Model Class Screening for Routine Projects at Front country Facilities in Jasper National Park

Parks Canada
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1 Introduction

Jasper National Park is host to millions of visitors each year; park visitation totalled 1.9 million in 2004. As the largest national park in the Rocky Mountains, it is a core protected area in the larger Yellowhead ecosystem. Along with its mountain park neighbours and three adjacent provincial parks, it makes up UNESCO's *Canadian Rocky Mountain Parks World Heritage Site* – 20 000 km^2 of spectacular and ecologically significant wilderness in the Canadian Rocky Mountains.

National parks including Jasper National Park, are a cornerstone of Canada's tourism industry. As a result, Parks Canada has developed an extensive network of facilities offering a range of opportunities for visitors to explore parks safely and with minimal impact to the park environment. Many of these front country visitor facilities were built between the late 1950s and early 1970s. They have reached the end of their normal serviceable lives and across the national park system, more than two thirds need to be rebuilt. Undertaking this work and maintaining these assets in good repair requires an annual investment of $100 million. In the 2005 Federal Budget, the Government of Canada provided a phased-in allocation of new funding, rising to $75 million per year by 2009-2010, to rebuild visitor facilities, renew infrastructure and restore national historic sites. Implementation of the routine maintenance, repair or replacement of buildings, utilities, roads and other physical works of this nature within the front country requires the completion of an environmental assessment compliant with the *Canadian Environmental Assessment Act* (CEAA).

1.1 Class Screenings and the Canadian Environmental Assessment Act

The *Canadian Environmental Assessment Act* (the Act) and its regulations set out the legislative basis for federal environmental assessments. The legislation ensures that the environmental effects of projects involving the federal government are carefully considered early in project planning. The Act applies to projects which require a federal authority (FA) to make a decision or take an action, whether as a proponent, land administrator, source of funding or regulator (issuance of a permit or licence). The FA then becomes a responsible authority (RA) and is required to ensure that an environmental assessment of the project is carried out prior to making its decision or taking action.

Most projects are assessed under a screening type of assessment. A screening systematically documents the anticipated environmental effects of a proposed project, and determines the need to modify the project plan or recommend further mitigation to eliminate environmental effects or minimize the significance of these effects. Screenings are conducted for projects that have not been excluded under Section 7 of the Act (*i.e.* are not on the *Exclusion List Regulations*) or are not on the *Comprehensive Study List Regulations* and have not been identified as requiring mediation or an assessment by a review panel.

The screening of some repetitive projects may be streamlined through the use of a class screening report. This kind of report presents the accumulated knowledge of the environmental effects of a given type of project and identifies measures that are known to reduce or eliminate the likely adverse environmental effects. The Agency may declare such a report appropriate for use as a class screening after taking into account comments received during a period of public consultation.

A model class screening consists of two reports:

- A model class screening report (MCSR) that defines the class of projects and describes the associated environmental effects, design standards and mitigation measures; and
- A class screening project report (CSPR) that describes any additional information (*e.g.* environmental effects, design standards and mitigation measures) needed for each project assessed under the MCSR, and concludes on the significance of environmental effects of that project.

1.2 Rationale for the Model Class Screening

According to the Agency, any proposed Model Class Screening must demonstrate that projects subject to the MCSR meet several criteria. The applicability of the class screening process to routine projects at Front Country facilities is based upon the following six criteria:

- well defined class of project,
- well understood environmental setting,
- unlikely to cause significant adverse environmental effects, taking into account mitigation measures,
- project specific follow-up measures,
- effective and efficient planning and decision making process and
- public concerns unlikely.

1.3 Spatial Boundaries of the Class Screening Area

This MSCR covers routine projects that occur in selected front country areas in Jasper National Park. For the purposes of this document, "front country areas" are those areas that contain facilities that support visitor use and experience and park management and/or operations; are zoned for Outdoor Recreation (Zone IV) or Park Services (Zone V); and where direct access by motorized vehicle is permitted. The community of Jasper is the only Zone V area in the park. The *Jasper Community Plan* will guide land use decisions in this area and routine projects are assessed through the application of the *Model Class Screening for Routine Projects in National Park Communities* (July 2004).

The front country areas that make up the Class Screening Area (CSA) are listed in Table 1.1. They include all the campgrounds, picnic/day use areas, trailheads, scenic viewpoints, parking lots and park gates that can be accessed by motorized vehicle. Only routine projects (as described in Section 2.3) that occur within the existing cleared area of

these front country areas are covered by this MCSR. For vegetation management projects **only** (see Section 2.3.4 for a description of these projects), the CSA includes a buffer of 1.5 tree lengths around the existing cleared area. Figures 1.1(a) to (d) show the locations of the front country areas that constitute the CSA.

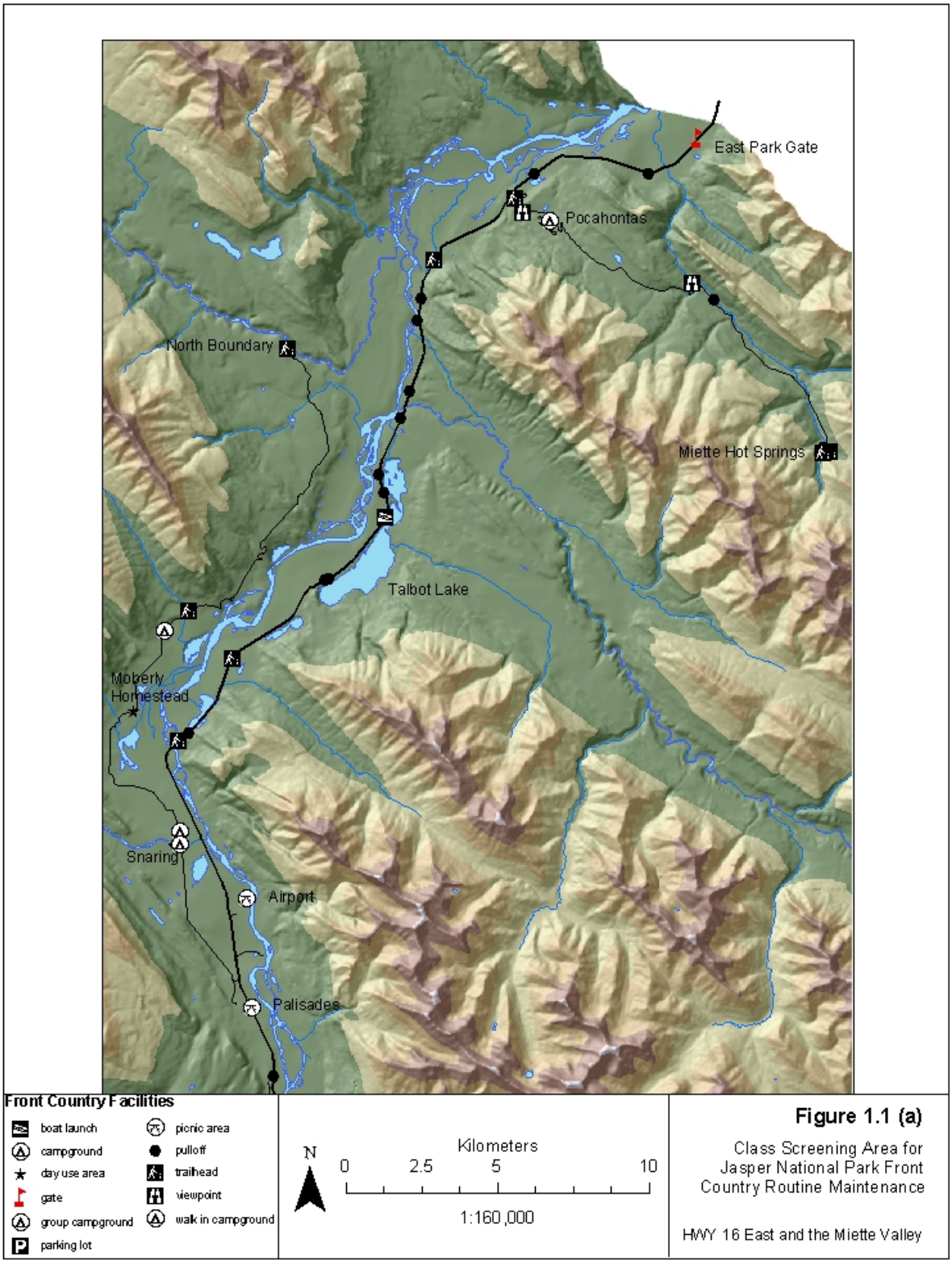


Figure 1.1 (a)

Class Screening Area for Jasper National Park Front Country Routine Maintenance

HWY 16 East and the Miette Valley

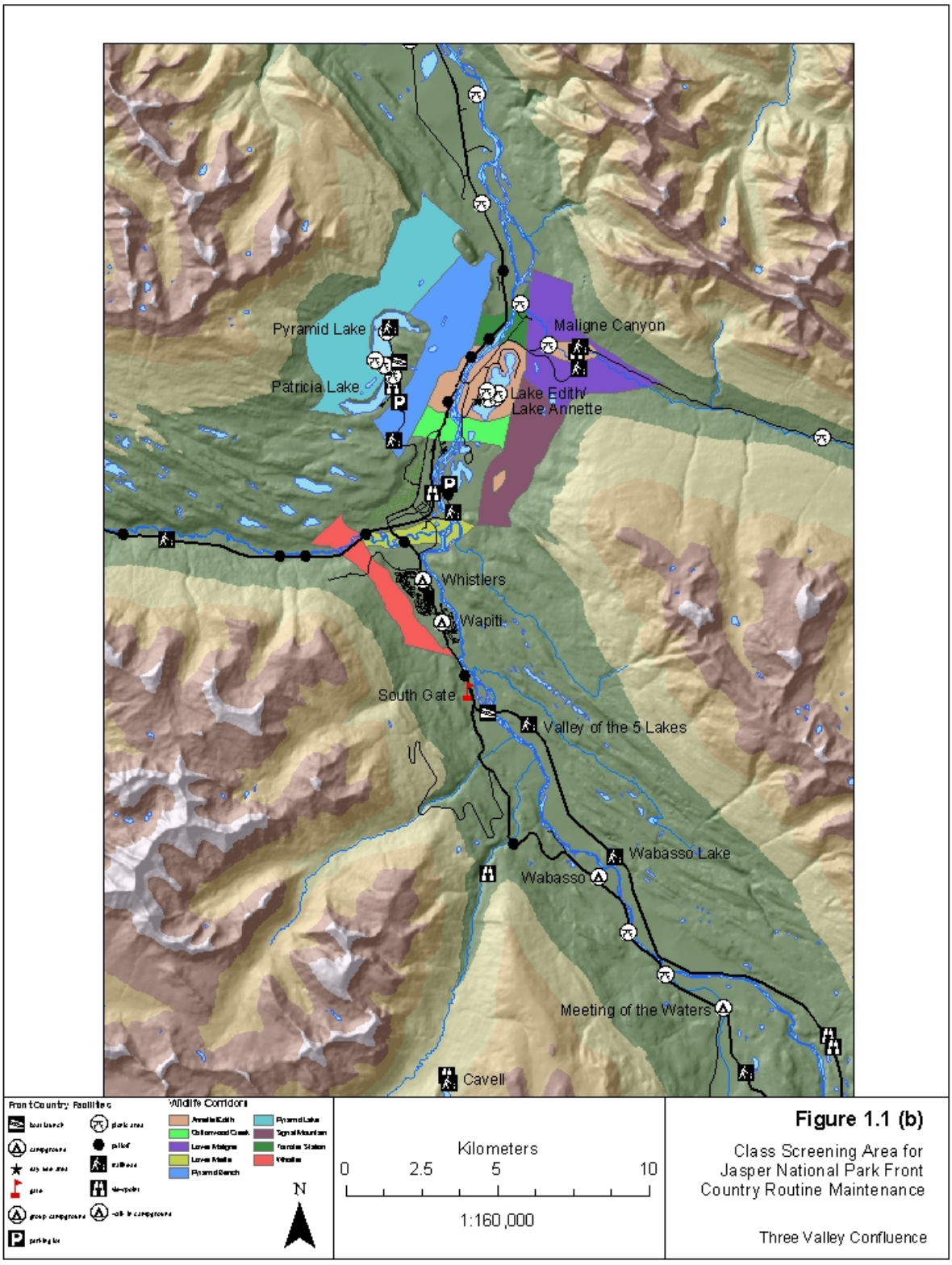


Figure 1.1 (b)

Class Screening Area for Jasper National Park Front Country Routine Maintenance

Three Valley Confluence

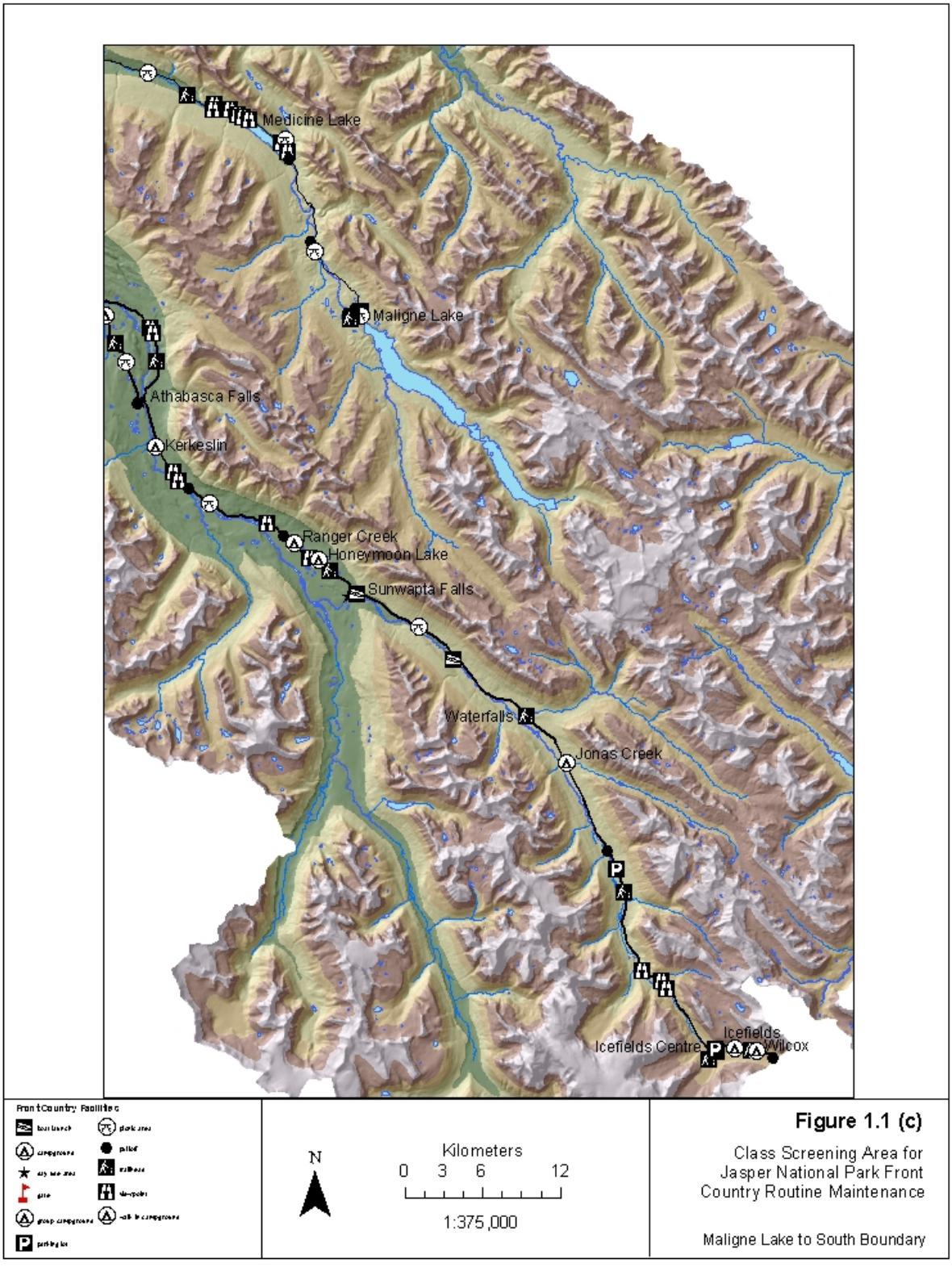


Figure 1.1 (c)

Class Screening Area for Jasper National Park Front Country Routine Maintenance

Maligne Lake to South Boundary

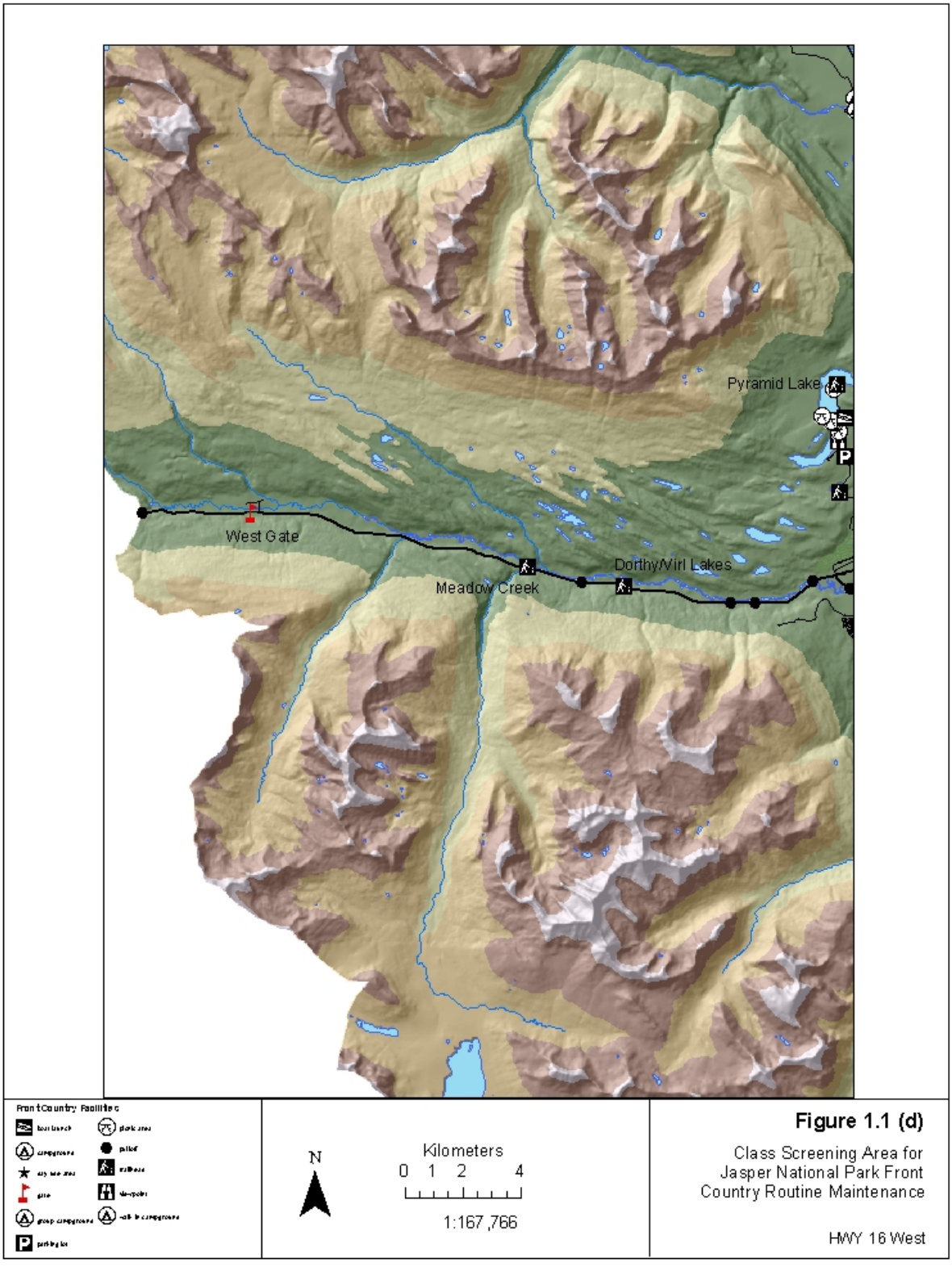


Figure 1.1 (d)

Class Screening Area for
Jasper National Park Front
Country Routine Maintenance

HWY 16 West

Table 1.1 Front country Areas in Jasper National Park

Frontcountry Area	Name	Location	Facilities	Ecosite
Campgrounds				
	Wilcox	Hwy 93-Icefields Pkwy	dry toilets, water, sani-dump	MQ1
	Icefields	Hwy 93-Icefields Pkwy	dry toilets, water	CN1
	Jonas	Hwy 93-Icefields Pkwy	dry toilets, water	AL1
	Honeymoon	Hwy 93-Icefields Pkwy	dry toilets, water	PR6
	Ranger Creek Group	Hwy 93-Icefields Pkwy	dry toilets, water	BK1
	Kerkeslin	Hwy 93-Icefields Pkwy	dry toilets, water	FR1
	Whistlers	Hwy 93-Icefields Pkwy	flush toilets, water, showers, power, sani-dump, theatre, playground	AT1
	Wapiti	Hwy 93-Icefields Pkwy	flush toilets, showers, power	AT1
	Meeting of the Waters Group	Hwy 93A	dry toilets, water	PT1
	Wabasso	Hwy 93A	dry toilets, water, sani-dump	AT1
	Snaring	Celestine Lake Road	dry toilets, water	VL1
	Snaring Overflow	Celestine Lake Road	dry toilets	HD3
	Celestine Walk in	Celestine Lake Road	picnic table	HD4
	Pocahontas	Miette Road	dry toilets, water	HD1
Picnic/Day Use Areas				
	Icefields Centre Parking Lot	Hwy 93-Icefields Pkwy	picnic tables, dry toilets	TR1
	Bubbling Springs	Hwy 93-Icefields Pkwy	picnic tables, dry toilets	VD2
	Sunwapta Falls	Hwy 93-Icefields Pkwy	picnic tables, dry toilets	BK4
	Mount Christie	Hwy 93-Icefields Pkwy	picnic tables, dry toilets	HD1
	Athabasca Falls	Hwy 93-Icefields Pkwy	picnic tables, dry toilets, shelter	PT1
	Leach Lake	Hwy 93A	picnic tables, dry toilets	PT1
	Meeting of the Waters	Hwy 93A	picnic tables, dry toilets	SC
	Otto's Cache	Hwy 93A	picnic tables, dry toilets	AT1
	Cavell Picnic	Cavell Road	picnic tables, dry toilets	CA2
	Moberly Historic Site	Celestine Lake Road	dry toilets	VL4
	Palisades Picnic	Hwy 16 East	picnic tables, dry toilets	VL5
	Airport Picnic	Hwy 16 East	picnic tables, dry toilets, shelter	VL3

Frontcountry Area	Name	Location	Facilities	Ecosite
	Disaster Point	Hwy 16 East	picnic tables, dry toilets	VL3
	Miette Picnic	Miette Road	picnic tables, dry toilets	AL2
	Lake Annette approach	Maligne Road	dry toilets	AT1
	Lake Annette Picnic 1	Maligne Road	picnic tables, dry toilets, shelter	AT1
	Lake Annette Picnic 2	Maligne Road	picnic tables, dry toilets	AT1
	Lake Annette Picnic 3	Maligne Road	picnic tables, dry toilets	AT1
	Lake Edith Picnic	Maligne Road	picnic tables, dry toilets	AT1
	Sixth Bridge	Maligne Road	picnic tables, dry toilets	FR1
	Fifth Bridge	Maligne Road	picnic tables, dry toilets	NY3
	Unnamed Pull off	Maligne Road	picnic tables, dry toilets	FR1
	Beaver Parking Lot	Maligne Road	picnic tables, dry toilets	PP2
	Bruce's Picnic	Maligne Road	picnic tables, dry toilets	BV1
	Maligne walk in area	Maligne Road	picnic tables	BZ1
	Patricia Lake	Pyramid Road	picnic tables, dry toilets	PT4
	Pyramid Picnic 1	Pyramid Road	picnic tables	PT4
	Pyramid Picnic 2	Pyramid Road	picnic tables	PT4
	Pyramid Picnic 3	Pyramid Road	picnic tables	PT4
	Pyramid Beach	Pyramid Road	picnic tables, dry toilets	PT1
	Pyramid Boat Launch	Pyramid Road	picnic tables, dry toilets	PT4
	Pyramid Island	Pyramid Road	picnic tables, dry toilets, shelter	NY3
	Lac Beauvert	Old Fort Point Road	dry toilets	AT1
Trailheads				
	Wilcox Pass	Hwy 93-Icefields Pkwy	kiosk, dry toilets	MQ1
	Upper Toe of Glacier	Hwy 93-Icefields Pkwy		PL1
	Lower Toe of Glacier	Hwy 93-Icefields Pkwy	kiosk	WW1
	Stanley Falls	Hwy 93-Icefields Pkwy		HC4
	Waterfalls	Hwy 93-Icefields Pkwy	kiosk	PR2
	Buck/Osprey Lakes	Hwy 93-Icefields Pkwy	dry toilets	PR6
	Horseshoe Lake	Hwy 93-Icefields Pkwy	dry toilets	PT1
	Wabasso Lake	Hwy 93-Icefields Pkwy	kiosk	PT3
	Valley of the Five Lakes	Hwy 93-Icefields Pkwy	kiosk, dry toilets	AT1

Frontcountry Area	Name	Location	Facilities	Ecosite
	16 ½ Mile Lake	Hwy 93A		PT1
	Tonquin	Cavell Road	kiosk	CA1
	North Boundary	Celestine Lake Road	kiosk	PT1
	Vine Creek	Celestine Lake Road		FR1
	Merlin Pass	Hwy 16 East		VL4
	Overlander	Hwy 16 East		VL1
	Roche Miette	Hwy 16 East		HD2
	Clairvaux	Hwy 16 West	kiosk, dry toilets	FR1
	Meadow Creek	Hwy 16 West		VL3
	Pocahontas Coal Trail	Miette Road	dry toilets, picnic tables	HD1
	Sulphur Skyline	Miette Road	kiosk	AL2
	Miette Interpretive Trail	Miette Road	kiosk, dry toilets	AL2
	Maligne Canyon	Maligne Road	kiosk, dry toilets	HD1
	Skyline	Maligne Road	kiosk	PT3
	Watchtower	Maligne Road	kiosk	AL2
	Opal Hills	Maligne Road	kiosk	BZ1
	Bald Hills	Maligne Road	kiosk	PR6
	Cottonwood Slough	Pyramid Lake Road	kiosk, dry toilets	PT1
	Palisades	Pyramid Lake Road		PT1
	Old Fort Point	Old Fort Point Road	kiosk, dry toilets	AT1
Viewpoints/Pulloffs				
	Jasper/Banff Boundary	Hwy 93-Icefields Pkwy		CN1
	Mount Athabasca from Tangle Hill	Hwy 93-Icefields Pkwy		PR2
	Tangle Falls	Hwy 93-Icefields Pkwy	dry toilets	PR2
	Mount Kitchener	Hwy 93-Icefields Pkwy		PR2
	Mushroom Peak	Hwy 93-Icefields Pkwy		HC2
	Honeymoon Hill	Hwy 93-Icefields Pkwy		PR6
	Ranger Creek	Hwy 93-Icefields Pkwy		BK1
	Mount Christie	Hwy 93-Icefields Pkwy		AT1
	Mount Fryatt river crossing	Hwy 93-Icefields Pkwy		FR1

Frontcountry Area	Name	Location	Facilities	Ecosite
	Mount Fryatt	Hwy 93-Icefields Pkwy		NY3
	Goat Lick	Hwy 93-Icefields Pkwy	dry toilets	NY3
	Mount Edith Cavell	Hwy 93-Icefields Pkwy		PT1
	Athabasca Pass	Hwy 93-Icefields Pkwy		PT1
	Between South Gate and Beckers	Hwy 93-Icefields Pkwy		VL3
	Hwy 93/Miette River	Hwy 93-Icefields Pkwy		VL3
	Geraldine Fire Road Junction	Hwy 93A		NY3
	Cavell Road Junction trailer drop	Hwy 93A		AT1
	Cavell Road 1	Cavell Road		PR2
	Cavell Road 2	Cavell Road		CA1
	Roche Bonhomme/Pyramid Mtn	Hwy 16 East		AT1
	Just west of Moberly Bridge	Hwy 16 East		AT1
	Lodgings and Roadways sign (east)	Hwy 16 East		HD4
	Colin Range	Hwy 16 East		AT1
	Mile 12	Hwy 16 East		VL1
	South Talbot Lake	Hwy 16 East		DV1
	Syncline Ridge	Hwy 16 East		DV1
	Rocky River	Hwy 16 East		HD2
	Jasper House	Hwy 16 East		TA3
	Disaster Point	Hwy 16 East	dry toilets	VL3
	Poco Ponds	Hwy 16 East		VL1
	Lodgings and Roadways sign (west)	Hwy 16 West		PT3
	Yellowhead Pass	Hwy 16 West	dry toilets	VL3
	Jasper/BC boarder	Hwy 16 West		PT3
	Punchbowl Falls	Miette Road		TA3
	Ashlar Ridge	Miette Road		NY3
	Maligne Canyon Overlook	Maligne Road		NY3
	North Medicine "*Where is the Water*"	Maligne Road		IB3
	Second North Medicine	Maligne Road		IB3
	Colin/Maligne Range	Maligne Road		SB3
	Mid Medicine	Maligne Road		SB3

Frontcountry Area	Name	Location	Facilities	Ecosite
	"*Sinking Lake*"	Maligne Road		SB3
	Mid Medicine	Maligne Road		SB1
	Medicine Lake Inlet Overlook	Maligne Road		GT1
	End Medicine "*The Delta*"	Maligne Road		PR2
	"*The Arch*"	Maligne Road		PP1
	Shangrila staging	Maligne Road		IB2
	Patricia Lake "*Project Habbakak*"	Pyramid Lake Road		PT4
	Internment Camp	Old Fort Point Road		AT1
Gates				
	Hwy 93-Icefields Pkwy (South gate)	Hwy 93-Icefields Pkwy	kiosk	AT1
	Highway 16 East Gate	Hwy 16 East	kiosk	HD1
	Highway 16 West Gate	Hwy 16 West	kiosk	HD3
Parking Lots				
	Icefields Centre	Hwy 93-Icefields Pkwy	dry toilets	TR1
	Beauty Creek Hostel	Hwy 93-Icefields Pkwy	dry toilets	PR2
	Cavell Meadows	Cavell Road	dry toilets	CA2
	Upper Maligne	Maligne Road	dry toilets	BZ1
	Mid Maligne	Maligne Road	dry toilets, flush toilets	BZ2
	Lower Maligne	Maligne Road	dry toilets	BZ2
	Maligne Boat Launch	Maligne Road	dry toilets, `flush toilets	PR6
	Pyramid Bench Pony Barns	Pyramid Road	dry toilets	PT4
Other				
Boat launches	Upper Sunwapta River access	Hwy 93-Icefields Pkwy	dry toilets	CV1
	Upper Sunwapta River egress	Hwy 93-Icefields Pkwy	dry toilets	PR6
	5 Mile Bridge	Hwy 93-Icefields Pkwy	dry toilet	AT1
	Talbot Lake	Hwy 16 East	dry toilets	DV1
	Maligne Lake	Maligne Road	dry toilets	PR6
	Pyramid Lake	Pyramid Lake Road	dry toilets	PT4
	Lac Beauvert	Old Fort Point Road	dry toilets	AT1

2 Routine Projects Within Front country Areas Covered by the Model Class Screening Report

2.1 Projects Subject to the Canadian Environmental Assessment Act

This MCSR applies to projects that occur relatively frequently and result in environmental effects that are predictable, well understood and can be easily mitigated using accepted mitigation methods. Routine projects conducted in the CSA that are subject to *CEAA* are described in Section 2.3.

To require an environmental assessment under the Act, a project must:

1) be an undertaking in relation to a *physical work* or a *physical activity* (captured in the *Inclusion List Regulations* of the Act) and
2) under Section 5 of the Act, have Parks Canada administering one or more of the following responsibilities:
   a) is the proponent of a project;
   b) grants money or other financial assistance to a project;
   c) grants an interest in land to enable a project to be carried out; or
   d) exercises a regulatory duty in relation to a project, such as issuing a permit, license or authorization that is covered under the *Law List Regulations*.

Parks Canada is required to complete an environmental assessment before it can exercise any power, duty or function in relation to routine projects in Front Country Facilities under Section 5 of the Act.

Projects are exempt from environmental assessment if they meet all the criteria set out in the *Exclusion List Regulations.* If all components of the project are described on the *Exclusion List Regulations*, the project is exempt from an environmental assessment under the Act. If any component of the project is not described on the *Exclusion List Regulations*, an environmental assessment of the project, including all components, is required under the Act. Environmental assessment practitioners should review the most current version of the *Exclusion List Regulations* prior to initiating an environmental assessment.

2.2 Routine Projects Not Suited to the MCSR

Some projects proposed in front country areas do not meet the class screening requirements for routine, repetitive activities with known, easily mitigable environmental effects. These projects have the potential to cause unacceptable environmental impacts, and therefore, an individual assessment will be required. The projects that **are excluded** from this MCSR for this reason are:

- Projects outside the CSA.
- Construction of new roads and parking lots in the CSA.

- Installation of a new septic field or modification or an existing septic field.
- Any vegetation removal through the use of heavy equipment (*e.g.* skidders and harvesters).
- Projects that occur on contaminated sites.
- Projects that are not consistent with key actions identified in the Jasper National Park Management Plan, such as, *to continue to provide safe, well-maintained, appropriate and accessible facilities consistent with park zoning, that have minimal impact. In providing these facilities, Parks Canada will consider the changing needs of park visitors, public safety, educational opportunities, and the potential impact on heritage resources.* For example, the decommissioning of an entire day-use area would require an individual environmental assessment, however the decommissioning of select structures within the day use area that are not likely to significantly impact use of the area (*e.g.* firebox removal) would be covered by the class screening.
- Projects that may adversely affect a *Species at Risk*, either directly or indirectly (*e.g*. projects that affect critical habitat). For the purposes of this MCSR, *Species at Risk* are identified in Section 4.5 and include:
    - Species identified on the List of Wildlife Species at Risk set out in *Schedule 1* of the *Species at Risk Act (SARA)* and including the critical habitat or the residences of the individuals of that species, as those terms are defined in subsection 2(1) of the *Species at Risk Act*.
    - Species that have been recognized as "at risk" by COSEWIC or by provincial or territorial authorities.

  * if, after reviewing the project description using the class screening report, it becomes known or reasonably suspected that species at risk could be adversely affected by the proposed project, do not use the MCSR. The project requires an individual environmental assessment under the Act. Note, the contents of the MCSR may be used in the preparation of the individual screening report

The following projects **may** require a separate assessment depending on the nature and scale of the project:

- Projects that increase the amount of wastewater generated or change the method of disposal;
- Installation of utilities that would result in increased capacity;
- Construction of new buildings and other structures in the CSA that are not replacements of existing buildings. This would depend on the scale and nature of the project. For example, a new storage shed could be covered under the class screening, but a new washroom building might be excluded if it increases the amount of wastewater generated. A new woodbin could be covered by the class screening, but a new generator might be excluded if it increases the capacity for power supplied to an area.
- Projects that have the potential to impact environmentally sensitive sites or Zone I areas (as described in Section 4.4);
- Projects in or near critical wildlife areas including movement corridors;

- Projects on land within 30 m of water bodies;
- Projects that may affect cultural resources.

Notwithstanding the criteria outlined above, the Environmental Assessment Office may require an individual environmental assessment for any project, if the circumstances warrant such an approach.

2.3 Summary of Routine Projects Subject to Class Screening

Table 1.1 lists the front country areas that fall within the Class Screening Area (CSA) and the facilities present at each location. The following section lists and describes the types of projects that are considered routine and are covered by this MCSR.

2.3.1. Buildings and Other Structures

Buildings in the CSA include washroom facilities (*e.g.* dry and flush toilets, showers), cook shelters, kiosks and staff accommodations, storage sheds and campground theatres. Other fixed structures that may not be considered buildings, but meet the definition of physical works are: woodbins, fences, septic fields, generators, interpretive displays and exhibits, signs, fireplaces and fireboxes, water reservoirs, water pumps, garbage bins, bridges, culverts, *etc*.

The MCSR covers:

- Construction or installation of new buildings and other structures.
- Decommissioning and abandonment of buildings and other structures.
- Modification, maintenance and repair of buildings and other structures.

2.3.2 Service Lines

Service lines found within the CSA include underground and aboveground service lines for water, sewage, storm water, natural gas, power and communication. Utilities (water, sewer, storm water, natural gas) that are provided in pipes are usually located under ground. Utilities provided through an electrical cable are usually located together in a conduit following a roadway, above or belowground.

The MCSR covers:

- Construction or installation of new service lines; modification, maintenance and repair of existing service lines; and decommissioning and abandonment of old service lines.

2.3.3 Roads, Parking Lots, Pulloffs, Sidewalks, Boardwalks and Trails

Roads are found within campgrounds and some larger day use areas and may be paved or gravel. Most maintenance and repair projects (*e.g.* road surface patching or overlay) are

excluded from *CEAA*. Modification of existing roads includes the realignment of roads within the right-of-way, the paving of gravel surface roads and the widening of existing roads within their right-of-way. Parking lots, sidewalks, boardwalks and formal trails are also located within the CSA.

The MCSR covers:

- Construction and installation of new boardwalks, trails and sidewalks,
- Decommissioning and abandonment of roads, parking lots, pulloffs, sidewalks, boardwalks and trails,
- Modification of boardwalks, sidewalks and parking lots, and
- Modification, maintenance and repair of roads, pulloffs and trails.

2.3.4 Vegetation Management

Periodic vegetation management is required at most front country areas to keep right-of-ways clear, remove trees that pose a public safety hazard and to maintain scenic views. The MSCR only covers vegetation management within the ROW of roads and utility lines and within 1.5 tree lengths of the existing cleared area of a front country area.

The MCSR covers:

- Removal of trees for public safety purposes (hazard tree removal), for fire protection or for viewscape maintenance through handfalling or brushing. It does not cover vegetation removal through the use of heavy equipment (*e.g.* skidders and harvesters).

3 Activities Associated with Routine Front country Projects

This section describes the activities associated with routine projects that are carried out within the Class Screening Area. The environmental effects associated with these activities are detailed in Chapter 5.0.

3.1 General Activities

General activities that apply to most projects and most stages of a project:

Material handling and storage: Includes transportation and storage of building and excavated materials (*e.g.* stockpiling overburden for use during backfilling and compacting).

Equipment operation: Equipment such as compactors, pumps, jackhammers, compressors, generators, cement mixers, backhoes and trucks are used for many different projects. In some cases, specialized equipment may be required (*e.g.* vacuum trucks and trenchers for utilities installation, paving machines for road work, bucket trucks for pruning and line work).

Waste management: Includes the collection of all non-hazardous waste and removal to appropriate facilities, as well as re-use and recycling of building materials. Vegetative material may be chipped, burned, or in very small amounts, left to decay on site.

Hazardous material collection and disposal: Includes the safe storage and disposal of all hazardous materials such as oil-based paint, fuels, oils, lubricants and other petrochemical products.

3.2 Site Preparation

Site preparation may be required prior to construction or modification of buildings or other structures, utility lines, roads or parking areas within the CSA. Site preparation includes:

- *Site investigation*, including geotechnical investigations such as digging test pits or drilling wells with backhoes or drilling rigs. Investigation ensures there is no existing contamination on site, and identifies underground utilities.
- *Vegetation clearance*, including mowing and removal of shrubs and trees. Vegetation clearance may also be undertaken at campgrounds and picnic/day use areas to maintain the existing cleared area.
- *Grading, excavation and/or material stripping* to prepare construction sites, reduce slope, demolish existing facilities, prepare roadbeds, repair subgrade and install or repair storm sewers and culverts.
- *Dewatering* involves the removal of excess water from an excavation using pumps, hoses and sediment traps.

- *Digging holes for new electrical poles* within ROWs with a backhoe or other equipment.

3.3 Buildings

Building construction begins with site preparation, followed by a variety of general construction activities such as pouring foundations, framing, cladding, roofing, constructing vapour barriers, adding insulation and interior finishing, and providing heating, ventilation, air conditioning, plumbing and electrical systems. Painting and sandblasting buildings is also included. Some sites may be serviced with utilities, including wastewater disposal systems (see 2.3.2 Service Lines).

Modification, maintenance and repair activities include painting, reroofing and residing.

Decommissioning and abandonment of an existing building involves disconnection of utilities, which may either be removed (requiring excavation) or left in-situ, demolition activities and removal of foundations.

3.4 Service Lines

Installation or maintenance of underground utility lines involves digging trenches 1 to 3 m deep and 0.5 m to 2 m wide by backhoe, installing the conduit, pipe or cable, filling the trench, compacting the material and crowning over to allow for subsidence. Final grading recontours the surface. Smaller lines, such as electrical or phone lines can be installed using a trenching machine, which cuts the trench, lays the line and closes the trench in one pass.

Aboveground utility line installation involves digging holes, pouring concrete foundations and stringing the lines. Lights may be installed as part of a building project or along roadways and in parking lots.

Installation of wastewater disposal systems involves excavation and backfilling.

Maintenance and repair of existing lines can involve many of the activities described above, but on a smaller scale, in order to inspect lines and facilities for breaks, leaks or other malfunctions, and to replace damaged or broken lines. For aboveground services, poles and lines may be replaced as necessary.

Maintenance also includes fall shutdown activities – pumping out of septic tanks and emptying water lines.

Decommissioning of underground service lines involves disconnecting and either removing and disposing of underground line or pipe, or capping/sealing to leave the disconnected line or pipe in place.

Decommissioning of aboveground service lines involves removal and disposal of aboveground poles and lines.

3.5 Roads, Parking Lots, Pulloffs, Sidewalks and Trails

Surfacing of gravel roads, parking lots, pulloffs and resurfacing of asphalt roads, parking lots and pulloffs involves the removal of the existing surface, surface preparation (stripping or scarifying the asphalt surface) and the laying of asphalt. Removal of the road surface and excavation may also be required to repair the subgrade, install or repair storm sewers or culverts.

Maintenance or repair of roads involves patching with asphalt and in the case of gravel roads, grading and removal of rocks or debris. Asphalt may be pre-mixed or, in larger projects, prepared on-site using an asphalt plant. Posts, lights and fences may be installed as part of a road or parking lot project.

Sidewalk, curb and gutter installation involves form work and pouring of a new structure using timber forms and concrete, asphalt or paving stones. Sidewalks can be realigned through base repairs and resurfacing. Boardwalks are generally constructed from timber. Some form work and use of concrete may also be required.

Trail projects involve base preparation, grading, trail surfacing and fixture installation (*e.g.* lights, benches, boardwalks, garbage bins, fence).

Decommissioning activities would include removal and appropriate disposal of surface material (asphalt, concrete, gravel, paving stones), repairs to subgrade and site restoration.

3.6 Vegetation Management

Vegetation management involves hand falling to remove hazardous trees within 1.5 tree lengths of the existing cleared area. Right-of-ways for roads and utility lines within the CSA are maintained by mowing, pruning and removing vegetation, including trees. Removal of vegetation for fire protection purposes or to improve scenic vistas at existing scenic viewpoints is also accomplished using hand falling, brushing and pruning.
Vegetative material is chipped, bucked for firewood, burned, milled for other construction projects, or stored for use on other projects.

3.7 Site Rehabilitation

Site rehabilitation involves backfilling, if necessary, and landscaping, grading, contouring and soil preparation. The disturbed site is revegetated through seeding, planting and sodding. Fertilizer may be used in some cases to help establish vegetation.

3.8 Scheduling and Duration of Projects

The construction season in the mountain parks generally runs from May to late October. Repairs may be scheduled for winter months if necessary (*e.g.* breaks in waterlines).

Typically construction, modification, maintenance, repair, decommissioning or abandonment activities take place between April and October. At campgrounds, spring (late April to early June) and fall (September) are the most active seasons due to seasonal start-up and shutdown periods.

Spring start up includes cleaning facilities and initializing, pressurizing and checking water pump stations and utility lines. Fall shutdown activities include pumping out septic tanks and emptying water lines.

Depending on the size and complexity of the facility, the duration of front country projects extends from a few days (for maintenance projects) to a month (for construction projects).

4 Description of Class Screening Area

4.1 Ecological Setting

Jasper National Park along with Banff, Yoho, Waterton and Kootenay National Parks, represents the *Rocky Mountain Natural Region* in the Parks Canada system of National Parks. This region encompasses a series of parallel ranges including the Rocky Mountains and the foothills. Jasper National Park is an area of dramatic mountain peaks and expansive valleys. Many of the mountains rise to elevations above 3000 metres. Mt. Columbia, the highest peak in Alberta, is 3782 metres. The lowest point in the park, 985 metres above sea level, lies near the park's east gate.

The mountains in Jasper National Park form ranges running parallel to one another in a northwest to southeast alignment. The westernmost range in this series is the highest. It also forms the continental divide, separating streams that flow east and north to the Arctic Ocean or Hudson Bay from those which drain westward to the Pacific Ocean. In places, gaps or passes form breaks in the steep-walled ranges and allow travel from one watershed to another. Rivers have also eroded passages through this otherwise rugged and precipitous land.

The Athabasca River and its tributaries drain more than four-fifths of the park. From the toe of the Columbia Glacier the Athabasca flows north and east through the park for nearly 150 kilometres. Ten other moderately-sized rivers and countless smaller creeks augment its volume over this distance. The Athabasca is one of the more significant rivers which flow from the mountain barrier toward the Arctic Ocean. The portion of the Athabasca which lies within Jasper National Park has been designated as a *Canadian Heritage River*.

The Athabasca, along with the Smoky, Southesk and Brazeau Rivers collect runoff from an area of over 10,000 square kilometres. Peak flow begins in late June, when snowmelt and rainfall combine to fill the river channels to capacity. Melting glaciers keep the water levels high through July. In midsummer, these rivers contribute significantly to the water supply required for municipal and agricultural needs downstream.

The park's northerly location and distance from the ocean make the macroclimate of Jasper National Park 'continental', with long, cold winters and short, warm summers. The park is subject to air masses and weather systems that migrate across western Canada at mid latitudes, modified by mountain topography, elevation, rainshadow effects and latitude.

During the Little Ice Age (from about A.D. 1200 to 1850), the onset of cooler temperatures and higher snowfall initiated a minor advance of the glaciers from their mountain strongholds. These colder conditions pushed treelines lower and permitted cold-tolerant spruce and fir forests to dominate the mountain slopes, much as they do today. Caribou, moose and bison, all species adapted to travel in deeper snow, frequented

much of the area, while elk and deer were confined to the grasslands still covering the bottom lands of the lower Athabasca Valley and the slopes of the drier front ranges.
During the past 150 years the climate has continued to fluctuate. Vegetation patterns have responded to its changes. Occasional severe winters, drought and periodic fire have played their part in shaping the ecology of the mountain regions. Numbers of animals, not to mention numbers of humans, have all been affected by the prevailing climate.
Although the Pacific Ocean lies several mountain ranges to the west, ocean winds influence much of Jasper's weather and contribute to the forces of change in the mountains. The winds rush up and over the main ranges. Moisture-laden clouds dump metres of snow and water in highlands such as the Columbia Icefield. Drier winds flow northeast down the Athabasca Valley, lifting sand and silt and sweeping slopes bare. When the dominant west wind falters, Arctic fronts sweep in from the north and east and the temperature plummets.

Jasper National Park is divided into three life zones - montane, subalpine, alpine - which are broad landscape units with characteristic species, communities and physical environments. Climatic differences associated with changes in altitude are the main determinants of these differences in biodiversity. Higher elevations are generally colder and wetter, while lower elevations are warmer and drier. Local differences in slope angle and direction create local microclimates. Steeper slopes are generally better drained and drier than moderately sloping or flat areas. South-facing slopes are drier and warmer than north-facing ones at the same altitude.

The ranges of plants and animals across this altitudinal range are related largely to their tolerances to cold, heat and drought. Other factors that influence distributions include food species, competition with other species, and soil conditions. The wettest areas are occupied by lakes, ponds, marshes and fens. Grasslands occur in the warmest, driest portions of the park and forests in moderate environments. Trees can't grow in the cold conditions of high altitudes above about 2200 metres and so forests are absent, replaced by low shrub and wildflower communities.

4.1.1 Montane

The montane life zone (7% of the park) is warm, dry and found only on the very bottoms of the Athabasca and Miette Valleys in Jasper. Here Douglas Fir stands hug south facing slopes, the furthest north in Alberta this species grows. Warm chinook winds sweep through the valleys in winter, melting snow and making forage in the extensive grasslands easy for elk, moose, deer and sheep. Bears, waking in spring, roam in and out of the montane, feasting on the red-and-orange buffalo berries for weeks at a time in the fall. Wolves and cougars move through the valleys in search of food while bald eagles and osprey nest near the rivers, close to the pike and mountain white fish they feed their young.

The montane is also where humans live. The Town of Jasper, the Canadian National Railway, the Yellowhead Highway, Outlying Commercial Accommodations and most park facilities dot the montane landscape. Almost 2 million people stop to visit the

montane every year, while another 1 million drive through it on the Yellowhead Highway.

Wildlife, like humans, use the valley bottoms as transportation corridors and rely on the montane for food and shelter. There is concern that human use in the valleys adversely impacts wildlife corridors, fragmenting the ecosystem and giving animals less and less room to live. Parks Canada recognizes the importance of maintaining the integrity and critical ecological role of the montane.

Table 4.2 lists the front country facilities in the montane.

4.1.2 Subalpine

The subalpine, which occurs at elevations above the montane, is a great sweeping forest that curls around mountainsides, fringed at treeline by krumholtz trees. Closed coniferous, mature forests dominated by Englemann spruce and subalpine fir characterize the subalpine. This zone stretches up from the montane providing habitat for a limited number of animals. Pine martins, large cat-like weasels, and their larger cousin the wolverine roam the subalpine. In the winter, lynx, moose and caribou frequent this life zone, using their large paws and hooves to maneuver through the deep snow. Clark's nutcrackers, the boreal chickadee, winter wren, golden-crowned kinglet, varied thrush, yellow-rumped warbler and the dark-eyed junco also call the subalpine home.

Table 4.2 lists the front country facilities in the subalpine.

4.1.3 Alpine

Above the subalpine, lies the alpine zone. Characterized by howling winds that scour the rocky earth, the alpine is the most intricate of Jasper's three life zones.

The alpine life zone is the most fragile life zone in Jasper. While difficult to reach, some alpine areas in the park are relatively accessible. The Whistlers tramway and certain trails, especially in the Columbia Icefield and Maligne Lake areas, allow visitors to easily access the alpine zone.

There are no front country facilities located in the alpine zone. Front country facilities in Jasper National Park are situated in the Montane and Subalpine Ecoregions only.

4.2 Ecosites

The *Ecological Land Classification* system for Jasper National Park further divides these three ecoregions into 55 ecosections based on broad landform, drainage and soil characteristics. These are in turn divided into 124 ecosites based on specific soil and vegetation differences. Table 4.2 identifies each front country facility by ecoregion and ecosite. Appendix A contains detailed information on each ecosite – soil, vegetation and wildlife.

In addition to the general information contained in the *Ecological Land Classification*, many species-specific inventories and wildlife studies have been carried out in Jasper National Park. Important habitat and special resources requiring additional consideration or mitigation during project planning and implementation are identified. The following resources, such as Zone 1 areas and Environmentally Sensitive Sites, are also described in the Jasper National Park Management Plan (2000) and identified through discussion with Parks Canada wildlife, aquatics and cultural resource specialists.

Table 4.2 Front Country facilities by Ecoregion and Ecosite

Ecosection	Frontcountry Area	
Montane Ecoregion		
Athabasca (AT)	5 Mile bridge pulloff/boat launch Mount Christie viewpoint Roche Bonhomme and Pyramid viewpoint West Moberly bridge pulloff Colin Range pulloff Valley of the 5 Lakes trailhead Whistler's campground Wabasso campground Otto's cache picnic area	Internment camp pulloff Old Fort Point trailhead Lac Beauvert parking lot Lake Annette picnic area 1, 2 and 3 Lake Edith south end picnic area Lake Annette entry day use Cavell Road junction pulloff South gate
Devona (DV)	Talbot Lake windsurfer pulloff Talbot Lake boat launch Syncline view pulloff	
Fireside (FR)	6th bridge picnic area Fryatt River crossing pulloff Geikie Siding trailhead	Vine Creek trailhead Maligne River picnic area Kerkeslin campground
Hillsdale (HD)	Pocahontas coal trail Maligne canyon trailhead Mount Christie picnic area Pocahontas campground East gate Rocky River pulloff Roche Miette trailhead	Unnamed pulloff Miette Road West gate Snaring overflow campground Celestine Road walk in campground HWY 16 East "*Lodgings and Roadways"* pullout Unnamed pulloff HWY 16 East
Norquay (NY)	Maligne Canyon overlook viewpoint Ashlar Ridge viewpoint Miette Road powerline pulloff Goat Lick viewpoint	Mount Fryatt viewpoint Geraldine fire road pulloff Pyramid Island picnic area 5th Bridge picnic area
Patricia (PT)	Cottonwood slough trailhead Pyramid Beach picnic area Skyline Trail trailhead Snake Indian River trailhead Athabasca Pass viewpoint Mount Edith Cavell viewpoint Horseshoe Lake trailhead Athabasca Falls day use area 16 ½ Mile lake trailhead Leach Lake picnic area Meeting of the Waters group campground	Pyramid Fire Road trailhead Wabasso Lake trailhead HWY 16 West "*Lodgings and Roadways"* pullout Pyramid Stables parking lot Habbakuk viewpoint Patricia Lake picnic area Pyramid Lake picnic area #1, #2 and #3 Pyramid Lake boat launch
Talbot (TA)	Jasper House pulloff Punchbowl Falls viewpoint	
Vermilion Lakes (VL)	Overlander trailhead Mile 12 pulloff Poco ponds pulloff Snaring campground South gate/Beckers pulloff Airport picnic area HWY 93/Miette River pulloff	Disaster Point pulloff HWY 16 West unnamed pulloff (2) Yellowhead Pass pulloff Meadow Creek trailhead Merlin Pass trailhead Moberly Homestead day use area Palisades picnic area
Subalpine		
Altrude Lakes (AL)	Honeymoon Lake campground Miette picnic area Sulphur Skyline trailhead	Miette Interp trail Watchtower trailhead
Baker Creek (BK)	Ranger Creek pullout	

	Ranger Creek group campground Sunwapta Falls day use area	
Bow Valley (BV)	Bruce's picnic area	
Brazeau (BZ)	Upper Maligne parking lot/Opal hills trailhead	Middle Maligne parking lot Lower Maligne parking lot
	Maligne walk in picnic area	
Cavell (CA)	Tonquin Valley via the Astoria River trailhead Cavell Road viewpoint #2	Cavell parking lot Cavell picnic area
Cyclone (CN)	Icefields campground Jasper/Banff boundary	
Consolation Valley (CV)	Upper Sunwapta boat launch (access)	
Goat (GT)	Medicine Lake inlet viewpoint	
Hector Lake (HC)	Mushroom Peak pulloff Stanley Falls trailhead	
Ishbel (IB)	Shangrila pulloff 1st North Medicine viewpoint "*Where is the water*" 2nd North Medicine viewpoint	
Mosquito (MQ)	Wilcox Pass trailhead Wilcox campground	
Peyto Lake (PL)	Upper Toe of the Glacier trailhead	
Pipestone (PP)	Maligne Road, "*The arch*" pulloff Beaver picnic area	
Panorama Ridge (PR)	Waterfalls trailhead Cavell Road viewpoint #1 Maligne Road, end of Medicine Lake "*The delta*" viewpoint Beauty Creek Hostel parking lot Mount Kitchener viewpoint Tangle Falls viewpoint Upper Sunwapta boat launch (egress)	Mount Athabasca from Mount Tangle viewpoint Bald Hills trailhead Maligne Lake parking lot/boat launch Honeymoon Lake campground Honeymoon Hill viewpoint Buck and Osprey Lakes trailhead
Sawback (SB)	Mid Medicine Lake viewpoint Colin/Maligne Range viewpoint Mid Medicine viewpoint "*Sinking Lake*" viewpoint	Colin/Maligne Range viewpoint Mid Medicine viewpoint "*Sinking Lake*" viewpoint
Tyrrell (TR)	Icefields Centre parking lot	
Verdant (VD)	Bubbling Springs picnic area	
Warwick (WW)	Lower Toe of the Glacier trailhead	
Other		
Recent Stream Channel (SC)	Meeting of the waters picnic area	

Most of the park's recreational infrastructure is located in the montane ecoregion. Current land use in the park, including such things as recreational infrastructure, roads, rails, pipelines and the Town of Jasper have contributed to direct and indirect habitat loss and impaired predator-prey systems. Furthermore these land uses have reduced the functionality of several rare habitat types in the park including grasslands, meadows and aspen stands. However, no new habitat has been lost or alienated as a result of these activities and restoration efforts are ongoing (Dobson, July 2003a).

4.3 Environmentally Sensitive Sites

This designation applies to areas with significant and sensitive features that require special protection. These are identified in the Jasper National Park Management Plan (2000). The following is a list of Jasper National Park's environmentally sensitive sites; none contain front country facilities however front country facilities are adjacent to Pocahontas Ponds and Maligne Lake Outlet.

4.3.1 Edith Cavell Meadows

The upper subalpine and alpine meadows near Mount Edith Cavell contain many significant plant species. With one exception, all these species are located elsewhere in the park. However, the existence of such an array of unusual plants indicates environmental circumstances not found elsewhere in the four mountain parks. The meadows are also an important caribou calving and rutting area. Use of the meadows has increased over the last several years and action is required to protect rare plant communities and provide for the needs of caribou.

4.3.2 Pocahontas Ponds

The wetlands of the Athabasca floodplain near Pocahontas are known locally as the Pocahontas Ponds. This area of small ponds and active and dead stream channels is very important to wildlife. The area provides critical winter range for elk and moose and is also important to small mammals. Carnivores are attracted by these prey species. Numerous bird species occur in high densities, many of which are not found elsewhere in the parks. Raptors such as osprey and bald eagle nest here. The area also provides habitat for the river otter, a species which is rare in the park. Any major construction in the area (*e.g*., roads) will change sedimentation and erosional patterns. Care must be taken that future development and use do not have a negative impact on the area's special resources.

4.3.3 Maligne Lake Outlet

The Maligne Lake outlet is a "club site", or area of high concentration for harlequin ducks particularly during the pre-nesting period. Similar concentrations are rare in North America. Harlequin ducks require special management due to their sensitivity to in-stream disturbance, narrow ecological requirements and low reproductive potential. The outlet is part of the mid-Maligne River, a movement corridor between Maligne and Medicine lakes for harlequin duck broods. Actions to preserve the Maligne Lake outlet include closing the mid-Maligne River to in-stream use, restoring vegetation along the outlet and improving presentation of the site's significance.

4.4 Park Zoning

As with the environmentally sensitive sites, Zone I and II areas are identified, but do not contain any front country facilities, therefore will not be impacted by the scope of this work. The majority of the routine front country projects will take place in Zones III and IV. Activities in Zone V are assessed through the *Model Class Screening for Routine Projects in National Park Communities* (July 2004).

4.4.1 Zone I – Special Preservation

Ancient Forest

The oldest living specimens of Engelmann spruce (*Picea engelmannii)* in the Canadian Rockies, and possibly North America, have been identified at a subalpine site approximately one kilometre west of the Columbia Icefield Centre. The site is near the upper limit of tree growth and is flanked by moraine and the outwash of the Sunwapta River. The trees range in age from approximately 703 to 763 years. These trees are an

excellent example of climax succession. The park will not encourage access to the area and will interpret resources off-site.

Surprise Valley (Maligne karst system)
The Surprise Valley is part of the Maligne karst system. The valley, located above the Maligne River, is drained entirely underground through limestone of the Upper Devonian Palliser Formation. It is associated with one of the largest underground river systems in North America. The valley contains deep sinkholes in glacier drift, sink lakes, and some of the finest examples of rillenkarren in North America. The Surprise Valley is designated as a Zone I area because of these significant surface karst features. No new access will be provided to the area. The remainder of the Maligne karst system can accommodate higher levels of controlled visitor activity and will be managed under Zones II, III, and IV.

Devona Cave Archaeological Site
The Devona Cave contains pictographs and other significant material that are important to understanding prehistoric activity and trade in this area. The area is not identified on the zoning map due to its sensitivity and access to the cave will be strictly controlled.

Jasper House
Jasper House has been designated as a national historic site because of the significant role it played in the fur trade. Jasper House is rich in architectural features, artifacts, and faunal remains. Archaeological remains are intact and are very important in understanding the history of the site. Management guidelines for Jasper House and Devona Cave sites will be developed through the park's cultural resource management program. Jasper House will also be managed through the *Jasper National Park National Historic Site Management Plan*.

4.4.2 Zone II – Wilderness (97% of the park)
Zone II contains extensive areas that are good representations of a natural region and are conserved in a wilderness state. The perpetuation of ecosystems with minimal human interference is the key consideration. Zone II areas offer opportunities for visitors to experience, first hand, the park's ecosystems and require few, if any, rudimentary services and facilities. In much of Zone II, visitors have the opportunity to experience remoteness and solitude. Motorized access is not permitted. Much of this land consists of steep mountain slopes, glaciers and lakes. Zone II areas cannot support high levels of visitor use. Facilities are restricted to trails, backcountry campgrounds, alpine huts, trail shelters and warden patrol cabins. These sections of the park will continue to have no facilities.

4.4.3 Zone III – Natural Environment (1% of the park)
In Zone III areas, visitors experience the park's natural and cultural heritage through outdoor recreational activities that require minimal services and facilities of a rustic nature. Zone III applies to areas where visitor use requires facilities that exceed the acceptable standards for Zone II. No motorized access is permitted, except for snowmobiles used to set tracks and service backcountry facilities and off-season

servicing by helicopters. Access routes and land associated with backcountry commercial lodges are in Zone III.

4.4.4 Zone IV – Outdoor Recreation (1% of the park)

Zone IV accommodates a broad range of opportunities for understanding, appreciation and enjoyment of the park's heritage. Direct access by motorized vehicles is permitted. In Jasper National Park of Canada, Zone IV includes front country facilities and the rights-of-way along park roads. Zone IV nodes occur at Pocahontas, Miette Hotsprings, Snaring Campground and overflow, the Pyramid Bench, Athabasca Falls, Sunwapta Falls, Maligne Canyon, the Maligne Lake day-use area, Jasper Park Lodge, the Columbia Icefield Area and Marmot Basin ski area.

4.4.5 Zone V – Park Services (Community of Jasper - <1% of the park)

The community of Jasper is the only Zone V area in the park. The *Jasper Community Plan* will guide land use decisions in this area and routine projects are assessed through the application of the *Model Class Screening for Routine Projects in National Park Communities* (July 2004).

4.5 Species at Risk

Parks Canada has increased its focus on Species at Risk issues since the proclamation of the *Species at Risk Act* (*SARA*) in June 2004. The goal of the Act is to protect and recover native species, sub-species and distinct populations at risk in Canada. The Act protects all animals and plants native to Canada listed on *Schedule 1* of *SARA*. At risk species are categorized as *special concern*, *threatened*, *endangered* or *extirpated*. The Act prohibits the following:

- No person shall kill, harm, harass, capture or take an individual of a wildlife species that is listed (on *Schedule 1*) as an extirpated species, an endangered species or a threatened species;
- No person shall damage or destroy the residence of one or more individuals of a wildlife species that is listed (on *Schedule 1*) as an endangered species or a threatened species; and
- No person shall destroy any part of the critical habitat of any listed (on *Schedule 1*) endangered species or of any listed threatened species.

Further to this, permits are required under *SARA* to carry out an activity that contravenes the prohibitions listed above. A permit may be issued for the following purposes:

- The activity is scientific research relating to the conservation of the species and conducted by qualified persons;
- The activity benefits the species or is required to enhance its chance of survival in the wild; or
- Affecting the species is incidental to the carrying out of the activity.

Parks Canada is meeting the requirements for *SARA* of listed species by providing for the recovery of two threatened species in Jasper National Park and attempting to manage

species of special concern to prevent them from becoming endangered or threatened. Increased funding has been provided for research and inventories – these efforts are ongoing. Table 4.5 lists the Species at Risk for Jasper National Park.

Table 4.5 Species at Risk for Jasper National Park

	SARA status	COSEWIC status
Woodland caribou (*Rangifer tarandus caribou*)	*Schedule 1:* Threatened	Threatened
Haller's apple moss (*Bartramia halleriana*)	*Schedule 1:* Threatened	Threatened
Western toad (*Bufo boreas*)	*Schedule 1:* Special concern	Special concern
Grizzly bear (*Ursus arctos*)	Under review	Special concern
Wolverine (*Gulo gulo*)	Under review	Special concern

Over the past five years, the focus for research, inventories and conservation in Jasper National Park has been on Woodland caribou, Haller's apple moss and grizzly bear. Inventory and planning has begun for the wolverine and western toad.

Projects that may adversely affect a species at risk, either directly or indirectly (*e.g.* projects that affect critical habitat) are not suited to the class screening and are therefore subject to individual assessment (refer to Section 2.2).

4.5.1 Woodland caribou

Woodland caribou (*Rangifer tanrandus caribou*) are comparable in size to elk, but are lighter in colour with large hooves. Caribou generally form small herds and use their large hooves in the winter to "float" on top of the snow, helping them escape predators. Lichens are an important food source but grasses, broad-leaved plants and twigs are also included in their diet.

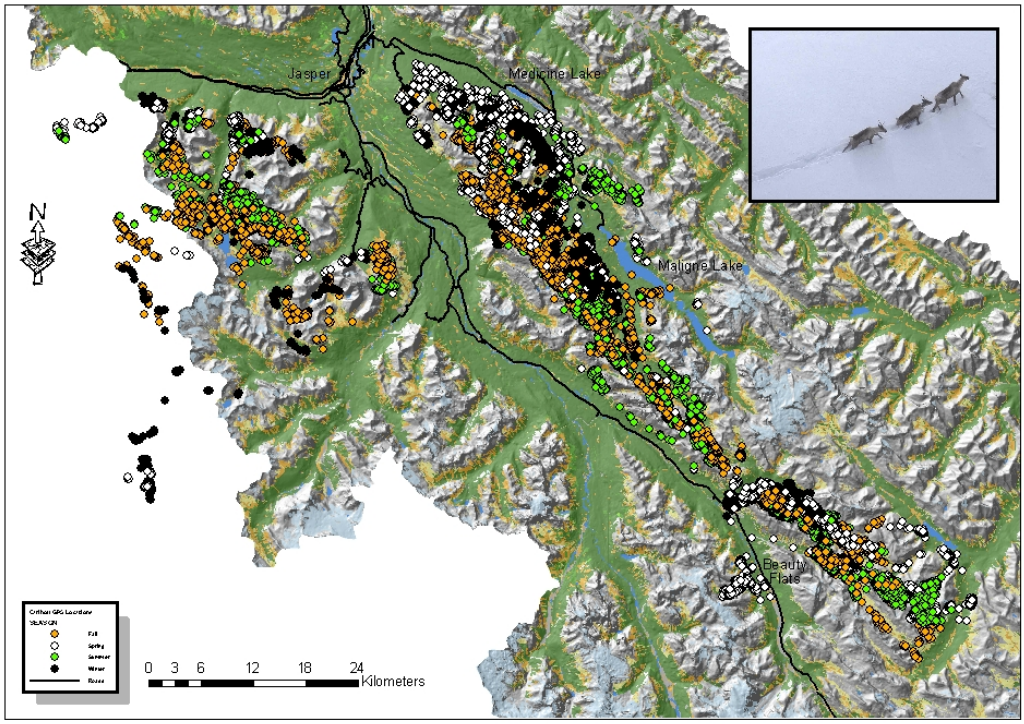
Woodland caribou are listed on *Schedule1* of the *Species at Risk Act* and *threatened* by COSEWIC. Jasper is near the southern continental extent of this species' range. The population may be vulnerable to climate change impacts and consequently less tolerant of other stresses than more northerly herds. Population surveys indicate significant declines in the south Jasper caribou population since the late 1980s. Potential causes of caribou decline in the mountain parks include lack of high quality habitat, disturbance by people, increased numbers of predators and increased wolf access to caribou range on plowed roads and packed ski trails. A changing climate potentially exacerbates all of these factors by reducing caribou resilience to stress (Dobson 2005). Preliminary results of Jasper's monitoring study suggest that most, but not all caribou avoid areas with high levels of human activity (Mercer *et al.* 2004).

In 1988, approximately 175-200 caribou occupied ranges south of the Yellowhead Highway in Jasper National Park (Brown *et al.*1994). Approximately 107 caribou currently occupy this range. Within this area, caribou in the Tonquin travel into the upper headwaters of the Fraser River and Hugh Allan Creek. Caribou in the Maligne Range

travel south to Jonas/Pobokton Pass and the White Goat Wilderness area. Figure 4.5 presents caribou locations in Jasper National Park from 2002 to the present.

Figure 4.5

Jasper Caribou Locations
2002 to Present



Researchers have not documented movements between the Maligne and the Tonquin valleys, nor movements across the Yellowhead Highway (Brown *et al.* 1994 and Mercer *et al.* 2004).

Caribou are often sighted along the Icefields Parkway south of Sunwapta Falls and along the Maligne Road during winter. Potential impacts to caribou, a species at risk, will be identified for projects at these locations. In the summer, finding caribou is very difficult as most herds retreat to high alpine meadows, far away from the many park visitors.

4.5.2 Haller's Apple Moss

Haller's apple moss (*Bartramia halleriana*) is listed on *Schedule 1* of the *Species at Risk Act* and *threatened* by COSEWIC. This species met the criterion for *endangered* status but was designated *threatened* because the location of the moss habitats at the verified sites are such that imminent extirpation is unlikely. There are two known locations of Haller's apple moss in Jasper National park along HWY 16 west (Dobson 2003a), each along a rocky outcrop. The pulloffs near these locations are located beyond 100m from the apple moss sites and therefore would not be impacted by routine work at these front country facilities.

4.5.3 Western Toad

Western toad (*Bufo boreas*) is listed on *Schedule 1* of the *Species at Risk Act* and a *species of special concern* by COSEWIC. Western toad is sensitive to human activities and natural events. Population trends in Alberta for this species are not known (Dobson 2003a). This species (as well as other amphibians in Jasper National Park) is dependent on oligotrophic, fishless ponds and small lakes for breeding. It is also sensitive to habitat deterioration, introduced exotic predators, competitors and disease (*ibid*).

Western toads are vulnerable to sensory disturbance and habitat displacement from project activities during breeding (April to June), often in very small or ephemeral water bodies. Western toads are highly philopatric, most males returning to breeding sites annually with females returning every 1 to 3 years. Although locally abundant and widespread through most of its historic range in Canada, habitat fragmentation is a concern in wetland areas. Predation may increase with land clearing as toads become more visible to birds and small mammals.

Ecosites which have the potential to provide forage and breeding sites for Western toads as well as other amphibians are listed in Table 4.5.3 along with adjacent front country facilities. Projects occurring at these front country facilities must evaluate the potential for impacts to amphibians and minimize these by following the additional mitigations identified in Tables 5.3 to 5.8.

Table 4.5.3 Ecosites with amphibian habitat (Holland and Coen, 1982)

Ecosite	Species Present	Adjacent Front country facility
HD1	Wood frog Long toed salamander	Pocahontas Coal trail Maligne Canyon trailhead Mount Christie picnic area Pocahontas campground East gate
HD2	Wandering garter snake	Rocky River pulloff Roche Miette trailhead
PT1	Wood frog Long toed salamander	Cottonwood Slough trailhead Pyramid Beach picnic area Skyline Trail trailhead Snake Indian River trailhead Athabasca Pass viewpoint Mount Edith Cavell viewpoint Horseshoe Lake trailhead Athabasca Falls day use area 16 ½ mile Lake trailhead Leach Lake picnic area Meeting of the Waters group campground Pyramid Fire Road trailhead
PT3	Wandering garter snake	Wabasso Lakes trailhead HWY 16 West "*Lodgings and Roadways*" pulloff Jasper/BC border pulloff
VL1	Western toad Wood frog Long toed salamander	Overlander trailhead Mile 12 pulloff Poco Ponds pulloff

VL3	Western toad Wood frog Long toed salamander	South gate/Beckers pulloff Airport picnic area HWY 93/Miette River pulloff Disaster Point pulloff HWY 16 West unnamed pulloffs Yellowhead Pass pulloff Meadow Creek trailhead
BK1	Western toad	Ranger Creek pulloff Ranger Creek group campground
BK4	Western toad Spotted frog	Sunwapta Falls day use area
CV1	Western toad Wood frog Spotted frog	Upper Sunwapta boat launch (access)
HC1	Western toad Spotted frog	Mushroom Peak pulloff
HC4	Western toad Wood frog Spotted frog	Stanley Falls trailhead
PP1	Western toad	Maligne Road "*The arch*" pulloff
SB1	Western toad	Mid Medicine Lake pulloff

4.5.4 Grizzly Bear

The grizzly bear (*Ursus arctos*) is currently under review for listing on *Schedule 1* of the *Species at Risk Act* and listed as a *species of special concern* by COSEWIC. Foothills Model Forest research indicates a stable regional population of grizzly bears in Jasper National Park with high cub production. However the species is subject to high human mortality (vehicle collisions and habituation) and reduced habitat effectiveness and security due to high levels of human use and development in some land management units (Dobson 2003a).

Grizzlies show pronounced seasonal migration, spending summer in the alpine areas and descending to the valleys in spring and fall when food is scarce. Ranging up to 4000 km2, grizzly bears have large territories that often extends out of the park. The grizzly bear is particularly sensitive to human influence and because of this, closely watched. Jasper currently supports a viable population of between 100 - 120 individuals but the continued existence of the grizzly depends upon the preservation of large areas of undisturbed wilderness.

The primary issues related to grizzly bear population status in Jasper National Park are related to regional issues of connectivity, habitat security and mortality risk. These issues are primarily the result of industrial activity outside the park. However recreational use of the landscape also creates temporary disturbances limiting bear movement and access to habitat. The highest quality, most continuous habitat is located in valley bottoms - also the areas where the majority of facilities and services are located. Like other wildlife, bears can be displaced from prime habitat by human activity.

Bears that spend time close to human development can become habituated – this may bring them into conflict with humans and, for female bears, increases the likelihood that

they will die of human-related causes (*e.g.* be killed on the highway or railway) (Garshelis et al. 2005). Human-caused mortality is the most important cause of grizzly bear mortality today, accounting for 75% of female and 86% of male grizzly bear mortality, although improved food and garbage management in the mid-eighties played an important role in reducing habituation, and consequently mortality (Herrero et al 2005).

Given the small population size and slow growth rate, random and unpredictable events could have a large impact on population viability, and even small changes in bear or human behaviour could tip the balance towards decline.

Parks Canada is working with the Foothills Model Forest, the Regional Carnivore Management Working Group and other provincial initiatives related to grizzly bear conservation in the Yellowhead ecosystem. Foothills Model Forest is working with stakeholders in the area to determine appropriate measures for addressing human-caused mortality of grizzly bears in the region. With this and other mitigations, it is possible that negative trends related to habitat effectiveness, connectivity and mortality risk can be reversed or reduced (Dobson 2005).

Bears are vulnerable to sensory disturbance through potentially all aspects of routine front country projects. Critical life phases for grizzly bears include post-hibernation when adult bears and cubs leave denning areas in search for food (April/May) and prior to hibernation (July to November) when they are building up their energy reserves for winter. Displacement of bears during these times could result in human/wildlife conflict and/or bears not finding sufficient food sources.

Grizzly bears are well distributed throughout Jasper National Park. The scope of work in this class screening has the potential to impact both bears and bear habitat therefore appropriate mitigations must be followed.

4.5.5 Wolverine

The wolverine (*Gulo gulo*) is currently under review for listing on *Schedule 1* of the *Species at Risk Act* and listed as a *species of special concern* by COSEWIC. The area north of Jasper National Park has been identified as a critical link for connections between metapopulations of wolverine in the Yellowstone to Yukon corridor. In Alberta, wolverive are generally confined to wilderness area of the Rocky Mountains and the north.

Information on wolverine is limited. The wolverine is a solitary animal that occupies large home ranges. They are believed to be widespread throughout the mountain parks at low densities. Low densities, low reproductive rate, a range that is significantly smaller than its historic range and sensitivity to human disturbance make the wolverine a candidate for additional protection. Winter disturbance in the vicinity of natal dens is thought to be particularly disruptive.

Wolverine are most commonly associated with Engelmann spruce-subalpine fir forests of the Subalpine ecoregion, but can occur at all elevations (Tremblay 2001). A Parks Canada study of winter wolverine ecology showed that wolverine in Lake Louise and Yoho used a wide variety of habitats, but made significant use of avalanche paths (Michel *et al.* 2002). Wolverines crossed trails created by humans (*e.g.* ski trails, groomed ski runs) and roads with low traffic volumes (*e.g.* Icefields Parkway, Whitehorn Road) on several occasions, however no crossings of the Trans-Canada Highway were observed (Michel *et al.* 2002). In a 1998 study in Kicking Horse Pass, wolverines avoided areas within 100 m of the Trans-Canada Highway and preferred areas greater than 1000 m from it (Tremblay 2001).

4.6 Other Important Areas for Wildlife

Three rivers converge in the centre of the montane ecoregion in Jasper National Park – the Maligne, the Athabasca and the Miette. The 700 km^2 area surrounding the convergence, know as the Three Valley Confluence, is of special management concern to Jasper National Park.

Representing 6% of the park and 50% of the park-wide montane habitat, this area is characterized by ecologically productive forest, dominated by Douglas fir, white spruce and aspen poplar with savannah valley arteries and wetlands (Cardiff 1998 in Dobson 2000). In addition to providing valuable habitat for wildlife in the park, the confluence of the three valleys also creates a zone of convergence for wildlife movement and dispersal within and through the park (*ibid.*).

Also at this convergence is the Town of Jasper, the majority of park accommodation and infrastructure to support the tourism industry, the Canadian National Railway, the intersection of two major highways, pipeline and utility corridors. The Three Valley Confluence is the focus of the majority of the development proposals in Jasper National Park. In 2004, 72 environmental assessments were approved in Jasper National Park, 40 (55%) of those were in the Three Valley Confluence. While there are relatively high levels of human use in other areas in the park, the concentration of various uses in this region represents a unique blend and intensity of ecological stresses (Dobson 2000).

Park biologists have monitored carnivore use of wildlife corridors in Jasper National Park and specifically in the Three Valley Confluence from 1999 to 2003. Carnivores appear to be displaced from some wildlife corridors by increasing levels of human use. Ongoing effort is required to reduce human activity in known wildlife movement corridors.

Figure 1.1(b) shows the location of front country facilities and wildlife corridors in the Three Valley Confluence. Projects occurring in areas of overlap should be carefully evaluated to include mitigations to avoid wildlife disturbance and be limited in scope to only the work described in this model class screening.

4.7 Aquatic Resources

Section 2.2 provides direction regarding front country facilities near aquatic resources, stating projects occurring on land within 30 m of a water body are excluded from this model class screening and subject to individual assessment. Beyond the 30m limit though, provided the work is consistent with the scope identified in this class screening, work may proceed and is subject to all additional mitigations for work >30m from a waterbody. Tables 4.7 (a) and (b) identify front country facilities within 30m and 100m from waterbodies (stream, river, lake, wetland).

Table 4.7(a) Front country facilities within 30 m of a waterbody

Front country facility
Stanley Falls trailhead
Tangle Falls viewpoint
Cavell Meadows parking lot
Cavell Meadows picnic area
Roche Miette trailhead
Yellowhead Pass pulloff
Pocahontas campground
Upper Maligne parking lot
South gate
Habbakuk viewpoint
Pyramid Lake #1 picnic area
Pyramid Lake #2 picnic area
Pyramid Lake boat launch
Pyramid Island picnic area
Pyramid Fire Road trailhead
Palisades picnic area

Table 4.7(b) Front country facilities within 100 m of a waterbody

Front country facility	
Mt. Fryatt viewpoint	Maligne Road "*Where is the water*" pulloff
Sunwapta Falls day use area	Lower Toe of the Glacier trailhead
Beauty Creek Hostel parking lot	Honeymoon Lake campground
Icefields Centre parking lot	Leach Lake picnic area
Wilcox Pass trailhead	Cottonwood Slough trailhead
Jasper/Banff boundary	Patricia Lake picnic area
Wilcox Pass campground	Pyramid Lake #3 picnic area
Icefields campground	Pyramid Beach picnic area
Jonas Creek campground	Overlander trailhead
Fryatt River Crossing pulloff	Mile 12 pulloff
Kerkeslin campground	Syncline Ridge pulloff
Cavell Road trailer drop pulloff	Lac Beauvert parking lot
Meeting of the Waters picnic area	Lake Annette #2 picnic area
Meeting of the Waters group campground	Lake Annette #3 picnic area
Cavell Road #2 viewpoint	Lake Edith picnic area
HWY 16 East "*Lodgings and Roadways*" pulloff	Lake Annette approach day use area
Disaster Point pulloff	North Medicine #2 viewpoint
Meadow Creek trailhead	Colin/Maligne Range viewpoint
Punchbowl Falls viewpoint	Mid Medicine viewpoint
Miette picnic area	Medicine Lake inlet overlook viewpoint
5th Bridge picnic area	"*Sinking Lake*" viewpoint

Maligne Canyon overlook viewpoint Maligne Canyon trailhead Maligne River picnic area Watchtower trailhead	"*The Delta*" viewpoint Lower Maligne parking lot Maligne boat launch

All work in wetland areas must also be consistent with the *Federal Policy on Wetland Conservation* (Environment Canada 1991).

4.7.1 Amphibians

Amphibian populations worldwide are in decline. The reasons are unclear, but are probably related to global and local environmental change. Potential causes of decline in national parks include habitat loss, introduction of non-native species, impacts to water quality, global climate change and disease.

Six amphibian species are found in Jasper National Park – the long-toed salamander (*Ambystoma macrodactyum*), western toad (*Bufo boreas*, see Section 4.5.3), wood frog (*Rana sylvatica*), spotted frog (*Rana pretiosa*), chorus frog (*Pseudacris triseriata maculata*) and wandering garter snake (*Thamnophis elegans vagrans*). Apart from anecdotal observational data, little is known of amphibian distribution in Jasper National Park. It is known that non native fish introduced into naturally fishless waters impact amphibian populations (Knapp 1996 in Dobson 2005) but whether or the degree to which populations in Jasper have been affected in unknown. In 2004, an amphibian inventory commenced in the montane areas of the park. Ongoing monitoring will document presence and trends of amphibian species in Jasper National Park.

Ecosites which have the potential to provide forage and breeding sites for amphibians are listed in Table 4.5.3 along with adjacent front country facilities. Projects occurring at these front country facilities must evaluate the potential for impacts to amphibians and minimize these by following the additional mitigations identified in Tables 5.3 to 5.8.

4.7.2 Fish

Considerable effort has been made over several years to gain a better understanding of the distribution and health of native fish populations. There are 16 native and 8 non native fish species documented in Jasper National Park; all but two native species (Trout perch and Flathead chub) have been recently re-confirmed.

Although work compliant with the scope and mitigations of this model class screening should not affect native fish species populations within Jasper National Park, land based activities can affect aquatic ecosystems through sedimentation, release of nutrients and alteration of surface and ground water patterns. Table 4.7(b) identifies front country facilities located within 100m of a water body. Work at locations >30 m from a waterbody may proceed subject to all additional mitigations for work close to water.

4.8 Cultural Resources

4.8.1 Heritage Buildings

All buildings over 40 years old must be reviewed by the Federal Heritage Buildings Review Office (FHBRO) before any work, including renovations or additions to the building, is carried out. A building is considered to be any structure with a roof (*i.e*. picnic shelters and hay sheds are buildings). Several heritage buildings within the Class Screening Area (CSA) have been evaluated by FHBRO, only two have status as listed in Table 4.8.1. If any changes to these buildings are proposed, the Cultural Resources Specialist should be involved early on in project planning.

Table 4.8.1 Buildings within the CSA Recognized by FHBRO

Front country facility	Status	FHBRO #
Maligne Lake Chalet	*Recognized*	87-015
Pyramid Island Picnic Shelter	*Recognized*	98-082

If a building is over 40 years old, but has never been evaluated, a FHBRO evaluation must be conducted before any major works are carried out. The Cultural Resource Specialist will assist with this process.

The guiding principles behind the maintenance and renovation of buildings recognized or classified by FHBRO are followed by Parks Canada. Maintenance, repairs or any changes to these historic buildings must be consistent with the *Code of Practice to Protect Federal Heritage Buildings*. The Code of Practice was established by the Federal Heritage Buildings Review Office (FHBRO) for Parks Canada in 1992.

The following is a summary of the *Code of Practice* to be followed in all circumstances for FHBRO-listed buildings:

1. All maintenance measures carry the risk of adverse impact on heritage character. All maintenance measures should be non-abrasive, non-destructive and environmentally benign. Replacement should occur only where the major part of an element is decayed beyond repair.

2. The substitution of maintenance-free materials such as aluminium, fibreglass or vinyl for existing materials is not recommended. These materials reduce heritage characteristics.

3. The design of additions or alterations to a building must respect its heritage character.

4. Uses, either existing or proposed, which damage heritage character or exceed the reasonable use capacity of the building should be avoided.

5. Where the integrity of the relationship between a building and its associated landscape is relatively unaltered, strong efforts should be made to retain this relationship and the materials that contribute to it.

The Western Canada Service Centre maintains a database that records the age of many buildings in the field unit. The database also shows if a FHBRO evaluation has been conducted. The database can be viewed at: http://westnet/intranet/calgary/cultural_resource/historical_services/Buildings.htm

4.8.2 Archaeological Sites

A map showing the location of cultural resources in Jasper National Park is not available due to the sensitivity of the resources and the need to protect them. However it is necessary to identify locations where cultural resources are coincident with front country facilities. Table 4.8.2 identifies front country facilities within 100m of known archaeological sites. If the project occurs at one of these locations, the proponent is responsible to speak to the Jasper National Park Cultural Resource Specialist about their project to determine the location of the archaeological resource(s), the applicability of the model class screening and associated mitigations.

Table 4.8.2 Front country facilities within 100m of known archaeological site(s)

Front country facility	
Cottonwood Slough trailhead	Overlander trailhead
Habbakuk viewpoint	Meadow Creek trailhead
Patricia Lake picnic area	Pocahontas Coal trailhead
Pyramid Island picnic area	Punchbowl Falls viewpoint
Pyramid Lake #1 picnic area	East gate
Pyramid Fire Road trailhead	Lake Annette approach day use area
Hwy 16 East "*Lodgings and Roadways*" sign pulloff	Moberly homestead day use area
Colin Range pulloff	Vine Creek trailhead
Airport picnic area	Celestine walk in campground
Palisades picnic area	Leach Lake picnic area
Talbot Lake boat launch	Beaver picnic area
Syncline Ridge pulloff	

Projects occurring in areas of overlap should be carefully evaluated to include mitigations to avoid disturbance and be limited in scope to only the work described in this model class screening or it may be necessary, as per Section 2.2 to complete a separate environmental assessment.

The Archaeological Resource Description and Analysis (ARDA) in under revision by archaeologists at the Western Canada Service Centre. Map layers containing this information will soon be available to Jasper National Park Environmental Assessment Specialists.

The archaeological resources at Jasper House, Athabasca Pass, Henry House and Yellowhead Pass are monitored on an ongoing basis and are further subject to their individual management plans.

4.9 Non native plants

Jasper National Park contains about 109 species of non-native plants (Achuff 2000 in Dobson 2005). Of these, 15 pose significant ecological threats and are treated as high priorities for eradication. The remaining species are less aggressive and targeted for

control or eventual eradication. Ultimately non-native plants directly affect habitat quality for native species of plants and animals and can hybridize with native species.

Non native plants mostly occupy areas that have been disturbed by human activity and were introduced by human activities – the railroad, the highway, reclamation seeding, hay and landscaping. Several infestations have also shown disturbing tendancies to colonize and displace native plant communities that are stressed by heavy year round herbivory and intensive trampling. Currently the park treats priority infestation sites through a combination of picking, mowing and herbicide application. Monitoring indicates that treatment by these methods is reducing the density of non native plants at these sites (Dobson 2005).

4.10 Special Resources

4.10.1 Grasslands

Although grassland condition is unchanged since the 1950s, the size of grassland area has declined and this ecosystem is rare in Jasper National Park. For example, the Henry House grassland was 468 ha in the 1950s, 215 ha today. Disturbance of these areas should be avoided where possible.

4.10.2 Aspen and willow communities

Many montane stands are failing to reproduce due to herbivory and past fir suppression. The issue is complex because while heavy browsing appears to prevent aspen regeneration and hasten the death of mature clones in areas of high elk density, fire in these heavily browsed areas may actually accelerate clone deterioration as new suckers are browsed and mature trees become scorched. Restoring or maintaining predator-prey processes should address some of the changes in herbivory as these changes appear to be linked to changes in predation and the distribution and abundance of elk and sheep.

As with grasslands, disturbance of these areas should be avoided where possible.

4.10.3 Douglas fir

Douglas Fir stands are highly susceptible to erosion and therefore to development. They also have a high intolerance to saline conditions. Douglas fir stands cannot be restored by short term methods because soils for this area tend to be droughty and infertile (Parks Canada 2004).

As with the above, efforts should be made to retain all Douglas fir trees where possible.

5 Environmental Assessment of Routine Projects within Front country Areas

This chapter describes the environmental effects that are likely to be caused by the projects covered under this MCSR. A project can only be approved by Parks Canada if it is not likely to result in significant adverse environmental effects. The first step in this process is to determine what adverse environmental effects are likely to result from the projects described in Chapter 3.

5.1 Likely Environmental Effects of Routine Projects

Based on the environmental conditions described in Chapter 4 and experience with numerous front country projects, a comprehensive list of potential environmental effects created by routine front country projects has been developed (see Table 5.1). These environmental effects are considered likely to occur in the absence of mitigation measures. The environmental effects have been organized according to eight broad areas of concern or environmental components: air quality and noise, soils and topography, hydrological and aquatic resources, vegetation, wildlife, cultural heritage, socio-economic conditions and human health. Each environmental effect has been given a unique identifier.

Table 5.2 shows which potential environmental effects are likely to be associated with the activities required to implement a particular project (as described in Chapter 3). In many cases, an individual project will involve several different activities. For example, site preparation is usually required for building construction. General activities, such as equipment operation and waste management, are also involved. The environmental effects of a building project would therefore include effects under the "General Activities", "Site Preparation", "Buildings" and "Site Rehabilitation" categories.

5.2 Mitigation of Environmental Effects

Standard mitigation measures are available that significantly reduce the magnitude, extent, frequency, duration and reversibility of the potential environmental effects described in Tables 5.1 and 5.2. A summary of the mitigation measures allowing a proponent to reduce the environmental effects of a project to a level that is not significant can be found in Tables 5.3 to 5.8. Proponents must be familiar with these mitigation measures and must implement them on the work-site in order to comply with the requirements of the MCSR.

In order to determine what mitigations are required for a project, the proponent should generate a list of the activities required to complete the project. For example, construction of a new picnic shelter could involve:

- **general activities** – materials handling and storage, equipment operation and maintenance, waste management;
- **site preparation** – vegetation clearing, excavating, dewatering;
- **building construction** and

- **site rehabilitation**.

The proponent should then review all the mitigations described under those headings (Tables 5.3, 5.4, 5.5 and 5.8) and incorporate them into project planning. For more information on additional specific mitigation measures, the proponent should contact the Environmental Assessment Office.

Table 5.1 Potential Environmental Effects of Routine Front country Projects

Environmental Component	Code	Potential Environmental Effects
Air Quality and Noise	A-1	Decreased ambient air quality (*i.e.* from dust, emissions and other particulate matter) especially in mountain valley bottoms
	A-2	Increased ambient noise levels
Soils and Topography	S-1	Changes in slopes, landforms and landscape diversity
	S-2	Soil compaction and rutting
	S-3	Ground subsidence from soil thaw, poor excavation and backfilling practices; ground surface mounding/structure movement due to frost heave from inappropriate backfill material or shallow foundation depth
	S-4	Loss of topsoil, topsoil and subsoil mixing, soil erosion, slope instability, due to increased soil exposure or improper excavation and storage techniques
	S-5	Loss of organic matter/soil sterilization due to intense burning
	S-6	Soil contamination – leaks, accidental spills or historic
Hydrological and Aquatic Resources	H-1	Adverse modifications to surface drainage patterns; stormwater runoff volumes and rate of runoff; stream or shoreline morphology; water flow volumes, levels and rates
	H-2	Changes in groundwater flow patterns, recharge and levels (*e.g.* due to dewatering)
	H-3	Reduced water quality and clarity due to increased erosion, sedimentation, transport of debris, point or non-point sources of pollution (*e.g.* discharge of water, leaks and accidental spills, metal corrosion, contaminated groundwater input, inputs of contaminants from construction activities and from surface runoff)
	H-4	Introduction of nutrients through improper wastewater treatment, burning vegetation piles, use of fertilizers
	H-5	Physical alteration of waterbody substrates
	H-6	Loss of spawning or breeding habitat and/or changes in abundance and diversity of aquatic flora and fauna due to decreased water quality and physical damage to aquatic habitat
Vegetation	V-1	Damage to and/or removal of vegetation in immediate or adjacent areas
	V-2	Introduction of non-native invasive plant species
Wildlife	W-1	Sensory disturbance causing displacement/habitat avoidance
	W-2	Wildlife habituation/attraction to artificial food sources
	W-3	Impeded/altered wildlife movement due to encroachment on wildlife movement corridors, creation of barriers to wildlife movement, habitat fragmentation
	W-4	Loss of habitat (food and cover)
	W-5	Damage to nests and/or disruption of nesting birds
	W-6	Decreased wildlife abundance due to direct mortality from physical activities (*e.g.* road kill)
Cultural Heritage	C-1	Loss or disruption of heritage, archaeological and paleontological features
Socio-Economic Conditions	SE-1	Disruption to park visitors, residents and businesses due to changed noise, air and water quality and traffic and changed aesthetics
Human Health	HH-1	Injuries to public and workers arising from a change in the environment (*e.g.* increased bear-human conflicts, wind throw due to tree removal)

Mitigation measures are the accepted best management practices that are known to reduce the level of potential environmental effects. Best management practices currently in use in Jasper National Park include *General Guidelines for Geotechnical Investigations* (Cardiff 1997), *Environmental Practices For General Construction in the Jasper Townsite and Developed Areas* (Jasper National Park 2003) and ***Best Available Methods for Common Leaseholder Activities*** (Axys 1998). If new regulations, technologies or accepted practices become recognized, they will be incorporated into the accepted mitigation measures. This will ensure Parks Canada is employing adaptive management in order to achieve continuous improvement.

It is important to recognize that appropriate mitigation measures may depend on site specific environmental characteristics.

In addition, Emergency Response Plans should be developed for worst case scenarios such as heavy rainfall and runoff events, spills and fires. Many of these recommended mitigation procedures are currently practised within Jasper National Park.

Proponents of projects in the class screening area should be familiar with recommended techniques/best management practices, the mitigation measures in Tables 5.3 – 5.8 and Emergency Response Plans and use them at project sites to reduce the environmental effects of their activities. In this way residual adverse environmental effects from project activities are not likely to occur.

Table 5.2 Potential Environmental Effects of Routine Front country Projects by Physical Activity

		Air Quality and Noise		Soils and Topography						Hydrological and Aquatic Resources						Vegeta-tion		Wildlife						Cult-ural Heri-tage	Socio-Econo-mic	Human Health
		A-1	A-2	S-1	S-2	S-3	S-4	S-5	S-6	H-1	H-2	H-3	H-4	H-5	H-6	V-1	V-2	W-1	W-2	W-3	W-4	W-5	W-6	C-1	SE-1	HH-1
General Activities	Materials handling and storage																									
	Equipment operation and maintenance																									
	Waste management																									
	Hazardous materials management and disposal																									
Site Preparation	Site investigation																									
	Vegetation clearing																									
	Grading, excavating, and/or material stripping																									
	Dewatering of excavations																									
Buildings and other structures	Construction																									
	Demolition																									
Service lines	Underground line installation																									
	Aboveground line installation																									
	Abandonment/ decommissioning																									
Roads, Parking Lots, Pulloffs, Sidewalks and Trails	Surfacing																									
	Sub-grade excavation																									
	Sidewalk/trail construction																									
Site Rehabilition	Landscaping																									

Table 5.3 Environmental Effects and Mitigation Measures of Routine Front country Projects by Physical Activity: General Activities

General Activities			
Environmental Component	Code	Description of Effect	Mitigation
Air Quality and Noise	A-1	Decreased ambient air quality	1) Unnecessary idling of equipment, including trucks will not be permitted. 2) Stabilize soil and other material storage piles against wind erosion. 3) Cover and contain fine particulate materials during transportation to and from the site and during storage. 4) Minimize vehicle traffic on exposed soils. 5) Wet down exposed soil and dry areas.
	A-2	Increased ambient noise levels	1) Confine "noise" activities to daylight hours.
Soils and Topography	S-2	Soil compaction and rutting	1) Use existing roadways or disturbed areas to access and travel within the site. 2) Identify and avoid soils susceptible to compaction (*e.g.* fine textured and organic soils. 3) In sensitive areas, use equipment of low bearing weight, low PSI tires or tracked vehicles. 4) Store construction materials in one area of the site. Flag clearly to reduce the area of disturbance and limit soil compaction.
	S-4	Loss of topsoil, topsoil and subsoil mixing, soil erosion, slope instability	1) Avoid equipment operation on steep or unstable slopes. 2) Keep site clearing to a minimum to maintain vegetative cover. 3) Phase work to minimize exposure of disturbed areas. 4) Direct runoff and overland flow away from working areas and areas with exposed soils. 5) If a prolonged period of exposure is expected, protect exposed soils with temporary cover (*e.g.* mulch, gravel, erosion blanket, vegetative cover). 6) Halt activity on exposed soils during periods of high rainfall and runoff. 7) Assess site for erosion control requirements and implement control measures as required (*e.g.* tarps, straw bales, erosion blankets, silt fencing). 8) Topsoil separation (10-15 cm) is required. 9) Store topsoil separately from subsoil and other construction materials. 10) Cover stockpiles of soil with polyethylene sheeting, tarps or vegetative cover.
	S-5	Loss of organic matter/soil sterilization due to intense burning	1) Salvage as much timber as possible for other uses (*e.g.* firewood). 2) Locate burn piles on previously disturbed areas. 3) Limit size of burn piles to reduce intensity of fire.
	S-6	Soil contamination – leaks, accidental spills or historic	1) Ensure machinery is in good working order and free of leaks. 2) Identify and handle all toxic/hazardous materials as required under the Canadian Environmental Protection Act, Transportation of Dangerous Goods Act and Workplace Hazardous Materials Information Service. 3) Prepare an appropriate Spill Response Plan. 4) Ensure spill containment equipment is on hand and personnel are trained in its use. 5) Report all spills to Jasper Dispatch at (780) 852-6155. 6) Store fuel and hazardous materials in a berm or secondary containment designed to contain 110% of the product's volume. Ensure other materials are stored appropriately to prevent spills. 7) Designate refuelling areas on hardened surfaces at least 100 m away from water bodies.

General Activities			
Environmental Component	Code	Description of Effect	Mitigation
			8) Clean up all spills immediately, as per the Spill Response Plan. If contamination is found, cease work and inform the site supervisor or environmental surveillance officer. 9) Dispose of contaminated soil at provincially certified disposal sites outside of the field unit. Documentation confirming proper disposal must be provided to Parks Canada. 10) Remove waste oil-based paints from the park in accordance with the federal and provincial *Transportation of Dangerous Goods Act* and Regulations.
Hydrological and Aquatic Resources	H-1	Adverse modifications to surface drainage patterns	1) Locate staging areas away from drainage features. 2) Determine if the project can be resigned to avoid the feature.
	H-3	Reduced water quality and clarity due to increased erosion, sedimentation, transport of debris, point or non-point sources of pollution	1) To minimize site run-off, control overland flow up gradient and down gradient of exposed areas (i.e. using diversion ditches, vales, vegetative filter strips and/or sediment traps). 2) Store stockpiles a minimum of 2 m from embankments with containment, slumps and water bodies to prevent material loss or degradation. 3) Filter or settle out sediment before the water enters any drainage pathway. 4) Periodically inspect erosion control structures for effectiveness. 5) Halt activity on exposed soil during events of high rainfall and runoff. 6) Designate refuelling areas on hardened surfaces at least 100 m away from water bodies. 7) Do not store fuels, oils, solvents, and other chemicals overnight within 100 m of a waterbody. 8) Ensure cleared vegetation does not enter watercourses. 9) Do not place or allow to disperse any rock, silt, cement, grout, asphalt, petroleum product, lumber, vegetation, domestic waste, or any deleterious substance into any waterbody, stormwater system or sanitary sewer. 10) See spill control measures under S-6. 11) To reduce erosive potential of dewatering, ensure water entering a waterbody is diffused.
	H-4	Introduction of nutrients into waterbodies	1) Locate burn piles a minimum of 30 m from watercourses.
	H-5	Physical alteration of waterbody substrates	1) Store and contain stockpiles a minimum of 2 m from water bodies to prevent material loss.
	H-6	Loss of spawning or breeding habitat and/or changes in abundance and diversity of aquatic flora and fauna due to decreased water quality and physical damage to aquatic habitat	1) See mitigations for H-1 though H-5
Vegetation	V-1	Damage to and/or removal of vegetation	1) Operate machines carefully to avoid damaging surrounding vegetation. 2) Ensure excavated material does not damage or bury plant material that is to be retained on the site or in adjacent areas. Store excavated soils and construction materials in a well-defined area. Use tarps and/or snow fences to limit damage to vegetation.

General Activities			
Environmental Component	Code	Description of Effect	Mitigation
			3) Install fencing around trees to be retained beyond the trees' drip line. 4) Salvage trees, shrubs and groundcover where possible for use in other projects. 5) Identify and avoid areas with rare plants or valued vegetation features. 6) For felled trees, remove all branch and top debris to the Transfer station burn pile, cut remaining wood into firewood lengths (14 inches) and haul to the Transfer station firewood pile. 7) Reclaim and revegetate the site (including temporary access roads, staging and storage areas) as soon as possible following the project.
	V-2	Introduction of non-native invasive plant species	1) Equipment should be pressure washed before arriving at the work site. 2) Reseed using the approved Parks Canada seed mix.
Wildlife	W-1	Sensory disturbance causing displacement/habitat avoidance	1) Limit activities to daylight hours. 2) Limit activities during critical foraging times (dusk and dawn) particularly post hibernation when bears and cubs are leaving dens in the spring (April/May) and prior to hibernation (July to September). 3) According to the wildlife that may be present, schedule high noise level activities and other intrusive construction activities to avoid critical life stages (breeding, nesting, rearing, migration). 4) A qualified biologist must confirm the presence of migratory birds if they are suspected in the project area. An exclusion window appropriate to the species must be applied if necessary.
	W-2	Wildlife habituation/attraction to artificial food sources	1) Keep site free of garbage and dispose of garbage in wildlife proof containers or remove daily from the site. 2) Educate workers that wildlife harassment or feeding is not permitted. 3) Communicate potential problem and/or habituated wildlife to Parks Canada at (780) 852-6155. 4) Store hazardous chemicals (*e.g.* antifreeze) that might be attractants in animal proof containers.
	W-3	Impeded/altered wildlife movement due to encroachment on wildlife movement corridors, creation of barriers to wildlife movement, habitat fragmentation	1) Minimize barriers to movement including equipment and human presence during daylight hours. 2) Evaluate the need for all fences. 3) Construct fences and orient in such a manner to reduce impacts on wildlife movement. Consult with Parks Canada Wildlife Conflict Specialist to determine appropriate fence design and location.
	W-4	Loss of habitat	1) Retain vegetation where possible, especially trees and shrubs. 2) Clear only minimum area required.
	W-6	Decreased wildlife abundance due to direct mortality	1) Observe local speed limits.
Cultural Heritage	C-1	Loss or disruption of heritage, archaeological and paleontological features	1) Consult with Parks Canada archaeologists to determine potential at the site. 2) If the potential to disturb archaeological resources exists, ground disturbance activities should be adapted to avoid these areas if possible. 3) If any artifacts are uncovered, stop work until a Parks Canada archaeologist is consulted.
Socio-Economic Conditions	SE-1	Disruption to park visitors, residents and businesses due to increased noise and traffic, changes in air, water quality and aesthetics	1) Evaluate site layout, access routes and construction activities to minimize their visual impact. 2) Limit noise producing activities to daylight hours. 3) Outline traffic control measures and assess the need for flagging personnel. 4) Store materials within the confines of the work site.

General Activities			
Environmental Component	Code	Description of Effect	Mitigation
Human Health	HH-1	Injuries to public and workers arising from a change in the environment	1) All workers must have the required protective equipment for the job and be trained in accordance with the provisions included in the *Alberta Occupational Health and Safety Act* and *Workers Compensation Board.* 2) First Aid kits must be available on all job sites. 3) All trenches or ditches left unattended overnight must be fenced. 4) Outline traffic control measures and assess the need for flagging personnel. 5) All road signage must be in accordance with provincial standards. 6) Call utility companies to identify buried resources/lines.

Table 5.4 Environmental Effects and Mitigation Measures of Routine Front country Projects by Physical Activity: Site Preparation

Site Preparation			
Environmental Component	Code	Description of Effect	Mitigation
Air Quality and Noise	A-1	Decreased ambient air quality	1) Avoid site preparation during dry and windy periods. 2) Unnecessary idling of equipment, including trucks will not be permitted. 3) Cover and contain fine particulate materials during transportation to and from the site and during storage. 4) Minimize use of propane for thawing by scheduling activities for spring/summer/fall.
	A-2	Increased ambient noise levels	1) Confine "noise" activities to daylight hours.
Soils and Topography	S-1	Changes in slopes, landforms and landscape diversity	1) Assess slope stability (based on slope length, soil texture, steepness, soil depth). Adjust activities to avoid these areas if possible (particularly where slopes are 15 degrees or greater and where soils are shallow and likely to move with disturbance). 2) Hand clear on steep slopes that do not require grading. Wait to clear steep slopes until immediately before scheduled construction and reclaim immediately afterwards. 3) Use appropriate geo-technical control measures to stabilize slopes.
	S-2	Soil compaction and rutting	1) Halt work during excessive rainfall events. 2) In sensitive areas, use equipment of low bearing weight, low PSI tires or tracked vehicles. 3) Use existing roads/disturbed areas for access and to travel through the work site.
	S-4	Loss of topsoil, topsoil and subsoil mixing, soil erosion, slope instability	1) Clear minimum area necessary. Where possible, leave stumps and roots in place. 2) Prepare Sediment Control and Erosion Plan where applicable. 3) Stabilize slopes as appropriate for local site conditions. Possible methods include: armour stones, crib walls, erosion control blankets, straw bales, sediment fencing – install prior to construction. 4) Topsoil separation (10-15 cm) is required. 5) Topsoil will be stored away from any slopes, subsoils, construction activities and day to day operations. 6) Create interceptor swales to divert runoff from the top of erodable slopes. 7) Minimize the amount of time that excavations and trenches remain open. 8) Dewater all excavations at appropriate locations.
	S-6	Soil contamination – leaks, accidental spills or historic	1) If any contamination is uncovered during excavation, investigate and identify the source, properly remove the contaminated soil and dispose of it in a certified landfill. 2) Prepare an appropriate Spill Response Plan and ensure spill contingency equipment and measures are in place before work begins.
Hydrological and Aquatic Resources	H-1	Adverse modifications to surface drainage patterns; stormwater runoff volumes and rate of runoff; stream or shoreline morphology; water flow volumes, levels and rates	1) Retain vegetated buffer around waterbodies. 2) Minimize changes to the ground surface that affect its infiltration and runoff characteristics. 3) Maintain effective surface drainage upon completion of the project, which may include re-establishment of, or improvement to, the original site drainage.
	H-2	Changes in groundwater flow patterns, recharge and levels	1) Avoid intercepting aquifers when drilling or excavating. 2) Maintain surface drainage, ponding, existing soil and groundwater conditions in groundwater recharge area.

Site Preparation			
Environmental Component	Code	Description of Effect	Mitigation
	H-3	Reduced water quality and clarity due to increased erosion, sedimentation, transport of debris, point or non-point sources of pollution	1) Properly seal all boreholes as per provincial standards. 2) Minimize clearing, grubbing and grading near water bodies. 3) Dewatering directly into a waterbody, sanitary or stormwater system is not permitted. Sediment must settle out or be filtered before water from an excavation is allowed to enter a drainage pathway. 4) Dewatering onto vegetated areas is permitted provided that water velocity is controlled to dissipate energy, prevent soil erosion and allow for infiltration, and dewatering structures are continuously monitored to ensure no damage is being done to soil or vegetation. Water entering the watercourse should be equivalent or better than the background quality on the watercourse.
	H-6	Loss of spawning or breeding habitat and/or changes in abundance and diversity of aquatic flora and fauna due to decreased water quality and physical damage to aquatic habitat	1) Avoid work during critical breeding periods for amphibians (April to June). 2) No work should occur within 30 m of a waterbody.
Vegetation	V-1	Damage to and/or removal of vegetation	1) Minimize area cleared. Clearly mark area to be cleared with flagging tape and/or temporary fencing. 2) Retain vegetation where possible, especially trees and shrubs. 3) During grubbing and stripping, minimize damage to trees and roots on the edges of the cleared area. 4) Use existing roadways/disturbed areas for site access and travel within the site. 5) Cut trees so that they fall within the cleared perimeter. 6) Salvage and replant shrubs and small trees. 7) Fencing around trees to be retained must be installed beyond the tree's dripline. 8) Ensure excavated material does not damage or bury plant material that is to be retained onsite or in adjacent areas; use filter cloth to separate. 9) Careful machine operation is required to ensure damage to surrounding vegetation does not occur. 10) Strategic vegetation clearing (*e.g.* removal of buffalo berries) should be considered in areas with high human/bear conflict. 11) Removal of Douglas fir trees should be done in consultation with Parks Canada staff.
	V-2	Introduction of non native invasive plant species	1) Equipment should be pressure washed before arriving at the work site. 2) Mechanical removal of weed infestations prior to grubbing/stripping to avoid tracking weed propagules throughout the work site. 3) Revegetate at the first opportunity.
Wildlife	W-1	Sensory disturbance causing displacement/habitat avoidance	1) Consult with Parks Canada to discuss any localized wildlife concerns. 2) When working adjacent to undisturbed areas, especially wildlife movement corridors and natural wetlands, restrict activity to daylight hours (dusk and dawn are critical times for wildlife). 3) Clear only the minimum area required. 4) Strategic vegetation clearing (*e.g.* removal of buffalo berries) should be considered in areas with high human/bear conflict.

Site Preparation			
Environmental Component	Code	Description of Effect	Mitigation
	W-3	Impeded/altered wildlife movement due to encroachment on wildlife movement corridors, creation of barriers to wildlife movement, habitat fragmentation	1) Minimize barriers to movement including equipment and human presence during daylight hours. 2) Evaluate the need for all fences. 3) Construct fences and orient in such a manner to reduce impacts on wildlife movement. Consult with Parks Canada Wildlife Conflict Specialist to determine appropriate fence design and location.
	W-4	Loss of habitat (food and cover)	1) Retain vegetation where possible, especially trees and shrubs. 2) Clear only the minimum area required.
	W-5	Damage to nests and/or disruption of nesting birds	1) Conduct any clearing outside of nesting season for migratory birds known to breed in the area. 2) A qualified biologist must confirm the presence of migratory birds if they are suspected in the project area. An exclusion window appropriate to the species must be applied if necessary. 3) If clearing must take place during the breeding/nesting season, sweep for bird nests before commencing work. Young birds must be allowed to fledge before nests are disturbed. Work must not violate Section 6 of the *Migratory Birds Regulations*.
	W-6	Decreased wildlife abundance due to direct mortality from physical activities	1) Observe local speed limits. Drive during daylight hours. 2) Minimize the time boreholes or test pits remain open in order to reduce small terrestrial wildlife mortality. Properly seal boreholes and fit PVC pipes. 3) Fence excavations to prevent injury to wildlife. 4) Investigate for presence of amphibians in manholes/trenches before commencing work. 5) Consider posting wildlife signs to reduce vehicle speeds and increase driver awareness near construction areas where wildlife are present. 6) Educate crews that feeding/harassing wildlife is not permitted. Food and garbage must be stored in wildlife proof containers.
Cultural Heritage	C-1	Loss or disruption of heritage, archaeological and paleontological features	1) Consult with Parks Canada archaeologists to determine archaeological potential at the site. 2) If the potential to disturb archaeological resources exists, ground disturbance activities should be adapted to avoid these areas. 3) If any artifacts are uncovered, stop work until a Parks Canada archaeologist is consulted.
Socio-Economic Conditions	SE-1	Disruption to park visitors, residents and businesses due to increased noise and traffic, changes in air, water quality and aesthetics	1) Evaluate site layout, access routes and construction activities to minimize their visual impact. 2) Limit noise producing activities to daylight hours. 3) Outline traffic control measures and assess the need for flagging personnel. 4) Store materials within the confines of the work site. 5) Time construction activities to minimize vehicle conflicts. 6) Heavy equipment operated on paved surfaces should be equipped with street pads or some kind of barrier to protect pavement. 7) The proponent is responsible for site security at all times.
Human Health	HH-1	Injuries to public and workers arising from a change in the environment	1) All trenches or ditches left unattended overnight must be fenced. 2) All workers must have the required protective equipment for the job and be trained in accordance with the provisions included in the *Alberta Occupational Health and Safety Act* and *Workers Compensation Board.*

Site Preparation			
Environmental Component	Code	Description of Effect	Mitigation
			3) First Aid kits must be available on all job sites. 4) Outline traffic control measures and assess the need for flagging personnel. 5) All road signage must be in accordance with provincial standards. 6) Call utility companies to identify buried resources/lines.

Table 5.5 Environmental Effects and Mitigation Measures of Routine Front country Projects by Physical Activity: Buildings and other structures

Buildings and other structures			
Environmental Component	Code	Description of Effect	Mitigation
Air Quality and Noise	A-1	Decreased ambient air quality	1) Unnecessary idling of equipment, including trucks will not be permitted. 2) Minimize use of propane for thawing by scheduling activities for spring/summer/fall. 3) Identify energy and water conservation opportunities for building design(low flow fixtures, low energy heating and lighting) and outdoor requirements (yard lighting, drip irrigation).
	A-2	Increased ambient noise levels	1) Confine "noise" activities to daylight hours.
Soils and Topography	S-2	Soil compaction and rutting	1) Halt work during excessive rainfall events. 2) In sensitive areas, use equipment of low bearing weight, low PSI tires or tracked vehicles.
	S-3	Ground subsidence or heaving from soil thaw or poor excavation or backfilling.	1) Ensure backfilling is undertaken using suitable materials free of ice and frozen soils and that adequate soil compaction is conducted to avoid ground subsidence. 2) Backfilling should be allowed to settle to prevent subsidence. 3) Provide additional backfill where subsidence has occurred. 4) In areas with high groundwater levels, ensure that soils susceptible to frost heave (generally fine sands to silty soils) are not used for backfill.
	S-6	Soil contamination – leaks, accidental spills or historic	1) When building demolition is required, check for hazardous materials (*e.g.* asbestos, PCBs, *etc.*). 2) If any contamination is uncovered during excavation, investigate and identify the source, properly remove the contaminated soil and dispose of it in a certified landfill. 3) Prepare an appropriate Spill Response Plan and ensure spill contingency equipment and measures are in place before work begins.
Hydrological and Aquatic Resources	H-1	Adverse modifications to surface drainage patterns; stormwater runoff volumes and rate of runoff; stream or shoreline morphology; water flow volumes, levels and rates	1) Maintain effective surface drainage upon completion of the project, which may include re-establishment of, or improvement to the original site drainage. 2) Minimize changes to the ground surface that affect infiltration and runoff. 3) Retain vegetated buffer around waterbodies.
	H-3	Reduced water quality and clarity due to increased erosion, sedimentation, transport of debris, point or non-point sources of pollution	1) Backfill and compact excavations as soon as possible. Optimize degree of compaction to minimize erosion and allow for revegetation.
	H-4	Introduction of nutrients to waterbodies	1) Wastewater disposal systems must meet the *Alberta Private Sewage Systems Standard of Practice* (1999).

Buildings and other structures			
Environmental Component	Code	Description of Effect	Mitigation
	H-6	Loss of spawning or breeding habitat and/or changes in abundance and diversity of aquatic flora and fauna due to decreased water quality and physical damage to aquatic habitat	1) Avoid work during critical breeding periods for amphibians (April to June). 2) No work should occur within 30 m of a waterbody.
Wildlife	W-1	Sensory disturbance causing displacement/habitat avoidance	1) Consult with Parks Canada to discuss any localized wildlife concerns. 2) When working adjacent to undisturbed areas, especially wildlife movement corridors and natural wetlands, restrict activity to daylight hours (dusk and dawn are critical times for wildlife). 3) Clear only the minimum area required. 4) Strategic vegetation clearing (*e.g.* removal of buffalo berries) should be considered in areas with high human/bear conflict.
	W-2	Wildlife habituation/attraction to artificial food sources	1) Keep site free of garbage and dispose of garbage in wildlife proof containers or remove daily from the site. 2) Educate workers that wildlife harassment or feeding is not permitted. 3) Communicate potential problem and/or habituated wildlife to Parks Canada at (780) 852-6155. 4) Store hazardous chemicals (*e.g.* antifreeze) that might be attractants in animal proof containers.
	W-3	Impeded/altered wildlife movement due to encroachment on wildlife movement corridors	1) Evaluate the need for permanent fences. 2) Construct fences and orient in such a manner to reduce impacts on wildlife movement. Consult Parks Canada Wildlife Conflict Specialist to determine appropriate fence design and location.
Cultural Heritage	C-1	Loss or disruption of heritage, archaeological and paleontological features	1) Consult with Parks Canada archaeologists to determine archaeological potential at the site. 2) If the potential to disturb archaeological resources exists, ground disturbance activities should be adapted to avoid these areas. 3) If any artifacts are uncovered, stop work until a Parks Canada archaeologist is consulted. 4) All buildings over 40 years old, including picnic shelters, must be reviewed by FHBRO prior to disposal or renovation. 5) Replacement should only occur when the major part of an element is decayed beyond repair. 6) The substitution of maintenance-free materials such as aluminium, fibreglass or vinyl for existing materials is not recommended. 7) All maintenance measures should be non abrasive, non destructive and environmentally benign. 8) The design of additions or alterations to a building must respect its heritage character. 9) Where the integrity of the relationship between a building and its associated landscape is relatively unaltererd, strong efforts should be made to retain this relationship and the materials that contribute to it. 10) Consult the FHBRO Code of Practice for complete details.

Buildings and other structures			
Environmental Component	Code	Description of Effect	Mitigation
Socio-Economic Conditions	SE-1	Disruption to park visitors, residents and businesses due to increased noise and traffic, changes in air, water quality and aesthetics	1) Evaluate site layout, access routes and construction activities to minimize their visual impact. 2) Limit noise producing activities to daylight hours. 3) Outline traffic control measures and assess the need for flagging personnel. 4) Store materials within the confines of the work site. 5) Time construction activities to minimize vehicle conflicts. 6) Heavy equipment operated on paved surfaces should be equipped with street pads or some kind of barrier to protect pavement. 7) The proponent is responsible for site security at all times.
Human Health	HH-1	Injuries to public and workers arising from a change in the environment	1) All trenches or ditches left unattended overnight must be fenced. 2) All workers must have the required protective equipment for the job and be trained in accordance with the provisions included in the *Alberta Occupational Health and Safety Act* and *Workers Compensation Board.* 3) First Aid kits must be available on all job sites. 4) Outline traffic control measures and assess the need for flagging personnel. 5) All road signage must be in accordance with provincial standards.

Table 5.6 Environmental Effects and Mitigation Measures of Routine Front country Projects by Physical Activity: Service lines

Service Lines			
Environmental Component	Code	Description of Effect	Mitigation
Air Quality and Noise	A-1	Decreased ambient air quality	1) Avoid site preparation during dry and windy periods. 2) Unnecessary idling of equipment, including trucks will not be permitted. 3) Minimize use of propane for thawing by scheduling activities for spring/summer/fall.
	A-2	Increased ambient noise levels	1) Confine "noise" activities to daylight hours.
Soils and Topography	S-2	Soil compaction and rutting	1) Halt work during excessive rainfall events. 2) In sensitive areas, use equipment of low bearing weight, low PSI tires or tracked vehicles. 3) Use existing roads/disturbed areas for access and to travel through the work site.
	S-3	Ground subsidence from soil thaw, poor excavation and backfilling practices; ground surface mounding/structure movement	1) Ensure backfilling is undertaken using suitable materials free of ice and frozen soils and that adequate soil compaction is conducted to avoid ground subsidence. 2) Provide additional backfill where subsidence has occurred. 3) In areas with high groundwater levels, ensure that soils susceptible to frost heave (generally fine sands to silty soils) are not used for backfill. 4) Backfilling should be allowed to settle to prevent subsidence.
	S-4	Loss of topsoil, topsoil and subsoil mixing, soil erosion	1) Avoid equipment operation on steep or unstable slopes. 2) Keep site clearing to a minimum to maintain vegetative cover. 3) Phase work to minimize exposure of disturbed areas. 4) Direct runoff and overland flow away from working areas and areas with exposed soils. 5) If a prolonged period of exposure is expected, protect exposed soils with temporary cover (*e.g.* mulch, gravel, erosion blanket, vegetative cover). 6) Halt activity on exposed soils during periods of high rainfall and runoff. 7) Assess site for erosion control requirements and implement control measures as required (*e.g.* tarps, straw bales, erosion blankets, silt fencing). 8) Topsoil separation (10-15 cm) is required. 9) Store topsoil separately from subsoil and other construction materials. 10) Cover stockpiles of soil with polyethylene sheeting, tarps or vegetative cover. 11) Install trench breakers of impervious material to direct groundwater seepage to the surface. 12) Minimize the length of exposed trench and exposure time. 13) Use interceptor ditches or berms upgradient of construction to divert overland flow around exposed soil surfaces. 14) Line steep ditches with filter fabric, rock or polyethylene lining to prevent channel erosion. 15) Delay trenching until just prior to utility installation. 16) Soil that has been temporarily moved away from power poles will be replaced.

Service Lines			
Environmental Component	Code	Description of Effect	Mitigation
	S-6	Soil contamination – leaks, accidental or historic	1) Soil and/or poles contaminated from the use of creosote or other wood preservatives will be contained and disposed of at an appropriate facility.
Hydrological and Aquatic Resources	H-2	Changes in groundwater flow patterns, recharge and levels	1) Pipes to be abandoned must be pressure tested for leaks and seled with no part of the line exposed above the surface.
	H-3	Reduced water quality and clarity due to increased erosion, sedimentation, transport of debris, point or non-point sources of pollution	1) Backfill and compact excavations as soon as possible. Optimize degree of compaction to minimize erosion and allow for revegetation. 2) When constructing and/or upgrading storm sewers, install oil/contaminant sumps. 3) Pressure treated wood is permitted at locations >100 m from waterbodies, otherwise use green wood or cedar.
	H-6	Loss of spawning or breeding habitat and/or changes in abundance and diversity of aquatic flora and fauna due to decreased water quality and physical damage to aquatic habitat	1) Avoid work during critical breeding periods for amphibians (April to June). 2) No work should occur within 30 m of a waterbody.
Vegetation	V-1	Damage to and/or removal of vegetation	1) Minimize area cleared. Clearly mark area to be cleared with flagging tape and/or temporary fencing. 2) Retain vegetation where possible, especially trees and shrubs. 3) During grubbing and stripping, minimize damage to trees and roots on the edges of the cleared area. 4) Use existing roadways/disturbed areas for site access and travel within the site. 5) Cut trees so that they fall within the cleared perimeter. 6) Salvage and replant shrubs and small trees. 7) Fencing around trees to be retained must be installed beyond the tree's dripline. 8) Ensure excavated material does not damage or bury plant material that is to be retained onsite or in adjacent areas; use filter cloth to separate. 9) Careful machine operation is required to ensure damage to surrounding vegetation does not occur. 10) Strategic vegetation clearing (*e.g*. removal of buffalo berries) should be considered in areas with high human/bear conflict. 11) Removal of Douglas fir trees should be done in consultation with Parks Canada staff.
	V-2	Introduction of non native invasive plant species	1) Equipment should be pressure washed before arriving at the work site. 2) Mechanical removal of weed infestations prior to stripping/excavation to avoid tracking weed propagules throughout the work site.

Service Lines			
Environmental Component	Code	Description of Effect	Mitigation
Wildlife	W-1	Sensory disturbance causing displacement/habitat avoidance	1) Consult with Parks Canada to discuss any localized wildlife concerns. 2) When working adjacent to undisturbed areas, especially wildlife movement corridors and natural wetlands, restrict activity to daylight hours (dusk and dawn are critical times for wildlife). 3) Clear only the minimum area required.
	W-3	Impeded/altered wildlife movement due to encroachment on wildlife movement corridors, creation of barriers to wildlife movement, habitat fragmentation	1) Minimize barriers to movement including equipment and human presence during daylight hours. 2) All trenches should be backfilled as soon as possible. 3) Evaluate the need for all fences. 4) Construct fences and orient in such a manner to reduce impacts on wildlife movement. Consult with Parks Canada Wildlife Conflict Specialist to determine appropriate fence design and location.
	W-6	Decreased wildlife abundance due to direct mortality from physical activities	1) Observe local speed limits. Drive during daylight hours. 2) Investigate for presence of amphibians in manholes/trenches before commencing work. 3) Fence excavations to prevent injury to wildlife.
Cultural Heritage	C-1	Loss or disruption of heritage, archaeological and paleontological features	1) Consult with Parks Canada archaeologists to determine archaeological potential at the site. 2) If the potential to disturb archaeological resources exists, ground disturbance activities should be adapted to avoid these areas. 3) If any artifacts are uncovered, stop work until a Parks Canada archaeologist is consulted. 4) The design of additions or alterations to a building must respect its heritage character. 5) Where the integrity of the relationship between a building and its associated landscape is relatively unaltererd, strong efforts should be made to retain this relationship and the materials that contribute to it.
Socio-Economic Conditions	SE-1	Disruption to park visitors, residents and businesses due to increased noise and traffic, changes in air, water quality and aesthetics	1) Evaluate site layout, access routes and construction activities to minimize their visual impact. 2) Limit noise producing activities to daylight hours. 3) Outline traffic control measures and assess the need for flagging personnel. 4) Store materials within the confines of the work site.
Human Health	HH-1	Injuries to public and workers arising from a change in the environment	1) Call utility companies to identify buried resources/lines. 2) All trenches or ditches left unattended overnight must be fenced. 3) All workers must have the required protective equipment for the job and be trained in accordance with the provisions included in the *Alberta Occupational Health and Safety Act* and *Workers Compensation Board.* 4) First Aid kits must be available on all job sites. 5) Outline traffic control measures and assess the need for flagging personnel. 6) All road signage must be in accordance with provincial standards.

Table 5.7 Environmental Effects and Mitigation Measures of Routine Front country Projects by Physical Activity: Roads, Parking Lots, Pulloffs, Sidewalks and Trails

Roads, Parking Lots, Pulloffs, Sidewalks and Trails			
Environmental Component	Code	Description of Effect	Mitigation
Air Quality and Noise	A-1	Decreased ambient air quality	1) Avoid site preparation during dry and windy periods. 2) Unnecessary idling of equipment, including trucks will not be permitted.
	A-2	Increased ambient noise levels	1) Confine "noise" activities to daylight hours.
Soils and Topography	S-1	Changes in slopes, landforms and landscape diversity	1) Assess slope stability (based on slope length, soil texture, steepness, soil depth). Adjust activities to avoid these areas if possible (particularly where slopes are 15 degrees or greater and where soils are shallow and likely to move with disturbance). 2) Hand clear on steep slopes that do not require grading. Wait to clear steep slopes until immediately before scheduled construction and reclaim immediately afterwards. 3) Use appropriate geo-technical control measures to stabilize slopes.
	S-2	Soil compaction and rutting	1) Halt work during excessive rainfall events. 2) In sensitive areas, use equipment of low bearing weight, low PSI tires or tracked vehicles.
	S-3	Ground subsidence from soil thaw, poor excavation and backfilling practices; ground surface mounding/structure movement	1) Ensure backfilling is undertaken using suitable materials free of ice and frozen soils and that adequate soil compaction is conducted to avoid ground subsidence. 2) Provide additional backfill where subsidence has occurred. 3) In areas with high groundwater levels, ensure that soils susceptible to frost heave (generally fine sands to silty soils) are not used for backfill.
	S-4	Loss of topsoil, topsoil and subsoil mixing, soil erosion	1) Clear minimum area necessary. Where possible, leave stumps and roots in place. 2) Prepare Sediment Control and Erosion Plan where applicable. 3) Stabilize slopes as appropriate for local site conditions. Possible methods include: armour stones, crib walls, erosion control blankets, straw bales, sediment fencing – install prior to construction. 4) Topsoil separation (10-15 cm) is required. 5) Topsoil will be stored away from any slopes, subsoils, construction activities and day to day operations. 6) Install trench breakers of impervious material to direct groundwater seepage to the surface. 7) Minimize the length of exposed trench and exposure time. 8) Use interceptor ditches or berms upgradient of construction to divert overland flow around exposed soil surfaces. 9) Line steep ditches with filter fabric, rock or polyethylene lining to prevent channel erosion. 10) Delay trenching until just prior to facility installation.

Roads, Parking Lots, Pulloffs, Sidewalks and Trails			
Environmental Component	Code	Description of Effect	Mitigation
	S-6	Soil contamination – leaks, accidental spills or historic	1) Do not use oil-based dust suppressants. 2) Paints with minimal amounts of potentially harmful substances, particularly water soluble organic chemicals, lead and other metals, are preferred. Rust inhibiting paints should be chosen over barrier types of paints do reduce the total volume of paint required over the long-term. 3) Hand painting is preferred over spray painting. Where sprayers are used, they must be properly adjusted and shielded to minimize the amounts of paint lost to overspray. 4) Do not spray in high winds. 5) Pressure treated wood is permitted at locations >100 m from waterbodies, otherwise use green wood or cedar.
Hydrological and Aquatic Resources	H-1	Adverse modifications to surface drainage patterns; stormwater runoff volumes and rate of runoff; stream or shoreline morphology; water flow volumes, levels and rates	1) Maintain effective surface drainage upon completion of the project, which may include re-establishment of, or improvement to the original site drainage. 2) Minimize changes to the ground surface that affect infiltration and runoff. 3) Retain vegetated buffer around waterbodies.
	H-3	Reduced water quality and clarity due to increased erosion, sedimentation, transport of debris, point or non-point sources of pollution	1) Apply seal coat to dry surface only and not prior to (within 24 hours) or during rainfall. 2) Concrete should be ready mix. If concrete is mixed onsite, concrete wash water should be used in subsequent mixes and final wash water contained and deposited at the Transfer station. 3) When constructing and/or upgrading storm sewers, install oil/contaminant sumps.
	H-5	Physical alteration of waterbody substrates	1) Store and contain stockpiles a minimum of 2 m from water bodies to prevent material loss.
	H-6	Loss of spawning or breeding habitat and/or changes in abundance and diversity of aquatic flora and fauna due to decreased water quality and physical damage to aquatic habitat	1) Avoid work during critical breeding periods for amphibians (April to June). 2) No work should occur within 30 m of a waterbody.

Roads, Parking Lots, Pulloffs, Sidewalks and Trails			
Environmental Component	Code	Description of Effect	Mitigation
Vegetation	V-1	Damage to and/or removal of vegetation	1) Minimize area cleared. Clearly mark area to be cleared with flagging tape and/or temporary fencing. 2) Retain vegetation where possible, especially trees and shrubs. 3) During grubbing and stripping, minimize damage to trees and roots on the edges of the cleared area. 4) Use existing roadways/disturbed areas for site access and travel within the site. 5) Cut trees so that they fall within the cleared perimeter. 6) Salvage and replant shrubs and small trees. 7) Fencing around trees to be retained must be installed beyond the tree's dripline. 8) Ensure excavated material does not damage or bury plant material that is to be retained onsite or in adjacent areas; use filter cloth to separate. 9) Careful machine operation is required to ensure damage to surrounding vegetation does not occur. 10) Strategic vegetation clearing (*e.g.* removal of buffalo berries) should be considered in areas with high human/bear conflict. 11) Removal of Douglas fir trees should be done in consultation with Parks Canada staff. 12) Maintain surface drainage, ponding, existing soil and groundcover conditions in groundwater recharge areas.
	V-2	Introduction of non native invasive plant species	1) Equipment should be pressure washed before arriving at the work site. 2) Mechanical removal of weed infestations prior to grubbing/stripping to avoid tracking weed propagules throughout the work site. 3) Revegetate at the first opportunity.
Wildlife	W-1	Sensory disturbance causing displacement/habitat avoidance	1) Consult with Parks Canada to discuss any localized wildlife concerns. 2) When working adjacent to undisturbed areas, especially wildlife movement corridors and natural wetlands, restrict activity to daylight hours (dusk and dawn are critical times for wildlife). 3) Clear only the minimum area required.
	W-3	Impeded/altered wildlife movement due to encroachment on wildlife movement corridors, creation of barriers to wildlife movement, habitat fragmentation	1) Minimize barriers to movement including equipment and human presence during daylight hours. 2) Evaluate the need for all fences. 3) Construct fences and orient in such a manner to reduce impacts on wildlife movement. Consult with Parks Canada Wildlife Conflict Specialist to determine appropriate fence design and location.
	W-4	Loss of habitat (food and cover)	1) Retain vegetation where possible, especially trees and shrubs. 2) Clear only the minimum area required.
Cultural Heritage	C-1	Loss or disruption of heritage, archaeological and paleontological features	1) Consult with Parks Canada archaeologists to determine archaeological potential at the site. 2) If the potential to disturb archaeological resources exists, ground disturbance activities should be adapted to avoid these areas. 3) If any artifacts are uncovered, stop work until a Parks Canada archaeologist is consulted.

Roads, Parking Lots, Pulloffs, Sidewalks and Trails			
Environmental Component	Code	Description of Effect	Mitigation
Socio-Economic Conditions	SE-1	Disruption to park visitors, residents and businesses due to increased noise and traffic, changes in air, water quality and aesthetics	1) Evaluate site layout, access routes and construction activities to minimize their visual impact. 2) Limit noise producing activities to daylight hours. 3) Outline traffic control measures and assess the need for flagging personnel. 4) Store materials within the confines of the work site. 5) Use appropriate signage for closed facilities (trails, pullouts, picnic areas) and identify detours/alternatives.
Human Health	HH-1	Injuries to public and workers arising from a change in the environment	1) All trenches or ditches left unattended overnight must be fenced. 2) All workers must have the required protective equipment for the job and be trained in accordance with the provisions included in the *Alberta Occupational Health and Safety Act* and *Workers Compensation Board.* 3) First Aid kits must be available on all job sites.

Table 5.8 Environmental Effects and Mitigation Measures of Routine Front country Projects by Physical Activity: Site Restoration/Reclamation

Site Restoration/Reclamation			
Environmental Component	Code	Description of Effect	Mitigation
Air Quality and Noise	A-1	Decreased ambient air quality	1) Avoid restoration work during dry and windy periods if the potential for soil erosion exists. 2) Unnecessary idling of equipment, including trucks will not be permitted.
	A-2	Increased ambient noise levels	1) Confine "noise" activities to daylight hours.
Soils and Topography	S-2	Soil compaction and rutting	1) Halt work during excessive rainfall events. 2) In sensitive areas, use equipment of low bearing weight, low PSI tires or tracked vehicles. 3) Use existing roads/disturbed areas for access and to travel through the work site. 4) Cultivate affected areas before seeding.
	S-3	Ground subsidence or heaving from soil thaw or poor excavation or backfilling.	1) Ensure backfilling is undertaken using suitable materials free of ice and frozen soils and that adequate soil compaction is conducted to avoid ground subsidence. 2) Backfilling should be allowed to settle to prevent subsidence. 3) Provide additional backfill where subsidence has occurred. 4) In areas with high groundwater levels, ensure that soils susceptible to frost heave (generally fine sands to silty soils) are not used for backfill.
	S-4	Loss of topsoil, topsoil and subsoil mixing, soil erosion	1) Install trench breakers of impervious material to direct groundwater seepage to the surface. 2) Use interceptor ditches or berms upgradient of construction to divert overland flow around exposed soil surfaces. 3) Line steep ditches with filter fabric, rock or polyethylene lining to prevent channel erosion. 4) Topsoil should be replaced in the order it was removed.
Hydrological and Aquatic Resources	H-1	Adverse modifications to surface drainage patterns; stormwater runoff volumes and rate of runoff; stream or shoreline morphology; water flow volumes, levels and rates	1) Maintain effective surface drainage upon completion of the project, which may include re-establishment of, or improvement to the original site drainage.
	H-3	Reduced water quality and clarity due to increased erosion, sedimentation, transport of debris, point or non-point sources of pollution	1) Accurately assess the need for chemical during site revegetation. An approved Integrated Pest Management Plan should be applied where necessary. 2) Do not use herbicides in areas where residue/runoff may enter a waterbody or drainage pathway.
	H-4	Introduction of nutrients to waterbodies	1) Limit use of fertilizer to re-establish groundcover. 2) Do not use herbicides in areas where residue/runoff may enter a waterbody or drainage pathway.

Site Restoration/Reclamation			
Environmental Component	Code	Description of Effect	Mitigation
	H-6	Loss of spawning or breeding habitat and/or changes in abundance and diversity of aquatic flora and fauna due to decreased water quality and physical damage to aquatic habitat	1) Avoid work during critical breeding periods for amphibians (April to June). 2) No work should occur within 30 m of a waterbody.
Vegetation	V-2	Introduction of non-native invasive plant species	1) Use certified weed free topsoil. Monitor the site for three years following landscaping and control for weeds. 2) Revegetate with Parks Canada recommended seed mix. 3) Revegetate exposed areas at the first opportunity. 4) Apply an approved Integrated Pest Management Plan if necessary.
Wildlife	W-1	Sensory disturbance causing displacement/habitat avoidance	1) When working adjacent to undisturbed areas, especially wildlife movement corridors and natural wetlands, restrict activity to daylight hours (dusk and dawn are critical times for wildlife). 2) Clear only the minimum area required. 3) Revegetate with species which will not attract wildlife.
Socio-Economic Conditions	SE-1	Disruption to park visitors, residents and businesses due to increased noise and traffic, changes in air, water quality and aesthetics	1) Evaluate site layout, access routes and construction activities to minimize their visual impact. 2) Limit noise producing activities to daylight hours. 3) Outline traffic control measures and assess the need for flagging personnel. 4) Store materials within the confines of the work site. 5) All waste should be disposed of at the Transfer Station, sorted to promote reuse/recycling of materials. 6) Complete thorough clean up of the site, including removal of general litter, survey stakes, flagging tape etc. at project completion.

5.3 Accidents and Malfunctions

Adverse environmental effects of accidents and malfunctions are included among the potential environmental effects listed in Table 5.1. Accidents and malfunctions fall into four main categories:

- vehicle collisions,
- fire,
- structural failures and
- spills and/or leaks.

The potential environmental effects of these events are:

- reduced air quality,
- soil contamination and sterilization,
- impacts to water quality and nutrient loading,
- damage to vegetation,
- loss of heritage features,
- disruption to park visitors, residents and businesses and
- human injury.

No significant adverse environmental effects on the project resulting from the accidents/malfunctions are likely with proper implementation of the identified mitigations measures in Tables 5.3 to 5.8. For example, vehicle collisions can be avoided by observing local speed limits and ensuring access routes are well-defined. Fires can be prevented through proper on-site storage of hazardous materials and regular maintenance of equipment.

5.4 Effects of the Environment on the Project

Under the *Canadian Environmental Assessment Act*, an environmental assessment must consider the potential effects the environment may have on the project as part of the evaluation of effects. Weather-related events, such as extreme rainfall, flooding, wildfire, extreme winds and landslides, may damage physical works and delay project activities. Most of the environmental effects of these events as they relate to routine projects (*e.g.* increased run off from the work site causing sedimentation) are anticipated in this report.
No significant adverse environmental effects on the project resulting from the existing environment are likely with proper implementation of the identified mitigation measures described in Tables 5.3 to 5.8.

5.5 Residual Environmental Effects

Residual environmental effects are those effects that are likely to occur after mitigation measures are implemented. Table 5.9 defines the criteria used to assess the significance of each residual environmental effect described in Table 5.10. If the appropriate mitigations measures identified in Tables 5.3 to 5.8 are properly implemented, residual adverse environmental effects are not likely to occur.

Table 5.9 Definitions of Criteria used to Assess Significance of Residual Environmental Effects

Criterion	Level	Definition
Magnitude	Low	There is little discernable change from background conditions
	Moderate	Change is above background conditions, but within thresholds and range of natural variability
	High	Change exceeds thresholds and causes changes beyond the range of natural variability
Geographic Extent	Low	Impacts restricted to site
	Moderate	Impacts extend beyond site, but remain within local area
	High	Impacts extend beyond the local area
Frequency	Low	Occurs once
	Moderate	Occurs more than once or intermittently
	High	Occurs often or continuously
Duration	Low	Impact limited to the construction period
	Moderate	Impact extends beyond the construction period
	High	Impact occurs for the operation/lifetime of the facility
Reversibility	Low	Effect reverses when activity ceases
	Moderate	Effect may be reversed over time
	High	Effect cannot be reversed
Significance	Negligible	Those environmental effects which, after taking into consideration applicable mitigation measures have been assessed to have a "low" level of significance for the majority (i.e. at least 3 out of 5) of the criteria described above, and have not been assessed to be "moderate" or "high" in either the "magnitude" or "reversibility" category. Overall, these effects are not likely to be measurable or noticeable beyond the project site / footprint boundary, are only evident during the site preparation, construction or decommissioning of the project or occur only once, and are completely reversible within a short period of time.
	Minor Adverse	Those environmental effects which, after taking into consideration applicable mitigation measures have been assessed to have a "low" or "moderate" level of significance for the majority of the criteria described above. Any effect that has been assessed as "moderate" or "high" for either "magnitude" or "reversibility" (but not both) is considered to be a minor adverse effect (not significant).
	Significant	Those environmental effects which, after taking into consideration applicable mitigation measures, have a magnitude that is "high" and exhibit any or all of the following: effect extends into areas beyond those adjacent to the project site/footprint boundary; effect is evident beyond the life of the project; effect occurs at regular or frequent intervals; and effect is permanent.

Table 5.10 Significance of Residual Environmental Effects of Routine Front country Projects

Environmental Component	Code	Likely Environmental Effects	Significance Criteria					Significance of Residual Effect
			Magnitude	Geographic Extent	Frequency	Duration	Reversibility	
Air Quality and Noise	A-1	Decreased ambient air quality	L	L	M	L	L	Negligible
	A-2	Increased ambient noise levels	L	L	M	L	L	Negligible
Soils and Topography	S-1	Changes in slopes, landforms and landscape diversity	L	L	L	L	M	Minor Adverse Effect
	S-2	Soil compaction and rutting	L	L	L	L	L	Negligible
	S-3	Ground subsidence and ground surface mounding/structure movement	L	L	L	L	L	Negligible
	S-4	Loss of topsoil, topsoil and subsoil mixing, soil erosion, slope instability	M	L	L	L	L	Minor Adverse Effect
	S-5	Loss of organic matter / soil sterilization	L	L	L	L	M	Minor Adverse Effect
	S-6	Soil contamination	L	L	L	L	L	Negligible
Hydrological and Aquatic Resources	H-1	Adverse modifications to surface drainage patterns; stormwater runoff volumes and rate of runoff; stream or shoreline morphology	L	L	L	L	L	Negligible
	H-2	Changes in groundwater flow patterns, recharge and levels	L	L	L	L	L	Negligible
	H-3	Reduced water quality and clarity	L	M	M	L	L	Negligible
	H-4	Introduction of nutrients into waterbodies	L	M	M	L	L	Negligible
	H-5	Physical alteration of waterbody substrates	L	L	L	M	L	Negligible
	H-6	Loss of spawning or breeding habitat and/or changes in abundance and diversity of aquatic flora and fauna	L	M	L	L	L	Negligible
Vegetation	V-1	Damage to and/or removal of vegetation	M	L	L	M	M	Minor Adverse Effect
	V-2	Introduction of non-native invasive plant species	M	L	L	M	M	Minor Adverse Effect
Wildlife	W-1	Sensory disturbance causing displacement/habitat avoidance	M	L	M	L	L	Minor Adverse Effect
	W-2	Wildlife habituation/attraction to artificial food sources	L	L	L	L	L	Negligible
	W-3	Impeded/altered wildlife movement due to encroachment on wildlife movement corridors, creation of barriers to wildlife movement, habitat fragmentation	L	L	L	L	L	Negligible

Environmental Component	Code	Likely Environmental Effects	Significance Criteria					Significance of Residual Effect
			Magnitude	Geographic Extent	Frequency	Duration	Reversibility	
	W-4	Loss of habitat	L	L	L	H	M	Minor Adverse Effect
	W-5	Damage to nests and/or disruption of nesting birds	L	L	L	L	L	Negligible
	W-6	Decreased wildlife abundance due to direct mortality from physical activities	L	L	L	L	L	Negligible
Physical and Cultural Heritage	C-1	Loss or disruption of heritage, archaeological and paleontological features	L	L	L	L	L	Negligible
Socio-Economic Conditions	SE-1	Disruption to park visitors, residents and businesses due to changes in the environment	L	L	M	L	L	Negligible
Human Health/Public Safety	HH-1	Injuries to public and workers arising from a change in the environment	L	L	L	L	L	Negligible

Five environmental effects categories (changes in slope; loss of topsoil; loss of organic matter; damage to and/or removal of vegetation; and introduction of non native invasive plant species) have the potential to result in *minor adverse effects* due to the fact that the reversibility of the effect would not be immediate, but rather be reversed over a measure of time. However, given that these potential residual environmental effects are likely to occur only in a worst-case scenario situation and can be further minimized over time, they are not considered significant.

The significance evaluation of sensory disturbance to wildlife also resulted in a *minor adverse effects* rating. This is due to the rating of *moderate* under magnitude, however it is expected that sensory disturbance to wildlife in association with routine front country projects would be within thresholds and a range of natural variability. These stressors would cease after the work period, therefore they are not considered significant.

The significance evaluation of habitat loss also resulted in a *minor adverse effects* rating. This is due to the rating of *high* under duration. For projects with the potential for significant habitat loss, it would be essential to determine the rarity of the ecosite (habitat) and any additional stressors on local wildlife. An individual environmental assessment may be required to determine if the project should proceed under those circumstances.

In summary, appropriate mitigation measures should be effective in minimizing environmental effects from routine projects in the Jasper front country to insignificant levels.

5.6 Cumulative Effects

The *Canadian Environmental Assessment Act* requires the consideration of cumulative environmental effects that are likely to result from a project in combination with existing, planned or imminent projects occurring in the same time and space. Cumulative effects are defined as 'the effect on the environment which results from effects of a proposal when combined with those of other past, existing and future projects and activities. These may occur over a certain period of time and distance.' (Hegmann, G. *et al*, 1999). A cumulative effects assessment determines the potential for project effects to combine with other activities in the project area to produce a cumulative impact on the environment. Although project-specific impacts may be small, the combined effects of the project with other effects from existing or planned projects may contribute to cumulative effects. Mitigation measures are intended to minimize project-specific impacts that could contribute to cumulative effects.

Cumulative effects are not expected in the absence of project-specific impacts. The routine projects included in this class screening are typically those with none, or easily mitigable effects, and therefore would not contribute to cumulative impacts. Front country MCSR project activities are generally localized, of short duration and are predicted to have negligible to low negative impacts that are largely mitigable. Such

projects are not considered to contribute to cumulative effects.

Many small activities within the same area have the potential to cause cumulative effects. Many front country facilities are located within the Three Valley Confluence in proximity to transportation corridors such as the Yellowhead Highway and the Canadian National Railway. The routine maintenance projects covered by this MCSR therefore occur in a regional setting where numerous activities that affect the environment are occurring simultaneously. Other activities that could result in similar types of environmental effects, and to which front country maintenance projects may add an incremental cumulative effect include:

- The operation and maintenance of the Yellowhead Highway
- The operation and maintenance of Highway 93;
- The operation and maintenance of Canadian National Railway;
- The operation and maintenance of electrical power transmission and distribution lines;
- The operation and maintenance of oil and gas pipelines; and
- Other Parks Canada activities such as prescribed burns and trail maintenance.

Cumulative environmental effects will be addressed in the CSPR by identifying other projects and activities that may occur within the geographical area and same temporal scale as the proposed front country facility maintenance project. If necessary, such projects will be assessed in combination with the maintenance project for cumulative environmental effects. Additional mitigation will be recommended as required. Significance of cumulative effects evaluation on a project-specific basis is facilitated through the CSPR.

All projects covered by the MCSR must first be in accordance with the Jasper National Park Management Plan. An environmental assessment of the Jasper National Park Management Plan was conducted by Parks Canada (Parks Canada 2000b). It concluded that projects in conformance with the plan will not contribute to significant cumulative effects and will, in some cases, move the Park towards enhanced ecological integrity.

Development of new front country facilities or construction of new roads or buildings are excluded from this MCSR (refer to Section 2.2). As their potential impact and contribution to cumulative effects may be greater than routine maintenance and replacement projects, they require individual assessments, including cumulative effects assessments.

5.7 Follow Up and Monitoring Programs

Parks Canada staff are the proponents for projects at the front country facilities covered by this class screening. A Parks Canada surveillance officer will ensure that mitigation measures and any other conditions of the MCSR are implemented during the project.

Parks Canada will ensure that work crews are familiar with the mitigation measures and any other conditions of approval of the MCSR. This may be accomplished through tailgate meetings or specialized training before the project begins. Parks Canada staff are responsible to audit construction sites to confirm compliance.

Since the projects included in this MCSR are small in scale, routine and located within the boundaries of existing cleared and disturbed areas, long-term site-specific monitoring will not normally be required.

6 Implementation of the Class Screening

6.1 Consultation and the Class Screening Process

During the development of this MCSR consultations were undertaken with the following:

- Local non-government environmental organizations in Jasper were notified of the draft MCSR, and were requested to provide feedback.
- Environment Canada and the Department of Fisheries and Oceans were provided the draft MCSR to review and comment on prior to the submission of the final draft to the Agency.

Comments received during the entire process were considered and incorporated into the final draft report, as appropriate.

Following the submission of the final draft, the Agency conducted a 30-day public consultation on the MCSR. All comments received were taken into consideration and incorporated in to the final MCSR, as appropriate, prior to its declaration by the Agency.

6.2 Canadian Environmental Assessment Registry

The purpose of the *Canadian Environmental Assessment Registry* (the Registry) is to facilitate public access to records relating to environmental assessments and to provide notice in a timely manner of assessments. The Registry consists of two components – an Internet site and a project file.

The Internet site is administered by the Agency. The RA and the Agency are required to post specific records to the Internet site in relation to a MCSR and any related CSPRs. Upon declaration of the MCSR, the Agency requires responsible authorities to post on the Internet site of the Registry, at least every three months, a statement of projects for which a MCSR was used. The statement should be in the form of a list of projects, and will include:

- the title of each project for which the MCSR was used;
- the location of each project;
- a contact number; and
- the date of the decision.

Note: The schedule for posting a statement is:

- July 15 - (for projects assessed from April 1 to June 30)
- October 15 - (for projects assessed from July 1 to September 30)
- January 15 - (for projects assessed from October 1 to December 31)
- April 15 – (for projects assessed from January 1 to March 31).

The project file component is a file maintained by the responsible authority during an environmental assessment. The project file must include a copy of the MCSR, including CSPRs and all records included on the Internet site. The responsible authority must maintain the file,

ensure convenient public access, and respond to information requests in a timely manner.

Further information regarding the Registry can be found in at http://www.ceaa-acee.gc.ca/050/index_e.cfm, administered by the Agency.

6.3 Amending the Model Class Screening Report

The purpose of an amending procedure is to allow the modification of the MCSR after experience has been gained with its operation and effectiveness. The reasons for such modification may include:

- clarification of ambiguous areas of document and procedures;
- streamlining or modifying the planning process in areas where problems may have arisen;
- minor modifications and revisions to the scope of assessment to reflect new or changed regulatory requirements, policies or standards; and
- new procedures and environmental mitigation practices that have been developed over time.

The RA will notify the Agency in writing of its interest to amend the MCSR. It will discuss the proposed amendments with the Agency and affected federal government departments and may invite comment from stakeholders and the public on the proposed changes. The RA will then submit the amended MCSR to the Agency, along with a request that the Agency amend the MCSR and a statement providing a rationale for the amendment.

The Agency may amend the MCSR without changing the declaration period if the changes:

- are minor;
- represent editorial changes intended to clarify or improve the screening process;
- do not materially alter either the scope of the projects subject to the MCSR or the scope of the assessment required for these projects; and
- do not reflect new or changed regulatory requirements, policies or standards.

The Agency may initiate a new declaration for the MCSR for the remaining balance of the original declaration period or for a new declaration period if the changes:

- are considered to be substantial; or
- represent modifications to the scope of the projects subject to the class or the scope of the assessment required for these projects.

6.4 Federal Department Consultation

Other expert federal departments were consulted during development of the MCSR, including Environment Canada and the Department of Fisheries and Oceans. Consultation with these federal departments ensured that appropriate environmental

mitigation practices were included in the MCSR.

7 Implementation of the Model Class Screening Project Report

7.1 Preparing Class Screening Project Report

The information included in this MCSR provides the background environmental and project information necessary to prepare the CSPR form. It is the responsibility of the Parks Canada Staff proposing the project to provide site-specific information necessary for the Parks Canada Environmental Assessment Office to reach a decision on project approval. This information will be provided through completion of a CSPR form.

The CSPR form will be completed by Parks Canada Staff proposing the project, and submitted to the Parks Canada Environmental Assessment Office. Depending upon the expected environmental effects of the individual project, the project will either: receive approval based on the information in the CSPR form, or receive a request to provide additional information or may require an individual environmental assessment.

Projects that have the potential for significant adverse environmental effects that are not or cannot be mitigated, or have uncertain environmental effects will not receive approval under the MCSR and will require an individual assessment under CEAA. The Parks Canada Environmental Assessment Office will specify the scope of assessment required for these projects. This does not mean the project may not proceed. Rather, it means that the project activities and/or the environmental impacts are not covered under the MCSR.

Approval will be given within 7 calendar days of the CSPR form being submitted, or notification of reclassification will be provided within 14 calendar days.

7.2 Responsibilities and Timelines

Parks Canada staff, as proponent or RA, are responsible to complete the following in the class screening process:

1. It is the responsibility of the Parks Canada Staff proposing the project to prepare a CSPR form.
2. It is the responsibility of the Parks Canada Staff proposing the project to ensure that all information provided in the CSPR form is accurate and required to sign a statement to this effect. If inaccurate information is provided, approvals will be invalidated.
3. It is the responsibility of the Parks Canada Environmental Assessment Office to:
    - provide the necessary forms, appropriate information and advice to the Parks Canada Staff proposing the project;
    - review the completed CSPR form(s); and
    - approve or reject the proposed development pursuant to *Section 20(1)* of the CEAA, or reclassify the project to an individual assessment.

Parks Canada Environmental Assessment Office, as RA, will review all projects and provide a response to the Parks Canada Staff proposing the project, within the following

time frames, provided there are no outstanding issues:

- for projects that fit under the MCSR – within 7 days of submission of the CSPR form or
- for projects that are reclassified from the MCSR to an individual assessment, notification of this reclassification will be provided within 14 days of submission of the CSPR form.

7.3 The Class Screening Project Report Form

The CSPR form is to be completed by the Parks Canada Staff proposing the routine front country projects described in Section 2.4 of the MCSR, and submitted to the Parks Canada Environmental Assessment Office. Information and forms can be obtained at the Environmental Assessment Office of Jasper National Park.

Parts 1 to 4 of the form are to be completed by Parks Canada staff proposing the project and submitted to Parks Canada Environmental Assessment Office. Environmental Assessment staff will complete Parts 5 to 8.

If you have questions about completing the form or the assessment process, call the Environmental Assessment Office at:

Jasper National Park
Environmental Assessment Services
#1 Compound Road, Box 10
Jasper, Alberta T0E 1E0
(780)852-6141(p)
(780)852-1885(f)

The Parks Canada Environmental Assessment Office will complete a review of the form within 7 days of submission, and the proponent will be informed of the decision.

Certain projects may not need an environmental assessment. Other projects may require a more detailed individual environmental assessment. Such projects are usually those that are located near environmentally sensitive areas, are excluded from the MCSR or those where unproven mitigation measures are to be used. If your project requires an individual environmental assessment, you will be advised.

It is the responsibility of the proponent to ensure that all information provided in the CSPR form is accurate and correct. Incomplete or inaccurate forms will be returned. In some cases you may be asked to supply additional information or to do an individual environmental assessment.

To assist you in the preparation of the form, the following attachments are provided:

- **Attachment 1**: Mitigations for reducing impacts of project activities (Tables 5.3 to 5.8)
- **Attachment 2**: Information relating to sensitive resources (Sensitive sites (Section 4.3), Special resources (Section 4.10), Tables 4.5, 4.5.3, 4.7(a)(b), 4.8.2)

PART 1: DESCRIPTION OF THE PROJECT

This section is designed to determine whether the project as defined in the Canadian Environmental Assessment Act requires an environmental screening. It is divided into four sub-sections covering ***buildings and other structures; service lines; roads, parking lots, pulloffs, sidewalks, boardwalks and trails; and vegetation management.***

Please complete those sections which apply to the project and check "Not Applicable" in the sub-section heading line for those that do not.

Who is the project being completed for?

Name: _____

Job title: _____

Phone: _____ Fax: _____

Who is the Project Manager, if different from above?

Name: _____

Job title: _____

Phone: _____ Fax: _____

1. FACILITY

Please provide a **summary description of your project** on a separate sheet and attach, including a site plan showing the proposed development. The project description should include all activities carried out as part of the project (*e.g.* excavation, vegetation removal, dewatering, site rehabilitation, *etc.*), construction methods and materials to be used and project timeframes. A one page site plan showing the area of disturbance and dimensions of structures is acceptable. (Parks Canada Environmental Assessment Specialist to compare proposed project to *Exclusion List Regulations*).

Buildings and other structures ☐ **N/A**

(a) Does your project involve (check all of the following that apply)?

i.	The construction of a new structure	☐ YES	☐ NO
ii.	The replacement of an existing structure	☐ YES	☐ NO
iii.	The demolition of an existing structure(s)	☐ YES	☐ NO
iv.	The modification, maintenance or repair of an existing structure(s)		

☐ YES ☐ NO

v. A change in the method of sewage disposal or an increase in the amount of sewage, waste or emissions ☐ YES ☐ NO

vi. Geotechnical investigation ☐ YES ☐ NO

vii. Creation of a need for related facilities such as parking spaces ☐ YES ☐ NO

(b) If your project is the replacement or modification of an existing building:

i. Will it increase the footprint or height of the structure ☐ YES ☐ NO

ii. By approximately how much _____

iii. Involve a heritage building ☐ YES ☐ NO

(c) If your project involves the construction or installation of an interpretive display or exhibit associated with an existing building, road, pulloff or trail, will it require the expansion of any existing associated facilities? ☐ YES ☐ NO

(d) If your project involves construction, installation, maintenance or repair of a sign, is the sign located:

i. Within an existing right-of-way ☐ YES ☐ NO

ii. Less than 15 m from an existing building ☐ YES ☐ NO

Service Lines ☐ **N/A**

(a) Does your project involve (check all of the following that apply)?

i. The construction of a new service line ☐ YES ☐ NO

ii. The abandonment of an existing service line ☐ YES ☐ NO

iii. The modification/maintenance/repair of an existing service line ☐ YES ☐ NO

iv. Risk of physical harm to mammals ☐ YES ☐ NO

v. Removal of contaminated materials ☐ YES ☐ NO

vi. Creation of a need for related facilities such as parking spaces ☐ YES ☐ NO

(b) If your project is the modification of an existing service line, will your project increase the carrying capacity of the water, sewer, electrical or telephone service lines? ☐ YES ☐ NO

Roads, Parking Lots, Pulloffs and Sidewalks, Boardwalks and Trails ☐ **N/A**

(a) Does your project involve (check all of the following that apply)?

i. The construction of a new pulloff, boardwalk, sidewalk or trail

☐ YES ☐ NO

ii. The decommissioning of a road, pulloff, parking lot, sidewalk, boardwalk or trail ☐ YES ☐ NO

iii. The modification of a pulloff, boardwalk, sidewalk or parking lot ☐ YES ☐ NO

iv. The modification, maintenance or repair or a road or trail ☐ YES ☐ NO

(b) Does your project involve:

i. The application of a dust control product or salt to the road or a pest control product to areas adjacent to the road ☐ YES ☐ NO

Vegetation Management ☐ **N/A**

(a) Does your project involve (check all of the following that apply)?

i. Hazardous tree removal ☐ YES ☐ NO

ii. Clearing to maintain the view at a viewpoint ☐ YES ☐ NO

2. SITE PREPARATION

(a) Will your project involve blasting or dredging? ☐ YES ☐ NO

(b) Will your project involve surface or groundwater dewatering? ☐ YES ☐ NO

(c) Will your project involve excavation of contaminated soil or disposal of any hazardous materials? ☐ YES ☐ NO

(d) If you answered yes to (a), (b), or (c) please provide details on a separate sheet.

3. EXCAVATION

(a) Will your project require excavation? ☐ YES ☐ NO

If YES, will it be:

i. For geotechnical investigation ☐ YES ☐ NO

ii. For building foundation ☐ YES ☐ NO

iii. For post or footing holes only ☐ YES ☐ NO

iv. Outside the footprint of an existing building ☐ YES ☐ NO

v. Will adjacent trees be affected (impacts inside the root zone) ☐ YES ☐ NO

vi. Associated with work on a utility line ☐ YES ☐ NO

vii. Will the excavated material be re-used on site ☐ YES ☐ NO

viii. What is the total quantity of material to be excavated? _____ m^3

4. RIGHT-OF-WAY (ROW)

(a) Will a new right-of-way be required to accommodate your project?

☐ YES ☐ NO

5. VEGETATION CLEARANCE

(a) Will you be clearing any vegetation or cutting any trees?

☐ YES ☐ NO

If YES, please specify the number of trees and species type:

_____
_____
_____

6. POLLUTING SUBSTANCES

(a) If your project is a maintenance, modification or repair project, will it:

i. Result in the likely release of a polluting substance into a waterbody

☐ YES ☐ NO

ii. Involve the application of oil or salt to a road, sidewalk or parking lot

☐ YES ☐ NO

iii. Involve the application of a control product (e.g. herbicide) to the areas adjacent to the road, sidewalk or parking lot ☐ YES ☐ NO

For i, ii, and iii if the answer is YES please provide additional information on what substances, amounts and concentrations.

PART 2: DESCRIPTION OF THE ENVIRONMENTAL AND CULTURAL SETTING

This section is designed to determine whether your project could potentially impact any valued environmental or cultural components and if it may cause any environmental effects not identified in the MCSR.

Please identify the ecosite of the project location. (Consult with Parks Canada Environmental Assesment Specialist if necessary).

Sensitive Resources

(a) Will your planned development be located on or adjacent to any of the sensitive sites or special resources described in Attachment 2? ☐ YES ☐ NO

If YES, please identify the type of site or resource on a separate sheet.

(b) Is your project located on undisturbed or undeveloped land ☐ YES ☐ NO

Species At Risk

(c) Is your project located in a front country area where there is the potential to disrupt a species at risk (see Table 4.5 in Attachment 2) ☐ YES ☐ NO

Aquatic Resources

(d) Is your project located within 30m of a waterbody (see Table 4.7(a) in Attachment 2) ☐ YES ☐ NO

(e) Is your project located within 100m of a waterbody (see Table 4.7(b) in Attachment 2) ☐ YES ☐ NO

(f) Is your project located in an ecosite identified as potential amphibian habitat (see Table 4.5.3 in Attachment 2) ☐ YES ☐ NO

Cultural Resources

(g) Are there any archaeological resources within 100m of the project site (see Table 4.8.2 in Attachment 2) ☐ YES ☐ NO

(h) If your project involves the maintenance, modification or disposal of an existing building:

i. When was the building built? _____

ii. If the building is more than 40 years old, has it been evaluated by FHBRO ☐ YES ☐ NO

iii. If you answered YES to question f(ii), is the building (circle the appropriate answer):
- Recognized
- Classified
- N/h

Soils/Landforms

(i) Is your project located on land with steep or unstable slopes

☐ YES ☐ NO

(j) Will your project require geotechnical investigation (drilling, soil sampling, test pitting) to determine soil capacity, contamination, groundwater, *etc.*

☐ YES ☐ NO

Pollution

(k) Has any investigative work been done to determine:

- Possible contamination of the site

☐ YES ☐ NO ☐ UNSURE

- The existence of hazardous materials in the building(s) on the site (*e.g.* asbestos, lead, PCB, pressure treated wood) or in the soil

☐ YES ☐ NO ☐ UNSURE

- The presence of fuel tanks, fuel storage *etc.* on the site (fuel includes gasoline, propane, diesel, heating oil, *etc.*)

☐ YES ☐ NO ☐ UNSURE

If YES, please attach a list of the work done or copies of the reports or documents. (A *Phase I Environmental Site Assessment* may be requested as part of the environmental screening depending on the history of the site.)

(l) Will you be using any hazardous materials onsite? If yes, what?

PART 3: MITIGATION MEASURES

This section is designed to identify what mitigation measures will be used to remove or reduce the potential environmental effects identified above, and to determine the potential for impacts to remain after the mitigations are implemented. Please review the list of project specific mitigations listed in Attachment 1. ***In order to be in compliance with the MCSR, all mitigation measures identified in Attachment 1 that apply to your project must be implemented.***

(a) Will the standard MCSR mitigation measures as described in Attachment 1 be used?

☐ YES ☐ NO ☐ UNSURE

(b) Will any environmental mitigation measures be undertaken other than or in addition to those listed in Attachment 1?

☐ YES ☐ NO ☐ UNSURE

If YES, please submit details on your proposed mitigation measures on a separate sheet.

PART 4: APPLICATION SIGNATURE

As the proponent of the proposed project or authorized agent, I guarantee that to the best of my knowledge all information provided here is complete, correct and accurate:

Signature:	Date:
Name:	Phone:
Job title:	

PART 5: ENVIRONMENTAL ASSESSMENT
(Parks Canada Environmental Assessment Specialist to complete)

(a) Does the project require an assessment under the *Canadian Environmental Assessment Act?* ☐ YES ☐ NO

(b) If YES, from the information supplied in Parts 1-4, is the project covered by the MCSR*?* ☐ YES ☐ NO

(c) Will the project cause any effects to the environment or cultural/heritage setting that have not been identified below in Table 1? ☐ YES ☐ NO

Table 1: Potential environmental effects from routine Front country projects

• Dust production	• Habitat loss, fragmentation
• Decrease in air quality	• Wildlife sensory disturbance
• Changes in landforms	• Encroachment on wildlife movement corridors
• Soil compaction and erosion	• Habituation
• Slope instability, ground subsidence	• Disruption of nests and dens
• Soil sterilization	• Direct mortality
• Soil and water contamination	• Impact to historical or archaeological resources
• Alteration of surface or groundwater patterns	• Increased traffic
• Reduced water quality	• Risk to public safety
• Alteration of substrates	• Waste production
• Damage/loss of vegetation	• Hazardous materials
• Introduction of non native species	

(d) If you answered YES for Part 5(c), briefly describe in Table 2:
   i. the environmental effects not identified in Table 1
   ii. site specific mitigation measures

(e) Will the standard and site specific mitigation measures reduce the significance of the environmental effects of the project? Please rate the level of significance for potential residual environmental effects in Table 2 (use the criteria provided in Table 5.9 in the MCSR).

Table 2: Project Environmental Effects not covered in the MCSR

Potential Effects	Significance Rating [(a)]	Mitigation Measures [(b)]

(a) N – negligible
MA – minor adverse
S – significant

(b) Standard and additional mitigation measures as described in Table 2 will be attached as conditions of the project approval

If the environmental effect is rated as significant, or if the effects are not adequately addressed through the CSRP, the project is not suitable for the MCSR and will require an individual environmental assessment.

PART 6: CUMULATIVE EFFECTS ASSESSMENT

In general, projects in compliance with the MCSR will not contribute to cumulative effects. This section is designed to evaluate any potential cumulative environmental effects associated with MCSR projects in conjunction with any other activities occurring in the class screening area.

(a) Have any other projects or activities in the area been identified which may interact or contribute to the environmental effects of the proposed front country maintenance activity, *ie.* additional cumulative effects? ☐ YES ☐ NO

If YES, please check ( ) the relevant projects/activities:

☐ highway and/or secondary road operation and maintenance
☐ pipeline operation, construction or maintenance
☐ electrical power transmission or distribution line operation and maintenance
☐ communications infrastructure operation and maintenance
☐ operation and maintenance of outlying commercial accommodation
☐ Other Parks Canada activities (*e.g.* prescribed burns, trail maintenance *etc.*)
☐ Other (please describe) :

_____
_____
_____
_____

(b) Will the project contribute to any cumulative effects that have not been identified in Table 3? ☐ YES ☐ NO

Table 3: Potential cumulative effects from routine Front country projects

• Dust production • Decrease in air quality • Changes in landforms	• Habitat loss, fragmentation • Wildlife sensory disturbance • Encroachment on wildlife movement corridors

- Soil compaction and erosion
- Slope instability, ground subsidence
- Soil sterilization
- Soil and water contamination
- Alteration of surface or groundwater patterns
- Reduced water quality
- Alteration of substrates
- Damage/loss of vegetation
- Introduction of non native species
- Habituation
- Disruption of nests and dens
- Direct mortality
- Impact to historical or archaeological resources
- Increased traffic
- Risk to public safety
- Waste production
- Hazardous materials

(f) If you answered YES for Part 6(b), briefly describe in Table 4:
   iii. the cumulative effects not identified in Table 3
   iv. site specific mitigation measures

(g) Will the standard and site specific mitigation measures reduce the significance of the cumulative effects of the project? Please rate the significance level of the potential residual cumulative effects in Table 4 (use the criteria provided in Table 5.9 in the MCSR).

Table 4: Cumulative Environmental Effects not covered in the MCSR

Potential Effect	Significance Rating [(a)]	Mitigation Measures [(b)]

(a) N – negligible
MA – minor adverse
S – significant

(b) Standard and additional mitigations as described in Table 2 will be attached as conditions of the project approval

If the cumulative effect is rated as significant, or if the cumulative effects are not adequately addressed through the CSRP, the project is not be suitable for the MCSR and will require an individual Environmental assessment.

PART 7: SPECIES AT RISK

(a) Will the project adversely affect species at risk, either directly or indirectly, such as by adversely affecting their habitat? ☐ YES ☐ NO

For the purposes of this document, Species at Risk include:

- Species identified on the *List of Wildlife Species at Risk* set out in *Schedule 1* of the *Species at Risk Act*, including the critical habitat or the residences of individuals or that species, as defined in subsection 2(1) of the *Species at Risk Act*.

- Species that have been recognized as *at risk* by COSEWIC or by provincial or territorial authorities.

If YES, consult with Parks Canada Wildlife or Aquatics Specialists to determine if the project may proceed.

PART 8: DECISION STATEMENT

Is the project likely to cause significant environmental effects if all of the mitigation measures s are followed (based on the following criteria: magnitude, geographic extent, frequency, duration and reversibility?

☐ YES, the project is likely to cause significant adverse environmental effects, project is not approved.
☐ NO, the project is not likely to cause significant adverse environmental effects, project is approved.

☐ Additional mitigation measures attached.

Screening Reviewed:

_____
Environmental Assessment Specialist (print name)

_____ Date: _____
Signature

Screening Recommended:

_____
Resource Conservation Manager (print name)

_____ Date: _____
Signature

Screening Approved:

_____
Park Superintendent (print name)

_____ **Date: _____**
Signature

File Name: _____
File Number: _____

8 References

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Appendix A

Ecological Land Classification Information
By Front Country Area

Appendix A: Ecological Land Classification Information by Front country Area
(Data compliled from *Ecological (Biophysical) Land Classification of Banff and Jasper National Parks*, 1982)

Front country Area	Ecosite	Soils and Terrain	Vegetation	Wildlife				
				Ungulates	Carnivores	Small Mammals	Breeding Birds	Amphibians
Montane Ecoregion								
• 5 Mile Bridge pulloff/boat launch • Mount Christie viewpoint • Roche Bonhomme and Pyramid viewpoint • West Moberly Bridge pulloff • Colin Range pulloff • Valley of the 5 Lakes trailhead • Whistler's campground • Wapiti campground • Wabasso campground • Otto's cache picnic area • Internment camp pulloff • Lac Beauvert parking lot • Old Fort Point trailhead • Lake Annette picnic areas #1, #2 and #3 • Lake Edith south end picnic area • Lake Annette entry day use • Cavell Road junction pulloff • South Gate	AT1/3 AT1/3c AT1/5c	Landform: glaciofluvial terraces Soils: Orthic and Eluviated Eutric Brunisols	(C3) Lodgepole pine / juniper/ bearberry (C6) Lodgepole pine/buffaloberry/showy aster (C19) Lodgepole pine/buffaloberry/twinflower	Highly important to ungulates year round, especially deer and elk.	Because of its importance to ungulates, highly important to wolf, coyote and cougar. Black and grizzly bear may be present from April to November.	Important due to the diversity and density of small mammals as well as the occurrence of bats. Very important to the survival of bats.	A medium number of species occur here at medium densities.	No records.
• Talbot Lake windsurfer pulloff • Talbot Lake boat launch • Syncline view pulloff	DV1/5c	Landform: sand and silt dunes Soils: Orthic Regosols	(L6) creeping juniper-northern wheatgrass-sedge	These montane grasslands are very highly important to ungulates in winter, primarily deer and elk, with some bighorn sheep.	Highly important to wolf, coyote, cougar and weasel. It is most important in winter when ungulates concentrate here.	Few species here and only the deer mouse in high densities.	A low number of species at medium densities.	No records.

Appendix A: Ecological Land Classification Information by Front country Area
(Data compliled from *Ecological (Biophysical) Land Classification of Banff and Jasper National Parks*, 1982)

Front country Area	Ecosite	Soils and Terrain	Vegetation	Wildlife				
				Ungulates	Carnivores	Small Mammals	Breeding Birds	Amphibians
• 6th Bridge picnic area • Fryatt River crossing pulloff • Geikie Siding trailhead • Vine Creek trailhead • Maligne River picnic area • Kerkeslin campground	FR1/3 FR1/5 FR1/5c FR1/6	Landform: alluvial fans and aprons Soils: Orthic and Eluviated Eutric Brunisols	(C6) Lodgepole pine/buffaloberry/showy aster (C19) Lodgepole pine/buffaloberry/twinflower	Highly important especially deer, moose and elk in winter for bedding and foraging.	Highly important to wolf, coyote, cougar and lynx because of high density of prey, especially in winter.	High density and diversity of small mammals including little brown bat, bushy tailed wood rat, hares, red squirrels, beavers, deer mice and voles.	High number of species at high densities.	No records.
• Pocahontas Coal trail • Maligne Canyon trailhead • Mount Christie picnic area • Pocahontas campground • East gate	HD1/3 HD1/3c HD1/5	Landform: fluvial fans and aprons Soils: Orthic and Cumulic Regosols	(C16) aspen/hairy wild rye-peavine (C17) balsam poplar/buffaloberry	Highly important to elk and deer especially in winter – low snow accumulation.	Highly important to coyote, wolf, cougar and marten. Moderately important to lynx.	High number of species, high density of red and Columbian ground squirrels and meadow voles.	Very high diversity at high densities.	Where ponds occur on this ecosite, they are important breeding sites for Wood frog and Long Toed Salamander.
• Rocky River pulloff • Roche Miette trailhead	HD2/3 HD2/5	Landform: fluvial fans, aprons and floodplains Soils: Orthic and Cumulic Regosols	(O3) white spruce/shrubby cinquefoil/bearberry	Highly important year round, especially elk and deer. Open forest provides forage and cover; snow accumulation low.	Highly important to wolf, coyote, cougar and lynx.	High number of species including masked shrew, varying hare, red squirrel and deer mouse.	High diversity at high densities	The uncommon Wandering garter snake has been recorded here.
• Unnamed pulloff Miette Road • West gate • Snaring overflow campground	HD3/3	Landform: fluvial fans and aprons Soils: Orthic and Cumulic Regosols	(C2) white spruce/fern moss (C27) white spruce/prickly rose/fern moss (C5) White spruce/Douglas fir/ feathermoss (C26) white spruce/buffaloberry/fern moss	Highly important in autumn and winter; moderate importance in summer.	Highly important to wolf, coyote, cougar and lynx.	A large number of species occur at high densities, including snowshoe hare, red squirrel, red-backed vole and deer mice.	High density and medium species diversity.	No records.
• Celestine Road walk in campground • HWY 16 East "*Lodgings and*	HD4	Landform: fluvial fans and aprons Soils: Orthic and	((H6) junegrass-pasture sage-wild blue flax (C3) lodgepole	These grasslands are highly important to ungulates, especially deer and	Highly important to wolf and coyote.	Moderate number of species occurs here including	Moderate number of species occur here at medium	No records.

Appendix A: Ecological Land Classification Information by Front country Area
(Data compliled from *Ecological (Biophysical) Land Classification of Banff and Jasper National Parks*, 1982)

Front country Area	Ecosite	Soils and Terrain	Vegetation	Wildlife				
				Ungulates	Carnivores	Small Mammals	Breeding Birds	Amphibians
Roadways" pullout • Unnamed pulloff Hwy 16 East		Cumulic Regosols	pine/juniper/bearberry	elk, year round. Snow accumulation is low; cover and forage abundant.		the little brown bat. High density of red squirrel and deer mouse.	densities.	
• Maligne Canyon overlook viewpoint • Ashlar Ridge viewpoint • Miette Road powerline pulloff • Goat Lick viewpoint • Mount Fryatt viewpoint • Geraldine fire road pulloff • Pyramid Island picnic area • 5th Bridge picnic area	NY3/7c NY3/8 NY3/8c NY3+R/8c	Landform: gullied ice-contact drift deposits Soils: Orthic and Eluviated Eutric Brunisols on north aspects; Orthic and Cumulic Regosols on south apects	(C5) white spruce-Douglas fir/feathermoss (C19) lodgepole pine/buffaloberry/twinflower (O5) Douglas fir/juniper/bearberry (L1) shrubby cinquefoil/bearberry-northern bedstraw (C1) Douglas fir/hairy wild rye	Highly important particularly to deer, elk and bighorn sheep. Valuable winter range – low snow and abundant forage.	Highly important especially to cougar, coyote, wolf and marten.	High diversity and high density.	Very high number of species at high densities.	None recorded.
• Cottonwood Slough trailhead • Pyramid Beach picnic area • Skyline Trail trailhead • Snake Indian River trailhead • Athabasca Pass viewpoint • Mount Edith Cavell viewpoint • Horseshoe Lake trailhead • Athabasca Falls day use area • 16 ½ Mile Lake trailhead • Leach Lake picnic area • Meeting of the Waters	PT1/5c PT1/6c	Landform: glacial till deposits – ridged or hummocky moraine or morainal blankets overlying ridged or hummocky bedrock Soils: Orthic and Eluviated Eutric Brunisols and Brunisolic Gray Luvisols	(C6) Lodgepole pine/buffaloberry/showy aster (C19) Lodgepole pine / buffaloberry / twinflower	Moderately important in summer and highly important in winter. Low snow and abundant forage make this ecosite important to deer and elk year round.	Very highly important to coyote and cougar in summer and winter and to wolves year round.	High number of species including the bushy tailed woodrat and bats.	High number of species at high densities.	Ponds are important breeding sites for Long Toed Salamander and Wood frog.

Appendix A: Ecological Land Classification Information by Front country Area
(Data compliled from *Ecological (Biophysical) Land Classification of Banff and Jasper National Parks*, 1982)

Front country Area	Ecosite	Soils and Terrain	Vegetation	Wildlife				
				Ungulates	Carnivores	Small Mammals	Breeding Birds	Amphibians
group campground • Pyramid Fire Road trailhead								
• Wabasso Lake trailhead • HWY 16 West "*Lodgings and Roadways*" pulloff • Jasper/BC boarder pulloff	PT3/7c PT3/8c	Landform: glacial till - morainal veneers on ridged bedrock Soils: Lithic phases of Orthic and Eluviated Eutric Brunisols and Brunisolic Gray Luvisols	(C3) Lodgepole pine / juniper/ bearberry (C6) Lodgepole pine/buffaloberry/showy aster (C19) Lodgepole pine/buffaloberry/twinflower	Highly important primarily in winter due to low snow and abundant forage.	Highly important to wolf, coyote and cougar. Moderate importance to marten and lynx.	Moderate number of species occur here.	High number of species at high densities.	The uncommon Wandering garter snake was recorded on this ecosite at three locations in Jasper.
• Pyramid Stables parking lot • *Habbakuk* viewpoint • Patricia Lake picnic area • Pyramid Lake #1, #2 and #3 picnic areas • Pyramid Lake boat launch	PT4/5c	Landform: glacial till – ridged moraine or morainal blankets overlying ridged bedrock Soils: Orthic and Eluviated Eutric Brunisols and Brunisolic Gray Luvisols	(C16) aspen/hairy wild rye-peavine	Very highly important to deer and highly important to elk and bighorn sheep.	Highly important to wolf, coyote and cougar.	Few species occur here – red squirrels and meadow voles in high densities.	High number of species occurs at high densities.	No records.
• Jasper House pulloff • Punchbowl Falls viewpoint	TA3	Landform: silt deposits on valley slopes Soils: Cumulic Regosols	(C2) white spruce/fern moss (C26) white spruce/buffaloberry/fern moss (C27) white spruce/prickly rose/fern moss	Highly important, especially to deer, moose, elk and when adjacent to escape terrain, bighorn sheep.	Highly important to wolf, coyote, cougar and marten.	There are few species; only the red squirrel occurs in high densities.	High number of species occurs at high densities.	No records.

Appendix A: Ecological Land Classification Information by Front country Area
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Front country Area	Ecosite	Soils and Terrain	Vegetation	Wildlife				
				Ungulates	Carnivores	Small Mammals	Breeding Birds	Amphibians
• Overlander trailhead • Mile 12 pulloff • Poco ponds pulloff	VL1/3	Landform: alluvial floodplain deposits Soils: Rego Gleysols and Terric Mesisols	(H11) water sedge-beaked sedge (S1) dwarf birch-shrubby cinquefoil-willow/brown moss (S7) willow/horsetail	Highly important in winter, especially to elk and moose. In summer importance is low.	Moderately important, being highly important to weasels and in winter to wolf and coyote.	Highly important due to the density of small mammals as well as the occurrence of bats, muskrats and beavers.	A very high number of species occurs here at very high densities.	Very highly important breeding sites for Wood frog, Long toed salamander and Western toad.
• Snaring campground	+SC3	Landform: level floodplains (recent stream channel) Soils: Regosolic and Gleysolic soils	(H3) sedge-saxifrage (H8) yellow dryad-willow herb (S7) willow/horsetail					
• South gate/Beckers pulloff • Airport picnic area • HWY 93/Miette River pulloff • Disaster Point pulloff • HWY 16 West unnamed pulloff (2) • Yellowhead Pass pulloff • Meadow Creek trailhead	VL3 VL3/3c	Landform: alluvial floodplain deposits Soils: Poorly drained Rego Gleysols	(C4) white spruce/prickly rose/horsetail (S1) dwarf birch-shrubby cinquefoil-willow/brown moss (S7) willow/horsetail	Highly important in winter, especially to elk and moose. In summer importance is low.	Highly important especially to wolf, coyote, cougar, weasel and lynx.	The diversity and density of small mammals and bats, beavers and muskrats make it one of the most important ecosites for small mammals.	High number of species occurs at high densities.	This ecosite includes ponds and wetlands that are very highly important breeding sites for Wood frog, Long toed salamander and Western toad.
• Merlin Pass trailhead • Moberly Homestead day use area	VL4	Landform: alluvial fans and floodplain deposits Soils: Poorly drained Rego Gleysols	(C4) white spruce/prickly rose/horsetail	Highly important in winter, especially to elk and moose. In summer importance is low.	Highly important to carnivores, especially wolf, coyote, cougar and lynx.	Density of small mammals - muskrats and the very rare pygmy shrew make it important for small mammals.	High number of species occurs at high densities.	No records.

Appendix A: Ecological Land Classification Information by Front country Area
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Front country Area	Ecosite	Soils and Terrain	Vegetation	Wildlife				
				Ungulates	Carnivores	Small Mammals	Breeding Birds	Amphibians
• Palisades picnic area	VL5	Landform: alluvial fans and floodplain deposits Soils: Poorly drained Rego Gleysols with Gleyed Cumulic Regosols	(S7) Willow/horsetail	High importance for ungulates year round, particularly to moose and elk.	Highly important to wolf, coyote, cougar and lynx.	A moderate number of species with high densities of masked shrew, dusky shrew, hare, red squirrel, meadow vole and bats.	High number of species occurs at very high densities.	No records.
Subalpine Ecoregion								
• Honeymoon Lake campground	AL1	Landform: stable fluvial fans and aprons Soils: well drained Orthic and Eluviated Eutric Brunisols	(C19) Lodgepole pine/buffaloberry/twinflower (C6) Lodgepole pine/buffaloberry/showy aster to a lesser extent: (C18) Lodgepole pine/buffaloberry/grouseberry (C11) Lodgepole pine/feather moss (C20) Lodgepole pine/false azalea/grouseberry (C29) Lodgepole pine/Labrador tea	Highly important year round. Deer, moose and elk are most common ungulates; especially important to deer and elk in summer.	Highly important to wolf, coyote and cougar in summer and lynx and wolverine year round.	A moderate number of species occur here at moderate densities.	High number of species occurs here at medium densities.	No records.
• Miette picnic area • Sulphur Skyline trailhead • Miette Interp trail • Watchtower trailhead	AL2	Landform: fluvial fans and aprons Soils: well drained Orthic and Eluviated Eutric Brunisols	(C13) Engelmann spruce-subalpine fir/feathermoss (C31) Engelmann spruce-subalpine fir/hairy wild rye-heartleaf arnica-twinflower/feathermoss	Highly important to moose in summer; low importance to other ungulates.	Highly important to carnivores.	A high number of species are found here, but only red backed vole, red squirrel and porcupine are relatively common.	High number of species occurs here at high densities.	No records.
• Ranger Creek pulloff • Ranger Creek group campground	BK1/6c	Landform: ridged glacial till deposits Soils: Eluviated Eutric Brunisols, Orthic Eutric	(C18) Lodgepole pine/buffaloberry/grouseberry (C19) Lodgepole pine/buffaloberry/twinflower (O11) spruce/Labrador	Highly important primarily to deer, moose and elk.	Very highly important especially to large carnivores because of the high densities of deer, elk and moose.	High number of species occurs here in high densities.	High number of species occurs here at high densities.	Important to Western toad for foraging and breeding where there are ponds.

Appendix A: Ecological Land Classification Information by Front country Area
(Data compliled from *Ecological (Biophysical) Land Classification of Banff and Jasper National Parks*, 1982)

Front country Area	Ecosite	Soils and Terrain	Vegetation	Wildlife				
				Ungulates	Carnivores	Small Mammals	Breeding Birds	Amphibians
		Brunisols and Brunisolic Gray Luvisols	tea/brown moss (S1) dwarf birch-shrubby cinquefoil-willow/brown moss (S3) dwarf birch-shrubby cinquefoil/needlerush					
• Sunwapta Falls day use area	BK4/6c	Landform: ridged ice contact drift deposits Soils: Eluviated Eutric Brunisols, Orthic Eutric Brunisols and Brunisolic Gray Luvisols	(C18) Lodgepole pine/buffaloberry/grouseberry (C19) Lodgepole pine/buffaloberry/twinflower (O11) spruce/Labrador tea/brown moss (S1) dwarf birch-shrubby cinquefoil-willow/brown moss (S3) dwarf birch-shrubby cinquefoil/needlerush	Highly important to ungulates year round.	Very highly important to carnivores. High densities of lynx, marten, coyote, wolf and cougar.	A moderate number of species occurs here.	High number of species occurs here at high densities.	Important breeding habitat for Spotted frog and Western toad.
• Bruce's picnic area	BV1/3c	Landform: glaciofluvial terraces Soils: Orthic and Eluviated Eutric Brunisols	(C9) lodgepole pine/dwarf bilberry (C18) Lodgepole pine/buffaloberry/grouseberry (C19) Lodgepole pine/buffaloberry/twinflower	Moderately important to deer, elk and moose primarily because of its low elevation and association with other more open habitats.	High importance to carnivores.	A moderate number of species occur here at high densities.	Medium number of species occur at high densities.	No records.
• Upper Maligne parking lot/Opal hills trailhead • Maligne walk in picnic area	BZ1/6c	Landform: rock residuum slopes Soils: Eluviated Dystric Brunisols and Eluviated Eutric Brunisols	(C30) Engelmann spruce-subalpine fir/Labrador tea/crowberry (C31) Engelmann spruce-subalpine fir/hairy wild rye-heartleaf arnica-twinflower/feathermoss	Moderate importance in winter and low in summer. All ungulates except caribou were recorded on this ecosite.	Moderately important to carnivores including coyote, wolf and cougar.	Few species occur here.	Low number of species at low densities.	No records.
• Middle Maligne parking lot • Lower Maligne parking	BZ2/6c	Landform: rock residumm slopes	(C18) Lodgepole pine/buffaloberry/grouseberry	Moderate importance in winter and low in	Low importance to carnivores.	A moderate number of species occur	Low number of species occur at medium	No records.

Appendix A: Ecological Land Classification Information by Front country Area
(Data compliled from *Ecological (Biophysical) Land Classification of Banff and Jasper National Parks*, 1982)

Front country Area	Ecosite	Soils and Terrain	Vegetation	Wildlife				
				Ungulates	Carnivores	Small Mammals	Breeding Birds	Amphibians
lot		Soils: Eluviated Dystric Brunisols and Eluviated Eutric Brunisols	(C29) Lodgepole pine/Labrador tea	summer. Caribou, deer and moose were the only species recorded.		on this ecosite but only the red backed vole is found at high densities.	densities.	
• Tonquin Valley via the Astoria River trailhead • Cavell Road viewpoint #2	CA1/7c	Landform: ridged glacial till deposits Soils: Eluviated and Orthic Dystic Brunisols	Upland: (C14) Engelmann spruce-subalpine fir/false azalea (C13) Engelmann spruce-subalpine fir/feathermoss (C21) Engelmann spruce-subalpine fir/tall bilberry/liverwort Depressions: (O11) spruce/Labrador tea/brown moss (O14) Engelmann spruce-subalpine fir/rock willow/bracted lousewort (S1) Dwarf birch-shrubby cinquefoil-willow/brown moss (S3) dwarf birch-shrubby cinquefoil/needlerush	Moderately important to ungulates in summer.	High importance to marten, weasel and lynx..	A moderate number of species occurs here.	Medium number of species occur at high densities.	No records.
• Cavell parking lot • Cavell picnic area	CA2/8	Landform: glacial till deposits Soils: Eluviated and Orthic Dystic Brunisols	(C14) Engelmann spruce-subalpine fir/false azalea (C13) Engelmann spruce-subalpine fir/feathermoss (C21) Engelmann spruce-subalpine fir/tall bilberry/liverwort	Low importance to ungulates year round.	Highly important to carnivores, especially to marten and lynx.	High number of species occurs on this ecosite.	Medium number of species occur at medium densities.	No records.
• Icefields campground • Jasper/Banff boundary	CN1/6	Landform: alluvial fans	(S10) willow-dwarf birch-shrubby cinquefoil	Highly important to ungulates year round. It is most	Low importance to carnivores.	Diversity and density of small mammals as	Medium number of species occur	No records.

Appendix A: Ecological Land Classification Information by Front country Area
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Front country Area	Ecosite	Soils and Terrain	Vegetation	Wildlife				
				Ungulates	Carnivores	Small Mammals	Breeding Birds	Amphibians
		Soils: Orthic Regosols	(S12) willow/hairy wild rye	important to elk, mountain goat and bighorn sheep.		well as the occurrence of the water vole make this ecosite highly important.	at low densities.	
• Upper Sunwapta boat launch (access)	CV1/5c	Landform: ridged glacial till deposits Soils: Orthic Gleysol, Rego Gleyson, Gleyed Ferro-Humic Podzol and Terric Mesisol Subgroups	(O11) spruce/Labrador tea/brown moss (O14) Engelmann spruce-subalpine fir/rock willow/bracted lousewort (S1) dwarf birch-shrubby cinquefoil-willow/brown moss (S1) dwarf birch-shrubby cinquefoil/needlerush	Moderately important in summer, especially moose. All species but bighorn sheep recorded here.	Very highly important. It is highly important to coyote, marten, weasel and wolverine and moderately important to wolf, cougar and lynx.	A high number of species occurs here.	High number of species occur at high densities.	This ecosite includes important breeding habitat for Wood frog, Spotted frog and Western toad.
• Medicine Lake inlet viewpoint	GT1/8	Landform: glacial till slopes Soils: Orthic Gleysol, Rego Gleyson, Gleyed Ferro-Humic Podzol and Terric Mesisol Subgroups	(O11) spruce/Labrador tea/brown moss (O14) Engelmann spruce-subalpine fir/rock willow/bracted lousewort (S1) dwarf birch-shrubby cinquefoil-willow/brown moss (S3) dwarf birch-shrubby cinquefoil/needlerush	This ecosite is highly important to ungulates year long. All species but caribou recorded with elk and bighorn sheep using the ecosite most heavily.	This ecosite is very highly important especially to wolf, coyote and cougar. It is moderately important to marten, lynx and wolverine.	High densities of masked shrews and heather voles; a moderate number of species are found here.	Low number of species occur at low densities.	No records.

Appendix A: Ecological Land Classification Information by Front country Area
(Data compliled from *Ecological (Biophysical) Land Classification of Banff and Jasper National Parks*, 1982)

Front country Area	Ecosite	Soils and Terrain	Vegetation	Wildlife				
				Ungulates	Carnivores	Small Mammals	Breeding Birds	Amphibians
• Mushroom Peak pulloff	HC1	Landform: alluvial floodplain deposits Soils: Rego Gleysols and Terric Mesisols	(C32) Engelmann spruce/horsetail/feathermoss (O6) Engelmann spruce-subalpine fir/willow/ribbed bog moss (S1) dwarf birch-shrubby cinquefoil-willow/brown moss (S3) dwarf birch-shrubby cinquefoil/needlerush	Low importance to ungulates.	Moderately important to mustelid species, but of low importance to other carnivores.	A few species occur here at low to moderate densities.	Medium number of species occur at high densities.	Important breeding habitat for Spotted frog and Western toad.
	+SC3	Landform: level floodplains (recent stream channel) Soils: Regosolic and Gleysolic soils	(H3) sedge-saxifrage (H8) yellow dryad-willow herb (S7) willow/horsetail					
• Stanley Falls trailhead	HC4	Landform: alluvial floodplain deposits Soils: Rego Gleysols and Terric Mesisols	(C32) Engelmann spruce/horsetail/feathermoss (O6) Engelmann spruce-subalpine fir/willow/ribbed bog moss (S1) dwarf birch-shrubby cinquefoil-willow/brown moss (S3) dwarf birch-shrubby cinquefoil/needlerush	Highly important to ungulates, especially moose, elk and caribou.	Highly important to carnivores especially wolf, coyote, cougar and weasels. It is moderately important to marten and lynx.	High diversity and density of small mammals make this ecosite highly important.	Very high number of species occur at high densities.	Important breeding habitat for Wood and Spotted frogs and Western toad.
	+SC3	Landform: level floodplains (recent stream channel) Soils: Regosolic and Gleysolic soils	(H3) sedge-saxifrage (H8) yellow dryad-willow herb (S7) willow/horsetail					
• Shangrila pulloff	IB2/7c	Landform:	(O4) Engelmann spruce-	Low importance to	Moderately	Moderate	Low number of	No records.

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Front country Area	Ecosite	Soils and Terrain	Vegetation	Wildlife				
				Ungulates	Carnivores	Small Mammals	Breeding Birds	Amphibians
		colluvial landslide deposits Soils: Orthic Regosols, Eluviated Eutric Brunisols and Eluviated Dystric Brunisols	subalpine fir-whitebark pine-lodgepole pine (O17) white spruce/juniper/bearberry	ungulates.	important to carnivores, principally wolverine.	number of species.	species occur at medium densities.	
• 1st North Medicine viewpoint "*Where is the water*" • 2nd North Medicine viewpoint	IB3/7c	Landform: colluvial landslide deposits Soils: Orthic Regosols, Eluviated Eutric Brunisols and Eluviated Dystric Brunisols	(C21) Engelmann spruce-subalpine fir/tall bilberry/liverwort (C30) Engelmann spruce-subalpine fir/Labrador tea/crowberry	Low importance to ungulates.	Moderately important to carnivores, notably lynx, marten and weasels.	There are a few species here and only masked shrew and varying hare occur in high densities.	Low number of species occur at medium densities.	No records.
• Wilcox Pass trailhead • Wilcox campground	MQ1/6	Landform: alluvial fans Soils: Orthic and Eluviated Eutric Brunisols and Orthic Regosols	(C15) Engelmann spruce-subalpine fir/grouseberry (O10) Engelmann spruce-subalpine fir/heather	Highly important, especially to deer, moose and elk.	Highly important especially in summer. Heavy use by wolf, coyote, marten and wolverine.	High number of species.	Low number of species occur at high densities.	No records.
• Upper Toe of the Glacier trailhead	PL1/6c	Landform: glacial till deposits on valley slopes Soils: Orthic and Eluviated Eutric Brunisols	(C15) Engelmann spruce-subalpine fir/grouseberry (C21) Engelmann spruce-subalpine fir/tall bilberry/liverwort (O10) Engelmann spruce-subalpine fir/heather	Moderately important. All species except goat make moderate use of this ecosite in summer, but because of heavy snow accumulation, few ungulates remain in winter.	Highly important – heavy use by marten and weasels and moderate use by several other species.	A high number of species occurs here including the uncommon Richarson's water vole. High densities of pika, Columbian ground squirrel and Golden mantled ground squirrel.	High number of species occur at low densities.	No records.

Appendix A: Ecological Land Classification Information by Front country Area
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Front country Area	Ecosite	Soils and Terrain	Vegetation	Wildlife				
				Ungulates	Carnivores	Small Mammals	Breeding Birds	Amphibians
• Maligne Road, "*The arch*" pulloff	PP1/6	Landform: alluvial fans Soils: Orthic and Cumulic Regosols	(C19) Lodgepole pine/buffaloberry/twinflower (C3) Lodgepole pine / juniper/ bearberry (C6) Lodgepole pine/buffaloberry/showy aster	Moderately important, particularly to elk, deer and moose; heavy snow restricts ungulate use in winter.	Highly important, principally to wolf, coyote, cougar and lynx.	High number of species occurs here. Flying squirrel have been recorded.	Medium number of species occur at medium densities.	This ecosite provides important Western toad breeding and foraging habitat.
• Beaver picnic area	PP2/3c	Landform: alluvial fans Soils: Orthic and Cumulic Regosols	(C17) balsam poplar/buffaloberry (C16) aspen/hairy wild rye-peavine	Moderately important to ungulates, being highly important to elk year round and to deer in winter.	Very highly important especially to coyote, wolf, weasels and cougar.	A moderate number of species occurs here. Dusky shrews, red squirrels, deer mice and meadow voles occur in high densities.	Medium number of species occur at medium densities.	No records.
• Waterfalls trailhead • Cavell Road viewpoint #1 • Maligne Road, end of Medicine Lake "*The delta*" viewpoint • Beauty Creek Hostel parking lot • Mount Kitchener viewpoint • Tangle Falls viewpoint • Mount Athabasca from Mount Tangle viewpoint	PR2/6c PR2/7 PR2/7c PR2X/7c	Landform: glacial till deposits on valley slopes Soils: Orthic and Eluviated Eutric Brunisols	(C6) Lodgepole pine/buffaloberry/showy aster (C18) Lodgepole pine /buffaloberry/grouseberry (C19) Lodgepole pine/buffaloberry/twinflower	Moderately important to ungulates year round. All species of ungulates have been reported here with elk and bighorn sheep the most frequent.	Very highly important to carnivores. It is highly important to marten, weasel and lynx. It is less important to larger species in winter because of deep snow and few ungulates.	High number of species occurs here including the very rare pygmy shrew.	Very high number of species occur at high densities.	No records.

Appendix A: Ecological Land Classification Information by Front country Area
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Front country Area	Ecosite	Soils and Terrain	Vegetation	Wildlife				
				Ungulates	Carnivores	Small Mammals	Breeding Birds	Amphibians
• Bald Hills trailhead • Maligne Lake parking lot/boat launch • Honeymoon Hill viewpoint • Honeymoon campground • Buck and Osprey Lakes trailhead • Upper Sunwapta boat launch (egress)	PR6/5c PR6/6c	Landform: ice contact drift deposits Soils: Eluviated Eutric Brunisols, Orthic Eutric Brunisols, Brunisolic Gray Luvisols	(C11) Lodgepole pine/feather moss (C18) Lodgepole pine /buffaloberry/grouseberry (C19) Lodgepole pine/buffaloberry/twinflower (C29) Lodgepole pine/Labrador tea	Low importance, but highly important to deer in summer.	Highly important, especially to marten and lynx and in summer wolf, coyote and cougar.	A moderate number of species.	Very high number of species occur at low densities.	No records.
• Mid Medicine Lake viewpoint	SB1/8	Landform: colluvial slopes with active avalanching Soils: Orthic Eutric Brunisols, Orthic Regosols and Orthic and Cumulic Humic Regosols	(S2) subalpine fir/willow (S10) willow-dwarf birch-shrubby cinquefoil (H5) hairy wild rye-wild strawberry-fireweed (C22) aspen/hairy wild rye-showy aster (C13) Engelmann spruce-subalpine fir/feathermoss (C14) Engelmann spruce-subalpine fir/false azalea	Highly important year round, especially to mountain goat and bighorn sheep.	Moderately important, notably to coyote, cougar and weasels.	The diversity and density of small mammals on this ecosite is high.	High number of species occur at medium densities.	This ecosite is important to Western toad.
• Colin/Maligne Range viewpoint • Mid Medicine viewpoint • "*Sinking Lake*" viewpoint	SB3A/8	Landform: colluvial slopes Soils: Orthic Eutric Brunisols, Orthic Regosols	(C3) lodgepole pine/juniper/bearberry (C6) lodgepole pine/buffaloberry/showy aster (C19) lodgepole pine/buffaloberry/twinflower	Moderately important in winter and low importance in summer.	Highly important, particularly to marten, wolverine and coyote in autumn and winter. It is moderately important to wolf, cougar and lynx.	Moderate number of species and high densities of varying hares and yellow pine chipmunks..	Low number of species occur at low densities.	No records.
• Colin/Maligne Range viewpoint • Mid Medicine viewpoint • "*Sinking Lake*" viewpoint	SB3A/8	Landform: colluvial slopes Soils: Orthic Eutric Brunisols, Orthic Regosols	(C3) lodgepole pine/juniper/bearberry (C6) lodgepole pine/buffaloberry/showy aster	Moderately important in winter and low importance in summer.	Highly important, particularly to marten, wolverine and coyote in autumn and winter. It is moderately	Moderate number of species and high densities of varying hares and yellow pine	Low number of species occur at low densities.	No records.

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Front country Area	Ecosite	Soils and Terrain	Vegetation	Wildlife				
				Ungulates	Carnivores	Small Mammals	Breeding Birds	Amphibians
			(C19) lodgepole pine/buffaloberry/twinflower		important to wolf, cougar and lynx.	chipmunks.		
• Icefields Centre parking lot	TR1/7c	Landform: glacial till deposits Soils: Orthic Eutric Brunisols, Eluviated Eutric Brunisols and Orthic Melanic Brunisols	(S10) willow-dwarf birch-shrubby cinquefoil (S12) willow/hairy wild rye (O18) Engelmann spruce-subalpine fir/willow/hairy wild rye	Highly important to ungulates, especially elk and bighorn sheep. Deep snow limits winter use.	Highly important to coyote, wolf and cougar.	High number of species is found on this ecosite as well as high densities of least chipmunk and hoary marmot.	High number of species occur at medium densities.	No records.
• Bubbling Springs picnic area	VD2/5	Landform: alluvial fans Soils: Orthic and Eluviated Dystric Brunisols	(C19) Lodgepole pine/buffaloberry/twinflower (C20) Lodgepole pine/false azalea/grouseberry	Low important to ungulates, though some tracts are highly important to moose.	Highly important to carnivores especially weasel, marten and wolverine.	Supports a high number of species but none of these occur at a high density.	Medium number of species occur at low densities.	No records.
• Lower Toe of the Glacier trailhead	WW1+M/5c	Landform: raw glacial till deposits Soils: ice retreat is so recent, little soil development has occurred. Some Orthic Regosol and Orthic Humic Regosol	(H8) yellow dryad-willow herb	Low importance to ungulates.	Moderately important, being highly important to marten and weasel and of moderate importance to other carnivores.	Moderate number of species.	Low number of species occur at low densities.	No records.
Other								
• Meeting of the waters picnic area	SC	Landform: recent stream channel Soils: Regosolic and Gleysolic soils	(H3) sedge-saxifrage (H8) yellow dryad-willow herb (s7) willow/horsetail					