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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Water Committee

From: Joel Melanson, Division Manager, Engineering & Construction, Water Services

Date: October 29, 2025 Meeting Date: November 12, 2025

Subject: **GVWD Capital Program Update to September 30, 2025**

RECOMMENDATION
That the Water Committee receive for information the report dated October 29, 2025, titled "GVWD Capital Program Update to September 30, 2025".

EXECUTIVE SUMMARY
As of September 30, 2025, the capital expenditure for the year to date for Water Services is $293.4 million, compared to a planned annual prorated expenditure of $363.4 million.

The forecasted expenditures for the current water utility capital program are expected to stay within the approved budgets through completion, and the projected annual spending will align with those approved in the 2025 capital plan.

PURPOSE
To report on the status of the Water Services' capital program and financial performance for the 2025 fiscal year to September 30, 2025.

BACKGROUND
This report provides an update on the expenditures of the capital program for the year to date for the GVWD capital projects managed by both Water Services (WS) and Project Delivery (PDE). Under the MV Stage Gate Framework, all projects managed by PDE are required to present progress updates to the Board at the end of each project stage. These stage gates provide the Board with the opportunity to formally assess each project and determine whether it should proceed to the subsequent stage.

2025 Capital Program Progress
As part of the 2025 capital program process, the annual capital expenditures comprise the projected spending for capital projects either continuing or to be started within the calendar year. Table 1 provides a summary of the 2025 actual capital spending to September 30, 2025, compared to the prorated capital expenditures.

Based on progress to-date on the projects within the current water utility capital program, forecasted expenditures are expected to remain within the approved budgets through to completion. The current project expenditures through to September 30, 2025 were $293.4 million, which represent approximately 81% of the prorated annual expenditures. It is projected that annual capital expenditures will remain within the approved annual plan.

Table 1 – Capital Spending Summary to end of September 2025

Water Total	2025 Prorated Expenditures to September 30, 2025	Actual Expenditures to September 30, 2025	% of 2025 Prorated Expenditures
WS – Water Mains	$75.9M	$59.0M	77.7%
WS – Pump Stations	$39.3M	$23.8M	60.6%
WS – Reservoirs	$11.4M	$12.4M	109.1%[1]
WS – Treatment Plants	$9.5M	$1.4M	14.6%[2]
WS – Others	$15.8M	$5.6M	35.2%
PDE – Tunnel Projects	$130.1M	$123.1M	94.5%
PDE – Coquitlam Water Supply Projects	$81.4M	$68.1M	83.6%
Total	**$363.4M**	**$293.4M**	**80.7%**

Notes: 1) More work was completed in 2025 on the Fleetwood Reservoir No. 2 than originally planned.
2) Underspend due to project delays in tendering and initiating construction.

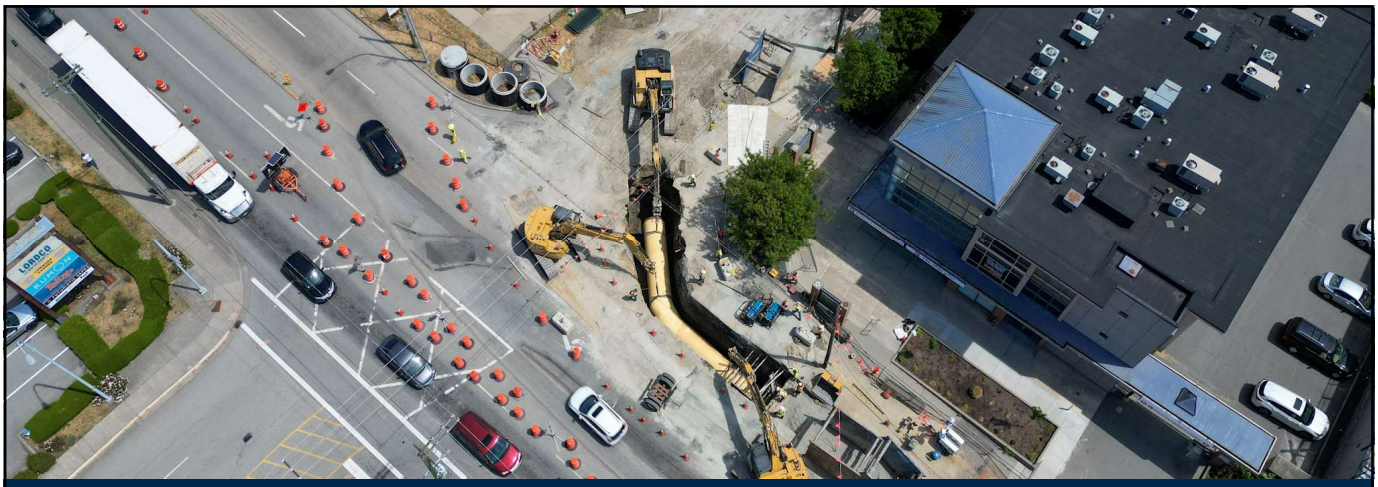
ALTERNATIVES
This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS
Capital expenditures are funded internally (pay as you go) and through debt service costs (interest and principal payments). Monitoring continues throughout the year on the financial performance, including reporting on treasury, procurement and continuous improvement .

OTHER IMPLICATIONS
Staff work proactively to mitigate potential project challenges through the development and implementation of effective communications and engagement strategies. Metro Vancouver engages with First Nations early and often on capital projects that may impact First Nations' rights and interests. In addition, Metro Vancouver collaborates with member jurisdiction staff to assess and mitigate project impacts for local residents and businesses and to communicate project status and schedules.

CONCLUSION
The forecasted expenditures for the current GVWD capital program are expected to stay within the approved budgets through completion, and the projected annual spending will align with the 2025 approved capital plan.

ATTACHMENT
1. Presentation re: GVWD Capital Program Update as of September 30, 2025.



Kennedy Newton Water Main – Scott Road Section (June 2023)

GVWD Capital Program Update

AS OF SEPTEMBER 30, 2025

Joel Melanson
Division Manager, Engineering & Construction

Water Committee, November 12, 2025
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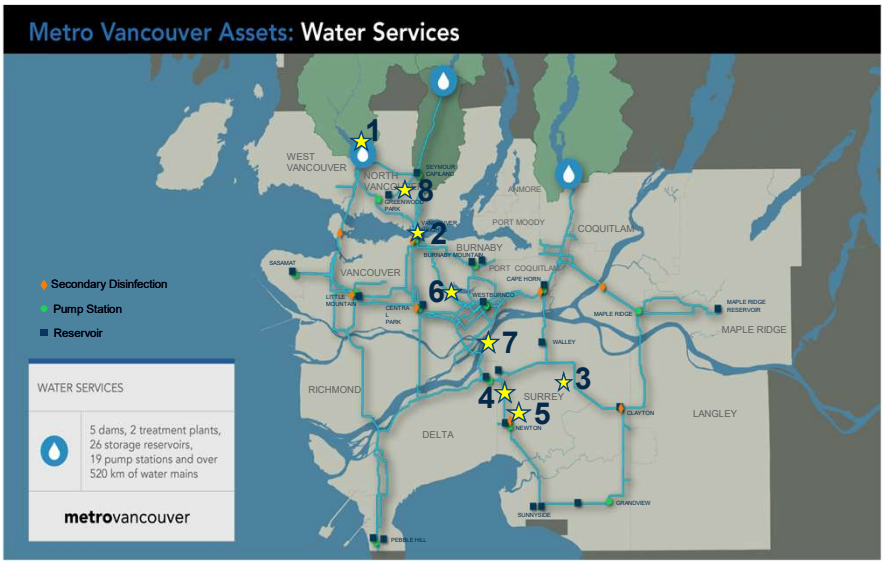
HIGHLIGHTED PROJECTS

1. Capilano Pump Station Backup Power System
2. Second Narrow Water Supply Tunnel
3. Fleetwood Water Main Valve Chamber
4. Kennedy Newton Water Main
5. Newton Pump Station Replacement
6. Central Park Water Main – Imperial Section
7. Annacis Water Supply Tunnel and Water Main South
8. Lynn Valley Aerial Crossing Rehabilitation



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CAPILANO PUMP STATION BACKUP POWER SYSTEM

On-going construction of the Powerhouse and Watershed Gatehouse. August 2025

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SECOND NARROWS WATER SUPPLY TUNNEL

Tunnel Boring Machine, January 2020

North Valve Chamber, October 2023

Water Main Pipes in North Shaft, August 2023

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FLEETWOOD WATER MAIN VALVE CHAMBER

Chamber Construction, Excavation. February 2025
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Chamber Construction, Formwork. March 2025

Chamber Construction, Backfilled. May 2025

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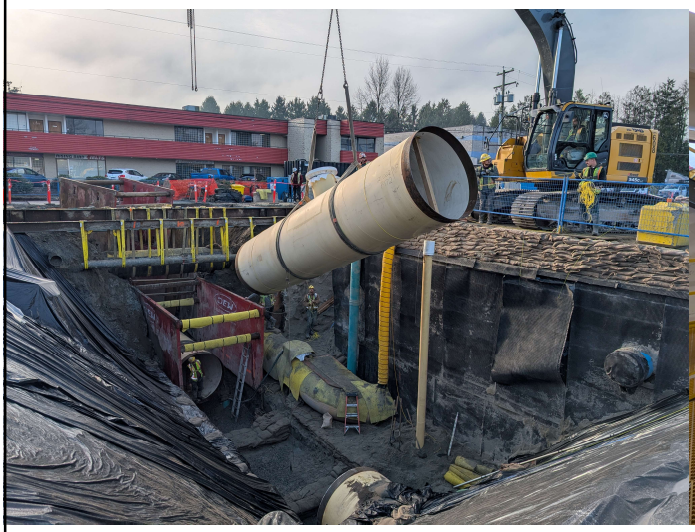
KENNEDY NEWTON WATER MAIN



1800 mm Water Main Installation at 86th Ave Chamber – Dec 5th 2024

86th Ave Crossover Chamber Interior – April 17th 2025

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NEWTON PUMP STATION REPLACEMENT

Excavation for the Newton Pump Station Replacement – October 2025

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CENTRAL PARK WATER MAIN – IMPERIAL SECTION – Project Phases

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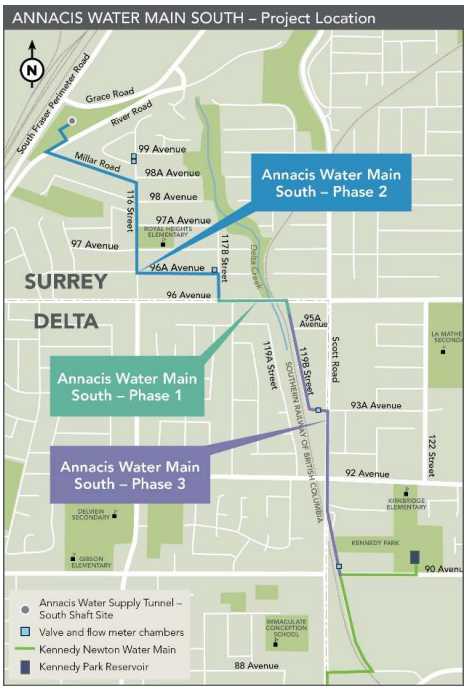
ANNACIS WATER SUPPLY TUNNEL

Annacis Tunnel Boring Machine. October 2023

Annacis South Shaft. November 2023

ANNACIS WATER MAIN SOUTH

Water Main Installation - September 2025



LYNN VALLEY AERIAL CROSSING REHABILITATION

Lynn Valley Aerial Crossing Rehabilitation – April, 2025

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Barnston Maple Ridge Pump Station

Questions?

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Water Committee

From: Mike Brannon, Director, Operations & Maintenance, Water Services

Date: October 22, 2025 Meeting Date: November 12, 2025

Subject: **Summer 2025 Water Supply Performance**

RECOMMENDATION
That the Water Committee receive for information the report dated October 22, 2025, titled "Summer 2025 Water Supply Performance".

EXECUTIVE SUMMARY
During the 2025 high-demand season, Metro Vancouver's water supply system performed reliably despite below-average snowpack, warmer temperatures, and prolonged dry conditions. Stage 1 watering restrictions were activated on May 1 and remained in place through the end of the high-demand season on October 15. Although precipitation was below normal through most of the season, a mid-August storm event temporarily boosted inflows. Total water use was slightly higher when compared to 2024; however, member jurisdictions played a key role in managing summer water demand and protecting the limited supply through public education and local enforcement efforts.

PURPOSE
To provide the Water Committee with an overview of water use and water supply system performance during the 2025 high-demand season.

BACKGROUND
The report titled "Water Supply Update for Summer 2025" was provided to the Water Committee at the May 14, 2025 meeting ahead of the high-demand season. The report included a summary of past trends in water use, the state of source water supply, and plans for operating the source reservoirs ahead of the high-demand season. As per the Committee's 2025 Work Plan, this report provides an overview of the performance of the regional water supply system during the high-demand season and is based on data available from May 1 to October 15, 2025.

Metro Vancouver's reservoirs are filled each winter and spring through precipitation and snowmelt, which must sustain the region through summer and into fall. In 2025, there was early snowfall, but mild and dry winter conditions led to below-average snowpack. March storms temporarily boosted snowpack to 83 per cent of normal, but warm, dry weather in April and May accelerated melt, reducing levels to 40 per cent by June.

With a subdued spring freshet and low streamflow, dam and reservoir operations began early in April to maximize storage. From May 1 to October 15, precipitation remained below normal, with June and July particularly dry, receiving just 23 per cent and 47 per cent of typical rainfall, respectively. On August 15, a powerful storm event delivered an entire season's worth of rain in one day, making August exceptionally wet at 232 per cent of normal precipitation. September remained dry until its final days, ending at 70 per cent of normal rainfall. Summer temperatures were consistently warmer than average, with June, July, and August about 1°C above normal, and September peaking at 1.8°C warmer. Despite the challenges, Metro Vancouver's water supply system performed well during the high-demand season, with average daily and peak hourly water demands only slightly exceeding 2024 levels.

OPERATING AND MANAGING THE RESERVOIRS

Annual Stage 1 lawn watering restrictions of the Drinking Water Conservation Plan were automatically activated on May 1, 2025 and remained in effect until October 15, 2025. These restrictions, supported by public education and local enforcement, are key to reducing overall water use through the summer.

The source reservoirs were managed through spring and early summer to capture incoming streamflow. Capilano and Seymour Reservoirs reached full pool on June 11 and 12, respectively. By June 1, snow survey measurements indicated the snowpack was only 40 per cent of the historical average. Nevertheless, with higher inflows and manageable demands, the reservoirs maintained full pool levels until early July.

The three alpine lakes were used to supplement source reservoirs. Palisade Lake outlets were opened on August 11 to supplement Capilano Reservoir, and Burwell Lake and Loch Lomond outlets were opened on July 30 to supplement Seymour Reservoir. All three alpine lakes are now closed and winterized for the season.

Figure 1 shows the total source storage level throughout the high-demand season. As illustrated, total source storage levels remained within the typical range. The noticeable increase in storage levels in mid-August reflects the storm event on August 15, replenishing storage levels by delivering the equivalent of an entire summer's rainfall in a single day.

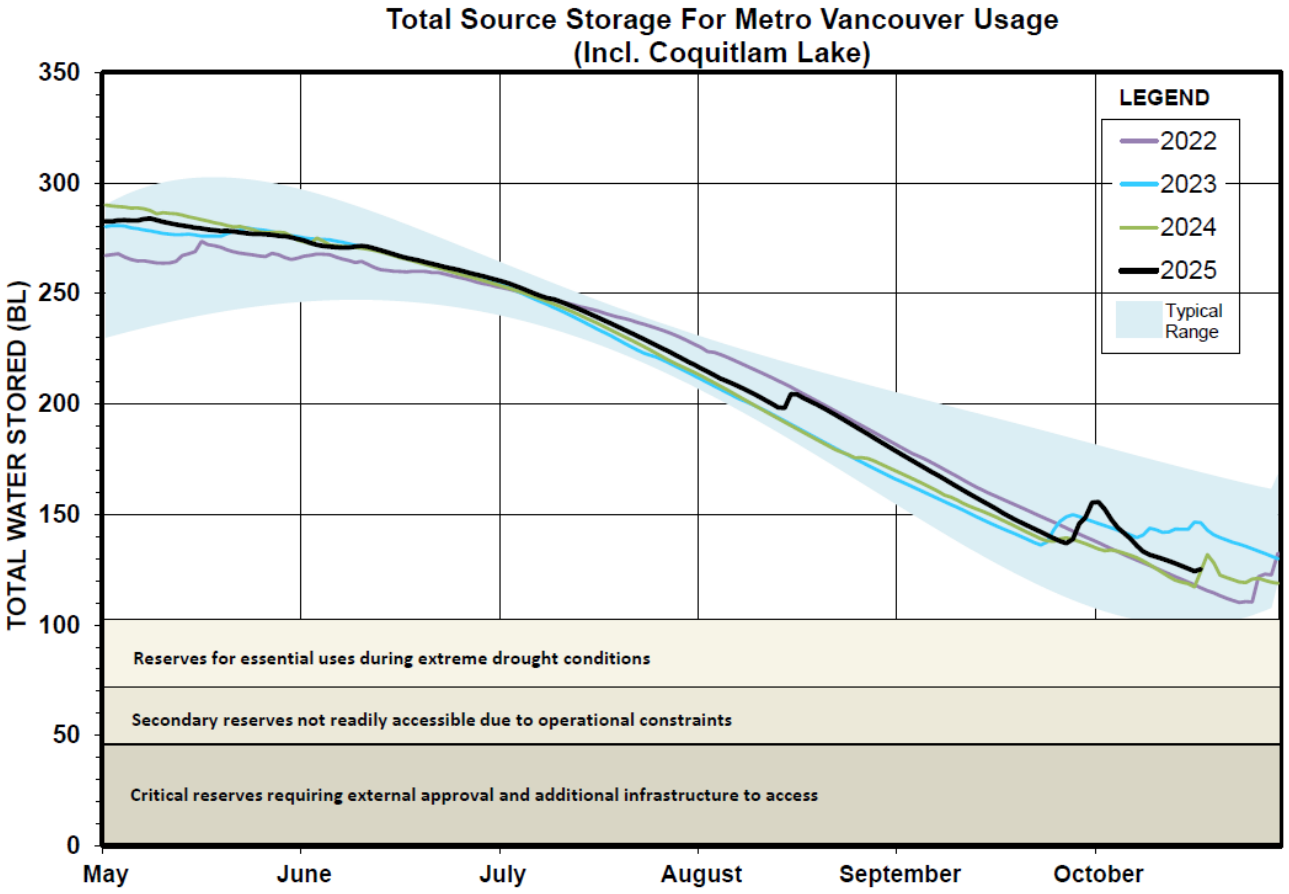

Figure 1 - Total Source Storage for Metro Vancouver Usage (Incl. Coquitlam Lake)

DRINKING WATER DEMANDS

Year-Over-Year Comparisons

As shown in Table 1, average daily water demand in the 2025 high demand season was only slightly higher than in 2024, with increases observed in May, June, August, and September, while July remained nearly unchanged. Storage volumes began to decline more rapidly in early July as the region experienced seasonal conditions, including high temperatures and minimal precipitation. It was not deemed necessary to implement Stage 2 restrictions, as demand remained below the critical threshold of 1.5 BL/d and significant rainfall in mid-August helped replenish reservoir levels.

In late September and early October, a series of storm events contributed to increased inflows and helped restore lake levels across the region. Also, the reservoir levels were intentionally lowered to support planned maintenance work at the dams in the fall. This drawdown was necessary to facilitate the completion of critical infrastructure upgrades, while maintaining overall system reliability.

Table 1: Daily Water Demand During High Season (billion litres per day)

Month	2024 (BL/d)	2025 (BL/d)
May	1.12	1.14
June	1.19	1.29
July	1.41	1.40
August	1.29	1.33
September	1.18	1.23
October 1 - 15	1.06	1.07

Total Volume Used During the High Demand Season
Between May 1 and October 15, 2025, the region experienced a slight increase in water use compared to the same period in 2024. This rise can be attributed to generally warmer and drier conditions, with average temperatures 1–2°C higher than the previous year.

Table 2: Total Volume of Water Used During High Demand Season (billion litres)

May 1 to October 15	
2024	**2025**
205 BL	211 BL

Peak Day and Peak Hour Demand
The peak day consumption data for summer 2024 and summer 2025 are shown below in Table 3 and are illustrated in Figure 2. The peak day is defined as the day of maximum withdrawal from the sources. Given that outdoor water use, especially lawn watering, is the main driving factor of increased demand in summer, it is expected that the peak day should fall on a designated lawn watering day. As outlined in Table 3, peak day (Sunday) and peak hour (Saturday) both fell on designated residential lawn watering days.

Table 3: Peak Day and Peak Hour Demand During High Season (billion litres per day)

	2024	Day/Time	2025	Day/Time
Peak day	1.54 BL/d	Sat. July 20	1.49 BL/d	Sun July 13
Peak hour	1.94 BL/d	Sat. July 20 at 6:00 am	1.92 BL/d	Sat Aug 2 at 5:00 am

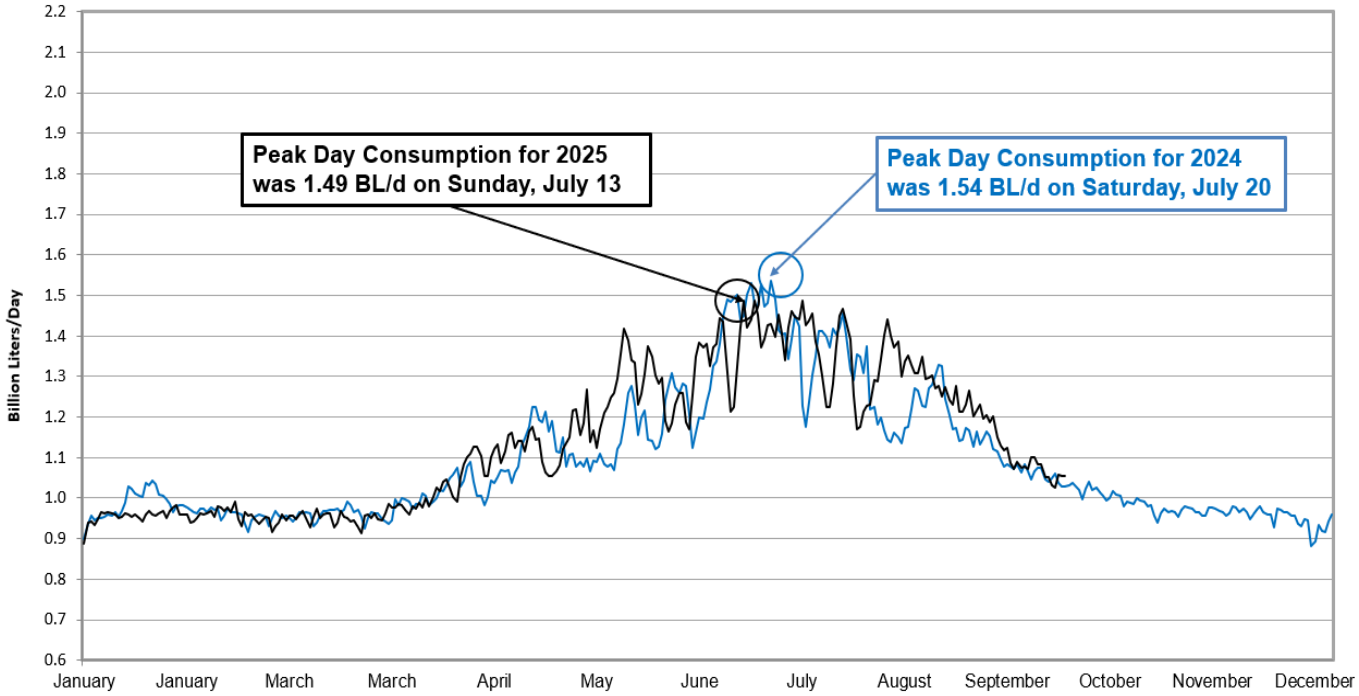

Figure 2 - Metro Vancouver Daily System Consumption Comparison 2024 and 2025

Environmental Flows

In addition to drinking water needs, Metro Vancouver's reservoirs must also provide the required environmental flows to sustain fish populations. Environmental discharges from the Cleveland and Seymour Falls Dams were maintained throughout the season to provide water to the river basins downstream of the dams, meeting all requirements.

Following the storm event in mid-August, Metro Vancouver maintained environmental flows from Seymour Falls Dam slightly above minimum requirements to support fisheries and minimize flow fluctuations. Additionally, two short-duration flow pulses (about two hours each) were implemented in early September to facilitate fish migration and reduce the risk of stranding.

REGIONAL WATER SUPPLY AND CONSERVATION COMMUNICATION

Metro Vancouver delivers annual public education initiatives to increase awareness of watering restrictions under the Drinking Water Conservation Plan and to encourage efficient use of the region's high-quality drinking water. A summary of the 2025 initiatives is included in the report titled "Drinking Water Conservation Plan: 2025 Communications and Public Outreach Results," provided to the November 12, 2025, Water Committee meeting.

In 2025, Metro Vancouver updated the "Reservoir Levels and Water Use" webpage to provide additional and more accessible information on the region's water supply conditions. Alongside updated graphs showing total source storage and demand, new graphs were added to display temperature, precipitation, and snowpack trends during the high-demand season. These additions help viewers better understand the current source storage levels and the factors that affect them. The response to the updated webpage has been very positive, both from within and beyond the region, including feedback from member jurisdiction staff. The webpage remains one of the most-visited webpages on the Metro Vancouver website.

ALTERNATIVES

This is an information report; no alternatives are presented.

FINANCIAL IMPLICATIONS

Revenues from water sales as of October 7 are 1.5 per cent, or approximately $4.8 million, below budget.

OTHER IMPLICATIONS

Member jurisdictions play a vital role in managing overall system demand and protecting our limited water supply during the summer months. Through proactive public education and local enforcement, they help raise awareness about conservation practices and ensure compliance with seasonal water use restrictions. These efforts are essential to maintaining system resilience, especially during peak demand periods, and contribute significantly to the success of regional water management strategies.

CONCLUSION

Metro Vancouver's water supply system performed reliably during the 2025 high-demand season, despite a below-average snowpack and prolonged warm, dry weather. A wetter-than-expected spring and a significant mid-August storm event supported supply, boosting reservoir levels. Peak day consumption remained comparable to 2024; however, total water use was slightly above 2024.

Annual Stage 1 lawn watering restrictions of the Drinking Water Conservation Plan were activated on May 1, 2025 and remained in effect until October 15, 2025.

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Water Committee

From: Dana Carlson, Project Coordinator, Corporate Communications

Date: October 21, 2025 Meeting Date: November 12, 2025

Subject: **Drinking Water Conservation Plan: 2025 Communications and Public Outreach Results**

RECOMMENDATION

That the Water Committee receive for information the report dated October 21, 2025, titled "Drinking Water Conservation Plan: 2025 Communications and Public Outreach Results."

EXECUTIVE SUMMARY

Metro Vancouver's annual water restrictions promotion, water conservation campaign, and Water Wagon program educates the region's residents on the value and mindful use of drinking water.

Media placements reached residents across the region, delivering 70.1 million impressions and 50,269 website visits. There were 287 earned media stories, delivering 134 million impressions for an advertisement value equivalent of $16 million. The Water Wagon outreach program provided 9,486 water bottle refills and fountain uses, and 2,485 conversations with residents.

PURPOSE

To update the Water Committee on regional communications to support the annual water restrictions, water conservation campaign, and Water Wagon program.

BACKGROUND

Metro Vancouver provides high-quality drinking water through its members to more than 3 million people and associated businesses, institutions, and industries in the region. Metro Vancouver's ability to capture, store, and distribute available water is limited, and like all natural resources, water must be managed and used wisely.

Increased uncertainty in population forecasts and the impacts of climate change brings increased risk of drought and water shortages in the summer months. Metro Vancouver aims to educate residents on how valuable drinking water is and encourage more mindful water use to reduce overall water demand and conserve water for where it's needed most — drinking, cooking, and cleaning.

Metro Vancouver's Drinking Water Conservation Plan is supported by three main communications initiatives:

- The water restrictions promotion educates residents about seasonal restrictions on lawn watering and other outdoor water use (Reference 1).
- The water conservation campaign, It's All Drinking Water, encourages reduced water consumption by encouraging mindful use (Reference 2). In addition, two secondary promotions support the conservation message:
    - A promotion about where the region's drinking water comes from increases awareness of Metro Vancouver's drinking water system and its limited source volumes (Reference 3).
    - A promotion for seasonal maintenance tips helps lawns grow stronger and require less water when water restrictions are in effect (Reference 4).
- The Water Wagon outreach program provides high-quality tap water at public summer events around the region while educating attendees about Metro Vancouver's water system and providing tips to conserve treated drinking water at home, indoors and outside. (Reference 5).

WATER CONSERVATION COMMUNICATIONS

Approach and Timing

Seasonal water restrictions were first promoted via a media release on April 4, followed by a second release on May 1 when the water restrictions were enacted. Promotions were in effect until the deactivation of water restrictions on October 15. Materials included a direct mail postcard, social media, posters, as well as translated print ads in multicultural newspapers.

The regional drinking water conservation campaign was in market from June 23 to September 1, 2025. Emphasis was placed on reducing water demand for the summer activities that use the most water, specifically lawn watering. The target audience was residents with lawns (adults 35–64 in detached homes, duplexes, and townhomes).

The creative direction featured bold colours and graphics. The key message and tagline were "Water one hour a week for a healthy lawn" and "It's all drinking water." Water conservation tips were woven throughout the creative.

In 2025, the campaign URL was changed to itsalldrinkingwater.ca (Reference 2) to better align with the creative direction and key messages. The previous URL, welovewater.ca, is still active and redirects visitors to the new campaign website.

Media placements included digital video (YouTube and Canadian pre-roll network), digital banner ads (programmatic network and The Weather Network), Facebook/Instagram, Google Search, television (CTV, Global BC), radio (CFMI-FM, CFOX-FM, CKNW, CJJR-FM, CFBT-FM, CHQM-FM, CKZZFM and CKWX), and digital billboards (weather triggered where possible).

Metro Vancouver Member Engagement
Metro Vancouver provided communications to support the Greater Vancouver Water District members' water conservation education and enforcement programs. Materials included content and creative for social media, rack cards, door hangers, brochures, posters, transit shelter ads, digital billboards, and translated materials.

Evaluation
Combined results for the water restrictions promotion and water conservation campaign follows:

Website

- There were 50,269 page views on the campaign website (Reference 2) and water restrictions web page (Reference 1), an increase from last year's 47,000 page views. The most popular page was the water restrictions landing page that achieved 30,728 views.

Regional Paid Media Placements

- The campaign received 70.1 million total impressions in 2025 – comparable to 2024 (68.1 million).
- YouTube saw an exceptionally high video view rate of 73%, well above benchmark (55%).
- Meta (Facebook and Instagram) received 647 reactions, 240 comments, 92 shares, and 50 saves for a social engagement rate of 0.013% — within expected ranges.
- The Google Ads search campaign performed strongly with a click-through-rate of 31.5% and an increase in impression share from 34% to 61% year-over-year.
- Across digital tactics, there were 2.7 million video views and 18,489 clicks to the website. The digital banner ads and social media ads had a frequency of 9.5, meaning people were exposed to the ads about once every week.
- The biennial post-campaign survey was not conducted in 2025, and is scheduled for 2026.

Earned Media

- There were 287 earned media stories, delivering more than 134 million impressions for a total ad value equivalent of $16 million. Earned media coverage was consistent from spring through the summer months.

Water Wagon Outreach Program
The Water Wagon is a regional resource and is available to attend public events in member jurisdictions whose water is distributed by Metro Vancouver. The Water Wagon is staffed by an outreach team that shares the "mountain to tap" story of the region's drinking water and ways to conserve this precious resource through interactive displays and games.

Between May to September the Water Wagon attended 24 community events across 11 member jurisdictions for a total of 31 event days. The outreach team counted 9,486 water bottle refills and fountain uses and had 2,485 conversations about the region's tap water with residents. A water wagon was also placed at Metro Vancouver's exhibit at the PNE Fair for an additional 15 days.

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

FINANCIAL IMPLICATIONS

The 2025 budget for water restrictions promotions, water conservation campaign, and Water Wagon program was $563,469.

OTHER IMPLICATIONS

The continued success of water conservation to reduce overall demand on a limited resource relies on collaboration and alignment between Metro Vancouver and member jurisdictions.

CONCLUSION

Metro Vancouver's conservation campaign achieved 70.1 million impressions and contributed to more than 50,000 website visits. There were 287 media stories, delivering 134 million impressions totaling an advertisement value equivalent of $16 million. Through an integrated approach, the water restrictions promotion and water conservation campaign educated residents about the value of drinking water and supported water conservation throughout the region to reduce seasonal demand.

ATTACHMENT

1. Water Conservation Communications Materials Examples.

REFERENCES

1. Metro Vancouver. (2025). *Lawn watering restrictions*. https://metrovancouver.org/lawns.
2. Metro Vancouver. (2025). *It's All Drinking Water*. https://itsalldrinkingwater.ca.
3. Metro Vancouver. (2025). *The Regional System.* https://metrovancouver.org/services/water/the-regional-system.
4. Metro Vancouver. (2025). *Seasonal Lawn Care.* https://metrovancouver.org/services/water/seasonal-lawn-care.
5. Metro Vancouver. (2025). *Water Wagon and Tap Water Team.* https://metrovancouver.org/services/water/water-wagon-and-tap-water-team.

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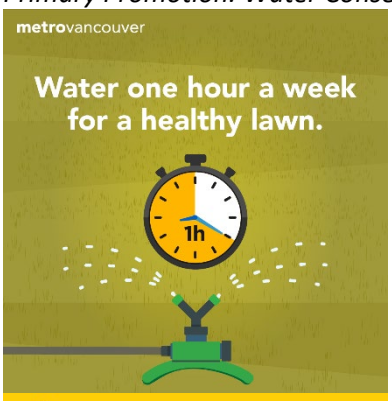
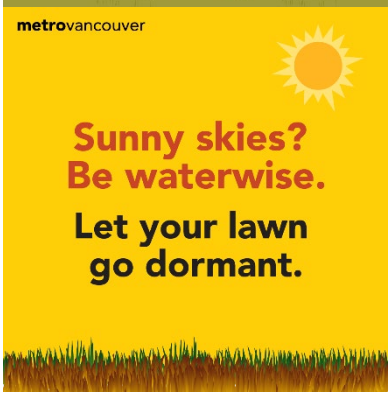
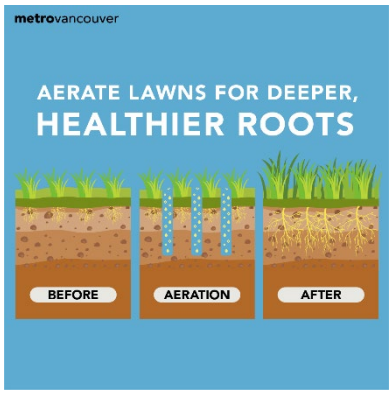
2025 Water Conservation Communications Materials Examples

Primary Promotion: Water Conservation Campaign

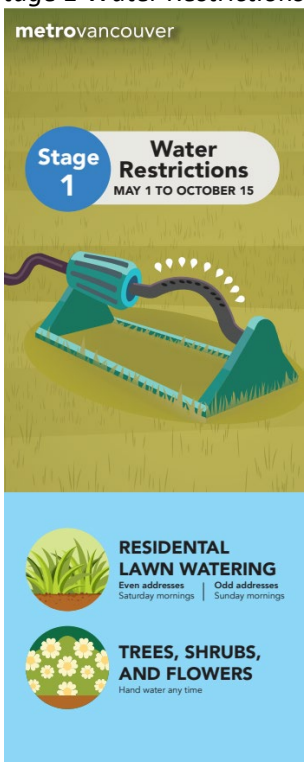




Secondary Promotion: Water Source and Seasonal (Spring/Fall) Lawn Care



Stage 1 Water Restrictions



Rack Card Front

Rack Card Back

Social Media Story Image

Postcard Front

Postcard Back

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Water Committee

From: Linda Parkinson, Director, Policy Planning & Analysis, Water Services

Date: October 30, 2025 Meeting Date: November 12, 2025

Subject: **Factors Influencing Long-Term Water Planning**

RECOMMENDATION

That the Water Committee receive for information the report dated October 30, 2025, titled "Factors Influencing Long-Term Water Planning".

EXECUTIVE SUMMARY

Metro Vancouver plans for and delivers regional-scale drinking water services to nearly three million people. This requires consideration of the various long-term challenges facing the regional water system, particularly in the face of rapid population growth and climate change impacts.

The Water Supply Outlook 2120, completed in 2019, is a comprehensive regional water supply study that analyzed a range of supply and demand scenarios over a 100-year period. It took into consideration anticipated population growth, climate change impacts, increased adoption of residential water metering, as well as continued water conservation. This study identified the late 2030's as the time when existing supply may no longer meet demand.

Metro Vancouver is planning to address this gap through a two-pronged approach: increasing water supply through the *Coquitlam Lake Water Supply project* and reducing per capita drinking water demands though policies and measures in the *Drinking Water Management Plan* update. Metro Vancouver is currently undertaking a *Water Supply Plan using Adaptive Pathways* project to create updated supply and demand scenarios, confirm timing of source supply gaps, and develop adaptive plans to ensure continued resilience of the regional drinking water system.

PURPOSE

The purpose of this report is to prepare the Water Committee for a November workshop on the *Drinking Water Management Plan* (DWMP) Update, by sharing information on the factors that influence long-term planning for the regional water system and how the utility is responding to the uncertainty and unpredictability associated with long-term planning.

BACKGROUND

Water Services' long-term planning is driven by two key parameters – source supply and drinking water demand. To ensure a reliable supply of high-quality drinking water for the region for decades to come, source supply must adequately meet the growing water demand. Planning for supply and demand requires a series of models that simulate what happens as water moves from the regional watersheds, through the transmission system to each member's connection point (See Figure 1 on next page).

These models include:

- **Water Supply Area Hydrological Models**: Hydrological models are used for each of the three mountain reservoir systems and water supply areas. These inform water supply and dam operations.
- **Water Demand Forecasting Models**: Growth planning for water infrastructure is driven by average annual demand, peak day demand and per capita demand. The water demand forecasting model incorporates population projections and a broad range of demand drivers, including demographic projections, climate change, and water conservation measures.
- **Water Transmission System Model**: The regional water transmission system (water mains, treatment plants, pump stations, etc.) moves the water from source to tap and must be capable of providing treated drinking water to members to meet needs during peak summer demand periods, which is modelled as the peak day demand. Therefore, the peak day demand is a very important parameter that informs the sizing and timing of transmission system infrastructure. The transmission model is also used to optimize existing system capacity, enabling full utilization of the infrastructure throughout its intended lifespan.

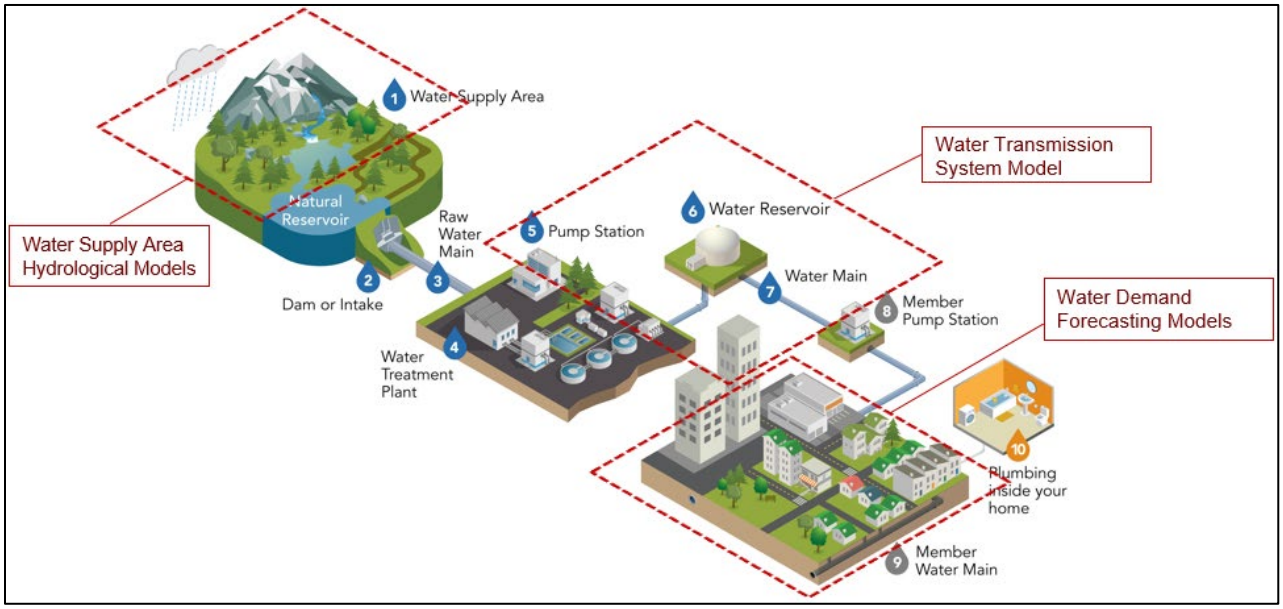

Figure 1: Models used to inform long term water planning

Combining water demand forecasts with modelling of future reservoir inflows helps determine the potential need for additional water supply over time. The probability, timing, and volume of these potential supply gaps must then be addressed through infrastructure capital plans and the utility's strategic plan; the Drinking Water Management Plan (DWMP).

Water Supply Outlook 2120

The Water Supply Outlook 2120 study, completed in 2019, is the most recent long-term source supply planning study conducted by Metro Vancouver. This study assessed the water system's resiliency to potential hazards and identified actions necessary for the continued supply and delivery of water to meet the region's needs over the next 100 years. The study examined long-term trends in both regional supply and demand considering population growth, climate change, demand shifts, and seismic vulnerability.

Given the 100-year outlook of the water supply planning study, there are many possible future demand and supply outcomes. While any outcome may occur during the entirety of a long-term forecast, it is not reasonable to plan water supplies for extremely rare conditions, as this carries a high risk of costly over or under-building of major capital infrastructure. To guide long-term planning, three planning scenarios were developed for probable low, moderate, and high-stress outcomes, after identifying the most important factors influencing the region's water demands and supplies. Figure 2 illustrates key factors driving the three planning scenarios:

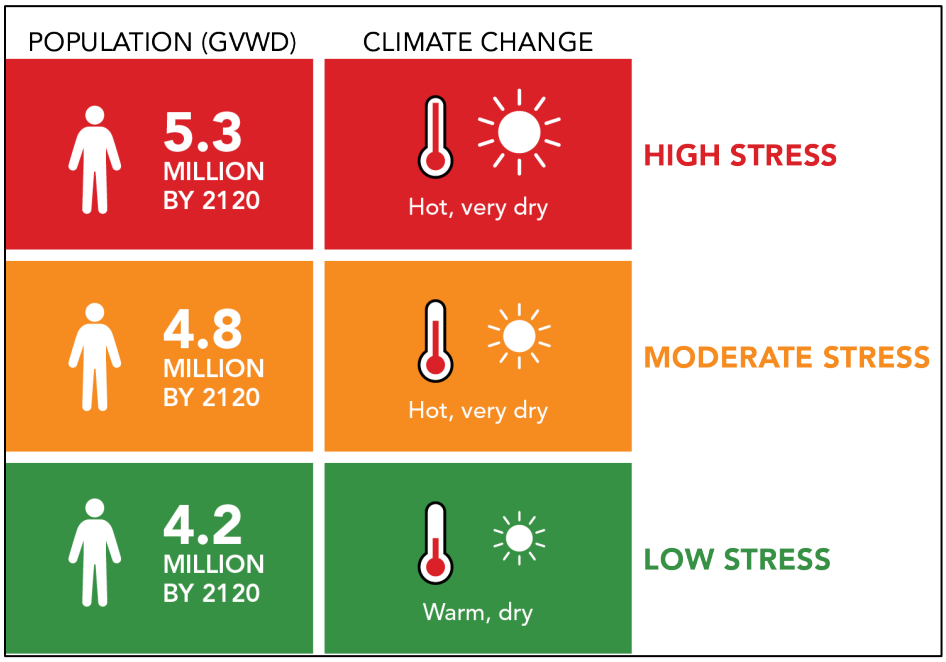

Figure 2: Planning Scenarios used for the Water Supply Outlook 2120 study

The Water Supply Outlook 2120 was developed using data up to and including 2016. At that time the regional population was growing by 35,000 people each year, which increased to 50,000 in 2024. As per the latest projections released by Metro Vancouver's Regional Planning department, regional population is projected to reach 7.5 million in 2120.

Regional Water Supply

Metro Vancouver's water comes from rainfall and snowmelt in three major water supply areas – Capilano, Seymour, and Coquitlam. The regional water supply is stored in these three main source storage reservoirs and three supplemental alpine reservoirs (Burwell Lake, Palisade Lake, and Loch Lomond). The region benefits from these supply sources reliably refilling every winter and their close proximity to the rapidly growing region that they service.

Climate, which is the primary factor impacting source supply and source water availability, is subject to natural variability and uncertainty outside the bounds of human control. Therefore, the regional effects of climate change must be considered when planning for future water supply. Work completed as part of the Water Supply Outlook 2120, found that it is expected that warmer temperatures will cause more precipitation to fall as rain rather than as snow in the water supply areas during winter months. Projections show that warmer temperatures and winter rains will erode the winter snowpack more quickly and reduce its depth and availability for drinking water in the spring and summer months. Precipitation forecasts also indicate drier summers that could

extend later into the year. Hotter days and longer dry spells over the summer months, combined with reductions in snowpack put strain on the existing water supply during times of the year when temperatures are high and water is in greatest demand.

Regional Water Demand
As outlined in the Committee Report "Current Water Use Metrics and the Status of Metering in the Region", September 10, 2025, the regional water demand is modelled using two main parameters – peak day demand and average annual demand. Peak day is defined as the day in a year when the highest volume of water is drawn from Capilano, Seymour, and Coquitlam source supplies. Metro Vancouver's design objective is to supply peak day demands to member jurisdictions, by which the size and timing of infrastructure are directly driven. Average day demand is the total water demand for the year divided by the number of days in the year and is an important parameter when determining source water supply and the need for access to additional water. The regional water supply system must be capable of providing drinking water to members all year round.

The following are the key factors that influence water demand and were accounted for in the Water Supply Outlook 2120 and in current models and tools used by Water Services.

Population Growth: Population growth has a significant impact on demand forecast, and on long-term water planning. Each year, in July, Metro Vancouver's Regional Planning department issues population projections for the region. These population projections are used to inform water demand projections. The Water Supply Outlook 2120 was developed using data up to and including 2016. At that time the regional population grew by 35,000 people each year. This increased to 50,000 in 2024. The 2025 population projections reflect the impact of recent federal immigration and nonpermanent resident policy changes, which have significantly influenced short-term population projections. Following a historic peak growth rate of 4.5 per cent in 2023–2024, the region is now experiencing a slowdown in growth through the 2025–2027 period. These fluctuations underscore the importance of regular updates to Metro Vancouver's projections, particularly in response to evolving federal policy. Despite short-term volatility, long-term immigration trends appear more stable and will continue to be the primary driver of regional population growth.

Demographic Changes: Changes in urban densification, decrease in lawn areas and reduction in indoor water demands due to plumbing code changes directly impact both peak day and overall water demand. This impact is captured through Metro Vancouver's planning projection data regarding household types, household sizes, percentage of single-family and multi-family population growth, average lot sizes, and household income. Increased densification results in passive conservation of water through reduced lot sizes and irrigable areas and increase in uptake of high-efficiency water fixtures. The Water Supply Outlook 2120 accounted for these expected changes in water demand over time driven by changes in housing type and density, amount of manufacturing, household income, and household size.

Climate Change: Climatic factors, such as daily average temperature directly influence end-user water consumption rates. Water Supply Outlook 2120 accounted for climate change impacts on seasonal demands by incorporating climate change scenarios from Pacific Climate Impacts Consortium (PCIC). PCIC is a regional climate service centre based out of the University of Victoria, that provides data on climate change in the Pacific and Yukon region of Canada.

Water Conservation measures: The factors noted above cannot be controlled by Metro Vancouver or our member jurisdictions. The only path available to Metro Vancouver and member jurisdictions to control demand is through water conservation measures. Water conservation occurs passively and can be implemented actively.

Passive conservation measures:

- Passive conservation can be attributed to updated plumbing codes and increased efficiency of water fixtures and appliances.
- Passive conservation measures usually target indoor demand and drive down both the annual average demand and peak day demand.

Active conservation measures:

- Active conservation requires adoption of measures such as active leak reduction, pay-by-use water rates, public education, and enforcement of the Drinking Water Conservation Plan (DWCP) by member jurisdictions. The DWCP is a regional policy that was developed to manage the use of drinking water during periods of high demand and during periods of water shortages, and emergencies. The DWCP, and its enforcement by member jurisdiction through their local bylaws, reduces peak day demand (which is particularly important as it drives sizing and timing of transmission system infrastructure).
- While universal metering is not a conservation measure in and of itself, it is required to effectively implement leak reduction programs and is necessary to enable various water rate strategies that support conservation.

Water Supply Outlook 2120 accounted for the impact of active conservation measures on water demand. The study assumed that the region would continue to implement the two day a week lawn watering restriction, which was in place prior to 2022, for the next century. The study also assumed that the region would be fully metered between 2076 and 2096, with some of the bigger members being fully metered as soon as 2046, and that the members would take advantage of the data from the meters to implement active conservation programs. The study assumed reductions in system leakage between 15 to 20 per cent.

Identifying the Supply Gap

Currently, Metro Vancouver's source reservoirs can be maintained nearly full under normal winter conditions. Snowpack typically starts melting around April, and the reservoirs are drawn down until early fall when the rain returns. As winters get warmer and wetter, and summers get hotter and drier, less snowmelt will be available as inflow to sustain the reservoirs through the summer months, creating the risk of a seasonal supply shortage.

Water Supply Outlook 2120 identified the late 2030s as the time when supply could no longer meet demand. The supply shortage was calculated for each of the three planning scenarios – low, moderate, and high stress – from 2016 to 2116. The probability and volume of the supply gap increased with each stress scenario (low to high) and increased over time (2036, 2056, 2076, and 2096) as illustrated on next page.

Table 1: Probability and size of a water supply shortage as projected in the Water Supply Outlook 2120

		2036	2056	2076
Low Stress	**Shortage (BL)**	5	13	22
	Probability	1%	3%	5%
Medium Stress	**Shortage (BL)**	44	63	99
	Probability	10%	14%	21%
High Stress	**Shortage (BL)**	55	81	123
	Probability	12%	17%	24%

Water Supply Outlook 2120 confirmed that Metro Vancouver is well positioned to access additional water supply from within its three existing water supply areas. Expanded treatment capacity and a deeper intake at Coquitlam Lake was confirmed as more cost effective than options from other water sources. As a result, the Coquitlam Lake Water Supply project (CLWSP) is now underway and will help Metro Vancouver secure the ability to double the supply of drinking water that comes from the Coquitlam source.

Addressing the Supply Gap

Metro Vancouver is planning to address the supply gap through a two-pronged approach:

- Increase water supply through the CLWSP
- Reduce per capita drinking water demands though policies and measures in the updated DWMP

CURRENT AND FUTURE PLANNING ACTIVITIES

Long-term utility planning has always carried a level of uncertainty and unpredictability, which has increased with the challenges of climate change and population growth volatility. Long-term planning must ensure the drinking water supply system is resilient in the face of unpredictable annual impacts of climate change and rapid population growth in the region. To achieve this, Metro Vancouver has updated several models in recent years to incorporate additional influencing factors, including the latest climate projections, and to enable scenario-building.

Managing Regional Water Supply

Source Water Supply

Metro Vancouver is currently undertaking a *Water Supply Plan using Adaptive Pathways* study ("Adaptive Pathways study") to build on the results of the Water Supply Outlook 2120 and update data and assumptions. The Adaptive Pathways study will result in a framework for future decision making that is responsive and flexible to different plausible future scenarios. The output will be an adaptive plan that describes the future pathways for the region's water supply based on projections for water supply and demands that will be monitored and updated over time.

Transmission Infrastructure

Water Services' design objective is to supply peak-day demands to member jurisdictions and this determines the size and timing of infrastructure. The peak day demand forecasting model is used as an input to the transmission system model to determine where new growth-driven projects are needed in the region's transmission system and when they will be needed. It is important to highlight that while the regional transmission system is designed to deliver peak day demands, it must also account for operability during the lower winter demands and various system configurations.

Despite the total peak day demand being fairly consistent since 2011 at about 1.5 to 1.6 billion litres a day, new growth-driven projects are still required to service the faster growing parts of the region, and to meet future higher peak-day demands due to population growth and climate change impacts. Metro Vancouver is currently in the process of developing a Water Infrastructure Master Plan in which it will document timing and prioritization of long-term implementation of infrastructure.

Managing Regional Water Demand

Since Metro Vancouver and its member jurisdictions each have a different, but complementary, role in supplying drinking water to the region, they both need to work collaboratively and consistently across the region to manage demand and ensure that drinking water conservation is successful. Member jurisdictions deliver drinking water to the residents and business in the region and are responsible for billing, and enforcement of water restrictions. Therefore, local leak management and active conservation strategies, that are critical to ensure the efficient use of drinking water resources, are the responsibility of member jurisdictions. These strategies reduce infrastructure needs and support regional growth while conserving resources and helping to manage costs. The best practices tool to support these strategies is universal water metering.

As noted, to progress active conservation measures, Metro Vancouver and member jurisdictions must work together. A very successful example is the DWCP which, together with education campaigns and local enforcement, has successfully contributed to steadying peak-day demand over the past 20 years despite the region's population growing by 1 million.

<u>Drinking Water Conservation Plan</u>

The DWCP is a regional policy developed in collaboration with member jurisdictions to manage the use of drinking water during the high demand season from May 1 to October 15 and during periods of water shortages and emergencies. The DWCP uses a staged approach to reduce demand for drinking water through specific water restrictions which become more restrictive with higher stages. This regional policy is adopted through GVWD member's bylaws. Through this collaborative approach the region has successfully been able to reduce the peak day demand from 1956 MLD in 2003 to 1519 MLD in 2024.

<u>Drinking Water Management Plan</u>

To build on the success of the DWCP, Metro Vancouver is proposing a regionally coordinated effort to advance drinking water conservation through the update of the DWMP and through adoption of the best practice tool of universal water metering. Metro Vancouver is proposing metering and per capita water use targets that each member can adopt through their local bylaws and programs.

Proposed strategies include:

- Continue advancing residential water metering to find and fix leaks
- Reduce drinking water use through active conservation supported by metering
- Advancing the recovery and reuse of non-potable water to reduce demand for drinking water

Education and Outreach

Metro Vancouver, in collaboration with members, develops communication and education campaigns to raise public awareness about the value of drinking water and encourages more mindful water use. These efforts aim to reduce overall water demand and conserve water for where we need it most — drinking, cooking, and cleaning. Metro Vancouver's annual water restrictions promotion, water conservation campaign, and the Water Wagon program help educate the public about the importance of using drinking water wisely.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

The existing Water Services budget includes provisions for conducting long-term planning studies and updating the planning tools and models. Financial implications will be determined as source supply and transmission infrastructure needs are further defined.

OTHER IMPLICATIONS

Ongoing collaboration and information sharing between Metro Vancouver and its member jurisdictions is key to successful long-term water planning for the region. Communications and engagement on water planning happens primarily through Regional Engineers Advisory Committee and its Water Subcommittee. Additional implications will be assessed as source supply and transmission infrastructure needs are further defined.

CONCLUSION

Metro Vancouver long-term planning is driven by two factors – drinking water demand and source supply. The key factor that impacts water supply availability is climate. Water demand is driven by a series of factors including population growth, demographic changes, climate change, and water conservation measures. Given the uncertainty inherent in these supply and demand factors, Metro Vancouver has enhanced its water models to take multiple supply and demand factors into consideration and allow staff to model plausible future scenarios to plan for long-term source supply and transmission infrastructure.

The Water Supply Outlook 2120 study, completed in 2019, is the most recent long-term source supply planning study conducted by Metro Vancouver. It considered a series of plausible future scenarios and examined long-term trends in both regional supply and demand considering population growth, climate change, demand shifts, and seismic vulnerability. Based on the results of these scenarios, the late 2030's was identified as the time when supply might no longer meet demand. Metro Vancouver is planning to address this gap through a two-pronged approach: by increasing water supply through the CLWSP and by reducing per capita drinking water demands through policies and measures in DWMP update. The Water Supply Plan using Adaptive Pathways project is currently underway to complement the Water Supply Outlook 2120 study and update the assumptions and scenarios.

ATTACHMENT

1. Presentation re: Factors Influencing Long-Term Water Planning.

REFERENCES

1. Parkinson, L. (2025). Current Water Use Metrics and the Status of Metering in the Region [Staff report to Water Committee meeting on September 10]. https://metrovancouver.org/boards/Water/WAT-2025-09-17-AGE.pdf
2. Metro Vancouver, Water Services Department, Water Supply Outlook 2120, issued September 2019, Page 22. https://metrovancouver.org/services/water/Documents/water-supply-outlook-2120.pdf

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Factors Influencing Long-Term Water Planning

WATER COMMITTEE

Linda Parkinson
Director, Policy, Planning and Analysis, Water Services

November 12, 2025
79694753

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AGENDA

- Background: Drinking Water Management Plan
- Water Supply Outlook 2120:
  - Scenario Planning
  - Regional Supply and Demand Trends
  - Projected Supply Gap
- Strategies to Manage Supply Gap
- Managing Uncertainty through Adaptive Planning

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DRINKING WATER MANAGEMENT PLAN UPDATE

Topic	Timing
DWMP Proposed Strategies and Actions Report	June 11 ✓
Current Drinking Water Use Metrics and Status of Metering in the Region	Sept 17 ✓
Renewed Drivers for Advancing Water Metering	Oct 15 ✓
Factors Influencing Long-term Water Planning	**Nov 12**
DWMP Workshop for Water Committee feedback	Nov 26

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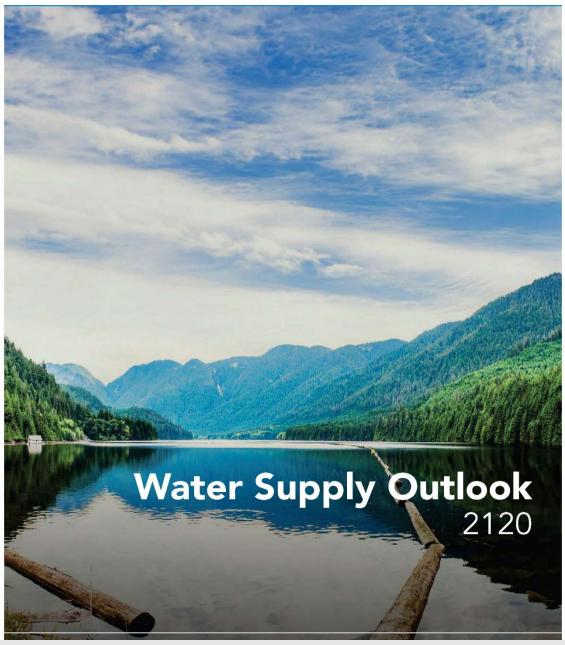
WATER SUPPLY OUTLOOK 2120

Purpose

- To provide a roadmap to ensure continued reliable and sustainable delivery of high-quality drinking water over the next century
- To ensure that the regional water system is resilient to risks including a rapidly-growing population, changing climate, seismic events, and power outages



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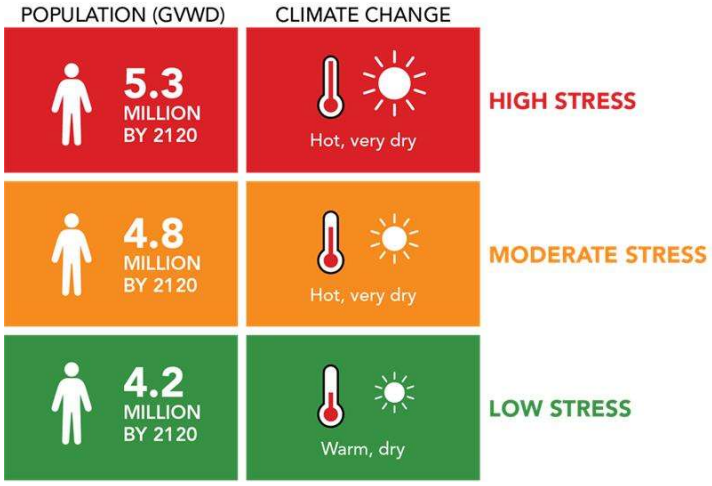
FUTURE SCENARIO PLANNING

Water Supply Outlook 2120



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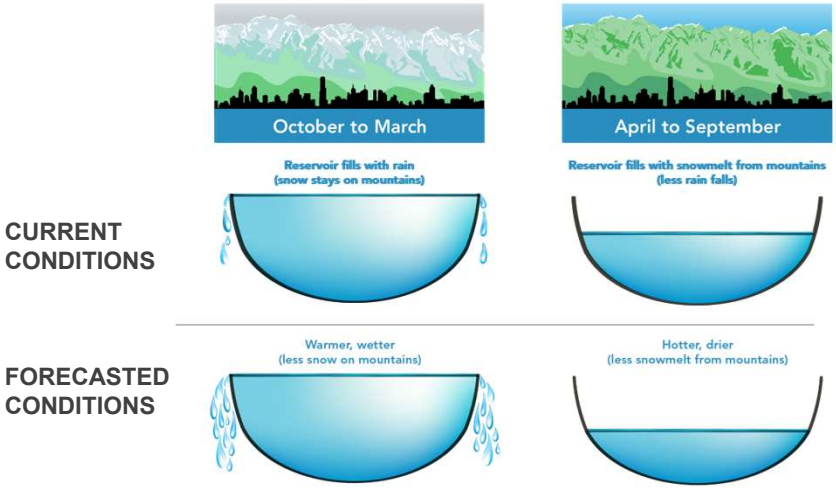
WATER SUPPLY FORECASTING

Water Supply Outlook 2120



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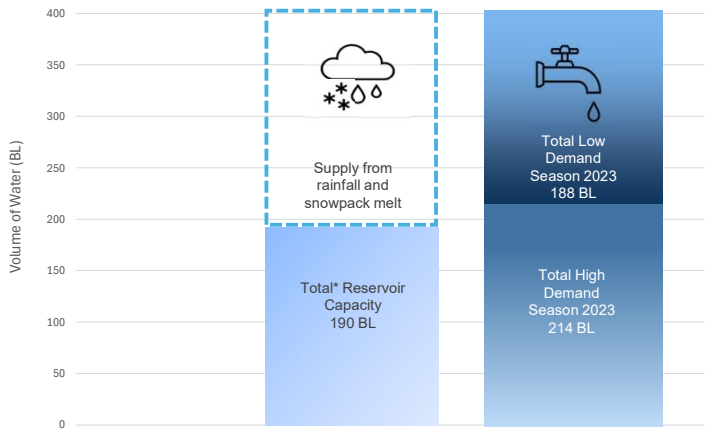
ACCESSIBLE ANNUAL WATER SUPPLY



*Accessible supply from Capilano, Seymour, Coquitlam and the Alpine Lakes

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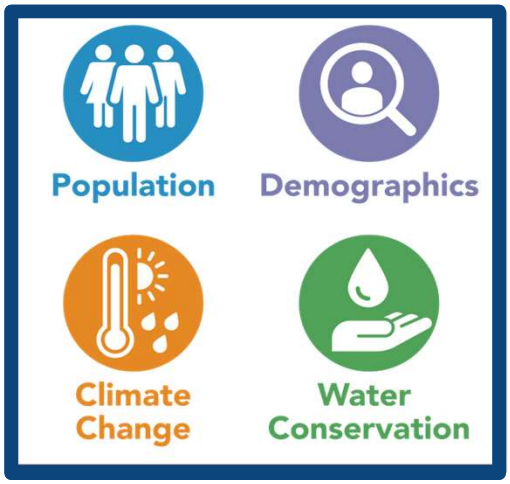
WATER DEMAND FORECASTING

Water Supply Outlook 2120



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REGIONAL SUPPLY AND DEMAND TRENDS

Supply – expected to decrease over time due to impacts of climate change

Demand – expected to increase over time due to population growth and impacts of climate change, despite conservation measures

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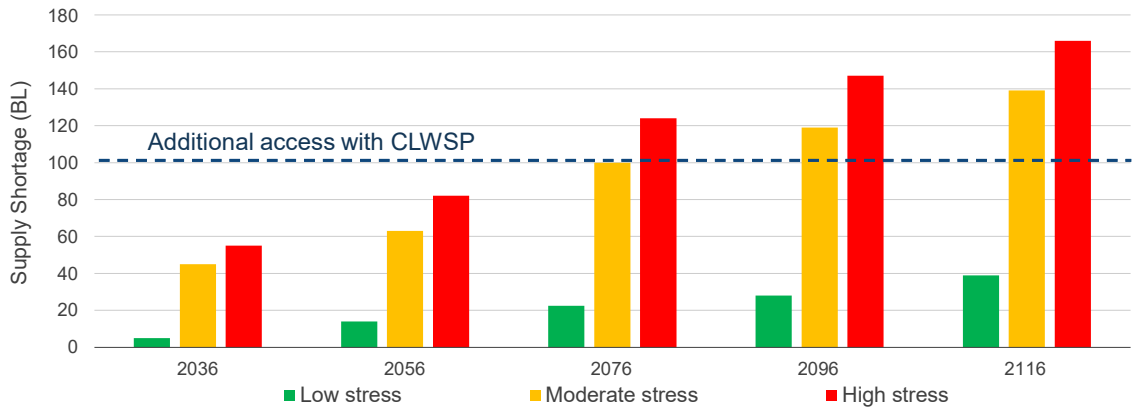
WATER SUPPLY GAP

We are trending closer to high stress scenario



* Modelling time steps are based on census year

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WE NEED TO BUILD AND WE NEED TO CONSERVE

We have a two-pronged approach to address the supply gap:

- Build new infrastructure to increase supply
- Implement conservation strategies to reduce demand

Low water levels at Seymour Reservoir during fall 2022

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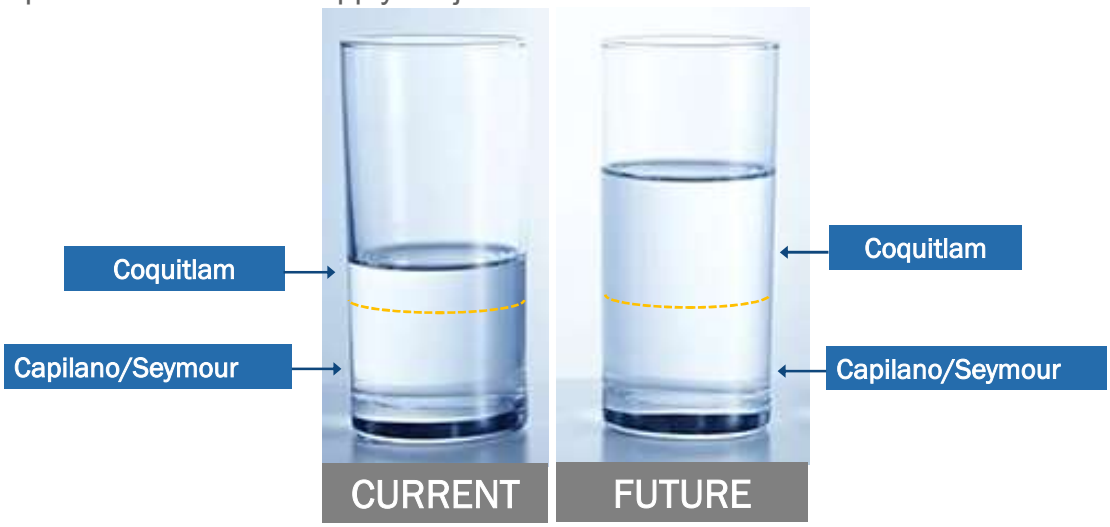
NEW INFRASTRUCTURE TO INCREASE SUPPLY

Coquitlam Lake Water Supply Project



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REDUCE DEMAND FOR DRINKING WATER

Drinking Water Management Plan Update

- Advance residential water metering as a best practice tool
- Reduce drinking water use through active conservation
- Continue advancing the recovery and reuse of non-potable water

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PLANNING IN THE FACE OF UNCERTAINTY

Managing Uncertainties:

- Enhancing models to account for wider range of supply and demand factors
- Ability to build future scenarios
- Undertaking adaptive planning study to update assumptions and scenarios

Low water levels at Coquitlam Reservoir during fall 2022

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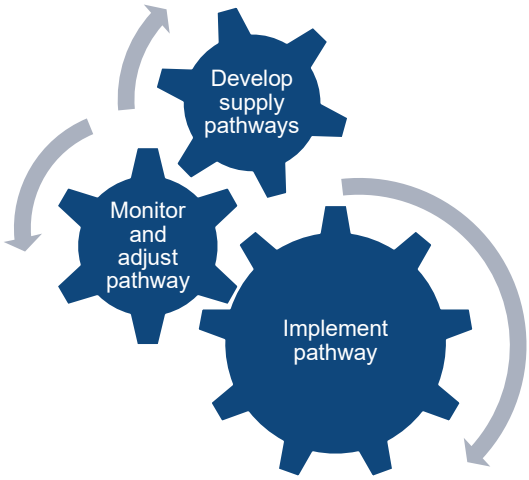
WATER SUPPLY PLAN USING ADAPTIVE PATHWAYS STUDY

The study will:

- Update the demand and supply scenarios for the regional water system
- Develop adaptive water supply plans for the next 50 years



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NEXT STEPS

Item	Timeline
Water Committee Workshop	**November 2025**
Finalize DWMP	December 2025
Final DWMP review with the public, First Nations, REAC WSC, REAC, and RAAC	Q1 2026
Water Committee and GVWD Board adoption	Q2 2026

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Coquitlam Water Treatment Plant, May 2017

Questions?

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Water Committee

From: Heidi Walsh, Director, Watersheds and Environment, Water Services
Mike Brannon, Director, Operations and Maintenance, Water Services

Date: October 14, 2025 Meeting Date: November 12, 2025

Subject: **Coquitlam Reservoir Turbidity Mitigation Planning**

RECOMMENDATION
That the Water Committee receive for information the report dated October 14, 2025, titled "Coquitlam Reservoir Turbidity Mitigation Planning".

EXECUTIVE SUMMARY
In October 2024, an intense atmospheric river triggered significant turbidity in the Coquitlam Reservoir, Metro Vancouver's largest drinking water source. Elevated turbidity conditions persisted for three days, and while water quality remained high, the event necessitated operational adjustments at the treatment plant, notifications to public health officials, and an increase in sampling frequency within the affected supply area. Field investigations traced the turbidity to two small landslides in a drainage close to the intake, as well as a larger area with potential future landslide risk. Short-term mitigation is underway with long-term stabilization works planned for summer 2026. Updated emergency response plans now include refined operational triggers and enhanced communication protocols to ensure we are better prepared for future similar events. Staff have engaged with kʷikʷəƛ̓əm (Kwikwetlem First Nation), səlilwətaɬ (Tsleil-Waututh Nation), the Health Authorities, BC Hydro, and the Provincial Water Comptroller on the current risk, imminent mitigation plans, and future emergency response protocols.

PURPOSE
To provide the Committee with information on potential turbidity risks at the Coquitlam Reservoir resulting from the October 2024 atmospheric river event, including current mitigation works and updated emergency response plans that have strengthened capacity to manage and respond to such events.

BACKGROUND
Coquitlam Reservoir is a critical component of the Metro Vancouver water supply system, providing about one third of the region's supply. Due to the geological history of the area and associated glacial processes, the southwestern area of the watershed has extensive 'glaciolacustrine' deposits composed of fine textured clay materials. Over time, the tributary drainages in this area have eroded and the creeks and streams now sit at the bottom of deeply incised gullies. The steep clay banks are more susceptible to failure during heavy rainfall events, particularly when the soils become saturated.

2024 Atmospheric River Event
Between October 18 and October 20, 2024, a significant atmospheric river system brought prolonged heavy rainfall and strong winds to the Metro Vancouver area resulting in widespread flooding, road closures, and downed trees. Environment Canada issued heavy rainfall and high streamflow warnings for the lower mainland and Howe Sound. The intense storm system most directly impacted the North Shore and Tri-Cities areas and delivered over 350 millimeters of rain at the Coquitlam Dam in a 48-hour period. The highest flows on record for the Coquitlam River (1966 - present) were recorded and the storm triggered a major turbidity event in Coquitlam Reservoir, the largest drinking water source for Metro Vancouver.

Water Quality Conditions
Turbidity levels in the Coquitlam system are typically very low and remain well within acceptable operating limits. However, the turbidity event during the October 2024 atmospheric river event caused turbidity levels to exceed these limits, prompting notification to the Fraser and Vancouver Coastal Health Authorities. Elevated turbidity conditions persisted for three days, necessitating operational adjustments at the treatment plant and an increase in sampling frequency within the affected supply area. All samples collected during this period met quality standards, and no public health advisories were issued. The turbid water remained suspended in the water column in the southern portion of the lake, where the GVWD water intake is located, for over three weeks before fully dissipating.

Beaver Creek Geo-Hazards
Field investigations immediately following the storm event found that the Beaver Creek drainage, located about 600m west of the intake, was the source of the turbidity. Several geo-hazards were located in the Beaver Creek drainage including two new landslides: one close to the reservoir and a second approximately 500m upstream; a substantial log jam near the upper slide site that was directing water flow into the stream bank, as well as a significant area of instability with future landslide risks.

Consulting Engineering Services were retained to provide technical support for a comprehensive assessment of geotechnical hazards in the upper and lower drainage areas of Beaver Creek, as well as to develop conceptual designs for short and long-term mitigation measures. Helicopter grapple work to remove the log jam near the upper slide was identified as the most effective short-term mitigation. This, along with the preliminary layout and construction of approximately 400m of access road to the lower landslide site, was completed this summer. Detailed design and permitting for the selected long-term mitigation option are ongoing throughout the fall and winter, with the balance of construction scheduled for the fisheries work window in summer 2026.

Emergency Response Planning
Water Services has robust Emergency Response Plans for addressing operational changes at the treatment plants in response to turbidity events as well as water quality communications to the Health Authorities and the Members. Both plans were activated during this event.

During post-storm debrief sessions, the risk of further turbidity events from the identified Beaver Creek area prompted staff to update existing operational plans. These updates ensured that triggers were accurate to ramp up operational changes at the Coquitlam Water Treatment Plant, including reducing plant output during an event. Additionally, communications protocols were enhanced and clearly defined to facilitate timely notifications to all relevant stakeholders, including regulatory agencies, member jurisdictions, and internal teams. This approach aimed to minimize public health impact and ensure a coordinated response during any subsequent turbidity events.

As a part of the Beaver Creek mitigation and emergency response planning, Metro Vancouver staff have met with BC Hydro, the Provincial Water Comptroller, and the Fraser and Vancouver Coastal Health Authorities to make them aware of the issue in case their assistance is needed should a more significant event occur over the 2025 – 2026 fall and winter.

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

FINANCIAL IMPLICATIONS
The consultant support for mitigation works planning and design as described in this report as well as early site prep work has been funded through a Minor Capital Program project with a value of $300,000. Construction of full site restoration will be funded as a Capital Project.

OTHER IMPLICATIONS
Staff presented at both the REAC Water Sub-Committee and the REAC meetings in September 2025 on this issue and received minimal feedback. The item was presented at both these venues to make member jurisdictions aware of the potential for a turbidity issue in the Coquitlam Reservoir that could result in water quality issues, including the potential to activate Emergency Procedures up to removing the Coquitlam source from service.

Staff have been engaging with kʷikʷəƛ̓əm and səlilwətaɬ on the issue as well as engaging them in the planning and works associated with the Beaver Creek mitigation project. The area is of particular interest to kʷikʷəƛ̓əm whose culture and identity is inextricably linked to the Coquitlam Lake watershed. This project has potential impacts on cultural heritage, archaeology, and environmental resources near the project site.

As a part of emergency response planning, staff met with both the Vancouver Coastal and Fraser Health Authorities to ensure they are aware of the potential for further turbidity issues over the 2025 - 2026 fall and winter. The Health Authorities have provided the GVWD with a letter of support for the mitigation project that will be submitted along with the Provincial *Water Sustainability Act* permit application.

The Coquitlam Lake Water Supply Project is incorporating key mitigation measures to reduce turbidity risks associated with this source. The new intake is strategically positioned in a deeper, more stable area of the lake that has historically demonstrated low susceptibility to turbidity events and consistently high water quality. Additionally, the treatment processes at the new facility will be designed to effectively manage and eliminate turbidity concerns, ensuring reliable water quality.

CONCLUSION

The October 2024 atmospheric river event highlighted the vulnerability of the Coquitlam Reservoir to turbidity impacts from extreme weather and related geohazards. Updated emergency response plans have strengthened capacity to manage and respond to such events. Continued collaboration with Indigenous partners, regulatory agencies, and technical experts on both short and long-term mitigation measures will ensure efforts are aligned to protect water quality, public health, and archeological values and will help safeguard this critical water supply for Metro Vancouver.

ATTACHMENT

1. Presentation re: Coquitlam Reservoir Turbidity Mitigation Planning.

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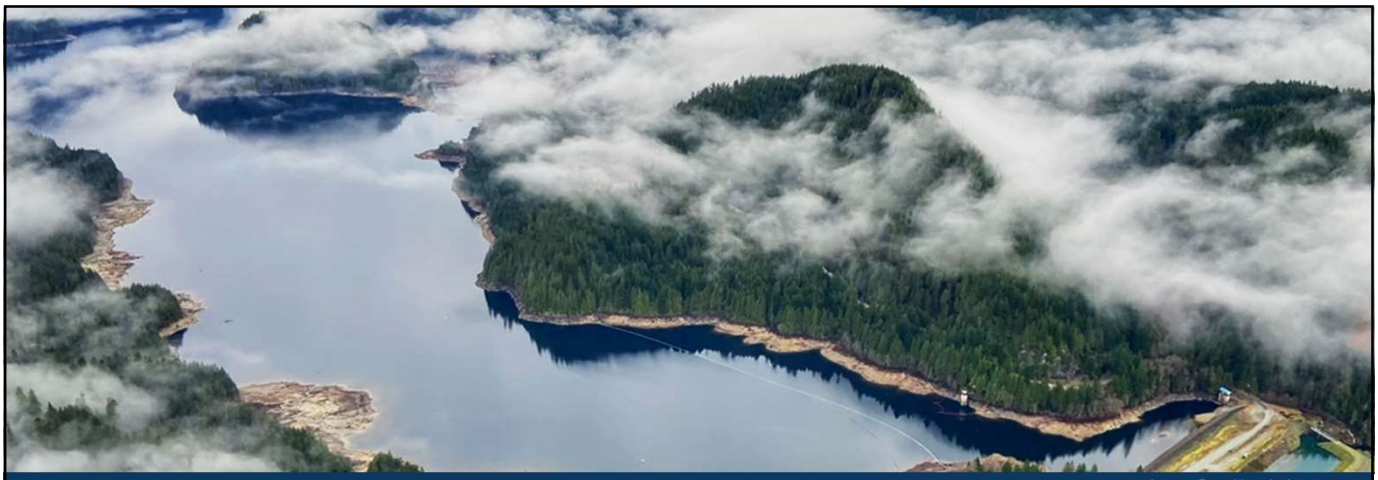

Lower Coquitlam Lake

Coquitlam Reservoir Turbidity Mitigation Planning

Heidi Walsh
Director, Watersheds & Environment

Mike Brannon
Director, Operations & Maintenance

Water Committee, November 12, 2025
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OVERVIEW

- Coquitlam Reservoir Facilities
- Atmospheric River Event – Erosion Mitigation
- Coquitlam Water Treatment Plant
- Turbidity Response
- Water Quality Results and Communication

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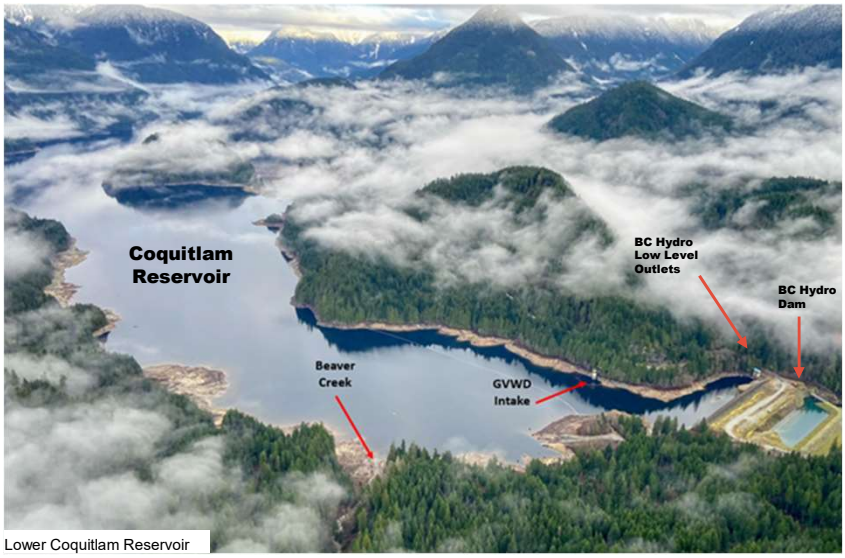
COQUITLAM RESERVOIR FACILITIES

- BC Hydro owns and operates the dam and river outlet valves
- GVWD owns and operates the water intake and manages the land-base



Lower Coquitlam Reservoir

ATMOSPHERIC RIVER EVENT

- October 18 to 20, 2024
  - Coquitlam Dam gauge recorded **353mm** of rain- the highest rainfall in the region
  - Coquitlam River gauge at Lougheed Hwy recorded an all time high (1966 – present)
- Treatment process remained effective despite landslide event at Beaver Creek

BEAVER CREEK LANDSLIDE

Investigations found several hazards:

- 2 landslide tracks – areas of exposed fine silt/clay
- Large area with visible tension cracks

Beaver Creek Lower Landslide, October 2024

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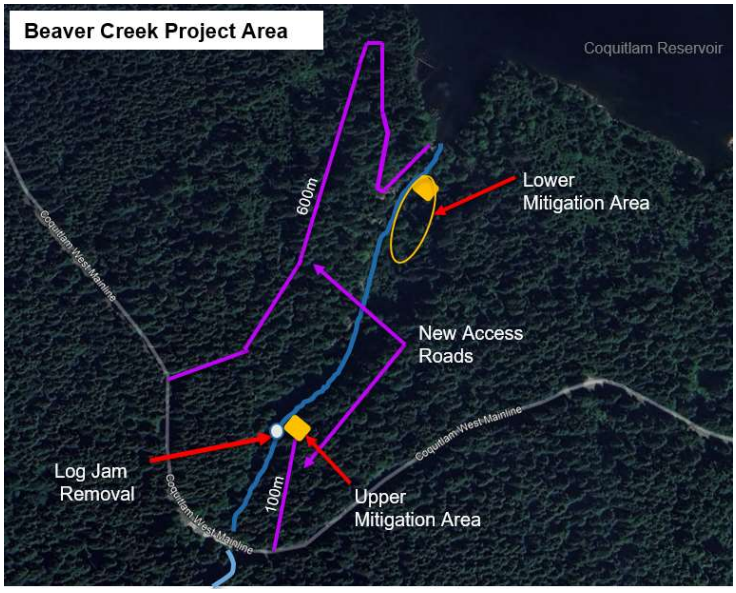
EROSION MITIGATION



Beaver Creek Mitigation Access Road , October 2025

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COQUITLAM WATER TREATMENT PLANT

Coquitlam Water Treatment Plant

Coquitlam Water Treatment Plant

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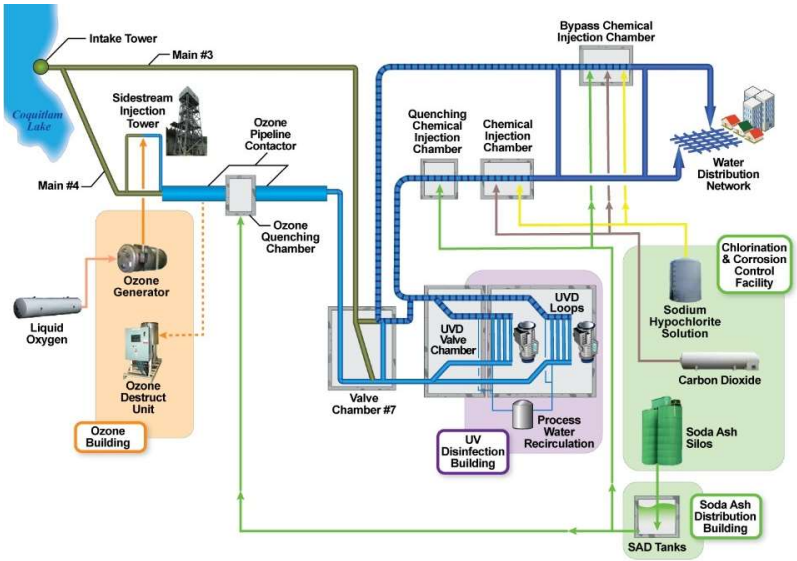
COQUITLAM WATER TREATMENT PROCESS

- Ozonation
- UV disinfection
- Corrosion control
- Chlorination



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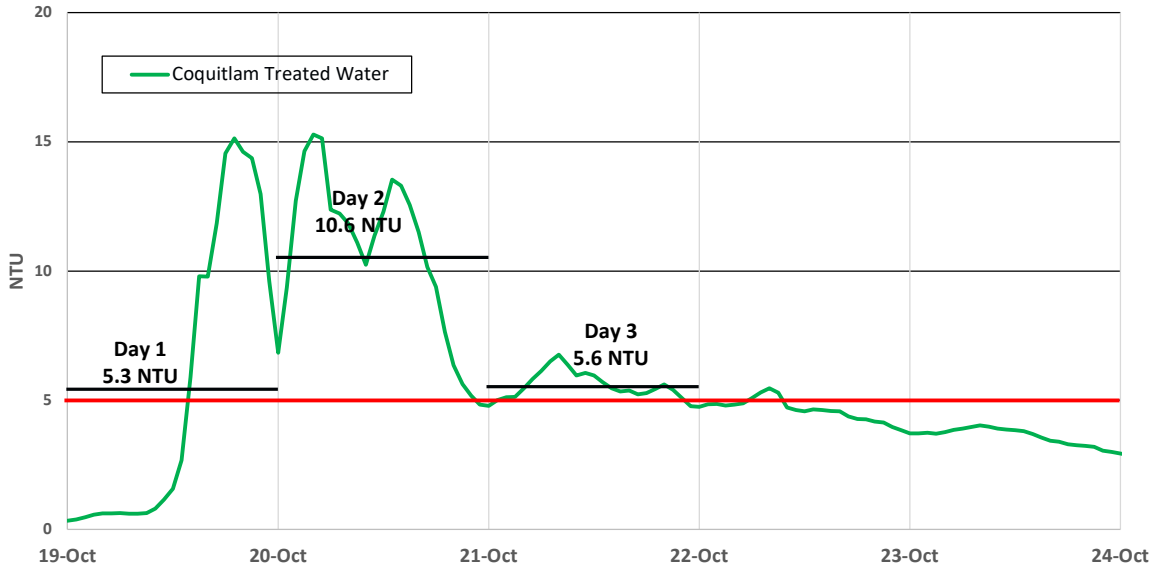
OCTOBER 2024 TURBIDITY



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TURBIDITY RESPONSE

Turbidity Range	Actions
>0.90 NTU to 2.99 NTU	• Reduce Coquitlam source • Confirm ozone and UV performance • Increase chlorine dose at plant and re-chlorination stations
>3.0 NTU to 4.99 NTU	• Further reduce Coquitlam source • Confirm ozone and UV performance • Additional chlorine increase
>5.0 NTU	• Additional microbial testing • Investigate removing Coquitlam source from service

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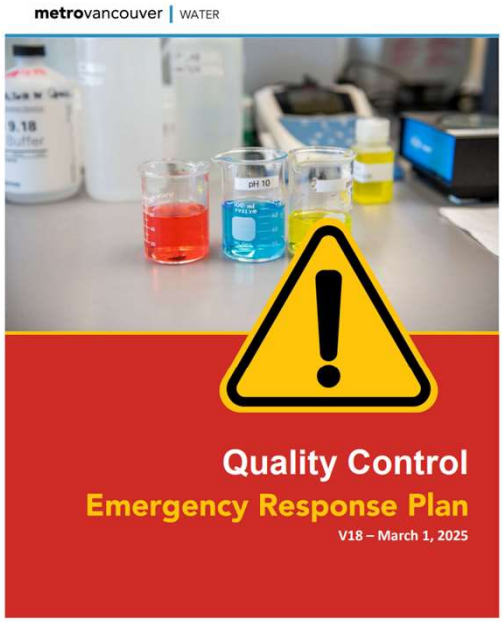
WATER QUALITY COMMUNICATIONS

- Health Authorities
- Member Jurisdictions
- Public



WATER QUALITY RESULTS

- No coliforms detected
- Treatment process remained effective
- Water quality remained high
- Limited aesthetic complaints

Coquitlam Water Treatment Plant

NEXT STEPS

- Finalize design and obtain permits for Phase 2 erosion mitigation.
- Complete construction in Q3 2026.
- Monitor water quality and respond according to established protocols.
- Coordinate water quality updates with Health Authorities and community members.
- Advance planning for new intake and treatment facilities as part of long-term risk management.

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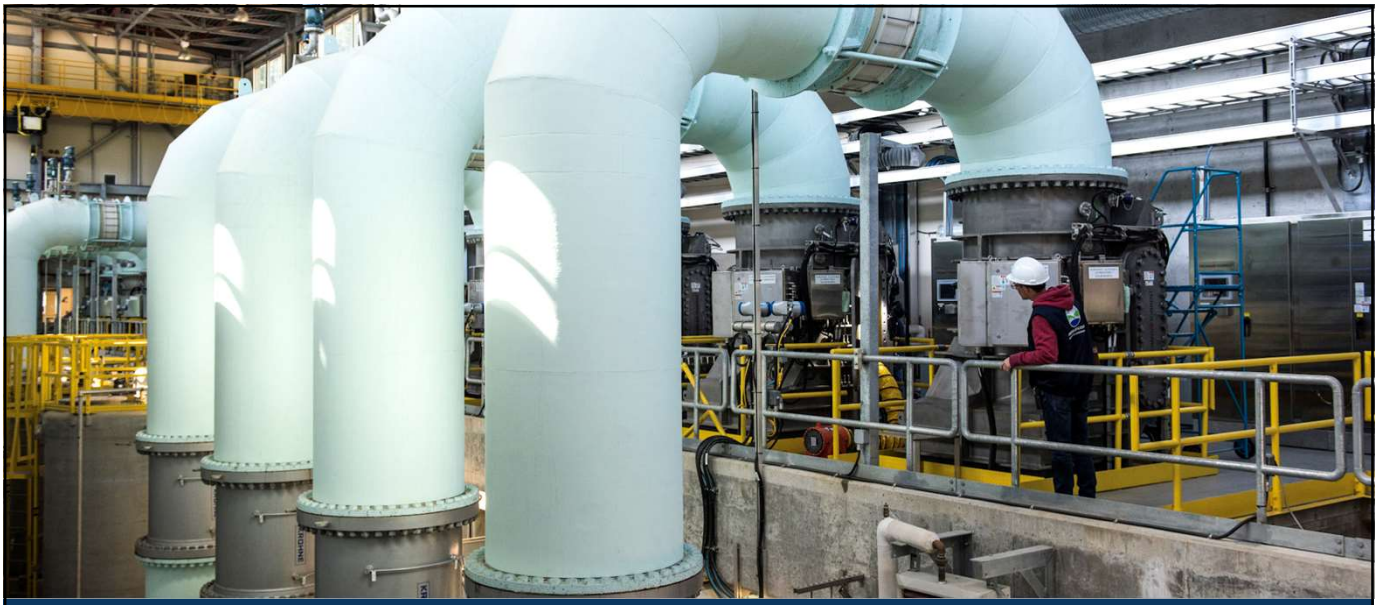

Coquitlam Water Treatment Plant – UV treatment

Questions?

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Water Committee

From: Murray Gant, Director, Major Projects, Project Delivery

Date: October 30, 2025 Meeting Date: November 12, 2025

Subject: **Water Supply Tunnel Projects Updates**

RECOMMENDATION
That the Water Committee receive for information the report dated October 30, 2025 titled "Water Supply Tunnel Projects Updates".

EXECUTIVE SUMMARY
Metro Vancouver is upgrading its water transmission system to ensure resilience in the event of an earthquake. Included in these upgrades are six major water supply tunnels being managed and delivered by the Project Delivery department. These high risk, high value, and complex projects are in various stages of design and construction and are being designed to meet current seismic standards, protect against scour and other marine activities, and meet the drinking water needs of the growing region.

Once complete, these projects will significantly contribute to Metro Vancouver's goals to ensure that the transmission components of the drinking water system are expanded and strengthened to allow the continued supply of high-quality drinking water to the region's residents and businesses.

PURPOSE
The purpose of this report is to provide an update on the status and progress of the six water supply tunnel projects.

BACKGROUND
In accordance with the Water Committee 2025 Work Plan, updates for the water supply tunnel projects are being brought forward to the Water Committee.

PROJECT UPDATES
Six major water supply tunnel projects are in various stages of planning, design and construction to support the continued delivery of high-quality drinking water to the region's residents and businesses. Following is a summary of each project. A map of the water supply tunnels is included as an attachment.

Second Narrows Water Supply Tunnel (Construction) – Project 1
The Second Narrows Water Supply Tunnel is a 1.1 km long, 6.5 m diameter tunnel crossing of Burrard Inlet from North Vancouver to Burnaby.

The project includes the installation of three welded steel water mains that will replace the three existing mains which were constructed in shallow trenches at the bottom of the Burrard Inlet from the 1940s to the 1970s. The existing mains are near the end of their service lives and do not meet Metro Vancouver's seismic standards. The project also includes two deep vertical shafts constructed on each side of Burrard Inlet, and large underground valve chambers to regulate the water flow through the newly installed steel water mains. The project will ensure the continued reliable delivery of high-quality drinking water to the cities of Burnaby, New Westminster and Surrey.

Construction of this new tunnel infrastructure commenced in 2019 and reached substantial completion earlier this year. The three new water mains will be tied into the drinking water system over the next few years and are expected to be in service by 2028. The total approved budget for construction is $445 million and forecast on budget.

Annacis Water Supply Tunnel (Construction) – Project 2
The Annacis Water Supply Tunnel is a 2.3 km long, 4.5 m diameter crossing of the Fraser River from New Westminster to Surrey.

The project consists of a tunnel and deep vertical shafts located on each side of the river which will accommodate the installation of a 2.6 m diameter welded steel water main. Large underground valve chambers will be constructed adjacent to each shaft to regulate flow and facilitate connection of the water main into the existing water transmission system. The project will ensure the continued reliable delivery of high-quality drinking water to Surrey, Langley, Delta, and Tsawwassen First Nation well into the future.

Construction commenced in early 2022 and the watermain inside the new tunnel is scheduled to be in-service by 2028. The total approved budget for construction is $450 million and forecast on budget.

Stanley Park Water Supply Tunnel (Construction) – Project 3
Metro Vancouver is commencing construction of a new water supply tunnel deep under Stanley Park. The new water supply tunnel will replace an existing water main that was built in the 1930s, experienced leaks in 2016 and 2023, and has reached the end of its service life. The new Stanley Park Water Supply Tunnel is needed to reduce the likelihood of additional leaks from the water main. The project will ensure the continued reliable delivery of high-quality drinking water to the cities of Vancouver, Richmond, and Delta.

The project includes the construction of a new water supply tunnel which is designed to provide increased capacity to meet future water demand and to meet Metro Vancouver's seismic design standards. The new tunnel will be 1.4 km long, approximately 4.5 m in diameter, and will include a 2.6 m diameter steel water main which will connect to two new underground valve chambers.

To facilitate construction, three vertical shafts will be excavated within Stanley Park. The tunnel will be constructed from an intermediary central shaft located in the existing Stanley Park Service Yard, with two exit shafts, one at the north side of park at the First Narrows Crossing of Burrard Inlet, and one at the south side of the park near the intersection of Chilco and Alberni streets. The project has been carefully designed to minimize impacts to the park, and reduce construction impacts to park users and residents.

Construction commenced in late 2024 and is expected to be substantially complete by 2029. The total approved budget for construction is $470 million and forecast on budget.

Cambie-Richmond Water Supply Tunnel (Preliminary Design) – Project 4
The Cambie-Richmond Water Supply Tunnel is a 1.1 km long, 4.5 m diameter crossing under the Fraser River from Vancouver to Richmond.

The project consists of a tunnel and deep vertical shafts located on each side of the river to facilitate the installation of a 2.1 m diameter welded steel water main. Each shaft site will also include the construction of underground valve chambers to facilitate water control functions. The project will ensure reliable, high-quality drinking water during major earthquakes and meet growing demand in Richmond, Delta, and Tsawwassen First Nation.

The project definition phase of the project was completed in 2022. Metro Vancouver subsequently acquired property in Vancouver and Richmond to facilitate construction of the shafts and valve chambers, and to launch and retrieve the tunnel boring machine.

Preliminary design commenced in September 2024. Construction is scheduled to commence in 2029 or 2030 and is anticipated to take approximately five years to complete. The approved preliminary design budget is $60 million and includes funds for property acquisition. The preliminary design is forecast on budget.

Lulu Delta Water Supply Tunnel (Definition/Conceptual Design) – Project 5
The Lulu Delta Water Supply Tunnel is a 1 to 2 km long marine crossing deep under the Fraser River between Richmond and Delta, and is located near the George Massey Tunnel. The new water tunnel is a maintenance project and will replace the existing Lulu Delta crossing which is near the end of its service life. The project will provide additional redundancy and ensure the reliable delivery of high-quality drinking water to Delta and Tsawwassen First Nation following a major earthquake.

The project consists of a new welded steel water main crossing constructed using a trenchless method such as tunneling, micro-tunneling or horizontal directional drilling. The selected method will be confirmed during the project definition phase.

The project definition phase commenced earlier this year, has an approved budget of $5 million, and is forecast to be completed on budget. Funding is available in the 5 Year Financial Plan to complete property acquisition following the project definition phase. The timing for the subsequent design and construction phases is under review and is planned to be deferred by several years for financial sustainability reasons with design anticipated to begin in approximately 2040.

Pitt River Water Supply Tunnel (Definition/Conceptual Design) – Project 6
The Pitt River Water Supply Tunnel is a 1 km long tunnel crossing the Pitt River between Port Coquitlam and Pitt Meadows. The new water supply tunnel will replace the existing Haney Mains No. 2 and No. 3 which are vulnerable to damage during a moderate earthquake. The project will ensure reliable, high-quality drinking water during major earthquakes and meet growing demand in Pitt Meadows and Maple Ridge.

The project consists of constructing a shaft on each side of the Pitt River and a deep tunnel which will facilitate the installation of a welded steel water main. Each shaft site will also include the construction of underground valve chambers to facilitate water control functions.

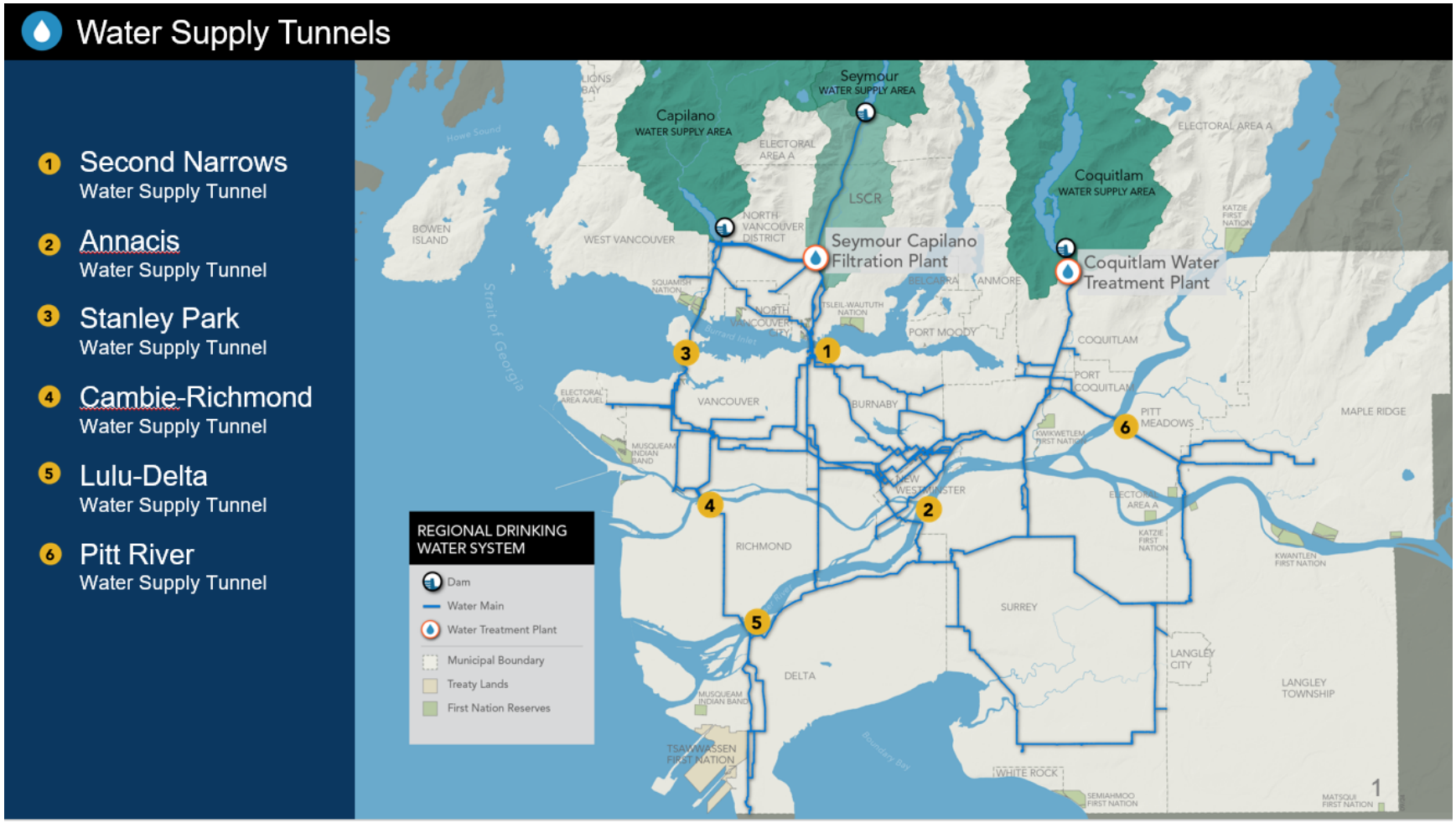
The project definition phase was completed last year. The timing for the design and construction phases is under review and is planned to be deferred by several years for financial sustainability reasons with design anticipated to begin in approximately 2040.

Notwithstanding the deferral of the design and construction phases, property acquisition will continue for the shaft site properties in Port Coquitlam and Pitt Meadows in order to secure land tenure for future construction. There is sufficient approved budget for property acquisition.

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

FINANCIAL IMPLICATIONS
The budgets noted in this report have been previously approved by the Board. At this time, the total expenditures projected for each noted phase are not anticipated to exceed the budget amounts. The Water Committee will be advised of any changes required as the projects progress through design, construction, and commissioning.

CONCLUSION
Making sure the regional infrastructure is resilient to earthquakes is a key initiative for the regional drinking water utility with multiple upgrades to the drinking water transmission system infrastructure underway. A major resilience strategy is to strengthen the water supply system by building large-diameter water mains in tunnels deep under the Burrard Inlet, the Fraser River, the Pitt River, and Stanley Park. These water supply tunnel projects are critical components of Metro Vancouver's drinking water transmission system and are being designed to withstand a major earthquake, river scour and marine activities, and to meet projected future drinking water demands for the region's growing population.

ATTACHMENT
1. Water Supply Tunnel Projects Map.

Water Supply Tunnel Projects Map