



APPENDIX E

Environmental Protection Plan



Environmental Management Plan

Discovery Mountain Marine
Communications and Traffic Services
Station

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Prepared for:

Canadian Coast Guard—Marine & Civil
Infrastructure
Fisheries & Oceans Canada

Prepared by:

Stantec Consulting Ltd.

Issued for Information

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Abbreviations

BC	British Columbia
BMP	best management practices
CCG	Canadian Coast Guard
DFO	Fisheries and Oceans Canada
ECCC	Environment and Climate Change Canada
EM	environmental monitor
EMP	Environmental Management Plan
HCA	<i>Heritage Conservation Act</i>
MFLNRO	Ministry of Forests, Lands and Natural Resource Operations
MFLNRORD	Ministry of Forests, Lands, Natural Resource Operations and Rural Development
MOE	Ministry of Environment
MWLAP	Ministry of Water, Land and Air Protection
QEP	qualified environmental professional
WCA	<i>Weed Control Act</i>
WHIMS	Workplace Hazardous Materials Information System



1.0 INTRODUCTION

This Environmental Management Plan (EMP) was prepared for the Canadian Coast Guard's (CCG) Discovery Mountain Marine Communications and Traffic Services Station (MCTSS) expansion (the Project). This EMP describes roles and responsibilities (Section 1.3), regulatory and legislative requirements (Section 2.0), planned construction activities (Section 3.0), the existing environment at the project location (Section 4.0) and environmental protection measures developed to avoid or mitigate effects on the environment during construction (Section 5.0). This EMP also provides recommendations for environmental monitoring and reporting requirements related to environmental monitoring and non-compliance incidents (Section 6.0).

1.1 PROJECT BACKGROUND

The CCG agency of Fisheries and Oceans Canada (DFO) is planning to expand the existing Discovery Mountain MCTSS as part of the Oceans Protection Program, which aims to enhance navigational safety in Canadian waters. Discovery Mountain MCTSS is a ridge-top site on Sonora Island, British Columbia (BC).

1.2 PURPOSE OF THE ENVIRONMENTAL MANAGEMENT PLAN

This EMP describes the general and specific environmental protection policies, mitigation measures, and contingency plans to be implemented before, during, and after construction activities for the Project. The EMP is intended to document environmental requirements and inform the Contractor's Project-specific Environmental Protection Plan. The Contractor(s) working on the Project must complete this Project in accordance with applicable legislation and comply with this EMP and/or provide suitable alternative approaches pre-approved by the CCG Project Manager. This document outlines the following:

- Roles and responsibilities for Project team members
- Regulatory requirements and permits for the Project
- Key construction activities and schedule
- Existing environmental conditions and resources
- Potential project effects and mitigation measures
- Management measures to mitigate potential project effects
- Environmental monitoring, reporting, and compliance requirements

The EMP is a living document that will be reviewed and updated as needed prior to and during construction of the Project. The mitigation measures and monitoring protocols outlined in this EMP may be re-evaluated to identify and update deficiencies and improve overall environmental management and protection.

1.3 ROLES AND RESPONSIBILITIES

Table 1 describes the roles and responsibilities of the Project team.



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Table 1 Roles and Responsibilities of the Project Team

Role	Responsibilities
CCG Project Manager	<ul style="list-style-type: none"> • Project owner with overall responsibility for delivery of the works associated with this Project; provides direction and general oversight for the Project • Responsible for overall environmental management and performance of the Project • Administers contracts and assesses the Contractors' ability to comply with this EMP as part of the tender evaluation • Attends health and safety meetings and Contractor tailgate meetings, where appropriate, to communicate potential environmental concerns/requirements • Provides the Contractor(s) and Environmental Monitor (EM) with project-specific details, such as background information, permits and this EMP • Responsible for contracting and overseeing First Nations observers, environmental monitoring, and construction monitoring • Authorizes stop work authority to project personnel (e.g., EM) for non-compliance with this EMP and contravention of regulatory permits and allow them to suspend project activities that are at risk of causing or potentially causing serious harm to fish, wildlife, or the environment (e.g., water quality, soils, air quality) • Notifies regulatory agencies or authorizes notification of environmental non-compliance or environmental incidences, where applicable • Oversee compliance of the EMP • Advises EM as required • Liaise with regulatory agencies, as necessary • Reviews and provides comment on the EM reports • Has the authority to issue a Stop Work order where activities are affecting or will affect the environment (e.g., water quality, soils, air quality) and wildlife
Contractor(s)	<ul style="list-style-type: none"> • Understands details of the Project by reviewing relevant documentation and regulatory approvals supplied by CCG (e.g., EMP, environmental permits) • Will prepare environmental plans required by CCG including a Spill Protection and Response Plan • Constructs works according to approved designs and standards, regulatory requirements/approvals, this EMP, and, if required, Contractor-specific management plans • Verifies that personnel are appropriately trained and competent in the use of environmental protection and mitigation measures, such as sediment, waste, spills, and noise control measures • Notifies the CCG Project Manager and/or EM of any observed or potential non-compliances with this EMP • Immediately reports incidents to the Project Manager or EM and initiates an appropriate response • Monitors for compliance with the EMP when a dedicated EM is not on site. During these times, the Contractor(s) will be expected to document and communicate environmental issues to CCG on a regular, as needed, basis." Corrects deficiencies and any non-compliance upon direction from the CCG Project Manager, EM, and/or regulators



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Table 1 Roles and Responsibilities of the Project Team

Role	Responsibilities
Environmental Monitor (EM)	<ul style="list-style-type: none"> • Will be a qualified environmental professional (QEP) or will consult with a QEP where appropriate if outside their area of expertise¹ • Establishes and flags exclusion zones where appropriate • A DFO/CCG employee or their delegate • Liaises/reports back to the CCG Project Manager on status of work and of any emerging environmental issues and assists in addressing them • Completes and records environmental pre-job meetings with the Contractor(s) • Attends health and safety meetings and Contractor tailgate meetings where appropriate, to communicate potential environmental concerns/requirements • Maintains a current version of the EMP and is familiar with all aspects of the document • Communicates requirements of this EMP to the CCG Project Manager and Contractor(s) • Evaluates and reports on the effectiveness of the environmental mitigation measures and on the Contractor's work procedures through regular site visits during construction. Frequency of site visits will be determined prior to construction start-up and will be based on regulatory (e.g., <i>Wildlife Act</i>) requirements and higher risk activities. • Advises the Contractor of non-compliance and of any emerging environmental issues and assists in addressing them • Provides corrective advice to the Contractor where appropriate, such as when non-compliances are observed or imminent • Has the authority to issue a stop work order where activities are affecting, or will affect the environment (e.g., water quality, drinking water quality, terrestrial, air quality), fish, and wildlife • Maintains records of site visits and regularly updates the CCG Project Manager • Writes environmental monitoring and permit-required reports to be submitted to the CCG Project Manager and appropriate regulatory authorities • Provides guidance and direction as needed during clean-up and restoration activities (e.g., after a spill or hydraulic leak) according to the requirements in this EMP
First Nations observers	<ul style="list-style-type: none"> • May be retained by CCG to observe and report on construction activities • May be directly involved in construction activities if a cultural or archaeological concern arises
Construction monitor	<ul style="list-style-type: none"> • A DFO/CCG employee or their delegate • Evaluates and reports on the construction performance for conformance to contract documents • Maintains records of site visits and regularly updates the CCG Project Manager • Grants final acceptance of the Contractor's work

¹ A qualified environmental professional (QEP) is an applied scientist or technologist who is registered and in good standing with an appropriate BC professional organization constituted under an Act, and who, through demonstrated suitable education, experience, accreditation, and knowledge relevant to the particular matter, may be reasonably relied on to provide advice within their area of expertise.



2.0 REGULATORY AND LEGISLATIVE REQUIREMENTS

Table 2 provides a summary of the key federal and provincial environmental legislation relevant to the Project, including required permits, notifications, and approvals to regulatory agencies.

Table 2 Construction Environmental Permits and Notifications

Legislation	Applicability to the Project (Environmental Permits for Construction)	Regulatory Agency	Description
<i>Migratory Birds Convention Act, 1994</i>	Applicable but no permits required	Environment and Climate Change Canada (ECCC)	Most migratory birds and their nests and eggs are protected everywhere in Canada under the <i>Migratory Birds Convention Act</i> . If vegetation clearing or other activities that may result in incidental take must occur during the primary migratory bird nesting period, a bird nest sweep and other potential mitigation measures will be required.
<i>Species at Risk Act</i>	Permit issued if affecting a species at risk on federal land is incidental to the carrying out of an activity, which is unlikely to apply to this Project.	ECCC	Species at risk, their critical habitat, and their residences (e.g., nest, roost, den) are protected on federal land under the <i>Species at Risk Act</i> . If the Project is likely to affect a species at risk or its critical habitat or residence on federal land, SARA requires that ECCC must be notified in writing.
<i>Wildlife Act</i>	A General Wildlife Permit is not likely to be required unless the Project overlaps with amphibian breeding or dispersal areas or a protected nest is encountered.	Ministry of Forests, Lands, Natural Resource Operations and Rural Development (MFLNRORD)	A permit under the <i>Wildlife Act</i> is required to salvage and relocate amphibians if disturbance activities occur during the amphibian active period and overlaps amphibian breeding or dispersal areas. A permit under the <i>Wildlife Act</i> is required to remove and relocate or modify the structure of an unoccupied protected nests of certain species (e.g., bald eagle, osprey, and great blue heron).
<i>Forest Act</i>	Occupant licence to cut	MFLNRORD	An occupant licence to cut is required for any cutting or removal of Crown timber from Crown land or private land.

The *Heritage Conservation Act* (HCA) protects heritage objects and archaeological sites, on provincial Crown land and private land in British Columbia, that predate 1846. These objects and sites are protected through designation as “provincial heritage sites” or through automatic protection by virtue of being of particular historical or archaeological value (Section 9). Protected archaeological sites may not be altered without permit issued by MFLNRORD. Permitting under the HCA is not expected to apply since the Project area is considered to have low potential for archaeological sites.



Construction Activities

3.0 CONSTRUCTION ACTIVITIES

Construction activities will expand the Discovery Mountain MCTSS. Expansion of the site will add the following infrastructure:

- New MCTSS building that will house two new diesel-fuelled engines driving four electrical generators
- Fuel storage platform attached to the MCTSS building that will house two 10,000 L fuel tanks
- New antenna tower

Activities required to build this new infrastructure include:

- Clearing and cutting existing trees, shrubs, and ground vegetation in areas of new infrastructure and to create a clear zone for the helicopter landing pad
- Grubbing
- Levelling the surface under the new antenna tower and MCTSS building
- Building concrete foundations and piers to support infrastructure
- Constructing and assembling infrastructure

Construction is anticipated to proceed for approximately 3-months, and it is anticipated to commence in August 2021.

4.0 EXISTING CONDITIONS

The following section describes the existing biophysical conditions and key environmental components for the Project compiled from a desktop review and site reconnaissance (May 18, 2021). The Project is on the summit of Discovery Mountain on the southwest side of Sonora Island and is remote and accessible only by helicopter. The existing infrastructure is on flattened areas with rocky outcroppings. The surrounding area slopes sharply in all directions toward the ocean; the surrounding landscape consists of undeveloped and historically logged forested land. The key environmental components and existing conditions for this site are summarized in Table 3.

Table 3 Key Environmental Components and Existing Conditions

Key Environmental Component	Description of Existing Conditions
Vegetation	<ul style="list-style-type: none"> • No plant species listed in Schedule 1 of the <i>Species at Risk Act</i> are anticipated to occur at the Project area. • Invasive species were not observed in the Project area. • The field reconnaissance visit to the Project area identified rock outcrops and a tree layer dominated by Douglas fir, Western redcedar, Western hemlock, and lodgepole pine with an understory of salal and huckleberries on thin soil over bedrock. These observations are



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Key Environmental Component	Description of Existing Conditions
	consistent with the species composition of the red-listed Douglas fir – Western hemlock – Salal moist maritime (CWHmm1/02)
Wildlife	<ul style="list-style-type: none"> • The tower and related facilities do not overlap with critical habitat for species at risk; the nearest area with potential to contain critical habitat, for marbled murrelet, is approximately 390 m from the Project • Field assessments (May 18, 2021) within 60 m of the Project identified the following: <ul style="list-style-type: none"> – very low suitability nesting habitat for marbled murrelet – moderately suitable nesting habitat for western screech-owl; however, nesting habitat is outside the Project footprint – Amphibian egg masses were observed in a pool of water, 60 m north of the Project footprint; egg masses likely northern pacific treefrog – Wildlife trees with potential for bat roost sites north and northeast of the Project footprint – Common nighthawk nesting habitat on rocky outcrops – Migratory bird nesting habitat, primarily forest songbirds • Wildlife species of conservation concern that could occur within 2 km of the Project footprint include red-legged frog, western toad, northern goshawk, olive-sided flycatcher, marbled murrelet, common nighthawk, northern pygmy-owl, western screech-owl, band-tailed pigeon, pine grosbeak, barn swallow, little brown myotis
Fish	<ul style="list-style-type: none"> • No fish habitat is present in the Project area
Archaeology	<ul style="list-style-type: none"> • No known above-ground archaeological resources or locations with high potential for buried archaeological resources in the Project area based on the desktop review.
Air Quality	<ul style="list-style-type: none"> • Existing infrastructure powered by two diesel-fueled generators

5.0 ENVIRONMENTAL PROTECTION MEASURES

Construction activities associated with the Project have the potential to affect environmental resources; however, with the implementation of the mitigation measures outlined below, potential effects associated with the Project can be reduced.

Unless otherwise stated, the Contractor engaged by the CCG to complete Project construction is assumed to be responsible for adhering to the mitigation measures detailed in the sections below (Sections 5.1–5.9).

5.1 GENERAL BEST MANAGEMENT PRACTICES

Mitigation and management measures that avoid and/or mitigate adverse environmental effects associated with the Project are based on best management practices (BMPs) and standard industry procedures. These documents are from various government agencies, industry BMPs, and recommendations by qualified professionals. The mitigation and management measures included in these documents have been created, modified, and enhanced as needed for the purposes of this EMP. Examples of BMPs used to develop this EMP include, but are not limited to:

- Field Guide to Fuel Handling, Transportation and Storage (MWLAP 2002)



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- Best Management Practices Guidelines for Bats in British Columbia (MOE 2016)
- Guidelines for Amphibians and Reptile Conservation during Urban and Rural Land Development in British Columbia (MOE 2014)
- Best Management Practices for Amphibian and Reptile Salvages in British Columbia (MFLNRO 2016)
- Environment and Climate Change Canada's General Nesting Periods of Migratory Birds in Canada (ECCC 2018)
- Environment and Climate Change Canada's Guidelines to Reduce Risk to Migratory Birds (ECCC 2019)
- Guidelines for Raptor Conservation During Urban and Rural Land Development in British Columbia (MOE 2013)

5.2 GENERAL CONSTRUCTION PRACTICES

Many environmental mitigation measures are common to different construction components and activities. Table 7 provides general environmental mitigation measures applicable to most Project activities.

Table 4 General Mitigation Measures

Category	Mitigation Measure
EMP and permits	1. Keep a copy of the EMP and any applicable permits onsite and readily available.
Project start up	2. At the start of project construction, review and discuss the measures in this EMP with all onsite personnel to promote an understanding of the Project, environmentally sensitive areas, reporting responsibilities, and emergency response plans.
Training	3. Train all personnel involved in construction activities on how to identify, document, and address environmental incident (e.g., spills)
	4. Train all personnel involved with construction activities in safe practices and the Health and Safety Plan.
	5. Train all personnel in the use of appropriate personal protective equipment.
Stop work	6. Stop work and contact the EM for assistance prior to commencing or continuing any activities that may pose any environmental risk not addressed in this document.
	7. The EM will have authority to issue a stop work order where activities are adversely affecting or are likely to adversely affect environmental conditions presented in Section 4.0. The EM will also make recommendations in the field for avoiding and mitigating effects, where measures in this EMP are not effective.
Construction footprint	8. Limit the construction footprint to the area of clearing in Project drawings.
	9. Limit clearing to the work areas flagged pre-construction. Do not clear or grub in areas of sensitive habitats identified by flagging.
Site cleanliness	10. Keep all work areas tidy during construction and remove all construction debris and garbage at the end of the Project.
Stockpiles/ laydown areas	11. Limit stockpiling of material and laydown areas to approved areas. Install appropriate erosion and sediment controls (as described in Section 5.4).
Deleterious substance	12. Only transport and use machinery free from leaks. Clean machinery prior to arriving at the Project site.



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Table 4 General Mitigation Measures

Category	Mitigation Measure
	13. Inspect machinery for leaks and required maintenance during the Project to limit leaks and spills.
Previously identified contaminated soils	14. Wear appropriate personal protective equipment (nitrile gloves and half-face respirator) if working with soils or disturbing the ground within 10 m of the existing building.
Hydrocarbons	15. Do not release hydrocarbons (e.g., hydraulic fluids and fuel, detectable by sight or smell) to the environment (see Spill Prevention, Response and Reporting, Section 5.3).
Air quality, GHGs, and noise quality	16. Limit equipment and machine idling.
	17. Turn off heavy equipment when inactive for more than 30 minutes.
	18. Verify that equipment and machinery are in good operating condition prior to work.
	19. Carry out regular maintenance on equipment and machinery.
	20. Maintain noise abatement equipment on machinery (e.g., mufflers) so they are in good working order.
	21. Equip drills with dust collectors.
Wildfire Prevention	22. Do not burn slash except with the written permission of the CCG Project Manager. Only burn slash material consistent with Provincially accepted guidelines to increase burning efficiency.
	23. Limit smoking to designated areas as approved by the CCG Project Manager.
	24. Prohibit smoking when the fire danger ranking is high or extreme.
	25. Keep readily accessible fire suppressing equipment at the work site and at designated smoking areas.
26. If slash burning is permitted by the CCG Project Manager, schedule burning to avoid high fire hazard periods.	



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5.3 SPILL PREVENTION, RESPONSE AND REPORTING

Substances that are deleterious to the environment and may pose a spill risk for this Project could include:

- Gasoline
- Diesel
- Hydraulic fluid
- Transmission fluid
- Engine oil
- Lubricants (grease, etc.)
- Drilling fluids
- Sediment

Table 8 outlines procedures for prevention and control of spills, including responsibilities, storage, and equipment.

Table 5 Spill Prevention, Mitigation Measures, Response and Reporting

Category	Mitigation Measure
Training	1. Provide on-site staff with training in the use of potentially hazardous materials and the location and use of spill kits and containment booms.
	2. Train all personnel in the Project-specific Spill Control Plan, Contamination Prevention Plan, and Waste Water Management Plan (as required in Environmental Procedures specification (01 35 43) items 1.4.8, 1.4.10, and 1.4.11, respectively).
Fuel handling guide	3. Handle, store, and label fuel consistent with <i>A Field Guide to Fuel Handling, Transportation and Storage</i> (MWLAP 2002), National Fire Code (National Research Council of Canada, 2015) and WHMIS. If there are discrepancies between this EMP and the referenced documents, the Project will err on the side of more stringent unless otherwise approved by CCG.
Fuel	4. Where possible, fuel storage, equipment or machinery refueling, and servicing will occur a minimum of 30 m from any waterbody. Where operational constraints require fuel storage, equipment or machinery re-fueling and servicing within 30 m of a waterbody, measures to prevent the release or spill of hazardous materials must be discussed and approved by CCG and the EM.
	5. Store fuels and petroleum products to comply with safe operating procedures, including containment facilities in case of a spill.
	6. Maintain an inventory of all potentially hazardous materials on site.
	7. Store portable fuel tanks (e.g., jerry cans) in leak-proof secondary containment with absorbent pads with a capacity of 110% of its volume. Regularly remove accumulated water in the containment.
	8. Shut off vehicles and equipment while refueling.
Equipment	9. Maintain equipment (e.g., containers, hoses, and machinery) in good running order to prevent leaking or spilling of potentially hazardous or toxic products. This includes hydraulic fluid, diesel, gasoline, and other petroleum products.



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Table 5 Spill Prevention, Mitigation Measures, Response and Reporting

Category	Mitigation Measure
	10. At the discretion of the EM, drip trays, poly sheet or sorbent pads will be placed beneath machinery and equipment. Place generators in secondary containment, such as within drip trays with sorbent pads.
	11. Only use containers sealed with a proper fitting cap or lid.
Equipment maintenance/ servicing	12. Place impervious materials, such as tarps, drip pans or spill trays, underneath equipment and machinery during servicing when there is a potential for accidental drips or spills.
Spills	13. In the event of a leak, stop all fueling/filling operations until the cause of the leak has been identified and it has been repaired.
	14. Implement the Project-specific spill response measures.

In the event of a spill, follow the Project-specific Spill Control Plan. The plan should include the measures presented in Table 9.

Table 6 Spill Response and Reporting Mitigation Measures

Category	Mitigation Measure
Spill kits	1. Provide an appropriate number of spill kits on site based on the type and amount of equipment.
	2. Regularly inspect spill kits and re-fill immediately after use.
	3. Have spill response materials contained in spill kits readily available when working at the Project site. These materials include, but are not limited to: <ol style="list-style-type: none"> a. Spill kits b. Sorbent pads and booms c. Dry oil sorbent d. Personal protective equipment (e.g., nitrile gloves, safety glasses, suits) e. Heavy duty plastic garbage bags f. Fire extinguishers g. Shovels



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Table 6 Spill Response and Reporting Mitigation Measures

Category	Mitigation Measure
Response	<p>4. The initial response to the spill may include:</p> <ol style="list-style-type: none"> a. Stop work b. Ensure your own safety and the safety of others c. On-site personnel wear personal protective equipment, such as nitrile gloves and safety glasses d. Identify the spilled materials and refer to the appropriate Safety Data Sheet to determine if human health or ignition hazards exist e. If possible and safe to do so, contain the spill by any safe means possible (e.g., plug leak, close/isolate leaking valve, etc.) f. Obtain assistance of others g. Begin containment of the spill and stop it from spreading h. Cleanup the spilled substance using available supplies from the on-site spill kits i. If the spill is to water, use measures such as installing sorbent rolls as floating booms to contain the spill and sorbent pads to soak up the material j. Immediately report the spill to the EM, if they are at the Project site, or otherwise notify the CCG Project Manager and EM as soon as it is safe to do so k. Submit a written report within 24-hours of the spill. l. The CCG Project Manager and/or the EM will determine if notification to regulatory agencies is required
Clean-up	<p>5. Commence final clean-up and reclamation following an assessment (by a QEP) of soil and/or water conditions. Conduct in situ remediation only if approved by CCG and appropriate regulatory agencies. Specific clean-up measures will be determined in consultation with CCG, regulatory agencies, and the appropriately qualified professionals.</p>
Reporting	<p>6. Immediately report all spills, regardless of severity, to the CCG Project Manager or EM.</p> <p>7. CCG is responsible for notifying regulatory agencies or authorizing notification on their behalf (e.g., environmental representative) to regulatory agencies of all hazardous spills and to verify that the spill reporting meets provincial and federal requirements. CCG should report all spills to water to the Provincial Emergency Program (1-800-663-3456).</p> <p>8. The Spill Reporting Regulation under the British Columbia <i>Environmental Management Act</i> identifies externally reportable quantities for certain substances (Appendix A). Any spills to water must be reported.</p>
Environmental incident/non-compliance report	<p>9. Submit an Environmental Incident/Non-Compliance Report in the event of a spill within 24-hours to the CCG Project Manager and EM. Information required to be included in this report is provided in Section 6.2.</p>



5.4 SEDIMENT AND EROSION CONTROL

Construction mitigation measures designed to limit the loss of soil and sediment mobilization to vegetation adjacent to project areas are provided in Table 10.

Table 7 Sediment and Erosion Control Mitigation Measures

Category	Mitigation Measure
Pre-construction	1. Clearly flag the clearing area, and clearly mark any areas with identified soil erosion potential hazards to mitigate during construction.
Stockpiles/laydown areas, clearing, and construction	2. Manage any soils disturbed during the Project in accordance with all federal, provincial, and municipal regulations and take precautions during construction activities to reduce the impact to the environment and exposure to humans.
	3. Limit the concentration of sediment and organic debris that may enter nearby environments. Follow best management practices.
	4. Avoid concentrating sediment or redirecting drainage to sensitive sites, including steep slopes, or on unstable or potential unstable slopes (as determined by a qualified professional) where possible. Implement erosion and sediment control measures as warranted.
	5. Minimize stripping of topsoil and vegetation. Where possible, retain topsoil for revegetation post-construction.
Precipitation events	6. Prepare for precipitation events by having the quantity and type of sediment and erosion control measures for the Project area readily available.
	7. During high rainfall events (e.g., 100 mm in 24-hour period) or when there is a potential for sedimentation offsite and entering waterbodies or conduits to waterbodies or sensitive sites, work may be stopped at the discretion of the EM or delegate.
Vegetation disturbance	8. Limit disturbance of existing vegetation to clearing areas in Project drawings.
	9. Avoid clearing vegetation on steep slopes, or on unstable or potential unstable slopes (as determined by a qualified professional) where possible. Implement erosion and sediment control measures as warranted.
Erosion and sediment control measures	10. Install erosion and sediment control measures before starting any works that may result in sediment mobilization or cause erosion.
	11. Train all onsite personnel in erosion and sediment control measures.
	12. Do not start construction until sediment and erosion control measures are in place and deemed functional by the EM or delegate.
	13. Only clear vegetation in areas required for safe construction.
	14. Avoid sediment entrainment by isolating and/or diverting surface water from disturbed areas
	15. Commence on-site grade reworking during dry conditions to minimize erosion potential.
	16. Cover sediment-based stockpiles (and slopes where warranted) with natural and/or synthetic covers (e.g., straw, mulch, matting or geotextile) to aid with erosion control and vegetation management.
17. Install perimeter barriers, such as silt fencing, along the clearing perimeter to limit sediment transport via sediment-laden runoff.	



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Table 7 Sediment and Erosion Control Mitigation Measures

Category	Mitigation Measure
	18. Progressive rehabilitation of disturbed soils and restricted access to rehabilitated areas will be implemented where applicable.
	19. Routinely inspect, maintain, and monitor erosion and sediment controls.
	20. Activate contingency plans for erosion and sediment controls in response ineffective control measures and changes in site conditions.
	21. Only remove erosion and control measures once construction is complete and ground conditions have stabilized, as approved by the EM or delegate.

5.5 VEGETATION MANAGEMENT

The Project area is within ecosystems of conservation concern as described in Section 4.0. Table 11 outlines mitigation measures to be implemented to reduce the disturbance of ecosystems and protect existing vegetation.

Table 8 Vegetation Mitigation Measures

Category	Mitigation Measure
Pre-construction	1. Clearly flag the clearing area, and clearly mark sensitive vegetation to avoid during construction.
Laydown	2. Store construction materials on unvegetated areas (i.e., previously cleared areas or rocky outcrops), unless approved by the EM.
Clearing	3. Top trees in the clearing area instead of clearing and grubbing where it is safe and practicable.
	4. Do not place cleared material in areas of pooled water.
	5. Maintain understory vegetation in temporary workspaces where it is safe and practicable.
	6. Protect trees outside and adjacent to the clearing area.
	7. Burn, chip, or remove large diameter slash material and dispose at an acceptable location (e.g., landfill) as approved by CCG or delegate.
Rare plants	8. If a previously unidentified rare plant is found prior to or during construction, flag and avoid where possible. If avoidance is not possible, then engage a QEP to determine appropriate mitigation.
Revegetation	9. In temporary workspaces that require clearing and grubbing, spread the area with stockpiled topsoil and seed with a native plant seed mix.
	1. Do not spread topsoil on naturally exposed bedrock.
	2. In temporary workspaces that were cleared without grubbing, allow the area to revegetate naturally.



5.6 INVASIVE PLANT AND WEED MANAGEMENT

The Project has the potential to introduce and spread invasive terrestrial species. Mitigation and management measures to reduce, prevent and control invasive species and weeds during the Project are described in Table 12. Throughout this section the term “invasive plants” also refers to the general term “weeds”, whereas “noxious weeds” refers specifically to invasive plants that fall under the BC *Weed Control Act* (WCA). For the purposes of this section invasive plants and noxious weeds will be referred to collectively as “Invasive Plants”.

Table 9 Invasive Species and Weed Control Management Measures

Category	Management Measure
Equipment	1. Only transport and use equipment, vehicles, and machines at the Project area that are clean (paying special attention to undercarriages, tracks, tires and blades). Reduce the probability of introducing noxious weeds to the sites by cleaning equipment of vegetation debris and soil prior to transport.
Material	2. Only import fill material free of invasive species.
	3. Imported fill material must meet the Canadian Council of Ministers of the Environment Canadian Soil Quality Guidelines for Commercial/Industrial Land Use and sample analysis should be documented from an independent Canadian Association of Laboratory Accreditation Inc. accredited laboratory.
Disposal	4. If invasive plants are found, dispose any removed invasive species at an appropriate disposal facility approved by CCG.
Revegetation	5. Use only certified weed-free seeds for revegetation.
Inspection	6. Inspect work areas during construction for invasive species.
Monitoring	7. The CCG will monitor the radar sites for noxious weeds following construction. If noxious weeds are discovered during monitoring, the CCG will create and implement control measures in consultation with a QEP to comply with the BC <i>Weed Control Act</i> .



5.7 WILDLIFE PROTECTION

Activities associated with the Project, such as vegetation clearing and equipment operation, have the potential to directly or indirectly affect wildlife. Table 13 presents the mitigation measures that should be implemented to avoid or limit adverse effects on wildlife.

Table 10 Wildlife Mitigation Measures

Category	Mitigation Measure
Pre-disturbance survey for wildlife habitat features	1. Prior to vegetation clearing, grubbing, and construction, areas to be cleared and adjacent buffer will be inspected by the EM or delegate QEP for wildlife features (e.g., dens, roosts, bird nests, wildlife trees). Search area of an appropriate size will be determined by the QEP. Mitigation measures to address birds and bird nests are described in this table. If other wildlife features (e.g., roost, den) are identified during this survey, the QEP will consult with the EM and CCG Project Manager on appropriate mitigation measures (e.g., setbacks, timing).
	2. If wildlife features are identified and mitigations implemented, the EM will follow-up during and after Project activities are completed to determine compliance with the EMP.
Wildlife habitat	3. Limit clearing and construction activities to within the delineated footprint.
	4. See Vegetation Mitigation Measures (section 5.5) to avoid or reduce loss of habitat features (e.g., wildlife trees).
Birds and bird nests	5. Nests of eagles, peregrine falcons, ospreys, and herons are protected year-round under the BC <i>Wildlife Act</i> , even when unoccupied. If such a nest is identified during the pre-construction survey, the QEP will consult with the EM and CCG Project Manager on appropriate mitigation measures (e.g., avoidance).
	6. Reduce potential effects on migratory birds (i.e., incidental take) by planning project activities (i.e., vegetation clearing and construction) to occur outside of the primary nesting period for migratory birds, which is March 31 – August 12 (forest and open habitats), where possible, per ECCC’s nesting calendar (ECCC 2018). Migratory bird nests are protected under the federal <i>Migratory Birds Convention Act</i> . If vegetation clearing and/or timber removal/repair must occur during the primary nesting period as identified above, then a “nest sweep” will be completed. a. The construction site and a 30-m zone around the construction site (where practical) will be inspected by a QEP for active or suspected active bird nests no more than seven days before disturbance is to begin b. If construction or activities do not begin within seven days of the nest sweep, another nest sweep must be undertaken c. Where active bird nests are identified, a nest-specific no-disturbance buffer will be established (see Buffer Zones category).



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Table 10 Wildlife Mitigation Measures

Category	Mitigation Measure
	7. Once construction has begun, if a nest is encountered within the construction site or adjacent to the construction site (even after the end of the primary nesting period), the personnel will report the finding to the EM. The EM will evaluate the nest status and consult with a QEP on appropriate mitigation measures (e.g., establishment of a buffer zone).
Buffer zones	8. Where active bird nests are identified, a 'buffer zone' will be established around the nests and marked (e.g., with flagging tape). The buffer size varies by species (accounting for their alert and flush distances), habitat type, and type of disturbance activity, and will be determined based on provincial and federal guidelines and the QEP's opinion. Buffers will remain in place for the duration that the nest is active as determined by the EM or delegate QEP.
	9. Construction activities will be avoided within established buffer zones; if activities must occur within the buffer, the EM will consult with a QEP and appropriate regulators on additional mitigation measures.
Amphibians	10. If post-breeding amphibians are observed dispersing from breeding habitat and could interact with Project activities, the EM will consult with a QEP on appropriate mitigation measures (e.g., install drift fencing or permit application for salvage and relocation).
Feeding, attractants, and hazards	11. Feeding of wildlife will not be permitted.
	12. Meals, food waste, garbage, and other attractants (e.g., oil containers) will be securely stored in bear-resistant containers to prevent attraction of wildlife.
	13. Construction materials (e.g., cables, wires, fencing) will be properly stored to avoid potential hazards for wildlife.
Dead, sick, injured animals	14. If dead, sick, or injured animals are observed, report to the EM directly (verbally or by radio, as soon as possible). The EM will report the observation to the British Columbia Conservation Officer Service (1-877-952-7277) .
Potentially hazardous wildlife	15. If cougar, grey wolf, or black bear are observed at the construction site do not approach the animal. Contact the EM directly (verbally or by radio), as soon as possible, for additional direction. If cougar, or black bear presence becomes an ongoing concern for construction personnel, the EM will consult with the British Columbia Conservation Officer Service (1-877-952-7277 [Report all poachers and polluters, RAPP, 24-hour hotline]) .
Wildlife disturbance and mortality	16. For mitigation measures to reduce noise, see Table 7
Habitat reclamation (revegetation)	17. See Table 11.



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5.8 ARCHAEOLOGICAL AND HERITAGE RESOURCE PROTECTION

In the event that an archaeological or heritage site is encountered during construction, the archaeological standards and practices (including implementation of a chance find protocol) will be followed.

Evidence of possible archaeological or heritage resources may include the following:

- Artefacts of stone or other material
- Shell deposits
- Rock paintings or carvings
- Depressions in the ground (large or small, circular or rectangular)
- Cabins and other old-looking structures
- Old industrial, ranching, and other remains of possible heritage significance
- Mature western red cedar with well-defined bark scars
- Human remains

If presumed archaeological or heritage resource is encountered during construction, the work must be stopped in the vicinity of the find and the EM will notify the CCG Project Manager. From there, the CCG project manager or their delegate will immediately contact the BC Archaeological Branch and/or a professional archaeologist.

5.9 WASTE CONTROL

Waste from project activities has the potential to adversely affect the aquatic and terrestrial environments; therefore, the mitigation measures outlined in Table 14 will be implemented.

Table 11 Waste Control Mitigation Measures

Category	Mitigation Measure
Existing waste	1. The CCG will remove waste at the site that is present prior to construction.
Waste	2. Waste or any miscellaneous unused materials will be recovered for disposal in a designated facility. Under no circumstances will materials be deliberately thrown into the aquatic or terrestrial environment.
	3. Securely store all food waste, garbage, and other attractants (e.g., oil containers) in bear-resistant containers to prevent attracting wildlife.
	4. Prohibit fires and burning of garbage.
	5. Securely store litter to prevent starting wildfires.
	6. Collect all construction debris/waste and transport and dispose off-site in accordance with the Non-Hazardous Solid Waste Disposal Plan (as required in Environmental Procedures specification (01 35 43 item 1.4.3.9) and in accordance with applicable legislation, guidelines, and best management practices.
Portable Toilets	7. Portable toilets will be placed a minimum of 30 m from any waterbody. Dispose sewage from portable toilets in an approved sewage disposal facility on an as-needed basis.



Table 11 Waste Control Mitigation Measures

Category	Mitigation Measure
Hazardous Waste	8. Although hazardous waste is not anticipated for this Project, it should be noted that sorbent materials or soils saturated with hydrocarbons (greater than or equal to 3% by weight) are classified as hazardous waste under the British Columbia <i>Environmental Management Act</i> and must be managed accordingly.
	9. Collect and transport off site all used petroleum products, including their empty containers. Dispose of in a licensed recycling facility in approved storage containers following applicable regulations.

6.0 ENVIRONMENTAL MONITORING AND REPORTING

6.1 GENERAL ENVIRONMENTAL MONITORING

The EM will verify that ongoing Project components are monitored against this EMP and applicable regulatory and legal requirements. CCG is responsible for contracting environmental monitoring and determining, in consultation with the EM, the appropriate frequency of site visits. Monitoring frequency will be determined based on the construction schedule, any regulatory requirements and timing of higher-risk activities. When the EM is not on site, the Contractor will be responsible for meeting the requirements of this EMP.

The CCG Project Manager and EM will have authority to alter work methodology and/or issue stop work orders to prevent environmental effects and/or adverse environmental effects, whether probable, imminent, or occurring. Once corrective actions have been implemented and deemed appropriate by the EM, suspended Project activity will be allowed to resume under the EM’s guidance.

6.2 REPORTING

The EM is responsible for keeping notes of site activities from each site visit and will prepare one monitoring report at the end of construction. This report will be submitted as a draft to the CCG Project Manager for review and comment. Once the EM has addressed the CCG Project Manager’s comments, the EM will finalize the report.

The monitoring report should include, at minimum:

- Construction activities
- Monitoring period
- Mitigation measures and activities that have been implemented or recommended
- Non-compliances and environmental incidents
- Presence of wildlife observed in the work area
- Photographs



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- Overall compliance or non-compliance with the EMP and/or regulatory permits/authorizations

Non-compliances and incidents will be reported to the CCG Project Manager (and regulators, where required) as soon as possible and within 24 hours of occurrence.

In the event of non-compliance or an incident, the event must be reported to CCG Project Manager. Non-compliances include non-compliance with this EMP, project-specific mitigation plans, or project permits/authorizations/legislation (e.g., spills).

The non-compliance and incident reports should include:

- Reporting person's name and telephone number
- Date and time of the non-compliance or incident, including major steps (such as when the incident occurred, when did response occur)
- Location of non-compliance or incident (coordinates if available)
- Description and cause of the non-compliance or incident (if a spill—including type, source and quantity of material)
- Receiving environment description
- Names of other persons or government agencies notified
- Description of the response and when it occurred
- If a spill, percent of material recovered
- Details of further action required
- Recommendations for preventative/mitigation measures

Non-compliances and incidents must be resolved immediately by the CCG Project Manager, the EM, and the Contractor(s), with the CCG Project Manager as the top authority. When a non-compliance or incident occurs, remedial actions must be taken as soon as possible (i.e., as soon as the site is safe).



Closure

6.3 EMERGENCY CONTACTS

Emergency contacts for the Project are provided in Table 15. Updated phone numbers for project personnel should be obtained prior to construction.

Table 12 Emergency Contact List for Project

Contact	Phone Number
The CCG Project Manager: Steve Cole	Office: (250) 480-2961 Mobile: (250) 686-3574
Contractor contact: TBD	Office: Mobile:
CCG Environmental Monitor: Robin Connelly	Office: (250) 363-8727 Mobile: (250) 580-8382
Provincial emergency program, 24 hours spill reporting	1-800-663-3456
Report All Poachers and Polluters (RAPP), 24 hours hotline	1-877-952-RAPP (7277)
Medical emergency	refer to Health and Safety Plan
WorkSafeBC	1-866-621-7233

7.0 CLOSURE

We trust that this information meets with your present requirements. Should you have any questions or require additional information, please do not hesitate to contact the undersigned.

Regards,

Stantec Consulting Ltd.

Reviewed by:

Ellie Zajc MES, B.Sc.
Environmental Specialist
Phone: (236) 878-3422
Ellie.Zajc@stantec.com

Rachel Keeler M.Sc., R.P.Bio
Environmental Specialist
Phone: (604) 360-8461
Rachel.Keeler@stantec.com



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APPENDIX A

Recordable Levels for Spills of Certain Substances

Appendix A RECORDABLE LEVELS FOR SPILLS OF CERTAIN SUBSTANCES

Reportable spills in the BC Spill Reporting Regulation related to a listed substance, other than natural gas, if (a) the spill enters, or is likely to enter, a body of water, or (b) the quantity of the substance spilled is, or is likely to be, equal to or greater than the listed quantity for the listed substance, detailed below:

Item	Substance spilled	Specified amount
1	Class 1, Explosives as defined in section 2.9 of the Federal Regulations	Any quantity that could pose a danger to public safety or 50 kg
2	Class 2.1, Flammable Gases, other than natural gas, as defined in section 2.14 (a) of the Federal Regulations	10 kg
3	Class 2.2 Non-Flammable and Non-Toxic Gases as defined in section 2.14 (b) of the Federal Regulations	10 kg
4	Class 2.3, Toxic Gases as defined in section 2.14 (c) of the Federal Regulations	5 kg
5	Class 3, Flammable Liquids as defined in section 2.18 of the Federal Regulations	100 L
6	Class 4, Flammable Solids as defined in section 2.20 of the Federal Regulations	25 kg
7	Class 5.1, Oxidizing Substances as defined in section 2.24 (a) of the Federal Regulations	50 kg or 50 L
8	Class 5.2, Organic Peroxides as defined in section 2.24 (b) of the Federal Regulations	1 kg or 1 L
9	Class 6.1, Toxic Substances as defined in section 2.27 (a) of the Federal Regulations	5 kg or 5 L
10	Class 6.2, Infectious Substances as defined in section 2.27 (b) of the Federal Regulations	1 kg or 1 L, or less if the waste poses a danger to public safety or the environment
11	Class 7, Radioactive Materials as defined in section 2.37 of the Federal Regulations	Any quantity that could pose a danger to public safety and an emission level greater than the emission level established in section 20 of the "Packaging and Transport of Nuclear Substances Regulations"
12	Class 8, Corrosives as defined in section 2.40 of the Federal Regulations	5 kg or 5 L
13	Class 9, Miscellaneous Products, Substances or Organisms as defined in section 2.43 of the Federal Regulations	25 kg or 25 L
14	waste containing dioxin as defined in section 1 of the Hazardous Waste Regulation	1 kg or 1 L, or less if the waste poses a danger to public safety or the environment
15	leachable toxic waste as defined in section 1 of the Hazardous Waste Regulation	25 kg or 25 L
16	waste containing polycyclic aromatic hydrocarbons as defined in section 1 of the hazardous Waste Regulation	5 kg or 5 L

Item	Substance spilled	Specified amount
17	waste asbestos as defined in section 1 of the Hazardous Waste Regulation	50 kg
18	waste oil as defined in section 1 of the Hazardous Waste Regulation	100 L
19	waste containing a pest control product as defined in section 1 of the Hazardous Waste Regulation	5 kg or 5 L
20	PCB Wastes as defined in section 1 of the Hazardous Waste Regulation	25 kg or 25 L
21	waste containing tetrachloroethylene as defined in section 1 of the Hazardous Waste Regulation	50 kg or 50 L
22	biomedical waste as defined in section 1 of the Hazardous Waste Regulation	1 kg or 1 L, or less if the waste poses a danger to public safety or the environment
23	A hazardous waste as defined in section 1 of the Hazardous Waste Regulation and not covered under items 1 – 22	25 kg or 25 L
24	A substance, not covered by items 1 to 23, that can cause pollution	200 kg or 200 L
25	Natural gas	10 kg
SOURCE: British Columbia <i>Environmental Management Act</i> : Spill Reporting Regulation (2017) Schedule Available at: http://www.bclaws.ca/civix/document/id/loo96/loo96/46_263_90		