



PORT of  
**vancouver**

# **PROJECT AND ENVIRONMENTAL REVIEW REPORT**

## **PER NO. 17-090 CONVEYANCE FOR NORTH SHORE WASTEWATER TREATMENT PLANT**

Prepared for: Director, Planning & Development

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		<b>VANCOUVER FRASER PORT AUTHORITY PROJECT AND ENVIRONMENTAL REVIEW REPORT</b>
<b>PER No.:</b>	<b>17-090</b>	
<b>Tenant:</b>	<b>Metro Vancouver</b>	
<b>Project:</b>	<b>Conveyance for North Shore Wastewater Treatment Plant</b>	
<b>Project Location</b>	<b>Approximately 150 m northeast of the northern tower of the Lions Gate Bridge, District of West Vancouver</b>	
<b>VFPA SID No.:</b>	<b>WVD035 and WVD056</b>	
<b>Land Use Designation:</b>	<b>Industrial</b>	
<b>Applicant(s):</b>	<b>Metro Vancouver</b>	
<b>Applicant Address:</b>	<b>4330 Kingsway, Burnaby, BC V5H 4G8</b>	
<b>Category of Review:</b>	<b>C</b>	
<b>Recommendation:</b>	<b>That PER No. 17-090 for Conveyance for North Shore Wastewater Treatment Plant be approved.</b>	

## 1 INTRODUCTION

The Vancouver Fraser Port Authority (VFPA), a federal port authority, manages lands under the purview of the *Canada Marine Act*, which imparts responsibilities for environmental protection. VFPA accordingly conducts project and environmental reviews of works and activities undertaken on these lands to ensure that the works and activities will not likely cause significant adverse environmental effects. This project and environmental review report documents VFPA's project and environmental review of PER No. 17-090: Conveyance for North Shore Wastewater Treatment Plant (the Project) proposed by Metro Vancouver (the Applicant).

This project and environmental review was carried out to address VFPA's responsibilities under the *Canada Marine Act*, and to meet the requirements of the *Canadian Environmental Assessment Act*, 2012 (CEAA 2012), as applicable. The proposed Project is not a CEAA 2012 "designated project" and an environmental assessment as described in CEAA 2012 is not required. However, VFPA authorization is required for the proposed Project to proceed and in such circumstances, where applicable, Section 67 of CEAA 2012 requires federal authorities to assure themselves that projects will not likely cause significant adverse environmental effects. This review provides that assurance. In addition, VFPA considers other interests, impacts and mitigations through the project and environmental review.

The project and environmental review considered the application along with supporting studies, assessments and consultations carried out or commissioned by the Applicant, as well as other information provided by the Applicant. In addition, this project and environmental review considered other information available to VFPA and other consultations carried out by VFPA. A full list of information sources germane to the review is provided in Appendix B.

This project and environmental review report is NOT a project authorization. It is a prerequisite to the issuance of a project permit (the Permit) and the conclusions described in this report require compliance with the conditions in the Permit.

## 2 PROJECT DESCRIPTION

The existing Lions Gate Wastewater Treatment Plant, situated just to the west of the Lions Gate Bridge, opened in 1961 and serves the North Shore municipalities of West Vancouver, the City of North Vancouver, and the District of North Vancouver. The plant is one of two remaining primary treatment plants in the region. New federal regulations require all primary treatment plants be upgraded to secondary treatment.

The new North Shore Wastewater Treatment Plant (NSWWTP) will be built on a new Metro Vancouver-owned site in the District of North Vancouver, approximately 2 km east of the existing treatment plant. The existing plant, located at 101 Bridge Road in West Vancouver, will be decommissioned and the lands returned to Squamish Nation in accordance with a Provincial/Federal cut-off lands agreement.

Within lands under VFPA jurisdiction, Metro Vancouver proposes to construct a pump station, a new marine outfall chamber and sections of both gravity main and force main conveyance pipes.

### 2.1 Proposed Works

#### Bridge Road Pump Station

- Construction of an enclosed pump station building measuring approximately 13 m (42.7 ft.) high x 22.5 m (73.8 ft.) wide x 30 m (98.4 ft.) long, for a footprint of 675 m<sup>2</sup> (7,265 ft<sup>2</sup>);
- Excavation of approximately 5,100 m<sup>3</sup> (6,670 yard<sup>3</sup>) of soil in an area of 27 m (89 ft) x 18 m (59 ft) to an approximate depth of 11 m (36 ft.);
- Installation of utility connections (electrical and potable water), and mechanical and electrical systems, including pumps, odour control unit, standby generator, and HVAC;
- Construction of roadway to, and around, site for fire truck access and paved parking for operations and maintenance staff;
- Installation of hardscaping, and low maintenance landscaping that incorporates plantings and grassed areas;
- Installation of associated exterior and interior lighting systems; exterior lighting comprised of wall mounted and stand-alone LED's; and
- Installation of a chain-link/rigid wire security fence measuring approximately 2.4 m (7.8 ft.) high, with locked access gate.

#### Sewerage Conveyance Pipes

- Construction of approximately 75 m (246 ft.) of 1200 mm diameter Hollyburn Interceptor extension pipe (influent), from the VFPA northern jurisdictional boundary south to the new pump station. The interceptor extension pipe conveys sanitary wastewater from the District of West Vancouver;
- Construction of approximately 30 m (98.4 ft.) of 900 mm diameter sanitary forcemain (influent) from the new Bridge Road Pump Station north to the VFPA jurisdictional boundary. The force main continues east and connects with the new NSWWTP;
- Construction of approximately 170 m (557.7 ft.) of 2100 mm diameter effluent line from the northern VFPA jurisdictional boundary south, and then west, to a tie-in at the existing outfall. Effluent line originates at the new NSWWTP. Total surface disturbance footprint for all three lines is approximately 2,950 m<sup>2</sup> (31,753 ft<sup>2</sup>); and
- Excavation (for the Interceptor, forcemain, and effluent line) to an approximate depth of 8 m (26.2 ft.).

### Marine Outfall Chamber

- Construction of an addition to the existing concrete outfall chamber measuring approximately 4.3 m (14.1 ft.) high x 5.1 m (16.7 ft.) wide x 5 m (16 ft.) long, that will result in a surface disturbance footprint of approximately 170 m<sup>2</sup> (1,830 ft<sup>2</sup>), that connects effluent pipe from the new NSWWTP to the existing outfall;
- Excavation (for the chamber) to an approximate depth of 5.5 m (18 ft.);
- Installation of utility connections (electrical and water), and mechanical and electrical systems;
- 2100 mm effluent pipe from the new NSWWTP;
- 1200 mm gravity overflow/pumped bypass connection from the new pump station;
- Existing 1400 mm outfall pipe;
- Provision for a future outfall connection;
- Weir wall to prevent air from accumulating in the 2100 mm effluent pipe;
- A barrier to keep water from entering the work site during high tide or storm surges; and
- An air relief chamber.

It is estimated that the entire project will require the removal of approximately 85,000 m<sup>3</sup> (111,176 yd<sup>3</sup>) of soil and the importation of approximately 40,000 m<sup>3</sup> (52,318 yd<sup>3</sup>) of soil. Construction vehicle volumes are anticipated to peak at 20-30 trucks/day approximately six months after construction start for a peak duration of six months. Construction vehicles associated with works within VFPA jurisdiction will travel westbound along a temporary easement situated to the immediate north of the rail tracks, and then southbound onto Bridge Road, to access the proposed Bridge Road Pump Station. Exiting vehicles will proceed north on Bridge Road and eastbound on the temporary easement, subject to authorization of CN Rail.

The Bridge Road Pump Station will be founded some 11 m or more below the ground surface, and some 9 m to 10 m below the groundwater level. It is anticipated that engineered modification of soil will be required to facilitate project excavations, especially to excavate to the depth required for the installation of the Pump Station. This could involve a technique such as cutter soil mixing, combined with jet grouting, to develop a concrete base that forms a seal and secant piling system consisting of drilled or driven piles advanced through the jet grout plug several metres below grade and below the bottom of the excavation in order to provide structural support prior to excavation. Responsibility for confirming the method rests with the successful contractor.

Rainwater and groundwater management (dewatering) is anticipated to be required during excavations at the pump station location and for the conveyance pipes. Dewatering is anticipated to require treatment to meet applicable water quality guidelines for the protection of marine aquatic life prior to discharge to the Burrard Inlet. The preferred treatment option includes pumping and conveying water to a temporary treatment system requiring an area of approximately 30 m (98 ft.) x 22 m (72 ft.) for storage and treatment tanks, on VFPA land south of the pump station location. Treated water would be conveyed from the treatment system through a 250 mm temporary pipe to the subtidal zone of the Burrard Inlet in the vicinity of the existing outfall.

The preliminary design suggests the 1200 mm Hollyburn Interceptor segment of the conveyance piping installation would be installed via micro-tunneling. This methodology is intended to minimize potential impacts to the bridge footings and to achieve water management requirements during construction.

There are no relocations of existing utilities, no demolition of any existing infrastructure, no marine-based logistics, and no changes to the existing outfall proposed.

Project construction is anticipated to take approximately 2 years, with construction starting in Q3 2018, pipeline commissioning in Q3 2019, and pump station commissioning in Q2 2020. The total project cost is approximately \$45,000,000.

Although standard VFPA construction hours are anticipated, there may be a need to conduct work during extended hours depending on concrete truck access coordination with the railway, as continuous pours will be required in the construction of the pump station. If necessary, the Applicant will apply for extended work hours prior to that component of the project.

Equipment used will be typical of the types used for excavations, concrete pours, superstructure construction, roadwork, and pipe laying. Examples include: secant pile drill rigs, excavators, cranes, micro-tunneling machines, concrete trucks, dump trucks, and paving machines.

### **3 VANCOUVER FRASER PORT AUTHORITY INTERNAL REVIEWS**

The following VFPA departments have reviewed the application and have the following project considerations.

#### **3.1 Planning**

Planning has reviewed the application and has the following land use comments.

The proposal meets Planning's requirements, based on the primary considerations of the land use designation and current land use policies.

##### **3.1.1 Land Use Designation**

The proposed use conforms to the designation of "Industrial" in Vancouver Fraser Port Authority's Land Use Plan.

##### **3.1.2 Building Permit Requirements**

A Building Permit is required for the Bridge Road Pump Station. This building requires review under the 2015 National Building Code and 2015 National Fire Code of Canada. The Applicant is required to obtain a VFPA building permit before proceeding with construction of the building and cannot occupy the building until they have obtained a VFPA occupancy permit. This is not yet under review.

#### **3.2 Engineering**

The proposed Project includes the construction of a wastewater pump station, an extension of the existing Hollyburn Interceptor, a below-ground forcemain, a gravity outfall sewer, and a new marine outfall chamber. Water utilities would connect to the District of West Vancouver water system within the Squamish Nation lands.

At this stage, indicative design drawings have been prepared for the new NSWWTP conveyance system, including the pump station, the Hollyburn Interceptor Extension influent sewer, the forcemain, the low pressure gravity effluent sewer, and the new marine outfall chamber. The intent is to procure the improvements and final design through a design-build process.

The Geotechnical Report Part A identifies that excavation, shoring and dewatering will be key challenges for construction of the sewer and the pump station. Potential construction methodologies have been identified that have the potential to mitigate these challenges.

Engineering has reviewed the application and requires the Applicant to ensure the following:

- Submit detailed design drawings and specifications for the proposed works at least 10 days prior to the start of construction for the review and approval by the VFPA
- Provide field review services and documentation to assure adherence to dewatering plan and geotechnical requirements

These are reflected in conditions No. 18, 26 and 32 in the Permit.

The proposal meets Engineering's requirements, subject to adherence with permit conditions.

### 3.3 Transportation

The present Lions Gate Waste Water Treatment Plant is serviced by Bridge Road, which runs in a north-south direction on the west side of, and parallel with, the Lions Gate Bridge. Bridge Road extends from the Taylor Way crossing of the Capilano River in the north and then proceeds south, crosses the CN Rail tracks, passes through a locked swing gate 50 m south of the rail tracks and then becomes an unpaved area with no defined width.

Bridge Road is used primarily for access to the Lions Gate Waste Water Treatment Plant (LGWWTP) and to limited local businesses (Capilano Highway Services, Curtis Paving, CN Rail).

Construction vehicle volumes are anticipated to peak (20-30 trucks/day) approximately six months after construction start and last an additional six months. Construction vehicles associated with works within VFPA jurisdiction, and with the conveyance structures in the surrounding immediate area, will travel westbound along a proposed temporary two lane access road running on the north side of (and parallel with) the rail tracks, between Whonoak Road and Bridge Road. Vehicles will then travel southbound onto Bridge Road to access the proposed Bridge Road Pump Station construction site. Exiting vehicles will proceed north on Bridge Road and eastbound on the proposed temporary two lane access road. Due to the limited use of Bridge Road, transportation impacts are deemed to be minimal. The Applicant is responsible to obtain all applicable temporary construction access permits and agreements (outside of VFPA's jurisdiction) from road authorities and railways.

The proposal meets Transportation's requirements, subject to adherence with permit conditions.

### 3.4 Marine Operations

VFPA Marine Operations has identified the existing Metro Vancouver outfall as a potential medium to long-term obstruction to dredging and the accommodation of vessels with deeper draughts transiting through the First Narrows passage (and ultimately to growth in Burrard Inlet trade capacity).

The proposed Project also includes a 250 mm temporary discharge pipe to convey treated water to the sub-tidal zone of the Burrard Inlet in the vicinity of the existing outfall. The design for this temporary discharge pipe will be confirmed through the design-build process and once the design has been finalized, Marine Operations requires the Applicant to submit drawings for review and approval.

This requirement is reflected in condition No. 29.

The proposal meets Marine Operations' requirements, subject to adherence with permit conditions.

## 4 STAKEHOLDER CONSULTATION

The proposed Project was assessed to have potential impacts to stakeholders and the local community and consultation activities were determined to be required. The following sections describe the stakeholder and public consultation activities undertaken by the Applicant and VFPA as part of the project and environmental review.

### 4.1 Municipal Consultation

The proposed Project was assessed to have potential impacts to municipal interests. A referral letter was sent to the following municipalities on November 16, 2017 notifying them of the proposed Project:

- District of West Vancouver
- District of North Vancouver

VFPA did not receive any municipal comments.

### 4.2 Federal and Provincial Agency Consultation

The proposed Project was assessed to be of potential interest to Federal and Provincial agencies. A referral letter was sent to the BC Ministry of Transportation and Infrastructure (MoTI) on November 16, 2017 notifying them of the proposed Project. MoTI responded with a letter dated December 13, 2017 identifying concerns related to the Project. Subsequent to that letter, the Applicant worked with MoTI in addressing the concerns raised and provided a revised letter dated March 22, 2018 that identified mitigations to the original concerns. The issues raised and subsequent outcomes of the two letters are summarized in the following table:

Issue	Mitigations and Permit Conditions	Rationale
<ul style="list-style-type: none"> <li>• MoTI has yet to accept the final offset/buffer distance between the proposed pump station and the structural foundations of the Lions Gate Bridge. Metro Vancouver has proposed siting the pump station no closer than 30m from the north cable bent.</li> <li>• MoTI has yet to accept Metro Vancouver's proposed movement tolerances and monitoring criteria during construction of the pump station.</li> </ul>	<p>The Applicant has established the requirement for COWI North America Ltd. and/or Klohn Crippen Berger Ltd. to undertake analysis, study or reporting regarding the Lions Gate Bridge as required by MoTI for the design and construction of the Project.</p> <p>Upon review of the subsequent methodology plans submitted, MoTI has issued a permit (MoTI file 2018-00366) to Metro Vancouver for the installation of monitoring equipment to enable pier settlement and rotation monitoring.</p> <p>Condition No. 19 of the VFPA Permit requires the Applicant to submit final engineered design drawings to MoTI for approval.</p>	<p>To provide MoTI an opportunity to review technical details of the design once the Applicant has awarded the design-build contract.</p>

### 4.3 Other Consultation

The proposed Project was assessed to have potential impacts to adjacent VFPA tenant operations. A referral letter was sent to the Canadian National Railway on November 16, 2017 notifying them of the proposed Project. VFPA did not receive any response to this referral.

### 4.4 Marine Users Consultation

The proposed Project was assessed by Marine Operations and it was determined the project would not have impact on marine users.

### 4.5 North Shore Waterfront Liaison Committee Consultation

The proposed Project was assessed to be of potential interest to the North Shore Waterfront Liaison Committee. The Applicant presented their project to the Liaison Committee on September 14, 2017. VFPA did not receive any comments from the North Shore Waterfront Liaison Committee.

## 5 PUBLIC CONSULTATION

The proposed Project was assessed by VFPA to have minimal or no potential impacts to community interests upon completion of the project. Therefore public consultation was not required to be conducted by the Applicant during the permit review.

The proposed Project was assessed by VFPA to have potential impacts to community interests during construction. These include potential impacts such as noise and traffic.

As a result, the Applicant is required to submit a construction communications plan and distribute a construction notice to adjacent residents and businesses as shown in the map below. The notification area is within approximately four blocks (500 m) from the project site. The construction notice shall be distributed by the Applicant at least 10 business days prior to the start of the works. The construction notice will be posted on the Applicant's website. These are conditions No. 20, 21 and 22 in the project permit.

Map of notification area



## 6 ABORIGINAL CONSULTATION

VFPA reviewed the proposed project, and determined that the works may have the potential to adversely impact Aboriginal rights, due to the potential for the proposed excavation to impact unidentified archaeological resources.

VFPA delegated the procedural aspects of consultation to the Applicant, Metro Vancouver. The roles and responsibilities for both VFPA and the Applicant in regards to Aboriginal consultation are described in VFPA's November 16, 2017 letter to Aboriginal groups.

The proposed Project falls within the traditional territory of the following Aboriginal groups:

- Squamish Nation
- Tsleil-Waututh Nation
- Musqueam Indian Band
- Cowichan Tribes
- Halalt First Nation
- Stz'uminus First Nation
- Lake Cowichan First Nation
- Lyackson First Nation
- Penelakut Tribe
- Sto:lo Nation (as represented by the People of the River Referrals Office)

All Aboriginal groups listed above were consulted on the proposed Project.

The following consultation activities were conducted:

On November 16, 2017, VFPA sent an initial letter and referral package to each of the Aboriginal groups listed above. The initial letter explained VFPA's delegation of the procedural aspects of consultation to the Applicant, and indicated that the Applicant would follow VFPA's referral package with their own letter, commencing their consultation process.

VFPA's referral package included:

- a consultation letter that described delegation of procedural aspects to the Applicant;
- a summary of roles and responsibilities for VFPA and the Applicant;
- the permit application;
- a general scope and project description document; and
- an overview map.

On December 22, 2017, Metro Vancouver wrote to the Aboriginal groups listed above, seeking to engage them regarding the proposed project. The letter provided an overview of the project, a link to additional project information, a schedule, a contact, and a deadline for input of March 13, 2018. Copies of the Archaeological Overview Assessment (AOA) and the Archaeological Impact Assessment (AIA) were attached to the letters.

On February 13, 2018, Metro Vancouver sent a reminder letter to the above-listed Aboriginal groups.

VFPA has reviewed the Applicant's record of Aboriginal consultation. No issues regarding the works proposed within VFPA jurisdiction were raised during consultation.

The Applicant has also conducted both an AOA and AIA for the proposed project; no impacts to unidentified archaeological resources are expected within the project area in VFPA jurisdiction, and no further archaeological work was recommended for this area.

In consideration of the above, adverse impacts to Aboriginal rights are not anticipated as a result of the proposed project.

Based on the record of consultation, VFPA is of the view that the duty to consult has been met.

## 7 ENVIRONMENTAL REVIEW

To fulfill its responsibilities under the *Canada Marine Act* and CEEA, 2012, VFPA must make a determination on the potential environmental effects of a proposed project on VFPA managed lands and waters prior to authorizing those works to proceed. To make that determination, VFPA considers the residual adverse effects of the Project, that is, the effects after mitigation measures have been taken into account. In addition, should a project be approved, VFPA includes additional environmental conditions in the project permit to further reduce the identified potential impacts.

This section of the project and environmental review report summarizes the environmental review conducted for the Project, and provides the environmental review decision in Section 7.3. The environmental review also considered the information provided in the previous sections of this report.

### 7.1 Scope of Environmental Review

The environmental review includes consideration of the potential environmental effects of the proposed project, taking into account mitigation measures to avoid or reduce those effects. This review considered the project components and physical activities described in Section 2.

The temporal scope of the review includes the period from the onset of the dredging of the PAH-problematic sediments to the conclusion of the pipeline removal. The Project is anticipated to be complete in 2018.

The environmental review considered potential adverse environmental and social effects of the Project on 14 environmental components (e.g., species with special status, aquatic species and their habitat, recreational interests, etc.), and from Accidents and Malfunctions. The environmental components are aspects of the biophysical and socio-economic environment considered to have ecological, economic, social, cultural, archaeological, or historical importance.

The environmental components assessed by the VFPA are presented in Section 7.2 and include the environmental effects listed in section 5(1) and 5(2) of CEEA 2012.

Section 7.2 summarizes the results of the environmental review.

## 7.2 Environmental Effects Summary

The following table summarizes the potential environmental effects the project could have on the identified environmental components.

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
<p><b>Air quality</b></p> <p>Assessed as required under subsection 5(1) and 5(2) of CEAA 2012</p>	■	<input type="checkbox"/>	<p>The potential effects to air quality from construction equipment and activities will be mitigated through the implementation of mitigation measures described in the Construction Environmental Management Plan (CEMP; condition No. 24). This includes measures to limit dust (e.g., covering or watering piles, compacting soils) and emissions from equipment (e.g., proper equipment maintenance, turning off when not in use and implementing an anti-idling policy).</p> <p>Air emissions during operations include the release of air vented from the interior of the building and exhaust emissions from the operation of the emergency diesel generator. The vented building air has the potential for the release of odour and proposed mitigations include a carbon scrubber. The diesel generator is designed for emergency backup power and when required would operate for short durations (&lt; 24 hours). The generator would also operate for testing every month for approximately an hour and the total operating hours for the year would be less than 40 hours. The generator would meet EPA Nonroad Tier 2 emission limits.</p> <p>With these permit conditions and the proposed mitigation measures in place, the Project is not anticipated to result in residual adverse effects on air quality.</p>	<input type="checkbox"/>	■
<p><b>Lighting</b></p> <p>Assessed as required under subsection 5(1) and 5(2) of CEAA 2012</p>	<input type="checkbox"/>	■	<p>Construction will occur during daylight hours, without lighting, and will be limited to regular construction hours of 7:00 am to 8:00 pm (condition No. 51).</p> <p>For the permanent lighting at the pump station, the proposed lighting design includes adequate measures to limit potential offsite lighting effects.</p> <p>Therefore, lighting from the project is not anticipated to result in adverse effects.</p>	<input type="checkbox"/>	■

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
<p><b>Noise</b></p> <p>Assessed as required under subsection 5(1) and 5(2) of CEAA 2012</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>During construction noise generated from pile driving, ground compaction and excavation activities could affect residents of the surrounding community. Work will be limited to regular construction hours (condition No. 51) and best practices will be applied to limit the impact from noise as described in the CEMP and Environmental Noise Assessment. During normal operations, the pump station is not anticipated to generate noise levels that would affect the surrounding community.</p> <p>The emergency diesel generator, which would run a maximum of 24 hours at any one time, has the potential to adversely affect nearby residents while in operation, particularly during night time hours. Emergency generator use is anticipated to be rare, about once a year. As required in permit condition No. 57, the emergency generator shall be designed and installed in such a manner to conform within acceptable performance standards.</p> <p>With these permit conditions and the mitigation measures described in the CEMP in place, the Project is not anticipated to result in residual adverse effects related to in-air noise.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
<p><b>Soils</b></p> <p>Assessed as required under subsection 5(1) and 5(2) of CEAA 2012</p>	■	<input type="checkbox"/>	<p>An estimated 85,000 m<sup>3</sup> of soil would be removed from the site and 40,000 m<sup>3</sup> will be imported to the site during construction. Metals at concentrations above applicable soil standards and guidelines have been identified in the soils in the project area. The Project has the potential to affect soil quality through the disturbance of soils containing these metals during the proposed works.</p> <p>During excavations of contaminated soils or soils suspected to be contaminated, the procedures and mitigation measures described in the Draft Soil Management Plan, CEMP and permit conditions will be followed to adequately monitor, test, isolate and dispose of the contaminated soils at an approved facility (conditions No. 24, 25, 42 and 43). Imported material would be clean and free of contaminants (condition No. 44).</p> <p>With the proposed mitigation measures and permit conditions in place, the Project is not anticipated to result in residual adverse effects on soils.</p>	<input type="checkbox"/>	■
<p><b>Sediments</b></p> <p>Assessed as required under subsection 5(1) and 5(2) of CEAA 2012</p>	■	<input type="checkbox"/>	<p>The Project does not include in-water works. Any water from precipitation and groundwater management associated with excavations and discharged to the marine environment during construction would be treated to remove total suspended solids (TSS) and potentially associated contaminants as described in the Draft Dewatering Plan. The discharge rate would be controlled to manage sediment and erosion potential. The final Dewatering Plan will also need to include details on the location of the temporary pipe and mitigation measures to reduce the potential scour of sediment in the proposed discharge location (condition No. 26).</p> <p>During operations of the pump station, the waste water treatment plant upgrade to secondary treatment is anticipated to improve the quality of surficial sediment deposited in the vicinity of the outfall overtime relative to current conditions.</p> <p>With the proposed mitigation measures and permit conditions in place, the Project is not anticipated to result in residual adverse effects on sediments.</p>	<input type="checkbox"/>	■

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
<p><b>Ground water</b></p> <p>Assessed as required under subsection 5(1) and 5(2) of CEAA 2012</p>	■	□	<p>Excavations proposed for the Project are anticipated to reach a maximum construction depth of ~11 m, which is below the water table which is at ~2 m below ground surface. Therefore, groundwater infiltration into the excavations is anticipated to be high, particularly at the pump station location. Excavation at that location is anticipated to require soil treatment such as jet grouting and secant pile installation, to develop a seal prior to excavation reduce infiltration and the need for dewatering. The use of concrete or grout in this process could also affect pH of water coming in contact during the curing process. Elevated concentrations of metals and other substances in groundwater and soils at the site also have the potential to be entrained and migrate with the water during dewatering. Groundwater and water coming into contact with concrete would be managed and treated as described in the CEMP and Draft Dewatering Plan to meet applicable guidelines prior to discharge to the environment (conditions No. 24 and 26).</p> <p>With the proposed mitigation measures and permit conditions in place, the Project is not anticipated to result in residual adverse effects on groundwater.</p>	□	■

<p><b>Surface water and water bodies</b></p> <p>Assessed as required under subsection 5(1) and 5(2) of CEAA 2012</p>	<p>■</p>	<p>□</p>	<p>Dewatering is required because the excavations for the project are expected to fill with groundwater and rain. The water may carry elevated metal concentrations, come in contact with uncured grout or cement (i.e., affects pH), and entrain suspended solids (TSS). This has the potential to affect water quality at the discharge point in Burrard Inlet.</p> <p>During dewatering, a water treatment system will remove suspended solids, balance pH, and remove dissolved metals. Hydrocarbons are not expected, but if encountered, appropriate treatment would be provided as described in the Draft Dewatering Plan. The system will be designed to prevent uncontrolled releases of sediment or other contaminants and deleterious substances to surface water bodies and groundwater. Treatment targets would meet Canadian Council of Ministers of the Environment and BC Water Quality Guidelines for the Protection of Marine Aquatic Life. VFPA will review an updated Dewatering Plan (condition No. 26).</p> <p>Stormwater collected outside of excavations at the project site could entrain sediment in surface runoff and increase TSS in Burrard Inlet. Sediment and erosion control and stormwater management measures described in the CEMP would be in place to reduce these effects (condition No. 24).</p> <p>The purpose of the Project is to improve the quality of water discharged from the waste water treatment plant compared to today. However, during operations, stormwater collected at the pump station and adjacent parking area has the potential to collect and entrain metals, hydrocarbons and sediment into surface waters. VFPA requires an updated Stormwater Pollution Prevention Plan, including design details of the stormwater system, prior to construction (condition No. 27).</p> <p>With mitigation measures in place, the residual adverse effects of the Project on surface water will only occur during construction. These are anticipated to be low in magnitude, and, if they occur, to be localized within &lt;200 m of the proposed dewatering discharge location, and short term (&lt;2 years). During operations, local water quality is anticipated to improve overall. Therefore, the residual adverse effects of the Project on water bodies are predicted to be not significant.</p>	<p>□</p>	<p>■</p>
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Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
<b>Species/ habitat with special status</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>No records of rare or endangered plant or animal species have been identified within the Project footprint.</p> <p>The Project is not anticipated to affect species with special status.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
<p><b>Terrestrial resources</b></p> <p>Assessed as required under subsection 5(1) and 5(2) of CEAA 2012</p> <p>Assessed under section 79 of the Species at Risk Act, as applicable</p>	■	□	<p>The Project will require minor vegetation removal. The area under the Lions Gate Bridge, which includes the pump station and part of the piping alignment, consists of a previously disturbed gravel laydown and storage area with sparse vegetation. The vegetation includes small deciduous trees and low shrubs, including black cottonwood, and invasive species such as Himalayan blackberry, and Scotch broom and a potential noxious species, Japanese knotweed. A habitat compensation site (riparian habitat) is located immediately to the east of the proposed conveyance pipe location.</p> <p>Measures described in the CEMP, such as minimizing vegetation removal and disturbance, constructing fencing around sensitive features and management of invasive species would be implemented to reduce potential effects on vegetation. The Applicant proposes to replant the disturbed areas. A vegetation mitigation plan will be required prior to approving the proposed replanting (condition No. 50). In addition, VFPA prohibits tree removal in the habitat compensation site located along the eastern portion of the site (condition No. 41).</p> <p>Trees and shrubs in the project area provide potential nesting sites for birds. No raptor stick nests have been identified in the immediate vicinity of the project route. Measures described in the CEMP such as not clearing vegetation during the bird nesting season (condition No. 28) will reduce potential effects to birds and wildlife.</p> <p>Given the disturbed nature of the site, limited amount of vegetation and habitat anticipated to be affected by the Project during construction (&lt;2 years), and reversibility of effects through proposed site restoration and replanting post-construction, the residual adverse effects of the Project on terrestrial resources are predicted to be not significant.</p>	□	■
<p><b>Wetlands</b></p>	□	■	<p>The Project location is within 80 m of a salt marsh. However, the project will not encroach into this area. Therefore, the Project is not anticipated to affect wetlands.</p>	□	■

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
<p><b>Aquatic resources</b> (e.g., aquatic plants, fish and fish habitat, waterbirds, marine mammals, etc.)</p> <p>Assessed as required under subsection 5(1) of CEAA 2012</p> <p>Assessed under section 79 of the Species at Risk Act, as applicable</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>No in-water works are proposed for this Project. Excavation at the outfall chamber would potentially temporarily disturb a small area of high intertidal habitat (&lt;170 m<sup>2</sup>). Mitigation measures described in the CEMP and conditions No. 33, 34, 36 and 37 would be in place to limit disturbance of marine habitat. The work area would also be restored once construction is completed (condition No. 35).</p> <p>During operations, secondary treatment of the waste water effluent is anticipated to improve the environmental conditions for aquatic resources using waters near the outfall.</p> <p>With mitigation measures in place, the residual adverse effects of the Project on aquatic resources are predicted to be not significant.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<p><b>Health and socio-economic conditions</b></p> <p>Assessed as required under subsection 5(1) and 5(2) of CEAA 2012</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>Based on the low magnitude of residual effects on surface water and water bodies and aquatic resources, the Project is not expected to cause adverse effects on health of people, including Aboriginal people.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<p><b>Archaeological, physical, and cultural heritage resources</b></p> <p>Assessed as required under subsection 5(1) and 5(2) of CEAA 2012</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>The Project is not anticipated to affect archaeological, physical, and cultural heritage resources.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
<p><b>Current use of lands and resources for traditional purposes by Aboriginal peoples</b></p> <p>Assessed as required under subsection 5(1) of CEEA 2012</p>	■	<input type="checkbox"/>	<p>Section 6 provides an overview of the concerns raised by Aboriginal Groups during VFPA consultation about the Project.</p> <p>With mitigation measures in place (as described in Section 6) residual adverse effects on Aboriginal Group interests are not anticipated.</p>	<input type="checkbox"/>	■
<p><b>Accidents and malfunctions</b></p> <p>Assessed as required by the <i>Canada Marine Act</i></p>	■	<input type="checkbox"/>	<p>There is potential for adverse effects on surface water and sediment from accidental equipment leaks, treatment system failure or spills of raw sewage.</p> <p>Mitigation measures described in the CEMP will be implemented to reduce potential adverse, Project-related effects due to accidents, including an appropriate spill prevention, containment, and clean-up contingency plan for hydrocarbon products and other deleterious substances (condition 24).</p> <p>With mitigation measures in place, the residual adverse effect, if it occurs, is expected to be not significant. Remediation of any residual adverse effect is anticipated to be achievable.</p>	<input type="checkbox"/>	■

Residual adverse effects (i.e., effects that remain with mitigation in place) were identified for the following environmental components:

- Surface water and water bodies;
- Terrestrial resources; and
- Aquatic Resources.

Overall, the residual adverse effects of the Project on all of the environmental components are characterized as:

- Low in magnitude primarily due to the anticipated effectiveness of the mitigation measures proposed during vegetation clearing, excavation and dewatering activities and, once the Project is in operation, it is anticipated to improve water quality, overall.
- Local in geographic extent due to potential minor effects on water quality during construction dewatering which would extend beyond the Project footprint (likely less than 200 m away). However, once complete, the Project is anticipated to improve water quality locally.
- Short term in duration because residual effects would be limited to the construction phase (<2 years).

- Intermittent in frequency because effects will occur at times throughout project construction. Vegetation removal will occur once, and be later replanted, however, dewatering will occur continuously during excavation, though treatment is planned to mitigate most adverse effects.
- Residual adverse effects of the Project would be reversible once the Project is completed.

In conclusion, based on the characterization above, the mitigation measures proposed by the Applicant, the permit conditions, and the planned site replanting and restoration, the residual adverse effects of the Project are predicted to be not significant.

### 7.3 Environmental Review Decision

In completing the environmental review, VFPA has reviewed and taken into account relevant information available on the proposed project, has considered the information and proposed mitigations provided by the Applicant and other information as listed elsewhere in this document, and concludes that with the implementation of proposed mitigation measures and Permit conditions, the Project is not likely to cause significant adverse environmental effects.

Original Copy Signed

**ANDREA MACLEOD**  
**MANAGER, ENVIRONMENTAL PROGRAMS**

April 12, 2018

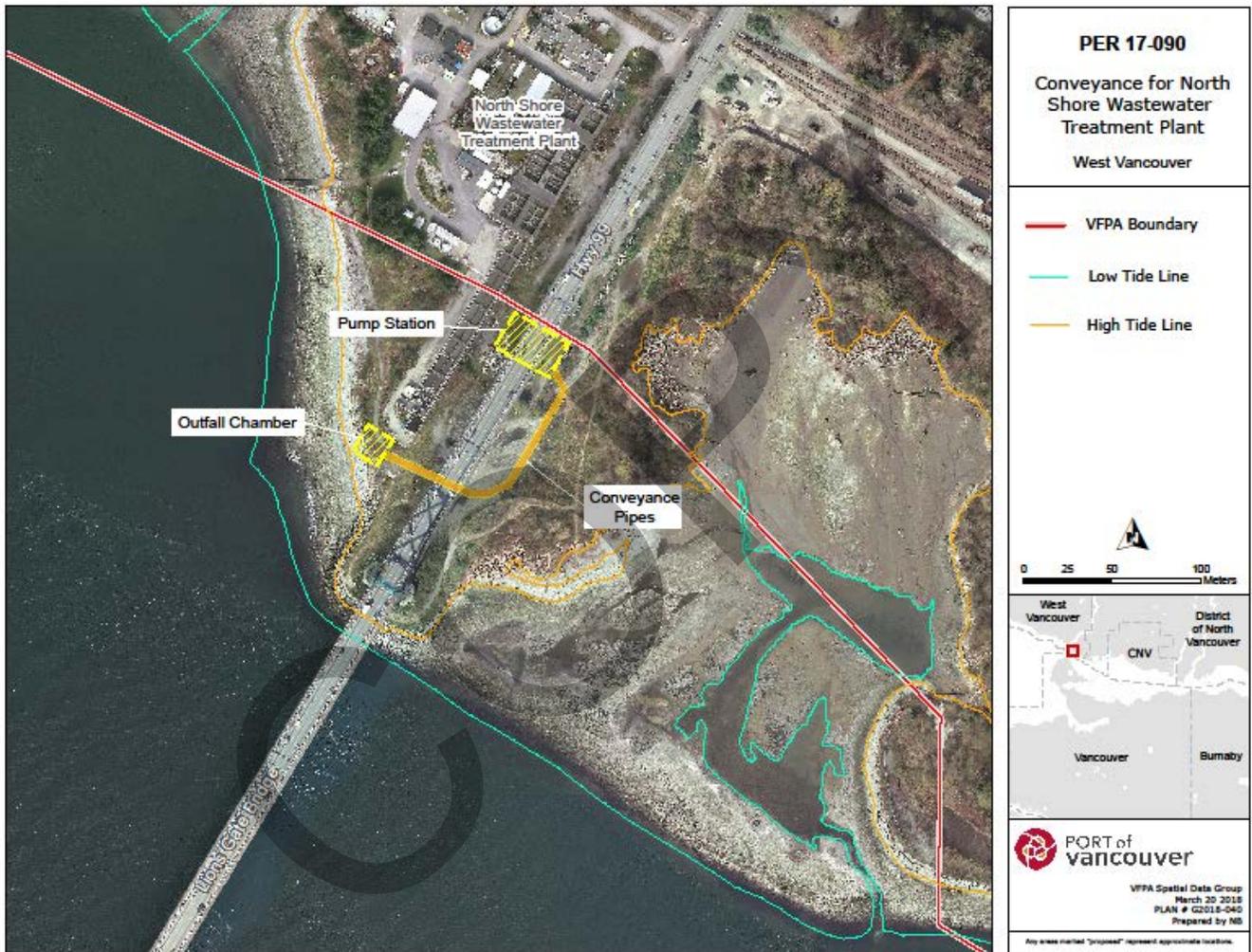
**DATE OF DECISION**

## 8 RECOMMENDATION

In completing the project and environmental review, VFPA concludes that with the implementation of proposed mitigation measures and conditions described in the Permit, the Project has appropriately addressed all identified concerns.

It is the recommendation of staff that this application be approved subject to conformance with the project and environmental conditions listed in project permit **PER No. 17-090**.

## APPENDIX A Location Plan



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**APPENDIX B**  
**List of Information Sources**

**VFPA has relied on the following sources of information in the project and environmental review of the Project:**

- Application form and materials submitted by Applicant on behalf of the tenant on dates as follows:
  - Preliminary application and materials: April 28, 2017
  - Revised submission materials: August 2, 2017
  - PER application and revised submission materials: October 20, 2017
  - Revised materials and drawings: February 5, 2018
- All Project correspondence from October 20, 2017 to April 13, 2018.
- All plans and drawings labelled PER No.17-090-A to K

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