



5.1

2019 Work Plan Priorities & Committee Orientation

LIQUID WASTE COMMITTEE

Peter Navratil

GENERAL MANAGER, LIQUID WASTE SERVICES

January 17, 2019

27964249

Liquid Waste Committee



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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

Presentation Overview

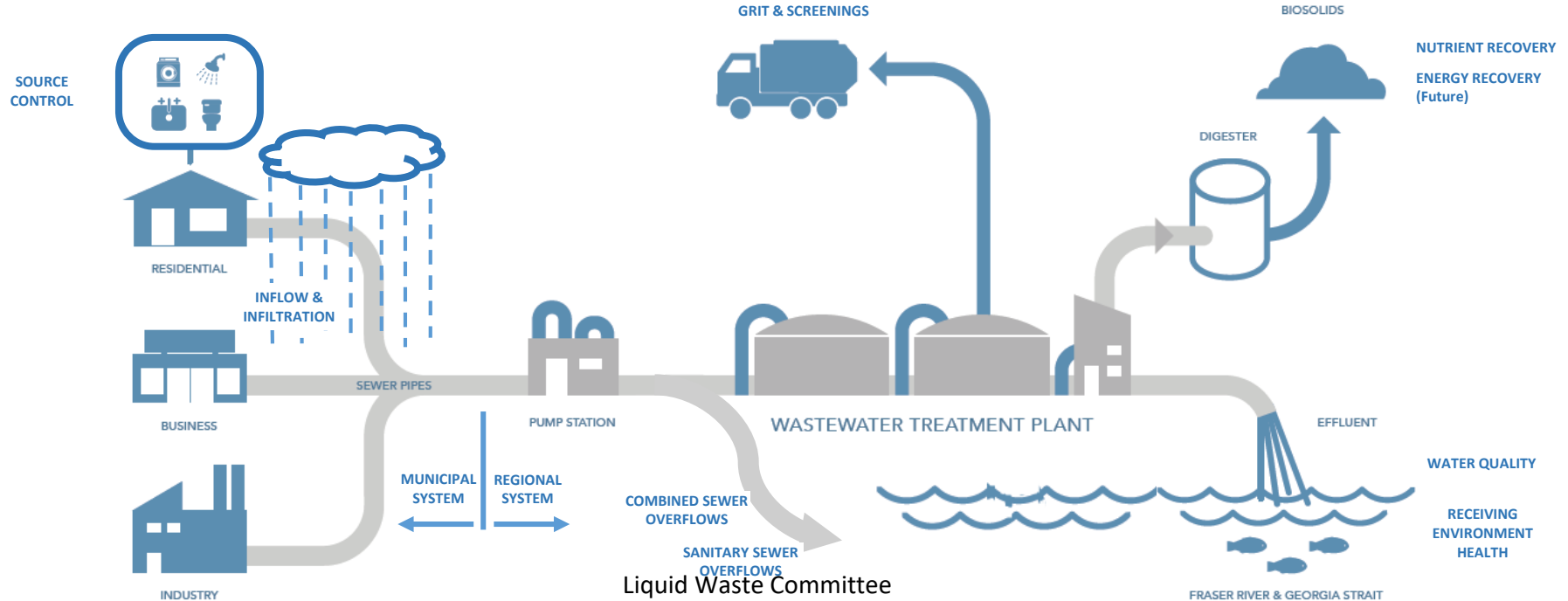
- Committee Terms of Reference
- Strategic and Regulatory Framework
- History and Overview
- 2019 Liquid Waste Budget
- 2019 Work Plan Priorities

Liquid Waste Committee Terms of Reference

Purpose

- The Liquid Waste Committee is the standing committee of the Metro Vancouver Board that provides advice and recommendations on policies, bylaws, plans, programs, budgets and issues related to liquid waste management under the GVS&DD service.
 - Annual budget and five-year financial plan
 - Integrated Liquid Waste and Resource Management Plan implementation
 - Annual Environmental Management and Quality Control Report
 - Municipal requests for sewerage area boundary expansions

Comprehensive Planning ILWRMP Innovation & Research Project Delivery Asset Management

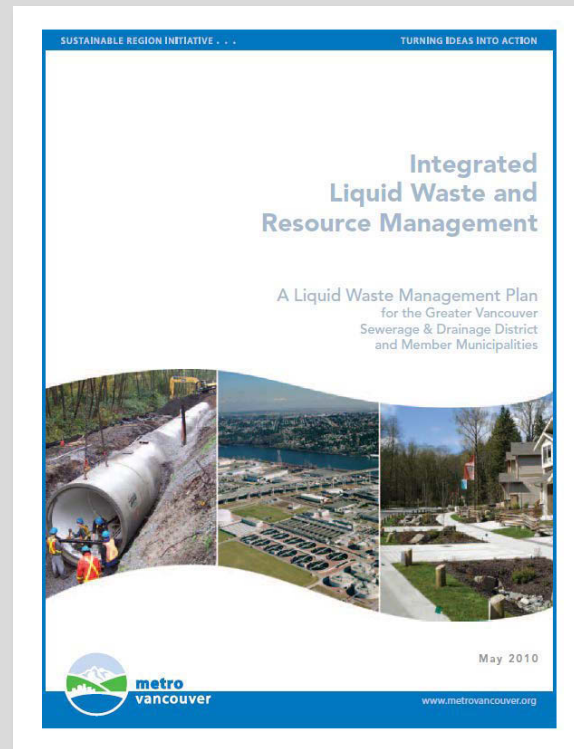


Integrated Liquid Waste and Resource Management Plan

ILWRMP Goals

1. Protect public health and the environment
2. Use liquid waste as a resource
3. Effective, affordable and collaborative management

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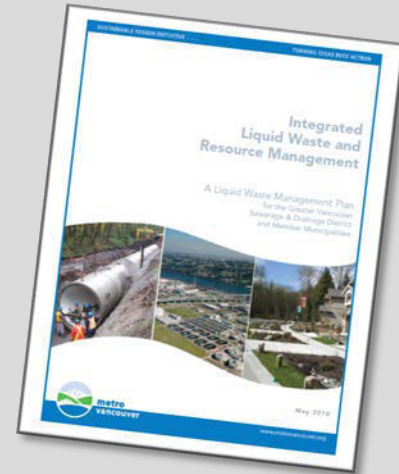
Regional Management Plans



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Environmental Regulations

- Wastewater Systems Effluent Regulations (WSER)
 - Federal (Fisheries Act)
- Municipal Wastewater Regulation (MWR)
 - Provincial (Environmental Management Act)
 - Liquid Waste Management Plan
- Organic Matter Recycling Regulation (OMRR)
 - Provincial (Environmental Management Act)
 - Biosolids Management





Liquid Waste Services Overview

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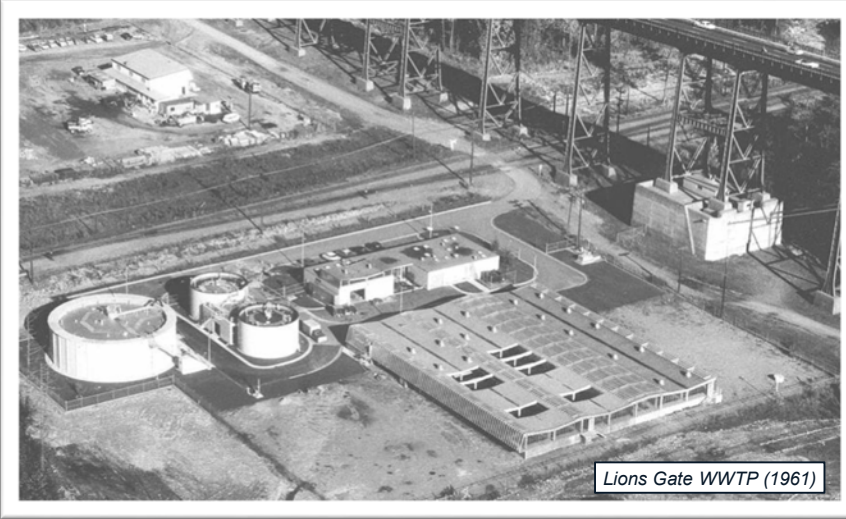
Context and Overview

- History of development goes back over 100 years
- GVS&DD formed in 1914



Context and Overview

- Population Growth
- Long Range Plan
(Rawn Report - 1953)
 - Introduced sewerage areas
- Wastewater Treatment
 - Lions Gate WWTP (1961)
 - Iona Island WWTP (1963)
 - Lulu Island WWTP (1972)
 - Annacis Island WWTP (1974)



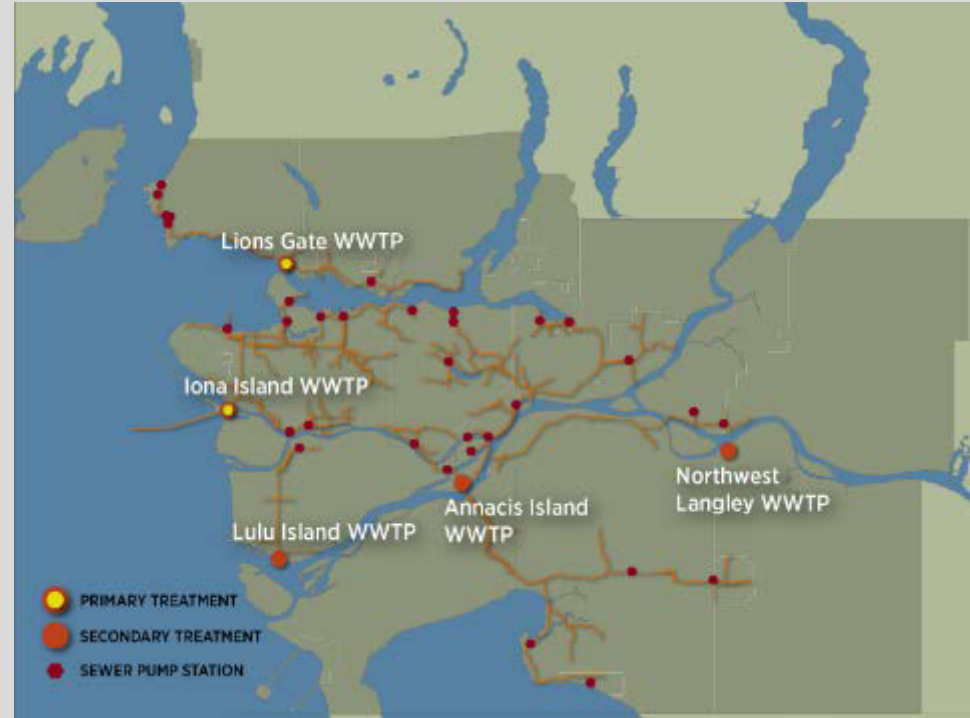
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Video: Metro Vancouver's Liquid Waste System

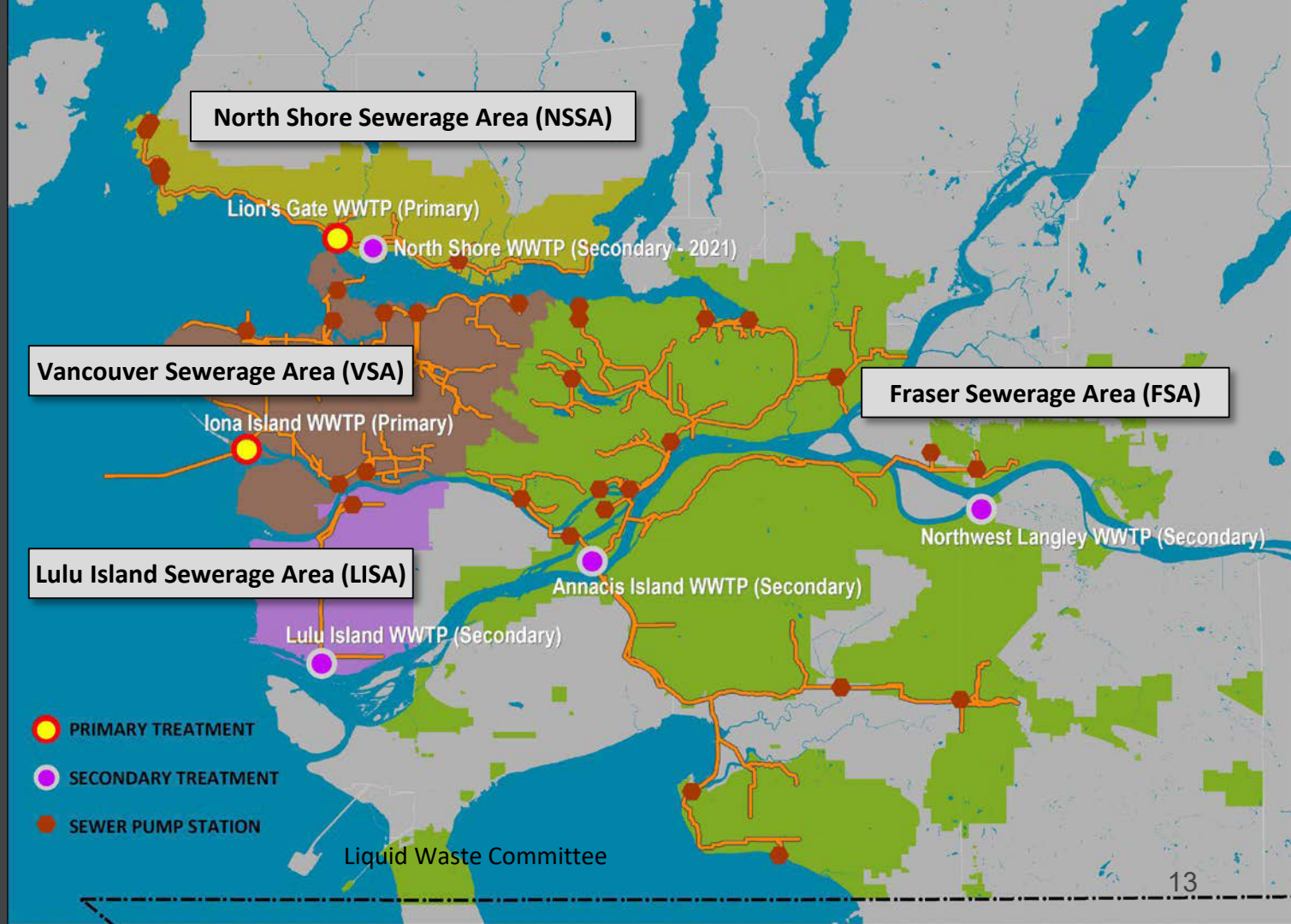


Context and Overview

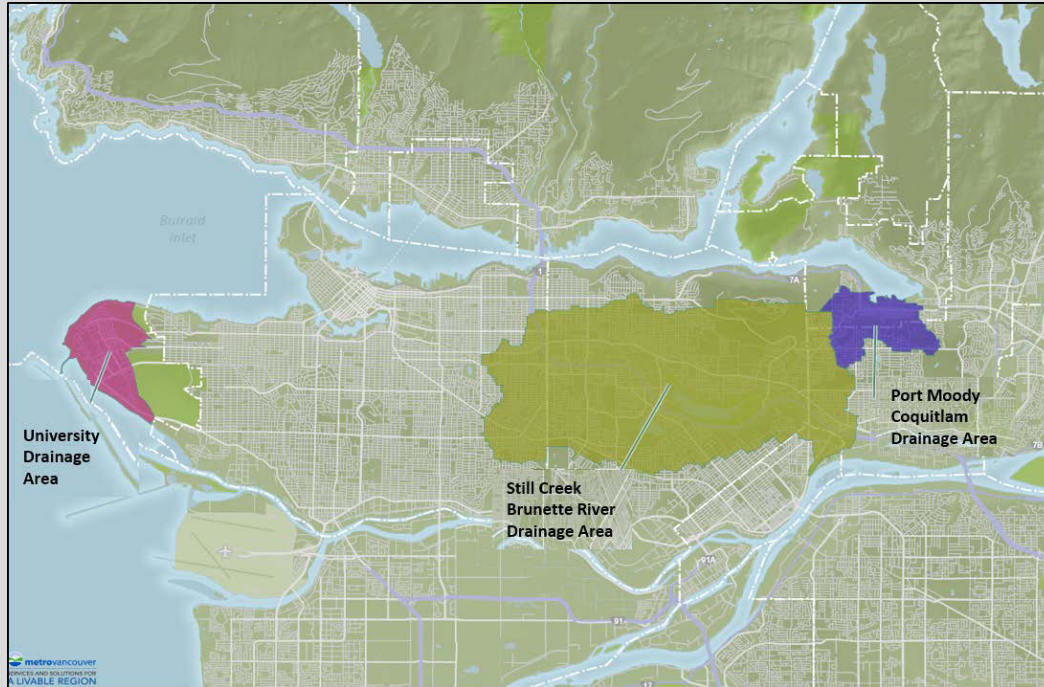
- 17 member jurisdictions
- 1 electoral area
- 2.4 million people
- GVS&DD Act
- Integrated Liquid Waste and Resource Management Plan



Metro Vancouver Liquid Waste System

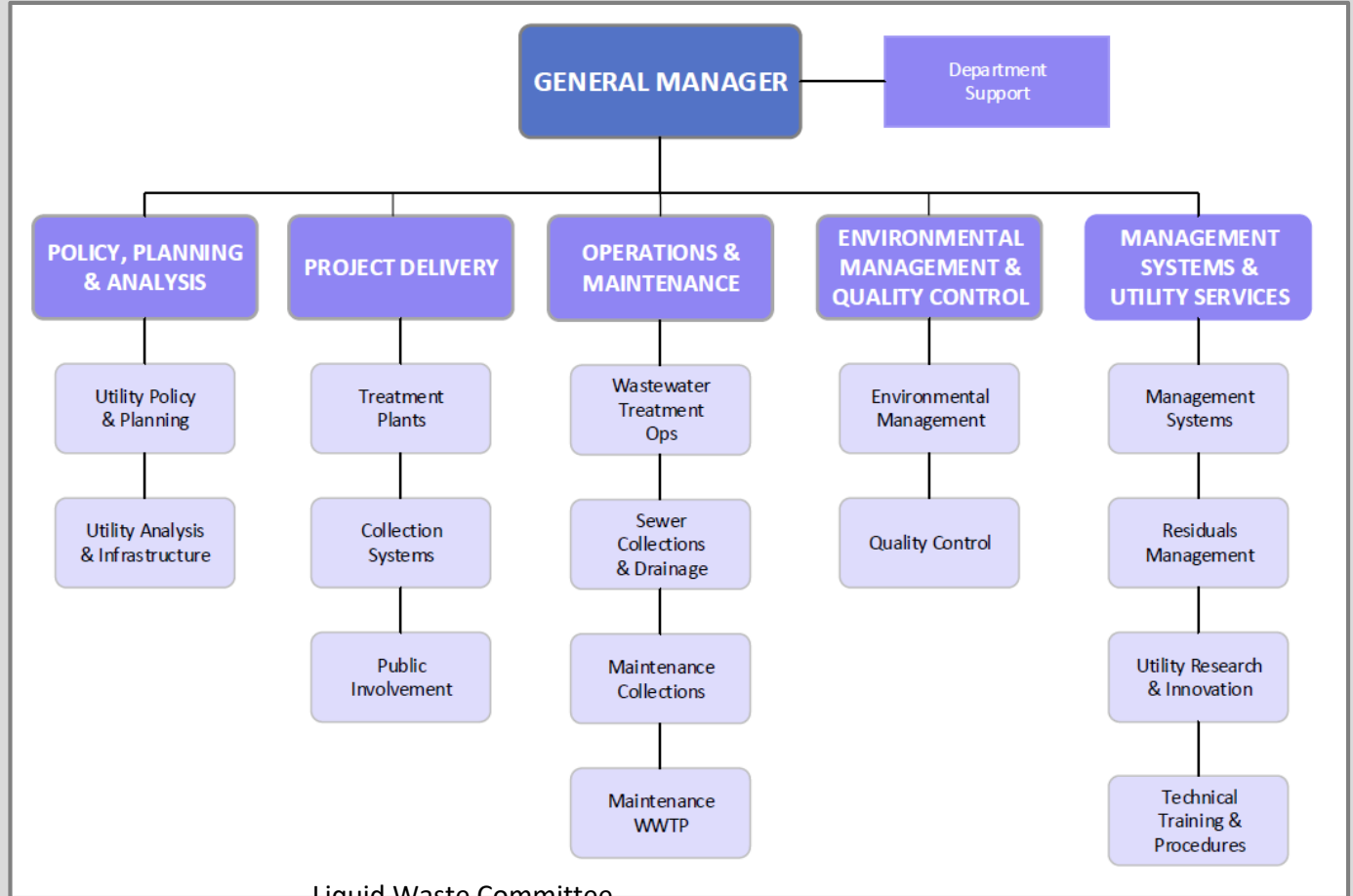


GVS&DD Drainage Areas



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Divisions



Policy, Planning & Analysis

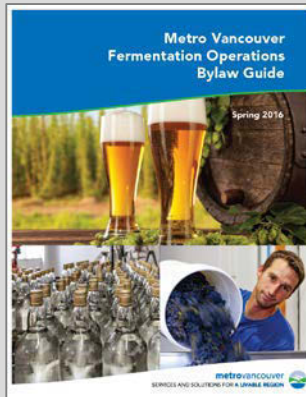
- Growth Analysis & Hydraulic Modeling
- Utility Analysis and Infrastructure
- Policy and Planning
- IIWWTP Project Definition
- Source Control Program

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Source Control and Public Education

- Regulations and Enforcement for Industrial Discharges (and fees)
- New sewer discharge Bylaws and amendments to existing Bylaws
- Guides and other educational tools for all dischargers
- Public Education Campaigns
 - Unflushables (wipes, prescription medicines, dental floss ...)
 - Fats, Oils and Grease



Project Delivery

- Collections System
- Treatment Plants
- North Shore WWTP
- Northwest Langley WWTP
- Public Involvement



Operations & Maintenance

- Maintenance – Collections & WWTPs
 - Lake City Operations Centre
- Wastewater Treatment
 - Trucked Liquid Waste
- Sewer and Drainage Operations
 - Still Creek & Newton





Environmental Management and Quality Control

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Wastewater System and Process Monitoring



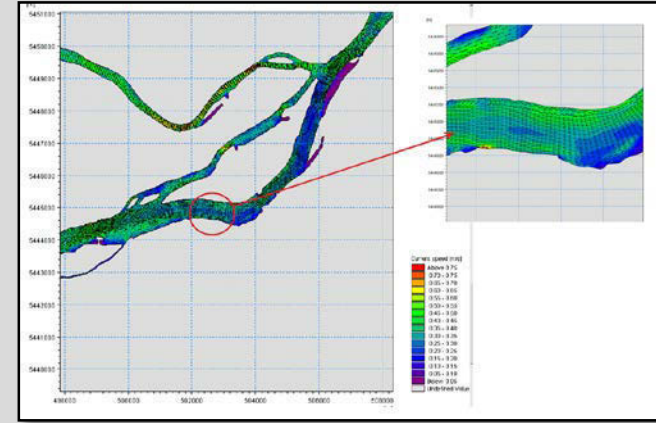
Process and chemistry laboratories
Liquid waste characterization
Process optimization
Regulatory reporting

Environmental Assessment



Human health protection
Environmental effects

Hydrodynamic and Environmental Modelling



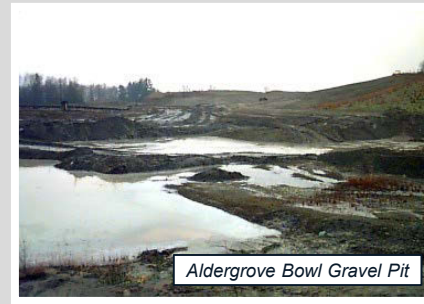
Simulation and forecasting

Monitoring, Modelling and Assessment

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Management Systems and Utility Services

- Management Systems
 - Capital Project Scope Definitions
 - Asset Management Program
- Utility Residuals Management
 - Biosolids Management
- Utility Research and Innovation
 - Annacis Research Centre
- Energy Management



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Break

Video: Understanding Wastewater Treatment





Annacis Island WWTP – Secondary

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Lulu Island Liquid Waste Committee WWTP – Secondary



Northwest Langley WWTP – Secondary

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Lona Island WWTP – Primary



Lions Gate WWTP – Primary



New North Shore WWTP – Secondary (2020)

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Resource Recovery

- Biogas – produces \$5.5M of electricity and heat /year
- Water Reclamation – offsets \$8.8M of potable water/year
- Nutrient Recycling – Biosolids recovers 40% of nutrients
- Sewer Heat / Effluent Heat
- Hydrothermal Process – Pilot Facility

2019 Liquid Waste Budget

- GVS&DD is a wholesaler of bulk wastewater collection and treatment to local governments who service individual consumers
- Liquid Waste operating budget: \$308.6 M
- Liquid Waste capital budget: \$564.9 M
- Liquid Waste levy: \$255.8 M
- Household Impact: \$250

2018 Work Plan Highlights

- Northwest Langley WWTP Indicative Design
- Hospital Pollution Prevention Bylaw
- Development Cost Charge Bylaw Update
- Liquid Waste Services Asset Management Policy
- North Shore WWTP Conveyance Design-Construction Award
- Gilbert Road Trunk Sewer Construction Award
- South Surrey Interceptor Construction Award
- Douglas Road Trunk Sewer Construction Award

2019 Work Plan Priorities

- Iona Island WWTP Project Definition / indicative design
- 30 Year Long Range Financial Plan Scenarios
- Biosolids Management Strategy
- Options and Strategies for Combined Sewer Overflows
- Inflow and Infiltration Mitigation Strategy
- Still Creek-Brunette River Flood Management Strategy
- Public Education Campaigns - Grease and Unflushables
- Annacis Island WWTP Outfall contract award
- Annacis Island WWTP Cogeneration Power Construction



Thank you.



North Shore Wastewater Treatment Plant

PROJECT STATUS UPDATE

Paul Dufault

PROJECT MANAGER, NSWWTP PROGRAM

LIQUID WASTE SERVICES

Liquid Waste Committee Meeting, January 17, 2019

27973157



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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

Integrated Liquid Waste and Resource Management

A Liquid Waste Management Plan
for the Greater Vancouver
Sewerage & Drainage District
and Member Municipalities



y 2010

dwater.org



CANADA

CONSOLIDATION

CODIFICATION

Wastewater Systems
Effluent Regulations

Règlement sur les
effluents des systèmes
d'assainissement des eaux
usées

SOR/2012-439

DORS/2012-139

Current to March 18, 2013

À jour au 18 mars 2013

Last amended on January 1, 2013

Dernière modification le 1 janvier 2013

Published by the Minister of Justice at the following address:
<http://laws-lois.justice.gc.ca>

Publié par le ministre de la Justice à l'adresse suivante:
<http://lois-lois.justice.gc.ca>



Regulatory Driven

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Components



- 
- An architectural rendering of a modern wastewater treatment facility. The main building is a long, low structure with a green roof and a colorful mural on its side. It is surrounded by trees and a paved area with people walking. In the background, there are industrial buildings and a large dome structure.
- Robust Secondary Wastewater Treatment
 - Sustainable
 - Recovers Resources
 - Integrated into the Community

Project Objectives

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NORTH SHORE WASTEWATER TREATMENT PLANT



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District Energy Option - October 5, 2017

- Awarded District Energy Heating, October 5, 2017
- Agreement with Lonsdale Energy Corp for the purchase of the heat
- GHG Neutral Liquid Waste Utility (5700 T/year)

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Influent Pumping

UV Disinfection

Operations & Maintenance Building

Pemberton Plaza

TALL TREES PLANTED ALONG 1ST STREET A WEST END OF SITE REFER TO PLANTING PLAN
RETAINING WALL WITH PLANTED TRELLIS AS SECURITY FENCE REFER TO CIVIL

NORTHWEST SECURITY GATE, REFER TO CIVIL
NON-PUBLIC ENTRY POINT INTO TREATMENT PLANT

OUTLINE OF INFILTRATION GALLERY BELOW PLANTED BERM, REFER TO CIVIL

PLANTED BERM, REFER TO LANDSCAPE SECTIONS AND PLANTING PLAN

BIO DIVERSE INFILTRATION FEATURE REFER TO O&M SITE PLAN
PUBLIC ARRIVAL PLAZA REFER TO O&M SITE PLAN
VISITOR PARKING AREA REFER TO CIVIL

PUBLIC ENTRY POINT REFER TO O&M SITE PLAN

BUS LAYBY AREA REFER TO CIVIL

SOUTH-EAST SECURITY GATE

NON-PUBLIC ENTRY POINT INTO O&M BUILDING

O&M ROOF TREATMENT- PUBLIC VIEWING DECK WITH WILDLIFE HABITAT RICH INTENSIVE GREEN ROOF, REFER TO ARCHITECTURAL AND LANDSCAPE PLANTING PLAN

STAFF PARKING AREA REFER TO CIVIL
PROTECTIVE BARRIER (CRASH-WALL) REFER TO CIVIL

TREATMENT FACILITY ROOF TREATMENT- EXTENSIVE GREEN ROOF OF WILD FLOWERS AND GRASSES, WITH PROVISION FOR FUTURE PUBLIC ACCESS REFER TO LANDSCAPE PLANTING PLAN

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Digesters

Primary Treatment

Aeration Basins

Secondary Clarifiers

Reclaimed Water

Power Generation

District Energy System

Solids Dewatering



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Acciona - Waste Water Treatment Facility
Camera 1 - December 13 2017 11:49:35



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Advanced Waste Water Treatment Facility
October 1 - October 12 2018 12:07:14



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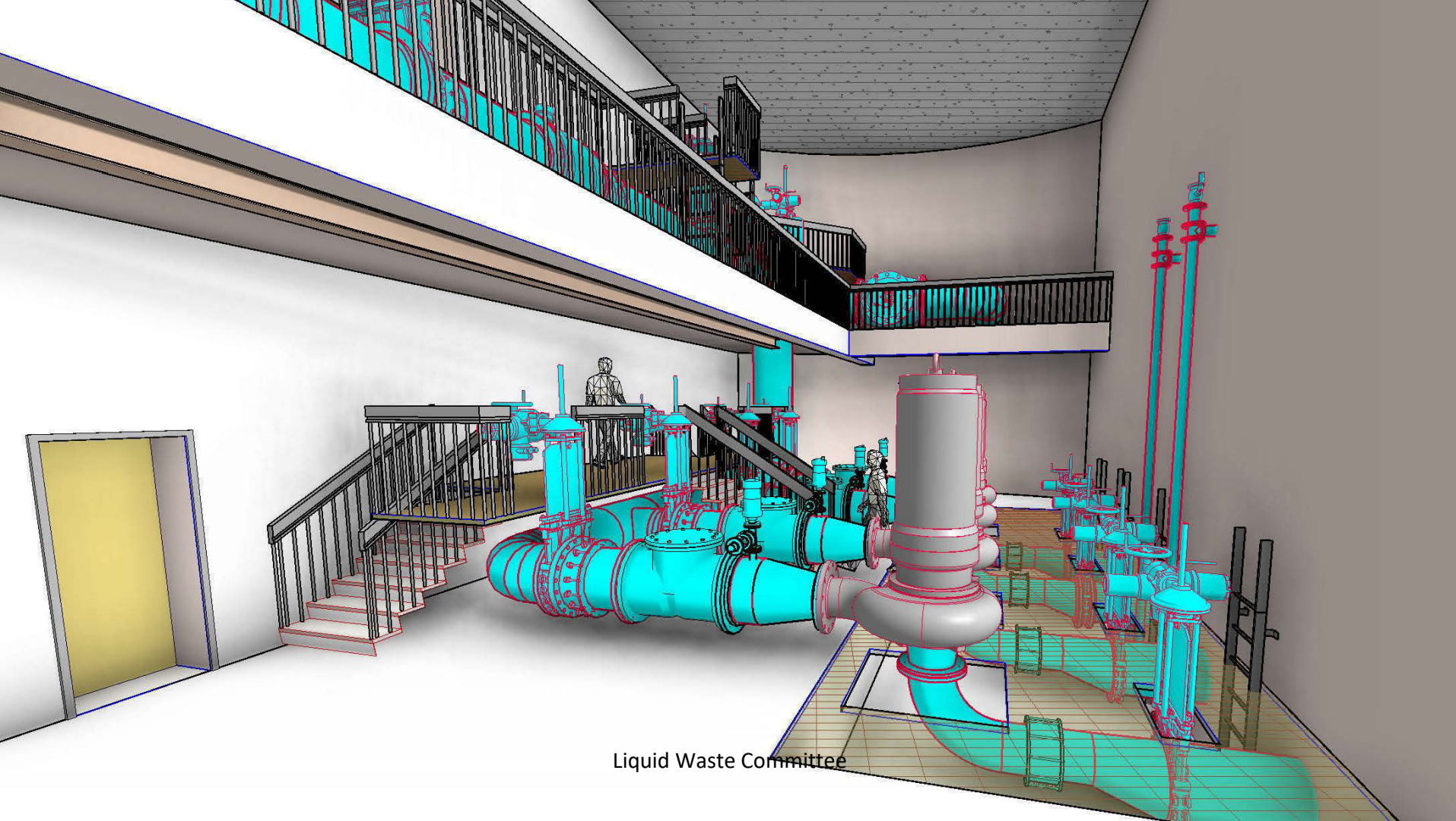
Ardara - Waste Water Treatment Facility
Camera 1, December 20 2018 11:30:21



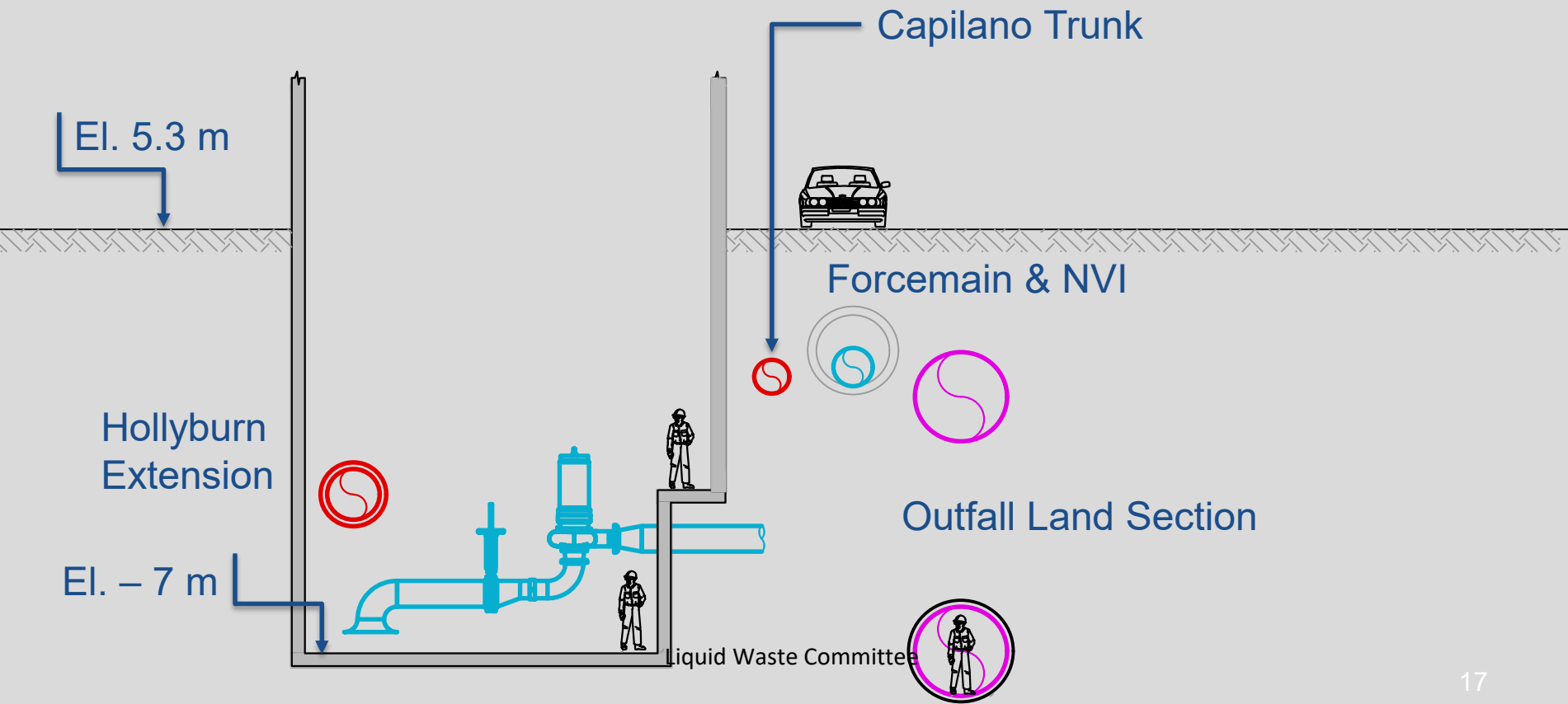


First Narrows Pump Station

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Budget and Funding

Item	Projected Expenditures
Project Initiation / Definition (Complete)	\$ 20,000,000
NSWWTP Program	\$ 727,900,000
Contingency	\$ 30,000,000
Total Project Budget	\$ 777,900,000
Government of Canada Funding	\$ 212,300,000
Province of British Columbia Funding	\$ 193,000,000
GVS&DD Net Project Amount	\$ 372,600,000

Questions

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An aerial photograph of Vancouver, British Columbia, showing the city's dense urban core, the harbor with several large red cranes, and the surrounding mountains under a clear blue sky.

Iona Island Wastewater Treatment Plant

PROJECT DEFINITION PHASE

Fred Nenninger

DIRECTOR, POLICY, PLANNING & ANALYSIS

LIQUID WASTE SERVICES

Liquid Waste Committee – January 17, 2019

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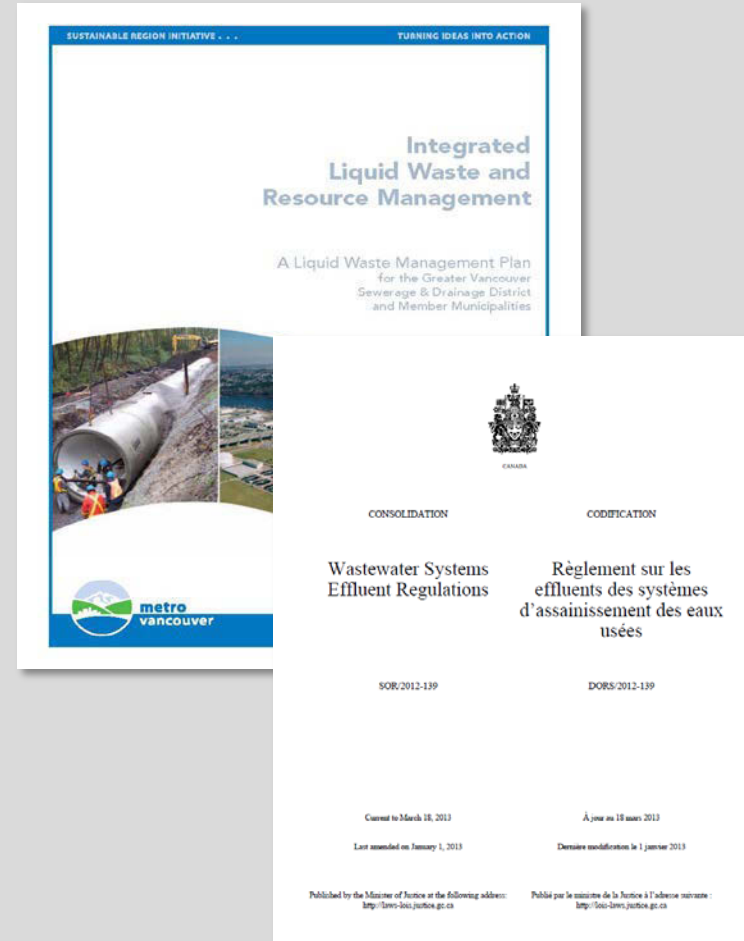
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Metro Vancouver Wastewater Treatment Plants



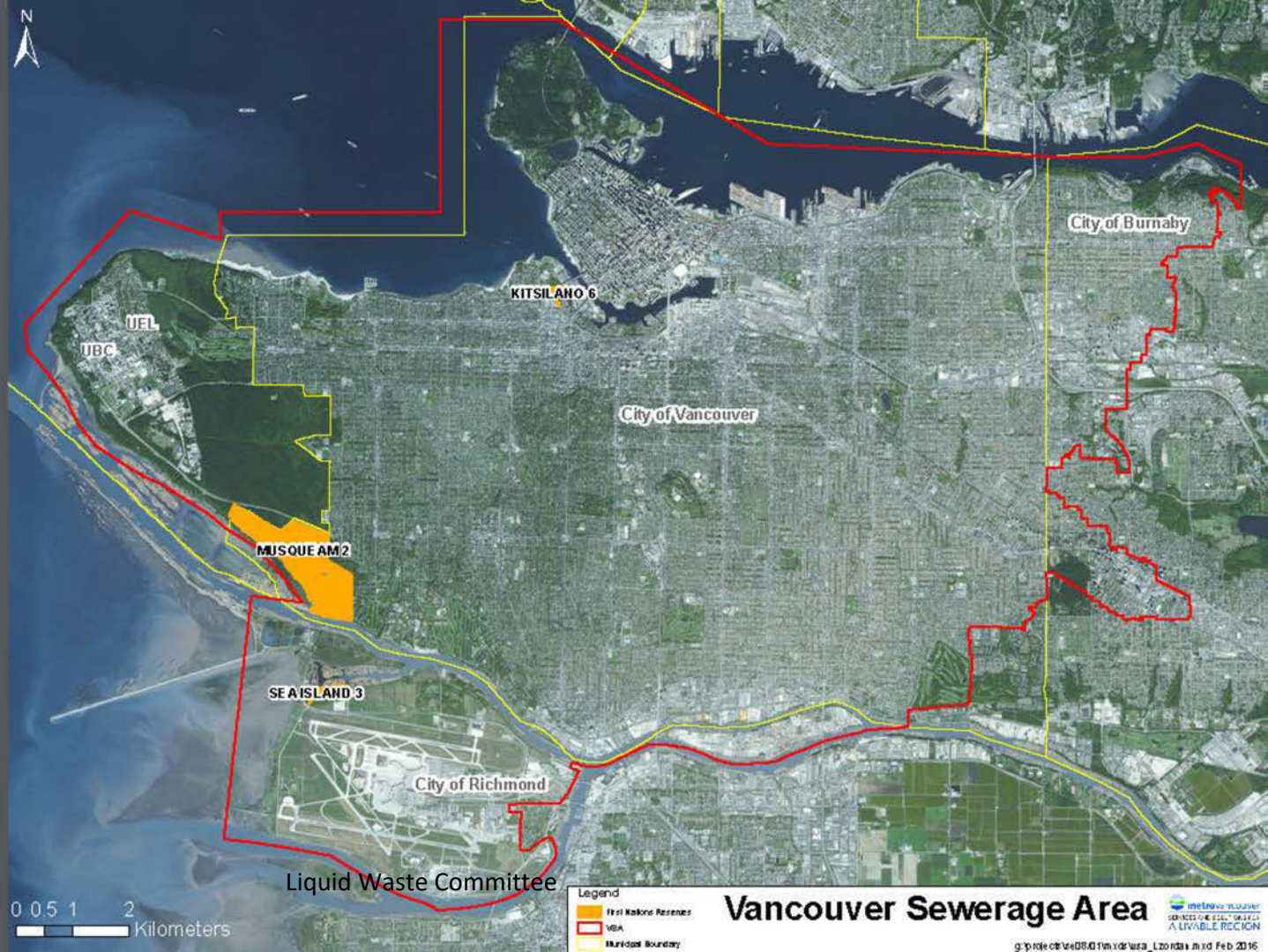
Iona Island Secondary WWTP Regulatory Drivers

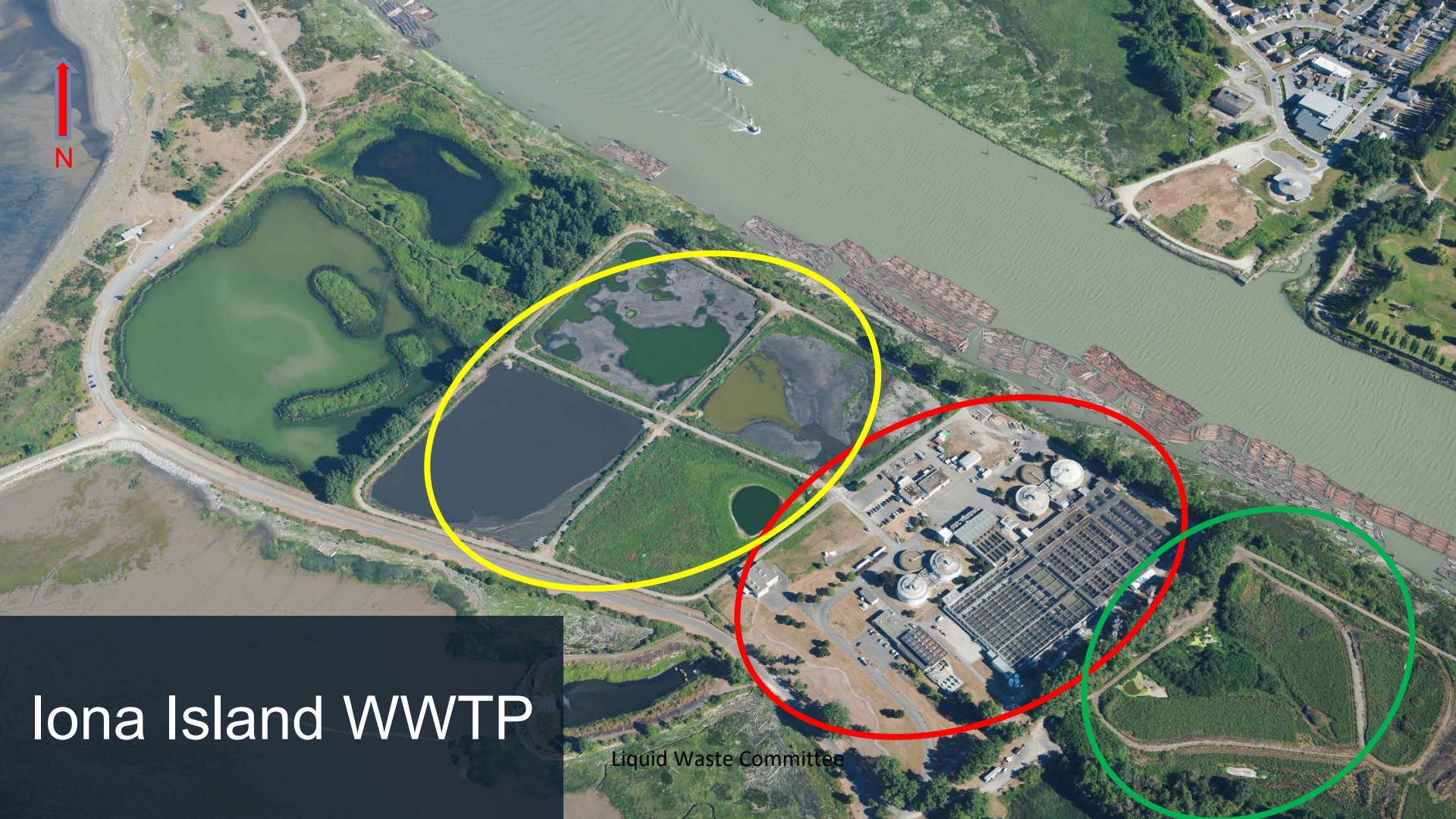
- Metro Vancouver's *Integrated Liquid Waste and Resource Management Plan*
- Government of Canada's *Wastewater Systems Effluent Regulations*



Vancouver Sewerage Area

Vancouver,
Burnaby, Richmond,
UBC, UEL,
Squamish Nation &
Musqueam Indian
Band

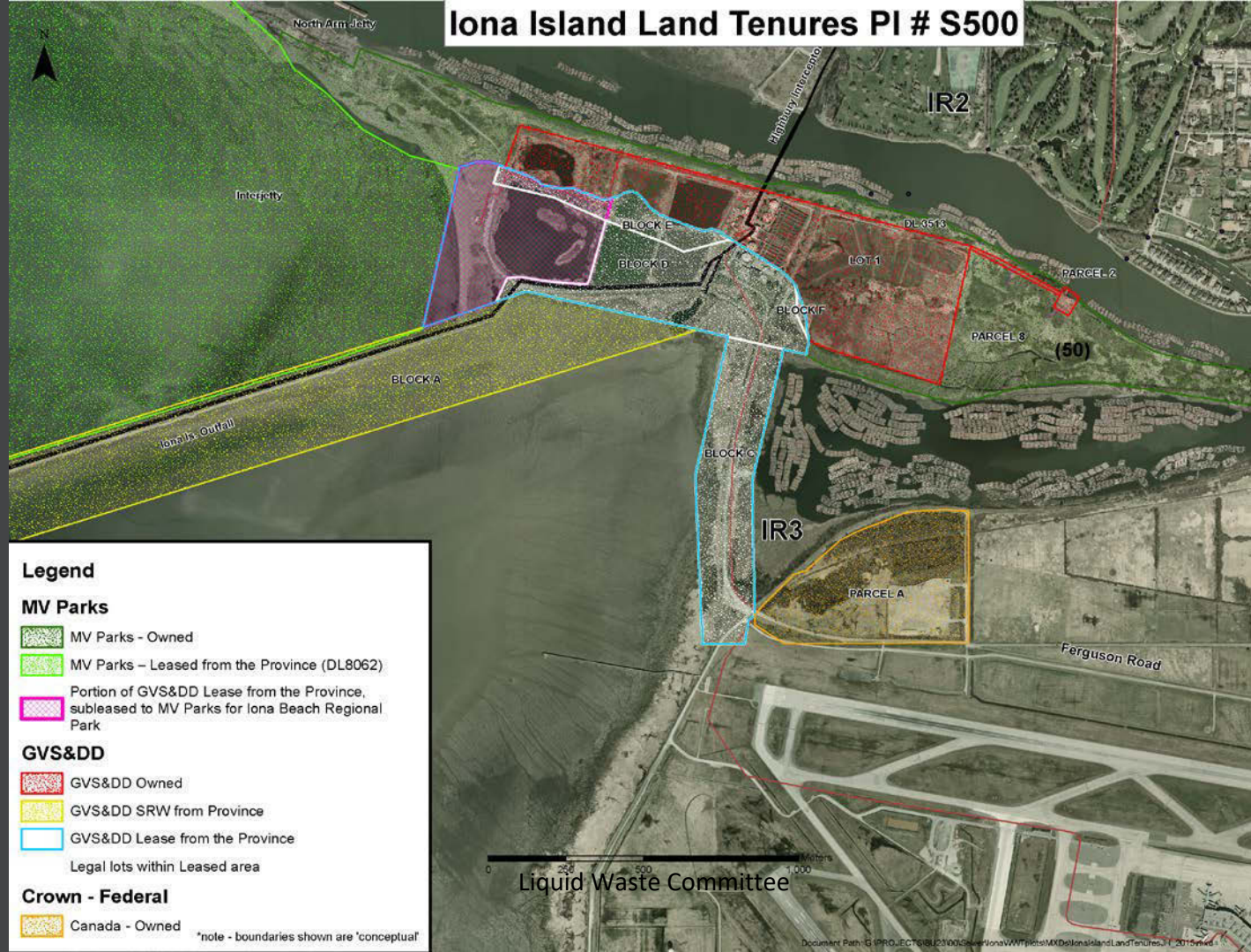




Lona Island WWTP

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Iona Island Land Tenures PI # S500



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Iona Island WWTP

Project Phases & Timeline



Iona Island Secondary WWTP

Project Goals

Secondary
Wastewater
Treatment

Resource Recovery

Community and Park
Integration

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The Project Definition Phase Deliverable

A report that will:

- Provide a indicative design
- Provide a project schedule for detailed design and construction
- Provide the detailed design and construction cost-estimate
- Recommend procurement method(s)

Integrative Design Process (IDP)

Expert Advisors

Ed Idriss
Ross Boulanger

Architectural Team

Miller Hull
Local Practice
Space2place

Engineering Team

AECOM
Jacobs

Management Advisors

- BTY
- EY & Mott MacDonald
- Kiewit
- Kleanza
- Golder

MV Steering Committee

Metro Vancouver Board & Committees

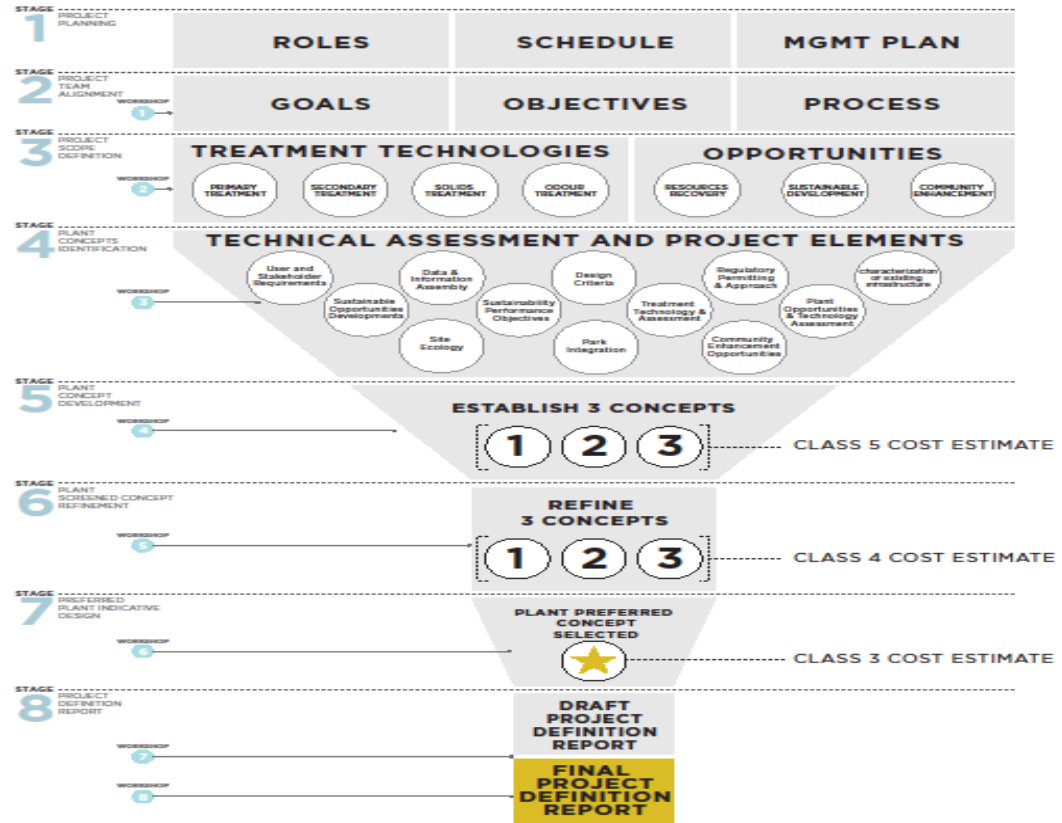
MV Project Team

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VSA Jurisdictions & First Nations

Local Communities

Integrative Design Process (IDP)



Integrative Design Process Workshops

Workshop	Theme	Preliminary Dates
IDP Workshop	Objective Hierarchy and Evaluation	January 21-22, 2019
IDP Workshop	Plant Concepts Integration	April, 2019
IDP Workshop	Plant Concept Evaluation and Screening	July, 2019
IDP Workshop	Plant Preferred Concept Selection	October, 2019
IDP Workshop	Preferred Plant Indicative Design	March, 2020
IDP Workshop	PDR Draft Review	July, 2020
IDP Workshop	PDR Final Presentation	September, 2020

Stakeholders and First Nations

Plus:

- Local governments
- Environmental groups
- Regional Park visitors
- River users
- other First Nations

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MV engagement objectives

- Promote community engagement
- Provide opportunities for input
- Work with First Nations
- Ensure transparency and accountability



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Project Definition Phase engagement objectives

- Raise awareness of the project
- Collaborate on how plant can be integrated with Iona Beach Regional Park
- Collaborate on resource recovery opportunities



What we've done

- Participated in National Indigenous Peoples Day (June 21, 2018)
- 45 people engaged



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What we've done

- Two pop-up events
July 2018
70 people engaged
- Shoreline Cleanup
Community event
Sept 15, 2018
114 people engaged
- Total: 229 people
engaged



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What's next – 2019 to 2020

4 community workshops that will feed into the IDP process.

Individual meetings with stakeholder groups that have specific interests or concerns.

Online input via our website.



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Community workshop #1

January 9, 2018 Site discovery and use



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2019 Liquid Waste Capital Projects

Paul Dufault

ACTING DIRECTOR, PROJECT DELIVERY
LIQUID WASTE SERVICES

Liquid Waste Committee, January 17, 2019

28136319

Liquid Waste Committee



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Annacis Island Stage V Expansion, Delta

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Annacis Island Stage V Expansion, Delta

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Cogeneration Upgrade, Annacis Island WWTP Delta

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Digester No. 2 Mixing System Upgrade, Iona Island WWTP Richmond

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Northwest Langley Wastewater Treatment Plant Township of Langley





Northwest Langley Wastewater Treatment Plant Township of Langley

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NSWWTP, District of North Vancouver

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Sperling Pump Station Upgrade, Burnaby

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First Narrows Pump Station, West Vancouver

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Sapperton Pump Station, New Westminster

Ground Waste Construction



Sapperton Pump Station, New Westminster

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Front Street Sewer Upgrade, New Westminster

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Gilbert Road Trunk Sewer, Richmond

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Gilbert Road Trunk Sewer, Richmond

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South Surrey Interceptor, Tunneled Section Surrey

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South Surrey Interceptor, Surrey

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Douglas Trunk Sewer, Burnaby

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Highbury Interceptor Air Management, Vancouver

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Thank you

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