

Capital Regional District Gardom Pond Dam Decommissioning Environmental Management Plan (EMP)

Prepared by:

Carla Schiller, *M.Sc., R.P.Bio.*

Darcy Schiller, *B.Sc., R.P.Bio.*

Titus Biological Services Inc.

13585 Cedar Way
Maple Ridge, B.C. V4R 2T4

604.728.6524
www.titusbiological.com

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Statement of Limitations

This Environmental Management Plan (EMP) was prepared by Titus Biological Services Inc. (Titus) exclusively for Skylark Management Corp. (the Client) and associated subcontractors, for the Gardom Pond Dam Decommissioning Project (the Project), in the Capital Regional District at and near Harbour Hill Drive on Pender Island (the Site). This EMP is intended to outline performance-based environmental requirements, standard protocols, and mitigation measures to be implemented during the works.

In developing this EMP, Titus has relied in good faith on information provided by the Client and other third party sources. We accept no responsibility for any deficiency or inaccuracy contained in this report as a result of our reliance on the aforementioned information.

The inferences concerning the conditions of the Site are based on information obtained from a limited review of available literature, and limited field investigations. Titus has prepared this EMP in a manner consistent with the normal standard of care exercised by members of the science and technical professions currently practicing in B.C., subject to the time limits and physical constraints applicable to the Project. We have attempted to identify and consider relevant facts and documents pertaining to the scope of work, as of the time period during which we conducted this analysis. However, our opinions may change if new information is available or if information we have relied on is altered.

This EMP has been prepared for the specific Project, Site, objective, and purpose described to Titus by the Client. Therefore the factual data, interpretations, findings, conclusions, and recommendations documented in this report have been prepared for the specific application to this Project, and are not applicable to any other project or site location. Titus makes no warranty, expressed or implied, and assumes no liability with respect to the use of the information contained in this report at the subject Site, or at any other site, for anything other than its intended purpose.

Unless otherwise stated, the suggestions, recommendations, and opinions given in this report are intended only for the guidance of the Client regarding the specific Project. No other party may use or rely on this report or any portion thereof without express written consent from Titus. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Titus accepts no responsibility for damages, if any suffered, by any third party as a result of decisions made or actions based on this EMP.

In order to properly understand the suggestions, recommendations and opinions expressed in this report, reference must be made to the whole of the report. Titus cannot be responsible for use of portions of the report without reference to the entire report.

Any change of Site conditions, purpose, or plans, or if the Project is not initiated within eighteen months of the date of the report, may alter the validity of the report. Should new information that may affect the contents of this document be discovered during the course of this Project, Titus should be requested to re-evaluate this EMP and to provide amendments, as required, prior to any reliance upon the information presented herein.

List of Acronyms

BMP	Best Management Practices	CEOR	Contractor Environmental Orientation Record
CMT	Culturally Modified Tree	CRD	Capital Regional District
DFO	Fisheries and Oceans Canada	EIA	Environmental Impact Assessment
EIR	Environmental Incident Report	EM	Environmental Monitor
EM	Environmental Management Plan	ESC	Erosion and Sediment Control
FLNRO	Ministry of Forests, Lands and Natural Resource Operations	ISCBC	Invasive Species Council of B.C.
MoE	Ministry of Environment	MoFR	Ministry of Forests and Range
MoTI	Ministry of Transportation and Infrastructure	MWLAP	Ministry of Water, Land and Air Protection
NTU	Nephelometric turbidity units	PCB	polychlorinated biphenyl
ROW	Right-of-Way	SARA	<i>Species at Risk Act</i>
Skylark	Skylark Management Corp.	Titus	Titus Biological Services Inc.
TOB	Top of Bank		

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1. INTRODUCTION

Skylark Management Corp (Skylark, the Contractor) has been contracted by the Capital Regional District (CRD) to complete the Gardom Dam Decommissioning Project (the Project) in Pender Island, B.C. Skylark has hired Titus Biological Services Inc. (Titus) to assist with environmental support services for the Project. The owner is providing the Environmental Monitor (EM) for the Project.

Titus has developed this Environmental Management Plan (EMP) to provide the Contractor and any subcontractors with performance-based environmental requirements, best management practices (BMPs), standard protocols, and mitigation measures to ensure compliance with applicable legislation, conditions of permits and approvals, and mitigation measures.

This EMP provides a framework to minimize environmental risks associated with the project, therefore limiting potential project-related impacts. An EMP is a key component of a project's regulatory compliance, providing the basis for assurance that environmental protection requirements are considered and will be carefully managed throughout the project. The EMP provides the Contractor and any subcontractor(s) with a tool to manage complex environmental issues across all phases of the project, from pre-construction planning to post-construction monitoring.

This EMP is dynamic in nature and may need to be modified by Titus as the works proceed. A copy of the EMP must be kept onsite for the duration of the works.

1.1 OBJECTIVE

The objective of this EMP is to provide the Contractor with a prescriptive document for the protection of environmental resources during project activities. The goal is to minimize, and where possible avoid, potential adverse effects to the environment. This EMP provides:

- Performance-based environmental requirements to be met by the Contractor and any sub-contractors in conducting work in accordance with regulatory approvals, BMPs, and engineering specifications;
- Measures to mitigate, and where possible avoid, potential adverse effects to the Site's environmental and cultural resources; and,
- An overview of environmental legislation that may be applicable to the Project.

This EMP is intended to provide Environmental Construction Specifications for the Contractor to develop mitigation strategies in order to ensure regulatory compliance.

The Environmental Construction Specifications constitute performance-based standards and requirements, which should be met by the Contractor and any sub-contractors performing work in connection with the Project. The Contractor should comply with the Environmental Construction Specifications and applicable law, legislation, and regulations (outlined below) where applicable, as well as best construction practices for protection of the environment.

Environmental monitoring will be required throughout the construction period to inspect, evaluate, and report on the effectiveness of work practices and environmental mitigation procedures, and to recommend and oversee improvements as necessary. Environmental monitoring and reporting requirements are described in Chapter 5 of this EMP. A final

inspection should be completed by the EM following completion of construction activities to evaluate and report on the effectiveness of the environmental mitigation measures.

1.2 APPLICABLE LEGISLATION AND GUIDELINES

Legislation and regulations referenced within and used to develop this EMP include:

- *Canadian Environmental Protection Act (SC 1999, c. 33);*
- *Canadian Fisheries Act (RSC 1985, c. F-14);*
- *Canadian Migratory Birds Convention Act (SC 1994, c. 22);*
- *Canadian Species at Risk Act (SARA; SC 2002, c. 29);*
- *B.C. Contaminated Sites Regulation (375/96);*
- *B.C. Environmental Management Act [SBC 2003, c. 53];*
- *B.C. Forest and Range Practices Act [SBC 2002, c. 69];*
- *B.C. Hazardous Waste Regulation (63/88);*
- *B.C. Heritage Conservation Act [RSBC 1996, c. 187];*
- *B.C. Spill Reporting Regulation (263/90);*
- *B.C. Transportation of Dangerous Goods Act [RSBC 1996, c. 458];*
- *B.C. Water Act [RSBC 1996, c. 483] and Water Act Regulation (234/2013);*
- *B.C. Weed Control Act [RSBC 1996, c. 487]; and,*
- *B.C. Wildlife Act [RSBC 1996, c. 488].*

Best Management Practice guidelines, industry standards and other documents referenced within and used to develop this EMP include:

- B.C. Approved Water Quality Guidelines (Ministry of Environment [MoE] 2010);
- Best Management Practices for Raptor Conservation during Urban and Rural Land Development in British Columbia (MoE, 2005);
- Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia (MoE, 2004);
- Best Management Practices for the Reduction of Air Emissions from Construction and Demolition Activities (Environment Canada, 2005);
- Best Practices for Managing Invasive Plants on Roadsides (MoTI and the Invasive Species Council of B.C. [ISCBC], 2013);
- Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia (Ministry of Forests, Lands and Natural Resource Operations [FLNRO] 2014);
- Environmental Impact Assessment: Environmental impact management report, Dam decommissioning and outlet stream restoration (Reimer, July 2019);
- Field Guide for Noxious and Other Selected Weeds of British Columbia (Ministry of Agriculture and Lands and Ministry of Forests and Range [MoFR] 2002);

- Field Guide to Fuel Handling, Transportation and Storage (Ministry of Water, Land and Air Protection [MWLAP] and MoFR 2002);
- Guidelines for Raptor Conservation during Urban and Rural Land Development in British Columbia (MoE, 2013);
- Habitat Conservation and Protection Guidelines (Fisheries and Oceans Canada [DFO], 1998)
- Land Development Guidelines for the Protection of Aquatic Habitat (DFO, 1993);
- Standards and Best Practices for Instream Works (MWLAP 2004);
- Supplementary Specifications: Section 01 57 01, Environmental Protection (Master Municipal Construction Documents, Volume II, Platinum Edition, 2009); and,
- Urban Stormwater Guidelines for Protection of Fish and Fish Habitat (DFO, 2005).

2. ROLES AND RESPONSIBILITIES

Roles and responsibilities are outlined below in Table 1.

Table 1: Roles and Responsibilities

Role	Name	Responsibilities
Project Manager	Liam Robinson, Ben Robinson	<ul style="list-style-type: none"> • Responsible for overall management, engineering, construction, and environmental performance of the project • Ensures that the EMP is prepared, communicated, accepted and implemented by the Crew, and any sub-contractors (or delegates this responsibility) • Ensures that the EMP is revised, as necessary • Ensures that environmental incidents are addressed and reported
Environmental Monitor	Provided by the Owner	<ul style="list-style-type: none"> • Oversees and coordinates the preparation of the EMP and Erosion and Sediment Control Plan • Liaises with regulatory agencies as necessary Liaises and provides technical advice to the Project Manager and Site Foreman • Communicates environmental requirements to the Project Manager and Site Foreman • Monitors and evaluates compliance of work practices, procedures and effectiveness of mitigation measures in this EMP • Confirms EMP requirements to the crew and contractors • Completes and records minutes of the pre-work environmental orientation meeting • Advises on methods to resolve non-conformances • Reports all non-conformances with this EMP to the Project Manager as part of the Environmental Incident Report • Completes summary report at end of project, if required
Site Foreman	Liam Robinson, Ben Robinson	<ul style="list-style-type: none"> • Provides oversight on day-to-day implementation of EMP requirements • Reports and assists in addressing all non-conformances with EMP

3. ENVIRONMENTAL INCIDENTS AND EMERGENCY CONTACTS

An Environmental Incident Report (EIR) should be submitted by the EM promptly following an environmental incident. The purpose of the EIR is to provide a timely and accurate internal notification of any environmental incidents to the Contractor. The target deadline for reporting is within 24 hours following an incident.

In the event of a spill the Contractor will adhere to the steps outlined in the Oil and Chemical Spill Emergency Response Plan (Appendix 2). If the EM is not onsite, the Contractor should promptly fill in the Spill Reporting Information Form (Appendix 3) to ensure that the appropriate information is collected for the required spill reporting.

The EM, at the site where the incident occurred, would prepare the EIR and notify the appropriate personnel based on the severity of the incident. The incident report will be distributed as per a list established by the Contractor.

An environmental incident is something that has caused, or has the potential to cause, any of the following:

- Adverse impact on the quality of air, land, or water, for humans, wildlife, aquatic species, or species at risk;
- Exceedance of a permitted or external reporting requirement;
- Notification of external agencies due to emergencies or situations beyond normal circumstances;
- Adverse publicity with respect to the environment;
- Legal or regulatory action with respect to violation of statutes, regulatory authorizations, or environmental damage; and,
- Alteration of or damage to heritage or archaeological resources.

Examples of environmental incidents include, but are not limited to:

- Spills of oil, fuels, Polychlorinated Biphenyls (PCBs) or chemicals;
- Release of waters outside of the safe range of pH (6.0 to 9.0);
- Sudden and uncontrolled emissions, discharge, or releases of air pollutants or gases (eg. propane, compressed CO₂, natural gas, NO_x, SF₆, H₂);
- Discharge of deleterious substances, including silt, sediment, or sediment-laden water, into watercourses;
- Flow changes that adversely affect fish or fish habitat, wildlife, or recreation;
- Adverse impacts on fish or wildlife species;
- Landslides, erosion, or floods with the potential to adversely affect environmental quality;
- Any ground disturbance where an archaeological site is encountered;
- Removal or alteration of a culturally modified tree (CMT);
- Removal of vegetation in or near watercourses without regulatory approval;
- Violation of environmental regulations, permits, or approvals; and,

- Changes in and about a stream (under the *Water Sustainability Act*) or serious harm to fish, including any permanent alteration to, or destruction of, fish habitat (under the *Fisheries Act*) without prior written approval and authorization.

Any environmental incidents should be brought to the immediate attention of the Project Manager, Site Foreman, and EM. The Foreman and Project Manager are responsible to ensure that all crew are adequately trained and equipped to deal with potential environmental incidents related to their work. Any concerns with regard to preparedness for environmental incidents should be brought to the attention of the EM prior to starting work. A list of emergency contacts is shown in Table 2 below.

If an incident occurs, the EM should be contacted immediately. The EM will initiate the Environmental Incident Reporting Procedure outlined in Appendix 2. The target for reporting is within 24 hours following an incident.

Table 2: Project and Emergency Contacts

Contact	Name	Phone #
Project Manager	Ben Robinson	604-970-3467
Site Foreman	Liam Robinson	778-789-3408
Environmental Monitor	Kathleen Reimer	
Emergency Management BC		1-800-663-3456
DFO Spill Reporting		604-666-3500
Environment Canada		604-666-6100

4. SCOPE OF WORK

The general nature of the work to be completed by the Contractor is:

- Modifying the existing dam embankment and fortifying the existing stream outlet channel;
- Installing a 900 mm outlet culvert into the existing dam embankment and a riprap lined sump at the tie in point; and,
- Downstream drainage improvements.

4.1 ENVIRONMENTAL BACKGROUND

Previous investigations at the Site include an Environmental Impact Assessment (EIA) completed by Kathleen Reimer of the Island Stream and Salmon Enhancement Society (Reimer, March 2019). The EIA assessed environmental impacts of the decommissioning of the dam and management and mitigation of these impacts.

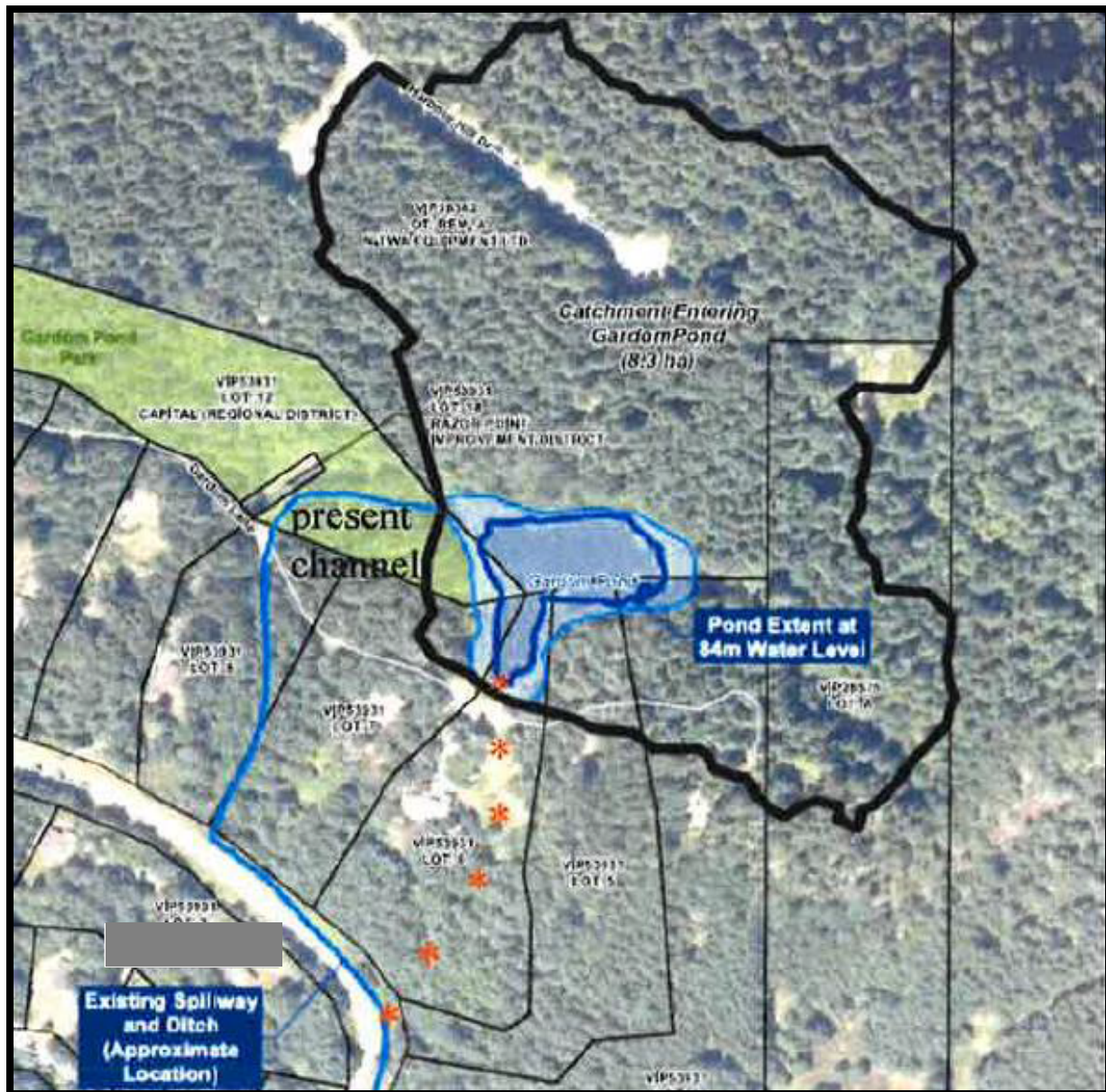


Figure 1. Project location of Gardom Pond, Pender Island, BC, showing neighbouring properties, present and expected water levels in the pond, and present and future outlet channels. Reimer EIM, 2019.

The Project Area includes an earthen dam that has been identified as having a high risk for failure. The decommissioning of the dam will lower the water level and shrink the footprint of Gardom Pond. It should not shrink the pond so much that it ceases to provide habitat for the existing populations of Red-legged Frog (*Rana aurata*) or Rough-skinned Newt (*Taricha granulosa*) or existing bird populations, including Red-winged Blackbird (*Agelaius phoeniceus*).

No fish are expected to be present in the pond, despite efforts to stock Rainbow Trout (*Oncorhynchus mykiss*) some decades ago. There are downstream barriers preventing the upstream migration of anadromous fish to the pond.

Part of the new discharge channel, which will follow the path of the original stream bed, will be within the MoTI road right-of-way (ROW). See Figure 1 above.

5. ENVIRONMENTAL MONITORING

5.1 ENVIRONMENTAL MONITORING PROGRAM

The Site Foreman and Project Manager will ensure that the EMP is followed. The EM will attend the Site, at a minimum, during the following activities:

- Safety and environmental orientation meetings prior to start of construction;
- Pre-clearing nesting bird surveys, if required;
- Installation and removal of any erosion and sediment control measures;
- All instream works;
- Any emergency spill incidents; and,
- At other times as determined by the EM or as requested by the Contractor or Owner.

It is the responsibility of the Project Manager or Site Foreman to promptly notify the EM of any environmental issues, concerns, non-compliances, or spills of any volume (see Table 2 for contact list, Appendix 2 for the Spill Prevention and Emergency Response Plan, and Appendix 3 for the Spill Reporting Information Form).

The EM has the authority to halt or modify the works in order to protect the environment, if environmental protection is compromised.

The EM will be obliged to advise both the Owner and applicable regulatory agencies when construction activities do not comply with regulatory requirements, and when corrective actions are required.

5.2 ENVIRONMENTAL REPORTING

The EM should provide the Contractor with a brief memo following each environmental monitoring inspection. A brief summary report should also be provided following the works. The summary report should include:

- Environmental observations;
- Any environmental non-compliances; and
- Environmental action items completed per the EM's direction.

The EM will also be responsible for submitting incident reports detailing any spills or other environmental incidents. The EM will report environmental incidents, including non-compliance issues, to the appropriate regulatory agencies and local authorities within a reasonable timeframe (typically within 24 hours of discovery).

Table 1 provides details and contact information for individuals associated with the Project, and regulatory agencies to be contacted in the event of an emergency. Appendix 2 provides the Spill Prevention and Emergency Response Plan. In the event of a spill, use the form in Appendix 3 to gather the appropriate information for the required spill reporting.

5.3 ORIENTATION MEETINGS AND TAILBOARD MEETINGS

To ensure that the Contractor and any sub-contractors are provided with the necessary information to carry out the obligations of this EMP, all environmental permitting requirements, and the Reimer EIA, an on-site meeting should be conducted prior to beginning the Project to review the environmental sensitivities and obligations. This meeting will be the responsibility of the Project Manager and the Site Foreman. The environmental portion of this meeting should review any environmental sensitivities, environmental precautions, and legal requirements. An Environmental Orientation Record (Appendix 1) should be completed and signed by all attending parties.

5.4 PRE-CONSTRUCTION SURVEYS AND SALVAGES

No salvages are expected for this Project as no fish are expected. Amphibian salvages may be conducted at the discretion of the EM.

6. REGULATORY LEGISLATION

This section provides a summary of the federal and provincial environmental legislation that applies or may apply to construction of the Project. This legislation provides the framework for the procedures and specifications described in Section 7.0 of this EMP. Should further clarification of any environmental issues be required, the Contractor should consult the appropriate legislative document.

6.1 ENVIRONMENTAL PRINCIPLES

The Contractor and any sub-contractors should conduct all operations in such a way as to minimize adverse effects to the environment, and should comply with all environmental requirements including applicable environmental legislation, regulations, permits, bylaws, licenses, authorizations, agreements, and rules.

The Contractor should provide, in accordance with the requirements of all applicable federal and provincial legislation, all suitable equipment, facilities and precautions required to minimize adverse effects on the environment, control the discharge of contaminants, or to prevent actions, which may pollute or degrade air quality, any body of water or land areas, or which may harm fish, wildlife, and their habitats.

The Contractor should suspend any activities or operations which are in contravention of any environmental legislation or regulation, or which are causing, or potentially causing, environmental damage.

6.2 FEDERAL LEGISLATION

The following is a list of selected applicable federal laws, acts and regulations that apply or may apply to the Project.

6.2.1 Fisheries Act

The Canadian *Fisheries Act* (1985, latest revision November 25, 2013) provides broad prohibition of polluting waters with substances that are deleterious to fish, and of works that cause serious harm to fish, including the permanent alteration or destruction of fish habitat,

unless the works are authorized by Fisheries and Oceans Canada. Sections of the *Fisheries Act* applicable to the Project include:

- Section 35 (1): *"No person shall carry on any work, undertaking or activity that results in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery."*
- Section 35 (2): *"A person may carry on a work, undertaking or activity without contravening subsection (1) if*
 - (a) the work, undertaking or activity is a prescribed work, undertaking or activity, or is carried on in or around prescribed Canadian fisheries waters, and the work, undertaking or activity is carried on in accordance with the prescribed conditions;*
 - (b) the carrying on of the work, undertaking or activity is authorized by the Minister and the work, undertaking or activity is carried on in accordance with the conditions established by the Minister;*
 - (c) the carrying on of the work, undertaking or activity is authorized by a prescribed person or entity and the work, undertaking or activity is carried on in accordance with the prescribed conditions;*
 - (d) the serious harm is produced as a result of doing anything that is authorized, otherwise permitted or required under this Act; or*
 - (e) the work, undertaking or activity is carried on in accordance with the regulations."*
- Section 36 (1)(3): *Unless authorized, "no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish or in any place under any conditions where the deleterious substance or any other deleterious substance that results from the deposit of the deleterious substance may enter any such water."*
- Section 37 (1): *"If a person carries on or proposes to carry on any work, undertaking or activity that results or is likely to result in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery, or in the deposit of a deleterious substance in water frequented by fish or in any place under any conditions where that deleterious substance or any other deleterious substance that results from the deposit of that deleterious substance may enter any such waters, the person shall, on the request of the Minister — or without request in the manner and circumstances prescribed by regulations made under paragraph (3)(a) — provide the Minister with any plans, specifications, studies, procedures, schedules, analyses, samples, evaluations and other information relating to the work, undertaking or activity, or to the water, place or fish habitat that is or is likely to be affected by the work, undertaking or activity, that will enable the Minister to determine*
 - (a) whether the work, undertaking or activity results or is likely to result in any serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery, that constitutes or would constitute an offence under subsection 40(1) and what measures, if any, would prevent that result or mitigate its effects; or*
 - (b) whether there is or is likely to be a deposit of a deleterious substance by reason of the work, undertaking or activity that constitutes or would constitute an offence under subsection 40(2) and what measures, if any, would prevent that deposit or mitigate its effects."*

6.2.2 Species at Risk Act (SARA)

The Canadian *Species at Risk Act* (2002) was enacted to prevent Canadian indigenous species, subspecies, and distinct populations from becoming extirpated or extinct, to provide for the recovery of endangered or threatened species, and to encourage the management of other species to prevent them from becoming at risk. Sections of SARA applicable to the Project include:

- *Section 32 (1): "No person shall kill, harm, harass, capture or take an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species."*
- *Section 33: "No person shall damage or destroy the residence of one or more individuals of a wildlife species that is listed as an endangered species or a threatened species, or that is listed as an extirpated species if a recovery strategy has recommended the reintroduction of the species into the wild in Canada."*

6.2.3 Migratory Bird Convention Act

The *Migratory Birds Convention Act* (1994) is an internationally recognized convention between Canada, the United States and Mexico to protect migratory game birds, migratory insectivorous birds, and migratory non-game birds, including herons. Sections of the *Migratory Birds Convention Act* potentially applicable to the Project include:

- *Section 5.1 (1): "No person or vessel shall deposit a substance that is harmful to migratory birds, or permit such a substance to be deposited, in waters or an area frequented by migratory birds or in a place from which the substance may enter such waters or such an area."*
- *Section 5.1 (2): "No person or vessel shall deposit a substance or permit a substance to be deposited in any place if the substance, in combination with one or more substances, results in a substance — in waters or an area frequented by migratory birds or in a place from which it may enter such waters or such an area — that is harmful to migratory birds."*

The Migratory Birds Regulation (1994) falls under the *Migratory Birds Convention Act*. Sections of the Migratory Birds Regulation applicable to the Project include:

- *Section 5: "Subject to subsection 5(9), no person shall (a) disturb, destroy or take a nest, egg, nest shelter, eider duck shelter or duck box of a migratory bird, or (b) have in his possession a live migratory bird, or a carcass, skin, nest or egg of a migratory bird, except under authority of a permit therefore."*

6.3 PROVINCIAL LEGISLATION

The following is a list of selected applicable provincial laws, acts and regulations that apply or may apply to the Project.

6.3.1 B.C. Wildlife Act

The B.C. *Wildlife Act* (1996) protects wildlife and wildlife habitat in British Columbia by identifying wildlife areas, defining human interactions with wildlife and regulating hunting, trapping and angling. Sections of the *Wildlife Act* applicable to the Project include:

- *Section 29: "Except as authorized by this Act, the regulations or a permit, a person who attempts to capture wildlife commits an offence."*

- Section 34: "A person commits an offence if the person, except as provided by regulation, possesses, takes, injures, molests or destroys (a) a bird or its egg, (b) the nest of an eagle, peregrine falcon, gyrfalcon, osprey, heron or burrowing owl, or (c) the nest of a bird not referred to in paragraph (b) when the nest is occupied by a bird or its egg."

6.3.2 B.C. Water Sustainability Act

The B.C. *Water Act* (1996, updated to *Water Sustainability Act*, February 29, 2016) provides for the management of surface water through the allocation of rights to divert, store or use water for any purpose. It establishes an approval process required to enable works "in and about a stream," where a stream is broadly defined to include all surface watercourses, including man-made ditches. Sections of the *Water Act* that may be applicable to the Project include:

- Section 4: "Except for a purpose defined in section 1 of this Act, a person who is not registered under the *Water Protection Act* must not divert, extract, use or store any water from a stream."
- Section 5: "A license entitles its holder to do the following in a manner provided in the license:
 - a) divert and use beneficially, for the purpose and during or within the time stipulated, the quantity of water specified in the license;
 - b) store water;
 - c) construct, maintain and operate the works authorized under the license and necessary for the proper diversion, storage, carriage, distribution and use of the water or the power produced from it;
 - d) alter or improve a stream or channel for any purpose; and,
 - e) construct fences, screens and fish or game guards across streams for the purpose of conserving fish or wildlife.
- Section 9 (1): "The comptroller, a regional water manager or an engineer may grant an approval in writing authorizing on the conditions he or she considers advisable:
 - a) a person to make changes in and about a stream;
 - b) a minister of the Crown, either in right of Canada or of British Columbia, to make changes in and about a stream; or,
 - c) a municipality to make changes in and about a stream.
- Section 9 (2): "A minister, municipality or other person may only make changes in and about a stream in accordance with an approval under this section or in accordance with the regulations or a licence or order under this Act."

6.3.3 B.C. Environmental Management Act

The B.C. *Environmental Management Act* (2003) encompasses the Contaminated Sites Regulation, Hazardous Waste Regulation, and Spill Reporting Regulation and provides a permitting system to enable the authorized discharge of effluent to water, disposal of solid waste to land, and discharge of emissions to the atmosphere. Sections of the *Environmental Management Act* applicable to the Project include:

- Section 6 (1): "For the purposes of this section, "the conduct of a prescribed industry, trade or business" includes the operation by any person of facilities or vehicles for the collection, storage, treatment, handling, transportation, discharge, destruction or other disposal of waste in relation to the prescribed industry, trade or business. (2) Subject to subsection (5), a person must not introduce or cause or

allow waste to be introduced into the environment in the course of conducting a prescribed industry, trade or business. (3) Subject to subsection (5), a person must not introduce or cause or allow to be introduced into the environment, waste produced by a prescribed activity or operation. (4) Subject to subsection (5), a person must not introduce waste into the environment in such a manner or quantity as to cause pollution."

6.3.4 B.C. Heritage Conservation Act

The B.C. *Heritage Conservation Act* encompasses the protection and conservation of heritage property in B.C., including all archaeological sites on Provincial, Crown or private land that predate 1846. Sections of the *Heritage Conservation Act* applicable to this project include:

- Section 13 (1): *"Except as authorized by a permit issued under section 12 or 14, a person must not remove, or attempt to remove, from British Columbia a heritage object that is protected under subsection (2) or which has been removed from a site protected under subsection (2).*
- Section 13 (2): *"Except as authorized by a permit issued under section 12 or 14, or an order issued under section 14, a person must not do any of the following:*
 - a) *damage, desecrate or alter a Provincial heritage site or a Provincial heritage object or remove from a Provincial heritage site or Provincial heritage object any heritage object or material that constitutes part of the site or object;*
 - b) *damage, desecrate or alter a burial place that has historical or archaeological value or remove human remains or any heritage object from a burial place that has historical or archaeological value;*
 - c) *damage, alter, cover or move an aboriginal rock painting or aboriginal rock carving that has historical or archaeological value;*
 - d) *damage, excavate, dig in or alter, or remove any heritage object from, a site that contains artifact, features, materials or other physical evidence of human habitation or use before 1846;*
 - e) *damage or alter a heritage wreck or remove any heritage object from a heritage wreck;*
 - f) *damage, excavate, dig in or alter, or remove any heritage object from, an archaeological site not otherwise protected under this section for which identification standards have been established by regulation; and*
 - g) *damage, excavate, dig in or alter, or remove any heritage object from, a site that contains artifacts, features, materials or other physical evidence of unknown origin if the site may be protected under paragraphs (b) to (f);*
 - h) *damage, desecrate or alter a site or object that is identified in a schedule under section 4 (4) (a);* i) *damage, excavate or alter, or remove any heritage object from, a property that is subject to an order under section 14 (4) or 16."*

7. ENVIRONMENTAL CONSTRUCTION SPECIFICATIONS

The Contractor and any sub-contractors associated with the Project will comply with all provisions of the required environmental specifications.

7.1 EROSION AND SEDIMENT CONTROL

This Project should not require extensive erosion and sediment control (ESC) measures, but the pond will need to be protected from sedimentation from the areas that will be disturbed during the works. These areas will need to be promptly restored to stabilize and prevent future risk of sedimentation. Refer to the Reimer EIA.

The EM should be on site to direct the installation and removal of ESC measures. The placement of ESC measures will be photographed and noted in the EM reports.

To minimize the risk of impacts to watercourses the following reference ESC measures are outlined for the Contractor (additional measures or a combination of measures may be required dependent upon weather and environmental conditions):

- Install erosion and sediment control measures as needed adjacent to work areas to control potential releases of soils, sediment-laden, or contaminated water from entering nearby watercourses;
- Install upslope drainage interception to redirect clean uncontaminated water around work zones;
- Surrounding storm drains and culvert intakes should be plugged and/or protected if there is any risk of sediment-laden water discharge from the work site;
- If necessary, restrict the movement of groundwater or seepage where there is a potential for discharge of sediment-laden or contaminated water into nearby watercourses (including ditches) by ensuring isolation of the site prior to works;
- If necessary, pump or decant off sediment-laden or contaminated water from construction activities into an approved settling and/or treatment area;
- Pump discharge locations should be monitored for erosion or flooding and disturbance to vegetation should be minimized;
- Ensure backup pumps are available onsite in case of high rainfall events or equipment malfunctions;
- Silt fencing should be available onsite and should be installed as needed at work locations in accordance with the manufacturer's instructions. The silt fence should be installed adjacent and downslope of the silt generating/sediment mobilizing activity. Orientation should be in manner to intercept any sediment-laden water and reduce potential sedimentation from local runoff;
- Silt fence and spill booms can be used to keep sediment-laden water in appropriate areas;
- Stockpiles of erodible material should be kept covered with polyethylene sheeting to prevent sediment transport. Installation of silt fence around stockpiles may be required;
- Machinery and equipment should be operated from above the top of bank (TOB) of any watercourse whenever possible;
- ESC measures should be inspected and maintained regularly during works;
- Clean up and demobilize any temporary ESC measures once the area is stabilized;
- Remove all equipment, supplies and other materials from the sites upon completion of construction and/or when the area is stabilized; and,

- Replant any disturbed/exposed areas as soon as possible by hydroseeding with a Coastal Reclamation Mixture (or approved standard, refer to the EIA), applying mulch, or by planting native vegetation.

Silt fence should be installed as required and removed with the EM's approval when the works are complete. The base of the silt fence fabric should be installed in a 150 mm deep trench and covered with native material to prevent flow under the fence (per the manufacturer's instructions, and Figure 2 below). Supporting posts should be installed on the side of the fence opposite to the potential silt generating activity. These posts should be 50 mm x 50 mm (2" x 2") dimensional lumber embedded 450 mm below grade and spaced every 1.4 meters. The geotextile fence fabric should be Amoco 2125 or accepted equivalent woven polypropylene and meet or exceed the following physical properties (Table 3).

ESC materials that are typically on-site prior to the start of work, and maintained on-site throughout the term of the works, are:

- Silt fence;
- straw bales;
- storm sewer catch basin donuts or filter bags;
- filter cloth and matting;
- clean gravel (clear crush rock);
- rip-rap for erosion control; and,
- tarps and/or polyethylene sheeting.

Disturbed areas should be protected from splash erosion as soon as possible using 5 cm of loosened straw mulch and reseeded or replanted as soon as possible.

Provided that works proceed as expected, diligent work practices and adherence to BMPs should be sufficient for proper erosion and sediment control.

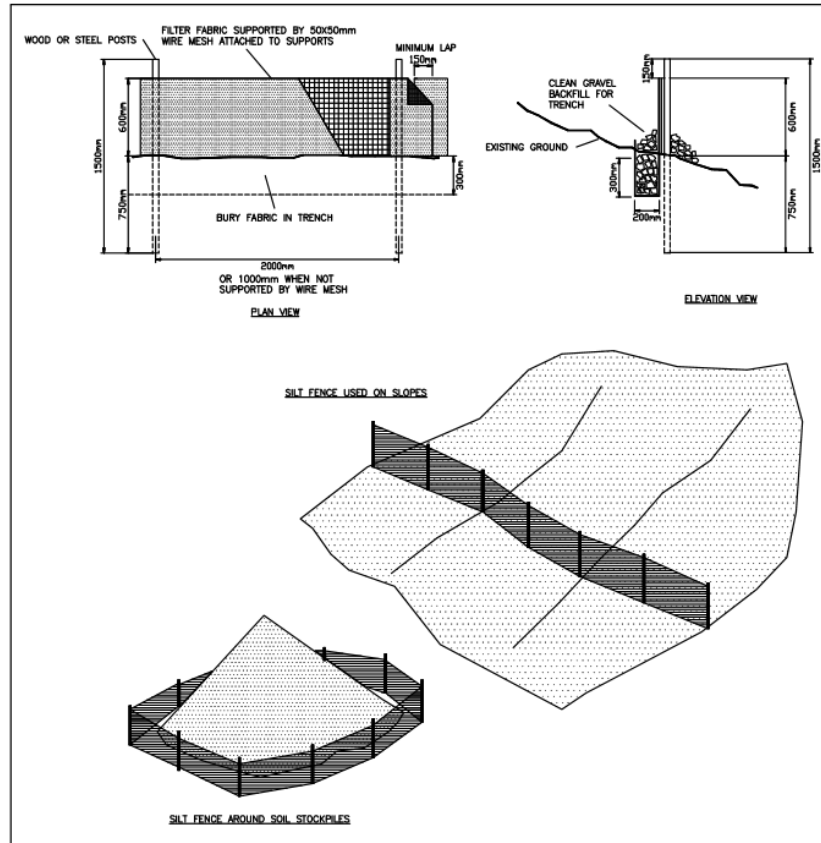


Figure 2. Typical silt fence construction details for installation and applications. DFO Land Development Guidelines for the Protection of Aquatic Habitat, 1992.

Table 3. Silt Fence Specifications.

Property	Test Method	Silt Fence
Grab Strength (N)	ASTM D-4632	445
Grab Elongation (%)	ASTM D-4632	15
Burst Strength (kPa)	ASTM D-3786	1895
Trapezoidal Tear (N)	ASTM D-4533	222
UV Resistance (%)	ASTM D-4533	80
Permittivity (L/sec/m ²)	ASTM D-4491	10
Width (m)		0.91
Mass per unit area (g/m ²)		97
Colour		Black

7.2 WATER QUALITY MANAGEMENT

No material, including sediment-laden water, should enter any watercourse, including ditches and streams.

If any issues with water quality are suspected, the EM should conduct water quality sampling for turbidity with a handheld turbidity meter and field multi-meter, and should look for visual and olfactory signs of suspended hydrocarbons.

Water quality sampling would typically involve the selection of three sampling locations, the first upstream of the site as a control, the second within or immediately downstream of the work area, and the third downstream of the work area at a distance chosen to determine the potential impact of the work. The third sampling station would not be required if the second is within acceptable water quality parameters.

Water quality within watercourses will be determined based on the parameters values listed below in Table 4.

Table 4. Water Quality Parameters.

Parameter	Criteria
Nephelometric Turbidity Units (NTU) ¹	<ul style="list-style-type: none"> - Change of 8 NTU in 24 hours when background is less than or equal to 8 - Change of 5 NTU when background is between 8 and 50 - Change of 10% when background is greater than or equal to 50 NTU
Oil and grease ²	Not detectable by sight or smell
pH ³	6.5 - 9.0

¹Values are from the BC Approved Water Quality Guidelines (Criteria) for Turbidity, Suspended and Benthic Sediments – Aquatic Life.

²Values are from the BC Approved Water Quality Guidelines (Criteria) for Drinking and Recreational Water Uses.

³Values are from the BC Approved Water Quality Guidelines (Criteria) for Freshwater Aquatic Life.

If work has the potential to impact water quality, the EM should be consulted and ESC measures must be installed prior to work beginning. See Section 7.1 for Erosion and Sediment Control. ESC supplies and spill kits will be available close to works and able to be deployed or installed quickly if ESC measures or spill kit materials are required. If water discharging from site does not meet water quality parameters corrective action will be required immediately under the advice of the EM.

7.3 AQUATIC HABITAT PROTECTION AND MITIGATION

This Project is being carried out within an aquatic habitat area. Careful management will be required. No material including sediment-laden water should be allowed to enter any watercourse.

The Contractor should adhere to the following reference fish habitat protection and mitigation requirements:

- Avoid placement of materials, vehicles, or equipment within 15 m of any watercourse;

- Whenever possible use existing roads or access routes;
- Install effective sediment and erosion control measures and conduct construction activities in a manner which minimizes potential for contamination or siltation into watercourses – for reference, see Section 7.1: Erosion and Sediment Control; and,
- Avoid any deposition of deleterious substances into aquatic environments – for reference, see Section 7.6: Spill Prevention and Emergency Response.

7.4 WILDLIFE HABITAT PROTECTION AND MITIGATION

Minimizing the Project footprint will help ensure that impact to wildlife habitat is minimized. If clearing must occur during the nesting bird window, please refer to Section 7.5.1 below for nesting bird surveys.

The Contractor and any sub-contractors should adhere to the following reference wildlife resource and habitat protection and mitigation requirements:

- Minimize risk of human-wildlife conflict throughout the Project area;
- Crews must not deliberately or inadvertently feed wildlife;
- Food scraps and garbage should be removed from the work site daily, or stored in animal-proof containers;
- All wildlife sightings should be reported promptly to the EM; and,
- Nuisance wildlife should be promptly reported to a Conservation Officer.

7.5 CLEARING AND VEGETATION MANAGEMENT

The Contractor should conduct their operations and operate all equipment in a manner that minimizes the destruction, scarring or defacing of trees, shrubs or plants. The project sites are generally in paved, mowed, or otherwise disturbed areas. The loss of some vegetation will occur, but it is anticipated that this will be restricted to shrubs and ground cover.

Clearing and grubbing should take place during dry conditions, with special care taken to adhere to ESC BMPs. Clearing and grubbing boundaries should be clearly marked prior to works taking place, to minimize the footprint of the clearing to that required for the Project.

If the limits of required clearing are within a patch of invasive plant growth, the Owner's representative will decide whether additional clearing to remove the infestation should take place. Please refer to the invasive plants management plan in Section 7.5.3 for clearing invasive plants.

The Contractor should adhere to the following reference BMPs for clearing and vegetation management:

- Clearly flag clearing limits;
- Avoid disturbance to areas outside of the work zone;
- ESAs should be clearly marked, protected, and conserved where possible;
- Clear vegetation during non-nesting portions of the year when practical – avoid spring clearing;

- Clearing and grubbing should take place during favourable weather and low water conditions to minimize erosion from disturbed soil surfaces;
- Works should be completed as soon as possible once they are started. Exposed soil areas should be protected and stabilized at the end of each work day;
- Slopes should be covered and stabilized using polyethylene sheeting, erosion control blankets, or by planting with native vegetation;
- Materials such as riprap placed around headwalls or within the active channel or floodplain of any watercourse should be clean, inert, and free of silt, overburden, debris, or any substance deleterious to aquatic life;
- Cleared and grubbed material and debris should be removed immediately from the work site or placed in a stable area above TOB, as far as possible from a watercourse; and,
- Disturbance to vegetation on and adjacent to the banks of any watercourse should be minimized.
- Leave previously existing debris in its natural state when practical; and,
- Only remove vegetation required to perform the work. Leave understory and non-target vegetation when possible.

7.5.1 Nesting Bird Surveys

If clearing is required within the nesting bird window (January 1st to September 30th), pre-clearing nest surveys will be required. Nesting bird surveys should be conducted by the EM not more than 3 days prior to clearing. The surveys would include both searching for nest structures and observing bird song and behavioural cues. Behaviours to not would include adults carrying nesting material, food to the nest or fecal sacs away from the nest, young begging for food, or adults flushing, giving alarm calls, distraction displays, or exhibiting agitated behaviour.

A raptor nest survey would also be included. Raptor nests are protected year round, whether occupied or not.

If evidence of nesting activity is observed by the EM, even if the nest location is not identified, a site-specific management plan will be prepared. The plan will include the establishment of a species-appropriate buffer around the active nest area, and nest activity will be monitored to ensure nest occupants are not being disturbed by the works. Once the EM has determined that the occupants of the nest have fledged, clearing within the buffer zone can resume.

In the unlikely event that a raptor nest is discovered within or in close proximity to the Project footprint, the Owner's representative will be contacted to determine if the sign location can be strategically relocated to avoid impacting the nest.

7.5.2 Minimizing Impacts to Trees

Minimizing impacts to trees is an important consideration, although trees of significance are not likely to be located in close proximity to the Project footprint. The root systems of significant trees can be extensive and can be adversely impacted by Project works.

No impacts to significant trees are expected. Should clearing be required in proximity to any trees of significance, the EM should be contacted prior to works beginning in the area to flag or fence buffer zones around the significant trees, to prevent damage to the trees or their root systems.

7.5.3 Invasive Plants Management Plan

Invasive plants are non-native plant species that have the potential to pose detrimental impacts on humans, animals, or ecosystems. Noxious weeds are invasive plants that have been designated under the *B.C. Weed Control Act*, which imposes a duty on all land occupiers to control this set list of invasive plants.

The Contractor should adhere to the following reference BMPs for invasive plants:

- All equipment is to arrive on site clean and free of any remnant soils, seeds, and plant materials to minimize the risk of introducing invasive plants or noxious weeds;
- Ensure that invasive plants are mentioned in tailboard meetings and that crews are familiar with Figure 5 above;
- Report any unflagged or suspected infestations to the EM;
- Keep equipment clean and avoid spreading invasive plants by avoiding infested areas when parking, turning around, or staging;
- Inspect and clean equipment and vehicles before leaving an infested area, and before entering a clean (invasive species free) area;
- Minimize unnecessary disturbance and retain desirable vegetation where possible;
- Mow or brush clean areas first and end in infested areas;
- Do not allow cut material to enter a watercourse;
- Use only clean fill material; and,
- Restore disturbed sites to promote revegetation with native species.

7.6 SPILL PREVENTION AND EMERGENCY RESPONSE

The Contractor should undertake daily inspections of all equipment to ensure they are in proper working order and check for signs of leakage. Daily inspections should include ensuring that spill kits are fully stocked, that all machines are equipped with spill kits on board, or that spill kits are easily accessible at the work Site location.

Spill kits in vehicles and equipment should include:

- 20 absorbent pads;
- 2 3" by 4' absorbent socks;
- 2 heavy duty hazmat disposal bags; and,
- 1 pair of nitrile gloves.

The Contractor should maintain a readily available supply of spill prevention and emergency response equipment (i.e. absorbent pads, booms, etc) on site at all times and should ensure

that personnel are trained in their proper use and application to ensure they are prepared to deal with any environmental emergency situations.

Used spill cleanup materials will be kept in an appropriately labelled and sealed container which will be kept closed and protected from rainfall at all times.

This EMP and the included Spill Prevention and Emergency Response Plan in Appendix 2 must be kept on site at all times. In the event of a spill, the form in Appendix 3 should be used to gather the appropriate information for the required spill reporting.

7.7 MATERIAL STORAGE AND HANDLING

Waste materials shall be removed and disposed of in accordance with the *B.C. Environmental Management Act ([SBC 2003] CHAPTER 53)*, *B.C. Special Waste Regulations* (B.C. Reg. 63/88) and *Transportation of Dangerous Goods Act and Regulations*. All activities will be conducted in an environmentally responsible manner. No waste should be permitted to enter the environment.

The Contractor should ensure that the following steps occur:

- Minimize waste where practical;
- The work site should be kept free of litter;
- Ensure that an adequate number of appropriate waste containers are available;
- Designate a safe area for temporary waste storage with adequate containment, secure and protected from weather until removal and disposal can be arranged;
- Categorize and label all waste materials appropriately. Sampling and analysis of waste materials may be required to determine the appropriate disposal option;
- Hazardous wastes, dangerous goods, and controlled products must be stored and handled to prevent loss and to allow containment and recovery in the event of a spill, in accordance with applicable legislation and regulations;
- Check to ensure that Special Waste registration, storage, permit and transportation requirements are met, if applicable; and,
- Remove all waste materials from the site as soon as possible in accordance with all applicable standards and regulations.

7.8 VEHICLES, EQUIPMENT, OILS & FUELS

Prior to arrival on site, the Contractor should check all equipment for leaks and excess lubricant, and inspect all machinery for leaks or worn hoses or fittings, and make any necessary repairs. Equipment should arrive on site clean and in good mechanical condition.

All crew and contractors fuelling equipment should have an environmental orientation to the work site and should understand the environmental risks of each area. They should be equipped with adequate spill prevention and response measures, should have appropriate training, and should follow BMPs with regard to fuel handling.

The following mitigation measures should occur:

- Prevent oils and fuels from entering any stream, pond, wetland, ditch, or storm system;
- Refuelling of all equipment should be conducted a minimum of 30 m from any watercourse;
- Where practical, biodegradable hydraulic fluids should be used on machinery and equipment working near watercourses;
- Daily machinery and equipment inspections should be conducted;
- All oil and fuel containers as well as equipment containing fuels or lubricants should be stored in secondary containment;
- All storage tanks must be inspected to ensure there are no potential leaks prior to, during, and after filling;
- All oil and fuel containers and fuel storage tanks must be designed for that purpose, be of approved type, and have all seals and caps in place and tightly fastened;
- Refuel machinery at the beginning of each work day to minimize the potential impact of an overnight leak or vandalism;
- Ensure that all fueled vehicles are parked only in designated areas on site with brakes applied and wheels chocked;
- All construction vehicles, equipment, and heavy machinery must be equipped with spill kits including sufficient quantities of absorbent pads, booms, and small leak-proof waste containers;
- Spill kits are to be used only in the case of a spill incident, and not for day to day equipment and tool management;
- Containment for 110% of the fuel and lubricants on the equipment parked in sensitive areas should be present;
- Containers should be properly labelled;
- No storage of fuels in ESAs;
- Block any drains in work areas using suitable devices to contain potential oil spills at the source;
- Use drip trays and absorbent pads under any heavy duty equipment that is working in a stationary position;
- Wrap hose connections with sorbent material to ensure there are no potential leaks prior to, during, or after fueling;
- Do not fill tanks to the top – leave adequate head-space to ensure that overfilling does not occur; and,
- If a leak is observed, stop the equipment and place drip trays and absorbent matting under the leak immediately, and repair the leak prior to continuing work.

See Section 5.2 for environmental reporting and incident reporting in the event of a spill or leak to the environment. Refer to Appendix 2 for the Spill Prevention and Emergency Response Plan. In the event of a spill, the form in Appendix 3 should be used to gather the appropriate information for the required spill reporting.

7.9 CONCRETE AND CONCRETE PRODUCTS

Concrete, cement, mortars, grouts, and cements or lime-containing products are basic, or alkaline in nature and are highly toxic to fish (MWLAP, 2004). Complete isolation of all concrete work during construction is required. All concrete wastewater or curing water should be considered toxic. No uncured concrete, concrete wash water or tools will be permitted to come into contact with water that is connected to fish-bearing waters. All equipment will be cleaned in an area where wash water will not enter a watercourse or drainage system, at least 30 m away from a watercourse.

During concrete pours within 30 m of a watercourse, pH should be monitored by the EM within the surrounding water bodies and CO₂ tanks and dispersal equipment should be on site. The CO₂ kit should be inspected and maintained regularly to ensure it is ready for use when needed. Any spills of concrete or concrete wash water area will be immediately reported to the EM.

The following reference BMP's should be referred to and implemented during construction activities to help meet the requirements of applicable legislation:

- Where possible use pre-cast concrete structures;
- Do not deposit, directly or indirectly, any concrete products into or about a watercourse;
- Any in-channel concrete pours, i.e. headwalls, should have forms inspected by the EM before any pours are conducted;
- Containment facilities should be available for washout of delivery trucks. There is to be no washout of trucks within the vicinity of any flowing water;
- Report any spills of concrete, concrete wash or concrete fines immediately to the EM and Project Manager;
- Isolate and hold any water that comes in contact with uncured concrete until the pH is between 6.5 and 8.0 and turbidity is less than 25 NTU;
- Completely isolate all concrete work from any water; and,
- Completely isolate all cast-in-place concrete and grouting from watercourses for a minimum of 48 hours if the ambient air temperature is above 0°C and for a minimum of 72 hours if ambient air temperatures are below 0°C.

7.10 NOISE

The Contractor should implement the following guidelines and procedures to minimize construction noise generated during the Project:

- Maintain equipment in good working order; and,
- Implement standard construction practices and use of "Best Available Control Technologies" for noise control on construction equipment.

7.11 AIR QUALITY AND DUST CONTROL

The Contractor should control dust and other airborne emissions that may arise from construction activities.

7.11.1 Idling Reduction Plan

The Contractor should undertake measures to minimize the idling time of construction vehicles and equipment. The Contractor is encouraged to utilize idle reduction technologies where appropriate and applicable. In order to reduce the greenhouse gas emissions idle resultant from this project idling times should not exceed the following:

- Motor vehicles and light duty trucks – 1 minute;
- Heavy duty diesel vehicles – 5 minutes;
- Diesel vehicles involved in construction Site passenger transportation – 10 minutes; and,
- Construction equipment – exempt when actually employed at the Site for the work intended.

Idling for more than the above times is permitted only under the following circumstances:

- When the vehicle or equipment is forced to remain motionless because of other traffic conditions or mechanical difficulties over which the operator has no control;
- To bring the vehicle or equipment to the manufacturer's recommended operating temperature;
- When the outdoor temperature is below 0°C or exceeds 30°C and the operator or passengers are inside the vehicle, and there is no auxiliary power sources available to provide temperature control;
- When it is necessary to operate auxiliary equipment that is located in or on the vehicle or equipment to accomplish the intended use of the vehicle or equipment (for example, cranes and cement mixers);
- When the vehicle is detaching or exchanging a trailer;
- When the vehicle or equipment is being repaired or engaged in repairing another vehicle, if idling is necessary for such repair;
- When the vehicle or equipment is queued for inspection, if idling is necessary for such inspection;
- For designated emergency vehicles or any vehicle or equipment assisting in police, fire, or ambulance services; and/or,
- When defrosting or defogging windows. Idling shall end when fog, frost, or ice conditions have been eliminated.

Staging areas should be located to minimize the impact of emissions:

- Locate combustion engines away from sensitive receptors such as fresh air intakes, air conditioners, and windows; and,
- Establish a staging zone for trucks that are waiting to load or unload material in the Project area, away from sensitive receptors.

In order to meet idle reduction goals, the Contractor should implement a system of education and training as part of the Site orientation, and should reinforce the idle reduction initiative via signage and during toolbox, health and safety, and Ministry meetings.

7.11.2 Dust Reduction Plan

The Contractor should undertake the following measures to minimize onsite dust and debris cause by construction vehicles and equipment:

- A street sweeper is to be used to ensure the site is kept clean from excess dust and debris on the road surface and surrounding area; and,
- Water may be used to control dust, if needed.

7.12 ARCHEOLOGY AND HERITAGE SITES

If heritage or archaeological features are exposed during any of the planned activities, refer to the Project-specific chance find management guidelines. This will be the case for artifacts, remains, features and any other potential sources. As a first step in the procedure, all work will stop until a qualified specialist can make an assessment.

Appendix 1

Contractor Environmental Orientation Record



Contractor Environmental Orientation Record

The Contractor Environmental Orientation Record (CEOR) should be completed for all contract work involving an environmental component. The Titus Environmental Monitor (EM) is responsible for ensuring that the environmental requirements of the work are reviewed with the Contractor before work is started, and that a record of the discussion is documented on the CEOR. The form must be signed by the Titus EM, Client, and Contractor. By signing the CEOR, the Contractor indicates he/she has been advised of the environmental requirements of the contract. The CEOR should be distributed to all applicable parties.

Date:		Project No.	
1	Project Information		
	Project Title		
	Project Description		
	Project Location		
2	Contractor Information (if applicable)		
	Company Name		
	Company Address		
	Site Contact/Representative Name		
	Tel. #	Fax #	E-mail
3	Environmental Management Plan / Environmental Practices Review the environmental issues and requirements of the work as specified in the Environmental Management Plan (EMP) or Environmental Practices (EP).		
	Is there an EMP are or there EP for the work? If so, have copies been provided?	<input type="checkbox"/> Yes	<input type="checkbox"/> NA
	Have the environmental requirements been reviewed with the contractor and the contractor's staff? (Use the checklist below to guide discussion)	<input type="checkbox"/> Yes	<input type="checkbox"/> NA
4	Environmental Issues	Environmental Protection Requirements	Discuss NA
	Soil erosion / compaction		<input type="checkbox"/> <input type="checkbox"/>
	Vegetation disturbance or removal		<input type="checkbox"/> <input type="checkbox"/>
	Invasive plants		<input type="checkbox"/> <input type="checkbox"/>
	Generation and disposal of hazardous substances		<input type="checkbox"/> <input type="checkbox"/>
	Generation and disposal of waste		<input type="checkbox"/> <input type="checkbox"/>
	Spill of hazardous substances		<input type="checkbox"/> <input type="checkbox"/>
	Fuel and flammable storage		<input type="checkbox"/> <input type="checkbox"/>
	Dust generation / other air emissions		<input type="checkbox"/> <input type="checkbox"/>
	Water quality – erosion and siltation		<input type="checkbox"/> <input type="checkbox"/>

Fish and Aquatic - Habitat alteration, disturbance or loss		<input type="checkbox"/>	<input type="checkbox"/>
Wildlife and Bird - Habitat alteration, disturbance or loss		<input type="checkbox"/>	<input type="checkbox"/>
Disturbance to Heritage Resources / Archaeological Sites		<input type="checkbox"/>	<input type="checkbox"/>
Visual Impacts / Noise Concerns		<input type="checkbox"/>	<input type="checkbox"/>
Property Considerations		<input type="checkbox"/>	<input type="checkbox"/>
Disruption of Recreation Use		<input type="checkbox"/>	<input type="checkbox"/>
Public Safety Concerns		<input type="checkbox"/>	<input type="checkbox"/>
Do the tools and equipment meet the requirements?		<input type="checkbox"/>	<input type="checkbox"/>

5 Permits and Approvals Information: Ensure the necessary environmental permits and approvals relating to the work have been obtained prior to starting work.

Are environmental notifications, permits, licenses or approvals required?	<input type="checkbox"/> Yes	<input type="checkbox"/> NA
List applicable regulatory requirements and permit reference numbers below:		
Have the permits, licenses and approvals obtained and / or checked?	<input type="checkbox"/> Yes	<input type="checkbox"/> NA

6 Emergency Response Plan / Oil and Chemical Spill Response Plan

Has the Emergency Response Plan discussed?	<input type="checkbox"/> Yes	<input type="checkbox"/> NA
Has the Oil and Chemical Spill Response Plan discussed?	<input type="checkbox"/> Yes	<input type="checkbox"/> NA
Are there spill kits available on location?	<input type="checkbox"/> Yes	<input type="checkbox"/> NA
Where are the spill kits located?		

7 Environmental Incident Reporting Ensure Contractor is aware of Environmental Incident Reporting (EIR) system.

Environmental Incident Reporting Procedures discussed?	<input type="checkbox"/> Yes	<input type="checkbox"/> NA
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The undersigned has been briefed on the environmental requirements of the work as detailed above.

Signed: _____ Contractor Date: _____

Counter-signed: _____ Titus Representative Date: _____

Additional Comments:

PLEASE RETURN A COPY OF THE SIGNED FORM TO THE TITUS ENVIRONMENTAL MONITOR



Appendix 2

Reference Spill Emergency Response Plan

If a spill of fuel, oils, unmixed cement, lubricants or other harmful substances occurs, the following reference procedures should be implemented.

Response Steps

1. **Ensure Safety**
2. **Stop the Flow** (When Possible)
3. **Secure the Area**
4. **Contain the Spill**
5. **Notify/Report** (Emergency Management BC 1-800-663-3456)
6. **Clean-Up**

(Circumstances may dictate another sequence of events)

1. ENSURE SAFETY

- Ensure personal/public, electrical and environmental safety
- Wear appropriate Personal Protective Equipment
- Never rush in, always determine the product spilled before taking action
- Warn people in immediate vicinity
- Ensure **no ignition sources** if spill is of a flammable material

2. STOP THE FLOW (WHEN POSSIBLE)

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

3. SECURE THE AREA

- Limit access to spill area
- Prevent unauthorized entry onto site

4. CONTAIN THE SPILL

- Block off and protect drains and culverts
- Prevent spilled material from entering drainage structures (ditches, culverts, drains)
- Use spill-sorbent material to contain spill
- If necessary, use a dike or any other method to prevent any discharge off site
- Make every effort to minimize contamination
- Contain as close to the source as possible

5. NOTIFY / REPORT

- Notify appropriate Site Supervisor or alternate of incident (provide spill details)
- When necessary the first external call should be made to (see spill reporting requirements):
Emergency Management BC 1-800-663-3456 (24 hour) (SPILL REPORTING SHALL BE INITIATED BY THE PROJECT MANAGER AND PROJECT ENVIRONMENTAL MANAGER OR A DELEGATE)
- Provide necessary spill details to other external agencies (see spill reporting requirements)
- Complete an Environmental Incident Report (EIR) available from the Environmental Monitor.

Spill Reporting Notification Chart

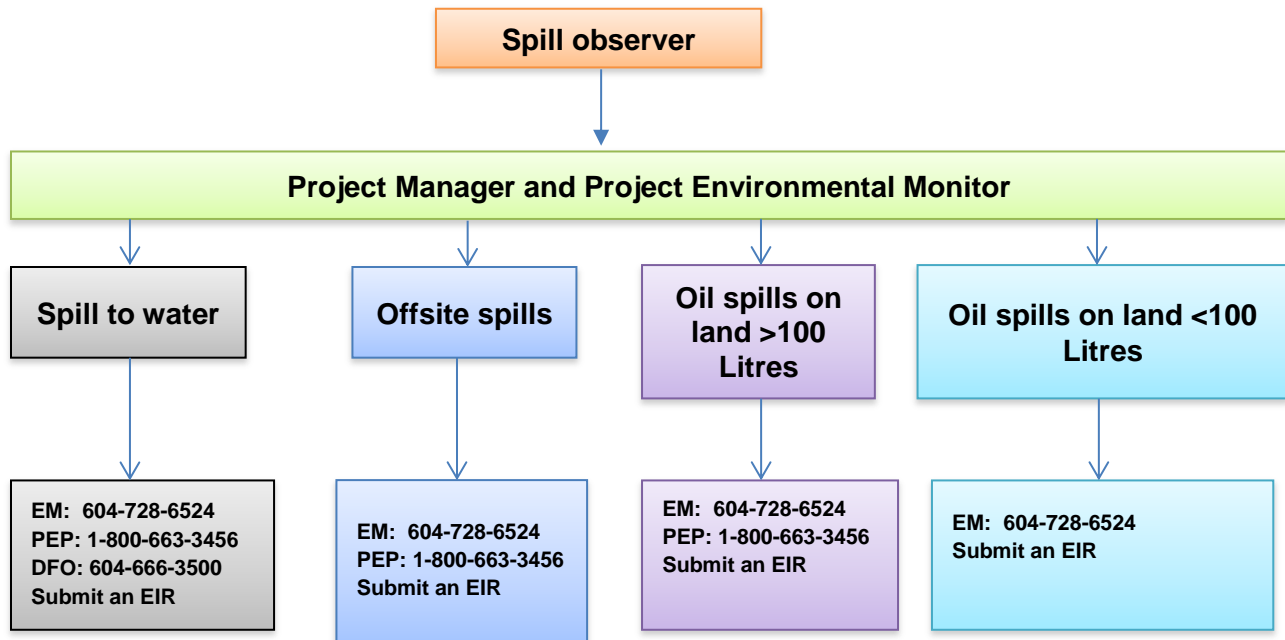


Table 1: List of externally reportable quantities for commonly used substances

Product	Quantity
Class 2.1 - flammable gas (e.g., propane)	10 kg or 10 min.
Class 2.2 - non flammable gas (e.g., SF6, CO2)	10 kg or 10 min.
Class 3 - flammable liquids	100 litres
Class 8 - corrosive liquid acids and caustics (e.g., battery acid)	5 kg or litres
Class 9 - environmentally hazardous (e.g., PCB's, used ethylene glycol)	1 kg or litre
Oil & Waste Oil	100 litres
Other Substances (e.g., new antifreeze, power-wash water)	200 kg or litres
Pesticides & Herbicides	1 kg or litre

Note: All spills to water are reportable. If in doubt as to whether or not to report a spill, err on the side of caution and report the spill immediately to the Environmental

Project Manager. Agency notification will be initiated by the Environmental Project Manager or the Environmental Monitor.

Emergency Contacts

Project Management

- Refer to Contact List on Page 3.

Spill Reporting and Emergencies

- Emergency Management BC 1-800-663-3456

Other Contacts

- Department of Fisheries and Oceans 604-666-8266
- Ministry of Forests, Lands, and Natural Resource Operations 604-582-5200

6. CLEAN-UP

- All equipment and/or material used in clean-up (e.g. used sorbents, oil containment materials etc.) must be disposed of in accordance with BC Ministry of Environment (MOE) requirements.
- Accidental spills may produce special wastes (e.g., material with > 3% oil) and contaminated soil. All waste disposals must comply with the *BC Hazardous Waste Regulations* (BC Reg. 63/88) and the *BC Environmental Management Act* ([SBC 2003] CHAPTER 53).
- Waste-contaminated sorbent material may not be disposed of in a landfill without prior approval from MoE and the landfill operator.
- Contaminated soil must be treated and dealt with as required on a site-specific basis and must comply with the requirements of the *BC Contaminated Sites Regulations* (B.C. Reg. 375/96).



Appendix 3

Spill Reporting Information Form

Provincial Emergency Program 1-800-663-3456

This form is based on the reporting information required under the *B.C. Spill Reporting Regulation*. Please complete this form and retain on file.

Person reporting spill:	Phone number:
Date of reporting:	Time of reporting:
Person causing spill (if known):	Phone number:
Date of spill:	Time of spill:
Spill location:	
Material type:	
Material quantity:	
Weather conditions:	
Agencies contacted: <input type="checkbox"/> Police/Fire Dept (911) <input type="checkbox"/> MoE Hotline (1-800-663-9453) <input type="checkbox"/> Provincial Emergency Program (1-800-663-3456 or 604-663-3456) <input type="checkbox"/> DFO 24h Hotline (604-666-3500) <input type="checkbox"/> CANUTEC (1-800-226-8832) <input type="checkbox"/> Others:	
Cause(s) and effect(s) of spill:	
Spill containment and clean up procedures initiated:	
Description of spill location and surroundings:	
Distance to nearest public facility, residence, First Nations community:	
Distance to nearest stream, water bodies, sensitive areas:	
Other comments/actions taken:	
Agencies on the scene:	
Report completed by:	Phone number:
Title:	Date:

Appendix 4

Heritage and Archaeological Resources Observations Flowchart

If you come upon evidence of past human occupation, such as:
Human bone, stone tools, shell deposit (middens), pithouses, rock paintings, culturally modified trees

STOP WORK IMMEDIATELY, and notify your supervisor, as soon as possible and **avoid** disturbing the site. The Supervisor will notify the Environmental Monitor designated for the works.

Why?

You may have discovered unrecorded archaeological resources, which are protected under the Heritage Conservation Act. Under this Act, all contractors are responsible for protecting archaeological resources uncovered during the course of work.

If you come upon suspected human remains you should:

Stop working immediately and notify the police and your supervisor as soon as possible. AVOID disturbing the site.

Why:

1. You may have discovered a crime scene. Any disturbance may hamper a police investigation.
2. You may have uncovered an archaeological site. The burial remains and any related artifacts are protected by the Heritage Conservation Act.
3. It shows respect for the human remains.

Who to call:

RCMP Pender Island: (250) 629-6171