metrovancouver
SERVICES AND SOLUTIONS FOR A LIVABLE REGION

METRO VANCOUVER REGIONAL DISTRICT
WATER COMMITTEE

REGULAR MEETING

Wednesday, July 6, 2022
9:15 am
Meeting conducted electronically pursuant to the Procedure Bylaw
28th Floor Boardroom, 4515 Central Boulevard, Burnaby, British Columbia
Webstream available at http://www.metrovancouver.org

A G E N D A[1]

1. ADOPTION OF THE AGENDA

1.1 July 6, 2022 Regular Meeting Agenda
That the Water Committee adopt the agenda for its regular meeting scheduled for July 6, 2022 as circulated.

2. ADOPTION OF THE MINUTES

2.1 May 1, 2022 Regular Meeting Minutes *pg. 3*
That the Water Committee adopt the minutes of its regular meeting held May 1, 2022 as circulated.

2.2 June 14, 2022 Special Meeting Minutes *pg. 8*
That the Water Committee adopt the minutes of its special meeting held June 14, 2022 as circulated.

3. DELEGATIONS

4. INVITED PRESENTATIONS

5. REPORTS FROM COMMITTEE OR STAFF

5.1 Draft Water 2023–2027 Capital Plan *pg.10*
That the Water Committee receive for information the report dated June 28, 2022, titled "Draft Water 2023–2027 Capital Plan".

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

5.2 Douglas Road Main No. 2 – Delivering Successful Infrastructure Projects *pg. 18*
That the Water Committee receive for information the report, dated May 11, 2022, titled "Douglas Road Main No. 2 – Delivering Successful Infrastructure Projects".

5.3 2021 GVWD Dam Safety Program Annual Update *pg. 23*
That the Water Committee receive for information the report dated May 24, 2022, titled "2021 GVWD Dam Safety Program Annual Update".

5.4 Jurisdictional Review of Drought Responses *pg. 31*
That the Water Committee receive for information the report dated June 20, 2022, titled "Jurisdictional Review of Drought Responses".

5.5 Project Delivery Capital Portfolio Update *pg. 35*
That the Water Committee receive for information the report dated June 28, 2022, titled "Project Delivery Capital Portfolio Update".

5.6 Manager's Report *pg. 38*
That the Water Committee receive for information the report, dated June 23, 2022, titled "Manager's Report".

6. INFORMATION ITEMS

7. OTHER BUSINESS

8. BUSINESS ARISING FROM DELEGATIONS

9. RESOLUTION TO CLOSE MEETING

10. ADJOURNMENT/CONCLUSION
That the Water Committee adjourn/conclude its regular meeting of July 6, 2022

Membership:

Brodie, Malcolm (C) – Richmond
Elford, Doug (VC) – Surrey
Asmundson, Brent – Coquitlam
Baird, Ken – Tsawwassen First Nation
Bell, Don – North Vancouver City
Bligh, Rebecca – Vancouver
Dingwall, Bill – Pitt Meadows
Guichon, Alicia – Delta
Keithley, Joe – Burnaby
Martin, Gayle – Langley City
Ross, Jamie – Belcarra
Svendsen, Ryan – Maple Ridge
Vagramov, Rob – Port Moody

METRO VANCOUVER REGIONAL DISTRICT
WATER COMMITTEE

Minutes of the Regular Meeting of the Metro Vancouver Regional District (MVRD) Water Committee held at 9:15 a.m. on Thursday, May 11, 2022 in the 28th Floor Boardroom, 4515 Central Boulevard, Burnaby, British Columbia.

MEMBERS PRESENT:
Chair, Mayor Malcolm Brodie*, Richmond
Vice Chair, Councillor Doug Elford*, Surrey
Councillor Brent Asmundson*, Coquitlam
Councillor Don Bell*, North Vancouver City
Mayor Bill Dingwall*, Pitt Meadows
Councillor Alicia Guichon*, Delta
Councillor Joe Keithley*, Burnaby
Councillor Gayle Martin*, Langley City
Mayor Jamie Ross*, Belcarra
Councillor Ryan Svendsen*, Maple Ridge
Mayor Rob Vagramov*, Port Moody (arrived at 9:16 a.m.)

MEMBERS ABSENT:
Chief Ken Baird, Tsawwassen
Councillor Rebecca Bligh, Vancouver

STAFF PRESENT:
Marilyn Towill, General Manager, Water Services
Jerry W. Dobrovolny, Chief Administrative Officer, Commissioner
Sabrina Mann, Legislative Services Coordinator, Board and Information Services

1. ADOPTION OF THE AGENDA

1.1 May 11, 2022 Regular Meeting Agenda

It was MOVED and SECONDED
That the Water Committee adopt the agenda for its regular meeting scheduled for May 11, 2022 as circulated.

CARRIED

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

2. ADOPTION OF THE MINUTES

2.1 April 6, 2022 Regular Meeting Minutes

It was MOVED and SECONDED
That the Water Committee adopt the minutes of its regular meeting held April 6, 2022 circulated.

CARRIED

3. DELEGATIONS

No items presented.

4. INVITED PRESENTATIONS

No items presented.

5. REPORTS FROM COMMITTEE OR STAFF

5.1 Lower Seymour Conservation Reserve Management Plan 2022

Report dated April 28, 2022, from Mike Mayers, Division Manager, Watershed Operations and Protection, Water Services, providing the Water Committee with information on the review and updates to the Lower Seymour Conservation Reserve Management Plan, the guiding principles, goals, and implementation strategies within the plan.

9:16 a.m. Mayor Vagramov arrived at the meeting.

It was MOVED and SECONDED
That the Water Committee receive for information the report dated April 28, 2022 titled "Lower Seymour Conservation Reserve Management Plan 2022".

CARRIED

5.2 Water Services Wildfire Preparedness Update

Report dated April 28, 2022, from Mike Mayers, Division Manager, Watershed Operations and Protection, Water Services, providing the Committee an update on wildfire preparedness for the water supply areas, in advance of the 2022 fire season.

It was MOVED and SECONDED
That the Water Committee receive for information the report dated April 28, 2022 titled "Water Services Wildfire Preparedness Update".

CARRIED

5.3 Award of Contract Resulting from Request for Proposal No. 22-015: Supply and Delivery of Sodium Hypochlorite

Report dated April 28, 2022, from Roy Moulder, Director, Procurement and Real Estate Services, and Bryan Shoji, Director, Wastewater Treatment and Residuals Management, Liquid Waste Services, and Andrew de Boer, Acting Director, Operations & Maintenance, Water Services, advising the GVWD and GVS&DD Boards on the results from RFP No. 22-015 and recommending award of a 3-year contract to Brenntag Canada Inc. for the supply and delivery of sodium hypochlorite.

In response to questions, members were informed of bids received and current market pricing.

It was MOVED and SECONDED

That the GVWD and GVS&DD Boards:

a) approve award of a contract for an estimated value of $11,992,000 (exclusive of taxes) to Brenntag Canada Inc., for an initial 3-year term, resulting from Request for Proposal (RFP) No. 22-015: Supply and Delivery of Sodium Hypochlorite, 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 Award of Contract Resulting from Request for Proposal No. 21-468: Newton Pump Station No. 2 – Reservoir Tunnelling and Outlets

Report dated April 28, 2022, from Roy Moulder, Director, Procurement and Real Estate Services, and Joel Melanson, Division Manager, Engineering and Construction, Water Services, advising the GVWD on the results from RFP No. 21-468: Newton Pump Station No. 2 – Reservoir Tunnelling and Outlets, requesting an increase in project budget, and recommending the award of contract to Michel's Canada Co. to enable the NESP2 project to proceed.

It was MOVED and SECONDED

That the GVWD Board:

a) authorize an increase of the project budget in the amount of $8,000,000 for the Newton Pump Station No. 2 project, bringing the revised total project budget to $53,000,000;
b) approve award of a contract in the amount of up to $12,362,769 (exclusive of taxes) to Michels Canada Co. resulting from Request for Proposal No. 21-468: Newton Pump Station No. 2 – Reservoir Tunnelling and Outlets, subject to final review by the Commissioner; and
c) authorize the Commissioner and the Corporate Officer to execute the required documentation once the Commissioner is satisfied that the award should proceed.

CARRIED

5.5 State of the Assets Report – Water

Report dated May 3, 2022 from Daniel Roberge, Deputy General Manager Operations, Water Services, and Jennifer Crosby, Director, Project Management Office, Project Delivery, presenting members with the State of the Assets Report – Water as part of the ongoing implementation and continuous improvement of asset management practices for the utility, consistent with the approved *Asset Management Policy for Water Services*.

Members were provided with a presentation on the State of the Assets Report, highlighting an executive summary including key findings, information maturity, key performance indicators, asset inventory, condition of the assets, investment forecasts, continuous improvement, and next steps.

Discussion ensued in response to questions regarding on-going staff efforts for robust seismic planning and corporate efforts to monitor risks as part of infrastructure planning.

Members commented on the importance of resilient infrastructure and local dyking and suggested staff collaborate on this work and how it would apply to Flood Resiliency Task Force.

Presentation material titled, "State of the Assets Report – Water" is retained within the May 11, 2022 Water Committee agenda.

It was MOVED and SECONDED

That the GVWD Board receive for information the report dated May 3, 2022, titled "State of the Assets Report - Water".

CARRIED

5.6 Manager's Report

Report dated April 11, 2022, from Marilyn Towill, General Manager, Water Services, updating the Water Committee on the Canadian Association of Laboratory Accreditation, the arrival of the microtunnel machine at Shaft 3 for the Douglas Road Main No. 2 Still Creek Microtunnel Project, and the Committee's Work Plan.

It was MOVED and SECONDED

That the Water Committee receive for information the report dated April 11, 2022, titled "Manager's Report".

CARRIED

6. INFORMATION ITEMS

No items presented.

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 regular meeting scheduled for May 11, 2022 pursuant to the *Community Charter* provisions, Section 90 (1) (e) and (g) as follows:

"90 (1) A part of the 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; and

(g) litigation or potential litigation affecting the regional district."

CARRIED

10. ADJOURNMENT/CONCLUSION

It was MOVED and SECONDED

That the Water Committee adjourn its regular meeting of May 11, 2022.

CARRIED

(Time: 9:43 a.m.)

_____	_____
Sabrina Mann, Legislative Services Coordinator	Malcolm Brodie, Chair

52748518 FINAL

METRO VANCOUVER REGIONAL DISTRICT
WATER COMMITTEE

Minutes of the Special Meeting of the Metro Vancouver Regional District (MVRD) Water Committee held at 8:01 a.m. on Tuesday, June 14, 2022 in the 28th Floor Boardroom, 4515 Central Boulevard, Burnaby, British Columbia, to consider a resolution to close the meeting.

MEMBERS PRESENT:
Chair, Mayor Malcolm Brodie*, Richmond
Vice Chair, Councillor Doug Elford*, Surrey
Councillor Brent Asmundson*, Coquitlam
Councillor Don Bell*, North Vancouver City
Mayor Bill Dingwall*, Pitt Meadows
Councillor Gayle Martin*, Langley City
Mayor Jamie Ross*, Belcarra
Councillor Ryan Svendsen*, Maple Ridge

MEMBERS ABSENT:
Chief Ken Baird, Tsawwassen
Councillor Rebecca Bligh, Vancouver
Councillor Alicia Guichon, Delta
Councillor Joe Keithley, Burnaby
Mayor Rob Vagramov, Port Moody

STAFF PRESENT:
Marilyn Towill, General Manager, Water Services
Jerry W. Dobrovolny, Chief Administrative Officer
Amelia White, Legislative Services Supervisor, Board and Information Services

1. ADOPTION OF THE AGENDA

1.1 June 14, 2022 Special Meeting Agenda

It was MOVED and SECONDED
That the Water Committee adopt the agenda for its special meeting scheduled for June 14, 2022 as circulated.

CARRIED

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

2. REPORTS FROM COMMITTEE OR STAFF

No items presented.

3. RESOLUTION TO CLOSE MEETING

It was MOVED and SECONDED

That the Water Committee close its special meeting scheduled for June 14, 2022 pursuant to the *Community Charter* provisions, Section 90 (1) (e) as follows:

"90 (1) A part of the 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

4. ADJOURNMENT/CONCLUSION

It was MOVED and SECONDED

That the Water Committee adjourn its special meeting of June 14, 2022.

CARRIED

(Time: 8:01 a.m.)

_____ _____

Amelia White, Malcolm Brodie, Chair
Legislative Services Supervisor

53447987 FINAL

To: Water Committee

From: Marilyn Towill, General Manager, Water Services

Date: June 28, 2022 Meeting Date: July 6, 2022

Subject: **Draft Water 2023–2027 Capital Plan**

RECOMMENDATION

That the Water Committee receive for information the report dated June 28, 2022, titled "Draft Water 2023–2027 Capital Plan".

EXECUTIVE SUMMARY

The draft 2023–2027 Water Capital Plan has been prepared based on direction received at the April 14, 2022 Metro Vancouver Board Budget Workshop and continues to maintain the Water Customer Level of Service Objectives. As part of Metro Vancouver's focus on enhancing transparency and governance of the Capital Plan, this report allows the Water Committee to provide comments on the draft Capital Plan, which will then be incorporated into the Water Capital Plan and included in the Fall budget presentations to the Water Committee and GVWD Board.

The estimated 2023 Capital Cash Flow is $426.3 million with a total estimated spend of $2.7 billion over the five years (2023-2027). With respect to the common four years compared to the prior cycle's capital plan, the estimated spend has increased by $7.3 million, or 0.4%, primarily due to escalation driven by market conditions and project schedule changes. These are largely offset by project deferrals.

PURPOSE

To present to the Water Committee the draft Water utility 2023-2027 Capital Plan for comments.

BACKGROUND

On April 14, 2022 Metro Vancouver held a Board Budget Workshop with the objective to seek direction for the preparation of the 2023-2027 Financial Plan. This report provides the Water Committee with the information needed to provide comments on the Capital Plan which will then be incorporated into the 2023-2027 Financial Plan scheduled to be presented in October.

Water Customer Level of Service Objectives

Projects within the draft 2023–2027 Capital Plan are guided by the Water Customer Level of Service Objectives, specifically:

- Maintain quality of the drinking water delivered;
- Maintain capacity and reliability of the Water Supply System;
- Improve environmental stewardship; and
- Minimize timeline to recover from a major event (including seismic, power interruption and climate change).

On an ongoing basis, staff monitor and evaluate the performance of the water supply system and its ability to achieve the service objectives. The projects in the Capital Plan embody the infrastructure changes required to achieve the customer level of service objectives.

CAPITAL PLAN HIGHLIGHTS

The draft 2023 - 2027 Capital Plan includes $426.3 million for 2023 and a total of $2.7 billion over the five years, with an average of $537.8 million per year (see Attachment). It should be noted that out of 146 projects on the 5-year plan, the largest eight projects make up 61.9% of the capital spending.

The spending over the next 5 years is driven by infrastructure changes required as a result of:

- Increase in the number of residents moving into the region, creating an increased demand for drinking water, particularly South of the Fraser (Growth);
- Ensuring that infrastructure is resilient to major emergency events, including power outages, seismic events, and the results of climate change (Resilience);
- Need for replacement or refurbishment of existing infrastructure to ensure that it continues to perform as required to meet service objectives (Maintenance); and
- Opportunities to reduce the life-cycle cost of services and/or achieve Board goals such as climate change mitigation and the provision of enhanced service levels (Opportunity and Upgrade).

Key capital projects planned or ongoing in 2023-2027 for the Water utility include the following:

Infrastructure Type	Project Name	Infrastructure Driver	Proposed 2023 Cashflow
Water Mains	Coquitlam Water Main	Growth	90,000,000
Water Mains	Annacis Water Supply Tunnel	Growth	74,600,000
Water Mains	Second Narrows Water Supply Tunnel	Resilience	40,000,000
Water Mains	Kennedy Newton Main	Growth	19,300,000
Pump Stations	Capilano Raw Water Pump Station (Back-up Power)	Resilience	18,000,000
Reservoirs	Fleetwood Reservoir	Growth	17,000,000
Treatment Plants	Coquitlam Lake Water Supply	Growth	15,000,000
Pump Stations	Newton Pump Station No. 2	Growth	11,100,000
Water Mains	Douglas Road Main No. 2 (Still Creek)	Maintenance	10,250,000
Reservoirs	Hellings Tank No. 2	Growth	9,000,000
Water Mains	Stanley Park Water Supply Tunnel	Maintenance	7,400,000
Water Mains	Cambie-Richmond Water Supply Tunnel	Resilience	5,500,000
Reservoirs	Pebble Hill Reservoir (Seismic Upgrade)	Resilience	2,650,000
Water Mains	Water Meter Upgrades	Upgrade/ Opportunity	2,450,000
Water Mains	Haney Water Supply Tunnel	Resilience	2,000,000
Other	Cleveland Dam Public Warning System and Enhancements	Maintenance	2,000,000

Infrastructure Type	Project Name	Infrastructure Driver	Proposed 2023 Cashflow
Pump Stations	Cape Horn Pump Station No. 3	Growth	1,600,000
Pump Stations	Burnaby Mountain Tank No. 2 and 3	Resilience	1,100,000
Water Mains	Annacis Main No. 5	Growth	900,000
Water Mains	Haney Main No. 4 (West Section)	Growth	900,000
	Other Projects	Various	98,185,000
			426,285,000

The Capital Program for GVWD is currently funded by a combination of long-term debt, reserves, contributions from the operating budget, and some external contributions from other agencies.

Capital Plan Changes

Metro Vancouver's annual capital planning process allows the Board to adjust the capital budget once a year, in the fall, to accommodate changes required to fund projects transitioning from one phase to another (e.g. design phase to construction phase), and in response to new or changing project needs, emerging issues, and changing priorities.

Proposed changes in the draft 2023-2027 Capital Plan can be described within the following categories:

- Projected carryforward – Project expenditures which were expected to occur in 2022, but are now scheduled to occur in 2023.
- Net Deferral – Project expenditures that have been deferred or re-scheduled beyond 2026.
- Cost Adjustments – Project cashflow changes resulting from project budget changes not related to scope.
- New Scope – Project cashflow changes resulting from project budgets specifically related to project scope change

The following table summarizes the total proposed capital plan adjustments in the draft 2023-2027 Capital Plan:

($Millions)

Prior cycle Cashflow 2022-2026	Cashflow 2022	Adjustments to 2023-2026 Capital Plan					Cashflow 2027	Draft Capital Plan 2023-2027
		Projected Carry-Forward	Net Deferral	Cost Adjustments	New Scope	Total		
2,483.6	(471.3)	122.5	(330.2)	176.1	38.9	7.3	669.5	2,689.1

The draft 2023-2027 Capital Plan expected cashflow is holding relatively steady on the common 4 years from last year's budget, with an increase of $7.3M over what we projected last year. This represents about a 0.4% increase.

Capital Plan Review Process
Water and Project Delivery Staff carefully reviewed the project schedules to accommodate any Carryforwards and Cost Adjustments by deferring project phases, where possible.

Throughout the capital planning process, Water reviews each project line to ensure efficient project timing, deliverability and scope. This exercise was performed in preparing the draft 2023-2027 Capital Plan and resulted in the planned deferral of $330 million in capital expenditures into future years.

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

FINANCIAL IMPLICATIONS
The draft 2023-2027 Capital Plan includes $426.3 million for 2023 and a total of $2.7 billion over the five years, an average of $537.8 million per year. The intent is that the Water Committee provide comments, which will then be incorporated into the Water Capital Plan and included in the Fall budget presentations to the Committees and the Board.

CONCLUSION
The draft 2023–2027 Capital Plan is the consolidated list of infrastructure projects required to meet and/or maintain the regional Water Customer Level of Service Objectives and includes the financial impacts of these projects over the next five years.

The presentation of the draft 2023–2027 Capital Plan for Water provides the opportunity for the Water Committee to provide comments, which will be incorporated into the Water Capital Plan and included in the Fall Budget budget presentations to the Water Committee and the GVWD Board.

Attachment
Draft Water 2023-2027 Capital Plan *(53044038)*

52896513

GREATER VANCOUVER WATER DISTRICT
CAPITAL PORTFOLIO
WATER UTILITY

DRAFT 2023 CAPITAL BUDGET AND 2023-2027 CAPITAL PLAN

	PROJECT BUDGET FOR APPROVAL	2023 CASH FLOW	2024 CASH FLOW	2025 CASH FLOW	2026 CASH FLOW	2027 CASH FLOW	2023 to 2027 TOTAL	ACTIVE PHASE	PRIMARY DRIVER
WS - Water Mains									
Angus Drive Main	30,700,000	50,000	-	-	-	-	50,000	Construction	Growth
Annacis Main No. 2 - Queensborough Crossover Improvement	1,200,000	150,000	50,000	-	-	-	200,000	Construction	Maintenance
Annacis Main No. 2 and Barnston Island Main Online Chlorine and pH Analyzers	750,000	500,000	-	-	-	-	500,000	Construction	Upgrade
Annacis Main No. 3 Annieville Channel Crossing Scour Protection	850,000	400,000	-	-	-	-	400,000	Construction	Maintenance
Annacis Main No. 3 BHP Potash Facility Pipe Protection	600,000	200,000	200,000	200,000	-	-	600,000	Construction	Maintenance
Annacis Main No. 5 (North)	60,600,000	600,000	16,000,000	15,000,000	10,000,000	4,400,000	46,000,000	Multiple	Growth
Annacis Main No. 5 (South)	12,450,000	300,000	-	1,000,000	14,000,000	14,000,000	29,300,000	Multiple	Growth
Annacis Water Supply Tunnel	482,100,000	74,600,000	80,000,000	65,000,000	50,000,000	51,000,000	320,600,000	Construction	Growth
Boundary Road Main No. 2 & No. 3 Decommissioning	1,250,000	50,000	-	-	-	-	50,000	Construction	Maintenance
Burnaby Mountain Main No. 2	600,000	300,000	600,000	600,000	2,600,000	5,000,000	9,100,000	Design	Maintenance
Cambie-Richmond Water Supply Tunnel	62,800,000	5,500,000	5,500,000	10,000,000	13,000,000	16,500,000	50,500,000	Design	Resilience
Central Park Main No. 2 (10th Ave to Westburnco)	4,750,000	1,460,000	3,300,000	11,000,000	6,000,000	5,600,000	27,360,000	Multiple	Maintenance
Central Park Main No. 2 (Patterson to 10th Ave)	91,900,000	7,100,000	12,500,000	13,000,000	8,000,000	-	40,600,000	Multiple	Maintenance
Clayton Langley Main No. 2	1,900,000	600,000	700,000	200,000	3,000,000	9,000,000	13,500,000	Design	Resilience
Coquitlam Water Main	293,700,000	90,000,000	120,700,000	114,000,000	149,000,000	156,000,000	629,700,000	Multiple	Growth
Douglas Road Main No. 2 (Flow Meter 169) Replacement	2,000,000	750,000	750,000	-	-	-	1,500,000	Construction	Maintenance
Douglas Road Main No. 2 (Vancouver Heights Section)	21,450,000	600,000	700,000	-	-	-	1,300,000	Construction	Maintenance
Douglas Road Main No. 2 Still Creek	60,600,000	10,250,000	8,000,000	5,000,000	10,000,000	-	33,250,000	Construction	Maintenance
Douglas Road Main Protection	1,500,000	790,000	510,000	150,000	-	-	1,450,000	Construction	Maintenance
Haney Main No. 4 (West Section)	1,900,000	900,000	1,650,000	1,200,000	7,550,000	16,850,000	28,150,000	Multiple	Growth
Haney Water Supply Tunnel	25,250,000	2,000,000	2,500,000	6,000,000	16,000,000	27,500,000	54,000,000	Design	Resilience
Improvements to Capilano Mains No. 4 and 5	1,700,000	750,000	750,000	-	-	-	1,500,000	Construction	Maintenance
Kennedy Newton Main	122,300,000	19,300,000	22,000,000	3,000,000	8,000,000	-	52,300,000	Construction	Growth
Lulu Island - Delta Main - Scour Protection Phase 2	3,550,000	10,000	10,000	2,600,000	890,000	20,000	3,530,000	Construction	Maintenance
Lulu-Delta Water Supply Tunnel	5,000,000	500,000	1,500,000	5,000,000	5,500,000	54,500,000	67,000,000	Design	Maintenance
Lynn Valley Road Main, Seymour Main No. 3 & Seymour Main No. 4 Aerial Crossing	4,200,000	1,930,000	2,270,000	-	-	-	4,200,000	Construction	Maintenance
Maple Ridge Main West Lining Repairs	3,500,000	500,000	1,500,000	1,300,000	-	-	3,300,000	Construction	Maintenance
Newton Reservoir Connection	850,000	450,000	1,100,000	2,500,000	10,000,000	10,000,000	24,050,000	Design	Growth
Palisade Outlet Works Rehabilitation	400,000	400,000	800,000	5,000,000	3,000,000	2,000,000	11,200,000	Design	Maintenance
Port Mann Main No. 2 (South)	33,600,000	550,000	-	-	-	-	550,000	Construction	Growth
Port Mann No. 1 South Section Decommissioning	850,000	750,000	-	-	-	-	750,000	Construction	Maintenance
Port Moody Main No. 1 Christmas Way Relocation	2,350,000	450,000	-	-	-	-	450,000	Construction	Maintenance
Port Moody Main No. 3 Dewdney Trunk Rd Relocation	2,700,000	50,000	-	-	-	-	50,000	Construction	Maintenance
Port Moody Main No. 3 Scott Creek Section	2,450,000	800,000	3,400,000	12,000,000	12,500,000	-	28,700,000	Design	Maintenance
Queensborough Main Royal Avenue Relocation	7,500,000	2,200,000	2,200,000	750,000	-	-	5,150,000	Construction	Maintenance
Rehabilitation of AN2 on Queensborough Bridge	3,850,000	850,000	470,000	-	-	-	1,320,000	Construction	Maintenance
Relocation and Protection for MOTI Expansion Project Broadway	8,900,000	1,600,000	580,000	575,000	575,000	-	3,330,000	Construction	Maintenance

	PROJECT BUDGET FOR APPROVAL	2023 CASH FLOW	2024 CASH FLOW	2025 CASH FLOW	2026 CASH FLOW	2027 CASH FLOW	2023 to 2027 TOTAL	ACTIVE PHASE	PRIMARY DRIVER
Relocation and Protection for MOTI George Massey Crossing Replacement	450,000	25,000	-	-	700,000	700,000	1,425,000	Design	Maintenance
Relocation and Protection for Translink Expansion Project Surrey Langley SkyTrain	600,000	50,000	2,025,000	2,525,000	525,000	525,000	5,650,000	Design	Maintenance
Sapperton Main No. 1 New Line Valve and Chamber	3,850,000	500,000	1,000,000	-	-	-	1,500,000	Construction	Upgrade
Sapperton Main No. 2 North Road Relocation and Protection	6,500,000	2,650,000	-	-	-	-	2,650,000	Construction	Maintenance
Scour Protection Assessments and Construction General	4,000,000	800,000	150,000	1,000,000	-	650,000	2,600,000	Construction	Resilience
Second Narrows Crossing 1 & 2 (Burrard Inlet Crossing Removal)	2,000,000	750,000	1,000,000	1,200,000	12,000,000	12,000,000	26,950,000	Design	Maintenance
Second Narrows Water Supply Tunnel	468,550,000	40,000,000	30,000,000	20,000,000	45,000,000	600,000	135,600,000	Construction	Resilience
Seymour Main No. 2 Joint Improvements	3,300,000	1,000,000	750,000	1,000,000	1,000,000	-	3,750,000	Construction	Resilience
Seymour Main No. 5 III (North)	7,900,000	500,000	-	-	100,000	500,000	1,100,000	Design	Resilience
South Delta Main No. 1 - 28 Ave to 34B Ave	21,900,000	350,000	-	-	-	-	350,000	Construction	Upgrade
South Delta Main No. 1 - Ferry Road Check Valve Replacement	600,000	100,000	-	-	-	-	100,000	Construction	Maintenance
South Surrey Main No. 1 Nickomekl Dam Relocation	7,100,000	400,000	3,600,000	2,100,000	1,000,000	-	7,100,000	Construction	Maintenance
South Surrey Main No. 2	2,000,000	800,000	900,000	2,000,000	5,000,000	6,900,000	15,600,000	Design	Growth
South Surrey Main No. 2 Nickomekl Dam Prebuild	2,000,000	500,000	1,000,000	500,000	-	-	2,000,000	Construction	Growth
South Surrey Supply Main (Serpentine River) Bridge Support Modification	1,350,000	250,000	-	-	-	-	250,000	Construction	Maintenance
Stanley Park Water Supply Tunnel	340,000,000	7,400,000	33,000,000	42,000,000	55,000,000	50,000,000	187,400,000	Construction	Maintenance
Tilbury Junction Chamber Valves Replacement with Actuators	5,600,000	200,000	-	-	-	-	200,000	Construction	Upgrade
Tilbury Main North Fraser Way Valve Addition	3,100,000	1,000,000	1,500,000	-	-	-	2,500,000	Construction	Maintenance
Water Chamber Improvements and Repairs	2,000,000	205,000	205,000	200,000	-	-	610,000	Construction	Maintenance
Water Meter Upgrades	22,400,000	2,450,000	2,500,000	2,500,000	2,500,000	2,400,000	12,350,000	Construction	Upgrade
Water Optimization - Flow Meters (Non-billing) Phase 1	-	-	1,500,000	2,000,000	3,000,000	4,000,000	10,500,000	Planned	Upgrade
Water Optimization - Flow Meters (Non-billing) Phase 2	3,000,000	250,000	1,500,000	750,000	2,000,000	3,000,000	7,500,000	Design	Upgrade
Water Optimization - Instrumentation	1,500,000	600,000	2,150,000	2,500,000	2,500,000	2,500,000	10,250,000	Design	Upgrade
Water Optimization Automation & Instrumentation	9,550,000	900,000	-	-	-	-	900,000	Construction	Upgrade
Whalley Kennedy Main No. 2	2,900,000	300,000	1,300,000	2,000,000	2,000,000	2,000,000	7,600,000	Design	Growth
Whalley Main	31,800,000	50,000	-	-	-	-	50,000	Construction	Growth
WS - Water Mains Total	**2,316,500,000**	**290,220,000**	**374,320,000**	**357,350,000**	**461,940,000**	**458,145,000**	**1,941,975,000**		
WS - Pump Stations									
Barnston/Maple Ridge Pump Station - Back-up Power	14,000,000	8,100,000	-	-	500,000	2,100,000	10,700,000	Design	Resilience
Burnaby Mountain Pump Station No. 2	1,300,000	100,000	900,000	1,000,000	700,000	9,000,000	11,700,000	Design	Maintenance
Cape Horn Pump Station No. 3	27,450,000	1,600,000	3,500,000	4,500,000	17,000,000	22,000,000	48,600,000	Design	Growth
Capilano Raw Water Pump Station - Back-up Power	55,000,000	18,000,000	16,050,000	2,000,000	-	-	36,050,000	Construction	Resilience
Capilano Raw Water Pump Station Bypass PRV Upgrades	3,200,000	1,600,000	700,000	-	-	-	2,300,000	Design	Maintenance
Central Park WPS Starters Replacement	11,000,000	2,550,000	5,400,000	1,000,000	-	-	8,950,000	Design	Maintenance
Grandview Pump Station Improvements	3,500,000	1,550,000	500,000	-	-	-	2,050,000	Construction	Resilience
Newton Pump Station No. 2	58,550,000	11,100,000	21,000,000	5,400,000	9,000,000	-	46,500,000	Construction	Growth
Pebble Hill Pump Station Seismic Upgrade	-	-	150,000	650,000	1,000,000	-	1,800,000	Planned	Resilience
Westburnco Pump Station - Back-up Power	24,500,000	250,000	1,500,000	7,050,000	6,500,000	4,800,000	20,100,000	Design	Resilience
Westburnco Pump Station No. 2 VFD Replacements	2,550,000	700,000	-	-	-	-	700,000	Construction	Maintenance
WS - Pump Stations Total	**201,050,000**	**45,550,000**	**49,700,000**	**21,600,000**	**34,700,000**	**37,900,000**	**189,450,000**		
WS - Reservoirs									
Burnaby Mountain Tank No. 2	3,350,000	450,000	950,000	1,200,000	500,000	7,000,000	10,100,000	Design	Resilience
Burnaby Mountain Tank No. 3	3,400,000	650,000	1,200,000	1,200,000	450,000	7,000,000	10,500,000	Design	Resilience
Cape Horn Reservoir Condition Assessment and Structural Repair	500,000	150,000	250,000	1,300,000	-	-	1,700,000	Design	Maintenance
Capilano Energy Recovery Facility 66" PRV Replacement	-	-	1,450,000	50,000	3,500,000	2,000,000	7,000,000	Planned	Maintenance

	PROJECT BUDGET FOR APPROVAL	2023 CASH FLOW	2024 CASH FLOW	2025 CASH FLOW	2026 CASH FLOW	2027 CASH FLOW	2023 to 2027 TOTAL	ACTIVE PHASE	PRIMARY DRIVER
Capilano Energy Recovery Facility Operational Upgrades	1,800,000	300,000	750,000	450,000	300,000	-	1,800,000	Construction	Maintenance
Central Park Reservoir Structural Improvements	-	-	100,000	200,000	1,300,000	500,000	2,100,000	Planned	Maintenance
Clayton Reservoir	25,750,000	50,000	-	-	-	-	50,000	Construction	Resilience
Dechlorination for Reservoir Overflow and Underdrain Discharges	2,700,000	1,700,000	300,000	-	-	-	2,000,000	Construction	Maintenance
Fleetwood Reservoir	56,550,000	17,000,000	13,000,000	9,650,000	-	-	39,650,000	Construction	Growth
Grandview Reservoir Unit No. 2	-	-	400,000	800,000	1,400,000	1,000,000	3,600,000	Planned	Growth
Hellings Tank No. 2	43,900,000	9,000,000	11,500,000	9,000,000	7,650,000	-	37,150,000	Construction	Growth
Kersland Reservoir No. 1 Structural Improvements	5,500,000	500,000	-	-	-	-	500,000	Construction	Maintenance
Pebble Hill Reservoir No. 3 Seismic Upgrade	500,000	50,000	-	-	-	5,000,000	5,050,000	Design	Resilience
Pebble Hill Reservoir Seismic Upgrade	12,350,000	2,600,000	2,600,050	-	-	-	5,200,000	Construction	Resilience
Reservoir Isolation Valve Automation	6,450,000	1,050,000	1,500,000	1,250,000	1,150,000	-	4,950,000	Construction	Resilience
Reservoir Sampling Kiosks - Multi Location	500,000	350,000	650,000	300,000	-	-	1,300,000	Design	Upgrade
Reservoir Structural Preliminary Assessments	3,200,000	500,000	1,200,000	1,500,000	-	-	3,200,000	Design	Maintenance
Sasamat Reservoir Refurbishment	400,000	150,000	650,000	700,000	-	-	1,500,000	Design	Maintenance
Sunnyside Reservoir Units 1 and 2 Seismic Upgrade	8,000,000	100,000	2,000,000	7,200,000	1,000,000	-	10,300,000	Design	Resilience
Vancouver Heights System Resiliency Improvements	2,500,000	700,000	1,000,000	500,000	-	-	2,200,000	Construction	Resilience
WS - Reservoirs Total	**177,350,000**	**35,300,000**	**39,500,050**	**35,300,000**	**17,250,000**	**22,500,000**	**149,850,000**		
WS - Treatment Plants									
Coquitlam Intake Tower Seismic Upgrade	2,500,000	250,000	250,000	5,000,000	14,000,000	5,000,000	24,500,000	Design	Resilience
Coquitlam Lake Water Supply	160,750,000	15,000,000	16,000,000	30,000,000	50,000,000	108,000,000	219,000,000	Multiple	Growth
Critical Control Sites - Back-Up Power	-	-	200,000	300,000	400,000	500,000	1,400,000	Planned	Resilience
CWTP CO2 System Improvements	-	-	500,000	1,750,000	1,500,000	-	3,750,000	Planned	Maintenance
CWTP Mobile Disinfection System	750,000	400,000	1,350,000	1,000,000	-	-	2,750,000	Design	Upgrade
CWTP Ozone Back-up Power	-	-	500,000	1,450,000	4,000,000	1,500,000	7,450,000	Planned	Resilience
CWTP Ozone Generation Upgrades for Units 2 & 3	7,500,000	2,050,000	50,000	-	-	-	2,100,000	Construction	Upgrade
CWTP Ozone Sidestream Pipe Heat Trace and Insulation	900,000	50,000	-	-	-	-	50,000	Construction	Maintenance
CWTP Ozone Sidestream Pump VFD Replacement	1,400,000	490,000	300,000	-	-	-	790,000	Construction	Maintenance
CWTP Temporary Water Supply	2,000,000	1,300,000	250,000	-	-	-	1,550,000	Design	Maintenance
Online Chlorine and pH Analyzers	2,500,000	400,000	1,400,000	1,200,000	1,500,000	1,500,000	6,000,000	Design	Upgrade
SCFP Additional Pre-Treatment	-	-	-	-	1,000,000	7,300,000	8,300,000	Planned	Upgrade
SCFP Centralized Compressed Air System	1,900,000	1,225,000	250,000	-	-	-	1,475,000	Construction	Maintenance
SCFP Clearwell Baffle Replacement	600,000	250,000	1,350,000	500,000	-	1,000,000	3,100,000	Design	Maintenance
SCFP Clearwell Membrane Replacement	600,000	200,000	600,000	800,000	5,700,000	5,500,000	12,800,000	Design	Maintenance
SCFP Floc Tank Baffle Replacement and Ladder Installation to Improve Accessibilit	800,000	700,000	100,000	6,000,000	2,000,000	1,000,000	9,800,000	Design	Maintenance
SCFP OMC Building Expansion	800,000	300,000	250,000	1,550,000	500,000	-	2,600,000	Design	Maintenance
SCFP Polymer System Upgrade	4,650,000	700,000	-	-	-	-	700,000	Construction	Maintenance
SCFP SCADA/ICS Controller Replacement	1,400,000	700,000	700,000	-	-	-	1,400,000	Design	Maintenance
WS - Treatment Plants Total	**189,050,000**	**24,015,000**	**24,050,000**	**49,550,000**	**80,600,000**	**131,300,000**	**309,515,000**		
WS - Other									
Beach Yard Facility - Site Redevelopment	-	-	-	500,000	1,000,000	1,500,000	3,000,000	Planned	Maintenance
Capilano Hydropower	4,250,000	-	-	-	1,750,000	2,000,000	3,750,000	Design	Opportunity
Capilano Mid-Lake Debris Boom	750,000	50,000	-	-	-	-	50,000	Construction	Resilience
Capilano Raw Water Pump Station VFD Upgrades	1,800,000	1,800,000	500,000	-	-	-	2,300,000	Construction	Maintenance
Capilano Reservoir and Seymour Reservoir Dam Safety Boom Replacement	3,700,000	3,050,000	500,000	-	-	-	3,550,000	Construction	Maintenance
Capilano Reservoir Boat Wharf	850,000	100,000	-	-	-	-	100,000	Construction	Resilience

	PROJECT BUDGET FOR APPROVAL	2023 CASH FLOW	2024 CASH FLOW	2025 CASH FLOW	2026 CASH FLOW	2027 CASH FLOW	2023 to 2027 TOTAL	ACTIVE PHASE	PRIMARY DRIVER
Capilano Watershed Bridge Replacements - Crown Creek and Capilano River	-	-	-	-	95,000	200,000	295,000	Planned	Maintenance
Capilano Watershed Security Gatehouse	4,700,000	2,950,000	400,000	-	-	-	3,350,000	Construction	Maintenance
CLD & SFD Fasteners Replacement & Coating Repairs	2,350,000	350,000	-	-	-	-	350,000	Construction	Maintenance
Cleveland Dam - Lower Outlet HBV Rehabilitation	4,900,000	200,000	1,000,000	-	-	-	1,200,000	Construction	Maintenance
Cleveland Dam Drumgate Seal Replacement	300,000	-	500,000	500,000	-	-	1,000,000	Planned	Maintenance
Cleveland Dam East Abutment Additional GV Series Pump Wells	750,000	50,000	-	-	-	-	50,000	Construction	Upgrade
Cleveland Dam Lower Outlet Trashrack Replacement and Debris Removal	-	-	-	-	500,000	500,000	1,000,000	Planned	Maintenance
Cleveland Dam Power Resiliency Improvements	1,700,000	1,300,000	250,000	-	-	-	1,550,000	Construction	Resilience
Cleveland Dam Public Warning System and Enhancements	10,000,000	2,000,000	2,000,000	3,000,000	-	-	7,000,000	Construction	Maintenance
Cleveland Dam Seismic Stability Evaluation	800,000	400,000	-	-	-	-	400,000	Design	Resilience
Cleveland Dam Spillway Resurfacing	-	-	-	-	400,000	1,000,000	1,400,000	Planned	Maintenance
Facilities O&M Documentation Development	2,000,000	500,000	1,000,000	500,000	-	-	2,000,000	Design	Resilience
Lake City HVAC Upgrade	900,000	900,000	200,000	-	-	-	1,100,000	Construction	Resilience
Lower Seymour Conservation Reserve Learning Lodge Replacement	5,050,000	50,000	-	-	-	-	50,000	Construction	Upgrade
Microbiology Laboratory Expansion	-	-	150,000	200,000	1,400,000	3,000,000	4,750,000	Planned	Maintenance
Newton Rechlorination Station No. 2	-	-	400,000	900,000	1,900,000	1,500,000	4,700,000	Planned	Maintenance
Pitt River Rechlorination Station Reconstruction	-	-	-	500,000	1,000,000	1,500,000	3,000,000	Planned	Maintenance
Rechlorination Station SHS Storage Tank Replacement	1,200,000	250,000	-	-	-	-	250,000	Construction	Maintenance
Rechlorination Station Upgrades	5,000,000	2,050,000	1,500,000	1,000,000	6,000,000	6,000,000	16,550,000	Design	Maintenance
Rice Lake Dams Rehabilitation	3,000,000	600,000	1,200,000	600,000	600,000	-	3,000,000	Construction	Maintenance
Scour Protection - General	2,000,000	100,000	-	-	-	-	100,000	Construction	Maintenance
Seymour Falls Boat Wharf	800,000	50,000	-	-	-	-	50,000	Construction	Resilience
Seymour Falls Dam Public Warning System	10,000,000	500,000	2,500,000	4,000,000	3,000,000	-	10,000,000	Construction	Maintenance
Seymour Falls Dam Seismic Stability Assessment	1,800,000	800,000	1,000,000	1,000,000	1,000,000	2,500,000	6,300,000	Design	Resilience
Seymour Lake Debris Boom	800,000	50,000	-	-	-	-	50,000	Construction	Resilience
Seymour Reservoir Mid-Lake Debris Boom	2,300,000	100,000	-	-	-	-	100,000	Construction	Resilience
South Fraser Works Yard	71,000,000	13,000,000	2,500,000	500,000	-	-	16,000,000	Design	Maintenance
WS - Other Total	**142,700,000**	**31,200,000**	**15,600,000**	**13,200,000**	**18,645,000**	**19,700,000**	**98,345,000**		
TOTAL CAPITAL EXPENDITURES	**3,026,650,000**	**426,285,000**	**503,170,050**	**477,000,000**	**613,135,000**	**669,545,000**	**2,689,135,000**		
SUMMARY BY DRIVER									
Growth	1,424,100,000	242,100,000	310,050,000	265,550,000	340,600,000	392,150,000	1,550,450,000		
Maintenance	764,500,000	86,685,000	110,570,000	133,700,000	149,685,000	164,545,000	645,185,000		
Resilience	748,200,000	88,450,000	70,450,050	67,500,000	108,600,000	90,150,000	425,150,000		
Upgrade	85,600,000	9,050,000	12,100,000	10,250,000	12,500,000	20,700,000	64,600,000		
Opportunity	4,250,000	-	-	-	1,750,000	2,000,000	3,750,000		
TOTAL CAPITAL EXPENDITURES	**3,026,650,000**	**426,285,000**	**503,170,050**	**477,000,000**	**613,135,000**	**669,545,000**	**2,689,135,000**		

To: Water Committee

From: Ben Suleiman, Lead Senior Engineer, Engineering & Construction, Water Services
Vanessa Anthony, Program Manager, Community Engagement, External Relations

Date: May 11, 2022 Meeting Date: July 6, 2022

Subject: **Douglas Road Main No. 2 – Delivering Successful Infrastructure Projects**

RECOMMENDATION

That the Water Committee receive for information the report, dated May 11, 2022, titled "Douglas Road Main No. 2 – Delivering Successful Infrastructure Projects".

EXECUTIVE SUMMARY

The Douglas Road Main No. 2 (DRM2) project is nearing completion and once complete, the new water main will increase the long-term resiliency of this water supply corridor. The project is currently tracking under budget with an on schedule completion expected in 2024. This project also provides an example for how Metro Vancouver's Water Services department is achieving key strategic goals outlined in the "Board Strategic Plan 2019 – 2022".

Metro Vancouver recognizes the construction of our major drinking water infrastructure projects has an impact on local communities. The Still Creek Tunnel Section of the DRM2 project, in particular, is an example of how strong collaboration and engagement by Metro Vancouver with the City of Burnaby, the public, and the contractor, can maximize the benefits of a project and minimize the impacts to the community. The Still Creek Tunnel Section project also demonstrates the benefits achieved when a contractor upholds and implements Metro Vancouver's community engagement values and works closely with the community.

PURPOSE

To inform the Water Committee of the progress of the DRM2 and to highlight how collaboration and engagement with our member jurisdictions and the community on drinking water infrastructure projects, such as the DRM2 Still Creek Tunnel Section, contribute to meeting the strategic directions set out in "The Board Strategic Plan 2019 – 2022".

BACKGROUND

The DRM2 project involves installing 14 km of a large diameter water main (1500 mm) between the Vancouver Heights Reservoir and Pump Station in north Burnaby to the Westburnco Reservoir and Pump Station in New Westminster. The new water main will replace the existing Douglas Road Main No. 1 which was built in the 1940s and has reached the end of its service life.

Planning of this significant infrastructure project began in 2004 and was divided into eight sections to be constructed over several years due to the overall size of the project and its impacts on traffic and the community. Construction of the first section began in 2006 and seven sections have now been completed, most of which are in service. The final section, Still Creek, is being constructed in

three sub-sections: North, Tunnel, and South. Construction is currently underway and expected to be completed in 2024.

The new water main has been designed to the latest seismic standards and accounts for the growing needs of the region's population. Once complete, the new water main will increase the resiliency of Metro Vancouver's drinking water system and ensure the reliable delivery of clean, safe, drinking water to our growing region.

By collaborating closely and creatively with staff from the City of Burnaby, and through our engagement with local residents and businesses, Metro Vancouver has been able to mitigate impacts from construction of this significant drinking water infrastructure project. The design and construction approach of the DRM2 Still Creek Tunnel Section demonstrates achievement of the Board's strategic goals of fostering collaboration and engagement, while managing our drinking water, and building resilience.

Project Impacts in the Community

The Still Creek Section of DRM2 consists of two open-cut construction sections, and one tunnelling section across approximately 2.2 km in the Still Creek neighbourhood of Burnaby.

Compared with smaller municipal utility installations, Metro Vancouver's water main construction projects are very large and take place over many years. Impacts can be significant and diverse; construction zones can span multiple lanes of roadway causing traffic delays and access restrictions or delays for businesses and residents. The construction equipment required to install the infrastructure includes large excavators, dump trucks and tunneling equipment, which result in noise, dust and vibration impacts to the community.

Collaborating with member jurisdictions throughout the design process, and engaging the community in efforts to minimize the community impacts of Metro Vancouver's project is a priority, and Metro Vancouver's project teams work hand-in-hand with the community engagement lead and general contractor to ensure project impacts are identified and minimized, and that communication with the public is open, frequent, and transparent.

Collaborating with Member Jurisdictions

Beginning in early 2017, Metro Vancouver worked closely with the City of Burnaby to determine a suitable alignment for the Still Creek Section. Staff from both organizations worked collaboratively to consider a number of items including future construction and development in the area, planned municipal upgrades, zoning changes, environmental constraints, and public impacts.

Collaboration with the City of Burnaby continued throughout design of the Still Creek Section during which time Metro Vancouver and the City of Burnaby discussed the potential to coordinate installation of municipal upgrade works along Douglas Road. Staff worked together to review traffic management strategies so that vehicles, pedestrians, cyclists, and buses could move safely and effectively during construction. Collaboration and ongoing communication with the City of Burnaby will continue until the completion of construction, anticipated in 2024.

Incorporating Public Feedback into Project Design and Construction
Metro Vancouver's engagement staff work to predict, research, and report on potential construction impacts of each water infrastructure project on the residents and businesses in the community. These impacts range from traffic, to noise and vibration, to parking and access.

Given the length and size of the DRM2 project, public impact mitigation has been critical to the successful completion of this large project. Metro Vancouver's technical and engagement teams worked together to ensure public feedback was integrated directly into the design of the project. They also ensured the construction contract language reflected public input in an effort to maximize the benefits of the project and minimize the impacts to the community wherever possible.

Working Effectively with the Community
During the Still Creek Tunnel Section, Metro Vancouver's general contractor adopted Metro Vancouver's community engagement guiding principles of accountability, transparency and responsiveness in their own interactions with the community.

Metro Vancouver also appointed a dedicated community liaison to work with the contractor and to work with, establish relationships, and build trust with the impacted community through timely and effective communications. The community liaison conducted community research, and the feedback was incorporated into the design, and construction mitigation measures. Providing prompt and frequent information to affected members of the public established strong relationships with the local community, especially the residents and businesses in the area of construction.

Residents and businesses adjacent to the tunnel shafts on the Still Creek Tunnel Section, which will remain in place for approximately 18 months, will experience longer lasting impacts compared to those in proximity to open cut sections. The installation contractor worked closely with two non-profit organizations whose properties were either adjacent to, or within, tunnel shaft construction footprints.

Creative mitigation measures taken by the contractor are helping to minimize project impacts in the community, and ensure more efficient completion of construction. An example is relationship-building by the contractor, that involved hiring a local community organization landscaping business, that employs adults with developmental disabilities, to provide tree protection, site restoration, and fence relocation services.

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

FINANCIAL IMPLICATIONS
This is an information report. No financial implications are presented.

CONCLUSION
DRM2 is nearing completion, which will greatly improve Metro Vancouver's ability to supply water to meet growth in the City of Burnaby, City of New Westminster and other parts of the region well into

the future. This new water main is designed to withstand significant seismic events and will increase the resiliency of Metro Vancouver's drinking water system.

The delivery of successful drinking water infrastructure projects requires close collaboration and coordination between Metro Vancouver and its member jurisdictions, comprehensive community engagement and communications, and collaboration between Metro Vancouver and the contractor. Furthermore, projects are more likely to be delivered successfully when the general contractor upholds Metro Vancouver's community engagement guiding principles in their own interactions with the community.

The Still Creek Tunnel Section of the DRM2 project provides an example of how Metro Vancouver's public engagement efforts and collaboration with its member jurisdictions—as well as close collaboration with contractors who adopt Metro Vancouver's community engagement values during projects—helps to mitigate community impacts and ensures projects are completed effectively.

Attachment
Douglas Road Water Main – Project Alignment

52330196


DOUGLAS ROAD WATER MAIN – Project Alignment
LEGEND
Construction complete
Under construction
Existing Water Mains
CITY OF BURNABY
BURRARD INLET
Second Narrows Water Supply Tunnel
Vancouver Heights Reservoir
Westburnco Reservoir
BURNABY LAKE
DEER LAKE
McGill St.
Rosser Ave.
Eton St.
N. Carleton Ave.
Albert St.
Union St.
Parker St.
Boundary Rd.
Gamma Ave.
Beta Ave.
Delta Ave.
Lougheed Hwy.
Sperling Ave.
Douglas Rd.
Trans Canada Hwy.
Canada Way
Buckingham Ave.
Berkley St.
Morley Dr.
Edmonds St.
6th St.
4th St.
Cumberland St.
13th Ave.
10th Ave.
Vancouver Heights Section
Delta Section
Still Creek Section
Kincaid Section
Buckingham Section
Canada Way South Section
13th Avenue Section

To: Water Committee

From: Andrew de Boer, Acting Director, Operations and Maintenance, Water Services
Ian Manning, Senior Engineer, Operations and Maintenance, Water Services

Date: May 24, 2022 Meeting Date: July 6, 2022

Subject: **2021 GVWD Dam Safety Program Annual Update**

RECOMMENDATION

That the Water Committee receive for information the report dated May 24, 2022, titled "2021 GVWD Dam Safety Program Annual Update".

EXECUTIVE SUMMARY

The GVWD owns and operates seven dams that are regulated by the Ministry of Forests – Dam Safety Branch, five of which are regional drinking water supply dams. The GVWD Dam Safety Program for the water supply dams is compliant with the requirements outlined in the provincial Dam Safety Regulation (BC Reg. 11/2021), as required for all dam owners in British Columbia. There were no significant concerns identified from the 2021 routine surveillance, monitoring, or formal dam inspections. The Rice Lake North and Rice Lake South dams have been added to this annual update report, and are located in the Lower Seymour Conservation Reserve (LSCR) in the District of North Vancouver. Metro Vancouver operates and maintains the LSCR for future water supply purposes, as well as its ecological and recreational values.

PURPOSE

To provide the Water Committee with an annual update on dam safety activities associated with the Cleveland, Seymour Falls, Palisade, Burwell, Loch Lomond, Rice Lake North, and Rice Lake South dams.

BACKGROUND

The GVWD dam safety team monitors and reviews the performance of seven dams to ensure they remain safe and to ensure the five GVWD water supply dams continue to provide reliable sources of drinking water. A dam surveillance consultant is retained to carry out third party review and report on dam monitoring and inspection activities. The dam safety team supports the goals and initiatives of the Board Strategic Plan and Drinking Water Management Plan through contribution to the provision of clean, safe drinking water and ensuring the long-term financial and functional resilience of the dams.

GVWD DAMS

Cleveland Dam and Seymour Falls Dam

Cleveland Dam is a 92 m high concrete gravity dam that impounds Capilano Reservoir, and Seymour Falls Dam is a 30 m high composite concrete and earth fill dam that impounds Seymour Reservoir. Both dams include discharge outlets to release water downstream to their respective rivers, as well as water supply intakes to convey water for treatment at the Seymour Capilano Filtration Plant. The

reservoir areas upstream of the dams are kept clear of debris with a series of booms, which float on the reservoir surface and prevent the passage of debris towards the dams and associated intakes.

Alpine Lake Dams

The three alpine lake dams are located within the Capilano and Seymour watersheds, and range in height from 5.8 m to 8.2 m. Palisade and Burwell Dams are rock fill dams with concrete slabs on their upstream faces, and Loch Lomond Dam is a vertical-face concrete dam. All three alpine lake dams include spillways and discharge outlets that allow for the release of water to their respective downstream reservoirs. Palisade Lake discharges to the Capilano Reservoir. Burwell and Loch Lomond Lakes discharge to the Seymour Reservoir. The alpine lakes are primarily used to augment the summertime storage capacity of the two downstream water supply reservoirs.

Rice Lake Dams

The two Rice Lake dams are earth fill dams located at the north and south ends of Rice Lake within the Lower Seymour Conservation Reserve (LSCR) in North Vancouver. The Rice Lake North Dam is 7.6 m high and includes an overflow spillway. The Rice Lake South Dam is 8.5 m high. The Rice Lake dams were constructed in the late 1950s to provide a supplemental drinking water supply for the City of North Vancouver. The function of Rice Lake as a drinking water supply ceased in the 1980s and Rice Lake has since been used for recreational purposes (e.g.: public walking trails, floating dock, and fishing).

DAM SAFETY COMPLIANCE

Cleveland Dam and Seymour Falls Dam fall under the “extreme consequence” classification of the provincial Dam Safety Regulation. The three alpine lake dams fall under the “significant consequence” classification, and the two Rice Lake dams have been assigned a provisional “high consequence” classification. Work is planned in 2022 to review and update the Rice Lake dams consequence classifications as described below. The following work was completed in 2021 to ensure continued compliance with the Dam Safety Regulation:

- Weekly site surveillance, at a minimum, was carried out at Cleveland Dam and Seymour Falls Dam.

- Weekly site surveillance was carried out for the Rice Lake dams.

- Monthly site surveillance is typically required at significant consequence dams, unless otherwise specified in the *Operation, Maintenance, and Surveillance* (OMS) Manual. Given their remote locations and winter helicopter access restrictions the alpine lake dams were periodically inspected by staff in accordance with the OMS Manual between June and October.

- Semi-annual formal inspections were carried out at Cleveland Dam and Seymour Falls Dam. An annual formal inspection was carried out at the Rice Lake dams. Annual formal inspections were carried out at the alpine lake dams.

- Annual test operation of mechanical, electrical, and communications components were carried out at all five water supply dams. There are currently no mechanical, electrical, or communications components at the Rice Lake dams.

- Annual collection, analysis, and interpretation of readings from instrumentation. Cleveland Dam and Seymour Falls Dam instrumentation readings were collected at various intervals, ranging from daily to annual. Data from instrumentation at the Rice Lake dams is collected weekly. The data from instrumentation at the alpine lake dams is reviewed daily.

- Annual review of contact information in the *Emergency Response Plan* (ERP), and if necessary, revision and submission to the Provincial Dam Safety Officer. The internal and external contact information for Cleveland Dam, Seymour Falls Dam, and the alpine lake dams were reviewed in the winter of 2021, and re-submitted to the Dam Safety Officer as part of ERP revisions in the spring of 2021. An *Ancillary Response Plan* (ARP) for the Rice Lake dams was being prepared in 2021, and will be issued in 2022.

- The OMS Manual and ERP for extreme and high consequence dams must be reviewed, at minimum, every seven years and revised and reported to the Dam Safety Officer, if necessary. Revisions to the Cleveland Dam and Seymour Falls Dam documents were ongoing in 2021, and will be issued in 2022. Various engagement activities were also on-going through 2021, and will continue in 2022, to improve emergency coordination with all Cleveland Dam and Seymour Falls Dam external ERP plan holders. An OMS Manual and ARP for the Rice Lake dams was being prepared in 2021 and will be issued in 2022.

- The OMS Manual and ARP for significant consequence dams must be reviewed, at minimum, every ten years, and revised and reported to the Dam Safety Officer, if necessary. Information pertaining to the alpine lake dams was last reviewed and reported in July 2016.

- A formal dam safety review must be carried out, with the report submitted to the Dam Safety Officer every seven years for extreme consequence dams, and every ten years for high consequence dams. The last dam safety review for Cleveland Dam was completed in 2016, and the next review will be conducted in 2023. No unsafe or unacceptable conditions in relation to the design, construction, or operation were identified. The last dam safety review for Seymour Falls Dam was completed in 2014, and a new dam safety review was carried out in 2021, with a final report to be issued in 2022. For the Rice Lake dams, multiple engineering assessments are scheduled to commence in spring 2022, and a formal dam safety review for the Rice Lake dams will be conducted in 2024.

- A formal dam safety review is not required for significant consequence dams. To be proactive, a dam safety review was carried out for the alpine lake dams in 2012, with results indicating the dams are being operated and maintained in a satisfactory manner. Another dam safety review is planned for 2025, following completion of ongoing hydrotechnical assessments and related follow-up activities.

- Formal dam audits are carried out every five years by the provincial Dam Safety Officers at Cleveland Dam and Seymour Falls Dam. The last formal dam audit was carried out in 2020. The audits noted the safety incident that occurred at Cleveland Dam on October 1, 2020, and that GVWD was investigating. No other significant concerns or comments were provided.

RICE LAKE DAM ACTIVITIES

In a recent review of the regulatory and maintenance requirements for the Rice Lake dams, staff identified the need for hydrotechnical and geotechnical engineering assessments, as well as a need to update their consequence classifications under the BC Dam Safety Regulation. This work commenced in spring 2022 and will be completed in spring 2023.

The review also identified the need for a new provincial water licence that better reflects Rice Lake's function as a water storage facility for ecological and recreational purposes. In support of the water licence application, and general asset management, staff also identified a need for an archaeological overview assessment. Other work will include maintenance activities, tree removal, and restoration work. Staff will be actively engaging with the public in summer 2022 to create awareness about the dams, discuss required tree removal, and seek input into options for restoring the area to be more usable for recreational purposes.

CLEVELAND DAM SAFETY ENHANCEMENTS

The Cleveland Dam Safety Enhancements program was initiated in 2021 and involves the identification and management of various initiatives to improve the safety and reliability of the dam. The safety enhancements program includes:

- Dam Safety Advisory Panel meetings with technical experts to discuss improvements to the operations and maintenance of Cleveland Dam and the dam spillway gate.

- The Cleveland Dam Drum Gate Return to Service project was completed in June 2021. A follow up project commenced in late 2021 and continued through spring 2022 to address other enhancements.

- The Cleveland Dam Interim Public Warning System project started in 2021, with six of seven public warning systems installed along the Capilano River. The remaining site is scheduled for later in 2022, following resolution of property agreements and other technical challenges including power requirements.

- The Cleveland Dam Safety Enhancements Program will be carried out from 2022 to 2024, with activities including a river users study, river hydraulic modelling, downstream hazards studies, updated public safety risk assessment, and the design and construction of a long term public warning system.

- Public engagement started in 2021 on the public warning system, and in summer 2022 staff will be collecting additional input from river users and the public to help inform the design of the long term safety enhancements.

DAM ASSET CONDITION

The five drinking water supply dams and two Rice Lake dams are regularly maintained and upgraded to ensure they continue to remain in good operating condition and extend their service life. Issues are identified through surveillance, inspections, assessments, and independent expert reviews. Improvement projects are prioritized and incorporated into GVWD's operating and capital financial planning process.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

There are no financial implications arising from this report. The cost of routine surveillance, monitoring and inspection activities form part of the Water Services annual Operations and Maintenance operating budget.

CONCLUSION

The GVWD Dam Safety Program for the water supply dams is compliant with the requirements of the provincial Dam Safety Regulation. No significant concerns were identified by the GVWD dam safety team or dam surveillance consultant from the 2021 routine surveillance, monitoring, and formal dam inspections. From a recent review of the regulatory and maintenance requirements for the Rice Lake dams, staff identified the need for new engineering assessments, a new provincial water licence that better reflects Rice Lake's function as a water storage facility for ecological and recreational purposes, and a need to update the Rice Lake dam consequence classifications under the *BC Dam Safety Regulation*. This work commenced in spring 2022.

Attachment

Photos of the GVWD Water Supply Dams and Other GVWD Dams

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GVWD Water Supply Dams:
Cleveland Dam

Seymour Falls Dam

Palisade Dam

Burwell Dam

Loch Lomond Dam

Other GVWD Dams:
Rice Lake North Dam

Rice Lake South Dam

To: Water Committee

From: Aby Sharma, Director (Acting), Policy, Planning and Analysis, Water Services

Date: June 20, 2022 Meeting Date: July 6, 2022

Subject: **Jurisdictional Review of Drought Responses**

RECOMMENDATION

That the Water Committee receive for information the report dated June 20, 2022, titled "Jurisdictional Review of Drought Responses".

EXECUTIVE SUMMARY

Drought conditions are being experienced worldwide, requiring all levels of government to respond. Water suppliers are implementing actions to respond to drought conditions, including drought planning, managing source waters, and implementing conservation initiatives.

Metro Vancouver is fortunate to be located in a temperate rainforest with high rainfall volumes. Metro Vancouver is closely monitoring climate change impacts on the drinking water supply as the source water is replenished annually and is sensitive to changes in precipitation patterns.

During the heat dome of 2021, Metro Vancouver continued to reliably supply the region with drinking water due to the higher than average snowpack, proactive management of the reservoirs, and an education campaign to encourage water conservation. Metro Vancouver monitors the water supply through the high-demand periods, implements the Drinking Water Conservation Plan, and promotes conservation through the *We Love Water* campaign.

PURPOSE

This report is to inform the Water Committee of the steps Metro Vancouver has been taking to respond to drought conditions and provides information on approaches to drought response taken by other jurisdictions.

BACKGROUND

The Metro Vancouver region and other parts of British Columbia experienced a record-breaking heatwave at the end of June 2021, with no rainfall between June 16 and July 31 of 2021. Despite these conditions, Metro Vancouver was able to supply the region's drinking water reliably. This was due to the higher than average snowpack in 2021 and proactive management of the Seymour and Capilano reservoirs to capture the incoming streamflow to ensure that the reservoirs reached their respective full capacity by early summer. Metro Vancouver is fortunate to be located in a temperate rainforest, which experiences high rainfall volumes and has not suffered a drought that stretches over many consecutive years as some regions worldwide have.

Drought is only one of many factors impacting Metro Vancouver's drinking water supply. Other factors that impact Metro Vancouver's water supply include the total water supply storage capacity

and the volume and timing of precipitation and temperatures throughout the year. For example, if the temperature increases rapidly in the spring, the snowpack could melt rapidly, jeopardizing the summer drinking water supply. Similarly, as Metro Vancouver's source water is replenished on an annual basis, the source water is particularly sensitive to climatic changes and heavily reliant on winter precipitation.

Metro Vancouver closely monitors climate change conditions through a series of stream gauges and other means throughout the watersheds and compares the data against an extensive historic record. A project is underway to develop a Drinking Water Stress Index, which will be similar to the provincial Drought Level in that, it will provide an easily communicated and publicly available indication of the drinking water supply levels. The Drinking Water Stress Index will proactively consider various factors affecting the water supply, including the environmental flows required to support fish, snowpack, demand trends, and environmental and operating conditions.

The DWCP is the main tool Metro Vancouver uses to manage outdoor water demand in the summer when drought conditions may stress the water supply. The DWCP limits water use through four escalating stages of watering restrictions that are activated based on water supply levels and projections and requires the support of member jurisdictions. Metro Vancouver also works closely with our members to promote conservation through the *We Love Water* campaign.

JURISDICTIONAL DROUGHT RESPONSES AND DRINKING WATER MANAGEMENT

The mitigation of drought impacts on drinking water supplies is a responsibility typically shared across many levels of government. Generally, the approaches used are planning, monitoring, managing available drinking water sources, and implementing water conservation measures and restrictions. A sample of national, state/provincial, and regional level approaches include:

- **Scotland:** As of May 26, 2022, the country's eastern half was under 'early warning' drought conditions. Their national 'Water Scarcity Plan' lays out the response required under each stage of water scarcity, including limiting demand and switching to an alternate source.

- **Israel:** Despite being a dry climate, Israel has successfully mitigated drought conditions to the point where they can sell water to a neighbouring country. Israel has turned to less traditional drinking water sources including relying on desalination for drinking water and treated wastewater for agriculture due to a general lack of suitable freshwater sources.

- **California:** This year has been the driest year on record for California. Up to 30% of California's drinking water supply is stored in the snowpack, but as of May 27 of this year, the snowpack on average was at 8% of normal. Many drinking water suppliers have diversified their sources in response to prolonged drought conditions, including Los Angeles, which also relies on local groundwater, imported surface water from two sources, and recycled wastewater. Despite this, there are water supply concerns for the state. On May 24, 2022, the California State Water Board adopted an emergency regulation that requires all urban drinking water suppliers to implement a demand reduction corresponding to a 20% shortage in supply through previously determined measures.

- **Texas:** Currently, almost a quarter of the state is experiencing 'exceptional drought' conditions. A plan has been developed to manage the persistent year-over-year drought conditions, which incudes projected water demand for all water users in Texas. For the municipal drinking water demand, there are per capita water targets for each municipality that are projected out to 2070.

- **Santa Cruz, California:** Santa Cruz took steps to ration residential water use to 180 litres per capita per day in 2014 due to extreme drought, and fines were issued for any exceedances. Since then, water use has dropped even further to 170 litres per capita per day. A committee of residents has been actively pursuing water supply improvements by recommending source diversification options and conservation methods.

- **Denver, Colorado:** Denver's response to drought conditions includes watering restrictions and developing personalized efficiency targets for each customer based on the amount of landscaping on their property.

- **Portland, Oregon:** Despite experiencing conditions similar to those experienced by Metro Vancouver in 2021, Portland has not experienced water supply shortages since 1992 due to sufficient storage. Conservation actions include a pilot project to test lawn and garden soil moisture sensors, plumbing fixture repair and replacements for low-income residents, and increased plumbing fixture rebates.

Conservation Initiatives

Water suppliers implement water conservation measures in response to drought conditions and to accommodate regional growth in order to minimize costly infrastructure upgrades, regardless of the severity of the water shortages. Table 1 provides a brief overview of various water suppliers' current initiatives to conserve drinking water. This table only represents a summary of initiatives by a sampling of jurisdictions and is by no means all-encompassing.

Table 1: Summary of Water Suppliers' Current Approaches to Water Conservation

	Rebates				Water Use Reductions									Public Education					
	Low Demand Landscaping	Low Flow Plumbing	Rain Water Harvesting	Once-Through Cooling Systems	Landscape Water Budget	Plumbing Audits	Water Waste Reporting Hotline	Water Conservation Regulations	Staged Restrictions	Lawn Watering Restrictions	Fines	Personalized Efficiency Target	Distribution System Leak Management	Irrigation Maintenance	School Programs	Low Demand Gardening	Groundwater Protection	Home Plumbing Maintenance	Public Workshops
Santa Cruz	●	●	●		●	●	●	●	●	●	●				●	●		●	
Los Angeles	●	●				●	●							●		●		●	
Portland		●		●											●	●			●
Denver		●							●	●	●	●							
Austin	●	●	●							●				●		●		●	●
Metro Vancouver									●	●					●	●			●
Regional District of Nanaimo			●	●					●				●		●	●	●	●	
Capital Regional District				●					●	●				●		●		●	●
Regional District of North Okanagan									●							●			

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

This is an information report. There are no direct financial implications.

CONCLUSION

Drought conditions are one of the factors that impact the drinking water supply. Successful management of drinking water supplies during drought conditions requires a multipronged approach, including adequate storage to capture the changing rainfall and snowmelt patterns, managing available source waters, long-range planning, and water conservation. Metro Vancouver is increasingly taking steps to mitigate drought impacts on the drinking water supply, including advancing our snowpack monitoring, developing a Water Stress Index, and implementing the newly revised DWCP.

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Water Committee

From: Cheryl Nelms, General Manager, Project Delivery

Date: June 28, 2022 Meeting Date: July 6, 2022

Subject: **Project Delivery Capital Portfolio Update**

That the Water Committee receive for information the report dated June 28, 2022 titled "Project Delivery Capital Portfolio Update".

EXECUTIVE SUMMARY

Metro Vancouver is providing an update on the portfolio of major capital projects being delivered by the Project Delivery Department. This update contains project specific information and a portfolio dashboard that provides information on the various programs and projects being delivered by the Department. The projects are progressing well with key items of note summarized below.

- Coquitlam Lake Water Supply: Project construction deferred by 5 years to 2038 - contingent on water conservation efforts.
- Coquitlam Water Main: Construction delayed to 2023 pending resolution of properties agreements and proximal works approvals.
- Stanley Park Water Supply Tunnel: Delays related to compensation and land agreements with the Vancouver Parks Board.

PURPOSE

This report provides an update on the progress of major capital projects being delivered by the Project Delivery Department.

BACKGROUND

Metro Vancouver is implementing best practices related to governance and oversight on the highest value, risk, and consequence capital projects. A key deliverable is to provide regular, standardized updates on the portfolio of major capital projects being delivered by the Project Delivery Department. Metro Vancouver has developed a standardized dashboard report, which includes the following information for each major capital project:

- Primary location
- Project schedule over the next 10 years
- Project update
- Current status
- Anticipated date for next review by the relevant Metro Vancouver Board

To improve communication and transparency on these major capital projects, Metro Vancouver plans to provide three updates in 2022 – April, July and October.

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

FINANCIAL IMPLICATIONS
This is an information report. No financial implications are presented.

CONCLUSION
This report provides a progress update on the portfolio of capital projects being delivered by the Project Delivery Department. The next update will be in October 2022.

Attachment
Project Delivery Capital Portfolio Dashboard – July 2022 (Water Section)

50563428

ATTACHMENT

Metro Vancouver Capital Projects Gantt Chart - Project Delivery

July 2022

Definition | Preliminary Design | Detailed Design | Construction

Grandparent Name	Project Name	Municipality	Years	Comments	Status	Next Expected Board Review Date
			2022-2026 Capital Plan 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031			
Water						
Annacis Water Supply Tunnel						
	Annacis Water Supply Tunnel	New West/Surrey		Construction contract awarded in October 2021. Construction started in April 2022		Oct 2022
Cambie Richmond Water Supply Tunnel						
	Cambie Richmond Water Supply Tunnel	Richmond/Van		Conceptual design complete. Preliminary design to commence in late 2022.		Oct 2022
Coquitlam Water Supply						
	Coquitlam Lake Water Supply - Intake and Tunnel*	Coquitlam		In Permitting and Regulatory phase. Engagement with First Nations and Stakeholders underway. Project construction is deferred to 2038 completion (approximately 5-year delay) and is contingent on ongoing water conservation efforts.		Jan 2023
	Coquitlam Lake Water Supply - Treatment*	Coquitlam		In Permitting and Regulatory phase. Engagement with First Nations and Stakeholders underway. Project construction is deferred to 2038 completion (approximately 5-year delay) and is contingent on ongoing water conservation efforts.		Jan 2023
	Coquitlam Water Main - Cape Horn*	Coquitlam		Detailed design has started with refinement of the alignment through Riverview Lands		Sep 2023
	Coquitlam Water Main - Central Pipeline Road North - Phase 1*	Coquitlam		Detailed design at approximately 60%		Sep 2023
	Coquitlam Water Main - Central Pipeline Road North - Phase 2*	Coquitlam		Detailed design at approximately 60%		Sep 2024
	Coquitlam Water Main - South - Robson to Guildford*	Coquitlam		Detailed design at 100%. Construction RFP anticipated in Q3 2022 pending resolution of properties agreements and proximal works approval. Construction start delayed to early 2023.		Oct 2022
	Coquitlam Water Main - City Centre Tunnel*	Coquitlam		Preliminary design has commenced		Jan 2023
Haney Water Supply Tunnel						
	Haney Water Supply Tunnel	P.Coq/P.Meadows		Conceptual design/definition to commence in June 2022		Oct 2022
Lulu Delta Water Supply Tunnel						
	Lulu Delta Water Supply Tunnel	Richmond		Early planning in progress. Conceptual design/definition to commence in 2023.		Jan 2024
Second Narrows Crossing						
	Second Narrows Water Supply Tunnel	Burnaby/DNV		Construction in progress, approx. 80% complete. On track to complete and in-service in 2025		Oct 2022
	Second Narrows Crossing 1 & 2 (Burrard Inlet Crossing Removal)	Burnaby		Planning/design to commence in late 2022, pending requirement from the Port of Vancouver (project may be deferred).		No reports anticipated
Stanley Park Water Supply Tunnel						
	Stanley Park Water Supply Tunnel	Vancouver		Construction procurement to commence late 2022, with construction start late 2023. Delays for approval on compensation and land agreements with Park Board.		Jul 2022

* Please note that these projects have been retitled to align with the naming conventions in the accompanying presentation. The changes are as follows:
- “Coquitlam Intake No. 2 & Tunnel" is now "Coquitlam Lake Water Supply – Intake and Tunnel”
- “Coquitlam Intake No. 2 (Water Treatment)” is now “Coquitlam Lake Water Supply – Treatment”
- “Coquitlam Main No. 4 (Cape Horn)” is now “Coquitlam Water Main – Cape Horn”
- “Coquitlam Main No. 4 (Central Section) - WTP to Gravel Pit” is now “Coquitlam Water - Main – Central – Pipeline Road North – Phase 1”
- “Coquitlam Main No. 4 (Central Section) - Gravel Pit to Robson” is now “Coquitlam Water Main – Central – Pipeline Road North - Phase 2”
- “Coquitlam Main No. 4 (South Section) – Prebuild” is now “Coquitlam Water Main – South – Robson to Guildford”
- “Coquitlam Main No. 4 (South Section) – Tunnel” is now “Coquitlam Water Main – City Centre Tunnel”

To: Water Committee

From: Marilyn Towill, General Manager, Water Services

Date: June 23, 2022 Meeting Date: July 6, 2022

Subject: **Manager's Report**

RECOMMENDATION

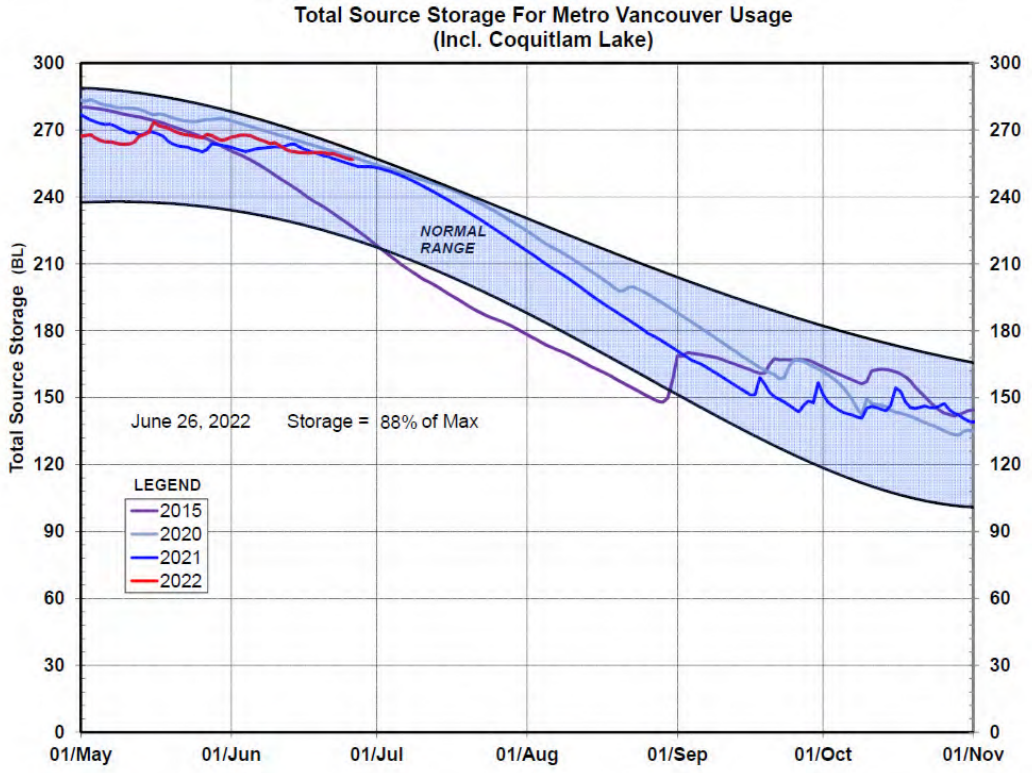
That the Water Committee receive for information the report dated June 23, 2022 titled "Manager's Report".

1. Water Supply Update

As of June 26, the total source storage is 88% of the maximum (Figure 1). The current total source storage is within the normal range for this time of year. This figure includes the GVWD's remaining nominated storage from Coquitlam Lake, as well as storage in Seymour Reservoir, Capilano Reservoir, and the three alpine lakes which are full and available for summer use.

The June 15, 2022 snow survey measurements indicated that watershed snowpack sites were collectively at 181% average historical snow depth, and 183% average historical snow water equivalent compared to 125% and 124% respectively for the same reporting period in 2021.

Figure 1



48993616

2. Temporary Provision of Water in an Emergency

Water Services has been working with the Regional Engineers' Advisory Committee (REAC) and its REAC Water Subcommittee (REAC-WSC) as well as Integrated Partnership for Regional Emergency Management in Metro Vancouver (IPREM) on further preparations for emergency water supply measures in case of wide-scale disruption due to a major earthquake.

IPREM is engaging with the province on clarifying the role of Emergency Management British Columbia (EMBC) in supplying drinking water, including for example supplying the basic daily needs for residents after 3 days post-earthquake. At the same time, member jurisdictions are planning their strategies for emergency repairs and alternate means of supply during an emergency.

Water Services has undertaken assessments of its infrastructure and operating environment and has determined or planned the following, at this time.

(a) Member jurisdictions access to drinking water supply at Metro Vancouver reservoirs. In case of a major earthquake today, the plan will be to focus on restoring supply to regional reservoirs as soon as possible, permitting member jurisdictions to connect and access drinking water from these points. That said, it is noted that in an earthquake, it is possible that there will be many breaks and leaks in both the Metro Vancouver transmission system and within the local distribution systems. Water Services will work with member jurisdictions under the Emergency Operation Centre (EOC)'s guidance and protocols to both isolate systems and determine additional connection points, especially where reservoirs are not able to be refilled.

(b) Longer term planning for supply of drinking water (ongoing). Water Services is continuing to refine the strategy of defining connectivity to the regional water supply system. Information gathered on seismic vulnerabilities will allow:
- Hydraulic modeling of the system to assess and optimize water distribution plans for an emergency
- Refinement of long range capital works plans and priorities related to seismic upgrades of key infrastructure

As well, Water Services will continue to work with member jurisdiction partners and IPREM to collaboratively assess regional needs and priorities for drinking water distribution during an emergency, including for example:
- Confirm the provincial role (through EMBC) in supplying drinking water in an emergency
- Confirm each member jurisdictions plans for meeting the needs of residents
- Define how to support local and regional priorities beyond fire-fighting (for example, connections near hospitals, seniors' homes, etc.)

3. Coquitlam Sockeye Hatchery – Proposed BC Hydro Facility

BC Hydro is moving forward with the design and construction of a Sockeye Hatchery for the Coquitlam River Watershed. This pilot hatchery will run for 10 years after which a review will determine if operations will continue. Staff and BC Hydro have been working on a land tenure agreement for 697 square metres (0.17 acres) of GVWD fee simple land just inside the Water Supply Area Gate, on the

west bank of the Coquitlam River, where the hatchery will be located. This tenure agreement will be finalized in Q3. GVWD and BC Hydro have also started working on a water supply agreement for GVWD water supply to the hatchery, fish trap, and enhancement site below the dam. It is anticipated that this Agreement will be provided to the Committee and Board as an information item in late Q3.

The Kwikwetlem First Nation (KFN) is working closely with BC Hydro on the construction and operational planning for the hatchery; the facility will be run primarily by technicians from KFN. Project oversight, as it pertains to fish production, is being done by Fisheries and Oceans Canada and project funding for construction and operations is being covered by BC Hydro. This project is an excellent example of a joint partnership between the Federal Government, BC Hydro, GVWD, and KFN.

4. **Water Capital Program Expenditures Update as at April 30, 2022**

Water Services, in collaboration with Financial Services and the Project Management Office are in the process of updating the format and presentation for the Capital Expenditure Updates. This will bring alignment between this reporting and the Project Delivery Capital Portfolio Update currently being presented to this Committee. These reports will be provided Quarterly beginning in the Fall of 2022.

For the Committee's information, the below table provides a brief update on Water capital expenditures for the first 4 months of 2022 as compared to budgeted expenditures over the same period.

2022 Capital Spending Summary For the 6 Months Ending June 30, 2022 6/30/2022	Year to Date		
	2022 Budget to June 2022	Actual Expenditures	% of Prorated Budget
Water Services			
Water Mains	166,901,000	69,722,263	
Pump Stations	19,525,000	794,362	
Reservoirs	22,003,000	7,583,865	
Treatment Plants	11,013,000	722,074	
Others	16,198,000	2,601,891	
	235,640,000	**81,424,455**	**35%**

The current underspend is due to several factors including delays in permitting and property negotiations, as well as impacts from supply chain issues.

5. Work Plan

Attachment
Water Committee Work Plan

48993616

ATTACHMENT

Water Committee 2022 Work Plan

Priorities

1st Quarter	Status
Annual Energy Management Program Update	Complete
Capilano Hydropower Feasibility Study	Pending
Development Cost Charges (DCC) Update	Complete
Project Delivery Capital Portfolio Update	Complete
Quality Management System for Drinking Water Update	Complete
Regional Water Supply System Lifeline Study - Seismic Vulnerability Assessment	Complete
Whalley Main and Port Mann Main No. 2 Project Completion	Complete
Contract Approvals – Contracts > $5 Million (as applicable)	Complete
Water Policies (as applicable)	Complete
2nd Quarter	
BC Ministry of Health Guidelines for Water Systems	Complete
Contribution Agreement Annual Reports	Complete
Douglas Road Main No. 2 Construction Update	In Progress
Drinking Water Conservation Program Update	Complete
Drinking Water Management Plan Update	Pending
GVWD Water Quality Annual Report	Complete
Lawn Water Regulations Communication & Regional Water Conservation Campaign	Complete
Status of GVWD Capital Expenditures	Complete
Temporary Water Supply Points for Members	In Progress
Water Conservation: Influence On Capital Planning	In Progress
Water Meter Replacement Program	Complete
Water Services Wildfire Preparedness Update	Complete
Water Supply Update for Summer 2022	Complete
Water Tunneling Projects Update	Pending
Contract Approvals – Contracts > $5 Million (as applicable)	In Progress
Water Policies (as applicable)	In Progress
3rd Quarter	
Annual Dam Safety Program Update	In Progress
Capital Projects Permitting Best Practices Guide	Pending
Coquitlam Main No. 4 Update	Pending
Coquitlam River Watershed Roundtable – Contribution Agreement 2023-2025	Pending
Kennedy Newton Main Construction Update	Pending
Status of GVWD Capital Expenditures	Pending
Contract Approvals – Contracts > $5 Million (as applicable)	Pending
Water Policies (as applicable)	Pending
4th Quarter	
Annual Budget and 5-year Financial Plan – Water Services	Pending
Corrosion Control Program Monitoring Update	Pending
Coquitlam Lake Water Supply Project Update	Pending
Fleetwood Reservoir Construction Update	Pending

Long Term Financial Plan	Pending
Regional Water Conservation Campaign and Water Regulations Communications 2022	Pending
Status of GVWD Capital Expenditures	Pending
Summer 2022 Water Supply Performance	Pending
Water Use-by-Sector Report	Pending
Watershed Fisheries Initiatives Annual Update	Pending
Contract Approvals – Contracts > $5 Million (as applicable)	Pending
Water Policies (as applicable)	Pending