metrovancouver
SERVICES AND SOLUTIONS FOR A LIVABLE REGION

METRO VANCOUVER REGIONAL DISTRICT
LIQUID WASTE COMMITTEE

REGULAR MEETING

November 4, 2021
1:00 p.m.
28th Floor Boardroom, 4515 Central Boulevard, Burnaby, British Columbia

A G E N D A[1]

1. ADOPTION OF THE AGENDA

1.1 November 4, 2021 Regular Meeting Agenda
That the Liquid Waste Committee adopt the agenda for its regular meeting scheduled for November 4, 2021 as circulated.

2. ADOPTION OF THE MINUTES

2.1 October 14, 2021 Regular Meeting Minutes *pg 4*
That the Liquid Waste Committee adopt the minutes of its regular meeting held October 14, 2021 as circulated.

3. DELEGATIONS

4. INVITED PRESENTATIONS

5. REPORTS FROM COMMITTEE OR STAFF

5.1 Iona Island Wastewater Treatment Plant Projects – Revised Design Concept *pg 10*
That the GVS&DD Board endorse the revised design concept for the Iona Island Wastewater Treatment Plant projects, as presented in the report dated October 29, 2021 titled "Iona Island Wastewater Treatment Plant Projects – Revised Design Concept"; and direct staff to finalize the project definition report for Board approval in March 2022.

5.2 Procurement Model For Regional Biosolids Drying Facility *pg 71*
That the GVS&DD Board endorse Design-Build-Operate as the procurement model for implementation of the regional biosolids drying facility.

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

5.3 Waste-to-Energy Facility Biosolids Processing System *pg 75*

That the Liquid Waste Committee receive for information the report dated October 27, 2021, titled "Waste-to-Energy Facility Biosolids Processing System".

5.4 Proposed Capital Investment for Sapperton District Sewer Heat Recovery Project *pg 79*

That the GVS&DD Board:

a) authorize expenditures up to $18 million for the Sapperton District Sewer Heat Recovery project, as presented in the report dated October 25, 2021, titled "Proposed Capital Investment for Sapperton District Sewer Heat Recovery Project", and

b) direct staff to enter into contract negotiations with the City of New Westminster for the sale of sewer heat.

5.5 *Integrated Liquid Waste and Resource Management Plan* - Early Engagement and 2019-2020 Biennial Report Feedback *pg 86*

That the Liquid Waste Committee receive for information the report dated October 26, 2021, titled *"Integrated Liquid Waste and Resource Management Plan* - Early Engagement and 2019-2020 Biennial Report Feedback*".*

5.6 Award of Contract for Phase A, Resulting from RFP No. 20-358: Engineering Services for Annacis Island Wastewater Treatment Plant Stage 5 Expansion Trickling Filter Pump Station and Trickling Filters – Detailed Design and Construction Engineering Services *pg 96*

That the GVS&DD Board:

a) approve the award of a contract for an amount of up to $24,801,041 (exclusive of taxes) to Brown and Caldwell Consultants Canada Ltd. for Phase A, Preliminary and Detailed Design Services resulting from Request for Proposal No. 20-358: Engineering Services for Annacis Island Wastewater Treatment Plant Stage 5 Expansion Trickling Filter Pump Station and Trickling Filters, subject to final review by the Commissioner; and

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

5.7 Award of Contract Resulting from RFP No. 20-358: Engineering Services for Annacis Island Wastewater Treatment Plant Stage 5 Expansion Trickling Filter Pump Station and Trickling Filters – Construction Control and Safety Coordination and Project Management and Technical Support Services *pg 100*

That the GVS&DD Board:

a) approve the award of a contract for an amount of up to $17,802,757 (exclusive of taxes) to CDM Smith Canada ULC, resulting from Request for Proposal No. 20-358: Engineering Services for Annacis Island Wastewater Treatment Plant Stage 5 Expansion Trickling Filter Pump Station and Trickling Filters for the Construction Control and Safety Coordination and Project Management and Technical Support Services work scopes, subject to final review by the Commissioner; and

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

5.8 Award of Contract Resulting from Request for Proposal No. 20-345: Construction Services for the Burnaby Lake North Interceptor No. 2 – Winston St Phase 2 Trenchless Section *pg 105*

That the GVS&DD Board:

a) approve award of a contract for an amount up to $62,942,479.02 (exclusive of taxes) to Pomerleau Bessac Infrastructure resulting from Request for Proposal No. 20-345: Construction Services for the Burnaby Lake North Interceptor No. 2 – Winston St Phase 2 Trenchless Section, subject to final review by the Commissioner; and

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

5.9 Manager's Report *pg 110*

That the Liquid Waste Committee received for information the report dated October 29, 2021 titled "Manager's Report".

6. INFORMATION ITEMS

7. OTHER BUSINESS

8. BUSINESS ARISING FROM DELEGATIONS

9. RESOLUTION TO CLOSE MEETING

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

10. ADJOURNMENT/CONCLUSION

That the Liquid Waste Committee adjourn/conclude its regular meeting of November 4, 2021.

Membership:

Stewart, Richard (C) - Coquitlam
Dominato, Lisa (VC) - Vancouver
Calendino, Pietro - Burnaby
Elford, Doug - City of Surrey
Ferguson, Steve - Langley Township
Little, Mike - North Vancouver District
Loo, Alexa - Richmond
McDonald, Bruce - Delta
McEwen, John - Anmore
Trentadue, Mary - New Westminster
Walker, Darryl - White Rock

METRO VANCOUVER REGIONAL DISTRICT
LIQUID WASTE COMMITTEE

Minutes of the Regular Meeting of the Metro Vancouver Regional District (MVRD) Liquid Waste Committee held at 1:00 p.m. on Thursday, October 14, 2021 in the 28th Floor Boardroom, 4730 Kingsway, Burnaby, British Columbia.

MEMBERS PRESENT:
Chair, Mayor Richard Stewart*, Coquitlam
Vice Chair, Councillor Lisa Dominato*, Vancouver
Councillor Pietro Calendino*, Burnaby
Councillor Doug Elford*, Surrey
Councillor Steve Ferguson, Langley Township
Mayor Mike Little*, North Vancouver District
Councillor Alexa Loo*, Richmond
Councillor Bruce McDonald*, Delta
Mayor John McEwen*, Anmore
Councillor Mary Trentadue*, New Westminster
Mayor Darryl Walker*, White Rock

MEMBERS ABSENT:
None.

STAFF PRESENT:
Jerry W. Dobrovolny, Chief Administrative Officer
Peter Navratil, General Manager, Liquid Waste Services
Manveer Atwal, Legislative Services Coordinator, Board and Information Services

1. ADOPTION OF THE AGENDA

1.1 October 14, 2021 Regular Meeting Agenda

It was MOVED and SECONDED
That the Liquid Waste Committee adopt the agenda for its regular meeting scheduled for October 14, 2021 as circulated.

CARRIED

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

2. ADOPTION OF THE MINUTES

2.1 September 9, 2021 Regular Meeting Minutes

It was MOVED and SECONDED
That the Liquid Waste Committee adopt the minutes of its regular meeting held September 9, 2021 as circulated.

CARRIED

3. DELEGATIONS

No items presented.

4. INVITED PRESENTATIONS

No items presented.

5. REPORTS FROM COMMITTEE OR STAFF

5.1 2022 - 2026 Financial Plan Overview

Dean Rear, General Manager, Financial Services/Chief Financial Officer, provided a verbal update on the 2022-2026 Financial Plan, highlighting the projected operating and capital budgets.

Discussion ensued regarding the cost to defer major capital projects to the future, the significant cost increases to individual households and the impact to rate payers.

Presentation material titled "2022-2026 Financial Plan Overview" is retained with the October 14, 2021 Liquid Waste Committee agenda.

It was MOVED and SECONDED
That the Liquid Waste Committee receive for information the October 14, 2021 verbal report from Dean Rear, General Manager, Financial Services/Chief Financial Officer regarding the "2022-2026 Financial Plan Overview".

CARRIED

5.2 2022 - 2026 Financial Plan – Liquid Waste Services

Report dated October 7, 2021 from Peter Navratil, General Manager, Liquid Waste Services, presenting the Liquid Waste Committee with the 2022 – 2026 Financial Plan for Liquid Waste Services for consideration.

Members were provided a presentation highlighting customer service objectives, continuous improvement projects, a proposed split dry/wet weather rate structure, allocated funding, and capital program highlights.

Presentation material titled "2022 - 2026 Financial Plan - Liquid Waste Services" is retained with the October 14, 2021 Liquid Waste Committee agenda.

It was MOVED and SECONDED
That the Liquid Waste Committee:

a) endorse the 2022 - 2026 Financial Plan for Liquid Waste Services as presented in the report dated October 7, 2021, titled "2022 - 2026 Financial Plan – Liquid Waste Services", and forward it to the Metro Vancouver Board Budget Workshop on October 20, 2021 for consideration; and
b) endorse amendments to the Cost Apportionment Bylaw to enable the division of the GVS&DD levy into separate dry and wet weather components and issue a separate requisition for each component.

CARRIED

5.3 Burrard Inlet and Lower Fraser River Hydrodynamic Modelling

Report dated September 15, 2021 from Andjela Knezevic-Stevanovic, Director, Environmental Management and Quality Control, Liquid Waste Services, updating the Liquid Waste Committee on the new tools developed by Liquid Waste Services for improved environmental management and tracking of environmental performance in the regional water bodies.

Members were provided a presentation highlighting the environmental management framework, current applications of the new tools and future opportunities.

Presentation material titled "Burrard Inlet and Lower Fraser River Hydrodynamic Modelling" is retained with the October 14, 2021 Liquid Waste agenda. Members were shown a video presentation summarizing the hydrodynamic modelling tools, which is not retained with the agenda.

It was MOVED and SECONDED
That the Liquid Waste Committee receive for information the report dated September 15, 2021, titled "Burrard Inlet and Lower Fraser River Hydrodynamic Modelling".

CARRIED

5.4 Board Appointments and Rescindments of Bylaw Enforcement Officers

Report dated September 20, 2021 from Ray Robb, Division Manager, Environmental Regulation and Enforcement, Parks and Environment, requesting that the Liquid Waste Committee appoint and rescind appointments of Metro Vancouver and City of Vancouver employees as Board-designated municipal sewage control officers.

It was MOVED and SECONDED

That the GVS&DD Board:

a) pursuant to the *Greater Vancouver Sewerage and Drainage District Sewer Use Bylaw* and the *Environmental Management Act:*
   i. appoint Metro Vancouver employees Eugene Lee, Toby Gritten and Matt Brinkworth as municipal sewage control officers;
   ii. appoint City of Vancouver employees Jason Koepke and Ze Chen Liu as municipal sewage control officers;
   iii. rescind the appointments of former Metro Vancouver employees Corey Pinder and Rick Laird as municipal sewage control officers; and
   iv. rescind the appointment of former City of Vancouver employee Linda Kwan as a municipal sewage control officer.

b) pursuant to Section 28 of the *Offence Act* for the purpose of serving summons for alleged violations under the *Greater Vancouver Sewerage and Drainage District Sewer Use Bylaw:*
   i. appoint Metro Vancouver employees Eugene Lee, Toby Gritten and Matt Brinkworth;
   ii. appoint City of Vancouver employees Jason Koepke and Ze Chen Liu;
   iii. rescind the appointments of former Metro Vancouver employees Corey Pinder and Rick Laird; and
   iv. rescind the appointment of former City of Vancouver employee Linda Kwan.

CARRIED

5.5 Liquid Waste Services Capital Expenditure Update as at August 31, 2021

Report dated September 29, 2021 from Colin Meldrum, Director, Engineering, Design and Construction, Liquid Waste Services, updating the Liquid Waste Services Committee on the status of the Liquid Waste Services' capital program and financial performance for the 2021 fiscal year to August 31, 2021.

Members provided a presentation highlighting the electrical and ICS control system upgrades to the Annacis Island Wastewater Treatment Plant, Iona Wastewater Treatment Plant, and Albert Street Sanitary Trunk Sewer.

Presentation titled "Liquid Waste Services Summary Project Update as at August 31, 2021" is retained with the October 14, 2021 Liquid Waste Committee agenda.

3:07 p.m. Vice Chair Dominato left the meeting.

It was MOVED and SECONDED

That the Liquid Waste Committee receive for information the report dated September 29, 2021 titled, "Liquid Waste Services Capital Expenditure Update as at August 31, 2021".

CARRIED

5.6 Manager's Report

Report dated October 1, 2021 from Peter Navratil, General Manager, Liquid Waste Services, updating the Liquid Waste Committee on Water Environment Federation Operations Ingenuity Award, the *2021 Wipe It, Green Bin It/ Fats, Oils, and Grease* Mini Campaign, and the 2021 Work Plan.

It was MOVED and SECONDED

That the Liquid Waste Committee received for information the report dated October 1, 2021 titled "Manager's Report".

CARRIED

6. INFORMATION ITEMS

No items presented.

7. OTHER BUSINESS

No items presented.

8. BUSINESS ARISING FROM DELEGATIONS

No items presented.

9. RESOLUTION TO CLOSE MEETING

It was MOVED and SECONDED

That the Liquid Waste Committee close its regular meeting scheduled for October 14, 2021 pursuant to the *Community Charter* provisions, Section 90 (1) (e), (g) and (m) as follows:

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

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

(g) litigation or potential litigation affecting the regional district; and

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

CARRIED

10. ADJOURNMENT/CONCLUSION

It was MOVED and SECONDED
That the Liquid Waste Committee adjourn its regular meeting of October 14, 2021.

CARRIED
(Time: 3:19 p.m.)

_____ _____

Manveer Atwal,
Legislative Services Coordinator

Richard Stewart, Chair

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metrovancouver
SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Liquid Waste Committee
Finance and Intergovernment Committee

From: Brett Young, Director, Major Projects, Project Delivery

Date: October 29, 2021 Meeting Dates: November 4, 2021 and November 10, 2021

Subject: **Iona Island Wastewater Treatment Plant Projects – Revised Design Concept**

RECOMMENDATION

That the GVS&DD Board endorse the revised design concept for the Iona Island Wastewater Treatment Plant projects, as presented in the report dated October 29, 2021 titled "Iona Island Wastewater Treatment Plant Projects – Revised Design Concept"; and direct staff to finalize the project definition report for Board approval in March 2022.

EXECUTIVE SUMMARY

Staff recommend a revised design concept for the Iona Island Wastewater Treatment Plant (IIWWTP) projects that includes the flexibility of implementing one of two proven secondary treatment process technologies, Membrane Bioreactor or Aerobic Granular Sludge. These secondary treatment technologies have a more compact footprint and provide a potential capital cost savings of ~10% relative to the earlier design concept. The revised design concept also addresses solids handling concerns while improving on constructability challenges and offering the potential for a reduced construction duration. There are no material changes to the ecological restoration projects, resource recovery opportunities or intended Iona Beach Regional Park uses.

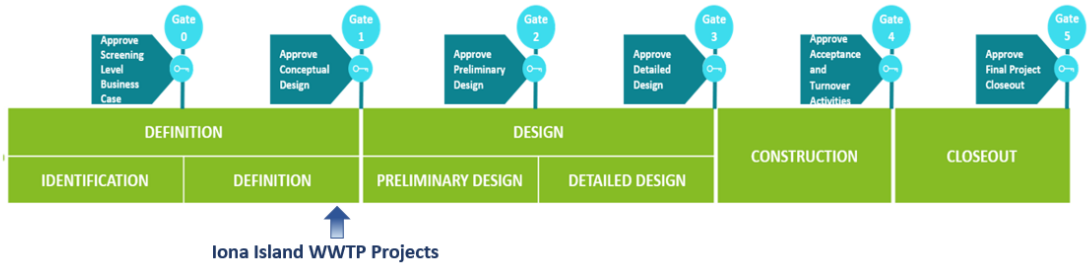
This recommendation was informed by input from an external expert panel and engagement with member jurisdictions, key stakeholders, the public and First Nations. Member jurisdiction staff remain interested in and concerned about household rate impacts from this major capital project.

Further evaluation will be done to refine the design, and validate expected performance and costs for the IIWWTP upgrade, and additional information will be presented with the final conceptual design and project definition report to committees and Board in March 2022.

PURPOSE

To present the revised design concept for the Iona Island Wastewater Treatment Plant projects for Board endorsement, so that staff can finalize the project definition report for Board approval in March 2022. This represents Gate 1 in Metro Vancouver's *Stage Gate Approval Process* (Figure 1).

Figure 1: Iona Island Wastewater Treatment Plant projects reaching stage gate 1.



BACKGROUND

At its July 30, 2021 meeting, an information report (Reference 1) was presented to the GVS&DD Board that identified a number of challenges to the earlier design concept. These challenges all contributed to higher estimated capital costs than originally anticipated and impacts to the schedule forecasting that the secondary treatment upgrade would be completed in approximately 2034, which is four years later than the regulatory deadline.

The information report presented preliminary cost and schedule information and identified steps underway to address the challenges. These steps included engaging an external expert panel, additional value engineering, and evaluation of options recommended to reduce costs or increase value. Staff also noted Metro Vancouver would engage member jurisdictions, key stakeholders, the public and First Nations on any revised aspects of the projects.

The July 2021 report also noted that staff would report back to the Board in November 2021 with recommended changes to the earlier design concept to address the challenges and seek Board endorsement of a revised design concept to enable staff to finalize the project definition.

ADDRESSING THE CHALLENGES

Challenge Review by External Expert Panel

An external panel of global experts undertook a value engineering exercise in June and July 2021 to challenge the earlier design concept and identify potential cost-saving and value-added opportunities. This process was led by technical specialists who have not been involved in the process to date with expertise in:

- wastewater treatment process design;
- operations and maintenance of large-scale municipal wastewater plants;
- geotechnical engineering, ground improvements and seismic design;
- landscape architecture and ecological restoration projects; and,
- constructability and the successful delivery of large infrastructure projects.

The external expert panel was given a broad mandate to review not only the challenges identified by the project team, but to also identify any other potential concerns with the earlier design concept, and to recommend opportunities to improve the value of the projects in terms of improved operations, reduced cost of construction, and lower total costs of ownership.

Expert Panel Recommendations

As part of the Challenge Review process, the expert panel made a total of 35 recommendations in the following three focus areas:

- wastewater treatment plant process design;
- ecological, community/park integration, and resource recovery; and
- construction considerations.

Many of the recommendations were consistent with value-engineering opportunities identified by the project and consultant teams.

A number of the recommendations, in particular those related to construction considerations and ecological, community and park integration, are applicable to later stages of the projects beyond the current project definition phase and will be further assessed at that time.

To address the cost and other challenges identified in the July 2021 Board report, the expert panel made specific recommendations related to:

1. wastewater treatment process design options, including technologies with more compact footprints to offset the high costs of ground improvements; and,
2. further characterization of site geology and additional seismic design modelling to refine ground improvement cost estimates.

Additional seismic modelling is being done as part of the next steps to finalize the project definition report.

Recommendations related to wastewater treatment process options were further evaluated. As part of a structured decision making process, and in consultation with the expert panel, a short-list of three technology options was developed for further detailed evaluation against the earlier design concept.

Review and Evaluation of Options

The short-listed technology options selected for detailed evaluation were:

- Option 1: Base Case (July 2020 Board-endorsed design concept, Reference 2)
- Option 1A: Modified Base Case
- Option 2: Membrane Bioreactor
- Option 3: Aerobic Granular Sludge

All of these are proven technologies for secondary level treatment of municipal wastewater and were considered earlier in the project definition.

Preliminary layouts to address the challenges were developed for each option with a focus on maintaining traditional views for the Musqueam Indian Band and the goal of providing a net gain in quality land for Iona Island Beach Regional Park. Park land gain would be achieved through conversion of existing lagoons to wetland habitat and other proposed ecological restoration projects. Important elements of the projects related to resource recovery opportunities, the ecological restoration projects and intended park uses are not materially different for any of the options.

Table 1: Summary of key advantages, disadvantages, and trade-offs for IIWWTP project options

Option	Advantages	Disadvantages
1 – July 2020 Design Concept	• Layout of WWTP facilities all within GVS&DD owned lands • Familiar to MV operations with migration path to advanced technologies in future	• Interim trucking of sludge to other WWTPs for ~7-year period • Challenges related to constructability and contract packaging flexibility
1A – Modified Base Case	• Eliminates need for interim sludge handling by constructing new digestion capacity concurrent with liquid treatment upgrades	• Footprint encroaches significantly onto park land; ecologically fragmenting parkland

Option	Advantages	Disadvantages
	• Reduces challenges with constructability and contract packaging flexibility	• Largest footprint with increased ground improvement costs
2 – Membrane Bioreactor	• Most compact secondary treatment footprint option with limited impact on MV park land • Addresses solids handling and constructability challenges	• Option with highest energy demand and higher O&M costs • Regular replacement of membranes required every 10 to 12 years
3 – Aerobic Granular Sludge	• Leading technology with lower O&M costs gaining traction and adoption globally • Addresses solids handling and constructability challenges	• Limited number of working installations at similar scale and complexity • Proprietary technology with only single supplier in the market

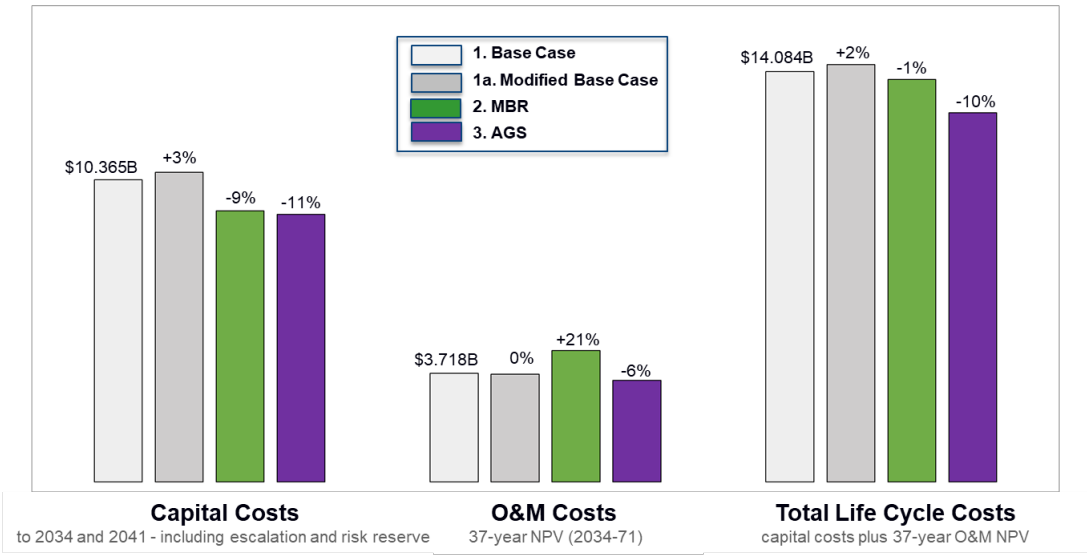
More detailed results from the evaluation of the options is provided in the following section.

RESULTS OF OPTIONS EVALUATION

Preliminary Cost Comparison

Capital and O&M cost estimates (Class 4) were developed, using Metro Vancouver's *Best Practice Project Estimating Framework*, for the three options and compared to Class 3 cost estimates for the base case (July 2020 design concept) as shown in the following figure. This figure is for the initial projects only and does not include costs of future upgrades or expansions.

Figure 2: Preliminary cost comparisons of options being evaluated



Key points from the above figure are:

- Both options involving more compact footprint secondary treatment technologies provide a potential reduction in capital costs of approximately 9% to 11%, due primarily to lower ground improvement costs.
- The higher O&M costs for the Membrane Bioreactor option offset some of the capital cost savings resulting in only a relatively marginal potential reduction (estimated at 1%) in total life-cycle costs.
- Both capital and O&M costs are lower for the Aerobic Granular Sludge option compared to the Base Case with a potential savings of about 10% in life-cycle costs.

Table 2 below summarizes how the options address each of the challenges identified and other key criteria. This is different from the summary table presented earlier at the time of the Board endorsement of the July 2020 design concept and includes the following changes:

- The first part of the table shows how each option compares in addressing the challenges identified with the earlier design concept (base case).
- The second part of the table shows other key issues where (i) certain criteria from the earlier table have been omitted where these are similar for the options considered, and (ii) new criteria specific to these options have been added where outcomes vary and illustrate some of the trade-offs in the decision process.

Table 2: Addressing the challenges and other key criteria

Summary Evaluation Criteria	Option 1 Base Case	Option 1A Modified Base Case	Option 2 MBR	Option 3 AGS
Addressing the Challenges				
Capital costs	Higher	Higher	Medium	Medium
Operations & maintenance costs	Medium	Medium	Higher	Lower
Total project life cycle costs (2034-71)	Medium	Medium	Medium	Medium
Potential to mitigate regulatory compliance delay	Lower	Lower	Medium	Medium
Avoidance of costs/risks re interim solids handling	Lower	Higher	Higher	Higher
Improve constructability and contract flexibility	Lower	Medium	Medium	Medium
Other Criteria and Trade-Offs				
GHG emissions from operations	Medium	Medium	Higher	Lower
Net gain in regional park land area	Higher	Medium	Higher	Higher
Layout extends to undisturbed east park lands	Lower	Higher	Medium	Medium
Risk of delay related to land tenure issues	Lower	Medium	Medium	Medium
Transition to year-round Nitrogen (nutrient) removal	Medium	Medium	Higher	Medium
Proven at similar scale; multiple technology vendors	Higher	Higher	Medium	Lower

REVISED DESIGN CONCEPT

To address the challenges identified, a revised design concept is recommended for the upgrading of the IIWWTP that involves:

- A modified layout of the treatment plant allowing for concurrent construction of the additional digester capacity, which avoids the need for trucking sludge solids to other regional treatment facilities and also mitigates some of the constructability challenges.
- The flexibility of implementing either the Membrane Bioreactor or the Aerobic Granular Sludge secondary treatment technologies. These more compact technology footprints offer the potential for significant capital cost savings of approximately 10% relative to the earlier design concept while also offsetting the impacts of the above footprint changes.

The revised design concept will meet all goals and objectives set at the start of the project definition, including tertiary level treatment and upgraded odour control systems. The opportunities for resource recovery remain and the ecological restoration projects are unchanged from the earlier design concept.

The project definition report will be completed with the flexibility of selecting either the Membrane Bioreactor or Aerobic Granular Sludge secondary treatment technologies subject to further evaluation during the preliminary design phase.

The upgrade of the IIWWTP will be the largest capital project ever undertaken by Metro Vancouver and additional due diligence is warranted to ensure the most cost-effective project is implemented. These due diligence steps will include:

- undertaking pilot testing of both the Membrane Bioreactor and Aerobic Granular Sludge technologies, as was planned for the earlier design concept; and
- further advancing technical and commercial discussions with potential vendors.

These steps will help to further refine the design, as well as the expected performance and costs of the wastewater treatment process at the scale of the IIWWTP upgrade. Pilot testing is frequently undertaken for large and complex wastewater treatment projects and was also done for Metro Vancouver's Seymour-Capilano Filtration Plant in the 2000s. This will not impact overall project schedule provided that priority delivery tasks (including initiating pilot testing) continue as planned.

IMPACTS TO REGIONAL PARK AND LAND TENURE CHANGES

To address the challenges identified, including providing space on site for the concurrent construction of the additional solids handling facilities, the proposed footprint of the plant includes a limited extension (approximately 3 hectares) into Metro Vancouver Regional District (MVRD) park land. Necessary land tenure changes will be facilitated through a land transfer between MVRD and GVS&DD, which will be subject to decisions by both Boards in 2022. Staff are working closely to develop an agreement that ensures a net gain in quality park land on the island. The land tenure transfer also requires provincial approval, which will include Indigenous Nation and public engagement. More information on the process will be brought forward in reports to MVRD and GVS&DD in 2022.

The limited use of park land to facilitate the layout changes will be more than offset by land tenure changes that would result in a much larger area being transferred to the regional park, including

approximately 18 hectares from GVS&DD, through conversion of existing lagoons to wetland habitat and other proposed ecological restoration projects.

There is a risk of delay to the project should land tenure not be resolved in a timely manner. In this case, layout of the upgraded treatment plant would need to be modified to construct part of the facilities on lands to the west of the existing treatment plant, potentially impacting Musqueam's desired view corridors.

PUBLIC AND FIRST NATIONS ENGAGEMENT

Engagement Activity

Further to extensive project definition engagement activities between June 2018 and February 2021, Metro Vancouver conducted engagement with member jurisdictions, the public, key stakeholders, and First Nations from July 30 to October 22, 2021. Staff provided updates and sought feedback on aspects of the projects that could, based on the work undertaken to address the challenges, result in revisions to the design concept that was presented during previous project engagement.
Engagement topics included:

- project cost and schedule estimates for the earlier design concept; and
- treatment technology and plant footprint for the earlier Board-endorsed design concept and three other short-listed technology options.

Table 3: Engagement activities by audience

Audience	Engagement Activity	Date(s)
Member jurisdiction staff	Update presentations at Vancouver Sewerage Area meetings	September 14, 2021 October 12, 2021
	Presentation to City of Vancouver Corporate Leadership Team	October 7, 2021
	Presentations to Regional Engineers Advisory Committee (REAC), Regional Finance Advisory Committee (RFAC), and Regional Administrators Advisory Committee (RAAC)	September 16, 2021 (REAC and RAAC only) October 18, 2021
First Nations	Project update letter including offer to meet	August 24, 2021
	Engagement letter with discussion guide and offer to meet	September 27, 2021
Musqueam Indian Band	Staff to staff meeting	July 30, 2021 September 14, 2021
	Project update letter	August 24, 2021
	Engagement letter with discussion guide with offer to meet	September 27, 2021
Public engagement	Online public comment period (39 participants)	September 27 to October 22, 2021
	Online community meetings (55 participants)	October 12 and 14, 2021
Key stakeholders	Meeting with Vancouver Airport Authority (YVR)	September 22, 2021
	Meeting with Deering Island Homeowners Society	September 24, 2021
	Meeting with Georgia Strait Alliance	September 29, 2021
	Meeting with Vancouver Fraser Port Authority	October 4, 2021
	Meeting with birders and naturalists	October 18, 2021

Meetings with the other groups and agencies also took place during this period to discuss regulatory issues and potential funding opportunities: Environment and Climate Change Canada; Infrastructure Canada; Canadian Infrastructure Bank; federal members of parliament; BC Ministry of Environment and Climate Change Strategy; BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development; BC Ministry of Transportation and Infrastructure; and BC Ministry of Municipal Affairs.

The methods used to promote public engagement and further details on activities are provided in an engagement summary (Attachment 1).

Engagement Feedback

Feedback was provided to Metro Vancouver during meetings, via the online public comment period, and in 13 separate submissions. All feedback received during the engagement period is provided in the engagement summary.

Table 4: Key issues raised during fall 2021 engagement, with Metro Vancouver staff responses

Audience	Key comments/questions/issues	Metro Vancouver (MV) response
Member jurisdiction staff and public audiences	Concern expressed with potential impacts to household rates; interest in receiving further information on these impacts when available.	At the July 30, 2021 Board meeting, staff presented preliminary household rate impacts for the July 2020 design concept. Estimated rate impacts for the revised design concept cannot be updated until cost estimates, schedule, and cash flows are further refined – this information will be presented to committees and Board in March 2022 with the final conceptual design and project definition report. Based on the evaluation to date, the revised design concept provides a potential capital cost savings of ~10% relative to the earlier design concept.
Musqueam Indian Band staff	Concern that Metro Vancouver's (MV's) Iona Island Wastewater Treatment Plant history video doesn't speak to the negative impacts the treatment plant has had on the Musqueam community. Also noted an opportunity to highlight how Musqueam and MV have moved from a place of no consultation, to the immersive and collaborative work being done today.	Comments noted. MV removed the video from the project website and provided the script to Musqueam staff to obtain feedback and integrate revised collaborative content into a revised video.
	Interest in MV sharing a preliminary permit review with Musqueam to help them identify and analyze permits of interest.	MV will share a preliminary permit framework for Musqueam's review.
Public and community members	Desire for higher level of treatment.	The revised design concept includes tertiary level wastewater treatment, exceeding regulatory requirements and providing adaptability to incorporate future advancements in treatment technology.

Audience	Key comments/questions/issues	Metro Vancouver (MV) response
	Preference indicated for Membrane Bioreactor secondary treatment technology in several submissions following public meetings.	This is one of two treatment technologies that will be studied further.
	Desire for increased communications regarding the projects and for MV to share updates regarding cost estimates and schedule.	In September 2021, MV commenced a quarterly email newsletter to provide regular project updates. Refined cost estimates and schedules will be presented to committees and Board in March 2022 as part of the conceptual design and project definition report. The revised design provides a potential capital cost savings of ~10% relative to the earlier design concept and the potential for a reduced construction duration.
	Desire to protect and enhance Iona Island's ecology and habitat for birds and fish.	This is a primary goal of the ecological restoration projects.
Deering Island Homeowners Society	Concern with the proposed location of the materials transport barge berth related to noise and visual impacts.	Concern noted. MV has explored other locations and has determined them infeasible from a property, permitting, and scheduling perspective. Barge berth operations will be restricted to 12 hours a day. MV will continue to provide updates to Deering Island residents including information on permitting requirements.
Georgia Strait Alliance / Obabika	Interest in learning more about the two alternate technologies evaluated as options to the July 2020 design concept.	MV provided responses to technical questions from Georgia Strait Alliance regarding the two alternate technologies in the September 29, 2021 meeting and provided further information in a follow up email.
	Concern with missing 2030 regulatory deadline for secondary treatment, and that secondary and tertiary treatment will not be in effect until 2034.	Concern noted. The revised design concept provides the potential for a reduced construction duration and MV is proceeding with priority delivery tasks immediately to mitigate further schedule impacts.
Birders and naturalists	Desire to limit plant footprint encroachment into MV Parks land.	MV is committed to a net gain in MV Parks land.
	Desire to ensure protection of birds and bird habitat throughout construction and operation of the IIWWTP.	Protection of bird habitat is one of the key objectives of the ecological restoration projects, and the impact of construction activities on wildlife and habitat will be mitigated where possible.
	Concern with dewatering of the sewage lagoons and potential for altering island ecological function; desire for detailed assessment of bird diversity / abundance within and around lagoons before commencing dewatering; desire for monitoring programs for lagoons	Lagoon dewatering is needed as a priority to maintain construction schedule. MV will work with birder groups during preliminary design to limit and mitigate the impacts to birds and their habitat, wherever possible. MV is committed to a net gain in MV Parks land, including the creation of

Audience	Key comments/questions/issues	Metro Vancouver (MV) response
	and adjacent habitat before, during, and after construction.	freshwater habitat as part of the ecological restoration projects.
Vancouver Airport Authority (YVR)	Appreciation for MV's acknowledgement of YVR's concerns surrounding bird habitat and aviation safety. Desire to continue working together to ensure that YVR's concerns are addressed.	Comment noted. MV will contact YVR regarding ongoing engagement through participation in the Technical Advisory Panel for the ecological restoration projects.
	Interest in understanding MV's project schedule and priority delivery activities to assist with YVR's planning and delivery of its planned projects in the coming years.	MV will continue to meet with YVR on a regular basis to share information as the projects progress.
Vancouver Fraser Port Authority (VFPA)	Interest in understanding if Iona Island was the only site considered for this development, given the identified complexities and associated estimated costs.	Other locations for the upgrade were studied in 2008/09 but deemed unfavourable for cost, property, permitting and environmental reasons. This was further validated when project definition resumed in 2018 and as part of recent challenge review and value engineering exercises.
	Interest expressed in being involved in the Technical Advisory Panel for the ecological restoration projects.	MV will contact YVR regarding participation in the Technical Advisory Panel for the ecological restoration projects.

An engagement report documenting feedback received since the start of project definition engagement in June 2018 will be provided with the project definition report in March 2022. The report will include how Metro Vancouver is integrating and/or taking action on feedback received to inform the design of the plant and ecological projects.

Further engagement is planned for the preliminary design phase that will follow project definition. Additional engagement activities will be undertaken, as required, to support ongoing priority delivery tasks and related permitting requirements.

NEXT STEPS

Following Board endorsement of the revised design concept, staff will refine the conceptual design, including budget and expected rate impacts, and finalize the project definition report for presentation to committees and Board in March 2022.

ALTERNATIVES

1. That the GVS&DD Board endorse the revised design concept for the Iona Island Wastewater Treatment Plant projects, as presented in the report dated October 29, 2021 titled "Iona Island Wastewater Treatment Plant Projects – Revised Design Concept"; and direct staff to finalize the project definition report for Board approval.

2. That the Board receive for information the report dated October 29, 2021 titled "Iona Island Wastewater Treatment Plant Projects – Revised Design Concept" and provide alternate direction to staff.

FINANCIAL IMPLICATIONS

The revised design concept does not impact the Phase 1 budget (2022 to 2026) and provides a potential capital cost savings of approximately 10% for the overall project.

At the July 30, 2021 Board meeting, staff presented preliminary household rate impacts for the July 2020 design concept. Rate impacts for the revised design concept will be updated once cost estimates, schedule, and cash flows are further refined. This information will be presented to committees and Board in March 2022 with the final conceptual design and project definition report.

OTHER IMPLICATIONS

The preliminary schedule for the July 2020 design concept shows secondary treatment operational in 2034, four years past the regulatory deadline for compliance. The revised design concept has the potential to accelerate the construction schedule by one to two years, to be confirmed in the final project definition report.

CONCLUSION

Staff recommend a revised design concept for the Iona Island Wastewater Treatment Plant projects incorporating a different secondary treatment technology that requires less land and provides a potential capital cost savings of approximately 10% relative to the earlier design concept. The revised concept includes the flexibility of selecting one of two proven secondary treatment process technologies, Membrane Bioreactor or Aerobic Granular Sludge during the preliminary design phase, when further evaluation will be done to refine the design and validate the expected performance and costs of the IIWWTP upgrade.

The revised design concept addresses solids handling concerns while improving on the constructability challenges. It also offers the potential for a reduced construction duration due to the smaller size of the treatment facilities. There are no material changes to the ecological restoration projects or resource recovery opportunities.

During engagement on the options being evaluated, member jurisdiction staff reiterated their interest in, and concern with, expected household rate impacts from this major capital project. This information will be presented with the final conceptual design and project definition report to committees and Board in March 2022. Staff recommend Alternative 1.

Attachment

Engagement Summary: Iona Island Wastewater Treatment Plant Projects – July 30 to October 22, 2021

References

1. "Iona Island Wastewater Treatment Plant Projects – Project Definition Update", report dated June 23, 2021
2. "Iona Island Wastewater Treatment Plant Project Design Concept", report dated June 23, 2020

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Iona Island Wastewater Treatment Plant Projects

Engagement Summary

July 30 to October 22, 2021

October 25, 2021

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Table of Contents

List of Appendices

1. Purpose

This report provides a summary of engagement activities and feedback received for the Iona Island Wastewater Treatment Plant (IIWWTP) projects from July 30 to October 22, 2021.

2. Summer/Fall 2021 Engagement Period

To address the identified challenges with the July 2020 design concept that were presented in the July 30, 2021 project definition update to the GVS&DD Board, the project team has been working to refine the design and develop a revised design concept.

To inform this work, Metro Vancouver conducted engagement with member jurisdictions, key stakeholders, the public, and First Nations in late summer and early fall 2021. Staff provided updates and sought feedback on aspects of the projects that could, based on the work to refine the design, result in revisions to the design concept that was presented during previous project engagement.

Engagement topics included:

- project cost and schedule estimates for the July 2020 design concept; and
- treatment technology and plant footprint for the July 2020 design concept and three alternate short listed technology options.

Engagement activities conducted and key feedback received are outlined in the subsequent sections by audience.

3. Previous Project Definition Engagement

The summer/fall 2021 engagement period followed extensive IIWWTP project definition engagement activities between June 2018 and February 2021.

In early 2022, a full report of stakeholder, public, and First Nation feedback received since summer 2018 will be provided to committees and the GVS&DD Board for consideration along with the final Project Definition Report. For reference, a summary of IIWWTP Projects engagement between 2018 and early 2021 is provided in the graphic below.

Figure 1: Summary of IIWWTP Projects engagement activities, from 2018 to early 2021.

4. Summary of Audiences and Activities

The following engagement activities, by audience, took place between July 30 to October 22, 2021:

Vancouver Sewerage Area (VSA) Member Jurisdictions

Members:

- City of Vancouver
- City of Richmond
- City of Burnaby
- University Endowment Lands (UEL)
- University of British Columbia (UBC)

Activities:

- Update presentations at VSA meetings: September 14 and October 12, 2021
- Presentation to City of Vancouver Corporate Leadership Team: October 7, 2021
- Presentations to:
    - Regional Administrators Advisory Council (RAAC) and Regional Engineers Advisory Council (REAC): September 16, 2021
    - RAAC, REAC, and Regional Finance Advisory Council (RFAC): October 18, 2021

Key Stakeholders

Organizations and Groups:

- Birders and naturalists
- Deering Island Homeowners Society
- Georgia Strait Alliance / Obabika
- Vancouver Airport Authority (YVR)
- Vancouver Fraser Port Authority (VFPA)

Activities:

- Virtual meeting with YVR: September 22, 2021
- Virtual meeting with Deering Island Homeowners Society: September 24, 2021
- Virtual meeting with Georgia Strait Alliance and Obabika: September 29, 2021
- Virtual meeting with VFPA: October 4, 2021
- Online webinar with birders and naturalists: October 18, 2021 (17 attendees)

Community Engagement

Groups:

- Residents and businesses in proximity to Iona Island (approx. 4,350 addresses)
- Subscribers to project email list (approx. 1,600 contacts)
- Iona Beach Regional Park visitors
- Community members and general public

Activities:

- Online community meeting (webinar format): October 12, 2021 (34 attendees)
- Online community meeting (webinar format): October 14, 2021 (21 attendees)
- Online public comment period: September 27 to October 22, 2021 (39 participants)
- Correspondence received to project inbox: July 30 to October 22, 2021 (13 letters and messages)

Additional details on each of these audiences, associated engagement activities, and input received can be found in Section 5: Stakeholder and Community Feedback.

First Nations

First Nations and Tribal Councils:

- Musqueam Indian Band
- Tsleil-Waututh Nation
- Cowichan Tribes
- Halalt First Nation
- Lake Cowichan First Nation
- Lyackson First Nation
- Penelakut Tribe
- Seabird Island Band
- Shxw'ow'hamel First Nation
- Skawahlook First Nation
- Soowahlie First Nation
- Sto:lo Nation
- Sto:lo Tribal Council
- Stz'uminus First Nation

Activities:

- Staff to staff virtual meeting with Musqueam Indian Band: July 30, 2021
- Project update letter to each First Nation and Tribal Council including offer to meet: August 24, 2021
- Staff to staff virtual meeting with Musqueam Indian Band: September 14, 2021
- Engagement letter and discussion guide to each First Nation and Tribal Council including offer to meet: September 27, 2021

Additional details on First Nation engagement, associated engagement activities, and input received can be found in Section 6: First Nation Feedback.

Meetings with Senior Government Agencies

Meetings with the following also took place during the summer/fall 2021 engagement period to discuss regulatory issues and potential funding opportunities: Environment and Climate Change Canada; Infrastructure Canada; Canadian Infrastructure Bank; federal members of parliament; BC Ministry of Environment and Climate Change Strategy; BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development; BC Ministry of Transportation and Infrastructure; and, BC Ministry of Municipal Affairs.

Communications and Promotions

The following communication tools were used to provide an update about the project and invite participation in the summer/fall 2021 engagement period:

- Reached out via email, mail and phone to key stakeholder groups to organize meetings to discuss project.
- Emails to Musqueam Indian Band to provide updates and organize meetings to discuss project.
- 28 letters sent to 14 First Nations, including offers to meet to discuss the project.
- Rack cards delivered via Canada Post and by hand to over 4,350 residents and businesses located near the project, inviting participation in:
    - the online public comment period (September 27 to October 22, 2021); and
    - the online community meetings (October 12 and 14, 2021).

  Rack cards were also provided to the UEL Administration Office.

- Three bulk emails sent to subscribers to project email list (over 1,600 subscribers as of October 2021):
    - September 10, 2021 – Community newsletter including notice of upcoming engagement
    - September 27, 2021 – Invitation to participate in September and October 2021 public engagement opportunities, including meetings and public comment period
    - October 8, 2021 – Reminder of upcoming online community meetings and invitation to participate in both meetings and public comment period
- Six newspaper advertisements placed in Burnaby Now, Richmond News, and Vancouver is Awesome to promote the public comment period and online community meetings.
- Web advertising on the webpages of The Ubyssey (UBC Student Newspaper), Burnaby Now, Richmond News, and Vancouver is Awesome, to promote the public comment period and online community meetings.
- Six social media posts, with over 45,000 impressions
- Sign posted at Iona Beach Regional Park to promote the public comment period and online community meetings.
- Updates posted to the Iona Island Wastewater Treatment Plant Project webpage (3,374 page views between July 30 and October 22, 2021)

5. Stakeholder and Community Feedback

Engagement activities and key feedback received are reported below for each audience. Feedback was collected through meeting notes, virtual meeting transcripts, online questionnaires, and correspondence. A record of all feedback received is provided in the attached appendices:

- Appendix A: Stakeholder and Community Feedback (Meetings and Correspondence)
- Appendix B: Online Public Comment Period Feedback

Staff responses to feedback provided in the period covered by this summary, as well as all feedback that has been received since the start of engagement activities in 2018 will be provided as part of the final engagement summary report that will presented to committees and the GVS&DD Board for consideration along with the Project Definition Report in early 2022.

Member Jurisdictions

City of Richmond, City of Vancouver, City of Burnaby, UEL, UBC

Engagement Activities:

September 14, 2021	Update presentation at VSA meeting
September 16, 2021	Update presentations to: • RAAC • REAC
October 7, 2021	Presentation to City of Vancouver Corporate Leadership Team
October 12, 2021	Update presentation at VSA meeting

October 18, 2021	Update presentations to: • RAAC • REAC • RFAC

Key feedback received:

- Concerns expressed regarding potential impacts to household rates.
- Interest in receiving further information on these impacts when available.

Key Stakeholder Groups

Metro Vancouver met virtually with five key stakeholder groups:

Vancouver Airport Authority (YVR)

Engagement Activity:

September 22, 2021	Virtual engagement meeting with representatives from YVR

Key feedback received:

- Appreciation for Metro Vancouver's acknowledgement of YVR's concerns surrounding bird habitat and aviation safety. Desire to continue working together to ensure that YVR's concerns are addressed because increased bird abundance and specifically snow geese, pose one of the highest risks to aviation safety.
- Interest in understanding Metro Vancouver's project schedule and priority delivery activities to assist with YVR's planning and delivery of its planned projects in the coming years.
- Interest in potential opportunities for Musqueam, Metro Vancouver and YVR to work together and share information as the project moves forward.
- Interest in participating in the Technical Advisory Panel for the ecological restoration projects.
- Interest in how the different technology options could change the work already underway with YVR as it relates to the utilities underneath Ferguson Road, traffic, and staging impacts.
- Interest in what work Metro Vancouver has done to learn how the causeway breach could impact flows in the middle arm and through the blind channel. Desire to understand how the causeway breach could impact flows of water further upstream.
- Interest in whether storm surges are being considered in Metro Vancouver's foreshore modelling.
- Interest in the scope of the effluent heat recovery feasibility study.

Deering Island Homeowners Society

Engagement Activity:

September 24, 2021	Virtual engagement meeting with Deering Island Homeowners Society representative

Key feedback received:

- Concern that the proposed location of the materials transport barge berth will cause visual impacts and a significant amount of industrial noise near Deering Island's residential area.
- Interest in whether the project team looked at other potential barge berth location sites.
- Comment that Metro Vancouver should consider placing the barge berth further west.
- Comment that the Fraser River area near Deering Island is typically noisy due to airplane and marine traffic, and becomes noisier at nighttime due to the frequency of barges. A barge berth could bring more industrial noise to the area.
- Interest in understanding what happens if the Iona Wastewater Treatment Plant project becomes too expensive for the ratepayers to fund.
- Commenter expressed surprise at the length of the project schedule and concern with potential cost escalation due to the 20-year project timeline.
- Interest in understanding whether all of the proposed treatment options are meant to accommodate the solids handling.
- Comment that Deering Island Homeowners Society supports this important environmental project overall.

Georgia Strait Alliance (GSA) and Obabika

Engagement Activity:

September 29, 2021	Virtual engagement meeting with representatives from Georgia Strait Alliance and Obabika

Key feedback received:

- Interest in learning more about the two alternate technologies being evaluated as options to the July 2020 design concept.
- Concern expressed regarding missing the 2030 regulatory deadline for secondary treatment and that secondary and tertiary treatment will not be in effect until 2034.
- Interest in understanding what occurred following the approval of the Liquid Waste Management Plan in 2011 and Metro Vancouver's commitment to focus efforts on the Lions Gate and Iona Island treatment plants, and how this relates to the current situation where the IIWWTP upgrade is going to take more time than is legally required.
- Interest in whether Metro Vancouver has received approval from the federal government to go past the 2030 regulatory deadline and why there were 18 months of delays for the indicative design to brought to the Board.
- Interest in understanding whether ratepayers will be solely responsible for covering the total 6.7-billion-dollar cost or if there are other anticipated funding streams.
- Interest in whether the proposed treatment options remove toxins such as pharmaceuticals.
- Interest in understanding how Indigenous knowledge has been integrated into the ecological restoration project planning so far.

- Comment that a lot of GSA's concerns over the last 18 months have been addressed in this project definition update. Appreciation expressed for the time Metro Vancouver has taken to provide the project definition update, the opportunity to have a direct conversation, and for Metro Vancouver's openness and honesty about various aspects of this project. Comment that it is clear now that GSA is a little more aligned that previously thought.
- Comment that GSA believes that we all want the IIWWTP to be as good as it can possibly be to reduce pollution in the Salish Sea.
- Offer extended by GSA to help Metro Vancouver in any way they can with regards to discussions with senior government agencies regarding funding for the IIWWTP projects.

Vancouver Fraser Port Authority (VFPA)

Engagement activity:

October 4, 2021	Virtual engagement meeting with representatives from VFPA

Key feedback received:

- Interest in understanding if Iona Island was the only site considered for this development, given the identified complexities and associated estimated costs.
- Interest in being involved in the Technical Advisory Panel for the ecological restoration projects.
- Interest in understanding when households across the region can expect to see impacts to rates.

Birders and Naturalists

Given the ecological significance of Iona Island and the Fraser River estuary, Metro Vancouver is engaging with interested birders and naturalists representing many different groups including:

- Birds Canada
- City of Vancouver
- Delta Naturalists
- Ducks Unlimited
- Environment and Climate Change Canada
- Nature Canada
- Nature Trust of BC
- Nature Vancouver
- Stewardship Centre for BC
- WildResearch
- Wild Trust of BC
- Vancouver Whale Watch

Engagement Activities:

October 18, 2021	Virtual engagement meeting with birders and naturalists
October 22, 2021	Submission of letter with additional comments from 13 representatives of local bird conservation and research groups

Key feedback received:

- Desire to limit plant footprint encroachment into Metro Vancouver park land.
- Desire to ensure protection of birds and bird habitat throughout construction and operation of the IIWWTP into the future.

- Concern expressed regarding the dewatering of the sewage lagoons and potential for altering the island's ecological function. Desire for detailed assessment of bird diversity and abundance within and around the lagoons before commencing dewatering.
- Desire for Metro Vancouver to develop well designed monitoring programs for the sewage lagoons and adjacent habitats before any activities occur that could potentially alter the ecological function of the island, including monitoring activities before, during, and after construction. Desire for Metro Vancouver to engage with the local wildlife community to help co-develop and implement monitoring and research.
- Comment that the sewage lagoons play a vital in supporting avian diversity on Iona Island—which is home to 285 observed species, the highest recorded diversity of birds in all of British Columbia.
- Comment that the island is an important natural asset that warrants the utmost attention during the development of the project.
- Desire for bird-friendly building design standards to be incorporated into facility and building design, including glass and lighting standards. Interest in learning more about the ecological restoration projects, the technical requirements being incorporated into their design, and what their effects will be on the future ecology of the area.

Public

Community Engagement

Engagement Activities:

July 30 to October 22, 2021	Correspondence received to project inbox (13 letters and messages), including submissions from: • Fraser Riverkeeper • West Southlands Residents Association
September 27 to October 22, 2021	Online public comment period (39 participants)
October 12 and 14, 2021	Online community meetings (55 participants)

Key feedback received:

- Desire for higher level of wastewater treatment expressed.
- Preference indicated for Membrane Bioreactor (MBR) secondary treatment technology in several submissions following public meetings.
- Desire for increased communications regarding the projects and for Metro Vancouver to share updates regarding cost estimates and schedule.
- Desire to protect and enhance Iona Island's ecology and habitat for birds and fish. General support expressed for ecological restoration projects.
- Concern expressed regarding missing the 2030 regulatory deadline for secondary treatment, and secondary and tertiary treatment coming into effect in 2034.
- Concern regarding the continued discharge of primary treated effluent into the Salish Sea. Desire for tertiary treatment to be implemented as soon as possible—and no later than 2034—for the health of the surrounding environment.
- Concern expressed about the high cost estimate for the project and that the challenges associated with the increased costs were not addressed earlier.
- Concern expressed regarding impacts to ratepayers. Desire for project to produce the best result while considering impact to households.
- Desire for First Nation engagement and action towards reconciliation. Interest in learning First Nations' perspectives on the project.
- Desire for the true value of the natural environment and the existing debt to nature to be considered when considering project costs and benefits.
- Comment that it is challenging for an individual without technical training or knowledge in the field to make informed comments about wastewater treatment process technologies.
- Interest in understanding if Metro Vancouver has looked into relocating the treatment plant to a different location, especially given current cost estimate.
- Concern expressed regarding the impact of microplastic and microfiber pollution. Desire for the treatment technology selected to address this issue.
- Concern expressed regarding impacts of construction activities, the loss of the existing sludge lagoons, and increased park user access to currently restricted areas of the park on bird populations at Iona Island.
- Interest in the scope of the modelling, studies and investigations being done to inform the projects, and whether lands on the north shore of the North Arm of the Fraser will be included.
- Interest whether Metro Vancouver is considering the energy efficiency and carbon costs of the different technology options.
- Concern expressed regarding the impacts of climate change and sea level rise on Iona Island and the IIWWTP and interest in understanding how Metro Vancouver is addressing this issue.
- Desire for Metro Vancouver to demonstrate leadership in the areas of wastewater treatment and environmental action.

See Appendix A: Stakeholder and Community Feedback (Meetings and Correspondence) and Appendix B: Online Public Comment Period Feedback for a list of all feedback received from the audiences listed above.

6. First Nation Feedback

First Nations engagement activities and key feedback received are reported below. Feedback was collected through meeting notes, virtual meeting transcripts, correspondence. A record of all feedback received is provided in the attached Appendix C: First Nation Feedback.

In line with Metro Vancouver's Information Sharing Process, Metro Vancouver has reached out to 14 First Nations and Tribal Councils on the IIWWTP Projects:

- Musqueam Indian Band
- Tsleil-Waututh Nation
- Cowichan Tribes
- Halalt First Nation
- Lake Cowichan First Nation
- Lyackson First Nation
- Penelakut Tribe
- Seabird Island Band
- Shxw'ow'hamel First Nation
- Skawahlook First Nation
- Soowahlie First Nation
- Sto:lo Nation
- Sto:lo Tribal Council
- Stz'uminus First Nation

Building on previous correspondence about the projects extending back to November 2018, the following letters were sent to each First Nation or Tribal Council during the late summer to early fall 2021 engagement period:

August 24, 2021	Project update letter *Purpose:* • Notify of the July 30, 2021 Project Definition Update to the GVS&DD Board, identified challenges, and next steps • Provide updates on the priority delivery activities and the status of project permit applications • Offer to meet regarding the projects and provide a point of contact for further discussion
September 27, 2021	Engagement letter *Purpose:* • Invite First Nations and Tribal Councils to share their feedback • Provide a discussion guide with information about the engagement topics included in the current engagement period • Offer to meet regarding the projects and provide a point of contact for further discussion

Metro Vancouver did not receive responses to the correspondence listed above from First Nations or Tribal Councils within the allocated time period, and only Musqueam Indian Band was available to actively engage (see details of engagement activities below). As noted earlier, a full report of First Nation feedback received since the start of IIWWTP engagement will be provided to the GVS&DD committees and Board for consideration along with the final Project Definition Report.

Musqueam Indian Band

As part of ongoing collaboration and engagement with Musqueam Indian Band, feedback was provided through staff to staff virtual meetings with the project team.

Engagement Activities:

June 30, 2021	Staff to staff virtual meeting – Provided an update regarding ongoing priority activities, permits and approvals, the identified challenges with the July 2020 design concept and subsequent work to refine the design, and upcoming engagement.
September 14, 2021	Staff to staff virtual meeting – Provided a project update and sought feedback on the July 2020 design concept, subsequent challenges identified, proposed treatment options being evaluated, and priority delivery activities.

Key feedback received:

- Concern expressed that Metro Vancouver's IIWWTP history video doesn't speak to the negative impacts the treatment plant has had on the Musqueam community. Also noted an opportunity to highlight how Musqueam and Metro Vancouver have moved from a place of no consultation, to the immersive and collaborative work being done today.
- Interest in Metro Vancouver sharing a preliminary permit review with Musqueam to help them identify and analyze permits of interest.
- Interest in how changes to the design concept will impact Musqueam views.
- Interest in understanding what the driver of the increased footprint option is versus the other treatment options.

7. Next Steps

An engagement summary documenting feedback received since the start of engagement in June 2018, as well as staff responses, will be provided to committees and the GVS&DD Board with the Project Definition Report in early 2022.

Further engagement is planned for the design phase that will follow project definition. Additional engagement activities will be undertaken, as required, to support ongoing priority delivery tasks and related permitting requirements.

Appendix A - Stakeholder and Community Feedback (Meetings and Correspondence)

The following table details all feedback received from stakeholders and members of the public though engagement meetings and correspondence during the July 30 to October 22, 2021 engagement period.

#	Date	Source	Question/Comment/Issue
1	30-Jul-21	Email	Will there be any work done on the section that dissects McCleery golf?
2	22-Sep-21	Meeting with Vancouver Airport Authority (YVR)	Are any of the proposed treatment options favoured at this point?
3	22-Sep-21	Meeting with Vancouver Airport Authority (YVR)	As MV works through these different considerations to the shift in technology, what upstream impacts do you see shifting that could change the work already underway with YVR as it relates to the utilities underneath Ferguson, traffic and most of the staging impacts? Will those ongoing conversations have to be adjusted or accommodated based on what moves forward?
4	22-Sep-21	Meeting with Vancouver Airport Authority (YVR)	Noting the IIWWTP projects schedule constraints between now and 2023, how can YVR get ahead of the work YVR needs to undertake to streamline upcoming project activities planned by both YVR and MV?
5	22-Sep-21	Meeting with Vancouver Airport Authority (YVR)	YVR appreciates Metro Vancouver's acknowledgement of YVR's concerns surrounding bird habitat and aviation risk. YVR and Metro Vancouver need to continue working together to ensure that YVR's habitat enhancement concerns are addressed because increased bird abundance and specifically snow geese, pose one of the highest risks to aviation safety.
6	22-Sep-21	Meeting with Vancouver Airport Authority (YVR)	YVR expressed interest in learning more about the Technical Advisory Panel as information becomes available.
7	22-Sep-21	Meeting with Vancouver Airport Authority (YVR)	Has MV done any work to understand how the causeway breach could impact flows in the middle arm, and flows through the blind channel? YVR wants to understand how the causeway breach could impact flows of water further upstream.
8	22-Sep-21	Meeting with Vancouver Airport Authority (YVR)	YVR is interested to know if storm surges are being considered in MV's foreshore modelling?
9	22-Sep-21	Meeting with Vancouver Airport Authority (YVR)	YVR expressed interest in potential opportunities for Musqueam, Metro Vancouver and YVR to work together and share information as the project moves forward.
10	22-Sep-21	Meeting with Vancouver Airport Authority (YVR)	Does MV anticipate that the procured engineering support services, brought on to confirm routing, could encounter changes to the Ferguson road project currently in design?
11	22-Sep-21	Meeting with Vancouver Airport Authority (YVR)	What is the scope of the effluent heat recovery feasibility study?
12	22-Sep-21	Meeting with Vancouver Airport Authority (YVR)	Which First Nations are you looking to engage with on the IIWWTP project definition update?
13	22-Sep-21	Meeting with Vancouver Airport Authority (YVR)	YVR appreciates the opportunity to review the Project Definition update and continue this work together. YVR will connect with staff internally and provide feedback and input on the Project Definition update.

#	Date	Source	Question/Comment/Issue
14	24-Sep-21	Meeting with Deering Island Homeowners Society	Having worked on a number of treatment plant projects, I've never seen a schedule this long.
15	24-Sep-21	Meeting with Deering Island Homeowners Society	Wasn't the schedule of the Annacis Island Wastewater Treatment Plant much shorter?
16	24-Sep-21	Meeting with Deering Island Homeowners Society	Normally if a project happens over a 20-year time, the present day project cost estimate is going to escalate.
17	24-Sep-21	Meeting with Deering Island Homeowners Society	What if the Iona Wastewater Treatment Plant project becomes too expensive for the ratepayers to fund?
18	24-Sep-21	Meeting with Deering Island Homeowners Society	Are all of these proposed treatment options meant to accommodate the solids handling?
19	24-Sep-21	Meeting with Deering Island Homeowners Society	Has the project team looked at other potential barge berth location sites?
20	24-Sep-21	Meeting with Deering Island Homeowners Society	The proposed barge berth location is located directly across from Deering Island and will cause a significant amount of industrial noise near Deering Island's residential area. MV should consider placing the barge berth further west, for example in front of Wreck Beach.
21	24-Sep-21	Meeting with Deering Island Homeowners Society	Noted that the Fraser River area near Deering Island is typically noisy due to airplane and marine traffic. At nighttime this area becomes even more noisy due to the frequency of barges. Believes the addition of a barge berth will bring more industrial noise to the area.
22	24-Sep-21	Meeting with Deering Island Homeowners Society	Deering Island Homeowners Society appreciates MV for taking the time to meet and review the Project Definition Update. Deering Island supports this important environmental project overall. Deering Island Homeowners Society advised MV that the Deering Island Homeowners Society would hold an annual general meeting in October.
23	28-Sep-21	Comment on MV Facebook Post	Let's hope they do a better job than the contractors building the new treatment plant in North Van. Two years behind and millions over budget.
24	28-Sep-21	Comment on MV Facebook Post	Looking so much better.
25	28-Sep-21	Comment on MV Facebook Post	Did a school tour of that facility back in the 1960s, it was world class back then. Any upgrades to control effluent discharges to the environment is money well spent.
26	28-Sep-21	Comment on MV Facebook Post	It's about time; it's a disgrace of what Vancouver and BC in general, do when it comes to water treatment yet always act environmentally friendly and green…

#	Date	Source	Question/Comment/Issue
27	28-Sep-21	Comment on MV Facebook Post	Nice beaches out there [at Iona] and a good hike along the spit. Lots of birds.
28	28-Sep-21	Comment on MV Regional Parks Facebook Post	I hope the upgrade wll improve the water quality of Fraser river and Vancouver shoreline!
29	28-Sep-21	Comment on MV Regional Parks Facebook Post	Methan capture, refinement and resale. Dry sludge treated and used for nutrients for non-food trees and plants. Ammonia extracted & refined for use in window cleaner. Urea extratracted and used for D.E.F. or diesel exhaust fluid.
30	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	GSA is seeking clarity on how the 4% resource recovery costs will be allocated (included in the cost estimate pie chart on slide 8 of the IIWWTP – Project Definition Update presentation)?
31	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	What is the dollar amount associated with tertiary upgrades as opposed to secondary upgrades?
32	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	Are the ratepayers solely responsible for covering the total 6.7 billion dollar cost or are there other anticipated funding streams?
33	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	Request for further elaboration on the combined sewer premium cost. Will this extend the timing of plant construction?
34	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	Will tertiary treatment be operational at the same time as secondary treatment in 2034?
35	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	The 2034 date is deeply concerning to GSA and caught GSA by surprise because no indication of this risk was communicated prior to the July 2021 board report.
36	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	GSA is interested in understanding what occurred following the approval of the Liquid Waste Management Plan in 2011 and MV's commitment to focus efforts on the Lions Gate and Iona Island Treatment plants. What happened in those preliminary years and why are we suddenly looking at a plant that's going to be taking more time than is legally required?
37	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	Could the Iona Island Wastewater Treatment Plant project have been started earlier?
38	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	Has MV received approval from the federal government to go past the 2030 regulatory deadline?

#	Date	Source	Question/Comment/Issue
39	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	Will the digesters be built in 2041, as was indicated in the IIWWTP July 2021 board report?
40	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	How would all of these treatment plant technologies be used at a changing scale during a high rainfall event? Would there be certain efficacies associated with different technologies during a higher rainfall?
41	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	Understands that the fundamental difference between 'tertiary 1' versus 'tertiary 2' would be the sludge activated BNR with the nutrient removal scenario. This type of treatment, used in Kelowna, allows for substantial removal of toxins of high concern. Is that accounted for in this process and is there a different technology that can achieve the same result?
42	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	Do the proposed treatment options remove toxins such as pharmaceuticals?
43	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	Note that the technologies could change, based on what is needed to address the compound of concern at the time. For example, antidepressants are a big concern in Europe. Could specific technologies target toxins of that nature?
44	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	Which wastewater treatment technology doesn't require primary treatment as a separate stage?
45	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	If the AGS option does seem reasonable for our region, would that mean the primary treatment upgrade would not have to happen?
46	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	GSA recognizes that construction projects always take longer than planned, but sees opportunities to explore time savings. Does MV think there may be opportunities to save some time?
47	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	Interest in how Indigenous knowledge has been integrated into the ecological restoration project planning so far.
48	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	GSA interested in understanding why there were 18 months of delays for the indicative design to brought to the Board.
49	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	Had MV brought a recommended July 2020 concept to the Board in early 2021, would that have included the new proposed technologies or are these technologies a new addition? Were these PDR delays to the Board associated with ground truthing the various phases and construction realities?

#	Date	Source	Question/Comment/Issue
50	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	Noted that a lot of GSAs concerns over the last 18 months have been addressed in this project definition update. Appreciates the time MV has taken to provide the project definition update and appreciates the opportunity to have a direct conversation. It's clear now that GSA is a little more aligned that previously thought. Appreciates MVs openness and honesty about various aspects of this project. GSA was alarmed by the Board report released in July 2021 and felt as though it came out of nowhere, given the fact that GSA wasn't notified about the challenges MV was facing.
51	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	Feel like this meeting has been in the spirit of what GSA hopes MV can go forward with because GSA believes that we all want the IIWWTP to be as good as it can possibly be to reduce pollution in the Salish Sea. GSA expressed thanks for MVs contributions at today's meeting and looks forward to working with MV.
52	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	When does the public comment period questionnaire start and end? Does the questionnaire include specific questions or does it provide opportunity for comments?
53	29-Sep-21	Meeting with Georgia Strait Alliance and Obabika	GSA indicated that they would offer to help MV in any way they could. GSA knows that there have been ongoing discussions with government agencies around IIWWTP funding. GSA explained that every time GSA has had opportunities to meet with different levels of government around funding, GSA raises the issue of funding the IIWWTP and presses them to come to the table. GSA will continue to request the federal and provincial government to help fund the IIWWTP projects and alleviate the Board's funding concerns.
54	30-Sep-21	Email	Re: "Treatment plant technology": As the upgrade project proceeds, please foreground the need to filter/capture microplastics/microfibres. We also hope that there would be public education and outreach on this crucial issue. See the link to a recent New York Times article we found relevant. (Also happens to reference Vancouver). https://www.nytimes.com/2021/09/28/science/microfiber-pollution-svalbard.html?action=click&module=Well&pgtype=Homepage&section=Science

#	Date	Source	Question/Comment/Issue
55	4-Oct-21	Meeting with Vancouver Fraser Port Authority	In regards to the household costs, when will ratepayers across the region expect to see the additional costs? Is it once the IIWWTP construction project is complete or is it prior to the construction of the IIWWTP?
56	4-Oct-21	Meeting with Vancouver Fraser Port Authority	Given the costly price tag, was this the only site considered for this development with this number of complexities?
57	4-Oct-21	Meeting with Vancouver Fraser Port Authority	VFPA is interested in being involved in the Technical Advisory Panel and learning more about the ecological restoration projects. VFPA is particularly interested in topics around sediment reuse and sand ecosystem restoration work.
58	4-Oct-21	Meeting with Vancouver Fraser Port Authority	Will MV present all of the proposed treatment plant concepts to the public at the upcoming community meetings?
59	8-Oct-21	Comment on MV Facebook Post	To what extent are these lagoons protected from higher tides expected due to climate change?
60	8-Oct-21	Comment on MV Facebook Post	The entire facility is being built basically at sea level facing rising tides, storm surge and increasing flood risk from the Fraser, it would be nice to hear how Metro Vancouver is addressing that.
61	8-Oct-21	Comment on MV Facebook Post	About time. Quick to tax and slow to fix.
62	12-Oct-21	Online Community Meeting	Given the huge extra cost, has there been any thoughts to relocate the project?
63	12-Oct-21	Online Community Meeting	There was discussion of the cost of seismic upgrades. Has there been specific consideration of the costs of sea level rise and climate change?
64	12-Oct-21	Online Community Meeting	Thank you for the presentation. Can you please talk about the impacts of the 4 year delay from the regulatory deadline?
65	12-Oct-21	Online Community Meeting	Will the plant be out of compliance of the regulatory deadline of secondary treatment for 4 years according to this timeline? What will be the impacts of being non-compliant?
66	12-Oct-21	Online Community Meeting	Has an independent estimate and risk quantification review been done outside the project team?
67	12-Oct-21	Online Community Meeting	How much confidence is there on the current 10.4 billion estimate?
68	12-Oct-21	Online Community Meeting	What is the additional cost of choosing the world class tertiary treatment process I pointed out is being used at the Orange Country California treatment plant, compared to the lower quality tertiary treament process now used at the Brightwater treament plant that Metro Van has indicated they are considering?
69	12-Oct-21	Online Community Meeting	If there is only one supplier with AGS, how do you negotiate with the supplier if you already have decided to use that technology?

#	Date	Source	Question/Comment/Issue
70	12-Oct-21	Online Community Meeting	Is there e.coli and bacteria sampling in the salish sea (beyond Iona beach) as part of baseline sampling?
71	12-Oct-21	Online Community Meeting	The images we're seeing show paths between all of the pond areas. We know that birds currently use the inner ponds where access is restricted much more than the outer ponds, particularly at high tide. Would you consider eliminating some of the paths to provide birds with more refuge areas away from people and (especially) dogs?
72	12-Oct-21	Online Community Meeting	I applaud Metro Vancouver for being so concious of the envirmonment and its importance.
73	12-Oct-21	Online Community Meeting	Is the impact on the shoreline on other side of theNorth arm of the Fraser being considered/investigated?
74	12-Oct-21	Online Community Meeting	Unfortunately, too many dog owners do not respect posted signs
75	12-Oct-21	Online Community Meeting	What kind of baseline bird surveys is Metro Vancouver collecting right now? Season(s), group of species, survey type, etc.
76	12-Oct-21	Online Community Meeting	Is there going to be any funding available to allow studies by NGOs and student groups of wildlife at the plant in the future?
77	12-Oct-21	Online Community Meeting	Thank you. I did not hear any surveys done for landbirds. Will MV consider surveys for landbirds too given Iona is an important stopover site for a great diversity of migratory landbirds?
78	12-Oct-21	Online Community Meeting	I understand there was plans to place a bridge on the causeway. What is the timing on that structure?
79	12-Oct-21	Online Community Meeting	Does the treatment technology need to be decided before the final project definition can be done?
80	12-Oct-21	Online Community Meeting	Has there been planning consideration to ensure there is sufficient habitat for migratory birds during construction?
81	12-Oct-21	Online Community Meeting	One of your ecological priorities is to "Improve Water Quaitly" in the Salish Sea and the Federal Government has jurisdiction over marine waters, including protecting the threatened Orca populations. Therefore could you appeal to their desire to enhance public perception of their Orca-protection efforts? That might convince them to contribute the additional cost of implementing world-class tertiary treament, in order to ensure the highest ecological purity of the outfall being discharged into the Orca's habitat.
82	12-Oct-21	Online Community Meeting	A great presentation. All topics well defined and look forward to future discussions
83	12-Oct-21	Online Community Meeting	Thank you for the presentation. Much appreciated.
84	14-Oct-21	Online Community Meeting	Why is dewatering taking so long?

#	Date	Source	Question/Comment/Issue
85	14-Oct-21	Online Community Meeting	Has a construction firm been selected for any of these phases yet? Do have to worry about what happened on the Lionsgate stop?
86	14-Oct-21	Online Community Meeting	What is the final effluent quality for the proposed disc filter system in terms of TSS, BOD and COD?
87	14-Oct-21	Online Community Meeting	Who is currently the general contractor on the project?
88	14-Oct-21	Online Community Meeting	What is the population estimate for 2100 being used for the design?
89	14-Oct-21	Online Community Meeting	Can you explain the process you will use to determine which design option will ultimately be selected? (What criteria are used)?
90	14-Oct-21	Online Community Meeting	What's the capital, O & M and lifecycle cost differences among these four options?
91	14-Oct-21	Online Community Meeting	Do you include a cost of carbon in the review of options?
92	14-Oct-21	Online Community Meeting	Which technology is considered financially feasible?
93	14-Oct-21	Online Community Meeting	I work in ecological restoration and marsh conservation. I have worked in the marsh alongside the Iona Island causeway and Sea Island so this issue is close to my heart. Is there any chance that Metro Van will backtrack on the commitment to upgrade to tertiary treatment?
94	14-Oct-21	Online Community Meeting	Is the aerobic granular technology confined to one supplier because of a patent? And, if so when does that expire?
95	14-Oct-21	Online Community Meeting	Will contractors be able to propose alternative consolidation methods to speed up the ground improvement works?
96	14-Oct-21	Online Community Meeting	Given what has recently occured with the North Shore wastewater treatment plant, how will this shape how you will procure services to deliver the Iona wastewater treatment program?
97	14-Oct-21	Online Community Meeting	Do the people on the panel risk having a conflict of interest if their company ends up on the short list for some of the contracts?
98	14-Oct-21	Online Community Meeting	A graph earlier showed the ecological projects starting in 2023. Are jetty breaches and invasive species removal not already ongoing, or are these not MV related?
99	14-Oct-21	Online Community Meeting	I take my 9ft boat all the way around Sea Island monthly at over 50km a round trip. Does Metro Van have any water lots that can have log storage removed to restore habitats?
100	14-Oct-21	Online Community Meeting	What happens to the log booms currently in some of the retoration areas?
101	14-Oct-21	Online Community Meeting	Will the breach under the outfall pipe be accessible at high tide or at some other tide stage?

#	Date	Source	Question/Comment/Issue
102	14-Oct-21	Online Community Meeting	Has an evaluation been conducted on how ecological changes will affect the size and species? For example Brant Geese versus Sandpiper, and their literal impact with aircraft at YVR?
103	14-Oct-21	Online Community Meeting	I'm really excited about the proposals to connect all the channels that used to be there!
104	14-Oct-21	Online Community Meeting	What is the sea level rise assunmption for 2100?
105	14-Oct-21	Email from West Southlands Residents Association	I am sending this email on behalf of the West Southlands Residents Association, a neighbourhood across the Fraser from the Iona Island water treatment plant. Although not bordering the Fraser, residents are often on the walkways adjacent to the river. I would like to find out where the barge berth for transportation of construction materials is to be built and whether it is expected to have an impact on the north shore of the Fraser. I have been unable to find anything on the website to clarify the plans. Also, have any studies related to the ecological work include consideration of the impact on the north shore of the Fraser?
106	15-Oct-21	Email from West Southlands Residents Association	West Southlands Residents Association has a long-standing interest in Fraser River -related issues including the shoreline. Many homes are in the flood plain and in recent years have seen the impact of water level rise on their properties, especially during King tides in December and January.
107	17-Oct-21	Email in advance of October 18 Birders and Naturalists Meeting	I'm not able to attend the October 18th Birders and Naturalists meeting, so I've completed the online questionnaire and put my thoughts in writing, in hopes that writing my thoughts will help to emphasize my concerns and will be a help in your zoom discussion.
108	17-Oct-21	Email in advance of October 18 Birders and Naturalists Meeting	Panels state that cost estimates have been developed and updated to take into consideration the challenges mentioned in the previous two panels. I am saddened that the expert engineers who worked on this project design over the past three years, did not already take these factors into account. I am saddened that "constructability" (access challenges and construction in a limited workspace) and "ground improvements" were not fully recognized earlier on in the design phase.

#	Date	Source	Question/Comment/Issue
109	17-Oct-21	Email in advance of October 18 Birders and Naturalists Meeting	Under Project Overview, one of the bullets about the design states: "Withstand an earthquake and sea level rise". Early during the initial public meeting phase, the question was raised as to whether it makes economic sense to locate the plant on Iona Island, given that location's elevation is so very close to current sea level, as well as earthquake stability issues. I recall the response was that other sites had been considered, but none would work. How thorough was this consideration of other possible locations? What portion of the current cost estimate is to cover earthquake stability and sea level rise, given this location on a floodplain island of the Fraser River estuary?
110	17-Oct-21	Email in advance of October 18 Birders and Naturalists Meeting	On the panel titled "What success looks like", the list is excellent, but one important point is missing. The point that is missing is the aim to: Enhance and sustain the varied natural habitats of Iona Beach Regional Park. These natural habitats include its upland sand dune, shrub and deciduous trees, its intertidal wetlands, and its freshwater ponds and marshes. Yes, there is a bullet which states, to enhance the visitor experience, but what is missing is a statement about the natural habitat. Yes, there is mention of other important nature considerations, such as water quality, salmon, killer whales and marine environment, but there should be a specific statement about the natural habitats of Iona Island Regional Park.
111	17-Oct-21	Email in advance of October 18 Birders and Naturalists Meeting	The terrestrial ecosystems and bird habitat are mentioned in the next panel, that is, the panel titled: "About the July 2020 Board-Endorsed Design Concept – Ecological Restoration Projects". However, enhancement and sustaining the varied natural habitats of the park should be mentioned in the proceeding panel ("What Success looks like"). As a side note on the topic of natural habitats of the park and consideration of visitor experience and overall environmental well being, it is worth noting that this constitutes only a very small portion of the overall cost of the project – the budget estimate is only 3% for "Ecological Restoration & Community Amenities".

#	Date	Source	Question/Comment/Issue
112	17-Oct-21	Email in advance of October 18 Birders and Naturalists Meeting	The last statement of the panel on "Ecological Restoral Projects" is misleading. That statement reads: "No modifications to the ecological restoration projects are being considered or evaluated as part of a revised design concept." Surely this statement is misleading when Design Concept 1a (Modified Base Case) states that more parkland will be used for construction of the facility. If parkland is reduced in size, then this surely will impact the park visitor experience and/or the ability to sustain and enhance the natural habitats of the park.
113	17-Oct-21	Email in advance of October 18 Birders and Naturalists Meeting	Regarding the statement about schedule constraints and that the project would not be completed until about four years after the federal government's regulatory deadline – should this not be immediately discussed with the responsible federal government staff? There is not much that the public can comment on this scheduling issue and how to resolve.
114	17-Oct-21	Email in advance of October 18 Birders and Naturalists Meeting	The total estimated project costs in 2021 dollars of $6.7 million and what this amounts to for the Vancouver Sewerage Area households does appear high compared to other Metro Vancouver sewerage areas. How much of the additional cost is due to necessary earthquake proofing and building to withstand sea level rise? Have other locations for the treatment plant been considered?
115	17-Oct-21	Email in advance of October 18 Birders and Naturalists Meeting	In considering overall costs, it should be appreciated that when we discharge our human waste into the ocean, it must be done to full tertiary treatment standard. In accounting dollars, we should calculate the debt owing to nature over the many previous decades of discharging sewerage that had received only basic treatment into the Salish Sea. Has anyone calculated that long term debt to nature?
116	17-Oct-21	Email in advance of October 18 Birders and Naturalists Meeting	Regarding the external panel of subject matter experts who have reviewed the three revised design options presented in subsequent panels – what is the basis for choosing a redesign? Will it be the cheapest cost, measured only in immediate construction costs and not including debt to nature and/or loss of long-term park benefits to nature, including humans? Will the recommendation/decision be made only on which option can be completed by 2030? Those factors are not always included in the Pros and Cons. That is for the panel on Option 1: Base Case, it does not mention under Cons, the high cost and expected completion date of 2034.

#	Date	Source	Question/Comment/Issue
117	17-Oct-21	Email in advance of October 18 Birders and Naturalists Meeting	Regarding Design Option 1a: Modified Base Case (July 2020 Board-endorsed design concept with use of additional land), it states, "Footprint encroaches onto Metro Vancouver Parks Land". This does not fit with the statement in an earlier panel that the design options under consideration have "no change to ecological enhancement plan". If more parkland will be used, this surely will impact the park visitor experience and/or the ability to sustain and enhance the natural habitats of the park.
118	17-Oct-21	Email in advance of October 18 Birders and Naturalists Meeting	Regarding Option 2 (Membrane Biological Reactor) and Option 3 (Aerobic Granular Sludge), I do not have the required knowledge in sewerage treatment to provide to comment. I assume this is why Metro Vancouver enlisted the help of the external panel. Will the details of their report be public, together with the names of the panel members?
119	18-Oct-21	Meeting with Birders and Naturalists	Are there plans to use eco-friendly alternative concrete that uses less energy to produce and produces less CO2?
120	18-Oct-21	Meeting with Birders and Naturalists	How much of the $400-500 household costs goes to capital costs and how much is operational?
121	18-Oct-21	Meeting with Birders and Naturalists	What happens to the methane gas?
122	18-Oct-21	Meeting with Birders and Naturalists	Does the water, that is currently ejected into the Salish Sea, still make its way there with all of the options you have mentioned? if not, is the pipe decommissioned?
123	18-Oct-21	Meeting with Birders and Naturalists	Can MV please provide the consequence table developed as part of the structured decisions making process?
124	18-Oct-21	Meeting with Birders and Naturalists	As we see the cost go up at this site, do other alternative sites become feasible or is Iona Island the only option on the table?
125	18-Oct-21	Meeting with Birders and Naturalists	What mitigation is proposed for encroachment in the park lands?
126	18-Oct-21	Meeting with Birders and Naturalists	Since the proposed treatment plant footprint encroachment could result in the loss of parkland, and understanding any loss of parkland would be traded for parkland somewhere else, shouldn't any mitigation for lost land, due to encroachment, be added to the budget?
127	18-Oct-21	Meeting with Birders and Naturalists	Based on the budget and the pie chart, there is $312,000,000 for community amenities and ecological restoration. Is this all planned for this site (or around it)?
128	18-Oct-21	Meeting with Birders and Naturalists	How are offsets being calculated and where will those offsets be invested? And is there a no net loss approach being utilized in this project?
129	18-Oct-21	Meeting with Birders and Naturalists	Will the ponds be independent of the sewage operation?

#	Date	Source	Question/Comment/Issue
130	18-Oct-21	Meeting with Birders and Naturalists	With regards to the foreshore work, has MV included a requirement to explore shorebird use and biofilm productivity on the foreshore mudflats?
131	18-Oct-21	Meeting with Birders and Naturalists	With dewatering of the lagoon being imminent, is there a baseline report being prepared on bird use of the lagoons that will be available for review and comment prior to dewatering?
132	18-Oct-21	Meeting with Birders and Naturalists	Will there be fenced off areas for semi public access and more importantly quiet areas for birds?
133	18-Oct-21	Meeting with Birders and Naturalists	Has any consideration been given to incorporating Bird Friendly Building Design as outlined in the Standards Council of Canada?
134	18-Oct-21	Meeting with Birders and Naturalists	Given the areas rich avian diversity, MV should consider bird friendly glass and lighting can be incorporated into future building designs. There is some recent research out of UBC across the river on rather significant numbers of birth deaths resulting from window/building collisions.
135	18-Oct-21	Meeting with Birders and Naturalists	What has the response from YVR been regarding creating bird habitat near the airport? How will their concerns affect the restoration plans?
136	18-Oct-21	Meeting with Birders and Naturalists	With different ecological values of those losses versus proposed swaps for parkland to have this net gain and no net-loss approach (appreciating that is one of MV's guiding principles), can MV indicate where that land swap might occur to understand the differences between those kinds of ecological integrities? Intent is to understand the net gain.
137	18-Oct-21	Meeting with Birders and Naturalists	Comment acknowledging that the IIWWTP projects is a great project and the related restoration projects will be wonderful.
138	18-Oct-21	Meeting with Birders and Naturalists	When MV opens up the causeway it will change the flow of the water in the North Arm. Have you looked at the upstream effects?
139	18-Oct-21	Meeting with Birders and Naturalists	Considering that sea level rise in the next century, could rise as much as one metre, how does that affect all the ecological restoration? Since the Iona Island vegetation is very sensitive to tidal flows, how does MV keep ahead of all that work within the plans?
140	18-Oct-21	Meeting with Birders and Naturalists	Could MV look at the ponds and the upland areas in the long-term, thinking about allowing the salt marsh to move up into those areas?
141	18-Oct-21	Meeting with Birders and Naturalists	What surveys have been done so far and which ones are you're planning on doing in the near future?

#	Date	Source	Question/Comment/Issue
142	18-Oct-21	Meeting with Birders and Naturalists	Will MV be looking at other metrics beyond exploring the number of birds and species? Noted that current research using 10-year banding data sets have been showing interesting results. The patterns of fat gain for migratory birds is an important source for migratory birds to migrate long distances. Research shows that Iona Island is acting as a very important stopover site for these migratory birds. Expressed interest in understanding future metrics related to whether the restoration projects maintain its importance in terms of fueling migratory birds.
143	18-Oct-21	Meeting with Birders and Naturalists	Is it possible to get a map showing the areas that will be lost in the proposed areas for land swaps, to increase the net gain of parkland at some point?
144	18-Oct-21	Meeting with Birders and Naturalists	Is there any discussion of looking at increasing park size elsewhere, as opposed to Iona Island itself? Expressed concern about MV increasing park size and incorporating more mundane land that's perhaps more covered in invasive compared with quality habitat that could perhaps be acquired elsewhere.
145	18-Oct-21	Meeting with Birders and Naturalists	Has any consideration been given to the living dykes project at Boundary Bay and possibly incorporating some of those methods into this project?
146	18-Oct-21	Meeting with Birders and Naturalists	Inquired about Board approval and additional engagement opportunities.
147	18-Oct-21	Meeting with Birders and Naturalists	These proposed design concepts will undoubtedly have some pretty substantial ramifications for Wild Research's programs. At what point in time will there be opportunities for more discussion?
148	18-Oct-21	Email	Will there be another Birders and Naturalists meeting during the engagement period or if there would be a chance to review what was said?
149	20-Oct-21	Telephone inquiry to Metro Vancouver Information Centre	Request to view videos or listen to recordings regarding the Iona Island Wastewater Treatment Plant projects.
150	22-Oct-21	Email from West Southlands Residents Association	Is a timetable available for construction of the barge berth ?
151	22-Oct-21	Letter submission from Fraser Riverkeeper	Fraser Riverkeeper has been working to compel Metro Vancouver to upgrade the Iona Island Wastewater Treatment Plant since 2007. The plant upgrade is a once-in-a-lifetime opportunity to invest in the health of the Salish Sea and adjacent communities.

#	Date	Source	Question/Comment/Issue
152	22-Oct-21	Letter submission from Fraser Riverkeeper	We were encouraged by Metro Vancouver's announcement last year that the Iona Island Wastewater Treatment Plant, after 57 years of functioning as a rudimentary primary treatment facility, would be upgraded to a tertiary plant. Now is the time to ensure federal regulatory standards are adhered to and timelines are met, as the Wastewater Systems Effluent Regulations require a minimum of secondary treatment of municipal wastewater treatment plants by 2030.
153	22-Oct-21	Letter submission from Fraser Riverkeeper	Fraser Riverkeeper has been pushing for a true tertiary treatment system, complete with the most protective technologies to best protect our communities, since learning of those plans. Fraser Riverkeeper submitted comments in October 2020 in support of a true tertiary plant upgrade with the potential to be truly protective of water quality and fish habitat.
154	22-Oct-21	Letter submission from Fraser Riverkeeper	Metro Vancouver is missing the 2030 regulatory deadline by four years and must avoid any further delay: Metro Vancouver has announced that its committed timeline is four years after the 2030 regulatory deadline for secondary treatment. The federal government requires secondary treatment at all wastewater treatment plants by 2030, but this won't happen at Iona until 2034. The project is also not expected to be fully complete until 2042. While it is encouraging that Metro Vancouver is committing to what it states is tertiary treatment, the delay in adhering to the federal deadline by four years is disappointing. Further delays must be avoided as discharges of deleterious substances into fish-bearing habitat further damages the health of the Salish Sea with each passing day. The primary treated sewage released into the Georgia Strait impacts water quality in vital salmon and orca habitat. Metro Vancouver must commit to implement true tertiary treatment with the best available technology as soon as possible, ensuring that the adjacent habitat built with the plant will benefit the wildlife whose habitat is impacted by longer delays in tertiary.

#	Date	Source	Question/Comment/Issue
155	22-Oct-21	Letter submission from Fraser Riverkeeper	Membrane Biological Reactor, Technology Option 2, the standard tertiary system technology utilized around the globe, should be incorporated into the design: Metro Vancouver should ensure the most protective and effective of tertiary treatment methods are adopted to protect the Salish Sea and its inhabitants. The decision should be made to prevent the largest quantity of harmful toxins like nitrogen, ammonia, metals, and microplastics from polluting the Salish Sea. Technology Option 2, the Membrane Biological Reactor, represents the most protective option and would boost the Iona Island Treatment Plant to one that is true tertiary, using technology that filters out as many toxins as possible, ensuring that the receiving environment is not endangered.
156	22-Oct-21	Letter submission from Fraser Riverkeeper	In the Spirit of Transparency, Metro Vancouver should maintain and honour the Public's Right to Know around Budget Modifications: Costs for the planned rebuild of Iona's aging wastewater treatment plant have ballooned more than five times since 2019. The new facility was still on target for its $1.9 billion as recently as 2019. However, a July 2020 report noted that estimate did "not reflect the preliminary design activity since 2018. The list of issues causing delays were not fully taken into consideration when the design concept for the new facility was presented to – and endorsed by – the Metro Vancouver board in July 2020. While it is understandable that unforeseen circumstances arise in the most challenging of projects, the new estimate of $10.4 billion is a monumental increase. Moving forward, Metro Vancouver must work to ensure transparency regarding the challenges that lead to any future cost overruns as soon as they encounter them.

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157	22-Oct-21	Letter submission from Fraser Riverkeeper	Metro Vancouver is Leading the Way: While this issue is directly impacting Vancouver, cities across the country look to Vancouver as a leader in environmental action. Its decisions will influence other municipalities facing these or similar choices. Metro Vancouver has the opportunity to be a leader in sewage treatment, and inspire municipalities with smaller populations, budgets, and publicity to take progressive steps to ensure the cleanest water possible. Moving forward with a true tertiary system that is the most protective of marine habitat will set the standard by which other Canadian municipalities can emulate and strive for.
158	22-Oct-21	Letter submission from Fraser Riverkeeper	Our team recognizes the great measures and effort the Metro Vancouver team has undertaken to proceed with this work against the backdrop of the serious challenges presented by the global COVID-19 pandemic. We sincerely thank you for your time and hard work on this Project and for continuing to hear from a broad range of interest groups in your public consultation process.
159	22-Oct-21	Letter submission from Birder and Naturalist Community	Since the start of community consultations in January 2019, the birding community has participated and consistently indicated to MetroVancouver Liquid Waste Services staff the importance of the sewage lagoons and adjacent habitats at Iona Island to avian biodiversity. The birding community has highlighted, on multiple occasions, to MetroVancouver staff that with 285 observed species Iona Island has the highest recorded diversity of birds in all of British Columbia. It is an important natural asset that warrants the utmost attention during the development of this project.
160	22-Oct-21	Letter submission from Birder and Naturalist Community	During the engagement process, MV staff have been informed the sewage lagoons play a vital role in supporting avian diversity and that monitoring of bird populations at Iona Island should occur prior to any major project activities getting underway.

#	Date	Source	Question/Comment/Issue
161	22-Oct-21	Letter submission from Birder and Naturalist Community	Despite our efforts to explain the ecological significance of the island, we have learned from MetroVancouver Liquid Waste Services staff and supporting consultants that one of the first steps in the Iona Island Wastewater Treatment Plant upgrade, the de-watering of the sewage lagoons, appears to already be underway. It is our understanding that these activities are occurring without a detailed assessment of bird diversity and abundance within and around the lagoons. The process of de-watering and eventual infilling of the sewage lagoons will drastically alter food availabilities and foraging options to the avifauna utilizing the island. It also remains unclear how these landscape level changes are going to be mitigated during the development process given the lifespan of this project.
162	22-Oct-21	Letter submission from Birder and Naturalist Community	Without pre-disturbance monitoring and data collection, it will be impossible for MetroVancouver to determine what impacts and changes in bird diversity, abundance and condition have occurred, and whether restoration efforts have been successful. We would like to see MetroVancouver develop and implement a set of studies focusing on the pre-, during and post-treatment monitoring.
163	22-Oct-21	Letter submission from Birder and Naturalist Community	MetroVancouver has indicated during the engagement process that it is committed to a “not net loss” approach and we commend this vision; however we believe it is important for MV to begin the process of impact assessment as early as possible to ensure it has sufficient pre-development data in hand, to allow staff to reasonably determine both positive and negative outcomes of these activities. To date, the birding community has not been made aware of any plans for such a study.
164	22-Oct-21	Letter submission from Birder and Naturalist Community	During the engagement process, park staff informed the birding community that it was undertaking BC Coastal Waterbird Surveys as a means of allowing staff to gain greater insights into the temporal shifts in waterbird presence on lagoons and ponds. While this may indeed be of some value, there appears to be a lack of discussion relating to quantifying the impacts of this project on migratory and non-migratory landbirds which have been shown to rely on Iona for the important development of fat reserves during migration.

#	Date	Source	Question/Comment/Issue
165	22-Oct-21	Letter submission from Birder and Naturalist Community	In order to meet the standards of acceptable research design, it is essential that MetroVancouver develop well designed monitoring programs of the sewage lagoons and adjacent habitats before any activities occur that could potentially alter the ecological function of the island. A failure to implement pre-treatment surveys undermines the ability to reach accurate conclusions about potential impacts on avian biodiversity that may be required during latter permitting stages of the project.
166	22-Oct-21	Letter submission from Birder and Naturalist Community	Given the proposed duration of this project, it is entirely possible that the regulatory process might change over the next decade. Greater demonstrations of ethical and responsible development will likely increase through time and we propose that the implementation of a strong monitoring program will only help to further public trust in our regional government.
167	22-Oct-21	Letter submission from Birder and Naturalist Community	Recognizing the significance of the area to wildlife in this province within the local birding community there exists a wealth of expertise and knowledge that we are willing to contribute to a program from MetroVancouver to monitor and analyse data on the avian community at Iona Island. As a community, we respectfully request MetroVancouver re engage with the local wildlife community to help codevelop and implement a research and monitoring program that will provide MetroVancouver with the data required to assess the impact their projects on the bird life at Iona Island. We the co-signed are available to meet with MetroVancouver and discuss a detailed research and monitoring strategy.
168	22-Oct-21	Email accompanying letter submission from Birder and Naturalist Community	Thank you for organizing the October 18th update on the proposed Iona Island Wastewater Treatment Plant. It was helpful to learn how the proposed project is progressing. Just as helpful was learning where things have not progressed, including the level of avian baseline monitoring. Since the October 18th meeting a number of leaders in the bird conservation community have connected with one another and shared concerns around the level of baseline information being used to inform the Iona Island Wastewater Treatment Plant project activities.
169	22-Oct-21	Email accompanying letter submission from Birder and Naturalist Community	Collectively those that have added their names to the attached letter believe more baseline data needs to be collected and analysed before any further activities associated with the upgrade are undertaken. Please find attached a shared letter expressing our concerns and an offer to engage in further dialogue about how to implement required research and monitoring.

Appendix B - Online Public Comment Period Feedback

The following table details all feedback received through the online public comment period questionnaire between September 27 and October 22, 2021.

July 2020 Board-endorsed design concept

QUESTION 1
Do you have any comments about the project cost estimate and schedule as presented in the panels?

#	Date	Response
1	22-Oct-21	no
2	22-Oct-21	IF there's a cost to delay --apart from ecological/water quality costs--is it factored in here? ie if option x can come online faster, will it avoid costly govt penalties, thus offsetting higher operating costs? WOuld like to see that in the 'alternatives' info. Are there 'just around the corner' technologies that were not examined, that might be now considered given things are already delayed? I realize that costs in design & extends timeline, unless faster to build...
3	21-Oct-21	I have concerns about the water sewage costs being ramped up to a 5 year budget instead of spread over 10 years to a more modest yearly increase. 66 percent increase is too much to ask of Metro Vancouver residents !
4	20-Oct-21	no
5	20-Oct-21	This is definitely a case where it does not do to be "penny-wise and pound-foolish." I know making the proper investments now will be most beneficial in the long run.
6	20-Oct-21	Can under estimating population growth vs over estimating affect future development opportunities.
7	18-Oct-21	Nothing specific
8	17-Oct-21	I am saddened that the expert engineers who worked on this project design over the past three years, did not already take these factors into account. I am saddened that “constructability” (access challenges and construction in a limited workspace) and “ground improvements” were not fully recognized earlier on in the design phase. Under Project Overview, one of the bullets about the design states: "Withstand an earthquake and sea level rise". Early during the initial public meeting phase, the question was raised as to whether it makes economic sense to locate the plant on Iona Island, given that location's elevation is so very close to current sea level, as well as earthquake stability issues. I recall the response was that other sites had been considered, but none would work. How thorough was this consideration of other possible locations? What portion of the current cost estimate is to cover earthquake stability and sea level rise, given this location on a floodplain island of the Fraser River estuary? The total estimated project costs in 2021 dollars of $6.7 million and what this amounts to for the Vancouver Sewerage Area households does appear high compared to other Metro Vancouver sewerage areas. How much of the additional cost is due to necessary earthquake proofing and building to withstand sea level rise? Have other locations for the treatment plant been considered? In considering overall costs, it should be appreciated that when we discharge our human waste into the ocean, it must be done to full tertiary treatment standard. In accounting dollars, we should calculate the debt owing to nature over the many previous decades of discharging sewerage that had received only basic treatment into the Salish Sea. Has anyone calculated that long term debt to nature? Regarding the statement about schedule constraints and that the project would not be completed until about four years after the federal government's regulatory deadline – should this not be immediately discussed with the responsible federal government staff? There is not much that the public can comment on this scheduling issue and how to resolve.

9	15-Oct-21	Missing the federal deadline by four years is disappointing, it could have been avoided and the delay further damages the health of the Salish Sea. However, the region can still make things right by implementing tertiary treatment by 2034, or sooner, as they are promising.
10	13-Oct-21	It's very disappointing that you missed the federal deadline by 4 years, causing further damages to the health of the Salish Sea. I hope that you can complete the tertiary treatment ahead of 2034.
11	13-Oct-21	One comment is that a "design build" concept should not be used. This type of contract increases the risk of project delays and cost over runs. Even if it delays the start of construction, the project should have the design completed before construction contracts are awarded.
12	13-Oct-21	Who has been selected as the General Contractor? or who are on the short list?
13	12-Oct-21	It is not clear why initial estimate was so much lower than current estimate of costs. Where the challenges unanticipated in the initial estim? did materials or labour costs rise more than anticipated? Did all these "challenges" catch the estimators by surprise?
14	12-Oct-21	No
15	10-Oct-21	I understand that the cost of this project is great, but would like to argue that nature is not infinite. In other words, climate change is in full effect and we must protect wild environments with urgency rather than shuffling around dates, money and time. The delays on this project are indicative of a lack of concern and a lack of upholding the human and non-human right to a healthy environment. Iona Island Wastewater Treatment Plant should be upgraded to tertiary treatment by 2030 to 1) reduce senseless human pollution in the Salish Sea, 2) protect migrating salmon of the Fraser River and 3) set an example for municipal projects that are morally good and effective for pristine ecological habitat.
16	10-Oct-21	Missing the federal deadline by four years is disappointing, it could have been avoided and the delay further damages the health of the Salish Sea. However, the region can still make things right by implementing tertiary treatment by 2034, or sooner, as promised.
17	9-Oct-21	It is shocking and disappointing to learn that the federal deadline for this project has been missed by 4 years. The cost has increased exponentially in that time. However, better late than never. We MUST do this project because we need to restore the Fraser Estuary as much as possible - it is one of the most important biodiversity areas in all of Canada - salmon, birds, orca and more depend on this area. Many people depend on this area for their livelihood too. Marshes also store carbon so we must ensure this continues to fight the climate emergency. Cost must be of secondary importance! We must spend the money on projects like these now or nothing else will matter in the future - it will be too late!
18	9-Oct-21	Missing the federal deadline by four years is disappointing, it could have been avoided and the delay further damages the health of the Salish Sea. However, the region can still make things right by implementing tertiary treatment by 2034, or sooner.
19	9-Oct-21	Imagine this project will take several stages. I am not familiar with the costs, but it is necessary step to protect and presrve the Georgia Straight habitat and all its surroundings.
20	9-Oct-21	I am very disappointed that the project schedule will miss the federally mandated 2030 deadline. The cost estimate will, of course reflect the civil construction industry increases due to the excessive delay in starting this project.

21	9-Oct-21	The most important consideration is the prevention of non-tertiary treated sewage being flowed into the Salish SeaNo
22	9-Oct-21	most people can understand the costs can vary in a project of this complexity and I think it would've been more helpful if the reasons and background to why some of the costs increased so much and been explained in an ongoing and timely manner.
23	9-Oct-21	Yes, implementing tertiary treatment by 2034 or sooner is imperative for the health of the Salish Sea and the entire ecoystem in this region, an incredibly important habitat for salmon, orcas, birds, and other wildlife. Do not delay any longer.
24	9-Oct-21	Unfortunate we will miss 2030 deadline
25	9-Oct-21	Disappointed that the federal deadline is being missed. That is 4 extra years of unnecessary pollution going into the Salish Sea.
26	5-Oct-21	It has to be done. We don't need a cadillac but we need the best result without millions on minor improvements
27	4-Oct-21	What are the reprecussions for not completing the upgrades by the 2030 deadline?
28	2-Oct-21	In all these issuses, there shpuld be a clear outline by the First Nations with their prespective, given the City will have included them as they are directly impacted, as they were impacted in the first Iona Plant project. before any comment by me as a lay person, and not living adjacent to it< i would expect the First Nations stated views to be included first, and then shared in this city overview etc. so we are fully imformed, as part of the approppriate way to move forward!!!!
29	1-Oct-21	No. Seems like a long time to get this built, but I lack knowedge/expertise in this area.

July 2020 Board-endorsed design concept

QUESTION 2
Do you have any comments about the ecological restoration projects? (No modifications to the ecological restoration projects are being considered or evaluated as part of any revised design concept.)

#	Date	Response
30	22-Oct-21	no
31	22-Oct-21	What is the situation with trucking sludge to other locations? it must cost? is it just moving a problem material to future/elsewhere? Is, or might there be in future, recovery potential in it?
32	22-Oct-21	Concider the birds and their habitat when you are making decisions
33	21-Oct-21	no
34	20-Oct-21	I have not been able to access the materials, e.g. a map o that indicates the changes to the area. Would you send them to me? My concerns are that this is an Important Birding Area and a critical habitat for birds. What is being done to protect this natural area?
35	20-Oct-21	no
36	20-Oct-21	I would like you to please prioritize being as energy-efficient as possible, and - where compatible with the above - keep the enroachment on parks as small as possible. Energy efficiency, however, must be priority number one.
37	20-Oct-21	Seems the quality of the outflow could be enhanced to the point of restoring the ability for human consumption of the areas shellfish as well as recreational water safety.
38	18-Oct-21	My main concern is that bird habitat is maintained. It can be a difficult thing to create. I'm pleased to see tidal function being restored in areas by breaching causeways, etc. I suggest a viewing "tower" is not a great idea. Birds do not respond well to having high structures above habitats and people up there. All birds can be viewed well from ground level. Please review consideration of this addition to the grounds.
39	17-Oct-21	The terrestrial ecosystems and bird habitat are mentioned in the panel titled: “About the July 2020 Board-Endorsed Design Concept – Ecological Restoration Projects”. However, enhancement and sustaining the varied natural habitats of the park should be mentioned in the proceeding panel (“What Success looks like”). As a side note on the topic of natural habitats of the park and consideration of visitor experience and overall environmental well being, it is worth noting that this constitutes only a very small portion of the overall cost of the project – the budget estimate is only 3% for “Ecological Restoration & Community Amenities”. The last statement of the panel on "Ecological Restoral Projects" is misleading. That statement reads: *"No modifications to the ecological restoration projects are being considered or evaluated as part of a revised design concept."* Surely this statement is misleading when Design Concept 1a (Modified Base Case) states that more parkland will be used for construction of the facility. If parkland is reduced in size, then this surely will impact the park visitor experience and/or the ability to sustain and enhance the natural habitats of the park.
40	13-Oct-21	MORE IS BETTER, we have a lot of past sins to make up for.
41	13-Oct-21	What part does the First Nations have in this Project?
42	12-Oct-21	It is not clear from information that I have found whether the impact on the opposite shoreline, along the north arm of the Fraser, has been included in evaluations and monitoring.
43	12-Oct-21	No
44	10-Oct-21	I respect that Iona Beach and Regional Park have been redesigned in the past 20 years to benefit hundreds migratory birds. However, the jetty disturbs marine mammal and fish movement; it also represents a graveyard for what was once an abundant crustacean habitat.

45	10-Oct-21	Is there going to actually be an improvement in the new ecology by destroying the existing one other than what's needed for plant expansion.?
46	9-Oct-21	Sorry, I am not familiar with the plan. I will try and find out the details on line (I Imagine..) I live on Vancouver Island, so I am nor sure if I could be a "valuable custommer" . I will inform myself so that I can give you bettter answers, Thank you
47	9-Oct-21	All reasonable steps should be taken to restore the natural ecosystems.
48	9-Oct-21	i'm just glad ecological restoration projects were included
49	9-Oct-21	why wasn't this planned to be completed earlier than later, why isn't this upgrade to the plant a high high priority?
50	6-Oct-21	sounds like a good plan
51	5-Oct-21	The point here is sewage treatment not environmental enhancements
52	4-Oct-21	While any improvement to the ecological value of the treatment site can be considered positive, was such an extensive proposal required? The environmental gain will be seen in the receiving environment and the water quality discharge.
53	2-Oct-21	See above: *"In all these issuses, there shpuld be a clear outline by the First Nations with their prespective, given the City will have included them as they are directly impacted, as they were impacted in the first Iona Plant project. before any comment by me as a lay person, and not living adjacent to it< i would expect the First Nations stated views to be included first, and then shared in this city overview etc. so we are fully imformed, as part of the appropriate way to move forward!!!!"*
54	1-Oct-21	Agree with need for ecological restoration in lower Fraser River.

Treatment plant technology options and layouts being evaluated

QUESTION 3
Do you have any comments about Technology Option 1 (Base Case - July 2020 design concept)?

#	Date	Response
55	22-Oct-21	no
56	21-Oct-21	no
57	20-Oct-21	no
58	20-Oct-21	This seems the best best.
59	20-Oct-21	Better than previous plans. Does this adequately satisfy the regions desire, hopes and expectations towards a non-septic non-toxic discharge into our waterways?
60	17-Oct-21	The estimated cost does seem high, but in considering overall costs, it should be appreciated that when we discharge our human waste into the ocean, it must be done to full tertiary treatment standard. In accounting dollars, we should calculate the debt owing to nature over the many previous decades of discharging sewerage that had received only basic treatment into the Salish Sea. Has anyone calculated that long term debt to nature?
61	13-Oct-21	We need a true tertiary system. Some of the choices presented do not qualify. Please consider the Membrance Biologial Reactor or option 2.
62	13-Oct-21	Not enough knowledge to comment on technology but trucking seems like a reasonable option to have a simple process all on Metro lands. Also, resource recovery and provisions to deal with chemicals of emerging concern would be nice. However, once tertiary is in place these can be added later if the plant is "future proofed" for these. They will be needed in the future.
63	13-Oct-21	Which is the most cost effective technology
64	12-Oct-21	This seems reasonable
65	10-Oct-21	We want a true tertiary system. Some of the choices being presented, however, are not truly tertiary. The Standard tertiary system technology around the globe, and the one that is the best option, is Membrane Biological Reactor or Technology option 2.
66	9-Oct-21	Please avoid this one.
67	9-Oct-21	Ditto: "Sorry, I am not familiar with the plan. I will try and find out the details on line (I Imagine..) I live on Vancouver Island, so I am nor sure if I could be a "valuable custommer" . I will inform myself so that I can give you bettter answers, Thank you "
68	9-Oct-21	Regardless of the technology chosen, the critical issue is to achieve true tertiary treatment as soon as possible, and in any case, no later than 2034.
69	9-Oct-21	No go
70	9-Oct-21	truly tertiary?
71	4-Oct-21	Where is the information on the net effectiveness/ improvement on water quality for each of the treatment options?
72	2-Oct-21	See above: *"In all these issuses, there shpuld be a clear outline by the First Nations with their prespective, given the City will have included them as they are directly impacted, as they were impacted in the first Iona Plant project. before any comment by me as a lay person, and not living adjacent to it< i would expect the First Nations stated views to be included first, and then shared in this city overview etc. so we are fully imformed, as part of the approppriate way to move forward!!!!"*

Treatment plant technology options and layouts being evaluated

QUESTION 4
Do you have any comments about Technology Option 1a (Modified Base Case)?

#	Date	Response
73	22-Oct-21	no
74	21-Oct-21	no, Best use to meet the requirements
75	20-Oct-21	no
76	20-Oct-21	Moving towards a higher quality teriary processing ASAP is the objective, without overloading the system with under estimates of popuation growth impacts.
77	17-Oct-21	Regarding Design Option 1a: Modified Base Case (July 2020 Board-endorsed design concept with use of additional land), it states, "Footprint encroaches onto Metro Vancouver Parks Land". This does not fit with the statement in an earlier panel that the design options under consideration have "no change to ecological enhancement plan". If more parkland will be used, this surely will impact the park visitor experience and/or the ability to sustain and enhance the natural habitats of the park. The plant redesign and development should not encroach further on parkland.
78	13-Oct-21	Not enough knowledge to comment.
79	12-Oct-21	This seems unreasonable to permanently expand the plant size and encroach on Park Land to alleviate 6-years of temporary trucking.
80	9-Oct-21	Please avoid this one.
81	9-Oct-21	Ditto: "Sorry, I am not familiar with the plan. I will try and find out the details on line (I Imagine..) I live on Vancouver Island, so I am nor sure if I could be a "valuable custommer" . I will inform myself so that I can give you bettter answers, Thank you "
82	9-Oct-21	Regardless of the technology chosen, the critical issue is to achieve true tertiary treatment as soon as possible, and in any case, no later than 2034.
83	9-Oct-21	Good option
84	9-Oct-21	truly tertiary?
85	2-Oct-21	See above: *"In all these issuses, there shpuld be a clear outline by the First Nations with their prespective, given the City will have included them as they are directly impacted, as they were impacted in the first Iona Plant project. before any comment by me as a lay person, and not living adjacent to it< i would expect the First Nations stated views to be included first, and then shared in this city overview etc. so we are fully imformed, as part of the approppriate way to move forward!!!!"*

Treatment plant technology options and layouts being evaluated

QUESTION 5
Do you have any comments about Technology Option 2 (Membrane Biological Reactor)?

#	Date	Response
86	22-Oct-21	no
87	21-Oct-21	no
88	20-Oct-21	Suggest applying the Xogen technology, viewed at https://www.youtube.com/watch?v=2vJZn3Avf70 for additional features engaging this technology.
89	20-Oct-21	I like this one the least.
90	20-Oct-21	Besides being very expensive, locked into supply materials, high maintenance and power requirements, its purposes are apparent. Other techniques may also assist greater clarification and reduction of SS and BOD in a shorter time frame. The Xogen system (xogen.ca) and its branching technologies may reduce the time and degree of solids collection within a compact land space. Though I have neither lock nor stock in the company, engaging its unique technology would be a boon to BC's longevity and well-being, while also visualizing our energy transformation future, preserving petroleum resources for purposes other than combustion.(tinyurl.com/khjk67wz) If some requests to them for piloting such a system, our budgets etc, savings may be found with reduced retention times required, if this process contributes its share of clarification and 'biological reform' eliminating toxic product discharges.
91	17-Oct-21	Regarding Option 2 (Membrane Biological Reactor) and Option 3 (Aerobic Granular Sludge), I do not have the required knowledge in sewerage treatment to provide to comment. I assume this is why Metro Vancouver enlisted the help of the external panel. Will the details of their report be public, together with the names of the panel members?
92	15-Oct-21	I want a true tertiary system. Some of the choices being presented, however, are not truly tertiary. The Standard tertiary system technology around the globe, and the one I think is the best option, isMembrane Biological Reactor or Technology option 2.
93	13-Oct-21	This is the best.
94	13-Oct-21	Not enough knowledge to comment.
95	12-Oct-21	MBR technology is fairly established but I know there are lots of replacements more frequent that 10-years.
96	10-Oct-21	Membrane Biological Reactor or Technology option 2 should be implemented by 2030.
97	9-Oct-21	Technology option 2 is the best option. I realize that this technological piece is very complicated AND that a true tertiary system is critical for the project to be effective to preventing undertreated sewage from entering the waters and further polluting the surrounding ecosystems. We want to be able to swim in our oceans while we stay healthy as do marine creatures.
98	9-Oct-21	It is better to have a true tertiary system, but otherwise this is the best option out of all the options.
99	9-Oct-21	Where do I find the details about the Member Biological Reactor??
100	9-Oct-21	Regardless of the technology chosen, the critical issue is to achieve true tertiary treatment as soon as possible, and in any case, no later than 2034.
101	9-Oct-21	No go

102	9-Oct-21	Tertiary treatment is ultimately so important and I think Technology Options 2 or 3 would be the best way to go.
103	9-Oct-21	TheStandardtertiary system technology around the globe, and the one I think is the best option, is Membrane Biological Reactor or Technology option 2.
104	9-Oct-21	I believe this is the best option
105	9-Oct-21	reactor? Not earth friendly
106	2-Oct-21	See above: *"In all these issuses, there shpuld be a clear outline by the First Nations with their prespective, given the City will have included them as they are directly impacted, as they were impacted in the first Iona Plant project. before any comment by me as a lay person, and not living adjacent to it< i would expect the First Nations stated views to be included first, and then shared in this city overview etc. so we are fully imformed, as part of the appropriate way to move forward!!!!"*

Treatment plant technology options and layouts being evaluated

QUESTION 6
Do you have any comments about Technology Option 3 (Aerobic Granular Sludge)?

#	Date	Response
107	22-Oct-21	no
108	21-Oct-21	no
109	20-Oct-21	seems okay
110	20-Oct-21	Seems appropriate and well developed.
111	17-Oct-21	Regarding Option 2 (Membrane Biological Reactor) and Option 3 (Aerobic Granular Sludge), I do not have the required knowledge in sewerage treatment to provide to comment. I assume this is why Metro Vancouver enlisted the help of the external panel. Will the details of their report be public, together with the names of the panel members?
112	13-Oct-21	Not enough knowledge to comment.
113	12-Oct-21	I understand this is an emerging technology but has had lots of research done in BC.
114	9-Oct-21	Please avoid this one.
115	9-Oct-21	I will have to look up the details, before being able to answer this question.
116	9-Oct-21	Regardless of the technology chosen, the critical issue is to achieve true tertiary treatment as soon as possible, and in any case, no later than 2034.
117	9-Oct-21	Best option
118	2-Oct-21	See above: *"In all these issuses, there shpuld be a clear outline by the First Nations with their prespective, given the City will have included them as they are directly impacted, as they were impacted in the first Iona Plant project. before any comment by me as a lay person, and not living adjacent to it< i would expect the First Nations stated views to be included first, and then shared in this city overview etc. so we are fully imformed, as part of the approppriate way to move forward!!!!"*

General

QUESTION 7
Do you have any other comments about the Iona Island Wastewater Treatment Plant Projects?

#	Date	Response
119	22-Oct-21	What is done with the sludge and dry waste solids. Could they be transported by empty coal trains to interior locations for soil blending, use for forests and agriland development.
120	22-Oct-21	I assume whichever design is selected WILL be capable of removing very small-scale plastic particles? Wish there was included a bit of info on capabilities of options altho I realize it's likely very technical. Is there any attempt to coordinate chosen technologies across the whole lower mainland, or even great area [pacific NW, or western Canada]--maybe can't, because of differing challenges. Seems if there's parallel systems, might be easier to get or train qualified people? or fix problems? I don't have any expertise to comment on the various options, but wow it seems there's quite a variety. Isn't there some way to rank them, apart from specific (& necessary) local considerations, in sense of world-wide current or best or emerging practices?
121	21-Oct-21	keep the improvement costs down by spreading it over 10 years ,not 5 years .
122	20-Oct-21	As mentioned suggest finding a place to engage Xogen to verify its benefits.
123	20-Oct-21	Thank you for all your work on this project.
124	20-Oct-21	Dilution is still not a solution to pollution. The technologies we decide to apply in small or great proportion, have the intrinsic abilities to transform both the energy and viable recirculation of the planets resources. The air quality the facilities produce and the treated sewage outflow characteristics determine the health of the sea and shores, healthy people, better land use value and civilization coexisting with close access to vibrant nature, often the reasons for populaton growth.
125	18-Oct-21	I am keen to see the best possible treatment of wastewater for the area on environmental and human health grounds. I do not have opinions on the technology.
126	17-Oct-21	Regarding the external panel of subject matter experts who have reviewed the three revised design options presented in subsequent panels – what is the basis for choosing a redesign? Will it be the cheapest cost, measured only in immediate construction costs and not including debt to nature and/or loss of long-term park benefits to nature, including humans? Will the recommendation/decision be made only on which option can be completed by 2030? Those factors are not always included in the Pros and Cons. That is for the panel on Option 1: Base Case, it does not mention under Cons, the high cost and expected completion date of 2034.
127	15-Oct-21	It is essential that we have true tertiary treatment ASAP to protect the Salish Sea that so many species as risk depend on, including endangered Southern Resident Killer Whales. The lack of communication and honesty from Metro Vancouver to the community has created distrust around the project. The region should communicate any changes to budgeting and timelines any other complications with stakeholders and the public as soon as they encounter them. The community is an important part of creating a strong plan for the region, and that begins by open communication from Metro Vancouver.

128	13-Oct-21	Communication to the community should be improved, particularly to changes in budgeting and timelines. The health of the Salish Sea is important to me and many other residents of BC. We can not be a climate leader, or a green community while raw sewage is being pumped into our sea. Please ensure that this project is completed well (with a true tertiary system) and as soon as possible.
129	13-Oct-21	Thanks for making the effort to include tertiary and this consultation process. We look forward to the day when Metro Vancouver is NOT the waste water villan of developed world.
130	12-Oct-21	No
131	10-Oct-21	While I am not an expert regarding any of the issues presented here, I live on this planet and am very concerned with preserving its habitability for all living things. (I also believe that we humans have not come close to understanding our connectedness with all living things. Who would ever have thought that trees communicate with each other???) Just as we have seen that the caribou can not survive when their habitat is degraded and the salmon populations are diminished when their complex habitat needs are destroyed, we, too, need to protect a healthy environment for humans to thrive in. So it would be my wish that finances not be a consideration in developing this facility; the recent election campaign made it clear that we have enough money to provide such 'common good' services. We simply have to make those with the resources pay whatever their 'fair share' requires; they have certainly benefitted more than most from being, in one way or another, a member of this community. This is simply a question of political will.
132	10-Oct-21	Primary treatment at IIWWTP is irresponsible in that it pollutes pristine ecological habitat of the Salish Sea. Note: I live in Vancouver, on unceded Musqueam territory.
133	10-Oct-21	The lack of communication and honesty from Metro Vancouver to the community has created distrust around the project. The region should communicate any changes to budgeting and timelines any other complications with stakeholders and the public as soon as they encounter them. The community is an important part of creating a strong plan for the region, and that begins by open communication from Metro Vancouver.
134	9-Oct-21	Communication between Metro Vancouver and its citizens is very important. Metro Vancouver needs to inform us of the reasons why this project is badly needed and be transparent about the delays, cost overages, etc. as soon as they occur. We need the public to be on-side with this project and be willing to pay for it. Your messaging must show courage and leadership - tell the public this is the only way to keep our community and ecosystems healthy. Remind them that we all rely on clean water, air and food to survive so we must take care of nature or else we will not only kill off the plants and animals but also ourselves. Remind them that you are undertaking this project for the sake of each of them and their children/youth.
135	9-Oct-21	The lack of communication and honesty to the community has created distrust around the project. The region should communicate any changes to budgeting and timelines any other complications with stakeholders, the public, and local First Nations as soon as they encounter them. The community is an important part of creating a strong plan for the region, and that begins by open communication.
136	9-Oct-21	Ditto: "*I will have to look up the details, before being able to answer this question*"

137	9-Oct-21	Project principals must do a better job of communication with the local community, the public and other stakeholders as the project evolves. The continued flow of under-treated effluent into the Salish Sea if unacceptable.
138	9-Oct-21	Should meet the Federal time line or ASAP thereafter.
139	9-Oct-21	There should be an absolute commitment to the completion of the projects by 2034. The date has already been pushed 4 years further than it should be .
140	9-Oct-21	Better communication and transparency please! The region should communicate any changes to budgeting and timelines any other complications with stakeholders and the public as soon as they encounter them. The Salish Sea is critical habitat for numberous endangered and declining species that have cultural importance to Indigenous peoples on the coast and up the Fraser riverbed - if Metro Vancouver is committed to true reconciliation, you will implement the best treatment technologies available at the quickest possible timeline.
141	9-Oct-21	please commit to open, transparent full communications on plans, budgets and schedules. I want to see a full tertiary treatment system.
142	9-Oct-21	lagged time line completion date
143	9-Oct-21	I am not sure which option is best.... not a specialist. But it is important for it to be a true tertiary wastewater treatment.
144	5-Oct-21	Produce the best result while remembering that we taxpayers see our government costs going up faster than incomes. Be resonable. We, the taxpayer, have no rational ability to comment on the best option.
145	2-Oct-21	In all these issuses, there shpuld be a clear outline by the First Nations with their prespective, given the City will have included them as they are directly impacted, as they were impacted in the first Iona Plant project. before any comment by me as a lay person, and not living adjacent to it< i would expect the First Nations stated views to be included first, and then shared in this city overview etc. so we are fully imformed, as part of the appropppriate way to move forward!!!!
146	1-Oct-21	It's very hard for a non-expert member of the public (like myself) to make informed comments on wastewater technologies with which we are unfamiliar.
147	28-Sep-21	this project will be detrimental to the migratory shorebirds that use this place to roost and feed. With endless construction noise and the loss of the precious sewage lagoons turning into duck ponds we will be losing a precious treasure pls reconsider
148	28-Sep-21	When the project is running - I hope that the public can be given performance data and environmental impact assessment data

Appendix C - First Nation Feedback

The following table details all First Nation feedback received during the July 30 to October 22, 2021 engagement period.

Musqueam Indian Band			
#	**Date**	**Source**	**Question/Comment/Issue**
1	30-Jul-21	Project update meeting with Musqueam Indian Band Staff	How will the proposed design changes impact views to Musqueam?
2	30-Jul-21	Project update meeting with Musqueam Indian Band Staff	What is the driver of the increased footprint option versus the other treatment options?
3	30-Jul-21	Project update meeting with Musqueam Indian Band Staff	*In response to Metro Vancouver interest in inviting Musqueam staff to participate in the regulatory working group:* Musqueam staff will need to confirm this with their colleagues, but expect interest. This was discussed previously as a means to help resolve timing and other issues tied to permitting.
4	30-Jul-21	Project update meeting with Musqueam Indian Band Staff	*In response to Metro Vancouver invitation to Musqueam staff to meet in early September to engage on aspects of the existing IIWWTP design concept that could potentially be revised:* Agreed to meet and confirmed September 14 as the meeting date. Asked Metro Vancouver to structure the September 14 meeting format to accommodate Musqueam staff who can only attend one-half of the two-hour meeting.
5	14-Sep-21	Project Definition Update Engagement Meeting with Musqueam Indian Band (Staff to Staff)	Who is the audience for the "History of Iona Island Wastewater Treatment Plant" video?
6	14-Sep-21	Project Definition Update Engagement Meeting with Musqueam Indian Band (Staff to Staff)	The "History of Iona Island Wastewater Treatment Plant" video doesn't include any content related to the significant negative human health impacts the treatment plant had on Musqueam people. Metro Vancouver should explore opportunities to include voices from the Musqueam community directly impacted by the treatment plant's history.

Musqueam Indian Band			
#	**Date**	**Source**	**Question/Comment/Issue**
7	14-Sep-21	Project Definition Update Engagement Meeting with Musqueam Indian Band (Staff to Staff)	Agrees with concerns about the "History of Iona Island Wastewater Treatment Plant" video voiced by Musqueam staff. Appreciates the video and sees opportunity to build on the story by spotlighting how Musqueam and Metro Vancouver (Metro Vancouver) have moved from a place of no consultation, to the immersive and collaborative work being done today. Sees opportunity to emphasize how the relationship between Musqueam and Metro Vancouver has progressed.
8	14-Sep-21	Project Definition Update Engagement Meeting with Musqueam Indian Band (Staff to Staff)	When is Metro Vancouver expecting to have the Project Definition Report approved?
9	14-Sep-21	Project Definition Update Engagement Meeting with Musqueam Indian Band (Staff to Staff)	Appreciates Metro Vancouver's commitment to share permits early on in the permitting process. Supports the idea of Metro Vancouver sharing a preliminary permit review with Musqueam to help them identify and analyze permits of interest.
10	14-Sep-21	Project Definition Update Engagement Meeting with Musqueam Indian Band (Staff to Staff)	Is the acquisition of eastern Iona island for the new treatment plant options complicated?

To: Liquid Waste Committee

From: Lillian Zaremba, Program Manager, Utility Residuals Management, Liquid Waste Services

Date: October 25, 2021 Meeting Date: November 4, 2021

Subject: **Procurement Model for Regional Biosolids Drying Facility**

RECOMMENDATION

That the GVS&DD Board endorse Design-Build-Operate as the procurement model for implementation of the regional biosolids drying facility.

EXECUTIVE SUMMARY

Metro Vancouver is mandated to use liquid waste as a resource and recover nutrients and energy from biosolids. A biosolids drying facility has been identified as the most viable and cost-effective option to diversify beneficial use markets for the growing quantities of biosolids that will be generated in the region. Dried biosolids pellets can be used either as fuel to replace coal in cement kilns or as an ingredient in blended fertilizer products. A value-for-money analysis compared three procurement models for the regional biosolids drying facility. The analysis concluded that Design-Build-Operate procurement has the lowest cost, with 13% savings compared to Design-Bid-Build. Third-party operation of the dryer is consistent with current Metro Vancouver practices for biosolids and offers benefits including: having operations expertise at the design stage, incentivizing consistent quality of the product, experienced operators avoiding process upsets, and experience with marketing and sales.

PURPOSE

This report recommends a procurement model for implementation of a regional biosolids drying facility that will allow for continued beneficial use of growing quantities of biosolids through the recovery of energy and nutrients.

BACKGROUND

The *Integrated Liquid Waste and Resource Management Plan* directs Metro Vancouver to use liquid waste as a resource and recover nutrients and energy from biosolids. New options for biosolids management are required because the annual biosolids production in the region is projected to increase substantially. A biosolids drying facility has been identified as the most viable and cost-effective option to diversify beneficial use markets for the growing quantities of biosolids that will be generated in the region. At its October 4, 2019, meeting, the GVS&DD Board endorsed biosolids drying as a biosolids management option and directed staff to report back to the Board with the recommended procurement model for implementation of a regional biosolids drying facility. A value-for-money analysis that compared different procurement models has been completed.

REGIONAL BIOSOLIDS DRYING FACILITY

Metro Vancouver's five wastewater treatment plants (WWTPs) currently generate 55,000 bulk tonnes of biosolids annually, which are beneficially used through land application. The quantity of biosolids generated by the region will increase substantially due to upcoming WWTP upgrades from primary to secondary treatment, along with increases due to population growth. The annual quantity is expected to grow to over 90,000 tonnes per year by 2022 and over 150,000 tonnes per year by 2050. It is unlikely that Metro Vancouver can secure sufficient new land application projects to beneficially use the entire additional quantity of biosolids. Land application projects are vulnerable to fluctuations in customer markets and public concern.

Diversification of resource recovery options and beneficial use markets will reduce the costs and risks of managing growing quantities of biosolids. Through a series of studies to investigate options for recovering energy from biosolids, a biosolids drying facility was identified as the most viable and cost-effective option. The regional biosolids drying facility will be built at either Annacis Island WWTP or Northwest Langley WWTP; a siting study to evaluate the two locations is in progress. The facility will receive biosolids from Metro Vancouver WWTPs and will produce dried biosolids that can be used either as a fuel to replace coal in cement kilns or as an ingredient in blended fertilizer products. Either of these two markets could use the entire quantity of dried biosolids produced by a facility with capacity of 75,000 bulk tonnes per year.

The biosolids drying facility would complement the existing land application program. Land applications of biosolids recovers valuable nutrients, builds healthy soils and sequesters carbon. The biosolids drying facility allows for recovery of energy or nutrients, which both fulfill the direction of the *Integrated Liquid Waste and Resource Management Plan*. Using dried biosolids as fuel in cement kilns displaces fossil fuels and reduces regional greenhouse gas emissions. Using dried biosolids as an ingredient in blended fertilizer is an alternative to mining phosphate, a non-renewable resource, and avoids the greenhouse gas emissions associated with conventional fertilizer production. Metro Vancouver is also proposing to process biosolids at the Waste-to-Energy Facility on a contingency basis if land application sites become unavailable. Processing biosolids at the Waste-to-Energy Facility does not impact the business case for the development of the regional biosolids drying facility.

Procurement options

A value-for-money analysis compared three procurement models for the regional biosolids drying facility: the base case of Design-Bid-Build (DBB), and the alternatives Design-Build-Finance-Operate-Maintain (DBFOM), and Design-Build-Operate (which also includes maintenance, but is commonly shortened to "DBO").

- DBB: GVS&DD would first contract with a consulting engineer to develop the detailed design and specifications, then tender the construction through a pre-qualified tender process. GVS&DD staff would operate the facility.
- DBFOM: GVS&DD would contract with a consulting engineer (the "owner's engineer") to develop a performance specification and run an RFQ/RFP procurement process to secure a single entity to design, build, operate and maintain the facility as well as provide financing that would not be fully repaid by GVS&DD until the end of the operating/maintenance period.

- DBO: GVS&DD would contract with an owner's engineer to develop a performance specification and run an RFQ/RFP procurement process to secure a single entity to design, build, operate and maintain the facility.

In all cases, Metro Vancouver would own the facility. Each of the three models has different costs for procurement, design, construction, operation, financing, retained risks, and transferred risks. The value-for-money analysis quantified these costs and risks to determine which model offers the lowest all-in cost to GVS&DD. DBFOM offered the most comprehensive risk transfer, but cost savings would be only 2 to 3% compared to DBB, depending on the amount of private financing. The analysis concluded that DBO has the lowest cost: 13% less than DBB, equivalent to savings of $41M compared to DBB. The primary driver for the DBO savings is the integrated design-build process, which has lower costs and reduced capital risk. The benefits of DBO would likely be even greater, since the assessment did not capture further risk reductions from having an experienced third-party firm operate the dryer.

Metro Vancouver has had success using the DBO model. The Waste-to-Energy Facility is a Metro Vancouver owned asset that was procured using DBO and is being operated by a third party. Other examples recently procured using models other than DBB include the North Shore WWTP Conveyance project, which used Design-Build-Finance (DBF), and the Iona Island WWTP Biosolids Dewatering Facility, which was constructed using Design-Build (DB).

Benefits of third-party operation

Operation of a biosolids drying facility is not a core function of wastewater treatment. Currently, dewatered biosolids are not handled by Metro Vancouver after production: third-party haulers remove the biosolids from Metro Vancouver WWTPs for transport to third-party sites where third-party contractors apply biosolids to land or process biosolids into soil products that are then marketed by a third party. Transferring the biosolids to a third party to produce dried biosolids pellets is consistent with current Metro Vancouver practices.

Having an experienced operator as part of the DBO design team would ensure that the dryer is designed to meet the quality requirements of the final product. For example, the blended fertilizer market is very sensitive to parameters like pellet size, hardness and nutrient content. Conversations with other municipalities that operate dryers indicate that fine-tuning the dryer to manufacture a product that meets the quality requirements is not trivial and any early mistakes could sour potential customers to the product. An experienced operator on the DBO team would avoid process upsets while starting up the dryer. A DBO contract could be structured with appropriate incentives and penalties so that the third-party operator, who is also responsible for marketing the product, would be motivated to ensure consistent quality of the dried product.

The blended fertilizer market comprises over 60 potential customers throughout southern British Columbia and northern Washington state. The dried biosolids pellets would need to meet applicable regulations for biosolids and fertilizers in the jurisdictions where it is being marketed. It will take a considerable investment to appropriately brand the product, connect with potential customers, confirm that the product meets regulatory requirements, and price it appropriately to maximize the value. These activities are outside the core business and experience of Metro Vancouver's liquid waste function. The DBO model would tap into experienced operators and marketers, and allows

Metro Vancouver to transfer the risks associated with producing and selling the dried product to a third party.

Using a third party to operate the dryer would not displace any current staff positions within Metro Vancouver. WWTP staff will continue to be responsible for producing dewatered biosolids, which would then be transported to the drying facility for processing by the third party. Operations and maintenance of the dryer are very different from WWTP operations and maintenance. Metro Vancouver does not currently have operations or maintenance personnel with experience suitable for biosolids drying equipment. A drying facility requires special training and carries unique safety risks that can be managed by an experienced operator.

ALTERNATIVES

1. That the GVS&DD Board endorse Design-Build-Operate as the procurement model for implementation of the regional biosolids drying facility.

2. That the Liquid Waste Committee receive for information the report dated October 25, 2021, titled "Procurement Model for Regional Biosolids Drying Facility" and provide alternate direction to staff.

FINANCIAL IMPLICATIONS

If the Board approves Alternative 1, the biosolids drying facility will be implemented as a Design-Build-Operate project. The estimated total project cost is $337.7 million. Biosolids drying is expected to have a lower lifecycle cost than other biosolids management options, thereby resulting in a net reduction in overall household impact.

Under Alternative 2, if further steps towards implementing a regional drying facility are not initiated, additional biosolids quantities will be sent out of province for landfill disposal if sufficient beneficial use land application projects cannot be secured. The cost of landfill disposal is higher than both the cost of land application and the lifecycle cost of a new biosolids drying facility.

OTHER IMPLICATIONS

Using dried biosolids pellets as a fuel in local cement kilns will result in regional greenhouse gas emission reductions. Using dried biosolids pellets as an ingredient in blended fertilizer avoids greenhouse gas emissions associated with conventional fertilizer production.

CONCLUSION

New options are needed to ensure beneficial use of growing quantities of biosolids in the region. The GVS&DD Board has endorsed biosolids drying as a biosolids management option. A value-for-money analysis compared procurement models for a regional biosolids drying facility. Design-Build-Operate procurement would have the lowest cost. Third-party operation of the dryer offers additional benefits. Staff recommend Alternative 1, endorsing Design-Build-Operate as the procurement model for a regional biosolids drying facility.

47504265

To: Liquid Waste Committee

From: Lillian Zaremba, Program Manager, Utility Residuals Management, Liquid Waste Services
Sarah Wellman, Senior Engineer, Solid Waste Operations, Solid Waste Services

Date: October 27, 2021 Meeting Date: November 4, 2021

Subject: **Waste-to-Energy Facility Biosolids Processing System**

RECOMMENDATION

That the Liquid Waste Committee receive for information the report dated October 27, 2021, titled "Waste-to-Energy Facility Biosolids Processing System".

EXECUTIVE SUMMARY

Using the Waste-to-Energy Facility to process up to 25,000 tonnes per year of biosolids will help diversify options for biosolids management as quantities increase with the development and upgrading of regional wastewater treatment plants. Managing biosolids at the Waste-to-Energy Facility will increase its processing capacity and electricity production, and improve operations.

Covanta, the Waste-to-Energy Facility operator, would construct the biosolids system to ensure coordination with facility operations. Covanta would use transparent procurement processes with oversight by Metro Vancouver. The capital and operating cost of processing biosolids will be paid by Liquid Waste Services on a cost recovery basis. The project capital cost, including biosolids management systems along with additional Waste-to-Energy Facility improvements to be completed in parallel, are up to $22 million. The cost of managing biosolids at the Waste-to-Energy Facility is comparable to other options for biosolids management, and is included in the Liquid Waste and Solid Waste capital and operating financial plans.

PURPOSE

The purpose of this report is to provide information to the Liquid Waste Committee about a planned biosolids processing system at the Waste-to-Energy Facility. The information in this report will be subsequently presented to the Zero Waste Committee at their November 17, 2021 meeting for consideration and recommendation, prior to seeking GVS&DD Board approval to proceed with construction.

BACKGROUND

The *Integrated Liquid Waste and Resource Management Plan* directs Metro Vancouver to use liquid waste as a resource and recover nutrients and energy from biosolids. New options for biosolids management are required because the annual biosolids production in the region is projected to increase from roughly 55,000 tonnes per year currently to 100,000 tonnes per year in the next five years and 150,000 tonnes per year by 2050. Land application of an additional 100,000 tonnes per year of biosolids would be challenging as land application projects are vulnerable to fluctuations in customer markets and public concern. On October 4, 2019, the GVS&DD Board endorsed biosolids

drying as a management option. The report dated September 13, 2019, titled "Biosolids Management Strategic Direction" also noted that Metro Vancouver was exploring the use of the Waste-to-Energy Facility to manage up to 25,000 tonnes per year of biosolids, and that processing of biosolids at the Waste-to-Energy Facility would not impact the business case for the development of a biosolids dryer.

BIOSOLIDS PROCESSING AT THE WASTE-TO-ENERGY FACILITY

Processing of biosolids at the Waste-to-Energy Facility would complement land application of biosolids and the planned regional biosolids drying facility. Land application recovers valuable nutrients, builds healthy soils and sequesters carbon. The biosolids drying facility will recover energy and nutrients, which both fulfill the direction of the *Integrated Liquid Waste and Resource Management Plan*. Processing biosolids at the Waste-to-Energy Facility in Burnaby is slightly better than energy-neutral and has lower transportation emissions than disposal at distant landfills. The intent is to run the biosolids processing system at a minimum one-third capacity (8,500 tonnes per year) and to use the additional capacity of up to 25,000 tonnes per year as a contingency if biosolids land application sites become unavailable. Contingency use of the Waste-to-Energy Facility will avoid landfilling of biosolids, which is not a beneficial use, does not recover energy or nutrients, and results in greenhouse gas emissions.

Over the period 2017 to 2019, Metro Vancouver conducted testing of biosolids processing at the Waste-to-Energy Facility. Testing determined that up to 25,000 tonnes per year of biosolids can be processed at the Waste-to-Energy Facility (an increase of approximately 10% in overall facility capacity) with only minor impacts on waste quantities processed and no impacts on air emissions or ash quality. Results of the testing program were submitted to the Ministry of Environment and Climate Change Strategy, and on March 31, 2021 the Ministry of Environment and Climate Change Strategy approved processing up to 25,000 tonnes per year of biosolids at the Waste-to-Energy Facility.

Process Details

Biosolids processing at the Waste-to-Energy Facility would involve the installation of storage tanks and appropriate pumping and conveyance infrastructure. Feed chute injectors have been installed already as part of replacement of the refuse feed chutes, work previously planned and now complete. With the injection of biosolids directly into the refuse feed chutes, there is no odour potential and facility equipment such as the refuse cranes does not contact the biosolids, minimizing potential worker concerns. A similar system is in place at the waste-to-energy facility in Oahu, Hawaii, and has been operating successfully for a number of years with no odour complaints.

Capital and Operating Costs and Project Development

A third party engineering study estimated the capital costs of developing a biosolids processing system at the Waste-to-Energy Facility at $19.8 million including contingency and escalation. Of the total cost, approximately $16.4 million is dedicated equipment for the biosolids processing system and $3.4 million is combustion air management upgrades that provide co-benefits to overall Waste-to-Energy Facility operations. On top of the $19.8 million estimate, an additional $2.2 million is included in the budget as supplemental contingency to ensure that project can be completed within budget.

The incremental operating cost to receive biosolids has been calculated at $45 per tonne on top of capital costs. This includes labour, lost garbage processing capacity, ash management, and other operating and maintenance costs.

For projects that are integrated into the Waste-to-Energy Facility operations such as the biosolids processing system, Metro Vancouver contracts with Covanta, the facility operator, to construct the project. Covanta undertakes procurement in a similar manner as Metro Vancouver, with opportunities advertised through B.C. Bid and proposals evaluated with the same level of rigor as Metro Vancouver would use. Metro Vancouver also engages third party engineering consultants to review proposed capital and operating costs to ensure they are reasonable.

As per the report dated September 13, 2019, titled "Biosolids Management Strategic Direction", the cost of managing biosolids through land application and landfilling ranges from $140 to $160 per tonne. When the cost of carbon is included according to the *Carbon Price Policy*, those costs rise to $155 to $265 per tonne of biosolids. The effective cost of processing biosolids at the Waste-to-Energy Facility will depend on the amount of biosolids received at the facility, given the fixed capital costs. Based on a throughput ranging from 8,500 tonnes per year to 25,000 tonnes per year, the unit cost of processing biosolids is $195 to $100 per tonne including the cost of carbon, which is in a similar range as other options.

Benefits

The Waste-to-Energy Facility achieves several benefits from processing biosolids. Adding biosolids increases the overall utilization of the facility because the high moisture content of the biosolids means that five tonnes of added biosolids only reduces garbage processing capacity by one tonne. Recent decreases in the organics content in the municipal solid waste stream, due to the organics disposal ban and proportional relative increases in plastic content, have increased the energy value of the waste stream reducing through put for the facility. Electricity production at the Waste-to-Energy Facility is estimated to increase by 3% through the addition of biosolids. Pilot trials showed improvements in process controls with the addition of biosolids, as the consistent moisture content of the biosolids improves the overall consistency of the input materials to the facility.

The Waste-to-Energy Facility provides a local, reliable, low risk and cost-effective option for managing biosolids. From a greenhouse gas perspective, the primary benefit of processing biosolids at the Waste-to-Energy Facility is reduced transportation emissions compared to trucking biosolids to distant landfills when disposal is required. For an input stream of up to ten percent biosolids at the Waste-to-Energy Facility, no supplemental natural gas is required to process the biosolids due to the high energy value of the municipal solid waste, resulting in no increase in greenhouse gas emissions at the facility. The 3% increase in electricity production from the addition of biosolids results in limited greenhouse gas benefits, as it is mainly displacing clean hydropower electricity. In the future, once heat recovery for district energy is in place at the Waste-to-Energy Facility, heat generated by the addition of biosolids would help displace natural gas use in district energy systems and reduce greenhouse gas emissions.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

The budget for the biosolids processing system is up to $22 million. Of the total $22 million, approximately $16.4 million would be funded as Liquid Waste Services Capital and $5.6 million as Solid Waste Services Capital. Since the project would be undertaken by Solid Waste Services, the Liquid Waste Services portion of the cost would be fixed. Funding for this project is included in the 2022-2026 5-Year Financial Plan.

If the biosolids processing system is not implemented, the diversification of options to handle biosolids will be reduced, increasing the potential for landfill disposal of biosolids.

CONCLUSION

Engineering work is complete for a system to process biosolids at the Waste-to-Energy Facility. Implementing the project would provide capacity for up to 25,000 tonnes per year of biosolids to be managed locally and provides benefits to the operation of the Waste-to-Energy Facility. Staff recommend proceeding with implementation of a biosolids processing system at the Waste-to-Energy Facility at a cost of up to $22 million.

48094486

To: Liquid Waste Committee

From: Jeff Carmichael, Division Manager, Business Development, Liquid Waste Services

Date: October 26, 2021 Meeting Date: November 4, 2021

Subject: **Proposed Capital Investment for Sapperton District Sewer Heat Recovery Project**

RECOMMENDATION

That the GVS&DD Board:

a) authorize expenditures up to $18 million for the Sapperton District Sewer Heat Recovery project, as presented in the report dated October 26, 2021, titled "Proposed Capital Investment for Sapperton District Sewer Heat Recovery Project", and
b) direct staff to enter into contract negotiations with the City of New Westminster for the sale of sewer heat.

EXECUTIVE SUMMARY

Metro Vancouver has the opportunity to reduce greenhouse gas (GHG) emissions by building sewer heat recovery facilities to support municipal district energy systems. Metro Vancouver's *Climate 2050* strategy (Reference 1) includes a target to achieve a 45% reduction in regional GHG emissions by 2030, from 2010 levels. Sewer heat recovery facilities will provide renewable, fossil fuel-free heat extracted from sewage to residents and businesses in the region. There is enough excess heat in the liquid waste collection system to heat 700 high rise buildings throughout the region. Several sewer heat recovery projects are under development or assessment.

The project will reduce GHG emissions, contributing to the *Climate 2050 Strategy*, as guided by the *Liquid Waste Heat Recovery Policy*. The investment will be capped at $18 million, which is based on the value of the anticipated GHG reductions over the life of the project. Actual project costs are expected to be within the range of $4M to $14M depending on the level of investment and asset ownership by Metro Vancouver. Metro Vancouver will receive carbon credits based on relative costs incurred by both parties, which will contribute toward Metro Vancouver's goal of carbon neutrality.

PURPOSE

To present to the Liquid Waste Committee for consideration by the GVS&DD Board, a recommendation to authorize expenditure for the Sapperton District Sewer Heat Recovery project, which will recover heat from the New Westminster Interceptor and make it available to the City of New Westminster's Sapperton District energy system, and to seek authorization to negotiate a contract with New Westminster for the operation of equipment and sale of sewer heat from the project.

BACKGROUND

Several plans and policies provide the foundation for the recommendations in this report.

The *Integrated Liquid Waste and Resource Management Plan* (Reference 2) includes the goal to use liquid waste as a resource, and commitments to evaluate opportunities to expand the recovery of energy from the liquid waste system, and to implement projects based on business case evaluations for such projects.

The *Liquid Waste Heat Recovery Policy* (Reference 3) enables waste heat from the liquid waste system to be used by municipalities and other external parties. It also provides guidelines for GVS&DD financial contributions to such projects, which require capital funding by municipalities and potentially by Metro Vancouver. GVS&DD is capable of contributing to both regional and corporate GHG emission reduction targets by capturing unused heat from sewage and making it available to municipalities and private parties for use, replacing fossil fuel combustion.

The *Carbon Price Policy* (Reference 4) establishes a price on GHG emissions, and directs staff to incorporate that value into life cycle cost analyses for projects.

The *Climate 2050* Strategy vision is that Metro Vancouver demonstrate bold leadership in responding to climate change. It commits to achieving a carbon-neutral region by 2050, with an interim target of reducing GHG emissions by 45% from 2010 levels by 2030.

On March 26, 2021, the GVS&DD Board approved an amendment to the *Cost Apportionment Bylaw 283* (Reference 5), to allocate heat recovery project investments using Tier III cost apportionment (100% regional). At the same meeting, the GVS&DD Board approved an amendment to the *Liquid Waste Heat Recovery Policy* (Reference 6), which expanded the scope of allowed investments to include sewer heat projects as well as wastewater treatment plant based effluent heat projects. The amendment allows the Board to consider approving capital contributions to sewer heat recovery projects to support collaborative district energy projects.

In collaboration with the City of New Westminster, a proposed sewer heat recovery project has been developed to provide recovered heat to the Sapperton District energy system, and a capital investment proposal to support the project has been created.

BUSINESS CASE FOR THERMAL ENERGY PURCHASE AGREEMENT

Several sewer heat recovery projects are under development or assessment. A number of future capital investment proposals are anticipated over the next several years.

The City of New Westminster has proposed the development of district energy systems that will serve the Sapperton District and the Royal Columbian Hospital. The system will use heat recovered from sewage to meet most heating needs, displacing natural gas use by existing customers.

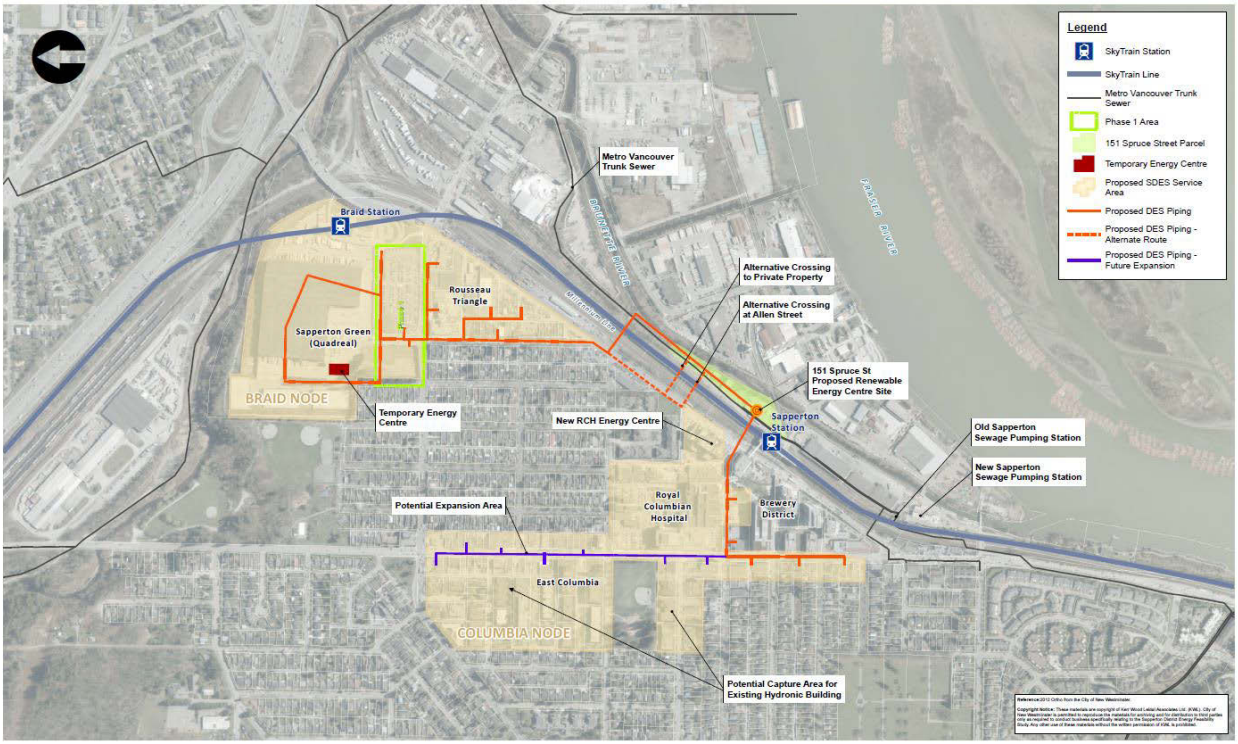
Figure 1 shows a schematic of the proposed service area and the location of the proposed sewer heat recovery facility.

The proposed sewer heat recovery facility will be constructed on a municipally-owned site. Connections will be established to the New Westminster Interceptor. Heat will be extracted from the

sewage and the sewage returned to the sewer main. Equipment is required to extract heat from the sewage.

It is proposed that GVS&DD make a capital investment for supporting equipment. The investment will be capped at $18 million, which is based on the value of the anticipated GHG reductions over the life of the project. Actual project costs are expected to be within the range of $4M to $14M depending on the level of investment and asset ownership by Metro Vancouver. Additionally, Metro Vancouver's investment will not be the primary funding source for the project: it is estimated that this investment will provide approximately 20 percent of the total capital cost of this district energy system. In exchange, Metro Vancouver will receive carbon credits based on relative costs incurred by both parties, which will contribute toward Metro Vancouver's goal of carbon neutrality.

Figure 1. Proposed Sapperton area District Energy Systems and Sewer Heat Recovery Project



This opportunity was evaluated using life-cycle cost analysis methods, including application of the *Carbon Price Policy*, and determined that it would be a cost-effective project. Energy source options were evaluated by the City of New Westminster, and it was determined that sewer heat-sourced energy is competitive with other clean energy sources, and is a lower risk long-term energy source than some sources (like biomass).

Capital costs will be allocated by GVS&DD using Tier III cost apportionment, as a wastewater resource recovery project that will reduce GHG emissions regionally. New Westminster will acquire heat from GVS&DD for a fee that fully recovers ongoing operation and maintenance costs for the infrastructure. Table 1 summarizes the costs and benefits of the project.

Table 1. Business Case Summary

Item	GVS&DD	New Westminster
District energy system estimated capital costs	($4 to $14 million)	($64 million)
Spending authority requested	$18 million	
Operating costs	($900,000) / yr	tbd
Revenues	$900,000 / yr	tbd, based on rate structure
Benefits from GHG reductions (as per Carbon Price Policy)	$18 million	
Net benefit to GVS&DD	Positive $4 to $14 million	

The project is anticipated to reduce GHG emissions by 172,000 tonnes over the life of the project. GHG reductions, which are valued as benefits as per the *Carbon Price Policy*, are expected to generate $18 million in benefits. GHG reductions at this location are voluntary, and may be transferred to other parties as credits. Metro Vancouver will receive some credits, as per *Liquid Waste Heat Recovery Policy* guidelines. Terms of Reference for the proposed contract, including GHG reduction allocations, are outlined in Attachment 1.

Project Risks and Risk Mitigation Strategies
Given the long-term commitment and relatively large capital investment for the development of a district energy system, there are inherent risks. Key risks and mitigation strategies are listed in Attachment 2.

ALTERNATIVES
1. That the GVS&DD Board:
   a) authorize expenditures up to $18 million for the Sapperton District Sewer Heat Recovery project, as presented in the report dated October 26, 2021, titled "Proposed Capital Investment for Sapperton District Sewer Heat Recovery Project", and
   b) direct staff to enter into contract negotiations with the City of New Westminster for the sale of sewer heat.

2. That the GVS&DD Board receive for information the report dated October 26, 2021, titled "Proposed Capital Investment for Sapperton District Sewer Heat Recovery Project" and provide alternate direction to staff.

FINANCIAL IMPLICATIONS
If the Board approves Alternative 1, GVS&DD will authorize expenditures up to $18 million for the project. The investment by Metro Vancouver is expected to fall within the range of $4M to $14M

and will be capped at $18M based on the application of the *Carbon Price Policy*. Metro Vancouver will receive carbon credits based on relative costs incurred by both parties, which will contribute toward Metro Vancouver's goal of carbon neutrality. Costs will be recovered from GVS&DD members under Tier III cost apportionment (100% regional allocation). The household financial impact will be less than $1 per household per year.

OTHER IMPLICATIONS

The City of New Westminster and Metro Vancouver may be required to seek approval or exemption for the system from the British Columbia Utilities Commission. This can be accomplished with existing staff and at minimal cost.

CONCLUSION

In the *Climate 2050* strategy, Metro Vancouver has committed to reduce GHG emissions by 45% by 2030 compared to 2010 levels, and be a carbon neutral region by 2050. Metro Vancouver has the potential and opportunity to take action on climate change to reduce greenhouse gas emissions by enabling the provision of capital funding for new facilities that will provide renewable, fossil fuel-free heat extracted from sewage to residents and businesses in the region.

Several projects are currently under development and further potential exists. A proposed sewer heat recovery project has been developed in collaboration with the City of New Westminster, which will provide clean, renewable energy to the Sapperton district energy system. Metro Vancouver will make a capital investment of up to $18 million for necessary sewer heat extraction infrastructure. All ongoing operation and maintenance costs will be borne by the district energy system owner. The benefits of the reduced GHG emissions from the proposed project are $18 million, so the project has a positive business case. Staff recommend Alternative 1.

Attachments

1. City of New Westminster Thermal Energy Purchase Agreement Terms of Reference
2. Risk Matrix

References

1. Climate 2050
2. Integrated Liquid Waste and Resource Management Plan
3. Liquid Waste Heat Recovery Policy
4. Carbon Price Policy
5. "Tier III Cost Apportionment Bylaw Amendments", report dated March 11, 2021
6. "Liquid Waste Heat Recovery Policy Amendments to Expand Opportunities for Sewer Heat Recovery", report dated March 2, 2021

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CITY OF NEW WESTMINSTER THERMAL ENERGY PURCHASE AGREEMENT TERMS OF REFERENCE

The terms of reference below between the Greater Vancouver Sewerage and Drainage District (GVS&DD) and the City of New Westminster (CNW) reflect the current intent of the parties in drafting a detailed Agreement for the sale of thermal energy from GVS&DD to CNW.

Preamble	
Contract Term	Initial term of 20 years from service commencement. Expected service commencement Jan 1, 2025 Charges to begin when GVS&DD infrastructure is completed and commissioned.
Renewal Provisions	Option to renew on mutual agreement. Renewal to be confirmed a minimum of 3 years before end of initial term.
Energy Delivery Location	GVS&DD will deliver energy within the Sapperton District Energy Centre ("SDEC"), scheduled to be located at 151 Spruce Street. GVS&DD will own and operate the heat exchanger and supporting infrastructure within the SDEC facility.
Subscribed Capacity	New Westminster intends to seek delivery of 12 MW of delivered thermal energy capacity.
Charges	New Westminster's charges will be designed to recover all costs incurred by GVS&DD for operation and maintenance of the heat exchanger and supporting infrastructure.
Allocation of GHG Emissions Reductions	GVS&DD will receive some GHG credits, as per the Liquid Waste Heat Recovery Policy, which states: • Carbon allocation will be on the basis of relative financial contributions. • Transferred credits to be retained by GVS&DD until carbon neutrality achieved in a given year. • Excess credits to be passed to member jurisdictions, based on capital contribution to the portfolio of heat recovery emission reduction projects.

Terms will also be established concerning items including: termination or default by either party, scheduled outages, insurance, reporting, cooperation and coordination mechanisms, and dispute resolution mechanisms.

RISK MATRIX

Risk	Description	Mitigation Strategy
Capital Cost Risk	Overall costs are a key risk for any capital project.	The GVS&DD infrastructure capacity and the corresponding purchase will be structured to contain contingency of 50% to ensure that actual cost is less than budget.
New Westminster Utility Risk	New Westminster may not choose to proceed with development of the Sapperton District Energy system.	The purchase agreement will be structured such that GVS&DD's capital investment will only proceed if commitments are in place for development of the system.
Regulatory Risk	Expected GHG emission reductions are based on current regulatory requirements in New Westminster. If those requirements change in the future, there is some risk that GHG credits available in the future will diminish.	The purchase agreement will front load GHG emission credit transfers to GVS&DD, minimizing credit transfers further into the future when requirement change risk is more significant.

To: Liquid Waste Committee

From: Tom Sadleir, Community Engagement Manager, External Relations

Date: October 26, 2021 Meeting Date: November 4, 2021

Subject: ***Integrated Liquid Waste and Resource Management Plan* - Early Engagement and 2019-2020 Biennial Report Feedback**

RECOMMENDATION

That the Liquid Waste Committee receive for information the report dated October 26, 2021, titled *"Integrated Liquid Waste and Resource Management Plan* - Early Engagement and 2019-2020 Biennial Report Feedback*".*

EXECUTIVE SUMMARY

This report summarizes the early feedback from Phase 1 engagement on the *Integrated Liquid Waste and Resource Management Plan* (the Plan) review and update, and feedback on the Plan's 2019-2020 Biennial Report.

Staff have been engaging member jurisdictions through presentations to, and discussions with, advisory committees before and since the engagement strategy for the Plan review and update was approved by the Province in March 2021. Early comments received reflect a desire to ensure affordability for wastewater services, protect our local waters, and streamline reporting processes.

Feedback from the email submissions regarding the Plan's 2019-2020 Biennial Report include concern with pollution from the Iona Island Wastewater Treatment Plant, marine contamination from vessels, and a desire for more collaboration with First Nations particularly on opportunities for innovation and revenue generation.

Phase 1 engagement on the Plan includes a review of the 2011 Plan and identifying a vision and guiding principles for a new Plan. Phase 1 findings, including upcoming public and Indigenous Nations engagement, will be reported to the Liquid Waste Committee, GVS&DD Board, and Ministry of Environment and Climate Change in early 2022. Submissions received on the 2019-2020 Biennial Report and Metro Vancouver's responses to the issues raised will be forwarded to the Ministry of Environment and Climate Change Strategy.

PURPOSE

To communicate the early feedback received during Phase 1 engagement on the *Integrated Liquid Waste and Resource Management Plan* review and update, and feedback on the Plan's 2019-2020 Biennial Report.

BACKGROUND

Since mid-2020, staff have been meeting with member jurisdiction staff to identify early priorities for the Plan review and update through a series of presentations and workshops. On March 26, 2021,

the Ministry of Environment and Climate Change Strategy approved the engagement-focused Plan review and update strategy. Following receipt of this approval, staff initiated the first phase of the formal engagement process, which includes a review of the existing Plan, identifying high-level priorities and developing a new vision and guiding principles for a new Plan.

On June 25, 2021, a report titled "*Integrated Liquid Waste and Resource Management Plan*: Biennial Reporting for 2019-2020" was presented to the GVS&DD Board, and staff was directed to arrange for the Liquid Waste Committee to receive public comments on the 2019-2020 Biennial Report.

This report provides the activities and results to date for Phase 1 engagement on the Plan review and update, and for engagement on the existing Plan's 2019-2020 Biennial Report.

REVIEW AND UPDATE OF THE LIQUID WASTE MANAGEMENT PLAN

Meetings and workshops with key member jurisdiction advisory committees before and during Phase 1 engagement (ongoing) include:

- Regional Engineers and Administrative Advisory Committees: July 22, 2020 and October 22, 2021
- Regional Engineers Advisory Committee - Liquid Waste Subcommittee: March 5, 2020 and July 28, 2021
- Stormwater Interagency Liaison Group: January 14 and July 8, 2021

Other technical advisory committees that have been engaged, or will be engaged in upcoming months, include the Environmental Monitoring Committee, Regional Planning Advisory Committee - Environment Subcommittee and Combined Sewer Overflow Elimination Working Group.

Through these meetings and written submissions, the following themes have emerged for the Plan update:

- Keep rates affordable and fair, and provide value for services
- Accelerate action on wet weather flows, including those originating on private property from inflow and infiltration (I&I), that lead to sewer overflows
- Engage and collaborate with those we serve, and integrate Indigenous perspectives
- Integrate improved performance metrics and streamline progress reporting to focus on key areas of interest and importance to the Ministry of Environment and Climate Change Strategy and the public
- Integrate climate scenarios adaptively
- Centre the next Plan around the draft vision statement, "Healthy Waters: For All. Forever", while keeping costs fair and affordable

In August 2021, attendees at the Metro Vancouver PNE Exhibit were invited to complete a questionnaire to identify their priorities for wastewater management in the region. These early engagement results indicate a desire for the next plan to prioritize protecting the environment, specifically the ocean, local streams and creeks. Questionnaire results (1,423 total responses):

What's important to you about Liquid Waste Management for the region? (pick a maximum of 3)

A. Minimizing sewage overflows to local waters – 22%
B. Improving water quality in streams and creeks – 17.4%
C. Minimizing greenhouse gas emissions (GHGs) (e.g. using renewable gas to displace natural gas) – 17.2%
D. Providing advanced sewage treatment – 16.8%
E. Being resilient to flooding (e.g. prepared for climate change) – 12.7%
F. Keeping costs low – 9.2%
G. Minimizing odours – 4.7%

In November 2021, the public will be invited to provide input to help set the direction for the plan update by attending a public webinar and completing an online feedback form. This input will be compiled into an engagement summary report along with comments from member jurisdictions and other levels of government, including Indigenous Nations, and presented to the Liquid Waste Committee, GVS&DD Board and Ministry of Environment and Climate Change Strategy in early 2022.

REVIEW OF THE 2019-2020 BIENNIAL REPORT

The 2019-2020 Biennial Report was posted to Metro Vancouver's website in July 2021. The following notification of opportunities to provide input on the report was provided:

- July 16, 2021 – letters to 35 First Nations, Tribal Councils and Associations
- July 16, 2021 – emails to 950 contacts from the *Integrated Liquid Waste and Resource Management Plan* database
- August 12, 2021 – newspaper advertisements: *Vancouver Sun* and *Province*
- August 31, 2021 – letter to 35 First Nations, Tribal Councils and Associations reminding of deadline for receipt of input

Notifications included a link to the 2019-2020 Biennial Report, invitation to appear as a delegation to the September 9, 2021 Liquid Waste Committee meeting, and invitation to provide written input with a deadline of September 27, 2021.

Feedback

The following email submissions were received:

1. September 8, 2021 – Kayla Phillips, Projects Analyst and Chris Raftis, Major Projects Coordinator, Intergovernmental Affairs, Musqueam Indian Band
2. September 27, 2021 – Anna Barford, Canada Shipping Campaigner, Stand.earth

Feedback from the email submissions included concerns regarding pollution from the Iona Island Wastewater Treatment Plant, marine contamination from vessels, and a desire for more collaboration with First Nations particularly regarding opportunities for innovation and revenue generation. These topics are addressed in the Metro Vancouver *Board Strategic Plan*, which provides direction to understand the impacts of contaminants on the ecosystem and strengthen relationships

with First Nations by exploring new pathways to Reconciliation, such as increased engagement, dialogue, and collaboration between Metro Vancouver and First Nations in the region. These topics will also be addressed in the review and update of the Plan.

The issues raised in the emails and Metro Vancouver's responses to those issues appear in Attachment 1: *Integrated Liquid Waste and Resource Management Plan* 2019-2020 Biennial Report Feedback Summary Issue-Response Table. The emails received appear in Attachment 2: Correspondence.

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

FINANCIAL IMPLICATIONS
There are no financial implications.

CONCLUSION
This report summarizes the early feedback from Phase 1 engagement on the *Integrated Liquid Waste and Resource Management Plan* review and update, and feedback on the Plan's 2019-2020 Biennial Report.

Staff have been engaging member jurisdictions through presentations to, and discussions with, advisory committees since the engagement strategy for the Plan review and update was approved by the Province in March 2021. Early comments received reflect a desire to ensure affordability for wastewater services, protect our local waters, and streamline reporting processes.

Feedback from the email submissions regarding the 2011 *Integrated Liquid Waste and Resource Management Plan* include concern with pollution from the Iona Island Wastewater Treatment Plant, marine contamination from vessels, and a desire for more collaboration with First Nations particularly on opportunities for innovation and revenue generation.

Phase 1 engagement on the Plan includes a review of the 2011 Plan and identifying a vision and guiding principles for the Plan update. Phase 1 findings, including upcoming engagement with the public and Indigenous Nations, will be reported to the Liquid Waste Committee, GVS&DD Board, and Ministry of Environment and Climate Change in early 2022. Submissions received on the 2019-2020 Biennial Report and Metro Vancouver's responses to the issues raised will be forwarded to the Ministry of Environment and Climate Change Strategy.

Attachments
1. *Integrated Liquid Waste and Resource Management Plan* 2019-2020 Biennial Report Feedback Summary Issue-Response Table, dated October 6, 2021
2. Correspondence, dated October 6, 2021

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October 6, 2021

ILWRMP 2019/2020 Biennial Report Feedback Summary
Issue-Response Table

#	Issue/Comment/Question	Metro Vancouver Response
Email submission September 8, 2021 from Musqueam Indian Band		
1	Throughout the Report, collaboration with First Nations is only mentioned in a specific section pertaining to that topic. Musqueam is interested in a more integrative approach where efforts to engage and work with Nations are contained throughout the report, and particularly where opportunities for innovation and revenue generating are concerned.	The 2019-2020 Biennial Report provides an update on specific actions identified in the 2011 Integrated Liquid Waste and Resource Management Plan. These actions are not reflective of the deeper integration of First Nation considerations that we hope to address in the next liquid waste management plan, which is scheduled to be developed over the next three years. During the plan update, we are committed to fostering an environment where a wide range of voices and perspectives are shared. We will work to understand priorities and desired outcomes of Indigenous Nations and peoples across the region for wastewater management.
2	It is outlined in the Report that the Iona WWTP is by far the most polluting facility in the fleet. Is this purely based on size or amount of fuel used? Will reducing this level of pollution be a primary concern in the new design?	The Iona Island Wastewater Treatment Plant is the largest plant in the region based on flows to the plant. It is also a primary treatment plant and as such uses technology and approaches that are now considered outdated. The upgraded plant design concept includes tertiary treatment, as do all options currently being evaluated. Together with a suite of ecological restoration projects, the plant upgrade will improve water quality in the Fraser River estuary and in the Salish Sea.

Email submission September 27, 2021 from Stand.earth		
3	The Integrated Liquid Waste and Resource Management Plan does not address liquid waste from vessels directly, nor does it list a relationship with the Vancouver Fraser Port Authority to accept liquid waste. Including liquid waste from vessels would prevent millions of litres of sewage and greywater from being dumped as pollution off the coast of BC, and instead capture the waste as a resource. The Integrated Liquid Waste and Resource Management Plan is a well placed policy to capture this liquid waste stream and support a healthier Salish Sea.	In general, most port and vessel activities are federally-regulated and are outside of Metro Vancouver's authority and mandate. However, through the review and update of the Integrated Liquid Waste and Resource Management Plan, Metro Vancouver will explore opportunities to work with other levels of government, including those responsible for port and vessel activities, to develop new integrated solutions that better protect and enhance the quality of waters throughout the region.

From: Anna Barford
To: LWMP
Subject: Comment on the Biennial Report 2019-2020: Integrated Liquid Waste and Resource Management Plan
Date: Monday, September 27, 2021 9:44:00 AM
Attachments: 2021_09_27Stand.earth Comment for MetroVancouver (2).pdf

Good morning,

Attached, please find a comment from Stand.earth to the Biennial Report 2019-2020: Integrated Liquid Waste and Resource Management Plan.

Please do not hesitate to reach out if there are any questions, or if I can be of further assistance

Best,

Anna Barford | she/her
Canada Shipping Campaigner O: +1 604 757 7029

Stand.earth challenges corporations and governments to treat people and the environment with respect, because our lives depend on it.

We write today to contribute a comment on the Biennial Report: 2019-2020 Integrated Liquid Waste and Resource Management from MetroVancouver. We wish to draw your attention to a source of liquid waste not included for your consideration.

Over 1 million cruise passengers came to Vancouver in 2019, and we are likely to see that many passengers again to this home port once cruising returns to pre-pandemic levels. Each of those passengers needs to use the toilet, take a shower, and will depend on an operating kitchen for restaurant food, the ship itself may need to change pool or hottub water, all producing liquid waste. The Management Plan for liquid waste does not address liquid waste from vessels directly, nor does it list a relationship with the Vancouver Fraser Port Authority to accept liquid waste.

Currently Transport Canada allows ships built before 2013 to dump greywater, which includes everything that isn't industrial or from the toilet, without treatment straight into the ocean. The US EPA found that greywater from cruise ships had a higher fecal coliform count than untreated municipal sewage, and was also laden with oil and grease and personal care products harmful to species at risk. Our neighbours in Puget Sound and SouthEast Alaska are addressing this by both introducing strict regulations and requiring ships unable to meet those to offload their waste at port for treatment in facilities.

Including liquid waste from vessels would prevent millions of litres of sewage and greywater from being dumped as pollution off the coast of BC, and instead capture the waste as a resource. Waste from industrial processes on ships are particularly likely to be detrimental, such as exhaust gas cleaning system waste and wash water which is highly acidic and very toxic. Liquid waste from vessels may not only be detrimental to the health of the local marine environment and those who use it, but also to our neighbours who are putting in place strong policies and investing in infrastructure to capture liquid waste from vessels of all sizes.

The Integrated Liquid Waste and Resource Management plan is a well placed policy to capture this liquid waste stream and support a healthier Salish Sea.

Please do not hesitate to reach out to myself for clarification or future discussions about this topic.

Sincerely,
Anna Barford
Canada Shipping Campaigner
Stand.earth
anna@stand.earth, 604-757-7029

From:	Kayla Phillips
To:	LWMP; Tom Sadleir
Cc:	Christopher Raftis
Subject:	Metro Vancouver's Integrated Liquid Waste and Resource Management Plan Biennial Report: Reminder to Provide Input
Date:	Wednesday, September 8, 2021 10:05:15 AM
Attachments:	2021.09.08 Letter to MV re integrated waste report.docx

Good morning,

Please find Musqueam's response to Metro Vancouver's Integrated Liquid Waste and Resource Management Plan Biennial Report: Reminder to Provide Input.

Thank you,

Kayla Phillips (she/her)
Projects Analyst, Intergovernmental Affairs
xʷməθkʷəy̓əm
Musqueam Indian Band
6735 Salish Drive, Vancouver, BC V6N 4C4
kphillips@musqueam.bc.ca, 778-928-8074

MUSQUEAM INDIAN BAND
6735 SALISH DRIVE
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CANADA V6N 4C4
TELEPHONE: 604 263-3261
FAX: 604 263-4212

September 8, 2021

File: PE-13-01-LW-005

BY EMAIL

Re: Metro Vancouver's Integrated Liquid Waste and Resource Management Plan Biennial Report: Reminder to Provide Input

Dear Tom Sadleir,

I am writing to you on behalf of the Musqueam Indian Band ("Musqueam") in response to your letter on August 31, 2021 seeking comments for the Integrated Liquid Waste and Resource Management Plan.

Musqueam Comments on the Report:

Comments on the report are minimal and are divided into one general comment and one specific question:

1. Throughout the Report, collaboration with First Nations is only mentioned in a specific section pertaining to that topic. Musqueam is interested in a more integrative approach where efforts to engage and work with Nations are contained throughout the report, and particularly where opportunities for innovation and revenue generating are concerned.
2. It is outlined in the Report that the Iona WWTP is by far the most polluting facility in the fleet. Is this purely based on size or amount of fuel used? Will reducing this level of pollution be a primary concern in the new design?

Thank you,

Kayla Phillips, Projects Analyst, Intergovernmental Affairs
Chris Raftis, Major Projects Coordinator, Intergovernmental Affairs

To: Liquid Waste Committee

From: Roy Moulder, Director, Purchasing and Risk Management, Financial Services
Kenneth Hui, Division Manager, Engineering, Design and Construction, Liquid Waste Services

Date: October 26, 2021 Meeting Date: November 4, 2021

Subject: **Award of Contract for Phase A, Resulting from RFP No. 20-358: Engineering Services for Annacis Island Wastewater Treatment Plant Stage 5 Expansion Trickling Filter Pump Station and Trickling Filters – Detailed Design and Construction Engineering Services**

RECOMMENDATION

That the GVS&DD Board:

a) approve the award of a contract for an amount of up to $24,801,041 (exclusive of taxes) to Brown and Caldwell Consultants Canada Ltd. for Phase A, Preliminary and Detailed Design Services resulting from Request for Proposal No. 20-358: Engineering Services for Annacis Island Wastewater Treatment Plant Stage 5 Expansion Trickling Filter Pump Station and Trickling Filters, subject to final review by the Commissioner; and

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

EXECUTIVE SUMMARY

A Request for Proposal (RFP) No. 20-358 was issued to four pre-qualified consultants for Engineering Services for Annacis Island Wastewater Treatment Plant (AIWWTP) Stage 5 Expansion Trickling Filter Pump Station and Trickling Filters. It closed on February 26, 2021. The RFP included three separate work scopes, for Design Services, Construction Coordination and for Project Management Services. The latter two are addressed under separate cover. The Design Services include three separate phases – namely Preliminary and Detailed Design, Services during Construction, and Services Post Construction. Brown and Caldwell Consultants Canada Ltd. was ranked highest and bid the lowest fee for the Design Services. It is recommended that the GVS&DD Board authorize the Commissioner and the Corporate Officer to award and execute a contract for Phase A (namely the Preliminary and Detailed Design) of the Design Services with Brown and Caldwell in an amount of up to $24,801,041 (exclusive of taxes). Board approval to award subsequent phases of work will be sought at a later date.

PURPOSE

This report is to advise the GVS&DD Board of the results of RFP No. 20-358: Engineering Services for AIWWTP Stage 5 Expansion Trickling Filter Pump Station and Trickling Filters and to recommend award of the contract for Phase A of the Design Services work scope in an amount of up to $24,801,041 (exclusive of taxes) to Brown and Caldwell Consultants Canada Ltd.

BACKGROUND

Pursuant to the *GVS&DD Officers and Delegation Bylaw No. 284, 2014* (Bylaw) and the *Procurement and Real Property Contracting Authority Policy* (Policy), procurement contracts which exceed a value of $5 million require the approval of the GVS&DD Board of Directors.

This report is being brought forward to the Liquid Waste Committee to consider a recommendation to the GVS&DD Board to authorize the award of Phase A (Preliminary and Detailed Design) of the Detailed Design and Construction Engineering Services (Design Services) work scope from RFP No. 20-358, Engineering Services for AIWWTP Stage 5 Expansion Trickling Filter Pump Station and Trickling Filters.

PROJECT DESCRIPTION

The AIWWTP provides secondary treatment for approximately 1.2 million people in Metro Vancouver. At present, the facility treats about 175 billion litres of wastewater each year. The treated water is then released into the Fraser River. To accommodate growth, the facility is undergoing an expansion (the Stage 5 project) which will increase its capacity to serve 1.5 million people.

As a result of Request for Qualifications No. 20-012 that was publicly advertised on Metro Vancouver's and BC Bid websites, four experienced firms were shortlisted and invited to respond to RFP No. 20-358 which closed on February 26, 2021. RFP No. 20-358 has the following three scopes of work that will be awarded separately:

- Detailed Design and Construction Engineering Services (the Design Services), which includes provision of professional engineering to design the works and act as the Engineer of Record through the design and construction phases of the project.
- Construction Control and Safety Coordination (the Construction Coordination work scope) which will provide professional consulting engineering from 2021 through 2026 for the coordination of all active construction contracts on site at AIWWTP, including: construction management third party advice and claims mitigation, overall multi-project construction schedule creation and maintenance, and safety coordination in co-shared areas. This is the subject of a separate report.
- Project Management Technical Services (Project Management) which will provide independent design review including, quality assurance services, project management support and provide a full-time Project Engineer based in the Corporation facility to assist the Corporation during both the design and the construction phases. This is the subject of a separate report.

All four firms submitted proposals for the Design Services, and are listed in alphabetical order as follows:

Table 1: Proponent Submission Pricing

Proponent	Total Proposed Fee (exclusive of taxes) for the Design work scope
AECOM	$54,134,527
Brown and Caldwell	$47,024,407
CDM Smith	$52,541,824
Jacobs	$54,672,792

The technical component of RFP No. 20-358 was evaluated by staff from Liquid Waste Services. The financial component was evaluated by staff from Liquid Waste Services and confirmed by staff from the Purchasing and Risk Management Division. Brown and Caldwell Consultants Canada Ltd. was identified as the highest overall ranked proponent for the Design Services in both the technical and financial components.

This contract for the Design Services is intended to be awarded separately in three phases:

- Phase A – Preliminary and detailed design services
- Phase B – Construction engineering services
- Phase C – Post-Construction engineering services

At this time only Phase A (base scope of services and selected provisional items) is being awarded. The award of Phases B and C are subject to future assessment. Phase B may be split between Engineer of Record services and a third party construction management firm; a decision will be made before award of Phase B.

Following identification of the highest ranked proposal, negotiations for Phase A scope ensued as allowed for in the RFP. Several items resulting from the negotiations are proposed to be included in the contract at this time. The additional work includes both base scope and provisional scope included as risk mitigation efforts and opportunistic improvements to the plant systems. Changes in Corporation direction for engineering projects have also resulted in additional scope being incorporated through negotiations. These items have a negotiated price of $2,641,001 (exclusive of taxes), resulting in a total recommended contract price of $24,801,041.

The proposal submitted by Brown and Caldwell contemplates additional phases of work with an overall estimated contract value of $51,713,922 (exclusive of taxes). It is expected that subsequent phases of work will be awarded to Brown and Caldwell subject to satisfactory completion of Phase A at which time the total cost and details of the subsequent Phases B and C of the work will be finalized. Award of further phases will require GVS&DD Board approval pursuant to the provisions of the Policy.

ALTERNATIVES

1. That the GVS&DD Board:
   a) approve the award of a contract for an amount of up to $24,801,041 (exclusive of taxes) to Brown and Caldwell Consultants Canada Ltd. for Phase A, Preliminary and Detailed Design Services, resulting from Request for Proposal No. 20-358: Engineering Services for Annacis Island Wastewater Treatment Plant Stage 5 Expansion Trickling Filter Pump Station and Trickling Filters for the Detailed Design and Construction Engineering Services subject to final review by the Commissioner, subject to final review by the Commissioner; and
   b) authorize the Commissioner and the Corporate Officer to execute the required documentation once the Commissioner is satisfied that the award should proceed.

2. That the GVS&DD Board not award Phase A, Preliminary and Detailed Design Services work scopes of Request for Proposal No. 20-358: Engineering Services for Annacis Island Wastewater Treatment Plant Stage 5 Expansion Trickling Filter Pump Station and Trickling Filters, and direct staff to report back to the GVS&DD Board with options for an alternate course of action.

FINANCIAL IMPLICATIONS

If the GVS&DD Board approves Alternative 1, a contract will be awarded to Brown and Caldwell Consultants Canada Ltd., in the amount of up to $24,801,041 (exclusive of taxes) to complete Phase A, Preliminary and Detailed Design Services (base scope and selected provisional items). Brown and Caldwell Consultants Canada Ltd., is the highest overall ranked proponent based on the evaluation criteria established in the RFP with the lowest cost proposal. There are sufficient funds in the project budget for this award.

If the GVS&DD Board chooses not to proceed with Alternative 1, staff will need further direction in relation to the project. Alternative 2 will result in delays to the project schedule that will impact the ability to meet the region's sewerage needs.

CONCLUSION

Request for Proposal No. 20-358 was issued for Engineering Services for Annacis Island Wastewater Treatment Plant Stage 5 Expansion Trickling Filter Pump Station and Trickling Filters. It included three separate work scopes: Detailed Design and Construction Engineering Services, Construction Control and Safety Coordination, and Project Management Technical Services. Brown and Caldwell Consultants Canada Ltd., has been identified as the overall highest ranked proponent based on the evaluation criteria established in the RFP with the lowest cost proposal for the Detailed Design and Construction Engineering Services work scopes.

It is recommended that the GVS&DD Board authorize the Commissioner and the Corporate Officer to award and execute a contract for Phase A, Preliminary and Detailed Design Services (base scope and selected provisional items) with Brown and Caldwell Consultants Canada Ltd., in the amount of up to $24,801,041 (excluding taxes).

47524041

To: Liquid Waste Committee

From: Roy Moulder, Director, Purchasing and Risk Management, Financial Services
Kenneth Hui, Division Manager, Engineering, Design and Construction, Liquid Waste Services

Date: October 22, 2021 Meeting Date: November 4, 2021

Subject: **Award of Contract Resulting from RFP No. 20-358: Engineering Services for Annacis Island Wastewater Treatment Plant Stage 5 Expansion Trickling Filter Pump Station and Trickling Filters – Construction Control and Safety Coordination and Project Management and Technical Support Services**

RECOMMENDATION

That the GVS&DD Board:

a) approve the award of a contract for an amount of up to $17,802,757 (exclusive of taxes) to CDM Smith Canada ULC, resulting from Request for Proposal No. 20-358: Engineering Services for Annacis Island Wastewater Treatment Plant Stage 5 Expansion Trickling Filter Pump Station and Trickling Filters for the Construction Control and Safety Coordination and the Project Management and Technical Support Services work scopes, subject to final review by the Commissioner; and

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

EXECUTIVE SUMMARY

A Request for Proposal (RFP) No. 20-358 was issued to four pre-qualified consultants for Engineering Services for Annacis Island Wastewater Treatment Plant (AIWWTP) Stage 5 Expansion Trickling Filter Pump Station and Trickling Filters. It closed on February 26, 2021. The RFP included three separate work scopes, for Design Services, Construction Control and Safety Coordination (Construction Coordination) and Project Management and Technical Support (Project Management). The Design Services are addressed under separate cover. CDM Smith Canada ULC was ranked highest overall for both Construction Coordination and Project Management scopes of services. It is recommended that the GVS&DD Board authorize the Commissioner and the Corporate Officer to award and execute a contract with CDM Smith Canada ULC in an amount of up to $17,802,757 (exclusive of taxes) for the Construction Coordination and Project Management work scopes. By awarding both work packages to CDM Smith, a cost reduction of $274,880 is realized.

PURPOSE

This report is to advise the GVS&DD Board of the results of RFP No. 20-358: Engineering Services for AIWWTP Stage 5 Expansion Trickling Filter Pump Station and Trickling Filters, and to recommend award of the contract for the Construction Coordination and Project Management work scopes in an amount of up to $17,802,757 (exclusive of taxes) to CDM Smith Canada ULC.

BACKGROUND

Pursuant to the *GVS&DD Officers and Delegation Bylaw No. 284, 2014* (Bylaw) and the *Procurement and Real Property Contracting Authority Policy* (Policy), procurement contracts which exceed a value of $5 million require the approval of the GVS&DD Board of Directors.

This report is being brought forward to the Liquid Waste Committee to consider a recommendation to the GVS&DD Board to authorize the award of the Construction Coordination and Project Management work scopes from RFP No. 20-358: Engineering Services for AIWWTP Stage 5 Expansion Trickling Filter Pump Station and Trickling Filters.

PROJECT DESCRIPTION

The AIWWTP provides secondary treatment for approximately 1.2 million people in Metro Vancouver. At present, the facility treats about 175 billion litres of wastewater each year. The treated water is then released into the Fraser River. To accommodate growth, the facility is undergoing an expansion (the Stage 5 project) which will increase its capacity to serve 1.5 million people.

As a result of Request for Qualifications No. 20-012 that was publicly advertised on Metro Vancouver's and BC Bid websites, four experienced firms were shortlisted and invited to respond to RFP No. 20-358 which closed on February 26, 2021. RFP No. 20-358 has the following three scopes of work that will be awarded separately:

- Detailed Design and Construction Engineering Services (the Design Services), which includes provision of professional engineering to design the works and act as the Engineer of Record through the design and construction phases of the project, the award of which is the subject of a separate report.
- Construction Control and Safety Coordination (Construction Coordination) which will provide professional consulting engineering from 2021 through 2026 for the coordination of all active construction contracts on site at AIWWTP, including: construction management third party advice and claims mitigation, overall multi-project construction schedule creation and maintenance, and safety coordination in co-shared areas. Third party Construction Engineering Services for the Stage 5 A506 Gravity Thickener Expansion construction project (RFP No. 20-002) is also included in this element.
- Project Management Technical Services (Project Management) which will provide independent design review including, quality assurance services, project management support and provide a full-time Project Engineer based in the Corporation facility to assist the Corporation during both the design and the construction phases.

The successful proponent for the Design Services contract is not eligible for either the Construction Coordination contract nor the Project Management contract. The remaining three firms' proposals were listed in alphabetical order as follows:

Table 1: Construction Coordination Proponent Submission Pricing

Proponent	Total Proposed Fee (exclusive of taxes)
AECOM Canada Ltd.	$10,165,976
CDM Smith Canada ULC	$11,892,520
CH2M Hill Canada Limited	$11,223,522

Table 2: Project Management Proponent Submission Pricing

Proponent	Total Proposed Fee (exclusive of taxes)
AECOM Canada Ltd.	$5,952,979
CDM Smith Canada ULC	$6,151,382
CH2M Hill Canada Limited	$6,122,271

The technical component of RFP No. 20-358 was evaluated by staff from Liquid Waste Services. The financial component was evaluated by staff from the Purchasing and Risk Management Division. CDM Smith Canada ULC was identified as the highest overall ranked proponent for both Construction Coordination and Project Management scopes of service for the following key factors:

- Understanding – Very clear understanding of the scope of work and the needs of Metro Vancouver. The team identified by CDM Smith Canada ULC were appropriately staffed and hours were appropriate for the roles. i.e., the Construction Management Advisor (CMA) role is a very key role for MV and CDM Smith Canada ULC identified significantly more hours for this role.
- The person proposed in the CMA role brings 50+ years of experience in utility capital improvement projects, wastewater treatment plant upgrades and sewer overflow / sanitary overflow infrastructure programs.
- The person identified as the Deputy CMA brings 24 years of experience, and most recently provided project management services on the Annacis Stage 5 Main Contract.
- The safety coordinator, who has previously provided service to Metro Vancouver, has been an asset in evaluating and providing guidance on safety concerns especially with respect to confined spaces.
- The construction coordination team – Have demonstrated proactive coordination effort, central point of information and coordination between O&M and all MV on-site projects, proactively alert potential impact of one project on another project among MV Project Managers. The team worked closely with plant staff to ensure impact of construction to plant operations is minimized.

CDM Smith Canada ULC have previously provided similar Construction Coordination services during Phase 1 of the AIWWTP Stage 5 expansion, and performed very well. They have also provided exceptional service as the Engineer of Record on the AIWWTP Outfall project.

Following identification of the highest ranked Construction Coordination proposal, negotiations ensued as allowed for in the RFP. As a result of the negotiations relating to the development of a Construction Management Plan for RFP 20-002, A506 Gravity Thickener Expansion construction project, the Construction Coordination hours were increased. These changes increased the Construction Coordination proposed fee by $33,735, bringing the negotiated Construction Coordination recommended award amount to $11,926,255 (exclusive of taxes).

Following identification of the highest ranked Project Management proposal, negotiations ensued as allowed for in the RFP. As a result of the negotiations relating to the combining of the Construction Coordination and Project Management contracts, Project Management hours were reduced. These changes decreased the Project Management proposed fee by $274,880, bringing the negotiated Project Management recommended award amount to $5,876,502 (exclusive of taxes).

The resulting recommended award value for both Construction Coordination and Project Management scopes of services is $17,802,757 (exclusive of taxes).

ALTERNATIVES

1. That the GVS&DD Board:
   a) approve the award of a contract for an amount of up to $17,802,757 (exclusive of taxes) to CDM Smith Canada ULC, resulting from Request for Proposal No. 20-358: Engineering Services for Annacis Island Wastewater Treatment Plant Stage 5 Expansion Trickling Filter Pump Station and Trickling Filters for the Construction Control and Safety Coordination and the Project Management and Technical Support Services work scopes, subject to final review by the Commissioner; and
   b) authorize the Commissioner and the Corporate Officer to execute the required documentation once the Commissioner is satisfied that the award should proceed.

2. That the GVS&DD Board not award the Construction Control and Safety Coordination and Project Management and Technical Services work scopes of Request for Proposal No. 20-358: Engineering Services for Annacis Island Wastewater Treatment Plant Stage 5 Expansion Trickling Filter Pump Station and Trickling Filters, and direct staff to report back to the GVS&DD Board with options for an alternate course of action.

FINANCIAL IMPLICATIONS

If the GVS&DD Board approves Alternative 1, a contract will be awarded to CDM Smith Canada ULC, in the amount of up to $17,802,757 (exclusive of taxes). CDM Smith Canada ULC, is the highest overall ranked proponent based on the evaluation criteria established in the RFP. There are sufficient funds in the project budget for this award.

If the GVS&DD Board chooses not to proceed with Alternative 1, staff will need further direction in relation to the project. Alternative 2 will result in delays to the project schedule that will impact the ability to meet the region's sewerage needs.

CONCLUSION

Request for Proposal No. 20-358 was issued for Engineering Services for Annacis Island Wastewater Treatment Plant Stage 5 Expansion Trickling Filter Pump Station and Trickling Filters. It included three separate work scope: Detailed Design and Construction Engineering Services, Construction Control and Safety Coordination, and Project Management and Technical Services. The work scope, Detailed Design and Construction Engineering Services, will be brought forward to the Board under a separate recommendation report. CDM Smith Canada ULC has been identified as the overall highest ranked proponent based on the evaluation criteria established in the RFP for the Construction Control and Safety Coordination and the Project Management and Technical Services work scopes.

It is recommended that the GVS&DD Board authorize the Commissioner and the Corporate Officer to award and execute a contract with CDM Smith Canada ULC in the amount of up to $17,802,757 (excluding taxes) for those two work scopes.

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To: Liquid Waste Committee

From: Roy Moulder, Director, Purchasing and Risk Management, Financial Services
Jugoslav Bajkin, Division Manager, Collection Systems, Engineering, Design and Construction, Liquid Waste Services

Date: October 29, 2021 Meeting Date: November 4, 2021

Subject: **Award of Contract Resulting from Request for Proposal No. 20-345: Construction Services for the Burnaby Lake North Interceptor No. 2 – Winston St Phase 2 Trenchless Section**

RECOMMENDATION

That the GVS&DD Board:

a) approve award of a contract for an amount up to $62,942,479.02 (exclusive of taxes) to Pomerleau Bessac Infrastructure resulting from Request for Proposal No. 20-345: Construction Services for the Burnaby Lake North Interceptor No. 2 – Winston St Phase 2 Trenchless Section, subject to final review by the Commissioner; and

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

EXECUTIVE SUMMARY

The Burnaby Lake North Interceptor No. 2 Project consists of supply and installation of approximately 2.9 kilometers of 2.1 meter diameter plastic-lined reinforced concrete sewer pipe, installed by microtunneling, and ancillary works. The Pomerleau Bessac Infrastructure (Pomerleau) submission was the strongest technical submission. They have a thorough and comprehensive workplan and understanding of the issues and challenges, and an exemplary team who are more than capable of successfully delivering this project. Pomerleau are currently completing the AIWWTP Outfall project, and have shown themselves to be a responsible and responsive contractor. They have been a collaborative partner who proactively addressed the project challenges. It is recommended that the GVS&DD Board authorize the Commissioner and the Corporate Officer to award and execute a contract for the work to Pomerleau in an amount of up to $62,942,479.02 (exclusive of taxes).

PURPOSE

This report is to advise the GVS&DD Board of the results of Request for Proposal (RFP) No. 20-345: Construction Services for the Burnaby Lake North Interceptor No. 2 – Winston St Phase 2 Trenchless Section, and to recommend award of the contract in an amount of $62,942,479.02 (exclusive of taxes) to Pomerleau Bessac Infrastructure (Pomerleau).

BACKGROUND

Pursuant to the *GVS&DD Officers and Delegation Bylaw No. 284, 2014* (Bylaw) and the *Procurement and Real Property Contracting Authority Policy* (Policy), procurement contracts which exceed a value of $5 million require the approval of the GVS&DD Board of Directors.

This report is being brought forward to the Liquid Waste Committee to consider a recommendation to the GVS&DD Board to authorize the award of a contract for the construction of Burnaby Lake North Interceptor No. 2 – Winston St Ph. 2 – Trenchless Section.

PROJECT DESCRIPTION

The Burnaby Lake North Interceptor No. 2 sewer pipe will be located in North Burnaby spanning from east of Springer Avenue at Lougheed Highway to south of Government Road on Cariboo Road. Growth in the area has required sewer capacity upgrades of the existing Burnaby Lake North Interceptor. The upgrade of this sewer has been divided into the four Stages shown on the Attachment, namely:

Stage 1 - Sperling Section
Stage 2 - Winston Street Section – Open Cut
Stage 3 - Winston Street Section – Tunneled, and
Stage 4 - Cariboo Section

The Sperling Section construction was completed in 2016. The Winston Street Section – Open Cut is nearly complete. The Winston Street Section – Tunneled, is the subject of this report. The Cariboo Section is currently in the planning stages.

This contract consists of supply and installation of approximately 2.9 kilometers of 2.1 meter diameter plastic-lined reinforced concrete sewer pipe, installed by microtunneling. Ancillary work includes the supply and installation of 56 m of open cut sewer, drop manholes, tee manholes and concrete chambers. The installation of the sewer pipe also includes design and installation of ground improvement, dewatering, design and installation of temporary shafts for launch and reception of the tunneling equipment, relocation of conflicting utilities, site restoration, clean-up and landscaping, and geotechnical engineering analysis

A total of five proposals were received. The proposals were evaluated on technical merit (60%) and financial criteria (40%). The technical portion of the proposals were evaluated on three (3) main items:

1. Firm qualifications and past experience as demonstrated in detailed descriptions of 5 past projects of similar pipe diameter, installation methods and soil conditions.
2. Key personnel that will work on the project.
3. Project construction methodology/work plan.

The following table lists the results, in alphabetical order, of the submissions to RFP No. 20-345:

Proponent	Proposal Fee (exclusive of taxes)
Clearway Construction Inc.	$ 55,503,787.85
Michels Canada Co.	$ 51,340,873.50
Pomerleau Bessac Infrastruture	$ 62,942,479.02
Shanghai Construction Group	$ 65,806,666.00
Ward & Burke Microtunneling Ltd.	$ 65,997,829.00

The Pomerleau submission was the strongest technical submission. Their proposal clearly demonstrated that the firm and the proposed key personnel have more than exemplary relevant experience to successfully complete the project, and their proposed construction methodology indicated they have the best understanding of the project and its challenges. Pomerleau are currently working on the AIWWTP Outfall construction and the Golden Ears Forcemain – Fraser River Crossing, and they have a long history of working with Metro Vancouver. On the AIWWTP Outfall project, Pomerleau have demonstrated a commitment to working together to collaboratively address issues in a timely fashion, and that project is being delivered on budget and on schedule.

The Pomerleau submission included some items to be clarified and two value engineering cost proposals that required some negotiations prior to award, as allowed for in the RFP. The negotiations with Pomerleau involved several meetings. The negotiation meetings resulted in identification of two cost reduction measures and some ongoing discussions about some of the terms and conditions. These latter items are still under negotiation, but are not expected to have an upward impact on either costs or the contemplated award.

ALTERNATIVES

1. That the GVS&DD Board:
   a) approve award of a contract for an amount up to $62,942,479.02 (exclusive of taxes) to Pomerleau Bessac Infrastructure resulting from Request for Proposal No. 20-345: Construction Services for the Burnaby Lake North Interceptor No. 2 – Winston St Phase 2 Trenchless Section, subject to final review by the Commissioner; and
   b) authorize the Commissioner and the Corporate Officer to execute the required documentation once the Commissioner is satisfied that the award should proceed.

2. That the GVS&DD Board terminate Request for Proposal No. 20-345: Construction Services for the Burnaby Lake North Interceptor No. 2 – Winston St Phase 2 Trenchless Section and direct staff to report back to the GVS&DD Board with options for an alternate course of action.

FINANCIAL IMPLICATIONS

If the GVS&DD Board approves Alternative 1, a contract will be awarded to the highest ranked proposal, Pomerleau, in the amount of up to $62,942,479.02 (exclusive of taxes), pending resolution of the outstanding non-financial negotiation items.

If the GVS&DD Board chooses not to proceed with Alternative 1, staff will need further direction in relation to the project. Alternative 2 will prevent the project from being completed.

CONCLUSION

Request for Proposal No. 20-345 was issued for the construction of the, Burnaby Lake North Interceptor No. 2 – Winston St Phase 2 - Trenchless Section. Pomerleau Bessac Infrastructure was confirmed as having the highest ranked proposal. It is recommended that the GVS&DD Board authorize the Commissioner and the Corporate Officer to award and execute a contract with Pomerleau in the amount of up to $62,942,479.02 (exclusive of taxes).

The construction of Burnaby Lake North Interceptor No. 2 – Winston St Phase 2 - Trenchless Section is a critical connection required to enhance sewer capacity in the City of Burnaby.

Attachment
Burnaby Lake North Interceptor No. 2 Project

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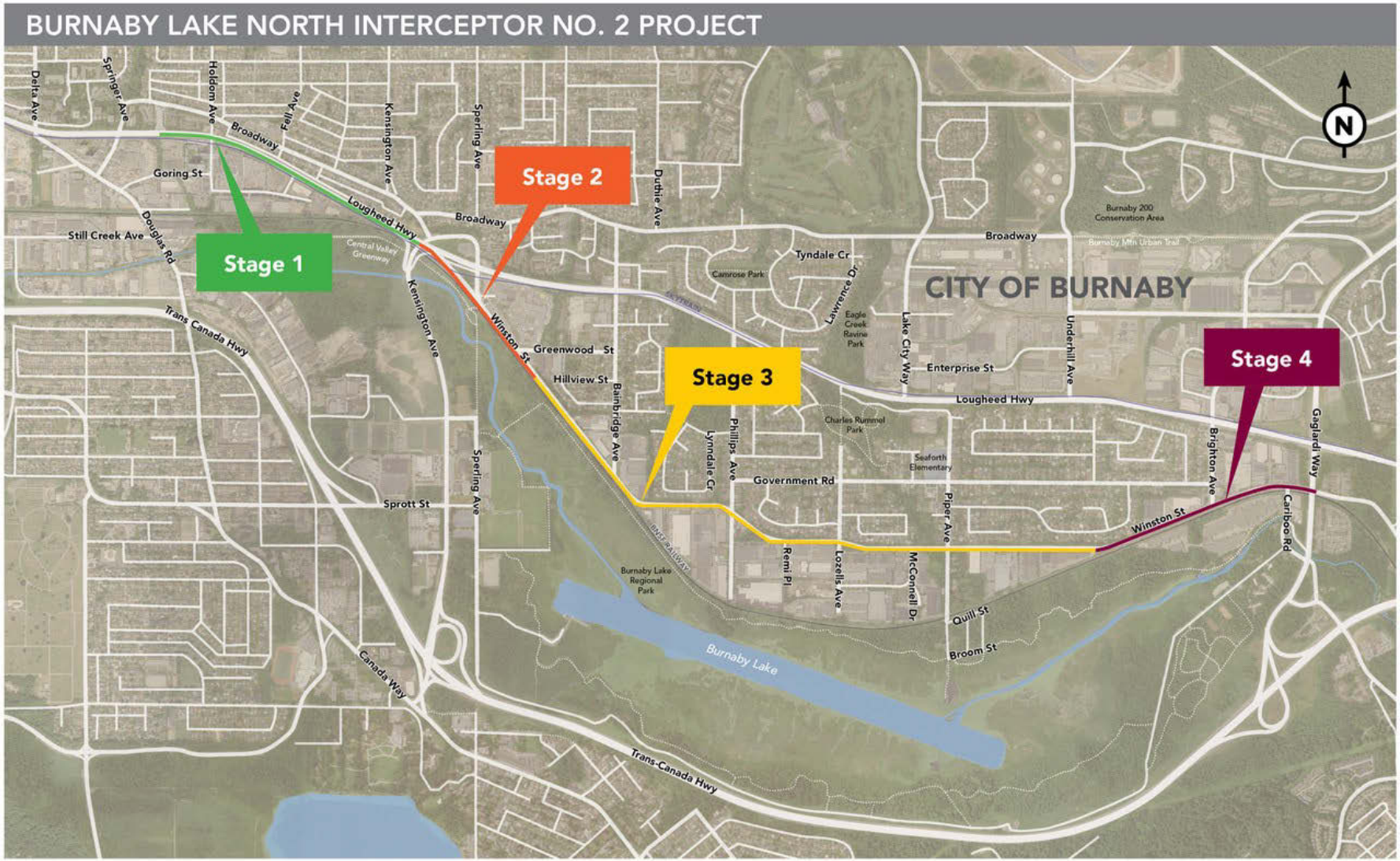
BURNABY LAKE NORTH INTERCEPTOR NO. 2 PROJECT
Stage 1
Stage 2
Stage 3
Stage 4
CITY OF BURNABY
N
Delta Ave
Springer Ave
Holdom Ave
Broadway
Fell Ave
Kensington Ave
Sperling Ave
Duthie Ave
Goring St
Still Creek Ave
Douglas Rd
Lougheed Hwy
Central Valley Greenway
Trans Canada Hwy
Winston St
Greenwood St
Hillview St
Bainbridge Ave
Lyndale Cr
Phillips Ave
Government Rd
Sprott St
Canada Way
Trans-Canada Hwy
Burnaby Lake Regional Park
Burnaby Lake
Remi Pl
Lozells Ave
McConnell Dr
Piper Ave
Quill St
Broom St
Tyndale Cr
Lawrence Dr
Cameron Park
Eagle Creek Ravine Park
Lake City Way
Underhill Ave
Enterprise St
Charles Rummel Park
Seaforth Elementary
Brighton Ave
Gaglardi Way
Cariboo Rd
Burnaby 200 Conservation Area
Burnaby Mtn Urban Trail

To: Liquid Waste Committee

From: Peter Navratil, General Manager, Liquid Waste Services

Date: October 29, 2021 Meeting Date: November 4, 2021

Subject: **Manager's Report**

RECOMMENDATION
That the Liquid Waste Committee receive for information the report dated October 29, 2021 titled "Manager's Report".

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1. 2022 ACEC New York Engineering Excellence Platinum Award for the South Surrey Interceptor Phase 2 - Johnston Road Section Project

The 2022 Engineering Excellence Awards Competition has recognized Metro Vancouver contractor Stantec and the South Surrey Interceptor project for an award. The South Surrey Interceptor Phase 2 – Johnston Road Section has been awarded a 2022 American Council of Engineering Companies (ACEC) New York Platinum Award, and will be honoured at the 56th Annual Engineering Excellence Awards Gala held in New York next April. The project, led by Liquid Waste Service's Engineering, Design and Construction group, featured the cost-effective and time-saving use of micro-tunneling to overcome urban routing challenges. See Attachment 1 for more details.

2. Schedule Updates for Food Sector Grease Interceptor Bylaw Review

The Food Sector Grease Interceptor Bylaw Review process was paused in June 2020 in response to the challenging conditions facing the food sector due to the COVID-19 pandemic, combined with initial constraints on fulsome engagement activities through 2020. As the pandemic progresses and the food sector continues to face uncertainty, this initiative is not scheduled for resumption until 2022. Policy recommendations will be developed with consideration given to the economic conditions under which businesses are now operating due to the pandemic.

3. 2021 Surfactants Communications Initiative for North Shore Residents

Surfactants are the key chemical ingredient in soaps, laundry detergents and personal care products. Surfactants increase cleaning power, but can pose harm to fish and other aquatic life. Primary wastewater treatment processes at the Lions Gate Wastewater Treatment Plant are not able to remove all surfactants and at times, some are still in wastewater when it is discharged into the environment. In October 2021, Metro Vancouver mailed information to North Shore residents (approximately 80,000 households) to ask them to reduce their use of soaps, detergents and cleaning products.

Residents can help protect our ocean by using less. Soaps, detergents and cleaning products are designed for hard water so they work really well in our region's soft water. This means residents can

use half the manufacturer's recommended amount and still get things just as clean. Using less soaps and detergents saves money and helps the environment.

4. Liquid Waste Committee 2021 Work Plan

Attached is the updated 2021 Work Plan indicating the status of the Committee's key priorities for the year end.

Attachments

1. 2022 ACEC New York Engineering Excellence Platinum Award
2. Liquid Waste Committee 2021 Work Plan

47386214

ATTACHMENT 1

From: Jennifer Waterbury <Jennifer@ACECNY.org>
Sent: Friday, October 29, 2021 9:22 AM
To: Dean, Anil
Subject: Congratulations: 2022 ACEC New York Engineering Excellence Awards

Importance: High

ACEC New York
American Council of Engineering Companies of New York

ACEC New York
Engineering Excellence Awards

October 29, 2022

Anil Dean, PE, GE, PEng, MBA
Stantec Consulting Services Inc.

Dear Anil Dean, PE, GE, PEng, MBA:

We are pleased to inform you that the judges in the 2022 Engineering Excellence Awards Competition have selected your firm's entry, **South Surrey Interceptor Phase 2 - Johnston Road Section** for a 2022 ACEC New York **Platinum Award** in the category of Category I: Special Projects. All awards will be recognized at a black-tie gala on **Saturday, April 9, 2022** in the Ballroom of the Hilton Midtown in New York City.

Sponsorship, program ads and tickets for the 2022 EEA Gala are now available. Visit our website for information on purchasing sponsorship, tables and tickets.

We congratulate you on the excellence of your entry, which embodies the quality and engineering expertise our association represents. The 2022 judging panel that reviewed your project consisted of:

Art Barrett, Dan Colangione, Minelly De Coo, John Vulcano

ACEC New York will issue a press release immediately following the awards dinner. Member firms are encouraged to issue their own press releases in advance of the gala event. A sample press release, using language approved by ACEC New York describing the program can be found on our website. Note: if you do issue a release, please refer to the program as the **ACEC New York** Engineering Excellence Awards (as opposed to the ACEC Engineering Excellence Awards, which is a separate program under the National organization).

If you have any further questions, please don't hesitate to contact our office at (518) 452-8611. Congratulations again.

Sincerely,

Gina R. Potfora, CMP
Vice President of Member Services

cc: Thomas Cascino, Co-Chair, Engineering Excellence Committee
Luke Martinek, Co-Chair, Engineering Excellence Committee
John Evers, President & CEO, ACEC New York
Carly Dantschisch

Jennifer Waterbury
She/her
Member Services Associate
ACEC New York
6 Airline Drive, Albany, NY 12205
P: 518-452-8611

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Leaders in the business of engineering

Liquid Waste Committee 2021 Work Plan
Report Date: November 4, 2021

Priorities	
1st Quarter	**Status**
Fats, Oils and Grease 2020 Campaign Update	Complete
Climate 2050 Infrastructure Discussion Paper	Complete
Alternate Models for Single Sewerage Area Allocation	Complete
Expanding Sewer Heat Recovery Opportunities to Reduce Greenhouse Gas Emissions	Complete
Testing of the COVID - 19 Virus in Wastewater	Complete
Review of Trucked Liquid Waste Provisions of the Sewer Use Bylaw	Complete
Sustainability Innovation Fund Project Update	Complete
Department Risk Management - Divisional Updates	Complete
Municipal Requests for Sewerage Area Boundary Amendments (as applicable)	Complete
Utility Policies (as applicable)	Complete
Contract Approvals – Contracts > $5M (as applicable)	Complete
2nd Quarter	
Liquid Waste Services Capital Program Expenditures Update as at Dec 31, 2020	Complete
Integrated Liquid Waste and Resource Management Plan - Biennial Report: 2019-2020	Complete
2020 GVS&DD Environmental Management and Quality Control Annual Report	Complete
Municipal Requests for Sewerage Area Boundary Amendments (as applicable)	Complete
Utility Policies (as applicable)	Complete
Contract Approvals – Contracts > $5M (as applicable)	Complete
3rd Quarter	
Liquid Waste Services Capital Program Expenditures Update as at April 30, 2021	Complete
Iona Island Wastewater Treatment Plant Project Definition	Complete
Sustainability Innovation Fund Project Update	Complete
Compounds of Environmental Concern Campaign Update	Complete
Municipal Requests for Sewerage Area Boundary Amendments (as applicable)	Complete
Utility Policies (as applicable)	Complete
Contract Approvals – Contracts > $5M (as applicable)	Complete
4th Quarter	**Status**
Liquid Waste Services Capital Program Expenditures Update as at August 31, 2021	Complete
Annual Budget & 5 Year Financial Plan - Liquid Waste	Complete
Burrard Inlet Hydrodynamic Modelling Demonstration	Complete
Procurement Model for Implementation of a Regional Biosolids Drying Facility	Complete
Results of Unflushables Mini-Campaign	Complete
Municipal Requests for Sewerage Area Boundary Amendments (as applicable)	Complete
Utility Policies (as applicable)	Complete
Contract Approvals – Contracts > $5M (as applicable)	Complete
Integrated Liquid Waste and Resource Management Plan Review and Update	Deferred to 2022
Review of Food Sector Bylaw	Deferred to 2022
Liquid Waste Services Environmental Management System Policy	Deferred to 2022
Department Risk Management - Divisional Updates and LWS Summary	Deferred to 2022
Asset Risk Management Consolidated Report	Deferred to 2022