Appendix E

Construction Environmental Management Plan

Vancouver Fraser Port Authority
CP Cascade Capacity Expansion Project
Updated July, 2019 – 18-7764

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CANADIAN PACIFIC RAILWAY

Construction Environmental Management Plan

Cascade Capacity Expansion Project

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1.0 Introduction

Canadian Pacific Railway (CP) is proposing to expand existing railway infrastructure to increase capacity along a section of their mainline right-of-way (ROW) on the Cascade Subdivision. The Cascade Subdivision is one of CP's busiest subdivisions and the proposed Project will expand rail capacity into and out of the Port of Vancouver. Growth in freight volumes into and out of port facilities on the south shore of the Burrard Inlet requires an increase in rail capacity on the west end of CP's Cascade Subdivision. A section of third track will increase track capacity and will reduce potential delays to both freight and passenger train traffic through the area on the mainline tracks. The proposed lead/service track will be situated within CP's ROW on the north side of the existing mainline tracks. The addition of the proposed switching lead/service track will require extending the embankment by the addition of structural fill and large rock rip rap into the riparian and foreshore areas of Burrard Inlet at several locations. The Project will also include the construction of three beaches on two sites as fish habitat offsetting: two situated east of Barnet Marine Park in Burnaby; and one west of New Brighton Park in Vancouver.

1.1 Purpose of the Construction Environmental Management Plan

The Construction Environmental Management Plan (CEMP) describes the environmental performance standards and responsibilities of the Contractor(s) in executing the Project. This CEMP describes the site-specific mitigation measures and Best Management Practices (BMPs) which will be implemented by CP and any Contractors on-site.

The following sections are contained within this CEMP:

- Identify Project information location, scheduling, and contact information. Specify environmental roles and responsibilities. (**Section 1.0**);
- Identify key environmental features and values in the area that could be potentially affected by Project construction (**Section 2.0**);
- Identify environmental regulatory requirements (**Section 3.0**);
- Identify elements of the work that could present a risk to the receiving environment and identify BMPs and/or work procedures that will be followed to minimize environmental risks (**Section 4.0**);
- Provide a protocol to respond to chance archaeological finds (**Section 5.0**);
- Provide a protocol to respond during emergency situations or spills (**Section 6.0**);
- Provide direction regarding post-construction follow-up and conclusion (**Sections 7.0** and **8.0**); and
- Provide environmental spill response planning and incident reporting procedures (**Appendix B**).

The guidelines and procedures addressed herein apply to all on-site activities. CP and Contractors will undertake Project activities in strict compliance with the direction provided in this CEMP and the conditions contained in the applicable authorizations, permits, licenses, and approvals from the

environmental regulatory agencies. In addition, CP and Contractors will rely on Dillon to assist in the implementation of BMPs as appropriate. Overall, the intent of this CEMP is to provide guidance to CP and Contractors to help them meet or exceed environmental compliance requirements. This will also assist CP in achieving its overarching goals and standards in relation to environmental management and sustainability.

This CEMP is not intended to address health and safety issues during the construction of the Project. Work by Dillon, CP or other Contractors on-site will be conducted in accordance with WorkSafe BC Standards.

1.2 Project Location and Scope

The proposed Cascade Capacity Expansion Project is located between Reed Point Marina and Mile 118.82 along the shoreline of Burrard Inlet (**Figure 1**) and crosses the municipalities of the City of Port Moody and the City of Burnaby. The proposed service track is to be 1,100 metres (3,600 feet) in length and situated on the north side of the existing mainline tracks, and include the intertidal and riparian zones. The proposed offsetting areas are situated east of Barnet Marine Park in Burnaby, as well as west of New Brighton Park in Vancouver and include the intertidal and riparian zones and include the intertidal and riparian zones.

The Project Area extending approximately 450 metres to the west from the existing Burrard Terminal to the western extent of the proposed alignment is hereafter referred to as Area 1 (**Figure 2**); the Project Area extending approximately 294 metres to the east from the existing Burrard Terminal to the west end of the Reed Point Marina parking lot is referred to as Area 2 (**Figure 3**). The area between Areas 1 and 2 is referred to as Area 3 (**Figure 4**).

Canadian Pacific

Cascade Capacity Expansion Project

Figure 1.
Project Location

0 25 50 100 Meters

N W E S

SCALE 1:3,500

MAP DRAWING INFORMATION:
ESRI Basemaps, City of Burnaby (Imagery - 2017), and City of Port Moody (Imagery - 2012)

MAP CREATED BY: RBB
MAP CHECKED BY: RD,CN,PS
MAP PROJECTION: NAD_1983_UTM_Zone_10N

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PROJECT: 18-7764
STATUS: DRAFT
DATE: 2018-10-02

Legend

Canadian Pacific
Cascade Capacity Expansion Project

Figure 2.
Area 1 Assessment Location

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MAP DRAWING INFORMATION:
ESRI Basemaps, City of Port Moody (Imagery - 2012), AECOM

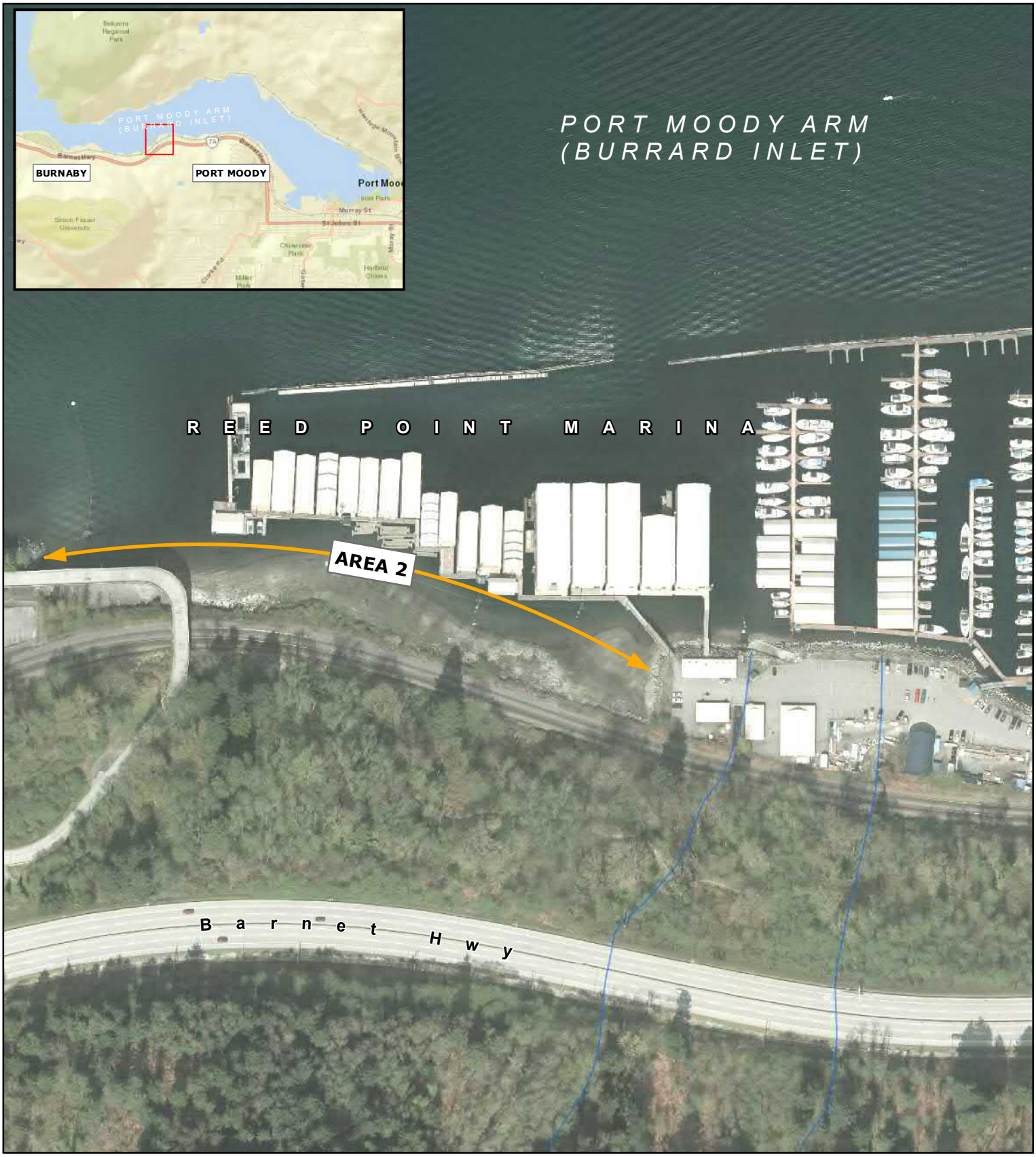
MAP CREATED BY: RBB
MAP CHECKED BY: RD,CN,PS
MAP PROJECTION: NAD 1983 UTM Zone 10N

0 12.5 25 50 Meters

SCALE 1:2,500

PROJECT: 18-7764 STATUS: DRAFT DATE: 2019-02-06

File Path: G:\GIS\2018\187764 Cascade 118\MXD\187764 - Cascade_Basemap_Area1_Location.mxd



File Path: G:\GIS\2018\187764 Cascade 118\MXD\187764 - Cascade_Basemap_Area2_Location.mxd

Legend

Canadian Pacific
Cascade Capacity Expansion Project

Figure 3.
Area 2 Assessment Location

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MAP DRAWING INFORMATION:
ESRI Basemaps, City of Port Moody (Imagery - 2012), AECOM

MAP CREATED BY: RBB
MAP CHECKED BY: RD,CN,PS
MAP PROJECTION: NAD 1983 UTM Zone 10N

0 12.5 25 50 Meters

SCALE 1:2,400

PROJECT: 18-7764 STATUS: DRAFT DATE: 2019-02-06

Legend

Canadian Pacific
Cascade Capacity Expansion Project

Figure 4.
Area 3 Assessment Location

DILLON CONSULTING

MAP DRAWING INFORMATION:
ESRI Basemaps, City of Port Moody (Imagery - 2012), AECOM

MAP CREATED BY: RBB
MAP CHECKED BY: RD,CN,PS
MAP PROJECTION: NAD 1983 UTM Zone 10N

0 12.5 25 50 Meters

SCALE 1:2,550

PROJECT: 18-7764 STATUS: DRAFT DATE: 2019-02-06

File Path: G:\GIS\2018\187764 Cascade 118\MXD\187764 - Cascade_Burrard_Terminal.mxd

1.3 Project Description

CP is proposing to expand existing railway infrastructure to increase capacity along a section of their Cascade Subdivision from Port Moody to Burnaby, British Columbia on the west end of CP's Cascade Subdivision. A section of third track will increase track capacity and will reduce potential delays to both freight and passenger train traffic through the area on the mainline tracks. The proposed new lead/service track will be situated on CP property on the north side of the existing mainline, and will require the widening of the existing slope/embankment onto the Burrard Inlet foreshore at several locations. The completed embankment and new track will be permanent structures. Three new beaches will also be constructed (i.e., two at the Suncor Beaches Site Proposed Lease Area; one at the Hastings Townsite Site Lease Area) as fish habitat offsetting and will be permanent structures; the Suncor Beaches Site will be constructed concurrently with the embankment and new track, while the Hastings Townsite Site will be constructed independently. Several temporary work areas are required to facilitate construction and will be removed following the completion of the Project.

Construction activities proposed for the development of the new lead/service track include: site access/egress preparation; vegetation clearing;; placement of structural fill and riprap; site clean-up; site restoration, and; demobilization. The toe of the expanded rail embankment and riprap is to extend up to 5 m beyond CP's right-of-way at a number of locations within the project area.

Temporary roads and work pads will be developed at the Project site to allow site access, facilitate construction, support machinery operation, and allow the movement of materials on-site. Some stockpiling of materials is also likely at these locations. Inbound (i.e., loaded) trucks, for example, will use the temporary work pads to turn, backup along the embankment footprint, and discharge fill or riprap at a predetermined location. All temporary work areas will be removed following the completion of construction; the temporary work areas at the Suncor site will be converted to fish habitat offsetting (see Section 8).

At present, a marine-based option has been identified as potential access and egress point to the Project site for the inbound and outbound movement of construction materials and equipment. A temporary unloading pad at the west side of the Project area will be constructed for accessing the work site and delivering/removing materials by marine barge.

1.4 Project Scheduling and Timing

A summary of the project schedule and milestones is provided in Table 1**,** below. Project work is scheduled to occur daily and within the Port of Vancouver's regular hours from Monday through Saturday between 7:00 am and 8:00 pm.

Table 1. Proposed Project Schedule and Milestones

Project Activity	Anticipated Timing
• Mobilization, start of construction[1]	• November 1, 2019
• Construction ○ Temporary isolation barriers for in-water works[2] ○ Temporary work areas[2] ○ Habitat offsetting areas ○ Embankment[3]	• November 1, 2019 – December 31, 2020
• Demobilization	• December 31, 2020
• New service/lead track in service	• April 30, 2021

[1] Mobilization, site facilities and temporary working areas, and access routes/track crossing.

[2]In-water temporary isolation barriers and temporary work areas below the high high water mark (HHWM) are anticipated to remain in place until December 31, 2020 to complete removal activities within the in-water work timing window (*i.e.,* August 16 – February 29).

[3]Includes track work which will occur above the HHWM or within temporary isolation structures.

1.5 Roles and Responsibilities

1.5.1 Proponent Responsibilities

CP is responsible for compliance with the requirements of applicable environmental legislation and other applicable legal requirements and the practices and procedures identified in the CEMP. CP is responsible for ensuring that all staff and subcontractors working on-site are familiar with and comply with the contents of the CEMP and environmental BMPs and that their employees and contractors and their subcontractors have appropriate environmental training including:

- Environmental Legislation and Regulations Awareness;
- Spill Prevention and Response;
- Working In and Around Water; and
- Archaeology and Cultural Resources Awareness.

Prior to the start of any construction activities, CP will confirm that the CEMP prepared by Dillon has been fully reviewed and checked, and complies with the requirements of the Contract and applicable laws. **Table 2** identifies the responsibilities of key personnel on the Project. For the duration of construction activities and following Project completion, CP will:

- Ensure that all appropriate environmental safeguards are planned and executed in the course of performing the work. This includes the timely acquisition and handling of any required permits, licenses, and notifications as required and executing the requirements of those permits appropriately;
- Keep environmental disturbances to the minimum necessary for accomplishing the proposed Project activities in compliance with BMPs outlined in the CEMP and as directed by the Environmental Monitor;

- Comply with any written or verbal directions given by Dillon's Representative or the Environmental Monitor to protect and preserve the environment as outlined in the CEMP or as deemed otherwise necessary;
- Take every precaution to avoid unnecessary impacts to the natural environment, both within and adjacent to the Project footprint;
- Ensure that good housekeeping practices are implemented for the duration of the Project; and
- Leave the job site in a safe, clean, and environmentally stable condition.

Table 2. Responsibilities of Key Personnel

Role	Responsibility	Name	Organization
CP's Representative	• Promotes and supports adherence to the requirements set out in the CEMP and other applicable legislation. • Communicates environmental responsibilities and requirements of the CEMP to CP staff and contractors and their subcontractors. • Ensures that applicable CP staff and contractors and their subcontractors are appropriately trained to prevent or mitigate environmental impacts. • Addresses deficiencies and any non-compliance items raised by the Environmental Monitor through CP staff and contractors and their subcontractors.	Chris Dane (Environmental Permitting Specialist)	CP
Environmental Monitor	• Reviews and understands the CEMP and communicates requirements to contractors and their subcontractors. • Ensures compliance with the CEMP through regular and appropriate monitoring according to conditions and planned activities at the site. • Advises on issues of non-conformity to the CEMP. • Has the ability to stop work if environmental damage is imminent. • Maintains appropriate records/photos of site visits, activities, compliance with the CEMP and risks to the environment. • Completes environmental monitoring reports at an agreed upon frequency. • Ensures appropriate regulatory bodies are notified as needed or appropriate in the event of CEMP non-compliance or an environmental incident.	To be determined	Dillon Consulting Limited
Construction Contractor	• Provides oversight on day-to-day implementation of the CEMP. • Interacts with the Environmental Monitor to ensure environmental protection through effective implementation of CEMP mitigation and by responding to non-conformances that may arise. • Coordinates appropriate response in the event of a spill or environmental incident.	To be determined	To be determined

1.5.2 Environmental Monitor Responsibilities

The Environmental Monitor is responsible for ensuring the environmental protection objectives established by CP, DFO, and VFPA are met by ensuring compliance with the CEMP and applicable environmental legislation. The Environmental Monitor is responsible for ensuring that all staff and subcontractors working on-site are familiar with and comply with the contents of the CEMP and Environmental BMPs.

Primary responsibilities of the Environmental Monitor are outlined in Table 2; however, they are subject to change according to the methods, needs and scope of the Project. For the duration of construction activities and following Project completion, the Environmental Monitor will:

- Review and understand the CEMP;
- Communicate the requirements of the CEMP to CP and its contractors and their subcontractors and assists with implementation of mitigation and BMPs;
- Ensures compliance with the CEMP through regular and appropriate monitoring according to conditions and planned activities at the site;
- Advise on issues of non-conformity to the CEMP;
- Be present during key monitoring stages such as during activities conducted below the high water mark, installation of erosion and sediment control measures and during Project start-up;
- Adjust monitoring frequency according to weather conditions, planned site activities and in consultation with permit holders and regulatory agencies;
- Conduct routine and random inspections of construction activities and practices at an appropriate frequency based on the work planned;
- Be available on-call in case of emergency environmental concerns during low risk work activities;
- Attend environmental pre-job meetings with CP staff as required;
- Stop work if environmental damage is imminent or occurring;
- Maintain appropriate records including photos and documentation of site visits, activities, compliance with the CEMP and risks to the environment;
- Complete environmental monitoring reports at an agreed frequency to the permit holder, VFPA and other regulatory bodies as required for permit conditions. An example Monitoring Report is provided in **Appendix A**; and
- Ensure appropriate regulatory bodies (i.e., VFPA, DFO) are notified in the event of an environmental incident (*e.g*. discharge of deleterious substances into a waterbody; work and/or removal of vegetation in or near waterbodies without regulatory approval; death of fish or wildlife, etc.).

1.5.3 Contractor Responsibilities

Prior to the start of any construction activities, the Contractor(s) will review and familiarize themselves and any subcontractors with the CEMP. For the duration of construction activities and following Project completion, Contractor(s) will:

- Ensure that appropriate environmental safeguards are executed in the course of performing the work;
- Comply with the Project permits and authorizations as well as any applicable federal, provincial and municipal laws, regulations or policies;
- Keep environmental disturbances to the minimum necessary for accomplishing the proposed Project activities in compliance with BMPs outlined in the CEMP and as directed by the Environmental Monitor;
- Comply with any written or verbal directions given by Dillon's Representative or the Environmental Monitor to protect and preserve the environment as outlined in the CEMP or as deemed otherwise necessary;
- Correct any deficiencies and non-compliance issues, as soon as reasonably possible, ideally within 24 hours of written or verbal instruction;
- Take precautions to avoid unnecessary impacts to the natural environment, both within and adjacent to the Project footprint;
- Ensure that good housekeeping practices are implemented for the duration of the Project; and
- Leave the job site in a safe, clean, and environmentally stable condition.

A Project contact list will be maintained and circulated to key personnel throughout the construction phase of the Project. It will include the regulatory bodies that have input to the Project and other relevant contacts. A preliminary Project contact list has been prepared below (**Table 3**) and will be finalized and circulated before construction begins.

Table 3. Project Contact List

Name	Role/Company	Phone Number
Joe Van Humbeck	CP Proponent	403-319-6530
Paul Schaap	Environmental Lead at Dillon	604-351-1174
Chris Dane	CP Environmental Specialist	604-944-5829
Regan Elley	VFPA Contact	604-665-9594
Vance Mercer	DFO Contact	604-666-2427
	City of Port Moody Contact	
	City of Burnaby Contact	
	Construction Foreman	
	Site Engineer	
	Environmental Monitor	

1.5.4 Communication

Communication between all parties involved during each phase of construction is paramount to timely and efficient implementation of the CEMP. The following communication measures will be implemented:

- The CEMP will be made available to key representatives of the Project/Construction team prior to commencement of the proposed work and will be available at all times at the work site during construction;
- A pre-construction meeting(s) will be convened between CP, Dillon and those undertaking the construction of the Project to review the CEMP and to outline the roles and responsibilities of each party; and
- The construction lead and contractors and their subcontractors will ensure that the CEMP is accessible to their employees at all times over the duration of the construction period.

Construction and environmental monitoring reports outlining site activities will be prepared at an agreed upon frequency and forwarded to the appropriate CP Representatives.

Environmental incidents will be reported to CP's Representative and the Environmental Monitor immediately, so that appropriate notifications can be made and site management personnel can ensure that incidents are handled appropriately. For response to spill emergencies, refer to **Appendix B** (General Emergency Spill Response Plan) Spills will be promptly cleaned up and reported in accordance with regulatory agency requirements.

Representatives of the Indigenous communities, regulators and stakeholders will be informed immediately in the event of a spill, accident or malfunction potentially affecting the environment.

2.0 Environmental and Cultural Features of the Project Area

Elements of the environment potentially affected by construction of the proposed Project include the intertidal and subtidal zones of Burrard Inlet (marine habitat), riparian vegetation (i.e., trees, shrubs and herbaceous plants) situated between Burrard Inlet and CP's existing mainline tracks, and freshwater drainage pathways that convey surface and groundwater from areas south of the CP right-of-way to Burrard Inlet via culverts. Biotic diversity in both areas of the Project (i.e., Areas 1 and 2) is low with common species of barnacle, clam and crab being the most abundant within the intertidal/subtidal zones. Rockweed, sea lettuce and sugar kelp were the most common vegetation species. Five species of fish were observed during field surveys.

A preliminary archaeological assessment identified lands with high archaeological potential; however, local alterations of the area for industrial development have significantly reduced the archaeological potential. An archaeological impact assessment (AIA) was subsequently conducted through completion of a field program. The AIA indicated that the footprint of construction generally had low archaeological potential due to the sloping terrain and landscape alterations. One site with high potential was tested, but results were negative.

The Species at Risk that were observed during field investigation was the Great Blue Heron (*Ardea herodias*). The Great Blue Heron (*fannini)* subspecies is Blue-listed in BC and may be found within the Project Area; however, its presence in the Project Area is considered transitory. No colonies were observed during the site assessments.

Although the likelihood of occurrence in the Project Area is low, Species at Risk considered in the Fisheries Authorization and Vancouver Port Authority applications include the following:

- Leatherback sea turtle (Pacific population) (*Dermochelys coriacea*) – Endangered
- Northern abalone (*Haliotis kamtschatkana*) – Endangered
- Basking shark (Pacific Population) (*Cetorhinus maximus*) – Endangered
- Killer whale (Northeast Pacific Transient Population) (*Orcinus orca*) – Threatened
- Killer whale (Northeast Pacific Southern Resident Population (*Orcinus orca*) – Endangered
- Harbour porpoise (Pacific Ocean population) (*Phocoena phocoena*) – Special Concern
- Humpback whale (North Pacific population) (*Megaptera novaeangliae*) – Special Concern
- Grey whale (Eastern North Pacific population) (*Eschrichtius robustus*) – Special Concern
- Stellar sea lion (*Eumetopias jubatus*) – Special Concern
- Green sturgeon (*Acipenser medirostris*) – Special Concern

Detection of any of these or other Species at Risk on-site within the Project Area or immediately adjacent to activities occurring in the Project Area that may cause harm to the Species at Risk would

require immediate cessation of activities and reporting to the Environmental Monitor and the appropriate regulatory authorities. Impact mitigation plans would then be developed prior to the re-initiation of construction.

3.0 Regulatory Background and Requirements

As a federally-regulated entity, CP is required to comply with the following applicable federal environmental legislation (**Table 4**):

Fisheries Act

The *Fisheries Act* is the primary federal legislation providing protection for all fish, fish habitat, and water quality and is administered by DFO and Environment Canada. The overarching goal of the *Fisheries Act* is to prevent "serious harm" to fish and fish habitat that support a commercial, Aboriginal or recreational fishery.

Dillon has submitted a "Request for Project Review" to DFO for the proposed Project.

Species at Risk Act

The federal *Species at Risk Act* (SARA) comprises legislation that prohibits the killing, harming, harassing, capturing or taking of species at risk, or destruction of their critical habitats. Background review and site assessments of the area have indicated that there is a low risk for rare and/or endangered species to be present in the Project Area.

Migratory Birds Convention Act

The *Migratory Birds Convention Act* prohibits the taking or killing of migratory bird nests and eggs, and the deposition of harmful substances in areas frequented by migratory birds. Vegetation removal that will affect trees used by all birds and other wildlife must be avoided while they are breeding, nesting, roosting or rearing young.

Other Guidance Documents

Other applicable federal and other environmental standards, guidelines and Best Management Practices are available for application during the proposed capacity expansion Project.

Table 4. Summary Table of Relevant Environmental Legislation

Act, Regulation or Bylaw	Applicability	Approval or Permit in Place/Forthcoming
Fisheries Act	The proposed work will include vegetation clearing and re-planting, minor excavation of soils, placement and grading of structural fill, use of industrial equipment, and placement of riprap shoreline protection material below the high water mark, as well as the construction of three beaches as fish habitat offsetting. Instream work within isolation barriers will also be completed.	Application for Authorization under Paragraph 35(2)(b) of the Fisheries Act currently under review by DFO. Scientific Fish Collection Permit

Act, Regulation or Bylaw	Applicability	Approval or Permit in Place/Forthcoming
Species at Risk Act	Although the potential is unlikely, several Species at Risk have been identified as potentially occurring on or near the Project Site.	QEPs have completed surveys and background review for Species at Risk and developed appropriate BMPs and mitigation measures.
Migratory Bird Convention Act	Vegetation clearing required for proposed work at Project Site.	Vegetation clearing will take place during the window of least risk; appropriate BMPs will be in place and enforced by Environmental Monitor on-site.
VFPA Fee Schedule	VFPA fees are applicable to all parties granted the right by VFPA to occupy lands owned, managed, or administered by VFPA.	VFPA Category C application in progress; Any activities that have associated fees (*e.g.* operation of non-road diesel engines) will require approval by VFPA and applicable fee payment.

Although not required to comply, CP has considered provincial, municipal and other regulations when developing this CEMP and has integrated the associated BMPs to reduce the environmental impact of the Project and as a measure of good faith to comply with other stakeholder's legislation and regulations. Other legislation and regulations considered during development of this CEMP include the following:

- *Environmental Management Act*;
- BC *Wildlife Act*;
- BC *Weed Control Act*;
- *Water Sustainability Act*;
- *Heritage Conservation Act*; and
- Relevant City of Port Moody and City of Burnaby Bylaws.

4.0 Best Management Practices for Construction

The Project has the potential to result in negative effects to fish and fish habitat; this includes the potential for "serious harm" to the broad definition of fish and their habitats under the *Fisheries Act*. This section outlines the impact avoidance and mitigation measures and BMPs that will be applied during construction of the proposed Project and which will be overseen by the Environmental Monitor. Regarding the frequency of environmental monitoring, it is anticipated that the Environmental Monitor will have a significant presence on-site during Project initiation, the establishment of environmental controls, and key activities taking place in areas where sensitive environmental features/functions may be affected. Initially, frequent monitoring is anticipated to assess the efficacy of environmental controls. The requirement for visits to the Project site will subsequently be reduced as construction proceeds and, in particular, once construction activity is above the high water level of Burrard Inlet.

4.1 General Practices

The following general measures and best-practices will be implemented:

- A Pre-construction Meeting will occur before site construction begins to ensure CP, Environmental Monitors and contractors on-site are familiar with the CEMP and associated BMPs and ensure appropriate equipment and personnel are in place to execute the CEMP and BMPs, as required;
- Contractors and site managers will review the CEMP and applicable guidelines and regulations prior to each Project phase or new activity;
- Contractors must be able to properly install any protection measures and understand BMPs used on the Project. If measures are not properly installed, they will not provide the necessary environmental protection; therefore, the measures will not be in compliance with the CEMP;
- Appropriate supplies (*e.g.*, rock, gravel, grass seed, silt fencing, staking, polyethylene sheeting) required to execute BMPs (*e.g.*, erosion and sediment control measures) must be readily available on-site in sufficient quantities for the site;
- Project activities with the potential to cause environmental harm during inclement weather, will be scheduled for dry or fair weather whenever possible to minimize the environmental impact. Project works that will not cause environmental harm will occur during times of extreme precipitation (*i.e.,* storm events of 25 mm of rain within a 24-hour period); and
- Site managers and contractors will be prepared to change existing mitigation measures and BMPs should they fail or be deemed inadequate by the Environmental Monitor or a regulatory agency. The Environmental Monitor will be notified of the changes to ensure they are adequately addressing the environmental concerns.

4.2 Site access, Mobilization and Laydown Areas

Prior to construction, details of access to the site, mobilization of equipment, hauling access and routes, equipment laydown areas, and re-fueling stations will be described and mapped in detail. The following

measures will be integrated into the design and designation of access routes and laydown areas and BMPs will be in place during construction to minimize the environmental impacts associated with access, mobilization and laydown:

- Mobilization will be planned to minimize the number of trips to and from the Project site;
- A laydown area for equipment and materials will be established and located on a flat, stable area where environmental risk is minimized;
- Stockpiling of rock containing fines, erodible sediment or fill material will not occur on-site unless it is covered and other appropriate BMPs applied to mitigate offsite runoff;
- Track out of vehicles from site will be managed (i.e., wheel wash station or cleaning of road ways) to reduce dispersion of sediment and material offsite;
- Material brought to site by barge will be delivered under appropriate tidal conditions; and
- Grounding of barges will not be permitted.

4.3 Air Quality

Construction activities can cause adverse impacts to local air quality. The following mitigation measures will be implemented to mitigate concerns regarding the potential degradation of local air quality during construction:

- No on-site burning of cleared vegetation or other construction-related materials will be permitted;
- Mechanical equipment that is required on-site will be in good working order and will comply with local emissions standards;
- Idling of vehicles and equipment will be kept to a minimum;
- Low-sulphur fuels will be used for on-site machinery;
- CP's contractor will visually inspect vehicles and equipment. Vehicles or equipment producing excessive exhaust pollution will be repaired or replaced at their cost prior to being used on the Project;
- Loads of dusty material will be covered when entering or leaving the site;
- Track out of vehicles from site will be managed (i.e., wheel wash station or cleaning of road ways) to reduce dispersion of debris and dust; and
- Dust-generating activities will be minimized as much as possible during windy periods to minimize airborne dust emissions. Water or some other environmentally acceptable dust suppressant and appropriate application equipment will be available to be used as needed. Chemical dust suppressants will not be used. Runoff from dust suppressant agents will be considered under Sections 4.6, 4.7, and 4.8.

4.4 Construction Noise

Short-term noise generation will result from construction equipment and associated activities during Project construction. The following general measures will minimize the potential for construction-related noise effects:

- Equipment will be properly maintained to limit noise generation and fitted with functioning exhaust and muffler systems;
- Equipment and machinery will be turned off (as appropriate and in compliance with Section 4.3 Air Quality) when not in use;
- As much as possible, construction activities will be coordinated with daytime periods;
- CP will consider municipal and regional (e.g., VFPA) noise bylaws and will, if applicable, apply for exemptions; and
- Noise monitoring will be conducted during noisy activities to ensure the predicted impacts are not exceeded, particularly during any marine aquatic pile driving (although this activity is not currently anticipated).

4.5 Machinery and Equipment

It is anticipated that heavy equipment and machinery will be necessary for on-site Project activities. The Contractor(s) shall provide a list of equipment and machinery to be used on-site during construction and identify the equipment type, fuel type, year of manufacture and engine power rating for each piece of equipment. This list will be provided to CP and the Environmental Monitor to ensure distribution to the relevant regulatory agencies. Mitigation measures in place to reduce the impact of machinery and equipment on-site are as follows:

- Equipment will be properly maintained and in good working order to prevent leaks or transmission of noxious fumes;
- Equipment should be inspected daily, and any identified wearing parts will be replaced and leaks repaired;
- Equipment will be cleaned prior to arrival on-site and before demobilization from the site in order to reduce the potential for the spread of invasive plant species;
- Machinery working in or around water will have marine grade fluids and oils;
- Machinery working in or around water will utilize biodegradable hydraulic fluid where its use is compatible with the manufacturer's specifications of construction equipment required to achieve project-specific construction objectives;
- A spill containment kit will be readily accessible on equipment and at a central location within the site (See Section 6.3);
- Equipment will be operated at optimum rated loads and turned off when not in use;
- Refueling of equipment will occur on land and at least 30 metres from any waterbody where possible. Tow-vessels bringing barges to site will not be refueled within the Project Area. Appropriate spill prevention and containment measures will be in place at all times during refueling or during the use of petroleum or other harmful chemicals on-site; and
- Light pollution will be minimized by pointing lights downward and placing task lighting as close to the work area as possible.

4.6 Erosion and Sediment Control

CP will comprehensively address erosion and sediment control (ESC) issues as directed by the Environmental Monitor and outlined in this CEMP throughout the duration of the Project to prevent the mobilization and deposition of sediment. The following mitigation measures have been developed to minimize the effects of construction on the aquatic habitat of Burrard Inlet:

- Erosion and sediment control equipment and devices will be readily available and in sufficient quantity on-site. Construction team members will be trained in the appropriate installation and use of ESC equipment. The Environmental Monitor will review installation and approve placement prior to work beginning;
- Construction team members will be prepared to install ESC equipment and measures quickly to minimize sediment entering receiving waterbodies. The overall goal is to isolate the work area and prevent any potential sediment laden runoff from entering a waterbody;
- Isolation barriers (*e.g*. floating silt curtain, coffer dam, or equivalent) will be installed during periods of in-water work in areas where fine-grained substrates are present to isolate the site and contain sediment that may be conveyed from the construction footprint (the installation of large rip rap associated with the offsetting habitat in areas of coarse-grained substrate will occur without isolation);
- Exposed soil and sediment on-site will be minimized through phasing of construction activities, retaining as much vegetation as possible, or covering erodible exposed areas with an appropriate temporary material (*e.g*., plastic sheeting or filter cloth);
- Disturbed areas with exposed soil will be stabilized at the end of construction through the effective use of soil cover (*e.g*., vegetation, straw mulch, erosion control blankets) to minimize soil erosion;
- Project activities with the potential to cause environmental harm during inclement weather, will be scheduled for dry or fair weather, whenever possible, to minimize erosion and sediment concerns. Additional ESC measures may need to be erected during or in anticipation of heavy precipitation. Minimal or no Project works will occur during times of extreme precipitation (*i.e.,* storm events of 25 mm of rain within a 24-hour period);
- Areas that are not part of the final footprint of construction will be re-vegetated to prevent potential surface erosion and siltation of aquatic habitat;
- Exposed soil on steep grade will be protected at the end of construction from surface erosion (*e.g*., hydroseeding with a heavy mulch, tackifier, and seed mix or by installing erosion blankets);
- ESC structures will be inspected regularly and after storm events of 25 mm of rain within a 24-hour period. Repairs will be completed as required;
- Machinery will not enter a wetted area unless appropriate approvals have been obtained to do so and proper site isolation, if required, has been installed;
- Site grading activities with the potential to cause environmental harm, will not be completed during periods of inclement weather; and

- Sediment-laden water exceeding discharge limits will be retained or treated on-site until concentrations reach an acceptable level.

4.7 Soil Management

Only small areas of soil will be managed during the proposed Project construction. Suitable soils and other materials will be repurposed for the construction of the fish habitat offsetting (*e.g.*, beaches). Excavated unsuitable soils will be excavated by machinery, removed from the site by truck and disposed of at an approved facility. It is not anticipated for there to be contaminated soils on-site, stockpiling of soils, or fill on-site. Imported materials will be structural fill and railway-specific materials such as ballast and riprap that will be sourced from CP's pits and quarries.

4.8 Water Management

Surface water management will be required – particularly during months of precipitation. Surface water leaving the Project site will be required to meet or exceed federal water quality standards. A primary source of potential water quality degradation is related to erosion and sedimentation; however, other sources of deleterious substances include equipment, machinery, and construction materials and substances. General mitigation measures to assist in preserving water supply and quality are provided below:

- The Environmental Monitor will regularly search for visual evidence of deleterious substances affecting freshwater and marine environments of the Project site;
- In-water works will be undertaken and completed in isolation (*e.g.*, temporarily diverting, enclosing or pumping water around the site), as required;
- Controls (*e.g.*, floating silt curtain, sand bags, silt fence, or equivalent) will be monitored for effectiveness and maintained as necessary; and
- The spill response protocol will be initiated if fuel, oil, coolant, or deleterious substance spills are observed; this may include vacuuming the contaminated material into a vacuum truck or secure container for off-site disposal at an approved facility.

4.9 Vegetation Management

Removal of riparian vegetation will be limited only to what is required to construct the proposed infrastructure and to provide adequate working space. Where appropriate, select areas of riparian vegetation not within the construction footprint (e.g., at the western Project limit) will be protected by snow fence, silt fence or some other barrier. No removal of this vegetation will occur. In addition, the following mitigation measures have been developed for vegetation management:

- Identification of a rare or sensitive plant or vegetation community on-site will require immediate notification to the Environmental Monitor and appropriate regulatory authorities;
- Vegetation will not be removed during bird nesting season (March 1 to August 31st) or will be done so only with approval by the Environmental Monitor or other QEP after completion of a nesting bird survey (Section 4.10);

- Visible work area boundaries will be maintained for the duration of construction;
- Vegetation clearing will be assessed by the Environmental Monitor;
- Burning and burying of vegetation and/or woody materials on-site will be prohibited; and
- Equipment will be maintained in a clean and weed-free condition.

A number of invasive plant species have been observed within and adjacent to the marine terrestrial vegetation at the site, including Japanese knotweed (*Polygonum cuspidatum*), Himalayan blackberry (*Rubus armeniacus*), policeman's helmet (*Impatiens glandulifera*), orchard morning glory (*Convolvulus arvensis*), and reed canary grass (*Phalaris arundinacea*). Reed canary grass is native to North America; however, it has tended to hybridize with Asian and European cultivars[1] and, as such, there is debate on whether it may truly be considered invasive in this region. Japanese knotweed is listed as provincially noxious under the Weed Control Regulation of the *Weed Control Act*.

Species-specific mitigation plans will be developed and integrated into the CEMP if removal of invasive species are necessary. Each plan will provide a series of mitigation measures to minimize the potential for the spread of invasive species both on- and off-site. The Environmental Monitor will work with the Contractor to ensure that employees have an understanding of requirements with respect to invasive species management. The Monitor will also assess the implementation of plans and adjust accordingly in response to conditions at the time of construction.

4.10 Wildlife Species Management

Habitat in and around the Project site provides nesting opportunities for numerous bird species. The nesting window for these species extends from March 1st to August 15th. As such, clearing of vegetation during this window is restricted unless a nest sweep is completed by a Qualified Environmental Professional following standard procedures to ensure that no active nests occur in the area identified for clearing. If a nest is observed, the Environmental Monitor will establish a species-specific buffer around the nest that will be maintained until all young have fledged.

Construction personnel will not feed, harass or otherwise interact with wildlife species at the Project site. Organic and food waste will be managed to avoid attracting wildlife to the site.

Identification of a rare or sensitive species on-site require immediate notification to the Environmental Monitor and appropriate regulatory authorities. Work will halt in proximity to the species observed and management plans will be developed as appropriate, before work resumes.

[1] e-Flora BC atlas: http://linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Phalaris%20arundinacea

4.11 Working In or Near Water

The Project will occur within and adjacent to Burrard Inlet as well as drainage pathways that convey surface and groundwater from upland areas to marine habitat. Working in or near the marine and freshwater environment is applicable to the proposed Capacity Expansion Project.

Work activities will occur below the high water mark of Burrard Inlet, and within the annual window of least risk to Marine/Estuarine fish and fish habitat (August 16 – February 28 for Burrard Inlet). Due to the seasonal tide cycles at the time of proposed instream works, working at low-tide is not possible. Therefore, mitigation measures for construction works in or near water have been developed for working under high-tide conditions. A summary of these mitigation measures is provided below:

Works occurring in or near marine water with fine-grained substrate

- Isolation barrier (*e.g.*, floating silt curtain, sheet-piles, aquadam, or equivalent) will be installed to isolate construction activities from Burrard Inlet;
- A fish and marine life salvage will be conducted within the isolated area prior to the commencement of in-water works.
- Turbidity monitoring will be conducted by an Environmental Monitor; and
- Isolation barrier will be removed following the completion of in-water construction activities.

Works occurring in or near marine water with coarse-grained substrate

- Isolation barrier (*e.g.*, floating silt curtain, sheet-piles, aquadam, or equivalent) will not be installed for in-water works in marine areas with coarse-grained substrate;
- The embankment and offsetting (i.e., beach and reef structures) will be constructed using large excavators with thumb bucket attachments or a barge using a clam-shell bucked to place the riprap on the coarse-grained substrate in a manner that minimizes sediment mobilization;
- If the embankment or beaches are constructed in a manner that isolates in-water areas (e.g., the beach wave-trip is constructed first), a fish and marine life salvage will be conducted within the isolated area prior to infilling within this area;
- Turbidity monitoring will be conducted by an Environmental Monitor.

Works occurring in or near freshwater

- Isolation barrier (*e.g.*, dam and pump, flume, or equivalent) will be installed to isolate construction activities from freshwater;
- To divert flow, the upstream isolation barrier will be installed first to divert flow around the work site; 100% of downstream flow will be maintained;
- Sediment-laden water from within the isolation area will be discharged to a vegetated area to allow sediment to settle prior to water returning to the watercourse downstream; other sediment and erosion control measures will be utilized, as needed;

- To re-establish flow, the upstream isolation barrier will be slowly removed to prevent a rush of water that may cause erosion and generate sediment. This water will be allowed to fill the culvert/channel where it will be held by the lower isolating barrier to promote the settlement of sediment;
- The lower isolating barrier will be removed slowly once the upstream water is clear; and
- Turbidity monitoring will be conducted by an Environmental Monitor.

Fish and Aquatic Life Salvage

- Fish and aquatic life will be excluded to the extent possible from active work areas through the installation of isolation barriers;
- Within in-water isolated work areas, fish and aquatic life (*e.g.*, sea stars, crabs) will be removed and relocated, as feasibility and safety allow; due to the seasonal tide cycles, removal of aquatic life during low-tide is not feasible; and
- Visual monitoring and hydrophone monitoring for the presence of marine mammals and impacts on fish will be conducted during impulse-generating activities such as pile driving (although this activity is not anticipated). Should a cetacean/marine mammal species at risk, or harbour seal, be observed within a species-specific exclusion zone, that activity will be temporarily suspended until the individual has left the exclusion zone or does not reappear within 30 minutes. If sound pressures over 30kPa are measured or distressed, injured or dead fish are observed following the initiation of pile driving, work will be halted and additional measures established to reduce the sound pressure waves before the work may resume; and

Turbidity Monitoring

- Turbidity monitoring will be conducted during in-water construction activities; and
- A turbidity monitoring plan will be prepared that outlines the sampling methodology (*e.g.*, location and frequency of sampling), exceedance thresholds, and response measures; in accordance with the Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Aquatic Life.

Other mitigation measures to be implemented during construction activities in or near Burrard Inlet include:

- Equipment will not operate beyond the Project footprint on the intertidal foreshore;
- A large spill clean-up kit, sufficient for use in Burrard Inlet (*i.e.*, including sufficient booms to contain a major spill), will be on-site during all construction work adjacent to the marine environment.

In the drainage pathways of the Project Area upslope of Burrard Inlet, fish habitat is limited to the contribution of food and nutrients to downstream habitat (*i.e.*, Burrard Inlet). Existing culverts are perched above the high water mark and habitat conditions and value of upslope pathways are limited by the absence of defined pathways, flow and other factors. Where appropriate, construction activities in

and around freshwater will follow BMPs described in the sections above and below (*e.g.*, erosion and sediment control, water management, hydraulic connections).

Please note that isolation methodology(s) to be applied will be determined by the Contractor with the approval of the Project Environmental Monitor.

4.12 Culvert Crossing Works

CP is proposing to repair/reline/extend eight culverts crossing the right-of-way during the proposed Project. The following mitigation measures will be implemented for works at the connections of constructed ditches and culverts:

- The work area will be isolated upstream with sandbags, road plates or other appropriate material;
- The isolated section of ditch/channel will be dewatered. Water will be pumped to the adjacent vegetation;
- If necessary, flowing water will be diverted around the site using a portable pump or flume;
- To re-establish flow into the new/repaired culvert and/or channel section, the upstream isolation barrier will be slowly removed to prevent a rush of water that may cause erosion and generate sediment. This water will be allowed to fill the culvert/channel where it will be held by the lower isolating barrier to promote the settlement of sediment; and
- The lower isolating barrier will be removed slowly once the upstream water is clear.

Please note that isolation methodology(s) to be applied will be determined by the Contractor with the approval of the Project Environmental Monitor.

4.13 Storage of Petroleum Products

Petroleum products (i.e., fuels, hydraulic fluids and lubricants) will be used during construction. Effective mitigation will be required to ensure that these materials are stored and managed appropriately and are not accidentally discharged to the environment. The following BMPs will be applied during construction:

- Petroleum products used on-site will be stored in a designated location that poses no risk of soil or surface water contamination. The designated storage area will be secure and clearly labelled and managed in accordance with local safety regulations;
- Impervious containment structures able to contain 110% of the maximum capacity of storage vessels will be installed and maintained around the storage vessels;
- Petroleum products will be handled in such a manner as to minimize leakage and spillage and to facilitate containment and recovery in the event of a spill. Petroleum products no longer required during construction will be removed from the site;

- Containers will be appropriately labelled and designated to be used for the temporary storage of used petroleum products. These containers will not be used for disposal of garbage or construction debris; and
- The site will be inspected on a regular basis to ensure that waste petroleum products and waste materials (e.g., oil cans, grease tubes, oily rags) are collected and properly disposed of at a location approved by regulatory authorities.

Storage areas for petroleum products will be inspected and monitored on an on-going basis during construction by the Environmental Monitor and/or Site Engineer.

Project construction will involve the operation of vehicles, equipment and machinery using petroleum products (i.e., fuels, hydraulic fluids, lubricants). There is, therefore, the potential for environmental damage to occur from accidental spills of petroleum to the surrounding environment with the resulting potential for soil or waterbody contamination. A re-fueling station will be designated on the site plan. To minimize the likelihood and potential environmental impact of a spill event, BMPs specific to fuel management to be implemented during construction include:

- On-site fuel and lubricant storage will adhere to applicable regulations and technical specifications (e.g., appropriate containment, areas away from drainage pathways, etc.), will not be stored within 30 meters of a waterbody where possible, and will be stored within appropriate secondary containment (an impermeable containment facility capable of holding 110% of storage tank contents);
- Vehicles, equipment and machinery will be kept in good repair to avoid leakage of petroleum products. Emergency spill response materials will be carried by equipment working on-site. Leaking equipment and/or equipment and machinery requiring maintenance will be immediately removed from the active work site to a maintenance area located at a suitable location approved by the Environmental Monitor and/or Site Engineer;
- Equipment will be monitored throughout the construction period to ensure that it is well-maintained and that there are no signs of leaking;
- Machinery working in or around water will have marine grade fluids and oils;
- Vehicle and equipment refueling, lubrication and maintenance will be conducted on flat surfaces in designated areas using appropriate spill prevention procedures;
- Equipment will not be refuelled within 30 metres of a waterbody where possible;
- Waste materials and liquids from servicing equipment will be properly packaged and removed from site daily;
- Refuelling equipment and tanks will be clean and in good working order;
- A controlled containment structure (e.g., drip tray) will be used when refueling/servicing equipment, as appropriate. Equip refuelling hoses with safety nozzles and automatic shut-off valves. Retain an on-site supply of synthetic absorbent material and/or spill kit on-site at fuelling locations; and

- Work areas will be inspected following construction for the visual presence of potentially contaminated soil (e.g., fuel or oil stains on the ground).

4.14 Spill Prevention and Readiness

Project construction will involve the operation of vehicles, equipment and machinery using petroleum products (i.e., fuels, hydraulic fluids, lubricants) and other substances that may be deleterious if released into the surrounding environment. There is, therefore, the potential for environmental damage to occur from accidental spills of petroleum or other products to the surrounding environment with the resulting potential for soil or waterbody contamination. To minimize the likelihood and potential environmental impact of a spill event, BMPs to be implemented during construction include:

- Review and approval of the Contractor's Project-specific Emergency and Spill Response Plan by CP or their Representative prior to commencement of site preparation and/or construction activities by the Contractor to ensure compliance with Project-specific environmental protection measures and commitments;
- Materials of a deleterious nature that could be spilled will be identified during the pre-construction meeting;
- Contractor's Emergency and Spill Response Plan must identify hazardous materials and products that will be used on-site and include their Material Safety Data Sheets on-site and make them available to construction team members;
- The names and contact information of persons responsible for the implementation of the Emergency and Spill Response Plan (Section 6.0) shall be made available to workers on-site including the Site Engineer and Environmental Monitor;
- Contractor personnel will be trained in proper spill containment and remediation procedures;
- On-site storage areas will be monitored throughout the construction period for signs of spillage or leakage of stored product; and
- Inspection and monitoring of equipment, storage, refueling/maintenance and construction areas will be regularly completed by the Environmental Monitor and/or the Site Engineer.

4.15 Concrete Works and Grouting

Although not anticipated under the current construction plan, if deemed necessary, concrete works and grouting will employ the following BMPs to prevent and minimize the potential for impacts on the receiving environment:

- Uncured or wet concrete will not be permitted to come in contact with precipitation or waterbody on-site;
- Concrete will be carefully poured and distributed to minimize spillage. Work will be completed in isolation of flowing water or other waterbodies (*i.e.*, when working near or below the high water mark);
- Proper housekeeping and appropriate work site isolation techniques will be employed to minimize the potential for spills;

- Recently poured concrete will be kept covered for a minimum period of 72 hours if in contact with water or if precipitation is anticipated; and
- Appropriate spill cleanup materials will be readily available, easily accessible, and in sufficient quantity on-site at all times during construction.

4.16 Solid Waste Management

Solid wastes generated during the Project will be removed from the site for recycling, where possible, or disposal. CP's contractor will adhere to applicable legislation/regulation with respect to the handling, transportation, and/or disposal of all Project materials including waste by implementing the following measures:

- Garbage will be removed from site on a regular basis;
- Recyclable or compostable materials will be collected separately from general waste according to Metro Vancouver Regional District requirements;
- Contractors will adhere to applicable legislation with respect to the handling, transportation, and/or disposal of all materials related to the Project. Regulations include, but are not limited to the BC Hazardous Water Regulations, Spill Reporting Regulations, Workers Compensation Board Regulations, Transportation of Dangerous Goods Regulations, etc.;
- The construction contractor will provide portable sanitary facilities on-site for workers' use throughout the duration of the construction period. The facilities will be serviced regularly by a qualified Contractor; and
- The construction contractor will provide properly labeled separate container(s) for potentially hazardous waste such as oily rags and hydrocarbon absorbent pads. Absorbent materials or soils contaminated with oil (greater than 3% by weight) or any quantity of gasoline will be handled and transported as Hazardous Waste. Contaminated soils will be excavated and hauled off-site to an authorized treatment/disposal area in accordance to the BC *Hazardous Waste Regulations*.

Upon completion of construction, CP will inspect the site to ensure that waste material has been removed and managed as described above.

5.0 Archaeological and Cultural Resources

In the event that buried archaeological or cultural resources are encountered during site operations, the contractor will immediately stop construction, notify CP's Representative and comply with the procedures identified below. Any item of particular archaeological, cultural or scientific interest found on the Project site will be the property of CP until further notice. CP will work with the Project archaeologist and appropriate authorities having jurisdiction to properly manage and protect such resources.

5.1 Archaeological/Cultural Sites Chance Find Guidelines

The following emergency impact management guidelines apply to archaeological and cultural sites. Emergency management procedures for suspected human burial sites are presented separately below.

Initial Response

Step 1: The construction contractor will immediately stop construction in the immediate vicinity of the archaeological or cultural site.

Step 2: The construction contractor will contact the CP Representative who will contact Project Archaeologist for further guidance.

Step 3: The construction contractor will wait for a response from CP and the Project Archaeologist regarding further action.

Initial Action

Depending on the nature of the situation, one of the following responses is likely:

- Based on a telephone description of the incident, it may be decided that there are no further concerns, allowing construction to continue as planned; or
- A field visit by Project Archaeologist may be required. In this case, CP or their agents will notify the appropriate Indigenous communities or organizations. It is anticipated that suitable protocols for such situations will be established in consultation with all interested parties.

Management Options

Based on direction from the Project Archaeologist and discussions with appropriate Indigenous communities or organizations, several options may be considered when determining how to proceed. CP anticipates this will constitute avoidance, implementation of protective measures, or salvage. Regardless, CP will not proceed without appropriate direction from the Project Archaeologist in consultation with Indigenous communities or organizations.

5.2 Chance Find Impact Management for Burial Sites

CP Initial Response

If definite or possible human remains are encountered:

Step 1: The construction contractor will immediately stop construction in the vicinity of the remains.

Step 2: The construction contractor will immediately contact the CP Representative who will contact the RCMP for further guidance.

Initial Action

CP anticipates that initial actions will be determined by the CP Representative, Indigenous communities or organizations and/or the RCMP. CP will not initiate any action until direction is provided as required.

Management Options

CP will implement management options as directed. CP is aware that removal of human remains and subsequent reburial might involve certain ceremonies or procedures that could delay construction. If CP has any concerns about possible archaeological, historic, or burial locations, the Project Archaeologist will be contacted for direction.

6.0 Emergency Response

In the event of an emergency, clear and rapid communication is essential to reduce the impact of an emergency situation on personnel and/or the surrounding environment.

6.1 Emergency Communication

Agency	Contact Number
Emergency Services	911
Burnaby RCMP Non-emergency	604-646-9999
Port Moody Police Department Non-emergency	604-461-3456
Burnaby Fire Dispatch Non-emergency	604-294-7190
Port Moody Firehall No.2 Non-emergency	604-931-1163
Port Moody Hospital (Eagle Ridge)	604-461-2022
VFPA Operations Centre	604-665-9086
Emergency Management BC Program (24-hour Report a Spill)	1-800-663-3456
CP Network Management Centre (NMC)	1-800-795-7851
Canadian Coast Guard (Kitsilano Station)	604-666-0295

6.2 Environmental Emergency Plan

Environmental emergencies that might occur during Project construction or on the Project site may include, but are not limited to:

- Reportable fuel spills;
- Sediment laden water leaving the site or entering a waterbody;
- Unauthorized harm or destruction to fish or fish habitat;
- Negative wildlife interactions; and
- Observation of a previously unidentified sensitive environmental feature.

In the event of one of these events, the Environmental Monitor and appropriate regulatory authorities should be notified as quickly as possible. The Environmental Monitor will assess and record all incidents and determine appropriate action.

6.3 Spill Response Plan

There is the low potential for environmental damage to occur from the accidental spillage of hazardous substances to the surrounding environment. Regardless, adequate spill response measures must be in place at all times during Project construction activities. To minimize the potential environmental impact

and ensure the proper management of a spill event, BMPs to be implemented during construction include:

- In the event of an accidental spill, initial response will be by the Contractor's designated on-site personnel and will follow these steps: 1) ensure safety; 2) stop the flow; 3) secure the area; 4) contain the spill (identification of product, equipment involved, affected area(s) and spill status); 5) Clean up the spill and 6) record and report the spill (Appendix B);
- Initial response will focus on minimizing the saturation of spilled material into the soils by using appropriate absorbent materials (e.g., pads);
- **All spills, regardless of quantity, are required to be reported to CP at 1-800-795-7851, as well as the Site Engineer and Environmental Monitor;**
- CP staff will liaise with the appropriate government agencies as required;
- **Any spill of a substance that is toxic, polluting or deleterious to aquatic life of reportable quantities must be immediately reported to the Emergency Management BC Program 24-hour phone line at 1-800-663-3456;**
- The Contractor will have the appropriate equipment available on-site to clean up the contamination and properly manage its removal and disposal; and
- Each piece of equipment must carry a 45L Spill Kit having the contents (or equivalent) described below. A 240L Rolling Bin Spill Kit having the contents (or equivalent) described below must be available at the designated equipment refueling location.

Table 5. Spill Supplies Necessary for Equipment Kit and On-Site Rolling Bin Spill Kit

TSKO/U Oil/Universal 45 Litre Truck Spill Kit Contents:	SRK 240 Litre Medium Rolling Bin Spill KitContents:
1 only Zippered Yellow All Weather Bag Part#: S46 15 only Oil Only White Perforated Pads Part#: WPB 100GL 15 only Universal Grey Perforated Pads Part#: GB100H 1 only 3" x 4' Oil Only Socks Part#: WSO 430 1 only 3" x 8' Oil Only Socks Part#: WSO 815 1 only 3" x 4' Grey Socks Part#: GSO 430 1 only Orange Disposal Bag Part#: OB3550 1 only Epoxy Stick for Metal Repair Part#: P1500	1 only Yellow rolling bin c/w lid Part#: GMT-240 1 only Large White Spill Kit Label Part#: A-KITLABEL 50 only Oil Only White Perforated Pads Part#: WPB 100ML 50 only Universal Grey Perforated Pads Part#: GB100H 2 only 3" x 4' Oil Only Socks Part#: WSO 440 2 only 3" x 8' Oil Only Socks Part#: WSO 815 2 only 3" x 4' Universal Socks Part#: GSO 440 2 only 3" x 8' Universal Socks Part#: GSO 815 1 only Orange Disposal Bag Part#: OB3550 2 only White Oil Only Pillows Part#: WPIL818 1 pair Green Nitrile Gloves Part#: 316 1 only Solid-A-Sorb Granular Sorbent, 2 lbs. Bag Part#: 715-2 1 only Epoxy Stick for Metal Repair Part#: P1500 1 only Plug N Dyke Plug Pattie, 10 oz. Part#: P2 1 only Chemical Splash Goggles Part#: 315 1 only Nitrile drain cover Part#: NDC36

Monitoring will be undertaken during regular environmental monitoring visits by the Site Engineer and/or the Environmental Monitor. Additional monitoring will be required if a spill occurs on-site to verify reporting and clean-up methods. Compliance with this directive will be monitored during site visits.

7.0 Post-Construction Follow-Up

Upon completion of construction activities, CP will leave all areas of the Project site stable and free of waste materials. As appropriate, disturbed areas outside of the Project footprint will be stabilized through seeding or another form of surface protection, as required.

Subsequent to completion of construction, CP will conduct five years of post-construction monitoring consisting of three monitoring objectives:

- ***Objective 1***: Document that Project activities have been completed in accordance with the applicable sections of the CEMP. This will include the following:
  - Establish permanent monitoring locations;
  - Identify monitoring criteria (e.g., quantity/quality) for "success" measurement; and
  - Evaluate the level of success achieved.
- ***Objective 2***: Document that Project off-setting habitat has been constructed in accordance with off-setting plans as follows:
  - Compare "as constructed" observations of completed Project with design plans including quantities, quality, species, etc. for "success" measurement; and
  - Evaluate the level of success achieved.
- ***Objective 3***: Document long-term functioning of off-setting habitat as follows:
  - Establish permanent monitoring locations;
  - Identify monitoring criteria (e.g., quantity, quality, evidence of use) for "success" measurement; and
  - Annually evaluate the level of success achieved culminating in a final evaluation of off-setting habitat function in Year 5.

If deficiencies are identified at any stage of the post-construction monitoring period, Dillon will provide an update to CP along with a series of suggestions for addressing these deficiencies in order to achieve the objectives of the Off-setting Plan. CP will address these deficiencies at their cost per the requirements of the CEMP.

8.0 Conclusion

Information presented in this CEMP is based on information provided in the *Request for Project Review* document submitted to DFO, discussions between CP and Dillon Representatives, and the knowledge and experience of Dillon staff. Should additional information become available that is relevant to environmental protection during construction of the proposed Capacity Expansion Project, the recommendations and findings of this CEMP will be revised.

Appendix A

Template Environmental Monitoring Report

ENVIRONMENTAL MONITORING REPORT

PROJECT INFORMATION

PROJECT NO. & NAME	18-7764 CP Cascade Rail Expansion
DILLON PROJECT MANAGER	Paul Schaap
SITE LOCATION	CP Rail between Mile 118.06 and 118.67
DATES OF VISITS	
WEATHER	
ENVIRONMENTAL MONITOR(S)	
REPORT SUBMITTED ON	
REPORT SUBMITTED TO	
CONTRACTORS WORKING ON SITE	

Construction Activities Performed

DATE: ACTIVITY

Construction Activity	Environmental Mitigation Observations, BMPs in place and Other Details
	•
	•
	•

DATE: ACTIVITY

Construction Activity	Environmental Mitigation Observations, BMPs in place and Other Details
	•
	•
	•

DATE: ACTIVITY

Construction Activity	Environmental Mitigation Observations, BMPs in place and Other Details
	•
	•
	•

Personnel Onsite

Name	Role/Company	Date(s)

Aquatic Salvage

Date	Number and Species Salvaged
	•
	•
	•

Water Quality

Were any turbidity or pH samples taken during the site inspection? YES NO
If yes, please provide sample location and reading:

Date	Location	Reading

Marine Mammal, Fish or Wildlife Observations and Interactions

•

Meetings/Communications and Issues Discussed

•

Issues or Concerns Raised and Measures taken to Address

Issue/Concern	Mitigated or Addressed through:
	•
	•
	•

Environmental Incidents

Detail any Environmental Incidents, Outcome and Reporting

Maps and Photos of Site

Include Photos and Maps as appropriate with appropriate descriptions

Appendix B

Spill Response Plan

General Spill Response Plan

If a spill of fuel, oils, lubricants, or other harmful substances occurs, the following procedures will be implemented:

1. Ensure safety.
2. Stop/contain the flow (when possible).
3. Secure the area.
4. Contain the spill.
5. Notify/report to CP's Representative and/or the Environmental Monitor.
6. Clean-up.

1) Ensure Safety

1. Ensure personal/public, electrical, and environmental safety.
2. Wear appropriate Personal Protective Equipment (PPE) and consult Material Safety Data Sheets.
3. Never rush in, always determine the product spilled before taking action.
4. Warn people in the immediate vicinity.
5. Ensure no ignition sources are present if spill may be a flammable material.
6. Only appropriately trained personnel should be responsible for cleaning up and managing the spill.

2) Stop the Flow (When Possible and Safe to Do So)

1. Act quickly to reduce the risk of environmental impacts.
2. Close valves, shut off pumps or plug holes/leaks, set containers upright.
3. Stop the flow of the spill at its source.

3) Secure the Area

1. Limit access to the spill area.
2. Prevent unauthorized entry onto the site.

4) Contain the Spill

1. Block off and protect drainage pathways. In the event of a spill onto the ground, a spill boom will be placed on the downslope side. The containment boom will be placed downstream where there is a spill to water. If on water, place booms around the spill to prevent the spread.
2. Prevent spilled material from entering drainage structures (i.e., local watercourses).
3. Use spill absorbent material to contain the spill.
4. If necessary, use a constructed dam or other method to prevent any discharge off-site.
5. Make every effort to minimize contamination.
6. Contain as close to the source as possible.

5) Clean Up

1. Use appropriate equipment to clean-up the spill based on the material spilled.
2. Technical assistance is available from the Environmental Monitor on clean-up procedures and residue sampling.
3. All equipment and/or material used in clean-up (e.g., used absorbent, oil containment materials, etc.) will be disposed of in accordance with regulatory requirements.
4. Accidental spills may produce hazardous wastes (e.g., material with >3% oil) and contaminated soil. All waste disposals must comply with the *Environmental Management Act* and Regulations.
5. Contaminated soil will be treated and dealt with as required on a site-specific basis.

6) Notify / Report

Once the spill is contained, contact the Environmental Monitor and inform them of the issue at hand (see **Table 3** in **Section 0** of the CEMP document). All spills, regardless of quantity, are required to be reported to the CP Network Management Centre (NMC) at 1-800-795-7851 as well as the Site Engineer and Environmental Monitor.

For spills in amounts requiring external notification, the person who had possession, charge or control of a substance immediately before its spill will immediately report details of the spill to the Environmental Monitor who will subsequently contact Emergency Management BC (EMBC) (24-hour Report a Spill) at 1-800-663-3456.

Spill reports to EMBC must include:

- Name and contact phone number of the person reporting the spill;
- Name and phone of the person(s) responsible for the spill;
- Location, time, and date of spill;
- Material spilled and quantity;
- Cause and effect of the spill;
- Action taken to contain the spill;
- Description of spill location and surrounding area;
- Duration of occurrence;
- Weather conditions;
- Planned follow-up;
- Government agencies on the scene; and
- Persons or agencies advised or to be advised.

Environmental "*Near Misses*" are also to be reported to the Environmental Monitor.