability of the primary disinfection process at the Goldstream Water Treatment Plant during periods with high bacteria load and high flows.

Secondary Disinfection. Figure 6 shows the total chlorine and monochloramine concentrations at the Main #4 First Customer Sampling Station. The target concentration of 1.5 mg/L for total chlorine was consistently achieved. The target ratio of 90% monochloramine was also consistently achieved. Adequate and effective secondary disinfection was provided across the entire system throughout the reporting period. During the total coliform event, the chlorine dosage was increased in two steps to 3 mg/L leaving the Goldstream Water Treatment Plant.

Figure 6



(b) Sooke River Road Water Treatment Plant

Turbidity. The raw water entering the Sooke River Road Water Treatment Plant was consistently well under 1 NTU (Table 5).

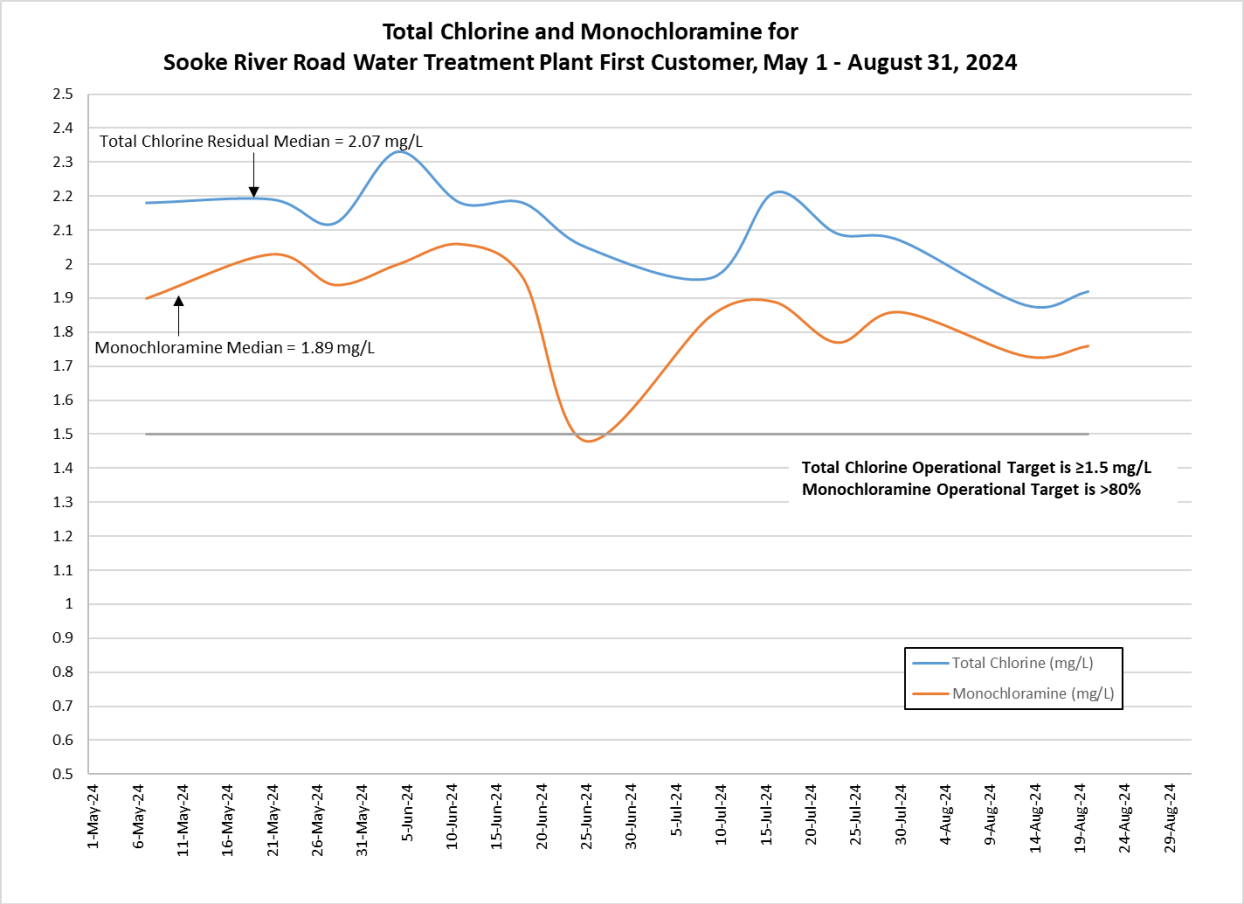
Table 5

Sooke River Road Water Treatment Plant Turbidity - Raw Water	
Samples Collected	13
Minimum	0.20 NTU
Maximum	0.35 NTU
Mean	0.28 NTU

Sooke First Customer Sampling Station Total Coliform Bacteria and E.coli. The Sooke First Customer Sampling Station, immediately downstream of the Sooke Water Treatment Plant, is sampled weekly to monitor the efficacy of the disinfection treatment process. No total coliform or *E.coli* bacteria were found in any sample collected from this site. The Sooke Water Treatment Plant disinfection process experienced no breakthrough during the total coliform event in late July and early August.

Secondary Disinfection. Figure 7 shows the total chlorine and monochloramine concentrations at the Sooke First Customer Sampling Station. The target concentration of 1.5 mg/L for total chlorine was consistently achieved during the reporting period. The target ratio of 80% monochloramine (older treatment plant, therefore not as precisely controllable) was consistently achieved except for a short period between June 20 and June 26 when the ammonia dosing was too low and had to be adjusted after the monochloramine drop was discovered. Adequate and effective secondary disinfection was provided across this much smaller distribution system.

Figure 7



3. DISTRIBUTION SYSTEMS

(a) Goldstream Service Area

Table 6

Goldstream Water Treatment Plant Service Area										
Month/Year	Samples Collected	Total Coliforms (CFU/mL)				E.coli (CFU/100mL)	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC > 0	Resamples TC > 0	Samples TC > 10	Samples > 0	Samples Collected	Adverse > 1 NTU	Median mg/L as CL2	Median °C
May-24	412	0	0	0	0	0	32	0	1.6	12.7
Jun-24	367	0	0	0	0	0	29	0	1.65	15.3
Jul-24	412	4	1	0	1	0	33	0	1.59	18
Aug-24	396	3	0.8	0	1	0	30	1	1.68	19.6
Total:	1587	7	0.4	0	2	0	124	1	1.63	16.7

Total Coliform Bacteria and E.coli. Seven out of the 1,587 bacteriological distribution system samples tested positive for total coliform bacteria during the entire reporting period (Table 6). Four of these positive results were associated with water infrastructure that has not been fully commissioned yet and is in a state where water becomes stale and warm and therefore subject to bacterial regrowth (McCallum Pump Station). Operational measures have been taken to flush and refresh water in these lines. July 16 and July 18 recorded total coliform hits at the Markham Metering Station. Investigations revealed a buildup of sediments in the sampling line. This was rectified and subsequent samples were free of total coliform bacteria. No sample tested positive for *E.coli* bacteria (Table 6).

Turbidity. One of the 124 turbidity samples registered higher than 1 NTU (Table 6), likely as a result of water main flushing activities in the spring. Overall, these results are an indication of good drinking water quality.

Total Chlorine Residual. A median total chlorine residual concentration of 1.63 mg/L across the system indicates an effective secondary disinfection protecting the potability of the treated drinking water as it flows throughout the system (Table 6).

Water Temperature. The temperature of the drinking water in the system during this reporting period was below the aesthetic objective in the *Canadian Drinking Water Quality Guidelines* (15º C) in May. From June to August, the water temperature was consistently above the guidelines.

Water Chemistry. The average pH of the drinking water in the Goldstream Service Area was 7.7 during the reporting period. The pH ranged from 7.0 to 8.4, which is typical when operating the hypochlorite chlorination equipment. The average alkalinity was 18.3 mg/L. Both pH and alkalinity have increased since the commissioning of the hypochlorite chlorination equipment.

Disinfection Byproducts. The three typically monitored disinfection byproducts in a drinking water system have all been well below the Health Canada established health limits in the Goldstream Service Area (Table 7).

Table 7

Disinfection Byproducts - Goldstream WTP Service Area						
Parameter	**Samples Collected**	**Unit of Measure**	**Minimum**	**Maximum**	**Mean**	**MAC (Maximum Acceptable Concentration)**
Haloacetic Acids (HAAs)	8	ug/L	<5	19.0	12.7	80
Trihalomethanes (THMs)	8	ug/L	17.0	23.0	19.8	100
NDMA	8	ng/L	<1.9	2.8	2.1	40

Metals. A comprehensive metals analysis was conducted every second month at four different locations in the Goldstream Service Area: (1) where treated water enters the Victoria/Esquimalt System, (2) the Oak Bay System, (3) one in Langford and (4) one in North Saanich. Out of the 32 tested metals, five are monitored particularly closely: iron, manganese, lead, aluminum and copper. All metal concentrations were below the respective Health Canada maximum acceptable concentration or the aesthetic objective (Table 8).

Table 8

Metals - Goldstream WTP Service Area								
Parameter	**Samples Collected**	**Unit of Measure**	**Minimum**	**Maximum**	**Mean**	**AO (Aestetic Objective)**	**OG (Operational Guideline)**	**MAC (Maximum Acceptable Concentration)**
Aluminum	8	ug/L	8.7	14.9	11.1		100	2900
Copper	8	ug/L	3.0	25.7	10.1	1000		2000
Iron	8	ug/L	9.7	28.7	19.8	300		
Lead	8	ug/L	<0.2	0.38	0.24			5
Manganese	8	ug/L	2.0	6.4	4.4	20		120

(b) Sooke Service Area

Table 9

Sooke River Road Water Treatment Plant Service Area										
Month/Year	**Samples Collected**	**Total Coliforms (CFU/mL)**				**E.coli (CFU/100mL)**	**Turbidity**		**Chlorine Residual**	**Water Temp.**
		Samples TC > 0	**Percent TC > 0**	**Resamples TC > 0**	**Samples TC > 10**	**Samples > 0**	**Samples Collected**	**Adverse > 1 NTU**	**Median mg/L as CL2**	**Median °C**
May-24	30	0	0	0	0	0	7	0	1.4	12.7
Jun-24	42	0	0	0	0	0	8	0	1.11	14.8
Jul-24	44	0	0	0	0	0	9	0	1.11	18.2
Aug-24	26	0	0	0	0	0	6	0	0.83	17.9
Total:	142	0	0.0	0	0	0	30	0	1.11	16.4

Total Coliform Bacteria and E.coli. No bacteriological sample from the Sooke Service Area tested positive for total coliform or E.coli bacteria during the entire reporting period (Table 9).

Turbidity. None of the 30 turbidity samples registered above 1 NTU (Table 9). This is an indication of good drinking water quality.

Total Chlorine Residual. A median total chlorine residual concentration of 1.11 mg/L across the system indicates an effective secondary disinfection protecting the potability of the treated drinking water as it flows throughout the system (Table 9).

Water Temperature. The temperature of the drinking water in the system during this reporting period was below the aesthetic objective in the *Canadian Drinking Water Quality Guidelines* (15º C) in May and June. During the following two months, the water temperature was consistently above the guidelines.

Water Chemistry. The average pH of the drinking water in the Sooke Service Area was 7.7 during the reporting period. The pH ranged from 7.3 to 8.1 and is typically very stable and consistent across this system. The average alkalinity was 17.7 mg/L.

Disinfection Byproducts. The three typically monitored disinfection byproducts in a drinking water system have all been well below the Health Canada established health limits in the Sooke Service Area (Table 10).

Table 10

Disinfection Byproducts - Sooke River Road WTP Service Area						
Parameter	**Samples Collected**	**Unit of Measure**	**Minimum**	**Maximum**	**Mean**	**MAC (Maximum Acceptable Concentration)**
Haloacetic Acids (HAAs)	2	ug/L	20.0	25.0	22.5	80
Trihalomethanes (THMs)	2	ug/L	32.0	32.0	32.0	
NDMA	2	ng/L	<1.9	<1.9	<1.9	40

Metals. A comprehensive metals analysis was conducted every second month in one location in the Sooke Service Area: at the end of the distribution system near Whiffen Spit. Out of the 32 tested metals, five are monitored particularly closely: iron, manganese, lead, aluminum and copper. All metal concentrations were well below the respective Health Canada maximum acceptable concentration or the aesthetic objective (Table 11).

Table 11

Metals - Sooke River Road WTP Service Area								
Parameter	**Samples Collected**	**Unit of Measure**	**Minimum**	**Maximum**	**Mean**	**AO (Aestetic Objective)**	**OG (Operational Guideline)**	**MAC (Maximum Acceptable Concentration)**
Aluminum	2	ug/L	6.7	11.5	9.1		100	2900
Copper	2	ug/L	8.9	9.6	9.2	1000		2000
Iron	2	ug/L	24.2	28.8	26.5	300		
Lead	2	ug/L	0.25	0.30	0.28			5
Manganese	2	ug/L	1.8	3.6	2.70	20		120

CONCLUSION

During this summer reporting period (May to August 2024), most parameters from source water to treated water indicate stable conditions and good water quality. Most trends are in line with historic data and confirm the adequacy of existing water treatment and performance of all major infrastructure components.

A second total coliform event since 2017 exposed the two regional water treatment plants for a period of about two weeks to high concentrations of a particular bacteria belonging to the regulated total coliform group. For a few days, low concentrations of total coliform bacteria appeared to break through the Goldstream Water Treatment Plant disinfection process. The breakthrough was likely limited to the early morning hours with high flows through the treatment plant. Effective secondary disinfection through chlorine residuals also limited the area potentially affected by viable total coliform bacteria in the treated water to a narrow range below the Goldstream Water Treatment Plant. A genomic analysis confirmed that the particular bacteria species involved is non-pathogenic to humans. Therefore, the risk to public health was low. This rare event indicated a vulnerability of the Goldstream Water Treatment Plant disinfection process to high bacterial loads. At the same time, the Sooke Water Treatment Plant disinfection process was uncompromised by the same bacterial loads. This latest total coliform event was likely caused by a wind-induced internal seiche in Sooke Lake Reservoir based on the findings of the post-event investigations of the 2017 total coliform event.

The multi-barrier approach applied to the Greater Victoria Drinking Water System ensures the otherwise excellent drinking water quality achieved during the reporting period.

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RWSC 24-17

REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, OCTOBER 16, 2024

SUBJECT **Dam Safety Program Update**

ISSUE SUMMARY

To provide the Regional Water Supply Commission (Commission) with an update regarding the ongoing implementation of the Integrated Water Services Dam Safety Program and related dam safety projects and initiatives for the Regional Water Supply System dams.

BACKGROUND

The Integrated Water Services Department (IWS) of the Capital Regional District (CRD) manages a portfolio of 23 dams, 15 of which are directly related to the Regional Water Supply (RWS) System and are noted below. Refer to Appendix A for a map of CRD-managed dams and Appendix B for RWS dam details. The following list of 14 of the 15 dams are currently being utilized for the region's water supply:

- Sooke Lake Watershed Dams (2)
  - Sooke Lake Dam
  - Sooke Lake Saddle Dam
- Deception Gulch Watershed Dams (1)
  - Deception Gulch Dam
- Goldstream Watershed Dams (11):
  - Butchart Lake Dams No.1 – No.5
  - Lubbe Lake Dams No.1 – No.4
  - Goldstream Lake Dam
  - Japan Gulch Dam

One other dam, Charters River Dam, is a concrete gravity dam that has been retired from the active drinking water supply for many years but still requires compliance activities, including surveillance, maintenance and operational tasks.

IWS also manages eight other water supply dams: Magic Lake Estates Water Service on Pender Island (4), Lyall Harbour/Boot Cove Water Service on Saturna Island (1) and Wilderness Mountain Water Service in East Sooke (3).

B.C. Dam Safety Regulation Compliance Requirements

Dams in British Columbia (BC) are regulated under the Water Sustainability Act and the *B.C. Dam Safety Regulation #32/2023*, enforced by Provincial Dam Safety Officers (DSO) within the Ministry of Water, Land, and Resource Stewardship. The Act allows the Province to issue water licenses for surface water use, storage, and diversion.

The Regulation provides specific obligations for dam owners including:

- Determination of the Dam Failure Consequence Classification (refer to Appendix D)
- Responsibilities for dam condition and safety
- Preparation and updating of an Operation, Maintenance and Surveillance manual
- Preparation and updating of Dam Emergency Plans
- Site surveillance and formal inspections
- Dam Safety Reviews and reporting

- Maintenance of dam safety records (refer to Application of the Dam Safety Regulation, Province of BC - Appendix C)

IWS engineering and operations staff undertake the required activities to meet the regulatory compliance requirements listed above.

DAM SAFETY PROGRAM

Since the last Dam Safety Program update to the Commission in November of 2019, staff have continued to work on many tasks for formalizing and developing the Dam Safety Program while in parallel undertaking the various reviews and capital upgrades identified. The following sub-sections provide an update on the ongoing program development.

Major Development Objectives Achieved

Since 2016, staff undertaking the development of a formalized Dam Safety Program (DSP). The initial three objectives of the DSP are now complete, briefly described below as follows:

1. **Determine the condition of all of the dam assets in the portfolio**
    - Staff have completed a legislated Dam Safety Review (DSR) for each of the 15 RWS dams.
    - The DSRs have resulted inputs to the mandatory Action Plans as well as the capital and operating plans.
    - Recommended improvements include further study of specific issues including seismic hazards, surveillance improvements, dam breach analysis and inundation zone mapping, and emergency planning.
2. **Validate the Dam Failure Consequence Classification of each of the dams**
    - Each dam requires a dam breach assessment and inundation zone mapping to determine the Dam Failure Consequence Classification (DFCC). DFCC is based on population (life) that may be at risk in the event of a failure of the dam (or dams in the case of a cascading effect), and potential impact to the environmental and cultural values, infrastructure and economy – additional details are provided in Appendix D.
    - Dam breach assessments and inundation zone mapping has been completed for all of the RWS dams. The findings recommended to reduce the DFCC of seven of the 15 dams. The current DFCC for each dam is provided in Appendix B.
    - Validating the DFCC is an important initial goal because the DFCC level is used to set the magnitude of dam design and rehabilitation criteria (e.g. design earthquake, inflow design flood, etc.), as well as the frequency of future DSRs.
3. **Establish a risk-informed approach to manage the many dam safety deficiencies within the portfolio**
    - Staff have prepared a Dam Safety Risk Register (DSRR) as a tool to summarize the pending safety deficiencies, risk score, priority, resources, background and budget. The number of safety deficiencies is now at approximately 300 items, all of which require resourcing by IWS staff, consultants/contractors, or both to resolve. In order to deliver dam safety improvements, Standing Offer Agreements with several dam safety consultants have been executed.

To support completion of these objectives, an independent dam safety expert was engaged to review of the IWS Dam Safety Program. The review concluded that IWS dam safety practices are partially compliant with the Guiding Principles of the Canadian Dam Association's Dam Safety

Guidelines but need improvement, and do not comply with the Guiding Principle that a comprehensive Dam Safety Management System (DSMS) be in place. Preparation of a DSMS is now in the planning phase.

Staff are developing the Dam Safety Program in a changing regulatory environment with a recent trend of increasing oversight and guidance from the Dam Safety Office and Engineers & Geoscientists of BC. This has required a net increase in effort to deliver capital studies, safety audits, and dam safety improvement projects. The Dam Safety Group is working closely with regulators to ensure compliance with the Regulation is maintained.

Completed and Ongoing Dam Safety Projects Update

A list of completed improvements and studies since the last Commission update in 2019 is listed in Appendix E. In general, these projects were selected through the DSRR process and included various major and minor dam remediations as well as full replacement of Lubbe Dam No.4 and major repair to the foundation of Butchart Dam No.5. In addition, various dam safety reviews, audits, assessments and analyses have been completed.

Many major dam safety capital projects are currently in progress, and a list with details is provided in Appendix E. Some of the project highlights include:

- Sooke Lake Dam – 2023 Dam Safety Review Audit
- Sooke Lake Dam Instrumentation Improvements – Detailed Design and Construction
- Sooke Watershed Dams – Breach Risk Reduction Measures
- Deception Gulch Dam – Low-level Outlet Gate and Air Vent Pipe Replacement
- Flood Forecasting System and Hydrotechnical Projects
- Seismic Stability Improvements: Sooke Lake Dam Spillway and Deception Gulch Dam

IWS Dam Safety Group Staffing Update

An Initiative Business Case (IBC) was prepared in 2023 to request resources to continue to develop and improve the IWS Dam Safety Program. The IBC requested a total team of eight staff phased over several years, consisting of a mix of engineers and operators to continue to resolve dam safety issues, improve operations, maintenance, and surveillance activities, and continue to prioritize regulatory compliance activities to lower dam safety risks.

In 2024, the following roles were approved and have been filled:

- **Manager, Dam Safety,** was appointed to lead the new Dam Safety Section within the Infrastructure Engineering Division (IE) and started work in that role on May 6, 2024. The Manager, Dam Safety currently undertakes work in conjunction with existing staffing resources from other IWS departments.
- **Team Lead, Dam Safety Operations**, was also selected and has started work, reporting to the Manager, Water System Operations.

NEXT STEPS

The following summarizes the next steps in the development of a robust Dam Safety Program.

Dam Safety Management System (DSMS)
Proceed with the development of the DSMS, which will establish a systematic and consistent way of managing the RWS dams. The DSMS will include: Policy and Objectives, Planning, Implementation, Risk Assessment, Monitoring and Evaluation, Audit, Review and Reporting, etc.

The DSMS will also define roles and responsibilities for dam safety within the IWS department's divisions and sections currently working with dams: Infrastructure Engineering, Water Infrastructure Operations, Water System Maintenance, Watershed Protection, Business Support Services, and Asset Management.

Upcoming Dam Safety Projects
The 2024 RWS Capital Plan includes budget to start the following dam safety-related capital projects for the eleven Goldstream Watershed Dams, including a Dam Safety Review in 2025, a drilling investigation at the major dams, design of instrumentation improvements, and updated seismic hazard and stability assessment. Recent DSRs have highlighted the importance of improving existing dam instrumentation systems to current industry best practices. Additionally, given the high regional seismic and flood hazard risks, there are many recommendations from experts for completing updated seismic stability assessments and associated structural upgrades, as well as preparing for and building resiliency to large flood events at the dams.

Building Capacity of the IWS Dam Safety Team
To ensure regulatory compliance, address the growing list of dam-related deficiencies and undertake the ongoing operation and maintenance activities, the CRD needs to continue to ensure the necessary in-house expertise and capacity. This capacity development is being achieved through staff augmentation and training of existing staff.

The 2025 RWS budget includes, two new engineers and a new operator to support the operation, maintenance, and surveillance of the dams, as well as regulatory compliance activities and resolving safety issues through capital and operational safety improvements. Staffing levels will continue to be assessed in a phased approach.

In accordance with the Regulation, the CRD maintains a series of Operation, Maintenance and Surveillance Manuals for each dam, as well as Dam Emergency Plans which are resources to be used in the event of a dam emergency such as earthquake, flood or dam breach. Dam Emergency Plans are shared annually with Local Emergency Authorities. Training and exercising around emergency preparedness and response is considered by experts as an essential part of an effective Dam Safety Management System. IWS staff who conduct duties related to dam safety obtain formal dam inspection training. This training will continue to be supplemented with emergency management training and planned exercises.

Building Public Awareness of Dam Safety Program
To raise awareness and educate the public about the importance and impact of dams, a webpage dedicated to the Dam Safety Program with educational materials is being developed. Several other dam owners in BC already have active public webpages to provide information related to dams and building safety awareness for those living near dams. Examples include BC Hydro, Metro Vancouver, Regional District of Nanaimo, and the City of Parksville. Materials that will be presented include frequently asked questions, emergency management/preparedness content, basic background on the Dam Safety Program and a basic map that shows the location of all IWS

dams. The content will be posted to a new CRD webpage. The target date for the completion of this work is December 31, 2024.

CRD staff currently coordinate preparation for response to any IWS dam-related emergencies directly with each Local Emergency Authority, per requirements of the Regulation. Furthermore, the CRD is considering a targeted communication plan for all property owners within each dam inundation zone. The intent is to raise awareness with property owners regarding the risk of the unlikely event of a dam failure situation and to provide information about opportunity for emergency notifications. Staff plan to present the communication strategy and implementation options at a future meeting, in the first quarter of 2025.

CONCLUSION

The Integrated Water Services Department manages 23 dams with the primary purpose of providing a reliable supply of clean and safe drinking water to the residents of our region. A comprehensive Dam Safety Program is being developed to manage the dams within the legislated framework. It is proposed to continue to evolve the Dam Safety Program with the advice and support of independent expert engineering consultants and build a robust Dam Safety Management System that will utilize a probabilistic risk-informed approach to mitigate dam safety issues. Staff continue to develop the Dam Safety Risk Register and track and resolve the large number of dam safety deficiencies in a prioritized manner. Continuing to review and add to the internal resources of the Dam Safety team in a phased approach is essential to maintaining regulatory compliance, resolving the many safety issues, and continually improving the program over time. The Capital Regional District (CRD) also plans to increase the public's awareness of the CRD's Dam Safety Program through a public website and targeted communication plans.

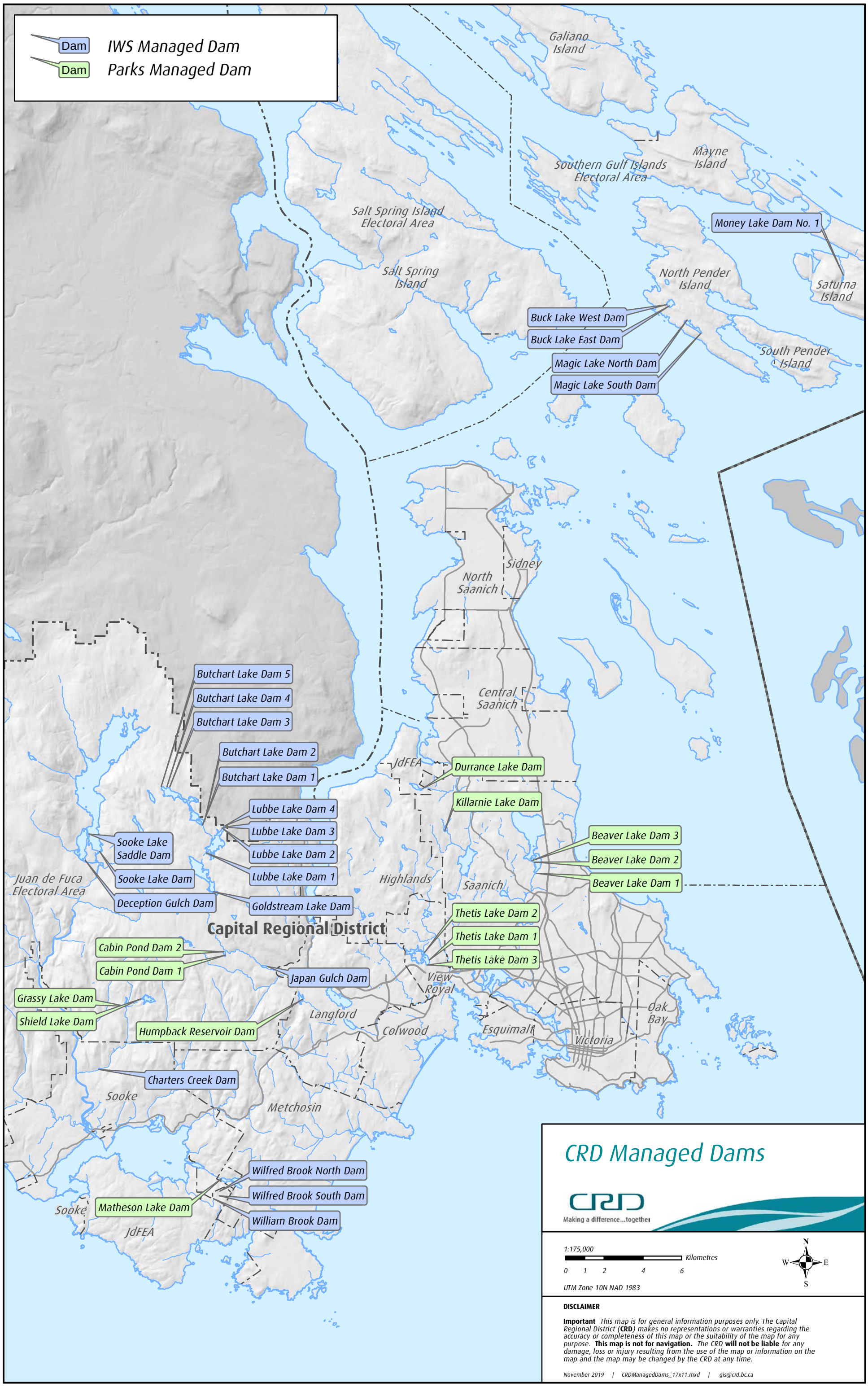
RECOMMENDATION

There is no recommendation. This report is for information only.

Submitted by:	Joseph Marr, P.Eng., Senior Manager, Infrastructure Engineering
Concurrence:	Alicia Fraser, P. Eng., General Manager, Integrated Water Services
Concurrence:	Ted Robbins, B. Sc., C. Tech., Chief Administrative Officer

ATTACHMENT(S)

Appendix A: CRD Managed Dams Map
Appendix B: Summary of Regional Water Supply Dams
Appendix C: Application of the Dam Safety Regulation
Appendix D: Dam Failure Consequence Classification
Appendix E: Dam Safety Program – Major Project Descriptions



CRD Managed Dams

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1:175,000

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UTM Zone 10N NAD 1983

DISCLAIMER

Important *This map is for general information purposes only. The Capital Regional District (**CRD**) makes no representations or warranties regarding the accuracy or completeness of this map or the suitability of the map for any purpose.* **This map is not for navigation.** *The CRD* **will not be liable** *for any damage, loss or injury resulting from the use of the map or information on the map and the map may be changed by the CRD at any time.*

November 2019 | CRDManagedDams_17x11.mxd | gis@crd.bc.ca

Appendix B – Summary of Regional Water Supply Dams

	Name	Consequence Classification Rating *(see Appendix E)*	Year Constructed - Original / Upgraded	Dam Crest Width	Dam Crest Length	Dam Crest Elevation / Height	Maximum Useable Water Storage (ML)
1	Sooke Lake Dam	Extreme	1970 / 2002	7.3m to 10m	533m (includes 63m spillway)	El. 190.75m / 24.75m	92,700
2	Saddle Dam	Very High	1970 / 2002	5m to 14m	1080m	El. 190.75m / varies up to 16m	n/a
3	Deception Gulch Dam	Very High	1979 / 1981 / 2002	7m	460m	El. 190.75m / 24m	4,050
4	Japan Gulch Dam	High	1900 / 1995	6.1m	97.5m	El. 134.6m / 12.5m	80
5	Charters River Dam	High	1976 / n/a	0.91m	30.48m (includes spillway)	El. 83.23m / 16.76m	19
6	Goldstream Lake Dam	High	1892 / 1995	NA	302m	El. 459.96m / 12.0m	3,550
7	Lubbe Lake Dam 1	High	1900 / 1995	NA	44m	El. 482.34m / 12.2m	3,000
8	Lubbe Lake Dam 2	Significant	1900 / n/a	4m	15.2m	El. 481.1m / 3.0m	3,000
9	Lubbe Lake Dam 3	Significant	1900 / n/a	4m	15.2m	El. 481.1m / 3.0m	3,000
10	Lubbe Lake Dam 4	Significant	1900 / 2019	5m	30m	El. 481.1m / 5.8m	3,000
11	Butchart Lake Dam 1	High	1900 / 1995	5m	60m	El. 546.6m / 11m	3,250
12	Butchart Lake Dam 2	High	1900 / 1995	NA	40.2m	El. 546.6m / 14.6m	3,250
13	Butchart Lake Dam 3	Low	1900 / n/a	NA	17.4m	El. 545.1m / 1.8m	3,250
14	Butchart Lake Dam 4	Significant	1900 / n/a	NA	48.5m	El. 545.2m / 7.3m	3,250
15	Butchart Lake Dam 5	Significant	1900 / 1995	NA	157m	El. 545.4m / 7.3m	3,250

Appendix C – Application of the Dam Safety Regulation

Ministry of Forests, Lands and Natural Resource Operations

INFORMATION SHEET

APPLICATION OF THE DAM SAFETY REGULATION

The **British Columbia Dam Safety Regulation (B.C. Reg. 44/2000)** was repealed and replaced with the **Dam Safety Regulation (B.C. Reg. 40/2016)** on February 29, 2016. This Information Sheet provides general information about the new regulation however dam owners are responsible for familiarizing themselves and complying with the regulation in its entirety. The new regulation is available at the link provided at the end of this document. In case of discrepancy between information contained herein and the regulation, the regulation takes precedence.

INTRODUCTION

The BC Dam Safety Regulation was first passed into law under the *Water Act* as Regulation 44/2000, effective February 11, 2000. This regulation was repealed and replaced with the Dam Safety Regulation (O.I.C. 114, B.C. Reg. 40/2016) under the *Water Sustainability Act*, effective February 29, 2016.

The objective of the regulation is to mitigate loss of life and damage to property and the environment from a dam breach by requiring dam owners to inspect their own dams, undertake proper maintenance on them, and ensure that these dams meet ongoing engineering standards.

WATER SUSTAINABILITY ACT

The *Water Act* was replaced with the *Water Sustainability Act* (Act) on February 29, 2016. The new Act has authority over dams (considered works) and holds owners of dams liable for any damage caused by the construction, operation or failure of their dam. Under the Act, owners of dams are responsible for obtaining a water licence and complying with its terms and conditions.

TO WHOM THE REGULATION APPLIES

The regulation applies to owners of dams that store or divert water from a stream or aquifer or both (see Part 1, Section 1 of the regulation for a full definition of "owner" and "dam"). The height, storage capacity and dam failure consequence classification of the dam determines which parts of the regulation, if any, apply (Figure A):

1. Owners of ***Minor Dams***, that meet the following criteria are **exempt** from the entire regulation unless the Comptroller of Water Rights (comptroller) or water manager determines otherwise:
   - less than 7.5 metres in height, and
   - able to impound no more than 10,000 m^3 of water.
2. With the exception of the exempt minor dams above and regardless of consequence classification, dam height, or storage volume **all** dam owners must comply with all parts of the regulation except Part 3.
3. The entire regulation applies to owners of dams that meet the criteria specified in Part 3, Section 7:
   - 1 metre or more in height and capable of impounding a volume of water greater than 1,000,000 m^3,
   - 2.5 metres or more in height and capable of impounding a volume of water greater than 30,000 m^3,
   - 7.5 metres or more in height, or
   - Classified as significant, high, very high or extreme failure consequence.

CLASSIFICATION SYSTEM

All dams are classified according to their potential consequence of failure. Owners of dams have varying levels of obligations under the regulation which are directly related to the dam's failure consequence classification (see Schedule 1 of the regulation).

REGULATION REQUIREMENTS

All owners of dams, other than owners of *minor dams*, must satisfy the requirements specified in Part 2, and may also need to meet requirements in Part 4 and Part 5.

1. The ongoing regulatory requirements for all dams, except the exempt *minor dams* include:
   - determine the dam failure consequence classification, and annually review and if necessary revise and submit to the Dam Safety Officer for acceptance,
   - comply with the provisions of the regulation that apply to a dam having that consequence classification,
   - properly inspect, maintain and repair their dam in a manner that keeps the dam in good operating condition, and

- prevent unauthorized operation of their dam.

2. Owners of dams meeting the criteria set out in Part 3, Section 7 of the regulation must undertake the following:
   - prepare, review and update the operation, maintenance and surveillance plan and dam emergency plan (except for low consequence dams) and submit to the Dam Safety Officer for acceptance,
   - as part of the Dam Emergency Plan, prepare a record containing information to be submitted to the local emergency authorities for the purpose of their preparing local emergency plans,
   - prepare and erect signage at all dams located on Crown Land (except for low consequence dams) notifying passersby to report any problems to the owner of the dam and/or the emergency response authorities,
   - obtain authorization under the Act when alternations or improvements to, or replacement of their dam is considered,
   - operate their dam in a manner, and initiate remedial actions, that will safeguard the public and dam in response to hazardous conditions at their dam,
   - prepare a plan in response to any potential safety hazard,
   - notify and get authorization from the Dam Safety Officer prior to removing, decommissioning, deactivating or stopping normal operation of their dam,
   - report all significant findings resulting from inspections and/or dam safety reviews to the Dam Safety Officer,
   - install any instrumentation necessary to adequately monitor the performance of a dam,
   - carry out dam safety reviews (except for low and significant consequence dams), and
   - submit to the Dam Safety Officer, upon request, records relating to the inspection, test or review carried out in relation to their dam including recorded data on the dam, reservoir, downstream area, or watershed upstream of the dam.

3. Additional requirements for all dam owners may include:
   - where there are two or more owners of a dam, these owners must designate one of the owners for the purpose of receiving, providing and retaining information and records in relation to the dam,
   - where there are two or more owners of a dam, an owner may be exempt from the requirements of this regulation if the comptroller is satisfied that proper arrangements have been made for one or more of the other owners to take on responsibility for their dam and the owner holds no more than 5% of the total storage rights in respect of the dam, and
   - an owner of a dam may be required to obtain independent expert advice in relation to an issue respecting their dam, with qualifications and experience in dam design, construction and analysis or in dam operation and maintenance or in hydraulic, hydrological, geological, geotechnical, mechanical or structural analysis.

TRANSITION

To allow owners sufficient time to meet new requirements in the regulation, transitional provisions are included. These are found in Part 5 of the regulation.

ROLE OF THE RESPONSIBLE MINISTRY

The comptroller instituted the Provincial Dam Safety Program in 1967. The program's goal is to set design, construction, maintenance, and surveillance standards, and assist dam owners in meeting these standards.

Dam Safety Officers, located in each region and in Victoria, protect public safety by monitoring and auditing the activities of dam owners, providing education and awareness training and taking compliance and enforcement action when necessary.

The Dam Safety Regulation is an important component of the Provincial Dam Safety Program's objective to minimize the impact of dam failures.

MORE INFORMATION

The regulation and more information on dam safety can be obtained from the Dam Safety Program website: http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/drought-flooding-dikes-dams/dam-safety

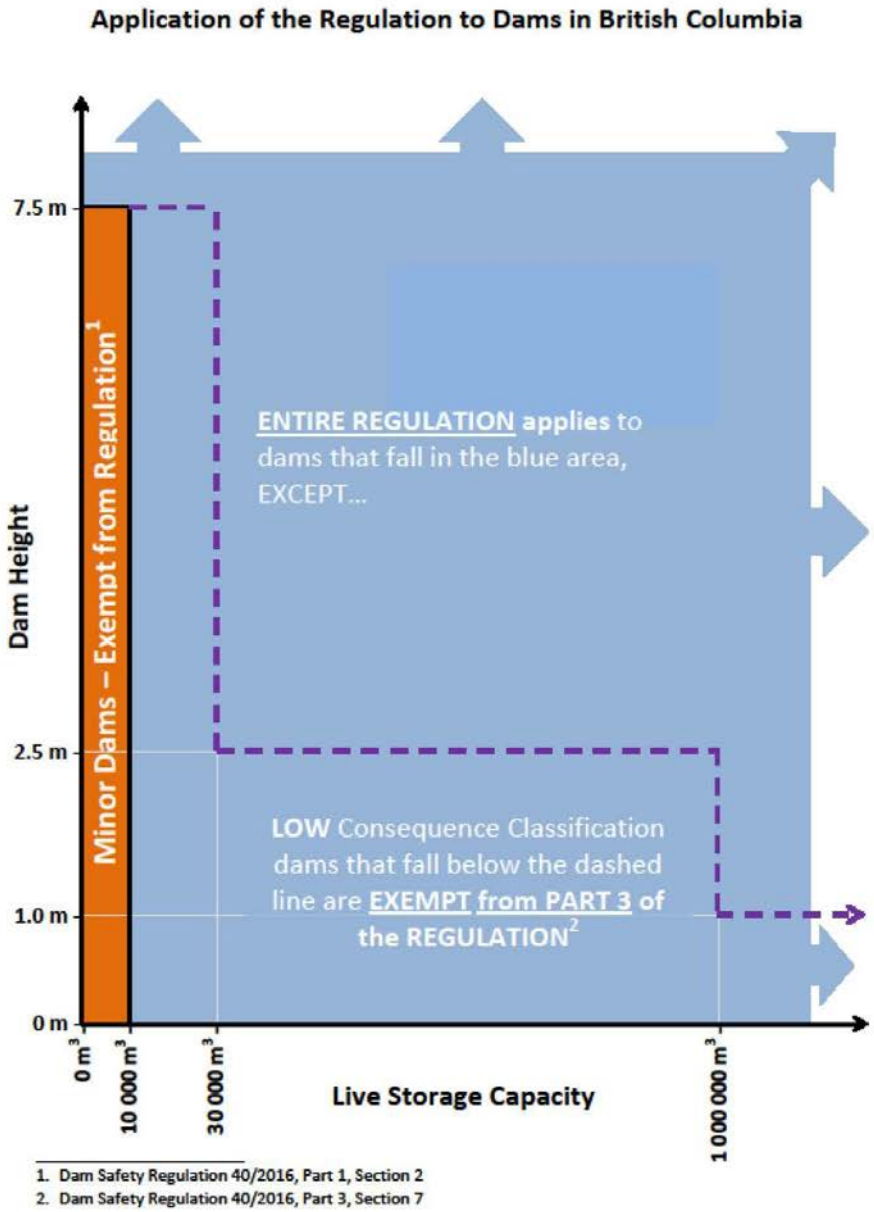
Or by contacting:

Dam Safety Section
Water Management Branch
PO Box 9340 Stn Prov Govt
Victoria BC V8W 9M1

Email: dam.safety@gov.bc.ca

Visit the Canadian Dam Associations' Dam Safety Guidelines and website at http://www.cda.ca/

Figure A. Graph of dam height vs. dam storage capacity which, along with dam failure consequence classification, determines what parts of the Dam Safety Regulation applies.



1. Dam Safety Regulation 40/2016, Part 1, Section 2
2. Dam Safety Regulation 40/2016, Part 3, Section 7

Appendix D – Consequence Rating

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Dam failure consequences classification	Population at risk	Consequences of failure		
			Loss of life	Environmental and cultural values	Infrastructure and economics
1	low	none[1]	no possibility of loss of life other than through unforeseeable misadventure	minimal short-term loss or deterioration and no long-term loss or deterioration of (a) fisheries habitat or wildlife habitat, (b) rare or endangered species, (c) unique landscapes, or (d) sites having significant cultural value	minimal economic losses mostly limited to the dam owner's property, with virtually no pre-existing potential for development within the dam inundation zone
2	significant	temporary only[2]	low potential for multiple loss of life	no significant loss or deterioration of (a) important fisheries habitat or important wildlife habitat, (b) rare or endangered species, (c) unique landscapes, or (d) sites having significant cultural value, and restoration or compensation in kind is highly possible	low economic losses affecting limited infrastructure and residential buildings, public transportation or services or commercial facilities, or some destruction of or damage to locations used occasionally and irregularly for temporary purposes
3	high	permanent[3]	10 or fewer	significant loss or deterioration of (a) important fisheries habitat or important wildlife habitat, (b) rare or endangered species, (c) unique landscapes, or (d) sites having significant cultural value, and restoration or compensation in kind is highly possible	high economic losses affecting infrastructure, public transportation or services or commercial facilities, or some destruction of or some severe damage to scattered residential buildings

Item	Column 1	Column 2	Column 3	Column 4	Column 5
	Dam failure consequences classification	Population at risk	Consequences of failure		
			Loss of life	Environmental and cultural values	Infrastructure and economics
4	very high	permanent[3]	100 or fewer	significant loss or deterioration of (a) critical fisheries habitat or critical wildlife habitat, (b) rare or endangered species, (c) unique landscapes, or (d) sites having significant cultural value, and restoration or compensation in kind is possible but impractical	very high economic losses affecting important infrastructure, public transportation or services or commercial facilities, or some destruction of or some severe damage to residential areas
5	extreme	permanent[3]	more than 100	major loss or deterioration of (a) critical fisheries habitat or critical wildlife habitat, (b) rare or endangered species, (c) unique landscapes, or (d) sites having significant cultural value, and restoration or compensation in kind is impossible.	extremely high economic losses affecting critical infrastructure, public transportation or services or commercial facilities, or some destruction of or some severe damage to residential areas

1. There is no identifiable population at risk.
2. People are only occasionally and irregularly in the dam-breach inundation zone, for example stopping temporarily, passing through on transportation routes or participating in recreational activities.
3. The population at risk is ordinarily or regularly located in the dam-breach inundation zone, whether to live, work or recreate.

APPENDIX E

Dam Safety Program - Major Project Descriptions

Major Dam Safety Projects completed since 2019

Remediation of Butchart Dam #5 – Grouting of Karst Limestone Foundation

During a routine inspection of Butchart Dam #5, a sinkhole was observed on the downstream slope in 2014. An investigation and remedial options study was conducted, and it was concluded that the issue was related to the dissolution of the limestone bedrock on which the dam was founded upon. Geotechnical engineering consultant, Thurber, was hired and the preferred option of grouting the bedrock foundation to remove voids was selected. The work was designed, and the project was successfully completed in the summer of 2021 by a team consisting of a specialist ground improvement contractor, an engineering consultant, and IWS staff. A total volume of more than 95 cubic metres of grout was injected in 24 drilled boreholes at the right abutment area. Visual inspections of the seepage weir area since the project completion in 2021 show that the foundation leaking issue has been resolved. Surveillance of the dam during weekly inspections continues. After an extended multi-year period of operating the reservoir at a lower level to reduce risk, the Butchart Reservoir is now maintained at the normal full-pool operating water level.

Replacement of Lubbe Dam #4

In 2011, routine inspections identified unusual seepage flows at the toe of the dam. A geotechnical consultant was hired to conduct a leakage assessment and determined that internal erosion of the of Lubbe Dam #4 was causing leaking to occur. After further monitoring and study by consultants, it was concluded that the dam needed replacement. The design and construction was completed in 2019. Routine surveillance of the replacement dam continues and there has been no dam performance issues identified with the new dam since its construction.

Sooke Lake Dam Spillway Gates Hydraulic System Replacement

IWS staff hired Janox Fluid Power Ltd. (Janox) to replace the hydraulic components of the gate actuator system for the Sooke Lake Dam Spillway Gates in 2020. The project was successful, and the two large outlet gates are now operational. Further improvements to the gate control system are needed. IWS staff are planning to hire resources to complete and commission the improvements.

Charters River Dam Decommissioning Study

Kerr Wood Liedel Associates Ltd. was hired in 2021 to develop and assess decommissioning options for Charters River Dam. The options analysis was used to assist with decision-making regarding whether to decommission the concrete gravity dam. Three options were assessed: Maintain the dam, partially remove the dam, and fully decommission the dam. Based on the comparison of the three options, the most cost-effective option, considering current costs and net present value analysis, is continuing to operate and maintain the dam. One of the key considerations in the decision to maintain the dam was that extensive resources (both internal and external) would be needed for an extended multi-year, multi-million-dollar project to plan and execute the dam decommissioning work. IWS staff are using the Dam Safety Risk Register process to prioritize resources to resolving the highest risk dam safety issues, and therefore the dam decommissioning work will not proceed until resources are available.

Sooke Lake and Deception Watershed Dams - Seasonal Reservoir Operating Strategy

Capital Regional District (CRD) is developing a Seasonal Reservoir Operating Strategy (SROS) to support goals related to climate change adaptation and dam safety risk mitigation. This new SROS will target lower than historical winter water levels at both the Sooke Lake Reservoir and the Deception Gulch Reservoir. This SROS will, in turn, create a new reservoir flood zone (or flood compartment storage) suitable for attenuating and storing the relatively higher incoming winter storm flows when water demand to customers is lower. Hatch was retained by CRD in 2023 to evaluate its plans for changing the currently passive water management reservoir operation to an active SROS, to identify and prioritize key considerations for implementing the SROS and, in turn, suggest the next high-level steps to completing the plan. Hatch provided in the report a SROS outline with recommended next steps for implementing the changes, which includes hydrological and dam operations modelling. In 2024, IWS staff have begun actioning the Flood Forecasting System project with Hatch to complete the required modelling and development of the Reservoir Operating Rules. Implementation of the strategy is anticipated to take several more years to allow for tools to be tested and validated.

Sooke Lake Dam Spillway Gate Isolation System Options

There are currently one set of stop logs for isolating the two spillway gates, which are the primary outlet for the dam. The stop logs can only be deployed for planned maintenance of a single gate at a time. There is currently no way to isolate the gates in the event of a gate failure during a high flow flood condition. IWS staff hired Hatch in 2023 to conduct an options analysis for the improvement of the existing gate isolation system for the two spillway gates. A preferred option has been selected to procure and install a set of two wheeled bulkhead gates. The Capital Projects team is working on the next phase of the project.

Sooke Lake Dam Spillway – Concrete Surface and Joints Rehabilitation

IWS staff are currently working on a plan to conduct Phase 2 of concrete repairs to the surface of the 64-metre-wide ogee spillway. A dive team has been hired in 2024 to conduct a condition assessment of the vertical upstream face of the ogee spillway and prepare for repairs to the vertical construction joints and concrete surface cracks. The condition assessment part of the work is planned to be completed in Q4 2024. Phase 1 of surface crack repairs was completed at the less steep portions of the spillway in 2021, following a condition assessment of the construction joints and seepage by Northwest Hydraulic Consultants' expert structural engineer.

Sooke Lake Saddle Dam – 2021 Dam Safety Review Audit

Hatch submitted the DSR report to the CRD on May 2, 2022. A copy of the DSR Audit report has been provided to the B.C. Dam Safety Office, and has been accepted by the DSO. Hatch concluded that:

- the dam is "reasonably safe"; and
- the overall total of outstanding issues to resolve is now 11. Of these, nine are non-conformances and two are potential deficiencies related to the seismic performance of the conduit and the bent gate stem.

The 11 outstanding issues that are recommended by Hatch to be resolved have been reviewed and validated by IWS staff. The issues are a mix of operations, maintenance and

surveillance related items, along with proposed site investigation and dam safety analyses work. IWS staff have used Hatch's recommendations and priority ranking to develop an Action Plan that considers necessary sequencing of dam safety analyses projects and minimizing dam safety risk.

Deception Gulch Dam – 2021 Dam Safety Review Audit

Hatch submitted the final report for the DSR to the CRD on May 2, 2022. A copy of the DSR Audit report has been provided to the B.C. Dam Safety Office and has been accepted by the DSO. Hatch concluded that:

- The dam is "in a reasonably safe condition".
- The overall total of outstanding issues to resolve is now 26. Of these, 24 are non-conformances and two are potential or actual deficiencies.

Major dam safety deficiencies have been confirmed as follows:

- The dam cannot withstand the design earthquake loading conditions. Design and construction of a granular buttress at the downstream face of the dam is recommended.
- It is unknown if the dam is capable of passing flows as required under earthquake loading conditions.
- Existing manual instrumentation, (versus an automated data acquisition system), does not provide real-time/advanced warning of dam failure and continues to have reliability concerns. Several aging piezometers are unresponsive.

A multi-phase Action Plan has been prepared by IWS staff to resolve the dam safety issues and conduct a business case assessment for the future configuration for the earthen dam and concrete spillway. The current maximum reservoir water level is being reviewed, as well as the benefits versus costs of increasing the storage volume in the reservoir.

Charters River Dam – 2021 Dam Safety Review Audit

Hatch submitted the final report for the DSR Audit to the CRD on June 3, 2022. A copy of the DSR Audit report has been provided to the B.C. Dam Safety Office and has been accepted by the DSO. Hatch concluded that:

- the dam is "reasonably safe"; and
- the overall total of outstanding issues to resolve is now 12. Of these, 12 are non-conformances and no potential or actual deficiencies.

The 12 outstanding issues to be resolved that are recommended by Hatch have been reviewed and validated by IWS staff. The issues are a mix of operations, maintenance and surveillance related items, along with proposed site investigation and dam safety analyses work. IWS staff have used Hatch's recommendations and priority ranking to develop an Action Plan that considers necessary sequencing of dam safety analyses projects and minimizing dam safety risk.

Goldstream Watershed Dams (11 total) Dam Breach Assessment and Inundation Zone Mapping

The 2015 Dam Safety Review (Thurber) recommended that the 1993 dam breach analysis and inundation zone mapping be updated. An engineering consultant, Hatch Ltd., was hired in 2018 and provided its final report in late November, 2019. This was a similar assignment to the dam breach assessment completed for the Sooke Watershed Dams by the consultant NHC. The project scope was completed following guidelines as per CDA Dam Safety Guidelines. The major tasks included:

- Review of background information and hydrology review and development.
- Dam breach model development, dam breach analysis including cascade failure analysis, Dam Failure Consequence Classification (DFCC), and inundation mapping for Butchart Dam Nos. 1, 2, 3, 4 and 5, Lubbe Dam Nos. 1, 2, 3 and 4, Goldstream Dam and Japan Gulch Dam.
- Structural and non-structural mitigation concepts, evaluation and prioritization, and
- Emergency and evacuation routes.

Overall, the assessment used the most recent industry standards and guidance along with conservative but reasonable assumptions to produce a comprehensive and defendable analysis of the effects of dam breach events for all 11 dams along the Goldstream River. Over 80 individual simulations were conducted to assess the various load cases and evaluate each of the DFCCs. These DFCCs were established by looking at the potential for incremental loss of life, economic and infrastructure damages, and environmental and cultural losses. For each dam a set of inundation zone maps were developed for the “flood-induced” and “sunny-day” dam failure type scenarios.

The results of the engineering assessment indicate that there is a very limited potential for incremental loss of life and economic damages. As a result, seven of the DFCCs previously adopted have been reduced by 1 or 2 classification levels which corresponds to a reduction in required spill capacity and adjusts ‘down’ the risk profile of those dams. The most critical potential damages throughout the system were reviewed and several mitigation measures were conceptualized, evaluated for value, and prioritized. Many of the recommendations are consistent with those raised during the 2015 Dam Safety Review Audit, and include improving emergency preparedness, improving dam safety instrumentation, developing a flood forecasting system, and developing emergency repair strategies for critical watermains that cross the inundation zone. The timing of this study was strategic to understand the risk profile prior to making any major investments in dam analyses and rehabilitation.

Dam Emergency Training and Exercises

The B.C. Dam Safety Regulation obligates dam owners to have a Dam Emergency Plan (DEP) and it is best practice to complete emergency response training and exercising of the DEP periodically. Dam Safety related training is occurring periodically within the IWS department, focussed on training staff who have responsibilities with operating, maintaining, and monitoring dams. A “Fully Functional” dam emergency exercise was held over two sessions (September 22, 2022, and October 28, 2022) which tested the CRD’s response to an escalating dam emergency. The training and exercise involved setting up an Emergency Operations Centre (EOC) and a Department Operations Centre (DOC) with incident command inspections and communication with external emergency authorities including Emergency Management BC, Local Emergency Authorities, Dam Safety Office, and the RCMP. The session was based on the British Columbia Emergency Management System and included notational elements of Incident Command,

activation of the IWS DOC and the CRD's Corporate EOC and included Local Emergency Authority content specific to evacuation of persons in a dam breach inundation zone.

Major Dam Safety Projects in progress now:

Sooke Lake Dam – 2023 Dam Safety Review Audit

Hatch is currently working on the DSR report and submitted a draft of the report to the CRD in March 2024. Hatch has concluded that "The Dam will be Reasonably Safe, conditional on implementation of the additional Established Good Practice recommendations, to compensate for physical Deficiencies and/or regulatory, procedural and operational Non-Conformances that have been identified and documented within Hatch's report".

IWS staff have hired geotechnical expert Thurber Engineering Ltd., who acts in the role of Dam Owner Technical Expert, to conduct a third-party review of the DSR Audit report and provide a list of considerations and additional information for Hatch to review prior to finalizing the DSR Audit report. It is anticipated that the final report will be completed by the end of 2024, with IWS staff planning to prepare a mandatory Action Plan to resolve the outstanding dam safety issues.

Sooke Lake Dam Instrumentation Improvements – Detailed Design and Construction

The 2016 Dam Safety Review Audit identified many dam safety deficiencies with the existing instrumentation system, including failing and unreliable instruments. Data collection from critical piezometers and seepage weirs is happening manually at all instruments, except for one automated seepage weir. Dam safety expert consultants have recommended to design and build an automated data acquisition system for the dam and integrate it with the CRD's IWS SCADA system so that water operators can continuously monitor dam performance remotely from the control room. Additionally, some of the existing piezometers in Sooke Lake Dam used to monitor the embankment are at the end of their service life and therefore need to be replaced. Reading of remaining manual instruments is planned to continue for comparative and validation purposes.

The detailed design phase is planned to be complete by end of 2024, with installation of new instruments planned for Q3 2025, when the reservoir level is lower. Instrumentation improvements will include: Twenty (20) vibrating wire type piezometers to measure internal pore water pressures in the dam, three (3) upgraded and instrumented seepage weirs, shape arrays to measure dam deformation, cameras, a tiltmeter at the intake tower, and three (3) seismographs. Temporary platforms are anticipated to be constructed to install new piezometers at the upstream face of the dam. Commissioning of the system is anticipated to be completed by mid-2026. IWS staff have coordinated a third-party review of the design and are coordinating with the Dam Safety Office to complete a permit application.

Sooke Watershed Dams – Breach Risk Reduction Measures

The results of the 2018 dam breach assessment and inundation mapping project included a prioritized list of recommendations from the consultant, NHC, to lower risks associated with the unlikely event of a dam breach at one of the Sooke Watershed Dams. The highest priority recommendations and status are as follows:

1. Implementing an Emergency Warning System – prior to proceeding with a feasibility study of installing an Emergency Warning System (e.g. siren) downstream of the dams, IWS

staff are actively working on a communication and engagement plan in order to raise awareness regarding the dam safety risks and providing information to property owners in and around the modelled dam breach inundation zone. Capital budget has been approved to complete the feasibility study of installing the Emergency Warning System, pending the results of the communication plan.

2. Implementing Structural Upgrades at the Dam – IWS staff have completed stockpiling of emergency riprap materials as the first structural upgrade in 2018, followed by instrumentation system improvements at the dams, starting with Sooke Lake Dam.
3. Adjusting Reservoir Levels at Sooke Lake and Deception Reservoirs – Seasonal adjustments to lower the Sooke Lake and Deception Reservoir maximum operating water levels during winter has been identified by dam safety experts as an opportunity to balance dam safety risks and water supply risks. Operating at lower winter operating level lowers the risk in the unlikely event of a dam breach, in a period of time when water demand is at its lowest. The operating level is then returned to full pool for the high water demand spring and summer seasons. The project involves setting Seasonal Reservoir Operating Rules and developing Flood Informed Reservoir Operations. An initial strategic assessment has been completed by dam safety expert consultant, Hatch Ltd., which resulted with confirmation that development of the SROR and FIRO would enable the CRD to lower dam safety flood risks during winter, without jeopardizing the reliability of the water supply system.

The potential inundation zone includes areas within both the CRD's Juan de Fuca Electoral Area and the District of Sooke (DoS), CRD staff are working with the Local Emergency Authority staff for both the CRD and DoS to coordinate emergency management efforts and preparedness. The roles and responsibilities for both will be further defined and additional communication is planned.

Deception Gulch Dam – Low-Level Outlet Gate and Air Vent Pipe Replacement.

During the annual formal dam inspection on October 17, 2023 by IWS staff, Water Infrastructure Operations (WIO) staff were executing a planned water release order separate to the inspection work, to increase flow to the Sooke River for conservation purposes. Soon after opening the low-level outlet gate, turbid water was observed discharging from the outlet of the LLO pipe, followed by the air vent pipe. An investigation of the issue has resulted in the action plan to decommission the existing air vent pipe, install a new air vent pipe in a more optimal location, and replace the existing low-level outlet gate, which is near end of useful life and experiencing mechanical issues. The new gate has been ordered and the plan is to complete the construction work during the lower reservoir water conditions in summer 2025.

Dam Emergency Plan (DEP) and Operation, Maintenance and Surveillance Manual (OMS) Updates

A comprehensive DEP based on industry accepted content was finalized and issued in 2020 and has been updated annually since that year. In addition to the DEP update, the OMS manual for Sooke Lake and Goldstream Watershed dams is being updated and is planned to be reissued in 2024, and will be sent to the Dam Safety Office for review and acceptance. The Dam Safety Office has requested that the updated OMS manual be submitted for review by January 31, 2025.

Flood Forecasting System and Hydrotechnical Projects

CRD IWS staff have compiled a bundle of inter-related hydrotechnical and dam safety related issues to be resolved under a single project. Dam Safety expert consultant, Hatch Ltd., was selected as the preferred consultant through RFP and hired in 2023 for the project.

The dam safety issues to be resolved are related to dam and reservoir operating procedures at Sooke Watershed Dams. The procedures need improvement in order to reduce dam safety risk, particularly during the winter storm season, but also maximize security of the water supply. The project involves development of new Watershed Simulation Models which includes hydrological modelling of the watersheds, dam operations modelling, hydraulic modelling of rivers, and engineering analyses. The Watershed Simulation Models are replacing the current hydrological model which is out-of-date. The models are being integrated using proprietary software called DELFT Flood Early Warning System (DELFT-FEWS) to develop a Flood Forecasting System (FFS) and a series of new Reservoir Operating Rules (ROR). The ROR will be based on the results of the Sooke Lake Reservoir Operating Strategy completed separately by Hatch and will consist of:

1. *Seasonal Flood Compartment Storage* - seasonally reduce the operating level of the Sooke Lake Reservoir and Deception Gulch Reservoir during the winter season when water demand is lowest, and flood risk is highest.
2. *Forecast Informed Reservoir Operating Rules* - the Flood Forecasting System will be utilized to implement Forecast Informed Reservoir Operations (FIRO). FIRO will include rules to monitor weather forecasts, predict effects of incoming storm systems on dams and reservoirs, and make forecast informed decisions regarding the need for <u>temporary</u> reservoir water level adjustments to safely pass increased reservoir inflows (i.e. major flood events).
3. *Other Reservoir Operating Rules* – The project involves looking at opportunities to develop additional ROR to improve dam safety and security of the water supply.

<u>Important note</u>: The Flood Forecasting System will provide a “decision-support” tool to be used by IWS staff to inform decisions around flood operations and dam safety risk reduction measures during winter. Prior to any implementation of new ROR, IWS staff plan to conduct a desktop testing of the tools and simulate operations during a winter season using the new modelling and decision support tool. This period of commissioning will allow staff to test and validate the new models to gain confidence in the new decision support tool and proposed changes to the reservoir operating strategy.

Additionally, the Watershed Simulation Models are being used to resolve other related dam safety deficiencies, namely:

1. *Emergency Reservoir Drawdown Analysis and Procedures*
2. *Inflow Design Flood Estimation and Dam Freeboard Analysis*

Phase 1 of the project is focused on the Sooke Lake Watershed Dams and is anticipated to be completed in 2025. Future phase(s) are planned to follow to expand the Flood Forecasting System to include the adjacent Goldstream Watershed Dams and expand the hydrological modelling to the Leech Watershed.

<u>Outlet Gates, Valves, and Actuators Assessment</u>

As a result of routine inspections and audits, issues such as the failure and unreliability of valve actuators were observed. This has resulted in the approval and completion of a comprehensive

actuator assessment study for all RWS Dams and potential future recommendations for capital improvements. Valve projects completed since last Dam Safety Program Update in November 2019:

1. Sooke Lake Dams Spillway Gate Hydraulic System Replacement
2. Replacement of High-Level Outlet Gate at Lubbe Dam No.1
3. Sooke Lake Saddle Dam Valve Stem Repairs

Other prioritized projects currently in design with construction to follow in 2025 & 2026 include:

1. Deception Gulch Dam Low-Level Outlet Gate and Vent Pipe Replacement
2. Replacement of High-Level Outlet Gates at Goldstream Dam and Butchart Dam No.1

Seismic Stability Improvements: Sooke Lake Dam Spillway, Sooke Lake Saddle Dam and Deception Gulch Dam

The CDA Dam Safety Guidelines state that engineering analyses are required to demonstrate that a dam will remain stable under all hazards and loading conditions based on the current Dam Failure Consequence Classification. In 2016, the CRD retained the professional engineering services of Thurber to lead a team of consultants and complete a seismic stability assessment of Sooke Lake Dam, Sooke Lake Saddle Dam and Deception Gulch Dam. Details of the project objectives and analyses were provided in the previous Dam Safety Update staff report dated November 20, 2019.

The consulting team led by Thurber provided a list of recommended structural and seismic retrofits for the dam spillway and intake tower and non-structural operational improvements and further studies to consider, to improve seismic resiliency. The following improvements have been prioritized and are currently in a scope definition phase:

1. *Sooke Lake Dam Spillway and Gates Retrofit project*, which includes design of seismic restraint of the 65m wide concrete spillway, and retrofitting of the two primary spillway gates, supporting walls surrounding the gates, and gate isolation system.
2. *Deception Gulch Dam – Safety/Risk Reduction Measures* project, which includes design of a large granular buttress to be constructed at the downstream face of the dam to increase resiliency to the updated design earthquake loads.

Additionally, the CRD staff are currently implementing the following risk-reduction measures: designing new dam safety instrumentation improvements, assessing valves and controls and updating Dam Emergency Plans. Also, the risk reduction benefits of operating the reservoirs at a lower water level during the winter months, when drinking water demand is lower, is a work in progress (Please see project description for Flood Forecasting System and Hydrotechnical Services for more details). IWS staff plan to complete similar seismic stability analyses of the remaining RWS dams (including the 11 Goldstream Watershed dams). The work will begin with a seismic hazard assessment for each of the four reservoirs in the Goldstream System and will be followed by a drilling investigation to classify dam materials and conduct deformation analysis on each of the major dams to determine what, if any, seismic upgrades are needed due to the updated seismic hazard.

Integrate Dam Performance and Hydromet to SCADA

A project team consisting of Dam Safety and IT staff has been assembled to prepare a plan for integrating all dam performance data to the current SCADA system, and plan for connecting remote dams in the Goldstream Watershed to the CRD's SCADA system. The project plan has identified the following key objectives:

1. Develop a standardized field cabinet complete with hardware which meet all appropriate regulations and can house equipment needed for an automated data acquisition system (e.g. datalogger, radio, etc.) that is scalable, flexible, robust, and compatible with the current SCADA system. The cabinets will be installed at remote dam sites, as well as key weather station sites that support dam safety decision making.
2. Conduct a pathway study for enabling improved communications to remote dam and hydrometeorological station sites located in the Goldstream Watershed.
3. Implement installation of new hardware and cabinets at the remote sites, in a prioritized manner.
4. Commission the new automated data acquisition system and integrate it with the SCADA system.

Work on the project will continue in 2024 and is anticipated to take several years to complete. Separate and parallel to this project, IWS staff are planning dam safety instrumentation improvements, such as automated piezometers and seepage weirs, at many of the major dams.

Dam Deformation Monitoring Program

IWS staff are coordinating annual dam deformation surveys at Sooke Lake Dam with support from Thurber and a local professional surveying firm. Survey benchmarks and targets were installed at the dam in 2019. Results of the annual surveys since 2019 show that the dam has not deformed or settled any significant amount since the baseline survey was conducted. In 2024, IWS staff hired Thurber Engineering to provide engineering advice developing a comprehensive Dam Deformation Monitoring Program for the 15 Regional Water Supply Dams. The DDMP will be a phased program that includes a mix of technologies (e.g. manual survey, drone, satellite, etc.) to collect topographic data for all the major dams. The data will support long-term monitoring of potential slow movements of the embankment dams, as well as the opportunity to provide baseline data for conducting post-earthquake surveys at the regional water supply dams. IWS staff are planning to continue with annual surveys of Sooke Lake Dam and begin the first phase of the broader program later in 2024.

Making a difference...together

RWSC24-16

REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, OCTOBER 16, 2024

SUBJECT **Greater Victoria Water Supply Area 2024 Wildfire Management Update**

ISSUE SUMMARY

To report on the 2024 Greater Victoria Water Supply Area (GVWSA) wildfire management program and departmental participation in the Old Man Lake wildfire, five kilometers (km) to the south in Sea-to-Sea Regional Park.

BACKGROUND

Several risk assessments of the GVWSA have been completed over the years. In all cases the risk of large-scale wildfire has been determined to be the greatest land-based threat to drinking water quality and infrastructure in the GVWSA. Landscape level wildfire is assessed as a low likelihood but high consequence risk. The water quality impacts associated with large fires stem from sediment, soils, woody debris, nutrients and potential contaminants entering source water reservoirs from severely burned areas. Infrastructure in the GVWSA may be destroyed or damaged by a large wildfire. Given this risk, the Watershed Protection division has developed comprehensive wildfire management programs including: planning, prevention, detection, readiness, response, forest fuel reduction, and burned area rehabilitation preparedness.

Wildfire Planning, Prevention and Preparedness

A comprehensive *GVWSA Wildfire Management Plan* provides an overview of GVWSA climate, weather, forest fuels, potential fire behaviour, fire history, and current strategies for wildfire prevention, detection, suppression and fuel management. In 2024 an update of the plan was begun, to be completed prior to the 2025 wildfire season.

Each spring the *GVWSA Wildfire Preparedness Plan* is updated and distributed to staff and external agencies providing operational procedures for wildfire reporting, patrols, standby and suppression, contact lists, work restrictions, suppression equipment inventory and staging.

Wildfire prevention activities begin with restricting public access and enforcement of the GVWSA Protection bylaw to reduce the probability of fire starts from unauthorized access. The Leech Water Supply Area (WSA) was added to the bylaw in 2016 and the Sooke and Goldstream WSAs have been under the current bylaw since 2000 and other similar regulation for many years prior to that. In 2024, one additional Watershed Security Officer is being authorized bringing the total to five Watershed Protection personnel with the training and authority to serve municipal tickets. In 2024 so far, 23 instances of unauthorized entry have been recorded in the GVWSA and 17 in-person interactions made with unauthorized individuals or groups in the GVWSA and neighbouring park and private lands. Unauthorized entries have been largely on the fringes of the GVWSA by foot, bicycle and motorbike and seven cold fires found. Where interaction was possible, positive outcomes were achieved by informing the public of their location and the necessity of a closed watershed.

A network of eight fire weather stations determines the daily Fire Danger Rating (FDR) in each of the WSA. The FDR guides/restricts operational work and may require fire watch after work ceases, to reduce the probability of fire starts.

Wildfire Detection

It is important for the GVWSA wildfire management program to detect any fires early, to increase the probability of controlling and suppressing the fire. Fire starts are detected by ground patrols, air patrols, tracking lightning strikes, and more recently drones and infrared cameras. In 2024 the infrared camera on Mt. Healey, that views the Sooke and Goldstream WSAs (and can also see Sea-to-Sea Regional Park to the south), was used extensively to track the Old Man Lake Wildfire and provide BC Wildfire Service (BCWS) daily information on the fire (Appendix A photos and B map). In fall 2024 an infrared camera was also mounted on Survey Mountain to "see" the Leech WSA (Appendix A photo and B map).

Wildfire Readiness

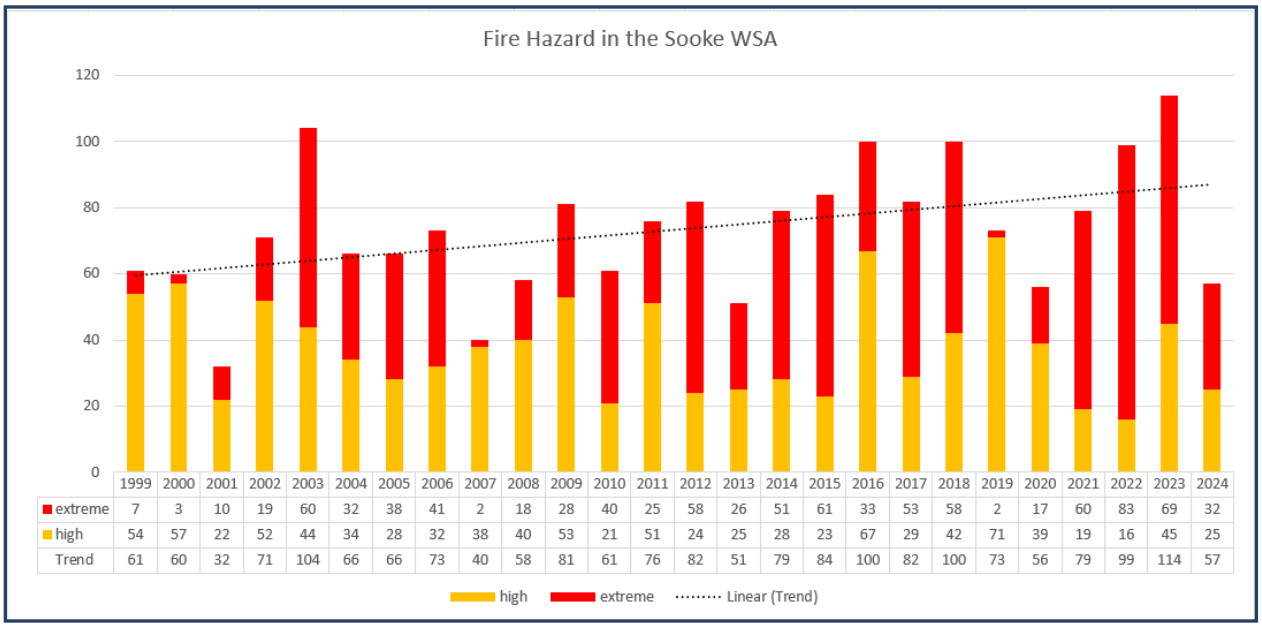
The wildfire response program includes the following elements:

- *Preparedness* – seasonal staff hiring, equipment staging, reporting daily wildfire preparedness status and fire weather conditions.
- *Training* – In 2024, 28 staff were trained and fit for wildfire response in the GVWSA, six additional staff within the Capital Regional District (CRD) have training and can also be called upon.
- *Standby* - staff on standby for fireline roles at prescribed fire danger levels.
- *Equipment* - well maintained equipment that is the same or compatible with provincial and industry equipment for seamless fire support.
- *Pumping Stations* - maintenance of access to approximately 30 water source locations spread throughout the GVWSA.
- *Service and Partnership Agreements*
    - Wildfire Response Agreement with the BCWS to provide unlimited support on wildfire suppression in the GVWSA for an annual fee. In 2024, the CRD paid $8,100 for protection of 20,605 hectares (ha) of GVWSA lands.
    - Memorandum of Understanding - South Vancouver Island Fire Management Organization – participating landholders in the South Island including private forest landholders and government agencies have agreed to terms of co-operation in reporting, initial attack, sustained wildfire suppression and payment for action on each other's lands.
    - Working relationships with neighbouring municipal and volunteer fire halls including Langford, Sooke, Shawnigan, Malahat, Colwood, and Metchosin.

Wildfire Response

In 2024, the GVWSA experienced only 57 days in high and extreme fire danger compared with 114 days in 2023 (see graph below). Given drought conditions and warm temperatures in 2024, the fire danger moved quickly from high to extreme, with a greater number of days in extreme (32) than high (25). Significant rainfall July 29-30, 2024 and August 18 and 23-26 dampened fire danger ratings providing welcome periods of fire danger relief.

Despite the fewer number of fire danger days, a wildfire started in Sea-to-Sea Regional Park on July 22 that grew to 230 ha before it was declared under control on July 30. Containment was aided by a large amount of provincial firefighting resources and the July 29-30 rainfall. There was also a small fire started by a lightning strike in the Leech WSA on August 17. The response to these wildfires is described below.



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
extreme	7	3	10	19	60	32	38	41	2	18	28	40	25	58	26	51	61	33	53	58	2	17	60	83	69	32
high	54	57	22	52	44	34	28	32	38	40	53	21	51	24	25	28	23	67	29	42	71	39	19	16	45	25
Trend	61	60	32	71	104	66	66	73	40	58	81	61	76	82	51	79	84	100	82	100	73	56	79	99	114	57

The number of days in High and Extreme Fire Danger Rating in the Sooke WSA 1999-2024

<u>Old Man Lake Wildfire (CRD Regional Parks)</u>

The fire started in the afternoon of July 22 in Sea-to-Sea Regional Park. It is considered human caused as there were no lightning strikes in the area, but exact cause has not been determined. BCWS took command of the wildfire, CRD Regional Parks managed public access and represented the CRD at the BCWS Command Post in the field and staffed a Department (Emergency) Operations Centre. CRD Watershed Protection provided 10 initial attack firefighting staff from the first day until August 1, or 11 consecutive days until the fire was declared contained and under control. CRD fire hydrants along the watermain under the Galloping Goose trail were utilized as well as Watershed Protection sprinkler systems, pumps and hoses to deliver water. BCWS deployed many different ground and aviation resources including a para-attack aka smokejumper crew.

The CRD response to the wildfire and liaison with the District of Sooke and T'Sou-ke First Nation was coordinated by CRD Protective Services which activated the Emergency Operations Centre. Communications on the wildfire, associated public access restrictions, and concerns about the GVWSA and water quality were coordinated by all agencies involved in the wildfire.

The terrain where the fire was burning was rocky, broken and steep in places making access and firefighting on the ground difficult (see also photos in Appendix A). Once the fire surpassed small size, it needed to grow to locations where crews could establish control lines, leading to days of growth that were concerning to the public. BCWS priorities were initially to control spread to the south towards Sooke, and then with influence from CRD, to control spread to the north towards

the GVWSA. CRD crews were essential in establishing and holding the north flank. CRD Watershed Protection personnel provided 1,180 hours or 147 person days on the fire. Once declared under control, Watershed Protection personnel pulled out and CRD Parks personnel provided fire mop-up and monitoring. The fire has not yet been declared out and is still considered an active BCWS wildfire site. Given terrain stability and rockfall risk, the Sooke Potholes Campground and fire-impacted section of the Galloping Goose Regional Trail remain closed. An after-action review conducted by Watershed Protection of initial attack activities and participation found no major concerns but opportunities for improvement, predominantly in communications. Given the difficult terrain, staff are commended on the lack of safety incidents while on the fire. CRD Protective Services and BCWS are conducting their own after-action reviews and Watershed Protection is participating where possible.

CRD is grateful to BCWS for the effort and resources applied to the fire to keep both community and the GVWSA safe. A letter of appreciation was sent to BCWS by the CRD Board Chair (Appendix C). T'Sou-ke First Nation also expressed their appreciation to the firefighters by hosting a dinner in the community with Kapoor Lumber Company providing funding to also express their gratitude.

Lightning Strike Wildfire (Leech Water Supply Area)

A storm with lightning on Saturday August 17 started a fire that was detected by a BCWS patrol flight on Sunday August 18 in the northeast of the Leech WSA in an inaccessible area (See Appendix B map). BCWS informed CRD of their intention to use helicopters to support their ground crew responding to the fire. CRD personnel viewed the smoking spot fire with a drone on Sunday after receiving the report, and since BCWS was taking control of the fire with aviation and the significant rainfall, stood down on initial attack. The fire was declared under control on August 19 when BCWS was able to reach and action the site; and declared out on September 4. CRD personnel hiked to the site to view and monitor after BCWS declared the fire under control (photo on right).

Forest Fuel Management

Forest fuel management refers to the reduction of the amount and type of forest fuels (small trees, branches, downed woody material, combustible shrubs) available to a wildfire. If located strategically, forest fuel management can reduce the intensity and rate of spread of wildfire, improve probability of suppression success, and reduce the threat to water quality and water supply infrastructure. Forest fuel management has been ongoing for the last 15 years with a variety of FireSmart and fuel reduction areas and corridors implemented and maintained (see Appendix B map).

In 2024 the 42-ha thinning trial in the Sooke WSA was completed and a new initiative of a juvenile spacing treatment in an immature planted stand in the Leech WSA is being implemented. Juvenile spacing means reducing tree density to stimulate growth of the remaining trees and reduce forest fuels in the medium term. Dense trees along two sections of road in the Sooke WSA were also thinned in 2024 and the fuels managed, to enhance the fuel break function that the roads provide.

In 2024 detailed LiDAR (light, detection and ranging) mapping was conducted on the CRD powerline running along the east side of Sooke Lake Reservoir, to identify areas where trees may pose a hazard to the powerline with potential to cause a fire start. Treatments to reduce priority tree hazards will be planned in subsequent years. In the meantime, a procedure to monitor weather conditions and shut down the powerline during high fire danger and windy days has been put in place.

Burned Area Rehabilitation Planning and Preparedness

While much effort is directed into preventing wildfire, the rehabilitation response after a wildfire can play a large role in reducing water quality impacts should a significant fire burn in the GVWSA. In 2023, a project to identify areas with the potential for erosion, sediment transport and debris flows within the Sooke WSA, that could impact water quality, was completed. Based on this assessment, in 2024 site-specific post-wildfire rehabilitation prescriptions were prepared in high priority areas. As part of this initiative, additional erosion control "woodstraw" is being procured in 2024 to ensure inventory in case of fire.

Recently, the Old Man Lake wildfire in Regional Parks impacted Regional Water Supply infrastructure from a tree sliding down through the burned hillside and striking the underground water Transmission Main 15 to Sooke. This event will influence review of wildfire and post wildfire risk to critical infrastructure within and potentially outside of the GVWSA.

CONCLUSION

Wildfire management remains the highest priority program in managing the Greater Victoria Water Supply Area (GVWSA). The GVWSA experienced a relatively short period of High and Extreme Fire Danger and wildfire risk in 2024, however a lightning strike and the Old Man Lake Wildfire five km away from the GVWSA in similar forest types and topography, provided a stark reminder of the potential and difficulty of controlling a wildfire. Annual wildfire prevention and preparedness activities were conducted in the GVWSA as well as completion of a thinning trial and new juvenile spacing initiative to continue to make progress on managing forest fuels, improving forest stand health and resilience. The "closed watershed" policy as well as the BC Wildfire Service – Capital Regional District *Wildfire Response Agreement* remain key elements in preventing and controlling wildfire starts in the GVWSA.

RECOMMENDATION

There is no recommendation. The report is for information only.

Submitted by:	Annette Constabel, M.Sc., RPF., Senior Manager, Watershed Protection
Concurrence:	Alicia Fraser, P. Eng., General Manager, Integrated Water Services
Concurrence:	Ted Robbins, B. Sc., C. Tech., Chief Administrative Officer

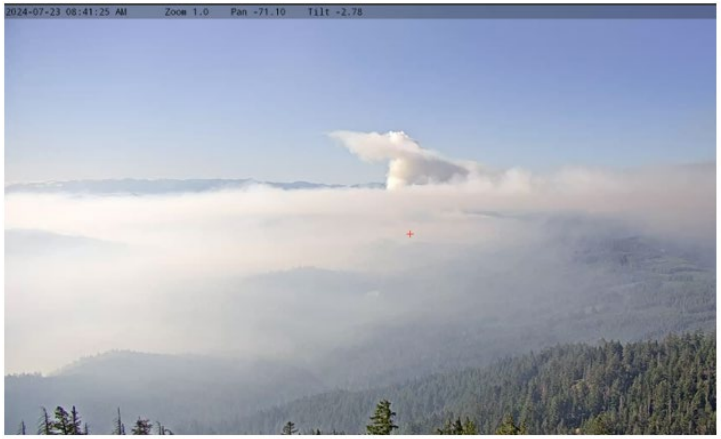
APPENDIX(S)

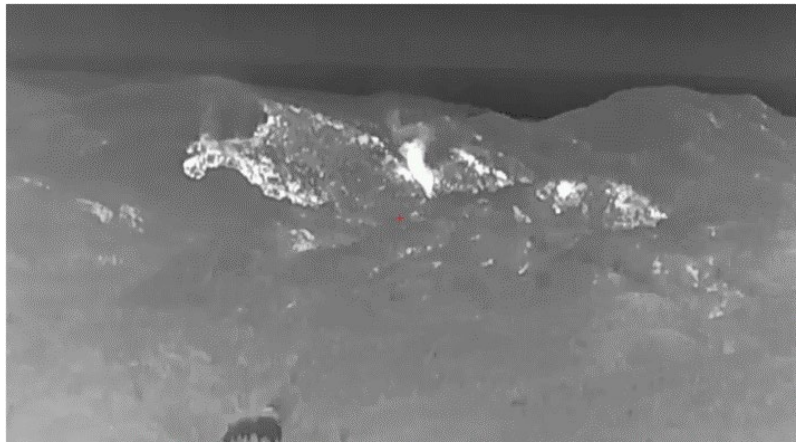
Appendix A: 2024 Wildfire Management Activity Photos
Appendix B: Wildfire Management Map
Appendix C: Letter from CRD Board Chair

APPENDIX A

2024 WILDFIRE MANAGEMENT ACTIVITY PHOTOS

View from Mt Healey camera looking toward Old Man Lake wildfire in Sea-to-Sea Regional Park on July 23, showing the visible and infrared view on a day of significant fire growth best seen by infrared.

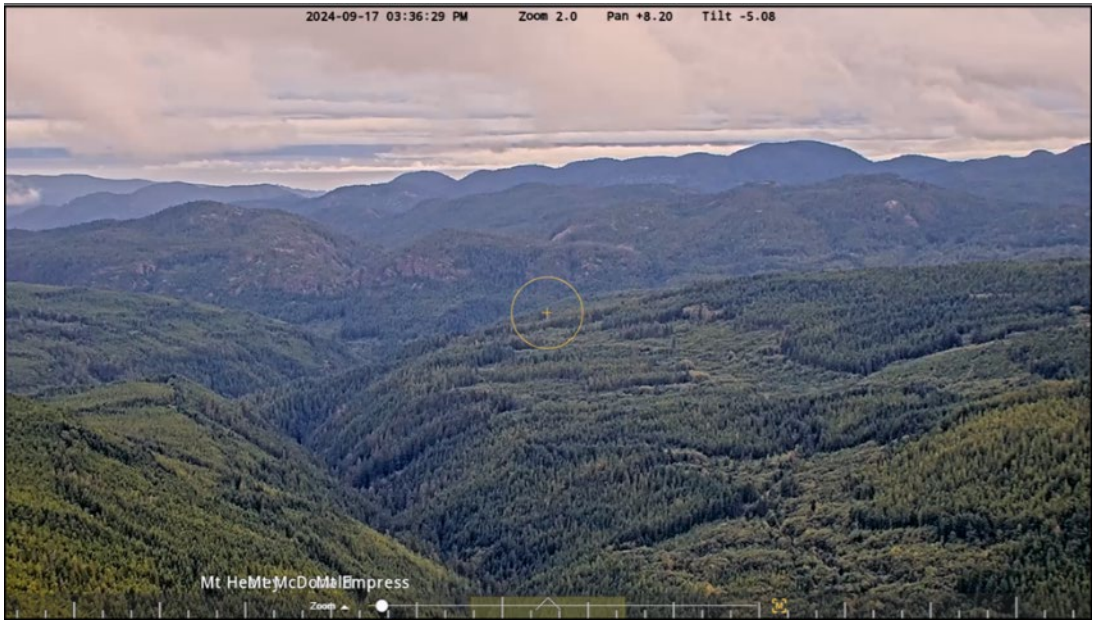


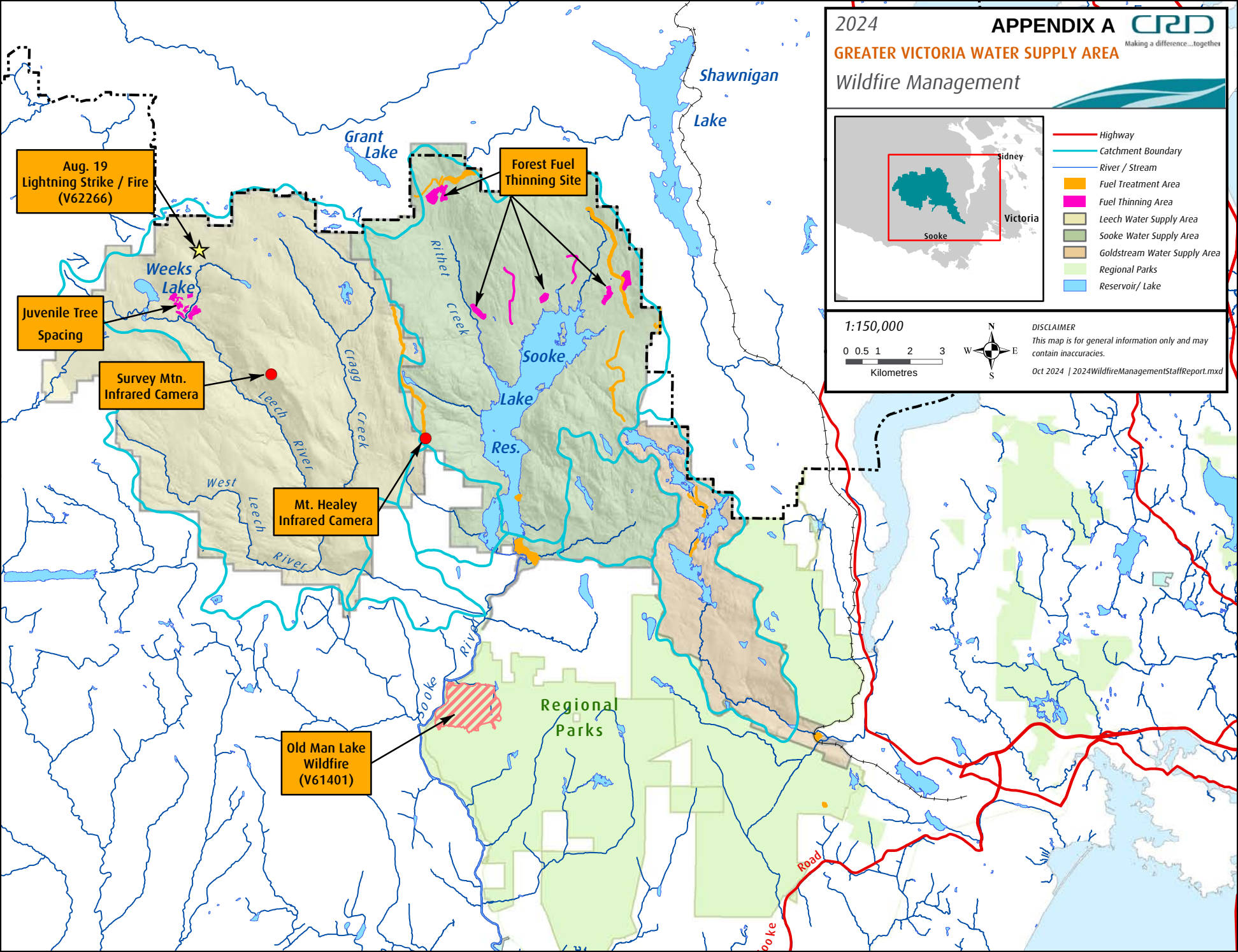


- Top photos show visible spectrum camera view
- Bottom photos show infrared view cutting through the smoke. White are areas of heat (fire)
- Photos on left show fire in the morning of July 23
- Photos on right show fire in the late afternoon of July 23, a day of significant fire growth
- Top right photo, an air tanker is visible.

APPENDIX A

View from new camera on Survey Mountain looking down the Leech River.




2024
APPENDIX A
GREATER VICTORIA WATER SUPPLY AREA
Wildfire Management
Making a difference...together
Sidney
Victoria
Sooke
Highway
Catchment Boundary
River / Stream
Fuel Treatment Area
Fuel Thinning Area
Leech Water Supply Area
Sooke Water Supply Area
Goldstream Water Supply Area
Regional Parks
Reservoir/ Lake
1:150,000
0 0.5 1 2 3
Kilometres
N
W
E
S
DISCLAIMER
This map is for general information only and may contain inaccuracies.
Oct 2024 | 2024WildfireManagementStaffReport.mxd
Aug. 19 Lightning Strike / Fire (V62266)
Forest Fuel Thinning Site
Juvenile Tree Spacing
Survey Mtn. Infrared Camera
Mt. Healey Infrared Camera
Old Man Lake Wildfire (V61401)
Shawnigan Lake
Grant Lake
Weeks Lake
Rithet Creek
Sooke Lake Res.
Cragg Creek
Leech River
West Leech River
Sooke River
Regional Parks
Road

APPENDIX C

Making a difference...together

Executive Offices
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Victoria, BC V8W 2S6

T: 250.360.3125
F: 250.360.3130
www.crd.bc.ca

August 30, 2024

File: 0400-20

BC Wildfire Service
Attention: David Greer, Acting Executive Director, Strategic Engagement & Partnerships
Via email: ***David.greer@gov.bc.ca***

Dear David Greer:

RE: BC WILDFIRE SERVICE RESPONSE TO THE OLD MAN LAKE FIRE

On behalf of the Capital Regional District (CRD) Board, we want to express our sincere gratitude and appreciation for BC Wildfire Service's (BCWS) prompt and continued response in combatting the Old Man Lake Fire (V61401) near Sooke Potholes. While the fire is not yet officially out, the CRD would like to commend BCWS for its significant efforts on the fire, which have enabled the fire to be deemed under control. The CRD is exceptionally grateful for the human, physical, and financial capital that BCWS invested in containing the Old Man Lake Fire as quickly as possible.

The heroic efforts of ground crews on difficult terrain have ensured that the CRD's regional parks and trails that were impacted by the fire will continue to be enjoyed for generations to come. While this fire did not enter the Greater Victoria Water Supply Area (GVWSA), like the wildfires of 2020, the CRD Board would like to thank BCWS for its professionalism and proactive approach to the fire, which ensured that the CRD's water supply remained safe, protected, and unimpacted by the fire.

The protection of the GVWSA and the drinking water quality of Sooke Lake Reservoir is of great importance as is the protection of our valuable park lands. BCWS's efforts to protect these critical regional assets is appreciated.

The CRD values its relationship, commitment to safety, and communication with BCWS to provide wildfire protection for the region. BCWS communication efforts on the Old Man Lake Fire went a long way in ensuring community leaders and residents were well informed and that both BCWS and CRD fire crews remained safe. We look forward to learning new and improved ways of managing future wildfires and how we can work together to continuously improve prevention, detection, and fire suppression efforts under the terms of our Wildfire Response and Wildfire Resource Agreements.

Sincerely,

Colin Plant
Chair, Capital Regional District Board

cc: CRD Board
Ted Robbins, Chief Administrative Officer, CRD