



APPENDIX V

Construction Environmental Management Plan



APPENDIX V

G3 Terminal Vancouver
Port Metro Vancouver Project Permit Application



G3 TERMINAL VANCOUVER PROJECT
PORT METRO VANCOUVER PROJECT PERMIT SUBMISSION
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

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Prepared for:



Prepared by:



Ibberson Canada Company



Kiewit

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1 INTRODUCTION

This Construction Environmental Management Plan (CEMP) is the primary document to guide overall environmental best management practices to be implemented by the construction team for the G3 Grain Terminal Vancouver Project (the Project) to reduce or eliminate effects on the environment and meet regulatory requirements. The general objectives of the CEMP are:

- to protect valued ecological components and socio-economic features along within the Project area during the design, demolition and construction phases of the project;
- to ensure compliance with the conditions of environmental approvals from regulatory authorities; and
- to reduce potential environmental liabilities.

Construction management of the Project recognizes that human safety, traffic management and other factors are also important during design, demolition and construction planning, an overall environmental benefit can be achieved by expeditious completion of the contract (i.e., minimizing the duration of disturbance). It is the Contractor's goal to deliver a safe and efficient grain terminal and to protect and enhance environmental and socioeconomic resources.

It is important to note that the CEMP and its component plans may need periodic revisions when further site-specific information becomes available or as Project conditions change. At a minimum, the CEMP will be reviewed on an annual basis to ensure mitigation measures within the CEMP are appropriate for the current and scheduled construction activities at the Project site. It is acknowledged that Port Metro Vancouver (PMV) will make the final determination on the suitability, completeness and adequacy of the CEMP and any future revisions.

2 PROJECT INFORMATION

2.1 Location

As indicated in Figure 1, the Project and terminal operation will be located at the current Lynnterm West marine breakbulk terminal within the Port of Vancouver at 95 Brooksbank Avenue in the City of North Vancouver. The site is bounded by the Lynn Creek estuary to the east, Neptune Bulk Terminals, to the west, Burrard Inlet to the south and the Canadian National Railway to the north.

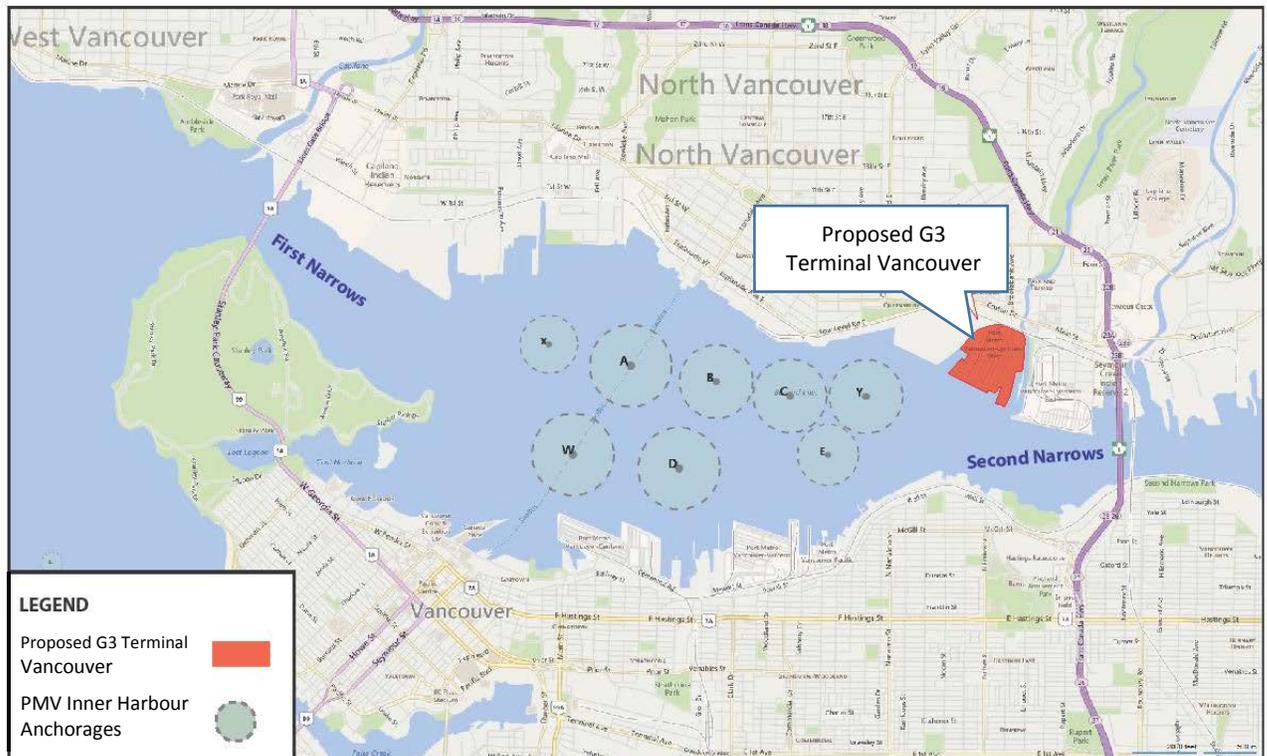


Figure 1: Project Location

2.2 Project Description

The G3 Terminal Vancouver includes removal of existing terminal facilities, site preparation and construction and operation of a new grain terminal with associated facilities. Project components include:

- Demolition of existing above ground structures, buildings and areas supporting current terminal activities in addition to demolition, relocation and modification of underground utilities;
- Onshore ground improvements that may include installation of stone columns and offshore improvements including placement of underwater rock revetment adjacent to portions of the existing sheet pile bulkhead;
- Extension of existing below grade road at Brooksbank Avenue and construction of an additional new underpass within the confines of the terminal; and,

- Rail loop, material unloading station, conveyance, storage and cleaning systems; dock and ship loading facility.

In addition internal access roads, vehicle parking, utilities, administration building, maintenance facility and other buildings will be constructed are more fully described in the following section.

As a result of the G3 Terminal Vancouver development, a portion of existing break-bulk cargo operations would be relocated to the nearby East Gate marine terminal. A plan drawing and a three dimensions rendering of the facility are provided in Figures 2 and 3, respectively.

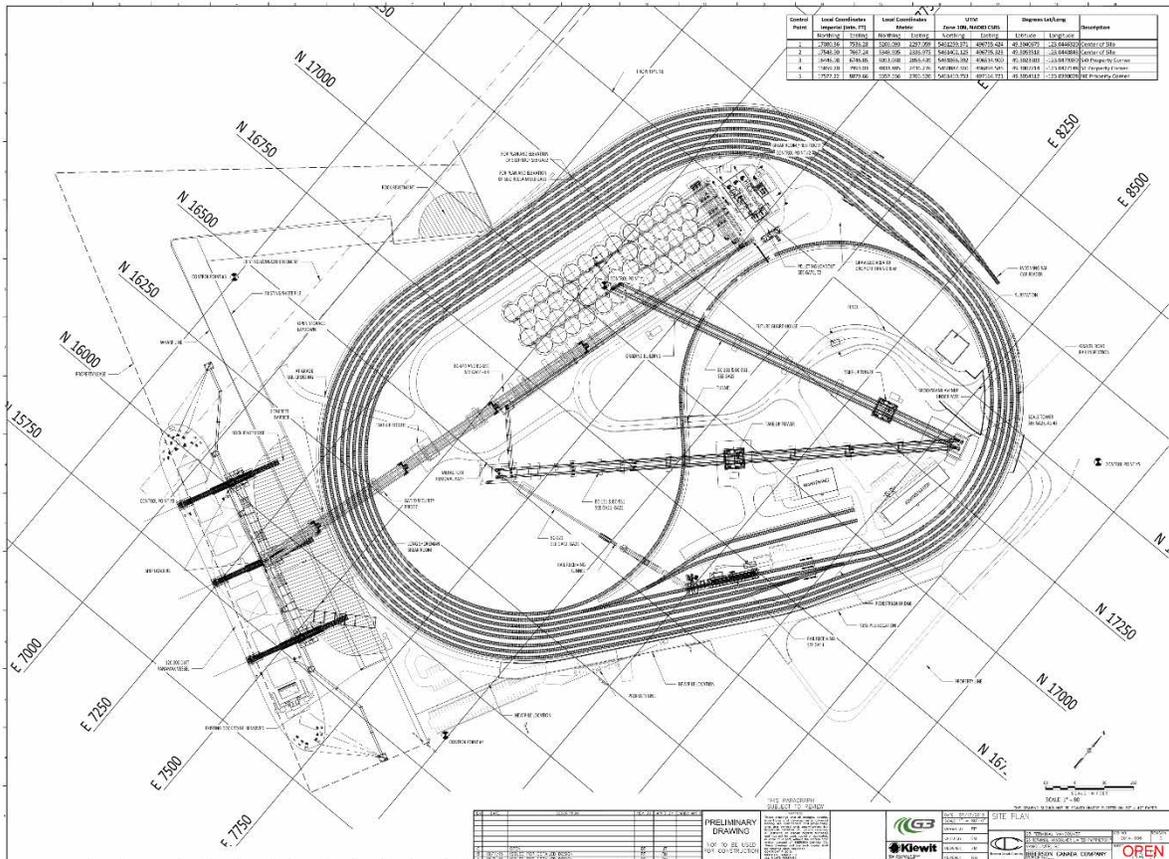


Figure 2: Facility Site Plan



Figure 3: Three Dimensional Representation of the G3 Terminal Vancouver

2.3 Project Schedule

In general terms, from the start of mobilization to the site, through the demolition of the existing infrastructure and construction of the new facility will be approximately three years. Providing permitting is in place the proposed start date for construction will be March 1, 2016 with final completion estimated to be the first week of February 2019.

As part of the Design - Build process, the establishment of demolition and construction schedules is a key and evolving process as preliminary design drawings are developed. The Project team will continue to work with PMV staff throughout the permitting process to address outstanding issues and how they may impact the overall schedule of the works.

2.4 Site Description

In general terms, G3 Terminal Vancouver is situated in an area designated as 'Port Terminal' as provided in the *Port Metro Vancouver Land Use Plan* (October 28, 2014). The Land Use Plan defines 'Port Terminal' designated areas as follows:

Port Terminal areas are primarily designated for deep-sea and marine terminals that handle a variety of commodities, including autos, breakbulk, dry bulk, liquid bulk and containers, as well as cruise passengers. This includes primary uses that support shipping, transportation of goods and passengers, handling of goods, and other uses. Ancillary uses may include offices, storage areas,

caretaker facilities, utilities, parking and other uses required to support the primary use.

With the exception of a thin strip of vegetation (approx. 250m x 5m at its widest) dividing the current Lynnterm West marine breakbulk facility from the Vanpile parking lot, the site is either paved with asphalt and has existing buildings that will be demolished prior to construction. The Project Geotechnical investigation indicates that the project site is underlain by Postglacial Salish Sediments (SAi), which are described as 'mountain stream, marine, deltaic, medium to coarse gravel and minor sand up to 15 m or more thick'. The deposit is highly variable in terms of particle size and gradation, as well as in-situ relative density. Cobbles and boulders are anticipated within the deposit. The site has been subject to the placement of various fill materials various times during development for industrial purposes.

2.4.1 Habitat Assessment

Detailed biophysical assessment reports of the existing aquatic and terrestrial habitat have been completed for the Project. Summaries of the finding in those reports are provided below.

2.4.1.1 Aquatic

Subsurface surveys were conducted on two occasions. In December 2014, surveys were conducted along the perimeter of the wharf area proposed for modification including the southern wharf edge and northwest corner of the existing wharf. In August 2015, surveys were conducted along transects under the southern wharf area proposed for modification. Plan drawings indicating the precise locations of the survey transects are provided in the *Lynnterm Terminal Expansion Project, North Vancouver Marine Habitat Assessment* (September 21, 2015).

The substrate at the base of the piles and outer edge of the wharf in the Assessment Area was largely medium and large rock material and shell hash with silt and organic material. Anthropogenic debris (e.g. rope, cable, metal pipe) was present throughout the area surveyed.

Substrate adjacent to the bulkhead was predominantly large rock material with shell hash and sand. Towards the outer edge of the wharf the substrate transitioned to predominantly shell hash and sand with few small rocks. Anthropogenic debris (e.g. chain, metal pipe, railing, and wooden poles) was present throughout the site; however, abundance increased towards the middle and outer edge of the wharf.

The piles examined during the surveys exhibited an assemblage typical of acorn barnacle to blue mussel zonation. Acorn barnacles and blue mussels were the most abundant species on piles. Unidentified encrusting organisms (e.g., algae, sponges, bryozoans) were visible on pilings. Plumose and painted anemone, feather duster worm, calcareous tube worm, lined chiton, Katy chiton, branched obelia, and ochre star were also observed.

Pile perch were observed in the water column. Dungeness crab, plumose anemone, painted anemone and calcareous tube worm were observed on the rocky substrate. Multiple red and brown algal species were observed on the substrate including sugar kelp. Sea lettuce was also present, attached to rocky substrate.

2.4.1.2 Terrestrial

The terrestrial habitat assessment was conducted on August 13, 2015 outside of the April 1 to July 31 general bird nesting window for the Lower Mainland. The Assessment Area is the only vegetated area on the site and comprises a linear area approximately 250m x 5m (at its widest) or 0.125 ha of ornamental, primarily non-native vegetation. The area is situated along the east side of a chain link and barbed wire fence at the eastern perimeter of the terminal. A parking lot is located immediately east of the Assessment Area.

Canopy vegetation within the Assessment Area is characterized by European birch with diameter at breast height (dbh) ranging from less than 10 centimetres (cm) to approximately 45 cm, with a majority of birch having a dbh of less than 20 cm. A majority of the birch within the Assessment Area has previously been topped and lack typical crown and branching structure. Two (2) elms of dbh 48 cm and 60 cm, respectively, are present at the north end of the Assessment Area.

Shrubs are sparsely distributed within the Assessment Area, and include rowan, tall Oregon-grape, laurel, and viburnum

Ground cover within the Assessment Area is characterized by English ivy, which covers the majority of the ground area and many of the birch. Other ground cover is distributed sparsely throughout the Assessment Area, and includes spurge-laurel, hairy cat's-ear, wall lettuce, vetch, common horsetail, ribwort plantain, ornamental sage, and grasses.

English laurel, English ivy, and spurge laurel are considered invasive plants by the Invasive Species Council of Metro Vancouver.

Wildlife or existing nests were not detected within the Assessment Area at the time of the survey. Northwestern crow was observed perching on an adjacent power line. Gulls were observed in other areas of the terminal.

The Assessment Area is unlikely to provide significant habitat value to wildlife. Wildlife habitat value is primarily limited to perching or roosting sites for birds (e.g. northwestern crow). Birch and elm within the Assessment Area could be used as nesting sites, but these nesting sites would be of low quality due to the exposed nature of the site to both predators and weather conditions. No bird nests were detected during the assessment.

Other wildlife use of the Assessment Area is considered unlikely, as the location is isolated from other vegetation by large expanses of paved area and existing vegetation provides little shelter or food value.

2.4.2 Archeological Overview Assessment

An Archeological Overview Assessment (AOA) was conducted for the G3 Terminal Vancouver site. The assessment concluded that the onshore development areas are considered to have archeological potential. Further construction related mitigation measures for archeological and heritage protection within the onshore area are provided in Section 5.11, Archeological Resources of this CEMP.

The tidal and sub-tidal (offshore) area that is to be developed for the Project has been subject to numerous dredging and infilling activities in the past that have significantly altered native sediment and soils. As such, the AOA concluded that this area has low potential for encountering

archeological materials, features and/or deposits. The AOA concluded that no further mitigation measures are required during construction activities in this area.

3 CONTACTS AND RESPONSIBILITIES

The successful implementation of the Project environmental program is a coordinated team effort that includes input and review by Project Management, Project environmental team, PMV representatives, field staff and construction craft workers. Project personnel involved with the planning and implementation of Project construction and the Project environmental program are provided in Table 1. Further details on the roles and responsibilities of key personnel are provided below in Section 3.1.

Table 1: Key Project Construction Personnel

Name	Role	Organization	Phone #
Don Jacobsen	Project Director	Kiewit	
Felix Cirelli	Construction Manager	Kiewit	
Tim Wilde	Environmental Manager	Kiewit	
TBD	Environmental Monitor	TBD	
		Port Metro Vancouver	
		Port Metro Vancouver	

3.1 Environmental Roles and Responsibilities

3.1.1 Environmental Manager

The Environmental Manager will plan, administer and authorize the use of resources to run an effective environmental program. The Environmental Manager will be a qualified environmental professional and will utilize the services of the Environmental Monitor at their discretion.

Responsibilities of the Environmental Manager include, but are not limited to the following:

- Overall environmental management of the Project;
- Implementation of environmental policies and procedures;
- Coordinate environmental input to construction planning;
- Supervise Environmental Monitors as necessary to ensure that the environmental goals and objectives of the Project are met in a timely and effective manner;
- Communicate and train on the requirements of this CEMP to project staff and construction craft workers;
- Preparation of environmental documentation in support of environmental permitting/agency acceptance;
- Authority to stop Project work in the event of an environmental non-compliance or potential non-compliance;

- Conduct regular meetings with the construction team and Environmental Monitor to ensure environmental compliance;
- Final review of the Construction Environmental Management Plan (CEMP) and any the development of any revisions throughout the construction period;
- Overall responsibility for effective implementation of the CEMP;
- Review and quality control of material generated by the Environmental Monitor and environmental specialists;
- Ongoing review of all environmental documentation to evaluate relevance and effectiveness;
- Development and implementation of environmental training activities;
- Liaise with the PMV and other regulatory agencies on environmental matters, as required;
- Producing weekly environmental reports;
- Maintaining complete inventory of all environmental records (e.g., reports, photographs, analytical results, incident reports, etc.) relating to the environmental program;
- Participate as required in community consultations on environmental matters; and,
- Identification of resource requirements and project environmental budgeting.

3.1.2 Environmental Monitor

Environmental monitors will verify compliance with the EMP through surveillance (field) monitoring, under supervision of the Environmental Manager. The Environmental Monitor will be qualified internal or external, 3rd party resource. The environmental monitors' duties will include, but not be limited to, the following:

- Ensuring that construction staff are aware of the environmental policies and requirements;
- Verifying that all required permits, licenses, and approvals are obtained prior to the start of the applicable construction activity;
- Train field staff and construction craft workers of the implementation of mitigations measures used to protect the environment, as require by the Environmental Manager;
- Be onsite as per the schedule established by the Environmental Manager and Construction Management prior to project start. The Environmental Monitor will remain on-call during non-critical work periods to respond to emerging environmental issues;
- Advise project members if project activities have caused or are likely to cause an environmental incident and make recommendations for corrective action;
- Liaise directly with project members and provide technical advice for the purpose of resolving situations that may impact the environment as they arise;
- Reviewing the work schedule and procedures with regard to present and future construction activities;

- Regularly monitoring fuel delivery and refueling procedures;
- Regularly checking all equipment and vehicles on site for hydrocarbon leaks;
- Ensuring that emergency spill and fire equipment caches are adequately supplied and dated;
- Checking the condition and operational efficiency of all water and sediment retention measures;
- Providing technical assistance on environmental matters to the PMV, construction staff and regulatory agencies;
- Inspecting all activities during construction, especially in-water works, to ensure compliance with terms and conditions of this CEMP, permits and approvals and the protection of sensitive habitats;
- Documenting construction activities by field notes and photographs;
- Supporting the Environmental Manager in the production of weekly environmental compliance reports;
- Has the modifying or Halting work authority to ensure that appropriate mitigation measures are in place to protect the environment; and
- Monitoring water and effluent within the project area in accordance with the Water Quality Program, and increasing observations and/or sampling as necessary when activities occur around sensitive areas.

3.1.3 Environmental Discipline Specialists

Specialized environmental consultants will provide environmental services as needed to support environmental management of construction activities. It is anticipated that the following discipline consultants may be needed to support construction of the Project:

- Contaminated sites consultant (e.g., to develop a protocol for managing possible encounters with previously unknown contamination, provide or review contaminated site assessments, coordinate remediation, and other tasks);
- Fisheries and aquatic consultant (e.g., to assess permanent and temporary impacts on aquatic species and habitat under the *Fisheries Act*);
- Wildlife/vegetation consultant (e.g., to provide vegetation/wildlife surveys, define special mitigation and monitoring programs);
- Archaeological/heritage consultant (e.g., to provide assessment as necessary and define procedures in the event that previously undisclosed cultural materials are encountered during construction);
- Noise consultant (e.g., to provide specialized monitoring, noise modeling or technical information in support of the community relations program); and
- Air quality consultant (e.g., to provide air quality monitoring or prepare technical documentation needed to resolve air quality complaints).

3.1.4 Construction Staff Responsibilities

A key component for the implementation of a successful environmental program is an understanding by field crews and supervision of how construction activities impact the environment and mitigations measures to reduce or eliminate those impacts. This CEMP provides guidance to field supervision on those mitigation efforts. Environmental responsibilities of the construction management and field supervision include:

- Becoming familiar with the CEMP, aspects of their work that could have a negative impact on the environment and implementing appropriate mitigation measures to reduce or eliminate those impacts;
- Ensure the field staff and subcontractors are familiar with the CEMP and mitigation measures that are to be used for the construction activities they are responsible for;
- Understand the role of, and be able to take direction from the Project environmental team with respect to environmental protection measures;
- Compliance with all Project permits and approvals; and,
- Report all environmental incidents, in a timely manner, to the Project environmental team and be involved in the corrective actions to prevent re-occurrence of those incidents.

4 RELEVANT ENVIRONMENTAL LEGISLATION

Table 2 provides a list of the relevant environmental legislation and legal requirements applicable to the Project. This table will be revisited and updated as necessary throughout the life of the Project to capture any changes in environmental legislation or changes in construction activities that may trigger any additional regulatory requirements.

Table 2: Environmental Legislation and Legal Requirements

Act, Regulation or Bylaw	Description	Applicability	Approval or Permit in Place/Forthcoming; or Requirements Met
Federal			
<i>Fisheries Act</i> (FA - administered by DFO and Environment Canada)	The FA is the main federal legislation providing protection for fish, fish habitat and water quality in Canada. Also, the FA also prohibits the deposit of deleterious substances to water frequented by fish.	The work requires placement of rip-rap below the high water mark (HWM) and pile installation. Also, stormwater will be generated during construction.	QEP completed self-assessment that determined the Project will not cause serious harm to fish that support a commercial, recreational or aboriginal fishery. The QEP self-assessment is provided as a separate deliverable to the PMV. An Erosion and Sediment Control Plan that outlines the mitigation measures that will be implemented to prevent the release of sediment laden water to Lynn Creek and Burrard Inlet is provided in Section 5.6 of this CEMP. In-water work will only be conducted during the period of least risk (August 16 to February 28). Protection measures for marine fish are covered in Section 5.12 Sensitive Habitat Features and Species of this CEMP.
<i>Canada Shipping Act, National Spill Response Protocol</i>	The <i>Canada Shipping Act</i> is Transport Canada's regulatory framework surrounding marine pollution and its enforcement. In the case of a report of pollution in the water, including oil or	The Project has the potential for hydrocarbon spills to Burrard Inlet.	An Environmental Emergency and Spill Response Plan has been developed for the construction phase of the Project and is provided in Section 6.2 of this CEMP.

Act, Regulation or Bylaw	Description	Applicability	Approval or Permit in Place/Forthcoming; or Requirements Met
	fuel spills, Canada operates under the National Spill Response Protocol, which specifies that the Canadian Coast Guard is responsible for all spill response and recovery in the marine environment.		
<i>Navigation Protection Act (NPA - administered by Transport Canada)</i>	The <i>NPA</i> is the main federal legislation that protects the public right to free and unobstructed passage over navigable waters.	The Project includes the partial demolition of and existing wharf and the construction of a new dock facility and mooring dolphins.	The project will be required to submit a 'Notice of Works' to the Navigation Protection Program (NPP). Depending on the NPP review, an 'Application for Approval' may be also required. An 'Application for Approval' will have conditions that need to be followed to ensure compliance with the approval.
<i>Migratory Birds Convention Act (MBCA)</i>	The <i>MBCA</i> is the main federal legislation that protects migratory birds, eggs and nests.	The work requires some limited vegetation clearing and building demolition.	Clearing activities will be conducted outside on the bird breeding season (April 1 to July 31). Buildings to be demolished will be surveyed for swallow nests prior to demolition. An ongoing swallow nesting monitoring program will be in place throughout project construction.
<i>Species At Risk Act (SARA)</i>	<i>SARA</i> is in place to prevent wildlife species in Canada from disappearing, to provide for the recovery of wildlife species that are extirpated, endangered, or threatened as a result	Various construction activities may impact some <i>SARA</i> listed species or their habitats.	A list of <i>SARA</i> listed species is provided in the Project Biophysical Report. The risk to those species will be evaluated and appropriate mitigation efforts are provided in the Project Biophysical Report.

Act, Regulation or Bylaw	Description	Applicability	Approval or Permit in Place/Forthcoming; or Requirements Met
	of human activity, and to manage species of special concern to prevent them from becoming endangered or threatened.		
PMV Non-Road Diesel Emissions (NRDE) Regulation	The NRDE fee recovers costs associated with managing air quality and reducing diesel particulate matter emissions	The NRDE Fee is applicable to all parties granted the right by PMV to occupy lands owned, managed, or administered by PMV.	Responsible parties must not introduce non-road diesel engines that are “non-certified” (Tier 0) or certified as “Tier 1” without prior written approval from PMV.
Provincial			
Spill Reporting Regulations of the <i>Environmental Management Act (EMA</i> - administered by the Ministry of Environment)	The regulation establishes a protocol for reporting the unauthorized release of substances into the environment as well as a schedule detailing reportable amounts for certain substances for sites having Provincial jurisdiction. The same protocol will be used for the G3 site (Federal jurisdiction) with the reports going to PMV	Substances (e.g., hydrocarbons) that may be harmful to the environment will be used during the construction period of the Project.	A comprehensive emergency and spill response plan has been developed for this CEMP (see Section 6). All spills over the limits specified in the regulation will be reported to the PMV
Contaminated Sites and Hazardous Waste Regulations of the <i>EMA</i>	These regulations govern the handling, storage, transportation, treatment and disposal of contaminated material and	Unexpected previously contaminated material may be found within Project boundaries.	A hazardous waste and contaminated material management plans are contained within this CEMP (Sections 8 and 5.88, respectively). A BC Waste Generator number will be

Act, Regulation or Bylaw	Description	Applicability	Approval or Permit in Place/Forthcoming; or Requirements Met
	hazardous waste.	Hazardous waste (e.g., used oil) will be generated during construction.	obtained for the life of construction.
<i>Wildlife Act</i>	The <i>Wildlife Act</i> protects a bird or its eggs, the nest of eagle, peregrine falcon, gyrfalcon, osprey, heron or burrowing owl and the nest of a bird when the nest is occupied by a bird or its egg.	The work requires some limited vegetation clearing and building demolition.	Clearing activities will be conducted outside on the bird breeding season (April 1 to July 31). A pre-construction nest survey will be conducted to determine the presence of any eagle, peregrine falcon, gyrfalcon, osprey, heron or burrowing owl nest.
<i>BC heritage Conservation Act</i>	Although a <i>Heritage Conservation Act</i> permit is not required on Federal Lands, the Union of BC Indian Chiefs (UBCIC) released the <i>First Nations Heritage Planning Toolkit</i> that outlines the management of cultural heritage sites in BC.	The work will require excavation in areas that have the potential to encounter archeological materials.	A First Nations Cultural Heritage Permit will be required from each local First Nations group prior to construction.
Regional			
Metro Vancouver Municipal Solid Waste and Recyclable Material Regulatory	Metro Vancouver administers and enforces the disposal of solid waste and recyclables that are received at their transfer stations and	The Project will be generating solid waste and recyclables during construction.	To minimize the production of solid waste from construction, all waste will be segregated on site and recyclables (e.g., wood, metal, and organic waste) will be transported to an appropriate facility. A Waste Management

Act, Regulation or Bylaw	Description	Applicability	Approval or Permit in Place/Forthcoming; or Requirements Met
Bylaw #181, 1996	landfills.		Plan is provided in Section 8 of this CEMP.
Municipal			
City of North Vancouver (CNV) Noise Control Bylaw 1987 #5819	The CNV Noise Bylaw restricts the continuous sound levels of construction equipment and the hours of construction activities.	Heavy construction equipment will be used during construction of the Project	Construction activities will comply with CNV Noise bylaw that limits construction activities between the hours of 7:00 am to 8:00 pm Monday through Friday and 9:00 am to 7:00 pm Saturday unless an exemption has been provided by the CNV.

5 PROJECT MITIGATION MEASURES AND ENVIRONMENTAL SPECIFICATIONS

5.1 General Practices

For this Project, environmental process, practice and risk management will be based on the concepts of “avoidance of impacts”, “continual improvement” and “check and act” throughout the duration of the Project.

The first step in environmental risk management is the “avoidance of impacts” during design. Should avoidance in design not be feasible, then a feedback loop starts and input by the environmental team is applied in order to minimize impacts. The revisiting of these impacts at the various design stages creates an adaptive management feedback loop aimed at “continual improvement”.

The concept of “continual improvement” requires sequencing of tasks whereby Project team members are assigned the responsibility of “checking and acting” upon construction features that may impact the environment. Key stages in the “check and act” portion of the process during construction are environmental monitoring and reporting. Monitoring and reporting provides further opportunity for continual improvement during construction where environmental mitigation measures can be revisited and refined to provide the required environmental protection goals. Environmental monitoring and reporting identify the mitigation/avoidance strategies to ensure that goals and objectives set out in the CEMP, PMV permit and applicable regulatory legislation are addressed.

Task sequencing for each stage in the process will aid in preventing lengthy delays in environmental review, regulatory permitting, day-to-day construction activities, and subsequent cost increases (i.e., risk management). This process facilitates environmental issue resolution while providing the mechanism for continual improvement.

To ensure the successful application of this procedure will depend on the execution of four general environmental processes: planning, training, monitoring and reporting.

5.1.1 Work Plans

It is critical that environmental protection and mitigation strategies developed by the Environmental Team are appropriately conveyed to the field staff, in a timely manner. The development of activity and or site specific environmental protection measures in the work plans for implementation in the field is an important step in communicating these measures to field crews. The Construction Team will develop specific construction work plans that identify and incorporate environmental constraints, regulatory commitments and mitigation strategies. The environmental input section is a component of the construction work plan and is a summary of the environmental mitigation measures related to the construction work being performed.

Once the work plan is complete, it will be reviewed by the Environmental Team and site superintendent to ensure that environmental compliance is achieved. The final version of the work plan will be presented at the pre-activity meeting with the Environmental Team and construction staff in attendance.

5.1.2 Environmental Training

Environmental training, education and awareness of all Project personnel form the cornerstone of a strong environmental program. The Construction Team provides training for its workers, including subcontractors as applicable, designed to:

- Increase employee awareness and appreciation of the environment and the natural resources likely to be affected during construction activities; and
- Familiarize workers with the negative impacts their actions can have on the environment and how these can best be avoided or minimized.

The training program is intended to facilitate worker understanding of the environmental context of the Project and clarify the role of the trainees in achieving at least minimum environmental requirements of the Project. Training is intended to increase environmental accountability of individual workers respecting protection of the environment; therefore environmental training is mandatory for all personnel.

The environmental training and awareness program consists of three levels, each targeting a different audience:

- Advanced Training on the CEMP conditions, PMV Permit requirements and applicable guidelines for construction managers as well as site supervisors;
- Basic Training for all other site workers (e.g., as part of more general Site Orientation); and
- Tailgate training sessions for individual crews to address specific construction methods or environmental issues.

Records will be kept for Advanced and Basic Training that summarize the objective or purpose of the training, the type of material covered, attendance, as well as minutes/notes where appropriate.

5.1.3 Environmental Monitoring

Environmental monitoring is a key step in environmental process and risk management for the Project. Not only is environmental monitoring used to review, observe and report on environmental impacts resulting from construction activities, it is also a critical tool in assessing potential risk during pre-construction planning. To reduce environmental risk, environmental monitoring needs to anticipate potential impacts and identify mitigation/avoidance strategies to ensure that goals and objectives set out in the CEMP and regulatory agency approvals are addressed during all project phases.

Monitoring of construction activities in sensitive areas or in-water works will be on a full-time basis. For the other activities, the intensity of environmental monitoring depends upon their sensitivity and potential impacts and will be set by the Environmental Manager in consultation with the PMV and Construction Management Team. For example, environmental monitoring will be on a full time basis during vegetation clearing.

Further details on the environmental monitoring roles and responsibilities of the Environmental Team are provided in Section 3.1 of this CEMP.

5.1.4 Environmental Reporting

A large component of the environmental management for the Project is the production of effective environmental reports. These reports facilitate the transfer of information between the Construction Team, PMV, and regulatory agencies. Clear, concise reporting during all Project phases and activities will form the basis for environmental issue identification, resolution, and compliance auditing. The Construction Team will implement an environmental reporting structure that addresses activities during Project construction as follows:

- Environmental incident and corrective action reports for each environmental incident;
- Weekly environmental monitoring reports; and,
- Environmental specialist reports (e.g., noising monitoring) specific to an activity or environmental feature.

All these reports will be submitted to the PMV and the applicable regulatory agency, if required.

5.2 Site Access, Mobilization and Laydown Areas

Our mobilization plan will capitalize on existing site conditions. Minimizing impacts to permanent features and setting up temporary facilities in strategic locations will result in a safe, efficient construction site. Three important aspects to a successful mobilization and effective construction site are office locations, laydown areas, and site access.

5.2.1 Site Laydown

Site laydowns (Figure 4) will be located in areas that remain undisturbed for the majority of the project duration. We will use two main laydown locations, all located outside the rail alignment loop.

The first available laydown area, which will remain available without disturbance for the entirety of project construction phase, is located on the southwest corner of the property outside of the rail alignment loop and comprises 5.87 acres. This area has suitable access for off-loading materials from barges. Access to this area becomes less favourable as rail construction progresses.

The second laydown, with an area of 2.2 acres, becomes available after completion of the underground utilities that service Neptune Terminals. It is located between the new rail alignment and the existing Neptune Terminal site.

The offices and lunch rooms will be contained inside the rail loop to the south end of the property.

5.2.2 Site Access

Access to the G3 Terminal Vancouver site will evolve over several stages during the life of the project. Initial site access and mobilization will utilize the existing Brooksbank Avenue. Once the Neptune Terminal Rail Use Agreement for rail line 5 has expired, a new temporary access road will be constructed.

The temporary site access road (Figure 5) will tie into Harbourview Road at the east side of Lynn Creek. Access will primarily accommodate two-way traffic; however, that width is reduced to a single

Figure 5: Temporary Site Access

5.3 Air Quality

Construction related impacts are generally of short-term duration but may still cause adverse air quality impacts. Air pollutants generated during construction generally fall into one of two categories – airborne dust and vehicular exhaust emissions.

Airborne and fugitive dust can be generated during dry periods and arise from disturbances of soil and construction aggregates, vehicular traffic on temporary unpaved roads, and wind erosion of stockpiles. Fugitive dust and airborne particulates will be controlled and minimized by implementing best management practices including:

- Minimizing the handling of soils and aggregates (e.g., by avoiding double handling of spoil, covering truckloads of fine-grained materials during hauling);
- Minimize generation of road dust (e.g., minimize the time that unpaved surfaces are exposed and use watering or sweeping);
- During dry conditions and when necessary, control dust sources (e.g., minimize the time that unpaved surfaces are exposed, water or cover potential dust sources, sweep paved surfaces);
- As necessary, use environmentally acceptable dust suppressants or water to control dust on access roads, laydown areas, work areas, and disposal areas;
- Prefer the use of water, with consideration for water conservation, drainage and sediment control where appropriate;
- No burning of oils, rubber, tires and any other material should take place at the site;
- Stationary emission sources (e.g. portable diesel generators, compressors, etc.) should be used only as necessary and turned off when not in use;
- Track out best management practices of vehicles leaving the site will be used to reduce the dispersion materials and debris from the site;
- Compact disturbed soils;
- Reduce activities that create fugitive dust during windy conditions;
- Manage storage piles (e.g., by shaping them, installing enclosures or coverings around piles, conducting storage pile activities downwind of sensitive receptors);
- Control mud and dirt track-out from construction sites; and,
- Minimize drop height at material transfer locations (e.g., when loading soil onto haul trucks).

Construction equipment and processes that generally result in sizable non-fugitive emissions include drills, excavators, crawler tractors, loaders, graders and marine vessels. BMPs that will be used to mitigate adverse air quality effects from construction include:

- Implement a vehicle/equipment anti-idling policy for construction equipment and vehicles;

- Make use of legislated best available technologies and practices to reduce emissions;
- Control point-source emissions e.g., by implementing applicable measures recommended by Metro Vancouver and Fraser Health Authority;
- Minimize cold starts and operate equipment at and within load tolerances and rating;
- Maintain all equipment in good working order and used at optimal loads to minimize emissions; and,
- Perform routine checks of the exhaust system of all equipment to identify actual or potential deficiencies (daily visual inspection by operator, 500hr preventative maintenance performed by maintenance department).

A qualitative air quality monitoring program (i.e., visual observation of air quality) will be implemented on an ongoing basis to guide the implementation of BMPs and check on their success or failure.

Qualitative monitoring will focus on activities that have the greatest potential impact to air quality. All non-road diesel equipment will be in compliance with the PMV Non-Road Diesel Engine Regulatory Program.

5.4 Noise and Vibration

The goal of the Noise Management Program is to guide measures that minimize community impacts and also achieve community acceptance of unavoidable demolition, construction and operational noise. An Operational Noise Study including mitigation measures is provided in a separate report submitted to the PMV. Noise complaints will be handled as per the community response plan.

Project demolition and construction will primarily entail the following noise generating activities:

- Demolition activity including removal of pre-existing structures and pavements (e.g., using hoe ram, jack hammer, saw-cutting, wire cutting);
- Sub-excavation of soils (e.g., using excavators);
- Trucking of materials along haul routes to and from site;
- Ground improvement such as preloading/surcharge (e.g., using dump trucks, excavators), pile driving (e.g., using drill rig, vibratory hammer, impact hammer), and stone columns (e.g., using jetter, drill rigs);
- Grading and sub-base construction (e.g., using dozers, excavators, rollers and compactors);
- Construction of structures (e.g., overpasses and interchanges) involving pile driving, possible soil nailing/rock anchoring (e.g., using drill rigs, air compressors), concrete works (e.g., using concrete delivery trucks and pumper trucks) and steelwork erection;
- Installation of railway infrastructure;
- Paving (using pavers and rollers);
- Some construction materials could come in by barge; and,
- Local contractor adjacent to site may be used for pile driving activities and material delivery.

Mitigation measures will include the preparation and implementation of noise management procedures, best efforts to target noise emission levels of equipment, and selection and implementation of activity and location specific BMPs to control demolition and construction noise emissions. Examples of key noise mitigation measures are as follows:

- Construction activities will be primarily conducted from Monday to Saturday between 7:00 am and 8:00 pm. However, some construction activities may need to be conducted outside of these hours in which case a variance request will be made to the PMV prior to the start of these activities;
- Affected community and CNV will be notified of any particular noisier activities that may be forthcoming. These activities may need to require monitoring to ensure compliance with the local noise bylaw;
- Maintain construction equipment in good working condition;
- Operate equipment at or within load tolerances and ratings;
- Focus maintenance on lubrication, replacement of worn parts, exhaust deficiencies;
- When practical, shut down heavy equipment not in active use;
- Avoid unnecessary engine revving and use of engine brakes;
- Minimize use of back-up beepers providing in compliance with WorkSafe regulations;
- Select travel routes to avoid noise-sensitive receptors;
- Relocate or reorient stationary equipment so as to engage natural noise screening/dampening features;
- Use special measures such as temporary noise barriers for noisier demolition and construction activities;
- Communicate with the public regarding work procedures and scheduling of noisy activities and,
- Train all personnel on noise mitigation strategies within the noise mitigation plan.

5.5 Machinery and Equipment

A variety of equipment and machinery will be used on site during construction of the Project. Examples may include crawler cranes, rubber tired loaders, bull dozers, articulated dump trucks, track and rubber tired excavators, etc. A number of small pieces of equipment such as fork lifts, generators, pick-up trucks and light plants will also be used during construction. A list of all equipment and machinery to be used during construction will be provided to the PMV prior to construction. In addition, all non-road diesel equipment will be subject to the PMV Non-Road Diesel Emissions (NRDE) Program which prohibits the addition of Tier 1 and older diesel engines without prior Port Authority approval. As such, the Construction Team will complete and submit the NRDE Annual Reporting Tool for applicable equipment once construction commences.

A small, u-dome type equipment maintenance facility will be situated within the Project boundaries. This facility will be used for minor preventative maintenance and repairs such as oil and fluid changes, hose changes, tire replacement, etc. All major equipment maintenance repairs will be done off site.

The implementation of some basic mitigation measures will avoid or minimize impacts resulting from operation and storage of equipment during construction. These include:

- Inspection of all equipment prior to mobilization to site to ensure they are in good operating order and maintained free from leaks, excess oil and grease invasive species and noxious weeds;
- All equipment will undergo a preventative maintenance (PM) program Preventative maintenance is typically scheduled for every piece of equipment on the project after a defined number of hours (typically every 250 or 500 hours). During these “PMs” the entire equipment is thoroughly checked and worn parts (though not defective) will be replaced. Preventative maintenance is carried out by qualified maintenance personnel.
- All construction equipment (including pick-up trucks) will have a spill containment kit onboard at all times;
- Refueling will only occur as outlined in the Fuel Management Plan in this CEMP (Section 7);
- All equipment will undergo a documented daily inspection performed by the operator. These inspections can identify potential spill sources (e.g. defective hoses or fittings) at the start of each shift. These inspection forms are reviewed by the maintenance department and the observations by the operator will be addressed; and,
- When practical, light spill from light plants or temporary light poles will be minimized by directing lights downward and placing task lights as close to the operation as possible.

5.6 Erosion and Sediment Control

This Erosion and Sediment Control Plan describes the general approach that will be implemented so that water that flows, or is discharged, from construction sites complies with applicable water quality standards. For the purpose of this plan, construction water is defined as run-off that is produced as a result of various construction activities (e.g. from dewatering work sites, excess water from drilling and ground densification) and surface run-off from rain events.

The details will be included in the specific Work Plans for each area and the functionality of the control plan is confirmed by the Environmental Team during the Pre-Activity Meetings and it is the duty of Field Supervisors to ensure the work is completed as per the plan.

Construction water emanating from the site will be monitored to confirm compliance prior to discharge to the natural environment. Measures will be implemented onsite to remedy deficient water quality induced by construction. The Plan also provides general and site specific measures for controlling sediment laden flows emanating from disturbed areas or from dewatering. It focuses on prevention and correction of potential erosion and sediment issues relating to preload and surcharge placement, vegetation removal and stripping, grade construction, cut faces, fills, ditching, and other areas requiring temporary disturbance of potentially erodible materials.

Construction affected surface water will meet specifications prior to discharging to the receiving waters. Adaptive management will be used to correct measures that fail to redress water quality deficiencies. The Construction Team's strategy is:

- Prepare site specific Sediment and Drainage Management Plans (SDMPs) in tandem with development of Work Plans and Work Methods with input from the Environmental Team;
- Identify requirements for additional water quality monitoring prior to and during construction to ensure preventative and mitigation measures can be taken as appropriate, to avoid impacts to water quality;
- Identify potential water quality contaminants of concern generated by construction activities and associated preventative and mitigation measures;
- Identify areas prone to sedimentation in more detailed, site specific plans or work methods, as applicable;
- Check that implemented BMPs are functioning as designed and that corrective actions are being taken when required. BMP implementation and maintenance checks are to be conducted at least weekly and after major rainfall events. These checks will be documented in the Weekly Monitoring Reports;
- Apply provincial and federal water quality guidelines and objectives in evaluation of the water quality samples collected before, during and after construction;
- Monitor levels of suspended sediments, using turbidity as a field measure, in accordance with applicable water quality objectives using provincial methodologies for turbidity monitoring; and,
- Comply with environmental requirements and BMPs in order to avoid impacts to water quality.

5.6.1 Best Management Practices

The selection and implementation of environmental best practices will consider such factors as: the size of work sites; activity associated with particular construction sites; proximity to environmentally sensitive features such as fish-bearing watercourses; work site gradient; nature of disturbed soil material, predicted discharge volumes and flow rates; and other factors. Measures will be adjusted in response to changing conditions or to correct environmental protection deficiencies.

BMPs will be implemented mainly in the following contexts:

- To manage drainage and storm flows in and around work sites;
- To prevent discharge to the environment of water that may be produced as a result of various construction activities (e.g., from dewatering work sites, excess water from drilling, etc.);
- To prevent erosion at discharge points e.g., by maintaining or reducing existing flow velocities and/or by providing dissipation measures; and
- To maintain water quality and flow volume at discharge points.

5.6.1.1 Water Management

Water discharged from a construction site into watercourses, ditches or stormwater drainage systems will be monitored to confirm that suspended solids, pH and other water quality parameters meet required environmental performance indicators. Water quality monitoring frequency and parameters requirements will follow the applicable permits and environmental legislation.

5.6.1.2 Erosion Prevention and Control

Best management practices for erosion prevention and control include, but are not limited to, the following:

- Minimize the area disturbed by construction, e.g. by minimizing clear and grub areas;
- Minimize soil disturbance and soil compaction;
- Minimize the volume of overland flow entering, or flowing through, construction areas;
- Regardless of the proximity to watercourses, applicable BMPs for surface water quality and sediment and erosion control will be implemented;
- Divert surface water around disturbed construction areas, stockpiles or lay down areas. Diversion should avoid significant alteration of pre-existing down slope drainage;
- Roughen the surfaces of compacted, disturbed and exposed soils to increase infiltration to ground and break up or slow down sheet flows (e.g., implement “cat tracking”);
- Minimize soil stockpile areas and volumes, where possible, particularly during inclement weather and/or when working in environmentally sensitive areas;
- Avoid placing soil stockpiles on sloped terrain;
- Stockpile soils as far away as possible from watercourses or other flowing conveyances that have direct hydraulically connection to sensitive receiving waters;
- Minimize slopes of disturbed areas and stockpiled material; maintain the natural angle of repose;
- Ensure that sufficient filter cloth, rock, seed, drain rock, culverts, staking, and other materials used for erosion prevention or control are readily available on site;
- When installing or relocating utilities, minimize the length of trench exposed at any given time;
- Check erosion control measures regularly (at least once a week), with frequency based on weather conditions, risk, and sensitivity of the area, and correct deficiencies without delay;
- Minimize vehicle access routes into working areas;
- Discharge points have dissipation measures implemented; and,
- Maintain or reduce existing flow velocities to stop erosion at discharge points, by roughening the surface, (e.g. by placing boulders and rocks at hose outlets to disperse flow, or have hoses discharge under water; for channel flow velocity reduction place check dams).

5.6.1.3 Sediment Control

The construction team will implement appropriate sediment controls to achieve water quality requirements for discharge to local watercourses, drainage ditches or storm sewers. As required, guidance on sediment control implementation will be provided by the Environmental Manager, Environmental Monitor or other suitably qualified personnel. Measures include, but are not limited to, the following measures:

- Silt fencing around stockpiled spoils or disturbed areas as necessary;
- Check-dams or gravel berms in drainage channels;
- Covering erodible materials with tarp or other appropriate impervious material;
- Storm drain inlet protection (e.g., using catch basin screens or filter socks);
- Temporary sediment control ponds or traps, or storm water interceptors;
- Undertake wheel washing primarily in centralized median locations to remove sediment from transportation vehicles and prevent offsite tracking of sediment
- Infiltration galleries around dewatering pumps to remove sediment; and
- Street sweeping to remove loose sediment from impervious or paved surfaces.

5.7 Contaminated Soil and Groundwater Management

A pre-construction Stage 1 and Stage 2 Preliminary Contaminated Site Investigation was conducted for the current tenant of the site. The Stage 2 investigation identified three areas of environmental concern (AECs); two contaminated soil site and one area of contaminated groundwater exceed federal Canadian Council of Ministers of the Environment (CCME) and provincial Contaminated Sites Regulation (CSR) guidelines. The two contaminated soil sites will be remediated to industrial standards by the current tenant prior to construction mobilization.

The area of existing groundwater contamination (i.e., copper, cadmium and zinc greater than CCME guidelines) is located along the middle part of the eastern edge of the site. During construction, the excavation for the proposed grain receiving pit has to potential to encounter the contaminated groundwater. In order to minimize the potential contact with this groundwater, sheet piles will be installed along the sides of the excavation and to a depth great than the excavation. Once the sheet pile walls are installed, the area will be excavated and a tremie concrete base will be poured. The tremie concrete pour is intended to occur in wet conditions; however, the amount of water is a limiting condition. Should the amount of groundwater in the excavation exceed the amount that the tremie pour is able to handle, the excess water will be pumped to baker tanks. The baker tanks will facilitate excess water storage and water quality testing allowing for construction to continue. Should water quality results in the baker tanks exceed applicable guidelines for release to the environment; the contaminated water will be transported to an approved facility for disposal.

Based on the results of the Stage 1 and Stage 2 Preliminary Site Investigation there is also the potential for encountering previously unknown contaminated soil and/or water during excavation activities. Preliminary design indicates that the potential for encountering contaminated soil and groundwater is greater where deeper excavations are required.

General management techniques for contaminated soil and groundwater include:

- Refine design to avoid, where practical, areas of soil contamination;
- Minimize excavation areas;
- To the extent possible, re-use soil within the project boundary;
- To the extent possible, limit the depth of excavations to above the groundwater table;
- To the extent possible, limit dewatering activities; and,
- If dewatering is required, utilize a baker-type tank system to store water, treat for pH, turbidity and providing the water meets CCME and CSR guidelines, release to the natural environment or stormwater system.

In all situations, contaminated soil and groundwater will be handled, transported, disposed of and documented in accordance with the provincial *Environmental Management Act* including the Contaminated Sites Regulation and Hazardous Waste Regulation. A qualified environmental professional in contaminated sites management will oversee all contaminated soil and water activities.

In areas with high probably of encountering contaminated soil and/or water, Remediation and Removal Action Plans (RRAP) will be developed prior to construction and prepared to address site specific remediation/removal and sampling of contaminated material. The RRAP's will be submitted to the PMV for their review and acceptance. In addition, the process outlined in Figure 8-2 below will be followed if potential contamination is encountered during any construction activity. All contaminated soil and water samples will be sent for analysis and characterization to an accredited laboratory and disposed of at an approved facility.

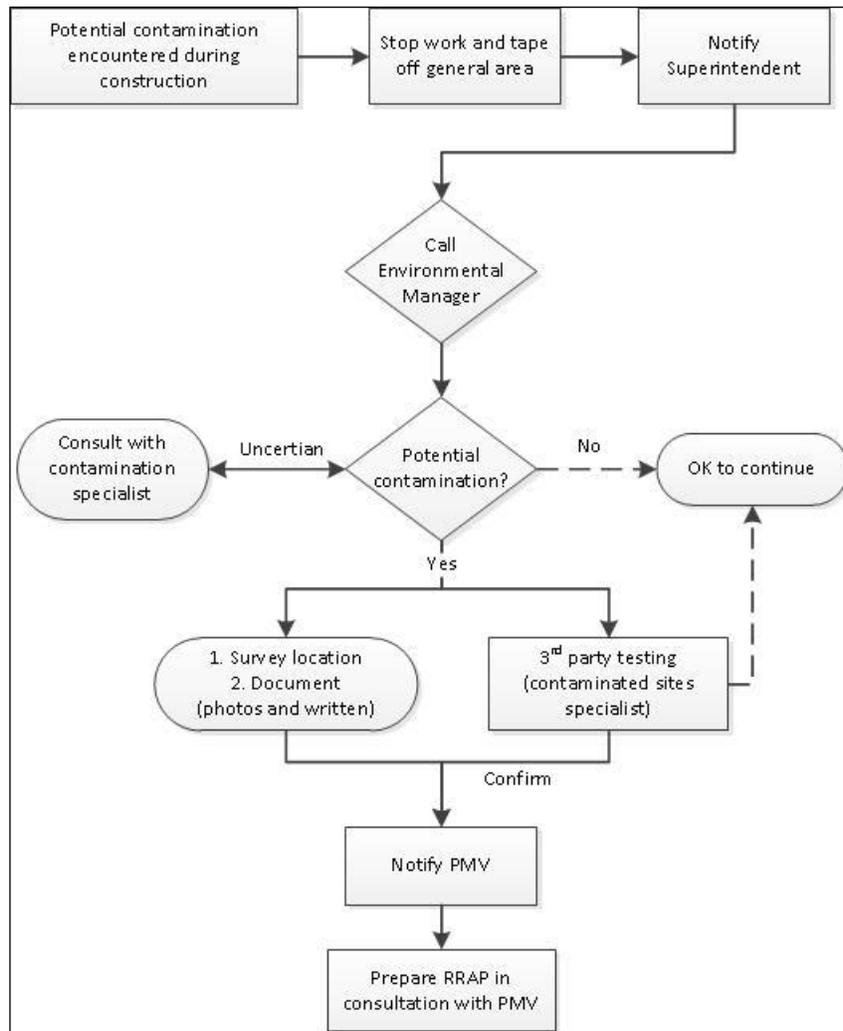


Figure 6: Potential Contamination Process

The primary mitigation strategy will be to minimize the depth of any excavation. All construction related dewatering will include on-site storage and treatment for turbidity. All construction water from dewatering activities will also be tested for contamination. Construction water from dewatering activities that do not meet federal Canadian Council of Ministers of the Environment (CCME) and provincial Contaminated Sites Regulation (CSR) standards will be disposed off-site at an approved facility.

5.8 Vegetation and Wildlife Management

Given the historic industrial use of the Site and the existing infrastructure that almost entirely encompasses the project site, impacts to terrestrial habitats and wildlife are deemed to be very low. One small, 200 m strip of vegetation (3 m wide at its widest) that borders the current site and Vancouver Pile parking lot will be removed for the project. The terrestrial habitat biophysical

assessment for the project provides further detail on the species composition and maturity of this strip of vegetation.

However, the site is immediately adjacent to Lynn Creek and the Lynn Creek estuary. Lynn Creek and its estuary has been designated as a 'Conservation' area in the *Port Metro Vancouver Land Use Plan* (October 28, 2014). Lynn Creek supports populations of salmonids and provides a key north/south corridor for wildlife. Given this local importance some key mitigation measures are not only needed to protect the Lynn Creek habitats' wildlife and fish species it supports but to protect vegetation and wildlife, in general. These measures include:

5.8.1 Vegetation

- Keep vegetation clearing at a minimum with particular attention near watercourses and Environmentally Sensitive Areas (ESAs);
- No vegetation will be felled into a watercourse;
- Stage clearing to provide maximum erosion protection while still allowing construction to proceed.
- Conduct pre-clearing surveys for any rare or sensitive species;
- Prepare a clearing and grubbing plan in consultation with the Environmental Manager;
- Mark the clear and grub, "No Disturbance", and "Vegetation to Remain" boundaries on the environment construction drawings;
- Flag or sign "No Disturbance" and "Vegetation to Remain" areas (e.g. 30 m buffer around designated watercourses and ESAs) in the field prior to clearing and inspect weekly;
- Maintain the appropriate ESA-specific buffer zones for clear and grub around designated watercourses (30 meters) and ESAs (e.g. 30 meters for songbirds) during clear and grub activities until ready to proceed with earthwork and stabilization (i.e., staged approach);
- Do not fell timber into a watercourse unless safety considerations dictate otherwise or unless approved by Environmental Monitor;
- The Construction Team will notify the Environmental Manager upon the discovery of rare or sensitive species – the Environmental Manager will in turn notify the PMV;
- If wood waste is stored on site, store it in a well-drained location, free of standing water, and
- All invasive plant species will be disposed of in accordance with the local municipal Green Waste Program and at a facility equipped to handle invasive plant waste.

5.8.2 Wildlife

- Inspect all buildings prior to demolition for swallow nests. Should a nest or nests be found a plan for removal will be developed in consultation with the BC Ministry of Environment and the PMV;
- All vegetation clearing will be conducted outside of the bird breeding season (April 1 to July 31);

- Maintain all construction sites free of wildlife attractants such as food, garbage, petroleum products or other materials with a strong odor;
- It is noted that birds may nest in construction equipment (e.g., on cranes, formwork, machinery, temporarily stored materials and other construction infrastructure). Inspection of work areas will occur regularly throughout the bird breeding season to identify birds attempting to nest as early as possible. Should breeding behavior be identified, a specific management plan will be developed by a qualified specialist and in consultation with the PMV and appropriate regulatory agencies to ensure compliance with the Migratory Birds Convention Act;
- Where garbage containers are required, ensure containers are inaccessible to wildlife; and,
- Report all observation of wildlife the Environmental Manager – the Environmental Manager will in turn notify the PMV.

5.9 Concrete Works and Grouting

There will be concrete and grouting works during construction for the Project. Current planning has all mass concrete sourced at a nearby concrete supplier and transported via mixer truck to the site, as needed. Logistics may require that a small batch plant be installed within the site boundary. Should an onsite batch plant be required, a standalone Concrete Batch Plant Management Plan will be developed and will include a section on environmental mitigation measures.

The following mitigation measures will be implemented for all cast-in-place concrete works.

- Conduct concrete pours and grout work in isolation of standing or flowing water;
- Isolate fresh concrete, cement or other products containing Portland cement from any designated watercourse or flowing conveyance hydraulically connected to a designated watercourse for 72 hours after placement (or longer if specified in environmental permits or not cured after 72 hours);
- Protect fresh concrete pours from rainfall with an impermeable cover until the concrete cures in order to prevent runoff (use accelerants if appropriate);
- Do not expose freshly poured concrete to rain or surface flows until curing is sufficiently complete to prevent leaching and pH effects;
- Isolate new cast-in-place concrete or other works from fish bearing waters until the concrete has properly cured (minimum 72 hours);
- Secure open bags of concrete mix and protect them from rain and wind;
- Locate smaller concrete mixers on tarps, polyethylene sheeting or some other suitable cover;
- Contain and test potentially high pH water emanating from areas where pours and other concrete or grouting works are recent or ongoing and, as warranted, either treat concrete affected water prior to release to receiving waters or remove it for off-site disposal to an approved facility.

- Carbon dioxide (CO₂) with regulators and diffusers will be present on-site and available for immediate deployment at all times when there is the potential for release of high pH water into the receiving environment;
- Appropriate spill clean-up material for concrete products will be readily available on site;
- Train relevant construction personnel to use CO₂; and
- Do not discharge concrete truck wash water directly to ground. Capture and remove wash water for treatment and disposal at an approved offsite facility (albeit small quantities of wash water can be treated onsite).

5.10 Marine Works

A new dock is required to support the change in facility use from break bulk to a dry bulk export terminal. The construction of the dock will include in-water piles to support three ship-loading conveyors and access trestle. A portion of the existing wharf deck will be modified to facilitate existing sheet pile wall improvements. The sheet pile wall improvement includes the construction of an in-water rock buttress. The rock buttress is required to support the static loads, created by the new rail line.

For the most part, all marine works will be via barge. This will include pile and dock demolition, pile driving, riprap placement and new deck construction. There may be a need for some small riprap placement or adjustment from the top of the sheet pile.

The following mitigation measures will be utilized for marine construction activities:

- Pile removal and pile-driving in open water will occur during the window of least risk for impacts to fish and fish habitat (August 16 to February 28);
- The area of pile removal will be surrounded by a containment boom during pile removal, and an oil boom will be placed within the containment boom;
- Creosote-treated piles will be extracted using a vibratory hammer along with a crane or excavator to minimize the suspension of sediments associated with pile removal decreasing the potential for pile breakage.
- Concrete piles not incorporated into the new structure and outside the new wharf footprint will be partially removed, using a hydraulic jackhammer, to the surficial elevation of the new rock revetment specified by the design;
- A bubble curtain will be utilized around pile driving activities (pile extraction and installation) to ensure underwater sound levels (peak pressures) do not exceed 30 kilopascals (kPa) at a distance of 1 m from the pile being driven;
- Pile driving will be monitored by an appropriately qualified individual with a hydrophone. If peak pressures exceeding 30 kPa are recorded or dead or injured fish are observed, pile driving activities will be halted and further mitigation measures will be enacted;
- Biodegradable hydraulic fluid will be used in marine based machinery (type of equipment permitting);

- Barges or other vessels will not ground on the foreshore or river/seabed or otherwise disturb the foreshore or river/seabed (including disturbance as a result of vessel propeller wash);
- Visual and hydrophone monitoring will be conducted during pile driving activities to assess impacts on fish. If sound pressures over 30 kPa are measured, or distressed, injured or dead fish are observed following the initiation of pile driving, work will be halted immediately and measures to reduce the sound pressure waves will be implemented before the work is resumed;
- No equipment will operate on the intertidal foreshore; and
- A marine based large spill clean-up kit including sufficient booms to contain a major spill will be on site during all marine operations.

Monitoring reports for in-water activities will be provided by the monitor to Environmental Manager and forwarded onto the PMV.

5.11 Archeological Resources

A pre-construction Archeological Overview Assessment (AOA) has been conducted to determine the historical, First Nations use of the land within the Project footprint and assess the likelihood of discovering objects of historical significance during construction. The AOA will be provided to the PMV as a separate submittal in the permit application.

The AOA concluded that the onshore area within the Project boundary has to potential to encounter archeological materials, features and/or deposits. Due to past dredging and infilling, the tidal and sub-tidal areas are considered to have low archeological potential.

The general strategy for managing potential discovery of artefacts with archaeological/heritage includes:

- Pre-construction archeological review
- Targeted delivery of training in archaeological material recognition; and
- Implementation of an Archaeological Protocol to manage possible encounter(s) artefacts.

5.11.1 Pre-construction Archeological Review

For the onshore develop area, prior to ground altering activities, a qualified archeologist will review construction plans and methods to determine the need for further assessment work that may include location specific mechanical excavations targeting the potential discovery of archeological materials (typically, this would be the case where native soils are going to be disturbed) or on-site monitoring by the qualified archeologist during construction related excavation activities.

During this phase, First Nations Cultural Heritage Investigation Permits will be required prior to construction from each First nations group that has deemed the G3 Terminal Vancouver site within their traditional territory.

5.11.2 Archeological Training

Archaeological education and awareness includes training in how to recognize cultural materials (e.g., artifacts, burial sites) and how to implement the Archaeological Protocol that has been developed to manage possible encounters with archaeological materials during construction. The protocol includes procedures for stopping work and notifying supervisory personnel in the event suspicious materials are encountered.

The archaeological training program includes two main components. Basic training on Project obligations respecting archaeological management will be delivered to all construction personnel as part of the basic site orientation. The basic training will be designed to deliver awareness that archaeological and cultural materials are protected under legislation and these may be encountered during construction. Specialized Training will be delivered by qualified archeologist to construction personnel who are about to construct in areas that have high potential for encountering archaeological materials. The training will focus on site recognition and on the Archaeological Protocol that will be implemented in the event previously unknown or undisclosed archaeological resources are discovered during the course of the work.

5.11.3 Archeological Protocol

The following protocol will be implemented to manage possible encounter(s) with previously unknown or undisclosed archaeological sites or other cultural materials.

- If construction encounters actual or suspected archaeological or historical materials, workers will immediately STOP WORK in that location, subject to safety considerations, and notify their supervisor(s). The supervisor(s) will then immediately notify the Environmental Manager who will notify the Project Manager, the PMV and organize a site visit by a qualified archeologist.
- Avoid disturbing the site and impose a 20 m exclusion buffer zone around the suspect site or artifact. Mark the exclusion zone with snow fence or flagging.
- Make other workers in the vicinity aware that the affected location is to be avoided until assessed by the Archaeological Consultant.
- Secure the area against trespass by unauthorized citizens.
- Do not collect archaeological remains, including artifacts of traditional (First Nations) or industrial (Euro-Canadian) manufacture.
- In the case of discovery of an isolated artifact, whenever possible leave the artifact on the ground where it was found; however, if the artifact is in imminent danger of being destroyed or damaged, collect it and mark its location with a stake or flag, and provide it to the qualified archeologist.
- Cover any exposed artifacts with plastic sheeting, a garbage bin liner, blanket, or other clean covering (not backfill) pending arrival of the qualified archeologist. Record the original location of any discovery or isolated artifact.

- The qualified archeologist will assess the archaeological, heritage or cultural materials and identify appropriate procedures to avoid or mitigate impacts. The qualified archeologist will take possession of any artifact that has been collected.
- In consultation with the qualified archeologist, construction personnel will implement measures (possibly slope stabilization, drainage, erosion or sediment control) as may be necessary to protect the discovery.
- Fill that has been excavated from the affected area and loaded into a truck will be emptied at a nearby secure location for inspection by the qualified archeologist.
- Human remains will be accorded full dignity and respect. If suspect human remains are encountered, STOP WORK IMMEDIATELY and notify the site supervisor as the first step in notifying the RCMP, the Environmental Manager and the qualified archeologist. Cover any exposed bones with a plastic sheet, blanket or other clean covering (not backfill) and stand watch until the qualified archeologist arrives onsite. As required, the qualified archeologist will devise a recovery protocol that meets with the approval of the appropriate First Nations communities and the police.
- Construction personnel will implement additional measures as may be prescribed by the qualified archeologist.
- Construction shall not resume at the location until required archaeological studies or recovery efforts are completed and there is authorization by the construction supervisor(s) to resume the work.

5.12 Sensitive Habitat Features and Species

5.12.1 Species at Risk

The aquatic biophysical survey report indicated that site conditions within the assessment area are not considered conducive to the presence of federally or provincially listed species at risk. The only listed species with the potential to occur at the Project location is northern abalone. Northern abalone (provincially Red-listed; designated Threatened by COSEWIC, 2000; designated Threatened under SARA Schedule 1, 2003) occurs in rocky habitats from the low intertidal to 100 m below sea level but is usually found in water less than 10 m deep. In BC, northern abalone distribution is patchy and typically located along open coastline. This species was not detected during either survey. The probability of this species occurring at the Project location is considered low due to the protected nature of the area under the wharf.

The terrestrial biophysical survey report concluded the site conditions are not conducive to use by federally or provincially listed species at risk within the Assessment Area.

5.12.2 Mitigation Measures

Lynn Creek, the Lynn Creek estuary and Burrard inlet are considered sensitive habitat features that have the potential to be impacted during construction. Mitigation measures related to the protection of riparian habitat, terrestrial habitat and the prevention of off-site migration of sediment laden run-off to

these features with provided the Vegetation and Wildlife Management and Erosion and Sediment Control the sections in this CEMP (Sections 5.8 and 5.6, respectively).

6 EMERGENCY RESPONSE

During construction there are risks of potential accidents occurring, malfunctions of equipment, spills or general environmental incidents which all may require a level of emergency response. It is important to outline and train on procedures to follow in the event of emergencies to assist in making appropriate decisions at a time when tensions may be elevated and personnel safety is of utmost concern. If accidents and malfunctions are not properly mitigated or responded to, they could have a significant impact on the Project.

6.1 Emergency Communication

Emergency communication is outlined in the Project Communication Plan. It is important to note that quick and clear communication is essential to minimize potential impacts to workers, the public, property and the environment in emergency situations. The PMV will be contacted for any release of a dangerous goods (as defined in the BC Spill Reporting Regulation) to water or any amount to land that is over the volume for the listed in the Schedule of the BC Spill Reporting Regulations. In addition, the Canadian Coast Guard will be contacted for any spill of hazardous material to Burrard Inlet. The phone numbers of key emergency responders are provided in Table 3.

Table 3: Key Emergency Contact Phone Numbers

Authority/Company Name	Phone Number
Emergency Services	911
PMV Operations Centre	604-665-9086
Local Non-emergency police	604-985-1311
Local Non-emergency fire	604-980-5021
Lions Gate Hospital	604-988-3131
Emergency Management BC (formerly PEP)	1-800-663-3456
DFO Radio Room	604-666-3500
Canadian Coast Guard	604-775-8881
Tri-Arrow Industrial Recovery Inc. (3 rd party spill response)	604-682-2751
HazCo Emergency Response (3 rd party spill response)	1-800-667-0444
Safety-Kleen Emergency Response (3 rd party spill response)	1-888-375-5336

6.2 Environmental Emergency and Spill Response Plan

6.2.1 Emergency Spill Response

A spill is defined as a discharge of a pollutant into the natural environment from or out of a structure, vehicle, or other container, that is abnormal in quality in light of all the circumstances of the

discharge. The purpose of this plan is to demonstrate compliance with applicable contractual and regulatory requirements governing incident prevention, incident response, notification, and reporting as well as fire response. More specifically, the Plan provides information on: Incident Response Procedure; Responsibilities in Case of an incident; Incident Notification and Reporting and Best Management Practices. An example of a spill response flow chart is provided in Figure 6. The chart will be posted in lunchrooms, offices and key locations throughout the site.

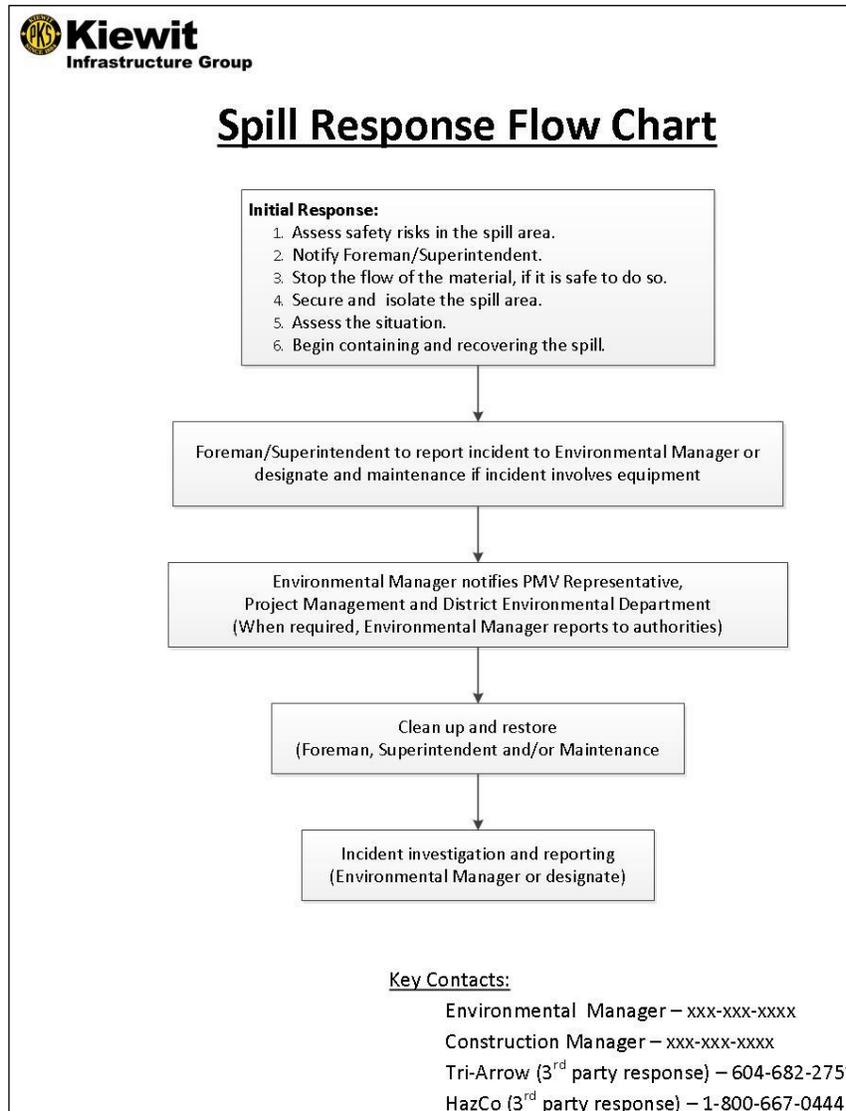


Figure 7: Spill Response Flow Chart

Spill kits are to be readily available in all work areas and provided in all construction vehicles. The Environmental Team will ensure that an adequate spill response equipment inventory is kept on site at all times. Additionally, spill response trailers or spill response drums will be located at any high risk operation.

The Construction Team will immediately take the necessary steps, including reliance on external resources, to abate an uncontrolled discharge. They will provide the necessary labour, equipment, materials and absorbents to contain and remove the spill, clean up the affected area, dispose of waste materials at an approved disposal site, and restore the area.

Any individual who notices a potential spill, spill, or equipment malfunction is to stop work immediately and shut down equipment. The person involved will contact the area foreman or superintendent. Foremen or superintendents will respond with additional spill response equipment if necessary and notify the Environment Coordinator, who will also respond. All parties are to remain at the scene until required information is gathered.

Initial response to spills during the works will be as follows:

1. Assess safety risks in the spill area.
2. Notify Foreman/Superintendent
3. Stop the flow of the hazardous material if it is safe to do so.
4. Secure and isolate the spill area.
5. Assess the situation (identify product, equipment involved, affected area, spill status, time of spill).
6. Begin containing and recovering the spill with on-site emergency spill equipment if it is safe to do so.
7. Complete the spill notification and reporting procedure as described above.

6.2.2 Incident Clean Up

The Environment Team will remain at the scene until incident cleanup is under control. Contaminated soil will be disposed of in the on-site contaminated soil bin, and spent adsorbent material will be disposed of in the hazardous waste bin. All fluid contained in drip trays, will be disposed of in the used oil recycling container. The Environment Team will document all clean-up activities with pictures.

Following clean-up of a significant spill, a debriefing will be held with all involved personnel. Debriefing will occur following any reportable spill as defined by the Spill Reporting Regulation. This debriefing will include review of the following:

- Root cause of the spill;
- Measures to prevent the spill from occurring again;
- Review with associated crew members; and,
- How the response could have been improved.

A more informal debriefing (e.g. one-on-one between foreman and worker) may be held for lesser spills as part of ongoing on-site training in spill prevention and response.

6.2.3 Incident Investigation and Reporting

An initial investigation will be implemented at the scene and will address the following questions:

- Have there been injuries?
- Is there need for outside help?
- What was spilled?
- How much has been spilled?
- Has the source been isolated?
- Has the area in which the spill occurred been contained?

The Environmental Coordinator will determine the amount of fluid released from the machine. Witnesses statements will be gathered from all parties involve. Both the Maintenance and Environment Department will identify action items to reduce the risk of similar incidents occurring in the future.

A complete “Environmental Incident Report” will be completed by the Environmental Manger in order to communicate the incident accurately with the PMV and any outside regulatory agencies.

An “Environmental Incident Report” will also be required when any of the following activities occur:

- Hazardous material spill;
- Work beyond established boundaries or timing windows;
- Work resulting in direct harm or death to wildlife including birds or fish;
- Improper heritage resource mitigation;
- Improper hazardous materials management;
- Water quality issue;
- Air quality issue;
- Negative wildlife/human interaction and,
- Work occurred without proper permit or authorization.

6.2.4 Best Management Practices for Spill Control and Reduction

The Construction Team will employ best management practices as a prevention method to spills and a method to limit the environmental damage in the case that a spill or release does occur. The following are examples of mitigation measures that will be practiced on site:

6.2.4.1 Spill Kits

- Maintain a functional spill kit (e.g. containing sorbent materials, gloves and portable disposal container for used sorbent material) on each construction related vehicle;
- Station properly furnished spill kits at appropriate intervals throughout the work area and near main watercourses. At a minimum, each such kit should contain sufficient hydrophobic

absorbent material (e.g. oil absorbent pads and socks) to contain and clean up potential drips, leaks, or spills (e.g. ruptured hydraulic line), gloves and heavy plastic bags to contain used absorbent materials and contaminated soils or wastes;

- Clearly sign the location of all large, drum style spill kits;
- Spill kits stationed for works in or about water will contain absorbent booms;
- Label spill kits to identify the spill capacity for which the kits are intended;
- Spill response procedures and relevant contact information will be posted on-site;
- A spill kit will be located where refueling occurs; and,
- Check spill kits on a regular basis to ensure all used contents of spill kits are replenished.

6.2.4.2 Clean-up

- Place used (contaminated) sorbent materials in spill kit bag provided for that purpose;
- Used materials can be temporarily stored on-site in a clearly labeled drum dedicated to that purpose – drum contents must be emptied within reasonable time with contents disposed off-site in accordance with CSR requirements;
- Soil and/or groundwater contaminated by spill(s) of hazardous materials must be remediated as per CSR requirements; and,
- The Environmental Manager will be contacted immediately when a spill of hazardous or deleterious substances enters the natural environment and a spill specific clean-up action plan will be developed and implemented in accordance with CSR and other applicable regulation.

6.2.4.3 Preventative Maintenance

- All equipment used on this project will undergo a maintenance program as described in Section 5.5 Machinery and Equipment of this CEMP.

6.2.4.4 Hazardous Material Storage

- Bulk lubricating oils will be stored in a designated area that is configured for secondary containment and protected from the elements. All containers within the containment area will be labeled as to their contents; lids will be on and closed. Empty containers will be removed, labeled and stored for re-use or disposal, as applicable to each particular container;
- Lubricating oil dispersal locations (connex) will have secondary containment to minimize impact from potential releases;
- Solvents and degreasers will be stored in fire resistant, approved security cabinets to minimize risk of environmental and personnel injury impacts; and,
- Miscellaneous items such as aerosols, washer fluid, paints, roof patch, caulking and non-combustible items, when not in use, will be stored in containment shelters that are protected from the elements, or will use enclosed and vented connex enclosures.

7 FUEL MANAGEMENT PLAN

Two 50,000 litre bulk diesel fuel tanks will be installed at the north laydown within the site boundary (Figure 7). The fuel tank farm will be designed and installed utilizing a non-combustible containment liner, concrete block perimeter, enclosed and roofed setup and will meet or exceed current fuel storage best management practices. The fuel tank farm will be designed to hold 110% of the combined volume of the tanks enclosed. The fuel farm will be signed and labeled to properly identify the contents, spill clean-up procedures, fueling procedures and to prohibit smoking within 15 m of fuel storage facilities. This location is greater than 30 m from any water body.

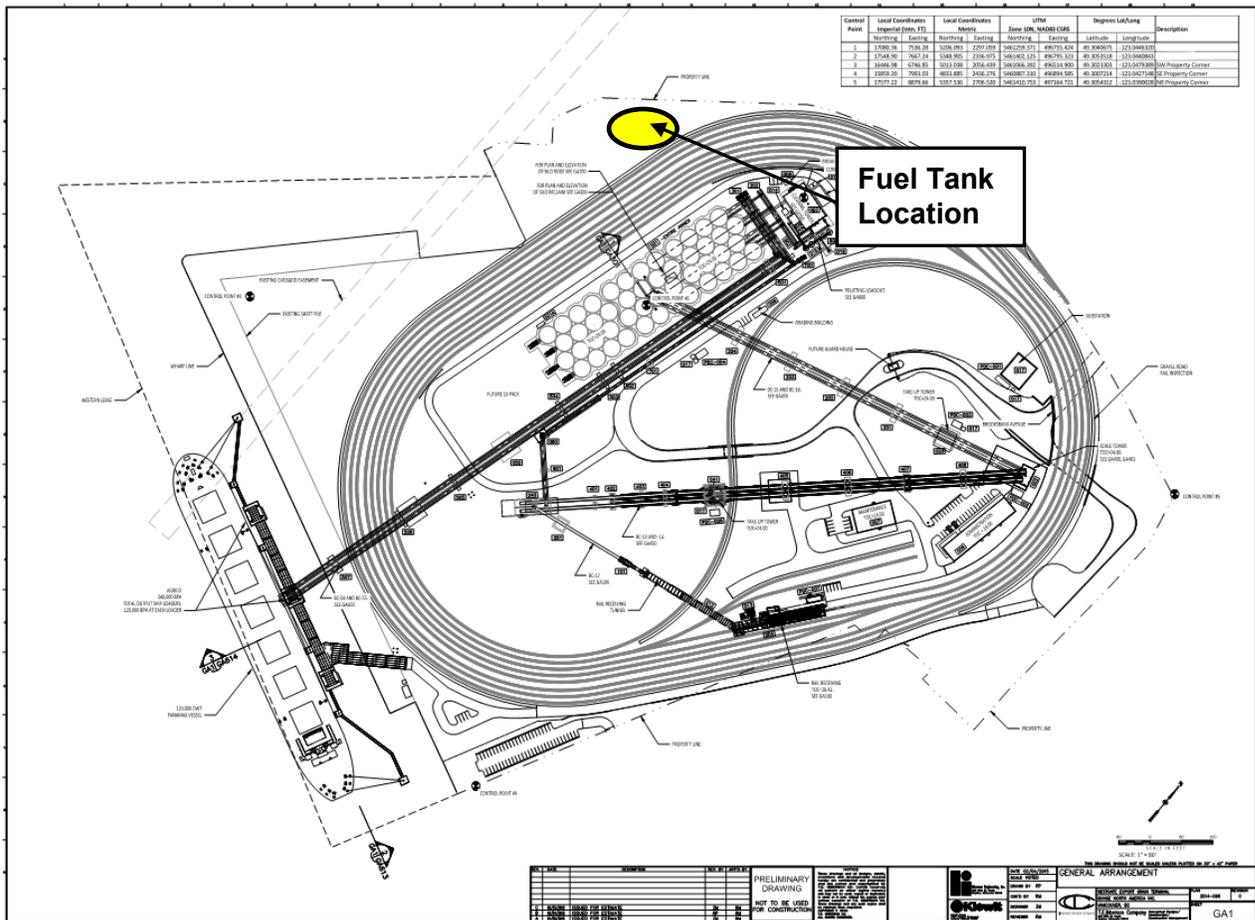


Figure 8: Site Plan Showing Fuel Storage Location.

7.1 Refueling Procedures

The following best management practices will be following for all refueling operations. All construction personnel involved with refueling will undergo specific training on these practices.

7.1.1 Onshore Works

General measures include:

- Deliver fuel to construction site by approved mobile refueling tanks (either to on-site refueling tanks or directly into the equipment);
- All dispensing or transferring of fuel will be attended for the duration of the operation;
- The attendant will be trained in fuelling procedure;
- Refuel excavators and other large tank capacity machines away from a water body and other ESAs (minimum 30 m unless otherwise reviewed and accepted by the Environmental Manager);
- When transferring fuel from mobile tank to large machines, place sorbent material around the fuel inlet prior to dispensing, and use pumping equipment, an approved hose and top-fill nozzle;
- Verify that there is a proper connection between the fuel fill hose and the fill pipe of the tank, mobile refueling tank or the equipment being filled, and verify that the fill valve is open;
- Do not overflow the receiving tank;
- While refueling, suspend operation of moving equipment in the immediate vicinity of the refueling; and,
- Maintain regular inspections of fuel systems and their components (check for leakage, deterioration or damage).

7.1.2 Refueling Marine Equipment

- Refueling procedures specific to marine based equipment used for construction of the piles and wharf structure will be developed and provided by the marine subcontractor(s) as part of marine Work Methods.

7.1.3 Jerricans

- Smaller equipment can be refueled using CSA approved jerrican(s); and,
- When not in use, jerricans should be placed in portable secondary containment rather than placed directly on the ground;

8 WASTE MANAGEMENT PLAN

8.1 Non-hazardous Waste

Construction will produce various forms of solid non-hazardous waste including but not limited to land clearing debris, surplus or defective construction materials (e.g., scrap lumber and wood products, scrap steel, scrap plastic), garbage (e.g., waste food, paper and other garbage produced by workers), waste vegetation debris, topsoil and excavation spoil, demolition debris (e.g., old asphalt and concrete), and other non-hazardous solid waste. Construction waste management will comply with relevant regulatory requirements and institutional constraints. In addition, commercially reasonable efforts will be made to sort non-hazardous solid waste onsite for the purpose of reusing and recycling.

Collection, sorting and temporary on-site storage of non-hazardous solid waste will occur on the Project site while removal of non-hazardous solid waste from the Project site for off-site disposal is expected to rely mainly on licensed solid waste haulers. Off-site disposal will use existing Metro Vancouver or municipal waste management processes or infrastructure (i.e., approved regional/municipal waste transfer stations and landfills).

A waste recycling program for office waste will be implemented for at the field office. Recyclable office wastes include, but are not limited to: paper, cardboard, some metals, bottle and glass, and cans. Recycling bins will be maintained within the site. Site personnel will be responsible for recycling their own lunch waste at these or off-site facilities during each working day.

Field personnel will receive site orientation training in the implementation of the Waste Management Plan. Further hazardous waste handling training may be necessary depending on the duties of the individual. It is expected that all environmental, maintenance and logistics/material handling personnel will receive further training in this regard.

A list of relevant emergency contacts including internal environmental personnel, regulatory agencies, private spill clean-up companies and municipal contacts is provided in the Emergency Spill Response Plan (Section 6.0) of this CEMP.

General, non-hazardous waste mitigation measures include:

- a waste minimization policy for procurement of construction materials and services (e.g., request suppliers to minimize packaging);
- Maintaining general site cleanliness (i.e., “good housekeeping”) by cleaning up construction debris, garbage and other non-hazardous solid waste materials on a regular basis;
- Removing non-hazardous solid waste for off-site disposal at an appropriate frequency (e.g., before on-site containment facilities become overfilled and before garbage becomes too smelly);
- Removing food and/or domestic waste from the construction site on a daily basis or, if such waste is to remain on-site overnight, store in animal resistant waste receptacles;
- Managing concrete related waste according to its characteristics (cured, uncured, washwater). In the case that batch plants are used, the Concrete Code of Practice will be adhered to;

- Posting key waste management information at each work site for easy reference;
- Providing site specific training on relevant waste management strategies and expectations;
- Construction personnel should provide feedback on waste management practices to correct methods that are not working or are too difficult to follow;
- Implementing site security and/or individually secured bins to prevent the public from gaining access to bins and possibly contaminating recyclables (for example, by disposing of their garbage in recycling bins); and,
- Removing non-hazardous solid waste material that is discovered in or adjacent to watercourses or other environmentally sensitive areas within the project right-of-way and dispose off-site in compliance with applicable environmental requirements.

8.2 Hazardous Waste

Improper management of hazardous waste can pose a risk to the health and safety of personnel and the public. Release of hazardous waste can result in land and/or water contamination, be lethal to wildlife and fish, and harm or destroy habitat.

All hazardous waste will be handled in compliance with the Workplace Hazardous Materials Information System (WHMIS) and will be properly labeled; up-to-date Material Safety Data Sheets (MSDS) will be maintained and located in the site office easily accessible for all personnel. Efforts will be made to minimize the storage locations and duration of hazardous waste. Hazardous wastes will be disposed of in accordance with the BC Environmental Management Act and the Hazardous Waste Regulation.

8.2.1 Demolition

A hazardous building material assessment (*Pre-Demolition Hazardous Building material Assessment – 95 Brooksbank Avenue, North Vancouver, British Columbia, September 2, 2015*) was conducted for the existing structures that are required to be demolished prior to the start of construction. The Assessment identified the presence of the following hazardous building materials:

- Asbestos-containing materials (ACMs);
- Lead-based coatings (LBCs);
- Ozone-depleting substances (ODSs);
- Elemental mercury; and,
- Polychlorinated biphenyls (PCBs).

As demolition proceeds, these hazardous materials will be treated as hazardous waste.

Recommendations on the safe handling, disposal and proper documentation for each type of hazardous waste is provided in the Assessment. These recommendations and any associated legal requirements will be implemented by the Project Team during the demolition phase.

8.2.2 General Mitigation Measures

In addition to the hazardous waste generated during the demolition phase, certain types of hazardous waste may be generated during construction. Hazardous waste generated during construction may include, but are not limited to, fuels, bitumen, oils, raw and uncured concrete, mortar, glues, lubricants, organic and inorganic contaminants, paints, solvents, cleaners, dust suppressants, and used filters.

Maintenance wastes (e.g., batteries, by-product oils, oily rags) generated in the maintenance area will be segregated from active work areas in a centralized location within the maintenance shop. Only drums that are actively being used will be in these locations.

Containers used to store hazardous by-products will meet the following criteria:

- Be in good condition with no visible defects that could result in leaking or spilling of by-products;
- Be leak-resistant and include seals containing liquid by-products;
- Will have removable tops if storing non-liquid by-products; and
- Be kept upright and closed at all times unless adding or removing contents.

Clearly label containers with the following information:

- “Hazardous By-Product” or “Used Oil For Recycle”;
- Name of the by-product (e.g., Used Oil);
- Type of hazard (e.g., toxic, ignitable); and
- Once filled, the date the container was placed in the storage area.

All efforts will be made to immediately remove from site any full hazardous waste containers. However, there may be periods where short-term storage of these containers may be required. In this case, accumulations of full hazardous waste and used oil containers will be stored in a centralized area or building designed to ensure non-compatible by-products are segregated and located in designated areas to optimize control. Storage areas will be:

- Marked/signed to ensure proper segregation;
- Locate hazardous material storage areas on level ground located a minimum of 30 m from streams and other Environmentally Sensitive Areas (ESAs);
- Secured (e.g., barricaded or fenced and locked) to keep unauthorized personnel out of the area;
- Protected with barriers/bollards as necessary to keep equipment, and vehicles from entering;
- Covered to keep out rainwater;
- Sized appropriately to store anticipated quantity of waste with sufficient space between drums to permit the required visual inspection;

- Signed to identify the hazard (e.g., Flammable — No Smoking or Open Flame Within 15 Meters, Hazardous By-product);
- Provided with covered secondary containment (e.g., soil berm with a high density polyethylene (HDPE) liner or manufactured secondary containment system) designed to contain 125% of volume of the largest container;
- Equipped with fire extinguisher(s);
- Equipped with spill kits appropriate to the type and amount of hazardous waste stored;
- Located away from existing drainage paths to offsite areas to prevent accidental spills from reaching sensitive areas; and
- Locate temporary hazardous waste storage areas a minimum 30 m from streams or other Environmentally Sensitive Areas (ESAs).

Manage the centralized hazardous waste storage area as follows:

- Only authorized personnel access the area;
- Log all incoming and outbound material such that an inventory of onsite hazardous materials can be kept;
- Environmental Coordinator and/or Maintenance personnel will maintain inspection records;
- Maintain sufficient space between drums/containers to allow access during emergency response situations; and
- Segregate incompatible materials from each other.

Hazardous waste will be transported in compliance with the Transportation of Dangerous Goods Act and the BC Hazardous Waste Regulation, by appropriately licensed waste transporters. Onsite personnel responsible for handling and receiving/shipping hazardous wastes will be appropriately trained.

A written record of inspections will be maintained to document the date, type and amount of by-products deposited in the storage area. Only authorized Project personnel will have access to hazardous by-product storage areas. All hazardous waste vendors will go through an internal approval process prior to being used on the Project.