metrovancouver
SERVICES AND SOLUTIONS FOR A LIVABLE REGION

METRO VANCOUVER REGIONAL DISTRICT
WATER COMMITTEE

MEETING

September 13, 2023
9:00 am
Meeting conducted electronically/in-person pursuant to the Procedure Bylaw
28th Floor Committee room, 4515 Central Boulevard, Burnaby, British Columbia

A G E N D A[1]

1. ADOPTION OF THE AGENDA

1.1 September 13, 2023 Meeting Agenda
That the Water Committee adopt the agenda for its meeting scheduled for September 13, 2023 as circulated.

2. ADOPTION OF THE MINUTES

2.1 July 12, 2023 Meeting Minutes ***pg. 3***
That the Water Committee adopt the minutes of its meeting held July 12, 2023 as circulated.

3. DELEGATIONS

4. INVITED PRESENTATIONS

5. REPORTS FROM COMMITTEE OR STAFF ***pg. 8***

5.1 In-System Reservoir Upgrades Update
That the Water Committee receive for information the report dated August 30, 2023, titled "In-System Reservoir Upgrades Update".

[1] *Note: Recommendation is shown under each item, where applicable.*

5.2 GVWD Capital Program Expenditure Update to June 30, 2023 *pg. 16*

That the Water Committee receive for information the report dated September 7, 2023, titled "GVWD Capital Program Expenditure Update to June 30, 2023".

5.3 Water Supply Update – Stage 2 Restrictions *pg. 36*

That the Water Committee receive for information the report dated September 7, 2023, titled "Water Supply Update – Stage 2 Restrictions".

5.4 Manager's Report *pg. 41*

That the Water Committee receive for information the report dated September 7, 2023, titled "Manager's Report".

6. INFORMATION ITEMS

6.1 Correspondence dated August 25, 2023 from Ministry of Forests to GVWD Water Services regarding a request for reduction of water use in response to Drought Level 5. *pg. 49*

7. OTHER BUSINESS

8. BUSINESS ARISING FROM DELEGATIONS

9. RESOLUTION TO CLOSE MEETING

Note: The Committee must state by resolution the basis under section 90 of the Community Charter on which the meeting is being closed. If a member wishes to add an item, the basis must be included below.

That the Water Committee close its meeting scheduled for September 13, 2023 pursuant to section 226 (1) (a) of the *Local Government Act* and the *Community Charter* provisions as follows:

90 (1) A part of a council meeting may be closed to the public if the subject matter being considered relates to or is one or more of the following:

(m) a matter that, under another enactment, is such that the public may be excluded from the meeting.

10. ADJOURNMENT/CONCLUSION

That the Water Committee adjourn/conclude its meeting of September 13, 2023.

Membership:

Brodie, Malcolm (C) – Richmond
Sager, Mark (VC) – West Vancouver
Albrecht, Paul – Langley City
Bell, Don – North Vancouver City
Bligh, Rebecca – Vancouver
Cassidy, Laura – Sc̓əwaθən məsteyəxʷ (Tsawwassen First Nation)
Guichon, Alicia – Delta
Hodge, Craig – Coquitlam
Keithley, Joe – Burnaby
Little, Mike – North Vancouver District
MacDonald, Nicole – Pitt Meadows
Stutt, Rob – Surrey
vanPopta, Misty – Langley Township

METRO VANCOUVER REGIONAL DISTRICT
WATER COMMITTEE

Minutes of the Regular Meeting of the Metro Vancouver Regional District (MVRD) Water Committee held at 9:00 am on Wednesday, July 12, 2023 in the 28th Floor Committee Room, 4515 Central Boulevard, Burnaby British Columbia.

MEMBERS PRESENT:
Chair, Mayor Malcolm Brodie, Richmond
Vice Chair, Mayor Mark Sager, West Vancouver
Councillor Paul Albrecht, Langley City
Councillor Don Bell*, North Vancouver City
Councillor Rebecca Bligh*, Vancouver
Chief Laura Cassidy*, scəwaθən məsteyəxʷ (Tsawwassen First Nation) (arrived at 9:10 am)
Councillor Alicia Guichon*, Delta
Councillor Craig Hodge, Coquitlam
Mayor Mike Little, North Vancouver District
Mayor Nicole MacDonald, Pitt Meadows
Councillor Rob Stutt, Surrey

MEMBERS ABSENT:
Councillor Joe Keithley, Burnaby
Councillor Misty vanPopta, Langley Township

STAFF PRESENT:
Jerry W. Dobrovolny‡, Chief Administrative Officer
Marilyn Towill, General Manager, Water Services
Rapinder Khaira, Legislative Services Coordinator, Board and Information Services

1. ADOPTION OF THE AGENDA

1.1 July 12, 2023 Meeting Agenda

It was MOVED and SECONDED
That the Water Committee adopt the agenda for its meeting scheduled for July 12, 2023 as circulated.

CARRIED

*denotes electronic meeting participation as authorized by section 3.6.2 of the *Procedure Bylaw*
‡denotes electronic meeting participation

2. ADOPTION OF THE MINUTES

2.1 June 14, 2023 Meeting Minutes

It was MOVED and SECONDED
That the Water Committee adopt the minutes of its meeting held June 14, 2023 as circulated.

CARRIED

3. DELEGATIONS

No items presented.

4. INVITED PRESENTATIONS

No items presented.

5. REPORTS FROM COMMITTEE OR STAFF

5.1 Draft Water 2024 - 2028 Capital Plan

Report dated July 6, 2023, from Marilyn Towill, General Manager, Water Services, presenting the Water Committee the draft Water Utility 2024 – 2028 Capital Plan for comments.

Members were presented with an outline of services objectives, a breakdown of Capital Plan drivers, and proposed changes to the Capital Plan.

9:10 am Chief Cassidy arrived at the meeting.

Presentation material titled "2024-2028 Draft Capital Plan" is retained with the July 12, 2023 Water Committee agenda.

It was MOVED and SECONDED
That the Water Committee receive for information the report dated July 6, 2023, titled "Draft Water 2024 - 2028 Capital Plan".

CARRIED

5.2 Award of Phase B Detailed Design Consulting Engineering Services from Request for Proposal No. 20-287 Coquitlam Main No. 4 Tunnel – Preliminary Design, Detailed Design and Construction Consulting Engineering Services

Report dated June 26, 2023, from George Kavouras, Director, Purchasing and Risk Management, Financial Services and Bob Cheng, Director, Major Projects, Project Delivery, seeking GVWD Board approval of the award of Phase B, Detailed Design Consulting Engineering Services, for an amount up to $13,671,153 to the Phase A consultant, Hatch Limited, for Request for Proposal No. 20-287 Coquitlam Main No. 4 Tunnel – Preliminary Design, Detailed Design and Construction Consulting Engineering Services.

It was MOVED and SECONDED

That the GVWD Board:

a) approve the award of Phase B, Detailed Design Consulting Engineering Services, for an amount up to $13,671,153 (exclusive of taxes) to the Phase A consultant, Hatch Limited, for Request for Proposal No. 20-287 Coquitlam Main No. 4 Tunnel – Preliminary Design, Detailed Design and Construction Consulting Engineering Services, and

b) authorize the Commissioner and Corporate Officer to execute the required documentation once the Commissioner is satisfied that the award should proceed.

CARRIED

5.3 Award of Tender No. 22-178 – Construction Services for Douglas Road Main No. 2 (South Open Cut Section)

Report dated June 29, 2023, from Joel Melanson, Division Manager, Engineering and Construction, Water Services and George Kavouras, Director, Procurement and Real Estate Services, seeking GVWD Board approval of the award of Tender No. 22-178 for Construction Services for Douglas Road Main No. 2 – South Open Cut Section in the amount of up to $20,626,875 to Sandpiper Contracting LLP.

It was MOVED and SECONDED

That the GVWD Board:

a) approve the award of Tender No. 22-178 for Construction Services for Douglas Road Main No. 2 – South Open Cut Section; in the amount of up to $20,626,875 (exclusive of taxes) to Sandpiper Contracting LLP, subject to final review by the Commissioner; and

b) authorize the Commissioner and the Corporate Officer to execute the required documentation once the Commissioner is satisfied that the award should proceed.

CARRIED

5.4 Guide to Metro Vancouver Utility Capital Projects for Member Jurisdictions and Impact Mitigation Framework

Report dated June 21, 2023, from Jennifer Crosby, Director, Project Management Office, Project Delivery and Nermine Tawfik, Supervisor Community Engagement, External Relations, providing the GVWD Board an update on progress with developing an equitable impact mitigation framework for member jurisdictions in which Metro Vancouver is undertaking capital project construction.

Members were provided with an introduction to the Guide to Metro Vancouver Utility Capital Projects for Member Jurisdictions and Impact Mitigation Framework, highlighting the objectives and purpose.

Presentation material titled “Guide to MV Utility Capital Projects and Impact Mitigation Framework” is retained with the July 12, 2023 Water Committee agenda.

It was MOVED and SECONDED
That the GVWD and GVS&DD Boards receive for information the report dated June 21, 2023 titled "Guide to Metro Vancouver Utility Capital Projects for Member Jurisdictions and Impact Mitigation Framework".

CARRIED

5.5 GVWD Capital Program Expenditure Update to April 30, 2023

Report dated June 14, 2023, from Joel Melanson, Division Manager, Engineering and Construction, Water Services, providing the Water Committee an update on the status of the GVWD Capital Program and financial performance for the 2023 fiscal year to April 30, 2023.

It was MOVED and SECONDED
That the Water Committee receive for information the report dated June 14, 2023, titled "GVWD Capital Program Expenditure Update to April 30, 2023".

CARRIED

5.6 Manager's Report

Report dated July 6, 2023, from Marilyn Towill, General Manager, Water Services, providing the Water Committee with an overview on residential water metering, drinking water consumption statistics reports, Water Committee tour, and the Water Committee 2023 Work Plan.

It was MOVED and SECONDED
That the Water Committee receive for information the report dated July 6, 2023, titled "Manager's Report".

CARRIED

6. INFORMATION ITEMS

6.1 2023 Update on Water Sustainability Innovation Fund Projects

It was MOVED and SECONDED
That the Water Committee receive for information the report dated June 14, 2023, titled "2023 Update on Water Sustainability Innovation Fund Projects."

CARRIED

7. OTHER BUSINESS

No items presented.

8. BUSINESS ARISING FROM DELEGATIONS

No items presented.

9. RESOLUTION TO CLOSE MEETING

It was MOVED and SECONDED

That the Water Committee close its meeting scheduled for July 12, 2023 pursuant to section 226 (1) (a) of the *Local Government Act* and the *Community Charter* provisions as follows:

90 (1) A part of a council meeting may be closed to the public if the subject matter being considered relates to or is one or more of the following:

(e) the acquisition, disposition or expropriation of land or improvements, if the board or committee considers that disclosure could reasonably be expected to harm the interests of the [regional district].

CARRIED

10. ADJOURNMENT/CONCLUSION

It was MOVED and SECONDED

That the Water Committee adjourn its meeting of July 12, 2023.

CARRIED

(Time: 9:38 am)

Rapinder Khaira,
Legislative Services Coordinator

Malcolm Brodie,
Chair

60943921 FINAL

To: Water Committee

From: Hein Steunenberg, Division Manager, Engineering and Construction Treatment and Facilities, Water Services
Paul Kohl, Director, Operations & Maintenance, Water Services

Date: August 30, 2023 Meeting Date: September 13, 2023

Subject: **In-System Reservoir Upgrades Update**

RECOMMENDATION

That the Water Committee receive for information the report dated August 30, 2023, titled "In-System Reservoir Upgrades Update".

EXECUTIVE SUMMARY

Metro Vancouver Water Services staff clean, maintain, upgrade, and expand Metro Vancouver's in-system reservoirs to ensure the delivery of high quality drinking water. This work is key in meeting the goals identified in the *Board Strategic Plan 2022 to 2026* for the Water Services function. The work is successfully completed through close collaboration with internal departments, member jurisdictions, and external partners.

PURPOSE

To inform the Water Committee of the work conducted on Metro Vancouver's in-system reservoirs and how this contributes to meeting the key strategic directions set out in the *Board Strategic Plan 2022 to 2026*.

BACKGROUND

Metro Vancouver currently owns and operates a total of 27 in-system reservoirs around the region. In order to deliver high quality drinking water, the in-system reservoirs are cleaned, maintained, upgraded, and expanded by Water Services. This report highlights some of the recent work and projects completed.

MANAGING IN-SYSTEM DRINKING WATER RESERVOIRS

Metro Vancouver follows the American Water Works Association's best practice approach of inspecting and cleaning in-system reservoirs at a minimum of once every five years. On this basis, an average of approximately 7 of the 27 in-system reservoirs are cleaned and inspected every year. This work is conducted during the low demand season from October to May, when Metro Vancouver staff isolate and drain selected in-system reservoirs. Once drained, staff inspect and complete condition assessments, and then perform final cleaning and disinfection. Prior to returning the reservoirs to service, in accordance with industry best practice, bacteriological water quality tests are conducted to ensure the quality of the drinking water meets the requirements of the BC *Drinking Water Protection Act* and associated *Drinking Water Protection Regulation*, which are consistent with the federal *Guidelines for Canadian Drinking Water Quality*.

Inspection and condition assessment reports are used to develop capital projects under the Maintenance and Resiliency programs of the Long Range Capital Plan. In addition, to meet the growing regional water demands, staff adds new reservoir projects as needed into the Long Range Capital Plan Growth program.

The implementation of the capital projects includes completing the reservoir designs 'in-house' or hiring consultants, preparing the tenders, and managing construction. For Maintenance and Resiliency projects, construction is typically scheduled to align with the next cleaning cycle for the in-system reservoir. This requires extensive planning and coordination between Metro Vancouver, member jurisdictions, user groups, and other stakeholders to take the reservoir out of service and complete construction while minimizing impacts to the surrounding communities and ensuring the return of the reservoir to service prior to the start of the high demand season.

At high priority in-system reservoirs, quality control capabilities are being improved through the installation of enhanced sampling equipment during the reservoir upgrades. This helps to increase the efficiency and reliability of the drinking water sample collection process.

MAINTENANCE

Maintenance projects for in-system reservoir sites extend the lifespan, improve operations, and reduce leakage. Recently completed maintenance projects include:

- **Little Mountain Reservoir Roof Upgrade**. Completed in 2021, this project included concrete repairs of the roof topping, which serves as the parking lot for Queen Elizabeth Park, resurfacing the parking lot, and drainage improvements. The project required extensive planning and coordination with the Vancouver Parks Board.
- **Whalley Reservoir Repairs**. Completed in 2022, this project fast tracked the design and construction to complete repairs of concrete cracks, replace joint sealants, and add a cementitious waterproof membrane to the reservoir interior base slab.
- **Kersland Reservoir Structural Improvements**. Phase 1 completed in 2022, made interior repairs to the concrete surface and replaced joint sealants. Phase 1 also installed a new balancing pipe in Unit 1. Phase 2, to repair the balancing pipe in Unit 2, is scheduled to start in December 2023.

RESILIENCY

The goal of seismic upgrade projects for reservoirs is to ensure the facility remains functional following a major earthquake. Recently completed seismic upgrade projects include:

- **Sunnyside Reservoir Unit 1 Seismic and Non-Seismic Upgrades.** Completed in 2021, this project seismically retrofitted Unit 1 by replacing the concrete roof and by adding external buttresses. The project also completed operational upgrades, including replacing the electrical and control equipment, adding a new automated inlet valve chamber, and installing automated outlet valves. A project with similar upgrades for Unit 2 is planned to start construction in 2025.
- **Pebble Hill Reservoir Unit 1 and Unit 2 Seismic Upgrades.** Currently on going and scheduled to be complete this fall, the project will seismically retrofit Unit 1 and Unit 2 by strengthening the roof with Fiber Reinforced Polymer (FRP) strips and by strengthening the walls and footings of the in-system reservoir with additional reinforced concrete.

GROWTH

To meet the growing demands for drinking water in communities south of the Fraser River, several new in-system reservoirs have been constructed, including:

- **Clayton Reservoir Phase 1.** Completed in 2018, this phase of the project constructed a new 22.5 ML above ground reservoir with inlet, outlet, and control chambers. The reservoir primarily feeds the adjacent City of Surrey pump station.
- **Jericho Reservoir Phase 1.** Completed in 2022, this project constructed a new 20.6 ML above ground dual cell reservoir and control chamber in the Township of Langley. This in-system reservoir provides a connection point to Township's East Langley Water Supply Main and their new Jericho Water Booster Pump Station (in design), and also services the City of Surrey.
- **Fleetwood Reservoir Phase 1.** Phase 1 is currently under construction and is scheduled to be complete in Q4 of 2024. This project will construct a 13.6 ML below ground reservoir in City of Surrey's Meagan Anne MacDougall Park. This in-system reservoir will service City of Surrey's adjacent Fleetwood Pump Station and supply the Anniedale-Tynehead area.

These essential projects will help increase the delivery of high quality drinking water to growing communities south of the Fraser River.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

Table 1 summarizes the budget allocated to each capital project. The budget was adjusted through the budget approval process as required to match inflation. For all completed projects actual costs were below their approved budgets.

Table 1: Financial Summary of the In-System Reservoir Capital Projects

Project	Approved Budget
Little Mountain Reservoir Roof Upgrade	$ 3,100,000
Whalley Reservoir Repairs	$ 2,500,000
Kersland Reservoir Structural Improvements	$ 4,500,000
Sunnyside Reservoir Unit 1 Seismic and Non-Seismic Upgrade	$ 15,000,000
Pebble Hill Reservoir No. 1 and No. 2 Seismic Upgrades	$ 11,900,000
Clayton Reservoir Phase 1	$ 23,050,000
Jericho Reservoir Phase 1	$ 35,000,000
Fleetwood Reservoir Phase 1	$ 53,500,000
Total =	$ 148,550,000

CONCLUSION

The completion of work related to the cleaning, maintaining, upgrading and expansion of in-system reservoirs greatly improves Metro Vancouver's ability to supply high quality drinking water and meet the future demands of the region. Through close collaboration with staff from member jurisdictions, the construction impacts from these large infrastructure projects are mitigated, and completing these projects helps Metro Vancouver meet the goals identified in the *Board Strategic Plan 2022 to 2026* for the Water Services function.

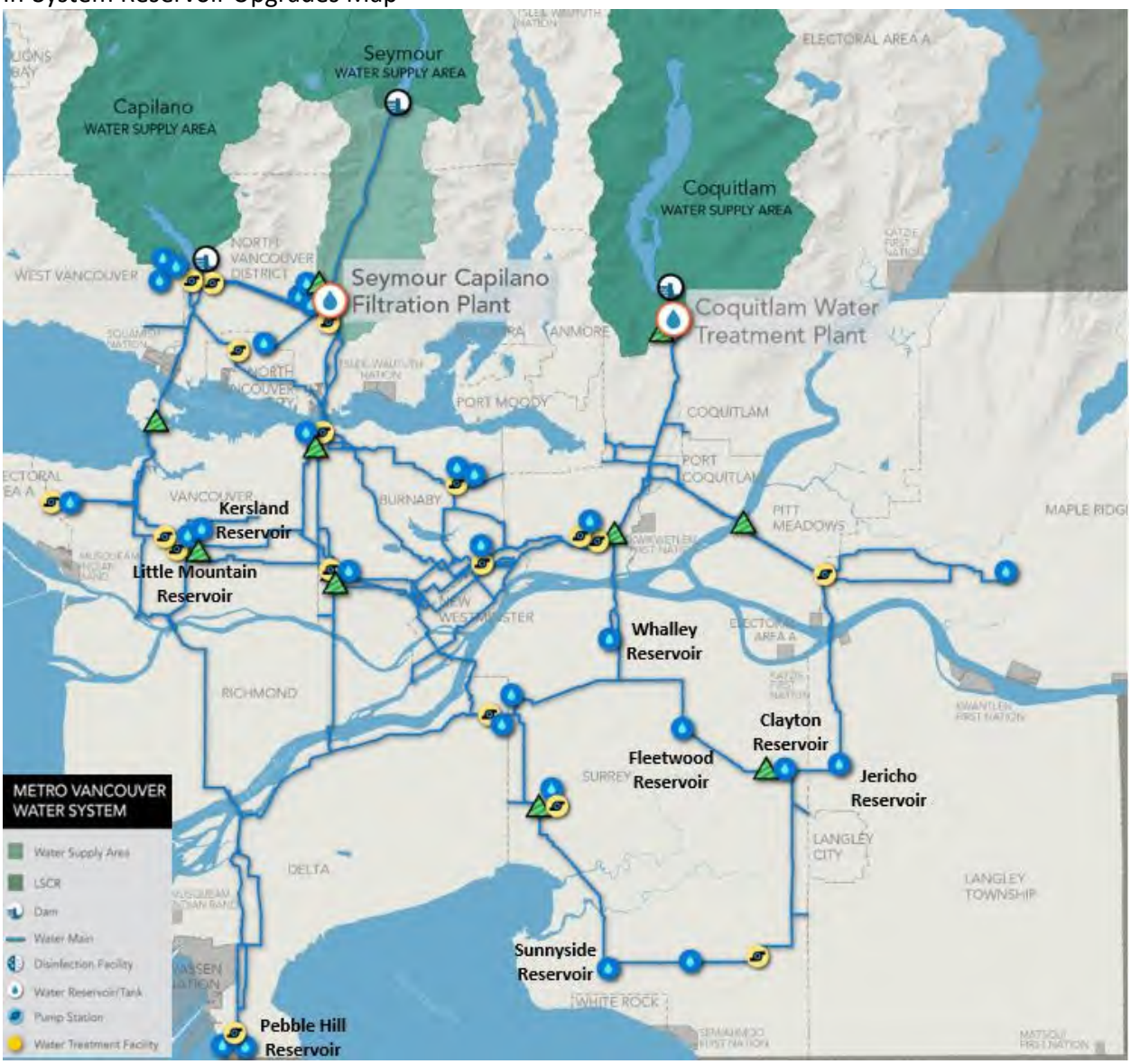
Attachments

1. In-System Reservoir Upgrades Map
2. Photos

Reference

1. Board Strategic Plan (metrovancouver.org)

In-System Reservoir Upgrades Map



Photos

Clayton Reservoir – February 2020

Jericho Reservoir – January 2022

Kersland Reservoir Unit 1 – New Balancing Pipe – March 2022

Reservoir Cleaning (Newton Reservoir) – April 2022

Pebble Hill Reservoir FRP Roof Strengthening – September 2022

Fleetwood Reservoir Under Construction – July 2023

To: Water Committee

From: Hein Steunenberg, Division Manager, Engineering and Construction Treatment and Facilities, Water Services

Date: September 7, 2023 Meeting Date: September 13, 2023

Subject: **GVWD Capital Program Expenditure Update to June 30, 2023**

RECOMMENDATION

That the Water Committee receive for information the report dated September 7, 2023, titled "GVWD Capital Program Expenditure Update to June 30, 2023".

EXECUTIVE SUMMARY

The capital expenditure reporting process as approved by the Board provides for regular status reports on capital expenditures. This report includes both the overall capital program for the water utility with a multi-year view of capital projects, and the actual capital spending for the 2023 fiscal year to June 30, 2023 in comparison to the prorated annual capital cash flow. In 2023, the annual capital expenditures for the GVWD are $93.5 million to date compared to a prorated annual capital cash flow of $200 m. Forecasted expenditures for the current water utility capital program remain within the approved budgets through to completion.

PURPOSE

To report on the status of the GVWD Capital Program and financial performance for the 2023 fiscal year to June 30, 2023.

BACKGROUND

The capital expenditure reporting process provides for regular status reports on capital expenditures with interim reports sent to the Water, Liquid Waste and Zero Waste Committees with a final year-end report to the Committees and the Boards in April of each year. Recent changes to the reporting framework now involve four reports per year (one per fiscal quarter) rather than three times per year. This is to align with the Finance Committee reporting schedule.

This report covers the GVWD capital projects managed by both the Water Services and the Project Delivery departments.

These reports for 2023 look at both the overall capital program for the water utility with a multi-year view of capital projects and the actual capital spending for 2023 fiscal year to June 30, 2023 in comparison to the annual Capital Cash Flow.

2023 CAPITAL EXPENDITURES

Capital Program Funding

The capital spending for the water utility is funded through the GVWD operating budget by a combination of contribution to capital (pay-as-you-go funding) and debt service costs (principal and interest payments). As a result, the annual impact on the ratepayers is significantly less than the level of budgeted capital expenditures.

Overall Capital Program

The overall capital program for the water utility includes capital projects which require multiple years to complete. These projects are broken down into various phases such as project definition, pre-design, detailed design, and construction. With the completion of each phase, more information is learned for the appropriate costing and scope of subsequent phases.

The capital spending on all the GVWD capital projects completed in 2023 or ongoing at some point in 2023 is forecasted to be over the previously estimated total project cost by approximately $1.4 billion, or 14.5% of total estimated cost. These estimated costs include future phases that are yet to be considered and approved by the Board through future planning cycles or Stage Gate process. With the rare exception, projects tend to complete with actual spending below Board approved limits predominantly due to savings on budgeted contingency amounts.

Attachment 1 provides the details behind the summary information including specific capital projects, summary of financial information, and notes where required. Attachment 2 provides additional project status information for some of the key projects.

2023 Capital Program Process

The Metro Vancouver financial planning process includes Board approval of both an annual Operating Budget (operations, contribution to capital, and debt service) and an annual Capital Cash Flow for the planned capital infrastructure projects. The annual Capital Cash Flow comprises the projected spending for a list of capital projects either continuing or to be started within the calendar year.

In 2023, capital expenditures for the GVWD are $93.5 m to June 30, 2023 compared to a prorated annual Capital Cash Flow of $200 m. The current underspend is due to several factors including delays in permitting, limited market capacity for projects, construction delays, and invoices for completed work not yet received.

Forecasted expenditures for the current GVWD capital program remain within the annual Capital Cash Flow planned for 2023.

Table 1 provides a summary of the 2023 actual capital spending to June 30, 2023 compared to the prorated Capital Cash Flow.

Table 1 – June 2023 Capital Spending Summary

Water Total	2023 Cash Flow To June 30, 2023	Actual Expenditures to June 30, 2023	% of 2023 Prorated Cash Flow
Water Mains	$ 131,936,000	$ 72,769,669	55%
Pump Stations	22,775,000	5,432,405	24%
Reservoirs	17,650,000	9,131,905	52%
Treatment Plants	12,008,000	688,956	6%
Others	15,600,000	5,474,362	35%
Total	**$ 199,969,000**	**$ 93,497,296**	**47%**

ALTERNATIVES
This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS
Capital expenditures are funded internally (pay-as-you-go) and through debt service costs (interest and principal payments). As capital expenditures are incurred, short term financing is secured and converted twice per year to long-term debt through the Municipal Finance Authority.

CONCLUSION
Forecasted expenditures for the current GVWD capital program remain within the annual Capital Cash Flow approved for 2023.

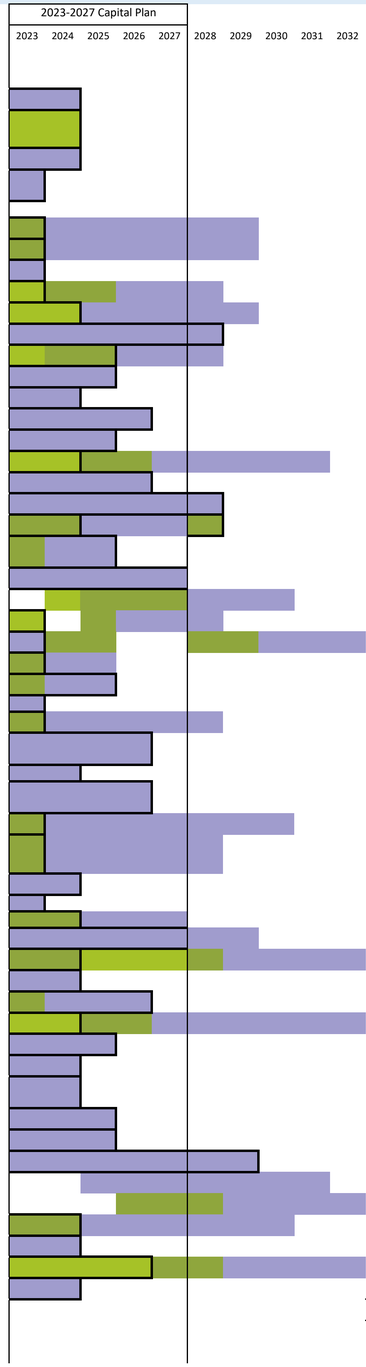
Attachments
1. Capital Project Update – June 30, 2023
2. GVWD Capital Project Status Information

55891319

Metro Vancouver
Water Services - Capital Project Update
As of June 30, 2023

Definition | Preliminary Design | Detailed Design | Construction

Project Name	Primary Driver	Project Location	Approved Capital Budget	Current Estimated Total Project Cost	% Complete	Comment
Water Mains						
Angus Drive Main	Growth	Vancouver	30,700,000	30,700,000	96%	
Annacis Main No. 2 - Queensborough Crossover Improvement	Maintenance	New Westminster	1,200,000	1,200,000	0%	Likely not required. MOTI may not relocate Queensborough Main.
Annacis Main No. 2 and Barnston Island Main Online Chlorine and pH Analyzers	Upgrade	Regional	750,000	1,200,000	10%	Projected costs adjusted for escallation.
Annacis Main No. 3 Annieville Channel Crossing Scour Protection	Maintenance	Surrey	850,000	850,000	100%	Construction completed by LWS. Funding in account to be transferred to LWS.
Annacis Main No. 3 BHP Potash Facility Pipe Protection	Maintenance	Surrey	600,000	600,000	Cancelled	BHP have withdrawn from the project.
Annacis Main No. 5 (North)	Growth	New Westminster	69,100,000	81,100,000	3%	
Annacis Main No. 5 (South)	Growth	Surrey	12,350,000	80,950,000	20%	
Boundary Road Main No. 2 & No. 3 Decommissioning	Maintenance	Burnaby	1,250,000	500,000	100%	
Burnaby Mountain Main No. 2	Maintenance	Burnaby	600,000	10,500,000	0%	
Central Park Main No. 2 (10th Ave to Westburnco)	Maintenance	Burnaby	4,750,000	29,250,000	1%	
Central Park Main No. 2 (Patterson to 10th Ave)	Maintenance	Burnaby	109,100,000	113,150,000	45%	
Clayton Langley Main No. 2	Resilience	Surrey	1,900,000	10,200,000	1%	
Douglas Road Main No. 2 (Flow Meter 169) Replacement	Maintenance	Burnaby	2,000,000	2,000,000	4%	
Douglas Road Main No. 2 (Vancouver Heights Section)	Maintenance	Burnaby	21,450,000	21,450,000	95%	Tie-ins delayed due to scheduling conflicts.
Douglas Road Main No. 2 Still Creek	Maintenance	Burnaby	60,000,000	60,000,000	57%	
Douglas Road Main Protection	Maintenance	Burnaby	1,500,000	1,500,000	5%	
Haney Main No. 4 (West Section)	Growth	Port Coquitlam	1,900,000	141,800,000	1%	
Improvements to Capilano Mains No. 4 and 5	Maintenance	Dist of North Van	1,700,000	1,700,000	6%	
Kennedy Newton Main	Growth	Surrey	140,450,000	166,350,000	57%	
Lulu Island - Delta Main - Scour Protection Phase 2	Maintenance	Richmond	3,550,000	3,550,000	0%	
Lynn Valley Road Main, Seymour Main No. 3 & Seymour Main No. 4 Aerial Crossings Rehabilitation	Maintenance	Dist of North Van	4,200,000	4,200,000	10%	
Maple Ridge Main West Lining Repairs	Maintenance	Maple Ridge	3,500,000	4,500,000	7%	
Newton Reservoir Connection	Growth	Surrey	850,000	28,050,000	0%	
Palisade Outlet Works Rehabilitation	Maintenance	Electoral Area A	400,000	11,200,000	0%	
Port Mann Main No. 2 (South)	Growth	Surrey	33,600,000	50,100,000	98%	
Port Mann No. 1 South Section Decommissioning	Maintenance	Coq/Surrey	850,000	850,000	0%	
Port Moody Main No. 1 Christmas Way Relocation	Maintenance	Coquitlam	2,350,000	2,350,000	0%	
Port Moody Main No. 3 Dewdney Trunk Rd Relocation	Maintenance	Coquitlam	2,700,000	2,700,000	95%	3rd party owned project
Port Moody Main No. 3 Scott Creek Section	Maintenance	Coquitlam	2,450,000	44,000,000	5%	
Queensborough Main Royal Avenue Relocation	Maintenance	New Westminster	7,500,000	7,500,000	20%	Pattullo Bridge replacement project owned by MoTI.
Rehabilitation of AN2 on Queensborough Bridge	Maintenance	New West/Delta	3,850,000	3,850,000	50%	
Relocation and Protection for MOTI Expansion Project Broadway	Maintenance	Vancouver	8,900,000	8,900,000	80%	
Relocation and Protection for MOTI George Massey Crossing Replacement	Maintenance	Delta/Richmond	450,000	2,450,000	0%	
Relocation and Protection for Translink Expansion Project Surrey Langley SkyTrain	Maintenance	Surrey	600,000	6,600,000	0%	MOTI procurement to select Project Co underway
Sapperton Main No. 1 New Line Valve and Chamber	Upgrade	New Westminster	3,850,000	3,550,000	95%	
Sapperton Main No. 2 North Road Relocation and Protection	Maintenance	Coquitlam	6,500,000	6,500,000	20%	
Scour Protection Assessments and Construction General	Resilience	Regional	4,000,000	4,000,000	26%	
Seymour Main No. 2 Joint Improvements	Resilience	Dist of North Van	3,300,000	10,100,000	21%	
Seymour Main No. 5 III (North)	Resilience	Dist of North Van	7,900,000	750,600,000	3%	
South Delta Main No. 1 - Ferry Road Check Valve Replacement	Maintenance	Delta	600,000	600,000	38%	
South Surrey Main No. 1 Nickomekl Dam Relocation	Maintenance	Surrey	7,100,000	7,100,000	0%	
South Surrey Main No. 2	Growth	Surrey	2,000,000	197,000,000	1%	
South Surrey Main No. 2 Nickomekl Dam Prebuild	Growth	Surrey	2,000,000	2,000,000	0%	
South Surrey Supply Main (Serpentine River) Bridge Support Modification	Maintenance	Surrey	1,350,000	1,350,000	20%	
Tilbury Junction Chamber Valves Replacement with Actuators	Upgrade	Richmond	5,600,000	5,600,000	83%	Tie-ins delayed due to railway permitting requirements.
Tilbury Main North Fraser Way Valve Addition	Maintenance	Burnaby	3,100,000	3,100,000	14%	
Water Chamber Improvements and Repairs	Maintenance	Burnaby	2,000,000	2,000,000	10%	
Water Meter Upgrades	Upgrade	Regional	22,400,000	22,400,000	54%	
Water Optimization - Flow Meters (Non-billing) Phase 1	Upgrade	Regional	-	17,700,000	0%	
Water Optimization - Flow Meters (Non-billing) Phase 2	Upgrade	Regional	3,000,000	21,600,000	0%	
Water Optimization - Instrumentation	Upgrade	Regional	1,500,000	11,800,000	3%	
Water Optimization Automation & Instrumentation	Upgrade	Regional	9,550,000	9,550,000	89%	
Whalley Kennedy Main No. 2	Growth	Surrey	2,900,000	118,800,000	0%	
Whalley Main	Growth	Surrey	31,800,000	31,800,000	96%	
Total Water Mains			**658,350,000**	**2,162,950,000**		
Pump Stations						



Metro Vancouver
Water Services - Capital Project Update
As of June 30, 2023

Definition | Preliminary Design | Detailed Design | Construction

Project Name	Primary Driver	Project Location	Years	Approved Capital Budget	Current Estimated Total Project Cost	% Complete	Comment
			2023-2027 Capital Plan				
			2023 2024 2025 2026 2027 2028 2029 2030 2031 2032				
Barnston/Maple Ridge Pump Station - Back-up Power	Resilience	Pitt Meadows		14,000,000	26,000,000	3%	Delayed due to property selection. Costs adjusted for escallation.
Burnaby Mountain Pump Station No. 2	Maintenance	Burnaby		1,300,000	21,000,000	1%	Scope of work under review.
Cape Horn Pump Station No. 3	Growth	Coquitlam		29,050,000	252,050,000	1%	
Capilano Raw Water Pump Station - Back-up Power	Resilience	Dist of North Van		55,000,000	81,000,000	36%	Board approved additional funds on award of tender
Capilano Raw Water Pump Station Bypass PRV Upgrades	Maintenance	Dist of North Van		3,200,000	3,800,000	14%	Projected costs adjusted for escallation.
Central Park WPS Starters Replacement	Maintenance	Burnaby		11,000,000	20,000,000	22%	Delayed due to re-zoning. Cost adjusted for escallation.
Grandview Pump Station Improvements	Resilience	Surrey		3,500,000	4,500,000	20%	Projected costs adjusted for escallation.
Newton Pump Station No. 2	Growth	Surrey		72,550,000	82,550,000	24%	
Pebble Hill Pump Station Seismic Upgrade	Resilience	Delta		-	3,500,000	0%	Projected costs adjusted for escallation.
Westburnco Pump Station - Back-up Power	Resilience	New Westminster		24,500,000	48,800,000	6%	Projected costs adjusted for escallation.
Westburnco Pump Station No. 2 VFD Replacements	Maintenance	New Westminster		2,550,000	3,050,000	20%	
Total Pump Stations				**216,650,000**	**546,250,000**		
Reservoirs							
Burnaby Mountain Tank No. 2	Resilience	Burnaby		3,350,000	66,750,000	2%	Projected costs adjusted for escallation.
Burnaby Mountain Tank No. 3	Resilience	Burnaby		3,400,000	21,400,000	2%	
Cape Horn Reservoir Condition Assessment and Structural Repair	Maintenance	Coquitlam		500,000	2,500,000	0%	Projected costs adjusted for escallation.
Capilano Energy Recovery Facility 66" PRV Replacement	Maintenance	City of North Van		-	8,800,000	0%	
Capilano Energy Recovery Facility Operational Upgrades	Maintenance	Dist of North Van		1,800,000	1,800,000	4%	
Central Park Reservoir Structural Improvements	Maintenance	Burnaby		-	3,300,000	0%	
Clayton Reservoir	Resilience	Surrey		25,750,000	25,750,000	99%	
Dechlorination for Reservoir Overflow and Underdrain Discharges	Maintenance	Burnaby		2,700,000	2,700,000	6%	
Fleetwood Reservoir	Growth	Surrey		56,550,000	58,850,000	42%	Projected costs adjusted for escallation.
Grandview Reservoir Unit No. 2	Growth	Surrey		-	26,000,000	0%	
Hellings Tank No. 2	Growth	Delta		43,900,000	15,950,000	15%	Projected cost reduced due to change in scope.
Kersland Reservoir No. 1 Structural Improvements	Maintenance	Vancouver		5,500,000	5,500,000	90%	
Pebble Hill Reservoir No. 3 Seismic Upgrade	Resilience	Delta		500,000	12,500,000	4%	
Pebble Hill Reservoir Seismic Upgrade	Resilience	Delta		12,350,000	12,350,000	90%	
Reservoir Isolation Valve Automation	Resilience	Regional		6,450,000	6,450,000	22%	
Reservoir Sampling Kiosks - Multi Location	Upgrade	Regional		500,000	1,300,000	0%	
Reservoir Structural Preliminary Assessments	Maintenance	Regional		3,200,000	3,200,000	2%	
Sasamat Reservoir Refurbishment	Maintenance	Vancouver		400,000	2,900,000	0%	
Sunnyside Reservoir Units 1 and 2 Seismic Upgrade	Resilience	Surrey		8,000,000	21,000,000	50%	
Vancouver Heights System Resiliency Improvements	Resilience	Burnaby		2,500,000	2,500,000	6%	
Total Reservoirs				**177,350,000**	**301,500,000**		
Treatment Plants							
Coquitlam Intake Tower Seismic Upgrade	Resilience	Coquitlam		2,500,000	26,500,000	8%	Construction delayed after review of project priorities.
Critical Control Sites - Back-Up Power	Resilience	Regional		-	7,000,000	0%	
CWTP CO2 System Improvements	Maintenance	Coq/P.Coq		-	3,750,000	0%	
CWTP Mobile Disinfection System	Upgrade	Regional		750,000	2,900,000	0%	
CWTP Ozone Back-up Power	Resilience	Coquitlam		-	10,300,000	0%	
CWTP Ozone Generation Upgrades for Units 2 & 3	Upgrade	Coquitlam		7,500,000	7,500,000	80%	Delay due to operational requirements.
CWTP Ozone Sidestream Pipe Heat Trace and Insulation	Maintenance	Coquitlam		900,000	900,000	23%	
CWTP Ozone Sidestream Pump VFD Replacement	Maintenance	Coquitlam		1,400,000	1,400,000	12%	
CWTP Temporary Water Supply	Maintenance	Coq/P.Coq		2,000,000	3,000,000	0%	
Online Chlorine and pH Analyzers	Upgrade	Regional		2,500,000	6,000,000	0%	
SCFP Additional Pre-Treatment	Upgrade	Dist of North Van		-	130,000,000	0%	
SCFP Centralized Compressed Air System	Maintenance	Dist of North Van		1,900,000	1,900,000	13%	
SCFP Clearwell Baffle Replacement	Maintenance	Dist of North Van		600,000	12,900,000	0%	
SCFP Clearwell Membrane Replacement	Maintenance	Dist of North Van		600,000	17,800,000	2%	
SCFP Floc Tank Baffle Replacement and Ladder Installation to Improve Accessibility	Maintenance	Regional		800,000	9,800,000	0%	
SCFP OMC Building Expansion	Maintenance	Dist of North Van		800,000	4,100,000	5%	Projected costs adjusted for escallation.
SCFP Polymer System Upgrade	Maintenance	Dist of North Van		4,650,000	4,650,000	40%	
SCFP SCADA/ICS Controller Upgrade	Maintenance	Burnaby		1,400,000	2,400,000	0%	
Total Treatment Plants				**28,300,000**	**252,800,000**		
Others							
Beach Yard Facility - Site Redevelopment	Maintenance	Dist of North Van		-	45,500,000	0%	

Metro Vancouver
Water Services - Capital Project Update
As of June 30, 2023

Definition | Preliminary Design | Detailed Design | Construction

Project Name	Primary Driver	Project Location	Years	Approved Capital Budget	Current Estimated Total Project Cost	% Complete	Comment
			2023-2027 Capital Plan				
			2023 2024 2025 2026 2027 2028 2029 2030 2031 2032				
Capilano Hydropower	Opportunity	Dist of North Van		4,250,000	156,250,000	1%	Project currently on hold.
Capilano Mid-Lake Debris Boom	Resilience	Dist of North Van		750,000	750,000	97%	
Capilano Raw Water Pump Station VFD Upgrades	Maintenance	Dist of North Van		1,800,000	3,700,000	0%	
Capilano Reservoir and Seymour Reservoir Dam Safety Boom Replacement	Maintenance	Dist of North Van		3,700,000	8,000,000	0%	Dam safety booms will be more expensive than first budgeted due to an increase in steel costs and design
Capilano Reservoir Boat Wharf	Resilience	Dist of North Van		850,000	850,000	100%	
Capilano Watershed Bridge Replacements - Crown Creek and Capilano River	Maintenance	Dist of North Van		-	1,300,000	0%	
Capilano Watershed Security Gatehouse	Maintenance	Dist of North Van		4,700,000	5,700,000	26%	Board approved additional funds on award of tender.
CLD & SFD Fasteners Replacement & Coating Repairs	Maintenance	Dist of North Van		2,350,000	2,350,000	83%	
Cleveland Dam - Lower Outlet HBV Rehabilitation	Maintenance	Dist of North Van		4,900,000	4,900,000	78%	
Cleveland Dam Drumgate Seal Replacement	Maintenance	Dist of North Van		300,000	1,300,000	22%	
Cleveland Dam East Abutment Additional GV Series Pump Wells	Upgrade	Dist of North Van		750,000	750,000	97%	
Cleveland Dam Lower Outlet Trashrack Replacement and Debris Removal	Maintenance	Dist of North Van		-	7,700,000	0%	
Cleveland Dam Power Resiliency Improvements	Resilience	Dist of North Van		1,700,000	1,700,000	4%	
Cleveland Dam Public Warning System and Enhancements	Maintenance	Dist of North Van		10,000,000	10,000,000	25%	
Cleveland Dam Seismic Stability Evaluation	Resilience	Dist of North Van		800,000	800,000	0%	
Cleveland Dam Spillway Resurfacing	Maintenance	Dist of North Van		-	7,800,000	0%	
Facilities O&M Documentation Development	Resilience	Regional		2,000,000	2,000,000	2%	
Lake City HVAC Upgrade	Resilience	Burnaby		900,000	1,200,000	0%	
Lower Seymour Conservation Reserve Learning Lodge Replacement	Upgrade	Dist of North Van		5,050,000	5,050,000	84%	Will be complete in 2023
Microbiology Laboratory Expansion	Maintenance	Burnaby		-	5,550,000	0%	
Newton Rechlorination Station No. 2	Maintenance	Surrey		-	6,050,000	0%	Project delayed to coordinate with Newton Pump Station Project.
Pitt River Rechlorination Station Reconstruction	Maintenance	Pitt Meadows		-	6,000,000	0%	
Rechlorination Station SHS Storage Tank Replacement	Maintenance	Regional		1,200,000	1,200,000	50%	
Rechlorination Station Upgrades	Maintenance	Regional		5,000,000	21,800,000	5%	
Rice Lake Dams Rehabilitation	Maintenance	Dist of North Van		3,000,000	3,000,000	0%	
Scour Protection - General	Maintenance	Regional		2,000,000	2,000,000	93%	
Seymour Falls Boat Wharf	Resilience	Dist of North Van		800,000	800,000	95%	
Seymour Falls Dam Public Warning System	Maintenance	Dist of North Van		10,000,000	10,000,000	0%	
Seymour Falls Dam Seismic Stability Assessment	Resilience	Dist of North Van	C	1,800,000	14,150,000	0%	
Seymour Lake Debris Boom	Resilience	Dist of North Van		800,000	800,000	88%	
Seymour Reservoir Mid-Lake Debris Boom	Resilience	Dist of North Van		2,300,000	2,300,000	91%	
South Fraser Works Yard	Maintenance	Regional		71,000,000	71,000,000	74%	
Total Others				**142,700,000**	**412,250,000**		
Grand Total Water Services				**1,223,350,000**	**3,675,750,000**		

Metro Vancouver

Water - Project Delivery - Capital Project Update

As of June 30, 2023

Project Name	Primary Driver	Project Location	Years	Approved Capital Budget	Current Estimated Total Project Cost	% Complete	Comment
			2023-2027 Capital Plan 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032				
Water Mains							
Annacis Water Supply Tunnel	Growth	New West/Surrey		482,100,000	482,100,000	22%	
Cambie-Richmond Water Supply Tunnel	Resilience	Richmond/Van		62,800,000	647,800,000	6%	
Coquitlam Water Main	Growth	Coquitlam	DD DD DD	293,700,000	1,656,700,000	5%	Procurement delay has resulted in later start of construction of South Section (Robson to Guildford).
Pitt River Water Supply Tunnel	Resilience	P.Coq/P.Meadows		25,250,000	595,250,000	1%	
Lulu-Delta Water Supply Tunnel	Maintenance	Richmond		5,000,000	441,000,000	0%	
Second Narrows Crossing 1 & 2 (Burrard Inlet Crossing Removal)	Maintenance	Burnaby		2,000,000	27,000,000	0%	
Second Narrows Water Supply Tunnel	Resilience	Burnaby/DNV		468,550,000	468,550,000	85%	
Stanley Park Water Supply Tunnel	Maintenance	Vancouver		340,000,000	340,000,000	5%	
Total Water Mains				**1,679,400,000**	**4,658,400,000**		
Treatment Plants							
Coquitlam Lake Water Supply	Growth	Coquitlam		160,750,000	4,117,050,000	1%	Protracted engagement for regulatory and permitting. Completion of project construction is anticipated to be the late 2030s due to delays in engagement.
Total Treatment Plants				**160,750,000**	**4,117,050,000**		
Grand Total Water - Project Delivery				**1,840,150,000**	**8,775,450,000**		

GVWD Capital Project Status Information

June 30, 2023

GREATER VANCOUVER WATER DISTRICT

Major GVWD capital projects are generally proceeding on schedule and within budget. The following capital program items and exceptions are highlighted:

Infrastructure Growth Program

- **Annacis Water Supply Tunnel** – A 2.3 kilometre long, 4.5 metre diameter water supply tunnel is required under the Fraser River to meet growing water demand south of the Fraser and to provide increased system resiliency. The construction contract was awarded in late October 2021, and construction commenced in March 2022. Construction is scheduled to be completed and the tunnel in-service by 2028.

- **Annacis Main No. 5 (South)** – This project comprises approximately 3.0 km of 1.8 m diameter steel pipe connecting the south shaft of the Annacis Water Supply Tunnel to the Kennedy Reservoir in the City of Surrey. Detailed design is nearing completion and is expected to be complete in fall 2023.

- **Annacis Main No. 5 (North)** – This project comprises approximately 2.8 km of 1.8 m diameter steel pipe connecting the north shaft of the Annacis Water Supply Tunnel in the City of New Westminster to the South Burnaby Main #2 in the City of Burnaby. Preliminary design has been completed, and detailed design is in progress and is expected to be complete by March 2024.

- **Cape Horn Pump Station No. 3** – Cape Horn Pump Station No. 3 with a back-up power system, will supplement the existing pump station No. 2 to deliver Coquitlam source water to meet growing demand in the areas south of the Fraser River. Detailed design commenced in the fall of 2022 following completion of the preliminary design phase with completion anticipated in early 2025.

- **Coquitlam Intake No. 2 (Coquitlam Lake Water Supply)** – A new intake, tunnel and filtration treatment plant are proposed at the Coquitlam Reservoir to increase the regional supply from this source, and meet growing future demand. The project is now in the permitting and regulatory phase, which focuses on engagement with First Nations, the City of Coquitlam, regulators, and stakeholders to acquire a water license and purchase provincially-owned land for the new treatment plant. Request for Proposal (RFP) for Phase 2 site investigations are being evaluated. Procurement for project management services and treatment pilot testing are anticipated to commence in the third quarter of 2023.

- **Coquitlam Main No. 4 (Coquitlam Water Main)** – This 12 km long steel water main, consisting of the Central, South, Tunnel, and Cape Horn Sections, will increase the transmission capacity from the Coquitlam source to the Cape Horn Pump Station and Reservoir in the City of Coquitlam. This project is required to address capacity constraints in the existing Coquitlam transmission system and also provide additional transmission capacity for the Coquitlam Lake Water Supply project. Detailed design of the Central and Cape Horn Sections continues. Preliminary design of the Tunnel Section is complete and detailed design will commence in September 2023. Construction of the South Section commenced week of July 10.

- **Fleetwood Reservoir –** Phase 1 of the Fleetwood Reservoir project includes a 13.6 megalitre reservoir, valve chamber, piping, access building, and associated work located at Meagan Ann MacDougall Park in the City of Surrey. Construction is ongoing and is scheduled to be completed in Q4 of 2024.

- **Kennedy Newton Main –** This project comprises approximately 9.0 km of 1.8 m diameter steel water main between the Kennedy Reservoir and the Newton Reservoir in the City of Surrey and is divided into 3 phases. Construction of Phase 1, between 72nd Avenue and 84th Avenue, is complete. Construction of Phase 2, between 72nd Avenue and Newton Reservoir is nearing completion and expected to be completed in the summer of 2023. Due to the complexity of the work within Phase 3, the installation work has been divided into three separate sections. The construction of the first section (Scott Road) commenced in the fall of 2022 and is now largely complete. The construction of the second section (86th Avenue) commenced in the spring of 2023 and is expected to be completed in early 2025. Construction of the last section is planned to commence in the summer of 2024 with completion by mid-2026.

- **Newton Pump Station No. 2** – This project, located at 6287 128th Street in the City of Surrey, consists of replacing the existing Newton Pump Station and includes full back-up power redundancy, connections to existing and future infrastructure, and installation of new outlets to the existing Newton Reservoir. The detailed design is complete and the construction of the new reservoir outlets is underway with the main pump station construction planned to commence in early 2024.

- **South Surrey Main No. 2** – The South Surrey Main No. 2 project involves the installation of 12 km of 1 m diameter steel water main between the Newton Pump Station and the Sunnyside Reservoir. The route selection between the two points is nearly complete with the detailed design anticipated to commence in early 2024.

<u>Infrastructure Maintenance Program</u>

- **Douglas Road Main No. 2 (Still Creek Section)** - This project comprises approximately 2.5 km of 1.5 m diameter steel pipe with trenchless crossings of Highway 1, Still Creek and the BNSF rail line. The Project is being constructed in three phases, with the North Open Cut and the Trenchless Crossing Sections completed in spring of 2023. The construction of the South Open Cut Section has been awarded and construction is anticipated to commence in the fall of 2023.

- **Douglas Road Main No. 2 (Vancouver Heights Section)** - This project comprises approximately 2.0 km of 1.5 m diameter steel pipe connecting the Vancouver Heights Reservoir to the Douglas Road Main No. 2 at Beta Avenue and Albert Street in the City of Burnaby. The installation construction contract is complete. Final tie-ins and commissioning are planned for the fall of 2024.

- **Central Park Main No. 2 (Patterson to 10th Ave)** - This project comprises approximately 7.0 km of 1.2 m diameter steel pipe connecting the Central Park Pump Station in Burnaby to the existing Central Park Main in New Westminster at 10th Avenue. The water main is divided into three phases with the 500 m long Maywood Pre-build completed in December 2020. Construction of Phase 1 of the project is anticipated to complete in the summer of 2023. Design of Phase 2 is underway and is expected to be complete in the fall of 2023. Construction of Phase 2 will be split into two sections (east and west of Kingsway), with construction of the section east of Kingsway expected to commence in spring 2024.

- **Central Park Main No. 2 (10th Ave to Westburnco)** - This project comprises approximately 5.0 km of 0.6 m diameter ductile iron pipe connecting the future Central Park Main at 10th Avenue in Burnaby to the Westburnco Reservoir in New Westminster. The water main is currently in the detailed design stage. A 500 m long pre-build section, along 7th Avenue between 8th Street and 5th Street is being coordinated with the City of New Westminster projects and is planned to commence in the spring of 2024. Construction of the remainder of project is planned to commence in early 2025.

- **Stanley Park Water Supply Tunnel** – This 1.4 km long steel water main, in a tunnel, will replace the aged existing Capilano Main No. 4 through Stanley Park to meet growing water demand and provide increased system resiliency. Detailed design is complete and work to finalize agreements is nearing completion. The procurement phase for construction was delayed due to challenges in obtaining approvals. Procurement is scheduled to commence this summer with construction anticipated to start mid to late 2024. Construction is scheduled to be complete by 2029.

- **Capilano Reservoir and Seymour Reservoir Dam Safety Boom Replacement** – The aim of this project is to replace and upgrade the Dam Safety Booms for Seymour and Capilano Reservoirs. A contract for design work for the boom systems was awarded at the beginning of June 2023. Construction is scheduled for 2024.

- **Capilano Watershed Security Gatehouse** – This project consists of constructing a new security gatehouse building near the entrance to the Capilano Water Supply Area. Construction anticipated to be completed by Q1 2025.

- **Central Park Pump Station Starters Replacement** – This project includes upgrades at the Central Park Pump Station. Upgrades include replacing the existing fixed speed pump drives with adjustable speed drives and soft start motor controllers. The existing electrical equipment will be relocated from the pump station to a new above ground electrical prefabricated building and the HVAC and control systems will be upgraded as needed. Detailed design is anticipated to complete by Q1 2024.

- **Kersland Reservoir No. 1 Structural Improvements** – This project involves completing structural improvements to Unit 1 and installing a new balancing pipe between Unit 1 and Unit 2. Construction of the Unit 1 improvements were completed by Bennett Mechanical Ltd. in August of 2022 and the new section of balancing pipe in Unit 2 is scheduled to be installed by Metro Vancouver forces during the winter of 2023/2024.

- **Rechlorination Upgrades** – This project is to upgrade the existing Cape Horn, Pitt River, and Clayton Rechlorination Stations. The required upgrades will include new buildings, modifications/additions of backup power systems, and replacement of existing process, mechanical and control systems. Preliminary design is currently underway. Detailed design is expected to start in Q4 2023.

- **SCFP Polymer System Upgrade** – This project consists of installing new dry polymer systems for the Filter Aid Polymer and Wash Water Recovery processes at the Seymour Capilano Filtration Plant. Construction is underway and is anticipated to be completed by Q1 2024.

- **Project documentation Development** – This project involves the review of drawings and control documentation at up to 40 sites to create required piping and instrumentation diagram drawings and Process Functional Specifications. Other items to be created at each of the sites is a lockout document for the site controller and a Hazop of the Kersland Pump Station (PS). Tender documents are being prepared and a Consultant will be determined toward the end of 2023.

<u>Infrastructure Resilience Program</u>

- **Second Narrows Water Supply Tunnel** – This project comprises a 1.1 km long, 6.5 m diameter water supply tunnel under Burrard Inlet, between North Vancouver and Burnaby, to increase the reliability of supply in the event of a major earthquake and provide additional long-term supply capacity. Construction commenced in early 2019. Construction of the shafts, tunnel, and installation of the three steel water mains inside the tunnel are complete. Construction of the north and south valve chambers is in progress. Overall construction is scheduled to be complete by mid-2024, followed by final tie-ins, commissioning, and site restoration through 2026.

- **Capilano Raw Water Pump Station - Back-up Power** – This project consists of installing diesel generators to provide 8 megawatt of back-up power to the pump station. A portion of the equipment has already been delivered. Construction is anticipated to be completed by Q1 2025.

- **Coquitlam Intake Tower Seismic Upgrade** – The Coquitlam Intake Tower is located in the southeast area of the Coquitlam Reservoir. Constructed in 1913, the tower provides the GVWD its primary intake of water from Coquitlam Reservoir. The Tower is a 27 m high and 5.5 m diameter unreinforced concrete structure, founded on bedrock. Detailed design of the seismic upgrade is 95% complete. Completion of detailed design is expected in Q4 of 2023. Due to coordination with BC Hydro work and water supply operations, construction will be completed over two winter periods after 2030.

- **Pebble Hill Reservoir No. 1, 2 and 3 Seismic Upgrade** – Pebble Hill Reservoir in south Delta is comprised of three units. Construction is scheduled to be completed in stages, taking only one unit out of service at any time. Construction of Unit 1 is complete. Unit 2 commenced in the fall of 2022 and will be completed in the summer of 2023. A separate tender will be issued in the future for Unit 3.

- **Westburnco Pump Station – Back-up Power** – This project consists of installing diesel generators to provide 5 MW of back-up power to the pump station. Preliminary design was completed in 2019 and detailed design will resume in Q4 of 2023.

- **Cambie-Richmond Water Supply Tunnel** – This project comprises approximately 1.1 km long 4.5 m diameter tunnel under the Fraser River between the City of Vancouver and the City of Richmond to increase the reliability of supply in the event of a major earthquake and provide additional long-term supply capacity. The project definition or conceptual design phase was completed in 2021. Preliminary design is scheduled to commence later this year with construction anticipated to commence in 2027.

- **Clayton Langley Main No. 2** – This project involves the installation of a back-up direct connection for supply to the City of Langley. Preliminary design of the project has commenced and it is expected that the new main will be approximately 1.5 km long and 0.6 m in diameter and will connect the 192nd Street Main to the City of Langley's distribution system. Construction is anticipated to commence in 2026.

- **Grandview Pump Station Improvements** – This project is to increase the capacity and improve operations of the pump station by adding a 4th pump and by replacing the existing variable frequency drives. The HVAC system will also be replaced along with the transformer. Construction is anticipated to start by Q4 of 2023.

- **Reservoir Isolation Valve Automation** – This project involves the automation of several key reservoir isolation valves so that utility system controllers can remotely isolate all of the water storage reservoirs in an emergency. Detailed design of the first 5 priority locations is complete with the installation of the first isolation valve planned for fall 2023.

- **Scour Protection** – This project involves design and construction of scour protection at the north bank of the Annacis Main No. 2 crossing under the Fraser River Annacis Channel. Detailed design is complete and all permits received. Vancouver Fraser Port Authority temporary workspace agreement in progress. Construction is planned to be complete by March 2024.

<u>Infrastructure Upgrade Program</u>

- **Cleveland Dam Public Warning System** – This project involves design and construction of a permanent public warning system along the Capilano River, downstream of the Cleveland Dam. Predesign has commenced, and construction is planned to be complete by the end of 2024.

- **Seymour Falls Dam Public Warning System** – This project involves design and construction of a permanent public warning system along the Seymour River, downstream of the Seymour Falls Dam. The project is currently in initiation phase and construction is planned to be complete by the end of 2025.

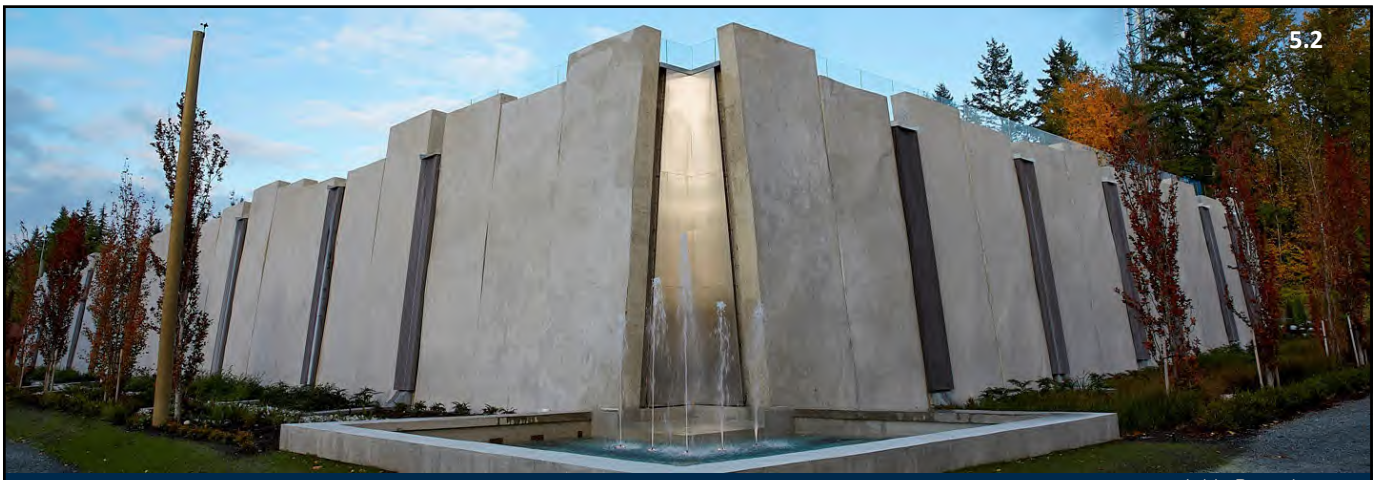
- **Coquitlam Ozone Upgrade** – This project consists of upgrades to the ozone generators at the Coquitlam Water Treatment Plant. The generators for units 1, 2 and 3 have been replaced and units 1 and 2 are in service. Testing and commissioning of unit 3 is planned to be completed by Q3 2023. Completion of the upgrades to the ozone control system will follow.

- **Pitt River (Haney) Water Supply Tunnel** – This project comprises approximately 1 km long 4.5 m diameter tunnel under the Pitt River between the City of Port Coquitlam and the City of Pitt Meadows to increase the reliability of supply in the event of a major earthquake and provide additional long-term supply capacity. The project definition or conceptual design will be completed by late 2023 followed by preliminary design which is scheduled to commence in 2024.

- **Water Meter Upgrades** –This program involves upgrading or replacing 37 existing water meter sites. To date, 11 water meter sites have been constructed and commissioned with 1 currently under construction. Of the remaining sites, 10 have been designed and are ready for construction and 15 sites are in the design phase.

- **Water Optimization** –This program involves installing additional flow and pressure meters at various locations to optimize operations, monitor performance, and eventually support automation of the entire transmission network. Network-wide, 143 locations for new meters and instrumentation have been identified under this program. The current phase of work includes 32 sites. Of these sites, 7 have been constructed and commissioned and another 25 are currently in the design phase.

ATTACHMENT 3



Jericho Reservoir

GVWD Capital Program Expenditure Update

AS OF JUNE 30, 2023

Hein Steunenberg
Division Manager Engineering & Construction Treatment & Facilities

Water Committee - September 13, 2023
61467764

metrovancouver

CAPITAL EXPENDITURE SUMMARY REPORT

Status of 2023 GVWD Capital Program

- 145 total projects included in program
- 94 active projects
- 3 completed projects
- 1 cancelled
- 47 projects not yet started

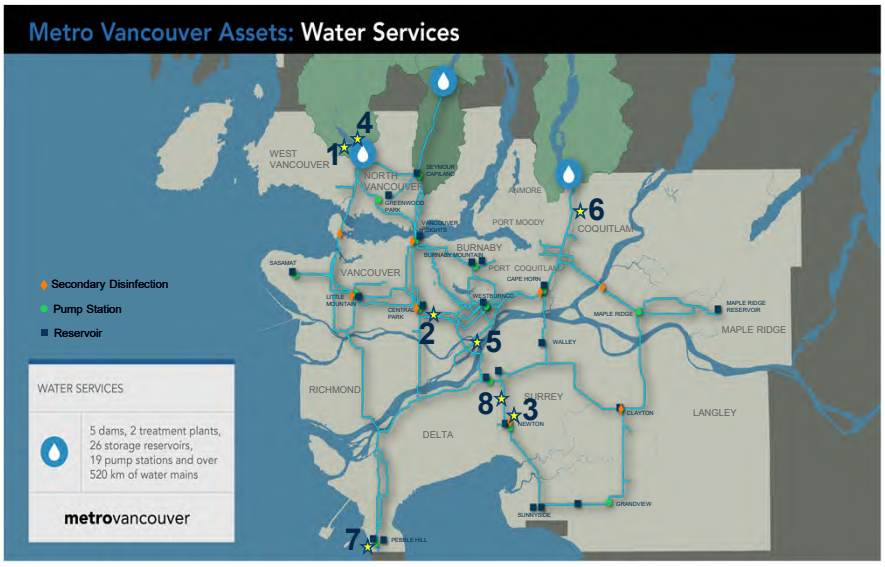
CAPITAL EXPENDITURE SUMMARY REPORT

Status of Overall GVWD Capital Program

- 2023 Prorated Capital Cash Flow is $200.0M
- Actual expenditures to end of June were $93.5M
- At this time, the planned work is expected to be completed within budget

HIGHLIGHTED PROJECTS

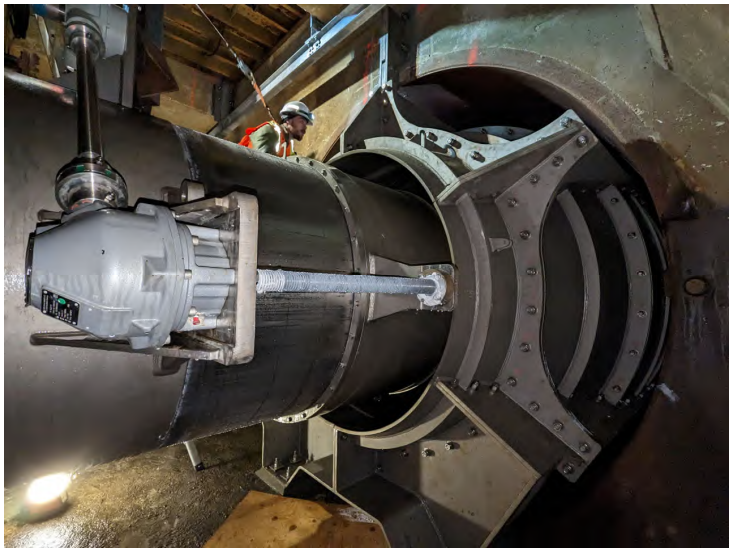
1. Cleveland Dam – Lower Outlet HBV Rehabilitation
2. Central Park Main No. 2
3. Newton Pump Station No. 2
4. Capilano Raw Water Pump Station – Back up Power
5. Annacis Water Supply Tunnel
6. Coquitlam Main No. 4
7. Pebble Hill Reservoir Seismic Upgrade
8. Kennedy Newton Main



CLEVELAND DAM – LOWER OUTLET HBV REHABILITATION

West Lower Outlet Fixed Cone Valve Hood

West Lower Outlet Fixed Cone Valve Hood



CENTRAL PARK MAIN NO. 2 – PHASE 1

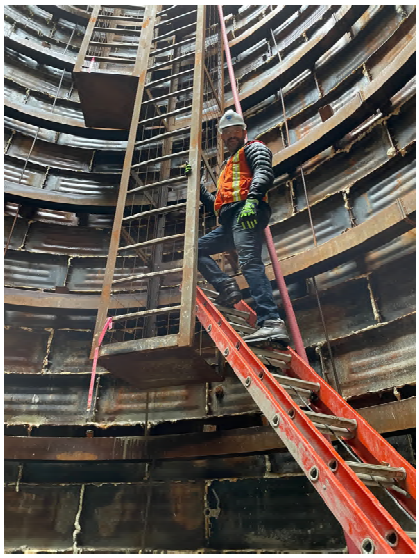
Elwell Crossover Chamber

Oxifree Application at 14th Ave Crossover Chamber

NEWTON PUMP STATION

Completed tunnel for new pump station feed

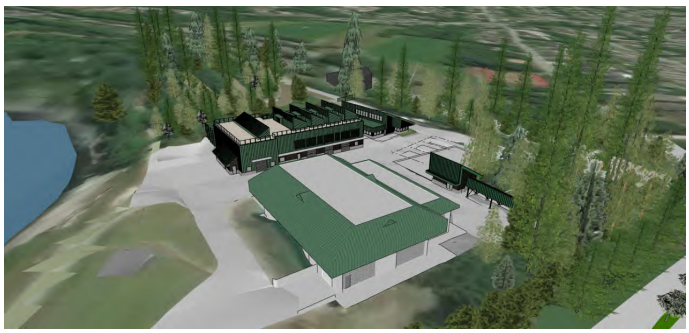
Entry shaft for tunnel boring machine



CAPILANO PUMP STATION BACKUP POWER

Factory Testing of one Genset

Powerhouse Facility Rendering



ANNACIS WATER SUPPLY TUNNEL

Hydromill working on a slurry wall panel at the North shaft

Archaeological investigation at the south shaft

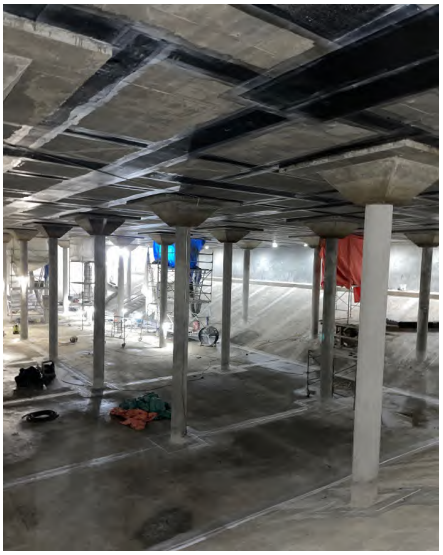
COQUITLAM WATER MAIN NO. 4

3.2m Diameter steel pipe in production

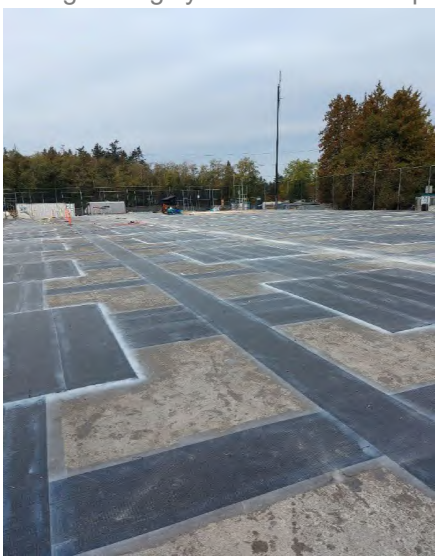
Steel pipe staged for delivery

PEBBLE HILL RESERVOIR

Interior Reservoir Work



Application of the fiber reinforced polymer strengthening system on the rooftop



KENNEDY NEWTON WATER MAIN

Crossover chamber just off 86th avenue

Pipe installation along 86th avenue

Seymour Capilano Filtration Plant

Questions?

metrovancouver

13

To: Water Committee

From: Linda Parkinson, Director, Planning Policy and Analysis, Water Services
Arezoo Heidarian, Lead Senior Engineer, Operations and Maintenance, Water Services

Date: September 7, 2023 Meeting Date: September 13, 2023

Subject: **Water Supply Update – Stage 2 Restrictions**

RECOMMENDATION

That the Water Committee receive for information the report dated September 7, 2023, titled "Water Supply Update – Stage 2 Restrictions".

EXECUTIVE SUMMARY

This report summarizes the current state of the regional water supply, water use trends in the high demand season and the effects of the activation of Stage 2 water restrictions of the Drinking Water Conservation Plan on August 4.

Regional water consumption data shows that the average day water demand increased steadily from 1.23 Billion Litres per Day (BLD) in May to 1.35 BLD in June and to 1.46 BLD in July. Since the activation of Stage 2 watering restrictions, the average day water demand has slightly reduced to 1.32 BLD in August. During Stage 2 watering restrictions (August 4 to August 31) there have not been any days with regional water demands over 1.5 BLD compared to 11 days during Stage 1 (May 1 to August 3). However, daily water use patterns in the high season indicate peak water use occurring during early Saturday and Sunday mornings that has not reduced as significantly as expected since the implementation of Stage 2, indicating that lawn watering may still be occurring.

Currently, a move to Stage 3 restrictions is not anticipated, but Metro Vancouver staff continue to monitor both supply and demand trends carefully. With increased and sustained enforcement of the lawn watering ban in Stage 2, there is opportunity to reduce water consumption beyond what has been seen in August. Stage 3 introduces restrictions which significantly affect local businesses.

PURPOSE

To provide the Committee with an update on the water supply system and the effects of Stage 2 water restrictions based on data available to the end of August 2023.

BACKGROUND

In October 2021, the GVWD Board endorsed an update to the Drinking Water Conservation Plan (DWCP) (Reference 1) which was first implemented on May 1, 2022. The most significant changes included the reduction of residential and non-residential lawn watering from two days per week to one day per week during Stage 1 and a complete ban on lawn watering in Stage 2 (which was previously implemented in Stage 3).

Weather Conditions and Seasonal Weather Forecast

The Metro Vancouver region has been experiencing significant seasonal drought this summer, with warmer temperatures and less precipitation than usual on the BC South Coast. The snowpack began to melt rapidly in May when temperatures were almost 4 degrees warmer than normal. Temperatures remained warmer than normal through June, July, and August. Only 163 mm of rain has fallen since April 24, which is around 38% of normal for the period of May to September. The seasonal weather forecast through September anticipates the continuation of warm and dry conditions.

Water Demand Patterns

Drinking water demand patterns have also been unusual since May:

- Every day from May 1 to July 23, 2023 the region's daily water use was more than in 2022
- During Stage 1 watering restrictions (May 1 to August 3), there were 11 days with regional daily water demands over 1.5 Billion Litres per Day (BLD)
- The peak day demand of 1.56 BLD occurred on July 5

In addition to drinking water needs, Metro Vancouver's reservoirs must also provide required environmental flows to sustain fish populations. On July 20, 2023, Metro Vancouver worked with Fisheries and Oceans Canada and Squamish First Nation on a small water release to encourage mid-run coho salmon to migrate up to the hatchery from the estuary. July flows on the Capilano River were almost at historic lows, however, this coordinated effort was successful in helping the Capilano Hatchery meet its early season targets for broodstock collection. Metro Vancouver staff continue to be in close contact with hatchery managers on both the Capilano and Seymour systems to monitor river conditions and salmon returns.

Activation of Stage 2 of the Drinking Water Conservation Plan

Based on warmer and drier weather conditions experienced from May through July, as well as the seasonal weather forecast projecting a high likelihood of continued drought into the fall, together with the sustained higher water demands, Stage 2 watering restrictions were implemented.

On July 28, the GVWD Board was informed by the CAO of the intent to activate Stage 2 restrictions which came into effect on August 4. All member jurisdictions have enacted bylaws to support the requirements of the DWCP and are responsible for enforcement. Metro Vancouver staff worked closely with member staff to ensure sufficient notification of the move to Stage 2 and to enable members to enact Stage 2 through their respective bylaws, notify the public and plan for enhanced enforcement.

Impacts of Stage 2 on Water Demand

For May, June, and July, the average day water demand increased steadily from 1.23 BLD to 1.35 BLD to 1.46 BLD (Figure 1). Since the activation of Stage 2 watering restrictions, the average day water demand has slightly reduced to 1.32 BLD. The peak day water demand during Stages 1 and 2 were 1.56 BLD on July 5 and 1.45 BLD on August 16, respectively. During Stage 2 watering restrictions (August 4 to August 31) there have not been any days with regional water demands over 1.5 BLD compared to 11 days during Stage 1.

During Stage 1 watering restrictions, daily water use patterns indicated peak water use occurring during early Saturday and Sunday mornings. It was expected that the implementation of Stage 2 watering restrictions would result in a signification reduction in water use during these times. However, the reduction observed is not as significant as expected, indicating that lawn watering may still be occurring.

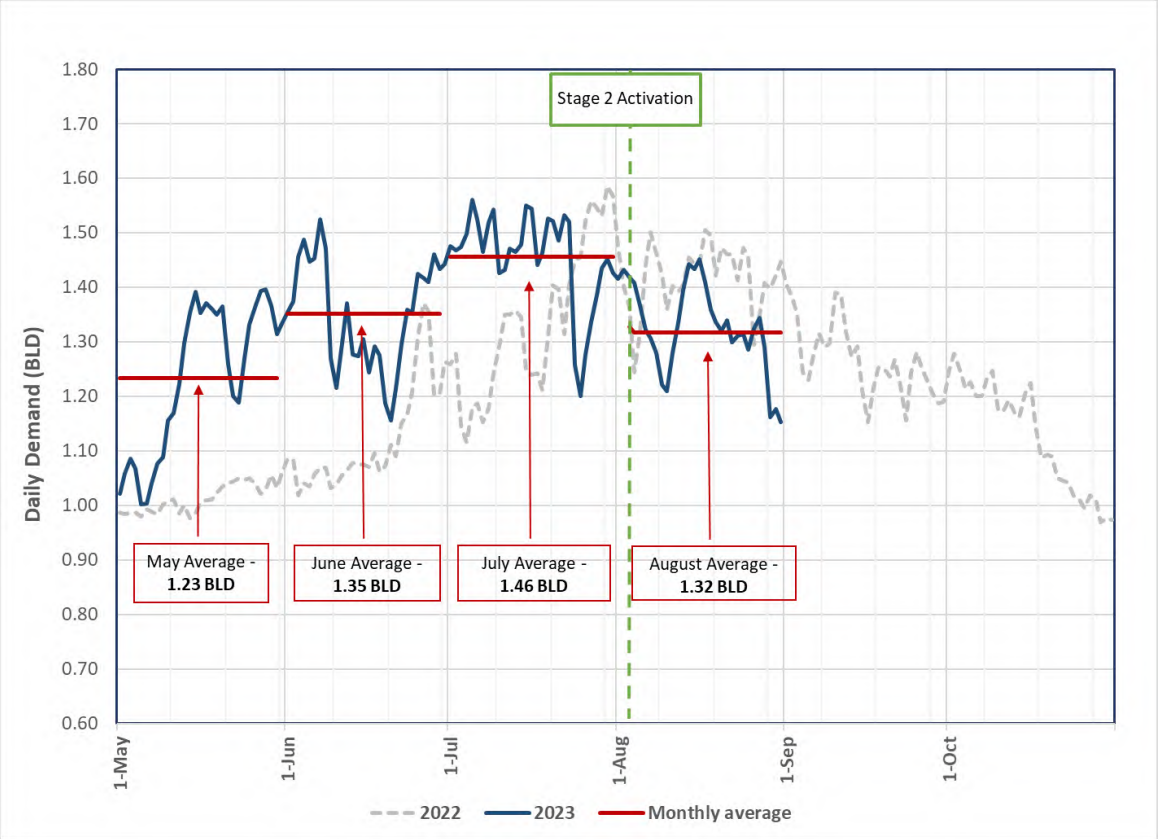


Figure 1: Daily water demands for high demand season (2022 and 2023)

Metro Vancouver continues to monitor water demand and reservoir levels daily. The volume of water within our source reservoirs continues to decrease, but as shown in Figure 2, it remains within the normal operating range. Even during times of recent rain events (specifically July 20, August 7, August 29, and August 31), the amount of rain has not significantly influenced reservoir levels, which is primarily due to exceptionally low soil moisture in the watersheds. Any rain that has fallen has been absorbed by the soil and has not contributed to reservoir inflow.

In addition to the provision of drinking water to the region, Metro Vancouver is also responsible for providing sufficient environment flows downstream of the Cleveland and Seymour Falls dams. Metro Vancouver staff will continue to monitor river flows to ensure that environmental flow requirements are being met.

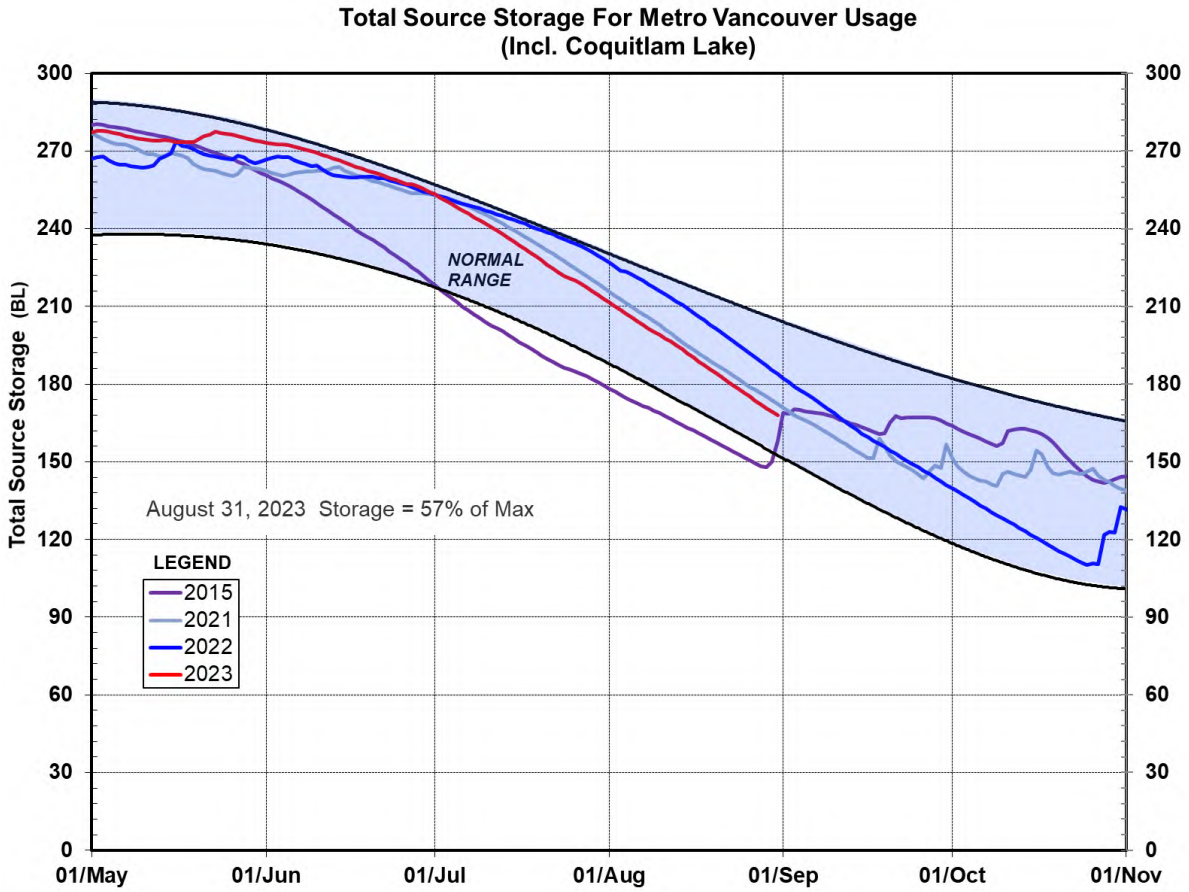


Figure 2: Total Source Storage (2023)

September and October Outlook

The September and October weather outlook predicts warm and dry conditions. Based on the September 1 weather outlook and the water demand patterns in August, we expect to have an adequate supply of water through the remainder of the high-demand season.

Currently, a move to Stage 3 restrictions is not anticipated, but Metro Vancouver staff continue to monitor both supply and demand trends carefully. With increased and sustained enforcement of the lawn watering ban in Stage 2, there is opportunity to reduce water consumption beyond what has been seen in August. Stage 3 introduces restrictions which significantly affect local businesses. Staff will also consider extending restrictions beyond October 15 if warm, dry conditions and higher than average water demands persist into the fall with no considerable rain. A move back to Stage 1 restrictions would only be considered if significant reservoir recovery is achieved from rain events.

ALTERNATIVES

This is an information report; no alternatives are presented.

FINANCIAL IMPLICATIONS

There are no financial implications with the current Stage 2 watering restrictions. However, if additional stage restrictions of the DWCP are activated, there could be impacts on businesses that are dependent on water for their business activities.

CONCLUSION

Based on the available regional data, and combined with the impacts from some rain early in August, after the implementation of Stage 2 restrictions, a reduction of the average day water demand from 1.46 BLD in July to 1.32 BLD in August was observed. Metro Vancouver is currently not anticipating the need to move to Stage 3 of the DWCP, if the region continues to reduce daily water demands. Staff will continue to collaborate with member jurisdictions to support water conservation in the region. Water demands, weather forecasts, and reservoir levels will be carefully monitored during the rest of the high-demand season.

Reference

1. Drinking Water Conservation Plan (https://metrovancouver.org/services/water/Documents/drinking-water-conservation-plan.pdf)

61544329

To: Water Committee

From: Marilyn Towill, General Manager, Water Services

Date: September 7, 2023 Meeting Date: September 13, 2023

Subject: **Manager's Report**

RECOMMENDATION
That the Water Committee receive for information the report dated September 7, 2023, titled "Manager's Report".

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1. Update on Metro Vancouver's DCC Program

As the region continues to face significant challenges associated with population growth, post covid inflation, climate change events and overall affordability, Metro Vancouver cannot delay the delivery of critical infrastructure required to support development across the region. Regional affordability and financial sustainability are key Board priorities, and therefore the Board Chair activated a Financial Plan Task Force to explore all methods to reduce increases to the average annual rates to rate payers.

Staff approached the capital plan with a lens to moving projects of lower risk and projects that could not be completed due to market and capacity limits out of the 5 year financial plan window. This work accomplished a reduction in the 5 year capital plan of $650M. Second, staff determined required remaining funding for the capital plan and brought forward a recommendation that aligns with the Board direction to have growth pay for growth by accelerating the development cost charge program during the 5 year financial plan window.

In April 2023, the Metro Vancouver Board endorsed moving toward a one-per-cent assist factor for water and liquid waste development cost charges (DCCs), and implementing a new parkland acquisition DCC and moving it to a 1% assist factor within the 2024-2028 Financial Plan, and directed staff to approach the 2024-2028 financial plan with targets of 12% for 2024, 11% for 2025, 5% for 2026, and 5% for 2027.

Metro Vancouver is currently analyzing the impact of DCC rate increases on the housing market, and on overall economic viability and long-range regional affordability, and will be engaging with member jurisdictions, in region First Nations, industry, and the public in the coming weeks. Starting on September 19, 2023, Metro Vancouver will be engaging on the proposed revisions to DCCs, and will be hosting online information sessions for member jurisdictions, industry, and the public. The incremental increases in DCC's in the following table are significant, however are primarily due to significant cost increases in the Metro Vancouver capital program, and need to be phased in over three years to mitigate against ongoing inflation and potential delays in development across the region.

Please see the table below for estimated per unit costs increases to total DCCs across the region. Metro Vancouver looks forward to dialogue on the proposed DCC increases over the coming weeks and anticipates bringing forward increased rates along with the 2024 budget and 2024-2028 Financial Plan in October.

Water DCC Assist Factor	Existing 50%	45% Jan 1, 2025	15% Jan 1, 2026	1% Jan 1, 2027
Residential Lot Development Unit	$ 6,692	$ 10,952	$ 16,926	$ 19,714
Townhouse Dwelling Unit	$ 5,696	$ 9,839	$ 15,206	$ 17,710
Apartment Dwelling Unit	$ 4,261	$ 6,791	$ 10,495	$ 12,223
Non-Residential (per square foot)	$ 3.39	$ 5.30	$ 8.19	$ 9.54

2. Residential Water Monitoring and Control Systems

Advanced home water monitoring and control systems are designed to enable homeowners to monitor water usage, detect water leaks and, with more sophisticated systems, shut off the water supply in the event of a premise plumbing leak. These types of systems are readily available to residents who are interested in developing a better understanding of their water use and preventing the potential damage, and drinking water wastage, caused by water leaks in their homes.

Products are available that have certain features for monitoring water flow, temperature, and/or pressure. Examples of advanced home water monitoring systems include (but are not limited to) Flo by Moen, Phyn Plus by Phyn, and Flume 2 by Flume. The purchase cost of these systems vary between $300 and $800. Further detail on the two types of systems are:

- **Advanced Home Water Monitoring and Control System** (for example "Flo by Moen")**:** These systems are comprised of an advanced technology water monitoring system combined with a shut-off valve. The water monitor and shut-off valve are installed on the main water supply line to the home. Sensors on the water meter actively monitor water flow, temperature and pressure that can be viewed on a mobile application. The shut-off valve can automatically close the home's main water line if the sensor detects unusually high water usage or very low pressure, which may be due to leaks or burst pipes. The cost of this system is approximately $800, not including installation costs.

- **Advanced Home Water Monitoring System** (for example "Flume 2")**:** These systems are attached to an existing water meter as opposed to being installed on a water supply line to the home. They do not include a shut-off valve. The sensors send water use information to a mobile application where water flow data is provided in real-time and leak alert notifications can be received. Residents that are metered can install this type of system to monitor and control their water use. The cost of this system is approximately $300, not including installation costs.

Installation details for these systems will vary depending on the manufacturer, product model, and any additional requirements or recommendations provided in the product's user manual or installation guide. The systems with an automatic shut-off valve should not be installed on a line that feeds a fire suppression system. The installation of any advanced home water monitoring system must meet all applicable drinking water standards, local plumbing codes, and electrical safety standards.

The cost of installing an advanced home water monitoring and control system through a certified plumber can vary depending on several factors, including the complexity of the installation, the specific system chosen, labour costs, and additional parts required. Installation costs are estimated to be less than $1,000 based on the assumptions it would take 60-90 minutes to install and minimal additional cost for parts would be required.

3. Coquitlam Lake Water Supply Project

Metro Vancouver is proposing to double its capacity to withdraw water from Coquitlam Lake, the largest of the three drinking water sources, through the Coquitlam Lake Water Supply Project. The Coquitlam Lake Water Supply Project consists of a new intake, tunnel and treatment plant. The proposed intake location is close to the deepest point in the lake, which offers better water quality protection and allows Metro Vancouver to extend the service life of the existing ozone and UV treatment plant. The new filtration plant will provide resiliency for turbidity events, mitigate risk of regulation changes for drinking water treatment and minimize the potential for contaminants in the system.

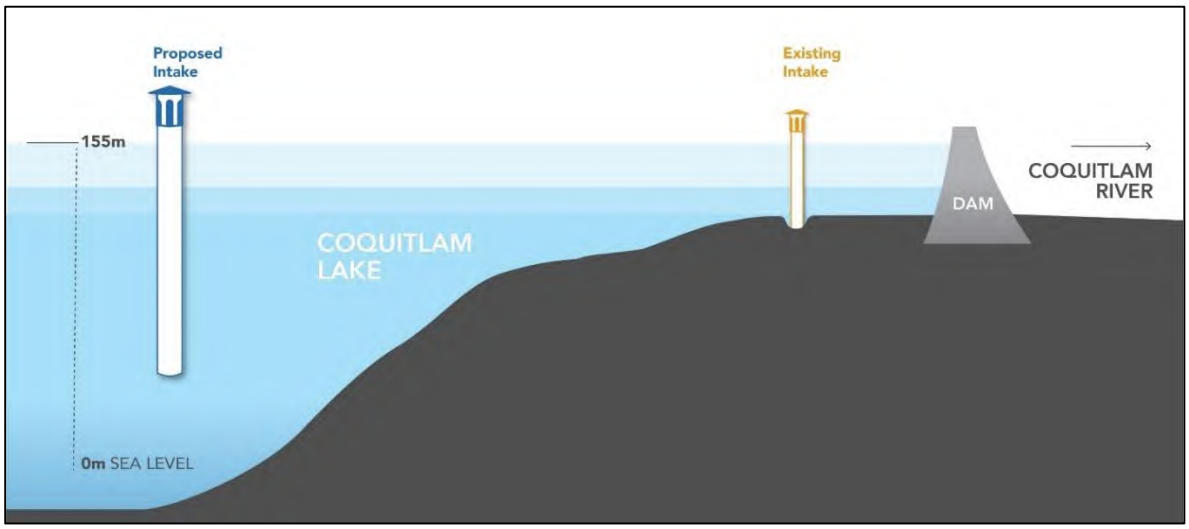


Figure: Coquitlam Lake Water Supply Project Proposed Intake

Once complete, the Coquitlam Lake Water Supply Project will enable Metro Vancouver to meet the drinking water needs of current and future generations and prepare for the effects of climate change, including unpredictable droughts and snowpack. Construction is expected to begin in the late 2020s, with completion targeted for the late 2030s.

The Coquitlam Lake Water Supply Project has substantially completed the technical work for the Project Definition phase and is in the early stages of the Permitting and Regulatory phase. This

phase focuses on key provincial permits/authorizations including a water license and acquisition of a site for the treatment plant.

Staff are working with the Province, City of Coquitlam, and First Nations, in particular kʷikʷəƛ̓əm (Kwikwetlem) First Nation, to identify and address concerns with the project. Currently, staff are in discussions with kʷikʷəƛ̓əm First Nation to co-create a collaborative project review process to identify and consider kʷikʷəƛ̓əm First Nation concerns with the project while balanced with Metro Vancouver's responsibilities to provide drinking water to the region. The goal is to have an agreement in place by the end of 2023 to allow for a fulsome review of the project impacts prior to commencing in early 2024. Staff will bring a report to the Water Committee and GVWD Board in 2024 to provide an update on the progress of the engagement process.

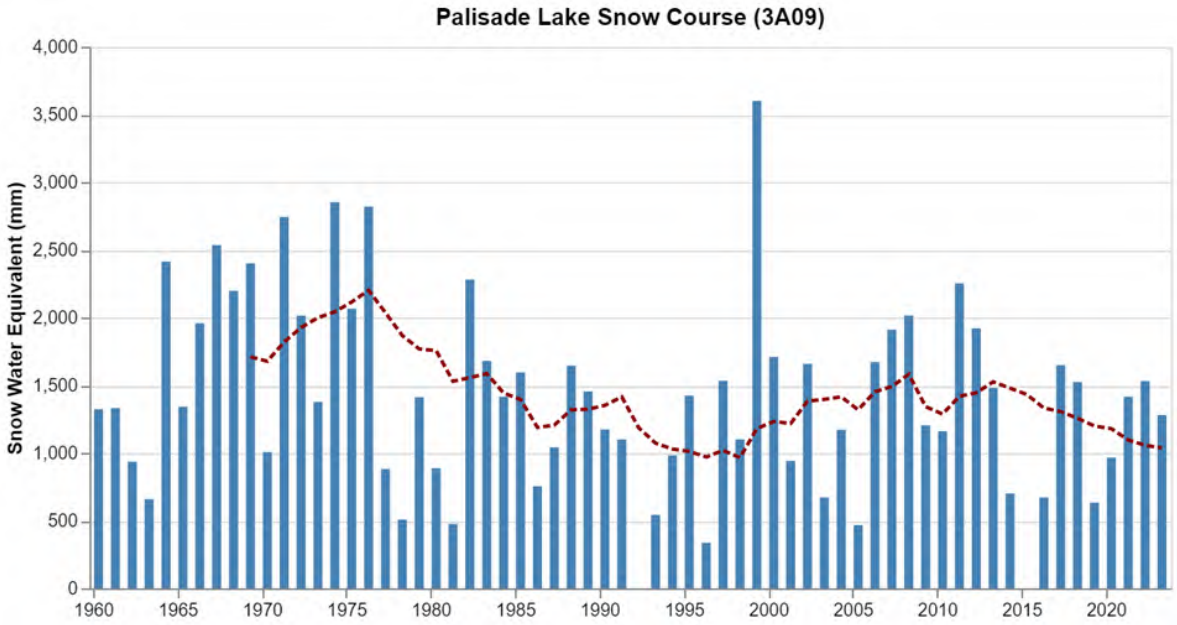
Procurement of consulting engineering services for Phase 2 Geotechnical Site Investigations is underway and a report with a recommendation to award this work is expected in October of this year. Procurement of a consultant program manager to work together with the internal team during the Permitting and Regulatory, Preliminary Design, and Detailed Design phases of the project, and water treatment pilot testing will commence in the third quarter of 2023.

Due to delays in the permitting and regulatory process, the project schedule has been pushed out two years, resulting in an estimated project cost increase of $200 million due to escalation. The total preliminary project cost is now estimated at $4.1 billion and has been included in the 2024 – 2028 Capital Plan. The total project cost will be continually refined and updated through the various stages of the project life cycle.

4. Water Sustainability Innovation Fund: Project Update: Next Generation Snowpack Monitoring

Metro Vancouver's regional water system relies on rainfall and runoff from snowmelt to refill reservoirs in the spring, and keep them topped up until the early part of the summer. Temperature and precipitation are key factors affecting seasonal snowpack. In a warming climate, more precipitation will fall as rain, particularly at lower elevations, which will reduce the extent and depth of snowpack in the water supply areas. The snowpack in the water supply areas varies considerably from season to season; however, there are some clear trends, and more dramatic changes are expected in the coming years. These trends are most evident in manual snow measurements due to the length of record (1936 to present), but there are also trends in more recent satellite observations, which were incorporated into the snowpack monitoring program during the first phase of the WSIF Snowpack Monitoring project in 2020.

The most notable trend is a decline in peak snowpack levels at lower elevations (below 1000 m). At Palisade Lake (see following map for location), peak snow water equivalent (SWE) values occurred in the mid-1970's. Since this time, we've seen an approximately 50% decrease in peak SWE values. The following graph highlights this change (red line is 10-year moving average).

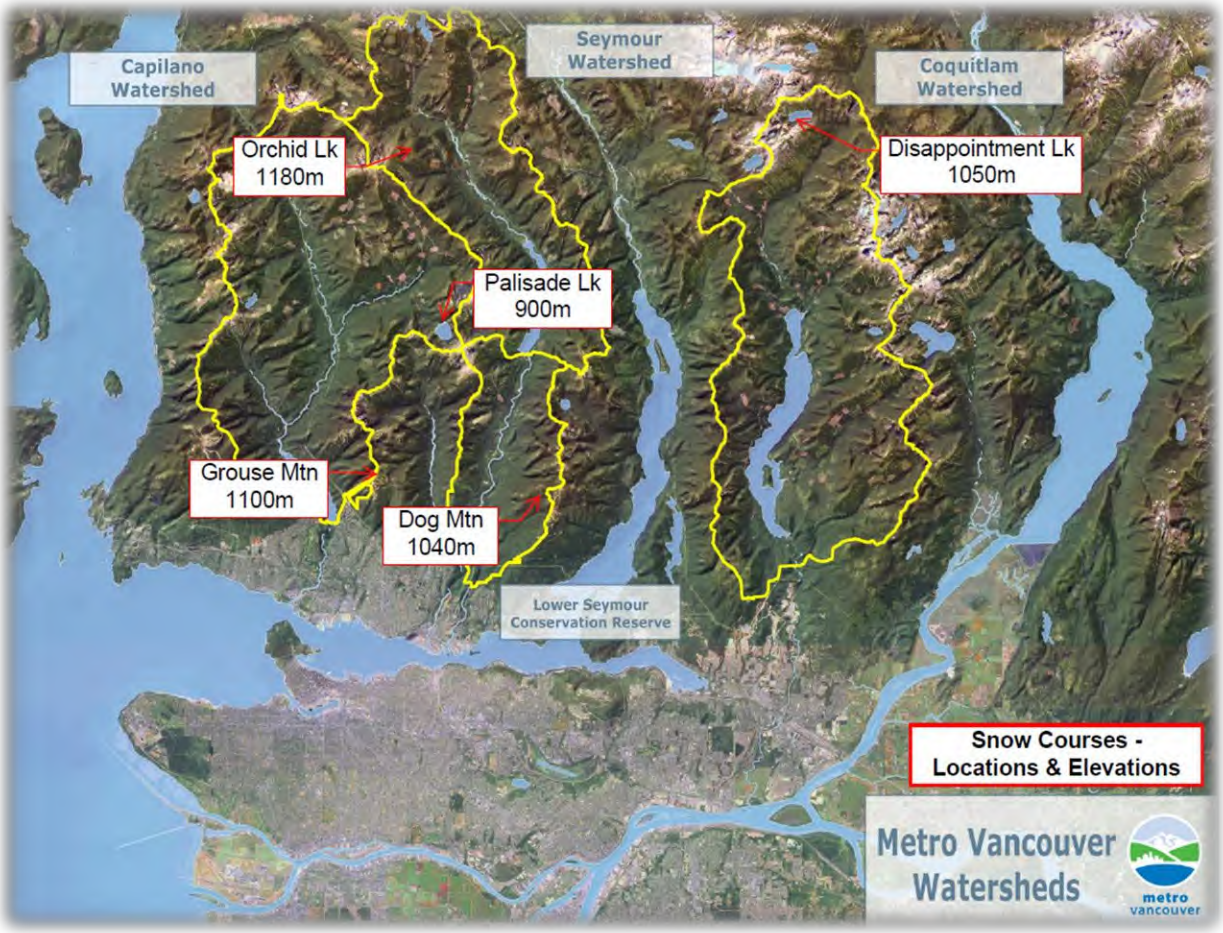


Graph: May 1 snow water equivalent values at Palisade Lake (900 m) from 1960 to 2023. The red dashed line highlights the 10-year moving average.

Satellite observations are showing a trend towards shorter snow covered periods and earlier spring snow melt. For example, the warm and dry spring conditions in 2023 resulted in rapid snowmelt. The snowpack disappeared almost two weeks earlier than previous seasons with similar peak snow depth values.

In summary, climate change is impacting seasonal snowpack in Metro Vancouver's water supply areas. Lower elevations have seen significantly less snow than in the past, and snow covered periods have generally become shorter. As the planet and region continue to warm, it is expected that snow accumulation will become less reliable. The Water Services Department is planning new infrastructure projects to address these changes. The WSIF funded Next Generation Snowpack Monitoring project has introduced new tools to more accurately quantify stored water in the seasonal snowpack, which will be increasingly important in the coming years. Phases 1 and 2 are complete and are already providing value by enabling the Water Services department to more accurately monitor and quantify the snowpack each year. Phase 3 is underway, with the primary goal of fully incorporating these tested new tools into the snowpack monitoring program.

A detailed analysis of local snowpack trends will be provided in a report at the conclusion of this project, which is currently estimated to be complete in 2025.



Map: Metro Vancouver snow course location map. Palisade Lake is on the east side of the Capilano Watershed.

5. Fleetwood Reservoir

Water Services Engineering and Construction is constructing the new Fleetwood Reservoir at Meagan Anne MacDougall Park, located at 9008 Fleetwood Way in the City of Surrey (Surrey). The new reservoir will have a storage capacity of 13.6 ML, and will supply Surrey's Fleetwood Pump Station and Anniedale-Tynehead area. As part of the project, a new 1 km long feeder main has been constructed to supply the reservoir from the Whalley-Clayton Main. Construction is approximately 30% complete and is scheduled to finish in the fall of 2024. The reservoir will be completely buried and after construction, the park will be fully restored over its roof.

Photo: Fleetwood Reservoir

6. Water Committee Tour – Kennedy Newton Main and Fleetwood Reservoir

Date	Thursday, October 5, 2023
Time	8:00 am to 12:00 pm (includes bus travel :: 2 pick up locations)
Pick up location #1	Metrotower III – lobby (7:45 | bus leaves at 8:00 am)
Pick up location #2	Fleetwood Community Centre (8:30 | bus leaves at 8:45 am) 15996 84 Avenue, Surrey
Footwear	Both locations are active construction sites. If you are using your own safety footwear, please note that the minimum acceptable steel-toe boots are CSA-approved, grade one (green triangle), with at least a 6" high cut. Steel toe shoe covers are NOT acceptable. If you do not have boots, or are unsure if your boots meet the requirements, we can provide you with a pair. To ensure we can source a pair for you, please provide your shoe size to Judy O'Hara no later than September 15, 2023.

Attachment

1. 2023 Water Committee Work Plan

56180024

Water Committee 2023
Work Plan

Priorities

1st Quarter	Status
Drinking Water Conservation Plan 2022 Summer Support Program Update	Complete
GVWD Electrical Energy Use, Generation and Management	Complete
Non-Potable Water Re-Use Project	Complete
Project Delivery Update: Coquitlam Main No. 4	Complete
Watershed Fisheries Initiatives Annual Update	Complete
New 2023 Water Sustainability Innovation Fund Projects	Complete
Contract Approvals as per Procurement and Real Property Contracting Authority Policy	Complete
Water Policies (as applicable)	Complete
2nd Quarter	
2022 Contribution Agreement Annual Reports - Seymour Salmonid Society and Coquitlam River Watershed Roundtable	Complete
Drinking Water Management Plan Update	Complete
GVWD 2022 Water Quality Annual Report	Complete
GVWD Capital Program Expenditure Update to December 31, 2022	Complete
GVWD Water Supply System 2022 Annual Update	Complete
Project Delivery Update: Water Tunneling Projects	Complete
Water Communications and Public Outreach Update	Complete
Wildfire Preparedness Update	Complete
Water Supply Update for Summer 2023	Complete
Contract Approvals as per Procurement and Real Property Contracting Authority Policy	Complete
Water Policies (as applicable)	Complete
3rd Quarter	
Annual Update on Water Sustainability Innovation Fund Projects	Complete
Corrosion Control Program Monitoring Update	Pending
GVWD 2022 Dam Safety Program Annual Update	Complete
GVWD Capital Program Expenditure Update to April 30 2023	Complete
In-System Reservoir Upgrades Update	In progress
Project Delivery Update: Coquitlam Lake Water Supply Project	In Progress
Contract Approvals as per Procurement and Real Property Contracting Authority Policy	In progress
Water Policies (as applicable)	In progress
4th Quarter	
Annual Budget and 5-year Financial Plan	Pending
GVWD Capital Program Expenditure Update to August 31, 2023	Pending
GVWD Development Cost Charges – Update	Pending
Quality Management System for Drinking Water Update	Pending
Summer 2023 Water Supply Performance	Pending
Water Communications and Public Outreach Results	Pending
Contract Approvals as per Procurement and Real Property Contracting Authority Policy	Pending
Water Policies (as applicable)	Pending

BRITISH COLUMBIA

August 25, 2023

File: D2023

Greater Vancouver Water District (20661)
WATER SERVICES, C/O FARSH 11TH FLOOR-4730 KINGSWAY
BURNABY BC
V5H0C6

Dear Water Licence Holder,

Re: Request for Reduction of Water Use in Response to Drought Level 5

The South Coast Region is currently in the midst of severe drought conditions. This area of the South Coast Region has been elevated to a **Drought Level 5**. We are requesting all water users to voluntarily conserve water and **reduce withdrawals from surface water and groundwater sources by 50% or more** for the remainder of the season to protect socio-economic and ecosystem values.

The current drought conditions and continued high water withdrawals significantly increase the stress on fish populations. Minimizing water use now will help reduce the likelihood of further declines in stream flows, which will ultimately benefit all users, fish populations and aquatic habitats. All water users need to do their part of reduce the impacts on the resource.

Should water levels fall below critical low flows (e.g. flows below which significant or adverse impacts will occur to aquatic species), further regulatory action may be taken under the *Water Sustainability Act*, such as Temporary Protection Orders or other Orders that require stopping water diversion.

Level	Impacts	General Response Measures
0	There is sufficient water to meet socio-economic and ecosystem needs	Preparedness
1	Adverse impacts to socio-economic or ecosystem values are **rare**	Conservation
2	Adverse impacts to socio-economic or ecosystem values are **unlikely**	Conservation Local water restrictions where appropriate
3	Adverse impacts to socio-economic or ecosystem values are **possible**	Conservation Local water restrictions likely
4	Adverse impacts to socio-economic or ecosystem values are **likely**	Conservation and local water restrictions Regulatory action possible
5	Adverse impacts to socio-economic or ecosystem values are **almost certain**	Conservation and local water restrictions Regulatory action likely Possible emergency response

Licence Terms and Conditions

As a reminder, we request that Water Licence holders review the terms and conditions of their licence and in particular, the period when water may be used. Most irrigators may

.../2

Ministry of Forests
Resource Management
South Coast Natural Resource Region
Suite 200, 10428 – 153 St
Surrey, BC V3R 1E1
Phone: 604-586-4400
Fax: 604-586-4444

notice this period ends on September 30th. If you anticipate using water outside of the dates indicated on your licence, please consider one of the following:

1. A use approval application for temporary water use,
2. An amendment to current licence to extend the date, or
3. A new use licence for additional water.

However, please be advised that approvals, licence amendments, and new licence applications will not necessarily result in an authorization being issued this season and may depend on water availability.

For more information please visit the Water Licence and Approvals website (https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-licensing-rights/water-licences-approvals/apply-for-a-water-licence).

Flow Monitoring and Drought Levels

Provincial water staff continue to closely monitor river levels, ecosystems, and weather forecasts and are frequently updating the Provincial Drought Information Portal. For more information on drought and recommended water conservation measures, please visit the drought information website (http://bit.ly/BCDroughtPortal). This website provides drought updates, a link to the drought portal, effects of drought, suggestions on how to deal with drought, an overview map of the drought levels for the province, and any angling closures.

I would like to thank you in advance for your efforts to conserve water and help protect water resources for future use and ensure the continued health of important aquatic habitats.

Yours truly,

Emily Elsliger
Assistant Water Manager