



Springer Creek Pedestrian Bridge Scour Protection Work Construction Environmental Management Plan (CEMP)



Prepared for:

Village of Slocan

503 Slocan Street, PO Box 50

Slocan BC, V0G 2C0

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1 PROJECT INFORMATION

1.1 Introduction and Purpose

Masse Environmental Consultants Ltd. (Masse) has prepared this Construction Environmental Management Plan (CEMP) for proposed scour protection works on the Springer Creek pedestrian bridge over Springer Creek, in the Village of Slocan, BC. This CEMP identifies the environmental management measures that will be implemented to comply with federal and provincial legislations and Best Management Practices (BMPs) to prevent adverse impacts to the environment during construction.

1.2 Project Overview

The project site is located on Springer Creek (Photo 1, Photo 2), ~560 m upstream of its confluence with Slocan Lake (Figure 1). The project consists of replacing displaced riprap which protects the pedestrian bridge abutments from erosion. The work is proposed to occur in the summer of 2026, when stream flows are low and within the regional least risk timing window for instream works for Springer Creek (July 16-August 31).



Photo 1. Springer Creek pedestrian bridge western abutment, April 2025.



Photo 2. Springer Creek pedestrian bridge eastern abutment, April 2025.

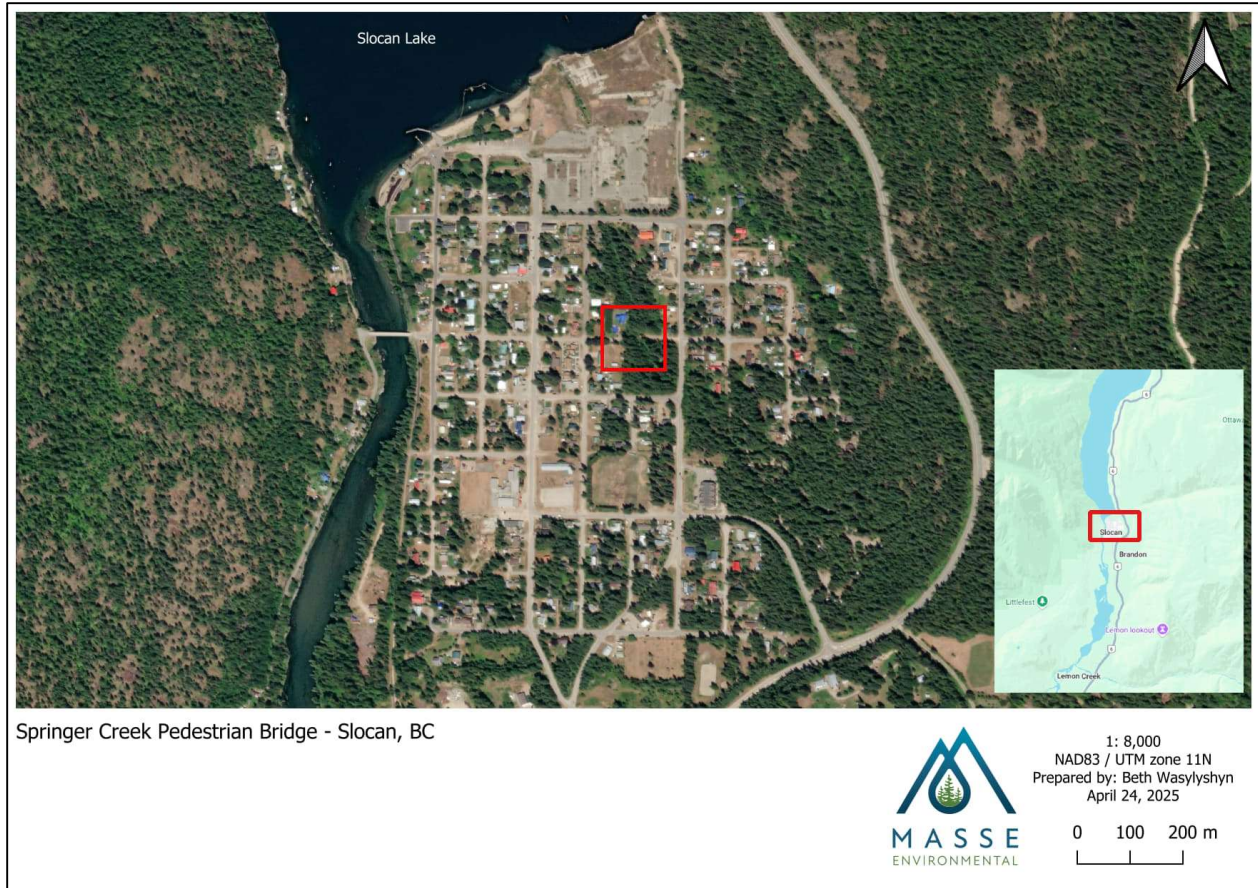


Figure 1. Project Location Map

1.3 Key Contacts

Contact details for key personnel are provided below (Table 1). All personnel are responsible for achieving environmental compliance during the project works. The contractor will plan the project activities in a manner that will mitigate impacts to the environment. Work activities with the potential to cause impacts to the environment will be conducted in a manner that will reduce these impacts and recommended mitigation techniques will be implemented.

Table 1. Primary Contact List.

Role	Agency/Company	Contact
Owner	Village of Slokan 503 Slokan Street, PO Box 50 Slocan BC, V0G 2C0	Patricia Dehnel cao@villageofslocan.ca 250-355-2277
Engineering	SNT Geotechnical LTD. #4, 385 Baker Street Nelson, BC, V1L 4H6	Ryan Williams ryan@sntg.ca 250-814-9737

Role	Agency/Company	Contact
Contractor	TBD	TBD
Environmental Monitor	TBD	TBD

1.4 Regulatory Framework

The project is expected to be completed via notification under Section 39(1)(b) and/or Section 39(1)(k) of the *Water Sustainability Act*, which allows for the maintenance of a clear span bridge and the repair or maintenance of existing erosion protection works to their original state. Other applicable provincial and federal legislations and regulations, as well as standards, guidelines and best management practices are listed in Table 2. A Department of Fisheries and Oceans Request for Review will also be submitted as work is proposed to be conducted below the high-water mark of Springer Creek to accommodate the riprap foundation. The riprap works in Springer Creek are in response to a flood event that eroded the original riprap.

Table 2. Applicable legislation and best management practises.

Applicable Legislation	BMP Guidelines
<p>Federal Legislation</p> <ul style="list-style-type: none"> - Canadian Environmental Protection Act (1999) - Fisheries Act (RSC 1985) - Migratory Birds Convention Act (SC 1994) and Regulation - Species at Risk Act (SC 2002) - Transportation of Dangerous Goods Act (2008) 	<ul style="list-style-type: none"> - A Field Guide to Fuel Handling, Transportation & Storage (MWLAP 2002). - BC Approved Water Quality Guidelines (MoE, 2018). - Canadian Environmental Quality Guidelines (CMME, 2012). - Land Development Guidelines for the Protection of Aquatic Habitat (DFO, 1993). - Measures to Protect Fish and Fish Habitat (DFO, 2019) - Kootenay- Boundary Water Sustainability Regulation Notification Terms and Conditions (FLNRORD 2018) - Requirements and Best Management Practices for Making Changes In and About a Stream in British Columbia, V. 2022.01 (Gov BC 2022).
<p>Provincial Legislation</p> <ul style="list-style-type: none"> - Environmental Management Act (SBC 2003) - Hazardous Waste Regulation (BC Reg. 63/88) - Spill Reporting Regulation (BC Reg. 187/2017) - Heritage Conservation Act (RSBC 1996) - Water Sustainability Act (SBC 2014) and Regulation - Weed Control Act (RSBC 1996) and Regulation - Wildlife Act and Amendment (RSBC 1996) 	

2 SITE DESCRIPTION

2.1 Aquatic Resources

Springer Creek is a third order stream, ~14 km in length and flows in east to west, then north to south, then finally south to north into Slocan Lake. Fish species reported in Springer Creek are Kokanee (*Oncorhynchus nerka*), Rainbow Trout (*Oncorhynchus mykiss*), and Sculpin (*Cottus sp.*). In the vicinity of the Project, the channel is a cascade-pool morphology with substrate materials consisting predominantly of boulder and cobble (Photo 3).



Photo 3. Springer Creek view downstream from project site. Cascade-pool morphology , April 2025.

2.2 Terrestrial Resources

Riparian vegetation on the south bank consists of a young mixed forest with a sparse understory of shrubs (Photo 4, Photo 5). Species present include Western red cedar (*Thuja plicata*), Douglas fir (*Pseudotsuga menziesii*), water birch (*Betula occidentalis*), Douglas maple (*Acer glabrum*), mountain alder (*Alnus incana*), and Sitka mountain-ash (*Sorbus sitchensis*).



Photo 4. Riparian vegetation, east side of Springer Creek, April 2025.



Photo 5. Riparian vegetation, west side of Springer Creek, April 2025.

2.3 Species at Risk

Species at risk confirmed within a 10 km radius of the project site are listed in Table 3 (CDC 2025). Species at risk are not expected to be impacted by the project due to its small footprint, short term nature of the construction activities, and because the project occurs within the existing right of way.

Table 3. Species at Risk.

Species (common name)	Latin name	BC Status ¹	COSEWIC ² /SARA Status ²	Comment
White Sturgeon	<i>Acipenser transmontanus pop. 2</i>	Red	E/E	Closest occurrence recorded in Slocan Lake.
Western Screech Owl	<i>Magascops kennicottii macfarlanei</i>	Blue	T/ T	Closest occurrence recorded 1.2 km away, off Curwen Road.
Shorthead Sculpin	<i>Cottus confusus</i>	Blue	SC/SC	Closest occurrence recorded in Slocan River.

¹Red = Species that is at risk of being lost (extirpated, endangered, or threatened) within British Columbia. Blue = Species considered to be of special concern within British Columbia. ²(E)Endangered = Facing imminent extirpation or extinction. (T)Threatened = Likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction. (SC)Special concern = May become a threatened or an endangered species because of a combination of biological characteristics and identified threats. Information sources: British Columbia Conservation Data Centre (2025).

2.4 Heritage Resources

Slocan is part of the traditional territory of the Ktunaxa, Sinixt, Secwepmec, and Syilx Okanagan First Nations. The project occurs within an area that has previously been disturbed, and the presence of heritage resources is considered unlikely. The Archaeological Chance Find Procedures provided in Appendix 2 will be used in the event of a chance archaeological find.

3 CONSTRUCTION ACTIVITIES AND POTENTIAL ENVIRONMENTAL IMPACTS

3.1 Construction Activities

The scope of work associated with the scour protection project is described below.

- Site preparation will include the removal of a few young trees and shrubs to accommodate access to the pedestrian bridge.
- Temporary removal of the pedestrian bridge to improve access to both banks of the creek for repairs.
- Removal of the old riprap while operating from the top of the stream banks.
- Installation of new riprap within the original footprint.
 - Excavation of toe for rip rap foundation.
 - Grading bank to engineered specifications.
 - Delivery of new 500kg class rip rap to site.
 - Installation of geotextile fabric.

- Installation of rip rap while operating from the top of the stream banks.
- The footprint of the new rip rap will not exceed the original extent of the rip rap prior to the damaging flood event.
- Once construction is complete, equipment and excess materials will be removed from site and disturbed areas will be restored.
 - Revegetation with trees and shrubs is not anticipated rather, a native seed blend for riparian areas will be used on areas of disturbed ground along the bank and the laydown area.

3.2 Potential Environmental Impacts

Environmental impacts of the project are expected to be minimal if best management practices and mitigation measures are followed. The primary environmental concern of this project is the temporary loss of riparian vegetation and risk of introduction of harmful or deleterious substances (sediment, hydrocarbons) into Springer Creek during construction. Best management practices and mitigation measures to address these concerns are provided below.

4 CONSTRUCTION MITIGATION

4.1 Environmental Orientation

An environmental awareness orientation will be conducted with all personnel at the project start-up. The purpose of the orientation is to ensure familiarity with the environmental procedures outlined in this document and to ensure that obligations regarding the exercise of due diligence for protection of environmental values are understood. A copy of an orientation is provided in Appendix 1. Environmental issues and procedures will also be discussed at daily toolbox meetings as appropriate for the work activities.

4.2 Environmental Timing Windows

The work will occur between July 16 – August 31, within the least risk window for fish in Springer Creek and when water levels in Springer Creek are low.

The work may occur during the bird breeding season (~April 15 – August 15). If clearing occurs within or close to the nesting period, a survey will be completed to confirm that no active nests are present prior to vegetation clearing.

4.3 Clearing and Grubbing Plan

Clearing will be required for access on both stream banks and re-grading of the banks will be required to accommodate the new riprap. The following mitigation measures will be implemented:

- Clearing and grubbing will be kept to the minimum possible area required.

- Where possible, vegetation will be cut close to the base and the roots retained to allow for natural regeneration.
- Cleared and grubbed materials will be stockpiled in a suitable area above the high-water mark of Springer Creek.

4.4 Management of Equipment and Fuel/Lubricant Materials

Construction activities require the use of machinery and equipment that use fuels, oils, lubricants, and hydraulic fluids. These materials are hazardous to the surrounding terrestrial and aquatic environments and must be managed properly. To reduce the risk of fluid leaks and spills the following measures will be implemented:

- Machinery will arrive on site in a clean condition free of fluid leaks, excess oil or grease, mud, sediment, and invasive or noxious weeds or seeds.
- All equipment will be regularly inspected for leaks at the start and end of each working day.
- Hydraulic machinery that is used below the highwater mark of Springer Creek will use environmentally sensitive hydraulic fluids which are non-toxic to aquatic life and are biodegradable.
- All fuel operating equipment (i.e., pumps, generators, excavators) will be equipped with secondary containment trays when stationary.
- Equipment will be stored in the staging area overnight (>30 m from any watercourse), if possible.
- An emergency spill response kit and spill reporting procedures (Section 4.13) will be available on site. The spill response kit will be inspected regularly and replenished as necessary.
- Safety Data Sheets (SDS) will be available on site.
- If emergency repairs are required, spill pads will be used to capture any drips.
- No large quantities of fuel will be stored on site.
- Small containers of fuel and oil to be stored in appropriate secondary containment.
- Any refuse contaminated with fuel, oil, grease, lubricants, or hydraulic fluid generated during repairs or servicing of equipment will be collected in polyethylene lined, covered, containers. This waste will be disposed of at a registered or licensed facility.
- Maintenance logbooks will be kept for each machine on-site and updated daily.

4.5 Erosion and Sediment Management Plan

The following mitigation measures to reduce erosion and the introduction of sediment into the watercourse include:

- The removal of vegetation will be minimised.

- The excavation will be completed carefully to minimize material becoming dislodged and entering the stream channel.
- Stockpiles will be located outside the highwater mark of Springer Creek in a stable location away from the top of bank.
- All stockpiled materials will be tarped and/or otherwise secured to prevent erosion and the escape of material by wind and/or water.
- Clean, non acid generating rock, essentially free of dust and fines, will be used for the riprap.
- Modify or stop work activities during periods of inclement weather and/or if elevated turbidity caused from construction activities is observed.
- Erosion and sediment control materials that will be readily available if required.

4.6 Worksite Isolation

Excavation and installation of the toe of the riprap may require the isolation of the work site from Springer Creek. This will be dependent on the water levels at the time of construction and will be installed as appropriate. Site isolation measures that may be suitable are:

- If room permits, retaining a small berm of native material along the toe of slope to separate the excavation area from Springer Creek, or
- Installation of a coffer dam (i.e., bulk bags lined with poly), or large boulders to push flows into the middle of the creek and separate the worksite from Springer Creek.

If an area of Springer Creek is isolated from the remainder of the creek to support construction, the following mitigation measures will be implemented as required:

- Fish scare tactics will be used prior to placing any site isolation,
- A fish salvage will be completed within the isolated area prior to any construction,
- Sediment-laden water within isolated areas will be pumped to an appropriate nearby location to minimise the potential for the introduction of sediment into Springer Creek.
- Any pumps used in areas where fish may be present will have screens that comply with the criteria specified by DFO's interim code of practice for end-of-pipe fish protection screens for small water intakes in freshwater (DFO 2020).
- Once work is complete, site isolation will be gradually removed from the downstream end first to ensure equalization of water levels inside and outside of the work area and to allow suspended sediments to settle.

4.7 Water Quality Monitoring

The BC Water Quality Guidelines (BCWQG) outlines the acceptable threshold concentrations of suspended sediment in watercourses for aquatic life. Allowable induced turbidity or total suspended sediments (TSS) relate to ambient (background) levels occurring naturally in the watercourse. The allowable levels are described in Table 4.

Table 4. BC Water Quality Guidelines for Turbidity

Water Use	Maximum Induced Turbidity (NTU)
Freshwater Aquatic Life	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 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 NTU at any time when background is 8 - 50 NTU 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.

Table adapted from MoE 2018

Turbidity will be measured and recorded by the EM in the field using a handheld portable turbidity meter when instream works are being conducted or a sediment release occurs. Measurements will be taken from an upstream site to measure background turbidity levels and downstream of the construction site. If levels of turbidity exceed freshwater aquatic guidelines due to construction activities, the contractor will be notified, and additional mitigation or monitoring will be implemented as required.

4.8 Waste Management

The Contractor is responsible for keeping the site clean. All refuse is to be stored appropriately in spill and leak proof bins. Domestic garbage will be taken off site daily.

Hazardous wastes potentially associated with the work include hydrocarbons, oily rags or spent absorbents containing more than 3% by weight hydrocarbons. The Contractor is responsible for the removal, handling and disposal of any hazardous wastes associated with the Work.

4.9 Air Quality

To reduce greenhouse gas emissions, idle reduction practices will be implemented onsite (Table 5).

Table 5. Idle Reduction Strategy.

Strategy	Action
1. Construction vehicle and equipment idling time restrictions	<ul style="list-style-type: none"> • Motor vehicles and light diesel trucks- 1 minute. • Heavy duty diesel vehicles- 5 minutes. • Diesel vehicles involved in construction site passenger transport- 10 min. • Construction equipment- exemptions when employed at the Site for work.
2. Staging Areas	<ul style="list-style-type: none"> • Establishing a staging zone for trucks waiting to load or unload materials that is located away from sensitive receptors.
3. Operation Efficiencies	<ul style="list-style-type: none"> • Book systems to ensure drivers are not required to wait and unload. • In instances where there is queuing, providing parking for trucks to wait and unload.
4. Worker Training	<ul style="list-style-type: none"> • Communication of the idle reduction strategy during the environmental site orientation, toolbox and health and safety meetings.

4.10 Wildlife Management

Interactions between staff and wildlife will be minimized by maintaining a litter free worksite and encouraging awareness. Staff will be instructed not to approach wildlife and to report all wildlife sightings to the Site Foreman and/or the EM.

4.11 Invasive Species

The following mitigation measures will be applied to prevent the spread of invasive species:

- All vehicles and equipment will be thoroughly washed before entering the project site to ensure that no weeds, seeds, or plant parts are brought into the site.
- Clearing of vegetation will be kept to the minimum possible area required for access, staging, channel construction, and safety considerations.
- Avoid parking and staging in areas where invasive species are present, if possible.

4.12 Site Restoration

Site rehabilitation activities required during and at the conclusion of the project will include:

- Reseeding exposed soils with MOTI Interior Forestland Mix (Table 6) or equivalent.
- Distribute any salvaged coarse woody debris over restored areas.

Table 6. MOTI interior forestland seed mix

Species	% composition by weight
Annual Ryegrass (<i>Lolium multiflorum</i>)	11
Canada Bluegrass (<i>Poa compressa</i>)	3
Hard Fescue (<i>Festuca trachyphylla</i>)	13
Intermediate Wheatgrass (<i>Thinopyrum intermedium</i>)	50
Perennial Ryegrass (<i>Lolium perenne</i>)	22
Red Top (<i>Agrostis gigantea</i>)	1

4.13 Spill Prevention and Emergency Response Plan

A detailed Spill Prevention and Emergency Response Plan (SPERP, Appendix 3) will be available on site for the duration of the project. To minimize the likelihood and impact of a spill the contractor will ensure that:

- A site-specific industrial spill kit is always kept onsite in a location that is clearly visible and easy to access. The industrial spill kit will be capable of handling the largest potential onsite spill and equipped with absorbent booms. Suggested industrial spill kit contents are detailed in Appendix 3.
- Each piece of heavy equipment will be equipped with a spill response kit.
- All personnel shall be familiar with the use of spill kits and their contents and are responsible for maintaining the contents of the spill kits according to the spill kit contents list contained within each kit.
- The contractor will ensure that personnel knowledgeable in SPERP are adequately trained to respond to hazardous material spills and are available onsite during all project activities. These personnel will review the SPERP regularly to ensure that it is up-to-date and that all required materials are available onsite.
- The SPERP will be placed within each spill kit.
- If a spill occurs it will be abated and contained immediately and then cleaned up. The contaminated material will be removed from the work site and disposed of in compliance with the applicable legislation and regulation of all authorities with jurisdiction over the project area.
- All spills will be reported to the Site Foreman, who will then inform the Village of Slocan and the EM. Emergency Management BC (1-800-663-3456) will be contacted for spills of a reportable quantity (Appendix 3).

4.14 Environmental Incident Reporting Plan

An environmental incident is a situation that has caused, or has the potential for causing, one or more of the following:

Springer Creek Pedestrian Bridge Scour Protection CEMP

- Adverse impact on the quality of air, land or water, wildlife, aquatic species, or species at risk.
- Violation of permit requirements or environmental regulations.
- Adverse publicity with respect to the environment.
- Legal or regulatory action with respect to violation of statutes or environmental damage.
- Alteration of, or damage to, heritage or archaeological resources.

All environmental incidences must be reported immediately to the Site Foreman, who will inform the Village of Slocan and the EM.

4.15 Environmental Monitoring Plan

A qualified environmental professional (QEP) will be available will to ensure that the preventative and mitigative strategies outlined in this plan are implemented and effective. The QEP will be present at the beginning of the project to ensure that construction personnel are familiar with the environmental requirements outlined in this CEMP, and as required during environmentally sensitive activities. Environmentally sensitive activities include:

- Clearing or grubbing during the breeding bird season (March 31 – August 15).
- Any work below the high-water mark of Springer Creek.
- Any discharge of potentially contaminated water.

5 CLOSURE

We trust the information provided in this report meets your current requirements. If you have any questions or require any further information do not hesitate to contact the undersigned.

Sincerely,



Beth Wasylyshyn, BIT
Masse Environmental Consultants Ltd.

6 REFERENCES

[CDC] Conservation Data Center iMap. Accessed June 2, 2025.

[DFO] Department of Fisheries and Oceans. Interim code of practice: End-of-pipe fish protection screens for small water intakes in freshwater.

<https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html>

MoECCS [Ministry of Environment and Climate Change Strategy] 2022. Fish Inventories Data Queries Tool. <http://a100.gov.bc.ca/pub/fidq/viewWatershedDictionary.do> . Accessed June 2, 2025.

APPENDIX 1. ENVIRONMENTAL ORIENTATION

Environmental Orientation Record

	Date:	File No. Title
1	Project Information	
	Project Title	
	Project Description	
	Project Location	
2	Contractor Information (if applicable)	
	Company Name	
	Company Address	
	Site Contact/Representative Name	
	Phone #	E-mail
	Cell #	
3	Key Environmental Issues and Requirements Review and record the environmental issues and requirements of the work as specified in the Environmental Management Plan (CEMP), Environmental Field Guides or other environmental requirements (e.g. Contract clauses, SOR). Use the checklist below to guide discussion.	
	Is there an CEMP, Field Guide, or other environmental requirement for the work?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> NA
	Site-Specific Environmental Sensitivities	Site-Specific Environmental Protection Requirements
		Discussed NA
	Soil Erosion / Compaction	<input type="checkbox"/> Yes <input type="checkbox"/> NA
	Vegetation Disturbance or Removal	<input type="checkbox"/> Yes <input type="checkbox"/> NA
	Generation and Disposal of Hazardous Substances	<input type="checkbox"/> Yes <input type="checkbox"/> NA
	Generation and Disposal of Waste	<input type="checkbox"/> Yes <input type="checkbox"/> NA
	Contaminated Soil Management	<input type="checkbox"/> Yes <input type="checkbox"/> NA
	Spill of Hazardous Substances	<input type="checkbox"/> Yes <input type="checkbox"/> NA
	Fuel and Flammable Storage	<input type="checkbox"/> Yes <input type="checkbox"/> NA
	Dust Generation / Other Air Emissions	<input type="checkbox"/> Yes <input type="checkbox"/> NA
	Water Quality – Erosion and Siltation	<input type="checkbox"/> Yes <input type="checkbox"/> NA
	Fish and Aquatic - Habitat Alteration, Disturbance or Loss	<input type="checkbox"/> Yes <input type="checkbox"/> NA
	Wildlife and Bird – Habitat Alteration, Disturbance or Loss	<input type="checkbox"/> Yes <input type="checkbox"/> NA
	Disturbance to Heritage Resources / Archaeological Sites	<input type="checkbox"/> Yes <input type="checkbox"/> NA
	Visual Impacts / Noise Concerns	<input type="checkbox"/> Yes <input type="checkbox"/> NA
	Property Considerations	<input type="checkbox"/> Yes <input type="checkbox"/> NA
	Disruption of Recreation Use	<input type="checkbox"/> Yes <input type="checkbox"/> NA
	Public Safety Concerns	<input type="checkbox"/> Yes <input type="checkbox"/> NA

APPENDIX 2. ARCHAEOLOGICAL CHANCE FIND PROCEDURES



Archaeological Chance Finds Management Procedures Kootenay Boundary Region

In 2024, the Province of British Columbia has collected data on more than 62,000 recorded archaeological sites (with more being added to the provincial inventory every year). Archaeological sites are protected by provincial legislation under the *Heritage Conservation Act* (HCA), which specifies that an individual (or corporation) must not “damage, excavate, dig in or alter, or remove any heritage object” from a heritage site, except in accordance with a Permit issued by the Minister”. The HCA confers automatic protection upon all heritage sites that pre-date AD 1846, regardless of whether they are recorded in the Provincial Heritage Register, and regardless of whether they are located on Crown land or private property. Certain sites, including human burials and rock art sites are automatically protected regardless of their age.

It’s important to note that all heritage sites, regardless of their condition, are protected under the HCA and does not distinguish between “intact” (*i.e.*, those sites which are in a pristine, or in an undisturbed state) and “disturbed” (*i.e.*, those sites which have been subject to alteration, permitted or otherwise). The following information has been provided to assist you with recognizing the archaeological site types most identified and most easily recognizable to non-professionals within the KBR.

Common Archaeological Site Types in BC and the Kootenay Boundary Region (KBR)

Most archaeological site types in BC are related to habitation areas, resource exploitation, tool making or repair, rock art, and ceremonial or ritual activities, such as burials. Preservation of organic materials is extremely poor in many places, because of acidic soil and previous forest fire history, and usually only small amounts of bone, antler, and wooden tools are found outside of coastal or other continuously wet areas, such as the edge of dammed water ways.

Lithic or Stone Tools

A “lithic” is the result of a human intentionally striking or otherwise modifying a rock, usually in the pursuit of tool manufacture or repair. These tools or “flakes” look different from naturally occurring rocks in the same area and tend to be small, angular, or pointed rather than smooth, and can look like they have been broken in an intended way or appear to resemble arrow heads or spear points. Most often the material is of a certain type or grade that may appear different than others in the same area, and the pieces found may have semicircular rings or bumps, which occur when rock is hit in a very particular way (Figure 1).



Figure 1: Examples of lithic or stone artifacts found in the KBR

Lithic sites are the most common site types identified in BC and are often all that is left of cultural activities that took place over hundreds or thousands of years ago. These artifact types can provide a wealth of information, including dates and the species being utilized, if studied in their original location and with the use of modern technology (such as radiocarbon dating adjacent organic material or blood residue analysis on the artifact itself).

Lithics can occur separately or in combination with other site types and tend to be located on specific landforms including knolls, eskers, ridges, rocky outcrops, relatively flat spots (terraces or riverbanks), areas used as travel corridors, quarries, hunting lookouts, or camping and village

locations. Lithic sites may contain thousands of years of information in the top metre of soil with many artifacts having eroded and exposed on the surface.

Cultural Depressions and Tipi Rings

Cultural depressions are the indentations left on the ground, usually in the form of pit-houses and cache (storage) pits. Where the cache pits are relatively small and often identified in relation to trails and travel corridors, pit-houses, and specific hunting areas, pit-houses, tend to be in “clusters” on more level and open terrace features where there is relatively easy access to a potable water source.

Pithouses were occupied in both summer and winter (Figure 2). These sub-terranean dwellings are identified in all areas of the KBR, except in the area farther east of Kootenay Lake and to the BC-Alberta border and northward to around the Columbia Lake area and where tipi rings reflect a more nomadic occupation.



Figure 2: Example of a Winter Pit-house

Pithouses are most often circular depressions that vary in depth and circumference, but almost always have a ridge or berm around the outer edge and charcoal or fire altered rock, representing a hearth, in the bottom. Tipi rings are circular outlines of transported rocks (Figure 3) that would have been used to weigh the structure and hide ends at the bottom.



Figure 3: Tipi Ring Made of Transported Rock

Rock Art Sites

“Rock art” refers to pictures or symbols that indicate a direction or geographic area. Petroglyphs are pictures made by cutting or hitting/pecking rock repeatedly, while pictographs are painted using a combination of ground red ochre mineral with a base such as egg white. Many of the rock art sites in the KBR are pictographs that are found on rock faces along waterways, but they can also be found elsewhere, indicating an area of cultural and spiritual significance. Referred to most often as panels, rock art can form a singular picture (Figure 4) or be part of a multi-image panel.



Figure 4: Example of a Pictograph Found in the KBR

Human Remains

In BC, “modern” human remains, and their designated areas of land (cemeteries and other recorded areas) are protected under the *Cremation, Interment and Funeral Services Act*, while older human remains, both archaeological and historical in age and regardless of ethnicity, are protected under the HCA:

12.1 (2) Except as authorized by a permit issued under section 12.2 or 12.4 or an order issued under section 12.3, a person must not do any of the following:

(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;

Pre-modern burial sites are any places where the body (or bodies) of an expired human has been placed or otherwise left. Burials consists of the partial or intact remains of at least one individual but may also contain whole or part of multiple individuals. In the KBR the burial types that are most likely to be identified are subsurface burials where bodies are placed in a foetal position along or facing a water body – sometimes these are then covered with piles of rock or “cairns” placed on top (Figure 5), mounded earth burials, cave or rock shelter burials, or those found along the edge of talus slopes.



Figure 5: Example of a Rock Cairn Burial

If you see bones which you know to be or suspect to be human, such as large bones that you do not recognise as animal remains, you should treat the area as a burial site by first securing the area and then immediately contacting the Archaeology Branch. The Archaeology Branch will then notify the Coroner's Office, the local policing authority, and may also arrange for a qualified anthropologist or archaeologist to provide an assessment of the remains should the Coroner's Office determine they are of archaeological significance.

If the remains are positively identified as archaeological in nature, the Archaeology Branch will work with the affected First Nations to arrange for their respectful handling in a culturally appropriate manner. Generally, if remains are still buried and are under no immediate threat of further disturbance, they will not be excavated or removed, however, if they have been partially or completely removed, the Archaeology Branch will facilitate the removal and reburial.

Guidance for Chance Finds Management

The HCA applies equally on private and Crown lands. Finding archaeological remains within the property or project boundaries does not mean that you will be automatically prohibited from continuing, rather it means that specific processes must be followed to ensure that the resource is handled in an appropriate manner. Please following these steps should you identify archaeological resources immediately:

1. If suspected archaeological materials or features are encountered, stop work in the immediate vicinity of the find and secure the area (rope or fence off, cover any larger holes, etc.).
2. Do not undertake further work that could disturb the find, including moving any soil from the adjacent or surrounding area of the site, including the removed materials.
3. Do not collect the artifacts on the surface as their distribution pattern may be important; and
4. Contact the Archaeology Branch for further direction.

Based on the nature of the incident, it may be determined that there are no further concerns and activities may continue, or further assessment or mitigation may be required. However, if an archaeological site is confirmed, coordinated discussions between the Archaeology Branch, the proponent, the provincial ministry who authorized the work, and all First Nations identified as having asserted the area as theirs. Once a consensus has been reached, the appropriate management option will be chosen and under direction from the Archaeology Branch, one or more of the following could happen:

- Avoidance through partial maintenance activity redesign or relocation. This results in minimal impact to the archaeological site and is the preferred option from a cultural resource management perspective. It is usually the least expensive option from a maintenance activity perspective as well.
- If human remains are identified and are determined to be forensic (*i.e.*, not archaeological), the local policing authority and Office of the Coroner will be contacted by the Archaeology Branch on your behalf.
- Application of temporary and/or permanent site protection measures as approved by the Archaeology Branch (e.g., fencing off the site, capping with soil) could be determined as the best option. An archaeological impact assessment to identify site boundaries and archaeological monitoring to verify the effectiveness of protective measures may be required.
- Archaeological mitigation, consisting of controlled excavations of the site; or
- Archaeological monitoring under a site alteration permit during construction by a professional archaeologist may be considered necessary.

EMERGENCY CONTACTS:

Please fill out the table and provide this document, *in its entirety*, to the ground crew conducting the work in the field, as well as to anyone else who may need to refer to its guidance.

Should you identify archaeological resources at any time, please take pictures (using a tape measurer or other at hand item for scale) and secure the immediate and adjacent area to ensure the integrity of the find and contact the Archaeology Branch at the first available opportunity.

If there is a professional archaeologist onsite working under an existing HCA permit, they should be the one to contact the Archaeology Branch on your behalf. A non-comprehensive list of professional archaeologists can be found under the “Find a Consultant” tab on the **BC Association of Professional Archaeologists** here: <https://www.bcapa.ca/>

General Contact	Name of Organization	Name of Contact	Telephone Number	Email Address
Archaeology Branch	Front Desk/ Reception		250-953-3334	
Proponent/ Lead Contractor				
Ministry Contact/ Project Lead				
Project Consulting Archaeologist				
First Nation Organization				
First Nation Organization				
First Nation Organization				

APPENDIX 3. SPILL PREVENTION AND EMERGENCY RESPONSE PLAN

Spill Emergency Response Plan

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

Spill Response Steps (*circumstances may dictate another sequence of events*)

1. Ensure Safety
2. Stop the Flow (When Possible)
3. Secure the Area
4. Contain the Spill
5. Notify/Report
6. Clean-Up

1. ENSURE SAFETY

- Ensure personal/public, electrical and environmental safety
- Wear appropriate Personal Protective Equipment (PPE)
- 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 Environmental Monitor and Site Supervisor or alternate of incident (provide spill details)
- Follow Incident Reporting Protocol
- When quantities are greater than specified in the *Spill Reporting Regulations* (Table 1) Emergency Management BC (EMBC) must be notified: 1-800-663-3456
- Provide necessary spill details to other external agencies (see spill reporting requirements)

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 disposal must comply with the BC Hazardous Waste Regulations (BC Reg. 63/88) and the BC Environmental Management Act ([SBC 2003] Chapter 53).
 - Waste 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).

Table 1. Contact List

Owner	Village of Slocan	Patricia Dehnel cao@villageofslocan.ca 250-355-2277
Contractor	TBD	TBD
QEP	Masse Environmental	250-352-1147 (office)
EMBC		1-800-663-3456

Table 2. List of externally reportable quantities for commonly used substances

Product	Quantity
Class 2.1 – flammable gas (e.g. propane)	10 kg
Class 2.2 – non-flammable gas (e.g. SF ₆ , CO ₂)	10 kg
Class 3 – flammable liquids	100 L
Class 8 – corrosive liquid acids and caustics (e.g. battery acid)	5 kg or 5 L
Class 9 – environmentally hazardous (e.g. PCB's, ethylene glycol)	1 kg or 1 L
Oil and Waste Oil	100 L
Other substances (e.g. new antifreeze, powerwash water)	200 kg or 200L
Pesticides and Herbicides	1 kg or 1 L

Recommended Spill Kit Contents

Item	Recommended
190L (50 gal) polyethylene drum	1
Oil absorbent pads	50
Universal absorbent pads	10
18' x 18' oil absorbent pillows	5
3" x 4' oil absorbent socks	5
5" x 10' linkable boom	5
36" x 36" drain cover	1
1 lb plugging compound	1
Nitrile gloves and safety gloves	4
Tyvek coveralls	2
Disposal bags	10
Instruction booklet	1

APPENDIX 4. SPILL INCIDENT REPORTING FORM

Spill Incident Report

Date of Report	
Date/Time of Incident	
Date/Time Reported to Site Supervisor	
Date/Time Reported to EM/FLNRO	
Personnel at Spill Site	
Spilled contents/amount	
Spill cause and effect	
Status of Spill	
Spill contained	
Extent of contamination	
Containment method	
Further action required	
Hazards to persons, property or environment	
Comments	

Form filled out by:

Position: _____

Contact: _____