

Finance Committee Meeting Date: May 20, 2010

To: Finance Committee

From: Jim Rusnak, Chief Financial Officer, Finance and Administration Department

Date: May 11, 2010

Subject: **The Integrated Liquid Waste and Resource Management Plan Secondary Treatment Timelines**

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*Recommendation:*

That the GVS&amp;DD Board:

- (a) incorporate the revisions to the *Integrated Liquid Waste and Resource Management Plan* (the Plan), November 2009 as recommended in this report titled "The Integrated Liquid Waste and Resource Management Plan Secondary Treatment Timelines"; dated May 11, 2010;
  - (b) adopt the Plan, and circulate the Plan for municipal council endorsement specific only to the municipal actions in the Plan;
  - (c) submit the Plan to the Minister of Environment;
  - (d) direct staff to include funds in the 2011 budget and future years to complete the work on project definition, land negotiation, preliminary design, detailed design and construction for Lions Gate WWTP upgrade;
  - (e) direct staff to include funds in the 2011 budget and future years to complete the work on project definition, land negotiation and preliminary design for Iona Island WWTP upgrade;
  - (f) direct staff to review and provide a recommendation, through the Regional Administrative Advisory Committee, of the definitions of Tier I and II costs as included in the Greater Vancouver Sewerage and Drainage District cost allocation formula for all wastewater treatment plant projects, current and proposed.
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**1. PURPOSE**

To provide additional information as requested by the Committee on the matter of secondary treatment timelines in the *Integrated Liquid Waste and Resource Management Plan* (ILWRMP) for consideration in responding to the GVS&DD Board's November 27, 2009 request.

**2. CONTEXT**

At the November 27, 2009 GVS&DD Board Meeting, it was resolved that the Board:

- a) refer the establishment of an appropriate timeline for the Iona Wastewater Treatment Plant upgrade and the funding for various timelines for the Iona Island and Lions Gate Wastewater Treatment plant upgrades to the Finance Committee for its consideration; and

- b) direct staff to report back on the Finance Committee findings and on legal implications of establishing the timelines for the Iona Wastewater Treatment Plant for 2020.

In response to the January 29, 2010 report to the Finance Committee meeting, subsequent reports were provided to the Committee at their March 18 and April 15, 2010 meetings.

In response to the April 15, 2010, Finance Committee meeting, it was resolved:

“That the Finance Committee direct staff to:

- a) provide members with copies of the preliminary Secondary Treatment Implementation schedules, along with a discussion of the significant risk factors affecting these projects;
- b) provide supplemental information that explains the cost allocation formula and provides information on estimated split between “primary” and “secondary” treatment costs ( Tier I vs. Tier II) for each project;
- c) report on non-traditional sources of funding and/or project delivery that may be applicable;
- d) clarify possible deadlines under existing and proposed ILWRMP’s relative to pending regulations under the Fisheries Act.
- e) provide a review of events and decisions taken relative to Lulu, Annacis and Langley Wastewater Treatment Plant upgrades.”

## RECOMMENDED CHANGES TO THE ILWRMP

A copy of the ILWRMP, November 2009 is provided by Attachment 1. The recommended changes are as follows:

- a. On ILWRMP page 6, modify the section “Roles and Responsibilities” as follows (new text is shown underlined, deleted text is shown struck-through):

### ***Roles and Responsibilities***

*The extent and complexity of the liquid waste systems, with roles and responsibilities being spread between broad levels of governance, require close co-ordination between all levels of government, businesses, institutions and homeowners. This includes and is demonstrated by senior government cost sharing for major capital projects that benefit and support their mandates and regulations.*

*The following groups have key roles and responsibilities in implementing this Plan:*

#### ***Federal Government:***

- *Environment Canada: regulates pollutants, and protects species at risk.*
- *Fisheries and Oceans Canada: mandated to protect fish populations and habitat in receiving waters and urban streams.*
- *Infrastructure Canada: provides and administers infrastructure co-funding for local government projects.*

**Provincial Government:**

- *Ministry of Environment: regulates liquid waste and approves Liquid Waste Management Plans.*
- *Ministry of Community and Rural Development: enables infrastructure financing and provides co-funding to local governments for civic projects.*
- *Ministry of Health: regulates on-site wastewater treatment systems (such as septic tanks).*
- *Ministry of Agriculture and Lands: encourages responsible agricultural land management.*

**Local Government:**

- *Metro Vancouver and the Greater Vancouver Sewerage and Drainage District (GVS&DD): own, maintain and operate regional trunk sewers and major wastewater treatment plants, regulate industrial waste discharges, implement required regional actions in its plans, report on plan progress, and collaborate with others as appropriate.*
- *Municipal members of the GVS&DD: own and maintain collector sewers, implement municipal actions set out in the regional liquid waste management plan, manage stormwater systems, report on their progress on actions required in the plan, set local land use plans and community development standards.*

**First Nations:** *have constitutional rights which must be taken into account in the planning process.*

**Homeowners, businesses, institutions, and crown corporations:** *own and maintain private property sewer connections and private stormwater management systems.*

- b. On ILWRMP page 19, modify the Action 1.3.5 as follows (new text is shown underlined, deleted text is shown struck-through)

1.3.5 *Upgrade or replace Lions Gate (North Shore Sewerage Area) and Iona Island (Vancouver Sewerage Area) wastewater treatment plants to secondary level treatment to meet Canada-wide Strategy for the Management of Municipal Wastewater Effluent (CWS-MMWE) requirements and timelines.*

- a) *The intended site for the North Shore Sewerage Area secondary facility is the Metro Vancouver owned property located between Pemberton, Philips, and McKeen Avenues and West First Street in the District of North Vancouver. The existing outfall will be retained as part of the upgraded facility. The outfall discharges to embayed marine waters as defined in the Environmental Management Act, Municipal Sewage Regulation.*
- b) *The intended site for the Vancouver Sewerage Area is the property immediately adjacent and east of the existing Iona Island plant in the City of Richmond. The existing outfall will be retained as part of the upgraded facility. The outfall discharges to open marine waters as defined in the Environmental Management Act, Municipal Sewage Regulation.*

- c) ~~Based on the CWS-MMWE and the assessment made by the Environmental Monitoring Committee, the Lions Gate upgrade should proceed be completed within a 10-years timeline and Iona Island within a 20-year timeline, subject to the appropriate financial arrangements being in place as indicated in the Financial Plan.~~
- d) Based on the CWS-MMWE and the assessment made by the Environmental Monitoring Committee, the Iona Island upgrade should be completed within 20 years. In spite of this, Metro Vancouver has a strong desire to accelerate the completion of the Iona Island upgrade as soon as is reasonably possible in a 10 to 20 year timeframe, because of the significance of this upgrade to Metro Vancouver's Sustainable Region Initiative. The Region will strive to the greatest extent possible to achieve this. Risk factors to overcome include resolution of technical and land tenure issues, construction logistics and will be subject to appropriate financial arrangements being in place as indicated in the Financial Plan. In collaboration with provincial and federal governments, Metro Vancouver will engage in resolving these obstacles to complete the Iona Island upgrade at the earliest practicable time.
- e) Metro Vancouver will seek assistance from both senior levels of government in resolving First Nations rights and title issues associated with these secondary treatment plant upgrades.
- c. On ILWRMP page 30, modify the section "Financial Plan" as follows (new text is shown underlined, deleted text is shown struck-through):

### **Financial Plan**

~~Metro Vancouver and its members recover most of the costs to build, operate and maintain their liquid waste infrastructure from users. These are not adequate, however, to wholly finance major capital projects such as upgrading primary wastewater treatment plants to secondary treatment, and therefore, historically senior levels of governments have worked in partnership with local governments and provided significant cost sharing for major capital projects. Given that these projects are driven in part by federal and provincial legislation and regulations targeting environmental protection, Metro Vancouver will seek and requires financial support, from both the Federal and Provincial governments, consistent with the responsibilities identified in the Canada-wide Strategy for the Management of Municipal Wastewater Effluent. Metro Vancouver is committed to complete works necessary to meet national and provincial objectives and regulations. Metro Vancouver will fund its share of the infrastructure.~~

While various pricing mechanisms can more equitably allocate the costs among the users of municipal and Metro Vancouver's liquid waste management services, they do not offer new revenue sources. Similarly, different financing and operating models may be able to make annual financing appear less burdensome, but they also do not offer new revenue sources. Through the IRR process, opportunities to access resources from the liquid waste system to create new revenues may be possible, but these are uncertain and cannot be relied upon to address the capital funding needs of this plan.

*The cost of the upgrades for the Iona Island and North Shore plants is estimated in the order of \$1.4 billion. The current regional average household levy for Metro Vancouver services varies from \$160 to \$180 depending on the sewerage area—municipal sewerage and drainage services are additional. Without senior government cost sharing, Metro Vancouver average household levies are estimated to increase by over 600% over the next two decades for North Shore and Vancouver Sewerage Area homeowners. The importance of senior government cost sharing in maintaining affordability at the household level is shown by the Table 2 scenarios.*

**Table 2 Scenarios for Annual Household Levies by Sewerage Area**

**2a) Sequencing Lions Gate and Iona Island within 10 years**  
**(includes inflation and 2/3 senior government cost sharing)**

<u>Sewerage Area</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>
<u>Fraser</u>	<u>\$156</u>	<u>\$171</u>	<u>\$242</u>	<u>\$291</u>	<u>\$323</u>
<u>Lulu Island</u>	<u>\$157</u>	<u>\$172</u>	<u>\$248</u>	<u>\$298</u>	<u>\$331</u>
<u>North Shore</u>	<u>\$181</u>	<u>\$292</u>	<u>\$417</u>	<u>\$504</u>	<u>\$565</u>
<u>Vancouver</u>	<u>\$159</u>	<u>\$266</u>	<u>\$364</u>	<u>\$440</u>	<u>\$492</u>

**2b) Sequencing Lions Gate and Iona Island within 10 years**  
**(includes inflation and 1/3 senior government cost sharing)**

<u>Sewerage Area</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>
<u>Fraser</u>	<u>\$156</u>	<u>\$186</u>	<u>\$282</u>	<u>\$355</u>	<u>\$415</u>
<u>Lulu Island</u>	<u>\$157</u>	<u>\$188</u>	<u>\$283</u>	<u>\$357</u>	<u>\$418</u>
<u>North Shore</u>	<u>\$181</u>	<u>\$317</u>	<u>\$639</u>	<u>\$810</u>	<u>\$953</u>
<u>Vancouver</u>	<u>\$159</u>	<u>\$290</u>	<u>\$545</u>	<u>\$690</u>	<u>\$812</u>

**2c) Sequencing Lions Gate and Iona Island within 10 years**  
**(includes inflation but no senior government cost sharing)**

<u>Sewerage Area</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>
<u>Fraser</u>	<u>\$156</u>	<u>\$205</u>	<u>\$335</u>	<u>\$427</u>	<u>\$506</u>
<u>Lulu Island</u>	<u>\$157</u>	<u>\$206</u>	<u>\$332</u>	<u>\$423</u>	<u>\$502</u>
<u>North Shore</u>	<u>\$181</u>	<u>\$348</u>	<u>\$911</u>	<u>\$1,168</u>	<u>\$1,391</u>
<u>Vancouver</u>	<u>\$159</u>	<u>\$317</u>	<u>\$769</u>	<u>\$985</u>	<u>\$1,172</u>

*The above three tables all assume that long term debt is amortized over 15 years.*

*While Metro Vancouver and its members will work with senior government, businesses and its communities to identify cost-effective solutions; significant and equitable federal and provincial cost sharing to ease the homeowners' burden is needed and expected by Metro Vancouver and its members.*

*This plan includes a commitment to upgrading both the Lions Gate and Iona Island primary treatment plants to secondary level treatment. Given the significant cost and that the work is designed to fulfill environmental policy goals shared by all three levels of government, this plan assumes provincial and federal financial commitments will be forthcoming.*

~~*Metro Vancouver and member municipalities will seek infrastructure funding from both senior levels of government consistent with the Canada-wide Strategy for the Management of Municipal Wastewater Effluent. In addition, Metro Vancouver will work with its member municipalities to ensure that the cumulative cost implications of this plan are mitigated through appropriate financial strategies such as rate smoothing.*~~

- d. On ILWRMP Table of Contents, add with page numbers:

*Table 2: Scenarios for Annual Household Levies by Sewerage Area*

## **SECONDARY TREATMENT IMPLEMENTATION SCHEDULES AND RISK FACTORS**

New draft federal *Fisheries Act* regulations announced by Environment Canada in the March 20, 2010 *Canada Gazette* propose to set the deadline for the upgrading of a high-ranked plant (i.e. Lions Gate), to December 31, 2019, and for medium-ranked plants (i.e. Iona Island) to December 31, 2029.

The Lion's Gate upgrade is estimated to take close to 10 years, from preliminary design, through to construction and commissioning. The Iona Island upgrade, a larger plant, is estimated at closer to 12 years from preliminary design through to completion. These timelines assume no significant delays or barriers are encountered (see discussion of risks that follows). Preliminary schedules to upgrade each wastewater treatment plant are provided in Attachment 2.

This schedule proposes that the first three years be dedicated to land negotiations, securing funding, project definition and pre-design for both Lions Gate and Iona Secondary Treatment Plants. Proceeding to detailed design, tender/procurement and construction/commissioning of Iona Secondary Treatment Plant will be dependent on the availability of appropriate senior government funding.

However, as project definition work and preliminary design have not been completed, there are uncertainty and risks affecting the schedules and budgets for both plants. These may be technical, administrative or logistical. Unforeseen technical factors may cause the project schedules to be extended. For example, site preparation may be complicated due to unanticipated geotechnical conditions, or due to protracted site remediation in the case of the new Lions Gate site.

Administrative factors affecting project schedules are secured financing, certainty regarding land tenure and potential First Nations issues. For example, while Metro Vancouver has secured a new wastewater treatment plant site for the North Shore, rights-of-ways are needed from the Canadian National Railway Company and the Squamish Nation to connect the Hollyburn Interceptor to the new plant, and the new plant to the existing Lions Gate outfall. At Iona Island, land needs to be secured from the Province of BC—this will require the support of the Musqueam Nation.

The timing of the upgrades may lead to logistical risks if project and construction phases occur concurrently with each other or with other large capital projects. There is limited capacity for engineering and construction within the region and competition between projects for labour and materials could increase costs and/or cause delays.

Timely completion of project definition, land acquisition and preliminary design work is needed if Metro Vancouver is to meet the timeline objectives for plant upgrading.

Furthermore, this work is needed to establish more reliable cost estimates essential to refining financing options and to securing senior government cost sharing.

### **COST ALLOCATION FORMULA**

The *Greater Vancouver Sewerage and Drainage District Act* establishes Metro Vancouver's authority to deliver sewerage and drainage services within its four sewerage areas. All capital and operating costs (less any senior government cost sharing) are funded by their participating members. In 1991, RAAC established a task force to review sewerage cost allocations. Through a series of consultations with municipalities, further subcommittees and consultant reports, a consensus was reached in November 1993. At that time a joint RAAC/REAC committee concluded that a "two tier" approach was necessary. The Board adopted the new cost allocation methodology on September 30, 1994.

Attachment 3 outlines the Greater Vancouver Sewerage and Drainage District's Cost Allocation Formula, along with a brief narrative to enhance understanding.

### **ESTIMATED TIER I AND TIER II COSTS**

The Cost Allocation Formula, referenced above, attempts to provide equitability by sharing sewerage area costs to match benefits. As mentioned earlier, it is a "two tier" system, which generally defines Tier II costs as capital costs that are attributable to projects that enhance treatment beyond primary. The significance of this determination is that 70% of Tier II costs are allocated to the region as a whole, while Tier I costs are funded directly by the individual sewerage area. Within this definition, there is some subjectivity to classifying certain upgrade components. A preliminary estimate of the split between Tier I and Tier II for Lions Gate is 60-40 and for Iona Island approximately 50-50, as per Attachments 4 and 5. These are the estimates that our financial analysis and modelling used for these two upcoming projects.

Historically, when the Annacis and Lulu Island WWTP's were upgraded to secondary treatment in the late 1990's, a decision was made to classify virtually all of the project costs as Tier II. These were upgrades to existing plants, whereas Lions Gate will be a new plant in a new location. Iona will likely be a new plant as well, adjacent to the existing facility, so a number of different factors exist for the current upgrades as compared to those in the late 1990s. However, given the magnitude of these upcoming projects, and the significant financial implications, it is suggested that staff be directed to work with RAAC to determine an appropriate, contemporary approach in Tier I versus Tier II classification, not only for the two new WWTP upgrades, but also for on-going projects moving forwards

Staff recommends that a review of definition of Tier I and II costs as included in the GVS&DD cost allocation formula for all wastewater treatment plant projects be undertaken through the Regional Administrative Advisory Committee.

## FUNDING AND PROJECT DELIVERY

Federal and provincial government policies require evaluation of public-private partnerships (P3) as a criterion for all local government applications for significant senior government cost sharing. Attachment 6 provides some discussion on this topic.

### 3. ALTERNATIVES

#### Alternative 1:

That the GVS&DD Board:

- (a) incorporate the revisions to the *Integrated Liquid Waste and Resource Management Plan* (the Plan), November 2009 as recommended in this report titled "The Integrated Liquid Waste and Resource Management Plan Secondary Treatment Timelines"; dated May 7, 2010;
- (b) adopt the Plan, and circulate the Plan for municipal council endorsement specific only to the municipal actions in the Plan;
- (c) submit the Plan to the Minister of Environment;
- (d) direct staff to include funds in the 2011 budget and future years to complete the work on project definition, land negotiation, preliminary design, detailed design and construction for Lions Gate WWTP upgrade;
- (e) direct staff to include funds in the 2011 budget and future years to complete the work on project definition, land negotiation and preliminary design for Iona Island WWTP upgrade;
- (f) direct staff to review and provide a recommendation, through the Regional Administrative Advisory Committee, of the definitions of Tier I and II costs as included in the Greater Vancouver Sewerage and Drainage District cost allocation formula for all wastewater treatment plant projects, current and proposed.

#### Alternative 2:

That the Committee provide alternate or additional recommendations to the Board.

### 4. CONCLUSION

The Committee requested supplemental information regarding the proposed revisions to the Integrated Liquid Waste and Resource Management Plan. Further information is provided in this report as requested.

#### **Attachments:**

1. Integrated Liquid Waste and Resource Management Plan, November 2009 (Doc #3957995)
2. Preliminary Schedule for Iona Island and Lions Gate WWTP Upgrades (Doc #4044176).
3. GVS&DD Cost Allocation Process (Doc #4048515).
4. Table Showing the Estimated Split Between Tier I and II Costs for the Lions Gate Wastewater Treatment Plant Upgrade (Doc #4043783).
5. Table Showing the Estimated Split Between Tier I and II Costs for the Iona Island Wastewater Treatment Plant Upgrade (Doc #4043763).
6. Information on Non-traditional Sources of Funding or Project Delivery (Doc #4049111)
7. April 15, 2010 Finance Committee Report (Doc #3948458)