

MITIGATION MEASURES

Heritage Resources

BC Hydro has identified some pole removals for Phase 2 will require archaeological monitoring during the work.

The Contractor and all on-site personnel will be familiar with BC Hydro's Heritage Resources Field Guide and implement 'stop work procedures' if evidence of past human occupation is observed during work.

Key mitigation measures are:

- Conduct of archaeological screening work to designate heritage areas.
- No access to designated heritage areas (where identified and confirmed by an Archaeologist and demarcated in the field).
- Archaeological monitoring required for areas of archaeological potential or at identified sensitive locations.
- No removal of artifacts.
- A chance find procedure is included in contractor orientations and site documents.
- Contact BC Hydro Environment immediately if a chance find is discovered.

Air Quality Specifications

The Contractor(s) will control all fugitive dust and other airborne emissions arising from the performance of the work, including but not limited to, that arising from movement and/or operations vehicular and machinery, generators, and power tools.

The Contractor will:

- Avoid engine idling.
- Consider watering areas and unpaved roads that are in frequent use, particularly in proximity to residences.

If the Contractor proposes to apply another method of dust control, other than water application, the approach should be submitted to the BC Hydro EM for acceptance prior to application.

Ecosystems and Vegetation Management

The Contractor(s) will conduct work and operate equipment in such a manner that the destruction, scarring or defacing of standing trees, native shrubbery, and other established plants is minimized. The Contractor will implement the following mitigation measures:

- Avoidance of clearing in mature/old forest areas will be avoided, where possible.
- Avoiding placement of excavated soils on ground cover vegetation. Soils will be placed on previously cleared locations, road surfaces and shoulders, or plywood or polyethylene tarps.

- Minimization of soil compaction, where possible, and provision of sufficient coverage for subsequent restoration (include matting or erosion-control, where required).
- Minimization of machinery impacts to vegetation and the banks of watercourses, to the greatest extent possible, with the intent that vegetation will only be cleared from sites required for construction use.
- Prior to mobilization, the BC Hydro EM will survey the site for invasive species. Specific measures for reducing the spread of these species will be discussed during the orientation. Measures may include cleaning vehicles prior to site access and removal/disposal of provincially or regionally noxious plants observed at work sites.
- All field equipment, including work boots, rain and safety gear, and vests will be cleaned prior to entering each work site.
- Heavy equipment and vehicles will be inspected for weeds and mud that may contain seeds prior to mobilizing to the work site. Wash and properly discard before mobilization to site. Avoid prolonged exposure of bare soils (promptly revegetate). Contractors will have BC Hydro invasive plant species field card during all field work (for species identification and species-specific containment information).

Erosion Prevention and Sediment Control

The Contractor(s) will prevent deleterious substances (including run off) from entering any stream or watercourse. Key mitigation measures to be followed by the Contractor will include:

- Installation of sediment and erosion control measures prior to starting work.
- Regular inspection of sediment and erosion control measures during the course of construction and conduct necessary repairs in a timely manner if damage occurs.
- Maintenance of measures until construction is complete and the affected areas are sufficiently stabilized and re-vegetated.
- Avoid stockpiling material within riparian areas (15 m from the top of bank of any watercourse), unless accepted by the BC Hydro EM.
- Avoid operation of machinery within riparian area (15 m from the top of bank), unless at a designated crossing or as accepted by the BC Hydro EM.
- Restoration of disturbed areas to a stable vegetated condition as soon as possible.
- Containment sediment-laden water (i.e., failing to meet BC Water Quality Guidelines (MOE 2001)) and dispose of at a designated wastewater site or into a vegetated area located at least 30 m from any watercourse, drainage ditch, and wetland, as accepted by the BC Hydro EM.
- Ensure all material such as rock, riprap, or other materials placed on the banks or within the active channel or floodplain of a stream is inert and free of silt, overburden, debris, or other substances deleterious to aquatic life.

Site Restoration and Revegetation

It is the responsibility of the Contractor to ensure that each work site is restored to pre-work conditions. Site restoration measures include:

- Stockpiling and replacing topsoil (and other organic material) in the order it was removed.

- Work sites that were leveled to provide a stable work surface will be re-contoured to match the original grade and re-textured (uncompacted and raked) to loosen and rough soil treatment;
- Seeding disturbed areas with a Project specific perennial native grass mixture, as required, for slope stabilization. Specific seed grass mix (native graminoid seed mix) to be obtained from the local district office (in stock) or sourced as per SARA permit application.
- Distributing coarse woody debris, where appropriate, in a manner that creates habitat for small mammals, arthropods, nonvascular plants and fungi.
- Remove all construction debris and confirm that no containers, pipes, poles or similar man-made structures that could be used as temporary owl burrow habitat and/or perches for their predators are left on site unless approved by the ER and QEP.
- Deactivating temporary access roads and trails and restore natural drainage patterns.
- Implementing revegetation measures, including erosion and sediment control measures to ensure revegetation success.
- Managing and monitoring revegetated areas during work activities to remove invasive species and encourage growth of favorable species.
- Implementing follow-up compliance monitoring of post-construction revegetation and reclamation will be conducted by the BC Hydro EM and documented in the Environmental Completion Report.

Specific approaches to site restoration will be coordinated between the BC Hydro EM and Contractor, with consultation from the QEP if required.

Wildlife Resources

For species at risk:

- All pre-construction species at risk surveys, buffer zone establishment and monitoring must be conducted by a QEP experienced in surveying methodologies associated with the respective species at risk.
- The QEP will conduct pre-construction surveys for American badger, great basin gophersnake, great basin spadefoot, Lewis's woodpecker, and burrowing owl to identify any key environmental features indicating residence or presence of individuals. Following best management protocols, the surveys will consist of visual inspections targeting individual occurrences and features to support dens, burrows, or nests (residences).
- Pole decommissioning works, and works requiring off-road access and disturbance (e.g., traversing of machinery on undisturbed surfaces) are proposed to occur between November 15 and March 31, during frozen ground conditions (to protect burrows) and when burrowing owl are absent.
 - Conduct all such works between November 15 and March 31.
 - Prior to November 15, the QEP must confirm that ground conditions are frozen before work may proceed.
 - Between November 15 and February 28, the QEP will periodically confirm frozen ground conditions (minimum once every two weeks).
 - Between March 1 and March 31, the QEP will confirm frozen ground conditions on a daily basis, at the start of each work day.

- If ground conditions during this work period cannot be confirmed by the QEP to be frozen, pole decommissioning works or works requiring off-road access must cease until ground can be confirmed frozen, or until the following year's work window.
- If species at risk individuals are encountered during pre-work surveys or during construction, management will follow QEP prescriptions; stop work, work elsewhere and monitor the location where species were observed prior to resumption of work.

For migratory birds: no vegetation clearing work is permitted during the bird nesting season (Early-April and Mid-August).

Additional mitigation that will be implemented to reduce the potential impacts to wildlife include:

- Minimize footprints and retain wildlife trees when safe and possible to do so.
- Avoid work activities in any locations identified as important habitat areas prior to construction (e.g., riparian areas, species at risk residences), and avoid wildlife habitat features as identified during pre-construction surveys.
- Minimize vehicular collisions with wildlife by enforcing speed limits, encouraging carpooling and communicating locations or expected aggregations of wildlife.
- Prevent nuisance wildlife by training workers and ensuring appropriate waste disposal.
- Waste control – esp. of pipes and cavities that could be used by burrowing owl is essential.
- Remove perch poles (perches for red tailed hawk – predators of burrowing owl).

Equipment Management

The Contractor is responsible for ensuring all equipment arriving at site is well tuned, leak-free, and clean. Other key mitigation measures include:

- Heavy equipment working within 30 m of a watercourse (e.g., Nicola River) will use synthetic biodegradable or vegetable oil based hydraulic fluids.
- Small equipment such as pumps operating within 30 m of the high-water mark will be kept within secondary containment at all times, with a spill response kit accessible in the vicinity.
- No fuelling to take place within 30 m of a watercourse (e.g. Nicola River) or adjacent to locations upstream leading to this watercourse.

Material Storage, Handling and Waste Management

The Contractor will make every reasonable effort to minimize waste by following the principles of reduce, reuse, and recycle. If wastes are generated in the course of the work, the Contractor is responsible for the disposal of waste products in compliance with appropriate environmental waste management procedures and legislation such as the *Environmental Management Act*.

General Construction Waste

Improper storage, transport and disposal of non-hazardous materials can negatively impact terrestrial and aquatic environments and must be managed in accordance with all provincial environmental acts and regulations. All non-hazardous solid wastes generated during the Project

will require disposal off site and will need approval from the local landfill operator prior to disposal. Local landfills may have specific restrictions on what waste items will be accepted.

Pipes and other cavities suitable for use by burrowing owl will be removed, or if they must be left onsite will be capped to prevent entry.

Sewage Disposal

The Contractor is required to provide portable sanitary facilities throughout the duration of the construction period. The facilities will be located on paved surfaces at least 15 m away from any storm drains or drainage ditches, 30 m from any watercourses (e.g., Nicola River) and securely fastened to the ground. The facilities will be removed from site upon completion of the Project.

Solid Waste – Non Wood

Other solid wastes generated during the Project, such as concrete or asphalt that will require disposal off site will need an approval letter from the local landfill operator prior to disposal. This ensures that the waste is accepted at the landfill and complies with BC Hydro waste policies, which include not disposing of waste on federal lands or in environmentally sensitive areas. The Contractor must provide the letter of approval from the landfill or alternate disposal location indicating that they accept the waste material to the BC Hydro Representative. This is to indicate that it complies with BC Hydro waste policies (i.e., the disposal location is not on federal land). Contact the BC Hydro EM for assistance if required.

Soil Handling & Disposal

Small amounts of soil (e.g., soil from newly excavated pole hole) may be required to be removed from the site during the Project.

The Contractor will not remove surplus soil (contaminated or uncontaminated) from the site before the BC Hydro EM and representative (or delegate) have approved the proposed soil disposal option. Surplus soil will only be disposed of at a receiving site authorized under municipal, provincial or federal legislation to accept the material being delivered to it.

The Contractor will not relocate soils to:

- Property designated under the Agricultural Land Reserve (as regulated under the *Agricultural Land Reserve Commission Act*) or property zoned for agricultural use;
- Property to be used now, or in the future for cultivation, residential gardens, farms, orchards and/or grazing livestock; and,
- Residential, urban parkland or federal land (including First Nation land)
- Environmental sensitive sites including within 30 meters of any waterbody (as defined by the *Water Sustainability Act*).

The BC Hydro Representative (or delegate) must approve the soil disposal location in writing. The Contractor will submit to BC Hydro's Representative a copy of the Soil Acceptance Letter and Agreement. Dependent on laboratory analysis, surplus soils leaving the Site may need to be accompanied by material designation paperwork when leaving the Site.

The Contractor will provide the BC Hydro representative (or delegate) with copies of agreements with the receiving site indicating the following:

- Acceptance of relocated soil
- Acknowledgement of soil analysis results and soil classification
- Location of the receiving site (i.e., approved provincial landfill)
- Weigh scale records for landfill disposal tracking.

Hazardous Construction Wastes Material Management

General

The following equipment, which may contain petroleum products or other harmful and polluting substances in on-board tanks and/or hydraulic systems, will be used on-site:

- Pickup trucks
- Flat deck trucks
- ATVs
- Man-lifts
- Pumps
- Compressors
- Grinders
- Power washer
- Generator and fuel tanks.

Hazardous materials handled and generated for this Project include:

- Fuel and coatings (including waste rags)

Improper storage, transport and disposal of the above materials can negatively impact terrestrial and aquatic environments and must be managed in accordance with all provincial and federal environmental regulations and BC Hydro Waste Management Standards.

- All hazardous materials will be tested prior to disposal.
- No shipment of hazardous material is allowed from the site without authorization of BC Hydro's Representative or their delegate.

Contaminated Soils

Contaminated soils will be excavated and hauled off-site to an accepted treatment/disposal area arranged by the Contractor and accompanied by a letter of acceptance. Contaminated soils hauled off site must be manifested. Provincial Special Waste Regulations, with respect to storage, land filling, and disposal of materials must be adhered to. The BC Hydro EM will provide advice as to the procedures required for disposal of these materials.

Despite any prior soil quality testing and assumptions, additional soil testing may be required from within excavation zones where olfactory or visual cues are evident.

- Prior to removal from Site, suspect surplus excavated soil will first be tested for contaminants and only be disposed of in a method approved by Hydro's Representative. Should potentially contaminated soil be encountered, the following procedure will be followed.
- The soil will be excavated and placed on polyethylene sheeting (6 millimetre or greater) adjacent to the location of its excavation and as far from ditches and surface water as possible.
- Contact Hydro's Representative to arrange sampling and for removal of the contaminated soil.
- Cover each pile with polyethylene sheeting to prevent silt and/or contaminant run-off.
- In the event contaminated water infiltrates into the excavation, measures will be taken to prevent the contaminated water from entering nearby ditches and/or surface water. This could include constructing an earth berm around the excavation and using ample absorbent materials. Do not pump this contaminated water off-site. Contact Hydro's Representative for assistance managing contaminated water.
- If contaminated water needs to be removed from the excavation, options include drumming the water and disposing of appropriately, vacuum truck extraction, etc.

Removal/Off-site disposal of soil is prohibited without authorization from the BC Hydro Representative or their delegate.

The Contractor is required to notify the BC Hydro EM of any observations for contaminated soil, whether olfactory or visual, regardless of their location. All observations for potentially contaminated soil are to be documented for future reference by BC Hydro.

Soils adjacent to poles may be contaminated due to pole treatment. Refer to BC Hydro Distribution field guides, bulletins, and best management practices found in the above link. The following documents are applicable to soil removal:

Disposal of Excess Soil from Wood Pole Renewals – Distribution Bulletin 2012-001	Soil removal, storage, handling and disposal
Authorized Pole Hole Soil Disposal Locations	Soil disposal
Engineering Report (EBA, April 2012) on Characterization of Excess Soil from Pole Holes	Soil disposal from poles
Soil Segregation and Disposal on Non-BC Hydro Owned Land – Environmental Bulletin	Soil disposal on non-BCH lands.

Transportation of Dangerous Goods

The transportation of dangerous goods (e.g. diesel, oil-filled equipment) must be completed in compliance with the Transportation of Dangerous Goods Regulations, by a registered carrier, with the appropriate equipment, signage, and shipping manifest.

Hazardous Wastes

Hazardous wastes will not likely be encountered, however, include hydrocarbons, and 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.

- Hazardous waste will be contained in appropriate leak-proof labeled containers and stored in dedicated, secure storage areas with secondary containment.
- SDS for identified hazardous substances will be made available to the EM for acceptance prior to being brought to site.
- Hazard signs indicating the nature of the stored material will be placed at storage locations.
- The Contractor shall maintain Hazardous Waste and TDG manifests, and provide to the EM.
- Pole top transformers shall be treated as PCB containing unless proven otherwise.

The following are available on BC Hydro’s website for handling and transport applicable to the work:

Polychlorinated bi-phenyls (PCB) labelling procedures – Environmental Bulletin	Transformer removals with PCBs > or = 50 ppm
Packaging Transformers in Spill Trays – Environmental Bulletin	Packaging scrap transformers for storage and transport
Waste labelling and manifest examples – Reference Card	Shipping wastes