

Basic Impact Analysis (BIA)

Valley of the 5 Lakes Parking Lot Expansion

Jasper National Park of Canada

March 2016

1. PROJECT TITLE

Valley of the 5 Lakes Parking Lot Expansion

2. PROJECT LOCATION

Valley of the 5 Lakes trailhead and parking area, Jasper National Park of Canada located 10 km south of the Jasper town site and 2.5 km south of the park gate on Highway 93.

3. PROJECT SITE

The Project site is located at the Valley of the 5 Lakes trailhead and parking area on the north side of Hwy. 93 10 km south of Jasper (Figure 1).

4. PROPONENT

Steven Colbath, Project Manager, Parks Canada Agency

5. PROPONENT CONTACT INFORMATION

Project Manager
Steven Colbath Project Manager Project Delivery Services West Asset Management and Project Delivery P.O. Box 10 Jasper, AB T0E 1E0

6. PROJECT DATES

Project commencement date has not been confirmed but is anticipated to be the fall of 2016.

Planned commencement: 2016-09-01

Planned completion: 2016-11-30

7. INTERNAL PROJECT FILE

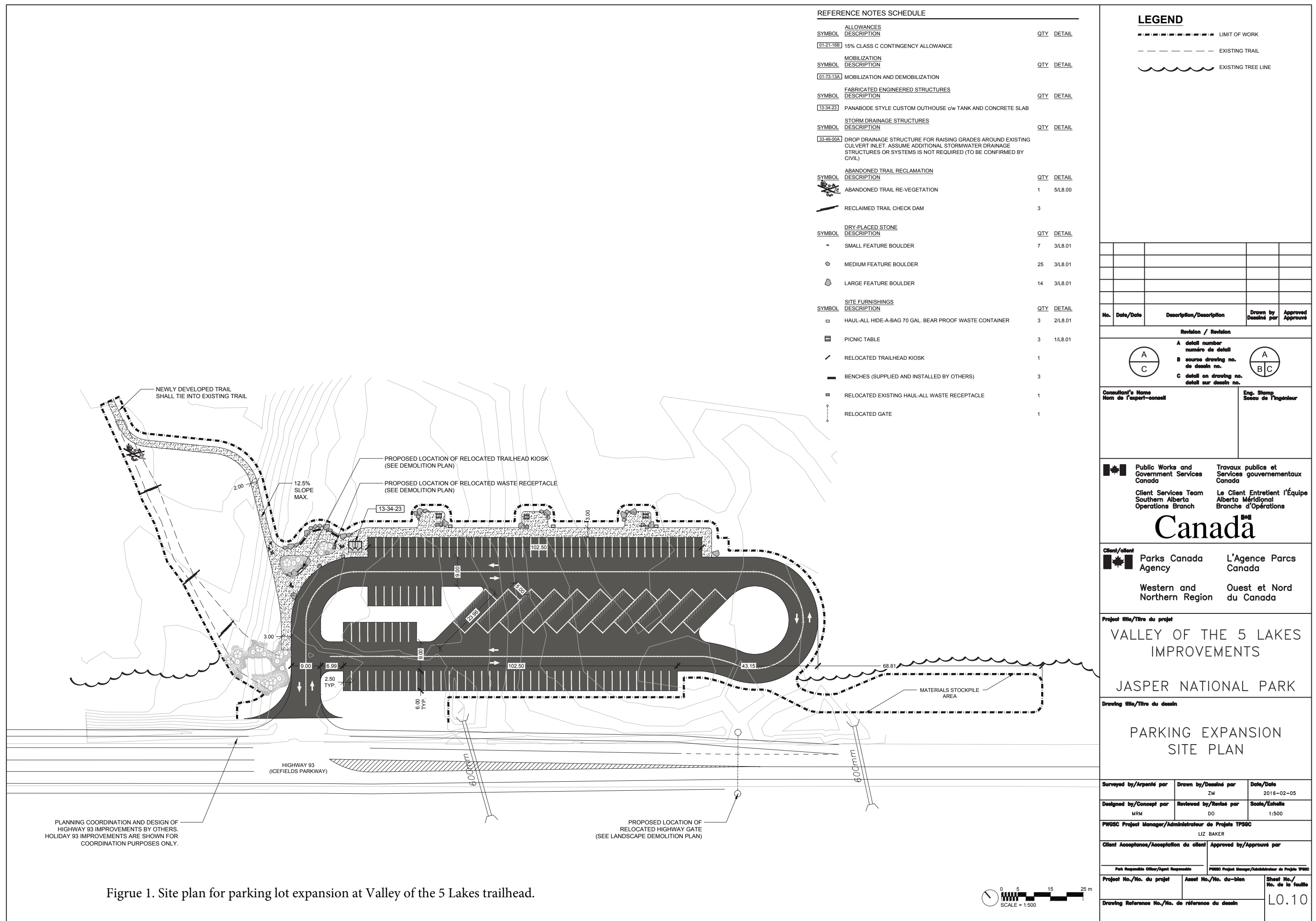
8. PROJECT DESCRIPTION

Parks Canada proposes to expand the parking lot and make improvements to the start of the trail and amenities at the Valley of the 5 Lakes trailhead south of Jasper in Jasper National Park. It is proposed to expand the parking facilities from 36 parking stalls to 111 stalls by expanding the parking lot to the southeast along the edge of the highway. The project plan also includes realigning the trailhead to rehabilitate the approximately the first 30 m of the trail which has a poor alignment on a steep slope and is highly eroded. There will also be improvements to day use amenities including new picnic facilities, upgraded washroom facilities and more bearproof garbage bins.

The new parking lot will cover approximately 1.0 ha with 0.28 ha on previously disturbed land within the right-of-way of the highway and 0.72 ha on native undisturbed forest. Approximately 0.07 ha of existing trails will be decommissioned and restored as part of this project as well.

8.1 Project Details

- i. **Tree Removal** – Most of the conifer trees will be removed from the project site to allow for the construction of the parking lot. A thin strip of existing immature trees will be maintained between the highway and the parking lot to screen the parking lot from the road. Also if possible some trees may be kept in areas designated for internal planting islands within the parking lot.
- ii. **Sod and tree salvage** – Immature trees within the project footprint that are small enough to enable successful transplantation (generally < 3 m tall) may be dug up, and transplanted to the planting islands in the middle of the parking lot if there are no suitable existing trees in these areas. They may also be transplanted to other areas in the park by Parks Canada if a suitable location is available at the time of construction. In addition native topsoil including the ground cover plants and associated soil in the rooting zone will be salvaged from areas to be disturbed. This material will then be used to revegetate the eroded existing trailhead alignment up the first slope from the parking lot to the north. Ideally the salvaged native material will be installed on the donor areas on the existing eroded trail alignment immediately but due to project timelines may be stored onsite for a short time prior to planting with occasional watering likely required.
- iii. **Site clearing and Grubbing** – All remaining vegetation and tree stumps and non-compatible subsoils will be removed from the site to enable site grading. The designated planting islands in the middle of the parking lot will be delineated prior to site clearing and as much of the vegetation in these zones as possible including ground cover and trees will be protected from clearing if it is deemed suitable to remain in the eventual islands.
- iv. **Site grading** – Site will be graded according to site grading plan for the site using heavy equipment. Planting islands will have no soil disturbance in them to extent possible within the constraints of the grading requirements.
- v. **Installation of new day use infrastructure** – New picnic area nodes will be created on the north side of the new parking lot and picnic tables will be installed in these areas. Narrow gravel pathways will connect the picnic areas and the parking lot. New washroom facilities will also be installed on the site (Figure 1).
- vi. **Construction and paving of new parking lot** – The parking lot will be paved with asphalt using standard paving equipment.
- vii. **Final reclamation and planting of vegetation islands** – The vegetated islands will be planted with native plants transplanted from areas cleared for the new parking lot. Any areas in the islands not vegetated with transplanted material may be seeded with a native grass mix approved by Parks Canada.



8.2 Project Rationale

Currently the parking lot at the Valley of the 5 Lakes trailhead is too small to provide sufficient parking for trail users during high visitor volumes in the summer and expected increases in visitor numbers to the site in the future. Consequently many trail Users Park on the highway which is a safety issue as well as a negative impact to visitor experience. The existing trailhead is highly eroded due to a poor alignment straight up a steep slope from the parking lot that has led to a very wide trail which negatively impacts aesthetics and continued erosion of the trail surface by heavy foot traffic and high precipitation events and during runoff in the spring. In addition the washroom facilities and picnic tables are old and need upgrading.

9 VALUED COMPONENTS LIKELY TO BE AFFECTED

Valued Ecosystem Components (VECs) include those selected to evaluate the potential implications to ecological integrity, cultural values and visitor experience. The proposed area for this Project falls within Jasper National Park's Land Use Zone IV - Outdoor Recreation.

9.1 Background

Under the Ecological Land Classification for Banff and Jasper National Parks (Holland and Coen 1982) the proposed Project occurs in the AT1 ecosite of the montane ecoregion. The AT1 ecosite comprises 0.6% of the total land area in Jasper National Park. This ecosite is found on valley floors and lower benches of broad valleys between 1020 m and 1400 m elevation and consists of terraces of coarse textured glaciofluvial material. Common vegetation types in the AT1 are C3, C6 and C19 lodgepole pine stands according to the Banff/Jasper Ecological Land Classification (Holland Coen 1982). This project will affect approximately 1 ha of the total 6880 ha of this ecosite in the park or 0.1%.

9.2 Hydrology and Aquatic Resources

Surface water is not present within 100 m of the proposed parking lot expansion, therefore there are no anticipated impacts to surface water or associated aquatic resources as a result of the parking lot expansion.

Based on a geotechnical assessment conducted in November 2015, groundwater seepage was not observed in any of the test pits (Thurber Engineering Ltd. 2015). However, during high precipitation events or when there are high rates of melt in the spring when the ground is still frozen, there is potential for temporary water ponding on the edges of the parking lot where runoff is directed from the asphalt. It is expected that this water will infiltrate quickly given the coarse nature of the soils and this water will serve to recharge groundwater in this area.

9.3 Wildlife and Habitat

Based on the Ecological Land Classification system, the proposed parking lot expansion occurs in the AT1 ecosite which is very important to wildlife especially elk, deer, cougar, wolf, coyote and lynx as well as bats. Small mammals such as snowshoe hare, red squirrel and deer mice also occur in large numbers (Holland Coen 1983). This ecosite is of medium importance to birds including olive-sided flycatcher, American robin, western tanager, dark-eyed junco, and yellow-rumped warbler (Holroyd and Van Tighem 1983).

A wildlife field assessment of the proposed parking lot expansion area was conducted on July 30th, 2015. During the site assessment, one game trail was observed approximately 75 m north of the existing parking lot paralleling the highway. Deer and elk pellets (of various ages) were observed along the game trail in low densities. An old elk antler was recorded along the game trail at the north corner of the survey area. There was limited wildlife forage species including a sparse cover of aspen along the north edge of survey area, buffaloberry, and various grasses. No birds or bird cavities were observed during the survey except for a common raven (*Corvus corax*). However, the pine forest type does provide suitable habitat for some species of nesting birds.

In November 2015, Parks Canada wildlife specialists were contacted to discuss wildlife concerns in the area – wolf and elk movement data as well as grizzly bear resource selection data was reviewed; findings are discussed below:

- Elk calving and rutting do not occur in the area (Bradley and Skinner, pers. comm., 2015).
- Wolves have been documented travelling through the area during the winter months (Bradley and Skinner, pers. comm., 2015). In 2007, Parks Canada documented a wolf den site approximately 1.5 km east of the parking lot towards the 5th lake (Valley of the 5 Lakes) and there is potential for wolves to be currently denning in the area. Wolves generally den from April 1st to July 30th.
- Based on grizzly bear resource selection function (RSF) data for the area, the model indicates moderate resource selection by grizzly bears during the month of July associated with buffaloberry (*Shepherdia canadensis*) production; however, due to high volumes of visitors using the day use area and trail, grizzly bears generally avoid the area (Bradley and Skinner, pers. comm., 2015).

9.4 Vegetation and Soil

A rare plant survey and vegetation inventory was conducted by a vegetation ecologist on July 30, 2015. The native plant community in the undisturbed areas is a dry open C3 lodgepole pine/ buffaloberry / bearberry (*Pinus contorta*/ *Shepherdia canadensis*/ *Arctostaphylos uva-ursi*) vegetation community type. The tree layer is lodgepole pine with a small component of aspen (*Populus tremuloides*) and balsam poplar (*Populus balsamifera*). The dominant shrub is buffaloberry and the dominant dwarf shrub bearberry makes up a high percentage of the ground cover. There was also common juniper (*Juniperus communis*) and Bebb's willow (*Salix bebbiana*) observed with low cover and frequency.

The dominant grasses were hairy wild rye (*Elymus innovatus*) and Richardson's needle grass (*Stipa richardsonii*) and low cover of Columbia (*Stipa columbiana*) needle grass also observed. Grasses made up less than 10% of the total cover of the plant community. The forb layer is generally sparse and includes common yarrow (*Achillea, millefolium*), cut-leaved anemone (*Anemone multifida*), harebell (*Campanula rotundifolia*), gaillardia (*Gaillardia aristata*), prickly rose (*Rosa acicularis*) and woolly cinquefoil (*Potentilla hippiana*).

There were no rare plant species located in the study area during a rare plant survey in July 2015 conducted by R. Delong, vegetation ecologist and rare plant specialist. Given the extensive experience of the surveyor in similar habitats the conclusion was reached that in general this area has low potential to support rare plants due to the disturbed nature of the areas immediately adjacent to the road east of the parking lot (i.e. highway right-of-way) and the high cover of a few common species in the native plant community understory. There is also a lack of unique microsites within the project area that tend to support rare plant species.

There was one patch of ox-eye daisy (*Chrysanthemum leucanthemum*), observed in the ditch of the highway and the GPS coordinates were obtained for this clump so it can be relocated and appropriate mitigation taken.

Soils in the AT1 ecosite are Orthic and Eluviated Eutric Brunisols which are typically found in upland well drained sites under conifer forests (Holland Coen 1982). These soils have a coarse gravelly texture in the lower horizons and are consequently well to rapidly drained and generally have deep water tables.

9.5 Cultural Resources

In August 2015 an Archaeological Impact Assessment (AIA) was conducted for the proposed project footprint and other facilities along the Icefields Parkway that will be subject to infrastructure improvements. The Valley of the 5 Lakes parking area was subject to both a desktop assessment (search of archaeological databases for the park) and some field testing (Langemann, 2015). No archaeological artefacts were discovered during this AIA process. As with all projects there is potential for discovery of previously unidentified archaeological artefacts.

9.6 Visitor Experience and Aesthetic Concerns

The Valley of the 5 Lakes parking lot and trailhead area will be closed during construction which may negatively impact visitor experience. However, construction of the parking lot will occur during the fall shoulder season between September and December, and therefore there will be less people using the trails at this time than in the

peak summer months. There are also alternate access points for this trail system near the Jasper townsite.

Salvaged and transplanted sods of native grasses, forbs as well as transplanted shrubs and trees will take 2-3 years to establish. Until restoration efforts take full effect, there will be a negative visual impact of the project.

10. EFFECTS ANALYSIS

Using the Effects Identification Matrix (Appendix I), the following potential adverse effects may be associated with the removal of vegetation and parking lot construction at the Valley of 5 Lakes trailhead area.

Air Quality:

- Greenhouse gas emissions from equipment and vehicles
- Emissions from asphalt paving equipment

Vegetation:

- Removal of native undisturbed vegetation communities including trees, shrubs, forbs and grasses (some of which will be salvaged and used in reclaiming adjacent areas).
- Potential for spread of existing small infestations of oxeye daisy as a result of ground disturbance associated with the project.
- Potential to introduce new infestations of invasive non-native weed species on dirty machinery and vehicles.

Soil:

- Soil compaction resulting from machinery use that affects vegetation growth and reclamation success
- Loss of topsoil due to improper soil stripping, handling and wastage.
- Loss of topsoil productivity due to admixing.
- Erosion of disturbed areas by wind or rain prior to reclamation
- Potential for soil contamination from accidental spill/leak of a deleterious substance

Wildlife:

- Direct loss of habitat due to removal of approximately 0.76 ha native undisturbed lodgepole pine forest
- Indirect loss of available habitat due to sensory disturbance from construction activities
- Temporary obstruction of wildlife movement due to construction activities
- Direct mortality of small mammals due to entrapment during excavations and direct mortality of birds during tree removal
- Indirect mortality from increased human-wildlife conflict as a result of improper storage of food and other wildlife attractants (e.g. planting palatable species in vegetation islands)

Cultural Resources:

- Potential for damage of previously unknown cultural resources

Visitor Experience:

- Trail and parking lot closure that affects trail usage and access in this part of the park
- Some negative visual impacts associated with construction until this phase is complete and the facilities reopen
- The parking area and associated trailhead will be closed to visitors during construction impacting visitor experience and recreation possibilities

11. MITIGATION MEASURES

This section identifies technically and economically feasible measures that will mitigate the identified potential adverse effects on VECs associated with the Project. Mitigation means the elimination, reduction or control of the adverse effects of the Project.

11.1 Air Quality

- 1) Minimize idling of machinery during construction.
- 2) Ensure that all asphalt paving equipment complies with required emissions standards

11.2 Vegetation/Soils:

- 3) Confine the area disturbed by this project to the project footprint, particularly in native undisturbed plant communities. Work space boundaries and laydown areas will be clearly marked by the ESO in consultation with the project manager prior to on-site activities.
- 4) Minimize number of trees to be removed within the project area and maintain existing trees where possible if tree species and form are acceptable within planting islands (staked out on the ground at the beginning of construction) and between the road and the parking lot. All trees to be removed will be clearly marked prior to the commencement of work.
- 5) All machinery and equipment must arrive on site clean and free of soil and vegetative debris to avoid spread of invasive non-native plant species. Machinery must also be cleaned prior to mobilizing to other parts of the Park.
- 6) Dispose of woody debris from tree clearing off site except that needed for trail restoration efforts. This includes tree boles and tops.
- 7) A laydown area for equipment and materials has been identified in the previously disturbed ditch of the highway on the eastern side of the project site (Figure 1). No lay-down areas should be located on previously undisturbed vegetated areas during this project wherever possible.
- 8) Top soil and associated ground cover plants to be salvaged and used for restoration activities in the existing trailhead alignment must be taken from undisturbed native plant communities that are within the project footprint and need to be cleared. Avoid salvaging native topsoil from any previously disturbed sites in the highway right-of-way (approximately 10 m) as these soils have been negatively impacted (compaction, loss of topsoil) by previous roadworks and may contain non-native plant propagules.
- 9) Any salvaged topsoil piles will be covered with breathable filter cloth to prevent loss due to erosion while still allowing air to penetrate and prevent the pile from going anaerobic.
- 10) All disturbed areas will be restored in consultation with the Parks Canada Vegetation Restoration Specialist who will approve of any reclamation plan for the site.
- 11) A seed certificate for any seeded grasses must be presented to Parks Canada for approval prior to applying seed to ensure seed lots contain the right species, and are free of weed seeds.
- 12) A detailed erosion control plan for the project area will be prepared and included within the *Environmental Protection Plan* prepared by a Qualified Environmental Professional (QEP).

- 13) All installed erosion control products must be free of hay and straw or be irradiated straw to prevent the spread of non-native seeds and to prevent attracting wildlife. Coconut matting and other 100% biodegradable erosion control products are appropriate substitutes.

11.3 Wildlife

- 14) Avoid tree clearing during the breeding bird window from April 17th to August 31st (A breeding bird nesting zone; Environment and Climate Change Canada 2015).
- 15) If tree clearing is unavoidable within the breeding bird window a bird nest survey will be conducted by a qualified biologist who is an avian specialist within the project footprint and associated buffer prior to tree removal to ensure no new nests are present in the area. If nests are located, buffers will be established in which no or limited work activity can occur.
- 16) Conduct vegetation clearing and construction operations in daylight hours only. This will minimize sensory disturbance and allow wildlife that are more active at sunrise, sunset, or at night to resume activity and movement.
- 17) Ensure that encountered wildlife is allowed to passively disperse from the area. This will limit the effects of sensory disturbance on wildlife movement resulting from clearing and construction processes. Report sensitive wildlife observations to Jasper dispatch at 780-852-6155 (e.g. large carnivores, wildlife conflict, etc.).
- 18) During all operations workers should remove refuse from the site and store food, garbage and other wildlife attractants in vehicles. This will help minimize the risk of negative wildlife-human interactions.
- 19) Open excavations should be appropriately fenced when workers are not present on the site (including at night) to avoid small mammal entrapment.
- 20) Remain within the defined work limits to avoid disturbance to surrounding vegetation and wildlife habitat.
- 21) Take logs and debris offsite as soon as possible after tree removal activities to avoid small mammal attraction to coarse woody debris piles.

11.4 Cultural Resources

- 22) In the event that cultural or historical artifacts are observed, all construction activities will stop immediately at that location and the Parks Canada Cultural Resource Specialist (Mike.Dillon@pc.gc.ca or 780.852.6164), the Environmental Surveillance Officer (780.883.0794) or Jasper Dispatch (780.852-6155) will be notified.

11.5 Visitor Experience and aesthetics

- 23) Notify stakeholders and park visitors of trail and parking lot closure on the Parks Canada website and through a coordinated Parks Canada communications strategy for this project.
- 24) Restore and revegetate the eroded existing trailhead area to improve aesthetics of the area following construction.

11.6 Standard Mitigations

- 25) All line locates must be conducted prior to all aspects of work.
- 26) Obtain all necessary permits prior to the commencement of the project.

- 27) The proponent is responsible for public and site safety at all times.
- 28) A spill response kit capable of handling 110% of the total fuels on-site must be available at the site at all times and all staff trained in its use.
- 29) All fuel, oil, and other deleterious substances as well as any generators or pumps must be stored and used in a leak-proof containment system that is capable of containing 110% of the fuel etc. in the equipment (e.g. plastic container for jerry cans of fuel, plastic toboggan for pump or generator)
- 30) Any detected leaks must be addressed immediately with absorbent pads and the faulty equipment either removed from site or repaired immediately. Equipment stored overnight must be stored on tarps with appropriate containment if required. Drip trays must be used under all stationary equipment.
- 31) Equipment must remain on previously disturbed ground, on rig mats or at least 30 cm of snow.
- 32) Refueling must occur on tarps or other impervious barriers. Refueling of equipment must occur on land at least 30 m from any watercourse. Where 30 m is not possible, a location as far as possible from the watercourse will be chosen. Topographic features and slope will be considered. The refueling area must have a spill containment kit immediately accessible.
- 33) In the event of any fluid spills or leaks exceeding 1 L or any spill quantity to water, notify Parks Canada Dispatch (780-852-6155) and the ESO (780-883-0794) immediately. Any absorbent materials used in the clean-up or soils contaminated by the spill must be disposed of at the appropriate facility outside the park.
- 34) All garbage must be stored and handled in compliance with the National Parks Garbage Regulations. Burning or burial of waste is not permitted. Waste is to be source separated and disposed of as follows:
 - a. **Sorted materials:** clean wood, glass, metal, concrete and clean fill shall be disposed of separately.
 - b. All **cardboard** must be recycled.
 - c. **Unsorted waste** must be disposed of at an approved landfill site (e.g. drywall, carpets, treated or painted wood, asphalt, tar paper, tar and gravel shingles and other mixed construction debris).
 - d. **Hazardous waste:** such as contaminated soil, fuel tanks, asbestos, materials treated with lead paint, mercury switches and light ballasts must be disposed of at an approved landfill site outside the park. Parks Canada must be provided with a receipt from the landfill facility documenting the amount and type of hazardous materials accepted.
- 35) The contractor must ensure that all work is performed in accordance with the ordinances, laws, rules and regulations set out in the *Canada National Parks Act* and Regulations.
- 36) Please contact the Project Manager (PM) two weeks prior to commencement of work. The Project Manager will schedule an on-site environmental briefing with all construction personnel, arrange site surveillance by a Parks Canada Environmental Surveillance Officer (ESO), and will issue applicable Special Activity Permits. Required workspace and limits of clearing will be provided in the project specifications.

12. CONSIDERATION OF THE NEED FOR PUBLIC PARTICIPATION & ABORIGINAL CONSULTATION

12 a) Indicate whether opportunity for public notification should be offered:

☒ No

☐ Yes

12 b) Indicate whether there is a requirement for Aboriginal notification in relation to project impacts:

☒ No ☐ Yes

13. EFFECT SIGNIFICANCE

Temporary Effects (significance is assessed after mitigations are followed)

- Loss of vegetation/habitat – limited area of disturbance in low quality wildlife habitat, irreversible, long-term
- Potential spills and leaks as a result of proposed activities – low in magnitude and short-term
- Habitat avoidance (sensory disturbance, obstruction of wildlife movement) – temporary, localized, reversible, and low in magnitude (due to high visitor use and existing infrastructure, most wildlife currently utilizing the area are likely accustomed to somewhat elevated levels of sensory disturbance).
- Direct wildlife mortality (entrapment) – low in magnitude, reversible, short-term
- Indirect wildlife mortality (wildlife attractants and potential wildlife removal/destruction) – low in magnitude, short-term

Residual Effects

It is anticipated that there will be no significant adverse residual environmental effects for valued ecosystem components (VECs) as a result of the proposed project activities, provided that all mitigation measures discussed in this document are followed.

14. SURVEILLANCE

Document whether surveillance (also referred to as compliance monitoring or site inspection) will be required while the project is underway, to verify that required mitigation measures are implemented.

☒ Surveillance required
☐ Surveillance not required

If tree removal occurs between April 17th and August 31st (breeding bird window), a bird nest survey must be conducted prior to any work starting. The ESO may conduct regular inspections during installation of the project to ensure proposed mitigation measures are properly followed and after the completion of the project to ensure the area is properly rehabilitated.

15. FOLLOW-UP MONITORING PROGRAM

Follow-up monitoring is:

- ☒ not required
- ☐ legally required (e.g. under the *Species at Risk Act* or *Fisheries Act*)
- ☐ required in accordance with the *Parks Canada Cultural Resource Management Policy*

16. SARA NOTIFICATION

Notification is:

- ☒ not required
- ☐ required under the *Species at Risk Act*.

17. EXPERTS CONSULTED

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

Department/Agency/Institution: Parks Canada Agency	Date of Request: Nov. 19 2015
Expert's Name:	
Mark Bradley Wildlife Specialist Jasper National Park	
Expertise Requested: Wildlife data for Valley of the 5 Lakes area in JNP	
Response: Comments provided and incorporated into the BIA	

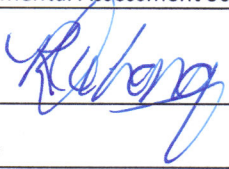
Department/Agency/Institution: Parks Canada Agency	Date of Request: Nov. 19 2015
Expert's Name:	
Peter Caputa Environmental Assessment Specialist Jasper National Park	
Expertise Requested: General information on JNP EIA process and project-specific details	
Response: Comments provided and incorporated into the BIA	

18. DECISION

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

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

19. SIGNATURES AND APPROVAL**EIA Authors**

Name: Rhonda Delong and Andrea Ram	Date: Mar. 24 2016
Position: Environmental Assessment Scientists, Avens Consulting	
Signatures: 	

EIA Reviewed by

Name:	Date:
Position: Senior Environmental Assessment Scientist	
Signature:	

EA Recommended by

Name:	Date:
Position: Functional Manager	
Signature:	

EA Approved by

Name:	Date:
Position: Jasper Field Unit Superintendent	
Signature:	

19. REFERENCE LIST

Bradley, M. 2015. Personal Communication. Wildlife Biologist, Jasper National Park, Parks Canada, Alberta.

Environment and Climate Change Canada. 2015. Website: <https://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=4F39A78F-1> [Accessed November 2015].

Holland, W.O. and G.M. Coen (gen.ed.). 1983. *Ecological (biophysical) Land Classification of Banff and Jasper National Parks*. Volume I: Summary. Alberta Institute of Pedology Publication SS-82-44

Holroyd, G.L. and K.J. Van Tighem. 1983. Ecological (Biophysical) land classification of Banff and Jasper National Parks. Vol. III: The Wildlife Inventory. Prepared by Canadian Wildlife Service, Edmonton for Parks Canada, Western Region.

Hughson, W. 2015. Personal Communication. Aquatics Specialist, Jasper National Park, Parks Canada, Alberta.

Langemann, G. 2015. Archaeological Impact Assessment: Valley of the Five Lakes trailhead, and Whistlers Campground, Jasper National Park. Unpublished report prepared for Parks Canada.

Skinner, G. 2015. Personal Communication. Resource Management Officer, Jasper National Park, Parks Canada, Alberta.

A. Direct Effects (during preparation/construction phases)	
---	--

[illegible]

A. Direct effects continued (during operation/implementation/decommissioning phases)														
			Components potentially affected by the proposed project											
			Natural Resources					Cultural Resources		Visitor Experience				
			Air	Soil & landforms	Water (surface, ground, crossings)	Flora (specify, including SAR)	Fauna (specify, including SAR)	Ceremonial Sites	Historical Sites	Visitor access & services	Recreational & Accom. opportunities	Viewscapes and soundscapes	Visitor Safety	Essence of place
Phase	Examples of Associated Activities													
Project	Operation/ Implementation/ Decommissioning	Visitor Use	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Section B of the matrix is used to identify potential indirect effects that may result from impacts on components of the environment on the Health and Socio-Economic Conditions of Aboriginal and non-Aboriginal peoples, as well as to the current use of lands and resources for traditional purposes by Aboriginal peoples.

No indirect effects are anticipated.