



## Parks Canada Basic Impact Analysis

### 1. PROJECT TITLE & LOCATION

Water System Rehabilitation, Cape Spear Lighthouse National Historic Site

### 2. PROPONENT INFORMATION

Annie Campeau, Project Engineer, 30 Victoria Street, Gatineau, QC - Tel: 819-420-9263

Jerry Feltham – Manager, FII – Newfoundland East Field Unit - Tel: 709 533 3122

Glenn Keough – Manager, National Historic Sites and Visitor Experience - Tel: 709 772-6709

### 3. PROPOSED PROJECT DATES

Planned commencement: Fall 2017

Planned completion: Fall 2017

### 4. INTERNAL PROJECT FILE # TN-2017-20

### 5. PROJECT DESCRIPTION

The Cape Spear Lighthouse National Historic Site (CSLNHS) is located at the most easterly point in Canada. Just 20 minutes east of St. John's, CSLNHS was designated as historically significant in 1962 for the age and the architecture of the historic lighthouse. In order to protect the commemorative integrity of the site, Parks Canada restored this lighthouse to its original appearance and CSLNHS was officially opened to the public in 1983. Today, Cape Spear continues to be protected as a National Historic Site for two main reasons: the age and architecture of the lighthouse and its significance as a gun battery during the Second World War.

Parks Canada is considering enhancing the site facilities by adding a café and more washrooms (FII project 585). There are currently washroom facilities at the site, however, these are serviced from an underground storage tank and water is trucked to the site as needed. The delivered water is initially of potable quality, however, there is no on-site treatment or sterile storage. The water provided to the public is considered non-potable and users are advised to not consume it.

Completion of the project will result in an adequate, reliable, potable water system capable of servicing current and anticipated CSLNHS requirements.

The scope of work for this project includes:

- a) demolition and removal of an existing underground fibreglass 56,800L water storage tank
- b) installation of new fiberglass 56,800L water storage tank on the existing tank base
- c) general construction of a new water supply line and associated valves, hydrant, and fittings

A new 50 mm high density polyethylene (HDPE) water main line will connect to a new drilled well (91 meter depth) that was completed on March 1, 2017. The new main line will follow an existing waterline, for approx. 350 meters, to existing washroom facilities and a new water storage tank located adjacent to the visitor parking area. Another new 25 mm HDPE water line will run for approx. 100 meters from the new storage tank to the visitor center/craft shop. This section of the new line will be installed in a previously undisturbed area. The size of the trenches will be approximately 0.75 m deep and 0.7 m wide. The construction corridor will be 4 m wide (Figure 1).





Figure 1. Google Earth image of Cape Spear National Historic Site showing the locations of the existing new drilled well, existing water storage tank and new waterline routes.

CSLNHS is situated in the highlands of the Avalon Peninsula and is underlain mainly by Precambrian Rock. Topography in the region is steeply sloping. Soils are of the Red Cove soil series and are characterized by reddish-grey, very firm, very stony, sandy loam and are moderately well-drained. The long, narrow ridge that forms the site is bordered by large water sources on three sides. Cape (Spear) Bay is located northwest of the site, the Atlantic Ocean is to the north, and Broad Cove is to the southeast. A small brook marks the western boundary of the site.

Flora on site consists of a combination of introduced and native species, mostly in the form of dense shrub vegetation resulting from successive fires in the area. A variety of vegetative communities exist within the site, however the area is predominated by rock barrens and alder barrens. The rock barrens consist primarily of bare soil and rock, along with carpets of vegetation consisting primarily of crowberry species (*Empetrum eamesii* and *Empetrum nigrum*). The alder barrens are comprised of sweet bayberry (*Myrica gale*) and dwarf alder (*Alnus crispa*) mixed with tufts of grass and herbs. Basin bogs and seepage fens are also found on site and consist primarily of sphagnum species. The presence of Rocky Mountain willowherb (*Epilobium saximontanum*) had been noted by Parks Canada Staff in 2001, a provincially listed rare species, on the north side of the trail situated between the lookout and the most easterly point of the site. The plant has not been noted since or elsewhere and is thought to have been misidentified. It is generally associated with calcareous habitats of western Newfoundland. Alpine Fescues (*Festuca brachyphylla*) was noted during a vascular plant survey in 1979. This species is also listed as a rare species in Newfoundland. It has not been recorded since and is thought to have been misidentified as it is an alpine species with the only known records from western Newfoundland. A survey of the vegetation on the proposed construction corridors was conducted on November 2, 2017. These species were not found. There are no known flora species listed under the federal *Species at Risk Act* (SARA) or the provincial *Endangered Species Act* (ESA) occurring at the site.

Resident fauna is limited to smaller mammals such as rodents and snowshoe hare (*Lepus americanus*), with medium and large mammals passing through the site on occasion. Many bird species can be found at the site including the horned lark (*Eremophila alpestris*), savannah sparrow (*Passerculus sandwichensis*), willow ptarmigan (*Lagopus lagopus*), American robin (*Turdus migratorius*), various sandpiper (*Calidris sp.* and *Actitis macularia*) and 2





snow bunting (*Plectrophenax nivalis*). Commonly sighted seabirds include murre (*Uria sp.*), shearwater (*Puffinus sp.*), black guillemot (*Cepphus grylle*), herring gull (*Larus argentatus*), greater black-backed gull (*Larus marinus*), and blacklegged kittiwake (*Rissa tridactyla*). The little brown bat (*Myotis lucifugus*) is classified as Endangered under SARA and the provincial ESA and may occur at the site although no known roosts or winter hibernacula have been previously identified. The short-eared owl (*Asio flammeus*) is classified as Special Concern under SARA and Vulnerable under the provincial ESA. This species could occur at the site. No breeding records or roosts have been confirmed and any occurrence would most likely be transient in nature. Marine species are abundant beyond the site boundaries and include, but are not limited to, such species as Atlantic cod (*Gadus morhua*), Atlantic salmon (*Salmo salar*), humpback whales (*Megaptera novaeangliae*), minke whales (*Balaenoptera acutorostrata*), and fin whales (*Balaenoptera physalus*).

The strategic location of the Cape Spear headland, overlooking the approaches to St. John's harbour, made it a key point for coastal navigation, communications, coastal defence and a special place for viewing. The natural features and relationships of the site that supported these activities still exist. The Cape Spear NHS Commemorative Integrity Statement provides details on the cultural resource inventory on site. The designated place includes the footprint of the original 1835 lighthouse building. The cultural resources of national historic significance (Level I) include the 1835 lighthouse and any structural remains of the original lighthouse on site. The cultural resources of other heritage value (Level II) include the structural components associated with the additions to the 1835 lighthouse, and the remains and vestiges of an attached fence and privy, the contemporary lighthouse complex including the VRC/Giftshop – the assistant keeper residence and, the World War II Battery complex. The cultural landscape consist of impressions left on the land as a result of activities relating to lightkeeping and WWII Defence at Cape Spear, i.e. footprints and former structures, remnants and evidence of ditches, wells and a water holding basin, evidence of pathways, roadways and, agricultural activities.

## 6. VALUED COMPONENTS LIKELY TO BE AFFECTED

As identified in Appendix 1 - Effects Identification Matrix.

## 7. EFFECTS ANALYSIS

The primary effects for all valued components will occur during the construction phase of the project.

### Natural Resources

Air - airborne dust particles from exposed soil and heavy equipment exhaust may result in reduced air quality. The effect is expected to be low given levels of rainfall typical in the Fall/Spring, reducing the potential for dust.

Water – wastes (e.g., garbage, litter, fuel and construction materials), erosion and sedimentation and surface water runoff may contaminate groundwater and the aquatic environments. The probability of a fuel spill is low, however, the area is subject to high winds and storm conditions. Erosion and sediment control and secure storage of materials will be important.

Soil and Landforms - excavation activities and operation of heavy machinery may result in soil compaction and rutting, soil erosion, loss of topsoil, exposure of subsoils, and soil contamination from waste (e.g., garbage, fuel). The area is historically a disturbed area so effects are expected to be low. Effective restoration of the site will be important.

Flora (including species at risk) - excavation will require removal of vegetation resulting in disturbance of adjacent natural areas, potential root exposure and physiological stress; ground disturbance may result in the introduction of invasive species, or expansion of existing invasive alien populations. Effects are expected to be low given that the site is historically a disturbed area and there are currently invasive species existing on the site. Effective restoration, however, will be important. Effects to species at risk are not expected.





Fauna (including species at risk) - operation of heavy equipment, increased human presence and noise may result in temporary habitat displacement/ preferred habitat avoidance (e.g., birds); artificial food sources such as garbage and litter may cause wildlife habituation/attraction (e.g., seabirds, fox); potential fuel spills, sediment and runoff may contaminate aquatic habitat; and potential runoff from fuel spills may cause injury or mortality to aquatic life. Effects are expected to be low given that construction will take place outside the migratory bird nesting season and this is a disturbed area with, at times, high levels of human activity. Effects to species at risk are not expected.

#### Cultural Resources

Archaeological sites – No major archaeological concerns with this project. There are no archaeological concerns with removing and replacing the current water tank with a new one if it stays in the same footprint. As for the new water line, there are no archaeological concerns if the main trench from the well to the visitor's center remains in the footprint of the abandoned line. The water line connecting the Visitor's center to the Gift Shop should not run through any known or presumed cultural resources.

Landscape and Landscape Features- Impact is expected to be low given that the main trench will use the footprint of existing abandoned waterline.

#### Visitor Experience

The potential effects on Visitor Experience are anticipated to occur during the construction period, including: reduced quality of visitor experience due to noise and presence of construction equipment; decreased aesthetic appeal and impacted viewscape; and potential hazard to visitors and staff due to construction activities (e.g., heavy equipment operation). The project will temporarily decrease the quality of the overall visitor experience but this is limited to the construction period. Most trails will remain accessible to visitors.

### **8. MITIGATION MEASURES**

#### General

##### Work Site Conditions/Staging/Laydown:

1. A project start up meeting will be held with the key people working onsite to review the mitigation measures, Parks Canada contact information and any site specific considerations with Parks Canada staff before work begins.
2. Staging and parking areas for material and equipment will be located at an area approved by Parks Canada staff.
3. The established 4 meter working corridor, and other existing disturbed areas approved by Parks Canada staff, will be used to access the site.
4. Clearly mark staging areas, work corridors and restricted areas with stakes, biodegradable flagging tape, fencing, temporary gates or other means; remove when project is completed.
5. Isolate operations and ground intrusion activities to the footprint of the 4 meter working corridor and limit vehicle access to essential vehicles only.
6. Confirm presence of buried infrastructure prior to excavation and take precautions to avoid damage.

##### Equipment Operation:

7. Equipment from outside the national historic site must be washed/cleaned free of soils prior to arrival.
8. Equipment must be properly tuned, clean and free of contaminants, in good operating order, free of leaks (e.g., fuel, oil or grease), and fitted with standard air emission control devices and spark arrestors prior to arrival on site.
9. During construction, any required cleaning of tools and equipment must be done greater than 30 meters from the shoreline to prevent the release of wash water that may contain deleterious substances.
10. Equipment operators must be fully trained and experienced.





11. Use low pressure/rubber tracked equipment or access matting where feasible to minimize soil compaction and ground disturbance.
12. Minimize idling of engines, contingent on operating instructions and temperature consideration.
13. Machinery (e.g., excavators, bobcats, chainsaws, and generators) must be stored, maintained and refuelled on a flat surface at least 100 meters from the ocean and any wetland areas.
14. Only minor repairs and maintenance (e.g., lubrication) of 'non-mobile' equipment such as flatbeds or shovels are permitted; all major repairs must be undertaken at an appropriate offsite location.

**Waste:**

15. All solid waste will be securely stored and handled according to applicable federal/provincial regulations.
16. All waste materials (e.g., construction material, refuse material, waste petroleum, and demolition waste) shall be removed from the site on project completion and considered, prior to disposal, for reuse, resale or recycling and then disposed of at an approved facility; cover waste loads during transportation.
17. Portable sanitary facilities must be serviced on a regular basis and accumulated waste disposed of at a sanitary waste disposal facility.
18. Burning of waste is not permitted at the National Historic Site.

**Hazardous Materials:**

19. Prevent the release of hazardous substances into the environment, including but not limited to, petroleum products and their derivatives and chemicals.
20. All on-site personnel must be briefed on reporting requirements for hazardous materials spills; spills must be reported immediately to the designated Parks Canada contact.
21. All construction sites must be equipped with containers suitable for the secure, temporary storage of hazardous wastes, separated by type.
22. A spill contingency response kit including sorbent material and berms to contain 110% of the largest possible spill (i.e., fuel or other toxic liquids) related to the work must be available on site at all times. On-site personnel must be aware of its location and trained in its use. Any contaminants must be recovered at source and disposed of according to applicable laws, policies and regulations.
23. Handle and store hazardous materials as per applicable federal legislation/regulations. The contractor must have all relevant and current Material Safety Data Sheets available onsite.
24. Petrochemical products, paints and chemicals must be stored 100 meters from aquatic environments. They must be secured overnight in a Parks Canada approved enclosed area under lock and key.
25. Any hazardous waste or contaminated material uncovered during excavation / construction, must be investigated, source identified, removed and disposed of outside the protected heritage place at an approved facility. Disposal documentation must be provided to the designated Parks Canada contact.

**Natural Resources**

**Air:**

26. Implement dust control measures during grading and re-surfacing especially during dry, windy weather.

**Water:**

27. Ensure all materials (e.g., organic materials, soil stockpiles, construction waste and materials) are securely stored in place, especially during high wind/storm conditions and at staging areas; materials must not enter aquatic environments or be allowed to disperse around the site.
28. This existing water line intersects a wetland area. Drainage patterns around/through any wetland areas must be restored at the end of the project.
29. Machinery will not be permitted into any wetland areas and must stay on the established 4 meter working corridor.





Soil and Landforms:

30. The contractor must prepare an erosion and sediment control plan and submit same to the designated Parks Canada contact for approval prior to the start of project activities.
31. Regularly inspect and maintain erosion and sediment control structures during all phases of the project and modify measures as necessary.
32. Use erosion and sediment control products made of 100% biodegradable materials (e.g., jute, sisal or coir fiber) when possible. Ensure backing materials are also biodegradable. Hay bales are not permitted.
33. Limit duration of soil exposure; phase activities whenever possible and restore disturbed areas as soon as possible.
34. Topsoil separation is required; stockpile topsoil away from subsoils and spoil material and more than 15 meters away from aquatic environments, drainage features and/or the top of steep slopes.
35. Excessive vegetation (i.e. tall shrubs) should be cut and removed from areas before topsoil separation begins.
36. Salvaged topsoil for reclamation activities will be stored inside the 4 meter working corridor or other areas approved by Parks Canada staff. This material will not be pushed or stored in natural areas to be left undisturbed.
37. Excavations must be drained (but not directly into any waterbody), back-filled and compacted as soon as possible.
38. Under thawed conditions, backfill material will be compacted prior to topsoil replacement; distribute topsoil evenly over the excavated area as per Parks Canada specifications.
39. Under frozen ground conditions, material will be sufficiently spread over the excavated site to allow for settlement under thawed conditions. Where practical, topsoil replacement will be postponed until the backfill has thawed.
40. Surface water shall be directed away from work areas. Sediment laden runoff must not enter any watercourse.
41. Remove temporary erosion and sediment control products, especially non-biodegradable materials, when they are no longer required.
42. When excavation is complete, shape loosened soils to match the local terrain and ensure noticeable construction impacts (e.g., ruts, holes, depressions, compacted areas) are appropriately re-graded, back-filled with topsoil, re-contoured and capped in preparation for restoration.
43. During grading, ensure that materials are not pushed, or permitted to enter or erode into water or wetlands and stay within delineated limits.

Flora:

44. Introduction of invasive plant species must be prevented:
  - Minimise bare soil exposure (e.g., plant native species, cover with natural mulch/ground coverings).
  - Minimise ground disturbance and vegetation removal, as practical and within project requirements.
45. Clear minimum area necessary. Remove and maintain sod mats for replacement when practical to improve re-vegetation success when work is complete.
46. Trees must be preserved and left in place. Any alteration to trees must be pre-approved by the designated Parks Canada contact.
47. Protect roots of trees to drip line to prevent disturbance or damage. Avoid traffic, dumping or storage of materials over root zone.
48. Restore any areas affected by construction activity as closely as possible to the natural surrounding area. Specifically:
  - Preserve native topsoil/rootmat from the site, spread over the affected areas, re-grade to natural contour, install effective erosion control measures (e.g., erosion control blankets) on the steepest sections of the waterline to ensure the soil does not wash away prior to native plant re-population next season.
  - Hydro seeding mixes shall be pre-approve by parks Canada staff.





Fauna:

49. All wildlife attractants must be secured (e.g., petroleum products, human food, recyclable drink containers and garbage) within wildlife-proof containers, in a secured building or a vehicle. Keep food waste separate from construction waste and remove daily. Notify the designated Parks Canada contact immediately should wildlife gain access to the above mentioned attractants.
50. Minimize the time excavations remain open and cover or fence when left unattended.
51. Never approach or harass wildlife (e.g., feeding, baiting, luring).
52. Alert the designated Parks Canada contact, immediately to any potential wildlife conflict (e.g., aggressive behaviour, persistent intrusion), distress or mortality. In the case of aggressive behaviour or persistent intrusion, stop work and evacuate the area.
53. The breeding season for most birds within Newfoundland occurs between May 1<sup>st</sup> and August 1<sup>st</sup>. Vegetation clearing/grubbing should not take place within this time frame. However, some species protected under the *Migratory Birds Convention Act* nest outside these timeframes. Under section 6 of the *Migratory Birds Regulations*, it is forbidden to disturb, destroy or take a nest or egg of a migratory bird; or to be in possession of a live migratory bird or its carcass, skin, nest or egg except under authority of a permit.
54. The construction limits will be surveyed for wildlife prior to clearing grubbing. If any nest/dens are discovered within the clearing limits, protect the area from clearing activities and immediately contact Parks Canada staff.

Cultural Resources

55. If cultural or archaeological resources are encountered, work must cease in the immediate area and the Parks Canada project manager notified immediately. They will then notify Martin Perron (Tel: 819-420-9558), Parks Canada Investments Project Archaeologist. If features (i.e., structural remains and/or artifact concentrations) are encountered, leave in place, mark the location (e.g. with prominent flagging) and do not disturb prior to archaeological assessment of nature and significance being completed.
56. A geotextile membrane and/or crushed stone will be required on the ground at the location of any material stockpiled in undisturbed areas.

Visitor Experience

57. Construction should be completed in as short a time period as is practicable, to allow for visitor access and to ensure visitor safety.
58. Maintain the site in as tidy a condition as possible for the duration of work.
59. Safety risks to visitors during construction must be minimized:
  - The work site must be closed and clearly delineated with fencing, barriers, temporary gates, caution tape, or combinations thereof.
  - Appropriate bilingual signage must be posted at common visitor access points and strategic locations.
  - Maintain a safe working distance between work activities and visitors, especially when transporting machinery and materials between any staging areas and the working corridor; consider the use of lookouts to manage traffic and direct visitors in this area.
  - Secure and clearly mark unattended safety hazards (e.g., excavations, debris piles) with fencing, warning signs, caution tape or combinations thereof.





## 9. OTHER Considerations

Check all that apply

- ☐ Public/stakeholder engagement
- ☐ Aboriginal engagement or consultation
- ☒ Surveillance

**Periodic inspection by Parks Canada staff to ensure mitigations are being followed.**

- ☐ Follow-up monitoring, required to evaluate effectiveness of mitigation measures and/or assess restoration success
- ☐ Follow-up monitoring, required by legislation or policy (indicate basis of requirement e.g. required by the *Species at Risk Act*)
- ☐ SARA Notification

## 10. SIGNIFICANCE OF RESIDUAL ADVERSE EFFECTS

Given the magnitude of effects, the short term of the project, the timing and reversibility after construction, the project is not likely to cause significant adverse residual environmental effects to natural resources. The project is anticipated to have negligible to minor changes to cultural resources and visitor experience and as such is not likely to cause significant adverse residual effects to the same.

## 11. EXPERTS CONSULTED

*Include Parks Canada experts. Add as many entries as necessary for the project.*

Department/Agency/Institution: Parks Canada	Date of Request: October 2017
Expert's Name & Contact Information: Anne Desgagne Martin Perron	Title: CRM Policy Advisor Archaeologist
Expertise Requested: cultural resources, archaeological resources	
Response: No major archaeological and cultural landscape concern with the project	

## 12. DECISION

Taking into account implementation of mitigation measures outlined in the analysis, the project is:

- ☒ **not likely to cause significant adverse environmental effects.**
- ☐ likely to cause significant adverse environmental effects.

### FOR SARA REQUIREMENTS:

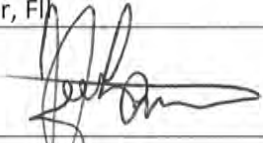

- ☒ **There are no residual adverse effects to species at risk and therefore the SARA-Compliant Authorization Decision Tool was not required**

**OR**, the SARA-Compliant Authorization Decision Tool ([Appendix 2](#)) was used and determined:

- ☐ There is no contravention of SARA prohibitions
- ☐ Project activities contravene a SARA prohibition and CAN be authorized under SARA
- ☐ Project activities contravene a SARA prohibition and CANNOT be authorized



**13. RECOMMENDATION AND APPROVAL***(Add additional blocks as required)*

<b>Prepared by:</b> Rod Cox – Resource Management Officer		<b>Date:</b> November 3, 2017
<b>Recommended by:</b> Jerry Feltham – Manager, FI		
<b>Signature:</b> 		<b>Date:</b> 11/06/17
<b>Approved by:</b> William Brake – Superintendent, NEFU		
<b>Signature:</b>  A/FUS		<b>Date:</b> 11/06/17

**14. ATTACHMENTS****15. NATIONAL IMPACT ASSESSMENT TRACKING SYSTEM**

- ☐ Project registered in [tracking system](#)
- ☒ Not yet registered (CEAA 2012 requires PCA submit a report to Parliament annually. EIAs must be entered in the tracking system **by the end of April** to enable reporting).

**\*\*\*Ensure that all required mitigation measures and conditions (e.g. follow-up monitoring requirements) are included in project permits and authorizations\*\*\***





## Appendix 1 : Effects Identification Matrix

**Section A** focuses on direct effects of the project and **Section B** on indirect effects that are caused by changes to the environment.

A. Direct Effects								
	<p><i>You may wish to change the components listed under the headings to specify the natural or cultural resources that are priority considerations for your PCA site or for the specific project being reviewed.</i></p>		Valued components potentially directly affected by the proposed project					
			Natural Resources					Cultural Resources
			Air	Soil & landforms	Water (surface, ground, crossings, etc.)	Flora (including SAR)	Fauna (including SAR)	Archaeological Sites
	Phase	Examples of Associated Activities						
Project Components	Preparation / Construction / Operation / Decommissioning	Supply and storage of materials	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		Clearing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		Excavation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		Demolition	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Blasting/ Drilling	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		Backfilling	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		Grading	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		Drainage	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Use of machinery	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Transport of materials/ equipment	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		Disposal of waste	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Maintenance	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>





B. Indirect Effects (all phases)							
<i>You may wish to change the components listed under the headings to specify the natural or resources that are priority considerations for your PCA site or for the specific project being reviewed.</i>		Impacts as a result of changes to the environment					
		With respect to non-Aboriginal peoples:	With respect to Aboriginal peoples:		With respect to visitor experience		
		Health and socio-economic conditions	Health & socio-economic conditions	Current use of lands and resources for traditional purposes	Access & services	Recreation & accommod'n opportunities	Safety
Phase	Natural resource components affected by the project						
Preparation /construction operation/implementation/decommissioning	Could impacts to <u>air</u> lead to adverse effects on...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Could impacts to <u>soils and landforms</u> lead to adverse effects on...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Could impacts to <u>water</u> (e.g. surface, ground water and water crossings) lead to adverse effects on...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Could impacts to <u>flora</u> (including SAR) lead to adverse effects on...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Could impacts to <u>fauna</u> (including SAR) lead to adverse effects on...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Other...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



