City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	March 19, 2025
From:	Milton Chan, P.Eng. Director, Engineering	**File:**	10-6000-01/2025-Vol 01
Re:	**2025 Liquid Waste Management Plan Biennial Report**		

Staff Recommendation

That the City's 2025 Liquid Waste Management Plan Biennial Report as presented in Attachment 1 of the staff report titled "2025 Liquid Waste Management Plan Biennial Report", dated March 19, 2025, from the Director, Engineering, be submitted to Metro Vancouver.

Milton Chan, P.Eng.
Director, Engineering
(604-276-4377)

Att. 1

REPORT CONCURRENCE		
ROUTED TO:	**CONCURRENCE**	**CONCURRENCE OF GENERAL MANAGER**
Public Works	☑	Roeland Zwaag
SENIOR STAFF REPORT REVIEW	**INITIALS:**	**APPROVED BY CAO**

Staff Report

Origin

The Greater Vancouver Sewerage and Drainage District (GVS&DD) Board adopted the Integrated Liquid Waste and Resource Management Plan (the "Liquid Waste Plan") in May 2010. Subsequently, at the September 27, 2010 City of Richmond Regular Council Meeting, Council adopted the following motion:

> *"That the municipal commitments in the Metro Vancouver 2010 Integrated Liquid Waste and Resource Management Plan be endorsed."*

The Minister of Environment approved the Liquid Waste Plan, subject to the conditions identified in his letter dated May 30, 2011.

The Liquid Waste Plan requires member municipalities to report progress on their commitments on the operations, monitoring, and management of sanitary systems on a biennial basis. Metro Vancouver has introduced a simplified report template for the 2025 Biennial Report with provincial approval that provides updates on GVS&DD members' status of their commitments in the current Liquid Waste Plan.

This staff report summarizes the City's progress on the Liquid Waste Plan municipal action items, and presents the 2025 Biennial Report (Attachment 1) for Council's endorsement for submission to Metro Vancouver. This submission will be included in the Liquid Waste Plan Biennial Report compiled by Metro Vancouver and submitted to the Ministry of Environment & Climate Change Strategy (formerly the Ministry of Environment) once it is approved by the GVS&DD Board.

Metro Vancouver is currently updating the current Liquid Waste Plan as outlined in a separate staff report titled "Metro Vancouver Liquid Waste Management Plan Update", dated March 19, 2025, from the Director, Engineering. Metro Vancouver has indicated that future Biennial Reports under the new Liquid Waste Plan will be submitted in a format similar to the 2025 Biennial Report, subject to provincial approval.

This report supports Council's Strategic Plan 2022-2026 Focus Area #1 Proactive in Stakeholder and Civic Engagement:

> *Proactive stakeholder and civic engagement to foster understanding and involvement and advance Richmond's interests.*
>
> *1.1 Continue fostering effective and strategic relationships with other levels of government and Indigenous communities.*

This report supports Council's Strategic Plan 2022-2026 Focus Area #3 A Safe and Prepared Community:

> *Community safety and preparedness through effective planning, strategic partnerships and proactive programs.*

3.4 Ensure civic infrastructure, assets and resources are effectively maintained and continue to meet the needs of the community as it grows.

This report supports Council's Strategic Plan 2022-2026 Focus Area #5 A Leader in Environmental Sustainability:

Leadership in environmental sustainability through innovative, sustainable and proactive solutions that mitigate climate change and other environmental impacts.

5.1 Continue to demonstrate leadership in proactive climate action and environmental sustainability.

Analysis

The Liquid Waste Plan includes a municipal commitment to report progress on a biennial basis. Richmond has previously submitted 10 biennial reports over the last 22 years based on reporting requirements in the current and previous Liquid Waste Management Plans.

The 2025 Biennial Report template, provided in a spreadsheet format by Metro Vancouver, is simplified compared to previous years. The new template consists of 10 Ministerial Conditions and 91 actions stipulated in the current Liquid Waste Plan. It provides a summary of member municipalities' status of all ministerial conditions and actions in the current Liquid Waste Plan as of the end of 2024.

Of the 101 conditions and actions in the 2025 Biennial Report, 66 fall under Metro Vancouver's jurisdiction, while the remaining 35 are Richmond's responsibility. The following sections highlight Richmond's key initiatives and progress in managing these 35 municipal actions as part of the City's commitment to sustainable liquid waste management.

Stormwater Management Plan

The Liquid Waste Plan includes actions that require municipalities to develop bylaws and design standards/guidelines, and to implement stormwater management plans that promote on-site rainwater management and integration with land use planning.

In alignment with these objectives, Richmond has adopted the Flood Protection Bylaw (No. 10426) to regulate surface water and groundwater discharges from properties, and has developed the Engineering Design Specifications that outline the requirements for infrastructure design to protect the City from flooding risks.

The City has also developed an Integrated Rainwater Resource Management Strategy that outlines a strategic approach to stormwater detention, water quality improvement, sediment control, as well as rainwater harvest and re-use. This strategy also promotes the protection and enhancement of green infrastructure to support long-term environmental resilience. In addition, Richmond's Ecological Network Management Strategy contains actions and initiatives on the integration of rainwater Best Management Practices tailored to various land uses within the City.

Liquid Waste Source Control

Grease Management and Green Cart Programs

The Liquid Waste Plan requires municipalities to continue outreach plans to support liquid waste source control programs. The City maintains a Grease Management Program that includes grease source control, sanitary sewer system monitoring and inspection, and on-going maintenance work. The City has a full-time bylaw enforcement officer dedicated towards liquid waste source control and grease management for the food services sector.

In addition, Richmond has had a Green Cart Program since 2013. This program reduces the amount of waste and pollutants, such as grease, that would otherwise be discharged into sanitary sewers. The City has also had a grease monitoring program since 2018. This program includes tracking the location and severity of grease accumulation, and conducting targeted maintenance at identified "hot spots" with a history of heavy grease accumulation.

Water Metering and Conservation

The Liquid Waste Plan strongly encourages municipalities to implement residential water metering programs, and to consider municipal rebate programs for water efficient fixtures and appliances to reduce potable water use.

Richmond is a regional leader in water metering, with a comprehensive water meter program for residential and commercial properties. All single-family, industrial, commercial, institutional, and farm properties, as well as about 60% of the multi-family units in Richmond have been metered. Since the inception of the program in 2003, the City's total water use has decreased by 14% despite an increase in population by 34%. This highlights the success of water metering in conserving water and effectively managing demand, reducing the need for costly infrastructure upgrades.

To further promote reduced water use, the City provides metered customers with water conservation kits, which include low-flow showerheads, faucet aerators, toilet fill cycle diverters, toilet leak detection tablets, and educational water conservation tools. In addition, the City has ongoing programs for toilet rebates and rain barrels.

Asset Management Plan

The Liquid Waste Plan requires municipalities to develop and implement asset management plans assessing the need for replacement or rehabilitation for their sewerage infrastructure. Richmond completes an ageing infrastructure analysis every two to three years to assess the current and long-term financial requirements for maintaining and replacing City's ageing infrastructure. The latest ageing infrastructure analysis was completed in 2022, with an update planned for 2025.

In addition, the City is updating its sanitary model to assess the potential impacts of the population densification resulting from the Provincial housing legislation passed in December 2023 on the City's sanitary infrastructure. This model update will help guide the City's planning and development efforts for future sewer upgrades, replacement, and rehabilitation projects.

Inflow and Infiltration

The Liquid Waste Plan requires municipalities to develop and implement inflow and infiltration (I&I) management plans that ensure I&I levels are within Metro Vancouver allowances. Inflow and infiltration of stormwater into the sanitary sewer system are typically caused by cross-connections or defects in the infrastructure, placing additional demands on the sanitary system.

Richmond does not have combined sewers, and does not permit unregulated groundwater discharge into the sanitary sewer system. Additionally, to manage I&I, the City conducts regular sewer assessments, maintenance, and rehabilitation programs to address defects proactively. This includes Closed-Circuit Television (CCTV) inspections of the City's gravity sewers to identify defects early, allowing for timely repair of the infrastructure to prevent further infiltration into the sanitary system. Any damaged infrastructure identified through inspections is prioritized in the City's annual capital program, positioning the City to continue meeting or exceeding Metro Vancouver targets.

Financial Impact

None.

Conclusion

The Liquid Waste Plan includes a municipal commitment to report progress on Liquid Waste Plan actions on a biennial basis. The 2025 Biennial Report adopts a simplified spreadsheet format provided by Metro Vancouver, and summarizes Richmond's progress on the municipal actions in the current Liquid Waste Plan as of the end of 2024. In summary, the City's sanitary and drainage infrastructure has been in good condition and performing well, thus providing effective protection to our environment, and enabling the City to meet the requirements in the Liquid Waste Plan. Staff will continue to work on the municipal actions that will be identified in the new Liquid Waste Plan to ensure that the City of Richmond continues to meet all of the requirements.

Jason Ho, P.Eng.
Manager, Engineering Planning
(604-244-1281)

Ridhi Dalla, P.Eng.
Senior Project Manager, Engineering
(604-204-8521)

JH:kl

Att. 1: City of Richmond 2025 Liquid Waste Management Plan Biennial Report

2025 Liquid Waste Management Plan Biennial Report

LWMP Action #	Action Description	Timeline Provided by Metro Vancouver	Colour coding indicating progress on actions (pink – not started, orange – in-progress, green - complete, blue – continuous action, grey - not applicable																				
			Metro Vancouver	City of Burnaby	City of Coquitlam	City of Delta	City of Langley	Township of Langley	City of Maple Ridge	City of New Westminster	City of North Vancouver	District of North Vancouver	City of Pitt Meadows	City of Port Coquitlam	City of Port Moody	City of Richmond	City of Surrey	City of Vancouver	District of West Vancouver	City of White Rock	University Endowment Land
Ministerial Conditions																							
MC1	The ministry supports upgrading to secondary level treatment the Lions Gate Wastewater Treatment Plant by 2020 and Iona Island Wastewater Treatment Plant as soon as possible, but no later than 2030 and not contingent on the availability of senior government funding. The Ministry of Environment is not a funding agency. While I understand the cost of the upgrades is significant, they are necessary to meet current environmental standards. The Ministry will support Metro Vancouver pursuing senior government and alternative funding options, but cannot guarantee any provincial commitment in that regard, nor compromise the Ministry's mandate to protect the environment	Not provided																				
MC2	Member municipalities are strongly encouraged to business case and/or implement residential water metering programs and to consider municipal rebate programs for water efficient fixtures and appliances to reduce potable water use	Not provided																					
MC3	Metro Vancouver, in partnership with member municipalities is encouraged to pursue a region-wide water conservation program targeting the industrial, commercial, institutional and agricultural sectors as part of its new Drinking Water Management Plan. Remaining municipalities in the region that have not implemented metering for these sections are encouraged to do so	Not provided																					
MC4	Metro Vancouver must use receiving environmental and effluent monitoring data from combined sewer overflow (CSO) and sanitary sewer overflow (SSO) in the regional system to interpret the overall status of CSOs and SSOs. Metro Vancouver will continue the fate and effects studies on CSOs with the Clark Drive location and other significant sites as determined by the Environmental Management Committee. Metro Vancouver will establish similar studies representative of significant SSO locations, in particular the Cloverdale, Katzie and Lynn locations. The interpretation and assessment should demonstrate whether there has been any improvement or degradation along with any measures taken to address such discharges. Metro Vancouver will report out in the Quality Control Annual Report	Not provided																					
MC5	Metro Vancouver is encouraged to continue to build upon previous studies associated with studying endocrine-disrupting chemicals, persistent organic pollutants and other micro-contaminants found in the wastewater by developing source control initiatives through education (for example, target outreach), regulation and inspection programs	Not provided																					
MC6	Metro Vancouver will continue the receiving and ambient monitoring programs specified in the approved 2002 LWMP, including, but not limited to, recreational water quality (beach monitoring); monitoring near the outfalls for all five wastewater treatment plants, including the extensive deep sea monitoring near the Iona Island plant; and CSO effluent quality and monitoring of small urban streams relating to impacts from urbanization and stormwater	Not provided																					

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MC7	Member municipalities will, with MV planning and coordination, and to the satisfaction of the Regional Manager, develop a coordinated program to monitor stormwater and assess and report the implementation and effectiveness of Integrated Stormwater Management Plans (ISMPs). The program will use a weight-of-evidence performance measurement approach and will report out in the Biennial Report. The Regional Manager may extend the deadline for completion of ISMP by municipalities from 2014 to 2016 if satisfied that the assessment program could result in improvement of ISMP and protect stream health.	Not provided																				
MC8	Bypass conditions that occur at wastewater treatment plants will be reported out in the annual quality control report. The report on each activity will include a description of the event, cause, environmental effect and monitoring that occurred, and any mitigation measures undertaken to prevent recurrence and remediate detrimental environmental effect.	Not provided																				
MC9	The ILWRM has a goal of protecting public health and the environment. In keeping with this goal and to ensure alignment with other national, provincial and regional initiatives, Metro Vancouver and member municipalities are encouraged to: (a) Have local land use planning consider the direction provided by the ISMPs, (b) Consider how the degree, type and location of land development within a drainage can affect the long-term health of the watershed, (c) Consider how to protect the stream, including the riparian areas that exert an influence on the steam, from long-term cumulative impacts; and (d) Use scenarios and forecasting to systematically consider environmental consequences/benefits of different land use approaches prior to build-out (for example, Alternative Future type approaches).	Not provided																				
MC10	Metro Vancouver will continue to consult with First Nations during the implementation of the Plan – in particular, engaging, as appropriate, with First Nations likely to be impacted by the secondary upgrades.	Not provided																				
Goal 1 – Protect public health and the environment																						
1.1.1	Review and enhance sewer use bylaws to reduce liquid waste at source, including contaminants identified by the Canadian Environmental Protection Act.	2012																				
1.1.2	Develop new regulatory instruments, such as Pollution Prevention Plans to complement existing regulations.	2014																				
1.1.3	Increase resources for permitting and inspection to support and enforce sewer use bylaws.	2010																				
1.1.4	Investigate the implications of the use of domestic food grinders.	2012																				
1.1.5	Develop and implement targeted outreach plans to support liquid waste source control programs.	On-going																				
1.1.6	Develop a template to guide the preparation and implementation of inflow and infiltration management plans as part of broader asset management plans and to support sanitary sewer overflow reduction strategies.	2011																				
1.1.7	Work with the real estate industry and their regulators, and the municipalities to develop and implement a process for the inspection and certification of private sewer laterals being in good condition as a required component of real estate transactions within Metro Vancouver.	2011																				

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1.1.8	Develop and implement inflow and infiltration management plans that identify reduction strategies and timelines to ensure wet weather inflow and infiltration are within targeted levels.	2012																					
1.1.9	Work with municipalities to review historical data and adjust, as necessary, the average inflow and infiltration allowance for regional trunk sewers and wastewater treatment plants, and develop associated target allowances for municipal sewer catchments associated with a 1:5 year return frequency storm event for sanitary sewers to a level that ensures environmental economic sustainability.	2013																					
1.1.10	Review progress in reducing inflow and infiltration every four years.	Every 4 years																					
1.1.11	Enhance enforcement of sewer use bylaw prohibition against the unauthorized discharge of rainwater and groundwater to sanitary sewers.	2010																					
1.1.12a	Work with municipalities to facilitate research on watershed-based stormwater management approaches.	2012																					
1.1.12b	Work with municipalities to identify improvements to stormwater bylaws to include on-site rainwater management requirements.	2012																					
1.1.12c	Work with municipalities to develop model utility design standards and options for neighbourhood design guidelines.	2012																					
1.1.12d	Work with municipalities to establish region wide baseline criteria for on-site rainfall management including variations for localized geology, rainfall and watershed conditions.	2012																					
1.1.12e	Work with municipalities to establish mechanisms to ensure continued performance of on-site rainwater management systems.	2012																					
1.1.12f	Work with senior government and industry to develop codes of practice, certification, guidelines and standards which support this plan.	2012																					
1.1.13	Decrease liquid waste volumes through complementary initiatives in the Metro Vancouver Drinking Water Management Plan to reduce potable water consumption.	On-going																					
1.1.14	Review and enhance sewer use bylaws to reduce liquid waste at source, including contaminants identified by the Canadian Environmental Protection Act.	2012																					
1.1.15	Continue existing programs of permitting and inspection to support and enforce sewer use bylaws. * *City of Vancouver only*	On-going																					
1.1.16	Identify and regulate pesticides and lawn care products which negatively affect rainwater runoff quality and urban stream health	2014																					
1.1.17	Continue outreach plans to support liquid waste source control programs.	On-going																					
1.1.18	Develop and implement inflow and infiltration management plans, using the Metro Vancouver template as a guide, to ensure wet weather inflow and infiltration volumes are within Metro Vancouver's allowances as measured at Metro Vancouver's flow metering stations.	2012																					
1.1.19	Enhance enforcement of sewer use bylaw prohibition against the unauthorized discharge of rainwater and groundwater to sanitary sewers.	2010																					

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1.1.20	Update municipal bylaws to require on-site rainwater management sufficient to meet criteria established in municipal integrated stormwater plans or baseline region-wide criteria.	2014																			
1.1.21	Update municipal utility design standards and neighbourhood design guidelines to enable and encourage on-site rainwater management.	2014																			
1.2.1	Prohibit the construction of new combined sewer systems other than those functioning as part of a strategy to reduce combined sewer overflows or to manage stormwater quality.	On-going																			
1.2.2	Address the Canada-wide Strategy for the Management of Municipal Wastewater Effluent (CWS-MMWE) by working with Burnaby, New Westminster and Vancouver to develop and implement priorities for sewer separation of catchments tributary to combined sewer outfalls; regional and municipal sequence for trunk and collector sewer separation; strategic use of existing combined sewers to manage rainwater quality runoff; and a strategy to separate combined sewer connections from private properties.	2014																			
1.2.3	Replace combined regional trunk sewers with separated sanitary and storm sewers as determined by the plans developed in 1.2.2	On-going																			
1.2.4	Work with municipalities to develop and implement municipal-regional sanitary overflow management plans which will: prevent sanitary overflows resulting from heavy rain and snowmelt occurring less than once every five years (for a 24 hour duration event); reduce emergency overflows due to power outages; and identify locations and schedules for appropriate system capacity improvements, wet weather containment, and point treatment and discharge to receiving waters of chronic overflows, including Cloverdale Pump Station, Katzie Pump Station, Lynn Pump Station.	2013																			
1.2.5	Work with Metro Vancouver to develop and implement municipal-regional sanitary overflow management plans as set out in 1.2.4	2013																			
1.2.6	Burnaby, New Westminster and Vancouver will work with Metro Vancouver to give effect to 1.2.2 and, specifically, implement plans to prevent combined sewer overflows by 2050 for the Vancouver Sewerage Area and 2075 for the Fraser Sewerage Area and separate combined sewers at an average rate of 1% and 1.5% of the system per year in the Vancouver Sewerage Area and Fraser Sewerage Area respectively.	On-going																			
1.3.1	Develop and implement operational plans for sewerage and wastewater treatment facilities to ensure infrastructure reliability and optimal performance.	On-going																			
1.3.2	Maintain trunk sanitary sewer capacity for dry weather sewage conveyance levels plus the Metro Vancouver target inflow and infiltration allowance; as necessary upgrade trunk sewer systems to maintain hydraulic gradelines and safe operating levels which have been established based on measured flow.	On-going																			
1.3.3	Work with municipalities to develop and implement emergency sanitary sewer overflow plans including contingency plans to minimize impacts of unavoidable sanitary sewer overflows resulting from extreme weather, system failures or unusual events.	On-going																			

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1.3.4	Operate wastewater treatment plants which have secondary level treatment (Annacis Island, Lulu Island, North West Langley wastewater treatment plants) to meet requirements specified in each facility's Operating Certificate and the Canada-wide Strategy for the Management of Municipal Wastwater Effluent National Performance Standards for wastewater effluent, including: monthly average maximum Carbonaceous Biochemical Oxygen Demand (CBOD5): 25 mg/L; and monthly average maximum Total Suspended Solids (TSS): 25 mg/L.	On-going																				
1.3.5	Upgrade or replace Lions Gate (North Shore Sewerage Area) and Iona Island (Vancouver Sewerage Area) wastewater treatment plants to secondary level treatment to meet Canada-wide Strategy for the Management of Municipal Wastewater Effluent (CWSMMWE) requirements and timelines.	Not Available																				
1.3.6	Maintain interim maximum daily concentration limits for wastewater effluent of 130mg/L BOD5 at both Lions Gate and Iona Island plants and 130mg/L TSS at Lions Gate and 100mg/L TSS at Iona Island until such a time as secondary treatment is operational, and operate the plants to meet requirements specified in each facility's Operational Certificate (Ongoing).	On-going																				
1.3.7	Assess environmental monitoring results (see Strategy 3.3) to determine whether any actions are required to meet Ministry of Environment/Canada-wide Strategy for the Management of Municipal Wastewater Effluent (CWS-MMWE) requirements.	On-going																				
1.3.8	Continue odour control programs at wastewater treatment plants and implement odour control programs for targeted facilities in the regional sewer system and for relevant energy and material recovery processes (see Action 3.3.4).	On-going																				
1.3.9	Develop and implement air emissions management programs for standby power generators and biogas production, including assessment of desirability of retrofit and accelerated asset replacement where appropriate.	2014																				
1.3.10	Develop and implement programs to reduce greenhouse gas emissions from the regional liquid waste management systems to help achieve federal, provincial and Metro Vancouver greenhouse gas targets (see Action 3.3.4).	2015																				
1.3.11	Develop and implement operational plans for municipal sewerage facilities to ensure infrastructure reliability and optimal performance.	On-going																				
1.3.12	Work with Metro Vancouver to develop and implement emergency sanitary sewer overflow plans including contingency plans to minimize impacts of unavoidable sanitary sewer overflows resulting from extreme weather, system failures or unusual events.	On-going																				
1.3.13	Work with private marina operators, Ministry of Environment and Environment Canada to develop and implement regulations to ensure all new marinas and marinas where planned renovations exceed 50% of the assessed existing improvements value have pleasure craft pump-out facilities.	On-going																				
1.3.14	Require all pleasure craft pump-out facilities to connect to a municipal sanitary sewerage system or a provincially permitted on-site treatment and disposal system or have established enforceable protocols for transporting liquid waste for disposal at a permitted liquid waste management facility.	On-going																				

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Goal 2 – Use Liquid Waste as a Resource																						
1.3.15	Continue existing municipal odour control programs and implement new programs for targeted municipal sewer facilities (see Action 3.3.4).	On-going																				
1.3.16	Develop and implement air emissions management programs for standby power generators at municipal sewer pump stations.	2016																				
1.3.17	Develop and implement programs to reduce greenhouse gas emissions from municipal liquid waste management systems to help achieve federal, provincial and municipal greenhouse gas targets (see Action 3.1.5).	On-going																				
1.3.18	Include Metro Vancouver and municipalities in the Ministry's processes to review and establish official water uses and official water quality objectives for specific water bodies within Metro Vancouver.	On-going																				
2.1.1	Assess each sewerage area using an integrated resource recovery business case model that: (a) evaluates opportunities to expand the recovery of energy, nutrients and water from the liquid waste system, specifically: Energy from biogas at wastewater treatment plants including investigating new sludge and wastewater treatment technologies and the co-digestion of other organic wastes such as organics in municipal solid waste, oils and greases, Heat energy from new pump stations, sewer replacement and rehabilitation and major wastewater treatment plant projects, Biodiesel from trucked liquid waste, waste grease and sewer grease, Energy from biosolids and sludge, Nutrients, such as phosphorous from liquid waste and biosolids, Alternatives to potable water for nondrinking purposes, such as rainwater harvesting, greywater reuse and reclaimed treated wastewater, (b) identifies linkages between liquid waste resource recovery opportunities and other systems (solid waste, drinking water, land use/buildings, parks, air quality, energy), (c) develops and evaluates business cases for integrated resource recovery/use opportunities.	2012																				
2.1.2	Implement appropriate business cases based on the results of 2.1.1	On-going																				
2.1.3	Work with municipalities to adapt plans and infrastructure for long-term needs based on the results of 2.1.1	On-going																				
2.1.4	Work with Metro Vancouver to give effect to 2.1.1, 2.1.2 and 2.1.3	On-going																				
Goal 3 – Effective affordable and collaborative management																						
3.1.1	Assess the performance and condition of regional sewerage systems by: (a) inspecting regional sanitary sewers on a twenty-year cycle and, (b) maintaining current maps of sewerage inspection, condition, and repairs.	On-going																				
3.1.2	Create incentives to reduce inflow and infiltration by adjusting Tier 1 sewerage cost allocation formulae within each sewerage area from an average dry weather flow basis (25th percentile) to average wet weather flow (75th percentile) with appropriate adjustments for combined sewerage areas. Tier 2 cost allocation would remain unchanged.	2010																				
3.1.3	In consultation with municipalities, review Metro Vancouver's safe-operating head for regional sewers	2011																				
3.1.4	Develop and implement asset management plans targeting a 100 year replacement or rehabilitation cycle for regional sewerage infrastructure.	2013																				
3.1.5	Update and implement asset management plans for wastewater treatment plants which address risks, including climate change and seismic events, and maintain performance in wet weather.	2013																				

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3.1.6	Assess the performance and condition of municipal sewerage systems by (a) inspecting municipal sanitary sewers on a twenty year cycle; (b) maintaining current maps of sewerage inspection, condition and repairs; and (c) using the Metro Vancouver "Sewer Condition Reporting Template Standard Report, November 2002" as a guide to ensure a consistent approach to sewer system evaluation and reporting.	On-going																				
3.1.7	Work with Metro Vancouver to give effect to 3.1.2, 3.1.3 and 3.1.4	On-going																				
3.1.8	Develop and implement asset management plans targeting a 100 year replacement or rehabilitation cycle for municipal sewerage infrastructure and provide copies of such plans to Metro Vancouver.	2014																				
3.2.1	With financial support from provincial and federal governments and the University of British Columbia, develop the Annacis Island Sustainability Academy to support innovative research and demonstration projects in liquid waste management.	2011																				
3.2.2	Collaborate with local and senior governments, academic institutions and industry in research on wastewater treatment technology and stormwater management and associated demonstration projects, training and development of educational toolkits.	On-going																				
3.2.3	Undertake an annual internal audit of best practices of one regional liquid waste management sub program and environmental management system to identify opportunities for innovation and improvements.	Annually																				
3.2.4	Undertake a tri-annual internal audit of best practices of one municipal liquid waste management sub-program in each municipality to identify opportunities for innovation and improvements.	Triennially																				
3.3.1	Continue to monitor the ambient environment conditions of relevant water bodies in the region in conformance with the Canada-wide Strategy for the Management of Municipal Wastewater Effluent (CWSMMWE) requirements, and work with the Ministry of Environment in developing Environmental Quality Objectives.	On-going																				
3.3.2	Continue to monitor the quantity and characteristics of Metro Vancouver's liquid waste point discharges to the environment in conformance with the Canada-wide Strategy for the Management of Municipal Wastewater Effluent (CWS-MMWE) requirements to meet Environmental Discharge Objectives.	On-going																				
3.3.3	Continue to operate its regional data collection network for sewers, rainfall and streams and use that data to assess the effectiveness of actions taken under this plan.	On-going																				
3.3.4	In collaboration with municipalities, estimate and document the greenhouse gas emissions and odours associated with the operation of the municipal and regional liquid waste management systems (see Actions 1.3.8, 1.3.10, 1.3.15, and 1.3.17).	2012																				
3.3.5	Estimate and report on the frequency, location and volume of sewage overflows from regional combined and sanitary sewers, and where feasible identify and address the probable causes.	On-going																				
3.3.6	In collaboration with Metro Vancouver, estimate and document the greenhouse gas emissions and odours associated with the operation of the municipal and regional liquid waste management systems.	2014																				
3.3.7	Estimate and report on the frequency, location and volume of sewage overflows from municipal combined and sanitary sewers, and where feasible identify and address the probable causes.	On-going																				
3.3.8	Maintain and, if necessary, expand the existing municipal sewer flow and sewer level monitoring network.	On-going																				

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			Metro Vancouver	City of Burnaby	City of Coquitlam	City of Delta	City of Langley	Township of Langley	City of Maple Ridge	City of New Westminster	City of North Vancouver	District of North Vancouver	City of Pitt Meadows	City of Port Coquitlam	City of Port Moody	City of Richmond	City of Surrey	City of Vancouver	District of West Vancouver	City of White Rock	University Endowment Land
3.4.1	Design and adapt infrastructure and operations to address identified risks and long-term needs, including risks associated with climate change.	On-going																			
3.4.2	In collaboration with municipalities and the Integrated Partnership for Regional Emergency Management (IPREM), develop emergency management strategies and response plans for municipal and regional wastewater collection and treatment systems, including identifying and maintaining a system of emergency wastewater overflow locations.	2015																			
3.4.3	Ensure liquid waste infrastructure and services are provided in accordance with the Regional Growth Strategy and coordinated with municipal Official Community Plans.	On-going																			
3.4.4	In collaboration with Metro Vancouver and the Integrated Partnership for Regional Emergency Management (IPREM), develop emergency management strategies and response plans for municipal and regional wastewater collection and treatment systems.	2015																			
3.4.5	Adapt infrastructure and operations to address risks and long-term needs	On-going																			
3.4.6	Ensure liquid waste infrastructure and services are provided in accordance with the Regional Growth Strategy and coordinated with municipal Official Community Plans.	On-going																			
3.4.7	Develop and implement integrated stormwater management plans at the watershed scale that integrate with land use to manage rainwater runoff.	2014																			
3.5.1	Establish a new overarching committee, the Integrated Utility Management Advisory Committee (IUMAC), to advise Metro Vancouver on plan implementation, particularly from the perspectives of integrated planning and resource recovery across utility systems.	2010																			
3.5.2	Continue to receive advice from the Environmental Monitoring Committee (EMC) and Stormwater Interagency Liaison Group (SILG) as subcommittees under IUMAC.	On-going																			
3.5.3	Use the Burrard Inlet Environmental Action Program and the Fraser River Estuary Management Program Management Committee (BIEAP-FREMP) as the senior level forum for discussion of policy and assessment of the scientific work related to the plan, and for resolving toxicity concerns and any disputes among its members related to implementing the plan.	On-going																			
3.5.4	Biennially produce a progress report on plan implementation for the distribution to the Ministry of Environment that: (a) summarizes progress from the previous two years on plan implementation, for all Metro Vancouver actions, including the status of performance measures, (b) includes summaries and budget estimates for proposed LWMP implementation programs for the subsequent two calendar years (By July 1st biennially).	By July 1st Biennially																			
3.5.5	Hold a public accountability session based on the biennial reports (Actions 3.5.4 and 3.5.8) by making the report available through Metro Vancouver's website and by holding a special meeting of the Metro Vancouver Waste Management Committee to receive public comments and input on the report.	Biennially																			
3.5.6	The latest annual report under the IWLRMP was submitted to the Ministry of Environment on March 1, 2022 as the Interim Report: 2021. It included figures showing locations and volumes of all wet weather sanitary sewer overflows and municipal ISMP progress for 2021. This information is also included in this biennial report.	March 1st annually																			

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			Metro Vancouver	City of Burnaby	City of Coquitlam	City of Delta	City of Langley	Township of Langley	City of Maple Ridge	City of New Westminster	City of North Vancouver	District of North Vancouver	City of Pitt Meadows	City of Port Coquitlam	City of Port Moody	City of Richmond	City of Surrey	City of Vancouver	District of West Vancouver	City of White Rock	University Endowment Land
3.5.7	In collaboration with members and the Ministry of Environment, undertake a comprehensive review and update of the Plan on an eight-year cycle.	Every eight years																				
3.5.8	Biennially produce a progress report on plan implementation for distribution to the Ministry of the Environment that (a) summarizes progress from the previous two years on plan implementation for all municipal actions, including the status of performance measures. (b) includes summaries and budget estimates for proposed LWMP implementation programs for the subsequent two calendar years.	By July 1st Biennially																				
3.5.9	Report through Metro Vancouver to the Ministry of Environment annual progress on integrated stormwater management plan implementation and all occurrences of sanitary sewer overflows.	March 1st annually																				
3.5.10	Work with Metro Vancouver to give effect to 3.5.2, 3.5.5, and 3.5.7.	On-going																				