4.0 ENVIRONMENTAL REVIEW OF POWER TRANSMISSION FACILITY OPERATION AND MAINTENANCE PROJECTS

Section 16(1) of CEAA clearly defines information that must be provided to the Agency to meet the requirements of CEAA prior to designating a MCSR. Previous sections of this report have been dedicated to describing the class of projects to be included in the MCSR. This section of the MCSR describes the existing environment in which AltaLink projects are undertaken so that potential environmental effects and the significance of residual environmental impacts can be determined. Specifically, this section will describe:

- The MCSR Study Area, or Class Screening Area (CSA) (Section 4.1)
- Existing Environmental Conditions (Section 4.2)
- Impact Assessment Approach (Section 4.3)
- Potential Environmental Effects of the Class of Projects (Section 4.4)
- Environmental Mitigation Practices (Section 4.5)
- Significance of Residual Environmental Effects (Section 4.5)

Information provided in these sections also enables the RA to take into account site- and situation-specific circumstances. This has been made possible through the integration of detailed ecological constraint mapping and a thorough investigation of potential environmental impacts for each project in different ecological settings. Standard environmental mitigation measures have been detailed for each project undertaken by AltaLink. Special mitigations for environmentally sensitive areas are identified on the ecological constraint maps contained in Appendix F.

4.1 Description of the Class Screening Area

In order to assess the significance of potential environmental impacts from this class of projects, it is necessary to describe the environmental setting of the facilities.

The study area for the MCSR includes a 200 m wide buffer on each side of the transmission lines. These areas include the entire length of each transmission line, the line RoW as well as the "zone of influence" around the transmission line. In all cases, substations and PTs are within this 250m buffer. The "zone of influence" includes all areas that have potential to be impacted by a project, either directly or indirectly. Factors considered when determining the zone of influence for this project include:

- **Width of the RoW**. Minimum clear widths on a RoW are governed by a range of factors (including tree height, height of conductor, sag, flashover distances, safety factors for tree growth, conductor swing etc.); and so can vary. The widest of the transmission RoWs in BNP is associated with the 138 kV transmission line 54 L. This RoW averages 30.5 to 33m in width (TAU 1994); this width is considered the maximum area directly impacted by AltaLink operations.

- **Sensory disturbance to wildlife**. Linear disturbances (power lines, roads, cut lines, railways etc.) that have repeated disturbances associated with them often cause wildlife to avoid otherwise effective habitats. The degree of avoidance is species specific and is related to the type of linear disturbance. For example, the zone of influence for grizzly bears (a highly sensitive species) range from 200 m to 1600 m for areas with "hiding" cover, and 800 m to 3200 m for open habitats. Documented zones of influence for elk (an easily habituated species) can range from 200 m to 1600 m. Some nesting raptors have exhibited a flush response at a mean distance of 476 m from the approach of a pedestrian (Jalkotzy *et al.*, 1998).

- The type of linear disturbance and the frequency of disturbance is an important consideration when determining the wildlife zone of influence. AltaLink activities on the RoW are generally localized and of short duration. The majority of the transmission lines in BNP parallel roadways, including the TransCanada Highway (TCH), Highway 1A or the CPR tracks. As such, it is reasonable to assume that wildlife living within the vicinity of these linear features, especially the TCH and Highway 1A, have habituated to a certain level of background noise. Therefore, in comparison to the level of activity occurring on these parallel roadways or human use corridors, sensory disturbances associated with the AltaLink RoW would be relatively low. Therefore, 200 m on either side of the RoW is considered an appropriate "zone of influence" to incorporate into the final CSA based on the minimum zone of influence identified by Jalkotzy *et al.* (1998).

- **Non-native species invasion**. A paper on non-native vegetation species in Banff National Park concluded that 150 m is the maximum distance documented in the park for non-native species invasion originating from linear disturbances (Hansen; 2000). This distance is included within the wildlife zone of influence.

- **Disturbance to Surface Waters**: The movement of surface water over the land can enter waterbodies that are not directly within the RoW, thus resulting in indirect effects some distance from the source of the linear disturbance. Due to the nature of the activities within the RoW, it was considered that the appropriate CSA for evaluating potential impacts to waterbodies is within 200 m on either side of the transmission line RoW.

The selected CSA combined the measure of maximum RoW width (±33 m) and added it to the approximation of the wildlife sensory disturbance zone of influence (200 m on each side of the RoW) and rounded the total width up to 500 m (i.e., 250 m on either side from the centre of the RoW).

4.2 Existing Environmental Conditions

As Figure 3.1 indicates, AltaLink transmission lines transmit power from the east BNP boundary to the town of Banff and the village of Lake Louise. Aquila Networks Canada (ANC) distributes power, which is sold by commercial power companies as electrical energy to public and commercial facilities throughout the Bow Valley including the town of Banff and the village of Lake Louise.

Differences in local climate, topography, elevation and soils result in a fairly wide range of vegetation communities and of wildlife species that are supported in the CSA. The following section describes the various biophysical site attributes associated with AltaLink facilities throughout BNP.

4.2.1 Terrestrial Setting

Ecological Land Classification (ELC) has been completed for BNP (Holland and Coen 1982). Parks Canada authorities supported this mapping project as a means of determining base level data on natural resources for responsible planning and management in the park (East *et al.* 1979 *in* Holland and Coen 1982). Information in the ELC provided the basis for describing the environmental setting for the CSA. This information was augmented with scientific literature, and personal communication with local experts.

Ecoregions

The CSA transverses 2 ecoregions and 33 ecosites; these areas are illustrated on maps 1 to 8 (Appendix E). Ecoregions are areas with distinctive regional climates expressed through vegetation associations (Strong and Leggat 1992). Ecoregions associated with the CSA include:

- The montane ecoregion,
- The lower subalpine ecoregion

The ***montane ecoregion*** is the most biologically diverse and ecologically important area in BNP (BBVS 1996). Vegetation in the montane ecoregion is dominated by three main vegetation types; Douglas fir *(Pseudotsuga menziesii)* and white spruce *(Picea glauca)* forests; aspen/poplar *(Populus spp)* forests; and grasslands at dry sites. Grasslands and mature Douglas fir stands are considered a special resource in BNP (Achuff 1996). One of the factors attributed to decreasing grassland areas is fire suppression. Fire safety and prevention is a primary focus of many of the activities undertaken by AltaLink in order to protect facilities in the park.

The low elevation and open forests of the montane make it important wildlife habitat and a critical link for wildlife movement throughout the Park. Assemblages of terrestrial fauna associated with the montane ecoregion in BNP include white-tailed deer (*Odoicoileus virginianus*), mule deer (*O. hemionus*), elk (*Cervus elaphus*), moose (*Alces alecs*), and bighorn sheep (*Ovis canadensis*). Carnivores include pine marten (*Martes americana*), fisher (*Martes pennanti*), coyote (*Canis latrans*), wolf (*C. lupus*), cougar (*Felis concolor*), black bear (*Ursus americanus*), grizzly bear (*U. arctos*) and wolverine (*Gulo gulo*).

Most of the development in BNP; including AltaLink transmission facilities, occur in the montane ecoregion. As a result, development and human disturbance has severed the Bow Valley (once a regional wildlife movement corridor) into several small corridors (Paquet *et al.* 1996). AltaLink transmission RoWs cross through or span several of the remaining wildlife movement corridors that have been identified in the Park. These corridors include (Pope 2001):

- Penstock Corridor
- Norquay-Cascade Corridor
- Fenland-Indian Grounds Corridor
- Cory Slopes Corridor
- River Flats Corridor
- Castle Slopes Corridor, and
- Whitehorn Corridor

The location of wildlife corridors in relation to AltaLink facilities have been identified on maps 551L_1 to 551L_9, and 54L_1 to 54L_6 in Appendix F.

The subalpine ecoregion occurs at altitudes above the montane and below the non-forested alpine ecoregion between elevations of 1500 m to 1950 m. ***Lower subalpine*** areas encompass most of the closed forest in Banff and are predominantly characterized by Engelmann spruce *(Picea engelmannii)*, and subalpine fir *(Abies bifolia)* (or hybrids of these species). Lodgepole pine *(Pinus contorta)* are also common at lower altitudes.

Ecosite Units

Ecosections are ecological sub-units within each ecoregion that develop under similar environmental influences (climate, moisture and nutrient regime). Variations in local site attributes, the history of disturbance and other physical factors have lead to further classification of each ecosection into an ecosite. Knowing what ecosite a facility occurs in allows researchers and operators to predict the type of soils, vegetation communities and wildlife that are associated with each site. This information is important when assigning appropriate environmental mitigations to each project activity throughout the CSA.

The CSA includes 17 ecosections and 33 ecosites. The relationship between each ecoregion, ecosection and ecosite in the CSA is listed in Table 4.1.

Table 4.1 Ecosites in the CSA

Ecoregion	Ecosection Name and Code	Ecosite Code (see Appendix E)
Montane	AT - Athabasca	AT1
	FR – Fireside	FR1
	GA – Garonne	GA1
	HD – Hillsdale	HD1, HD2, HD3, HD4
	NY – Norquay	NY1, NY3
	PT – Patricia	PT1
	VL – Vermillion Lakes	VL1, VL3, VL4
Lower Subalpine	AL - Altrude	AL1
	BK – Baker Creek	BK1, BK4
	BV – Bow Valley	BV1, BV2
	CV – Consolation Valley	CV1
	HC – Hector	HC1, HC4
	IB – Ishbel	IB1
	PP – Pipestone	PP1, PP3
	PR – Panorama Ridge	PR1, PR2, PR3, PR4, PR6
	SB – Sawback	SB2, SB4
	VD – Verdant	VD1, VD2
Other	R – Rockland	R

Of the 33 ecosites in the CSA, 28 are crossed by AltaLink facilities; the remaining ecosites occur within the zone of influence.

Ecosite units associated with the CSA have been mapped and are illustrated on maps 551L_1 to 551L_9, and 54L_1 to 54L_6 (Appendix F). Table E-1 (Appendix E) summarizes the predominant biophysical characteristics associated with each ecosite including landform, soils, vegetation and wildlife associations.

Wildlife

BNP is home to over 281 species of wildlife including 59 mammals, 281 species of birds, 1 reptile and 6 amphibians (Holyrod and Van Tieghem 1983, and McIvor 1999). For this reason, only characteristic wildlife species (as noted by Holyrod and Van Tieghem (1983) and McIvor 1999) that have special status and the potential to be impacted by AltaLink projects are listed in Table E-1 (Appendix E).

Species with special conservation status that have the potential to be impacted by AltaLink projects in BNP, and those species' basic ecology is discussed below.

- **Grizzly bears** are considered a species that "may be at risk" (AENV 2000; update July 2002). The most sensitive periods for grizzlies are during spring (hypophagia) and mid-late summer (hyperphagia). Hypophagia occurs during spring when the bears are hungry and weak after a winter of hibernation. At this time they are in need of protein, which they get from early green vegetation in wetlands and on avalanche slopes. Hyperphagia occurs during mid-late summer, when bears start to feed on their most important fattening foods (berries in the mountains) that are essential to get them through the winter. This is particularly important for pregnant females or females with cubs (Parks Canada, pers. com). Parks Canada tracks the locations of large or otherwise significant berry patches in the late summer. Grizzly bear home ranges are large and include the entire CSA. However, in particular, Lake Louise (Map 551L_9), the habitat paralleling the 1A (Map 551L_3 to 551L_8) are associated with grizzly bears and/or significant berry patches.

- **Cougars** are considered to be a "sensitive" species in Alberta (AENV 2000). Historical cougar populations have been reduced, initially due to decline in large mammal populations in the beginning of the century followed by hunting under bounty from the mid-30s to mid-60s (Jalkotzy *et al.* 1992). Cougar population distribution in SW Alberta is primarily associated with the mountains and foothills. These areas encompass a variety of habitats including the montane, and subalpine ecoregions in BNP. Cougars are predators, preying primarily on ungulates (mostly deer and elk), and occasionally smaller mammals such as porcupine and beaver (Jalkotzy *et al.* 1992). They are almost exclusively solitary with breeding and gestation and caring for litters occurring at anytime throughout the year. The majority of births, however, have been recorded from April to August.

- **Canada Lynx** is considered to be "sensitive" in Alberta (AENV 2000). Lynx prey almost exclusively on snowshoe hare. Because of this, populations fluctuate with the hare populations; female lynx nearly stop or stop reproduction when hare populations are low (U.S. Fish and Wildlife Service 2002). Human activities (other than trapping which does not occur in BNP) do not appear to affect lynx populations (Environment Canada 2002). Lynx are usually found in early succession forests (after a disturbance) where hare densities are higher due to dense shrub understory. Home ranges vary with available prey densities. Lynx hunt at night; male lynx usually hunt alone, females hunt with kittens as a family group except during mating season in late February/early March. Kittens are born under brush, logs or uprooted trees in April and May. Because lynx are usually active at night, it is expected that AltaLink projects will have little to no impact on species activities.

- **Wolverines** are considered "vulnerable" in western and Northern Canada (COSEWIC, 2002) and in Alberta they "may be at risk" of extinction or extirpation (AENV, 2000). Wolverine home ranges are often hundreds of square kilometres in size, encompassing a variety of habitats. Distribution is related to food availability and human development, preferring areas with low levels of development. They are

scavengers and predators, depending on the time of year (Peterson, 1997). Wolverines are solitary except for during mating from May to August. The female digs a den or gives birth under fallen trees or rock crevasses in late February or March. The majority of AltaLink activities are proximate to developed areas and areas supporting high levels of human use. As such it is considered unlikely that wolverine would select dens sites in areas with the potential to be impacted by AltaLink projects.

- **Harlequin ducks** are listed as a "sensitive" species, making them vulnerable to human disturbance and worthy of special management considerations. Habitat degradation on breeding streams has been identified as a significant threat to the species long-term survival (Smith *et al.* 1995). Harlequin ducks are ground nesters; nests consist of depressions on the ground normally within 1 m of streams but have been found up to 55 m away (Smith, 2000). As such, there is potential for ground nest destruction during mowing activities on the ROW. Harlequin Ducks gather along the Bow River in April to mid-May before dispersing to nest in small mountain steams to lay their eggs in May-June with incubation often coinciding with peak stream runoff. Harlequin ducks frequently return to the same stream section to nest year after year. Harlequin ducks require clean fast flowing water with a healthy macro-invertebrate population. This makes them vulnerable to the effects of surface runoff and associated chemical pollutants and sedimentation.

  Harlequin Ducks /nest sites have been recorded at the following areas which are relevant to the CSA (Smith *et al.* 1995):

  - Bow River east of Lake Louise (poles 435-436, Map 551L_09)
  - Baker Creek (poles 366-367, Map 551L_8)

- The **American Bittern** is a heron-like bird, considered to be "sensitive" in Alberta (AENV 2000). Marshes, swamps, moist meadows, wet alder and willow thickets are the preferred habitat of this bird, and it can be found throughout Alberta where suitable habitat exists. It is always found in areas with dense vegetation, preferring seclusion (Semenchuck 1993). American Bitterns nest on the ground or on raised tussocks, in marshy and occasionally dry areas with tall vegetation. It arrives in Alberta in late April or early May, leaving by early September but occasionally staying into late October (Semenchuck 1993). Breeding typically begins once new vegetation emerges suitable for cover (usually in May). Within the CSA, wetland areas are considered potential breeding habitat for American Bitterns.

- **Osprey** is a fish eating bird of prey listed as "sensitive" by Alberta Environment (2000). It nests in the vicinity of permanent lakes and rivers, building nests near the water at the top of trees or wooden transmission and distribution poles. They are found throughout Alberta where lakes and nesting opportunity are present. Osprey spring migration into southern Alberta occurs in April and fall migration south is in September. Historically, osprey was persecuted in the early 1900s, and later population declines occurred from chemical pesticides use.

- **Northern Goshawk** is a "sensitive" species according to Alberta Environment (2000). Populations are shown to be very prey dependent, declining with prey populations. Prey includes grouse, snowshoe hare, red squirrel and other small mammals (Semenchuck 1993). Goshawks inhabit dense mixed wood forests. They build large nests (up to 1 m in diameter) in conifer or deciduous trees, often close to a permanent lake or river. The Northern Goshawk often migrates south or to parklands and prairie within Alberta in September-October, migrating back to densely forested boreal and mountain habitat for breeding in March-April (Semenchuck 1993, Fisher and Acorn 1998).

- The **Pileated Woodpecker** is considered to be "sensitive" in Alberta (AENV 2000). A pair of Pileated Woodpeckers require up to 40 hectares for foraging, preferring mature conifer or mixed wood forests (Fisher and Acorn 1998). They nest in mature to old-growth trees, excavating a cavity for 3 to 6 weeks in a dead or dying trunk. In the winter the Pileated woodpecker will excavate separate cavities for roosting, remaining in the same range year round. Populations are threatened due to intensive forest management (Semenchuck 1993). In the CSA piliated woodpeckers may be associated with mature deciduous stands that can be used as nest trees.

- **Western Tanager** is a "sensitive" species according to Alberta Environment (2000). Highest densities in the mountains are found in Douglas fir, aspen/lodgepole pine forests (Holroyd and Van Tighem 1983). Nests are generally built in conifers and occasionally deciduous up to 15 m high in the tree (Semenchuck 1993). This species arrives in the mountains in mid to late May, leaving in mid-August/September. Breeding would occur shortly after arrival, ending around mid-July.

- The **Clay-Coloured Sparrow** does not have special status in Alberta, however, it is considered a valued ecosystem component in the river valleys of the montane ecoregion as the grasslands, which are its preferred habitat, are considered rare in BNP.

- **Cooper's Hawk** do not have special status in Alberta, however the presence of Cooper's hawks usually indicate the presence of aspen and mixed-wood forests. Cooper's Hawks inhabit mixed woodlands such as aspen/lodgepole pine forests or pure aspen stands. Aspen forests occupy a small portion of lands within BNP and are considered a special resource (Achuff, 1986).

- The **long-toed salamander** is ranked as a 'sensitive' species in Alberta (Alberta Environment, 2000). They are considered uncommon but not in decline, although their clumped distribution tends to associate them with habitats potentially at risk (Alberta Wildlife Management Division, 1996). Habitat for the long-toed salamander typically occurs in closed canopy lodgepole pine and Douglas fir associations near a water body or near balsam poplar and willow dominated wet areas (Graham, 1999). The long-toed salamander is found in the shallow breeding ponds that are generally free of fish and not necessarily permanent. Breeding occurs from mid-April to the end of May and the eggs hatch three weeks later. Long-toed salamanders are known to migrate up to 1 km from breeding ponds to overwinter. For the past 8 years all of the

amphibians have been monitored in BNP (M. McIvor, pers. com.). The specific ecosites, on the transmission RoW and within the zone of influence, where long-toed salamander adults and egg masses have been found are:

On transmission RoW:

- GA1: Powerline Pond east of Pilot Pond, directly under ROW (Map M551L_5, poles 151 to 153)
- HD1: Mule Shoe Lake Wetlands (Map M551L_4, poles 82 to 89)
- PT1: Openside Pond (Map 54L_1, poles 220 and 221)
- PT1: Zapped Pond (Map 54L_1, poles 207 and 208)

Within the zone of influence:

- VL3: Moose Meadows Pool at northern end of meadows (Map M551L_5, poles 188 to 201).
- GA1: Pilot Pond or Lizard Lake (Map M551L_5, pole 158)
- VL4: Bow Valley Parkway Wetland at Five Mile Creek floodplain (M551L_3, poles 66 to 69)

- The **Columbia spotted frog** provincial status is uncertain, as it is not known whether populations are declining (James, 1998). The Committee on the Status and Endangered Wildlife in Canada (COSEWIC) considers it "not at risk" within Canada, but "of concern" in Alberta due to extremely limited distribution (James, 1998). Columbia spotted frogs inhabit cool, permanent water bodies such as slow moving streams, rivers, marshes, ponds and the edges of small lakes. In the Bow Valley they have been found primarily in the lower subalpine and montane regions, and occasionally in the upper subalpine (James, 1998). They are often found in non-woody wetland plant communities, using thick algae and vegetation for cover. For the past 8 years all of the amphibians have been monitored in BNP (M. McIvor, pers. com.). The Columbia spotted frog adults and egg masses have not been found in specific waterbodies crossed by AltaLink transmission lines, however there is potential habitat for Columbia spotted frog along the AltaLink RoW in BNP.

To maximize the level of protection afforded the Columbia spotted frog and long-toed salamander, all wetlands and waterbodies crossed by AltaLink are assumed to have the potential to support amphibians and amphibian habitat, until Parks Canada investigations determine otherwise (Banff National Park Warden Service, Sept 26, 2002). This includes all wetlands and waterbodies listed in Tables 4.4 and 4.5 and/or on the maps, as well as wetlands and waterbodies not specifically listed.

Vegetation

Over 70 vegetation community types are supported in BNP (Holland and Coen, 1982); 33 of these occur in the CSA. The dominant vegetation community types associated with each ecosite in the CSA are listed in Table E-1 (Appendix E). Table 4.2 lists all of the vegetation communities supported in the CSA and their dominant species. Table 4.3 illustrates the associations between ecosites and the various vegetation communities. As Table 4.3 indicates, more than one vegetation complex can be associated with an ecosite. These vegetation "mosaics" within each ecosite are tied to variations in local site attributes (aspect, slope, levels of disturbance etc.).

Several vegetation communities have been identified as special resources in BNP because of their limited distribution (Achuff, 1996). These are:

- Dry montane forest communities (C1: Douglas fir/hairy wild rye, O5: Douglas Fir/juniper bearberry and O2: Limberpine – Douglas fir/bearberry), montane grasslands (H6: Junegrass – pasture sage – wild blue flax)

- Aspen forests (C16: Aspen/hairy wildrye-peavine).

All of these vegetation communities have potential to occur in the CSA.

4.2.2 Wetland Setting

AltaLink facilities cross a number of ecosites that are characterized by wet terrain or that are near surface water tables. Table 4.4 lists wet ecosites and wetlands crossed and potentially influenced by AltaLink transmission lines, in an east to west direction. Wetlands crossed by AltaLink facilities have been identified on maps in Appendix F.

Wetlands occupy a small portion of the total areas of BNP (around 2.6%), however, they contain a diverse assemblage of plants and animals and are significant areas of wildlife use (Schindler and Pacas, 1996). The presence of lush vegetation that can be used for food and cover, and available water make wetlands excellent wildlife habitat. They provide seasonally critical habitat and travel corridors for wolves, coyotes, grizzly bears, black bears and elk within the region, and a diverse and abundant wildlife community is typically found in the wetland ecosites crossed by AltaLink. Ungulates, large carnivores and furbearers that use the wetland ecosites in the CSA are typical of those found in the montane ecoregion.

Amphibians recorded using wetland areas in the CSA include: long-toed salamander (*Ambystoma macrodatylum*), wood frog (*Rana sylvatica*) and Columbia spotted frog (*Rana leuteiventris*) (McIvor and McIvor, 1999). The long-toed salamander and Columbia spotted frog are listed as "sensitive", meaning that they are "not at risk of extinction or extirpation but may require special attention or protection to prevent them from becoming at risk" (Alberta Sustainable Resource Development/Alberta Environment, 2000). Egg clusters of the long-toed salamander have been found in areas crossed by the AltaLink transmission lines (Table 4.4). These locations have been noted on the ecological constraint mapping (Appendix F).

Table 4.2 Vegetation Community and Dominant Species in the CSA

C1	Douglas fir/hairy wild rye
C3	Lodgepole pine/juniper/bearberry
C4	White spruce/prickly rose/horsetail
C5	White spruce/Douglas fir/feather moss
C6	Lodgepole pine/buffalo berry/showy aster
C8	Black spruce – Lodgepole pine/willow/sedge
C9	Lodgepole pine/dwarf bilberry
C10	Lodgepole pine – white spruce/green alder/feather moss
C11	Lodgepole pine/feather moss
C13	Engelmann spruce subalpine fir/feather moss
C14	Engelmann spruce – subalpine fir/false azalea
C16	Aspen/hairy wild rye – peavine
C17	Balsam poplar/buffaloberry
C18	Lodgepole pine/buffaloberry/grouseberry
C19	Lodgepole pine/buffaloberry/twin flower
C20	Lodgepole pine/false azalea/grouseberry
C21	Engelmann spruce – subalpine fir/tall bilberry/liverwort
C26	White spruce/buffalo berry/fern moss
C27	White spruce/prickly rose/fern moss
C28	Balsam Poplar/horsetail
C29	Lodgepole pine/Labrador tea
C30	Engelmann spruce – subalpine fir/Labrador tea/crowberry
C31	Engelmann spruce – subalpine fir/hairy wild rye – heart leaf arnica – twin flower/feather moss
C32	Engelmann spruce/horsetail/feather moss
O2	Limberpine – Douglas fir juniper/bearberry
O3	White spruce/shrubby cinquefoil/bearberry
O4	Engelmann spruce – subalpine fir – white bark pine-lodgepole pine
O5	Douglas fir/juniper/bearberry
O6	Engelmann spruce – subalpine fir/willow/ribbed bog moss
O11	Spruce/Labrador tea/brown moss
O14	Engelmann spruce – subalpine fir/ rock willow/bracted lousewort
O17	White spruce/juniper/bearberry
S1	Dwarf birch – shrubby cinquefoil – willow/brown moss
S3	Dwarf birch – shrubby cinquefoil/needlerush
S4	Willow – dwarf birch/fleabane
S7	Willow/horsetail
S8	Willow/cinquefoil
S9	Dwarf birch – willow/Kobresia
S11	Willow/timber oat grass
H3	Sedge – saxifrage
H6	Junegrass – pasture sage – wild blue flax
H8	Yellow dryad – willow herb
H11	Water sedge – beaked sedge
H19	Bluebunch wheatgrass – hairy wild rye – showy aster
L1	Shrubby cinquefoil/bearberry – northern bedstraw

Table 4.3 Vegetation Complex associations within each ecosite

Ecosites	C1	C3	C4	C5	C6	C7	C8	C9	C10	C11	C13	C14	C16	C17	C18	C19	C20	C21	C26	C27	C 28	C29	C30	C31	C32	O2	O3	O4	O5	O6	O11	O14	O17	S1	S3	S4	S7	S8	S9	S11	H3	H6	H8	H11	H19	L1
Montane																																															
AT - ATHABASCA **AT1**		✓			✓											✓																															
FR – FIRESIDE **FR1**					✓			✓								✓																															
GA – GARONNE **GA1**	✓	✓			✓			✓					✓																															✓	
HD – HILLSDALE **HD1**													✓	✓																															
HD – HILLSDALE **HD2**																											✓						✓											✓		
HD – HILLSDALE **HD3**				✓															✓	✓																									
HD – HILLSDALE **HD4**		✓																																								✓			
NY – NORQUAY **NY1**	✓				✓																																								
NY – NORQUAY **NY3**	✓	✓		✓																						✓			✓																✓
PT – PATRICIA **PT1**		✓		✓	✓				✓																																				
VL – VERMILLION LAKES **VL1**																														✓	✓			✓			✓								
VL – VERMILLION LAKES **VL3**			✓																															✓			✓								
VL – VERMILLION LAKES **VL4**		✓																			✓																									
Lower Subalpine																																														
AL - ALTRUDE **AL1**					✓			✓		✓					✓	✓	✓					✓																									
BK – BAKER CREEK **BK1**					✓										✓	✓	✓														✓			✓	✓										
BK – BAKER CREEK **BK4**		✓			✓											✓	✓					✓									✓			✓	✓										
BV – BOW VALLEY **BV1**								✓								✓																		✓											
BV – BOW VALLEY **BV2**																	✓					✓																							
CV – CONSOLATION VALLEY **CV1**																															✓	✓		✓	✓									
HC - HECTOR **HC1**																									✓					✓	✓			✓	✓								✓		
HC - HECTOR **HC4**																																		✓	✓	✓		✓	✓	✓	✓			✓		
PP - PIPESTONE **PP1**		✓			✓											✓																													
PP - PIPESTONE **PP3**											✓								✓					✓	✓																				
PR – PANORAMA RIDGE **PR1**										✓							✓					✓																							
PR – PANORAMA RIDGE **PR2**													✓	✓																															
PR – PANORAMA RIDGE **PR3**									✓	✓	✓	✓			✓	✓																✓													
PR – PANORAMA RIDGE **PR4**		✓			✓						✓	✓			✓	✓		✓					✓	✓				✓																	
SB – SAWBACK **SB4**		✓																										✓				✓												✓
VD – VERDANT **VD2**								✓								✓	✓																												
Within Buffer Zone																																														
IB – ISHBEL **IB1**															✓	✓						✓																							
PR – PANORAMA RIDGE **PR6**										✓					✓	✓						✓																							
PT – PATRICIA **PT5**							✓			✓																					✓													
SB – SAWBACK **SB2**											✓	✓						✓					✓	✓																				
VD – VERDANT **VD1**											✓	✓																																

C – closed forest community
O – open forest community
S – shrub community
H – herb community
L – low shrub community

Table 4.4 Wetlands in BNP crossed or within the zone of influence of AltaLink Transmission Lines (East to West)

Map Sheet	Pole Number	Wetlands crossed	Wetlands within the zone of influence	Ecosite Classification[(b)]
M54L_1	207 & 208	Unnamed pond ("Zapped Pond")[(a)] in small wet area		PT1
M54L_1	220 & 221	Unnamed pond ("Openside Pond")[(a)] in small wet area (may be dry, depending on rainfall)		PT1
M54L_6	301 to Banff Avenue	Area wet in low spots		VL4
M551L_ 1 & 2	27, 28 & 32 to 38 & 41	Whisky Creek flats just NW of Banff Townsite		VL3
M551L_3	66 to 69		Bow Valley Parkway Wetland[(a)] at Five Mile Creek floodplain	VL4
M551L_4	89 to 104	Muskeg brushy area		VL1
M551L_4	114 to 132	Treed wetland		VL3
M551L_4	82 to 89	Mule Shoe Lake Wetlands [(a)]		HD1
M551L_5	151 to 153	Powerline Pond[(a)] east of Pilot Pond, directly under ROW		GA1
M551L_5	158		Pilot Pond or Lizard Lake[(a)]	GA1
M551L_5	188 to 201		Moose Meadows, Moose Meadows Pool at northern end of meadows[(a)]	VL3
M551L_6	222 & 223	East of Castle Junction		HC1
M551L_7	307 to 310	Marshy area north of HWY 1A		BK1
M551L_8	350 & 356	Seasonally wet meadows southeast of Baker Creek on the north side of the CPR		HC4
M551L_9	460 to 469	Swampy muskeg southeast of Lake Louise		BK1

[(a)] Long-toed salamander egg clusters and adults found in ponds surveyed and named by McIvor and McIvor (1999); Sites have been identified on map sheets in Appendix F.

[(b)] Ecosite classifications are defined in Table 4.1 and described in Appendix E.

Wetlands also provide essential habitat for birds, including resting and staging areas (Schindler and Pacas, 1996). Some species of breeding birds typically using these wetland ecosites include: Swainson's thrush (*Catharus ustulatus*), ruby crowned-kinglet (*Regulus calendula*), yellow-rumped warbler (*Dendroica coronata*), dark-eyed junco (*Junco hyemalis*), pileated woodpecker (*Dryocopus pileatus*), savannah sparrow (*Passerculus sandwichensis*) and osprey (*Pandion haliaetus*) (Holroyd and Van Tighen, 1983). Typical waterfowl species include: Harlequin duck (*Histrionicus histrionicus*), mallard (*Anas platyrhynchos*), American green-winged teal (*Anas crecca*) and wood duck (*Aix sponsa*) (Ferguson and Halverson, 2000). The pileated woodpecker, osprey and harlequin duck are all listed as "sensitive" (Alberta Sustainable Resource Development/Alberta Environment, 2000).

4.2.3 Aquatic Setting

The predominant aquatic features associated with the CSA are the Bow River, its tributaries and associated wetlands. Wetlands in the CSA are described in Section 4.2.2. A significant portion of the AltaLink line parallels the Bow River; the 551L line also crosses the Bow several times. In addition to crossing the Bow River, several tributary streams that are part of the Bow watershed are within AltaLink's operating area. Table 4.5 lists the water bodies crossed and potentially impacted by AltaLink transmission lines (i.e., are within 200 m on either side of AltaLink's facilities), in an east to west direction.

The access maps provided in Appendix G demonstrate efforts to avoid stream crossings in the CSA through the utilization of alternative access routes or timing restrictions. These alternative access routes are the preferred routes for all planned maintenance activities that require the use of heavy machinery and equipment (i.e., foremosts, nodwells, backhoes). Alternately, stream crossings are made as per timing restrictions. ATVs and Argos, due to their low ground pressure and single crossings are not restricted. Appendix B contains photographs of stream crossings that were investigated to determine site-specific crossing and timing requirements.

Groundwater

Much of the lower elevation portions of the Bow Valley, along which the AltaLink line is found, are the result of fluvial and colluvial deposition. Groundwater flows through these deposits and ultimately reaches the Bow River. Groundwater studies in BNP indicate that groundwater moving through mountain streams and scree slopes is an important source of recharge (Hydrogeological Consultants Ltd., 2001).

Surface Water

Originating from its headwaters at the Bow Glacier, the Bow River flows through the glacially-steepened, wide Bow Valley in a southeasterly direction. The river flows 130 km to the eastern edge of BNP. The outflow from Bow Glacier and Bow Lake flows steeply and swiftly, travelling down a series of small falls. The river gradually widens and decreases in gradient, such that rapids and gravels become prevalent. By the time it reaches Castle Junction, the Bow is wider, with the occurrence of gravel bars and some braiding of the streambed. Deep pools and slow currents eventually lead to the extensive wetland area of the Vermillion Lakes. From this point

on, with the exception of the Bow Falls, which is a 12 m high rapid just downstream of the Town of Banff, the Bow River exists as a wide, meandering river to the BNP boundary.

Several water quality monitoring stations exist along the Bow River system, with several locations along the mainstem and at several of its lakes and tributary streams (Environment Canada, 2001). While specific water quality information exists for some of the waterbodies crossed by the AltaLink transmission lines, only a general discussion of water quality within the Bow River system is relevant for this MCSR.

The water quality of the Bow River within BNP is generally very good, but changes occur down its longitudinal gradient, which may be due in part to human use. Snow and water samples taken near the headwaters of the Bow River confirmed the presence of several pesticides, demonstrating that long-range atmospheric transport and deposition occurs within BNP (Block *et al*., 1993). Other persistent organic pollutants can be found in waters within BNP (Blais *et al.* 2001).

The Bow River and its tributaries contain very low sediment concentrations, even during spring freshet (Environment Canada, 2001), when snow and glacial melt and surface runoff typically carries with it large volumes of sediment. Sediment inputs from tributaries of the Bow increase the sediment loads as the river flows further downstream, but in general, the water is clear for most of the year. Modifications to alluvial fans as a result of the construction of the transportation corridors may have reduced material deposition to the Bow River from many of its northern tributaries since historic times (Pacas, pers. com.). However, fine sediments may have increased since human intervention of the area began over a century ago. Increased linear disturbances, road construction and use, municipal effluents and runoff, can all increase sediment loading to surface waters.

The water chemistry of the Bow River and many of its tributaries within BNP reflects the high proportion of carbonate rock in the area and is dominated by calcium, magnesium and bicarbonate ions (Mayhood *et al*., 1976). The pH is slightly alkaline, and the total hardness increases from low to moderate along the length of the river (Environment Canada, 2001). The Bow River and its tributaries are generally oligotrophic (low in productivity), containing few nutrients (Schindler and Pacas, 1996). Nutrient limitation, particularly by phosphorus, is a common characteristic of high mountain streams fed by glaciers and springs.

Aquatic Resources

For the purposes of the MCSR, the aquatic resources potentially affected by the AltaLink transmission lines were limited to fish and fish habitat. As the top aquatic predators, fish give an indication of the health of lower trophic levels, including aquatic plants and benthic invertebrates. Field work was conducted by Highwood's aquatics specialist and AltaLink personnel (November and December, 2002) for all potential waterbody crossings to determine their site-specific characteristics, alternate access routes, potential fish habitat and any barriers to fish movement. This information provided site-specific and site-appropriate timing restrictions. Given the nature of projects included in the MCSR and the limited interaction between project

activities and the aquatic environment, no other field work was conducted for the remainder of the alignment.

While there have been many studies of the fish and their habitat in Banff National Park, the specific distributions of all species and their spawning and overwintering sites have not been well documented (Brewin, pers. com.). In addition, existing documents are often contradictory and incomplete, and records of non-sport fish distribution are limited (Brewin, pers. com.). Table 4.5 and the maps in Appendix F include known species and habitat use as interpreted and documented in the literature (Parks Canada and CPR, 2000; Godman, 1999; Agra Earth & Environmental, 1999; EnviResource Consulting Ltd., 1999; Duke *et al*., 1996; Golder Associates Ltd., 1996; Schindler and Pacas, 1996; Mayhood, 1995; Bow River Water Quality Council, 1994; Brewin, 1994; Paul, 1994; Mayhood and Paczkowski, 1993; Nelson and Paetz, 1992; Environmental Management Associates, 1987; Mudry and Green, 1977; Mayhood *et al*., 1976; Smiley, 1974; Ward, 1974; Ward, 1972). Alberta Environment, Trout Unlimited and Parks Canada were also contacted (Lajeunesse, Brewin and Pacas, pers. com.) for information.

Many species of fish are found in the Bow River system, however, the naturally cold waters, lack of shelter, small tributary size and low productivity limit the growth and abundance of fish species in BNP. Bow Falls, located just downstream of the town of Banff, acts as a natural physical barrier and prevents the upstream movement of fish. The Cascade power plant, operated by TransAlta, has regulated the flow of the lower Cascade Creek such that it exists as a dry streambed for much of the year, reducing its potential for fish habitat (Golder Associates Ltd., 1996). Over time, the fish populations in the upper Bow River system have changed substantially, with native species declining and being replaced by non-native species.

Species native to the upper Bow River system include westslope cutthroat trout (*Oncorhynchus clarki lewisi*), bull trout (*Salvelinus confluentus*) mountain whitefish (*Prosopium williamsoni*), longnose sucker (*Catostomus catostomus*), mountain sucker (*Catostomus platyrhynchus*), longnose dace (*Rhinichthys cataractae*), brook stickleback (*Culaes inconstans*), lake chub (*Couesius plumbeus*) and burbot (*Lota lota*) (Banff-Bow Valley Study, 1996; Nelson and Paetz, 1992; Leeson and Harrison, 1988). Historically, non-native fish species, including brown trout (*Salmo trutta*), brook trout (*Salvelinus fontinalis*) and rainbow trout (*Oncorhynchus mykiss*), were stocked in the Bow River near Banff. Other introductions of non-native fish to the system include Yellowstone cutthroat trout (*Oncorhynchus clarki bouvieri*), lake trout (*Salvelinus namaycush*) and white sucker (*Catostomus commersoni*) (Brewin, 1994).

Introductions of non-native fish have impacted some of the native populations, particularly the westslope cutthroat trout and bull trout, through competition and hybridization. Overfishing and habitat destruction have also contributed to the decline of these native species (BBVS, 1996; Mayhood, 1995). Fisheries investigations in the Bow River and its tributaries near Banff suggest that the fish community is currently dominated by brook trout, mountain whitefish, longnose suckers and white suckers, where it was historically dominated by bull and westslope cutthroat trout and mountain whitefish (Bow River Water Quality Council, 1994; Brewin, 1994).

Table 4.5 Transmission Line Waterbody Crossings and Fish Species within Banff National Park (East to West)

Map Sheet	Pole Number	Waterbodies Crossed by Transmission Line	Waterbodies in 500 m Buffer	Vehicle/Equipment Crossing	Fish Species
M54L_1	208-207	Unnamed pond (Zapped Pond[(b)])		Impassable waterbody	Unknown
M54L_1	217-216	Carrot Creek		Possible alternate access; respect timing windows otherwise	Brook trout, brown trout ** Brown trout spawn in Carrot Creek*
M54L_1	221-220	Unnamed pond (Openside Pond[(b)])		Impassable waterbody	Unknown
M54L_1	231-230		Unnamed pond (Lily Pond[(b)])	No crossing required	Unknown
M54L_1	236-235	Unnamed pond		Impassable waterbody	Unknown
M54L_2	249-248	Unnamed ephemeral creek from Johnson Lake (usually dry at this site)		Usually dry at this site; no water crossing required	Usually dry due to damming of east end of Johnson Lake, not fish-bearing
M54L_2	253-252	Unnamed ephemeral creek from Johnson Lake (usually dry at this site)		Usually dry at this site; no water crossing required	Usually dry due to damming of east end of Johnson Lake, not fish-bearing
M54L_2	259-258	Unnamed ephemeral creek from Johnson Lake (usually dry at this site)		Usually dry at this site; no water crossing required	Usually dry due to damming of east end of Johnson Lake, not fish-bearing
M54L_2	264-258		Johnson Lake	No crossing required	Cutthroat trout, rainbow trout, brook trout, brown trout, splake, mountain sucker
M54L_2	265-264	Unnamed creek from Johnson Lake		No timing restrictions; fish migration barriers limit habitat	Unknown; barriers to upstream fish migration to lake
M54L_3	271-270		Power canal from Two Jack Lake	No crossing required	Bull trout, brook trout, brown trout, lake trout, mountain whitefish, cisco, splake, longnose sucker
M54L_3	276-275	Cascade Creek (usually dry at this site)		Usually dry at this site; no water crossing required	Possibly brook trout when wet, but generally not fish-bearing
M54L-6	298-297	Whiskey Creek (usually dry at this site)		Usually dry at this site; no water crossing required	Possibly brook trout and brook stickleback when wet, but generally not fish-bearing
M551L_1 / M551L_2	27-18, 28-27	Whiskey Creek		Alternate access available	Brook trout, brook stickleback
M551L_1 / M551L_2	37-36	Forty Mile Creek		Impassable waterbody	Cutthroat trout, bull trout, brook trout, brown trout, mountain whitefish, brook stickleback ** Brook trout and possibly bull trout spawn in Forty Mile Creek*
M551L_1 / M551L_2	37-36		Echo Creek	No crossing required	Cutthroat trout, bull trout, brook trout, brown trout, mountain whitefish, brook stickleback
M551L_2	64-63	Unnamed ephemeral creek to Vermilion Wetlands		Alternate access available	Unknown
M551L_3 / M551L_2	68-66	Five Mile Creek		No timing restrictions as not fish-bearing; o	Not fish-bearing
M551L_3	71-70	Unnamed ephemeral creek (Cory Creek) to Bow River (usually dry at this site)		No timing restrictions as not fish-bearing and usually dry; operational restrictions apply	Usually dry at this site; not fish-bearing
M551L_4	84-83, 83-82	Mule Shoe Lake (part of Bow River)		Fall/winter crossing acceptable when frozen; respect May 1 to August 15 timing restrictions	Cutthroat trout, bull trout, brook trout, brown trout, mountain whitefish
M551L_4	115-114, 116-115, 118-117, 120-119, 121-120, 134-133	Ranger Creek		Fall/winter crossing acceptable when frozen; respect May 1 to August 15 timing restrictions	Brook trout

Table 4.5 Transmission Line Waterbody Crossings and Fish Species within Banff National Park (East to West)

Map Sheet	Pole Number	Waterbodies Crossed by Transmission Line	Waterbodies in 500 m Buffer	Vehicle/Equipment Crossing*	Fish Species
M551L_5	157-156	Unnamed pond (Powerline Pond)		Impassable waterbody	Unknown
M551L_5	158		Pilot Pond	No crossing required	Unknown
M551L_5	183-182	Johnston Creek		Impassable waterbody	Cutthroat trout, bull trout, brook trout, rainbow trout
M551L_5	190-189, 195-194	Unnamed creek (Borrow Pit Springs) to Bow River		Fall/winter crossing acceptable when frozen and low flows; respect May 1 to August 15 timing restrictions	Brook trout
M551L_6 / M551L_5	209-208	Unnamed creek to Bow River		Impassable waterbody	Brook trout
M551L_6	337-236A	Silverton Creek (dry during winter)		Fall/winter crossing acceptable when dry; respect May 1 to August 15 timing restrictions when wet	Cutthroat trout, bull trout, brook trout when wet, but dry during winter and not fish-bearing
M551L_6	280-279	Unnamed creek to Bow River		Alternate access available	Unknown
M551L_7 / M551L_6	284-283	Unnamed creek to Bow River		Alternate access available	Unknown
M551L_7	330-329	Unnamed creek to Bow River		Fall/winter crossing acceptable when frozen; respect May 1 to August 15 timing restrictions	Unknown when wet, but frozen to substrate during winter and not fish-bearing
M551L_8	350-339	Unnamed creek to Bow River		Alternate access available	Unknown
M551L_8	367-366	Baker Creek		Alternate access available	Cutthroat trout, bull trout, brook trout, mountain whitefish * *Brook trout possibly spawn in Baker Creek*
M551L_9	423-414		Island Lake and Outlet Creek to Bow River	No crossing required	Cutthroat trout, rainbow trout, mountain whitefish
M551L_9	423-421, 436-435	Bow River		Impassable waterbody	Cutthroat trout, bull trout, brown trout, brook trout, rainbow trout, lake trout, mountain whitefish, splake, longnose dace, white sucker, longnose sucker, brook stickleback * *Cutthroat trout possibly spawn in the Bow River upstream of Lake Louise* * *Brook trout spawn in the Bow River between its confluence with Silverton Creek and Muleshoe Lake* * *Mountain whitefish and brook trout likely spawn throughout the Bow River within BNP, including near its confluence with Brewster Creek.* * *Mountain whitefish and possibly cutthroat and brown trout spawn in the Bow River near its confluence with Cascade Creek.*
M551L_9	442-441	Corral Creek		Fall/winter crossing acceptable when frozen; respect May 1 to August 15 timing restrictions	Cutthroat trout, brook trout * *Cutthroat trout possibly spawn in Corral Creek*
M551L_9	447-446	Unnamed creek to Bow River		Respect May 1 to August 15 timing restrictions; log crossing available during winter	Unknown
M551L_9	458-456	Unnamed creek to Kingfisher Lake and McNair Pond		Fall/winter crossing acceptable when frozen; log crossing available during winter	Bull trout, brook trout, rainbow trout, mountain whitefish
M551L_9	474		Pipestone River	No crossing required	Cutthroat trout, bull trout, brook trout, mountain whitefish * *All these species possibly spawn in the Pipestone River*

* Waterbody crossings will be re-evaluated by AltaLink and Parks Canada in 2005; the two- year anniversary of the declaration of the MCSR. At that time, required amendments to stream crossing mitigations will be made.

(a) Sites have been identified on map sheets in Appendix F.
(b) McIvor, M. and D. 1999. Amphibian Surveys in Banff National Park and adjacent areas, 1992-1998.

Most of the literature on fish distribution and habitat use within BNP does not specify the subspecies of cutthroat trout, likely due to difficulties in identification and also due to its introgressive hybridization with other black-spotted trout species throughout the Bow River basin (Mayhood, 1999; Mayhood, 1995). Therefore, distinctions between the Yellowstone cutthroat trout, the westslope cutthroat trout and introgressed forms have not been made here.

Bull trout and cutthroat trout appear to be quite widely distributed throughout the upper Bow River system upstream of Bow Falls, but have decreased in abundance since historic times. Reports (Mayhood, 1999; Schindler and Pacas, 1996; Mayhood, 1995; Brewin, 1994) state that these native populations are in jeopardy, and may be at, or approaching, levels associated with a high risk of extirpation. Compounding the decreases in their abundance is the high relative abundance and distribution of brook trout, which is known to out compete cutthroat trout and hybridize with bull trout (Brewin, 1994).

As a result, the bull trout has been listed as "sensitive", meaning that it "is not at risk of extinction or extirpation but may require special attention or protection to prevent it from becoming at risk" (Alberta Sustainable Resource Development/Alberta Environment, 2000). Although the westslope cutthroat trout is not officially recognized as being at risk, there is currently a zero possession limit for both bull and cutthroat trout caught in BNP (Parks Canada, 2002).

Fish spawning and overwintering likely occurs throughout the Bow River system, wherever suitable habitat can be found. Each fish species has different behaviour and habitat preferences, including the time of year, stream flows and size, substrate size and spawning method. Table 4.5 and the maps in Appendix F list the known and potential spawning areas within the waterbodies crossed by or within the buffer zone of AltaLink facilities. Unless constrained by physical limitations, including frozen/dry creekbeds, impassable falls or hanging culverts, all listed waterbodies may provide spawning habitat for the fish species known to be present.

In order to protect the reproduction, growth and survival of these fish species during the spawning and egg incubation period, timing restrictions have been put in place throughout the province by Alberta Environment. These timing restrictions prevent activities within the waterbodies, and vary depending on the fish species present or potentially present. The timing restrictions also vary based on site-specific stream characteristics and the potential for the waterbody to provide fish habitat.

In general, the Bow River has a "no activity" clause spanning from September 15 to April 15 (Lajeunesse, pers. com.). Specific timing restrictions for sportfish species in the Bow River differ for spring and fall spawners (Alberta Transportation and Utilities, 2000):

- Spring spawners:
  - Rainbow trout: May 1 to July 15
  - Cutthroat trout: May 27 to August 15

- Fall spawners:
  - Bull trout: September 1 to March 25
  - Lake trout: September 10 to April 5
  - Mountain whitefish: September 10 to April 15
  - Brook trout: September 15 to March 25
  - Brown trout: September 15 to March 25

Although unlikely, if all sportfish species were theoretically present and spawning in one area, timing restrictions would span from September 1 to April 15 and from May 1 to August 15. The only windows available for stream crossings would be from August 16 to 31 and from April 16 to 30, which would protect all incubating eggs, developing fry and spawning and overwintering fish. As a conservative measure, these are the timing windows recommended for the waterbodies for which stream crossings are unavoidable and additional habitat information is not available (Table 4.5).

In reality, stream crossings by AltaLink are expected to be infrequent (approximately every seven years) and rare, since AltaLink only fords streams when other access routes are unavailable. In addition, some of the stream crossings are physically impassable. Of all the waterbodies crossed directly by the transmission lines, only a few creeks have the potential to be crossed by AltaLink vehicles and equipment during routine maintenance activities, and are identified in Table 4.5. Field visits were used to assess these crossings for site-specific characteristics, alternate access routes, potential fish habitat and any barriers to fish movement. Photographs and descriptions of the waterbodies assessed during the field visits can be found in Appendix B.

The field assessments provided sufficient information to recommend site-specific and site-appropriate timing restrictions. Additional alternate access routes were identified for several creeks, eliminating the need to cross that waterbody. Other waterbodies were found to be dry or frozen to the bottom during the winter. For these creeks, the fall and winter timing restrictions (Sept. 1 to April 15) were lifted, due to the lack of available fall spawning, incubation and overwintering habitat.

All other stream crossings were given the conservative protection limitations of the two two-week windows mentioned above, in order to maximize the level of protection afforded fish and fish habitat in the Bow valley. These remaining waterbodies are assumed to have the potential to support all life stages of all fish species, until further studies determine otherwise (Parks Canada, 2002).

4.2.4 Heritage Resources

Parks Canada provided information related to cultural resources in BNP. All known historic sites and archaeological sites were mapped and if available, described on maps 551L_1 to 551L_9 and 54L_1 to 54L_6 (Appendix F). Those sites located on the RoW include:

Site #	Map Sheet	Pole #s
63	M54L-2	270
562	M551L_1&2	34-35
68	M551L_1&2	32-33
180	M551L_1	42-43
110	M551L_2	63-64
108 &106	M551L_2	62-63
563	M551L_1&2	28-32
496	M551L_3	67
364	M551L_4	133-140
24	M551L_4	86-87
1779	M551L_6	265
76	M551L_6	256-257
75	M551L_6	254
1245	M551L_6	246-253
73	M551L_6	242
82	M551L_6	226-227
118	M551L_8	396-407
119	M551L_8	395-396

All of these sites consist of historic features such as depressions, berms or scatters of historic refuse, except for site 1779, which is an historic stone survey cairn with adjacent tree inscription (Gwyn Langemann, Pers. Com.).

4.2.5 Human Use and Recreation

The majority of the infrastructure and facilities supporting human use in BNP occur in the frontcountry areas. Frontcountry is defined as vehicle-accessible regions of the park and the adjacent lands about 10 km from a roadway (Fisher *in* Taylor and Ryall, 2001). AltaLink transmission facilities are all located in the frontcountry. In addition, several of the AltaLink facilities intersect or parallel recreational trails that support human use. Other anthropogenic features associated with human use that share the CSA with AltaLink facilities include the TransCanada Highway, Highway 1A, Canadian Pacific Railway (CPR) and the various roadways that provide access recreational areas and outlying commercial accommodations (OCAs).

4.3 Impact Assessment Approach

CEAA requires a review of the environmental effects of the projects included in the MCSR. To identify the potential environmental impacts associated with projects included in the MCSR, the following approach was taken:

- Describing the project with particular attention to those aspects that have potential to interact with the environment;
- Describing the typical environments that are potentially affected by projects;
- Identifying the potential project/environmental interactions (i.e., project activities that may affect the environment);
- Describing the potential environmental impacts of project activities;
- Identifying appropriate environmental mitigation measures;
- Assessing potential environmental effects of accidents and malfunctions and identifying appropriate control and response measures;
- Identifying potential residual effects and rating their likely significance;
- Consideration of potential cumulative environmental effects and,
- Identifying follow-up and monitoring requirements.

Potential pre-mitigation environmental impacts were determined based on the activities associated with AltaLink projects described in:

- Section 3.6;
- Table 3.2;

and, the existing environment described in:

- Section 4.2;
- Table E-1 (Appendix E); and,
- The ecological constraint mapping (Appendix F),

Impact ratings were assigned for each project activity based on the criteria listed in Table 4.6.

4.4 Potential Environmental Effects of Transmission Facility Routine Maintenance and Operation

As required under CEAA, potential pre-mitigation environmental effects related to routine operation and maintenance activities were identified. Potential environmental effects related to the routine operation and maintenance of AltaLink facilities in BNP were identified for those environmental resources that are considered to be Valued Ecosystem Components (VEC) in BNP: air quality, groundwater, surface water, aquatic resources, soil, vegetation, wetlands and riparian habitat, wildlife and historical resources. Social VECs are public safety and recreational use.

Table 4.6 Impact Rating Attributes

Impact Attribute	Rating Term	Definition
Direction	Positive	Beneficial change
	Neutral	No Change
	Negative	Adverse change in the Valued Ecosystem Component (VEC) being evaluated
Geographic Extent	Local	Within the project area or its immediate environs
	Regional	Beyond the project area but within the Bow River Watershed within BNP
	Extra-regional	Outside the Park
Duration	Short-term	During the construction phase
	Medium term	Up to two years
	Long term	Longer than two years
Frequency	Once	Occurs only once per year
	Intermittent	Occurs occasionally (e.g. 3 times per year)
	Continuous	Occurs continuously
Reversibility	Reversible	May be reversed over time or when activity ceases
	Non-Reversible	Will not be reversed
Magnitude	None	*These terms combine the above attributes.* *They are relative and assigned by professional environmental practitioners*
	Negligible	
	Low	
	Medium	
	High	

4.4.1 Air

- **Travel on the RoW**: Dust and emissions from poorly maintained vehicles and equipment (i.e., trucks, chainsaws, mowers) have potential to negatively affect air quality (Hydrocarbons and green house gas). The effects of dust and emissions are extremely localized and of short duration and thus considered negligible.

- **Burning** during vegetation management (only used as directed by Parks personnel for disposal of brushing debris) can create smoke and increased particulate matter (PM). Smoke from burning activity in some conditions can create temporary safety and health hazards. Potential impacts to air quality are considered low.

- **Herbicide applications** can produce spray drift negatively impacting air quality. The environmental effects of this drift are extremely localized and of short duration and thus considered negligible.

4.4.2 Groundwater

- **Pole re-treatment and/or pole replacement with new treated poles:** Accidental spills of pole treatment chemicals (fungicides, pesticides and other chemicals) may result during their transportation, handling, mixing, application and storage. These spills can result in groundwater contamination. Some pole treatment chemicals (pentachlorophenol, or "penta") bind strongly to soils and sediments and biodegrade within a few weeks, resulting in little potential for groundwater contamination (Brooks, 1998). Others, like bendiocarb, are more mobile, but generally degrade before they can leach through soils into groundwater (US EPA, 1999). Pole wraps provide an impervious barrier between the pole and soil environment. This offers additional protection from chemical migration. Prior to purchase by AltaLink, all treated wood poles are inspected. This reduces the possibility of "bleeders" (pole treated with excess preservative) being installed. Pole treatment significantly increases the service life of each pole. Without these treatments, poles would have to be replaced more often; a range of environmental impacts are associated with pole replacement. Due to the low frequency and magnitude of pole re-treatment and replacement, the overall effects to groundwater are considered negligible.

- **Herbicide application:** Accidental spills of herbicides may result during their mixing and application onto vegetation. These spills can result in groundwater contamination. Imazapyr, glyphosate and 2-4 D, (the herbicides used to control weeds), are strongly adsorbed by soils and have a low potential for leaching into the groundwater (Information Ventures, 1995a, b, c). In the event of a weed infestation, other products may be used to control noxious and restricted weeds. Only herbicides federally approved and registered by Agriculture Canada under the Pest Control Products Act are used. The potential effects to groundwater resulting from activities associated with herbicide applications, specifically accidental spills, are considered low.

- **Hazardous material handling/Temporary staging and Equipment refuelling, maintenance and repair:** Accidental spills of fuel or oils may result during their transportation, handling, application and storage, and during regular operations, maintenance and refuelling of vehicles and equipment. Many of these hazardous products (including gasoline, diesel, lube oil, and aviation fuel) can move quickly through soil and contaminate groundwater sources. Pre-mitigation potential effects to groundwater associated with hazardous material handling, specifically accidental spills, are considered moderate.

- **Transformer oil handling:** Accidental spills of transformer oils may result during their transportation, handling and storage, resulting in contamination of groundwater. The Voltesso 35 transformer oil (mineral oil) has low solubility, which slows down its movement through soil to groundwater, however, any spills would serve as a long-term source of groundwater contamination if not removed (Conor Pacific, 2000). Pre-mitigation potential effects to groundwater associated with the handling of transformer oils, and accidental spills in particular, are considered low.

4.4.3 Wetlands, Surface Water and Aquatic Resources

- **Access and travel along the RoW/Ground Patrols:** Travel along access trails or on the RoW, particularly in wet conditions, has the potential to create rutting of roads and may cause the channelization or pooling of surface waters, preventing normal flows.

  Surface water runoff and increased sedimentation resulting from eroded soils can decrease the quality of surface waters or wetlands that they enter. These changes in water quality can impact aquatic resources. Sediment can settle out to fill interstitial spaces in the substrate, reducing aquatic habitat and smothering benthic invertebrates and fish eggs and developing fry. The pre-mitigation impacts to wetlands, surface water and aquatic resources from travel along the RoW range from low to medium, depending on the timing, frequency, extent and localized environmental conditions (slope, erosion risks, wet conditions etc.).

- **Pole re-treatment and/or pole replacement:** Accidental spills of pole treatment chemicals (fungicides, pesticides and other chemicals) may result during their transportation, handling, mixing, application and storage. If these spills occur near open water, they can result in wetland and surface water contamination and impact aquatic organisms and wildlife. The leaching of these chemicals from poles in or near water can also contaminate surface waters, however, changes to water quality vary depending on the chemical. Poles treated with pentachlorophenol are not inserted into standing water. Natural cedar poles with boron rods inserted internally, or steel poles, are used instead. Prior to purchase by AltaLink, all treated wood poles are inspected. This reduces the possibility of "bleeders" (poles treated with excess preservation) from being installed. Bendiocarb, used to fumigate ants in poles, breaks down quickly and does not build up in water (US EPA, 1999). Other chemicals, include metam sodium, copper naphthenate and sodium fluoride may also contaminate surface

waters. Boron is a less toxic alternative to other fungicides, however, it is very water soluble in some forms, so is applied in the form of glass rods, which are inserted internally into the pole.

Impacts on aquatic organisms and wetland species may cause direct mortality, or affect their growth and reproduction, the degree of toxicity depending on the chemical. Metam sodium and bendiocarb are very highly toxic to aquatic organisms (Cox, 2000*a*). The use of boron rods or sodium fluoride in flurods, however, appears to pose little risk to aquatic organisms (Mallinckrodt Baker, Inc., 2001). Bioaccumulation, or an increase in the chemical in animal tissues found higher in the food chain, can be a concern to secondary or tertiary species through food chain transfer. Bendiocarb does not appear to bioaccumulate or bioconcentrate in aquatic organisms or their predators (US EPA, 1999; Brooks, 1998).

The excavation required to replace a pole near or in water can be extensive, potentially releasing sediments to the surface water, decreasing its quality. This sediment can settle out to fill interstitial spaces in the substrate, reducing aquatic habitat and smothering benthic invertebrates and fish eggs and developing fry.

Due to the low frequency and magnitude of pole re-treatment and replacement, the overall effects to wetlands, surface water and aquatic resources are considered low.

- **Insulator washing:** Insulator washing typically occurs at highway crossings, not on RoWs. The washing of insulators near surface waters may result in their contamination by dust and road salts, impairing water quality and potentially, the health of aquatic organisms. Increased sedimentation can settle out to fill interstitial spaces in the substrate, reducing the quality of aquatic habitat. Road salts are persistent in the environment and can also impair water quality. Surface waters contaminated by road salts can result in toxic effects on aquatic organisms (Environment Canada and Health Canada, 2001). It is because of the low frequency and localized areas potentially affected, the effects of insulator washing on wetlands, surface water and aquatic resources are considered negligible.

- **Vegetation Management:** Vegetation removal can reduce the water storage capacity of slopes and wetlands, changing the timing and volume of surface runoff received by the waterbodies.

  Riparian vegetation removal may decrease available aquatic habitat and reduce important organic inputs, potentially reducing the productivity of wetlands. Low order streams such as the tributaries to the Bow River crossed by the RoW also typically rely on organic inputs of terrestrial origin due to their low productivity. Riparian removal may also increase light penetration and therefore, water temperatures, which may impact aquatic communities. Streambank vegetation removal may decrease overhanging cover for fish, reducing the quality of habitat. Riparian removal may decrease bank stability and increase the sediment and debris inputs to the waterbody. This sediment can settle out to fill interstitial spaces in the substrate, reducing aquatic habitat and smothering benthic invertebrates and fish eggs

and developing fry. Pre-mitigation potential effects to wetlands, surface water and aquatic resources associated with various forms of vegetation control are considered low and are reversible.

- **Burning:** The removal of vegetation by burning can impact surface waters and wetlands if it occurs in adjacent areas. Localized inputs of organic material and nutrients could enter wetlands and waterbodies from the burned material through surface water runoff, potentially increasing the productivity of the system. Sediments may also be released through runoff into wetlands and surface waters, with negative impacts on water quality and aquatic habitat. Pre-mitigation potential effects of burning vegetation on wetlands, surface water and aquatic resources are considered negligible due to the low magnitude, frequency and reversibility of the impacts.

- **Herbicide application:** The inappropriate application of herbicides for weed control in or near water can contaminate surface waters and wetlands. In turn, this can harm aquatic organisms, through water or food that has been contaminated by spray drift or surface runoff. The herbicides imazapyr, glyphosate and 2,4-D used to control brush and weeds, can move from treated areas into streams is mobile in soil and can contaminate rivers and streams outside the area of application. 2,4-D dissipates rapidly in moving water, but may remain longer in standing waters. Its forms range from highly toxic to non-toxic to aquatic organisms. Glyphosate and imazapyr range from being non-toxic to moderately toxic to fish and do not bioaccumulate in aquatic systems (Information Ventures, 1995a, b, c, Cox, 2000*b*). Pre-mitigation potential effects to wetlands, surface water and aquatic resources associated with herbicide application are considered low due to the low frequency and magnitude of the applications.

- **Hazardous material handling/Temporary staging:** Accidental spills of pesticides, herbicides, fuel or waste oils may result during their transportation, handling, mixing, application and storage. If these spills occur near open water, they can result in surface water and wetland contamination. Chemicals can also contaminate surface waters and wetlands by chemical spray drift, improper chemical disposal and from runoff of contaminated soils. Aquatic organisms can be exposed to hazardous waste spills through contaminated water or food, either causing direct mortality or affecting their growth and reproduction. Pre-mitigation potential effects to wetlands, surface water and aquatic resources associated with accidental spills during hazardous material handling are considered moderate.

- **Equipment refuelling, maintenance and repair:** Accidental spills of fuel or waste oils near surface waters may result during regular operations, maintenance and refuelling of vehicles and equipment. Spills may also result during their transportation, handling and storage. Surface water contamination can lead to toxic effects on aquatic organisms through water or food exposure. Pre-mitigation potential effects to wetlands, surface water and aquatic resources associated with equipment refuelling, maintenance and repair, and accidental spills in particular, are considered low due to their low frequency of occurrence.

- **Fording:** The fording of waterbodies may increase erosion and disturbance of streambanks and streambeds, resulting in sedimentation of the water body. Fording may also release particles or liquids attached to the equipment and/or vehicles, potentially contaminating surface waters and wetlands with oils, grease, fuel and other automotive fluids, which can be toxic to aquatic organisms.

  Fording may increase erosion and disturbance of riparian vegetation, wetlands, streambanks and streambeds, affecting water quality and habitat. Sedimentation can reduce the quality of aquatic habitat and can kill or affect the growth of developing fish eggs and fry. Fording may also physically damage or destroy aquatic organisms. Non-native aquatic species, such as foreign vegetation, seeds, small aquatic organisms and pathogens may also be released into the waterbody during fording, potentially influencing the health, populations and dynamics of the aquatic community.

  Pre-mitigation potential effects to wetlands, surface water and aquatic resources from fording range from negligible to medium, depending on the timing, frequency, extent and localized environmental conditions (streambed and bank composition, slope, erosion risks, width of crossing etc.).

- **Transformer oil handling:** Accidental spills of transformer oils may result during their transportation, handling and storage, potentially impacting water quality and the health of aquatic organisms. Little information exists on the environmental effects of transformer oils (specifically Voltesso 35; a mineral oil), however, its acute toxicity appears to be very low (Imperial Oil, 1993). Its low solubility and high viscosity means that initial spills would float on the surface of the water. If not removed, the oil would act as a long-term source of surface water contamination, with subsequent impacts on aquatic resources (Conor Pacific, 2000). Pre-mitigation potential effects to wetlands, surface water and aquatic resources associated with the handling of transformer oils, and accidental spills in particular, are considered low due to their frequency of occurrence. Major substations have secondary containment as additional risk mitigation.

4.4.4 Soil

- **Access and travel on the RoW**: Travel along the RoW including excessive speeds and improper turning can rip organic mats (duff layer) and expose soils making them vulnerable to erosion. Organic matter in soil improves soil nutrient content, structure, and water holding capacity. High organic content reduces vulnerability to wind and water erosion.

  Repeated travel along a route by heavy equipment can result in soil compaction (an alteration of soil structure affecting the substrate's water holding capacity, levels of aeration, microbial diversity and overall productivity). Compacted soils are vulnerable to water erosion. Vegetation associated with compacted soils also become vulnerable from the direct trampling effects of heavy equipment, but also from limited capability of compacted soils to provide necessary moisture and nutrient

regime necessary for survival. Given the frequency of events and localized duration, impacts associated with travel on the ROW are considered low.

- **Hazardous material handling:** Improper disposal of products such as waste oil, old batteries and chemical containers can contaminate localized areas of soil and reduce soil quality. Impacts associated with this activity are considered low given the low frequency and short duration of these activities.

- **Vegetation removal**: Risk of water and wind erosion increases when vegetation is removed, especially in environmentally sensitive areas such as slopes. Impacts to soil associated with vegetation removal are considered low.

4.4.5 Vegetation

- **Access and travel on the RoW:** Travel along the RoW including excessive speeds and improper turning can result in a direct loss of vegetation. Compacted soils limit root access to nutrients and water as a result of restricted root growth, reduced water infiltration rates and decreased oxygen in the substrate. Soil compaction also negatively affects microorganism communities, which play a critical role in nutrient recycling and mineral uptake.

  Vehicles and equipment entering onto the RoW have potential to bring with them weeds or weed seeds. Some exotic plants have potential to out-compete native species alter soil stability and nutrient cycling, change fire regimes and inhibit native seedling regeneration. The frequency, duration and extent of these impacts are considered low.

- **Excavation** activities associated with pole replacements, salvage and pole anchoring and pole testing expose subsurface materials creating an environment susceptible to non-native species introduction. Introduction of exotic species can lead to shifts in community structure, decreasing natural variation and biodiversity. Preventing the establishment of non-native species in BNP is one of Parks Canada's primary management objectives. Piling excavated materials on top of native healthy vegetation can damage or kill it. Considering the frequency, duration and extent of these activities, impacts to vegetation associated with excavation activities for routine maintenance projects are considered low.

- **Herbicide weed control** Chemical spray drift can cause serious damage or kill vegetation. The limited use of herbicides around AltaLink facilities in the park in terms of frequency, extent and duration result in low impact rating for chemical herbicide weed control.

4.4.6 Wildlife

- **All Project Activities**: Anthropogenic sensory disturbance can negatively affect wildlife especially during certain times of the year. The following periods have been identified as being sensitive time frames for wildlife species:
  - Elk calving (May 01 to June 30)

- Elk rut (August and September)
- Sheep lambing (May 01 to June 30)
- Grizzly Bear hyperphagia (August 01-September 30)
- Grizzly Bear hypophagia (May 01-June 30)
- Wolf denning (April 01-July 30)
- Waterfowl and migratory bird nesting/rearing (May 15 to July 31)
- Osprey nesting/rearing (May 01 to August 15)
- Hawk/Eagle nesting/rearing (April 01 to July 15)
- Owl nesting/rearing (Feb 15 to June 01)
- Harlequin Duck staging/nesting/rearing (April 01 to June 30)
- Long-toed Salamander breeding and migration (April 01 to May 30 and September)

Transmission facilities in BNP are located with varying distances to other developments and linear disturbances in the park. BNP Management Plan (1997) identifies Land Use zones based on a level of disturbance. Under this system facilities can be grouped into four general categories:

- Zone V – Park services zone in highly populated areas (for example, those facilities within and adjacent to the Town of Banff and Lake Louise).
- Zone IV – Outdoor recreation zone in regularly disturbed areas (for example portions of the RoWs that parallel the Trans-Canada, Highway 1A and/or the CPR).
- Zone III – Natural environment zone that includes less disturbed areas (facilities more than 200 m from another development or linear disturbance).
- Zone II – Wilderness zone in remote areas that receive little disturbance from human activity (for example, the section of 54 line within the Fairholm Bench.

The locations of these facilities influence the degree to which AltaLink projects contribute to sensory disturbance impacts to wildlife and overall cumulative effects.

Wildlife in remote areas that receive little disturbance from human activity or development (such as the Fairholm Bench), are likely to be more sensitive to project activities. Wildlife living in the vicinity of highly populated areas, however, receive regular disturbance from development and human activity, therefore wildlife is likely habituated to some extent to noise disturbance. Similarly, wildlife inhabiting areas adjacent to the Trans-Canada, Highway 1A and/or the CPR, are subject to regular disturbance. In these areas of regular disturbance, wildlife sensory disturbance from AltaLink projects is less significant than more remote areas.

- **Detailed Aerial Patrols, Aerial Patrols, Task Specific Aerial Patrols, Detailed Climbing Patrols and some Pole Top Equipment Installation, Repair or Replacement** have potential to disturb raptor nests associated with power poles, especially during periods of parturition. Osprey (known to nest on power poles) remain in the park until fall migration in early September.

  The noise associated with aerial patrols have potential to cause temporary sensory disturbance to wildlife during sensitive life stages, in particular sensitive species such as grizzly bears. Grizzly bears are particularly sensitive during spring (hypophagia) and mid-late summer (hyperphagia) and all helicopter staging areas are located in areas associated with grizzly bear habitat. While short term sensory disturbance impacts to grizzly bear during sensitive life stages may be considered moderate; the limited frequency of aerial patrols and the short period of disturbance associated with them, impacts to the overall wildlife population in the park are considered low. Detailed climbing patrols and disturbance associated with pole top equipment repair, replacement or installation is also of low frequency, limited duration and considered a low impact on wildlife.

- **Brushing and Mowing** at certain times of the year can remove habitat and alter/damage avian nesting sites and/or kill young birds or parents. This is a particular concern for ground nesting species including Harlequin ducks. These activities also have potential to cause direct mortality to small mammals. The noise associated with mowing activities is considerable, and can last for prolonged periods in relatively small areas. This noise can induce the flight response in a range of wildlife species. Brush mowing is not conducted along waterways and tends to be limited to fairly level areas with firm ground and with few rocks. Given the limited extent of these activities, but the moderate magnitude of potential effects, impacts to wildlife are considered low to moderate.

  Complete vegetation cover removal (mowing) when combined with the presence of numerous “perches” available to raptors (the power poles) on RoWs has potential to change predator/prey relationships and can negatively skew small mammal populations. Elimination of woody vegetation limits available nesting habitat for some avian species. Given the limited extent of these activities, impacts to wildlife are considered low.

- **Herbicide or pesticide application**: Herbicides and other chemicals can cause wildlife to become sick, exhibit reproductive problems or die as a result of exposure or ingestion (Cox 2000 a & b). Direct exposure can result if birds or small mammals/furbearers eat pole wraps, when amphibians (such as the long-toed salamander) absorb chemicals through their skin, or when wildlife breathes in chemical vapours/spray. Indirect effects of chemical use on wildlife can occur through the consumption of food or water that has been contaminated by spray drift or surface runoff. For example, waterfowl, gallinaceous birds, small mammals or amphibians could be affected by eating recently treated foliage, seeds or insects. Sodium fluoride is not expected to be toxic to wildlife (goats, sheep or wildbirds) (Mallinckrodt Baker, Inc., 2001). Herbicide applications are limited to areas targeted

for non-native plant control, which are typically associated with surface disturbances and substations. Risks to wildlife health associated with controlled herbicide applications are considered low.

- **Pole re-treatment:** Bears, porcupines and bushytailed wood rats have been known to eat pole wraps, which contain copper naphthenate (Parks Canada pers. comm.). Little is know about the toxicity effects of copper naphthenate, however except in extreme exposure conditions, excess copper is readily cleared from organisms (www.ncamp.org/ poisonpoles/copper.html). "Penta" and copper napthenate are known to be toxic to aquatic life in very low concentrations (US EPA, 1999; Brooks, 1998) and can be harmful to amphibians. "Penta", a chemical found in treated poles, is rapidly biodegraded within days in freshwater streams (Brooks, 1998). In laboratory tests on rats and rabbits, metam sodium (a fumigant) suppressed the activity of the immune system, caused cancer and increased fetal loss in pregnant animals and caused birth defects (Cox 2000*a*). Short-term exposure effects in mice were associated with hyperactivity followed by mild lethargy (Cox, 2000*a*). Chemical re-treatment is usually in solid or paste form and it is expected that the presence of the maintenance crew would limit the wildlife present in the area during pole re-treatment activities; thus exposure would be *very* limited. Impacts to wildlife resulting from pole treatments are expected to be low.

4.4.7 Public Health and Safety

- **Hazardous material handling:** Public health and safety is a concern during any operation involving the storage, handling, transportation and application of chemicals. Many of these chemicals are flammable, explosive, corrosive and/or poisonous and can have serious health effects or even cause death. Exposure can be through inhalation or absorption; absorption through the skin is the most common. Improper disposal of agrochemical containers can contaminate drinking water sources. Hazardous materials are handled by trained utility personnel, or by certified contractors. The risk to human health and safety is considered low.

- **Burning** poses obvious threats to public safety if not properly controlled and can result in health hazards and even death. The smoke associated with burning can be dangerous if inhaled, but smoke crossing paved highways and roadways is of equal concern with respect to traffic visibility and safety.

4.4.8 Heritage Resources

- Excavation activities have potential to disturb historical resource sites. Archaeological resources have been surveyed along the majority of the AltaLink RoW. The 14 sites that occur on the AltaLink RoW are listed in Section 4.2.4 and mapped on the ecological constraint maps (Appendix F). Excavation activities associated with routine maintenance and operations are localized (within 5 feet of the base of each pole) and relatively uncommon. The RoW itself has been disturbed in the past thus the magnitude of impacts to historical resources are considered low.

Potential pre-mitigation environmental impacts associated with AltaLink projects included in the MCSR are rated in Table 4.7 and are based on the assessment criteria in Table 4.6.

4.5 Standard Environmental Mitigation Practices and Ecological Constraint Mapping

The purpose of this MCSR is to streamline the CEAA approval process by demonstrating that impacts from routine operation and maintenance projects covered by the MCSR are either low or easily mitigable. By evaluating routine operations and identifying mitigations that reduce the negative environmental impacts associated with these projects into a single document (the MCSR), the environmental assessment process is standardized and streamlined making it more efficient, consistent and predictable.

Standard environmental mitigation practices can significantly reduce the magnitude of the potential impacts identified in Section 4.4. Standard environmental mitigations (i.e., those that are applicable to the entire CSA) for activities undertaken by AltaLink maintenance crews have been detailed for each project in the MCSR in Table 4.10. Many of these recommended practices are currently practised by AltaLink within BNP.

It is important to recognize that appropriate mitigations depend on site-specific environmental and seasonal conditions. Because AltaLink facilities cross a large number of ecosites and thus varied environmental conditions, mitigations (in terms of timing constraints or equipment restrictions) are also identified on maps to indicate site-specific considerations. The ecological constraint mapping provided in Appendix F illustrates known environmentally sensitive areas in relation to AltaLink facilities (including wetlands, areas of steep terrain, archaeological resources, habitats for special vegetation resources, stream crossings and critical habitats for certain wildlife species) and identifies appropriate mitigations.

The mitigation table (Table 4.10) the ecological constraint mapping (Appendix F) and access maps (Appendix G) are used together to prepare CSPRs. Together they identify general and site-specific mitigations including:

1. Locations of sensitive sites,
2. Potential locations of sensitive species,
3. Timing constraints for each project activity,
4. Vegetation clearing restrictions, and
5. Equipment restrictions associated with sensitive terrain.

Descriptions of these constraints are included below.

Table 4.7 Matrix of Potential Pre-mitigation Environmental Impacts from Projects*

Project	Environmental Components									
	CEAA Triggered	Assessment May be Requested under Parks Canada Procedures	Soil	Vegetation	Wildlife	Wetlands, Surface Water, Aquatic Resources	Ground-water	Air Quality	Historical Resources	Public Safety
Maintenance and Operation of Overhead Transmission Lines										
Access and Travel along the Right-of-Way[(a)]			N-L	N-L	L	L-M	-	-	-	-
Detailed Aerial Patrols (DAP)			-	-	L	-	-	-	-	-
Detailed Climbing Patrols			-	-	L	-	-	-	-	-
Ground Patrols			N-L	N-L	L	L-M	-	N	-	-
Aerial Patrols			-	-	L	-	-	-	-	-
Emergency Aerial Patrols			-	-	L	-	-	-	-	-
Task Specific Aerial Patrols			-	-	L	-	-	-	-	-
Pole Test and Re-Treatment	If excavation is required		N-L	N-L	L	N-L	N	N	L	-
Pole Replacement or Salvage	If excavation is required		L-M	L-M	L	L	N	N	L	-
Pole Stubbing			L	L	L	-	-	N	L	-
Pole Anchor Installation	If excavation is required		L-M	L-M	L	-	-	N	L	-
Crossarm Replacement		✓	N	N	L	-	-	N	-	-
Conductor Repair, Replacement and Salvage		✓	N	N	L	-	-	N	-	-
Conductor Joining			N	N	L	-	-	N	-	N
Insulator Washing		✓	N	N	L	N	-	N	-	-
Vegetation Management on the RoW										
Manual Brushing (Slashing) and Trimming	If vegetation removal is required		L	L	L	L	-	N	-	-

Table 4.7 Matrix of Potential Pre-mitigation Environmental Impacts from Projects* - *Continued*

Project	Environmental Components									
	CEAA Triggered	**Assessment May be Requested under Parks Canada Procedures**	**Soil**	**Vegetation**	**Wildlife**	**Wetlands, Surface Water, Aquatic Resources**	**Ground-water**	**Air Quality**	**Historical Resources**	**Public Safety**
Vegetation Control on the RoW- *Continued*										
Brush Mowing	If vegetation removal is required		L	L	L	L	-	N	-	-
Herbicide Applications		✓	L	L	L	L	L	N	-	L
General Projects *(Materials Storage, Disposal, Handling)*										
Waste Management			-	-	N-L	-	-	-	-	-
Hazardous Material Handling		✓	L	N	-	M	M	-	-	N-L
Temporary Staging Areas		✓	-	-	L	M	M	-	-	-
Equipment Maintenance and Repair			N	-	-	L	M	-	-	-
Equipment Refuelling			N	-	-	L	M	-	-	-
Other										
Fording streams, wetlands and rivers		✓	N	N	N-L	N-M	-	-	-	-
Substations										
Substation Inspections			-	-	N	-	-	-	-	-
Substations Equipment Major Repair and Maintenance			-	-	N	-	-	-	-	-
Herbicide Applications			N	L	L	L	L	-	-	-
Transformer Oil Handling			-	-	-	L	L	-	-	-

a - depending on weather and subsequent ground conditions
H – High Impact Rating
N – Negligible Impact Rating
P – Positive Impact Rating
L – Low Impact Rating
M – Medium Impact Rating
* Constraint mapping identifies locations that have higher sensitivity to impacts than other areas.

4.5.1 Project Planning and Time Restrictions

Typically routine projects are planned for the fall. This scheduling lends itself to a variety of environmental and operational benefits, for example:

- Hardened ground reduces potential impacts to wet or otherwise erodible soils.
- Avoidance of sensitive wildlife life stages.
- Decreased interaction with recreational park users:
  - Summer users (hiking, rafting, canoes, rock climbers, campers, etc.)
  - Winter Users (ice climbers, cross country skiers, downhill skiers etc.).

When it is not possible to undertake projects in the fall, AltaLink will commit to avoiding known sensitive areas and from undertaking certain activities in specified locations, at particular times of year.

Timing restrictions and limitations regarding access for AltaLink projects in BNP are linked to:

- Stream crossings, and,
- Sensitive wildlife life stages.

Timing restrictions for stream crossings and sensitive wildlife life stages for each map sheet are detailed in Table 4.8, and summarized in Table 4.9.

- Table 4.9 groups projects into three categories: Green- no timing restrictions
- Yellow – some restrictions apply
- Red – access is restricted.

This enables AltaLink to carry out its maintenance projects around sensitive wildlife stages. These groups are based on the following criteria:

- **Green** timing windows are outside sensitive wildlife time windows and projects are unlikely to cause significant levels of disturbance to wildlife and fish, thus no access restrictions apply;
- **Yellow** timing windows are when project activities *may* result in negative effects to wildlife and utility crews are obligated to apply special mitigations to activities pursuant to the advice of Parks Canada and Table 4.10. Adherence to these mitigations will reduce potential impacts to negligible levels; and,
- During **red** timing windows it is too difficult to predict the effectiveness of mitigations in protecting vulnerable wildlife and fish during these periods and thus, access is restricted**.**

Table 4.8 Time Constraints related to AltaLink Projects in BNP

Project	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Map Sheet
Maintenance and Operation of Overhead Transmission Lines													East from Banff Park Boundary to Cascade Substation 54 Line Maps 1 and 2
Detailed, Annual, Emergency and Task Specific Aerial Patrols													
Ground and Detailed Climbing Patrols; Pole Test and Re-Treatment													
Pole Straightening, Replacement or Salvage													
Pole Anchor Installation, Pole Stubbing													
Crossarm Replacement; Conductor Repair, Replacement and Salvage; Conductor Joining; Insulator Washing													
Vegetation Control on the RoW													
Manual Brushing (Slashing); Trimming													
Brush Mowing													
Herbicide Applications													
Fording wetlands													
Fording Carrot Creek (Poles 217-216), or use alternate access route													
Fording unnamed dry creeks from eastern end of Johnson Lake (Poles 249-248, 253-252, 259-258)													
Fording unnamed creek from outlet of Johnson Lake (Poles 265-264); upstream fish barriers													
Maintenance and Operation of Overhead Transmission Lines													From Cascade Substation to Banff Substation 54 Line Maps 3, 4, 5 and 6
Detailed, Annual, Emergency and Task Specific Aerial Patrols													
Ground and Detailed Climbing Patrols; Pole Test and Re-Treatment													
Pole Straightening, Replacement or Salvage													
Pole Anchor Installation, Pole Stubbing													
Crossarm Replacement; Conductor Repair, Replacement and Salvage; Conductor Joining; Insulator Washing													
Vegetation Control on the RoW													
Manual Brushing (Slashing); Trimming													
Brush Mowing													
Herbicide Applications													
Fording wetlands													
Fording dry channels of Cascade Creek and Whiskey Creek (Poles 276-275, 298-297)													

Time Restrictions	
	Potential fish spawning, incubation and/or overwintering: no stream crossings for large equipment
	Long-toed salamander breeding and migration: no access April, May or September
	Potential Harlequin Duck nesting: contact Parks Canada prior to commencing activities from May 15 to June 30
	Highway 1A to Johnston Canyon access between 9 am and 6 pm only, from March 01 to June 25
Not Restricted Access- Required to Apply Species-Specific Mitigation	
	Grizzly Bear habitat: contact Parks Canada wildlife specialists prior to commencing activities May 01-June 30 and Aug. 01-Sept. 30
	Potential for Cooper's Hawk and Pileated Woodpecker nest trees: cooper's hawk and potential pileated woodpecker nesting/rearing April 01 to July 15
	High large mammal use along Castle Slopes Wildlife Corridor: wolf denning April 01 to July 30; elk rut Aug. 01-Sept. 30
	Potential Western Tananger nesting: May 15 to July 15
	Potential for Osprey nest trees: osprey nesting/rearing May 01 to August 15
	Potential American Bittern nesting: May 01 to July 15
	Potential for Northern Goshawk breeding in dense mixed wood forest: March and April

Not all species with special conservation status in the CSA have been included based on the following rational:

- Lynx – there is little to no potential for AltaLink activities to directly affect lynx since this species is most active at night
- Cougar – a wary animal that avoids human encounters; cougar breeding and rearing occurs year-round (i.e. no particular sensitive time period)
- Wolverine – this species selects habitats with low levels of development. The majority of Altalink facilities are proximate to development and high human use areas thus it is considered unlikely that wolverine would select den sites in areas within the CSA that have potential to be impacted by projects in the MCSR

Sources: Semenchuck 1993, Fish and Acorn 1998, McIvor 1999, Holyrod and VanTeigem 1983, Heuer *et al* 1998, Duke 2000, Smith 2000, Pope 2001, Stevens 1996, Michel, S. pers. comm., Alberta Transportation and Utilities 2000.

Table 4.8 Time Constraints related to AltaLink Projects in BNP – *Continued*

Project Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Map Sheet
Maintenance and Operation of Overhead Transmission Lines													Banff Substation and Townsite 551 Line Maps 1 and 2 to Pole # 47
Detailed, Annual, Emergency and Task Specific Aerial Patrols													
Ground and Detailed Climbing Patrols; Pole Test and Re-Treatment													
Pole Straightening, Replacement or Salvage													
Pole Anchor Installation; Pole Stubbing													
Crossarm Replacement; Conductor Repair, Replacement and Salvage; Conductor Joining; Insulator Washing													
Vegetation Control on the RoW													
Manual Brushing (Slashing); Trimming													
Brush Mowing													
Herbicide Applications													
Fording wetlands													
No fording of Whiskey Creek (Poles 27-18, 28-27) or Forty Mile Creek (Poles 37-36) required, use alternate access routes													
Maintenance and Operation of Overhead Transmission Lines													Mount Norquay Rd. Junction to East Castle Junction 551 Line Maps 2 from pole #47 west, and maps 3, 4 and 5
Detailed, Annual, Emergency and Task Specific Aerial Patrols													
Ground and Detailed Climbing Patrols; Pole Test and Re-Treatment													
Pole Straightening, Replacement or Salvage													
Pole Anchor Installation; Pole Stubbing													
Crossarm Replacement; Conductor Repair, Replacement and Salvage; Conductor Joining; Insulator Washing													
Vegetation Control on the RoW													
Manual Brushing (Slashing); Trimming													
Brush Mowing													
Herbicide Applications													
Fording wetlands													
No fording of unnamed ephemeral creek (Poles 64-63) required, use alternate access routes													
Fording Five Mile Creek (Poles 68-66) and Cory Creek (Poles 71-70); not fish-bearing													
Fording Mule Shoe Lake (Poles 84-83, 83-82); frozen in winter													
Fording Ranger Creek (Poles 115-114, 116-115, 118-117, 120-119, 121-120, 134-133); frozen in winter													
Johnson Creek (Poles 183-182) impassable, use alternate access													
Fording unnamed creek (Borrow Pit Springs) (Poles 195-194, 190-189); frozen in winter													

Time Restrictions	
	Potential fish spawning, incubation and/or overwintering: no stream crossings for large equipment
	Long-toed salamander breeding and migration: no access April, May or September
	Potential Harlequin Duck nesting: contact Parks Canada prior to commencing activities from May 15 to June 30
	Highway 1A to Johnston Canyon access between 9 am and 6 pm only, from March 01 to June 25
Not Restricted Access- Required to Apply Species-Specific Mitigation	
	Grizzly Bear habitat: contact Parks Canada wildlife specialists prior to commencing activities May 01-June 30, Aug. 01-Sept. 30
	Potential for Cooper's Hawk and Pileated Woodpecker nest trees: potential nesting/rearing April 01 to July 15
	High large mammal use along Castle Slopes Wildlife Corridor: wolf denning April 01 to July 30; elk rut Aug. 01-Sept. 30
	Potential Western Tananger nesting: May 15 to July 15
	Potential for Osprey nest trees: osprey nesting/rearing May 01 to August 15
	Potential American Bittern nesting: May 01 to July 15
	Potential for Northern Goshawk breeding in dense mixed wood forest: March and April

Table 4.8 Time Constraints related to AltaLink Projects in BNP – *Concluded*

Project Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Map Sheet
Maintenance and Operation of Overhead Transmission Lines													Castle Junction Area and west toCorral Creek Substation 551 Line Maps 6, 7, 8 and part of Map 9
Detailed, Annual, Emergency and Task Specific Aerial Patrols													
Ground and Detailed Climbing Patrols; Pole Test and Re-Treatment													
Pole Straightening, Replacement or Salvage													
Pole Anchor Installation; Pole Stubbing													
Crossarm Replacement; Conductor Repair, Replacement and Salvage; Conductor Joining; Insulator Washing													
Vegetation Control on the RoW													
Manual Brushing (Slashing); Trimming													
Brush Mowing													
Herbicide Applications													
Fording wetlands													
Unnamed creek (Poles 209-208) impassable, use alternate access													
Fording Silverton Creek (Poles 337-236A); dry in winter													
No fording of unnamed creeks (Poles 280-279, 284-283) required, use alternate access routes													
Fording unnamed creek (Poles 330-329); frozen in winter													
No fording of unnamed creek (Poles 350-339) required, use alternate access routes													
No fording of Baker Creek (Poles 367-366) required, use alternate access routes													
Bow River (Poles 436-435, 423-421) impassable, use alternate access routes													
Fording Corral Creek (Poles 442-441); frozen in winter													
Maintenance and Operation of Overhead Transmission Lines													Corral Creek Substation to Lake Louise Substation 551 Line, the west half of Map 9
Detailed, Annual, Emergency and Task Specific Aerial Patrols													
Ground and Detailed Climbing Patrols; Pole Test and Re-Treatment													
Pole Straightening, Replacement or Salvage													
Pole Anchor Installation; Pole Stubbing													
Crossarm Replacement; Conductor Repair, Replacement and Salvage; Conductor Joining; Insulator Washing													
Vegetation Control on the RoW													
Manual Brushing (Slashing); Trimming													
Brush Mowing													
Herbicide Applications													
Fording wetlands													
Fording unnamed creek (Poles 447-446); log crossing during winter													
Fording unnamed creek (Poles 458-456); frozen in winter; log crossing during winter													

Time Restrictions	
	Potential fish spawning, incubation and/or overwintering: no stream crossings for large equipment
	Long-toed salamander breeding and migration: no access April, May or September
	Potential Harlequin Duck nesting: contact Parks Canada prior to commencing activities from May 15 to June 30
	Highway 1A to Johnston Canyon access between 9am and 6 pm only, from March 01 to June 25
Not Restricted Access- Required to Apply Species-Specific Mitigation	
	Grizzly Bear habitat: contact Parks Canada wildlife specialists prior to commencing activities May 01-June 30 and Aug. 01-Sept. 30
	Potential for Cooper's Hawk and Pileated Woodpecker nest trees: cooper's hawk and potential pileated woodpecker nesting/rearing April 01 to July 15
	High large mammal use along Wildlife Corridors: wolf denning April 01 to July 30; elk rut Aug. 01-Sept. 30
	Potential Western Tananger nesting: May 15 to July 15
	Potential for Osprey nest trees: osprey nesting/rearing May 01 to August 15
	Potential American Bittern nesting: May 01 to July 15
	Potential for Northern Goshawk breeding in dense mixed wood forest: March and April

Table 4.9 Access Timing Windows

Project	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Banff Park Boundary to Cascade Substation, Line 54 Maps 1 and 2												
Air -access projects												
All ground access projects including stream crossings with quads and argos (Red regarding between Poles 207-208, 220-221)												
(C) Stream crossings using heavy equipment (dry creeks from Johnson Lake, Poles 249-248, 253-252, 259-258 and Johnson Lake outlet, Poles 265-264)												
(A) Stream crossings using heavy equipment (Carrot Creek, Poles 217-216)												
From Cascade Substation to Banff Substation, 54 Line Maps 3, 4, 5 and 6												
Air -access projects												
All ground access projects including stream crossings with quads and argos												
(C) Stream crossings using heavy equipment (Cascade Creek and Whiskey Creek, Poles 276-275, 298-297)												
Banff Substation and Townsite, 551 Line Maps 1 and 2 to Pole # 47[(a)]												
Air –access projects												
All ground access projects including stream crossings with quads and argos												
(A) Stream crossings using heavy equipment (Whiskey Creek, Poles 27-18 and Forty Mile Creek, Poles 37-36)												
Mount Norquay Rd. Junction to East Castle Junction, 551 Line Maps 2 from pole #47 west, and maps 3, 4 and 5												
Air -access projects												
All ground access projects including stream crossings with quads and argos (Red regarding between poles 82-84)												
(A) Stream crossings using heavy equipment (Unnamed ephemeral creek, Poles 64-63; Johnson Creek, Poles 183-182)												
(C) Stream crossings using heavy equipment (Five Mile Creek, Poles 68-66; Cory Creek, Poles 71-70)												
(B) Stream crossings using heavy equipment (Mule Shoe Lake, Poles 83-82 and 84-83; Ranger Creek, Poles 115-114, 116-115, 118-117, 120-119, 121-120, 134-133, unnamed creek, 190-189 and 195-194)												
Castle Junction Area and west to Corral Creek Substation, 551 Line Maps 6, 7, 8 and part of Map 9												
Air -access projects												
All ground access projects including stream crossings with quads and argos (Red regarding between poles 366-367 and 435-436)												
(A) Stream crossings using heavy equipment (Unnamed creeks, Poles 209-208, 280-279, 284-283, 350-339; Baker Creek, Poles 367-366; Bow River, Poles 436-435, 423-421)												
(B) Stream crossings using heavy equipment (Silverton Creek, Poles 337-236A; Unnamed creek, Poles 330-329; Corral Creek, Poles 442-441)												
Corral Creek Substation to Lake Louise Substation, 551 Line, the west half of Map 9												
Air -access projects												
All ground access projects including stream crossings with quads and argos												
(B) Stream crossings using heavy equipment (Unnamed creeks; Poles 447-446, 458-456)												

(a) Given the high level of disturbance in this highly populated area some timing restrictions do not apply.

	No restrictions
	Projects not permitted during these timing windows
	Consult Parks Canada wildlife specialists and Table 4.9 of the MCSR to apply species-specific mitigation prior to undertaking projects

Sources: Semenchuck 1993, Fish and Acorn 1998, McIvor 1999, Holyrod and VanTeigem 1983, Heuer *et al.* 1998, Duke 2000, Smith 2000, Pope 2001, Stevens 1996, Michel, S. pers. comm., Alberta Transportation and Utilities 2000.

(A) Stream crossing: potential spring/fall spawning or overwintering habitat.
(B) Stream crossing: potential spring spawning or summer rearing habitat (frozen or dry in winter).
(C) Stream crossing: not fish bearing (dry or fish migration barriers).

Stream Crossings

AltaLink maintenance crews rarely ford streams since in most cases access onto a RoW can be achieved through the use of alternate access routes without crossing waterbodies. Exceptions to this involve 17 stream crossings along the RoW, where fording is the only practical option for maintenance crews and thus, required.

In general, timing restrictions for stream crossings span from September 1 to April 15 and from May 1 to August 15; these time periods are when sportfish species may be spawning or their eggs and fry may be developing within the streambed.

In November and December, 2002, Highwood Environmental's aquatics specialist and AltaLink personnel assessed the 17 waterbodies that require fording and stream crossings to determine their site-specific characteristics and potential fish habitat. This assessment allowed the recommendation of site-specific and site-appropriate timing restrictions (Table 4.5):

- Five waterbodies are completely dry, resulting from anthropogenic modifications altering historical flow regimes. These waterbodies have no timing restrictions associated with them.

- Three waterbodies have no fisheries potential, due to downstream barriers to fish movement. These waterbodies have no timing restrictions associated with them.

- Eight waterbodies are either ephemeral, dry or frozen during the winter. These waterbodies have no fisheries potential during the winter, and only the spring and summer timing restrictions are applicable (May 1 to August 15).

- One waterbody has the potential for year round fisheries habitat and is subject to the September 1 to April 15 and May 1 to August 15 timing restrictions. The two two-week windows are applicable to these waterbodies.

This site-specific information is provided on the ecological constraint maps (Appendix F). Specific timing restrictions for fording are dependent upon the type of vehicle and equipment required to undertake an activity. All fording by heavy equipment (i.e., foremosts, nodwells or backhoes and 4x4 trucks) is restricted to the two, two-week windows from April 16 to April 30 and from August 16 to August 31. Single stream crossings with lighter vehicles (i.e., ATVs and argos) are *not* restricted to the two, two-week timing windows. These types of stream crossings are extremely short-term disturbances with impacts similar to, or less intrusive than natural disturbances, including storm events and bedload movement. Therefore, fording is permitted at all times for one/two crossings of quads and argos.

The physical attributes of waterbodies (as listed in Table 4.10) further define the restrictions that limit stream-crossing activities. It is possible that additional waterbodies or wet areas not listed on the maps may be encountered by the ground crews during regular maintenance and operations. In these situations, the ground crews will use their best judgement and discretion in determining the appropriate stream crossing method and equipment, based on the best management practices and timing restrictions outlined in the MSCR.

Sensitive Wildlife Life Stages

All activities undertaken by AltaLink have the potential to create sensory disturbance effects that can negatively affect wildlife, especially during certain times of the year. The following periods have been identified as being sensitive time frames for wildlife species:

- Elk calving (May 01 to June 30)
- Elk rut (August and September)
- Sheep lambing (May 01 to June 30)
- Grizzly Bear hyperphagia (August 01-September 30)
- Grizzly Bear hypophagia (May 01-June 30)
- Wolf denning (April 01-July 30)
- Waterfowl and migratory bird nesting/rearing (May 15 to July 31)
- Osprey nesting/rearing (May 01 to August 15)
- Hawk/Eagle nesting/rearing (April 01 to July 15)
- Owl nesting/rearing (Feb 15 to June 01)
- Harlequin Duck staging/nesting/rearing (April 01 to June 30)
- Long-toed Salamander breeding and migration (April 01 to May 30 and September)
- Columbia Spotted Frog breeding (April to September).

Many of these animals are large, mobile and are easily visible. Some of them (such as grizzly bears and wolves) are monitored by Parks Canada. Others, such as raptors and piliated woodpeckers, have nest sites that will be noted during ground patrols. During sensitive life stages for these species, AltaLink project activities are ***not restricted per se***, however special environmental mitigation practices must be applied should utility workers or contractors encounter wildlife species or their associated nest or den locations. These time periods are indicated as "yellow" on Table 4.9. In most cases, potential negative effects to wildlife can be avoided by maintaining a certain distance away from animals or nest sites; and, by allowing them to passively move off the RoW. For some species, Parks Canada wildlife wardens must be contacted to prior to undertaking project activities during sensitive (i.e., "yellow") wildlife timing windows. Wildlife wardens will know if bears or wolves/wolf den sites are in the area in addition to other current wildlife concerns (i.e., elk rut). Species-specific mitigations are listed in the mitigation table, Table 4.10.

Other species or nest locations are small, challenging to locate and generally difficult to avoid. Within the CSA, these include:

- Long-toed salamander breeding and migration areas
- Columbia spotted frog breeding and migration areas
- Harlequin ducks and other migratory bird nesting/breeding/rearing areas.

Due to the difficulty in identifying the presence of these species or their nest sites, the time periods during their sensitive life stages have been classed as "red" in areas supporting known breeding sites and/or preferred habitats. This ensures that project activities will not occur in these areas during critical times.

Other time restrictions relate to broader Parks Canada Policy. For the purposes of wildlife protection, road closures have been applied to areas of the Park. The only such closure that is within the CSA is the Highway 1A (Johnston Canyon east to the TransCanada Highway) closure. From March 1st to June 25th, access along this highway is only permitted between 9:00 am to 6:00 pm.

Time restrictions associated with stream crossings, wildlife and road closures are identified on the ecological constraint maps in Appendix F.

4.5.2 Special Vegetation Clearing Measures

The ecological constraint mapping also identifies areas that have potential to support special vegetation resources in the park, and thus require special clearing measures. Special vegetation resources noted on the mapping include:

- Douglas fir;
- Limber pine;
- Mountain Juniper and,
- Aspen stands (also associated with Cooper's hawks, northern Goshawk and Piliated woodpecker nest sites)

Trees supporting raptor nests (such as Osprey) also will be given special consideration. During RoW maintenance activities, these trees require special notation, brushing and clearing measures. Similarly, trees identified as wildlife trees (i.e., with obvious nest cavities) that are in danger of interfering with power lines will be topped rather than cleared. These special measures are listed in Table 4.10, Standard Environmental Mitigation Measures.

As a standard mitigation, AltaLink crews limit some RoW maintenance activities to particular areas. In particular:

- **Brush Mowing** – limited to sections of the RoW that have fairly smooth ground and an absence of rock. Brush mowing is never performed within 30 m of a waterbody.

- **Herbicide applications** – Only chemicals registered and approved by Agriculture Canada under the Pest Control Products Act are used by AltaLink. Herbicide applications are only used on an "as needed" basis and are typically limited to areas within fenced substations that are gravelled and require "bare ground"; or, in the event of an outbreak of weed species listed on the Parks Canada Priority Control list (Appendix D).

Table 4.10 Standard Environmental Mitigations Associated with Routine Transmission Facility Operation and Maintenance Projects in Banff National Park

Project Activity	Environmental Component Affected	Potential Impact	Impact Rating	Best Management Practice	Residual Impact Rating
MAINTENANCE AND OPERATION					
Overhead Line Maintenance					
Access and Travel along RoW	Soil and Vegetation	Soil compaction, loss of organic matter, damage and/or loss to vegetation, erosion and loss of topsoil.	N-L	*Soil* Appropriate equipment will be selected in accordance to restrictions listed on the access maps (Appendix F) and site specific ground conditions (i.e., foremost in snowy or potentially wet areas). Confine all activities to the RoW; restrict vehicular travel and other equipment operation to the RoW and approved access routes (cleared, graded roadways maintained by CPR, or Parks Canada or access trails approved by Parks Canada). All equipment will be in good working order and shall be cleaned of weeds, weed seeds and other plant material prior to entry onto the RoW. Preliminary project tailgate meetings will include discussion on project mitigations, general conduct and travel speeds along the Row.	N
	Wildlife	Short-term sensory disturbance/ habitat avoidance.	L	*Wildlife* The feeding, harassment or destruction of any wildlife is strictly prohibited and will be grounds for dismissal from work. Wildlife encountered will be allowed to passively disperse from roads/RoW. Whenever ever possible, routine operation and maintenance projects will be scheduled to avoid sensitive wildlife stages (i.e., during GREEN timing windows (Table 4.9)) and will be co-ordinated to minimize the number of occasions crews enter onto the RoW. When it is not possible to undertake projects during green timing windows (Table 4.9), the following mitigations apply projects undertaken during YELLOW timing windows in known sensitive areas (as identified on the ecological mapping and Table 4.9): Minimize activity within 250 m of: active owl nests – February 15 to June 01, Active hawk/eagle nests – April 01 to July 15, Active Osprey nests – May 01 to August 15, Active waterfowl and migratory bird nesting areas – May 15 to July 31, Harlequin Duck nesting habitat (pre-nesting/staging) – April 01 to May 15, Harlequin Duck nesting habitat (nesting) – May 15 to June 30. Minimize activity within 500 m: Elk calving activity: May 01 to June 30 and the elk rut: August and September, Sheep lambing: May 01 to June 30, Bear hypophagia: May 01 to June 30 (weather dependent) and hyperphagia: August 01 to September 30 (berry dependent), Wolf denning: April 01 to July 30[(a)]. (See Table 4.8 and 4.9)	N
	Wetlands, Surface Water and Aquatic Resources	Travel along the RoW has the potential to adversely affect water quality and fisheries habitat through rutting, surface water sedimentation and stream crossings.	L-M	*Wetlands, Surface Water and Aquatic Resources* Minimize the number of occasions crews enter onto the RoW by co-ordinating all routine operation and maintenance activities. Confine all activities to the RoW; restrict vehicular travel and other equipment operation to the RoW and approved access routes. Stream crossings by heavy equipment are avoided when practically possible – the majority of AltaLink facilities can be accessed without crossing streams. If stream crossings are considered necessary, the environmental mitigations detailed for "Fording Streams, Wetlands and Rivers" below will be adhered to; in particular time constraints to avoid impacts to spawning and developing fish (Table 4.9).	N-L
Detailed, Annual, Emergency and Task Specific Aerial Patrols	Wildlife	Short-term sensory disturbance/ habitat avoidance (i.e., disturbance of raptor nests associated with power poles) especially during periods of nesting.	L	*Wildlife* For routine operations, aerial patrols will be scheduled to avoid sensitive wildlife life stages. These time periods are identified as GREEN bars on Table 4.9. If aerial patrols are deemed necessary during YELLOW timing windows (Table 4.9), helicopters should remain a minimum of 500 m from male and subadult bears, and 700 m from female bears with cubs; Yellow timing windows for bears include hypophagia: May 01 to June 30 (weather dependent) and hyperphagia: August 01 to September 30 (berry dependent)[(a)]. Similarly, helicopters must stay at least 250 m away from active osprey nests during yellow time periods: May 01 to August 15, active owl nests: February 15 to June 01, and active hawk/eagle nests (April 01 to July 15) (See Table 4.8 and 4.9).	N

N – Negligible Impact Rating L – Low Impact Rating M – Medium Impact Rating H – High Impact Rating P – Positive Impact Rating

* Constraint mapping identifies locations that have higher sensitivity to impacts than other areas.

(a) Contact Banff National Parks Wildlife Specialists: Tom Hurd for east of Castle Junction and Alan Dibb for west of Castle Junction, before commencing any Projects during the timing windows specified for bear and wolf, to determine if these species are active in the area.

Table 4.10 Standard Environmental Mitigations Associated with Routine Transmission Facility Operation and Maintenance Projects in Banff National Park – *Continued*

Project Activity	Environmental Component Affected	Potential Impact	Impact Rating	Recommended Best Management Practice	Residual Impact Rating
Ground Patrols and Detailed Climbing Patrols	Soil	Soil compaction, loss of organic matter, erosion and loss of topsoil.	N-L	*Soil* **Adhere to all access mitigations listed in this table for all activities.** Projects will be halted during events of heavy rainfall, peak snowmelt and high runoff.	N
	Vegetation	Loss of vegetation, introduction of non-native species.	N-L	*Vegetation* All equipment will be in good working order and shall be cleaned of weeds, weed seeds and other plant material prior to entry onto the site. Special effort will be used to preserve Douglas fir, limber pine and mountain juniper. Special note of these species will be made during ground patrols to ensure their protection in accordance to the management initiatives listed below. **Within the RoW**, these species will be allowed to grow until the plant attains a height that has potential to impact the powerline. At this time Douglas fir will become a target species and will be controlled. In most cases, limber pine and mountain juniper will not grow beyond a hazardous threshold height and thus do not have to be removed. **Adjacent to the RoW**, individual trees will be assessed. Healthy trees that do not threaten the integrity of the line or interfere with danger tree removal will not be cleared. Danger trees will be removed, topped or trimmed as appropriate to the site-specific location.	N
	Wildlife	Short-term sensory disturbance/ habitat avoidance, direct mortality/ destruction of nests for avian ground nesting species.	L	*Wildlife* The feeding, harassment or destruction of any wildlife is strictly prohibited and will be grounds for dismissal from work. Wildlife encountered will be allowed to passively disperse from roads/RoW. Whenever ever possible, routine operation and maintenance projects will be scheduled to avoid sensitive wildlife stages (i.e., during GREEN timing windows (Table 4.9)) and will be co-ordinated to minimize the number of occasions crews enter onto the RoW. When it is not possible to undertake projects during green timing windows (Table 4.9), the following mitigations apply projects undertaken during YELLOW timing windows in known sensitive areas (as identified on the ecological mapping and Table 4.9): Minimize activity within 250 m of: active owl nests – February 15 to June 01, Active hawk/eagle nests – April 01 to July 15, Active Osprey nests – May 01 to August 15, Active waterfowl and migratory bird nesting areas – May 15 to July 31, Harlequin Duck nesting habitat (pre-nesting/staging) – April 01 to May 15, Harlequin Duck nesting habitat (nesting) – May 15 to June 30. Minimize activity within 500 m: Elk calving activity: May 01 to June 30 and the elk rut: August and September, Sheep lambing: May 01 to June 30, Bear hypophagia: May 01 to June 30 (weather dependent) and hyperphagia: August 01 to September 30 (berry dependent), Wolf denning: April 01 to July 30[(a)]. (See Table 4.8 and 4.9). During ground patrols, wildlife trees/snags and raptor nest trees will be flagged.	N
	Wetlands, surface Water and aquatic resources	Increased rutting of roads and disruption of normal flow patterns. Soil erosion and surface water runoff can decrease water quality of surface waters and wetlands, with impacts on aquatic habitat.	L-M	*Wetlands, Surface Water and Aquatic Resources* Halt projects during events of heavy rainfall, peak snowmelt (end of May, beginning of August) and high runoff.	N-L
Pole Test and Re-Treatment	Soil	Soil compaction, loss of organic matter, erosion and loss of topsoil.	N-L	*Soil* **Adhere to all access mitigations listed in this table for all activities.** Projects will be halted during events of heavy rainfall, peak snowmelt and high runoff. Soil that has been temporarily shoved away from poles and temporarily placed on tarps will be shovelled back against the pole and lightly tamped to prevent slumping or pooling of water.	N

N – Negligible Impact Rating L – Low Impact Rating M – Medium Impact Rating H – High Impact Rating P – Positive Impact Rating

* Constraint mapping identifies locations that have higher sensitivity to impacts than other areas.

(a) Contact Banff National Parks Wildlife Specialists: Tom Hurd for east of Castle Junction and Alan Dibb for west of Castle Junction, before commencing any Projects during the timing windows specified for bear and wolf, to determine if these species are active in the area.

Table 4.10 Standard Environmental Mitigations Associated with Routine Transmission Facility Operation and Maintenance Projects in Banff National Park– *Continued*

Project Activity	Environmental Component Affected	Potential Impact	Impact Rating	Recommended Best Management Practice	Residual Impact Rating
Pole Test and Re-Treatment - *Continued*	Vegetation	Loss of vegetation, introduction of non-native species.	N-L	*Vegetation* **Adhere to all access mitigations listed in this table for all activities.** Protect undisturbed land by only stockpiling materials on heavy canvas or polypropylene tarpaulins to protect native vegetation. Excavated material should not be permitted to damage or bury plant material that is to be retained on the RoW or in adjacent areas.	N
	Wildlife	Short-term sensory disturbance/ habitat avoidance, potential for negative health affects related to ingestion of pole wraps (porcupines).	L	*Wildlife* **Adhere to all access mitigations listed in this table for all activities.** Pole wraps are installed 2 feet below ground and only 1 inch above ground to minimize wildlife attraction. AltaLink will investigate additional mitigations for pole wraps (such as wire mesh wraps) within BNP. Whenever ever possible, routine operation and maintenance projects will be scheduled to avoid sensitive wildlife stages (i.e., during GREEN timing windows (Table 4.9)) and will be co-ordinated to minimize the number of occasions crews enter onto the RoW. When it is not possible to undertake projects during green timing windows (Table 4.9), the following mitigations apply projects undertaken during YELLOW timing windows in known sensitive areas (as identified on the ecological mapping and Table 4.9): Minimize activity within 250 m of: active owl nests – February 15 to June 01, Active hawk/eagle nests – April 01 to July 15, Active Osprey nests – May 01 to August 15, Active waterfowl and migratory bird nesting areas – May 15 to July 31, Harlequin Duck nesting habitat (pre-nesting/staging) – April 01 to May 15, Harlequin Duck nesting habitat (nesting) – May 15 to June 30. Minimize activity within 500 m: Elk calving activity: May 01 to June 30 and the elk rut: August and September, Sheep lambing: May 01 to June 30, Bear hypophagia: May 01 to June 30 (weather dependent) and hyperphagia: August 01 to September 30 (berry dependent), Wolf denning: April 01 to July 30[(a)]. (See Table 4.8 and 4.9)	N
	Groundwater	Chemicals from pole treatments can leach into groundwater and impair its quality	N	*Groundwater* New and existing poles located within the 30 m waterbuffer zone will have pole wraps installed. A pole wrap has an impervious outer barrier layer that ensures preservatives remain with the pole and cannot migrate into the environment.	N
	Wetlands, Surface Water and Aquatic Resources	Chemicals from pole treatments including pole wraps, chemical fumes and chemical rods (listed in Appendix D) can impair water quality and be toxic to aquatic organisms if introduced into a waterbody.	N-L	*Wetlands, Surface Water and Aquatic Resources* **Adhere to all access mitigations listed in this table for all activities.** New and existing poles located within the 30 m waterbuffer zone will have pole wraps installed. A pole wrap has an impervious outer barrier layer that ensures preservatives remain with the pole and cannot migrate into the environment. When testing and repairing treated poles near or in water, remove and dispose of all sawdust, chips and wood particles.	N
	Historical Resources	All excavation Projects have potential to disturb archaeological/ historical resources.	L	*Historical Resources* Notify Parks Canada Archaeology department prior to any ground disturbing activity in areas identified on mapping (Appendix F) and Section 4.2.4 (p.4-24) as potential sites.	N
Pole Replacement or Salvage	Soil	Heavy equipment and excavation activities may result in soil compaction, loss of organic matter, erosion and loss of topsoil.	L-M	*Soil* **Adhere to all access mitigations listed in this table for all activities.** Projects will be halted during events of heavy rainfall, peak snowmelt and high runoff. Soil that has been temporarily shoved away from poles will be shovelled back against the pole and lightly tamped to prevent slumping or pooling of water.	N

N – Negligible Impact Rating L – Low Impact Rating M – Medium Impact Rating H – High Impact Rating P – Positive Impact Rating

* Constraint mapping identifies locations that have higher sensitivity to impacts than other areas.

(a) Contact Banff National Parks Wildlife Specialists: Tom Hurd for east of Castle Junction and Alan Dibb for west of Castle Junction, before commencing any Projects during the timing windows specified for bear and wolf, to determine if these species are active in the area.

Table 4.10 Standard Environmental Mitigations Associated with Routine Transmission Facility Operation and Maintenance Projects in Banff National Park– *Continued*

Project Activity	Environmental Component Affected	Potential Impact	Impact Rating	Recommended Best Management Practice	Residual Impact Rating
Pole Replacement or Salvage – *Continued*	Vegetation	Loss of or damage to vegetation, introduction of non-native species.	L-M	*Vegetation* **Adhere to all access mitigations listed in this table for all activities.** Excavated material should not be permitted to damage or bury plant material that is to be retained on the RoW or in adjacent areas.	N
	Wildlife	Short-term sensory disturbance/ habitat avoidance disturbance of raptor nests associated with power poles.	L	*Wildlife* **Adhere to all access mitigations listed in this table for all activities.** Pole wraps are installed 2 feet below ground and only 1 inch above ground to minimize wildlife attraction. AltaLink will investigate additional mitigations for pole wraps (such as wire mesh wraps) within BNP. Whenever ever possible, routine operation and maintenance projects will be scheduled to avoid sensitive wildlife stages (i.e., during GREEN timing windows (Table 4.9)) and will be co-ordinated to minimize the number of occasions crews enter onto the RoW. When it is not possible to undertake projects during green timing windows (Table 4.9), the following mitigations apply projects undertaken during YELLOW timing windows in known sensitive areas (as identified on the ecological mapping and Table 4.9): Minimize activity within 250 m of: active owl nests – February 15 to June 01, Active hawk/eagle nests – April 01 to July 15, Active Osprey nests – May 01 to August 15, Active waterfowl and migratory bird nesting areas – May 15 to July 31, Harlequin Duck nesting habitat (pre-nesting/staging) – April 01 to May 15, Harlequin Duck nesting habitat (nesting) – May 15 to June 30. Minimize activity within 500 m: Elk calving activity: May 01 to June 30 and the elk rut: August and September, Sheep lambing: May 01 to June 30, Bear hypophagia: May 01 to June 30 (weather dependent) and hyperphagia: August 01 to September 30 (berry dependent), Wolf denning: April 01 to July 30[(a)]. (See Table 4.8 and 4.9)	N
	Groundwater	Wood preservatives such as pentachlorophenol can leach into groundwater and impair its quality.	N	*Groundwater* Locations where replacement poles that are in or have the potential to be in standing water part of the year will be assessed for alternative solutions. First choice will be to explore options to move the pole to an alternate firm ground location. Alternatively, replacement poles will be either a natural cedar pole with internal boron treatment or a steel pole.	N
	Surface Water, Aquatic Resources, Wetlands	Wood preservatives such as pentachlorophenol may enter the water body, impair water quality and be toxic to aquatic organisms.	L	*Surface Water and Aquatic Resources* New and existing poles located within the 30 m waterbuffer zone will have pole wraps installed. A pole wrap has an impervious outer barrier layer that ensures preservatives remain with the pole and cannot migrate into the environment. Locations where replacement poles that are in or have the potential to be in standing water part of the year will be assessed for alternative solutions. First choice will be to explore options to move the pole to an alternate firm ground location. Alternatively, replacement poles will be either a natural cedar pole with internal boron treatment or a steel pole.	N
	Historical Resources	All excavation Projects have potential to disturb archaeological/ historical resources.	L	*Historical Resources* Notify Parks Canada Archaeology department prior to any ground disturbing activity in areas identified on mapping (Appendix F) and Section 4.2.4 (p.4-24) as potential sites.	N

N – Negligible Impact Rating L – Low Impact Rating M – Medium Impact Rating H – High Impact Rating P – Positive Impact Rating

* Constraint mapping identifies locations that have higher sensitivity to impacts than other areas.

(a) Contact Banff National Parks Wildlife Specialists: Tom Hurd for east of Castle Junction and Alan Dibb for west of Castle Junction, before commencing any Projects during the timing windows specified for bear and wolf, to determine if these species are active in the area.

Table 4.10 Standard Environmental Mitigations Associated with Routine Transmission Facility Operation and Maintenance Projects in Banff National Park– *Continued*

Project Activity	Environmental Component Affected	Potential Impact	Impact Rating	Recommended Best Management Practice	Residual Impact Rating
Pole Stubbing	Soil	Heavy equipment and excavation activities may result in soil compaction, loss of organic matter, erosion and loss of topsoil.	L	*Soil* **Adhere to all access mitigations listed in this table for all activities** Projects will be halted during events of heavy rainfall, peak snowmelt and high runoff. Soil that has been temporarily shoved away from poles and temporarily placed on tarps will be shovelled back against the pole and lightly tamped to prevent slumping or pooling of water.	N
	Vegetation	Loss of vegetation, introduction of non-native species.	L	*Vegetation* **Adhere to all access mitigations listed in this table for all activities.**	N
	Wildlife	Short-term sensory disturbance/ habitat avoidance.	L	*Wildlife* **Adhere to all access mitigations listed in this table for all activities.** Whenever ever possible, routine operation and maintenance projects will be scheduled to avoid sensitive wildlife stages (i.e., during GREEN timing windows (Table 4.9)) and will be co-ordinated to minimize the number of occasions crews enter onto the RoW. When it is not possible to undertake projects during green timing windows (Table 4.9), the following mitigations apply projects undertaken during YELLOW timing windows in known sensitive areas (as identified on the ecological mapping and Table 4.9): Minimize activity within 250 m of: active owl nests – February 15 to June 01, Active hawk/eagle nests – April 01 to July 15, Active Osprey nests – May 01 to August 15, Active waterfowl and migratory bird nesting areas – May 15 to July 31, Harlequin Duck nesting habitat (pre-nesting/staging) – April 01 to May 15, Harlequin Duck nesting habitat (nesting) – May 15 to June 30. Minimize activity within 500 m: Elk calving activity: May 01 to June 30 and the elk rut: August and September, Sheep lambing: May 01 to June 30, Bear hypophagia: May 01 to June 30 (weather dependent) and hyperphagia: August 01 to September 30 (berry dependent), Wolf denning: April 01 to July 30[(a)]. (See Table 4.8 and 4.9)	N
Pole Anchor Installation	Soil	Heavy equipment and excavation activities may result in soil compaction, loss of organic matter, erosion and loss of topsoil.	L-M	*Soil* **Adhere to all access mitigations listed in this table for all activities.** Projects will be halted during events of heavy rainfall, peak snowmelt and high runoff. Soil that has been temporarily shoved away from poles and temporarily placed on tarps will be shovelled back against the pole and lightly tamped to prevent slumping or pooling of water. Remove all excess soil materials created during excavations. Loose soil shall be tarped during truck removal.	N
	Vegetation	Loss of vegetation, introduction of non-native species.	L-M	*Vegetation* **Adhere to all access mitigations listed in this table for all activities.** All equipment should be in good working order and shall be cleaned of weeds, weed seeds and other plant material prior to entry onto the site. Protect undisturbed land by only stockpiling materials on disturbed or designated areas or on heavy canvas or polypropylene tarpaulins to protect native vegetation. Excavated material should not be permitted to damage or bury plant material that is to be retained on the RoW or in adjacent areas.	N

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Table 4.10 Standard Environmental Mitigations Associated with Routine Transmission Facility Operation and Maintenance Projects in Banff National Park– *Continued*

Project Activity	Environmental Component Affected	Potential Impact	Impact Rating	Recommended Best Management Practice	Residual Impact Rating
Pole Anchor Installation – *Continued*	Wildlife	Short-term sensory disturbance/ habitat avoidance.	L	*Wildlife* **Adhere to all access mitigations listed in this table for all activities.** Whenever ever possible, routine operation and maintenance projects will be scheduled to avoid sensitive wildlife stages (i.e., during GREEN timing windows (Table 4.9)) and will be co-ordinated to minimize the number of occasions crews enter onto the RoW. When it is not possible to undertake projects during green timing windows (Table 4.9), the following mitigations apply projects undertaken during YELLOW timing windows in known sensitive areas (as identified on the ecological mapping and Table 4.9): Minimize activity within 250 m of: active owl nests – February 15 to June 01, Active hawk/eagle nests – April 01 to July 15, Active Osprey nests – May 01 to August 15, Active waterfowl and migratory bird nesting areas – May 15 to July 31, Harlequin Duck nesting habitat (pre-nesting/staging) – April 01 to May 15, Harlequin Duck nesting habitat (nesting) – May 15 to June 30. Minimize activity within 500 m: Elk calving activity: May 01 to June 30 and the elk rut: August and September, Sheep lambing: May 01 to June 30, Bear hypophagia: May 01 to June 30 (weather dependent) and hyperphagia: August 01 to September 30 (berry dependent), Wolf denning: April 01 to July 30[(a)]. (See Table 4.8 and 4.9)	N
	Historical Resources	All excavation Projects have potential to disturb archaeological/ historical resources.	L	*Historical Resources* Notify Parks Canada Archaeology department prior to any ground disturbing activity in areas identified on mapping (Appendix F) and Section 4.2.4 (p.4-24) as potential sites.	N
Crossarm Replacement	Soil	Heavy equipment may result in soil compaction, erosion and loss of topsoil.	N	*Soil* **Adhere to all access mitigations listed in this table for all activities.**	N
	Vegetation	Loss of/damage to vegetation, introduction of non-native species.	N	*Vegetation* **Adhere to all access mitigations listed in this table for all activities.**	N
	Wildlife	Short-term sensory disturbance/ habitat avoidance, disturbance of raptor nests associated with power poles.	L	*Wildlife* **Adhere to all access mitigations listed in this table for all activities.** Whenever ever possible, routine operation and maintenance projects will be scheduled to avoid sensitive wildlife stages (i.e., during GREEN timing windows (Table 4.9)) and will be co-ordinated to minimize the number of occasions crews enter onto the RoW. When it is not possible to undertake projects during green timing windows (Table 4.9), the following mitigations apply projects undertaken during YELLOW timing windows in known sensitive areas (as identified on the ecological mapping and Table 4.9): Minimize activity within 250 m of: active owl nests – February 15 to June 01, Active hawk/eagle nests – April 01 to July 15, Active Osprey nests – May 01 to August 15, Active waterfowl and migratory bird nesting areas – May 15 to July 31, Harlequin Duck nesting habitat (pre-nesting/staging) – April 01 to May 15, Harlequin Duck nesting habitat (nesting) – May 15 to June 30. Minimize activity within 500 m: Elk calving activity: May 01 to June 30 and the elk rut: August and September, Sheep lambing: May 01 to June 30, Bear hypophagia: May 01 to June 30 (weather dependent) and hyperphagia: August 01 to September 30 (berry dependent), Wolf denning: April 01 to July 30[(a)]. (See Table 4.8 and 4.9)	N
Conductor Joining	Soil	Heavy equipment may result in soil compaction, erosion and loss of topsoil.	N	*Soil* **Adhere to all access mitigations listed in this table for all activities.**	N
	Vegetation	Loss of/damage to vegetation, introduction of non-native species.	N	*Vegetation* **Adhere to all access mitigations listed in this table for all activities.**	N

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Table 4.10 Standard Environmental Mitigations Associated with Routine Transmission Facility Operation and Maintenance Projects in Banff National Park– *Continued*

Project Activity	Environmental Component Affected	Potential Impact	Impact Rating	Recommended Best Management Practice	Residual Impact Rating
Conductor Joining - *Continued*	Wildlife	The loud noise associated with this activity will likely result in short-term sensory disturbance/ habitat avoidance, and has potential to disturb raptor nests that are associated with power poles.	L	*Wildlife* **Adhere to all access mitigations listed in this table for all activities.** Whenever ever possible, routine operation and maintenance projects will be scheduled to avoid sensitive wildlife stages (i.e., during GREEN timing windows (Table 4.9)) and will be co-ordinated to minimize the number of occasions crews enter onto the RoW. When it is not possible to undertake projects during green timing windows (Table 4.9), the following mitigations apply projects undertaken during YELLOW timing windows in known sensitive areas (as identified on the ecological mapping and Table 4.9): Minimize activity within 250 m of: active owl nests – February 15 to June 01, Active hawk/eagle nests – April 01 to July 15, Active Osprey nests – May 01 to August 15, Active waterfowl and migratory bird nesting areas – May 15 to July 31, Harlequin Duck nesting habitat (pre-nesting/staging) – April 01 to May 15, Harlequin Duck nesting habitat (nesting) – May 15 to June 30. Minimize activity within 500 m: Elk calving activity: May 01 to June 30 and the elk rut: August and September, Sheep lambing: May 01 to June 30, Bear hypophagia: May 01 to June 30 (weather dependent) and hyperphagia: August 01 to September 30 (berry dependent), Wolf denning: April 01 to July 30[(a)]. (See Table 4.8 and 4.9)	N
Conductor Repair, Replacement and Salvage; Insulator Washing	Soil	Heavy equipment may cause soil compaction, loss of organic matter, erosion, loss of topsoil.	N	*Soil* **Adhere to all access mitigations listed in this table for all activities.**	N
	Vegetation	Introduction of non-native species.	N	*Vegetation* **Adhere to all access mitigations listed in this table for all activities.**	N
	Wildlife	Short-term sensory disturbance/ habitat avoidance, disturbance of raptor nests associated with power poles.	L	*Wildlife* **Adhere to all access mitigations listed in this table for all activities.** Whenever ever possible, routine operation and maintenance projects will be scheduled to avoid sensitive wildlife stages (i.e., during GREEN timing windows (Table 4.9)) and will be co-ordinated to minimize the number of occasions crews enter onto the RoW. When it is not possible to undertake projects during green timing windows (Table 4.9), the following mitigations apply projects undertaken during YELLOW timing windows in known sensitive areas (as identified on the ecological mapping and Table 4.9): Minimize activity within 250 m of: active owl nests – February 15 to June 01, Active hawk/eagle nests – April 01 to July 15, Active Osprey nests – May 01 to August 15, Active waterfowl and migratory bird nesting areas – May 15 to July 31, Harlequin Duck nesting habitat (pre-nesting/staging) – April 01 to May 15, Harlequin Duck nesting habitat (nesting) – May 15 to June 30. Minimize activity within 500 m: Elk calving activity: May 01 to June 30 and the elk rut: August and September, Sheep lambing: May 01 to June 30, Bear hypophagia: May 01 to June 30 (weather dependent) and hyperphagia: August 01 to September 30 (berry dependent), Wolf denning: April 01 to July 30[(a)]. (See Table 4.8 and 4.9)	N
	Wetlands, Surface Water and Aquatic Resources	Insulator washing may release sediments and road salts into surface waters, impairing water quality and the quality of aquatic habitat.	N	*Wetlands, Surface Water and Aquatic Resources* **Adhere to all access mitigations listed in this table for all activities.** Wash insulators during dry periods to reduce surface runoff into wetlands and surface waters.	N

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Table 4.10 Standard Environmental Mitigations Associated with Routine Transmission Facility Operation and Maintenance Projects in Banff National Park– *Continued*

Project Activity	Environmental Component Affected	Potential Impact	Impact Rating	Recommended Best Management Practice	Residual Impact Rating
Vegetation Control on the RoW (approximately every 3 to 4 years)					
Manual Brushing (Slashing), Trimming	Soil	Soil compaction, loss of organic matter, erosion and loss of topsoil.	L	*Soil* **Adhere to all access mitigations listed in this table for all activities.** Projects will be halted during events of heavy rainfall, peak snowmelt and high runoff. Soil that has been temporarily shoved away from poles and temporarily placed on tarps will be shovelled back against the pole and lightly tamped to prevent slumping or pooling of water. Selectively cut vegetation in the vicinity of steep slopes, erosion sensitive soils, 30 m water buffer zone, sensitive areas (as identified on the mapping); existing vegetation and root systems are the best method of slope stabilization and runoff filtration. Never skid or yard trees across steep embankments.	N
	Vegetation	Loss of vegetation (including riparian), introduction of non-native species.	L	*Vegetation* **Adhere to all access mitigations listed in this table for all activities.** Special effort will be used to preserve Douglas fir, limber pine and mountain juniper. **Within the RoW**, these species will be allowed to grow until the plant attains a height that has potential to impact the powerline. At this time Douglas fir will become a target species and will be controlled. In most cases, limber pine and mountain juniper will not grow beyond a hazardous threshold height and thus do not have to be removed. **Adjacent to the RoW**, individual trees will be assessed. Healthy trees that do not threaten the integrity of the line or interfere with danger tree removal will not be cleared. Danger trees will be removed, topped or trimmed as appropriate to the site-specific location. In the 30 m riparian buffer zone, special effort will be used to maintain vegetation density. Trees attaining a hazardous height will be selectively removed or topped (depending on site specific circumstances) leaving all stumps and roots in place.	N
	Wildlife	Short-term sensory disturbance/ habitat avoidance, Loss of wildlife food and cover, potential limitation for wildlife movement, disruption/ loss of raptor nest trees.	L	*Wildlife* **Adhere to all access mitigations listed in this table for all activities.** Whenever ever possible, routine operation and maintenance projects will be scheduled to avoid sensitive wildlife stages (i.e., during GREEN timing windows (Table 4.9)) and will be co-ordinated to minimize the number of occasions crews enter onto the RoW. When it is not possible to undertake projects during green timing windows (Table 4.9), the following mitigations apply projects undertaken during YELLOW timing windows in known sensitive areas (as identified on the ecological mapping and Table 4.9): Minimize activity within 250 m of: active owl nests – February 15 to June 01, Active hawk/eagle nests – April 01 to July 15, Active Osprey nests – May 01 to August 15, Active waterfowl and migratory bird nesting areas – May 15 to July 31, Harlequin Duck nesting habitat (pre-nesting/staging) – April 01 to May 15, Harlequin Duck nesting habitat (nesting) – May 15 to June 30. Minimize activity within 500 m: Elk calving activity: May 01 to June 30 and the elk rut: August and September, Sheep lambing: May 01 to June 30, Bear hypophagia: May 01 to June 30 (weather dependent) and hyperphagia: August 01 to September 30 (berry dependent), Wolf denning: April 01 to July 30[(a)]. (See Table 4.8 and 4.9) Wildlife trees (snags with obvious cavity nests and nest trees) and deciduous trees will be noted during ground patrols. In Wildlife corridors (identified on the mapping) and wetland areas, wildlife trees will be "topped" rather than removed. When topping trees, crews will use lateral heights, vary the heights of remaining trees and leave some branches in tact. Nest trees will not be felled until after September. Slash will be bucked (and limbed) and left flat on the ground to decompose. Obvious wildlife trails will not be obstructed.	N
	Wetlands, Surface Water and Aquatic Resources	Riparian vegetation removal can lead to increased erosion and siltation, which can negatively affect water quality and aquatic resources.	L	*Wetlands, Surface Water and Aquatic Resources* **Adhere to all access mitigations listed in this table for all activities.** In the 30 m riparian buffer zone, special effort will be used to maintain vegetation density. Trees attaining a hazardous height will be selectively removed or topped (depending on site specific circumstances) leaving all stumps and roots in place. No felled vegetation or debris will be placed in a waterbody.	N

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Table 4.10 Standard Environmental Mitigations Associated with Routine Transmission Facility Operation and Maintenance Projects in Banff National Park– *Continued*

Project Activity	Environmental Component Affected	Potential Impact	Impact Rating	Recommended Best Management Practice	Residual Impact Rating
Brush Mowing	Soil	Soil compaction, loss of organic matter, erosion and loss of topsoil.	L	*Soil* **Adhere to all access mitigations listed in this table for all activities.** Mowing is prohibited in Riparian areas (within 30 m of water) and steep slopes.	N
	Vegetation	Loss of vegetation, introduction of non-native species.	L	*Vegetation* **Adhere to all access mitigations listed in this table for all activities.** All Douglas fir, Limber pine and Mountain Juniper will be marked or flagged during ground patrols and pre-mow slashing and flagged sites will be avoided during mowing. Special effort will be used to preserve Douglas fir, limber pine and mountain juniper. **Within the RoW**, these species will be allowed to grow until the plant attains a height that has potential to impact the powerline. At this time Douglas fir will become a target species and will be controlled. In most cases, limber pine and mountain juniper will not grow beyond a hazardous threshold height and thus do not have to be removed. **Adjacent to the RoW**, individual trees will be assessed. Healthy trees that do not threaten the integrity of the line or interfere with danger tree removal will not be cleared. Danger trees will be removed, topped or trimmed as appropriate to the site-specific location. Mowing is prohibited in Riparian areas (within 30 m of water) and steep slopes.	N
	Wildlife	Short-term sensory disturbance/ habitat avoidance, disruption/loss of ground nests.	L	*Wildlife* **Adhere to all access mitigations listed in this table for all activities.** Whenever ever possible, routine operation and maintenance projects will be scheduled to avoid sensitive wildlife stages (i.e., during GREEN timing windows (Table 4.9)) and will be co-ordinated to minimize the number of occasions crews enter onto the RoW. When it is not possible to undertake projects during green timing windows (Table 4.9), the following mitigations apply projects undertaken during YELLOW timing windows in known sensitive areas (as identified on the ecological mapping and Table 4.9): Minimize activity within 250 m of: active owl nests – February 15 to June 01, Active hawk/eagle nests – April 01 to July 15, Active Osprey nests – May 01 to August 15, Active waterfowl and migratory bird nesting areas – May 15 to July 31, Harlequin Duck nesting habitat (pre-nesting/staging) – April 01 to May 15, Harlequin Duck nesting habitat (nesting) – May 15 to June 30. Minimize activity within 500 m: Elk calving activity: May 01 to June 30 and the elk rut: August and September, Sheep lambing: May 01 to June 30, Bear hypophagia: May 01 to June 30 (weather dependent) and hyperphagia: August 01 to September 30 (berry dependent), Wolf denning: April 01 to July 30[(a)]. (See Table 4.8 and 4.9) No mowing will occur April to September in the vicinity of the following water bodies. These waterways in the study area have bee documented as being used by Harlequin Ducks (Smith *et al*. 1995, Smith 2000): • Bow River east of Lake Louise (poles 435-436, Map 551L_09) • Baker Creek (poles 366-367, Map 551L_8)	N
Burning				Brush debris is only burned if directed by Parks personnel. In the event of a burn, the following mitigations will be applied. All burn piles will be kept small and supervised at all times.	

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Table 4.10 Standard Environmental Mitigations Associated with Routine Transmission Facility Operation and Maintenance Projects in Banff National Park– *Continued*

Project Activity	Environmental Component Affected	Potential Impact	Impact Rating	Recommended Best Management Practice	Residual Impact Rating
Burning – *Continued*	Air Quality and Public Safety	Smoke associated with burning can be a safety hazard, especially if burning occurs near roadways. Compaction, loss of organic matter, erosion and loss of topsoil.	L	*Air Quality and Safety* Burning dry materials create less smoke than damp/wet materials. This reduces visibility effects and potential safety hazards on roadways. A courtesy call to downwind operators of OCAs and recreation areas will be made to inform them of planned, controlled burns related to vegetation management. Parks Canada, the Banff Fire Hall and the transportation authority will be contacted to determine if "smoke warning" signs are required. Weather will always be taken into consideration before burning; showers and fronts will cause wind gusts and wind reversals. Burns will only occur during the maximum "Smoke Dissipation Window" – winds at 3 to 8 mph (5-13 km/hr); clear or high cloud ceiling; between 1:00 pm and 6:00 pm; complete burning activity at least 4 hours prior to sunset. Use a small test fire to check smoke dissipation.	N
	Vegetation and Soil	Loss of vegetation. Burning can result in a loss of organic matter in soils and can increase the risk of erosion and loss of topsoil.	L	*Vegetation and Soils* Once felled, trees will be piled and burned on the RoW. Care is taken to ensure flames and smoke do not create flashover conditions from the conductor and the potential for sparks entering the forest. Burning operations will be done with snow cover on the ground. No burning is allowed 30 m from any waterbody. Standard methods will be applied to ensure all fires are completely out.	N
	Wetlands, Surface Water and Aquatic Resources	Burning vegetation piles can introduce nutrients and sediments, impairing water quality and the quality of aquatic resources	N	*Wetlands, Surface Water Quality and Aquatic Resources* Minimize the size of burning brush piles and do not locate them in the vicinity of open water (at least 30 m away).	N
Herbicide Applications				*General Spray BMPs* Pesticide use in BNP requires filling in an Integrated Pest Management application form by February 28th of each year. Only chemicals registered and approved by Agriculture Canada under the Pest Control Products Act will be used on the RoW or at substations. (Appendix D). Non-native plants typically are found in areas that have experienced a soil surface disturbance or the placement of new topsoil. Most transmission facility operation and maintenance activities do not result in exposed bare topsoil. Thus non-native vegetation control has not been an issue on transmission RoWs. With the exception of substations and perimeter areas, to date there has not been a need to utilize herbicides on transmission line RoWs. However, when required, herbicides are selectively used on RoWs to manage outbreaks of noxious or restricted weed species. Herbicides may be used in conjunction with mechanical or hand labour methods. (Appendix D lists Restricted & Noxious Weeds). • Outbreaks of non-native vegetation will be identified during ground patrols. • An applicable herbicide will be selected based on the non-native target species type, stem density, plant life stage, and adjacent non-target vegetation species. Herbicide will be selectively applied (spot spraying) only to the area that has been infested with non-native plants. Herbicide application rates and timing will be as stated by label requirements. • All herbicide applications are conducted by provincially certified applicators. • Herbicide applications will be conducted during appropriate weather conditions, dry and light winds (<16km/hr). Herbicide applications will be monitored to determine success of applications.	N

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Table 4.10 Standard Environmental Mitigations Associated with Routine Transmission Facility Operation and Maintenance Projects in Banff National Park– *Continued*

Project Activity	Environmental Component Affected	Potential Impact	Impact Rating	Recommended Best Management Practice	Residual Impact Rating
Herbicide Applications – *Continued*	Vegetation	Improper application techniques can result in native vegetation damage/loss.	L-M	*Vegetation* Herbicides will be applied selectively using hose and handgun or backpack spray methods. Detailed records will be kept of each area sprayed as per provincial regulations including information on application date, weather conditions, equipment and pesticides used, growth stage of the non-native species and surrounding vegetation is important. Subsequent ground patrols will note the success of spray programs.	N
	Groundwater, Wetlands, Surface Water, Aquatic Resources, Soils	Improper application techniques (methods, rates) or spills can contaminate groundwater, surface water, and soils and can be harmful to aquatic resources.	L	*Groundwater, Wetlands, Surface Water and Aquatic Resources* Retain a 30 m buffer zone around water bodies where herbicide application is prohibited. The only exception to this is within the fenced areas of substations. In these areas, non-residual herbicides (such as round-up) will be applied, when necessary, using spot spraying techniques. Only herbicides registered and approved by Agriculture Canada under the Pest Control Products Act will be used Do not pump or use open water for mixing herbicides? Water used to mix herbicides will be obtained from a town water supply or by using a clean water nurse tank.	N
	Wildlife	Chemicals used for pest control can be toxic to wildlife (direct and indirect pathways).	L	*Wildlife* **Adhere to all access mitigations listed in this table for all activities.** Plant species identified for non-native plant control are unpalatable to wildlife.	N
	Public Safety	Chemicals used for pest control can be harmful to the humans.	L	*Safety* Public will not be at risks due to the rare need for herbicide applications and generally the RoWs are not high public use areas.	N
GENERAL PROJECTS					
Waste Management • Decommissioned poles • Anchors	Aesthetics	Stockpiles of industry related waste is prohibited in the park.	L	Salvaged poles are taken off the RoW and removed from BNP. Salvaged poles are sold to the public for alternate uses. Other management measures for pole disposal continue to be explored. Anchor rods are detached from the anchor and removed when the pole is moved or salvaged. Anchors will be left in-situ below groundline if they do not present a hazard, or where excavating for removal would cause excess disturbance.	P
Hazardous Material Handling	Groundwater Surface Water Soils	Improper mixing handling or spill containment application techniques (methods, rates) or spills can contaminate groundwater, wetlands, surface water, and soils and can be harmful to aquatic resources.	L	*Herbicides* Herbicides will be mixed according to labels No herbicide mixing will take place within 30 m of water.	N
	Vegetation Wetlands	Improper mixing or spill containment can result in native vegetation damage/loss.	N		N
	Wildlife	Chemicals used for pest control can be toxic to wildlife (direct and indirect pathways).	L	Water used to mix herbicides will be obtained from a town water supply or by using a clean water nurse tank.	N
	Public Safety	Chemicals used for pest control can be harmful to the humans.	N-L	Herbicide containers must be disposed of in accordance with provincial guidelines. *Petroleum, oils and lubricants – See below under Vehicle and Equipment Operation and Maintenance*	N

N – Negligible Impact Rating L – Low Impact Rating M – Medium Impact Rating H – High Impact Rating P – Positive Impact Rating

* Constraint mapping identifies locations that have higher sensitivity to impacts than other areas.

(a) Contact Banff National Parks Wildlife Specialists: Tom Hurd for east of Castle Junction and Alan Dibb for west of Castle Junction, before commencing any Projects during the timing windows specified for bear and wolf, to determine if these species are active in the area.

Table 4.10 Standard Environmental Mitigations Associated with Routine Transmission Facility Operation and Maintenance Projects in Banff National Park– *Continued*

Project Activity	Environmental Component Affected	Potential impact	Impact Rating	Recommended Best Management Practice	Residual Impact Rating
Temporary Staging	Groundwater Surface Water Aquatic Resources Wetlands Soil	Improper handling or spill containment techniques (methods, rates) or spills can contaminate surface water, groundwater, and soils and can be harmful to aquatic resources.	N-L	Fuels and oils will be stored at least 100 m away from a water body. Service vehicles will be refuelled at least 100 m away from a water body. Vehicles and machinery will be equipped with spill kits. Staging areas for maintenance equipment will be tidy and garbage-free. Upon termination of the project, sites will be promptly cleaned and vacated, and the Parks office will be advised.	N
Equipment Maintenance and Repair and Equipment Refuelling	Groundwater Surface Water Wetlands Soil	Improper handling or spill containment techniques (methods, rates) or spills can contaminate surface water, groundwater, and soils and can be harmful to aquatic resources.	N-L	Refuel and service vehicles at least 100 m away from a water body. Vehicles and machinery will be equipped with spill kits. Inspect and repair equipment to stop any leaks of oil and other fluids.	N
Other					
Fording Streams, Wetlands and Rivers	Wetlands, Surface Water and Aquatic Resources	Soil materials that enter a waterbody as a result of fording (i.e., mud on tires) temporarily decrease water quality. Increased siltation can decrease light penetration, clog spawning beds, reduce water flow and oxygenation of gravels and impact developing fish eggs.	N-M	*Wetlands, Surface Water and Aquatic Resources* **Adhere to all access mitigations listed in this table for all activities.** Minimize the number of stream crossings. Work for periods will be scheduled in accordance to table 4.9	N
		Released particles or liquids attached to equipment, including oils, grease and fuel, decrease water quality and are potentially toxic to aquatic organisms.	N	Equipment will be inspected and repaired to stop any leaks of oil and other fluids prior to entering waterbody. Equipment will be clean and free of external grease, oil and other fluids prior to entering the waterbody.	N
		Released non-native aquatic species, such as foreign vegetation, seeds, small aquatic organisms and pathogens attached to equipment and/or vehicles may influence the health, populations and dynamics of the aquatic community.	N	All equipment will be in good working order and shall be cleaned of weeds, weed seeds and other plant material prior to entering the waterbody.	N
		Physical damage to streambed and aquatic organisms.	L	Respect fish timing windows; no stream crossings with large equipment from September 1 to April 15 and from May 1 to August 15. Limit in-stream equipment to low pressure, pneumatic-tired, multi-wheel vehicles.	N

N – Negligible Impact Rating L – Low Impact Rating M – Medium Impact Rating H – High Impact Rating P – Positive Impact Rating

* Constraint mapping identifies locations that have higher sensitivity to impacts than other areas.

(a) Contact Banff National Parks Wildlife Specialists: Tom Hurd for east of Castle Junction and Alan Dibb for west of Castle Junction, before commencing any Projects during the timing windows specified for bear and wolf, to determine if these species are active in the area.

Table 4.10 Standard Environmental Mitigations Associated with Routine Transmission Facility Operation and Maintenance Projects in Banff National Park– *Continued*

Project Activity	Environmental Component Affected	Potential impact	Impact Rating	Recommended Best Management Practice	Residual Impact Rating
Fording Streams, Wetlands and Rivers – *Continued*				Fording is acceptable under the following conditions: • Firm rock or coarse gravel streambed. • Stream depth < 1 m. Fording is unacceptable under the following conditions: • Soft substrates. • During fish timing restrictions and in a high fish value stream. • During spring runoff and high stream discharge. • High steam depth (> 1 m), wide width and steep gradient. • Active channel streambanks > 2 m. • Unstable soil conditions and high erosion potential of banks.	
	Wildlife	Disrupt/damage or destroy avian nests in riparian, wetland areas.	N	*Wildlife* **Adhere to all access mitigations listed in this table for all activities.** Whenever ever possible, routine operation and maintenance projects will be scheduled to avoid sensitive wildlife stages (i.e., during GREEN timing windows (Table 4.9)) and will be co-ordinated to minimize the number of occasions crews enter onto the RoW. When it is not possible to undertake projects during green timing windows (Table 4.9), the following mitigations apply projects undertaken during YELLOW timing windows in known sensitive areas (as identified on the ecological mapping and Table 4.9): Minimize activity within 250 m of: Active waterfowl and migratory bird nesting areas – May 15 to July 31, Harlequin Duck nesting habitat (pre-nesting/staging) – April 01 to May 15, Harlequin Duck nesting habitat (nesting) – May 15 to June 30. Harlequin Duck nesting areas have been identified at the following locations: • Bow River east of Lake Louise (poles 435-436, Map 551L_09) • Baker Creek (poles 366-367, Map 551L_8)	N
SUBSTATIONS					
Substation Inspections, Equipment Repair and Maintenance	Wildlife	Short-term sensory disturbance/ habitat avoidance	N	*Wildlife* Whenever ever possible, routine operation and maintenance projects will be scheduled to avoid sensitive wildlife stages (i.e., during GREEN timing windows (Table 4.9)) and will be co-ordinated to minimize the number of occasions crews enter onto the RoW. When it is not possible to undertake projects during green timing windows (Table 4.9), the following mitigations apply projects undertaken during YELLOW timing windows in known sensitive areas (as identified on the ecological mapping and Table 4.9): Minimize activity within 250 m of: Active waterfowl nesting areas – May 15 to July 15, Harlequin Duck nesting habitat (pre-nesting/staging) – April 01 to May 15, Harlequin Duck nesting habitat (nesting) – May 15 to June 30. Harlequin Duck nesting areas have been identified at the following locations: • Bow River east of Lake Louise (poles 435-436, Map 551L_09) • Baker Creek (poles 366-367, Map 551L_8)	N

N – Negligible Impact Rating L – Low Impact Rating M – Medium Impact Rating H – High Impact Rating P – Positive Impact Rating

* Constraint mapping identifies locations that have higher sensitivity to impacts than other areas.

(a) Contact Banff National Parks Wildlife Specialists: Tom Hurd for east of Castle Junction and Alan Dibb for west of Castle Junction, before commencing any Projects during the timing windows specified for bear and wolf, to determine if these species are active in the area.

Table 4.10 Standard Environmental Mitigations Associated with Routine Transmission Facility Operation and Maintenance Projects in Banff National Park– *Continued*

Project Activity	Environmental Component Affected	Potential impact	Impact Rating	Recommended Best Management Practice	Residual Impact Rating
Herbicide Applications	Groundwater, Wetlands, Surface Water, Aquatic Resources	Improper application techniques (methods, rates) or spills can contaminate groundwater, surface water, and soils and can be harmful to aquatic resources.	L	*Groundwater, Wetlands, Surface Water and Aquatic Resources* • Herbicides are used to control all vegetation within substations. The presence of vegetation within a substation posses an electrical and fire hazard to workers and the public. Due the presence of energized wires mechanical or manual control methods are not practical within substations. • Only chemicals registered and approved by Agriculture Canada under the Pest Control Products Act will be used on the RoW or at substations. (Appendix D). • A 10 m buffer zone around water bodies will be retained where herbicide application is prohibited. • Herbicide application rates and timing will be as stated by label requirements. • All herbicide applications are conducted by provincially certified applicators. • Herbicide applications will be conducted during appropriate weather conditions, dry and light winds (<16 km/hr). • Water used to mix herbicides will be obtained from a town water supply or by using a clean water nurse tank.	N
Transformer Oil Handling	Groundwater, Wetlands, Surface Water, Aquatic Resources	Improper storage or spills can contaminate groundwater, surface water, and soils and can be harmful to aquatic resources.	L	Mitigations include: drip pans, spill kits on site, all hose ends have hydraulic couplers (automatic shut off). Personnel are on site continuously during oil handling procedures. Major substations (Sunshine, Lake Louise and Banff) have secondary containment to mitigate the risk of transformer oil spills. Ensure appropriate spill kits are on site.	N

N – Negligible Impact Rating L – Low Impact Rating M – Medium Impact Rating H – High Impact Rating P – Positive Impact Rating

* Constraint mapping identifies locations that have higher sensitivity to impacts than other areas.

(a) Contact Banff National Parks Wildlife Specialists: Tom Hurd for east of Castle Junction and Alan Dibb for west of Castle Junction, before commencing any Projects during the timing windows specified for bear and wolf, to determine if these species are active in the area.

4.5.3 Equipment Restrictions

Maps 551L_1 to 551L_9, and 54L_1 to 54L_6 (Appendix F) identify areas characterized by wet and/or steep terrain. These areas have equipment restrictions associated with them; restrictions are identified on the Access maps (Appendix G) and are congruent with Table 3.3 presented earlier in Section 3.6.1.

Vehicular travel and other equipment operation will be restricted to the RoW and approved access routes. The access maps in Appendix G identify primary approved access points associated with AltaLink facility RoWs.

4.5.4 Maintenance Crews and AltaLink Personnel

AltaLink employees and contractors undertaking AltaLink projects will become familiar with and accountable for adherence to standard environmental mitigation practices associated with each project. Crew Bosses directing AltaLink maintenance projects are responsible for ensuring environmental mitigation measures are applied for every project undertaken in BNP. Trained environmental specialists will be responsible for completing the CSPR form and is accountable to ensure that crews have been briefed on all environmental constraints and mitigations. CSPR conditions, code of practice and standard environmental mitigations will be highlighted during this start-up tailboard meeting.

A project start-up tailboard meeting is conducted, prior to the start of field activities and conducted by the site foreman. The start-up meeting is attended by the AltaLink Project Manager and as applicable, AltaLink Field Operations Personnel and contractors. The project scope is reviewed and the operational activities are discussed. Hazards (personnel safety, environmental, public & property) are reviewed. Potential risks and mitigations associated with identified hazards are discussed. The meeting is recorded and signed by attending personnel.

4.5.5 Standard Environmental Mitigation Practices

Standard environmental mitigation measures that must be adhered to for every project undertaken by AltaLink in BNP are detailed in Table 4.10. Mitigations have been listed for each project.

4.6 Effects of the Environment on the Project

Natural events including flooding, extreme erosion, forest fire, wind throw, snow, rock or debris avalanches have potential to damage transmission facilities; and, in some cases create emergency situations. When these events threaten the integrity of structures or the safe, reliable delivery of electrical power to park infrastructure. Similarly birds and insects can damage poles; beaver and bears are known to chew on pole wraps. All of these activities can increase the frequency of undertaking certain projects.

The physical environment supporting AltaLink facilities will influence the time of year and the type of equipment that may be used to complete that project. For example, equipment restrictions

apply in wet areas and in areas vulnerable to erosion. Sensitive wildlife stages will also influence the time of year some project may be undertaken in BNP.

These issues and concerns are considered to be mitigable through efficient maintenance and operation procedures, and use of suggested mitigations (see table 4.10).

4.7 Malfunctions and Accidents

Malfunctions and accidents on a high voltage transmission facility are an extremely serious concern. Transmission facility malfunctions and accidents can create an electrocution and fire hazard.

Transmission facilities are designed and maintained with the objective of delivering safe reliable power on a continuous basis. The *Alberta Electrical and Communication Utility Code* (Alberta Labour and the Safety Codes Council 1999) establishes a minimum safety standard for the installation and maintenance of electrical and communication utility systems. The guiding principal of this code is to enhance public safety by minimizing potential risk of shock and fire hazards and establishing safety rules for utility workers and other who must work near electrical and utility systems. Despite such regulations, routine inspections and maintenance, malfunctions and accidents can occur.

Conductor malfunction is when either the conductor physically breaks or an object from the ground makes contact with the conductor. Physical conductor breaks can be caused by external forces such as a tree falling onto the line, lightning, and extreme ice and wind loading. Ground to conductor contacts can occur by trees growing into or falling onto the conductor. Ground to conductor contacts can also occur when inappropriately operating construction equipment near overhead powerlines. Conductor mechanical failure could occur where lengths of conductor are joined together or attached to structures, though this is very rare.

An insulator's function is to prevent electricity flowing from the powerline conductor to the ground. **Insulator malfunction** can be caused by dust and other contaminates coating the insulating porcelain. Especially when an insulator becomes moist, an electrical conducting situation can be created. Typically, natural occurring rain keeps insulators clean. If not, then insulator washing may be necessary. Insulator porcelain can crack and chip due to weathering.

Wood Pole Failure Wood pole structures, similar to conductors, can malfunction due to extreme weather situations. Wood poles also can malfunction due to loss of strength through rot. Wood poles are routinely tested and retreated with wood preservatives to prevent this. Another mode of pole failure is through vehicle or construction equipment collisions. This mode of failure is remote due to the physical location of the powerline ROW.

Substations malfunctions typically occur through mechanical failure. External failure modes, such as vegetation or wildlife contacting electrical equipment, are possible though rare.

To reduce risks of malfunctions and accidents, all transmission facilities are routinely inspected and modified and repaired as required. RoW vegetation management reduces fire risk and

ensures access in the event of emergencies. Emergency response plans outline protocol for responding in the event of malfunctions or accidents. The likelihood of these malfunctions occurring is reduced through use of appropriate operation and maintenance procedures.

4.8 Emergency Situations

The Agency has advised Parks Canada "that pursuant to Section 7(1) of the Act, an environmental assessment is not required of a project where the project is to be carried out in response to an emergency and the project is carried out in the interest of preventing damage to property, the environment, or is in the interest of public health and safety. The scope and magnitude of actions taken by Federal Authorities in these circumstances will be defined by the powers that authorize the emergency actions. However, Federal Authorities should, as a matter of policy, attempt to ensure that environmental considerations are factored into their emergency response planning to the extent possible."

Emergencies within BNP, other than those of a national scale, include but are not limited to the actual occurrence of, and/or imminent threat of flooding, dam failure, extreme erosion, facility structural damage and forest fire, snow, rock or debris avalanche, natural gas leaks or explosions, train derailments and railway track failure, toxic materials release or spill, natural event blockage of the TransCanada Highway or CPR Mainline, and telephone or electrical failure to the Town of Banff or the Hamlet of Lake Louise. Initial actions or immediate containment will be approved but will require a post project environmental assessment and follow-up. If a longer-term project arises from the initial emergency, the normal environmental assessment protocol will apply to any further undertakings.

4.8.1 Emergency Situation Environmental Assessment Procedure

Protocols in the event of one of the above specified emergencies requires notification to the Warden Office of the nature and location of the emergency, initial action proposed and any subsequent follow-up. The 24 hour Banff Park Dispatch Office [Tel: (403) 762-1470] will notify the appropriate staff who will determine the acceptability of the proposed emergency action and issue an appropriate permit if required.

Emergency response to electrical service restorations are restricted to existing rights of ways, standard access methods, use of standard equipment and are to follow codes of good practice and the mitigations identified in this MCSR. The day following an emergency, a CSPR form must be completed and issued to Parks Canada as outlined in Section 5.4.

4.8.2 Post Emergency Environmental Assessment

Should the emergency repair require further long-term work already covered in the MCSR, a CSPR form may be used. When emergency repair is outside the activities included under the MCSR, an individual environmental screening will be required.

Upon submission, the individual environmental screening will undergo a 14 day public review period. Repairs deemed to be made as a result of emergency actions but requiring an

environmental screening will not be subjected to the Advisory Development Board review process.

4.9 Residual Impacts

Residual impacts are those impacts still remaining **after all appropriate mitigation has been implemented**.

The potential residual impacts likely to result from this project have been defined using the ratings in Table 4.6.

Most of the potential impacts identified in Table 4.7 and described in Section 4.4 are already rated as low and, if appropriate mitigation measures are followed, should be reduced to insignificant levels. Potential residual impacts include:

- Operating in proximity to water bodies may cause sedimentation and contamination of surface water. However, if appropriate mitigations are followed and activities are restricted to beyond 30m from a waterbody, resulting effects would be **insignificant**.

- Sensory disturbance to wildlife can result from numerous incursions onto the RoW. However, adhering to identified time restrictions and co-ordinating maintenance projects to reduce the number of times crews enter the RoW can reduce these impacts. If this is done these impacts become **insignificant**.

- Dangerous brush mowing can reduce the vegetation resources of BNP, particularly special resources. However, as special resources are noted and may be topped rather than cleared from the RoW, and mowing is minimal, this impact will be **insignificant** provided all mitigations are followed.

4.10 Cumulative Effects

For the purposes of the MCSR, cumulative environmental effects are defined as those effects on the environment that result from project activities when combined with effects on the environment as a result of other past, current and imminent projects and activities.

The routine operation and maintenance activities covered by this MCSR occur in a regional setting where numerous activities that affect the environment are occurring simultaneously. Other activities that could result in similar types of effects, and cumulatively add to the effects of AltaLink projects, include operation and maintenance in other linear corridors including the TransCanada Highway, Highway 1A, Aquila distribution lines, the ATCO pipeline RoW and the Canadian Pacific Railway RoW. Parks Canada may also on occasion carry out activities in proximity to the AltaLink RoW. These activities include prescribed burns, trail construction, and facilities maintenance. Many small activities within the same area have the potential to cause ‘nibbling’ effects. For example, linear corridors that have repeated disturbances associated with them often cause wildlife to avoid otherwise effective habitats. The degree of avoidance is species specific and is related to the type of linear disturbance.

AltaLink activities along the right of way are generally localized, of short duration and predictable. In relation to other activities within linear corridors that parallel the transmission line RoWs, the routine activities covered by the MCSR would add small incremental effects to other existing impacts. Cumulative effects associated with the AltaLink RoW would be of negligible magnitude.

The potential for 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 operation and maintenance project. Other projects and activities identified, which may affect the same environmental components identified for operation and maintenance projects (i.e., wildlife, vegetation, aquatic resources etc), will be assessed in combination with the operation and maintenance project for cumulative environmental effects. Additional mitigation will be recommended as required. Significance of cumulative effects evaluation is facilitated through the CSPR on a project-specific basis.

4.11 Follow-Up Programs and Monitoring

AltaLink has an environmental management system (EMS) that is compatible with ISO 14001 standards. Auditing is an integral component of this environmental management system. Each year some aspect of AltaLink's EMS undergoes an external third party environmental audit.

All work sites are susceptible to periodic random spot checks and inspections by AltaLink personnel. These inspections can be either primarily a safety, or a quality, or an overall general orientation.

Parks Canada, as the RA, and AltaLink, as the proponent, will ensure that mitigation commitments required, as part of the CSPR approval will be carried out during project activities. As the RA, Parks Canada routinely conducts surveillance of RoW projects. Long-term vegetation monitoring projects related to weeds and prescribed burns are also conducted by Parks Canada, as are long-term wildlife movement studies. Every winter in BNP, Parks wildlife specialists conduct wildlife corridor monitoring and subsequent reporting.

5.0 PREPARING THE CLASS SCREENING PROJECT REPORT

The information included in the MCSR provides the background environmental and project information necessary to prepare a CSPR. It is the responsibility of AltaLink to provide project-specific and site-specific information necessary for Parks Canada, the RA, to reach a decision on project approval. This information will be provided through completion of a CSPR. Information and copies of forms can be obtained from the Warden's Office in Banff and Lake Louise.

Projects that clearly meet the conditions of the class will receive approval based on the information provided in the CSPR.

5.1 The Class Screening Process

A CSPR format has been developed that will identify project activities, specific locations, and the appropriate mitigations on a site-specific basis. The CSPR form is shown in Table 5.1. The following procedure applies:

- A CSPR will be submitted for all activities at least 7 days before the activity is planned. When required, a Restricted Activity Permit will be issued upon approval of the CSPR.

- The CSPR may be submitted by fax, email or post to the Warden's Office in BNP.

5.2 Timelines and Responsibilities

The responsibilities of the proponent and Parks Canada in the class screening process are outlined below:

- It will be the responsibility of Parks Canada to prepare a MCSR, or to ensure a MCSR is prepared by a proponent.

- It will be the responsibility of the proponent to ensure that an AltaLink employee familiar with AltaLink operations and environmental practices prepares the CSPR form so that all information provided in CSPR is accurate. The proponent will be required to sign a statement to this effect. If it becomes known that the proponent has provided inaccurate information, any approval will be invalidated.

- It will be the responsibility of Parks Canada to:
  - Provide the necessary forms, appropriate information and advice to the proponent;
  - Review the completed CSPRs; and
  - Parks Canada, as the RA, will review all projects and approve or reject the proposed project pursuant to Section 20(1) of CEAA within 7 days of submission of the CSPR (see exclusions in Section 3.4), or reclassify the project to an individual screening if the RA feels the projects are outside the scope of the MCSR.

5.3 Federal Environmental Assessment Index

The MCSR will be listed in the Federal Environmental Assessment Index (FEAI). The FEAI will indicate the MCSR, the RA and RA contact, and the location where project specific information may be obtained.

Projects screened under the MCSR will not be listed individually on the FEAI, rather the RA will maintain a running tally of all projects completed under the MCSR and submit the tally semi-annually to the Agency for incorporation in the FEAI (i.e., September 30 and March 31). Projects that do not fit within the MCSR will be subject to individual screening and will be placed on the FEAI as is the RA's current practice.

5.4 AltaLink Management Ltd. Class Screening Project Report Form for Routine Operation and Maintenance of Electrical Power Transmission Facilities in Banff National Park

Procedure

This Class Screening Project Report (CSPR) form applies to activities and projects covered by the *Model Class Screening Report for Routine Operation and Maintenance of Transmission Facilities in Banff National Park*. It must be completed and submitted to the Warden's Office in Banff or Lake Louise seven (7) days prior to the planned activity. This form is necessary:

- To receive approval under CEAA to perform the work;
- To obtain an associated Restricted Activity Permit;
- As a follow up to emergency procedures;
- The form may be submitted by email, fax or mail and a reply must be received before access to the Right-of-Way may be obtained.

In the event of emergency operations (as defined in Section 4.9 of the MCSR) the Warden Dispatch will be contacted (available 24 hours/day) at (403) 762-4506 or the Wardens Office at (403) 762-1470 to notify of any emergency procedures required. This form relative to those emergency works must be completed and submitted to the Warden's office within three days with an attachment explaining:

- The cause of the emergency;
- The remedy/actions taken;
- The name of the Emergency Response Warden contacted, and
- The time.

Use Table 4.9, Table 4.10 and the ecological constraints maps (Appendix F and G) from the Model Class Screening Report to complete the following section.

The CSPR form provides the following information:

Part 1: Identifies whether the projects are subject to CEAA.

Part 2: Provides the project description including:

- Identifies projects (as per Table 3.2 of the MCSR)
- Locations of the projects (as per map sheets/locations)
- Access points and Vehicle/Heli descriptions
- Timing of the projects (e.g., the month/week).
- Identifies constraints to project activities.

Part 3: Identifies additional constraints to specific project activities that result from consultation with Parks Canada for individual projects that are not listed in the MSCR.

Part 4: Emergency Procedures.

Information provided in Part 1 and Part 2 of the CSPR form is required to obtain a Restricted Activity Permit.

Part 1: Are the proposed projects subject to CEAA?

Date: _____

AltaLink Personnel (name and title): _____

Address: _____

Telephone: _____

Brief Project Description _____

_____

_____

_____

_____

_____

Does your project involve the following:

	Yes	No
Clearing new land within BNP for construction of a new ROW;		
Brush mowing or chemical spraying on the RoW closer than 30 m to a waterbody. This exclusion does not affect herbicide applications within fenced substations;		
Modifications that increase nominal line voltage;		
Instream activities, except fording activities, triggering Section 35 (2) of the *Fisheries Act*; or		
Project activities that do not comply with the mitigation measures identified in the MCSR?		

If yes to any, the project is not subject to the MCSR. Do not proceed with the CSPR. An individual screening under CEAA may be required. For further information, contact Parks Canada Agency.

Part 2: Project Description

General Project Description (*include purpose, location and scope of project*)

Project Purpose: _____

_____

_____

Project Activities: _____

_____

_____

Project Location: _____

_____

_____

Vehicle/helicopter Description: _____

_____

_____

Vehicle/helicopter Licence: _____

_____

Access Points and Description: _____

_____

_____

Project Timelines: _____

_____

_____

Detailed Activity List: *Please check (✓) boxes to indicate which activities will be undertaken, their location and proposed timing of activities. Using Table 4.9 (Red, green and yellow access timing windows), please identify the timing window in which you plan to undertake activities. If projects are scheduled for RED or YELLOW (restricted time) periods, please list additional mitigations/special constraints that must be applied as directed by Parks Canada.*

Are the Activities: Routine / Emergency — **Activity**	✓	**CEAA Triggered**	**Assessment May be Requested under Parks Canada Procedures**	**Proposed Date**	**Location**	**Timing of Activities**			**Additional Constraints/mitigations NOT LISTED IN THE MCSR that must be applied to project activities as directed by Parks Canada.**
					Pole #s & Ecological Constraint Map Sheet #	**Green timing window**	**Yellow timing window**	**Red timing window**	
Maintenance and Operation of Overhead Distribution Lines									
Access and Travel along RoW		-	-						
Detailed Aerial Patrols (DAP)		-	-						
Detailed Climbing Patrols		-	-						
Ground Patrols		-	-						
Aerial Patrols		-	-						
Emergency Aerial Patrols		-	-						
Task Specific Aerial Patrols		-	-						
Pole Test and Re-Treatment		✓	-						
Pole Replacement or Salvage		✓	-						
Pole Stubbing		✓	-						
Pole Anchor Installation		✓	-						
Crossarm Replacement		-	✓						
Conductor Repair, Replacement and Salvage		-	✓						
Conductor Joining		-	✓						
Insulator Washing		-	✓						

Activity	✓	CEAA Triggered	Assessment Requested under Parks Procedures	Proposed Date	Location	Green timing window	Yellow timing window	Red timing window	Additional Constraints/mitigations NOT LISTED IN THE MCSR that must be applied to project activities as directed by Parks Canada.
Vegetation Management on the RoW									
Manual Brushing (Slashing)		✓	-						
Trimming			-						
Brush Mowing		✓	-						
Herbicide Applications		✓	-						
General Activities									
Materials Storage, Disposal, Handling									
Waste Management		-	-						
Hazardous Material Handling		-	✓						
Temporary Staging areas		-	✓						
Equipment Maintenance and Repair		-	-						
Equipment Refuelling		-	-						
Fording streams, wetlands and rivers		-	✓						
Substations									
Substation Inspections		-	-						
Substation Equipment Major Repair and Maintenance		-	-						
Herbicide Applications		✓	-						

Part 3: Potential Residual and Cumulative Environmental Effects

Will the project likely cause environmental effects other than those described in the MCSR as summarized below?

Yes	No

The following table summarizes potential environmental effects identified in the MCSR.

Valued Ecosystem Components	Potential Residual Environmental Effects
Air Quality	• Decrease in air quality
Groundwater	• Contamination
Wetlands, Surface Water, Aquatic Resources	• Contamination
	• Destruction of /damage to habitat
	• Sedimentation
	• Run-off
Soil	• Compaction
	• Erosion
Vegetation	• Loss/Damage to species
	• Introduction of non-native species
Wildlife	• Short term sensory disturbance or habitat avoidance
	• Contamination of habitat (pesticides, chemicals)
	• Physical destruction/disturbance to habitat
Public Safety	• Contamination (toxins, pesticides, chemicals)
	• Decreased visibility in relation to burning
Historical Resources	• Destruction or disturbance of archaeological or heritage sites

If Yes, please explain.

This information to be provided by Banff National Park

Have any other project or activities not being undertaken by AltaLink been identified as contributing to cumulative environmental effects in that they may interact or contribute to the environmental effects of the proposed operation or maintenance activities, which have not already been addressed in the MCSR, Section 4.10 (Cumulative Effects). ***Please Check (✓)*** *and complete* ***the box below.***

	Other Projects or Activities
NO	N/A
YES	e.g. CPR – construction Aquila Networks Canada – construction TransCanada Highway – construction ATCO Gas – construction Banff National Park activities – prescribed burns – trails construction Other – facility maintenance

If yes, specify what mitigation measure(s) will be applied and indicate the significance rating for the residual environmental effect(s) and/or cumulative environmental effects following mitigation as negligible, low, moderate or high. For more details on the evaluation of significance refer to the MCSR Section 4.3 and Table 4.6.

Environmental and Cumulative Environmental Effects not covered in the MCSR

Effect	**Mitigation**	**Significance Rating[(a)]**

[(a)] N – Negligible L – Low M – Moderate H – High

If there is a potential for significant residual environmental and/or cumulative environmental effects, **do not** proceed with the CSPR. An individual screening may be required under CEAA. For further information, contact Parks Canada.

Part 4: Emergency Procedures (Described in Section 4.8, page 4-60)

To be completed for emergencies only

Emergency Attachment:	YES	NO
Time of Contacting Emergency Response Warden:		
Name of Emergency Response Warden Contacted:		
Cause of Emergency:		
Operations required to redress the situation:		
Follow-up required:		

I am Familiar with all of the Mitigations identified in Attachment A: ***AltaLink Management Ltd. Environmental Mitigation Measures For Routine Maintenance Operations in Banff National Park*** and will comply with all of these mitigations while involved in activities on the Right-of-Way in Banff National Park.

Crew Boss Name:

Title:

Signature:

I am Knowledgeable of AltaLink's Model Class Screening. I have prepared and reviewed this form and find it complete and accurate to the best of my knowledge.

AltaLink's Environmental Services Officer Name:

Title:

Signature:

Authorization (Parks Canada):

6.0 AMENDING THE MCSR

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 will be developed over time.

Parks Canada will notify the Canadian Environmental Assessment Agency in writing of its intention to modify the MCSR. It will discuss the proposed amendments with the Agency and affected federal government departments. It may invite comment from stakeholders and the public on the proposed changes and, submit the amended MCSR to the Agency along with a statement of rationale for the modification.

Depending on the nature of changes the Agency will:

1. Amend the MCSR

The Agency will review the proposed modifications and, if they are consistent with requirements of the Act and:

- 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 will accept the changes and add the amended document to its public registry while not changing the declaration period.

2. Amend the MCSR with conditions

The Agency may accept the amended document with conditions and add the report to the public registry while not changing the declaration period.

3. Re-declare the MCSR

Following the requirements of Section 19 of the Act and after consulting with the responsible authority, the Agency may re-declare the report for the remaining balance of the declaration period or for a new five year period when:

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

The Agency will add the amended document to its public registry.

Parks Canada will review the performance of the MCSR within two years of the anniversary of the declaration of the MCSR in consultation with stakeholders and the public and will make any amendments considered necessary in accordance with the amendment mechanism described above. It is at this time, that AltaLink, as the proponent, will re-evaluate access points and stream crossing mitigations.

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