

# GIYUXW (KEOGH) RIVER

## TRANSPORT CANADA BRIDGE REPLACEMENT PROJECT CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN



**Prepared for:**  
PUBLIC SERVICES AND PROCUREMENT CANADA  
SUITE 401 – 1230 GOVERNMENT STREET  
VICTORIA, BC  
V8W 3X4

**Prepared by:**



**PSPC TA: 700559357; Project #: R.109401.002**  
**AquaTerra Project No. 2016425 (10-01)**  
**AquaTerra Project No. 2020831**  
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DRAFT	25 June 2021	BZ	CL		DRAFT FOR REVIEW
0	13 July 2021	CL	CL	RM	INTERNAL COMMENTS INCORPORATED

### Key Personnel and Contact Information

Organization	Position	Name	Tele.	Cellular	Email
PSPC	Project Manager	Trevor Greer	-	236-334-8052	Trevor.Greer@pwgsc-tpsgc.gc.ca
	Env. Specialist	Rachel Myers	-	236-464-5456	Rachel.Myers@pwgsc-tpsgc.gc.ca
	Capital Projects Mgr.	Gaurav Sandha	-	-	Gaurav.Sandha@tc.gc.ca
Transport Canada	Airport Manager	Jason Tran	-	250-902-8275	Jason.Tran@tc.gc.ca
	Env. Lead	Suzanne L'Heureux	-	-	Suzanne.L'Heureux@tc.gc.ca
WSP	Site Inspector	TBD		TBD	TBD
AquaTerra Environmental Ltd.	Project Biologist	Chris Lee	604-357-3475	604-765-2993	chris@aquaterra.ca

### 24 Hour Emergency Contacts

Organization	Position	Name	Telephone	Cellular	Email
PSPC	Project Manager	Trevor Greer		236-334-8052	Trevor.Greer@pwgsc-tpsgc.gc.ca
PSPC	Environ. Specialist	Rachel Myers		236-464-5456	Rachel.Myers2pwgsc-tpsgc.gc.ca
Contractor	Project Manager	TBD		-	-
AquaTerra Environmental Ltd.	Project Biologist	Chris Lee	604-357-3475	604-765-2993	chris@aquaterra.ca

### Emergency Spill Response Contacts

Organization	Telephone
Emergency Management of BC (EMBC)	1-800-663-3456
Fisheries and Oceans Canada 24h Emergency Hotline	1-800-465-4336; 604-666-3500
Ministry of Environment Conservation Officer	604-898-2175
Fire / Police / Ambulance	911
Port Hardy	250-949-6665

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## 1. BACKGROUND

The Keogh River ('Giyuxw'; the 'river') is a 31 km, third-order coastal stream that is situated in the traditional territory of the Kwakiutl First Nation ('Kwakiutl'). The river drains an area of approximately 129 km<sup>2</sup> and flows northwestward into Queen Charlotte Strait near Port Hardy on Northern Vancouver Island. The Port Hardy regional airport lands are located adjacent and northwest of the Keogh River and is serviced by an emergency secondary access point that includes an existing bridge spanning the river (**Figure 1**). The location of the bridge is in an area that is of cultural and historical significance to the Kwakiutl, which includes a nearby historical fish weir, stone trap, and community harvests. Transport Canada (TC) has determined that the bridge has reached the end of serviceable life and requires a full replacement including new footings and abutments. Public Service & Procurement Canada (PSPC) retained AquaTerra Environmental Ltd. (AquaTerra) on behalf of TC to prepare a Construction Environmental Management Plan (CEMP) and to provide environmental oversight services during the construction of the proposed project.

**Figure 1:** Port Hardy Airport, Keogh River, and Transport Canada Bridge Location (Red Arrow).



## 2. ENVIRONMENTAL POLICY STATEMENT

This Construction Environmental Management Plan (CEMP) is intended to address potential environmental issues associated with the Giyuxw (Keogh) Bridge Replacement project. Site specific mitigation measures and management strategies have been developed by AquaTerra in consultation with TC, PSPC and the Kwakiutl Nation, which have been adapted as part of this CEMP. A copy of this CEMP is to be kept on site at all times over the duration of the works.

## 3. ENVIRONMENTAL MANAGEMENT PLAN OVERVIEW

### 3.1. *Environmental Management Plan Objectives*

The primary objectives of this CEMP are as follows:

- To describe in detail the approach being taken to achieve project-related objectives;
- To outline and effectively manage surface water / stormwater drainage and sediment control;
- To minimize risks to the environment associated with the project via adherence to this CEMP combined with appropriate Environmental Monitoring and Environmental Oversight;
- To provide Transport Canada, PSPC, the contractor, and applicable regulatory authorities with a level of certainty that the project will be conducted by the contractor in compliance with relevant statutes, regulations, directives, permits and approvals from legislative authorities in all matters relating to environmental protection;
- To outline hazardous materials handling procedures;
- To outline solid waste handling procedures;
- To provide spill prevention and emergency response planning procedures;
- To protect aquatic and terrestrial habitat and resource values within and adjacent
- To meet the project conditions specified in the regulatory permits / letters; and
- To meet the requirements of applicable federal legislation including the:
  - *Fisheries Act; and*
  - *Species at Risk Act.*

*To ensure appropriate environmental protection measures are in place for this project occurring on federally administered land, Transport Canada will also utilize Provincial regulation and guidance when and where deemed appropriate (e.g. Environmental Management Act [EMA] and the Heritage Conservation Act [HCA]).*

### **3.2. Adherence to the Construction Environmental Management Plan**

Adherence to the CEMP will be the responsibility of the contractor. Deviation from the construction activities, scope of schedule outlined in this CEMP may necessitate a revision to this document followed by supplementary review from TC, PSPC, AquaTerra, and regulatory authorities, if deemed necessary.

### **3.3. Construction Environmental Management Plan Review and Updates**

As the construction schedule evolves, amendments to this CEMP may be required with review and input from TC and PSPC. Similarly, feedback from regulatory agencies may necessitate the inclusion of supplementary mitigation measures. The CEMP will be regularly reviewed and updated, as required, to address the following:

1. Changes in the project management process;
2. Changes identified by the continuous improvement of processes;
3. Additional terms and conditions of the regulatory permits / letters;
4. Changes in design or construction sequence, staging, methodology, or resourcing;
5. Progress in the design of construction works;
6. Changes in project area access;
7. Changes to the local area environment;
8. Changes in generally accepted environmental management practices;
9. New identified risks to the environment or its inhabitants, including species-at-risk;
10. Any pollution, contamination, or changes in law; and
11. Requests or directions from regulatory authorities.

### **3.4. Construction Environmental Management Plan Governance**

This CEMP is the project reference document relating to environmental protection practices and is to be implemented and adhered to by the contractor and their



designated Environmental Monitor (EM), inclusive of contractor personnel and subcontractors, over the duration of the project. The contractor and their sub-contractors must also comply with all applicable legislation, guidelines, approvals, permits, authorizations, conditions, agreements, and policies. Other specific contractor responsibilities as outlined in this CEMP include, but are not necessarily limited to, the following:

1. Familiarization, implementation, and adherence to the CEMP requirements by all contractor and subcontractor personnel;
2. Familiarization of environmental sensitivities within and immediately adjacent to the project area and establishment of a reporting protocol for unique observations and environmental incidents warranting further investigation;
3. Regular environmental monitoring and inspections to verify environmental protection and appropriateness of implemented mitigation measures and environmental monitoring associated with works in the vicinity of the Keogh River, laydown area, and adjacent watercourses / sensitive areas, as deemed acceptable by all parties;
4. Work area isolation and fish and wildlife salvage(s) by the EM;
5. Water quality monitoring by the EM;
6. Addressing waste management over the duration of the project;
7. Erosion and sediment control planning and implementation; and
8. Emergency spill prevention and response.

#### **4. PROJECT DESCRIPTION**

##### ***4.1. Project Overview***

The project consists of demolition and removal of the existing bridge / footings, and construction of a new bridge immediately upstream to the south. The bridge, located approximately 500 m east of the airport runway terminus, was constructed in the 1970s and a recent engineering report completed by WSP (Engineering Service For Keogh Bridge Replacement – Phase 2 Options Study Report; 31 March 2020) concluded that the structural panels illustrated some signs of corrosion, with the bridge abutments constricting the width of the river channel with a risk of erosion failure. The report also noted that the existing timber crib wall abutments are rotting and showing signs of settlement and rotation. The report concluded that the bridge has an estimated live load rating of 9,100 kg, which is considerably less than the original design rating and the

required load for use by emergency vehicles. As such, bridge replacement was deemed to be required to ensure continued emergency access to and from the airport.

#### **4.2. Project Schedule**

The project is anticipated to commence in August 2021, with work tentatively scheduled to be completed in October or November 2021.

### **5. PROJECT ENVIRONMENTAL NOTIFICATIONS AND APPROVALS**

A Request for Review (RFR) has been submitted to Fisheries and Oceans Canada (DFO) and a response is currently pending.

### **6. ENVIRONMENTAL MANAGEMENT**

#### **6.1. Structure and Responsibilities**

##### **Contractor**

The contractor will ensure that the project is constructed in accordance with the CEMP and relevant guidelines, statutes, acts and other pertinent legislation to achieve the environmental objectives established by TC and PSPC.

The contractor will report to the Project Manager describing the progress of construction and will be responsible for managing and scheduling construction-related tasks. The contractor will liaise regularly with the Project Biologist to discuss the construction schedule so works with a potential to impact the environment can be identified and implementation of environmental mitigation and monitoring strategies can be verified prior to the onset of works.

##### **Environmental Monitor**

###### **6.1.1. Environmental Monitor**

The Environmental Monitor (EM; who must be a Registered Professional Biologist (RPBio), Professional Biologist (PBIol) will conduct inspections and full-time monitoring during environmentally sensitive works (i.e., instream works; works below the high water mark). For other works, a minimum of weekly inspections will be conducted during works with a lower risk to the environment, as well as following significant rain events (i.e. rain events precipitating more than 25 mm in 24 hours) to ensure compliance with the CEMP, applicable acts and approvals.

The Environmental Monitor will be responsible for the preparation and issuance of a site-specific Environmental Protection Plan (EPP), and will communicate monitoring observations as well as any recommendations or requests for corrective action directly to the contractor for dissemination to PSPC and Project Biologist within 24 hours. If there is an imminent risk to aquatic or terrestrial habitats, the Environmental Monitor will have the authority to stop work until potential impacts can be effectively mitigated. General responsibilities of the Environmental Monitor will include:

- Review the site prior to construction and confirm that all environmental protection measures have been adequately installed (i.e., site isolation measures and erosion and sediment control measures);
- Prior to any work on the site, an on-site pre-construction meeting will be held amongst the EM, contractor, TC and Project Biologist to ensure an understanding of the Best Management Practices (BMPs) and mitigation measures required for the project;
- Provide full-time monitoring while within 30 m of a watercourse or aquatic feature / drainage;
- Confirm that the Site Supervisor and / or contractor have on-site all documentation relating to environmental mitigation and environmental approvals;
- Confirm that all personnel are aware of and are following the environmental policies, Best Management Practices (BMPs), and specific project requirements;
- Be available throughout the project to represent the contractor in all matters relating to environmental protection;
- Attend key meetings (e.g., kick-off meeting) when environmental protection matters are discussed;
- Work with the contractor to implement recommended changes to items that are not in conformance with the CEMP and / or in compliance with applicable legislation / regulatory permit(s) conditions;
- Have authority to halt works in the event that the surrounding aquatic environment (e.g., Keogh River) are being adversely impacted, or at imminent risk of being adversely impacted, as a result of the project until appropriate additional mitigation measures or solutions to address the problem and prevent future occurrence are implemented;
- Complete weekly environmental monitoring reports to submit to PSPC and Project Biologist for review;

- Provide a final post-construction summary report documenting the completed works and any difficulties encountered during the works within 60 days of completion;
- During in-stream works, collect water quality samples (Turbidity and pH) at select test points to be provided in the EPP to ensure compliance with water quality guidelines;
- Conduct visual checks for equipment leaks, integrity of work area containment system, and other environmental concerns/issues, including potential downstream impacts;
- Confirm that the contractor replenishes the spill kits for each piece of equipment, as required;
- Confirm the appropriate delineation of sensitive areas (e.g., channelized drainages, ditches);
- Photograph on-site activities and conditions for documentation purposes;
- Conduct fish salvages in isolated work areas;
- Conduct amphibian / reptile / wildlife salvages in active work areas prior to the onset of works;
- Effectively manage wildlife (e.g., beavers);
- Conduct Songbird Nesting Surveys between March 15 and August 31 using the protocol outlined in **Section 8.6**; and
- Conduct routine water quality sampling per **Section 8.3**.

#### 6.1.2. Project Biologist (AquaTerra)

The Project Biologist has been retained by PSPC to provide environmental oversight and will be conducting periodic inspections. AquaTerra will be providing expert technical advice to PSPC and will be available to answer any technical questions.

### **6.2. Construction Environmental Management Plan Orientation and Training**

The contractor's EM will complete an environmental orientation with contractor and subcontractor personnel to minimize potential impacts to the environment and resources within the project area boundaries. AquaTerra will be responsible for reviewing the training content and will be present to attend the training event. If the proposed works are not conducted in accordance with the CEMP or applicable environmental regulatory guidance, the EM must inform the TC, PSPC, and the Project Biologist.

Contractor personnel and subcontractors, through orientation and training sessions, will include, but not necessarily be limited to:

- Project-specific environmentally sensitive areas (including the Keogh River, riparian areas, laydown area and drainages, and adjacent wetland and terrestrial areas);
- Impact mitigation strategies associated with the project;
- Procedures to identify and report potential environmental impacts;
- Use of the spill response kits and spill containment and clean-up techniques;
- Appropriate routine visual inspection of equipment or machinery prior to utilization, including containment tray requirement;
- Appropriate re-fuelling and equipment and vehicle maintenance protocols;
- Roles and responsibilities in achieving conformance with the CEMP and governing agency regulations;
- Roles and responsibilities of the Environmental Monitor and Project Biologist; and
- Reporting criteria for environmental incidents including responsible personnel and locations of emergency contact numbers.

Toolbox meetings, or equivalent, will be conducted for all contractor employees and sub-contractors on a regular basis to maintain and improve occupational health and safety, and environmental issues awareness. A wide range of topics will be covered over time, focusing on issues most relevant to current or upcoming works.

## **7. POTENTIAL ENVIRONMENTAL IMPACTS DURING CONSTRUCTION**

Key potential environmental impacts that may result from the bridge replacement construction activities are summarized in the following sections.

### ***7.1. Fish and Fish Habitat***

For the duration of the project, the contractor must mitigate potential environmental impacts associated with the Keogh River and run-off areas / drainages within or surrounding the site. Refer to **Section 8.2** for fish and fish habitat mitigation strategies. In general, potential environmental impacts associated with aquatic habitats include:

- Direct or indirect mortalities of aquatic inhabitants during or as a result of in-stream works in the absence of appropriate or ineffective mitigation (e.g., site

isolation, silt curtains, fish salvages, environmental monitoring; water quality monitoring etc.);

- Temporary loss of access to habitats during work area isolation;
- Temporary disturbance to the active work areas along the toe of slope;
- Temporary and permanent impacts to riparian areas adjacent to the Keogh River;
- Increased potential for accidental discharge of deleterious substances as a result of on-site spills or leaks; and
- Increased potential for the unscheduled release of existing contaminants (e.g., lead paint on the bridge deck and/or potential creosote within the existing abutments) during construction works or relocation for disposal.

### ***7.2. Terrestrial Wildlife, Sensitive Species, and Associated Habitats***

As part of the project site preparation, vegetation clearing, grubbing, and soil grading will be required to meet operational and/or safety concerns for the crossing structure and the approaches. Refer to **Section 8.5** for general mitigation measures during vegetation removal. Potential environmental impacts associated with terrestrial wildlife and terrestrial habitat include:

- Potential displacement of wildlife including direct displacement, reduced habitat use and/or nest abandonment;
- Loss of available habitat for sensitive, resident and/or migratory wildlife species due to vegetation clearing;
- Increase in fugitive dust and noise caused by construction machinery and/or operations;
- Increased potential for accidental discharge of deleterious substances and/or soil contamination due to on-site spills or leaks; and
- Increased potential for an unscheduled release of existing contaminants during excavation or relocation for disposal.

## **8. MITIGATION STRATEGIES – NATURAL ENVIRONMENT**

### ***8.1. Applicable Best Management Practices***

The contractor's EM will provide an overview of the applicable BMPs (listed in the documents below) during the site kick-off meeting prior to commencing of works. The contractor and Environmental Monitor(s) are to be familiar with the following documentation:

### Fish and Fish Habitat

- *DFO Land Development Guidelines for the Protection of Aquatic Habitat* (Chilibeck et al. 1992);
- *Habitat Conservation and Protection Guidelines*, Department of Fisheries and Oceans Canada, 1998;
- *A User's Guide to Working in and Around Water*. 2001. Regulation under British Columbia's *Water Act*. BC Environment Water Management Branch;
- *Standards and Best Practices for In-Stream Works*. Ministry of Water, Land and Air Protection (now MoE), 2004; and
- *Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia* (Polster, D., J. Cullington, T. Douglas, and T. Hooper. 2012).

### Terrestrial Wildlife, Sensitive Species, and Associated Habitats

- *Best Management Practices for Raptor Conservation during Urban and Rural Land Development in British Columbia*, Ministry of Environment, 2013;
- *Best Management Practices for Amphibian and Reptile Salvages in BC*, 2016;
- *Beaver Management Guidelines in BC*;
- *Interim Code of Practice for Beaver Dam Removal (DFO)*; and
- *Canadian Wildlife Service Songbird Nesting Survey Protocol*.

#### **8.2. Fish and Fish Habitat Protection**

As previously noted, the proposed project will require instream works within the Keogh River. For the duration of the construction project, the contractor and contractor's EM will ensure that site isolation and erosion and sediment control measures are implemented to prevent sediment migration and potential impacts to water quality and fish / fish habitat. Design drawings illustrating silt curtain orientation, as an initial measure to mitigate potential impacts are provided in **Appendix A**. The contractor's Environmental Monitor will be required to prepare a site-specific Environmental Protection Plan (EPP) with site specific fish and fish habitat protection measures, as well as erosion & sediment control (ESC) control.

To be protective of fish and fish habitat, the contractor is required to adhere to the following mitigation measures:

1. The reduced risk window (i.e., the window in which the potential impacts to salmonids are minimized, that accounts for all species – is June 15<sup>th</sup> to September 15<sup>th</sup>). Where possible, instream works will occur within this window, with supplementary mitigation measures being required for work outside of this window (i.e. project work window ending October 31<sup>st</sup>). Supplementary mitigation measures are to be provided in the EPP.
2. Turbidity thresholds are to be monitored / maintained over the duration of instream works within un-isolated portions of the river, limited to 8 Nephelometric Turbidity Units (NTUs) above background within a 24 hour period, or <10% of an increase in turbidity when the background is >50 NTU per the BC Water Quality Guidelines. Fisheries and Oceans Canada (DFO) recommends a maximum of 25 NTU during dry weather conditions and 100 NTU during wet conditions (i.e., >25 mm within a 24 hour period)<sup>1</sup>.
3. Bridge installation and bridge demolition must not impede Indigenous fishing activities and unfettered access is to be maintained both during and post-construction.
4. During pile driving works, in-stream pressure must not exceed the DFO Threshold of 30 kPa.
5. A fish salvage (two salvage methods, at a minimum) following site isolation are required during bridge deconstruction / abutment removal works, and during any instream works (i.e., rip-rap placement) associated with new bridge construction.
6. Biodegradable lubricants and hydraulic fluids (e.g. vegetable-based lubricants fluids) are to be used for all equipment working within 20 m of the Keogh River or any watercourse / drainage / wetland / ditch.
7. During rip-rap placement below the high water mark on the new bridge and abutment removal at the existing bridge, silt / turbidity curtains are to be installed

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<sup>1</sup> I.K. Birtwell, M. Farrell, and A. Jonsson. 2008. The Validity of Including Turbidity Criteria for Aquatic Resource Protection in Land Development Guideline. Fisheries and Oceans Canada. Canadian Manuscript Report of Fisheries and Aquatic Sciences 2852.



- parallel to the banks and secured via lead line / chains. Efforts must be made to prevent the silt curtain skirt from getting buried by rip-rap during placement. The area between the curtain and bank is to be isolated and fish, amphibians, reptiles, and semi-aquatic mammals are to be salvaged, as required, prior to the onset of works.
8. The contractor shall provide a debris containment system (if required) during removal of the existing bridge to reduce the risk of paint chips or debris from entering the watercourse. Any resulting paint chips and paint on the bridge span should be appropriately managed and disposed of off-site.
  9. Obtain sufficient quantities of silt fencing, straw bales (not hay – which can contain invasive species seeds), native grass seed mix, sandbags, erosion control blanketing, mulch, etc. necessary to stabilize disturbed ground prior to the commencement of works. These materials must be on-site, available for inspection and installation prior to the commencement of any ground disturbance.
  10. Immediately repair any damage that compromises the function of erosion and sediment control measures.
  11. Minimize the amount of shrub and ground vegetation clearing in the proposed work area to minimize exposed soil.
  12. Complete clearing and ground disturbance immediately prior to construction activities to decrease the duration of soil exposure.
  13. Operate all machinery on land (above high water mark).
  14. No debris is to be placed below the high water mark or placed into the river.
  15. Install ESC measures prior to the onset of construction activities in accordance with contractor specifications. ESC measures should be routinely inspected and maintained throughout the construction period.
  16. Water quality will be monitored by the Environmental Monitor during full-time and / or routine site visits at designated test points. Locations of the test points may

charge as the project progresses. Work is to be halted if sediment leaving the active work area exceeds the applicable thresholds (Section 8.3).

17. No deleterious substances is permitted to be discharged into any watercourses (including ditches and drainages) surrounding the work site.
18. Water with elevated pH (> 9.0) must not enter any watercourse or be pumped to a vegetated area and should be treated with a CO<sub>2</sub> bubbler system prior to discharge off-site.
19. Primary in-stream works are to be conducted during the least risk in-stream works window between 15 June – 15 September, unless otherwise stipulated by the PSPC.
20. Cover any stockpiled material containing fines with polyethylene sheeting or similar material, and install silt fencing as needed between the pile and watercourses.
21. Rock used as rip rap shall be clean of excess sediment / debris and any substances deleterious to aquatic life, and shall be durable, angular in shape and appropriately sized.
22. Re-vegetate graded and disturbed soils with a suitable erosion control mix of seed emphasizing native species and apply mulch or other stabilizer on slopes to minimize erosion until vegetation establishes.
23. Meet the conditions of any regulatory requirements.

### **8.3. Field Water Quality Control**

As part of regular environmental monitoring, the Environmental Monitor will ensure that water quality follows the water quality guidelines outlined below and any specific regulatory requirements (pending). During in-stream works, water quality measurements are to be taken immediately prior to works and during the initial stages of works to ensure water quality conditions are met per regulatory conditions. Following this, water quality will be sampled during routine monitoring events until works are complete. In the event of a spill of any deleterious substance (such as fuel, oil, effluent flow, etc.) into the

work zone, Keogh River, or surrounding watercourses, spill response procedures are provided in **Appendix B**.

As included in the Land Development Guidelines for the Protection of Aquatic Habitat<sup>2</sup>, the “[r]unoff water from the development site should contain less than 25 mg/liter of suspended solids (or non-filterable residue, NFR) above the back-ground suspended solids levels of the receiving waters during normal dry weather operation and less than 75 mg/liter of suspended solids above background levels during design storm events”. Additionally, turbidity shall not exceed 25 nephelometric turbidity units (NTU). The provincial requirement for water quality is described in **Table 1** and **Table 2**. Environmental Monitor will ensure that the water meets BC Water Quality Guidelines for aquatic life (including pH, turbidity, and metals) prior to discharging off-site.

**Table 1:** BC Water Quality Guidelines for Turbidity and TSS / NFR.

Water Use	Turbidity	Non-Filterable Residue (Total Suspended Solids)
Aquatic Life (fresh, marine, estuarine)	Change from background of 8 NTU at any one time for a duration of 24 h in all waters during clear flows or in clear waters	Change from background of 25 mg/L at any one time for a duration of 24 h in all waters during clear flows or in clear waters
	Change from background of 2 NTU at any one time for a duration of 30 d in all waters during clear flows or in clear waters	Change from background of 5 mg/L at any one time for a duration of 30 d in all waters during clear flows or in clear waters
Aquatic Life (fresh, marine, estuarine)	Change from background of 5 NTU at any time when background is 8 - 50 NTU during high flows or in turbid waters	Change from background of 10 mg/L at any time when background is 25 - 100 mg/L during high flows or in turbid waters
	Change from background of 10% when background is >50 NTU at any time during high flows or in turbid waters	Change from background of 10% when background is >100 mg/L at any time during high flows or in turbid waters

<sup>2</sup> <http://www.dfo-mpo.gc.ca/Library/165353.pdf>

**Table 2:** BC Water Quality Guidelines for pH.

Environment	pH	Guidelines
Freshwater	< 6.5	No statistically significant * decrease in pH from background. No restriction on the increase in pH except in boggy areas that have a unique fauna or flora. Site-specific ambient water quality objectives to restrict the pH increase in areas with a unique fauna and flora are recommended.
Freshwater	6.5-9.0	Unrestricted change permitted within this pH range. This component of the freshwater WQGs should be used cautiously if the pH changes causes the CO <sub>2</sub> concentrations to exceed a 10 µmol/L minimum or a 1360 µmol/L short-term. CO <sub>2</sub> concentrations below 10 µmol/L can cause a shift in the phytoplankton community to cyanobacteria, while CO <sub>2</sub> concentrations above 1360 µmol/L can be toxic to fish.
Freshwater	> 9.0	No statistically significant * increase in pH from background. Short-term increases (2-3 days) to pH 9.5 are permitted for lake restoration projects. Decreases in pH are permitted if carbon dioxide concentrations are not elevated above 1360 µmol/L. CO <sub>2</sub> concentrations above 1360 µmol/L may be toxic to fish.

#### **8.4. Instream Works**

Prior to the commencement of construction works, instream works will include work site isolation and a fish salvage. The contractor's Environmental Monitor will be responsible for conducting the fish and amphibian salvage works. Prior to instream works, the following mitigation measures are to be implemented:

- Ensure fish exclusions (i.e. floating silt curtains with weighted lead-line) are installed along the active work area(s) as illustrated within **Appendix A** and

maintained for the duration of instream works to ensure fish and amphibians do not enter the active work zone and to control sedimentation; and

- Ensure fish and amphibian salvages are completed prior to in-stream works. Salvaged fish and aquatic wildlife are to be relocated outside of the isolated work zone at a location(s) agreed upon by the Project Biologist and EM.

#### 8.4.1 Demolition of The Existing Bridge

During the demolition of the existing bridge, the contractor must implement the following details:

- Operate all machinery above the Top of Bank (TOB) of the Keogh River;
- Remove, haul, and dispose of any/all debris produced by the demolition works per **Section 9.2**; and
- Immediately recover any debris that falls into the Keogh River. Demolition procedures that result in the existing structure collapsing into the waterway will not be permitted.

The existing bridge has been painted with lead paint. As such, the existing bridge must be decommissioned and disposed of appropriately. No sandblasting work is to occur on-site or in the lay down area, and the existing bridge is to be isolated from the Keogh River to prevent lead paint chips from entering the watercourse. No lead paint residue or chips are permitted to be left on-site.

##### 8.4.1.1. Timber Abutment Removal

Currently, old timber abutments exist within the Keogh River. The abutments may have been historically preserved using creosote, a hydrocarbon product. The following environmental mitigation measures are to be implemented during the removal of the timber pilings:

- Utilize absorbent pads / booms during removal of wood abutments as a precautionary measure given the potential for historical creosote treatment;
- Remove abutments by mechanical means to prevent breaking the abutments and ensure no wood debris remains within the river after removal works; and
- Store removed abutments at least 30 m from the Keogh River on a solid surface (such as polyethylene sheeting or tarp) to prevent potential leaching into the environment.

#### 8.4.2. Potential Contamination Prevention

Any suspected contaminated groundwater, surface water or soil will immediately be reported to PSPC identifying the location and nature of suspected contamination who will notify appropriate project personnel. The potential contamination will be characterized by a qualified professional. Furthermore, disposal of contaminated soil must follow the *Environmental Management Act*, which requires that soils meet numerical Standards as provided in applicable guidelines set forth in the Canadian Council of Ministers of the Environment (CCME) Contaminated Site Regulation (CSR). PSPC must be advised of all field and remedial work at least 72 hours in advance, and be provided with complete access to inspect such works. Contaminated soil must be treated and dealt with as required on a site-specific basis, and may require an additional Qualified Professional(s) specialized in contaminated sites to provide direction.

The disposal of contaminated soil must comply with the requirements of the Federal Canadian Council of Ministers of the Environment (CCME), and the BC Contaminated Sites Regulations (CSR). Any contaminated material must be segregated and located a minimum of 30 m away from the river. Suspected contaminated soil must be temporarily stored on-site, and shall be placed on top of and protected with polyethylene sheeting and securing with sandbags, to prevent leaving to the environment. Contaminated soils are to be disposed of at a designated facility as soon as practical.

#### 8.4.3. Uncured Concrete Release Prevention

Uncured concrete is characterized by elevated pH, which is harmful to fish. If any grouting or concrete work is anticipated to occur, the Environmental Monitor will evaluate and determine the need for monitoring. Any water outside of the isolated work area that meets uncured concrete or grout must be contained and treated using a CO<sub>2</sub> bubbler or other appropriate methods approved by the Monitor. Any water that must be discharged to local drainages or vegetation must meet applicable water quality guidelines (pH 6.5 to 9.0) prior to discharge.

If required, concrete works should be conducted during periods of dry weather, if possible. If works occur during inclement weather, uncured concrete will be covered with polyethylene sheets or tarps during rain events to avoid generation of high pH water.

Additionally, wash water from the concrete trucks will be contained and removed from the site by the concrete supplier. Waste concrete, if any, that requires disposal off-site should be directed to an appropriate facility.

Additional measures are provided below:

- Conduct concrete works during favourable dry weather conditions;
- Ensure the work area is dry prior to pouring concrete;
- Wash off all tools, pumps, pipes, hoses and trucks used for finishing, placing or transporting fresh concrete off-site to prevent wash water from entering the adjacent watercourses;
- Ensure that a CO<sub>2</sub> tank and regulator, hose, and gas diffuser are readily available on-site during concrete pours and curing, and ensure crews are trained in their use; and
- Monitor pH at discharge to Keogh River and surrounding drainages, if any, periodically during concrete pouring. Where possible, the field testing will be conducted during routine monitoring events. Water will be tested upstream and downstream of work site to ensure effective site isolation and compliance.

#### 8.4.4. Spills of Hazardous Goods and Reporting

Spills to land will be reported to the regulatory agencies (see Emergency Spill Response Contacts list - inside front cover) and PSPC when quantities of materials exceed the classifications laid out by the Transportation of Hazardous Goods Regulations (> 100 L to ground or ***any amount*** spilled directly to water). Any spills to water, regardless of volume, will be immediately reported to PSPC, the Environmental Monitor, Project Biologist, and Federal (DFO) to evaluate the requirement(s) for clean-up and additional reporting (see Emergency Spill Response Contacts list - inside front cover). Spill response procedures are provided in **Appendix C**. Reportable spill volumes are provided below (**Table 3**).

**Table 3.** Reportable Spill Volumes Per the Transportation of Hazardous Goods Regulations.

<b>Class</b>	<b>Substance</b>	<b>Reportable Amount</b>
Class 1	Explosives	Any quantity posing danger or 50 kg
<b>Class 2.1</b>	<b>Flammable Gases, other than Natural Gas</b>	<b>10 kg</b>

Class 2.2	Non-flammable and Non-Toxic Gases	10 kg
Class 2.3	Toxic Gases	5 kg
<b>Class 3</b>	<b>Flammable Liquids (petroleum products)</b>	<b>100 L</b>
Class 4	Flammable Solids	25 kg
<b>Class 5.1</b>	<b>Oxidizing substances</b>	<b>50 kg/ 50 L</b>
Class 5.2	Organic Peroxides	1 kg / 1 L
Class 6.1	Toxic Substances	5 kg / 5 L
<b>Class 8</b>	<b>Corrosives</b>	<b>5 kg / 5 L</b>
Class 9	Miscellaneous – polycyclic aromatic hydrocarbons	5 kg / 5 L

Table 3 Continued:

Class	Substance	Reportable Amount
Class 9	Miscellaneous – waste asbestos	50 kg
Class 9	Miscellaneous – waste oil	100 L
Class 9	Miscellaneous – pest control product	5 kg / 5 L
Class 9	Miscellaneous – PCB wastes	25 kg / 25 L
Class 9	Miscellaneous – natural gas	10 kg / >100 PSI line break

Spills are to be documented on Spill Response Form (SRF; **Appendix D**) and issued to PSPC and applicable agencies, as required, within 24 hours.

#### 8.4.5. Sediment Release

In addition to Hazardous Goods Regulations, a release of sediment in excess of 200 kg or 200 L to off-site drainage components (i.e., aquatic habitat or areas leading to aquatic habitat such as storm drains of non-fish bearing watercourses) constitutes a spill event and is a contravention of Section 34 of the *Fisheries Act*. As such, sediment releases exceeding this volume shall be immediately reported to PSPC, the Project Biologist and the Environmental Monitor and both Federal (DFO) and Provincial agencies (EMBC/MOE) to evaluate the requirement(s) for clean-up and additional reporting (see Emergency Spill Response Contacts list - inside front cover).

#### 8.4.6. Environmental Incident Plan / Reporting

In the event of an environmental incident, works must stop immediately and appropriate response procedures outlined within this CEMP must be initiated (i.e. spill response procedures, etc.). Contractor crew and sub-contractors are responsible for immediately informing PSPC of all environmental incidents.

### **8.5. Terrestrial Wildlife, Sensitive Species, and Associated Habitats**

BMPs are to be followed during the project's site preparation, vegetation clearing and grubbing, and soil grading activities to mitigate any potential impacts to native vegetation



and sensitive wildlife species. All reasonable efforts are to be made to maintain existing native vegetated areas within the project boundaries. General mitigation measures to be protective of terrestrial habitats, wildlife and potentially occurring sensitive species are provided below:

1. If any vegetation removal to accommodate rip-rap placement, new bridge alignment, or existing bridge demolition is required during the peak bird nesting season (15 March – 31 August), a bird nest survey is to be conducted in advance of vegetation clearing. Generally, the nest survey results are valid for 48 hours after the last survey, with the potential to extend up to 5 days contingent on bird activity. Any culturally or ecologically significant plants occurring within areas where vegetation may be removed are to be identified and, if feasible, relocated.
2. A wildlife salvage will be conducted (contingent on site-specific conditions, work schedule and discussions with the Project Biologist) prior to vegetation clearing and rip-rap placement in the laydown area and work areas between the high water mark and top-of-bank given the noted amphibian and/or reptile presence in the vicinity of the works.
3. Assess the bridge and void spaces beneath the bridge deck for wildlife / nests prior to any bridge related decommissioning or construction activities;
4. General sweeps / assessments of wildlife presence / utilization are to be conducted during each day prior to the onset of works to assess for wildlife presence and to implement appropriate mitigation, as required.
5. Minimize disturbance to the riparian areas by using the existing roadways for staging and stockpiling construction materials;
6. Minimize idling and equipment noise to mitigate noise-related impacts to wildlife;
7. Make all reasonable efforts to retain existing native vegetated areas within the project boundaries and demarcate areas to be left undisturbed (i.e., flag the clear and grub boundary) to prevent encroachment during construction. The Contractor shall ensure that the environment beyond the work limits is not negatively impacted or damaged by workers' vehicles or construction machinery

- and shall instruct workers so that the “footprint” of the project is kept within defined boundaries;
8. Minimize the removal of native vegetation, woody debris, and rocks surrounding the instream areas of the Keogh River;
  9. Where possible, minimize disturbance to root systems;
  10. Prevent the spread of invasive species via limiting soil exposure and limiting anthropogenic activities. Equipment arriving on-site is to be cleaned and free of vegetation, soil or debris from other sites that could result in the spread of invasive species. Refer to **Section 8.6** for details;
  11. Re-vegetate disturbed areas with native shrubs in consultation with the Project Biologist as soon as possible after disturbance to prevent the establishment of invasive species;
  12. Strictly manage construction waste and pollutants to prevent contamination;
  13. If any wildlife is identified within active construction area, PSPC must be immediately notified, and work suspended in that area until the wildlife voluntarily leaves the site;
  14. There is anticipated to be an increase in bear activity in the area concurrent with the adult salmonid migration. Associated measures and deterrents will be required to limit worker-bear interaction in the fall months;
  15. Effectively manage Beaver activity within the vicinity of the work area and develop a strategy, as required, to minimize impact to this species;
  16. Follow appropriate practices for beaver management including the DFO Interim Code of Practice for Beaver Dam Removal<sup>3</sup> and coordinate with agencies in consultation with Transport Canada and PSPC for beaver trapping / relocation, if required;
  17. Monitor wildlife / human interactions and implement mitigation measures, as required; and
  18. Implement an effective garbage management system during construction.

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<sup>3</sup> <https://www.dfo-mpo.gc.ca/pnw-ppe/codes/beaver-dam-barrage-castor-eng.html>

## **8.6. Nesting Birds**

### **8.6.1. Songbird Nesting Survey Protocol**

Songbird nest surveys must be conducted according to the protocols below if vegetation removal (rooted vegetation) is to occur between March 15 and August 31 in areas associated with the project activity. These dates are based on historic peak songbird nesting data in the Lower Mainland and may be modified by the Professional Biologist (RPBio.) or Qualified Environmental Professional (QEP) based on weather and site specific conditions.

All survey personnel are required to ensure they are using the approved and most recent revision of the protocol. Project personnel involved in the vegetation removal operations must be trained and familiar with the requirements of this Songbird Nest Survey (SBNS) protocol. If raptor nests or nests of species named under the *BC Wildlife Act* are identified in the vicinity of the project area prior or during to construction, a QEP must inform personnel of the nest location(s) and buffers are to be put in place around active nests for year-round protection, based on applicable regulatory requirements and QEP recommendations.

#### Survey Parameters

##### *Timing*

The intent of the SBNS is to identify the location of nests and nesting birds. Although there is generally an increase in songbird activity (such as territorial singing) during early morning hours, songbird nest surveys can be conducted throughout the day provided light conditions permit the location of nests. Data gathered during the morning is useful to determine species composition and diversity; however, the primary goal of the survey is to locate nests. The surveys must not be completed during inclement weather such as heavy rain, snow, fog or high wind as bird observations may be limited during these conditions.

##### *Survey Personnel*

All SBNS must be conducted by or under the direction of an R.P. Bio. QEPs conducting the nest surveys should have a background in birding, bird identification, or bird biology and should be trained by the qualified RPBio in the survey protocol.

*Survey Effort*

The total survey effort is based on the vegetation density and availability of nesting sites. The duration of the survey will depend on factors such as terrain, time of year, forest type, vegetation density, experience, and the professional opinion of the nest searchers.

*Survey Rates and Requirements*

Survey personnel should walk transects through the area to be cleared searching for nests and nesting activity. In addition to nest searches, additional techniques should be used to increase the likelihood of finding nests, such as using bird song or behavior as cues to locate nests. Cues to find nests include behavior such as adults carrying fecal sacs away from the nest, adults bringing food to the nest, young begging for food, and incubation of eggs. The survey must be conducted both within the clearing limits and 20m beyond the limits. The number of surveys (survey cycle) required is based on the vegetation type and density. There may be variations to the number of surveys required during the peak and non-peak breeding seasons and this will be determined by the RPBio/QEP.

The following table summarizes maximum survey rates (ha/hr) and number of surveys required based on vegetation type (**Table 4**). Please note that the QEP may require additional surveys if the local conditions merit it.

**Table 4.** Maximum Survey Rates and Number of Surveys Required Based on Vegetation Type.

<b>Vegetation Type</b>	<b>Maximum Rate (ha/hr)</b>	<b>Surveys Required</b>
Predominantly Grass	2.0	1
Predominantly Shrub	1.5	2
Predominantly tree	1.0	3

*Determining Status of Nests*

Each nest observed must be given a designation of active or inactive. Nests that are determined to be inactive due to nest condition or other biological indicator can be given the designation of inactive. If the contents of the nest are easily observed from a distance, the presence of eggs or new nesting material can be used as indicators of activity. Other means to determine nesting activity include observations of bird nesting or breeding activity in the vicinity of the nest. Nests that appear in good condition from a

distance but with bird presence or breeding activity not initially observed (associated with the nest) must be given the designation of active. It is only after two observation periods of approximately 1 hour each, on two separate days that a potentially active nest can be designated as inactive.

**Please note:** Nests must not be approached for any reason if nesting activity is observed or if a nest has the potential to be active. A nest can only be approached to directly check the contents if reasonable steps have been taken to ensure the nest is inactive – i.e. after at least two 1 hour nest watches on two separate days or based on observations of nest condition that indicate inactivity. This includes the use of mirror poles or climbing a tree to view the contents of a nest.

#### *Buffers*

Buffers of vegetation to remain around active nests are based on recommendations of the QEP or RPBio. Generally, a 25 m no clearing nest buffer will be enough for most songbirds. The Ministry of Environment Best Management Practices, Table 4.2 of the *Develop With Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia* (MOE 2006) and Ministry of Environment *Best Management Practices for Raptor Conservation during Urban and Rural Land Development in British Columbia* (MOE 2005) will be used determine recommendations of buffers for non-passerine active nest sites. Please note that the QEP may extend buffer distances should species be particularly sensitive or species at risk. Moreover, raptor nests or nests of species named under the *BC Wildlife Act* are identified in the vicinity of the project area prior or during to construction, a QEP must inform personnel of the nest location(s) and buffers are to be put in place around active nests for year-round protection, based on applicable regulatory requirements and QEP recommendations.

## **9. MITIGATION STRATEGIES – CONSTRUCTION OPERATIONS**

### **9.1. Construction Material and Equipment Management**

#### 9.1.1. Construction Laydown Areas

A designated construction laydown area measuring 40 m x 60 m has been designated near the existing north ring road of the airport approximately 850 m west of the bridge. An assessment of the laydown area identified a grass dominated area including invasive

species (i.e., Scotch Broom) and bordered to the north by a roadside drainage ditch and to the east by a channelized drainage, both of which are sensitive habitat areas.

#### 9.1.2. Equipment, Refuelling, Storage, Operation, and Maintenance Checks

Machinery utilized on site is to arrive in clean functioning condition, free of leaks. A procedure is to be in place to document equipment inspections daily by the contractor (i.e., equipment checklist).

##### 9.1.2.1. Equipment Re-fuelling and Storage

Re-fuelling will be supervised by appropriate personnel to ensure no petroleum products are spilled during re-fuelling activities. A designated re-fuelling area will be located a minimum of 30 m from aquatic habitats such as the Keogh River and its surrounding watercourses, or as advised by the EM. Refuelling practices will be assessed during routine environmental monitoring events and if there is a perceived risk to the environment, the refueling practice for the project will be revised. There will be no fuelling of trucks or worker vehicles as part of the project. Drip trays and sorbent materials will be on-hand for rapid deployment.

Non-mobile, oil-filled equipment (such as compressor and generator) will be placed in a secondary containment area, always sized to hold at least 110% of the equipment's oil / fuel capacity. Moreover, mobile equipment (such as excavator, back-hoe, and loader) will have drip trays underneath, sized to hold at least 110% of the machine's oil / fuel capacity, when not in use.

##### 9.1.2.2. Equipment Operation

Heavy machinery is prohibited from entering the watercourse. Equipment operating near surface water will be equipped with drip trays to contain fuel, oil, coolant, or grease leakage. Drip trays for grout pumps and grout reservoirs will be capable of containing all accidental spills / leakage during hose connection and operation. All equipment will be in good operating condition and meet applicable statutory requirements for serviceability and exhaust emissions.

##### 9.1.2.3. Equipment Maintenance

If required, equipment maintenance will be conducted within a designated equipment service area (to be determined by the contractor and approved by PSPC) and situated

such that it poses no risk to contamination of soils and is located at least 30 m away from the nearest watercourse. If maintenance is to occur in place, appropriate controls are to be in place including isolation of the maintenance area, polyethylene sheeting, or similar, under the work area and a spill kit and pads near the maintenance activity. Drip trays will be used to control on-ground spillage of fuels, oils, coolants, and grease. The contractor will be responsible for any clean-up of contamination resulting from its equipment maintenance operations. Contaminated granular materials and soils will be carefully excavated and disposed of appropriately. Materials classified as hazardous waste will require disposal in accordance with Provincial and Federal regulations. No equipment will be washed anywhere within the project area or within surrounding areas near open water.

## **9.2. Waste Management**

### **9.2.1. Construction Waste**

The contractor will maximize opportunities for the reduction, re-use, and recycling of solid wastes. Solid waste will be received at designated laydown areas only. The contractor will retain a waste contractor, as required and waste will be sent to an appropriate waste sorting facility. Garbage generated by the contractor will be contained and removed off-site on a regular basis to maintain clean and tidy environment and prevent wildlife attraction. Additionally, appropriate containers with wildlife proof lids must be available throughout the site.

### **9.2.2. Hazardous Materials Waste**

If surplus product must be discarded, the manufacturer's local and provincial recommended methods for proper waste management will be adhered to. If accidental mixing of fuels, chemicals, and hazardous materials occurs, the waste product will be removed to an approved disposal/recycling facility. Hazardous waste materials are to be stored at a location >30 m from a watercourse, sloping away from sensitive areas in a lockable container and labelled according to the Workplace Hazardous Materials Information System (WHMIS) regulations and will comply with the Occupational Health and Safety Regulation. Additional information can be found within the Contractor Safety Program's WHMIS Plan. Waste will be kept in the original containers unless these cannot be re-sealed and will be handled only by persons trained and qualified in handling these materials. Secondary containment will be required for any hazardous

material waste, such as used lubricants. Transport of any hazardous material will have to follow protocols and procedures outlined in the *BC Transportation of Dangerous Goods Act*.

#### 9.2.3. Municipal Waste

Routine removal of food waste including recyclables will be the responsibility of all construction personnel over the course of construction. Portable toilet facilities may be made available on-site at appropriate locations away from environmentally sensitive area and will be emptied, as necessary, by a licensed commercial waste contractor.

#### 9.2.4. Concrete Waste

Runoff from uncured grouts or cements material may be strongly alkaline. All water must meet applicable water quality guidelines (pH 6.5 to 9.0) prior to discharge to vegetation or watercourses. No concrete affected water to be discharged on-site drainage system or the vegetation. Water with elevated pH should be contained and treated using a CO<sub>2</sub> bubbler or other appropriate methods approved by the EM. Any concrete waste disposal off-site should be directed to an appropriate facility.

### **9.3. Spill Prevention Mitigation Measures**

The following spill prevention mitigation measures are outlined below to minimize potential impacts to the project area and surrounding areas in the case of a spill:

- The contractor shall immediately contain and clean up any leaks and spills of prohibited materials within the project footprint;
- All large equipment working in the proximity of the Keogh River must use environmentally sensitive hydraulic fluids which are non-toxic to aquatic life and which are readily or inherently bio-degradable;
- Machinery working within 15 m of fish habitat must contain a spill containment kit on board of the machine;
- The contractor will be familiar with all regulatory requirements and be adequately prepared to respond to a spill condition within the shortest possible times;
- Prohibit all other equipment and machinery from operating below the high-water mark at any time;
- Work area run-off water contaminated with hazardous substances will be treated as the product of a spill to the environment;



- Store all fuel and / or hazardous materials in trucks or containment areas that are at least 30 m from the Keogh River. Fuel will also be placed within a bermed and lined area to prevent leaks or spills into the environment;
- Refuelling practices will be assessed during routine environmental monitoring events and if there is a perceived risk to the environment, the refueling practice for the project will be revised;
- Verify that the spill does not impact the work of others and if so, that immediate measures are taken to minimize work interruption;
- If solid form recoverable concrete material has entered a drainage area / stormwater infrastructure, remove, and contain, where possible, and cover with tarping;
- Place containers containing fuel, oil, chemicals or other hazardous materials within a lockable metal or plastic spill containment tray in the laydown area at least 30 m away from watercourses / aquatic features to mitigate potential spills or releases;
- All equipment working on the project will be in good working condition and free of excess oil, grease etc.;
- Prompt clean-up action and equipment repair is to be conducted when leaks are identified;
- Repairs to equipment and machinery at the site are to be conducted within the designated laydown area, where possible;
- Excess concrete, grout, drilling wastes and other liquid products will be directed to secure containment facilities for subsequent removal and disposal by the contractor. If concrete material (solid form) has entered the water, the material should be removed as it will continue to provide alkaline material into the surrounding water. If a spill involves water that has been rendered alkaline, the water should be contained, if possible, with tarps and CO2 treatment applied;
- If encountered items to be disposed cannot be readily identified, they will be assessed by the Environmental Monitor prior to disposal activities;
- Spill kit materials (absorbent pads, booms, trays etc.) will be readily accessible in the event of an accidental spill or leakage from equipment or machinery;
- Conduct routine monitoring (discussed in **Section 7.4**) to ensure that spill kits on-site and within each heavy machine are adequately stocked; and

- Ensure on-site personnel have been appropriately trained to respond to spill situations and know the reporting procedures and location of emergency spill response contact phone numbers (provided on page i).

Any materials used within the spill kit are to be re-stocked within a maximum of 48 hours. At a minimum, spill clean-up kits should contain the following:

***Large Spill Kit***

- 300 absorbent 'white' polypropylene pads for fuels and lubricant spills;
- 8 absorbent socks (polypropylene) measuring 3" x 48";
- 4 general refuse bags;
- Personal protective equipment for a minimum of two personnel including nitrile gloves, goggles, tyvek suits and boots;
- List detailing content of kit and where to obtain replacement items.

***Individual Spill Kit***

- 25 absorbent 'white' polypropylene pads for fuel and lubricant spills;
- 2 absorbent socks;

**9.4. Noise and Air Quality / Dust Control**

Construction activities may be disruptive to wildlife, workers and the surrounding areas through either construction related noise and/or emission of dust or other airborne materials. The EM will record compliance during regular environmental monitoring events. Measures aimed at limiting exposure to both noise and airborne emissions are outlined below:

9.4.1. Noise Control

To minimize potential impacts to the project area and surrounding environment, the following noise control measures are outlined below:

- When possible, noise construction activity, machinery or equipment should be limited during periods of high wildlife activity, such as dawn and dusk;
- Hours of construction operation should be strictly enforced by the contractor;
- Construction equipment should be in proper working order with all original mufflers and emission equipment operating in accordance with manufacturer's specifications;
- Plan a designated delivery area and time if it is anticipated that noise control may

be in issue;

- Slowly and gradually unload vehicles. Drop heights will be minimized when loading vehicles to avoid unnecessary noise;
- The contractor and their sub-contractors must practice idle reduction for the duration of the project. Specifically, restricting idling during inactive periods. The idle reduction commitment will be communicated during the tool-box meetings and safety talks on regular basis;
- During inactive periods, idling equipment must not exceed: one minute for motor vehicles and light diesel trucks, five minutes for heavy duty diesel vehicles, and ten minutes for diesel equipment and
- Exceptions to idling equipment during inactive periods include mechanical failure, temperatures below 10°C, and the operator / passengers are in the vehicle, and emergency vehicle.

#### 9.4.2. Air Quality / Dust Control

To minimize potential impacts to the project area, the following air and dust quality control measures are outlined below:

- The contractor must educate employees and sub-contractors on air quality and dust management and mitigation measures;
- Site layout and operations should be planned so that machinery and dust causing activities are located away from nearby waterbodies or potentially sensitive areas;
- The contractor shall limit the operation and movement of vehicles, machinery and handling of stockpiles or other construction materials to control air quality and fugitive dust during dry, windy weather events;
- The application of chemical dust suppressants to control fugitive dust and other airborne emissions is prohibited;
- Water tanks may be utilized to apply water to sites within areas of potential dust generation such as unsealed roads, haul roads and dump areas. Appropriate silt control measures must be employed by the contractor to ensure silt laden flow does not enter the nearby watercourses;
- All friable materials shall be covered or wetted down to prevent blowing dust and debris. Drawing water from any watercourse is not permitted;
- Re-vegetate long term stockpiles to prevent wind whipping;

- The contractor may suspend operations under severe weather, particularly high winds during and after very dry periods; and
- Ensure fine material supplies are sealed and enclosed after use and stored appropriately to prevent dust.

**APPENDIX A**  
PROJECT DRAWINGS AND  
KEOGH RIVER SITE ISOLATION DETAILS

**APPENDIX B**  
SPILL RESPONSE PROCEDURES

## Spill Response Procedure

*For Spills  $\geq$  5 L and Spills of Any Volume Reportable Under EMA*

### 1) Making the areas safe, which includes:

- Ensure personal, public, electrical and environmental safety;
- Wear appropriate personal protective equipment (PPE);
- Never rush in; always determine the product spilled before acting;
- Warn people in the immediate vicinity;
- Be aware of wind direction; and
- Ensure no ignition sources if spill is a flammable material.

### 2) Stopping the Flow (when possible and safe to do so):

- Act quickly to reduce the risk of environmental impacts;
- Close valves, shut off pumps, or plug holes and leaks;
- Utilize all available resources to initially contain the spill (i.e., native soil, spill kits, excavators or any material, equipment or tool that can safely contribute to containment efforts); and
- Stop the flow or the spill at its source.

### 3) Securing the Area:

- Limit access to the spill area; and
- Prevent unauthorized entry onto the site by securing and marking the area to limit exposure to pedestrians, including workers, and vehicle traffic.

### 4) Containing the Spill:

- Prevent spilled material from entering drainage structures;
- Use spill-absorbent material to contain the spill; or if that is not possible and the spill volume exceeds the capacity of the spill kit, use native soil, sandbags, straw bales, etc.;
- If necessary, use a dyke or any other method to prevent any discharge on-site;
- A temporary sump may be deployed to contain or direct spilled liquids if groundwater is not present;
- Make every effort to minimize contamination; and
- Take soil or water samples for laboratory testing.

**5) Notifying/Reporting:**

- Notify the EM immediately (provide spill details);
- If a reportable spill has occurred the EM or Environmental Manager or a designate will call EMBC at 1-800-663-3456 (24 Hour);
- Provide necessary spill details to other external agencies as required;
- Complete an Environmental Incident Report; and
- For spills >100 L or reaching a watercourse, contact back-up commercial spill clean-up companies and local fire response teams.

**6) Cleaning-Up:**

- The EM and Contractor will coordinate spill cleanup;
- Additional assistance on clean-up procedures and residue sampling will be available from the Environmental Manager, as required;
- Clean up the affected area, including confirmatory testing on the cleaned area;
- Remove the impact/debris; decontaminate any equipment or tools used in the cleanup;
- Dispose of waste materials at an approved disposal site in compliance with the BC *Environmental Management Act*, Hazardous Waste Regulation and BC *Waste Management Act*;
- Dispose of all material used in clean-up (e.g., used sorbents, oil containment materials, etc.) in accordance with the above regulatory requirements; and
- Treat and dispose of contaminated soil in compliance with the BC *Environmental Management Act*, Contaminated Sites Regulation and Hazardous Waste Regulation.

**7) Residue Sampling:**

- Water quality may be tested at a laboratory for further analysis of various parameters (such as chemicals or metals) as determined necessary by the EM and Project Biologist to ensure no deleterious substances are contaminating the site.



**APPENDIX C**  
SPILL RESPONSE FORM

### Spill Report Form

Date of Spill:	Estimated Time of Spill:	File No.
Date of Report:	Location of Spill:	Type of Activity:
<b>Contact Information of Person Reporting the Spill</b>		
Name:	Tel:	Firm:
<b>Contact Information of Person Involved in the Spill (if different from above)</b>		
Name:	Tel:	Firm:
Type of Material Released:	Estimated Quantity Spilled:	Evacuation Required (Circle one): Yes      No
Class of Spill (as per Spill Reporting Regulation):	What was affected? (Write Y, N or maybe) 1      Soil _____      Surface Water _____ Groundwater _____      Air _____	
Cause of Spill:		
<b>Spill Response Completed (Describe)</b>		
Containment:		
Clean up or recovery:		
Disposal of Spilled or Contaminated Materials:		
<b>Proposed Measures to Prevent Recurrence:</b>		
<b>Names of Persons/Agencies Advised:</b>		

**Photographs (insert or attach print-out[s]):**

Signed by: \_\_\_\_\_ Role/Authority: \_\_\_\_\_