

Appendix D – Mitigations

Appendix D

Table 4.3 Mitigations for Reducing Potential Impacts of Project Activities

Activity	Potential Impacts	Best Management Practices
Repair, and clean-up of existing 'Boyscout Cairn' – Refer to Key plan (G-100) for site location.	Soil compaction; Loss / damage to vegetation / soil; Wildlife sensory disturbance / mortality; Minimal amounts of runoff and sedimentation control	<ul style="list-style-type: none"> x Access to site off of Bow Valley Parkway – No large equipment access, Cairn location only accessible by walking / quad. Equipment and route to access Boyscout Cairn to be approved by Departmental Representative, prior to any work taking place. x Keep access route as small access direct to cairn and back to highway, 'storage' or onsite parking not permitted. x Avoid site investigations during dusk and dawn in order to reduce human presence and wildlife disturbance during hunting/foraging or movement through areas.
Site investigation, including geotechnical investigation	Runoff / sedimentation; Erosion; Soil compaction; Loss / damage to vegetation / soil; Wildlife sensory disturbance / mortality	<ul style="list-style-type: none"> x Conduct site surveys, test pits, bore holes using appropriate excavation mitigation measures for geotechnical investigation (see mitigations for "Grading, excavation and materials stripping"). x Minimize the time boreholes or test pits remain open in order to reduce small terrestrial wildlife mortality. Properly seal boreholes and fit PVC pipes. x Avoid site investigations during dusk and dawn in order to reduce human presence and wildlife disturbance during hunting/foraging or movement through areas.

Activity	Potential Impacts	Best Management Practices
<ul style="list-style-type: none"> x Vegetation clearance x Grading, excavation & material stripping x Building construction x Trenching & backfilling x Replacement or modification of culverts & ditches x Utilities / foundation removal 	<p>Runoff / sedimentation</p>	<ul style="list-style-type: none"> x Prepare a Sediment and Erosion Control Plan satisfactory to Park Superintendent. x Acquire necessary sediment control equipment (i.e., straw bales, landscaping fabric, sediment fences, etc.) and install prior to construction. <p>In all ecosites, on areas with a slope class of 5 (5-15%) or greater and sites close to waterbodies, but not closer than 30 m:</p> <ul style="list-style-type: none"> x Assess slopes stability (based on slope length, soil texture, steepness, soil depth). x Use appropriate geo-technical control measures to stabilize slopes. x Filter or settle out sediment before the water enters any drainage pathway. x Halt construction activity on exposed soil during events of high rainfall intensity. x Periodically inspect erosion control structures for effectiveness. x Minimize vegetation cover removal. x To ensure that site runoff is minimized, control overland flow up gradient and down gradient of exposed areas by use of diversion ditches, bales, vegetative filter strips, and/or sediment traps. x When possible, hand clear slopes > 35%. Wait to clear steep sloped areas until immediately before scheduled construction and reclaim immediately afterwards. x Stockpiles related to excavations will be stored a minimum of 2 m from embankments, slumps, water bodies and containment sources to prevent material loss or degradation. x Following excavations, lightly tamp disturbed areas to minimize slumping and potential pooling of water and leave a crown when tamping down to allow for settling.

Activity	Potential Impacts	Best Management Practices
<ul style="list-style-type: none"> x Vegetation clearance x Grading, excavation & material stripping x Building construction x Trenching & backfilling x Replacement or modification of culverts & ditches x Utilities / foundation removal <p><i>(continued)</i></p>	<p>Wind and water erosion</p>	<p>All Ecosites, especially VL3: Protect exposed soils with coarse granular materials, mulches, straw, or landscaping fabric along drainage pathways.</p> <ul style="list-style-type: none"> x Minimize grubbing. x Clear minimum area necessary. Where possible, leave stumps and roots in place. x Cover stockpiles of soil with polyethylene sheeting, tarps, or vegetative cover.
	<p>Compaction of soils</p>	<ul style="list-style-type: none"> x Identify soils susceptible to compaction (fine textured and organic soils). x In sensitive areas, use equipment of low bearing weight, low PSI tires, or tracked vehicles.
	<p>Dust production</p>	<ul style="list-style-type: none"> x Wet down dry, exposed soils, particularly during windy periods. x Ensure materials being stored or transported are covered with tarps or equivalent material.
	<p><i>All wildlife:</i> Wildlife habitat loss and fragmentation; or encroachment on wildlife movement corridor; or increased wildlife predation as a result of cleared areas; or habituation.</p>	<ul style="list-style-type: none"> x Identify wildlife habitat that may be impacted by activities and avoid sensitive areas, including wetlands. x When working adjacent to undisturbed areas and areas bordering natural habitat, especially wildlife movement corridors and natural wetlands: minimize activity to daylight hours, as dusk/dawn times are critical for wildlife life stages (breeding, nesting, rearing, migration). x Clear only the minimum area required for construction activities. x Minimize barriers to movement including equipment and human presence during daylight hours. Restrict activity during dusk and dawn. x Keep site free of garbage and dispose of garbage in bear proof containers or haul from site daily. x Retain vegetation barriers where possible, especially trees and shrubbery. x Communicate potential problem and/or habituated wildlife to Parks Canada (403-762-1416). x Investigate for presence of amphibians in manholes before commencing work. x Sweep for bird nests before commencing work. Young birds must be allowed to fledge before nests are disturbed.

Activity	Potential Impacts	Best Management Practices
<ul style="list-style-type: none"> x Vegetation clearance x Grading, excavation & material stripping x Building construction x Trenching & backfilling x Replacement or modification of culverts & ditches x Utilities / foundation removal <p>(continued)</p>	<p><i>Species at Risk / of Special Concern:</i></p> <p>Habitat destruction, sensory disturbance, mortality and increased predation of amphibians</p>	<p><i>Species at Risk / of Special Concern</i></p> <p>Grizzly bears</p> <ul style="list-style-type: none"> x Be aware of critical foraging times (dusk and dawn) particularly post hibernation when bears and cubs are leaving dens in the spring (April/May) and prior to hibernation (July to September). x Trail density should be minimized to allow bears better opportunity to access habitat at greater distances from trails. x Management of attractants around trails and facilities (including removal of berry shrubs like Canada buffaloberry) should be combined with restoration of alternative food sources in alternative suitable habitats. <p>Western (boreal) toad</p> <ul style="list-style-type: none"> x Investigate for presence of toads in manholes before commencing work. x Protect wetlands from human encroachment
	<p>Loss of or damage to vegetation, weed invasion</p>	<p>To protect undisturbed areas adjacent to project site:</p> <ul style="list-style-type: none"> x Minimize area cleared. Clearly mark area to be cleared with biodegradable flagging tape and/or temporary fences. x Ensure vertical (Rocky Mountain) juniper, Douglas fir and limber pine are protected. x For every tree removed, two native trees of same species must be planted on site if possible. x Hoarding around trees to be retained must be installed at the tree's drip line prior to commencement of site work. x Ensure excavated material does not damage or bury plant material that is to be retained on the site or in adjacent areas. x Trees are to be cut so that they fall inside the cleared perimeters. x Care must be taken during grubbing and stripping to ensure that trees and roots on the edge of the cleared area are not disturbed. x Grubbing and stripping may not be permitted on steep slopes to reduce the potential for erosion. x Sites will be reclaimed as soon as possible and seeded with a Parks Canada approved seed mix (see Appendix B).

Activity	Potential Impacts	Best Management Practices
<ul style="list-style-type: none"> x Vegetation clearance x Grading, excavation & material stripping x Building construction x Trenching & backfilling x Replacement or modification of culverts & ditches x Utilities / foundation removal <p><i>(continued)</i></p>	<p>Reduction of or disturbance to character of FHBRO listed heritage buildings</p>	<ul style="list-style-type: none"> x All building over 40 years old, including picnic shelters, are to be reviewed by FHBRO prior to work commencing. x All maintenance measures should be non-abrasive, non-destructive and environmentally benign. x Replacement should only occur where the major part of an element is decayed beyond repair. x The substitution of maintenance-free materials such as aluminium, fibreglass or vinyl for existing materials is not recommended. x The design of additions or alterations to a building must respect its heritage character. x Where the integrity of the relationship between a building and its associated landscape is relatively unaltered, strong efforts should be made to retain this relationship and the materials that contribute to it. x Consult FHBRO Code of Practice for complete details.
	<p>Disturbance of archaeological resources</p>	<ul style="list-style-type: none"> x Determine if project activities have the potential to disturb a site or sites of archaeological or historic interest (see Table 3.3). x Consult with Parks Canada (403-762-1416) to discuss if consultation with the Park's archaeologist is required. x If it is deemed that potential archaeological sites may be subject to ground disturbance, activities should be adapted to avoid them if possible. Monitoring by an archaeologist, and possibly preliminary archaeological work, may also be required. x Work must be stopped immediately and the site supervisor notified if any archaeological artefacts are found and workers must be educated accordingly.
<ul style="list-style-type: none"> x Grading, excavation & material stripping x Digging holes for replacement utility or fence poles 	<p>Slope failure</p>	<ul style="list-style-type: none"> x Avoid work on steep slopes unless absolutely necessary, including areas with slopes of Class 6 (15-30%) or greater, especially where shallow soils overlie bedrock. x Use appropriate geo-technical control measures to stabilize slopes. Consult occupational health and safety guidelines.

Activity	Potential Impacts	Best Management Practices
x Grading, excavation & material stripping x Digging holes for replacement utility or fence poles (continued)	Loss of or damage to vegetation, weed invasion	x Protect undisturbed land by only stockpiling materials on heavy canvas, plywood 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 site or in adjacent areas. es will be reclaimed as soon as possible and seeded with a Parks Canada approved seed mix (see Appendix B).
	Loss of organic matter, topsoil and/or topsoil-subsoil mixing	Use separate lifts and storage of topsoil and subsoil horizons, replacing them in the same order after completion of activity, wherever practical. Topsoil will be stored away from any slopes, subsoils, spoil material, construction activities and day-to-day operations. Select appropriate equipment, especially in erosion/slump prone areas Use wide tracked equipment, rubber tired vehicles and low bearing pressure weight equipment in sensitive areas or avoid vehicle use. x Compact soil to approximate precondition conditions while allowing for settling.
	Disturbance of archaeological resources	x Determine if project activities have the potential to disturb a site or sites of archaeological or historic interest (see Table 3.3). x Consult with Parks Canada (403-762-1416) to discuss if consultation with the Park's archaeologist is required. x If it is deemed that potential archaeological sites may be subject to ground disturbance, activities should be adapted to avoid them if possible. Monitoring by an archaeologist, and possibly preliminary archaeological work, may also be required. x Educate workers to stop work immediately and to notify site supervisor upon finding any archaeological artefacts. Not to resume work in that area until Parks gives approval.
	Sensory disturbance and mortality of wildlife due to increased traffic	x According to the wildlife that may be present, schedule high noise level activities and other intrusive construction activities to avoid critical life stages (breeding, nesting, rearing, migration). Consult with Parks Canada (403-762-1416) to discuss any localized wildlife concerns. Consider posting wildlife signs to reduce vehicle speeds and increase driver awareness near construction areas where wildlife mortality has or is likely to occur. Educate workers to not harass or attract wildlife, keep the site free of food scraps, and dispose of garbage in bear proof containers.

Activity	Potential Impacts	Best Management Practices
<ul style="list-style-type: none"> x Grading, excavation & material stripping x Digging holes for replacement utility or fence poles <p><i>(continued)</i></p>	Decreased aesthetics	<ul style="list-style-type: none"> x Evaluate the site layout, access routes and construction activities to minimize their visual impact. x Materials to be stored within the confines of the work site.
	Public safety	<ul style="list-style-type: none"> x Outline traffic control measures and assess the need for flagging personnel. x Call utility line companies to identify infrastructure locations (Alberta One Call: 1-800-242-3447).
Construction (painting and paint stripping)	Contamination of soil and water from accidental spill of paint, stripping compounds, or thinners	<ul style="list-style-type: none"> x Prepare an appropriate Spill Response Plan. x Ensure paint is stored appropriately to prevent spillage. x Dispose of contaminated materials at provincially certified disposal sites outside of the Park. No treatment of contaminated soils (e.g., bioremediation) is allowed in the Park. All applicable documentation demonstrating proper disposal should be obtained. Alternatively, use the paint exchange program in Banff.
Right-of-way (ROW) maintenance	Dust production	<ul style="list-style-type: none"> x Wet down dry, exposed soils, particularly during windy periods. x Ensure materials being stored or transported are covered with tarps or equivalent material.
	Loss of wilderness quality	<ul style="list-style-type: none"> x Retain vegetation barriers where possible, especially trees and shrubbery. x Minimize the amount of vegetation removed. x Restore vegetation where required.
	Contamination from fertilizers and herbicides	<ul style="list-style-type: none"> x Accurately assess the need for chemicals during right-of-way maintenance. Use products and methods identified in Parks Canada Management Directive 2.4.1 (1985). x A Parks Canada permit must be obtained for herbicide use. x Avoid herbicide/fertilizer use in proximity to, or where runoff may enter a waterbody or drainage pathway. x Ensure adjacent natural areas are not affected by herbicide use. x Do not use near or over water.

Activity	Potential Impacts	Best Management Practices
Light installation (10 or more)	Runoff / sedimentation	<ul style="list-style-type: none"> x Minimize the amount of disturbed soil. x Minimize the time that bare soil is exposed and the excavation remains open. If deemed necessary, use site-specific erosion control methods (see mitigations for “Grading, excavation & materials stripping”). x Stop work during wet weather
Fence installation	Barrier to wildlife movement	<ul style="list-style-type: none"> x Evaluate the need for all fences. x Construct fences and orient in such a manner to reduce impacts on wildlife movement. Consult with Parks staff to determine appropriate fence designs and locations (403-762-1416).
Hazardous materials management	Potential contamination	<ul style="list-style-type: none"> x Prepare an appropriate Spill Response Plan. In the event of emergency operations, call 911. The Warden Dispatch can also 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. x All toxic/hazardous materials will be identified and will be handled as required under the Canadian Environmental Protection Act, Transportation of Dangerous Goods Act and Workplace Hazardous Materials Information Service. x Dispose of contaminated materials at provincially certified disposal sites outside of the Park. No treatment of contaminated soils (e.g., bioremediation) is allowed in the Park. All applicable documentation demonstrating proper disposal should be obtained. Alternatively, use the paint exchange program in Banff. x All hazardous materials and wastes will be clearly labelled with WHMIS labels and information. x Spill contingency plans, equipment and supplies will be present on-site at all times and employees trained in their use. x Fuels, oils, lubricants and other petrochemical products will not be stored within 100 meters of any waterbody (including wetlands). x On-site storage of fuels is not permitted. x If any contamination is found, cease work immediately. Inform the building site supervisor and, if necessary, implement Emergency Response Plan. x Where demolition is involved, check for hazardous materials including asbestos, PCBs, etc.

Appendix D

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects

Activity	Potential Impacts	Mitigation Measures
Pre-planning		
Site investigation, including geotechnical investigation	Sensory disturbance, disturbance of archaeological resources, slope failure, sedimentation	<ul style="list-style-type: none"> • Conduct Phase I Environmental Site Assessment, if not already completed for the site, and additional site surveys, test pits, bore holes etc. if necessary. • Minimize the time boreholes remain open in order to reduce small terrestrial wildlife mortality. Properly seal boreholes and fit PVC pipes. • Use existing roadways or disturbed areas for site access and travel within the site. • Follow appropriate excavation mitigation measures for geotechnical investigation (see mitigations for “Trenching”).
General planning activities specific to all building projects.	Runoff / sedimentation; soil contamination	<ul style="list-style-type: none"> • Prepare an Emergency Response Plan for the worst case, i.e., heavy rainfall and runoff events, high winds, spills, fires, etc. • In the event of emergency operations (as defined in Section 4.11 of the MCSR), call 911. The Warden Dispatch can also 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. • Ensure all activities are conducted at least 30 m from waterbodies.
	Dust production	<ul style="list-style-type: none"> • Have a water source available to wet down exposed soil and dry areas.
	Wind and water erosion	<ul style="list-style-type: none"> • Prepare a satisfactory Sediment and Erosion Control Plan covering all construction and restoration periods. • Acquire necessary sediment control equipment (i.e., straw bales, landscaping fabric, sediment fences, etc.) and install prior to construction. • Extra planning should be used for areas with silty deposits (VL3 and VL4) and sloped areas with sandy deposits (see Figure 4.2).
	Compaction of soils	<ul style="list-style-type: none"> • Identify soils susceptible to compaction (fine textured and organic soils). • In sensitive areas, use equipment of low bearing weight, low PSI tires, or tracked vehicles.
	Slope failure	<ul style="list-style-type: none"> • Assess slope stability (based on slope length, soil texture, steepness, soil depth) and adjust activities to avoid these areas if possible. Use appropriate setbacks. • Pay particular attention when planning for slopes of Class 6 (15-30%) or greater, especially where soils are shallow and likely to move with disturbance.
	Habitat loss and fragmentation; or encroachment on wildlife movement corridor	<ul style="list-style-type: none"> • Identify wildlife habitat that may be impacted by activities and avoid sensitive areas, including wetlands. • Ensure only necessary vegetation is removed and delineate areas to be avoided with biodegradable flagging tape and/or temporary fences.

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -
Continued

Activity	Potential Impacts	Mitigation Measures
General planning activities (continued)	Sensory disturbance and mortality of wildlife	When working adjacent to natural areas: <ul style="list-style-type: none"> • According to the wildlife that may be present, schedule high noise level activities and other intrusive construction activities to avoid critical life stages (breeding, nesting, rearing, migration). Consult with Parks Canada (403-762-1416) to discuss any localized wildlife concerns. • Confine “noise” activities to hours set out in Town of Banff Noise Bylaw. • Consider posting wildlife signs to reduce vehicle speeds and increase driver awareness near construction areas where wildlife mortality has or is likely to occur. • Educate workers to not harass or attract wildlife, keep the site free of food scraps, and dispose of garbage in bear proof containers.
	Disturbance of archaeological resources	<ul style="list-style-type: none"> • Consult with Parks Canada (403-762-1416) to discuss if consultation with the Park’s archaeologist is required (see Figure 4.1). • If it is deemed that potential archaeological sites may be subject to ground disturbance activities should be adapted to avoid them. • Educate workers to notify site supervisor upon finding any archaeological artefacts and to stop work immediately.
	Increased water and energy consumption	<ul style="list-style-type: none"> • Identify water and energy conservation opportunities for building design (e.g., low flow fixtures, low energy heating and lighting) and outdoor requirements (e.g., yard lighting, drip irrigation systems).
	Public safety	<ul style="list-style-type: none"> • Outline traffic control measures and assess the need for flagging personnel. • Call utility line companies to identify infrastructure locations (Alberta OneCall: 1-800-242-3447).
	Reduced aesthetics (noise and visual)	<ul style="list-style-type: none"> • Evaluate the site layout, access routes and construction activities to minimize their visual impact. • Plan work schedule to confine “noise” activities to hours set out in Town of Banff Noise Bylaw and, if possible, periods of low visitation.

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -

Continued

Activity	Potential Impacts	Mitigation Measures
Site Preparation		
Clearing of vegetation	Dust production	<ul style="list-style-type: none"> • Wet down dry, exposed soils, particularly during windy periods. • Ensure materials being stored or transported are covered with tarps or equivalent material.
	Runoff / sedimentation	<ul style="list-style-type: none"> • Halt construction activity on exposed soil during events of high rainfall intensity and runoff and refer to the Sediment and Erosion Control Plan. Periodically inspect erosion control structures for effectiveness.
	Wind and water erosion	Particularly in areas with silty deposits (VL3 and VL4) and sloped areas with sandy deposits (Figure 4.2): <ul style="list-style-type: none"> • Protect exposed soils with coarse granular materials, mulches, straw, or landscaping fabric along drainage pathways. • Minimize grubbing.
	Damage to adjacent vegetation, loss of native vegetation	To protect undeveloped areas adjacent to development site: <ul style="list-style-type: none"> • Minimize area cleared. Clearly mark area to be cleared with biodegradable flagging tape and/or temporary fences. • Ensure vertical (Rocky Mountain) juniper, Douglas fir and limber pine are protected. • For every tree removed, two native trees must be planted. • Hoarding around trees to be retained must be installed beyond the tree's drip line prior to commencement of site work. • A development permit from the Town of Banff Planning and Development Division (403-762-1215) is required before removing any trees. • Ensure excavated material does not damage or bury plant material that is to be retained on the site or in adjacent areas. • Trees are to be cut so that they fall inside the cleared perimeters. • Care must be taken during grubbing and stripping to ensure that trees and roots on the edge of the cleared area are not disturbed. • Grubbing and stripping may not be permitted on steep slopes to reduce the potential for erosion.
	Wildlife habitat loss and fragmentation; or encroachment on wildlife movement corridor	When working adjacent to all undeveloped areas and areas bordering natural habitat, especially wildlife movement corridors and natural wetlands: <ul style="list-style-type: none"> • Clear only the minimum area required for construction activities. • Retain vegetation barriers where possible, especially trees and shrubbery.

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -

Continued

Activity	Potential Impacts	Mitigation Measures
Clearing of vegetation (continued)	Reduced aesthetics	<ul style="list-style-type: none"> • Transport stockpiled material offsite immediately or stockpile cleared vegetation in an area out of view from public until it can be disposed of appropriately (see mitigations for “Disposal of cleared material”). • Dispose of cleared vegetation as soon as possible.
Grading and excavation	Dust production / aesthetics	<ul style="list-style-type: none"> • Wet down dry, exposed soils. • Ensure materials being stored or transported are covered with tarps or equivalent material. • Minimize grading and excavation on windy days to limit dust production.
	Runoff / sedimentation	<p>Halt construction activity on exposed soil during events of high rainfall intensity and runoff.</p> <ul style="list-style-type: none"> • All excavations will remain free of water (see mitigations for “Dewatering”). • Cover stockpiles of soil with polyethylene sheeting, tarps, or vegetative cover. <p>Sites close to waterbodies, but not closer than 30 m:</p> <ul style="list-style-type: none"> • To ensure that site run-off is minimized, control overland flow up gradient and down gradient of excavated areas by use of effective diversion ditches, bales, vegetation filter strips, or sediment traps.
	Wind and water erosion	<ul style="list-style-type: none"> • Particularly in areas with silty deposits (VL3 and VL4 - see Figure 4.2), and sloped areas with sandy deposits: • Protect exposed soils with coarse granular materials, mulches, or straw. • Cover stockpiles of soil with polyethylene sheeting, tarps, or vegetative cover.
	Loss of topsoil and/or topsoil-subsoil mixing	<ul style="list-style-type: none"> • Use separate lifts and storage of topsoil and subsoil horizons, replacing them in the same order after completion of activity, wherever practical. • Topsoil will be stored away from any slopes, subsoils, spoil material, construction activities and day-to-day operations.
	Slope failure	<ul style="list-style-type: none"> • Avoid work on steep slopes unless absolutely necessary. Areas with slopes of Class 6 (15-30%) or greater, especially where shallow soils overlie bedrock: • Use appropriate geo-technical control measures to stabilize slopes. Consult occupational health and safety guidelines.
	Disposal of cleared material	Dust production

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -

Continued

Activity	Potential Impacts	Mitigation Measures
Disposal of cleared material (continued)	Reduced aesthetics (visual)	<ul style="list-style-type: none"> • Minimize the time cleared vegetation remains at the work site. • Large timber (trees larger than 15 cm DBH) shall be cut into blocks not to exceed 35 cm and stockpiled for re-use as firewood. • Smaller trees and other woody material may be chipped and sent to the Cascade pit, or burned, if a burning permit is obtained. Dispose of diseased vegetation by burning. • Dispose of trade waste at the Bow Valley Waste Management Commission’s Class III landfill.
Construction		
Dewatering	Sedimentation; Erosion; Damage to vegetation	<ul style="list-style-type: none"> • Dewatering is not permitted into any waterbody, including the Bow River and Whiskey Creek. <p>Dewatering is permitted across previously disturbed vegetation or natural vegetation if the following conditions are met:</p> <ul style="list-style-type: none"> • Sediment controls are used (i.e., silt fences, silt bags, etc.). • Water velocity is controlled to dissipate energy, prevent soil erosion and allow for infiltration. • Dewatering structures are continuously monitored to ensure no damage is being done to soil or vegetation. • As an interim measure, the Town may allow silty water to be pumped into the sanitary system. A permit is required (403-762-1215). • Parks Canada does not allow dewatering into storm sewers unless it can be demonstrated that the proponent has the methods and equipment to limit sediment entering the receiving waterbody. • Sediment from the traps may be used as fill on the construction site.
	Damage to adjacent vegetation	<ul style="list-style-type: none"> • For undeveloped areas adjacent to development site, ensure water and sediment is directed away from natural areas.
	Sensory disturbance and mortality of wildlife	<p>When working adjacent to natural areas:</p> <ul style="list-style-type: none"> • According to the wildlife that may be present, schedule, high noise level activities and other intrusive construction activities to avoid critical life stages (breeding, nesting, rearing, migration). Consult with Parks Canada (403-762-1416) to discuss any localized wildlife concerns. • Confine “noise” activities to hours set out in Town of Banff Noise Bylaw. • Consider posting wildlife signs to reduce vehicle speeds and increase driver awareness near construction areas where wildlife mortality has or is likely to occur. • Educate workers to not harass or attract wildlife.

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -

Continued

Activity	Potential Impacts	Mitigation Measures
Construction (sandblasting)	Dust production (sand blasting)	<ul style="list-style-type: none"> • Minimize sandblasting. • Confine activity to days with little or no wind and use physical barriers (e.g., shrouds, scaffold canopies) to contain dust. • Sandblasting should only remove loose paint to provide a clean surface for the new paint to adhere to. To reduce the amount of old paint needed to be removed, the new paint to be used should be as similar in colour as possible to the existing painted surface.
Construction (painting and paint stripping)	Contamination of soil and water from accidental spill of paint, stripping compounds, or thinner	<ul style="list-style-type: none"> • Prepare an appropriate Spill Response Plan and ensure that spill contingency equipment and measures are in place before work begins. • Ensure paint is stored appropriately to prevent spillage. • In the event of emergency operations (as defined in Section 4.11 of the MCSR), call 911. The Warden Dispatch can also 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. • Waste oil based paints must be transported out of the Park in accordance with the Federal and Provincial <i>Transportation of Dangerous Goods Act</i> and Regulations. • Dispose of contaminated materials at provincially certified disposal sites outside of the Park. No treatment of contaminated soils (e.g., bioremediation) is allowed in the Park. All applicable documentation demonstrating proper disposal should be obtained. Alternatively, use the paint exchange program in Banff.
Site Servicing (Subsurface)		
Trenching, Utilities excavation and removal	Runoff / sedimentation	<ul style="list-style-type: none"> • To ensure that site run-off is minimized at times of heavy rainfall, control overland flow up gradient and down gradient of exposed areas by use of effective diversion ditches, bales, vegetation filter strips, or sediment traps.
	Wind and water erosion	Particularly in areas with silty deposits (VL3 and VL4) and sloped areas with sandy deposits (see Figure 4.2): <ul style="list-style-type: none"> • Use interceptor ditches or berms (bales) up-gradient of excavation to divert overland flow around exposed soils • Line steep ditches with filter fabric, rock or polyethylene lining to prevent channel erosion.
	Wildlife mortality	<ul style="list-style-type: none"> • Fence trench if it is to be left unattended overnight.

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -

Continued

Activity	Potential Impacts	Mitigation Measures
Trenching; Utilities excavation and removal (continued)	Loss of topsoil and/or topsoil-subsoil mixing	<ul style="list-style-type: none"> Wherever possible, use separate lifts and storage of topsoil and subsoil horizons, replacing them in the same order after completion of activity. Minimize the amount of time that the trench remains open. Soils will be stored away from any steep slopes, subsoils, spoil material, construction activities and day-to-day operations.
	Slope failure	<ul style="list-style-type: none"> Avoid work on steep slopes unless absolutely necessary. Areas with slopes of Class 6 (15-30%) or greater, especially where soils are shallow: Use appropriate geo-technical control measures to stabilize slopes. Consult occupational health and safety guidelines.
<i>Decommissioning and Abandonment</i>		
Demolition activities / foundation removal	Dust production	<ul style="list-style-type: none"> Wet down dry, exposed soils. Ensure fine materials being stored or transported are covered with tarps or equivalent material.
	Discovery of existing soil contamination	<ul style="list-style-type: none"> If any contamination is found, cease work immediately. Inform the building site supervisor and, if necessary, implement Emergency Response Plan.
	Loss of topsoil and/or topsoil-subsoil mixing	<ul style="list-style-type: none"> Wherever possible, use separate lifts and storage of topsoil and subsoil horizons, replacing them in the same order after completion of activity. Soils will be stored away from any grades, subsoils, spoil material, construction activities and day-to-day operations.
<i>Site Reclamation or Restoration</i>		
Grading	Dust production	<ul style="list-style-type: none"> Wet down dry, exposed soils. Ensure materials being stored or transported are covered with tarps or equivalent material.
	Runoff / sedimentation	<ul style="list-style-type: none"> Halt grading on exposed soil during events of high rainfall intensity and runoff. Consult the Sediment and Erosion Control Plan. Cover stockpiles of soil with polyethylene sheeting, tarps, or vegetative cover. Where possible, establishment containment structures to trap runoff.
	Wind and water erosion	<p>Particularly in areas with silty deposits (VL3 and VL4) and sloped areas with sandy deposits (see Figure 4.2):</p> <ul style="list-style-type: none"> Protect exposed soils with coarse granular materials, mulches, or straw along drainage pathways. Recontour slopes to pre-disturbance conditions.
Revegetation	Runoff / sedimentation / erosion	<ul style="list-style-type: none"> Initiate replanting of disturbed areas immediately after construction is completed.

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -

Continued

Activity	Potential Impacts	Mitigation Measures
Revegetation (continued)	Compaction of soils	<ul style="list-style-type: none"> • Cultivate affected areas before reclaiming, especially areas with fine textured or organic soils.
	Weed invasion	<ul style="list-style-type: none"> • Revegetate exposed areas at first opportunity. • Ensure topsoil is clean and weed free. If clean fill is unavailable, check on weeds or treat as needed for 3 years following landscaping and revegetation. • Revegetate with Parks Canada approved grass seed mix or the Town seed mix for landscape rehabilitation (see Appendix C). • Monitor the site to ensure appropriate weed control for two years following landscaping (applicable to construction crews only). • Follow Parks Canada Integrated Pest Management Plan 2.4.1 for weed control.
Herbicide/fertilizer use	Contamination of soil or water	<ul style="list-style-type: none"> • Accurately assess the need for chemicals during site revegetation. Use products and methods identified in Parks Canada Management Directive 2.4.1 (1985). • Do not use fertilizers and herbicides in areas where residue or run-off may enter a waterbody or drainage pathway. • Do not over water.
Paving	Dust production	<ul style="list-style-type: none"> • Wet down dry, exposed soils. • Ensure fine materials being stored or transported are covered with tarps or equivalent material.
	Contamination of soil or water	<ul style="list-style-type: none"> • Prepare an appropriate Spill Response Plan. In the event of emergency operations (as defined in Section 4.11 of the MCSR), call 911. The Warden Dispatch can also 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. • Use an environmentally friendly tack coat and do not apply if rain is in the forecast.
	Noise disturbance and mortality of wildlife due to increased traffic	<p>Adjacent to natural areas.</p> <ul style="list-style-type: none"> • According to the wildlife that may be present, schedule high noise level activities and other intrusive construction activities to avoid critical life stages (breeding, nesting, rearing, migration). Consult with Parks Canada (403-762-1416) to discuss any localized wildlife concerns. • If wildlife mortality is likely to increase due to traffic, post signs to reduce vehicle speeds and increase driver awareness. • Educate workers to not harass or attract wildlife.

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -

Continued

Activity	Potential Impacts	Mitigation Measures
General Activities		
Materials handling / storage	Dust production	<ul style="list-style-type: none"> • Wet down dry, exposed soils or cover with tarps. • Ensure materials being stored or transported are covered with tarps or equivalent material.
	Damage to adjacent vegetation	<ul style="list-style-type: none"> • Excavated material will not be permitted to damage or bury plant material that is to be retained on the site or in adjacent areas. • 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 construction site or in adjacent areas.
	Decreased aesthetics (visual) and public safety	<ul style="list-style-type: none"> • Materials will be stored within the confines of the work site.
Equipment operation and maintenance	Decrease in ambient air quality due to emissions	<ul style="list-style-type: none"> • Ensure all equipment is properly tuned, free of leaks, in good operating order, and fitted with standard air emission control devices. • Minimize idling of engines at all times.
	Dust production	<ul style="list-style-type: none"> • Wet down dry and dusty roads. • Do not use oil-based dust suppressants. • Reduce speeds. • Ensure fine materials being stored or transported are covered with tarps or equivalent material.
	Contamination of soil and water from accidental spill	<ul style="list-style-type: none"> • Prepare an appropriate Spill Response Plan. In the event of emergency operations (as defined in Section 4.11 of the MCSR), call 911. The Warden Dispatch can also 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. • Avoid work in high risk areas, particularly in areas of high water table, steep slopes or in close proximity to streams. • Have spill containment equipment on-hand and ensure that all personnel are trained in their use. • Ensure all construction equipment is free of leaks from oil, fuel or hydraulic fuels. • The crossing of any waterbody (including wetlands) by construction equipment, or the use of such equipment within waterbodies is strictly prohibited unless prior approval has been confirmed.

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -

Continued

Activity	Potential Impacts	Mitigation Measures
Equipment operation and maintenance (continued)	Contamination of soil and water from accidental spill	<ul style="list-style-type: none"> • Designate refuelling areas at least 100 m away from any water body. Refuelling sites will be bermed with an impermeable liner to contain 125% of the anticipated fuel quantity. Any contaminated rainwater will be moved out of the park.
	Contamination of soil and water from accidental spill	<ul style="list-style-type: none"> • Refuelling activities should not be conducted where run-off could carry contaminants into drainage pathways (including storm sewers). • Dispose of contaminated materials at provincially certified disposal sites outside of the Park. No treatment of contaminated soils (e.g., bioremediation) is allowed in the Park. All applicable documentation demonstrating proper disposal should be obtained.
	Compaction of soils	<ul style="list-style-type: none"> • Restrict vehicular travel and other equipment operation to the construction site and approved access routes. • Vehicle parking will be restricted to specialized areas on the construction site. • Minimize or halt construction traffic during wet conditions when the soil shows signs of ponding or rutting. • In sensitive areas, if possible, use equipment which minimizes surface disturbance including low ground pressure tracks/tires, blade shoes and brush rake attachments.
	Damage to adjacent vegetation	<p>Undeveloped areas adjacent to development site:</p> <ul style="list-style-type: none"> • Careful machine operation is required to ensure that damage to surrounding vegetation does not occur. • Excavated material must not be permitted to bury plant material that is to be retained. Snow fences may be used to prevent excavated material escaping into the surrounding forest. • Hoarding around trees to be retained must be installed beyond the tree's drip line prior to commencement of site work.
	Weed invasion	<ul style="list-style-type: none"> • All construction equipment from outside Banff National Park will be steam cleaned prior to arrival to minimize the risk of introducing weeds. • Construction equipment from outside the Park will not be washed while in the Park.

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -

Continued

Activity	Potential Impacts	Mitigation Measures
Equipment operation and maintenance (continued)	Sensory disturbance to wildlife	<ul style="list-style-type: none"> • All undeveloped areas and areas bordering natural habitat, especially wildlife movement corridors and natural wetlands: • Use existing roadways, pathways and previously disturbed areas for site access and travel within the site. • Educate workers not to enter wildlife corridors. • Confine “noise” activities to hours set out in Town of Banff Noise Bylaw.
	Increased traffic levels	<ul style="list-style-type: none"> • Time construction activities to minimize vehicle conflicts on access roads and/or use flagging personnel.
Waste management (general)	Contamination of soil and water from accidental spill or improper disposal	<ul style="list-style-type: none"> • No rock, silt, cement, grout, asphalt, petroleum product, lumber, vegetation, domestic waste, or any deleterious substance shall be placed or allowed to disperse into any stream, river, pond, sewer, or other water course.
	Aesthetics (visual and smell)	<ul style="list-style-type: none"> • Collect all waste, store appropriately and dispose trade waste at the Bow Valley Waste Management Commission’s Class III landfill, and garbage at the Waste Transfer Station. • All garbage and food must be stored in bear-proof bins as per the Banff Waste Bylaw. • Construction sites must undergo thorough clean-up, including removal of general litter, survey stakes and flagging tape at project completion.
Hazardous materials collection and handling	Contamination of soil or water	<ul style="list-style-type: none"> • Prepare an appropriate Spill Response Plan. In the event of emergency operations (as defined in Section 4.11 of the MCSR), call 911. The Warden Dispatch can also 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. • All toxic/hazardous materials will be identified during demolition and will be handled as required under the Canadian Environmental Protection Act, Transportation of Dangerous Goods Act and Workplace Hazardous Materials Information Service. • Dispose of contaminated materials at provincially certified disposal sites outside of the Park. No treatment of contaminated soils (e.g., bioremediation) is allowed in the Park. All applicable documentation demonstrating proper disposal should be obtained. Alternatively, use the paint exchange program in Banff. • All hazardous materials and wastes will be clearly labelled with WHMIS labels and information. • Spill contingency plans, equipment and supplies will be present on-site at all times and employees trained in their use.

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -

Continued

Activity	Potential Impacts	Mitigation Measures
Hazardous materials collection and handling (continued)	Contamination of soil or water	<ul style="list-style-type: none"> • All fuels, oils, lubricants and other petrochemical products will not be stored within 100 meters of any waterbody (including wetlands). • Do not store fuels, lubricants, solvents, paints, and other chemicals on site overnight except within construction trailers secured with lock and key. Storage should be on a bermed, impervious site (secondary containment). Permits are required from Banff National Park or Town of Banff. • No rock, silt, cement, grout, asphalt, petroleum product, lumber, vegetation, domestic waste, or any deleterious substance shall be placed or allowed to disperse into any stream, river, pond, storm or sanitary sewer, or other water course.

Additional Mitigations for Reducing Potential Impacts: Access to Boy Scouts Cairn (#10)

- Restricted Activity Permit (RAP) is required for off-road vehicle access to the site and is to be obtained from the EA office prior to work commencing.
- Site is to be accessed via ATV; no truck access is permitted due to potential for spreading weeds and disturbing ground squirrel habitat.
- Canada thistle (*Cirsium arvense*) is established along the edge of Highway 1A and several plants are growing along preferred access route from the road. Due to probability of spreading weeds further, the following mitigations will apply:
 - All vehicles and equipment are to be cleaned and inspected for weed seeds prior to entering the Park each day.
 - Boards are to be placed over top of thistle plants along highway edge to allow ATV to drive over area; while minimizing disturbance to weeds, thereby reducing chance of spread.
 - Driving over individual thistle plants encountered along access route to cairn should be avoided as much as possible.
 - The number of trips to and from the road to the cairn should be minimized as much as possible.
 - Upon completion of work, boards are to be removed from site and disposed of appropriately.
- The open meadow through which the cairn is to be accessed by provides habitat for Richardson ground squirrels (*Urocitellus richardsonii*). Driving with the ATV over squirrel tunnel entrances is to be avoided as much as possible.
- A fallen tree is laying over the decommissioned trail that will be used to access the cairn. This fallen tree may be driven over with ATV (if safe to do so) or moved aside from trail. The wood is to be left on site and re-positioned over trail once work is completed (to deter future access).

Additional Mitigations for Reducing Potential Impacts: Access to Boy Scouts Cairn (#10)

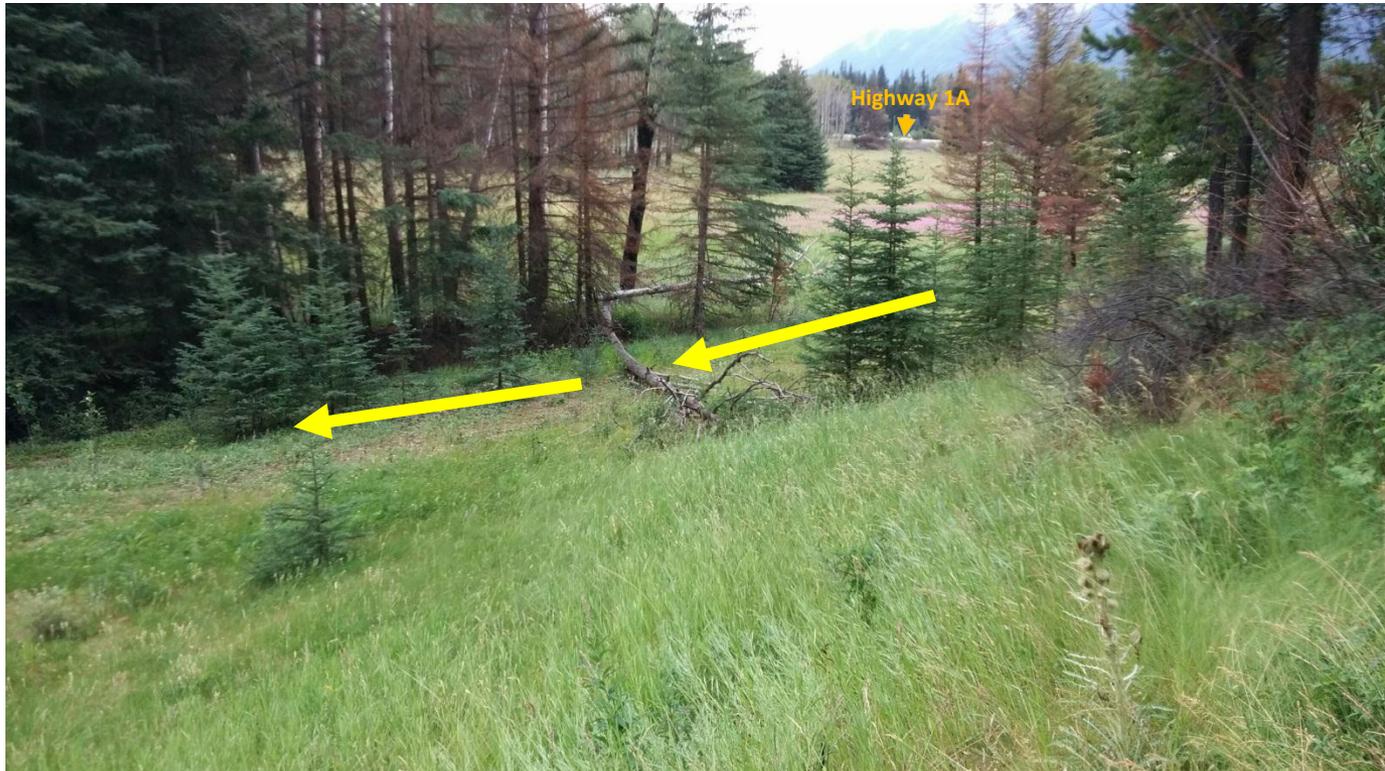


Boards to be placed over top of thistle plants for access to avoid spread of weed seeds through site. Driving over any thistle plants along access route should be avoided as much as practicable.



ATV to stay within old right of way of decommissioned trail to reduce damage to soil/vegetation. Watch for fallen tree covered by long grass. Limit number of trips to and from the road as much as possible.

Additional Mitigations for Reducing Potential Impacts: Access to Boy Scouts Cairn (#10)



Fallen tree may be driven over with ATV if safe to do so, or to be moved aside from decommissioned trail for access. Wood is to be left on site.