CASCADE ENVIRONMENTAL
RESOURCE GROUP LTD

Environmental Assessment

Silvertip Gondola 2026

Canmore, AB



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LIST OF ABBREVIATIONS

Abbreviation	Definition
AAAQO	Alberta Ambient Air Quality Objectives and Guidelines
ABMI	Alberta Biodiversity Monitoring Institute
ACIMS	Alberta Conservation Information Management System
ASP	Area Structure Plan
AQHI	Air Quality Health Index
AVI	Alberta Vegetation Inventory
BCEAG	Bow Corridor Ecosystem Advisory Group
CAAQS	Canadian Ambient Air Quality Standards
CAC	Criteria air contaminant
CCME	Canadian Council of Ministers of the Environment
CEAP	Climate Emergency Action Plan
CEMP	Construction Environmental Management Plan
CRR	*Conservation and Reclamation Regulation*
CRVA	Climate Risk and Vulnerability Assessment
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DBH	Diameter at breast height
DRP	Disaster Recovery Program
EA	Environmental Assessment
ECCC	Environment and Climate Change Canada
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
ELC	Ecological land classification
EM	Environmental Monitor
EPEA	*Environmental Protection and Enhancement Act*
ERP	Emergency Response Plan
ESA	Environmentally significant area
ESC	Erosion and Sediment Control
KI	Key Indicator
LID	Low Impact Development
LSA	Local study areas
LSWC	Lower Silvertip Wildlife Corridor
m^3	Cubic metres
m^3/s	Cubic metres per second
MD	Municipal District
MDP	Master Development Plan
MRIP	Municipal Recreation and Infrastructure Plan
NO_2	Nitrogen dioxide

NO_x	Oxides of nitrogen
$PM_{2.5}$	Fine particulate matter less than 2.5 µg
RSF	Resource section function
SARA	*Species At Risk Act*
TDS	Total dissolved solids
ToB	Top of bank
ToC	Town of Canmore
TOR	Terms of reference
TPM	Total Particulate Matter
U.S. EPA	United States Environmental Protection Agency
USWC	Upper Silvertip Wildlife Corridor
µg/m^3	Micrograms per cubic metre
VRM	Vector Ruggedness Measure

1 Project Description

Stone Creek Inc. (Stone Creek) proposes to develop an aerial passenger ropeway (Gondola) as a part of the Silvertip Integrated Village Resort (Silvertip Resort); a new high-quality large-scale tourist development in Canmore Alberta. The proposed ropeway crosses Bow Valley Wildland Provincial Park, and the Summit Area is located on the old Teahouse site, on Mt. Lady Macdonald. The Base Station of the Gondola is located within the Town of Canmore, on the east side of the Trans Canada Highway.

Canmore is a mountain community, located in the Rocky Mountains of Alberta, at the gateway of Banff National Park and Map 1 shows the location of Silvertip and the Town of Canmore.

This section provides a description of the Silvertip Gondola Project (the Project) to establish the context for the Environmental Assessment (EA) Map 2 shows the Project Area and an example of conceptual footprint used in the analysis. Study Areas (Map 3) have been developed to address and capture the direct and indirect effects of the project.

Some Project elements remain conceptual as shown on Map 2 and will be refined through detailed field fit review, engineering, Indigenous engagement, permitting, and regulatory review. The information presented in this section reflects the level of Project definition required in support of the MDP.

1.1 Overview

The Silvertip Gondola is a proposed year-round aerial passenger ropeway that will connect three destinations within the Silvertip Resort Village and the Palliser Lands in Canmore, Alberta. The project is intended to provide visitors with access to the alpine environment while expanding recreation and visitor services within an integrated mountain destination.

The Project includes three connected areas. The Palliser Base Area (Lower Station) will serve as the primary arrival point, with parking, passenger facilities, operations, and employee housing. The Silvertip Village Base (Mid-Station) will connect directly with the existing and planned resort village, providing convenient access to hotels, restaurants, conference facilities, shops, and recreational amenities. The upper section of the gondola will terminate at the Summit Area (Upper Station) on Mount Lady Macdonald, where visitors will have access to dining, accessible viewpoints, interpretive exhibits, and a managed network of alpine trails.

The Project is designed to complement the Bow Valley's existing recreation opportunities by providing an accessible way to experience the mountains. Existing hiking opportunities will remain available, while the gondola will improve access for a broader range of visitors, including families, seniors, and people with limited mobility.

As a year-round destination, the Silvertip Gondola will combine sustainable transportation, recreation, hospitality, and visitor experiences within a single integrated development. Together with the existing and planned amenities at Silvertip Resort Village, the project will create a connected mountain destination that offers visitors opportunities to experience the landscape throughout the year.

1.1.1 Proponent Information

The gondola will be designed in consultation with ropeway engineers and an aerial transportation systems manufacturer and will be owned, developed, managed and operated by Stone Creek Resorts Inc. The overall development activity at Silvertip Resort is governed by a rigorous set of design guidelines and is subject to an Area Structure Plan (ASP) approved by the Town of Canmore in 2007 (Stone Creek Properties Inc., 2007). The ASP ensures that all development will adhere to the sustainability principles adopted by the town.

1.1.2 Energy Requirements

Operation of the Project, including the ropeway and Silvertip Village Base Station assumes a required load of 350 kVA and a 500 kV for the terminal drive motors. The operation of the Upper Station is anticipated to require substantially less power through the use of passive HVAC systems. Food refrigeration may also be minimized through storage in the Silvertip Resort area and daily supply deliveries to the Upper Station (McElhanney, 2021).

Under Section 58 of the Canadian Electrical Code, it is forbidden to install electrical wire on the towers of a passenger ropeway system, other than the power required to operate the Gondola. The power distribution system is proposed to be run near the centerline of the ropeway which will require a grounded system or a ground-fault circuit interrupter (McElhanney, 2021). Therefore, it is McElhanney's recommendation to install the electrical and communication lines within a carrier and at a 3 m offset from the towers (McElhanney, 2021).

1.1.3 Water Supply and Disposal Requirements

Existing water and sanitary infrastructure associated with Silvertip Resort will provide water and wastewater services for the Project (McElhanney, 2021). Water and sanitary services to the Upper Station will be conveyed through above ground insulated water and sanitary sewer utility infrastructure designed to operate under local climatic conditions, including winter temperatures.

The Project will include potable water storage and fire suppression water storage at the Upper Station, as well as sanitary servicing infrastructure consisting of a wastewater retention tank and grinder pump system.

1.1.4 Project Staging and Construction Schedule

At the time of preparation of this EA, project phasing and scheduling remain conceptual, as preliminary and detailed engineering designs have not yet been finalized. A project staging overview is presented in the MDP submission package to provide context for the assessment of potential environmental effects discussed throughout this report. Actual timelines will be refined as the project progresses through detailed design, regulatory review, and construction planning. Several activities are anticipated to occur concurrently.

1.1.5 Communities Benefiting from the Project

The Silvertip Gondola is proposed as a year-round recreational and tourism amenity that would serve residents and visitors to the Town of Canmore and surrounding region. The Project is intended to enhance access to outdoor recreation opportunities and support a range of community-oriented programs and activities at Summit Lodge.

Potential benefits associated with the Project include increased recreational opportunities, support for local tourism, employment generation, and opportunities for local businesses during both construction and operations. Special event activities such as music and dinners are anticipated at the Upper Station.

1.1.6 Operational Schedule

The proposed Project will operate year-round and is expected to follow the typical seasonality of summer-oriented sightseeing businesses. It is expected that a large portion of the visitation will occur between May 1 and September 30. The peak operating season is between June and September.

1.1.7 Project Purpose and Rationale

A detailed description of the purpose, need, and rationale for the Project is provided in the MDP submission package. The MDP outlines the objectives of the proposed development, the need the Project is intended to address, and the rationale for proceeding with the Project.

1.1.8 Anticipated Economic, Environmental and Social Impacts of the Project

The environmental effects of the Project are assessed throughout this EA, with detailed evaluations provided in Section 3. Consistent with the guiding principles and objectives of the MDP, environmental stewardship has been incorporated into Project planning and design. The Project has been designed to minimize environmental disturbance by concentrating development within designated activity areas, avoiding or minimizing effects on sensitive environmental features where feasible, and limiting the extent of new land disturbance. These design measures are intended to reduce habitat fragmentation, maintain ecological connectivity, and minimize potential Project effects on wildlife and wildlife habitat. Environmental baseline studies indicated that wildlife use within the Project Area is generally limited due to existing development and recreation activity. As a result, significant adverse environmental effects are not anticipated, provided recommended mitigation measures are implemented.

Further details regarding anticipated environmental effects, mitigation measures, and residual effects are provided in Sections 4-5.

1.1.9 Project Alternatives

The Silvertip Project has limited flexibility as the locations of Base Station, Mid-Station, and Upper Station terminals are dependent on moving in straight paths. Passenger ropeways require straight lines between stations due to operational complexities of horizontal alignment changes. As for the utility systems, the servicing alignment will fall within the ropeway alignment, as there is more flexibility for design and construction of these facilities.

1.1.10 Implications of Delay In and Or During Project

Delays in the Project schedule may defer anticipated tourism, recreation, employment, and economic benefits. They may also defer implementation of proposed visitor-management, trail-management, monitoring, and environmental-mitigation measures associated with the Project. During construction, delays may extend the duration of short-term effects on wildlife, including noise and sensory disturbance, increased human activity, temporary habitat displacement, and localized disruption of wildlife movement around active construction areas. Prolonged construction may also extend the period during which wildlife are exposed to construction-related disturbance. Delays may also prolong the period during which soils remain exposed, increasing the potential for erosion and sediment transport.

1.1.11 Project Impacts on the Environment and Ecological Integrity of the Wildlife Corridor

The Project traverses the Lower and Upper Silvertip Wildlife Corridors. The benefit of the Project will be to control human-wildlife interactions and to provide a wider subset of the visiting population access to the Summit Area. The project recognizes the importance of any impact, indirect effects from human use, sensory disturbance and human–wildlife interactions. Impacts and mitigation measures are further described in Section 3.8.

1.1.12 Adaptive Management Measures within the Project

Stone Creek Resorts is committed to an adaptive management approach to the Project. This includes observing sensitive species windows including bird nesting. During construction, works will be concentrated in areas away from sensitive species activities. During operations, adaptive management

may include changes to operating hours or closures to trails associated with the Project to prevent adverse effects to the ecological integrity or wildlife in the area.

1.2 Constraints

Constraints to the Project were identified through iterative planning and environmental assessment process. This work considered applicable provincial, regional, and municipal planning frameworks; environmental baseline studies; Indigenous consultation; wildlife and habitat assessments; regional monitoring initiatives; and preliminary engineering considerations. Identified constraints were incorporated into Project siting, design refinement, and mitigation development to avoid or reduce potential effects where practicable.

The proposed Project location includes lands within and adjacent to Bow Valley Wildland Provincial Park now designated as the Lady MacDonald All-Resort Area, provincial public land, and municipal jurisdictions.

Stone Creek Resorts is participating in regional wildlife monitoring led by Alberta Parks and has contributed to camera monitoring in and around the Project Area. The Project has been designed to minimize potential effects through a compact development footprint, focused visitor circulation, and mitigation measures.

The Project is proposed within the Bow Valley, a landscape influenced by existing development, transportation, tourism and other human activities.

Stone Creek Resorts is participating in regional wildlife monitoring conducted by Alberta Parks and has contributed funds for camera monitoring in and around the Project Area. The Project is not anticipated to adversely affect the current environment setting.

1.2.1 Planning and Regulatory Constraints

The Project is located within a planning context that includes lands in the Town of Canmore, the Municipal District of Bighorn No. 8 (MD of Bighorn), and the Lady MacDonald All-Resort Area designation.

1.2.2 Bow Corridor Ecosystem Advisory Group and Human-Wildlife Interaction

Silvertip pioneered the establishment of wildlife corridors in the Bow Valley in 1992. At the time, wildlife monitoring programs and related construction management plans were established, which continue to this day. Considerable effort has been expended in research and data collection in the past and is ongoing to ensure the Silvertip development has been integrated into the area and environmentally sensitive areas have been protected. The establishment of wildlife corridors, intended to function as movement corridors linking patches of habitat on either side of the Plan area, was based on extensive research and ongoing field monitoring.

The proposed Gondola would cross perpendicular to the direction of the Upper and Lower Silvertip Wildlife Corridors. The corridors are zoned as Wildlands Conservation District (Town of Canmore) and Preservation (Alberta Environment and Protected Areas). While closed to human access, a Ministerial Order #27/05 permits the use of the Montane Traverse trail which runs along the extent of the Upper Silvertip Corridor. This popular trail accommodates hiking, running, and biking activity on a daily basis. In comparison, gondolas function high above the ground surface and crosses the wildlife corridors perpendicularly. As a result, the Gondola would not create a continuous ground-level barrier to wildlife movement through the corridors, and the area of the corridors directly occupied by permanent infrastructure would be limited to the relatively small footprints of the tower structures. The elevated and perpendicular configuration of the Gondola therefore minimizes its potential to physically obstruct wildlife movement through the Upper and Lower Silvertip Wildlife Corridors.

Wildlife movement corridors, habitat patches, and human-wildlife coexistence considerations were identified as key priorities through review of the Bow Corridor Ecosystem Advisory Group (BCEAG)

Wildlife Corridor and Habitat Patch Guidelines (BCEAG et al., 2012), the Town of Canmore Human-Wildlife Coexistence Strategy and Implementation Action Plan, the Municipal Recreation and Infrastructure Plan (MRIP), and Project-specific wildlife assessments.

The EA considered these priorities through avoidance of sensitive wildlife features where feasible and incorporation of measures intended to maintain habitat connectivity and reduce human-wildlife interactions. During construction, mitigation focuses on minimizing disturbance, limiting the extent and duration of activities, managing wildlife attractants, and restricting temporary fencing to areas where required. During operations, mitigation focuses on access management, prevention of informal trail development, wildlife attractant management, wildlife-sensitive lighting considerations, public education, and ongoing monitoring and adaptive management.

Given the elevated design of the gondola, the primary long-term wildlife consideration is increased human activity associated with Project operations rather than the gondola infrastructure itself. Monitoring and adaptive management measures will be implemented to assess mitigation effectiveness and support the continued functionality of the Upper and Lower Silvertip Wildlife Corridors.

Additional discussion is provided in Sections 3.8, 4.5, 5.8, and 6.4.

1.2.3 Project Environmental Setting

Environmental considerations were identified through desktop review, field investigations, technical studies, previous environmental assessment work completed within the Study Area, and consultation with regulatory agencies and municipal stakeholders. Baseline studies considered wildlife and wildlife habitat, wildlife corridor functionality, vegetation, wetlands, aquatic resources, geology, soils, hydrology, and terrain characteristics. These features were considered during Project development to minimize disturbance to environmentally sensitive areas and reduce the potential for adverse environmental effects. Identified considerations include:

- The presence of the Upper and Lower Silvertip Wildlife Corridors;
- Regionally significant wildlife habitat and movement areas;
- The occurrence of species at risk and species of management concern;
- Environmentally sensitive vegetation communities;
- Waterbodies, drainage features, and aquatic habitat;
- Steep terrain, variable slope conditions, and geotechnical limitations; and
- Existing recreational use and associated human-wildlife interactions.

1.2.3.1 Wildlife Habitat and Wildlife Corridor Constraints

Wildlife habitat and wildlife movement were identified as primary environmental constraints within the Project Area. The proposed alignment traverses the Upper Silvertip Wildlife Corridor (USWC) and Lower Silvertip Wildlife Corridor (LSWC), which provide connectivity between local habitat patches and form part of the broader Bow Valley wildlife movement network. Wildlife Corridors and Habitat Patches in the Bow Valley are considered important ecosystem components; therefore, the Silvertip Project proposal considered the potential effects of the project on these features. The Bow Corridor Ecosystem Advisory Group documents (2012), and the Wildlife Corridor and Habitat Patch Guidelines for the Bow Valley, (BCEAG, 2012) were used as reference for this analysis.

Wildlife field investigations, habitat assessments, available telemetry information, and review of the Bow Corridor Ecosystem Advisory Group (BCEAG) Wildlife Corridor and Habitat Patch Guidelines identified

corridor functionality, habitat connectivity, sensory disturbance, and human-wildlife interactions as key considerations for Project planning.

Project design incorporated these considerations through refinement of tower locations, minimization of the development footprint, avoidance of sensitive habitat features where practicable, and development of mitigation measures intended to maintain corridor functionality during construction and operation.

The environmental assessment specifically considered potential effects on Key Indicator (KI) species of:

- Grizzly Bear (*Ursus arctos*);
- Black Bear (*Ursus americanus*);
- Cougar (*Puma concolor*);
- Wolf (*Canis lupus*);
- Lynx (*Lynx canadensis*);
- Elk (*Cervus canadensis*); and
- Bighorn Sheep (*Ovis canadensis*)

Additional discussion is provided in Sections 3.8.1.6, 3.8.1.7, and 3.8.1.8.

1.2.3.2 Vegetation

Baseline environmental investigations in the Study Area identifies a diverse range of vegetation associations across its elevational limits. A total of forty-three ecosite phases exist throughout the Study Area. Approximately 72% of the Study Area is comprised of vegetated ecosite phase polygons. Plant species of concern confirmed within the Study Area during field investigations include limber pine (*Pinus flexilis*) and whitebark pine (*Pinus albicaulis*) which were identified as a constraint to the alignment and Summit Area facilities. One ecological community of concern and 9.96 ha of Old Growth Forest within the high-elevation alpine environment was observed in the study area, careful planning and design is required to minimize impacts in these environmental sensitive areas.

1.2.3.3 Geology

The Project extends from approximately 1,335 m elevation within the Bow Valley to approximately 2,250 m elevation on the slopes of Mount Lady Macdonald. The environmental setting is characterized by steep and variable terrain, colluvial deposits, morainal materials, fluvial deposits, exposed bedrock, and localized areas of potential rockfall and slope instability. Specialized geotechnical and geological assessments will be undertaken in support of detailed infrastructure siting and engineering designs to accommodate terrain limitations and geotechnical considerations as required.

1.2.3.4 Aquatic Environment

Aquatic assessments identified no fish bearing waterbodies or aquatic features requiring constraints to the Project in the Project Area. The Project is not anticipated to adversely affect surface water, groundwater or hydrology in the area and thus constraints were negligible.

1.2.3.5 Existing Recreational Use

The Project area is located within a landscape that experiences existing recreational use associated with the Montane Traverse Trail, Lady Macdonald trail network, Silvertip development, and surrounding public lands. Existing recreational use is relevant to Project planning because this existing recreational activity may influence wildlife habitat, wildlife movement patterns, and increase human-wildlife interactions.

Project planning will incorporate these considerations through trail management strategies aimed at restricting recreational use to current trails, public education initiatives, and continued wildlife monitoring commitments.

1.2.4 Cumulative Environmental Impacts in the Region

The Project is proposed within the Bow Valley, a landscape influenced by existing and ongoing development, transportation, recreation, tourism, and other human activities. While an analysis of cumulative effects are outside of the scope of this individual project and remain within the purview of the Provincial government to assess, the potential for cumulative effects contribution by the Project was initially developed in 2022. Based on this review, the Project is anticipated to make a limited incremental contribution to cumulative environmental effects in the Bow Valley. The assessment and supporting information have been provided to the Province to support consideration baseline conditions, future cumulative effect assessment criteria, and thresholds.

1.2.5 Regional Monitoring

Existing regional monitoring programs were reviewed to identify environmental conditions, trends, and areas relevant to the Project. The review included available Bow Valley environmental indicators, watershed and aquatic monitoring, Alberta Parks wildlife monitoring, regional-air quality information, climate data, and terrain and ecosystem information.

Monitoring information identified several considerations that have informed Project design and future monitoring commitments:

- **Air Quality:** Available regional air-quality monitoring information from the Exshaw (Lagoon) Monitoring Station was reviewed. No air-quality **c**onsiderations were identified at the current planning stage; however, construction-phase dust and equipment emissions will be managed through standard mitigation measures.
- **Climate and Weather:** Climate data for the Bow Valley (Banff and Kananaskis Climate Monitoring Stations) indicate the need for design for cold temperatures, high winds, wildfire risk and increasing inclement weather conditions. These considerations will inform detailed engineering, operational procedures, and service interruptions during unsafe conditions. Environment and Climate Chage Canada (ECCC) climate normals provide long-term data on temperature, precipitation, wind, and other climate variables relevant to design and operations.
- **Wildlife and Habitat:** Alberta Parks and regional wildlife-monitoring data identify the importance of wildlife habitat, movement corridors, and human-wildlife interactions in the Bow Valley. These considerations have informed the compact Project footprint, managed visitor access, designated trail planning, and proposed wildlife-monitoring and adaptive management measures.
- **Ecosystem Condition and Invasive Species:** Regional environmental data indicates the need to avoid the introduction and spread of invasive species. Construction and operations will incorporate appropriate invasive species prevention, monitoring, and public education measures.

Long-term monitoring will support adaptive management by tracking changes in environmental conditions and the effectiveness of mitigation measures. Monitoring results will be used to identify whether additional management actions are required, including adjustments to construction practices, visitor-management measures, trail access, operating procedures, or wildlife-protection measures.

1.3 Transportation and Infrastructure

Transportation and infrastructure for the Project have been planned to support efficient visitor movement, year-round operations, and reduced reliance on private vehicle travel. The gondola system will serve as the primary transportation link between the Palliser Base Area, Silvertip Village Mid-Station, and Summit

Area Upper Station, minimizing the need for additional mountain road infrastructure and concentrating transportation activities within existing developed areas. The transportation framework supports an integrated mobility network by connecting key destination areas, accommodating future transit opportunities, and promoting accessible visitor access while aligning with municipal planning objectives and environmental stewardship principles.

1.4 Water and Waste Management

Water supply, wastewater servicing, waste management, and stormwater management for the Project have been conceptually assessed and determined to be feasible using a combination of existing municipal infrastructure, private servicing systems, and site-specific management measures.

Potable water for the Palliser Base Area and Silvertip Village Mid-Station would be supplied through existing Town of Canmore and Silvertip Resort Village infrastructure, while water for the Upper Station would be supplied from the municipal system via a private pumped distribution system and onsite storage.

Stormwater management would incorporate existing municipal infrastructure where available and utilize Low Impact Development (LID) and infiltration-based approaches to maintain natural drainage patterns and protect water quality.

Wastewater servicing for the Palliser Base Area and Silvertip Village Mid-Station will be serviced with conventional urban sewer infrastructure while the Upper Station requires a private extension from this municipal system. Wastewater generated by the Upper Station can be conveyed to the existing municipal system through a pumped sanitary collection system designed to accommodate the site's terrain, climate, and operating conditions. Wastewater generated within the Summit Lodge will be collected through an internal gravity plumbing system before entering a dedicated sanitary holding tank with a grinder and pump discharge.

Waste management will be integrated into the Silvertip Resort waste management system including recycling. All waste and rubbish generated at the Summit Lodge will be transported to the Resort by gondola using waste transport gondolas.

1.5 Conservation and Reclamation

The objective of conservation and reclamation under the Conservation and Reclamation Regulation (CRR) of the *Environmental Protection and Enhancement* Act (EPEA) is to return the specified land to an equivalent land capability (Government of Alberta, 1993). Under the CRR specified land is defined as:

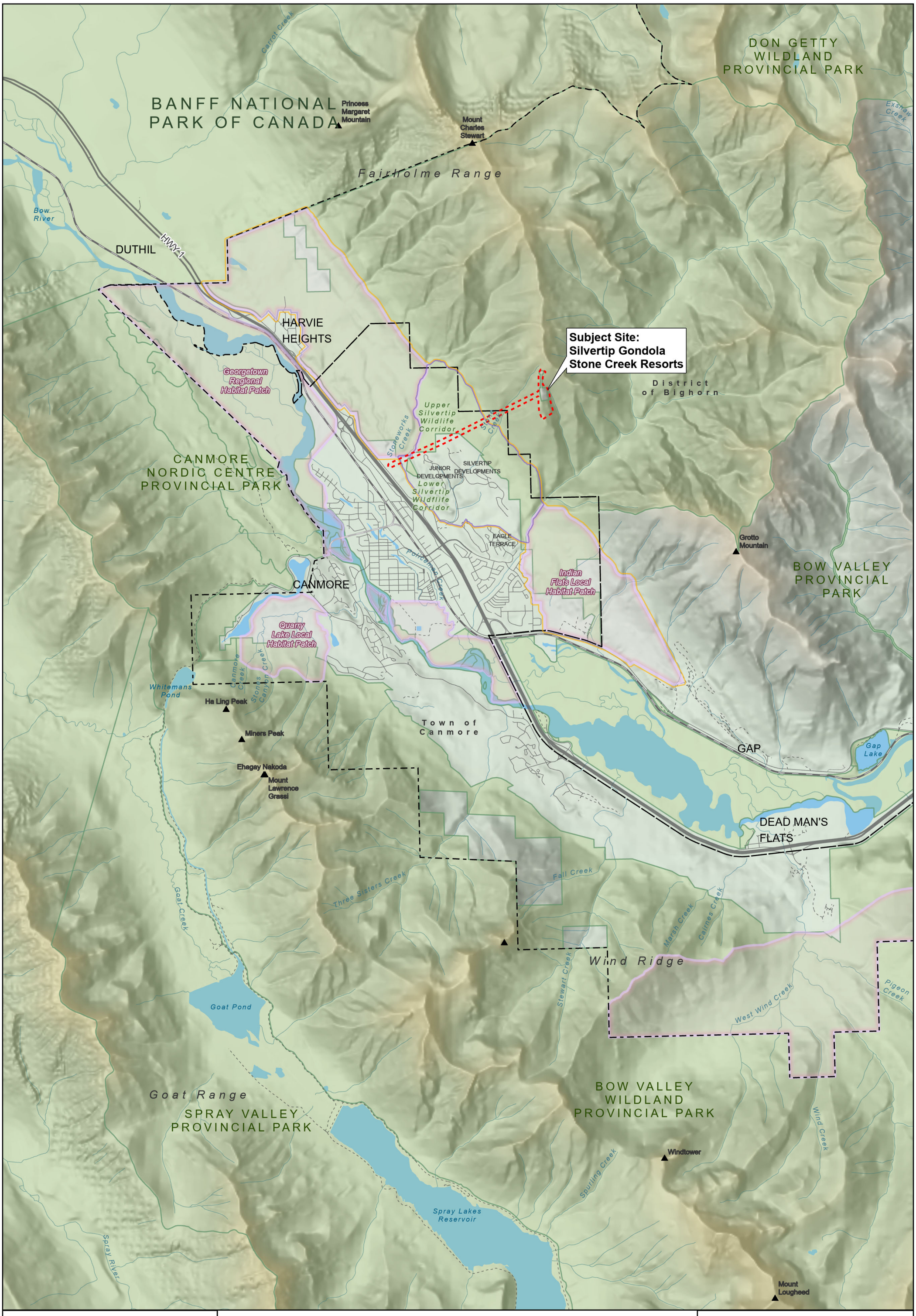
> *(t) "specified land" means land that is being or has been used or held for or in connection with*
>
> *i. the construction, operation or reclamation of a well, an industrial pipeline or a battery,*
>
> *ii. the construction, operation or reclamation of an oil production site,*
>
> *iii. the construction, operation or reclamation of a municipal pipeline,*
>
> *iv. the construction, operation or reclamation of a telecommunication system or transmission line,*
>
> *v. the construction, operation or reclamation of a mine, pit, borrow excavation, quarry or peat operation,*
>
> *vi. the construction or reclamation of a roadway,*
>
> *vii. the conduct or reclamation of an exploration operation,*
>
> *(vii.1) the conduct or reclamation of a mineral resource exploration operation,*
>
> *viii. the reclamation of a railway,*

ix. the construction, operation or reclamation of a plant, or

x. the construction, operation or reclamation of a renewable energy operation,

The Project does not meet the definition of “specified land”, therefore it is the Cascade’s opinion that a Conservation and Reclamation Plan is not required for this Project.

The Project proposes to continue voluntary commitments for wildlife monitoring and stewardship activities around the resort, as appropriate. These activities would build on existing voluntary commitments and ongoing initiatives, recognizing that many trails in the surrounding area are provincial trails and are not managed by the Project.



Silvertip Gondola
Map 1 - Location

Date: 2026-09-23

0 0.25 0.5 1 1.5 2 2.5
Kilometres

N

- Project Area
- Benchlands Wildlife Corridor
- Canmore Wildlife Corridor
- Designated Habitat Patch
- Provincial / National Park
- Abandoned Rail Line
- Main Rail Line
- Municipal Boundary

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Silvertip Gondola
Map 2 - Site

Date: 2026-09-23

Project Area

Example Concept (illustrative purposes only)

- Conceptual Gondola Alignment
- Conceptual Footprint
- All-season Resort Development Area
- Designated Wildlife Corridor
- Habitat Patch
- Provincial Park
- Existing Road
- Building Footprint
- Municipal Boundary

N

0 25 50 100 150 200 250

Metres

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BOW VALLEY WILDLAND PROVINCIAL PARK

Town of Canmore
District of Bighorn

Upper Station

Mid-Station

Lower Station

2400m
2200m
2000m
1800m
1600m
1400m

Upper Silvertip Wildlife Corridor

Harvie Heights Regional Habitat Patch

Montane Cut-Off Trail

Johnny's Trail

Stoneworks Creek

Douglas Fir Bench Trail

Pallliser Trail

Trans-Canada Highway

Trans-Canada Highway

Aspen Glen

Little Ravine Road

Juniper Ridge

JUNIOR DEVELOPMENTS

Juniper Ridge

Blue Grouse Ridge

Silvertip Trail

Silvertip Village Lane

SILVERTIP GOLF COURSE

Stone Creek

Montane Traverse Trail

Silvertip Road

SILVERTIP DEVELOPMENTS

Silvertip Ridge Lane

Stonecreek Road

Silvertip Ridge

Stonecreek Place

Legacy MacDonald Trail

Silvertip Gondola

Map 3 - Assessment Study Areas

Date: 2026-09-23

0 100 200 400 600 800

Metres

N

Study Areas

- Project Area
- Vegetation & Soils
- Wildlife
- Aquatic Ecology
- Designated Wildlife Corridor
- Habitat Patch
- Provincial Park
- Existing Road
- Authorized Recreation Trails
- Other Trail (Closed, Illegal, Overgrown, Etc.)
- Building Footprint
- Municipal Boundary

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2 Environmental Assessment Methodology

This Environmental Assessment (EA) report examines the environmental effects of the Project with consideration of all applicable provincial and federal legislation, codes of practice, guidelines, standards, policies and directives.

The EA was prepared in accordance with the Final Terms of Reference (Tourism and Sport, n.d.) and the environmental information requirements prescribed under *Environmental Protection and Enhancement Act* (EPEA) and associated regulations. The EA will form part of Stone Creek's Master Development Plan (MDP) application to the All-Season Resort Branch.

This report was prepared with reference to the Guide to Preparing Environmental Impact Assessment Reports in Alberta (Alberta Government, 2013) and the Final Terms of Reference.

Spatial Boundaries

Three types of spatial area boundaries were used in this EA to best describe direct and indirect effects relating to the project (Map 1). These areas are defined as:

1. the conceptual Project Footprint/ Project development areas, estimated 1.8 ha, will be used as a proxy of what would be subjected to physical alteration as a result of the development that captures direct effects;
2. The Project Area comprises the Project Footprint and a surrounding 40 m buffer (Map 2); and
3. the Study Area, encompasses the Project Area,

Three relevant Study Areas (Map 3) were derived to capture the direct and indirect effects of the project:

a) Wildlife (Section 3.8 Wildlife) – encompasses the Silvertip Resort, the USWC, the LSWC, and the upper slope of Lady McDonald which is intended to capture the direct and indirect effects of the project.

b) Vegetation and Soils – includes a 200 m buffer around the Project Area, encompassing the major Project infrastructure and potential direct and indirect construction and operational impacts. Vegetation components potentially affected by the Project, including plant species, communities, ecosites, and their abundance, were assessed due to their important role in ecosystem function. Used in sections: 3.7 Vegetation, 3.9 Terrain and Soils.

a) Aquatics - The Study Area for Aquatic Ecology was derived from watersheds that includes the downstream waterbodies (streams and ponds) that are potentially vulnerable to any disturbance of their aquatic habitat (in the contiguous aquatic environment) from the Project. Used in sections: 3.2 Hydrogeology, 3.3 Hydrology, 3.6 Aquatic Ecology, and 3.4 Surface Water Quality.

c) Air Quality and Noise – The Study Area was defined by the McElhanney Study (Appendices A-1 and A-2).

Note: Impact assessment areas provided in the report were calculated using an example concept as shown on Map 2. This design was provided as an example to calculate a realistic impact on wildlife habitats and vegetation. Project elements remain conceptual such as the project development area and project footprint shown on Map 2 and will be refined through detailed engineering, field fit review, Indigenous engagement, permitting, and regulatory review.

2.1 Air Quality and Noise

The air quality and noise assessment focused on identifying residences, facilities, and other receptors that could potentially be affected by project-related noise, vibration, and dust during construction and operation (Government of Alberta, 2024).

2.1.1 Air Quality Methodology

Air quality information was obtained through a review of available literature, public air quality monitoring data, and site observations to characterize baseline conditions and assess potential project-related effects. The assessment considered existing ambient air quality conditions, and predicted changes associated with project activities.

1. Baseline Information

The baseline information characterized existing ambient air quality conditions and identified residences, facilities, and other receptors that could potentially be affected by project-related air emissions, dust, or vibration during construction and operations.

The baseline air quality assessment was informed by the Cougar Creek Environmental Impact Assessment (Town of Canmore, 2016) which identified a number of local generators of emissions that have potential to affect the air quality in the air space of Silvertip and Canmore summarized in Table 1. With the exception of transport related emissions and noise sources, most emission generating activities are located outside of the Study Area and are not expected to influence local baseline conditions.

Table 1: Existing emission-generating activities within the Canmore area (Town of Canmore, 2016)

Baseline Setting for local ambient air/noise/vibration/dust emission sources	Study Area	Regional Area
Local and regional traffic, including Highway 1 traffic, recreational travel, and local transportation activities	✓	✓
Residential, commercial, and institutional land uses: housing, maintenance, heating, landscaping, construction		✓
Railway operations along the Canadian Pacific Kansas City (CPJC) rail corridor		✓
Existing industrial and resource-based activities, including quarrying (6 facilities) and local landfill (1 facility) operations		✓
Operation and maintenance of regional utility infrastructure, including electrical transmission lines, natural gas pipelines, and telecommunication networks		✓
Recreational activities, including campground and picnic area use and associated campfires		✓

[1] Emissions generating activities are not anticipated to have changed much since the Cougar Creek EIA assessment completed by the Town of Canmore in 2016.

Regional ambient monitoring data from the Lafarge (Lagoon) air monitoring station was used to assess air quality. The Lafarge station, located approximately 13.2 km southeast of the project, is the closest monitoring site providing data for nitrogen dioxide (NO_2) and fine particulate matter ($PM_{2.5}$).

Annual monitoring data from 2025 were reviewed and evaluated against the Alberta Ambient Air Quality Objectives and Guidelines (Government of Alberta, 2024). Conditions for each applicable averaging period were compared with the relevant objectives and guidelines to characterize the existing air quality setting within the Study Area.

2. Impact Assessment

Construction Phase

The construction-phase assessment focused on emissions associated with project construction activities, including the operation of heavy equipment, vehicular traffic, and fugitive dust generated from ground disturbance and travel on unpaved surfaces.

Construction emissions of selected criteria air contaminants (CACs), including NO_2 and $PM_{2.5}$, were estimated using equipment-specific emission factors and manufacturer-reported emission data, where available. Construction emissions were estimated and evaluated qualitatively to determine the potential for adverse air quality and fugitive dust effects and the need for mitigation measures. Predicted concentrations were compared with the Alberta Ambient Air Quality Objectives and Guidelines (AAAQO) (Government of Alberta, 2024) to assess the potential for adverse effects or objective exceedances.

Operations Phase

The operational assessment evaluated whether project activities occurring during the operating life of the Project would generate air emissions with the potential to affect ambient air quality.

Given the nature of the project and the absence of significant long-term emission sources during operations, no quantitative operational air quality modelling was considered necessary. The decision not to undertake quantitative operational air quality modelling was further supported by comparison with similar regional projects, including the Cougar Creek Project, where operational activities were not identified as a substantial source of long-term air emissions. Given the limited operational emission sources associated with the Project, operational effects on ambient air quality are expected to be negligible.

2.1.2 Noise Assessment Methodology

Noise effects were assessed by characterizing existing ambient noise conditions within the Silvertip area, identifying potentially affected receptors, and evaluating potential noise effects associated with project construction and operation.

Although no municipal, provincial, or federal noise guideline exists for gondola developments, the Alberta Utilities Commission (AUC) Rule 012: *Noise Control* and the principles established in the former Energy Resources Convention Board (ERCB) Directive 038 was considered as professional reference benchmark in the assessment of potential noise effects at nearby residences and other sensitive receptors (Alberta Utilities Commission, 2026). This document was used to inform the assessment approach and interpretation of potential effects.

1. Baseline Information

Baseline ambient noise conditions within the Project Area and surrounding areas were assessed by McElhanney Ltd. and are provided in Appendix A-1B-1. McElhanney collected baseline sound level measurements using a Holdpeak HP-882A Digital Sound Level Meter at representative locations within the Silvertip area. These measurements were used to characterize existing ambient sound conditions relevant to the assessment of potential Project-related noise effects.

2. Impact Assessment

Construction phase

The construction-phase assessment evaluated potential noise effects associated with site preparation, excavation, material transport, helicopter-supported construction activities, and operation of heavy equipment anticipated during project construction.

Noise-generating equipment expected to be used during construction was reviewed, and anticipated sound levels were assessed based on manufacturer specifications, published reference information,

professional judgement, and field observations from similar activities. Construction noise effects were qualitatively assessed with consideration of the conceptual construction schedule, duration of activities, distance to receptors, topography, and existing ambient noise conditions.

Operation phase

Operational noise effects were assessed qualitatively using: (1) baseline sound level information collected by McElhanney within the noise assessment area; (2) comparative sound level information collected by McElhanney at the Grizzly Gondola in Lake Louise, Alberta; and (3) supplementary comparative sound level information collected by Cascade at the Sea-to-Sky Gondola in Squamish, British Columbia.

Sound level measurements collected at comparable gondola facilities, including the Grizzly Gondola and Sea to Sky Gondola, were used to characterize expected operational noise levels. Operational noise effects are expected to be limited and localized within the Project Area and are further addressed in the Stone Creek Resort's Technical Study on Noise Impacts in Appendix A-4.

2.2 Hydrogeology

Literature produced by government agencies, academic institutions, and industry study groups, along with relevant hydrogeological information presented in recent assessments of developments in and around the Town of Canmore were used to describe the hydrogeologic setting for the project.

2.3 Hydrology

A literature review was conducted in order to collect information on hydrological resources, including wetlands located within the Study Area of the Project. Documents available for reference included:, Historical Resources Impact Monitoring, Stoneworks Creek Flood Control/Stormwater Diversion (Stantec Consulting Ltd., 2013), Stone Creek Debris-Flow Hazard Assessment (BGC Engineering Inc., 2015), Stone Creek Debris-Flow Risk Assessment (BGC Engineering Inc., 2015), Stoneworks Creek Debris-Flood Risk Assessment (BGC Engineering Inc., 2015), Stoneworks Creek, Forensic Analysis and Short-Term Debris Flood Mitigation (BGC Engineering Inc., 2013), Long-Term Mitigation – Stoneworks Creek (Alpinfra Interdisciplinary Engineering, 2016), and Stone Creek Properties Inc Wildlife Management Plan (McCallum & Paquet, 1993). Available information was summarized in the Hydrological Assessment section of this report.

A review of the geotechnical debris flow and debris flood reports and peer reviewed journal articles, which document the magnitude and frequency of the events was conducted and field-verified between July 28 and 30, 2026. Field observations corresponded to the conclusions of prior desktop research.

2.4 Surface Water Quality

A literature review was conducted to collect information on surface water quality including wetlands located within the Study Area of the Project. Documents available for reference included: Historical Resources Impact Monitoring, Stoneworks Creek Flood Control/Stormwater Diversion (Stantec Consulting Ltd., 2013), Stone Creek Debris-Flow Hazard Assessment (BGC Engineering Inc., 2015), Stone Creek Debris-Flow Risk Assessment (BGC Engineering Inc., 2015), Stoneworks Creek Debris-Flood Risk Assessment (BGC Engineering Inc., 2015), Stoneworks Creek, Forensic Analysis and Short-Term Debris Flood Mitigation (BGC Engineering Inc., 2013), Long-Term Mitigation – Stoneworks Creek (Alpinfra Interdisciplinary Engineering, 2016), and Stone Creek Properties Inc Wildlife Management Plan (McCallum & Paquet, 1993). Available information was summarized in the Surface Water Quality Assessment section of this report.

A review of available technical reports and peer reviewed journal articles, which document surface water quality was field verified between July 28 and 30, 2026. Desktop information could not be verified as waterbodies were dry at the time of the field visit.

2.5 Climate Change

A desktop review of regional climate records and hydrological information was conducted to characterize climate conditions in the Study Area. Sources included:

- Environment and Climate Change Canada (ECCC) weather stations records, including the 1981–2010 and 1991-2020 long-term climate normals. Climate normals and averages are used to describe and summarize the average climatic conditions of a particular location;
- ECCC almanac averages and extremes (1887–2026), obtained for Banff (Climate ID: 3050520) and Banff CS (Climate ID: 3050519) weather stations;
- Alberta climate datasets and regional climate studies;
- Hydrometric records, watershed studies, flood studies, and groundwater investigations; and
- The Town of Canmore Climate Risk and Vulnerability Assessment (CRVA) and Climate Emergency Action Plan (CEAP).

Baseline information was summarized using long-term climate records from ECCC. Climate normals for temperature, precipitation and wind were based primarily on the Banff weather station, approximately 17 km northwest of the project, and supplemented by data from the Kananaskis station, approximately 22 km east of the project. Climate extremes were characterized using available Banff and Banff CS records from 1887-2026, including maximum and minimum temperatures and daily precipitation. Additional parameters such as snowfall, climate variability, and historical extreme weather events were obtained through literature review and review of publicly available reports for the Bow River Basin and Canmore area. The hydrological setting of the Study Area was summarized with reference to Section 3.2 – 3.4 providing an overview of flood frequency and flood prone conditions and the relationship between hydrology and climate drivers including precipitation, snowmelt, and drought.

Future climatic conditions were characterized using publicly available downscaled climate projections relevant to the Bow Valley and the Canmore Region. Sources included climate projections summarized in the Town of Canmore's CVRA and regional climate studies and journal articles. The assessment focused on climate variables most relevant to Project performance and environmental interactions including:

- **Temperature:** extreme heat events and wildfire conditions;
- **Precipitation:** drought, extreme rainfall and flood events; and
- **Glacial melt:** runoff; snowpack conditions.

The climate change assessment was completed as a qualitative, project-specific review of climate-related hazards and adaptation considerations. It relied on the Town of Canmore CRVA, the Town of Canmore CEAP, available regional climate projections, and available hydrological, flood, groundwater, and watershed studies. The CRVA was used to identify regionally relevant climate hazards and to inform consideration of their likely relevance to the Project. Project-specific risk characterization considered the location and design of Project components; the duration and timing of construction and operations; the Project's proximity to mapped hazard areas and drainage features; the sensitivity of Project components, workers, visitors, and the environment; and the proposed mitigation, operating procedures, and emergency-response measures.

The assessment is intended to identify reasonably foreseeable climate-related interactions over the Project life and to confirm that climate change considerations are incorporated into project design, construction planning, operations, maintenance, and emergency preparedness. Climate projects describe potential future conditions and associated trends; they do not predict the timing, magnitude, or location of individual future events.

2.6 Aquatic Ecology

This section of the EA considers the potential direct and indirect effects from construction and operation activities to aquatic life arising from possible alterations to surface flow, drainage morphology, and the 6 m riparian setbacks on waterbodies within the Project Area. These potential effects include, but are not limited to, sediment-laden surface runoff, rockfalls, diversion of flow, or fuel spills.

The Study Area, as referenced in all other sections of the EA, refers to land and water that may be disturbed during the construction phase of the project. This includes the construction footprint, buffers and rights of way throughout the project.

The Study Area for Aquatic Ecology is the area within the vicinity and downstream of, and including, waterbodies (streams and ponds) that are potentially vulnerable to any disturbance of their aquatic habitat (in the contiguous aquatic environment). Streams within the Study Area include Stoneworks Creek, Stone Creek and Cougar Creek (Map 4). There is also a constructed pond on the Silvertip resort golf course contiguous with Stone Creek.

Riparian setbacks were determined based on the municipal stream buffer regulation for the Town of Canmore, which establishes a 6 m setback from the top of bank (ToB) for ephemeral and intermittent streams and gullies, and a 30 m setback for permanent waterbodies including streams (Town of Canmore, 2025). Also referenced in this study is Stepping Back from the Water: A Beneficial Management Practices Guide for New Development near Water Bodies in Alberta's Settled Region (Government of Alberta, 2012), flood hazard mapping and field observations during various field surveys.

Fish species and benthic invertebrates potentially present, including species at risk, occurring within the Study Area or downstream from the Study Area were determined based on observations from Cascade field investigations between July 28 and 30, 2026, information from various local reports including the Cougar Creek Environmental Impact Assessment (Town of Canmore, 2016), the Fish and Wildlife Management Information System (Government of Alberta, 2026) and Aquatic Invertebrates of Alberta (Clifford, 1991)

2.7 Vegetation

The vegetation Study Area includes a 200 m buffer around the Project Area, encompassing the major Project infrastructure and potential direct and indirect construction and operational impacts. Vegetation components potentially affected by the Project, including plant species, communities, ecosites, and their abundance, were assessed due to their important role in ecosystem function, wildlife habitat, soil stability, air quality, and water regulation.

2.7.1 Vegetation Communities

The Field Guide to Ecosites of Southwestern Alberta (Archibald, Klappstein, & Corns, 1996) was used to assess vegetation and ecological communities within the Study Area which were then analyzed and documented in this report. The ecosystem classification of Southwestern Alberta is equivalent to the ecoregion defined by the Canada Committee on Ecological Land Classification as part of a multi-level national mapping system for Canada.

2.7.2 Pre-Survey Methods

Prior to field data collection, preliminary ecosite phase maps were created utilizing the Alberta Vegetation Inventory (AVI) data for the Study Area (Government of Alberta, 2022). Cascade Biologists and GIS personnel analyzed the overlap of ecosite phases within the Study Area and Project Area and created potential plot sites which would capture detailed ecosite phase and plant community classification in the field. A plot sampling plan was created to assess at least one polygon for every ecosite phase which overlapped the Project Area described in the pre-survey map. Survey efforts included detailed and visual plots. Detailed plots collected site, vegetation, and soil data, while visual plots collected site and

vegetation data to verify previously surveyed ecosite polygons. Data collection parameters for visual and detailed plots can be viewed in Table 2.

Plots within the Project Area and Study Area were previously surveyed by Cascade in 2017 and 2021. These surveys were used to further refine plot locations for the 2026 field investigations. Relevant data to aid in field surveys were uploaded onto the ArcGIS Field Maps software and included AVI polygons, potential plot locations, slope aspect and percentage, natural subregion boundaries, forest age classification, and parent material for soil classification. Alberta AVI data (Government of Alberta, 2022) was used to characterize structural stages and determine forest age classes for each polygon.

Natural subregion guidelines for the Study Area were reviewed based on Government of Alberta open data mapping (Government of Alberta, 2022). The most recent guidelines for ecological sites and plant communities for the Alpine, Subalpine and Montane subregions were analyzed and prepared for use in field survey methods. (Willoughby & Gould, Ecological sites and plant communities for the Alpine subregion. First Approximation, 2021) (Willoughby, et al., Ecological sites of the Subalpine subregion. Second approximation, 2020) (Willoughby, et al., Ecological sites of the Montane subregion. Fourth approximation, 2021).

2.7.3 Field Survey Methods

Data collection protocols used for vegetation surveys in 2026 followed guidelines outlined by Archibald (1996) to identify ecosites from field characteristics. (Archibald, Klappstein, & Corns, 1996). Field surveys utilized the Alberta provincial MF5 Site Description Form from the Range Inventory Manual (Government of Alberta, 2021) and Soil Description Form RDB 2002-2 from the Ecological Land Survey Site Description Manual (Alberta Sustainable Resurce Development, 2003). Information collected in plots included the data attributes presented in Table 2 below. Detailed plots included a full data description of site, vegetation and soils. Visual inspections comprised vegetation and site data collection to confirm ecosite polygons codes that had been previously assessed by a detailed plot. Field plots within target ecosite polygons were chosen that were representative of the area to be classified. A 10 m x 10 m plot was created and plant species composition and abundance recorded. Representative trees within the plot were recorded for basal diameter and age utilizing an increment borer to collect tree cores. At detailed plots, a soil pit approximately 60 cm deep, or to a limiting layer where encountered, was excavated to characterize the soil properties. Site properties were collected to gather data on aspect, elevation and a georeferenced point was collected on ArcGIS Field Forms with associated photos of the plot location. Ecosite phase and plant community type codes and Soil Type Classification were characterized utilizing field data and dichotomous keys detailed in the appropriate corresponding Natural Subregion guidelines and Field Guides to Ecosites of Southwestern Alberta (Archibald, Klappstein, & Corns, 1996).

Field data was collected in 71 plots across the Study Area by Cascade over the following period:

- July 26 and 27, 2017: 31 plots
- July 20 and 21, 2021: 15 plots
- July 28, 29 and 30, 2026: 25 plots

Locations of field plots can be viewed on Appendix B-1.

Table 2: Data Attributes Collected during Vegetation Plot Field Verification

Data Type	Component Data
Site Data	Natural Subregion Elevation Aspect Slope Exposure Type Flood Hazard Perviousness Regional Landform Site Position-Meso Site Surface Shape Site Microtopography Successional Status Surface Substrate (%Cover) Ecosite Code
Vegetation Data	Plant Species Name Percent Cover Stand Height Structural Stage Stand Age Diameter at Breast Height (DBH) of representative trees
Soils Data	Depth of soil horizons for L, F, H, A and B layers* Surface Texture for A layer* Effective Texture for B layer* Coarse Fragment % of A and B layers* Humus Form* Drainage Class* Parent Material* Organic thickness* Ecological Moisture Regime* Nutrient Regime* Soil Type Classification*

* Collected for detailed ecosite plots only

2.7.4 Post Survey Methods-Mapping

Vegetation mapping was completed for the Project Area and Study Area following completion of the field surveys utilizing ArcGIS software. All polygons that were pre-stratified to the ecosite phase before the field survey were checked against field plot data and given a final ecosite phase. Preference was given to field plot data results in determining final ecosite code. Polygon boundaries were modified from results

of the field surveys where appropriate. Non-vegetated designated polygons followed the Alberta Vegetation Inventory Standards (Government of Alberta, 2022).

2.7.5 Plant Species of Concern

In Alberta plant species of concern are protected and managed under a range of provincial and federal programs legislation, including the following:

- Schedule 6 of the Alberta Wildlife Regulation under the *Wildlife Act;*
- Alberta Conservation Information Management System (ACIMS); and
- *Species at Risk Act* (SARA).

2.7.6 Committee on the Status of Endangered Wildlife in Canada (COSEWIC) Wildlife Regulation

Schedule 6 of the Alberta Wildlife Regulation under the *Wildlife Act* designates the provincial legally listed endangered species. The latest revision of Wildlife Regulation (current as of January 2026) was researched to determine plant species listed under Schedule 6 as endangered or threatened. Schedule 6 includes endangered plants, algae and fungi; however, no algae or fungi species have been prescribed so far. Schedule 6 listed endangered plants were analyzed against the existing project habitat conditions and determined if occurrences were possible or unlikely. A plant listed under Schedule 6 prohibits the wilful molestation, disturbance, or destruction of the species.

2.7.7 Alberta Conservation Information Management System (ACIMS)

Spatial data analysis for sensitive and non-sensitive plant species of concern Element Occurrence was queried for the Project Area and Study Area and general surrounding area utilizing the General Status of Alberta Wild Species ACIMS data search map, and associated GIS open data (Alberta Conservation Information Management System, 2026). All plant species of concern was listed from the results of the search and analyzed for potential occurrence within the Project Area and Study Area based on geographic range and habitat requirements.

2.7.8 Species at Risk Act (SARA)

The *Species at Risk Act* (SARA) is a federal legislation providing legal protection to endangered, threatened and extirpated species. The SARA Critical Habitat for Species at Risk National Dataset – Canada was analyzed within the Project Area and Study Area for potential occurrences of plant species listed by SARA. The dataset includes active critical habitat records for terrestrial species listed on Schedule 1 of the *Species at Risk Act* (SARA) as Endangered, Threatened, or Extirpated, as well as archived records for species whose status has been downlisted to Special Concern, and for which Environment and Climate Change Canada (ECCC) and/or Parks Canada are responsible. Plant species of concern listed within the ACIMS database were also researched for possible SARA classification. Applicable SARA recovery documents where then researched for information on threats and strategies for the plant species of concern.

2.7.9 Committee on the Status of Endangered Wildlife in Canada (COSEWIC)

The Canadian government created SARA in 2002 to complement the Accord for the Protection of Species at Risk (a national effort to identify and protect threatened and endangered wildlife and their associated habitats across the country). COSEWIC is the scientific body responsible for assigning the status of species at risk under SARA. All potential plant species of concern identified by the ACIMS data search and Wildlife Regulation with potential for occurrence within the Project Area and Study Area were cross-referenced with the COSEWIC database for status designation.

2.7.10 Field Survey

A list of plants of concern and habitat preferences analyzed from previous databases and spatial data described was created prior to field investigations. Field cards with identification of the plant and appropriate habitat features were created for use in the field when personnel were completing vegetation plots and walking between plots to record any occurrences. Landscape microfeatures including ephemeral habitats, seepages or transition zones were highlighted in field mapping as important areas where rare plants may be located.

Known occurrences of limber pine and whitebark pine had been collected in previous vegetation plots within the Project Area and Study Area, and a focused search was planned for these species within the whole Project Area. Field Personnel actively searched for limber pine and whitebark pine species using a back -and-forth pattern search within the linear Project Area boundaries and recorded georeferenced occurrences via a handheld GIS unit loaded with ArcGIS Field Maps.

2.7.11 Data Limitations of Field Survey

- Steeper sections of the Project Area for the gondola alignment were inaccessible for safe travel to conduct the patterned search for whitebark pine and limber pine. Occurrence locations were visually recorded; however, are generalized in this area.
- Limber pine and whitebark pine occurrences were collected via a GPS system and locations of occurrences should not be viewed as a sub-meter survey level accuracy.

2.7.12 Ecological Communities of Concern

Vegetation associations within the Project Area were defined by field inspections to the plant community type to analyze if any tracked ecological communities were present. The ACIMS lists all species Elements reported for the province (Alberta Conservation Information Management System, 2026). Through this process, taxonomic experts compile lists of species reported for Alberta and calculate their ranks (S-Ranks). These lists are used to update the ACIMS database. ACIMS is actively collecting information on and processing Element Occurrences for ecological communities because they are Elements that current information suggests are rare or of conservation concern due to threatened habitats or documented declines (Alberta Conservation Information Management System, 2026).

Tracked potential plant community types from the most recent ACIMS database sources were compared to pre-field stratification mapping. Potential ecosite polygons that could be considered a tracked ecological community of concern were identified. Prior to field surveys, descriptions of these potential tracked ecological communities of concern from NatureServe (2026a) were provided to field staff to analyze against conditions observed during ecosite plots. Plant community types found within the Project Area and Study Area following field ecosite plots were compared to the following ACIMS recent database sources (listed below). Plant community types with similar species abundance were compared to NatureServe (2026a) descriptions of the tracked ecological community to determine the presence of the ecological community.

- List of Elements in Alberta - ecological communities (tracked communities) (Government of Alberta, 2022)
- Tracked Elements in Alberta listed by Natural Subregion (Government of Alberta, 2022)

2.7.13 Old Growth Forests

2.7.13.1 Pre Field Investigations

Pre-field investigations utilized AVI stand age data to highlight pre-stratified polygons that may contain old-growth forest. Stand age class was based on the classification provided by the Department of Agriculture, Forestry and Rural Economic Development (Department of Agriculture, 2022). The following

age classes were used: Young (0-19 years), immature (20-79 years), mature (80 to 119 years), old growth (120-179 years), very old (>179 year).

2.7.13.2 Field Investigations

Cascade field crews searched for indicators of old-growth forest during vegetation plots of the Project Area. Indicators included heterogeneous-age structure, large canopy trees, an accumulation of snags, and downed woody material. Pre-stratified polygons indicated to be Old Growth from AVI data were surveyed in the field by tree coring analysis. Representative trees species were cored at breast height (1.3 m) using an increment borer. Seven cores were recorded in the candidate polygon Tree cores were analyzed and aged using growth ring counts, with each ring indicating a year of growth and the age adjusted by tree species in the table below. As tree ages were taken at breast height in the field, an age adjustment factor to account for the growth of the tree to reach breast height was added (Government of Alberta, 2022).

Table 3: Age adjustment factors (bh_{age} to total age) by tree species

Species	Adjustment
Fir, larch, white spruce	15 years
Pine	10 years
Black spruce	20 years
Deciduous	6 years

2.7.14 Invasive Plant Species

Invasive species are organisms that originate elsewhere (i.e., they are exotic) and cause harm in their new environment. Invasive plant species records were analyzed from previous sightings during field investigations on the Project Area and Study Area and in close vicinity. Data sources included site investigations from McCallum and Paquet (1993) and observations from previous field studies by Cascade in (2021).

2.7.15 Traditional Use Species

Potential traditional plant species will be addressed through Indigenous Consultation addressing First Nations use and resources in the area as detailed in the MDP submission package.

2.8 Wildlife

This section details the methods used to assess environmental effect to wildlife and wildlife habitat.

2.8.1 Wildlife and Wildlife Habitat

A literature review was conducted to collect information on wildlife species potentially occurring in the Study Area. Available documents were reviewed and used to generate the baseline condition description. Where possible baseline conditions were verified with site investigations using wildlife camera data, GPS collar data, backtracking data, habitat selection models, and onsite field survey. Peter Sherrington, Research Director of the Rocky Mountain Eagle Research Foundation, was contacted for information regarding golden eagles and other avians. Kananaskis ecologist Melanie Percy, Alberta Parks Ecologist, (pers comm., January 29, 2017), John Paczkowski, Alberta Parks Ecologist (pers comm., October 2, 2018) and Brett Boukall, Senior Wildlife Biologist, AEP (pers. comm., October 29, 2018) were contacted and interviewed.

The focus of the wildlife baseline discussion was on wildlife utilization of the USWC, LSWC and in particular, wildlife-human interactions in the Study Area and Project Area.

2.8.2 Field survey and Autonomous Recording Units

Targeted field observations were conducted July 26 and 27, 2017 and July 28 to 30, 2026, recording wildlife seen and wildlife use, such as scatt and tree markings. Autonomous Recording Units (ARU) were deployed between July 28 and 30, 2026 using the Song Meter Mini Bat 2 Ultrasonic-Acoustic Recorder of Wildlife Acoustics.

Deployment locations were selected to target habitats suitable for these taxa, with particular emphasis on species at risk.

Each ARU was programmed to record ultrasonic (bat) data from 1.5 hours before sunset to 45 minutes after sunrise, capturing the full period of bat activity, including evening emergence and pre-dawn foraging. Acoustic (bird) recordings were programmed from 1 hour before sunrise to 45 minutes after sunrise, in order to capture the dawn chorus period, when avian vocal activity is at its highest and detectability is optimized.

Acoustic bird data were analyzed using BirdNET-Analyzer version 2.4, with recordings selected for analysis in accordance with the sampling requirements outlined in the Sensitive Species Inventory Guidelines (Government of Alberta, 2013). A minimum confidence threshold of (75%) was applied to automated species detections.

Bat recordings were analyzed using Kaleidoscope Pro version 3.0.2, applying the classifier protocol developed for the detection and identification of bat species recorded in Alberta.

2.8.3 Amphibians and Reptiles

A literature review was conducted in order to collect information on amphibian and reptile species potentially occurring in the Study Area. In addition, GIS mapping including ecosite, wetlands and wildlife habitat in the Canmore Corridor was obtained from to the Province of Alberta. The only report with amphibian and reptile information was the Stone Creek Properties Inc. Wildlife Management Plan written by McCallum and Paquet in 1993.

2.8.4 Birds

A literature review was conducted in order to collect information on bird species potentially occurring on the Stone Creek Property. In addition, GIS mapping including Ecosite and Wildlife habitat in the Canmore Corridor was obtained from the Province of Alberta. Three documents were available: Stone Creek Properties Inc. Wildlife Management Plan (McCallum & Paquet, 1993), Wildlife and Ecological Monitoring on the Silvertip Property - 6 year Summary Report (McCallum & Paquet, 1997) and 1997-2002 Wildlife Monitoring Report for the Silvertip Residential Development (Whitford, 2003). Peter Sherrington, Research Director of the Rocky Mountain Eagle Research Foundation, was contacted for information regarding golden eagles and other avians (January, 2017). Results of the ARUs were also used to inform bird presence in the Project Area.

2.8.5 Mammals

A literature review was conducted in order to collect information on species potentially occurring in the Study Area. In addition, GIS mapping including ecosite, wetlands and wildlife habitat in the Canmore corridor was obtained from the Province of Alberta, the Government of Alberta and Parks Canada.

A literature review, and conversations with Kananaskis ecologist Melanie Percy (Alberta Parks Ecologist for Kananaskis, personal communication, January 29, 2017), indicated that the Stone Creek Properties Wildlife Management Plan (McCallum & Paquet, 1993) has the most complete list of mammals that may

inhabit the study area. Three mammals that were not on this list (red-backed vole, striped skunk and the domestic rabbit) were added by Cascade, based on direct observation in the Bow Valley.

2.8.5.1 Key Indicator Species

The key indicator (KI) species were selected based on their ecological relevance to the Silvertip Wildlife Corridors, their sensitivity to the potential effects of the Project, and the availability of species-specific information to support impact assessment and monitoring. The selected species—grizzly bear, black bear, elk, bighorn sheep, wolf, cougar, and lynx—represent a range of habitat requirements, movement behaviours, and responses to human disturbance. Collectively, they provide a representative basis for assessing potential effects on wildlife habitat, movement and connectivity, sensory disturbance, and human-wildlife interactions, while also capturing species of particular management and conservation interest in the Bow Valley.

Cougar (Puma concolor)

As a keystone species, cougars exist in relatively low-density populations with large territories and provide regulation for prey animals such as elk, big horn sheep, and other smaller wildlife. The presence of this species within its natural range can indicate healthy populations of available prey and suitable available habitat as a species sensitive to human presence. Cougars are known to occur within the Bow Valley and as such have been evaluated as a KI.

Lynx (Lynx canadensis)

The Canada lynx is known to occur with the Bow Valley. This species is a common indicator of climate change due to its requirements to forested, high elevation and deep snow habitats. Similar to cougar, lynx populations can indicate the health of their prey populations (small mammals such as rodents, hare, squirrels, etc.) and suitable habitat availability as a species sensitive to human presence.

Wolf (Canis lupus)

Wolves are known to occur throughout the Bow Valley. Wolves are chosen as a KI as their populations help to regulate prey, largely herbivores, and allow plant species, plant communities, songbirds, butterflies and other species to flourish. Wolves both support biodiversity and indicate pressures from human presence.

Grizzly Bear (Ursus arctos)

Grizzly bears are known to occur in the Bow Valley. This species requires a large home range territory throughout a variety of ecosystems that changes seasonally. Grizzlies are slow to reproduce and are sensitive to changes in the environment including human presence. Therefore, this species can indicate the health of a diverse range of ecosystems and available habitat.

Black Bear (Ursus americanus)

Black bears are similar to grizzly bears as top predator generalists who inhabit a variety of ecosystems that may differ seasonally. This reflects the health of a wide range of ecosystems. Differences to grizzly bears include, smaller territories, less sensitivity to human presence, and reproduction is not as slow. Black bears are predicted to have a higher population presence than grizzly bears in the project area as they are more tolerant of human presence and anthropogenic development.

Elk (Cervus canadensis)

Elk is an herbivorous species that affect vegetative communities through grazing and are an important food source for many carnivorous species such as grizzly, wolves, black bears and cougar. Any changes to the elk populations will directly affect changes in predator and plant communities. Elk provide an example of ecosystem health from the middle of a food web as a primary consumer.

Big Horn Sheep (Ovis canadensis)

Big horn sheep are selected as a KI due to their local presence in the Bow Valley corridor and cultural importance for general presence and hunting activities. Big horn sheep populations were close to extinction in the Rocky Mountains in the 1800s and have since made recoveries (U.S. National Park Service, 2018). Big horn sheep are an indicator species due to their specialized habitat requirements of grasslands and shrublands, mountainous terrain, and sensitivity to human presence.

2.8.5.2 Wildlife Models and Wildlife Habitat Use

Wildlife use and habitat suitability were assessed for each KI species using the best available spatial and observational information. The assessment incorporated wildlife utilization distributions, remote-camera data, GPS-collar data, backtracking data, published resource selection function (RSF) models, the Alberta Biodiversity Monitoring Institute (ABMI) predictive relative abundance models, and predictive habitat suitability models developed by Cascade based on species-specific habitat selection criteria identified from peer-reviewed literature.

These approaches provide different measures of wildlife use and habitat value and are therefore not directly comparable among species. Utilization distribution models describe the spatial distribution and intensity of observed wildlife use, RSF models estimate relative predicted habitat use, ABMI models estimate relative predicted abundance, and Cascade habitat suitability models identify areas that meet predefined ecological habitat criteria. Results from each approach were interpreted according to the underlying methodology and were not treated as equivalent measures of habitat quality.

Wildlife use was also assessed using backtracking data, which provided information on the frequency, relative abundance, and intensity of wildlife movement within the Study Area and Project Area.

Seasonal analyses were conducted based on the seasonal periods used in the available datasets and published models. Grizzly bear and black bear habitat-use information was assessed by foraging season: spring (April 30 to June 15), summer (June 16 to August 10), and fall (August 11 to November 7). Lynx, wolf, cougar, bighorn sheep, and elk were assessed by winter (November 8 to April 29) and non-winter (April 30 to November 7).

2.8.5.2.1 Spatial Wildlife Use

Spatial wildlife use was assessed using camera detections, GPS-collared animal locations, wildlife backtracking data, and a grizzly bear utilization distribution model. Together, these datasets were used to characterize patterns of wildlife occurrence, habitat use, and movement within the Study Area.

2.8.5.2.1.1 Remote-Camera Kernel Density

Camera data from the Canmore area, provided by Alberta Parks for the period 2012 to 2024, were used to assess the spatial distribution and relative intensity of wildlife detections within the Study Area.

Appendix C-1 and Appendix C-2 show the location and operational dates of each camera. Wolf, cougar, elk, lynx, bighorn sheep, grizzly bear, and black bear detections were analyzed.

Kernel density analysis was used to estimate the spatial distribution and relative intensity of wildlife detections. Kernel density is a commonly used approach for estimating utilization distributions and home ranges from spatial wildlife-location data (Worton, 1989; Laver & Kelly, 2008; Elbroch, Lendrum, Quigley, & Caragiulo, 2015). Kie et al. (2010) evaluated commonly used methods for estimating animal space use and found that kernel density estimators remain a useful approach for describing spatial distributions of wildlife locations. The ArcGIS Spatial Analyst Kernel Density estimator tool was used to generate a continuous surface from the camera detection locations. The kernel density function assigns greater influence to locations near each detection, with the influence decreasing with increasing distance from the detection location, resulting in a continuous surface representing the relative intensity of detections.

Because the number of days that individual cameras were operational varied, camera detections were normalized by camera effort before conducting the spatial analysis. Normalized detections were

calculated by dividing the number of detections at each camera by the number of days the camera was active and multiplying the result by 100 (Beirne, 2025). This provided a standardized measure of detection frequency that allowed camera locations with different sampling durations to be compared. The normalized camera detections were used to provide comparative statistics for each species within the report by season. Human utilization was also assessed from the camera data along with the KI species.

The resulting kernel density surfaces were interpreted as an indication of the relative probability of presence or intensity of use within the study area. Kernel density analysis is based on the spatial distribution of observations and does not directly incorporate environmental variables such as habitat characteristics, prey availability, or human disturbance (Franklin, 2010). Consequently, the resulting surfaces describe the spatial distribution of observed wildlife detections rather than habitat suitability or habitat selection. The kernel density results were therefore considered alongside the habitat suitability, RSF, ABMI, and other wildlife-use analyses described below.

2.8.5.2.1.2 GPS-Collar Data

GPS collar data for cougar (2000 to 2003), elk (2008 and 2011) wolf (2005 to 2025), black bear (2019 to 2023), and grizzly bear (2000 to 2025), provided by the Government of Alberta and Parks Canada in 2026, were reviewed to assess wildlife movements and spatial use within the Study Area. Broader Bow Valley data were also reviewed to provide regional context and allow the relative level of wildlife use within the Study Area to be interpreted in relation to wildlife use elsewhere in the Bow Valley.

GPS locations were mapped and connected chronologically to illustrate the general movement paths of individual animals and identify areas of use, movement corridors, and potential connections between habitat patches. The data were also reviewed to determine whether collared individuals entered or moved through the Study Area and Project Area.

The number and distribution of GPS locations were interpreted in consideration of differences in the number of collared individuals, collar deployment periods, and sampling frequency among species and years where information was available and consistent. Consequently, the presence or concentration of GPS locations was not interpreted as a direct measure of habitat preference, habitat quality, or relative abundance.

2.8.5.2.1.3 Backtracking Data

Backtracking data collected in the winter season between 1998 and 2023 was provided by Alberta Parks and was used to assess wildlife use and movement within the Study Area and Project Area. No backtracking surveys were conducted by Alberta Parks between 2010 and 2013 or between 2017 and 2020 due to funding constraints.

Backtracking data provide a complementary measure of wildlife use because they document animal movements directly along the landscape and can identify areas used for movement that may not be captured by remote cameras or GPS collars. Wildlife use was captured by identifying species footprints and characterized using three complementary metrics:

- Frequency of use, based on the number of independent track observations;
- Relative abundance, based on the estimated number of animals associated with each track observation; and
- Movement intensity, based on the cumulative linear distance of backtracked animal movements.

These metrics were used to characterize patterns of wildlife movement and use within the Study Area and Project Area and were considered alongside the utilization distribution and habitat-suitability analyses.

2.8.5.2.1.4 Grizzly Bear Utilization Distribution Model

A grizzly bear utilization distribution model developed by Palm et al. (2025) was used to characterize the spatial distribution and intensity of grizzly bear use within the study area.

Unlike a Resource Selection Function (RSF) model, which estimates relative habitat use based on relationships between animal locations and environmental characteristics, a utilization distribution model describes the spatial distribution of observed animal locations. The model therefore provides an indication of areas that were used more frequently by grizzly bears represented in the underlying dataset.

The Palm et al. (2025) model was used to assess the relative intensity of grizzly bear use within the Study Area and Project Area. Areas of higher utilization were interpreted as areas of relatively greater observed use, rather than as areas of higher habitat quality.

The grizzly bear utilization distribution results were considered together with remote-camera detections, GPS-collar data, backtracking observations, and the Cascade habitat suitability assessment to provide a comprehensive assessment of grizzly bear use and habitat within the Study Area.

2.8.5.2.2 Habitat Suitability and Predicted Wildlife Use

Habitat suitability and predicted wildlife use were assessed using the best available species-specific spatial models. Four modelling approaches were used:

- ABMI predictive relative abundance models;
- Published resource selection function (RSF) models;
- Published utilization distribution models; and
- Cascade-developed habitat suitability models.

The applicability of each approach depended on the species and availability of suitable data and published models.

These approaches measure different ecological characteristics and should not be interpreted interchangeably. ABMI models provide predictions of relative abundance, RSFs estimate relative predicted habitat use, utilization distributions describe the spatial distribution and intensity of observed animal locations, and Cascade models identify habitat that meets predefined ecological criteria.

2.8.5.2.2.1 ABMI Predictive Relative Abundance Models

ABMI predictive relative abundance models were reviewed for all KI species for which models were available. These models provide continuous, species-specific predictions of relative abundance across the landscape.

Because each ABMI model is developed and scaled independently, predicted relative abundance values are not directly comparable among species. Instead, the values indicate relative differences in predicted abundance within each species-specific model.

Given the relatively coarse spatial resolution of the ABMI models and the availability of more detailed species-specific models for some KI species, the ABMI predictive relative abundance models were used to characterize habitat suitability for lynx and wolf. These models were considered appropriate for these species because suitable species-specific habitat models were not available at a comparable spatial scale.

For interpretation and mapping, continuous ABMI predictions were independently classified for each species using the Jenks Natural Breaks method within the Study Area. Breaks were calculated using non-zero predicted values only. Cells with predicted values of zero were assigned to a separate zero-value class and excluded from the calculation of the natural breaks.

For this assessment, the resulting classes were interpreted as:

- Low relative abundance;
- Moderate relative abundance; and
- High relative abundance.

These categories represent relative predicted abundance within each species-specific model within the Study Area and are not absolute measures of habitat quality or abundance. They should not be directly compared between species.

2.8.5.2.2.2 Resource Selection Function Models

Published RSF models were used where suitable models were available and applicable to the study area and supplied by Alberta Parks.

RSFs characterize the relationship between wildlife locations and environmental or habitat characteristics and provide an estimate of the relative probability of the species to select for that habitat or probability of intensity of habitat use. RSF values therefore represent relative predicted use within the modelled landscape, rather than absolute habitat quality.

Cougar

The Chetkiewicz and Boyce (2009) RSF model was used to characterize the relative distribution of predicted cougar habitat use within the Study Area and Project Area. The model incorporates habitat characteristics associated with cougar habitat selection and provides a continuous measure of relative predicted use.

The model results were used to identify areas of relatively low to high predicted cougar use and to assess the distribution of predicted-use habitat within the Study Area and Project Area.

Bighorn Sheep

The Poole et al. (2016) RSF model was used to characterize relative predicted bighorn sheep habitat use. The continuous RSF predictions were classified into low, moderate, high, and very high predicted-use categories to facilitate comparison between the Study Area and Project Area.

These categories represent increasing predicted use within the Poole et al. (2016) model and are not equivalent to the primary, secondary, and tertiary habitat classes used in the Cascade bighorn sheep habitat suitability model.

The RSF and Cascade models were therefore interpreted as complementary lines of evidence. The RSF identifies areas with relatively greater predicted use based on observed bighorn sheep locations, while the Cascade model identifies areas that contain physical and ecological characteristics considered suitable for lambing and foraging.

Grizzly Bear Habitat Suitability

A habitat states model for the Clearwater Grizzly Bear Population Unit (which includes grizzly bears in the Canmore area, on the north side of the TransCanada Highway) was provided by Scott Nielsen from the University of Alberta (Nielsen, et al., 2006). Edge habitat is also preferred by both sexes (Stewart, et al., 2013).

Sink Habitat

Sink habitat are defined as areas that provide attractive habitat or food resources while also having elevated mortality risk (Nielsen, et al., 2006). Grizzly bears have a higher risk of mortality in areas within 500 m of high-use roads and 200 m of high-use trails (Benn & Herrero, 2002), therefore suitable habitat is considered constrained inside these areas, and non-constrained outside these areas.

2.8.5.2.2.3 Cascade Habitat Suitability Models

Where an appropriate published model was not available, or where a more detailed criteria-based assessment was considered appropriate, habitat suitability models were developed by Cascade using habitat selection criteria identified from peer-reviewed literature.

Cascade-developed predictive habitat suitability models based on publicly available data were used for black bear, elk, and bighorn sheep.

Cascade habitat suitability models characterize habitat based on ecological characteristics considered important for each species. Depending on the species, these characteristics included vegetation communities, ecosites, slope, aspect, elevation, terrain ruggedness, proximity to waterbodies, forage availability, and other species-specific habitat requirements.

Areas where multiple habitat-selection criteria overlap generally represent greater habitat suitability. Similarly, habitats containing seasonally important food resources or other key habitat features were assigned higher suitability were supported by the available literature.

The resulting habitat suitability maps classified habitat into species-specific relative quality classes:

- Primary habitat – highest-quality habitat;
- Secondary habitat – moderate-quality habitat; and
- Tertiary habitat – lower-quality habitat.

The criteria and thresholds used to define these classes are species-specific and reflect the ecological requirements of each species. Consequently, the habitat classes are not intended to be directly comparable among species. Where supported by the available literature, habitat avoidance and human-related risk factors were also incorporated into the models.

These were then used to identify the habitat quality that may be impacted by these constraints.

Wildlife camera data, backtracking and GPS collar data were visually assessed with the Cascade-developed habitat suitability models to ensure a degree of agreement.

GIS spatial data used for the models include ecosite, elevations, roads, streams, wetlands and wildlife habitat in the Canmore corridor was obtained from the Province of Alberta. Interpretations of LiDAR and ortho photographs were used where available for modeling elevation, aspect, slope and terrain ruggedness, along with Cascade field verified ecosites.

Black Bear

Black bear habitat suitability was assessed seasonally based on habitat characteristics associated with important foraging resources.

Spring habitat included south- to southwest-facing aspects, open forests near streams, riparian areas providing herbaceous forage, open herbaceous habitats including shrublands and grasslands, lower-elevation Montane habitats, and anthropogenic foraging areas such as golf courses.

Summer habitat included areas near streams, anthropogenic foraging areas, forest edges, and open forests with less than 50% canopy cover. Ecosites containing *Shepherdia canadensis* were also considered important summer habitat. A 10-m buffer was applied to streams and forest edges.

Fall habitat included forested areas near streams, anthropogenic foraging areas, and forest edges at lower elevations within the Montane region.

Potential mortality-risk factors were also incorporated. The highest source of black bear mortality in Banff National Park is vehicle collision on the Trans-Canada Highway, followed by management-related mortality (Hebblewhite, Percy, & Serrouya, 2003). Because the Study Area is not expected to be influenced by the Trans-Canada Highway, highway-related mortality risk was not incorporated into the model. A 100-m buffer around development was instead applied to identify habitat potentially subject to increased human-related mortality risk.

Habitat within the 100-m development buffer was classified as constrained or sink habitat according to the underlying habitat-quality class.

Elk

Elk habitat suitability was primarily associated with grassland and anthropogenic foraging areas, including golf courses, below 1,500 m elevation and on slopes less than 25° (Edwards B. , 2013).

Habitat suitability was reduced in areas associated with lower habitat use or increased human-related risk, including white spruce, high road density (Edwards B. , 2013). These factors indicate habitat that will be avoided by elk, not necessarily due to increases in risk of mortality, but more a preference. Therefore, these habitats should not be considered sink habitat. As defined in Edwards (2013) this is habitat listed as selected against compared to preferred habitat as a result of the model, correlation to density of roads which could be an indicator for population build up. Elk selecting habitat near urban development can experience a decrease in predation risk. However, Elk can experience an increase in parasite resulting in a decrease of fitness. As the proximity to urban development can have both a negative and positive impact on elk, it was not considered a sink habitat (Edwards B. , 2013).

Habitat was classified into primary, secondary, and tertiary habitat based on the combination of habitat selection and avoidance criteria as followed (Edwards B. , 2013) and L. Homstol (pers. comms. 2018):

- Primary habitat: Forb/grazing-type landcover (grasslands) with less than 25% slope excluding 100m buffer from Highway 1 and high-density road network, White Spruce and terrain above 1500m;
- Secondary habitat: Forest and Shrubland (excluding white spruce) with less than 50% canopy cover and less than 25% slope, excluding terrain above 1500 m, anthropogenic foraging (golf course) and terrain above 1500 m; and
- Tertiary habitat: Forest (excluding white spruce) greater than 50% canopy cover of any slope angle or Forest (excluding white spruce) with less than 50% canopy cover and greater than 25% slope.

Bighorn Sheep

Bighorn sheep habitat suitability was assessed primarily in relation to lambing and foraging habitat. Four key habitat characteristics were used to identify potential lambing habitat based on Lee et al. (2019):

- steep slopes between 40° and 85°;
- surface ruggedness;
- south-, southwest-, and southeast-facing aspects; and
- non-vegetated alpine habitat.

Terrain ruggedness was assessed using the Vector Ruggedness Measure (VRM) tool (Sappington, Longshore, & Thompson, 2007). VRM produces a dimensionless measure of terrain ruggedness ranging from 0, representing flat terrain, to 1, representing the most rugged terrain.

Lambing habitat located close to suitable foraging habitat was considered higher-value habitat (Lee, Ford, Sanderson, & Clevenger, 2019). Foraging habitat was defined as herbaceous/grassland habitat, low-shrub habitat, or treed habitat with less than 50% canopy cover occurring within 300 m of escape terrain. Escape terrain was defined as slopes between 40° and 85°.

Lambing habitat was classified as primary, secondary, or tertiary based on the combination of slope, terrain ruggedness, aspect, and land-cover characteristics.

The Poole *et al.* (2016) RSF model (provided by Alberta Parks) was also used to characterize relative predicted bighorn sheep habitat selection. The RSF and Cascade habitat suitability models were interpreted independently because they represent different measures of habitat value. High predicted-use habitat in the RSF does not necessarily correspond to primary lambing or foraging habitat in the Cascade model, and areas identified as suitable lambing or foraging habitat by the Cascade model are not necessarily areas of highest predicted use in the RSF.

2.8.5.2.3 Habitat Classification and Assessment of Habitat Loss

For Cascade-developed habitat suitability models, the area of habitat within each habitat-quality class was calculated for the Study Area and Project Area.

These calculations were used to characterize the distribution and availability of suitable predicted habitat under existing conditions. Where appropriate, the area of habitat within the Project Area was compared with the corresponding habitat available within the broader Study Area to determine whether the Project Area contained a disproportionate amount of higher-quality habitat.

For impact assessment, the area of habitat expected to remain available following development was compared with existing habitat availability to quantify potential direct habitat loss. This analysis was supplemented by consideration of habitat fragmentation, displacement, human-related disturbance, and changes in habitat function where relevant. Accordingly, changes in the area of modeled habitat were not assumed to represent equivalent changes in ecological habitat value, as the functional consequences of habitat loss and disturbance may vary depending on habitat quality, species behaviour, connectivity, and the surrounding landscape.

For published RSF and ABMI models, habitat classes were interpreted as relative predicted use or relative predicted abundance, respectively, rather than as direct measures of habitat quality. Consequently, changes in the area of these classes were not automatically equated with equivalent changes in ecological habitat value.

2.8.5.3 Wildlife Corridors and Patches

The current state of the LSWC and USWC was compared to the wildlife corridor and habitat patch guidelines for the Bow Valley (Bow Corridor Ecosystem Advisory Group, 2012) to determine the baseline functionality of the corridor.

Corridor and patch functionality assessment was based on the physical presence of the new residential development and the potential increased human use anticipated from the development which might affect the use of the USWC and the LSWC.

2.8.5.4 Human Wildlife Conflict Data

Human–wildlife conflict data collected between 2000 and 2025 were provided by Alberta Environment and Protected Areas (AEPA) and Alberta Parks for the Study Area. Records from 2000 to 2018 were collected by Jay Honeyman, former Human–Wildlife Conflict Biologist, Alberta Parks through a dedicated data collection and interviewing project, whereas records from 2018 to 2025 were obtained from Alberta Parks. The Alberta Parks dataset is based on self-reported observations to a call line. Because the two datasets were collected using different methodologies, they are not directly comparable and were analyzed separately to minimize potential reporting bias.

For records collected after 2018, incidents were classified as either human–wildlife conflicts or human–bear interactions. Human–wildlife conflicts include incidents where wildlife poses a threat to human safety or property, obtain anthropogenic food, damage property, kill or attempt to kill livestock or pets, exhibit aggressive or predatory behaviour, or are intentionally or unintentionally injured or killed by people (excluding legal harvest). Human–wildlife interactions include any occurrence in which a person and an animal are aware, or are reasonably assumed to be aware, of one another in space and/or time. Interactions may have positive, neutral, or negative outcomes; only those resulting in negative outcomes are classified as human–wildlife conflicts. These definitions follow the terminology used by the proposed by International Bear Association as proposed by Lackey et al. (2018) and the modified definitions of Hopkins et al. (2010) presented in the recent review by Lackey et al. (2025).

2.8.5.5 Wildlife Species of Concern

An online search of government databases was conducted to identify listed species with the potential to occur within the Canmore corridor. The Alberta Conservation Information Management System (ACIMS) online maps were reviewed for occurrences of Alberta's species and ecological communities (Elements). The list of species of concern included those listed provincially under the General Status of Alberta Wild Species 2020 as "At Risk," "May Be at Risk," and "Sensitive" (AEP 2020); those assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as "Endangered," "Threatened," or "Special Concern"; those listed on Schedule 1 of the federal Species at Risk Act (SARA); and those listed on Schedule 6 of the Alberta Wildlife Regulation.

This initial search encompassed all species with the potential to occur within the Canmore environmental corridor and its surroundings. To refine this list and assess the likelihood of species presence within the Study Area, a detailed literature review was subsequently conducted for each species identified, focusing on habitat requirements, life history, behaviour, and ecology, in order to determine which species' habitat associations were consistent with conditions present within the Study Area. Species were retained on the final list of concern only where suitable habitat, as characterized by the literature review, was confirmed to occur within or immediately adjacent to the Study Area.

2.9 Terrain and Soils

A review of existing literature and mapping data was conducted to collect information on the landforms, geology, and soils of the Study Area. Information obtained from these sources include details of the Study Area's topography, including slopes, aspect, elevation range, significant landforms, surface and bedrock geology, and soil types.

Mapping data used in this assessment included aerial photos, elevation contours, surficial geology, bedrock geology, significant landforms, and soil types (Alberta Environment and Parks, 2017; GIS4Ag, 2017; Agriculture and Agri-Food Canada, 2016; Jevons, 2017).

Reviewed literature sources included, the Bow Corridor Local Integrated Resource Plan (Alberta Energy/Forestry, Lands and Wildlife, 1992), Bow Valley Protected Areas Management Plan (Alberta Community Development Parks & Protected Area (ACD), 2002), the Detailed Soil Survey of the Canmore Corridor Area (Scheelar, 1976), and the Approved Silvertip Area Structure Plan (Stone Creek Resorts Inc., 2007).

Soils were assessed in the field as part of the survey plots used to describe ecosites within the Study Area.

3 Environmental Assessment

3.1 Air Quality and Noise

Potential project related effects on air quality and noise are assessed separately for the construction and operational phases. The assessment considers the nature, magnitude, extent, duration, and frequency of potential effects.

3.1.1 Baseline Information

Air quality and noise are assessed to characterize existing environmental conditions and inform the evaluation of potential project-related effects during construction and operation. The assessment considers ambient air quality, noise-sensitive receptors, and existing sources of air emissions and dust, along with noise and vibration.

3.1.1.1 Air Quality

Baseline air quality conditions within the Project Area are generally considered good and are typically reflected by Air Quality Health Index (AQHI) ratings within the low-risk category (Government of Alberta, n.d.; Government of Alberta, 2025). Existing air quality and acoustic conditions are influenced primarily by regional transportation, residential development, and nearby industrial operations

Baseline air quality conditions for the Project were characterized using ambient monitoring data collected at the Lafarge Exshaw (Lagoon) Monitoring Station (Government of Alberta, 2025), the nearest available monitoring station providing measurements of NO_2 and fine particulate matter ($PM_{2.5}$). These parameters were selected as key indicators of air quality because they are commonly associated with construction activities, equipment operation, and vehicular emissions.

Measured concentrations of criteria air contaminants (CACs) were compared with the AAAQO (Government of Alberta, 2024) and, where applicable, the Canadian Council of Ministers of the Environment (CCME) Canadian Ambient Air Quality Standards (CCME, 2025). Results are summarized in Table 4

Table 4: Baseline Air Quality Conditions at the Lafarge Exshaw (Lagoon) Monitoring Station.

Substance	Averaging Period	Ambient Monitoring (µg/m3)	AAAQO	
			µg/m^3	Guideline
NO_2	1-hour	77.516	300	AAAQO
NO_2	Annual	7.3	45	AAAQO
$PM_{2.5}$	24-hour	58.23	29	AAAQO
$PM_{2.5}$	24-hour (98th percentile)	26.60	27	CCME

Baseline monitoring data indicate that NO_2 concentrations were below the applicable AAAQO for both the 1-hour and annual averaging periods. The maximum measured 24-hour $PM_{2.5}$ concentrations exceeded the applicable AAAQO. However, CCME guidance recommends evaluating $PM_{2.5}$ using the 98th percentile of the daily 24-hour concentrations when assessing compliance with ambient air quality standards (CCME, 2025). Using this approach, $PM_{2.5}$ concentrations were below the applicable Alberta objectives and CCME standards, indicating that regional ambient air quality conditions are generally consistent with provincial and national air quality expectations.

The Lafarge Monitoring Station is located adjacent to the Lafarge Exshaw Cement Plant and associated limestone quarry operations. Consequently, measured particulate matter concentrations may reflect the influence of nearby industrial activities in addition to regional background conditions. As a result, $PM_{2.5}$ concentrations recorded at the monitoring station may be conservative relative to ambient conditions within the Study Area.

3.1.1.2 Noise

Baseline acoustic conditions were characterized using the noise assessment prepared by McElhanney Ltd. and provided in Appendix A-1B-1. This assessment uses the noise buffer established by McElhanney (as shown in Appendix A-4) as the geographic Silvertip area for its acoustic review.

Ambient sound levels for the Silvertip area were collected by McElhanney personnel on April 20, 2017, at six different points of interest. Location 1, adjacent to the proposed base; Location 2, beside the proposed gondola alignment where it passes over the golf course; and Locations 3 – 6, at residential areas closest to the proposed gondola alignment. Results are presented in Table 5, with the full acoustic report provided in Appendix A-1.

Table 5: Ambient Acoustic Sound Levels at Silvertip Resort

Location	Position	Noise Level (dB)				Comments
		dBA (dB)		dBC (dB)		
		Min	Max	Min	Max	
1	Adjacent Highway	63.5	79.7	78.7	86.8	Highway noise very distinct due to proximity to TCH
2	Golf Course	45.9	48.3	53.7	57.7	Located in a slight depression, surrounded by trees
3	Little Ravine Road	46.9	51.1	51.0	57.7	Faint background sound from a gas regulator at an adjacent home
4	Rear of Little Ravine Road	46.2	49.3	53.1	57.8	Open to golf course; trees between test location and highway
5	Silvertip Trail	45.2	46.9	52.9	55.8	Test taken at northwest end of Silvertip trail, adjacent to staff accommodation
6	Stonecreek Road	44.8	47.9	49.8	53.1	Taken at northwest end of the road

The measured results indicate that highway traffic was the dominant noise source at Location 1. At the other measurement locations, A-weighted sound levels (dBA) ranged from 44.8 to 51.1 dBA, and C-weighted sound levels (dBC) ranged from 49.8 to 57.8 dBC showing relatively consistent sound levels in residential areas. The difference in measured sound levels is consistent with the varying distance, terrain, and vegetative screening between the Trans-Canada Highway and the residential and golf-course locations.

3.1.2 Impact Assessment

3.1.2.1 Air Quality

The Project should have little effect on the air quality of the area and effects likely to be concentrated in the construction phase. Emissions from the project are considered negligible relative to the emissions from highway vehicles and heavy equipment operation in the region. The gondola will be electrically powered and is expected to generate very low emissions during operation.

3.1.2.1.1 Construction

Construction activities have the potential to temporarily affect local air quality through emissions associated with heavy equipment operation, vehicle use, helicopter-supported construction activities, and fugitive dust generated by soil disturbance and material handling. These effects are expected to be localized to active construction areas within the Project Area and are limited to the duration of construction.

The air quality assessment evaluated potential changes in CAC emissions as a result of project activities. Emissions of nitrogen oxides (NO_x) and $PM_{2.5}$ were estimated for each major equipment type anticipated to be used during project construction. Equipment power ratings were obtained from manufacturer specifications (John Deere, 2018; Ford, 2018), and total equipment energy use (kWh) was calculated based on rated engine power and estimated operating duration.

For a planning-level assessment, construction emissions were estimated using a representative 12-month period. The assessment assumes that each equipment unit identified in Table 6 operates for 8 hours per day, 5 days per week, for a total of 240 working days, including an allowance of 10 days of equipment maintenance. These assumptions are intended to provide a conservative estimate of potential construction related CAC emissions. Following detailed design and confirmation of the construction schedule, the emissions calculations should be updated to reflect actual construction phasing, duration, and equipment requirements.

Table 6: Equipment unit type, duration of use, and power rating during construction

Type of Construction Unit	Number of Units	Hrs/day	Days	Rated (kW)	Total kW hrs
JD 350 Excavator	3	8	240	202	1163520
JD 60G Excavator	3	8	240	40	230400
JD 850K Crawler Dozer	4	8	240	152	1167360
Ford F150 Pickup Truck	4	8	240	242	1858560
JD 370 E Articulated Dump Truck	3	8	240	315	1814400
Bell 407 Helicopter	1	6	20	567	68,040

Emission estimates were developed using applicable emission factors for non-road diesel engines. Emission factors were obtained from the United States Environmental Protection Agency (U.S. EPA) Nonroad Compression-Ignition Engine Exhaust Emission Standards and represent current Tier 4 emission standards for non-road diesel equipment (U.S. EPA, 2016). Canada regulates off-road compression-ignition engine emissions under the *Canadian Environmental Protection Act*, through standards generally aligned with the U.S. EPA tier requirements (ECCC, 2025). Total emissions were estimated by multiplying equipment-specific emission factors by corresponding calculated equipment operating hours and power ratings. Estimated CAC emissions from construction equipment are summarized in Table 7.

Table 7: Total estimated air emissions for equipment used during the construction phase

Type of Construction Unit	Total kW hours	Emission Factors (g/kW-hr)		Emissions(kg)[3]	
		NO_x	$PM_{2.5}$	NO_x	$PM_{2.5}$
JD 350 Excavator	1163520	0.4	0.02	465.408	23.2704
JD 60G Excavator	230400	0.4	0.02	92.16	4.608
JD 850K Crawler Dozer	1167360	0.4	0.02	466.944	23.3472
F150 Pickup Truck	1858560	0.4	0.02	743.424	37.1712
JD 370 E Articulated Dump Truck	1814400	0.4	0.02	725.76	36.288
Total Emissions				2494	125

Helicopter-supported construction activities are expected to occur only intermittently during installation of the upper station and tower infrastructure. Emissions associated with helicopter use were estimated separately using published emissions factors for Bell 407 aircraft from the Federal Office of Civil Aviation Switzerland (FOCA, 2015). Table 8 summarizes estimated total emissions with hours of operation calculated from Table 6.

Table 8: Total estimated air emissions from a Bell 407 helicopter during the construction phase

Total Hours of operation	One hour No_x (kg)	One hour particulate matter non-volatile (g)	Emissions (kg)[3]	
			No_x	particulate matter -non volatile
120	1.1	32	132	3.84

*No emissions standards for helicopters in US EPA, FOCA Switzerland source used.

Although construction activities will generate emissions of NO_x and $PM_{2.5}$, the predicted emissions are expected to be temporary, localized, and dispersed rapidly within the mountain environment. The Project does not include major industrial emission sources, continuous combustion processes, blasting programs of regional significance, or extended heavy-haul transportation activities. Site disturbance within the Bow Valley Wildland Provincial Park boundaries is expected to be minimal, involving primarily small excavating machinery with limited emissions. Earth moving and site preparation for the base and mid stations will be balanced, with machinery limited to excavators with rock hammers, dump trucks, and construction cranes, if required. Fugitive dust will be the key indicator for these activities. The Upper Station will be serviced by a temporary aerial construction crane, with small equipment flown or transported via construction ropeway to the site for preparation. Rock hammers will be used for any excavation in rock. Permanent tower foundations will be installed using hand tools, with concrete flown to tower locations; towers will be flown into place and bolted to foundations by hand. All disturbed soils will be revegetated following construction.

Fugitive dust and vibration effects generated during excavation, grading, material handling, vehicle movement, and helicopter-supported construction activities is anticipated to represent the primary air quality consideration during construction. Dust effects are expected to be localized, temporary, and readily managed through implementation of standard construction best management practices, including within the CEMP, dust suppression and progressive reclamation.

Construction emissions are therefore expected to represent a minor contribution to ambient air quality conditions within the Study Area.

A screening-level air quality model was not undertaken. Based on the limited scale and duration of construction activities, conservative emission estimates, relatively small construction footprint, and absence of significant long-term emission sources, the potential for exceedances of AAAQO is considered low. Accordingly, a qualitative assessment was determined to provide an appropriate level of analysis for the project.

3.1.2.1.2 Operations

The gondola system will be electrically powered and will not require routine combustion-based equipment during normal operations. Operational activities are therefore not expected to generate measurable emissions of nitrogen oxides, fine particulate matter, or other criteria air contaminants.

Routine maintenance activities may require occasional use of vehicles and small equipment; however, these activities will be infrequent, localized, and short-term. As a result, operational effects on ambient air quality are expected to be negligible.

No significant adverse effects on air quality are anticipated during project operations.

3.1.2.2 Noise Impact Assessment

Noise effects were assessed for both the construction and operational phases of the Project. The assessment considered potential effects on nearby residences, recreational users, and wildlife within the Silvertip area. Existing ambient noise conditions measured sound levels from comparable gondola facilities, and project-specific construction activities were used to evaluate potential changes in the acoustic environment.

Project-related noise effects are anticipated to occur primarily during construction activities. Operational noise generated by the gondola system is expected to be low and localized.

3.1.2.2.1 Construction

Construction activities have the potential to increase ambient noise levels within the Silvertip area. Noise-generating activities include:

- Operation of excavators, dozers, dump trucks, cranes, and other construction equipment;
- Helicopter transport of equipment, materials, and personnel;
- Drilling of rock anchors and foundation preparation;
- Use of rock hammers or controlled blasting, if required; and
- Vehicle traffic associated with construction access.

For a planning-level assessment, construction emissions were estimated using a representative 12-month period, with the type and intensity of activities varying throughout the construction period.

Construction noise will be temporary, intermittent, and largely confined to active work areas. The highest noise levels are expected to occur during helicopter-supported construction activities (installation and removal of temporary towers for construction crane; installation of permanent towers for the gondola; transport of equipment and components for top station) and localized rock excavation (rock drilling, hammering or blasting for top station installation and tower anchors). Given the limited duration of these activities, noise effects are expected to diminish rapidly upon completion of construction.

Potential effects on nearby residents are expected to be minor due to separation distances between construction activities and residential receptors. Temporary behavioural responses from wildlife may

occur in proximity to active construction areas, particularly during helicopter operations; however, these effects are expected to be localized and short-term.

Helicopters will be used in the initial construction period as a means of flying materials, equipment and personnel to the construction crane tower sites. Once the crane is installed, most of the uphill transport will be managed by crane until it is time to disassemble the crane. In general, negative impacts associated with helicopter activity are associated with flight altitude, noise output, speed and approach pattern (McKenchie & Gladwin, 1994). Imposing minimum distances on helicopter activity from observed sensitive wildlife will help mitigate negative impacts, this is further discussed in section 3.8.2.1.3. The establishment of consistent approach and landing paths that avoid sensitive areas will make helicopter activity more predictable and facilitate wildlife habituation to the pattern. Table 9 summarizes the effect of the noise in the construction case.

Table 9: Impact Determination – Construction Noise

Impact Attribute	*Attribute*	Rationale for Determination
Nature:	*Sporadic*	Noise levels will vary according to construction activities
Duration:	*Short-term*	Effects are limited to the construction period.
Magnitude:	*Moderate*	Short-term peak noise levels associated with helicopter operations and rock excavation activities may substantially exceed existing ambient conditions in localized areas
Direction:	*Negative*	Noise levels will temporarily increase above baseline conditions
Spatial:	*Local*	Effects will be limited to the Project Area and immediately surrounding lands
Reversibility:	*Reversible*	Effects will cease upon completion of construction
Likelihood:	*High*	Construction activities will generate noise and temporary increases above baseline conditions are expected. Mitigation measures can reduce noise impacts.

3.1.2.2.2 Operation

Noise generated during operation of the Project is expected to originate primarily from the drive and return terminals, moving haul rope assemblies, and tower sheave assemblies. Manufacturer provided predicted noise levels indicates that operational sound levels are generally highest at terminal facilities (70 – 80 dBs), lower at towers (30 – 40 dBs) and decrease substantially with distance from source.

The assessment of operational noise was informed primarily by McElhanney Ltd (2017) for the Grizzly Express Gondola in Lake Louise (Appendix A-2). The McElhanney study included field measurements at representative locations throughout the gondola alignment and provided the principal basis for evaluating anticipated operational noise levels associated with a gondola system. Field measurements collected at the Sea-to-Sky Gondola (Cascade, 2017), provided in Appendix A-3, were provided for a comparative gondola assessment to verify the general noise characteristics identified by McElhanney at the Grizzly Express Gondola. Results from both studies indicate that operational noise was highest at terminal locations and decreased rapidly with distance from the source. Tower locations generally produced noise levels comparable to other common recreational and resort activities.

Additional consideration was given to the Stone Creek Resort's Silvertip Gondola Noise Technical Report, which summarizes the findings of McElhanney's Baseline Assessment (Appendix A-1) and of the Grizzly Express Gondola noise assessment (Appendix A-2), comparing projected operational noise levels to existing baseline conditions and nearby residential receptors. Consistent with the conclusions of

McElhanney, the report concluded that operational noise effects are expected to be localized and diminish substantially with distance from terminal infrastructure.

Table 10 summarizes sound level measurements recorded at the Grizzly Express Gondola and Sea-to-Sky Gondola. Although measured sound levels vary between facilities due to differences in equipment, site conditions, measurement locations, and ambient environmental noise, both studies demonstrate similar overall trends, with the highest sound levels occurring at terminal facilities and substantially lower sound levels occurring along the gondola alignment.

Table 10 Summary of Recorded Acoustic Sound Measurements at Comparable Gondola Facilities

Location	Sea-to-Sky Gondola Average Noise level (dB)	Grizzly Express Gondola Average Noise level (dB)	Rationale for Determination
Ambient Locations	*55*	77.3	Representative background conditions
Drive station	*62.3*	66.3	Highest operational noise source
Support Towers	*55.8*	54.4	Noise decreases substantially with distance from terminals
Hold Down Tower	*42.4*	66.5	Noise decreases substantially with distance from terminals
Return station	*59.8*	77.2	Elevated near terminal infrastructure

Anthropogenic sources of noise can be considered ambient when the noise is less than 50 dB and relatively uniform in sound (U.S. Fish and Widlife Service, 2006). Examples of noise levels include (U.S. Fish and Widlife Service, 2006):

- Natural Ambient (usually < 50 dB);
- Very Low (50-60 dB): forest habitats next to rapids/high winds and may include quiet human activities (conversation, hiking trails, picnic areas);
- Low (61-70 dB): small power tools, light vehicle traffic on paved roads;
- Moderate (71-80 dB): small chain saws, portable generators, electric hand tools;
- High (81-90 dB): medium and large construction equipment including grazers, dozers, dump trucks, drill rigs, backhoes, front end loaders, diesel engines, power saws, large chainsaws, large gasoline-powered tools;
- Very High (91-100 dB): jackhammers, motorcycles, compression brakes, pile drivers, chipping machines, tree felling activities, explosives;
- Extreme (101-110 dB): low-level helicopters, unmuffled explosives;
- Sounds over 110 dB: low-level jets, double rotor logging helicopters.

Gondola operation is typically quiet, likely falling into the very low noise level category listed above and is therefore unlikely to have any significant long-term effects on wildlife as wildlife will likely habituate to low-level meaningless noise (Bowles, 1996; Weisenberger, Krausman, Wallace, De Young, & Maughan, 1996), especially if predictable timetables are followed that facilitate learning (Francis & Barber, 2013).

The Project will operate using electrically powered equipment and is not expected to generate the types of continuous high-intensity noise typically associated with industrial facilities, transportation corridors, or resource extraction activities. While the gondola may be audible from some locations within the Silvertip area, operational noise is expected to be localized near terminal infrastructure and portions of the

alignment. As summarized in the Stone Creek Resorts Technical Report (Appendix A-4), measurements from the comparable Grizzly Express Gondola in Lake Louise indicated sound levels of approximately 43 to 47 dBA along most portions of the alignment, which is comparable to existing residential background sound levels. The report also noted that sound levels decrease rapidly with distance from gondola infrastructure, with existing ambient noise sources becoming dominant at greater distances. Due to the relatively low noise levels, predictable operational schedule, and continuous nature of the sound source, wildlife and recreational users are expected to adapt or habituate to the presence of operational noise over the time. Table 11 summarizes the effect of the noise during operation.

Table 11: Impact Determination – Operational Noise

Impact	*Attribute*	Rationale for Determination
Nature:	*Continuous*	Noise will occur while the gondola is operating
Duration:	*Long-term*	Effects will continue throughout Project operations
Magnitude:	*Low*	Noise levels are expected to remain low and localized
Direction:	*Adverse*	Increased noise levels in areas closest to the base, mid, and upper stations.
Spatial	*Local*	Impacts effects are largely confined to the project corridor
Reversibility:	*Reversible*	Effects will cease if operations cease
Likelihood:	*Moderate*	Operational noise will be generated by the gondola system
Residual Significance	*Not significant*	Noise levels are expected to remain low and localized

Noise is expected to be continuous while the gondola is in operation, and this noise will last for the operation life of the gondola. Noise levels are expected to have a low negative effect. The extent of the effect of the operational noise will be limited to local environment. No significant adverse effects on nearby residential receptors are anticipated.

3.2 Hydrogeology

This section provides an overview of the existing geologic and hydrogeologic setting for the Project.

3.2.1 Baseline Information

The Alberta Geological Survey has defined ten provincial-scale hydrogeological regions. The Project is located in the Region 1: Mountains and Foothills (Alberta Geological Survey, 2026). The land elevation of the Project ranges from approximately 1340 m to 2400 m.

The bedrock physiography of the Study Area includes a bedrock valley (<1600 m) and Highlands (>1600 m) (Alberta Geological Survey, 2026). Sediment Thickness: within the Study Area ranges from 0 m in the upper elevation to 25 m at lower elevations near the valley floor (Alberta Geological Survey, 2026). The surface morphology is rugged which is defined as high relief, uneven land surface typically with widespread bedrock outcrops and few trees or plants (Alberta Geological Survey, 2026).

There are three major bedrock units within the hydrogeology of the Study Area that sub crop along a northwest-southeast orientation, based on mapping compiled by from the (Alberta Geological Survey, 2026):

Unit 1 - Fernie Formation and Kootenay Group

The Fernie Formation and Kootenay Group covers the majority of the valley bottom and has a lithology that is dominated by shale, siltstone, sandstone, and limestone.

Unit 2 - Pennsylvanian, Permian, and Triassic strata

The Pennsylvanian, Permian, and Triassic strata covers the Montane areas of the Study Area and has a lithology that is dominated by siltstone, limestone, sandstone, shale, and chert.

Unit 3 - Mississippian strata

The Mississippian strata Subalpine and Alpine areas of the Study Area and has a lithology that is dominated by limestone, shale, dolomite, and siltstone.

There are three surficial geological genetic groups within the hydrogeology Study Area, based on mapping compiled by from the (Alberta Geological Survey, 2026):

Genetic group 1: Moraine

The Moraine group is composed of diamicton (till) deposited directly by glacial ice. The till is a mixture of clay, silt, sand and minor pebbles, cobbles and boulders. Locally, this unit may contain blocks of bedrock, pre-existing stratified sediment and till, and/or lenses of glaciolacustrine and/or glaciofluvial sediment.

Genetic group 2: Colluvial Deposits

The Colluvial deposits group is composed of sediments that have reached their present position as a result of direct, gravity-induced movement; commonly occurs as slope and slump deposits confined to valley sides and floors. This unit may contain pre-existing bedrock, till, glaciolacustrine, glaciofluvial and/or eolian sediments, generally poorly sorted. In places, this unit includes a significant component of fluvial deposits, as these two units are inseparable at 1 million scale.

Genetic group 3: Bedrock

Bedrock in the Study Area is confined to the alpine. Bedrock in the mountains consist primarily of clastic rocks, and limestone and dolostone

The base of the Silvertip Resort, subdivision and Project are situated on the Benchland Aquifers (Toop & de la Cruz, Hydrogeology of the Canmore Corridor and Northwestern Kananaskis Country, Alberta, 2002). The benchlands are described as poorly sorted terrace deposits of sand, gravel and clay that flank the western end of the Bow Valley near Canmore (Toop & de la Cruz, Hydrogeology of the Canmore Corridor and Northwestern Kananaskis Country, Alberta, 2002). The south-facing benchlands, which encompass the Silvertip lands, consist of coarse, permeable material causing lowered water table in many locations. In contrast the north-facing benchlands consist of less permeable material which allows for more water retention, however, still result in poor yields (Toop & de la Cruz, Hydrogeology of the Canmore Corridor and Northwestern Kananaskis Country, Alberta, 2002).

Water Well Drilling Reports were produced for eight test wells, and one spring spread over four locations are present within the Study Area (Map 4). A summary of the Water Well Drilling Reports are presented in Table 12 below.

Table 12: Water Wells Sites within the Study Area

Report Year	Well ID	Well Depth (ft)	Well Depth (m)	Water Bearing	Static Water Level (ft)	Static Water Level (m)
1994	374434	280	85.34	No	-	-
1969	405104	82	24.99	No	49	14.94

Report Year	Well ID	Well Depth (ft)	Well Depth (m)	Water Bearing	Static Water Level (ft)	Static Water Level (m)
1994	406852,	75	22.86	Gravel & Boulders 39 ft Sand & Gravel 75 ft	-	-
1995	406854	70	21.34	No	-	-
1964	405872	46	14.02	No	34 (1961/10/13) 37 (1965/12/23)	10.36 11.28
1983	405873	-(SPRING)	-		-	-
1983	405874	225	68.58	No	76	23.16
1983	405875	58	17.68	No	-	-
2008	1476229	126	38.40	Gravel 100 ft	46.67	14.22

(Government of Alberta, 2026)

A test well within the Lower Silvertip Wildlife Corridor (LSWC) located downslope and southeast of the Silvertip Resort and the Study Area was drilled on behalf of Stone Creek Properties to 280 ft (85.3 m) (McAllister Holding Ltd., 1994). Lithology is described in Table 13 below.

Table 13: Silvertip Resort Test Well Lithology:

Depth from Ground Level (ft)	Depth from Ground Level (m)	Lithology Description
3.00	0.9144	Topsoil
7.00	2.1336	Brown Sand
133.00	40.5384	Sand & Gravel
162.00	49.3776	Gray Shale
163.00	49.6824	Gray Siltstone
189.00	57.6072	Gray Shale
194.00	59.1312	Gray Siltstone
280.00	85.344	Gray Fine Grained Sandstone

Bedrock consisting of shale, siltstone and sandstone was encountered at 162 ft (49.4 m), with no water reported (McAllister Holding Ltd., 1994).

Three test wells are located due south of the Palliser Base Area (Map 4). Well depth ranged from 46 ft (14.02 m) to 225 ft (68.58 m) (M&M Drilling Co. Ltd., 1983; Unknown Driller, 1964; M&M Drilling Co. Ltd., 1983). The lithology is summarized in Table 13 below.

Table 14: Summary of Test Well Lithology South of Palliser Base Area:

Depth from Ground Level (ft)	Depth from Ground Level (m)	Lithology Description
35.00	10.67	Silt and Rocks
46.00	14.02	Sand and Gravel
58.00	17.68	Gravel
74.00	22.56	Gravel
225.00	68.58	Black Hard Shale

Bedrock consisting of shale, at 225 ft (68.58 m), with the Static Water Level reported between 34 ft (10.36 m) and 76 ft (23.16 m).

3.2.2 Impact Assessment

There are no components or activities of Project anticipated to affect or have the potential to affect groundwater resources quantity or quality at any stage of the project. Water wells are not anticipated to be drilled or used at any stage of the project. Water used for the project will be carried in and out by a piped in and out and/or vehicle (gondola or helicopter) in case of emergency.

There are no wetlands or seepage areas in the Study Area. Due to the elevation of the project ranging from 1340 m to 2400 m, and approximately 30 m above the valley floor aquifers, the project should not affect the Town of Canmore's potable water supply (Town of Canmore, 2026; Sabatini Geotechnical Inc., 1999).

3.3 Hydrology

Project activities have minimal potential to affect surface water in the Study Area during all phases of the Project. The proposed Lower Alignment of the gondola spans approximately 970 m and occupies 0.98 ha of Provincial land. The Lower Alignment crosses the Stoneworks Creek avulsion channel approximately 300 meters from the Highway 1 corridor where the creek channel terminates. The Upper Alignment would extend for approximately 2,100 m to the proposed Summit Area (Upper Station) location crossing Stone Creek at the tree line approximately 1,400m upstream of a constructed pond on the Silvertip golf course. During high-water events surface water in Stone Creek discharges into this 0.3 ha pond and does not reemerge downstream.

Stoneworks Creek and Stone Creek were dry at the time of field surveys at the end of July 2026. Both upper Stoneworks Creek and Stone Creek are watersheds at high altitude where most precipitation generates flow as surface runoff directed toward surface water features or an interflow in the uppermost alluvium or weathered bedrock. A portion of this precipitation may infiltrate into the deeper bedrock through joints and fractures and under the alluvial fans at the base of the slope creating sub-surface flows. The upper watersheds can be described as recharge areas for downstream shallow aquifers. This constitutes surface-groundwater interaction. Thus, these two creeks only flow when there is a high rain or flood event and do not have perennial or even annual seasonal flow. (Town of Canmore, 2016).

3.3.1 Baseline Information

3.3.1.1 Stoneworks Creek

Stoneworks Creek is a tributary of the Bow River and lies approximately 1.5 km northwest of the Town of Canmore (Map 4). Historically, Stoneworks Creek discharged into the Bow River floodplain (BGC Engineering Inc., 2015). However, Stoneworks Creek, when there is water present, appears to go

underground at variable elevations from the valley floor depending on the volume of flow and seasonal conditions. Culverts, <1 m diameter in size under Highway 1 support calculations that very little surface water is present during all seasons of the year. However, during the July 2026 field survey, evidence of recent debris removal on Palliser Trail parallel to the uphill boundary of Highway 1, indicated recent surface water flows within the Stoneworks Creek bed. It is assumed that subsurface flow from Stoneworks Creek re-emerges via springs in Policemen and Spring Creeks after passing underground or, at higher flows, through a series of culverts beneath Highway 1 and Canmore's municipal storm-water system. Spring Creek and Policeman Creek discharge into the Bow River approximately 4 km east of these springs.

The upper reaches of both Stoneworks Creek and Stone Creek have many steep talus slopes greater than the angle of repose (BGC Engineering Inc., 2015) . Down to approximately 2,050 m asl, slopes are largely unvegetated and are dominated by rock fall detachments and deposits. Steep slopes in the watershed discourage snow accumulation through frequent small avalanches, while the overall southerly aspect of the watershed favours an early melt (BGC Engineering Inc., 2015).

The main channel of Stoneworks Creek originates below the summit of Mount Charles Stewart (2,750 m) within the upper basin. The upper watershed of Stoneworks Creek is characterized by significant sediment sources which originate from the Rundle Group (i.e. limestone) rocks in the area. The Rundle Group rocks have resulted in the creation of extensive talus slopes that deposit rock debris into the Stoneworks Creek channel system (BGC Engineering Inc., 2015).

A tributary joins the main channel of Stoneworks Creek at the elevation of the Silvertip Golf Course Resort (1440 m asl), approximately 1 km upstream of the Highway 1 corridor where the creek goes to ground. The tributary drains a 1.1 km^2 sub-watershed to the east of the main channel (BGC Engineering Inc., 2015). The tributary is debris-flow dominated and originates from the upper slopes of Mount Lady Macdonald (2,606 m). The tributary channel runs for approximately 1.27 km and has an average slope of 22^o (36%). Debris flows require a channel gradient that is greater than 30%, while debris floods will occur on streams and creeks that have channel gradients ranging between 3 and 30% (BGC Engineering Inc., 2013). Thus, Stoneworks Creek, its tributary, and Stone Creek are subject to a spectrum of mass movement processes, from clear-water floods to debris floods to debris flows in order of increasing sediment concentration (BGC Engineering Inc., 2013).

As noted above, debris flows are categorized as follows:

- Debris floods: Flows with a volumetric sediment concentration of approx.10% to 50% that typically occurs in channel gradients between 3% and 30%. Often triggered by heavy rains.
- Debris flows: Flows with a volumetric sediment concentration in excess of 50% to 60% that typically occur in channel gradients in excess of 30%.

Since deglaciation of the immediate area 10,000 years ago, Stoneworks Creek has developed a wide alluvial fan. An alluvial fan is a triangle-shaped deposit of gravel and silt. Alluvial fans are created when flowing water moves down steep gradients of mountains and hillsides carrying alluvium within their flow. The flowing water carries alluvium to the valley bottom—the valley floor where the Bow River is located – or deposits it in the fan when the water goes subsurface at lower flows (BGC Engineering Inc., 2015). Stoneworks Creek has a lower and an upper fan, which is an unusual geomorphic characteristic but not unique in the Bow Valley. Both the lower and upper fans spread out on ice marginal kame-terraces and span an area of 0.62 km^2 and 0.17 km^2 respectively (BGC Engineering Inc., 2013).

The Town of Canmore plans to mitigate flood flow hazard on the left side of the Stoneworks Creek fan with a two-phased, long-term mitigation structure (Alpinfra Interdisciplinary Engineering, 2016).

Below the upper Stoneworks Creek Reach (approximately 1400 meters in length), Stoneworks Creek flows southwest though steep mature, forested slopes (approximately 2900 meters). The watershed elevation in the surface water LSA at the streams source is 2,400m asl and at the Stoneworks Creek Fan, is 1300 m asl. This indicates an average >30% gradient for most of the waterbody channel.

There are no erosion protection structures within the creek channel or on the banks. The channel varies between 20 and 30 meters wide, with continuous erosion and scouring of the banks and a diversity of bedrock and debris material sizes. Down the center of the channel is intermittent evidence of a seasonal meandering channel with smaller substrates, indicating more moderate flow than the scoured main channel for certain periods of the year. At the time of the Cascade site visit (July 31, 2026), the wider channel had extensive upland vegetation growth within the dry channel. Some conifers and deciduous shrubs were observed and estimated to be <5 years old. This provides an indication of the infrequent nature of surface flow events, certainly in the wider channel. Lateral movement of the wider channel was evident from the scour and erosion of the incised banks, islands and braiding within the channel.

Culverts across the Palliser Trail and Highway 1 to the south were between 1-2 meters in diameter but were completely dry at the time of the site survey. This too indicates infrequent and moderate flow, except in extreme weather events.

3.3.1.2 Stone Creek

Stone Creek is also a tributary of the Bow River; it is located to the north of the Bow River. The waterbody lies approximately 3 km northeast of the Town of Canmore. Stone Creek and its associated tributaries drain the southwestern face of Mount Lady Macdonald (Map 4).

Stone Creek is located to the east of Stoneworks Creek and flows a similar northwest trajectory down the steep and unvegetated slope of Mt. McDonald (Map 4). Below the upper Stoneworks Creek Reach (approximately 900 meters in length), Stone Creek flows southwest though steep mature forested slopes (approximately 1200 meters). The watershed elevation in the surface water within the Study Area at the streams source is 2,070 m asl and at the pond on the golf course, is 1450 m asl. This indicates an average >25% gradient for most of the waterbody channel.

Above the golf course, the channel of Stone Creek varies between 5 m and 10 m wide, with continuous erosion and scouring of the banks and a diversity of bedrock and debris material sizes. Lateral movement of the wider channel is evident from the scour and erosion of the incised banks, islands and braiding within the channel.

As with Stoneworks Creek, there are no erosion protection structures within the Stone Creek channel or on the banks until it drops to the Silvertip Golf Course, where the stream narrows to a 3 m wide constructed armored channel with large boulders and 1-1.5 m wide culverts for approximately 500 m through a residential area and across the golf course green. The constructed channel discharges into an artificial pond on the golf course.

There is no evidence of any surface flow below the golf course pond. It is assumed that the water naturally goes subsurface or is directed into the Town of Canmore's stormwater system. Possible subsurface flow from Stone Creek re-emerges to supplement flow in Policeman Creek and Springs Creek 2 km downslope of the golf course pond.

Stone Creek's watershed area is 0.7 km^2 and its associated fan-area measures 9.0 ha (BGC Engineering Inc., 2015). Sediment is deposited onto this alluvial fan via the main channel of Stone Creek and its upper watershed. The Stone Creek watershed is described as a "largely weathering – or supply-limited watershed" (BGC Engineering Inc., 2015). The channel descending the talus slope of Mount Lady Macdonald has an average gradient of 15%. This indicates that the creek and the fan are susceptible to a debris-flow events although sediment generation and sediment supply from the tributary creek in the upper watershed is low compared to other creeks in the immediate area. This limited sediment transportation is a significant characteristic of Stone Creek and indicates that intensive sediment recharge through erosion and weathering must occur before enough material has accumulated for a debris-flow to occur (BGC Engineering Inc., 2015).

Stone Creek lies to the east of Stoneworks Creek. Similar to Stoneworks Creek, it does not flow on an annual basis. This waterbody is only wetted during high rainfall and flood events.

3.3.1.3 Cougar Creek

Cougar Creek runs along the north and eastern perimeter of the Study Area of the Project but is not crossed by the proposed gondola alignment and the main channel of Cougar Creek is over 1.5 km removed from the proposed Lady MacDonald Summit Terminal (Map 4). The hydrology of the waterbody is similar to that of Stoneworks and Stone Creek. Cougar Creek drains a 41.3 km^2 watershed with approximately 23 partially inactive tributaries (Town of Canmore, 2016). This is many times the magnitude of the Stoneworks and Stone Creek watersheds to the west. Steep unstable talus slopes and a >15% channel gradient cause infrequent debris floods and flows to the valley floor.

In June 2013, there was a catastrophic debris flow on Cougar Creek due to a one in a three-hundred-year rain event (Town of Canmore, 2016). As a consequence, a 29.85 m high debris flood retention structure has been constructed 2 km north-west of the Town of Canmore. The structure is designed to reduce the amount of debris travelling from the upper watershed onto the alluvial fan and to reduce bank erosion in the creek, if another flood event were to occur.

In the lower reaches of Cougar Creek traverse a 3.1 m^2 alluvial fan. Immediately below the debris structure articulated concrete mats protect the banks of Cougar Creek from erosion but also confine flow (Town of Canmore, 2016). Across the fan and up to the confluence with the Bow River the creek is unconfined, low gradient and braided. It is interpreted that there is a strong connection between subsurface flow within the Cougar Creek Fan and the surface water flow in Cougar Creek (BGC, 2014f). Thus, as with Stoneworks and Stone Creeks, some or all flow goes subsurface when the channel reaches the alluvium fan.

At the time of the site survey (July 28-30, 2026) there was surface flow in Cougar Creek immediately north of Highway 1 below the detention structure. The wetted width was approximately 2.5 meters wide and there was moderate flow. The total channel width was >35 meters. Less than 500 meters further downstream below the Highway 1 transportation corridor, the channel was completely dry and remained dry, although clearly visible, up to the Bow River confluence.

3.3.1.4 Surface Hydrology Flow Baseline Data

There is no hydrometric monitoring data available to characterize the seasonal flow in Stoneworks or Stone Creeks. Flow is deemed too sporadic and unpredictable for the use of a water gauge to be effective (Town of Canmore, 2016). Flow metrics are also unavailable for downstream Policeman Creek, Spring Creek and the Bow River within the proximity of the Project.

Flow can only be very generally extrapolated from calculations for the Cougar Creek flood retention structure for 100, 300 and 1000-year events for rainfall durations from 2 to 12 hours (Town of Canmore, 2016). Thus, any information for the Project Study Area is limited to visual observations and reporting.

The presence of surface water is ephemeral and discontinuous over the extent of all three creeks and can vary dramatically over the year. This further contributes to the lack of background sampling and data available. Consequently, there are no surface water users who have existing regulatory authorizations in the local and regional study areas.

3.3.2 Impact Assessment

Given that both Stoneworks Creek and Stone Creek are dry and only flow when there is a high rain or flood event, potential for effects on surface water within the Study Area during site preparation, construction, and operation phases of the project will be minimal. Cougar Creek has intermittent flow but because of its distance from the proposed works any aquatic impact is unlikely.

Groundwater seepage is visible from the Canmore Kame Terraces which crosses the lower portion of the study area and into Policeman Creek, Spring Creek and the Bow River. However, no major earthworks are planned for the Project within the kame terraces other than small excavations for tower footings (1.5 m^3) and burial of servicing where feasible.

3.3.2.1 Construction

Water for the Upper Station will be pumped up from Silvertip Resort. Wastewater is intended to be piped to the valley for disposal through the Town of Canmore sewer system. A service line for the Upper Station will have to cross Stone Creek. The service line will cross above the creek bed. This will be determined by geotechnical and engineering review.

There are no other actions associated with construction that are expected to have potential impacts on Stone Creek or Stoneworks Creek since they do not flow on an annual basis.

Anticipated effects of the development on hydrology and surface water quality during construction are expected to be negligible. In the case of a high rain or flood event during the construction period work would be halted.

3.3.2.2 Operations

There are no actions associated with operation that are expected to have potential impacts on Stone Creek or Stoneworks Creek since operations take place at a distance from each creek and water as a transport medium for sediment is rarely present in these creek beds.

Table 15 summarizes potential impacts of the project on hydrological resources. Stone Creek and Stoneworks Creek only flow during a flood or heavy rain event. As such, potential impacts are likely to be short in duration and will occur rarely or at irregular intervals. The project is not anticipated to have measurable adverse or beneficial effects on hydrological resources. If a rain or flood event is to occur any potential effects from the project will be localized and can be reversed following the event. There is high confidence in the assessment of the effects because the creeks are dry and they do not flow on an annual basis.

Table 15: Impact Determination – Hydrology

Impact Attribute	Rationale for Determination
Nature: Sporadic	Effects are only anticipated in the event of a flood event
Duration: Short-term	Effects are only expected to occur for the duration of a flood event
Magnitude: Low	No water will be drawn from or discharged to Stone Creek or Stoneworks Creek
Direction: Neutral	No adverse or positive effects anticipated.
Spatial Extent: Local	Effect restricted to the immediate area of the action
Reversibility: Reversible	Effects are only anticipated in the event of a flood event
Likelihood: High	There is high confidence that effects can be avoided.

There are no anticipated effects of the development on hydrology or hydrogeology in terms of surface water and groundwater quantity and quality. Project water and wastewater will be conveyed by pipeline and/or transported by vehicle (gondola or helicopter) during emergencies, as applicable.

As noted above, the Town of Canmore plans to mitigate flood flow hazard on the west side of the Stoneworks Creek fan with a two phased, long-term mitigation structure (Alpinfra Interdisciplinary Engineering, 2016). These works fall outside the scope of this assessment.

Project activities, with the full implementation of Best Management Practices and throughout all project stages, are not anticipated to alter the quality or volume of water, peak and minimum flow rates or sediment quantities flowing in Stoneworks Creek and Stone Creek.

There are several surface water users in the Bow River and Policeman Creek. These include the Town of Canmore, Burnco Rock Products Ltd., Alberta Environment and Protected Areas and Alberta Forestry and Parks - Public Lands Division (Town of Canmore, 2016). As there are not expected to be any alterations water quantity or quality as a result of this project there will be no water-use conflicts.

BANFF
NATIONAL PARK
OF CANADA

BOW VALLEY
WILDLAND
PROVINCIAL PARK

Harvie Heights
Regional
Habitat Patch

Georgetown
Regional
Habitat Patch

Upper
Silvertip
Wildlife
Corridor

Lower
Silvertip
Wildlife
Corridor

SILVERTIP
GOLF COURSE

JUNIOR
DEVELOPMENTS

SILVERTIP
DEVELOPMENTS

EAGLE
TERRACE

CANMORE

Trans-Canada Highway

Central
Basin
Pond

Palliser Pond

Stone
Creek

Stoneworks
Creek

Policeman
Creek

Cougar
Creek

Canmore
Creek

District of Bighorn

Town of Canmore

Indian
Flats Local
Habitat Patch

South Canmore
Local Habitat
Patch

CANMORE
NORDIC CENTRE
PROVINCIAL PARK

2600m
2200m
2000m
2400m
1800m
1600m
1400m

Silvertip Gondola
Map 4 - Aquatic Environment

Date: 2026-09-24

0 100 200 400 600 800
Metres

N

- Project Area
- Aquatic Ecology Study Area
- Riparian Buffer
- Stormwater Ponds

Watercourses
- Intermittent Watercourse
- Watercourse
- Culvert
- Habitat Patch
- Wildlife Corridor
- National Park
- Wilderness Area
- Provincial Park
- Main Rail Line
- Existing Road
- Building Footprint
- Municipal Boundary

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3.4 Surface Water Quality

The Project Study Area contains major creeks, Stoneworks, Stone Creek and Cougar Creek that are typically wetted during intermittent flooding or precipitation events. For most of the year, they are dry but have flow during heavy rainfall, snowmelt and catastrophic weather events. A review of historical reports and government databases indicates that no surface-water-quality studies were identified for Stoneworks Creek or Stone Creek. In August 2015, in connection with the construction of the Cougar Creek debris structure, two test pits were dug near the debris structure and eight monitoring wells installed from which inorganic parameters and total metals were analyzed.

3.4.1 Baseline Information

Stoneworks Creek, Cougar Creek and Stone Creek only intermittently contribute surface flow to the Bow River. Surface water quality in the above-named creeks during high flow and flood events (i.e., 1 in 100 and 1 in 300-year return period events) are not available as sampling the water during these events would be unsafe and unrepresentative. The three creeks provide only very limited aquatic habitat given extended periods of dry and then extreme, even violent variations in flow. There is no record of fish presence or macroinvertebrate presence in any of the waterbodies. Cougar Creek is the only waterbody that connects directly to fish-bearing habitat in the Bow River.

Stoneworks Creek

As noted above, there is no baseline water quality data for Stoneworks Creek.

Stone Creek

There is no baseline water quality data available for Stone Creek.

Cougar Creek

Because strong groundwater input was encountered at 0.9 m and 1.2 m below ground surface during the excavation of test pits on Cougar Creek in 2015 (Thurber Engineering, 2015), the results from the wells and test pits only give a proxy for water chemistry during normal, low-flow conditions on Cougar Creek (Town of Canmore, 2016).

A review of the general and inorganic parameter data indicates no exceedances above the Canadian Water Quality Guidelines for the Protection of Aquatic Life (Canadian Council of Ministers of the Environment, 2019). It should be noted that Cougar Creek is relatively small, steep, and has flows that fluctuate significantly depending on snow melt and precipitation, seasonal and even monthly, variations in turbidity concentrations are expected (Town of Canmore, 2016). For total metals, several parameters from the August 2015 sampling program were found to exceed the Canadian Council of Ministers of the Environment (CCME) protection of aquatic life guidelines at several of the monitoring wells. Aluminum and selenium were found to exceed the CCME protection of aquatic life guidelines at all three of the monitoring wells that were sampled. Because there are no developments in Upper Cougar Creek, the total metal concentrations collected at the monitoring wells are considered to be natural.

It is estimated that during flood events, the downstream flow of Cougar Creek is made up of 10% to 20% solids (Town of Canmore, 2016).

3.4.2 Impact Assessment

Impacts to downstream fish and fish habitat may occur due to changes in water quality. There is potential for erosion and sedimentation during the construction phase of the project due to vegetation removal, grading and exposing soils for the duration of construction. Soil and erosion can mobilize and impact downstream environments due to wind, flooding, snow melt and precipitation, with higher risk in flood and high precipitation events.

Project areas that may impact water quality are soil or sediment stockpiles, exposed soils from vegetation removal throughout the gondola alignment and during base terminal, mid terminal and gondola footing construction. Gondola towers will have a low risk for erosion due to surrounding vegetation for most of the alignment. Gondola towers located within 30 m of any waterbody will be considered high risk for erosion and sedimentation potential. Upper mountain developments are considered low risk for erosion and sedimentation due to the lack of soil. No sediment stockpiles are anticipated for upper mountain developments.

Water quality potential impacts can be reduced by applying mitigation measures. These will be discussed in Section 4 Mitigation Measures

3.4.2.1 Flows and Water Quality

Changes to flows may be altered by reducing permeable surfaces and reducing vegetative cover within the Project Area. No development will take place in wetted areas, streams or creeks of the Study Area. Riparian setbacks will be established and maintained as a buffered area to allow for surface waters to permeate to ground. Riparian areas contain vegetation that facilitates slower release of water that also assists in maintaining natural drainage patterns. Changes to terrain surface permeability and vegetation have the potential to affect surface water as sheet flows during high precipitation and flood events. The base terminal and mid station will reduce permeable surface area and may cause increased flows to enter the municipal drainage system southwest of Highway 1.

Mitigation measures can be applied to reduce all potential impacts to changes in flows and sheet flows due to project activities.

It was determined that no fish habitat is present within the Study Area and surface flow connectivity to downstream fish habitat is irregular and uncommon. No wetlands are identified in the Study Area and aquatic ecology is limited.

There is low potential for impacts to local water quality and flows from project activities. It has been determined that mitigation measures will reduce these impacts, and no impact to downstream aquatic ecosystems is anticipated from the project.

3.5 Climate Change

This section evaluates the potential effects of climate change on the Project during construction and operation. In accordance with Alberta Environment and Protected Areas guidance (Government of Alberta, 2013), the assessment focuses on the Project's vulnerability to changing climatic conditions and associated environmental stressors. Key information sources include provincial climate adaptation resources, scientific literature, Bow River Basin hydrological studies, and the Town of Canmore's Climate Risk and Vulnerability Assessment (CRVA) and Climate Emergency Action Plan (CEAP) (Town of Canmore, 2024a; Town of Canmore, 2024b).

3.5.1 Baseline Information

3.5.1.1 Existing Climate Conditions

The Project is located within the Bow River Basin in the eastern slopes of the Canadian Rocky Mountains. This region experiences a cool continental mountain climate characterized by cold winters, warm summers, considerable seasonal temperature variation, and precipitation patterns strongly influenced by elevation and topography.

The Bow River Basin is situated within a relatively dry region of Alberta where water availability is strongly dependent on mountain snowpack accumulation and seasonal snowmelt processes. A defining climatic characteristic of the region is the occurrence of Chinook winds, which periodically bring warm, dry air into the Bow Valley during winter and early spring. These events can produce rapid temperature increases

and significant reductions in relative humidity over short periods, influencing snowpack accumulation, melt rates, and watershed hydrology (Bow River Basin Council, 2023; Bow River Basin Council, 2010).

Historical climate conditions were characterized using Environment and Climate Change Canada (ECCC) climate normals for the Banff and Kananaskis weather stations, supplemented with available historical climate records and regional studies (ECCC, 2026a; ECCC, 2026b; ECCC, 2026c). No ECCC normals station exists in Canmore. The Banff climate normals (1991–2020) were selected as the primary regional reference dataset because of their proximity to the project and completeness of the available record. The Kananaskis station (1981–2010 normals) was used as a secondary reference. No 1991–2020 climate normals were available for the Kananaskis station at the time of preparation; therefore, the differing reference periods should be considered when comparing the datasets.

Climate parameters considered in the baseline assessment included:

- Air temperature;
- Precipitation;
- Wind;
- Snowfall and snowpack conditions; and
- Climate extremes.

Temperature

Average annual temperatures within the region are relatively cool due to elevation and mountain influences. Climate normals indicate annual average temperatures of approximately 2.7°C at Banff and 3.6°C at Kananaskis (see Table 16). Monthly average temperatures range from winter lows below −8°C to summer averages approaching 15°C. Historical observations indicate that temperatures in excess of 35°C and below −45°C have occurred within the broader region, demonstrating the substantial range of climatic conditions that may be experienced over the life of the project.

Table 16 Historical Air Temperature Normals (ECCC, 2026a; ECCC, 2026b)

Month	Banff (1991–2020)			Kananaskis (1981–2010)		
	Daily Avg -°C	Daily Max -°C	Daily Min -°C	Daily Avg -°C	Daily Max -°C	Daily Min -°C
January	−8.5	-3.5	−13.5	−6.1	−0.3	−11.7
February	−6.6	-0.5	−12.6	−4.7	1.3	−10.7
March	−2.2	3.7	−8.2	−1.6	4.5	−7.7
April	2.8	9	−3.5	3.2	9.4	−3.1
May	7.4	14.3	0.5	7.7	14.4	0.9
June	11.2	17.9	4.4	11.4	18.3	4.5
July	14.7	22.5	6.8	14.5	22.1	6.8
August	14	22.1	5.8	13.8	21.6	6
September	9.4	16.7	2.2	9.4	16.5	2.2

Month	Banff (1991–2020)			Kananaskis (1981–2010)		
	Daily Avg -°C	Daily Max -°C	Daily Min -°C	Daily Avg -°C	Daily Max -°C	Daily Min -°C
October	3.4	9.1	−2.4	4.5	10.4	−1.5
November	−3.8	0.6	−8.2	−2.3	2.8	−7.3
December	−9	-4.6	−13.4	−6.2	−1	−11.4
Annual Average	**2.7**	**8.9**	**−3.5**	**3.6**	**10**	**−2.7**

Precipitation and Snowfall

Precipitation within the Bow Valley exhibits a distinct seasonal pattern, with the majority of rainfall occurring during late spring and summer months. Winter precipitation is dominated by snowfall, which accumulates in the surrounding mountain environments and provides an important source of runoff during spring and summer. Annual total precipitation averages approximately 454 mm at Banff and 639 mm at Kananaskis (See Table 17). Higher values recorded at Kananaskis reflect the influence of local topography and orographic effects. Snowpack accumulation in the surrounding Rocky Mountains remains a critical component of regional hydrology (Fang & Pomeroy, 2023). Recent research examining Rocky Mountain snowpack trends found relatively limited changes across the Alberta and British Columbia Rocky Mountains compared with more pronounced declines observed in the southern portions of the mountain range, suggesting that snowpack conditions remain an important contributor to regional water supply (Zanewich & Rood, 2025).

Table 17 Historical Precipitation Normals (ECCC, 2026a; ECCC, 2026b)

Month	Banff (1991–2020)			Kananaskis (1981–2010)		
	Rainfall (mm)	Snowfall (mm)	Precipitation (mm)	Rainfall (mm)	Snowfall (mm)	Precipitation (mm)
January	1.6	21.2	18.8	1.2	22.0	21.2
February	0.9	20.3	18.6	0.3	23.7	21
March	6.6	25.3	29.3	2.9	41.4	40.7
April	15	30	39.2	13.9	44.9	55.4
May	37.9	12.3	50	60.5	29.2	88.5
June	72.5	1.7	73.3	118.2	1.2	119.4
July	46.7	0.1	46.9	64.9	0	64.9
August	49	0.2	46.9	70.2	0.6	70.8
September	39.9	7.9	44.9	56.6	16.3	72.8
October	18.7	16.7	35.8	11.2	29.6	39
November	5.5	25.2	27.8	3.4	28.4	26.7

Month	Banff (1991–2020)			Kananaskis (1981–2010)		
	Rainfall (mm)	Snowfall (mm)	Precipitation (mm)	Rainfall (mm)	Snowfall (mm)	Precipitation (mm)
December	1.3	23	22.5	1.1	19.2	18.9
Annual	295.6	183.9	454	404.6	256.5	639.4

Regional wind patterns are strongly influenced by valley orientation and the occurrence of Chinook events. Predominant winds are generally from the southwest, with occasional strong wind events exceeding 80 km/h, illustrated in Table 18. Wind conditions play an important role in air quality, wildlife behaviour, snow redistribution, and winter climate variability. Canmore often experiences Chinook winds caused by large-scale pressure differentials between the windward and leeward sides of the Canadian Rocky Mountain range. Chinook events can rapidly increase air temperatures and alter snowmelt conditions, creating short-term variability in both climate and hydrology (Toop & de la Cruz, Hydrogeology of the Canmore Corridor and Northwestern Kananaskis Country, Alberta, 2002).

Table 18 Summary of maximum wind conditions recorded at Banff and Kananaskis (ECCC, 2026a; ECCC, 2026b)

Parameter	Banff (1991–2020)	Kananaskis (1981–2010)
Prevailing direction	Southwest	Southwest
Maximum recorded speed	83 km/h	77 km/h
Range (maximum recorded speeds)	59–83 km/h	40–77 km/h

3.5.1.2 Climate Extremes and Variability

Historical Climate Variability

Climate conditions within the Bow Valley exhibit substantial natural variability associated with mountain weather systems, seasonal snowpack accumulation, and drought cycles (Bow River Basin Council, n.d.).

Extreme Temperature Events

Historical observations demonstrate that extreme heat and cold events are characteristic of the regional climate. Recent records show temperatures exceeding 37°C during the June 2021 western North America heat wave, while historical winter temperatures below −50°C have been recorded within the region (Town of Canmore, 2023; ECCC, 2026c).

Extreme Precipitation and Flooding

Extreme precipitation events have historically resulted in significant flooding throughout the Bow Valley (Whitfield & Pomeroy, 2016). One of the most notable examples was the June 2013 flood at Cougar Creek, when prolonged rainfall combined with snowmelt generated severe flooding and debris flood activity throughout Southern Alberta. In Canmore, the 2013 event significantly exceeded previous flood hazard expectations and highlighted the sensitivity of mountain watersheds and steep creek systems to extreme rainfall events (Estarte, 2018). The Cougar Creek flood prompted extensive reassessment of local flood and debris-flow risks and resulted in numerous mitigation and adaptation initiatives throughout the community (Felix & Estarte, 2018).

Table 19 Historical Climate Extremes (ECCC, 2026c)

Extreme event	Value (five highest/lowest recorded events in Banff between 1887–2026)				
Highest temperature °C	37.8	37.4	36.6	35.6	34.4
Date	2021, June	2021, June	2021, June	2021, July	1934, July
Lowest Temperature °C	−51.2	−48.9	−48.3	−46.1	−46.1
Date	1950, Jan	1893, Jan	1924, Dec	1950, Jan	1930, Jan
Highest precipitation (mm)	60	55.4	53.6	53.3	53.1
Date	2013, Jun	2005, Jun	1973, May	1892, Nov	1948, July
Significant flood event	Cougar Creek June 2013 event				
Significant debris flood event	Cougar Creek, June 2013 event				

3.5.1.3 Hydrology and Hydrologic Variability

Surface Water

Hydrological conditions within the region are governed primarily by snow accumulation and snowmelt processes occurring throughout the Rocky Mountain headwaters of the Bow River Basin. The Bow River exhibits a characteristic snowmelt-dominated flow regime, with peak flows generally occurring during June in response to progressive melting of mountain snowpacks (Hopkinson & Young, 1998; Bash & Marshall, 2014). Flows typically decline through late summer and autumn before reaching annual lows during winter months. Within the Canmore area, surface water conditions are influenced by both natural watershed processes and upstream reservoir operations, particularly the Spray Lakes Reservoir system and associated hydroelectric infrastructure (Bow River Basin Council, 2005).

Groundwater

Groundwater is an important component of streamflow throughout the Bow River Basin, particularly during winter and low-flow periods when surface runoff contributions are reduced (Toop & de la Cruz, Hydrogeology of the Canmore Corridor and Northwestern Kananaskis Country, Alberta, 2002; Bow River Basin Council, 2005). Groundwater recharge is influenced by precipitation, snowmelt, surficial geology, seasonal climatic conditions and land uses.

Climate-Hydrology Relationships

Hydrologic conditions within the Project area are highly sensitive to climatic factors, including:

- Annual snowfall accumulation;
- Timing of spring snowmelt;
- Precipitation intensity and duration;
- Drought conditions; and
- Extreme rainfall events.

Warmer winters or reduced snowpack accumulation can reduce spring and summer runoff volumes, while years with substantial snow accumulation combined with rapid warming or heavy rainfall can result in elevated flood risk.

Extreme rainfall events, particularly when combined with snowmelt, can generate rapid runoff responses in steep mountain watersheds and increase the potential for flooding, debris floods, erosion, and sediment transport. These processes are particularly important within Canmore where steep creek systems such as Cougar Creek, have demonstrated sensitivity to extreme precipitation events.

3.5.2 Impacts of Projected Climate Change

Climate change is expected to alter the climatic and hydrological conditions relevant to the Project over its construction and operational phases. Consistent with the Town of Canmore Climate Risk and Vulnerability Assessment (CRVA) (Town of Canmore, 2024a) and Climate Emergency Action Plan (CEAP) (Town of Canmore, 2024b), the Bow Valley is expected to experience warmer annual and summer temperatures, fewer frost days, longer snow-free periods, changes in the timing and form of precipitation, and an increased likelihood of certain climate-related extreme events. These projected changes may affect environmental conditions, access, visitor safety, worker safety, infrastructure performance, drainage, vegetation, wildlife, and emergency response.

The assessment uses the Town of Canmore CRVA as the principal regional climate-risk reference. The CRVA identifies wildfire and smoke, steep-creek flooding, riverine flooding, extreme heat, dry conditions/drought, and climate-related ecosystem change as key hazards for Canmore. The relative relevance of these hazards to the Project was considered in relation to the Project footprint, site setting, drainage conditions, location relative to mapped flood and debris-flow hazard areas, anticipated construction schedule, and operational characteristics.

Climate projections are inherently uncertain at a site-specific scale, particularly for short-duration and localized events such as convective storms, debris floods, wildfire ignition, smoke transport, and windstorms. Accordingly, the assessment does not predict individual events. Rather, it evaluates whether reasonably foreseeable regional climate trends and hazards could interact with the Project and identifies measures to reduce Project vulnerability and maintain safe operations.

Table 20 summarizes selected climate indicators for the Canmore region as presented in the Town of Canmore CRVA (Town of Canmore, 2024a). The projections are used to identify the direction of climate change and inform qualitative consideration of Project sensitivity and adaptation requirements. The values should not be interpreted as site-specific design criteria or predictions of conditions at the Project site.

Table 20 Climate parameter changes in Canmore (Town of Canmore, 2024a)[1, 4]

Climate Indicator	Historical	RCP 8.5[2]		Trend
		2011- 2040	2040 – 2070	
Annual Temperature (°C)	0	3	5	Increasing
Summer Mean Temperature (°C)	12	15	19	Increasing
Humidex > 30°C Occurrence (days)[3]	0	0	3	Increasing
Frost Days (days)	248	231	213	Decreasing
Annual Precipitation (mm)	641	683	720	Increasing

[1]Climate data and projected values are reproduced or summarized from the Town of Canmore CRVA, which references climate projection information for the Canmore region.
[2]RCP 8.5 is a high emissions concentration pathway used in earlier generations of climate projections. It is used here to illustrate a higher-end future climate condition and the direction and potential magnitude of projected change.

[3]Humidex is an index of perceived heat based on temperature and humidity. A humidex greater than 30°C is generally associated with thermal discomfort and may require heat-health and worker safety precautions.
[4]Climate projection values represent regional-scale estimates and are not Project-specific climate modelling results.

Due to predicted changes in average temperature and precipitation for the Bow Valley Corridor predicted environmental changes in the natural environment include:

- Decline of glaciers and snowpack average depth providing reduced surface water flow to drainages;
- Increased extreme precipitation events due to temperature increase;
- Streamflow changes including increase in winter, peak earlier in spring and decrease in summer; and
- Increased risk of wildfire and insect pests due to warmer and drier summers.

3.5.2.1 Climate-related Hazards

The CRVA identifies several climate-related hazards that are relevant to the Canmore area. The hazards of greatest potential relevance to the Project are wildfire and smoke, high-intensity precipitation and associated debris-flood hazards, high winds, extreme heat, drought and water-supply constraints, and climate-driven changes to vegetation and wildlife habitat (Table 21). Riverine flooding is also a significant regional hazard; however, the Project is not located on the floodplain, and indirect effects depend on access, servicing and emergency-egress conditions.

Table 21 Climate Related Hazards as identified by the Town of Canmore CRVA (Town of Canmore, 2024a)[1]

Climate hazard	Wildfire and smoke	Extreme precipitation and steep-creek/debris-flood hazards	High winds	Ecosystem change
Regional context from CRVA/CEAP	Wildfire and smoke are identified by the Town as among Canmore's highest climate-related risks.	Steep-creek flooding is identified as a high-priority climate risk in Canmore. The CEAP calls for ongoing mitigation and updated watershed hazard/risk assessments.	Strong winds are an existing Bow Valley operational consideration; regional information is insufficient to quantify climate-driven change in design wind conditions	The Town recognizes climate-related changes to natural spaces, forests, water, and ecological systems.
Project components or receptors potentially affected	Gondola stations and line; buildings; utilities; access roads and trails; workers; visitors; surrounding vegetation and wildlife habitat	Access roads; trails; drainage works; culverts; utilities; lower-station area; slopes; workers and visitors	Gondola line and stations; towers; outdoor facilities; construction lifting activities; visitors and workers	Vegetation; wildlife habitat; invasive species; restoration areas; visitor experience
Project sensitivity / potential interaction	Potential for wildfire damage, smoke-related air-quality and visibility effects, access restrictions, evacuation, service interruption, and reduced visitor use	High-intensity rainfall, rain-on-snow, erosion, sediment transport, and debris-flood processes may affect drainage capacity, access, infrastructure, and safety	Potential suspension of gondola operations, construction delays, worker-safety risks, damage to unsecured materials, and visitor-access restrictions	Changes in forest health, pests, invasive species, habitat quality, wildlife behaviour, and revegetation success may alter baseline conditions and mitigation performance over time
Key adaptation and mitigation measures	FireSmart-informed site and landscape design; emergency response and evacuation procedures; air-quality and smoke response procedures; fire-weather monitoring; communication protocols; coordination with applicable emergency authorities; inspection and maintenance of electrical and utility infrastructure	Confirm current hazard mapping and creek-specific studies; incorporate drainage and erosion-control design; avoid or minimize encroachment into identified hazard areas; design and maintain drainage crossings; inspect after major storms; establish weather-triggered closures and emergency procedures	Design to applicable wind-load and gondola standards; site-specific wind monitoring where warranted; operational wind thresholds; shutdown and restart procedures; inspection protocols; secure-material and lifting procedures	Adaptive vegetation and invasive-species management; periodic monitoring; use of locally appropriate species; review of wildlife and restoration measures as conditions change
Residual Project vulnerability	Moderate to high, depending on wildfire location, intensity, smoke conditions, emergency direction, and effectiveness of preparedness measures	Low to moderate where facilities are located outside mapped hazard areas and mitigation is implemented; may remain moderate for access and localized drainage features	Moderate; risk is managed primarily through design standards and operating controls rather than predicted climate change	Low to moderate

[1] The regional hazard context is informed by the Town of Canmore CRVA (Town of Canmore, 2024a) and CEAP (Town of Canmore, 2024b). Project sensitivity and residual vulnerability are qualitative, Project-specific professional judgements based on available information, Project location and design, and the mitigation measures identified in this EIA. They do not constitute an independent quantitative climate risk assessment, wildfire model, flood model, or debris-flow model.

3.5.2.1.1 Temperature, Extreme Heat, and Changing Snow Conditions

Warmer annual and summer temperatures are expected to result in longer snow-free periods, fewer frost days, earlier spring snowmelt, greater evapotranspiration, and more frequent or longer-duration periods of heat stress. These changes may affect worker safety during construction and maintenance; visitor comfort and safety; cooling requirements for enclosed or occupied facilities; vegetation moisture conditions; and the timing and condition of snow and ice on access routes, trails, structures, and operational areas.

A reduced duration of cold and snow-covered conditions is not expected to adversely affect the Project's core sightseeing function. However, changing snow and ice conditions may still affect winter access, maintenance requirements, drainage performance during freeze-thaw periods, and the safe operation of outdoor facilities. Therefore, winter design and operating criteria should continue to account for snow, ice, freeze-thaw cycles, and extreme cold events, notwithstanding a projected long-term reduction in frost days.

3.5.2.1.2 Wildfire and Smoke

The Town of Canmore identifies wildfire and smoke as major climate-related risk for Canmore (Town of Canmore, 2023). Warmer temperatures, longer dry periods, vegetation moisture stress, and potential forest-health changes can increase the duration of the wildfire season and the likelihood of conditions conducive to wildfire spread. Wildfire smoke may originate locally or from fires elsewhere in Alberta, British Columbia, or the northwestern United States; smoke-related air quality effect may occur even where the Project is not directly threatened by wildfire.

For the Project, wildfire and smoke could affect worker and visitor health and safety, visibility, access, evacuation and emergency response, power or communications reliability, visitor experience, operating hours, and business continuity. A local wildfire could also damage Project infrastructure, affect surrounding vegetation and wildlife habitat, or require temporary closure under an evacuation order, wildfire restriction, air quality advisory, or direction from emergency authorities.

3.5.2.1.3 Precipitation, Snowpack and Hydrology

Annual precipitation is projected to increase overall; however, the timing, intensity, and form of precipitation are also expected to change. More winter precipitation may fall as rain rather than snow at lower elevations, spring freshet timing may shift earlier, and high-intensity rainfall events may increase the potential for rapid runoff, erosion, sediment transport, and high flows in steep mountain drainages. These changes may be further influenced by rain-on-snow events and variable snowpack conditions.

The project is located above the Bow River floodplain and is not anticipated to be directly exposed to flooding from the Bow River or its tributaries. However, being outside the Bow River floodplain does not eliminate the potential for localized drainage, overland flow, culvert, erosion, debris flood or debris flow hazards. High intensity rainfall and changing snowmelt conditions may affect small and steep catchments differently than the Bow River mainstem. The Town's CEAP recognizes the ongoing need to update steep creek (debris flood) hazard and risk assessments and to maintain mitigation measures as climate science and debris flow projections evolve (Town of Canmore, 2024b).

Historical debris-flood events, including the June 2013 rainfall event, demonstrate the sensitivity of Bow Valley mountain catchments to extreme rainfall and runoff conditions (Estarte, 2018). Potential Project interactions may include effects on access roads and trails, surface-water management infrastructure, drainage crossings, utility corridors, slope stability, sediment control measures, visitor safety, and emergency access. Site specific drainage and hazard management measures should therefore be designed, reviewed, and maintained with consideration of extreme rainfall, erosion, sediment transport, and debris flood conditions.

3.5.2.1.4 Drought and Water Availability

Although total annual precipitation may increase, warmer temperatures may increase evapotranspiration and vegetation water demand. Consequently, seasonal drought, low soil moisture, vegetation stress, and late-summer water supply constraints may remain relevant. Changes to snowpack, glacier contribution, snowmelt timing, and seasonal runoff may also contribute to greater variability in water availability within the Bow River Basin.

Project implications may include increased irrigation or vegetation-establishment requirements, higher wildfire susceptibility, constraints on non-essential water use, and potential limitations on water availability for construction, operations, or emergency preparedness. Water conservation, efficient irrigation where applicable, and contingency planning for operational water requirements should be incorporated into Project planning.

3.5.2.1.5 High Winds

High winds are an existing feature of the Bow Valley and are relevant to gondola safety, visitor safety, access, construction activities, and the operation of elevated infrastructure. Climate change may affect the frequency, timing, or intensity of some wind events; however, the available regional information does not provide a sufficient basis for quantifying a Project-specific change in wind design conditions. High winds are therefore treated as an existing operational hazard that may be exacerbated by more variable weather conditions rather than as a hazard that can be screened out.

The Project should be designed and operated in accordance with applicable structural, gondola, electrical, and occupational health and safety requirements for wind loading and wind-related operation. Operating procedures should establish wind thresholds for construction activities, gondola operation, suspension of service, inspection, and emergency response.

3.5.2.1.6 Ecosystem Change

Climate change may alter forest health, vegetation composition, invasive-species pressure, pest and disease occurrence, wildlife habitat conditions, wildlife movement, and the timing of ecological processes. These changes may interact with project effects by influencing baseline conditions over time, the effectiveness of revegetation and restoration measures, wildlife use of the area, and the level of wildfire risk associated with vegetation conditions. The Project's vegetation management, revegetation, invasive species, wildlife management, and monitoring measures should therefore be adaptive and periodically reviewed over the operational life of the Project.

3.5.3 Impact Assessment

The Project may be affected by projected changes in temperature, precipitation patterns, snowpack, wildfire occurrence, and the frequency and intensity of extreme weather events. Based on available climate projections and the Town of Canmore's CVRA, the climate hazards most relevant to the Project include wildfire, extreme precipitation, and debris flood related hazards (Town of Canmore, 2024a). Climate hazards identified in the CRVA that may affect Project components during construction and operation are summarized in (Table 21). Where hazard ratings differ from those presented in the CRVA, the rationale is provided based on available literature and consideration of Project-specific conditions; these revisions are not the result of an independent climate risk assessment.

3.5.3.1 Construction

Construction is expected to occur over a relatively short period compared with the operational life of the Project. Accordingly, long-term changes in average climate conditions are expected to be more relevant to operations, maintenance, and lifecycle resilience than to the construction phase. However, construction remains sensitive to existing and near-term climate variability and extreme weather, including

heavy rainfall, high winds, lightning, wildfire and smoke, heat, snow and ice, localized flooding, erosion, and debris-flood conditions.

Climate-related construction effects could include temporary work stoppages; reduced safe access; delays associated with weather, air-quality, or emergency restrictions; erosion and sediment-control challenges; localized drainage issues; worker heat stress; and risks to temporary works, equipment, materials, and public safety. Construction activities involving elevated work, lifts, or gondola-line installation may be particularly sensitive to high winds and lightning.

Construction planning will incorporate weather monitoring, site-specific erosion and sediment control, drainage management, seasonal work planning, worker health and safety procedures, wildfire and smoke response procedures, wind and lightning shutdown criteria, emergency communication protocols, and post-storm inspection requirements. Construction activity will be suspended or modified where conditions exceed safe operating thresholds or where directed by applicable authorities.

The Project is not expected to materially increase regional flood or debris-flow risk. However, construction-related grading, clearing, drainage works, creek crossings, and servicing activities could create localized erosion, sedimentation, or drainage effects if not properly designed and managed. The final servicing design should demonstrate that drainage capacity, erosion protection, streambank stability, and construction methods are appropriate for the applicable hydrological and hazard conditions, including consideration of extreme precipitation events.

With implementation of standard construction environmental-management measures and climate-responsive construction controls, residual climate-related effects during construction are anticipated to be low and temporary. The residual level will depend on the occurrence of extreme events and on adherence to weather-related operational restrictions and emergency procedures.

3.5.3.2 Operations

The operational phase is the Project stage most sensitive to projected climate change because it extends over several decades and will experience changing temperature, precipitation, snowpack, vegetation, wildfire, and extreme-weather conditions. Project operations are therefore expected to require adaptive management, periodic review of design assumptions, and incorporation of updated municipal and regional hazard information as it becomes available.

The Project is a sightseeing and recreational facility and is not dependent on consistent snowpack for its primary function. Consequently, projected reductions in snow cover duration and changes in snowpack are not anticipated to materially affect the core purpose of the Project in the same manner as a snow-dependent winter-recreation development. Nevertheless, snow, ice, freeze-thaw conditions, winter access, and cold-weather events remain relevant to safe operation, maintenance, drainage performance, and visitor safety and will continue to be addressed through design and operating procedures.

Wildfire and smoke are expected to be the most important climate-related operational risks. Wildfire or smoke may require reduced operating hours, temporary closure, access restrictions, evacuation, cancellation of outdoor activities, or implementation of worker and visitor health-protection measures. The Project will maintain wildfire- and smoke-response procedures, monitor applicable fire-weather, wildfire, air-quality, and emergency notifications, and comply with direction from Alberta Wildfire, the Town of Canmore, Alberta Health Services, and other applicable authorities.

High winds are also an important operational consideration for the gondola. Wind conditions may require reduced operating speeds, suspension of gondola operations, temporary closure of exposed facilities, inspection of towers and line systems, or restriction of outdoor visitor activities. Gondola and associated infrastructure will be designed, operated, inspected, and maintained in accordance with applicable regulatory, engineering, manufacturer, and safety requirements. Operational wind thresholds and shutdown/restart procedures will form part of the Project's operating and emergency-response procedures.

Extreme precipitation and steep-creek/debris-flood hazards may affect drainage infrastructure, access roads, trails, utility corridors, slopes, and visitor safety. The location of the Project above the Bow River floodplain reduces the potential for direct riverine flooding, subject to confirmation using current mapping and final Project design. However, this location does not remove potential exposure to localized runoff, erosion, steep-creek flooding, debris floods, or debris flows. The lower station and any adjacent infrastructure will be evaluated against applicable Stoneworks Creek, Stone Creek, and other relevant drainage/hazard mapping and studies during the detailed design phase.

The June 2013 rainfall event illustrates the capacity of extreme rainfall to trigger debris-flood processes in Bow Valley catchments. Available mapping indicates that the Project's exposure to Stone Creek debris-flow hazards is limited by spatial separation from mapped inundation areas, subject to confirmation through final design and current hazard information (BGC Engineering Inc., 2015).

The Town has reported completion of the Cougar Creek debris-flood retention structure and ongoing work on wildfire and flood-risk reduction (Town of Canmore, n.d.). These actions improve community resilience but should not be relied upon as the sole basis for Project safety or as a substitute for Project-specific hazard avoidance, design, operating procedures, and emergency planning.

Extreme heat and drought may affect worker and visitor comfort, cooling needs, vegetation health, irrigation or landscaping demand, and wildfire susceptibility. The Project will address these conditions through worker heat-stress procedures, visitor communication, water-conservation practices, use of appropriate native or drought-tolerant vegetation where feasible, and adaptive maintenance of landscaped or restored areas.

Ecosystem change may affect vegetation condition, forest health, invasive-species pressure, wildlife habitat, and the effectiveness of restoration and mitigation measures over time. The Project will apply adaptive vegetation, invasive-species, and wildlife-management measures and will review the effectiveness of mitigation during operations, particularly following wildfire, major storm, or debris-flood events.

3.6 Aquatic Ecology

3.6.1 Baseline Information

The Study Area for this project include three creeks that are occasionally wetted during flood or high precipitation events but are typically dry for much of the year. The Study Area does not contain fish habitat as flow from Cougar Creek, Stoneworks Creek and Stone Creek goes subsurface naturally as they pass over their respective alluvial fans. These subsurface reaches act as a complete barrier to fish passage and extremely steep gradients above this are prohibitive of fish presence. During seasonal high flows, the water from these creeks also passes underground through the municipal storm system as they reach the transportation corridor on the north side of Canmore. Cougar Creek, which lies along the eastern boundary of the Study Area, contributes water during heavy run-off both on the surface and subsurface directly to downstream fish habitat in the Bow River. Stoneworks Creek and Stone Creek pass underground and the water re-emerges as springs in Policeman and Spring Creeks, which then flow into the Bow River.

During seasonal heavy run-off, the above-mentioned waterbodies historically connected downslope to the fish-bearing Policeman Creek and Bow River. However, the development of the Town of Canmore and the Trans-Canada Highway now separates the upslope creeks from fish habitat via infrastructure including the municipal drainage system, a debris barrier and storm retention ponds. These waterbodies do not provide fish habitat in their upper reaches due to a lack of surface flow and extremely steep gradients. However, these creeks do provide subsurface flows that eventually connect to downstream fish habitat within Policeman Creek, Spring Creek and ultimately the Bow River. These creeks within and adjacent to the Study Area are described in more detail below.

3.6.1.1 Upslope Waterbodies

3.6.1.1.1 Stoneworks Creek

Stoneworks Creek is a tributary on the north side of the Bow River and lies approximately 1.5 km northwest of the Town of Canmore. Historically, during high flow, Stoneworks Creek avulsed across its fan into the Bow River floodplain (Map 4). As noted above, for much of the year, any surface water from the higher reaches of the Creek appears to go underground at the terrace-level base of the mountain slope and then re-emerge as springs into Policeman and Spring Creek in the center of the main valley. Any infrequent surface flow from Stoneworks Creek on reaching the transportation corridor now flows south through a series of culverts beneath Palliser Trail and Highway 1 through Canmore's municipal road system to Policeman's Creek, where it ultimately discharges into the Bow River. This creek is only wetted during flood or high precipitation events and does not provide surface connection to fish-bearing waters or provide fish habitat.

Stoneworks Creek is described as a main channel with the dominant geomorphic hazard of debris floods and a debris-flow dominated tributary channel that drains a 1.1 km^2 sub-watershed that lies to the east (BGC Engineering Inc., 2015). The main channel of Stoneworks Creek originates below the summit of Mount Charles Stewart (2,750 m) within the upper basin. The tributary to the east, that is debris-flow dominated, originates from the upper slopes of Mount Lady Macdonald (2,606 m). The watershed of Stoneworks Creek is characterized by significant sediment sources which originate from the Rundle Group (i.e. limestone) rocks in the area. The Rundle Group rocks have resulted in the creation of extensive talus slopes in the area that deposit rock debris into the Stoneworks Creek channel system (BGC Engineering Inc., 2015).

The Stoneworks Creek watershed is significantly debris-flow prone from its eastern tributary that releases sediment into the main channel of Stoneworks Creek below the treeline at an elevation of approximately 1,440 m (BGC Engineering Inc., 2015). The tributary channel runs for approximately 1.27 km and has an average slope of 22º (36%). Debris flows require a channel gradient that is greater than 30%, while debris floods will occur on streams and creeks that have channel gradients ranging between 3% and 30% (BGC Engineering Inc., 2013).

Since deglaciation of the immediate area 10,000 years ago; Stoneworks Creek has developed a wide-ranging alluvial fan. An alluvial fan is a triangle-shaped deposit of gravel and silt (alluvium) that is created when flowing water moves down steep gradients of mountains and hillsides carrying alluvium within their flow. The flowing water carries alluvium to the valley bottom where the Bow River is located. When the flowing water reaches the valley floor it is able to divert from its established channel and allowed to spread out. The buoyant alluvium is deposited as the water body fans out, creating the typical triangle-shaped alluvial fan. The alluvial fan is formed by the deposition of sediments that originate from the main channel itself as well as the upper watershed above (BGC Engineering Inc., 2015).

Stoneworks Creek has a lower and an upper fan, which is an unusual geomorphic characteristic but not unique in the Bow Valley. Both the lower and upper fans spread out on ice marginal kame-terraces and span an area of 0.62 km^2 and 0.17 km^2 respectively (BGC Engineering Inc., 2015).

The Town of Canmore plans to mitigate flood flow hazard on the east side of the fan with a two phased, long-term mitigation structure (Alpinfra Interdisciplinary Engineering, 2016). These works fall outside the purview of this assessment but are considered in the terrain analysis. In 2013, following a debris flow, the Town of Canmore put in place plans for a mitigation structure at the alluvial fan of Stoneworks Creek (BGC Engineering Inc., 2013).

3.6.1.1.2 Stone Creek

Stone Creek is also a tributary of the Bow River. It is located to the north of the Bow River and lies approximately 3 km northeast of the Town of Canmore. Stone Creek and its associated tributaries drain down the southwestern face of Mount Lady Macdonald. Sediment from the talus slopes above is

intercepted by a municipal stormwater drainage system (BGC Engineering Inc., 2013) downstream of the golf-course pond where the surface flow of Stone Creek terminates.

Stone Creek's watershed area is 0.7 km^2 and its associated fan area measures 9.0 ha (BGC Engineering Inc., 2015). The channel above the fan has a 15% slope which indicates the fan is susceptible to debris-flow events. Stone Creek's watershed is described as a "largely weathering – or supply-limited watershed" (BGC Engineering Inc., 2015). This means that sediment generation and sediment supply from all the tributary creeks in the upper watershed is low compared to other creeks in the immediate area. This limited sedimentation is a significant characteristic of Stone Creek and indicates that intensive sediment recharge through erosion and weathering must occur before enough material has accumulated for a debris-flow to occur (BGC Engineering Inc., 2015).

Stone Creek does not flow on an annual basis and has much less sediment bed-load than Cougar Creek to the east and Stoneworks Creek to the west. Thus, it presents a lower safely hazard and is integrated into the landscape of the Silvertip Resort. The stream runs through an armored constructed channel and into a pond on the Silvertip golf course from where it goes underground. Subsurface groundwater originating from Stone Creek likely discharges to Policeman Creek and/or the Bow River.

As with Stoneworks Creek, Stone Creek is extremely steep and is also separated from downstream fish-bearing water by impassable natural and constructed barriers to fish. Thus, there are no aquatic ecology considerations regarding this waterbody.

3.6.1.1.3 Cougar Creek

Cougar Creek is primarily a dry, non-fish bearing waterbody that transports debris-flow from high elevation mountain terrain and is wetted during flood events. The Cougar Creek watershed drains 42 km^2 from Mount Townsend in the northeast to Mount Fable in the east, to Grotto Mountain in the south and to Mount Lady MacDonald and Mount Charles Stewart in the west (Town of Canmore, 2016). Cougar Creek is subject to a range of mass movement processes from clear water floods to debris floods and debris flows. Cougar Creek expands to an alluvial fan in its lower reach where it connects with the Bow River, southwest of Highway 1.

Recently, the Town of Canmore constructed a debris retention structure on Cougar Creek. Above this retention structure, the upper reaches of Cougar Creek flow down steep mountain slopes that experience frequent small avalanches, debris flows, and are devoid of vegetation (Town of Canmore, 2016). Cougar Creek is subject to a range of mass movement processes from clear water floods to debris floods and debris flows.

In its lower reaches the channel gradient of Cougar Creek is 2% to 3% but increases steeply above the alluvial fan and the retention structure. Water flow within the flat lower reaches of Cougar Creek alternates between shallow surface flow and subsurface flow (Town of Canmore, 2016). As Cougar Creek is only periodically wetted and is considered intermittent and ephemeral, it is unlikely to provide fish habitat even in the lower reaches that are periodically accessible to fish from the Bow River. However, periodic surface flows and subsurface flows connecting to downstream fish habitat within the Bow River have potential to provide water and nutrients to fish habitat in the Bow River.

3.6.1.2 Fish Habitat

All waterbodies within the project Study Area drain via surface flow in flood events or permanent subsurface flows to downstream fish habitat in Policeman Creek and then the Bow River. Because flows are below the surface this constitutes a permanent barrier to fish presence in Stone Creek and Stoneworks Creek. Lack of sustained surface water also negates the possible presence of benthic invertebrates.

However, subsurface flow from these two waterbodies, which exits the ground as springs in Policeman and Spring Creek contributes to excellent fish habitat for all life stages in both valley-bottom creeks. Fish

species displayed in Table 22 below are known to be present in downstream Policeman Creek and Bow River.

Table 22: Fish species present in Policeman Creek and also the Bow River

Common Name	Scientific Name	Alberta List	SARA	COSEWIC
Brown trout	*Salmo trutta*	Exotic/Alien	-	-
Brook trout	*Salvelinus fontinalis*	Exotic/Alien	-	-
Bull trout	*Salvelinus confluentus*	Sensitive	Special Concern	Threatened
Mountain whitefish	*Prosopium williamsoni*	Secure	-	-
Longnose sucker	*Catostomus catostomus*	Secure	-	-
White sucker	*Catostomus commersoni*	Secure	-	-
Cutthroat trout (westslope)	*Oncorhynchus clarki lewisi*	At Risk	Threatened	Threatened
Rainbow trout	*Oncorhynchus mykiss*	At Risk	-	-

3.6.1.3 Downslope Fish Bearing Waterbodies

3.6.1.3.1 The Bow River

The confluence of Cougar Creek and the Bow River occurs on an almost 1 km wide portion of the Bow River Floodplain approximately 100 m downstream of the confluence of Policeman Creek and the Bow River. The Bow River has a watershed area of 3,840 km^2 and is environmentally and economically significant. It supports a popular sports and indigenous fishery and features four hydroelectric dams between Lake Louise and Calgary. It is a Class C waterbody, which provides fish habitat of less sensitivity and is only of moderate importance. Class C waterbodies have a restricted activity period (RAP) from September 1 to April 30 for the protection of fish and fish habitat during sensitive life stages (Government of Alberta, 2003).

In total, there are 34 different species of fish reported within the Bow River from its source to the confluence with the Oldman River flowing into the South Saskatchewan River approximately 75 km west of Medicine Hat, Alberta. Species at risk that are recorded in downstream aquatic habitat from the project area include Westslope cutthroat trout, rainbow trout and bull trout. Bull trout are designated as 'threatened' under COSEWIC. They are potentially present in Policeman Creek and are known to be present in the Bow River. Mountain whitefish generally remain the most common species throughout the Bow River system, while populations of native Westslope cutthroat trout and bull trout have been substantially reduced (Town of Canmore, 2016). Introduced rainbow, brown and brook trout are now more common in the mainstem of the Bow River compared to historic records. Much of this stocking has been purposefully done to improve angling (Town of Canmore, 2016).

3.6.1.3.2 Policeman Creek/Spring Creek

Policeman Creek is a side channel of the Bow River that is regulated upstream of the Town of Canmore. The headgate typically disconnects the Bow River from Policeman Creek from October to April to prevent harm to spawning fish and their redds in Policeman Creek. The Creek flows through the town and both Policeman Creek and the contiguous Spring Creek receive inflow from stream-bed springs, which are potentially connected to sub-surface flow from Stoneworks Creek and Stone Creek. Both of these creeks

flow sub-surface under their respective fans and are approximately 700-1500 m directly above the Policeman/Spring Creek configuration.

Policeman Creek is a Class B water body and, synchronized with the closing of the headwall on the Bow River, has a restricted activity period (RAP) for instream work from September through April. Spring Creek and Policeman Creek provide excellent spawning and rearing habitat for brown and brook trout. Trout Unlimited Canada excavated several deep pools in Policeman Creek to extend overwintering habitat in 2006.

The information below has been derived from the Alberta Fish and Wildlife Internet Mapping Tool (Fish and Wildlife Internet Mapping Tool - Public, 2026) The table lists the species status under the Alberta *Wildlife Act* and the federal *Species at Risk Act* (SARA).

Alberta Recovery Plans for species at risk recommends managing water quality, removing human caused barriers to fish habitat, restoration measures in fish habitat, outreach, and education. The Study Area for the project does not provide any direct fish habitat. However, measures to protect water flows and quality will be applied to the project for the protection of downstream fish habitat.

In the unlikely event of project-related sediment being transported down the upper reaches of these three creeks, sediment material would be naturally filtered from the water as it passes underground before seeping into fish habitat in Policeman and Spring Creeks. As noted above, no detrimental hydrological effects are anticipated from the Project to downstream fish and fish habitat.

3.6.1.4 Riparian Areas

Riparian areas are buffers of land adjacent to water bodies and waterbodies that are recognized as essential for the regulation of water quantity and provides highly productive habitat that supports biodiversity (Alberta Sustainable Resource Development, 2012). Alberta Environment and Sustainable Resource Development recommends development setbacks from water bodies. Setbacks will also separate residential, commercial and industrial areas from important aquatic environmental areas that should be conserved. The Town of Canmore has identified the need for protected riparian areas and references the *Stepping Back from the Water: A Beneficial Management Practices Guide for New Development Near Water Bodies in Alberta's Settled Region* to determine waterbody setback distances (Alberta Sustainable Resource Development, 2012; Town of Canmore, 2016).

Riparian setbacks were determined as 6 m for Stone Creek, Stoneworks Creek and Cougar Creek assuming all are ephemeral or intermittent streams, as they do not convey flow throughout the entire year or flow to ground before reaching downstream fish habitat (Alberta Sustainable Resource Development, 2012).

All creek alignments within the Study Area have been given a setback of 6 m on either side of the waterbody centre line with a 1.5 m increase for every 1% slope increase above 5% (Alberta Sustainable Resource Development, 2012). Riparian setbacks have also been expanded to encompass potential plant communities of concern or plant species of concern (MAP 4 – Aquatic Study Area).

Riparian setbacks are applied to a maximum elevation at treeline as there is a direct relationship between slope and erosion potential, conversion of nutrients, and retention of nutrients. Although creek alignments are mapped above this elevation by the national data set, it is determined that riparian vegetation communities do not exist above treeline for this project location due to the frequent debris-flow nature of the area.

Additionally, Alberta Flood Hazard Mapping considers the lower reaches of Cougar Creek as a floodway. Thus, lower Cougar Creek is assigned a greater riparian setback (50 m) because it is a permanent waterbody with alluvial sediments (Alberta Sustainable Resource Development, 2012).

3.6.2 Impact Assessment

Potential impacts to the aquatic environment include changes to flows and surface water quality. Water quality can be impacted by sediment-laden runoff from exposed soils in excavated areas, during vegetation clearing, sediment erosion, grading and from stockpiled sediment. Other impacts include spills during construction from hazardous materials. Water quantity, or flows, can be impacted by vegetation removal and creating permeability to the ground surface around impervious structures like a paved parking lot, gondola terminal buildings, gondola towers and the alpine lodge.

There is no fish habitat within the Study Area. However, project activities could potentially influence the surface water quality and flows in downstream fish habitat of Policeman Creek, Spring Creek and the Bow River. Table 23 presents the anticipated impact magnitude per project development type. The Project is predicted to have low to no impact magnitude. Paved parking at the base terminal will reduce ground permeability, causing an increased probability for sheet flows.

Table 23: Determination of Project Impacts to the Aquatic Environment

Development	Area	Impact Magnitude
Gondola Footings	0.35 ha	Low
Upper Mountain Developments	0.89 ha	Low to none
Mid Station	0.1 ha	Low
Base Terminal	0.05 ha	Low

3.6.2.1 Water Quality

Impacts to downstream fish and fish habitat may occur due to changes in water quality. There is potential for erosion and sedimentation during the construction phase of the project due to vegetation removal, grading and exposing soils for the duration of construction. Soil and erosion can mobilize and impact downstream environments due to wind, flooding, snow melt and precipitation, with higher risk in flood and high precipitation events.

Project activities that may impact water quality are soil or sediment stockpiles, exposed soils from vegetation removal throughout the gondola alignment and during base terminal, mid terminal and gondola footing construction. Gondola towers will have a low risk for erosion due to surrounding vegetation for most of the alignment. Gondola towers located within 30 m of any waterbody will be considered high risk for erosion and sedimentation potential. Upper mountain developments are considered low risk for erosion and sedimentation due to the lack of soil. No sediment stockpiles are anticipated for upper mountain developments.

Water quality potential impacts can be reduced by applying mitigation measures. As also noted, the potential for sediment transportation into the fish-bearing streams on the valley floor is mitigated by the natural filtration as the stream flow from the mountain slopes passes underground through the creek fan to re-emerge into Policeman and Spring Creeks.

3.6.2.2 Flows

Flows may be altered by reducing permeable surfaces and reducing vegetative cover within the Project Area. No development will take place in wetted areas, streams or creeks of the Study Area. Riparian setbacks will be established and maintained as a buffered area to allow for surface waters to permeate to ground. Riparian areas contain vegetation that facilitates slower release of water that also assists in maintaining natural drainage patterns. Changes to terrain surface permeability and vegetation have the potential to affect surface water as sheet flows during high precipitation and flood events. The base

terminal and mid station will reduce permeable surface area and may cause increased flows to enter the municipal drainage system southwest of Highway 1.

Mitigation measures can be applied to reduce all potential impacts to changes in flows and sheet flows due to project activities.

3.7 Vegetation

This section details existing vegetation communities' occurrence, relative abundance, distribution and any species or ecological communities of concern within the Study Area for the Project.

3.7.1 Baseline Information

The existing vegetation communities' occurrence, relative abundance, distribution and any species or ecological communities of concern were identified within the Study Area for the Project.

3.7.1.1 Vegetation Associations

The ecological classification hierarchy in Alberta for forested regions are classified from large to small scale as follows:

1. Natural regions
2. Subregions
3. Ecosections
4. Ecological site
5. Ecological site phase
6. Plant community

The Project Area and Study Area are located within the Rocky Mountain natural region and in the natural sub-regions of Montane, Subalpine and Alpine. The correlating ecosections are Montane South, Subalpine South, and currently there are no ecosections for the Alpine Natural Sub-region. The Ecosection of the Project is within the southern portion of Alberta's Rocky Mountain region. The Project exists across the natural sub-regions as displayed in Table 24.

Table 24: Natural Region Distribution with the Project Area and Study Area

Natural Sub-Region	Study Area (ha)
Alpine	40.5 (22%)
Subalpine	61.7 (34%)
Montane	79.3 (44%)
Total	**181.5**

Montane is one of the most diverse natural subregions in Alberta. Montane is distinguished by the presence of Douglas-fir (*Pseudotsuga menziesii*), limber pine (*Pinus flexilis*), and lodgepole pine (*Pinus contorta*). Montane includes elevations below Subalpine and Upper Foothills, and above Foothills Fescue grass and Foothills Parkland. This is the driest and warmest subregion within the Rocky Mountain natural region. Local climatic influences produce highly diverse plant communities and soil types over short distances (Willoughby, et al., 2021).

Subalpine includes all areas below the Alpine natural subregion and above Montane and Upper Foothills, as well as areas within the lower valley sides and bottoms of the Rocky Mountain Main Ranges. Along the Bow River Corridor, the Subalpine boundary occurs at approximately 1700 m elevation. Climatic conditions are somewhat more moderate than Alpine allowing the growth of trees. However, climate is still cold year-round and tree growth rates are slow (Willoughby, et al., 2020).

Alpine occurs above treeline in the Rocky Mountains of Alberta. Alpine occurs above 2150 m in southern Alberta and declines to 1900 m in northern ranges. A cold, short, unpredictable climate along with rocky substrates that can be steep and unstable, active glaciers and permanent snowfields limit vascular plant growth and soil development is restricted to sheltered locales. Alpine is the most diverse natural subregion in Alberta given the number of microhabitats and evolution of flora (Willoughby & Gould, 2021).

3.7.1.1.1 Ecological Sites and Phases

A total of 71 plots were surveyed in the Study Area from 2017- 2026. The existing vegetation within the Study Area is characterized by ecosite phases, with distribution presented on Map 5 and summarized as relative abundance in Table 25. Species abundance for vascular and non-vascular plants identified within the Study Area is presented in Appendix B.

All mapped ecosite phases within the Study Area were classified as terrestrial and no wetland vegetation associations were identified during the field investigations. The hygric h1 ecosite phase polygon was investigated in 2021 field studies and was not determined to be a wetland, consisting of terrestrial vegetation collecting surface water between the two fairways on the golf course (Map 5).

The Study Area contains a diverse range of vegetation associations across its elevational limits. A total of forty-three ecosite phases exist throughout the Study Area, seven within the Alpine, sixteen within the Subalpine and twenty within the Montane Subregions (Table 25). Two naturally non-vegetated and three anthropogenic non-vegetated land codes are also detailed. Spatial distribution of the ecosite phases is presented in Map 5. Approximately 72% of the Study Area is comprised of vegetated ecosite phase polygons (Table 25), 16% is naturally non-vegetated, consisting primarily of barren rock (NMR) and a golf course pond (NWL), 12% is anthropogenic non-vegetated including power line right of ways (AIH), resort infrastructure (ASC) and golf course (ASR) (Table 25).

The barren rock accounts for the greatest abundance at 14% of the total Study Area within the Alpine Subregion (Table 25). Vegetated ecosite phases b2 contribute the next highest abundance in the Alpine Subregion at 2.55% of the total Study Area (Table 25).

In the Subalpine Subregion of the Study Area barren rock accounts for much less of the area at 0.5% with greatest abundances accounted for by ecosite phase e3 (7.4%), b1 (5.38%) and b3 (4.2%) (Table 25).

In the Montane Subregion of the Study Area, anthropogenic disturbances account for higher areas of cover at 12% (Table 25). Highest abundance of ecosite phases is d2 (14.3%) and d3 (4.9%) (Table 25).

The lowest ecosite phase abundances in the Alpine subregion include aa1 at 0.04%, f2 at 0.19% and b3 at 0.33% of the total Study Area (Table 25). The lowest ecosite phase abundances in the Subalpine Subregion include b4 at 0.11% and g2 at 0.15% (Table 25). The lowest ecosite phase abundances in the Montane Subregion include b2 at <0.01%, aa1 at > 0.01% and e2 at 0.02 % (Table 25).

Table 25: Ecosite Phases within the Study Area

Natural Southern Subregion	Ecosite Phase	Area (ha) within Study Area	% within Study Area
Alpine	a1 - stone fields	1.8	0.99
	aa1 (SA code) - graminoid grassland	0.1	0.04

Natural Southern Subregion	Ecosite Phase	Area (ha) within Study Area	% within Study Area
	b2 - mountain avens Fa-Se	4.62	2.55
	b3 - mountain avens shrubland	0.6	0.33
	b4 - mountain avens/graminoid	2.5	1.37
	d3 - heather shrubland	4.9	2.70
	f2 - globeflower-willow shrubland	0.3	0.19
	NMR - rock barren	25.7	14.16
Subalpine	a1 - lichen -Pl	2.9	1.60
	aa1 - graminoid grassland	2.9	1.61
	b1 - bearberry/hairy wild rye-Pl	9.8	5.38
	b2 - bearberry/hairy wildrye Pl-Aw	0.8	0.44
	b3 - bearberry/hairy wildrye Se	7.6	4.16
	b4 - bearberry Aw	0.2	0.11
	b5 - bearberry/hairy wildrye Pa	0.2	0.08
	5b5 - bearberry/hairy wildrye Pa 5NMR - rock barren	5.6	3.09
	b7 - grassland	0.4	0.25
	cc1 - rough fescue	6.1	3.35
	cc2 - shrubland	0.3	0.19
	d1 - heather Se	3.6	1.99
	e1 - false azalea-grouseberry Pl	3.9	2.16
	e3 - false azalea-grouseberry Se	13.4	7.41
	f2 - thimbleberry Fa-Se	2.8	1.52
	g2 - tufted hairgrass grassland	0.3	0.15
	NMR - rock barren	1.0	0.53
Montane	aa1 - bluebunch wheat grass grassland	0.01	0.01

Natural Southern Subregion	Ecosite Phase	Area (ha) within Study Area	% within Study Area
	b1 - bearberry Pl	0.51	0.28
	b2 - bearberry Aw	0.00	0.00
	b3 - bearberry Aw-Sw-Pl	0.06	0.03
	b4 - yellow mountain avens	1.41	0.77
	b6 - bearberry Sw	0.69	0.38
	c2 - Canada buffaloberry/hairy wild rye Pl	1.33	0.73
	c4 - Canada buffaloberry/hairy wild rye Aw-Sw-Pl-Fd	0.56	0.31
	c5 - grassland	3.39	1.87%
	cc1 - rough fescue	0.62	0.34%
	cc3 - rough fescue Fd	5.84	3.21%
	cc4 - rough fescue Aw	0.08	0.04%
	d1 - creeping mahonia-white meadowsweet Fd	4.27	2.35%
	d2 - creeping mahonia-white meadowsweet Pl	26.04	14.34%
	d3 - creeping mahonia-white meadowsweet Sw	8.93	4.92%
	d4 - white meadowsweet Aw	1.07	0.59%
	d8 - creeping mahonia-white meadowsweet Aw-Pl-Sw-Fd	0.68	0.38%
	e1- thimbleberry/pine grass Pl	0.27	0.15%
	e2 - thimbleberry/ pinegrass Aw	0.04	0.02%
	f1 - balsam poplar Pb	0.13	0.07%
	h1 - horsetail Sw-Pb	0.18	0.10%
	AIH - right of way	0.88	0.49
	ASC - towns/villages- golf course buildings and infrastructure	0.93	0.51

Natural Southern Subregion	Ecosite Phase	Area (ha) within Study Area	% within Study Area
	ASR - rural recreation -golf course	9.30	5.12
	ASR - rural recreation golf course	1.44	0.79
	NMR - rock barren	1.28	0.70
	NWL - golf course Pond	0.04	0.02
Study Area Total		**181.6**	

Silvertip Gondola

Map 5 - Vegetation and Ecological Classifications

Date: 2026-09-23

- Project Area
- Vegetation Study Area
- Ecosites
- Mature Climax
- Old Growth
- 50% S2 -Tracked Alberta Ecological Community (b5)

Field confirmation approx

- Limber pine
- Whitebark pine

ACIMS - Non Sensitive (AEP Tracked)

- Limber pine (S2)
- Open Sedge

Natural Subregion

- Alpine
- Subalpine
- Montane
- Proposed Gondola Alignment
- Proposed Footprint
- Building Footprint
- Municipal Boundary
- Habitat Patch
- Wildlife Corridor
- Watercourse

N

0 50 100 200 300 400 500

Metres

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3.7.1.1.1.1 Alpine Subregion

a – stone fields

This ecosite occurs on subxeric to xeric alpine sites at high elevations up to 2800 m elevation on various slopes and aspects (Map 5). It can also occur on colluvial rubble at lower elevations (1800 m). It has sparse vegetation and includes boulder fields, fell-fields, stonefield lichens, rock lichen tundra, rock tundra and saxicolous lichen. Canopy cover is sparse, and succession is mature (Photo 1).

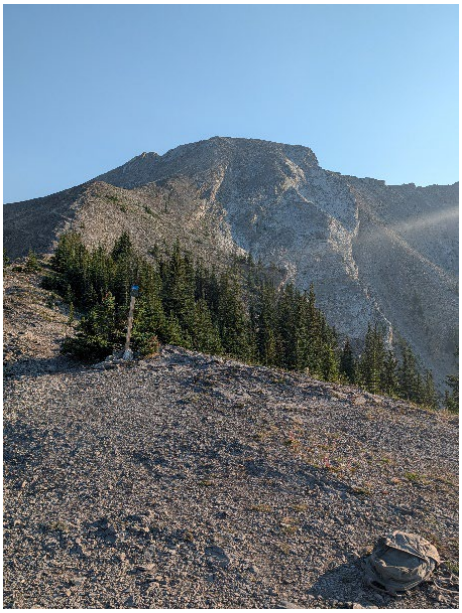


Photo 1: The alpine a1 ecosite phase of the Study Area. July 28, 2026.

b- mountain avens

This ecological site is characterized by a dominance of white mountain avens or entire-leaved white mountain avens in the understory. This ecosite occurs on south and west facing windswept ridge. It generally occurs on southerly slopes within the subregion but occasionally occurs on coarse textured soils as well. Dry site conditions and medium nutrient conditions are common. The b2 ecosite phases contained Engemann spruce, subalpine fir and lodgepole pine as dominant tree species, drainage was rapid with colluvial deposits as the parent material (Photo 2).



Photo 2: Ecosite phase b2 vegetation association. July 28, 2026

d – heather-grouseberry

This ecosite is mesic in the alpine and dominated by ericaceous shrubs such as *Cassiope* and/or *Phyllodoce*. It occurs in wind protected areas where snow accumulates and it will also occur on various slopes gradients and aspects from 1700 to 2600 m elevation (Map 5). Soils are moderately to well drained, developed on morainal and residual landforms.

f – globeflower-willow

These small ecosites occur at lower elevation alpine (2100 m) on well drained soils from below timberline into the alpine (Map 5). Indicator species are mostly globeflower and mountain valerian, but other common forbs are western anemone and wandering fleabane. Snow melts away early in growing season but remains moist from snowbank meltwater with ephemeral streams often present. Sites may accumulate fine alluvial sediment.

Subalpine Subregion

a – lichen (xeric/poor)

This is a very dry ecosite with nutrient-poor soils usually on southerly slopes or coarse-textured soils. Vegetation such as lichens, bearberry and juniper indicate dry conditions. Organic layers are thin and often shallow to bedrock. Lodgepole pine is the edaphic climax species with sparse shrub and forb layers. The ecosite phase a1-lichen-Pl is 35% cover by lodgepole pine with trace white spruce. The shrub layer is dominated by bog cranberry. Forbs, lichen and grass are sparse.

aa1 - graminoid grassland

The ecosite aa1-grassland has moderately dry soils with medium to poor nutrients and located within in the alpine meadow in the vicinity of the proposed Summit Area (Map 5). Structural stage was observed in graminoid stage dominated by grass and forbs (Photo 3). Bearberry, field chickweed, Alaskan bellflower and common juniper dominated the low-lying vegetation (Photo 3).



Photo 3: Ecosite phase aa1 observed in the alpine meadow located in the vicinity of the proposed Summit Area.

b – bearberry/lichen

This is a very dry forested ecosite due to southerly or westerly aspects and/or coarse textured colluvial parent materials. Soil moisture is subxeric and soil nutrients are poor. Organic layers are thin and soils are often shallow to bedrock. Indicative plants species are bearberry, lichen, bog cranberry and blueberry.

The ecosite phase b1 – bearberry/lichen Pl has a tree cover of mostly lodgepole pine. Other indicative species include crowberry, reindeer lichen and Schreber's moss. The ecosite phase b2 – bearberry/hairy wildrye Pl-Aw has a tree cover of mostly Pl with some Aspen and traces of white spruce. The ecosite

phase b3 – was found on steep colluvial slopes in elevations below b5 and in a transition between the associations, with b3 containing a greater diversity of trees than b5 (Photo 5). Western mountain-heather in the shrub layer is also indicative. Ecosite phase b5 was found on steep colluvial slopes and included limber pine, subalpine fir and Douglas Fir (Photo 4). The ecosite phase b7 – grassland has no tree cover, little shrubs, and mainly grasses.

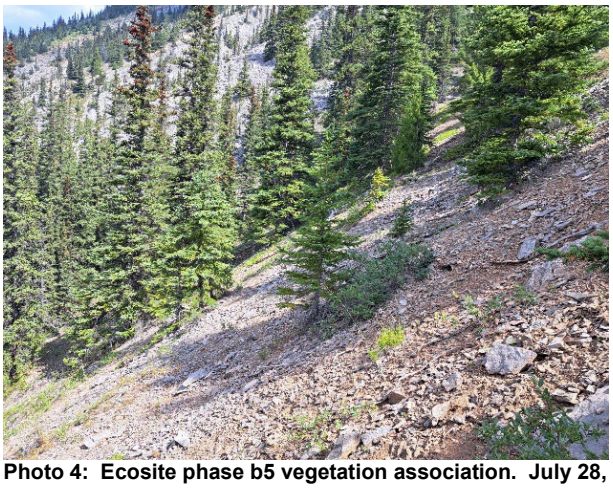


Photo 4: Ecosite phase b5 vegetation association. July 28, 2026.

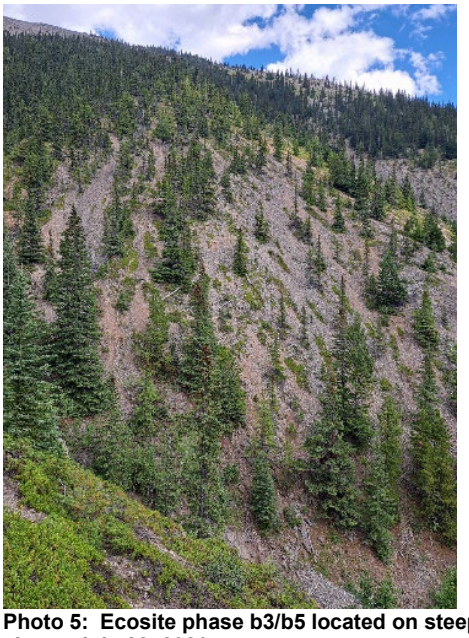


Photo 5: Ecosite phase b3/b5 located on steep colluvial slope. July 28, 2026.

cc – heather-grouseberry

This is a forested ecosite that occurs near treeline (1680 – 2180 m) throughout the subalpine (Map 5). It is typical for high snow cover and short growing seasons. The understorey is dominated by heather species at higher elevations where there is transition into alpine. Grasslands are often the climax vegetation, while moist sites will have shrubs and deciduous tree species. Soil moisture is mesic and soil nutrients are poor. Soils are generally coarse-textured or very stony and are shallow to bedrock.

The ecosite phase cc1 – heather-grouseberry Pl has a tree canopy of mostly lodgepole pine with lesser amounts of Engelmann spruce. Indicative species are grouseberry and Schreber's moss. The ecosite phase cc2 – shrubland consists mainly of shrubs with lesser fobs and grasses. Indicator species are silverberry, snowberry and choke cherry.

d – heather

The ecosite is near treeline and has high snow cover with short growing seasons (Map 5). Nutrient conditions are poor due to coarse-textured or stony soils. Soils are shallow or absent due to bedrock. Climax species are Engelmann spruce and subalpine fir. The ecosite phase d1 – heather Se has 40% tree cover and well developed shrub and moss layers. Indicator species are western mountain-heather, red heather and yellow heather.

e – false azalea-grouseberry

This ecosite represents complex climatic conditions and the modal condition for low to mid elevations (1330 – 2220 m) of the subalpine (Map 5). Characteristic species are grouse-berry and false azalea. Dominant tree species may be lodgepole pine, Engelmann spruce, subalpine fir and/or whitebark pine. Soils may be dry, mesic or wet, yet contain similar plant communities.

The ecosite phase e1 – false azalea-grouseberry Pl has a dominant tree cover of lodgepole pine with trace Engelmann spruce and subalpine fir. Soil is well drained, mesic with medium nutrients. The ecosite phase e3 – false azalea-grouseberry Se is dominantly Engelmann spruce with lesser subalpine fir, lodgepole pine (Photo 6). Buffaloberry, bearberry and common juniper dominate the shrub layer (Photo 6).



Photo 6: Ecosite phase e3 vegetation associations. July 28, 2026

f – thimbleberry

This ecosite occurs on sites with seasonal seepage at lower elevations within the southern portion of the subregion. This is transitional from Subalpine to Montane conditions. Species diversity is high due to a rich nutrient regime and moderately moist soils. This ecosite is successional to Engelmann spruce and subalpine fir. This ecosite is derived from AVI mapping as seepage areas and waterbodies are inaccessible in the field in the Study Area (Map 5). Confidence of mapping code is low as thimbleberry has not been observed throughout the Study Area.

g – dwarf birch/tufted hair grass

This ecosite occurs in low valley sites within the Subalpine. These areas are usually frost pockets which restrict the growth of tree species and results in the development of shrub communities dominated by dwarf birch and willow. Soil is moderately moist with a rich nutrient regime and is imperfectly to well drained. Slope is typically level to gentle at elevations of 1440 – 2340 m. Like ecosite f, this ecosite is from AVI mapping as seepage areas and waterbodies are inaccessible in the field in the Study Area (Map 5). Confidence as other g ecosites have not been observed in the Study Area.

3.7.1.1.1.2 Montane Subregion

aa – bluebunch wheat grass

This ecosite occurs on undeveloped soils having poor nutrient content and subxeric to xeric soil moisture. They typically occur on steep upper slopes (mid-slope to slope crests) having south or westerly aspects (Map 5).

The aa1 – bluebunch wheat grass grassland is the only phase of this ecosite that occurs within the Study Area and it is found in small pockets of the Study Area (Map 5). This ecosite phase is dominated by northern wheat grass, sedges, June grass and bluebunch wheat grass with a small amount of cover by pasture sagewort, creeping juniper, snowberry, Saskatoon, and prickly rose.

b – bearberry

This ecosite (Photo 7) typically has dry soil conditions resulting from southern exposure (aspect ranges from easterly to westerly) or coarse-textured soils. The nutrient regime is mesic to rich and the moisture

regime is moderately fresh to mesic. It tends to occur on mid to upper slopes (1330 – 1760 m). Soils are shallow have a thin organic layer. Indicative species are bearberry and juniper.

The ecosite phase b1 – bearberry Pl has a tree cover of lodgepole pine and traces of Douglas-fir. Indicative species are bearberry and juniper. The shrub layer is well developed with a moderate grass layer. The ecosite b2 – bearberry Aw is dominated by aspen as indicator species. Ecosite phase b3 – bearberry Aw-Sw-Pl has a tree canopy of lodgepole pine, aspen, white spruce and lesser amounts of Douglas-fir. Bearberry dominates the shrub layer and hairy wild rye dominates the grass layer. The ecosite phase b4 – yellow mountain avens has a moderate to low tree cover of white spruce and balsam poplar. Yellow mountain avens dominate the shrub layer. The ecosite phase b6 – bearberry Sw has moderate tree coverage dominated by white spruce with lesser lodgepole pine. There are minimal forb and grasses with a well-developed shrub layer.



Photo 7: Bearberry Pl (b1) ecosite within the Study Area. July 2021.

c - buffaloberry/hairy wild rye

This ecosite is forested and relatively dry, yet not as dry as the ecosites a and b. Stands contain closed canopies of Douglas-fir, aspen and/or lodgepole pine. Understorey vegetation is sparse and commonly contains Canada buffaloberry and hairy wild rye. Edaphic grasslands in this ecosite are restricted to steep southerly slopes. Soils are relatively dry (mesic to dry) and nutrient poor to rich. Stands may be made of lodgepole pine, Douglas-fir and aspen. However, succession is toward white spruce and/or Douglas-fir.

The ecosite phase c2 – Canada buffaloberry/hairy wild rye Pl has a canopy of lodgepole pine with traces of white spruce. Indicative species are buffaloberry, dwarf bilberry, wild rye and pine reed grass. The ecosite phase c4 – Canada buffaloberry/hairy wild rye Aw-Sw-Pl-Fd has a tree canopy of aspen and white spruce with lesser amounts of lodgepole pine and Douglas-fir. Indicative species are grouseberry and hairy wild rye. The ecosite phase c5 – grassland has no tree canopy and is dominated by the grass layer. Indicative species are bearberry, foothills rough fescue and parry oat grass.

cc – rough fescue

This ecosite occurs on lower slopes (1300 – 1900 m) having southerly or westerly aspects (Map 5). This ecosite is dominated by grass species due to dry conditions and westerly winds. Soils are typically deep black chernozemic soils. Climax vegetation is often grasslands. However, sites with higher moisture content will contain saskatoon, snowberry, chokecherry and aspen with succession to Douglas-fir and lodgepole pine.

There are three phases within this ecosite in the Study Area: cc1, cc3 and cc4. The phase cc1 – rough fescue has a dominant cover of rough fescue and lesser indicator species of Parry oat grass and harry wild rye. The phase cc3 – rough fescue Fd has a Douglas-fir tree cover but is dominated by grass and shrubs (Photo 8). The phase cc4 – rough fescue Aw has a tree cover of mostly aspen and some white spruce and is dominated by the grass layer.



Photo 8: Ecosite phase cc3 vegetation within field plot. July 30, 2026.

d – creeping mahonia-meadowsweet

This ecosite has medium soil nutrients (poor to rich) and mesic soil moisture. Sites tend to occur on lower valley slopes (1142 – 2030 m), and on gentle slope gradients (Map 5). Forest stands are commonly aspen, lodgepole pine, white spruce and Douglas-fir. Succession is towards white spruce and/or Douglas-fir, however the area has a history of fire disturbance. Grasslands are dominated by pinegrass and hairy wild rye that may succeed to forest.

The following ecosite phases occur within the Study Area: d1, d2, d3, d4 and d8. The phase d1 – creeping mahonia-white meadowsweet Fd has a tree canopy of Douglas-fir and traces of white spruce. Indicator species are white meadowsweet, snowberry and stair-step moss. The phase d2 – creeping mahonia-white meadowsweet Pl has a canopy of mostly lodgepole pine and traces of Douglas-fir, white spruce and aspen (Photo 9). Indicator species are white meadowsweet, Schreber's moss, stair-step moss and pine reed grass. The phase d3 – creeping mahonia-white meadowsweet Sw has a dense canopy of subalpine fir and white spruce and lesser amounts of Engelmann spruce and lodgepole pine (Photo 10). Indicator species are meadowsweet, grouseberry, stair-step moss and pine reed grass. Ecosite phase d4 – white meadowsweet Aw has a tree canopy of aspen. Indicator species are white meadowsweet, pine reed grass and hairy wild rye. The ecosite phase d8 – creeping mahonia-white meadowsweet Aw-Pl-Sw-Fd has a tree canopy of aspen, lesser amounts of Douglas-fir and traces of lodgepole pine and white spruce. Shrubs contain prickly rose and snowberry and grasses have a cover of 20%.



Photo 9: Ecosite phase d2 vegetation association. July 29, 2026.



Photo 10: Ecosite phase d3 vegetation association. July 30, 2026.

e – thimbleberry/pine grass

This ecosite (Photo 11) has rich soil nutrient content (medium to very rich) and mesic soil moisture. Soil humus layers are well developed. Seepage may occur in spring or after heavy rains. Stands are typically of aspen and white spruce, where succession is towards white spruce. Disturbance can result in

increased shrub and forb layers. It is typically located on middle to lower slopes of variable aspects having deeper soils and where seepages can occur.

The ecosite phase e1 – thimbleberry/pine grass Pl is mostly lodgepole pine with lesser amounts of aspen and white spruce. Indicator species are thimbleberry and bear-grass. The phase e2 – thimbleberry/pine grass Aw is mainly aspen with traces of white spruce. Indicator species are false Solomon's-seal, green false hellebore and clasping-leaved twisted-stalk. Soils are rich and well drained. The phase e3 – thimbleberry/pine grass Sw has a tree canopy of Engelmann spruce, lesser of white spruce and trace subalpine fir and lodgepole pine. Indicator species are thimbleberry, bracted honeysuckle, yellow angelica and red and white baneberry.



Photo 11: Thimbleberry/pine grass (e1) ecosite within the Study Area. July 2021.

f – balsam poplar

This ecosite (Photo 12) occurs on a variety of soil parent materials and is usually at lower slopes with steeper gradients or with gravelly river floodplains (Map 5). Soils have mesic to rich nutrients and have mesic moisture. The presence of balsam poplar indicates an enhanced moisture regime. Seepage is common in spring, after heavy rains, or within river floodplains. Pioneer species are balsam poplar and the climax species is white spruce.

The ecosite phase f1 – balsam poplar Pb is dominated by balsam poplar, with some aspen. Indicator species are snowberry, baneberry and bluejoint grass.



Photo 12: Balsam poplar (f1) ecosite within the Study Area. July 2021.

h – horsetail (hygric/rich)

This ecosite is wet and nutrient rich, commonly found at toe and slope positions. Fluvial parent materials are present where flooding and seepage periodically occurs. Horsetail commonly dominate the forest

floor. The ecosite phase h1-horsetail Sw-Pb is forest dominated by white spruce with lesser balsam poplar and trace aspen. Shrub and grass cover is moderate and is dominated by the forb layer. Indicator species are meadow horsetail and bluejoint grass. This is found in a small drainage between to fairways of the golf course (Map 5).

3.7.1.1.1.3 Naturally Non-Vegetated Areas

Naturally non-vegetated areas within the Study Area include barren rock (NMR) and pond (NWL) (Map 5, Table 25). Barren rock includes large dry gravel bars adjacent waterbodies/debris paths that are bare of vegetation and alpine colluvial scree areas that are void of vegetation (Map 5). Alpine scree areas were designated barren rock following AVI standards that have naturally less than 6% vegetation cover (Gov. Alberta, 2022c). Alpine scree rock was observed not to include lichens and mosses due to constant scree movement on the steep slopes (Photo 13). The code also covers the golf course pond in the Study Area (Map 5).

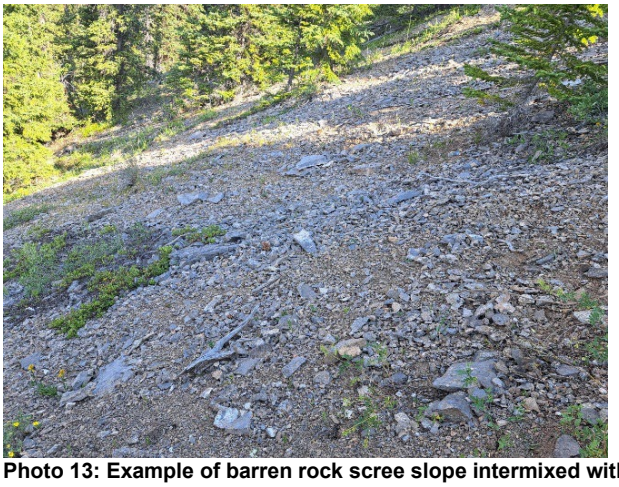


Photo 13: Example of barren rock scree slope intermixed with ecosite phase b5. July 28, 2026

3.7.1.1.1.4 Anthropogenic Non-Vegetated Land



Photo 14: Developed area within the Study Area. July 2021.

There are areas within the Study Area that have been previously developed (Photo 14). These include powerline rights-of-way (AIH), vegetated fairways (ASR), paved paths and any structures that combined make up the golf course (ASC) (Map 5, Table 25).

3.7.1.1.2 Plant Community Types

Plant community types were classified within the Project Area and were surveyed within the direct alignment and proposed footprint of the Project. Sixteen Plant Community types were described in the Project Area. Table 26 displays the Plant Community Type and its associated ecosite phase and Natural Subregion.

Table 26: Summary of Vegetation Associations defined to Ecosite Phase and Plant Community type where applicable within the Project Area.

Natural Southern Subregion	Ecosite Phase	Plant Community Type	Plant Community Type Name
Alpine	a1 - stone fields	Aa19 Shrubby cinquefoil/Early yellow locoweed/June grass (windswept ridges)	*Potentilla fruticosa/Oxytropis sericea/Koeleria macrantha*
	aa1 (SA code) - graminoid grassland	SAsA3 Idaho fescue-Sedge	*Festuca idahoensis-Carex spp.*
	b2- mountain avens Fa-Se	Ac1 White mountain avens (Fa-Se)	*Dryas octopetala (Abies lasiocarpa-Picea engelmannii)*
	b3 - mountain avens shrubland	-	-
	b4 - mountain avens/graminoid	-	-
	d3 - heather shrubland	-	-
	f2 - globeflower-willow shrubland	-	-
Subalpine	aa1 - graminoid grassland	-	-
	b1 - bearberry/hairy wild rye-Pl	SAsC2 Pl/Juniper-bearberry/hairy wildrye	*Pinus contorta/Juniperus spp. Arctostaphylos uva-ursi/Elymus innovatu*
	b2 - bearberry/hairy wildrye Pl-Aw	-	-
	b3 - bearberry/hairy wildrye Se	SAsC4 Se/Juniper-Bearberry/Hairy wildrye	*Picea engelmannii/Juniperus communis-Arctostaphylos uva-ursi/Elymus innovatus*

Natural Southern Subregion	Ecosite Phase	Plant Community Type	Plant Community Type Name
	b4 - bearberry Aw	-	-
	b5 - bearberry/hairy wildrye Pa	SAsC5 Pa/Ground juniper/Hairy wildrye	*Pinus albicaulis/Juniperus communis/Elymus innovatus*
	b7 - grassland	-	-
	cc1 - rough fescue	-	-
	d1 - heather Se	-	-
	e3 - false azalea-grouseberry Se	SAsC17 Se/Grouse-berry/Feather moss	*Picea engelmannii/Vaccinium scoparium/Hylocomium/Hylocomium splendens*
	f2 - thimbleberry Fa-Se	-	-
Montane	b1 - bearberry Pl	-	-
	b3 - bearberry Aw-Sw-Pl	Msf1 Aw-Fd-Pl/Bearberry	*Populus tremuloides-Pseudotsuga menziesii/Arctostaphylos uva-ursi*
	c2 - Canada buffaloberry/hairy wild rye Pl	-	-
	c4 - Canada buffaloberry/hairy wild rye Aw-Sw-Pl-Fd	-	-
	c5 - grasslands		
	cc3 - rough fescue Fd	Msb8 Rough fescue-Idaho fescue (Fd)	*Festuca campestris-Festuca idahoensis (Pseudotsuga menziesii)*
	d1 - creeping mahonia-white meadowsweet Fd	Mse10a Fd/Snowberry	*Pseudotsuga menziesii/Symphoricarpos occidentalis*

Natural Southern Subregion	Ecosite Phase	Plant Community Type	Plant Community Type Name
	d2 - creeping mahonia-white meadowsweet Pl	Mse9 Pl/Pine grass	*Pinus contorta/Calamagrostis rubescens*
		Mse11 Pl/Feather moss	*Pinus contorta/Pleurozium schreberi*
		Mse25 Pl/Pine grass-Timothy	*Pinus contorta/calamagrostis rubescens-Phleum pratense*
		Mse26 Fd-Pl/Pinegrass	*Psuedotsuga menziesii-Pinus contorta/Calamagrostis rubescens*
	d3 - creeping mahonia-white meadowsweet Sw	Msh15 Pine grass (Sw)	*Calamagrostis rubescens (Picea glauca)*
	d8 - creeping mahonia-white meadowsweet Aw-Pl-Sw-Fd	Msf15 Aw-Sw/Rose/Kentucky bluegrass	*Populus tremuloides-Picea glauca/Rosa acicularis/Poa pratensis*
	f1 - balsam poplar Pb	-	-

3.7.1.1.3 Plant Species of Concern

Rare plants exist in low numbers, live in restricted habitat, or are threatened by any number of things such as habitat destruction or invasive species (Alberta Conservation Information Management System, 2026). Table 27 displays all plant species currently listed as at risk in Alberta under the *Wildlife Act* and any plant species with a sensitive and non-sensitive Element Occurrence conservation status with a mapped location within or the close vicinity of the Study Area (Alberta Conservation Information Management System, 2026).

The table includes the species' status from Alberta Environment and Parks or the *Wildlife Act* (Alberta), Alberta tracked Vascular Elements in ACIMS database (Alberta Conservation Information Management System, 2026), the status from the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), the status of Schedule 1 of the *Species at Risk Act* (SARA), habitat description and the potential for occurrence within the Study Area.

Based on geographic range and habitat requirements, five plant species of concern are determined to potentially occur within the Study Area: limber pine (*Pinus flexilis*), whitebark pine (*Pinus albicaulis*), porsild's bryum (*Bryum porsildii*), Michigan grapefern (*Botrychium michiganense*) and open sedge (*Carex aperta*).

Species confirmed within the Study Area during field investigations includes limber pine and whitebark pine (Map 6).

Table 27: Potential Plant Species of Concern within the Study Area

Species Name	Schedule 6 Wildlife Regulation	Alberta	COSEWIC	SARA	Habitat	Potential for Occurrence
Limber pine *Pinus flexilis*	Endangered	S2- At high risk of extirpation	Endangered	-	South and west aspects or exposed ridges at 850 to 1900 m elevation; Occurs on eastern boundary of Rocky Mountains.	**Confirmed** – Observed during field investigations within the Study Area.
Michigan grapefern *Botrychium michiganense*	-	S3-At moderate risk of extirpation	-	-	Occurs at southern boreal forests and prairies borders. Distributed across Canada. Habitat is sand dunes and disturbed road sides.	**Possible** – Found at low elevation boundary adjacent to Study Area (Map *5*).
Open sedge *Carex aperta*	-	S2 – At high risk of extirpation	-	-	Wet lake margins, riverbanks and meadows in lowland, steppe and montane zones.	**Likely** – Only Observed throughout Silvertip Golf Course during field investigations in anthropogenic ponds.
Porsild's bryum *Bryum porsildii*	Endangered	-d	Threatened	Threatened	In Alberta the moss is found in Whitehorse Wildland Park and Kananaskis Country. Prefers sites that are constantly moist with seepage or splash during growing season. Grows on shaded rock cracks and cliffs.	**Possible** – May occur within Study Area near waterbodies or drainages with rocky substrate free of vegetation.
Slender mouse-ear-cress *Halimolobos virgata*	Endangered	S2-At high risk of extirpation	Threatened	Threatened	Occurs in open short- to mid-grass prairie in sandy, alkaline soil that is dry for most of the year in southeastern Alberta.	**Unlikely** – No suitable sandy or prairie habitat in Study Area.
Small flowered sand verbena *Tripterocalyx micranthus*	Threatened	S2-At high risk of extirpation	Endangered	Endangered	Found in dry habitats in loose sands of dune and sandhill areas.	**Unlikely** – No suitable sand habitat within Study Area.
Soapweed *Yucca glauca*	Endangered	S1-At very high risk of extirpation	Threatened	Threatened	In Alberta, this perennial occurs in three known sites in the southeast of province. Occurs on south facing coulee slopes.	**Unlikely** – Study Area is not within species' range.
Tiny cryptantha *Cryptantha minima*	Endangered	S2-At high risk of extirpation	Threatened	Threatened	Limited to a small area of grassland habitat in southeastern Alberta and Saskatchewan.	**Unlikely** – Study Areas is not within species' range.

Species Name	Schedule 6 Wildlife Regulation	Alberta	COSEWIC	SARA	Habitat	Potential for Occurrence
Western spiderwort *Tradescantia occidentalis*	Endangered	S1-At very high risk of extirpation	Threatened	Threatened	A perennial restricted to four disjunct sand dune habitats.	**Unlikely** – No suitable sand habitat within Study Area.
Whitebark pine *Pinus albicaulis*	Endangered	S2- At high risk of extirpation	Endangered	Endangered	Associated with steep, southwestern aspects above 1500 m elevations in the Rocky Mountains.	**Confirmed** – Observed during field investigations (Map 6).

3.7.1.1.3.1 Limber Pine

Limber pine is a long-lived species often reaching several hundred years and several are over 1000 years. Seeds and trees have adapted to drought conditions. Seeds are dispersed by small mammals and birds. The Project Area is located within the population distribution. The habitat of limber pine is exposed ridges or warm, dry slopes at 850 to 1900 m elevation. In Alberta, stand habitat can be on a variety of slopes from gently rolling terrain to rocky ridges and outcrops. Limber pine are often exposed to high winds and grow on shallow, well- to rapidly-drained soils. (COSEWIC, 2014). Limber pine seedlings are relatively drought tolerant, which allows them to establish in more arid locations than whitebark pine (Alberta Environment and Parks, 2022). Compared to other species limber pine seeds have the highest ratio of nutrition to seed size, number and tree density, and provide a compact, rich food source for nearly 100 species of birds, small mammals and bears (Alberta Environment and Parks, 2022).

Approximately 100 Limber pine were observed and their locations recorded within the Study Area (Map 6). Observations were found from elevations of 1800 m at approximately the location the proposed Gondola intersects Stone Creek to 2300 m at the proposed Summit Area. Species observations ranged from cone producing larger trees at over 2 m in height (Photo 15) and small saplings below 1.5 m in height (Photo 16). Observations were sporadic in pattern with open forest canopies rather than dense stands.



Photo 15: Larger limber pine bearing cones in foreground located in the Study Area. July 28, 2026



Photo 16: Smaller limber pine sapling located in the Study Area. July 28, 2026

3.7.1.1.3.2 Whitebark Pine

Whitebark pine occurs in high elevation forests in the mountains of western Canada and USA. It occurs at or close to treeline, forming both open and closed forests in association with Engelmann spruce and subalpine fir. Regeneration occurs on sites disturbed by fire or avalanche, providing open habitat for this shade-intolerant species. Whitebark pine, similar to limber pine, is a long-lived species. Seed dispersal is dependent on Clark's nutcracker (*Nucifraga columbiana*). Like limber pine seeds are a food source for many birds and mammals including black and grizzly bears (COSEWIC, 2010).

Ten whitebark pine observations were recorded in the Study Area (Map 6). Occurrences were limited to the alpine at approximately 2200 m -2300 m in elevation at the proposed Summit Area and did not occur in the subalpine environment like limber pine (Map 6). Whitebark pine occurrences were found to be up to 3 m in height and sporadic throughout the Alpine area (Photo 17 and Photo 18).

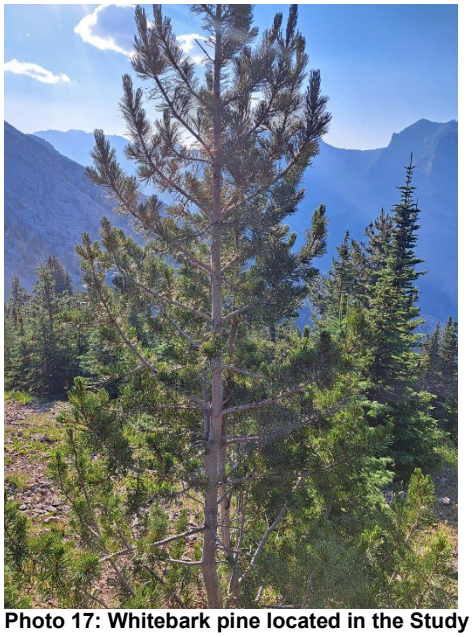


Photo 17: Whitebark pine located in the Study Area. July 28 2026



Photo 18: Whitebark pine located in the Study Area. July 28, 2026

3.7.1.1.3.3 Porsild's Bryum

Porsild's byrum is a disjunct species of moss occurring at scattered sites that may have historically been part of a continuous distribution across Canada. Habitat is mostly mountainous areas in shaded microhabitats on cliffs or rock outcrops that is continuously moist from seepage or splash off flowing waters. It is most frequently associated with waterfalls. Elevations vary from sea level to the subalpine. Threats to the population include climate change, such as increased drought conditions, and natural stochastic events such as rockfall and ice scouring (COSEWIC, 2003).

Porsild's bryum was not identified during field investigations. Areas within the Study Area that could provide habtiat are Stone Creek and Stoneworks Creek where potential seepage areas occur (Map 5). It is unknown whether this bryum can exist on warm slopes in drought summer conditions, as is typical of the Study Area.

3.7.1.1.3.4 Open Sedge

Open sedge, or Columbian sedge, does not receive legal protection in Alberta but is considered S2 – At high risk of extirpation on the Alberta list of Elements – Vascular plants (Alberta Conservation Information Management System, 2026) (Table 27). This plant has been identified during field investigations in

artificial pond areas of the golf course. A polygon is identified on ACIMS mapping (Alberta Conservation Information Management System, 2026) limited to the boundaries of the Silvertip Golf Course (Map 5). Open sedge habitat is wet lake margins, riverbanks and meadows in lowland, steppe and montane zones (Klimkenberg, 2023).

Although an open sedge habitat element occurrence is located under the proposed Project alignment, the only possible place it could be located is within the golf pond perimeter on the edge of the Study Area (Map 5).

3.7.1.1.3.5 Michigan Grapefern

Michigan grapefern is not legally protected but has been identified in the provincial mapping in the vicinity of the Study Area (Map 5). There are several scattered occurrences of this moonwort throughout northwestern America and across Canada. It has been found in dry conifer forests, grasslands and shrublands and occurs in open woods and fields, roadsides, mine tailings, and dunes, in average to dry calcareous or sandy soil in partial shade (BC CDC, 2026). Little information is known about this species, and it is listed as S3-At moderate risk of extirpation by the Alberta list of Elements – Vascular plants (Alberta Conservation Information Management System, 2026) (Table 27). There are no known occurrences within the Study Area.

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2400m
2400m
2200m
2000m
1800m
5
2
3
2
2
3
6 or 7
BOW VALLEY
WILDLAND
PROVINCIAL PARK
Lady MacDonald Trail
Lady MacDonald Trail
Stone Creek
Town of Canmore
District of Bighorn

Silvertip Gondola
Map 6 - Limber and Whitebark Pine

Date: 2026-09-23

0 25 50 100 150
Metres

N

Project Area
Vegetation Study Area
Field confirmation approx (may be stands or singular occurance)
Limber pine (76 of 93)
Whitebark pine (10)
ACIMS - Non Sensitive (AEP Tracked)
Limber pine (S2)
Proposed Gondola Alignment
Proposed Footprint
Wildlife Corridor
Municipal Boundary
Authorized Recreation Trails
Intermittent Watercourse

3.7.1.1.4 Ecological Communities of Concern

An ecological community is a distinct assemblage of plant species with similar total species composition and vegetation structure often associated with specific environmental conditions. Given the right conditions, it can reoccur predictably (Alberta Conservation Information Management System, 2026). Rare and sensitive landscape units are regionally important because they support unique ecological communities and contribute to long-term maintenance of biodiversity and are an important component of Alberta's natural regions and subregions (Alberta Conservation Information Management System, 2026). The Alberta SR rank assigns a conservation rank to all communities on the tracking list considered to be restricted in distribution, and the definition for each is provided below in Table 28 (Allen, 2014).

Table 28: Provincial Ecological Community Conservation Ranks

Ranks	Definition
S1	Five or fewer occurrences or very few remaining hectares.
S2	Six to 20 occurrences or few remaining hectares.
S3	21 to 80 occurrences. May be rare and local throughout its range or found locally, even abundantly, in a restricted range (e.g. a single county or Natural Subregion).
S4	Apparently secure Province wide, though it may be quite rare in parts of its range, especially at the periphery.
S5	Demonstrably secure Province wide, though it may be quite rare in parts of its range, especially at the periphery.
SNR	Element is not yet ranked.
SU	Unrankable—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA	Not Applicable —A conservation status rank is not applicable because the community is not a suitable target for conservation activities.
S#S#	Range Rank* —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

Table 29 and Table 30 display the Alberta tracked ecological communities that occur within the Study Area. A

Table 29: Provincial Tracked Ecological Communities within the Study Area.

Mapped Ecosite Code	Study Area (ha)	Tracked Plant Community and AEP Status
b5 bearberry/hairy wildrye Pa	2.81 (1.5% of total area)	S2- Pinus flexilis - Pseudotsuga menziesii / Juniperus spp. / Arctostaphylos uva-ursi woodland

ACIMS Ecological Community Tracking List Report (Allen, 2014).

Table 30 provides a summary of the tracked ecological community type provided from descriptions on NatureServe (2026) and ACIMS Ecological Community Tracking List Report (Allen, 2014).

Table 30: Summary of Tracked Ecological Communities found within the Study Area

Association Name	NatureServe Element Code:	Group	Global Rank	Alberta Rank
Pinus flexilis - Pseudotsuga menziesii / Juniperus spp. / Arctostaphylos uva-ursi woodland limber pine - Douglas-fir / juniper species / common bearberry	CEGL000802	Forest Woodland	G4- Apparently secure	s2 -Six to 20 occurrences or few remaining hectares

The Study Area overlaps with 2.81 ha of the tracked ecological communities of concern. This equals a coverage of 1.5% within the total Study Area. The subalpine ecosite b5 is at treeline where the gondola alignment is proposed to reach the Summit Lodge. The ecosite was described as a b5 bearberry/hairy (Map 5) wildrye Pa ecosite phase associated with SAsC5 Pa/Ground juniper/Hairy wildrye Plant Community Type. The ecosite was assigned with notes that limber pine was found instead of whitebark pine as it was within a subalpine environment with likely crossover with Montane high elevation plant community types. The Montane south A1 ecosite phase contains the plant community type listed for tracked ecological community *Pinus flexilis - Pseudotsuga menziesii / Juniperus spp. / Arctostaphylos uva-ursi* woodland and was designated as the community type with crossover with b5 that best represents the plant and site associations within the field plot. Typical colluvium site conditions were observed with predominantly loose rock scree with limber pine, Douglas fir and shrub layer dominated by common juniper and bearberry (Photo 19 and Photo 20).



Photo 19: Looking upslope at plant association within tracked ecological community at risk. July, 28, 2026



Photo 20: Looking across slope at plant association within tracked ecological community at risk. July, 28, 2026

3.7.1.1.5 Old Growth Forest

The Study Area contains 9.96 ha of Old Growth Forest within the Study Area (Map 5). Old Growth Forest exists within the Alpine environment in proximity to the Summit Area (Map 5). The remote environment leads to fewer anthropogenic disturbance factors, creating an older forest age compared to that observed in the Montane forests at lower elevations. Trees cored within the Old Growth areas were recorded at 155 years old for a Subalpine fir species and at 135 years old for Engelmann spruce.

An Old Growth Forest area was delineated using AVI data in the montane subregion of the Project Area and Study Area, in proximity to the proposed Silvertip Village Base (Mid Station). Observations conducted in the field within the delineated AVI Old Growth Polygon found representative trees cored at ages between 67-99 years old. Field observations also noted veteran Douglas fir trees within this

polygon. These veteran trees were sporadic throughout this section of forest and did not represent the tree species that make up the canopy and are likely older trees from previous disturbance factors in the area. Tree core analysis aged these veteran Douglas fir trees at 147-154 years old. Although these veteran Douglas fir trees are within the Old Forest Age structure the surrounding representative forest was not observed to contain old growth stand characteristics. Large coarse wooded debris was mainly absent form the forest floor with no natural openings in the canopy from loss of large diameter trees (Photo 21 and Photo 22). Large Snags and large trees in different stages of decay within the forest were infrequent or absent, with one occurrence of a snag observed as per Photo 22. Field observations indicated the previously delineated Old Growth Forest polygon is better classified as mature climax forest (Map 5), lacking old-growth structural attributes but with potential to develop them within 30 to 50 years. The Study area contains 8.6 ha of mature climax forest stands.



Photo 21: Looking at mature climax vegetation association lacking old forest stand attributes. July 29, 2026



Photo 22: Looking at mature climax vegetation association lacking old forest stand attributes. July 29, 2026



Photo 23: Single snag observed within the mature climax polygon. July 29, 2026.

An age range of tree species observed within the Project Area and Study Area is presented below in Table 31.

Table 31: Age Range of Trees within the Project Area and Study Area

Tree Species	Age Range (years)
Trembling aspen	54
White Spruce	51-117
Lodgepole pine	38-110
Englemann spruce	85-135
Subalpine fir	57-155
Douglas fir	67-154

3.7.1.1.6 Invasive Plant Species

A total of five (5) invasive plant species have been previously recorded within the Project Area and Study Area (Table 32). Three species—yellow toadflax (*Linaria vulgaris*), oxeye daisy (*Leucanthemum vulgare*), and Canada thistle (*Cirsium arvense*)—were identified through EDDMapS (2026). All three species occur within the Study Area, with Canada thistle recorded within the proposed gondola alignment.

Field vegetation surveys conducted in July 2021 identified oxeye daisy and white sweetclover (*Melilotus albus*) within the lower montane zone of the Study Area. In addition, yellow toadflax (*L. vulgaris*) and tall buttercup (*Ranunculus acris*) were previously recorded on the Silver Tip Golf Course during field investigations in 1993 (McCallum & Paquet, 1993); however, these occurrences are located outside the Study Area.

All recorded species are listed as provincially noxious under the *Alberta Weed Control Act*, except for white sweetclover (*M. albus*), which is not currently regulated under provincial legislation.

Based on site conditions and regional species distributions, it is likely that additional invasive plant species are present within the Study Area.

Table 32: Invasive species recorded in the Project and Study Area

Common Name	Scientific Name	Alberta Weed Control Act Designation
Yellow toadflax	*Linaria vulgaris*	Noxious
Oxeye daisy	*Leucanthemum vulgare*	Noxious
Canada thistle	*Cirsium arvense*	Noxious
Tall buttercup	*Ranunculus acris*	Noxious
White sweetclover	*Melilotus albus*	Not provincially listed

3.7.2 Impact Assessment

The potential temporary and permanent effects of the Project on vegetation communities are assessed below.

3.7.2.1 Vegetation Associations

Potential impacts from the Project to vegetation communities will include both the construction phase and operations phase. As described previously no wetland habitat or features were observed in the Study Area and therefore no impacts from the Project will occur to wetland habitat.

3.7.2.1.1 Construction Phase

Construction of the Project will have direct impacts to vegetation loss through clearing to access parts of the Project Area for infrastructure development. The impact analysis in the construction phase is based on a precautionary approach with a 40 m buffer (Project Area) around all project infrastructure footprints including the gondola ropeway alignment. The construction phase impact analysis does not include infrastructure footprints. Construction impacts are analyzed as temporary and short-term if the areas are revegetated outside of all infrastructure footprints in construction access areas.

Construction impacts will include activities to establish essential infrastructure required, including (B&A, 2026):

- Aerial passenger ropeway and alignment;
- Ropeway towers, foundations and associated structural works;
- Palliser Base Terminal;
- Silvertip Village Mid-Station;
- Summit Lodge Area facilities and trails; and
- Utility servicing required to support Gondola operations within the upper ropeway alignment between Silvertip Village Mid-Station and Summit Lodge Area.

Construction impacts will likely be reduced in the Project Area as design of the gondola progresses with guiding principles discussed in the MDP to reduce development footprints and uphold ecological stewardship (B&A, 2026). Impacts within the gondola alignment outside of tower infrastructure are already being considered with tower height and gondola carriage height to reduce vegetation impacts below, avoiding a continuous cleared corridor between towers. Servicing for the Palliser Base Terminal and Silvertip Village Mid Station are not required within the ropeway alignment as it will utilize existing surrounding connections. Water and sewer utility servicing design for connection to the Summit Base area is considering an above-ground, low-impact install to slip pipes between trees to minimize vegetation removal. Construction impacts within the alpine Summit Base Area will also likely be greatly reduced based on final design within the Project Area as trail construction and viewing areas will not require large clearing areas for vegetation during construction. The construction impacts are defined as “Maximum Potential Impact” in Table 33 to capture the precautionary approach and display potential impacts before implementation of mitigation measures.

Construction impacts have the potential to impact a maximum of 27 ha of vegetation within the 40m buffer around conceptual footprint. The construction impact areas within each ecosite displays the importance of sound land design and appropriate mitigation measures to retain biodiversity in the Study Area. If construction impacts are not appropriately mitigated, temporary vegetation impacts could impact large areas of some ecosite phase polygons within the Study Area including aa1 within the Alpine Sub region and b5 in the Sub alpine region (Table 33). As both aa1 and b5 are not classified as ecological communities of concern, construction impacts to these ecosites are not expected to result in a substantive regional loss. however, should be addressed with appropriate mitigation measures.

3.7.2.1.2 Operation Phase

The operation phase is long-term, and the impact footprint is much reduced from the construction phase. Permanent impacts to vegetation are the areas of disturbance that will not be revegetated due to the presence of a permanent structure or development throughout the operation phase. Operation phase infrastructure footprint impacts include

- Ropeway towers, foundations and associated structural works;
- Palliser Base Terminal;
- Silvertip Village Mid-Station; and
- Summit Lodge Area facilities and trails.

Impact analysis shows the operation phase will have a small area of permanent/residual impact on the vegetation associations within the Study Area, with 11 ecosite phases out of 29 impacted (Table 33). Total permanent impact areas within vegetated polygons equals 0.55 ha and a 2% permanent disturbance within the Project Area vegetated polygons (27.62 ha) and 0.4% within the Study Area vegetated polygons (131.7 ha) (Table 33). The highest percentage of ecosite phase loss within the Study Area from permanent impacts was aa1 within the Subalpine Region at 7% (Table 33). Most percentage of ecosite permanent loss was less than 1% within the Study Area (Table 33). Ecosite Phase b2 within the Alpine Subregion and ecosite phase b3 were the only other ecosites above 1% permanent loss at 4.5% and 3.3% respectively (Table 33). The impact analysis determines biodiversity within the Study Area throughout the vegetation association ecosites can be retained during the operation phase of the Project. The greatest risk of impact to vegetation associations will be during the construction phase.

Table 33: Vegetation Association Impact Analysis of Ecosite Phases located in the Study Area during the Construction and Operation Phase of the Project

Ecosite Phase	Max. potential impact – Construction (ha)	Max. potential impact area as a percentage of ecosite area within the Study Area (%)	Permanent Impact Area – Operations (ha)	% of permanent impact of ecosite within the Study Area
Alpine				
a1-stone fields	0.09	5	0	0
aa1 (SA code) - graminoid grassland	0.07	100	0	0
b2- mountain avens Fa-Se	3.96	86	0.21	4.5
b3 – mountain avens shrubland	0.31	52	0	0
b4 – mountain avens/graminoid	0.39	16	0	0
d3- heather shrubland	0.25	5	0	0
f2 – globeflower-willow shrubland	0.19	57	0	0
Subalpine				
aa1 - graminoid grassland	2.62	90	0.21	7.0

Ecosite Phase	Max. potential impact – Construction (ha)	Max. potential impact area as a percentage of ecosite area within the Study Area (%)	Permanent Impact Area – Operations (ha)	% of permanent impact of ecosite within the Study Area
b1 - bearberry/hairy wild rye-Pl	1.86	19	0.01	0.1
b2 - bearberry/hairy wildrye Pl-Aw	0.05	6	0	0
b3 - bearberry/hairy wildrye Se	2.09	28	0.01	0.1
b4 - bearberry Aw	0.17	85	0	0
b5 - bearberry/hairy wildrye Pa	0.15	100	0	0
5b5 - bearberry/hairy wildrye Pa 5NMR - rock barren	3.01	54	0.01	0.3
b7 - grassland	0.14	**30**	0	0
cc1 - rough fescue	0.29	5	0	0
d1 - heather Se	0.28	8	0	0
e3 - false azalea-grouseberry Se	0.69	5	0	0
f2 - thimbleberry Fa-Se	0.01	**<1**	0	0
Montane				
b1 - bearberry Pl	0.05	11	0	
b3 - bearberry Aw-Sw-Pl	0.02	28	>0.01	3.3
c2 - Canada buffaloberry/hairy wild rye Pl	0.20	15	>0.01	<0.1
c4 - Canada buffaloberry/hairy wild rye Aw-Sw-Pl-Fd	0.08	15	0	0
cc3 - rough fescue Fd	1.66	28	0.01	0.2
d1 - creeping mahonia-white meadowsweet Fd	1.95	46	0.01	0.3
d2 - creeping mahonia-white meadowsweet Pl	4.86	19	0.02	0.1
d3 - creeping mahonia-white meadowsweet Sw	1.33	15	0.06	0.6
d8 - creeping mahonia-white meadowsweet Aw-Pl-Sw-Fd	0.20	29	0	0

Ecosite Phase	Max. potential impact – Construction (ha)	Max. potential impact area as a percentage of ecosite area within the Study Area (%)	Permanent Impact Area – Operations (ha)	% of permanent impact of ecosite within the Study Area
f1 - balsam poplar Pb	0.08	61	0	0
Total	**27.01**		**0.55**	

3.7.2.2 Implications of Vegetation Changes for other Environmental Resources

Impacts that can occur if vegetation is removed include loss of soil stabilization on steep slopes and impacts to riparian areas affecting water quality. Vegetation loss on the steep scree slopes above Stone Creek (Map 5) within the gondola alignment could influence these factors if not appropriately mitigated. As described in the wildlife section of the report, the vegetation associations also provide habitat for a range of potential wildlife species and removing vegetation could impact this environmental resource if not mitigated appropriately.

Potential Impacts from habitat fragmentation from the development are also discussed in the wildlife section analyzing potential effects of the Project on surrounding wildlife corridors and movement.

3.7.2.3 Fragmentation

Developments within the Project Area have the potential to cause fragmentation for vegetation species populations and plant communities through the removal of vegetation and the introduction of permanent structures that can act as barriers. This can reduce seed dispersal, reduce genetic exchange through population isolation and create edge effects, changing light and soil conditions.

Fragmentation may occur in the Project Area through the ropeway towers and associated foundations, Palliser Base Terminal, Silvertip Village Mid-Station, Summit Lodge Area facilities and trails. The permanent disturbance will be ropeway tower footings within the ropeway alignment. Little to no fragmentation is anticipated for plants or plant communities within the ropeway alignments as dispersal around and between the footings is viable. Fragmentation associated with alpine trails is expected to be limited because trails are narrow; however, potential off-trail recreational use, and localized interruption of plant-community continuity are acknowledged. The Palliser Base and Silvertip Village Mid-station area have the potential to cause fragmentation of plants and plant communities due to areas of vegetation clearing and permanent impact areas such as the terminal and paved parking development. It should be noted that both the Palliser Base Station and Silvertip Mid Station have already been approved for development before the Project. The Summit Lodge and terminal also are also larger permanent structures with a higher risk of fragmentation. Fragmentation risk can be reduced when mitigation measures are applied, and impacts will be limited to the three areas of the terminals with low risk of fragmentation for the majority of the Project Area within the ropeway alignment and trail system.

3.7.2.4 Plant Species of Concern

Plant species of concern identified as having potential to occur within the Study Area were further evaluated in the impact assessment.

3.7.2.4.1 Limber Pine and Whitebark Pine

Limber pine and whitebark pine occurrences found within the Study Area are analyzed for impact risks for the Project for both the construction and operation phase below.

3.7.2.4.1.1 Construction Phase

Limber pine occurrences were observed within the proposed gondola alignment and within close proximity to the footprint of the proposed Summit Lodge Facility and Trails (Map 6). Potential direct impacts to limber pine if mitigation measures are not followed would include:

- Clearing and site preparation for ropeway towers, foundations, associated structural works and overhead electrical lines.
- Clearing and site preparation for construction of the Summit Facility Area

Indirect impacts can also occur from construction for the aforementioned activity including:

- Accidental stem damage from machines when working in area
- Root damage and compaction from construction activities when working in area
- Change in soil and drainage patterns from adjacent construction activities

Whitebark pine were also observed within close proximity to the proposed footprint for the Summit Lodge facilities and trails (Map 6). Potential direct impacts that could occur if mitigation measures are not followed include:

- Clearing and site preparation for construction of the Summit Facility Area and trails

Indirect impacts during the construction phase would be the same as those identified for limber pine.

3.7.2.4.1.2 Operations Phase

During the operations phase of the Project, impacts could occur to limber and whitebark pine from maintenance activities to trim vegetation under the ropeway alignment or within the Summit Facility Area and trails.

3.7.2.4.2 Porsild's bryum

There are no known occurrences within the Study Area for Porsild's bryum and habitat preferences are low, with waterbodies becoming dry in summer conditions. Therefore, impacts to this plant species of concern are negligible from the Project.

3.7.2.4.3 Open Sedge

An open sedge habitat element occurrence is located under the Proposed Gondola Project ropeway alignment (Map 5). However, the only possible habitat for open sedge is located within the golf pond perimeter on the edge of the Study Area (Map 5). No impacts to possible open sedge habitat are expected as no land use changes are proposed in the area adjacent the golf course pond within the Study Area.

3.7.2.4.4 Michigan Grapefern

There are no known occurrences within the Study Area for Michigan grapefern and impacts to this plant species of concern are negligible from the Project.

3.7.2.5 Ecological Communities of Concern

The *Pinus flexilis - Pseudotsuga menziesii / Juniperus spp. / Arctostaphylos uva-ursi* ecological community of concern is located within the proposed ropeway alignment of the Project (Map 5). Similar to limber pine, potential direct impacts to the ecological community if mitigation measures are not followed would include:

- Clearing and site preparation for ropeway towers, foundations, associated structural works and overhead electrical lines.

The ecological community of concern impact analysis conducted for the vegetation association section details that if the whole ropeway alignment and 40 m buffer (Project Area) is impacted during construction, then the maximum potential impact area before mitigation measures would equal 1.51 ha and 54% of the ecosite polygon would be affected (Table 34). As detailed in Section 3.7.1.1 , construction impacts are a precautionary approach and will likely be greatly reduced in final design to avoid impacts to vegetation below the ropeway alignment. Ropeway tower placement, avoiding a continuous cleared corridor between towers, and above-ground insulated utility infrastructure designed to slip between trees for water and sanitary sewer within this area are already being considered. Permanent impacts within the ecological community of concern due to potential ropeway towers would equal 0.01 ha and permanently impact 0.3% of the overall occurrence in the Study Area (Table 34). Impact analysis demonstrates that if sound mitigation measures in design and construction are followed, minimal impacts will occur to the ecological community of concern within the Study Area.

Pinus flexilis - Pseudotsuga menziesii / Juniperus spp. / Arctostaphylos uva-ursi is ranked as a S2 ecological community of concern, meaning it has six to 20 occurrences or few remaining hectares regionally. If mitigation measures are followed the 2.1 ha total area occurrence of the ecological community can be maintained with minimal permanent impacts (0.01 ha), and there will be no associated regional impacts. NatureServe description for the ecological community notes that limber pine is highly susceptible to white pine blister rust, which can decimate stands. Mitigating impacts to limber pine within this area will also contribute to minimizing regional impacts for this ecological community.

Table 34: Impact Analysis for Ecological Communities of Concern located within the Study Area during the Construction and Operation Phase of the Project.

Ecological community of Concern	Maximum Potential Impact – Construction (ha)	Maximum potential impact area as a percentage of ecosite area within the Study Area (%)	Permanent Impact Area – Operations (ha)	% of permanent impact of ecosite within the Study Area
Pinus flexilis - Pseudotsuga menziesii / Juniperus spp. / Arctostaphylos uva-ursi	1.51	54	0.01	0.3%

3.7.2.6 Old Growth Forest

Old growth forest habitat is located in the high elevations and in close vicinity to the Summit Lodge Area footprint and within the associated trail network. Potential direct impacts that could occur if mitigation measures are not followed include:

- Clearing of portions of old growth forest during site preparation for construction of the Summit Facility Area and trails.

The old growth forest impact analysis conducted for the vegetation association section details that if the 40 m buffer (Project Area) is impacted during construction 1.51 ha and 46% of the ecosite polygon will be affected (**Table 35**). As detailed previously, construction impacts are a precautionary approach and will be greatly reduced in final design to avoid impacts by siting of the footprint for the Summit Lodge and constructing trails that will require minimal tree clearing. Permanent impacts within the old growth forest area due to the trail network construction and Summit Lodge would equal 0.01 ha and permanently impact 0.3% of the overall occurrence in the Study Area (**Table 35**). Impact analysis demonstrates that if sound mitigation measures in design and construction for the trail network and Summit Lodge are followed, permanent impacts will affect 2.1% of the total old growth forest in the Study Area.

Table 35: Impact Analysis for Old Growth Forest located within the Study Area during the Construction and Operation Phase of the Project.

	Maximum Potential Impact - Construction (ha)	Maximum potential impact area as a percentage of Old Growth within the Study Area (%)	Permanent Impact Area -Operations (ha)	% of permanent impact of Old Growth Forest within the Study Area
Old Growth Forest	4.63	46	0.21	2.1 %

3.7.2.7 Invasive Plants

Weeds, or invasive plants, are non-native that can adapt quickly and aggressively causing lasting damage. Negative effects include:

- Reducing habitat available to native plants (also affecting insect, fish and wildlife species);
- Reducing property values; and
- Increase in land management costs.

Potential impacts associated with the Project may occur during both the construction and operational phases.

During construction, there is a risk of introducing and spreading invasive plants through unclean vehicles and equipment entering the site, the importation of contaminated soil or sediment from off-site sources, and the use of landscaping materials or revegetation seed mixes containing non-native or invasive species. In addition, existing invasive plant populations within staging or work areas may spread if not appropriately managed, and disturbed or exposed soils that are not revegetated promptly may provide suitable conditions for invasive plant establishment.

During the operational phase, recreational use of the alpine trail network may contribute to the introduction and spread of invasive plants through foot traffic. Off-trail travel and trampling of vegetation may further increase the risk of introducing or dispersing invasive species into previously undisturbed areas.

Implementation of appropriate mitigation measures will reduce the likelihood of invasive plant introduction, establishment, and spread throughout both the construction and operational phases of the Project.

3.8 Wildlife

3.8.1 Baseline Information

Existing wildlife and wildlife habitat conditions within the Study Area were assessed using available habitat mapping, species-specific habitat models, and wildlife occurrence and movement data. These data were used to characterize the distribution, quality, and use of wildlife habitat within the Study Area and to identify areas of importance to key indicator species.

3.8.1.1 Amphibians and Reptiles

Several amphibians and reptiles occur in the Bow Valley area. Amphibians listed as occurring in the Bow Valley area include the following: boreal toad (*Bufo boreas boreas*) recorded at Carrot Creek/Lake area west of the Study Area (McIvor & McIvor, 2021); Wood frog (*Rana sylvatica*) and Columbia spotted frog (*Rana luteiventris*) recorded east of the Study Area in the Yamnuska Natural area (McIvor & McIvor, 2021); Long-toed salamander (*Ambystoma macrodactylum*) recorded in Banff National Park (McIvor & McIvor, 2021) and in the town of Canmore as supplied by provincial map data. Common reptiles

expected in the Bow Valley area are restricted to the wandering garter snake (*Thamnophis elegans*). Table 36 lists potentially occurring species in the Project Area, restricted by habitat requirements.

The Project Area and Study Area were found to be a dry site. Amphibian habitat, including wetland or riparian areas, were not observed during the field study. Six man made ponds constructed as part of the Silvertip Golf Course exist within the Study Area. Stoneworks Creek, two tributaries to Stonework's Creek, Stone Creek and Cougar Creek are located within the Study Area. The Project Area is located outside the sensitive snake hibernacula range (Government of Alberta, 2020). Reptile hibernacula may be present within the Project Area or Study Area as hibernacula features include bedrock, large rock or talus features were observed during the field investigations.

No amphibians or reptiles were observed during the field survey. Table 36 presents the amphibian and reptile species that potentially occur in the LSA and therefore can potentially occur in the Project Area.

Table 36: Amphibians and Reptiles Potentially Occurring within the Project Area

Common Name	Scientific Name
Long-toed Salamander	*Ambystoma macrodactylum*
Western Toad	*Anaxyrus boreas*
Columbia Spotted Frog	*Rana luteiventris*
Western Tiger Salamander	*Ambystoma mavortium*
Wandering Garter Snake	*Thamnophis elegans*
Red-sided Garter Snake	*Thamnophis sirtalis*
Wood frog	*Rana sylvatica*

(McCallum and Paquet, 1993)

3.8.1.2 Birds

Bird populations were studied on the Stone Creek properties including the Project Area, Study Area between 1993 and 2002. The results of these studies were presented in three reports. McCallum and Paquet present the results from the first studies conducted by Sherrington in 1993 prior to development of the Silvertip (McCallum & Paquet, 1993). McCallum and Paquet (1997) assessed the cumulative impacts in the Silvertip bird communities during the development phase of the project between 1993 and 1997 (McCallum & Paquet, 1997). Jacques-Whitford (2003) conducted point-count surveys of the Study Area between 1996 and 2002 (Whitford, 2003).

A total of 106 species of birds were observed between 1993 and 2002 within the Project Area and Study Area during the three studies listed above. A list of the bird species from these studies that have the potential to occur within the Project Area and Study Area is presented in Appendix C-3. Table 37 presents the bird species recorded in the Project Area using the ARU between July 28 and 30 2026.

Table 37: Bird Species recorded in the Project Area by the Autonomous Recording Units.

Common Name	Scientific Name
American crow	Corvus brachyrhynchos
American goldfinch	Spinus tristis
American robin	Turdus migratorius

Common Name	Scientific Name
American three-toed woodpecker	Picoides dorsalis
American tree sparrow	Spizelloides arborea
Barred owl	Strix varia
Belted kingfisher	Megaceryle alcyon
Black-backed woodpecker	Picoides arcticus
Black-billed magpie	Pica hudsonia
Black-capped chickadee	Poecile atricapillus
Black-crowned night-heron	Nycticorax nycticorax
Blackpoll warbler	Setophaga striata
Bohemian waxwing	Bombycilla garrulus
Boreal owl	Aegolius funereus
Broad-winged hawk	Buteo platypterus
Brown creeper	Certhia americana
Cedar waxwing	Bombycilla cedrorum
Chestnut-backed chickadee	Poecile rufescens
Chipping sparrow	Spizella passerina
Clark's nutcracker	Nucifraga columbiana
Clay-colored sparrow	Spizella pallida
Common goldeneye	Bucephala clangula
Common grackle	Quiscalus quiscula
Common raven	Corvus corax
Common redpoll	Acanthis flammea
Cooper's hawk	Accipiter cooperii
Dark-eyed junco	Junco hyemalis
Downy woodpecker	Dryobates pubescens

Common Name	Scientific Name
Eastern kingbird	Tyrannus tyrannus
Eurasian collared-dove	Streptopelia decaocto
Eurasian wigeon	Mareca penelope
Evening grosbeak	Coccothraustes vespertinus
Gadwall	Mareca strepera
Golden-crowned kinglet	Regulus satrapa
Great blue heron	Ardea herodias
Great horned owl	Bubo virginianus
Greater white-fronted goose	Anser albifrons
Green-winged teal	Anas crecca
Hairy woodpecker	Dryobates villosus
Hammond's flycatcher	Empidonax hammondii
Long-eared owl	Asio otus
MacGillivray's warbler	Geothlypis tolmiei
Mallard	Anas platyrhynchos
Marsh wren	Cistothorus palustris
Mountain chickadee	Poecile gambeli
Mourning dove	Zenaida macroura
Northern flicker	Colaptes auratus
Northern pygmy-owl	Glaucidium gnoma
Northern rough-winged swallow	Stelgidopteryx serripennis
Northern saw-whet owl	Aegolius acadicus
Northern shrike	Lanius borealis
Orange-crowned warbler	Leiothlypis celata
Pacific wren	Troglodytes pacificus

Common Name	Scientific Name
Palm warbler	Setophaga palmarum
Pileated woodpecker	Dryocopus pileatus
Pine grosbeak	Pinicola enucleator
Pine siskin	Spinus pinus
Purple finch	Haemorhous purpureus
Red crossbill	Loxia curvirostra
Red-breasted nuthatch	Sitta canadensis
Red-naped sapsucker	Sphyrapicus nuchalis
Red-necked grebe	Podiceps grisegena
Red-tailed hawk	Buteo jamaicensis
Rock pigeon	Columba livia
Ruby-crowned kinglet	Corthylio calendula
Ruby-throated hummingbird	Archilochus colubris
Rufous hummingbird	Selasphorus rufus
Sandhill crane	Antigone canadensis
Savannah sparrow	Passerculus sandwichensis
Say's phoebe	Sayornis saya
Short-eared owl	Asio flammeus
Townsend's solitaire	Myadestes townsendi
Townsend's warbler	Setophaga townsendi
Tree swallow	Tachycineta bicolor
Tundra swan	Cygnus columbianus
Varied thrush	Ixoreus naevius
Warbling vireo	Vireo gilvus
Western flycatcher	Empidonax difficilis

Common Name	Scientific Name
White-crowned sparrow	Zonotrichia leucophrys
White-throated sparrow	Zonotrichia albicollis
White-winged crossbill	Loxia leucoptera
Yellow-rumped warbler	Setophaga coronata

3.8.1.3 Mammals

Common mammal species that may utilize the Project Area and Study Area were identified in the McCallum and Paquet report (McCallum & Paquet, 1993) that studied the Stone Creek properties and is included in Appendix C-3.

Mammal species that utilize aquatic habitat listed in the McCallum and Paquet report table are unlikely to occur in the Project Area due to dry conditions (e.g. water shrew *(Sorex palustris*)) but may occur nearby and have been included. Also included within the table are two species not native to the area the striped skunk (*Memphitis memphitis*) and the domestic rabbit (*Oryctolagus cuniculus*). Occasional sightings of skunks in the Bow Valley may occur due to animals accidentally transported via train (Melanie Percy, pers. comm. 2017).

Red squirrel (*Tamiasciurus hudsonicus*) caches were frequently found within the Project Area and Study Area during the field studies.

Wildlife cameras located in the Study Area detected the following species, Mule deer was the most frequently observed species.:

- Black bear (*Ursus americanus*),
- Cougar (*Puma concolor*),
- Coyote (*Canis latrans*),
- Elk (*Cervus canadensis*),
- Mule deer (*Odocoileus hemionus*),
- Red fox (*Vulpes vulpes*),
- Red squirrel (*Tamiasciurus hudsonicus*),
- White-tailed deer (*Odocoileus virginianus*),
- Wolf (*Canis lupus*),
- Snowshoe hare (*Lepus americanus*),
- Northern flying squirrel (*Glaucomys sabrinus*),
- American marten (*Martes americana*),
- Grizzly bear (*Ursus arctos*),
- Striped skunk (*Mephitis mephitis*),
- Hoary marmot (*Marmota caligata*),
- Chipmunk (*Neotamias* spp.),

- Bobcat (*Lynx rufus*),
- Bighorn sheep (*Ovis canadensis*),
- Canada lynx (*Lynx canadensis*),
- Common raven (*Corvus corax*),
- Moose (*Alces alces*),
- Vole (*Microtus* spp.),
- Golden-mantled ground squirrel (*Callospermophilus lateralis*),
- American pika (*Ochotona princeps*),
- Bushy-tailed woodrat (*Neotoma cinerea*), and
- Mouse (*Peromyscus* spp.).

Results of the ARU indicated the presence of the following bats:

- Northern myotis (*Myotis septentrionalis*);
- Long-legged myotis (*Myotis volans*);
- Western small-footed myotis (*Myotis ciliolabrum*);
- Little brown myotis (*Myotis lucifugus*);
- Hoary boat (*Aeorestes cinereus*);
- Big brown bat (*Eptesicus fuscus*);
- Silver-haired bat (*Lasionycteris noctivagans*); and
- Long-eared myotis (*Myotis evotis*).

3.8.1.4 Wildlife Activity Overview

To assess wildlife use patterns and human/wildlife activity within the Study Area, camera data from 70 cameras within the Study Area and Project Area were used for the analysis. Only the key indicator species were considered for this analysis. The selection of key indicator species is described in Section 2.8.5.1

Figure 1 summarizes the number of wildlife occurrences for key indicator species in the Study Area. The most frequently encountered species were bighorn sheep and elk, while grizzly bear, lynx and wolf were the least frequently encountered species.

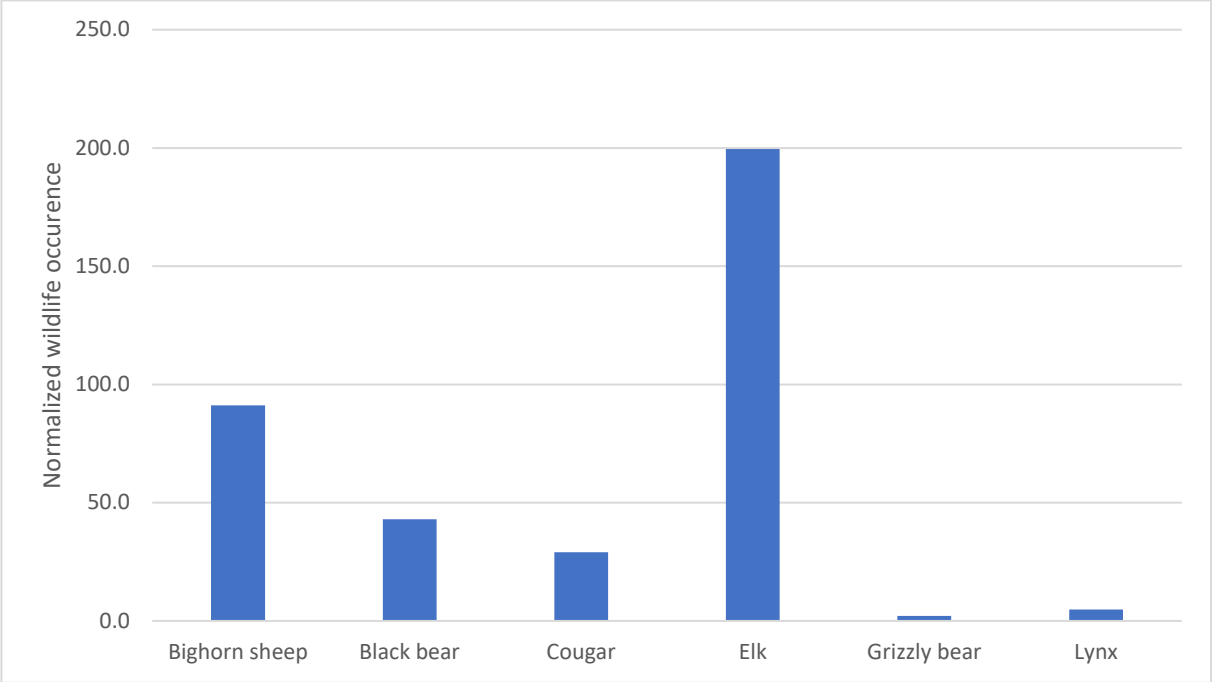


Figure 1: Normalized wildlife occurrence per key indicator species in the Study Area

3.8.1.4.1 Cougar

Most cougar activity in the Benchlands Corridor (as defined on Map 1) during the 1999–2009 snow-tracking study period occurred at high elevations within habitat patches on either side of the USWC (Lee, Managh, & Darlow, 2010). Smaller areas of concentrated cougar activity were also identified within the LSWC, including at lower elevations on the east side of Cougar Creek and at mid-elevations on the west side of Cougar Creek. Callaghan and Jevons (2001) assessed cougar habitat use using transect and snow-tracking data collected in the Benchlands between 1999 and 2000. Snow-tracking data demonstrated that cougars used both the USWC and LSWC, although the highest density of activity occurred west of Silvertip and east of Cougar Creek. Cougar use was relatively low in the vicinity of Silvertip. Cougars were also found to use areas associated with a high probability of bighorn sheep occurrence, which generally consisted of rugged terrain within and above the USWC. The study further indicated that cougars preferred areas with lower levels of human use, although individuals were occasionally observed near human development, particularly at night when human activity was lower.

Subsequent monitoring generally supports the greater use of the USWC relative to the LSWC. Chinook Co. (2011) conducted winter transect monitoring and snow-tracking in the Study Area in 2010. One cougar was observed at the southern end of the USWC, while snow tracking identified cougar activity along the northern boundary of the eastern portion of the USWC. Cougars were associated with habitat providing greater hiding cover. Garrow and Everett (2013) similarly documented cougar activity primarily within the eastern portion of the USWC during winter transect surveys, with a maximum activity rate of 0.903 tracks/24 hours. Additional observations were made in the central Study Area and within the LSWC. Snow-tracking conducted between January and March 2013 indicated that cougars primarily moved through the USWC, although movement was also detected in the LSWC and central Study Area. These results were consistent with those of Lee et al. (2010). Matrix Solution Inc. (2017) reported that cougars were relatively rare during their 2017 surveys and were only observed within the USWC, further suggesting that use of the LSWC is comparatively limited. Analysis of backtracking and telemetry data by MSES (2020) similarly indicated limited cougar use of the LSWC and identified the USWC as an

important movement route between the Harvie Heights and Indian Flats habitat patches, where cougars spend the majority of their time.

Remote-camera monitoring within the Study Area identified 29 normalized cougar detections, including 16 detections during winter and 13 during non-winter periods. During the non-winter months, the highest probability of cougar presence was identified within the USWC and Indian Flats Habitat Patch, with high probability of presence also occurring in the Wind Valley Habitat Patch (Map 7). During winter, the highest probability of presence occurred within the Indian Flats Habitat Patch, southern portion of the USWC, and Harvie Heights Habitat Patch (Map 8).

Utilization distributions generated from 3,615 locations of five GPS-collared cougars collected between 2000 and 2004 indicated that most cougar activity occurred east of Canmore, primarily within the Pigeon Wildlife Corridor, Wind Valley Habitat Patch, and Bow Flats Habitat Patch. Cougar activity within the Study Area was comparatively low (Map 9). Forty locations from one individual were recorded within the Study Area in 2001, and no GPS locations were recorded within the Project Area.

Backtracking data provided by Alberta Parks further indicate that cougars primarily travel through the USWC, with occasional movements through the central Study Area (Map 9). A total of 72 independent cougar track observations were recorded within the Study Area, representing an estimated 479 animals and a cumulative track length of 75,122 m. Within the Project Area, cougar tracks were recorded during 33 observations, representing an estimated 45 animals and a cumulative track length of 2,866 m.

Cougars are sensitive to human-use levels, although they can be relatively flexible in their response to anthropogenic disturbance (Chetkiewicz & Boyce, 2009) (Knopff, 2011). As habitat generalists, cougars can occupy a range of environments, including rural and forested areas, and may modify their activity patterns temporally to avoid periods of greater human activity (Knopff, 2011). Lee et al. (2010) concluded that cougar use of the USWC had declined since 2005, coincident with increasing levels of human activity.

Overall, the available data indicate that the USWC is used more extensively by cougars than the LSWC and appears to provide an important movement route between habitat patches. Cougar use occurs during both winter and non-winter periods, with several datasets indicating relatively greater use of the USWC during winter. The continued detection of cougar movement through the USWC, including movement between the Harvie Heights and Indian Flats habitat patches, indicates that the corridor continues to provide movement opportunities for the species despite existing human use. At least one female with a yearling was documented using both habitat patches, although it could not be determined whether this represented the same individual detected at different locations.

Analysis of cougar habitat using the RSF model developed by Chetkiewicz and Boyce (2009) indicates seasonal differences in predicted habitat quality. During winter, moderate- to high-quality habitat occurs within much of the USWC, while lower-quality habitat occurs near the upper mountain development, LSWC, and Palliser area. During summer, lower-quality habitat is more widespread throughout the Study Area, although areas of moderate to moderate/low quality are also present (Map 10). Habitat was ranked from 1 to 5 (low to high quality) during summer and from 1 to 6 during winter. During summer, moderate/low and moderate-quality habitat (Ranks 2 and 3) represented 37.9% and 29.4% of the Study Area, respectively. During winter, high-quality habitat (Rank 6) represented 63.1% of the Study Area, while low-quality habitat (Rank 1) represented 21.5%. These results indicate that the USWC provides areas of relatively higher predicted habitat quality for cougars, particularly during winter, consistent with the observed movement and activity patterns documented by snow tracking, remote cameras, and telemetry data.

Table 38: Baseline Summer Habitat Type for Cougar in the Study Area (Chetkiewicz and Boyce, 2009)

Habitat quality Rank	Area (ha)	% of Study Area
5	148.2	14.5
4	180.9	17.6
3	301.1	29.4
2	388.0	37.9
1	13.0	1.3

Table 39: Baseline Winter Habitat Type for Cougar in the Study Area (Chetkiewicz and Boyce, 2009)

Habitat quality Rank	Area (ha)	% of Study Area
6	646.6	63.1
5	20.1	2.0
4	33.3	3.3
3	45.3	4.4
2	65.2	6.4
1	220.1	21.5

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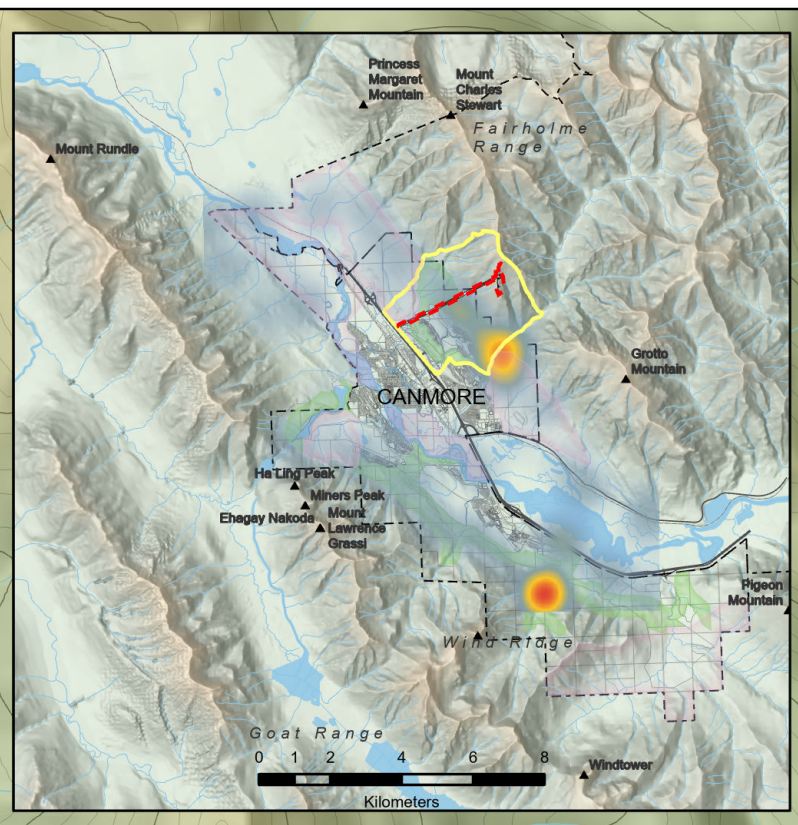
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BOW VALLEY WILDLAND PROVINCIAL PARK

Harvie Heights Regional Habitat Patch

Upper Silvertip Wildlife Corridor

Lower Silvertip Wildlife Corridor

JUNIOR DEVELOPMENTS

SILVERTIP DEVELOPMENTS

EAGLE TERRACE

Indian Flats Local Habitat Patch

South Canmore Local Habitat Patch

Trans-Canada Highway

Bow Valley Trail

Mountain Avenue

Silvertip Trail

Palliser Trail

17 Street

Fairholme Drive

8 Avenue

Railway Avenue

Benchlands Trail

Elk Run Boulevard

Rundle Drive

Bridge Road

Bow River

District of Bighorn

Town of Canmore

1400m

1600m

1800m

2000m

2200m

2400m

Silvertip Gondola

Map 7 - Cougar Camera Detections (Non-Winter)

Date: 2026-09-23

0 100 200 400 600 800

Metres

N

Camera - Normalised Count (per 100 days) - AB Parks 2026

1

5

10

Camera - No Cougar

Probability of Cougar Presence (per day, non-winter)

High

Low

Project Area

Wildlife Study Area

Wildlife Corridor

Habitat Patch

Existing Road

Municipal Boundary

Provincial Park

Lakes & Rivers

Watercourse

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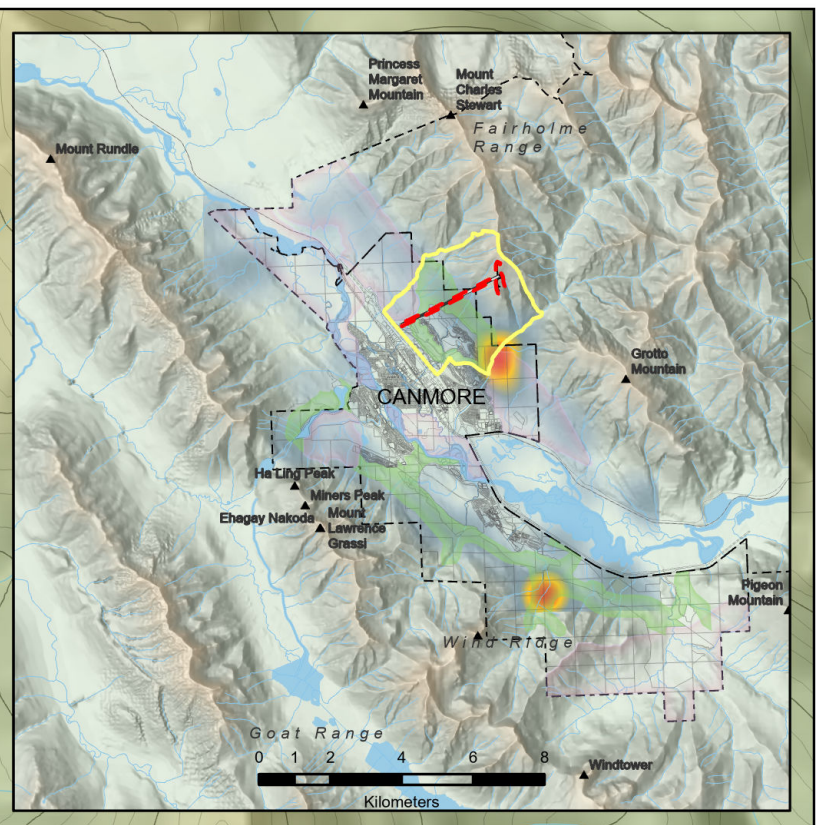
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BOW VALLEY WILDLAND PROVINCIAL PARK

2200m
2000m
1800m
1600m
1400m

Upper Silvertip Wildlife Corridor

Lower Silvertip Wildlife Corridor

JUNIOR DEVELOPMENTS

SILVERTIP DEVELOPMENTS

EAGLE TERRACE

Town of Canmore
District of Bighorn

Palliser Trail
Bow Valley Trail
Mountain Avenue
Trans-Canada Highway
Silvertip Trail
17 Street
Fairholme Drive
8 Avenue
Railway Avenue
Benchlands Trail
Elk Run Boulevard
Bow River
Rundle Drive
Bridge Road

CANMORE NORDIC CENTRE PROVINCIAL PARK

Silvertip Gondola

Map 8 - Cougar Camera Detections (Winter)

Date: 2026-09-23

0 100 200 400 600 800
Metres

N

Camera - Normalised count (per 100 days) - AB Parks 2026

1
5
10

Camera - No Cougar

Probability of Cougar Presence (per day, winter)

High
Low

Project Area
Wildlife Study Area
Wildlife Corridor
Existing Road
Municipal Boundary

Building Footprints
Provincial Park
Watercourse
Lakes & Rivers

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Silvertip Gondola

Map 9 - Cougar Backtracking and GPS Collar Data

Date: 2026-09-24

0 100 200 400 600 800
Metres

N

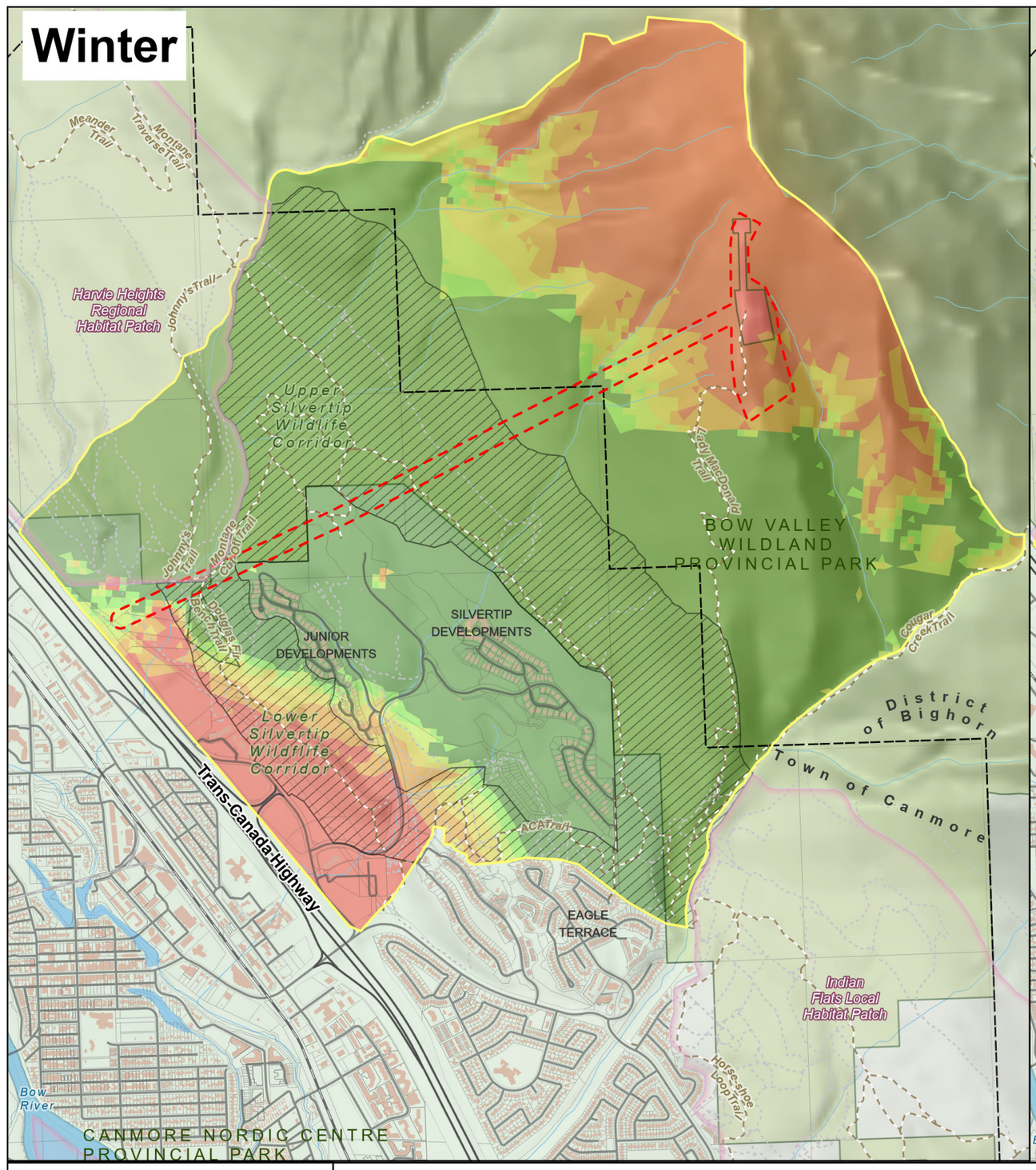
Project Area
Wildlife Study Area
Authorized Recreation Trails
Other Trail (Closed, Illegal, Overgrown, Etc.)
Proposed Footprint
Wildlife Corridor
Municipal Boundary
Habitat Patch
Provincial Park

Cougar Winter Backtracking (Alberta Parks 2026)
1998-2000
2000-2005
2005-2009
2014-2018
2018-2019
2019-2020

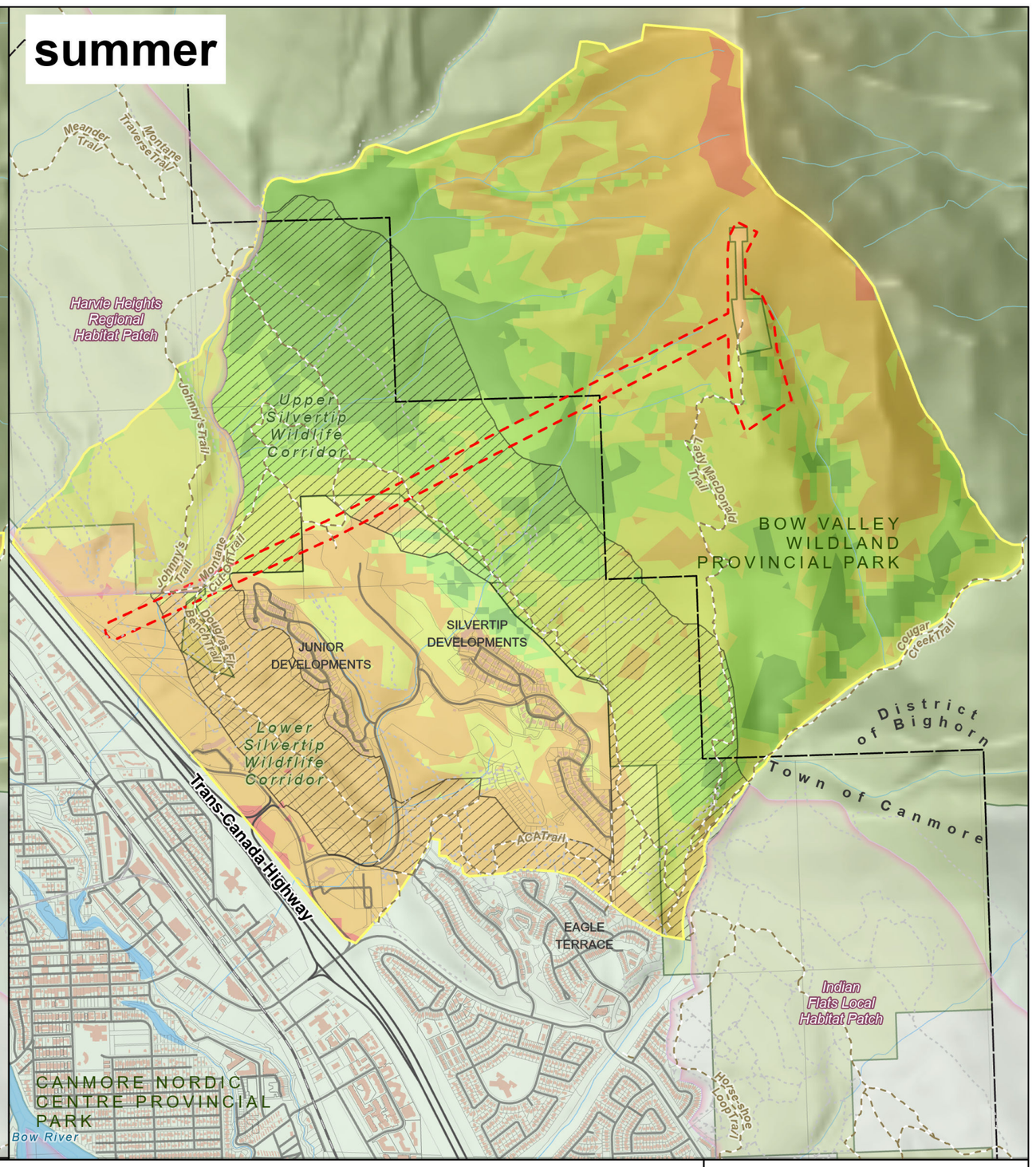
Cougar GPS Collar (year and animal) - Alberta and Canada Parks 2026
2001,A
2002,D

Existing Road
Abandoned Rail Line
Main Rail Line
Watercourse
Lakes & Rivers

Winter



summer



Silvertip Gondola

Map 10 - Cougar Resource Selection Function (Chetkietwicz & Boyce, 2009)

Date: 2026-09-23

0 100 200 400 600 800

Metres

N

Resource Selection Likelihood - RSF Chetkietwicz & Boyce, 2009

- 1 (Low)
- 2
- 3
- 4
- 5
- 6 (High)

- Project Area
- Wildlife Study Area
- Wildlife Corridor
- Habitat Patch
- Municipal Boundary
- Provincial Park
- Watercourse
- Lakes & Rivers
- Exisiting Road
- Authorized Recreation Trails
- Other Trail (Closed, Illegal, Overgrown, Etc.)
- Building Footprints

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3.8.1.4.2 Lynx

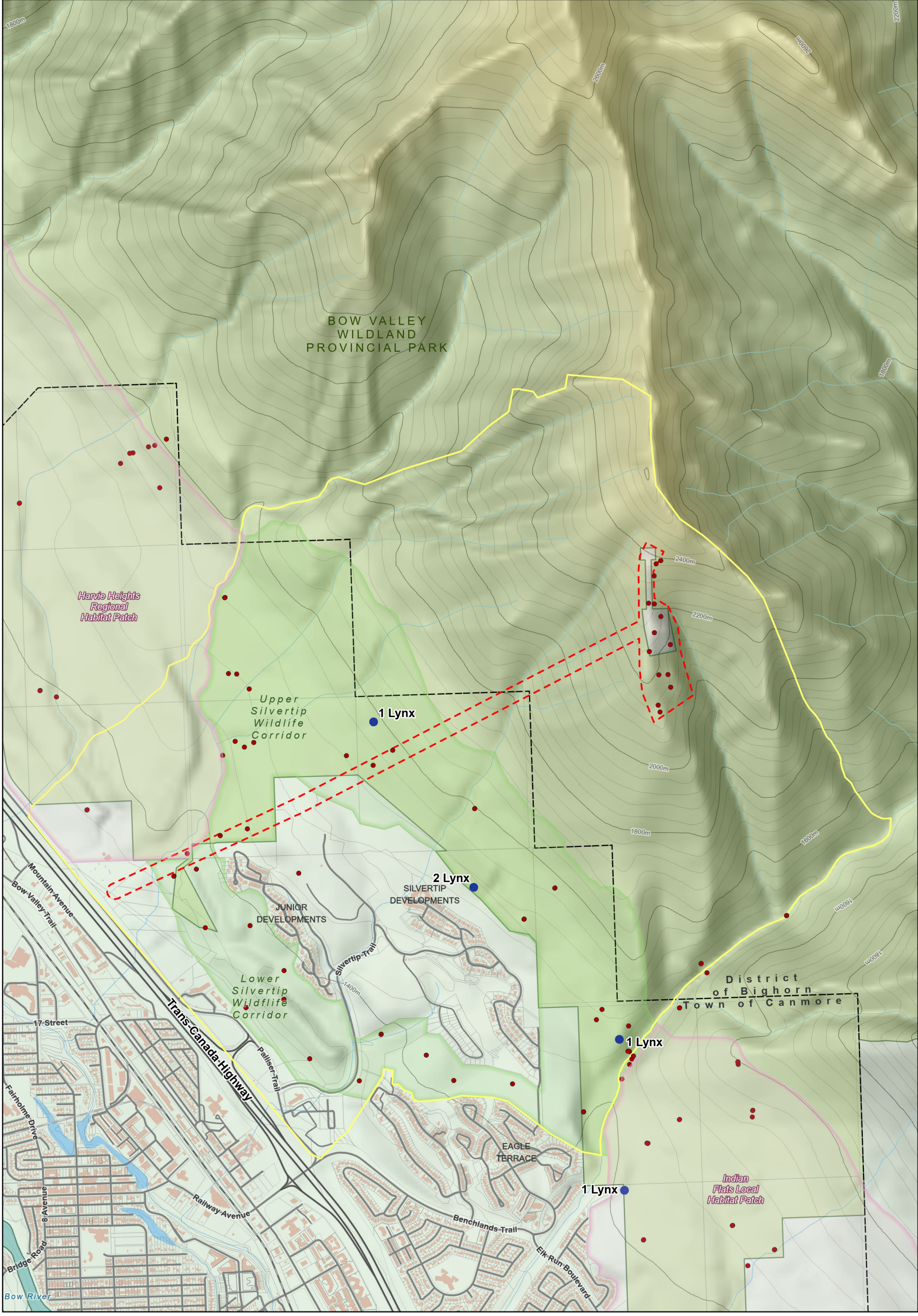
Most of the available snow-tracking data for lynx was collected during the winter of 2006–2007 and identified two main activity centres west of the Silvertip Wildlife Corridors, within the habitat patch upslope of Harvie Heights (Duke & Quinn, 2009). Data from other years is extremely limited, and no lynx were detected during the 2013 surveys conducted by Garrow and Everett (2013). Lynx occur at very low densities in the Central Rockies and are generally restricted to relatively small patches of high-quality habitat (Apps, 2000). Apps (2000) also found that lynx activity in the southern Rockies varied considerably among years and that their distribution was highly patchy. Lynx are susceptible to natural mortality associated with declines in prey populations, although this effect is less pronounced than in northern lynx populations (Apps, 2000). Competition with other carnivores may also influence lynx occurrence; high levels of coyote activity in the LSWC may limit lynx recruitment to the Study Area (Lee, Managh, & Darlow, 2010). Denning habitat may also be affected by human development and motorized and pedestrian/bicycle traffic, particularly where off-leash dogs are present, which can further limit suitable habitat for lynx in the Bow Valley (Apps, 2000).

Remote cameras within the Study Area identified less than one normalized detection of lynx. No detections were recorded during winter, while less than one normalized detection was recorded during the non-winter period (Map 11). Backtracking data indicate that lynx occasionally use the USWC. Nine independent lynx track observations were recorded within the Study Area, representing an estimated 34 animals and a cumulative track length of 9,136 m (Map 12). Within the Project Area, lynx tracks were recorded on four occasions, representing an estimated six animals and a cumulative track length of 289 m.

Suitable lynx habitat in the Study Area is associated with mature Engelmann spruce forests and younger seral stages with abundant shrub cover and dense sapling growth. The highest concentrations of suitable habitat identified through habitat mapping occur within the Harvie Heights Habitat Patch. The ABMI predictive relative abundance model (Alberta Biodiversity Monitoring Institute, 2020) indicates that 65.0% of the Study Area is classified as high relative abundance habitat, followed by 29.1% classified as moderate and 5.9% as low relative abundance habitat. Areas of highest predicted relative abundance are concentrated at mid-elevations within the Study Area (Map 13). The Project Area similarly contains a relatively high proportion of high relative abundance habitat, comprising 57.8% of the Project Area, while 38.9% is classified as moderate relative abundance and 3.3% as low relative abundance habitat (Table 40).

Table 40: Baseline Predicted Relative Abundance for Lynx in the Study Area and Project Area (ABMI, 2020)

Location	Category	Area (ha)	Percentage
Study Area	Category 1	59.99	5.85
Study Area	Category 2	298.41	29.12
Study Area	Category 3	666.39	65.03
Project Area	Category 1	1.26	3.28
Project Area	Category 2	14.97	38.92
Project Area	Category 3	22.24	57.80



Silvertip Gondola

Map 11 - Lynx Camera Detections
(All Seasons)

Date: 2026-09-23

0 100 200 400 600 800
Metres

N

Camera Locations
- Lynx Presence (Non-Winter)
- No Lynx

- Project Area
- Wildlife Study Area
- Wildlife Corridor
- Habitat Patch
- Provincial Park

- Municipal Boundary
- Building Footprints
- Lakes & Rivers
- Watercourse
- Existing Road

Contours
- 20m Interval
- 100m Interval

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Silvertip Gondola

Map 12 - Lynx Backtracking

Date: 2026-09-23

0 100 200 400 600 800

Metres

N

Legend

- Lynx Backtracking (Alberta Parks 2026)
- Project Area
- Wildlife Study Area
- Municipal Boundary
- Habitat Patch
- Wildlife Corridor
- Provincial Park
- Building Footprints
- Lakes & Rivers
- Authorized Recreation Trails
- Other Trail (Closed, Illegal, Overgrown, Etc.)
- Watercourse

Contours

- 20m Interval
- 100m Interval

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BOW VALLEY WILDLAND PROVINCIAL PARK

Harvie Heights Regional Habitat Patch

Upper Silvertip Wildlife Corridor

Lower Silvertip Wildlife Corridor

SILVERTIP DEVELOPMENTS

JUNIOR DEVELOPMENTS

EAGLE TERRACE

District of Bighorn

Town of Canmore

Indian Flats Local Habitat Patch

South Canmore Local Habitat Patch

CANMORE NORDIC CENTRE PROVINCIAL PARK

Mountain Avenue
Bow Valley Trail
17 Street
Trans-Canada Highway
Palliser Trail
Fairholme Drive
8 Avenue
Railway Avenue
Bridge Road
Bow River
Silvertip Trail
Benchlands Trail
Elk Run Boulevard

2400m
2200m
2000m
1800m
1600m
1400m

Silvertip Gondola

Map 13 - Lynx Predicted Relative Abundance Model

Date: 2026-09-23

0 100 200 400 600 800

Metres

N

Lynx - ABMI 2024

- Category 1 - Low Relative Abundance
- Category 2 - Medium Relative Abundance
- Category 3 - High Relative Abundance
- Project Area
- Wildlife Study Area
- Habitat Patch
- Wildlife Corridor
- Municipal Boundary
- Provincial Park
- Building Footprints
- Authorized Recreation Trails
- Other Trail (Closed, Illegal, Overgrown, Etc.)
- Existing Road
- Watercourse
- Lakes & Rivers

3.8.1.4.3 Wolf

Wolves generally use higher-elevation areas farther from human development, even where prey densities are higher in developed areas (Duke & Quinn, 2009). Small areas of increased wolf activity have been identified at mid-elevations on both sides of Cougar Creek within the Silvertip Wildlife Corridors, although greater activity is generally associated with the habitat patches to the east and west of the corridors (Duke & Quinn, 2009). Wolves generally avoid areas of human development, including the golf course, despite the relatively high density of prey species using these areas.

Callaghan and Jevons (2001) used transect and snow-tracking data collected between 1999 and 2000 to assess wolf use of the Study Area and found evidence that Silvertip may act as a filter to wolf movement. During their study, wolves used the corridor west of Silvertip extensively but rarely travelled through the USWC and generally avoided areas east of Cougar Creek. Subsequent work by Callaghan and Jevons (2004) showed that wolves regularly used the USWC but rarely used the LSWC. Wolves were also associated with habitat providing greater hiding cover. Wolf movement was positively correlated with elevation and negatively correlated with distance from trails, while wolf presence was not associated with the probability of finding prey (Callaghan & Jevons, 2004).

Chinook Co. (2011) conducted winter transect monitoring and snow-tracking in the Study Area in 2010. Seven wolves were observed in the Harvie Heights Habitat Patch during winter transect monitoring, while snow-tracking identified wolf activity within the Harvie Heights Habitat Patch and at the western end of the USWC. No wolf activity was detected during the 2013 surveys conducted by Garrow and Everett (2013). Matrix Solution Inc. (2017) subsequently documented wolf activity during backtracking surveys.

Remote cameras within the Study Area identified five normalized detections of wolves, including two during winter and three during the non-winter period (Map 14 and Map 15). During the non-winter period, the probability of wolf presence was generally low within the Study Area, with the highest probability occurring in the Georgetown-CNC Habitat Patch. During winter, the highest probability of presence occurred within Bow Valley Provincial Park, the USWC, and the Georgetown-CNC Habitat Patch.

Backtracking data indicate that wolves primarily use the USWC to move across the landscape (Map 16). A total of 45 independent wolf track observations were recorded within the Study Area, representing an estimated 537 animals and a cumulative track length of 71,126 m. Within the Project Area, wolf tracks were recorded on 29 occasions, representing an estimated 102 animals and a cumulative track length of 2,419 m.

Telemetry data provided for the Banff National Park (BNP) project included 10 individual wolf IDs, with records extending from 2005 to 2025. Seven individual wolves were identified within the Study Area during 2015, 2017, 2019, 2020, 2021, and 2025. Two wolves were detected within the Project Area during winter 2017, and one wolf was detected during winter 2019.

Table 41: Baseline Predicted Relative Abundance for Wolf in the Study Area and Project Area (ABMI, 2020)

Location	Category	Area (ha)	Percentage
Study Area	Category 1	60.81	5.93
Study Area	Category 2	449.16	43.83
Study Area	Category 3	514.81	50.24
Project Area	Category 1	1.26	3.28
Project Area	Category 2	20.69	53.79

Location	Category	Area (ha)	Percentage
Project Area	Category 3	16.51	42.93

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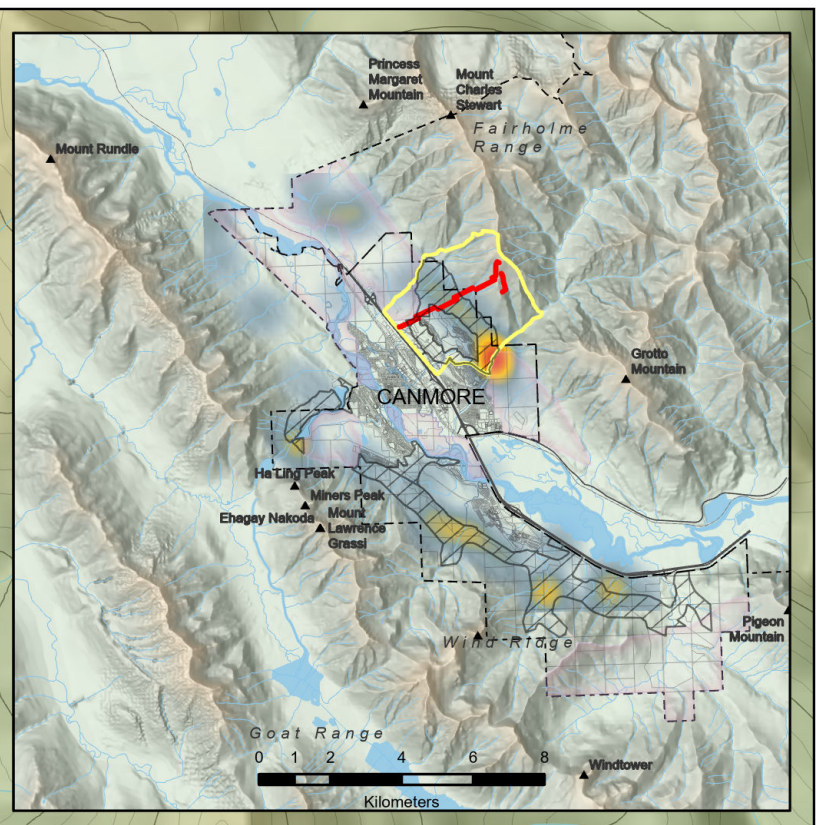
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BOW VALLEY WILDLAND PROVINCIAL PARK

Tibits Quarry Trail
Montane Traverse Trail
Meander Trail
Harvie Heights Regional Habitat Patch
Johnny's Trail
Upper Silvertip Wildlife Corridor
Montane Cut-off Trail
Lady MacDonald Trail
Cougar Creek Trail
1400m
1600m
1800m
2000m
2200m
2400m
Bow Valley Trail
Mountain Avenue
JUNIOR DEVELOPMENTS
SILVERTIP DEVELOPMENTS
Douglas Fir Bench Trail
Silvertip Trail
Lower Silvertip Wildlife Corridor
District of Bighorn
Town of Canmore
Trans-Canada Highway
17 Street
Palliser Trail
ACA Trail
Fairholme Drive
EAGLE TERRACE
Railway Avenue
8 Avenue
Benchlands Trail
Bow River
Rundle Drive
Bridge Road
Elk Run Boulevard
Indian Flats Local Habitat Patch
Horseshoe Loop Trail
CANMORE NORDIC CENTRE PROVINCIAL PARK
CANMORE
Grotto Mountain Trail

Silvertip Gondola

Map 14 - Wolf Camera Detections (Winter)

Date: 2026-09-23

0 100 200 400 600 800
Metres

N

Camera - Normalised Count (per 100 days) - AB Parks 2026

1
5
10

Camera - No Wolf

Probability of Wolf Presence (per day, winter)

High
Low

Project Area
Wildlife Study Area
Wildlife Corridor
Habitat Patch
Watercourse

Existing Road
Authorized Recreation Trails
Other Trail (Closed, Illegal, Overgrown, Etc.)
Highway

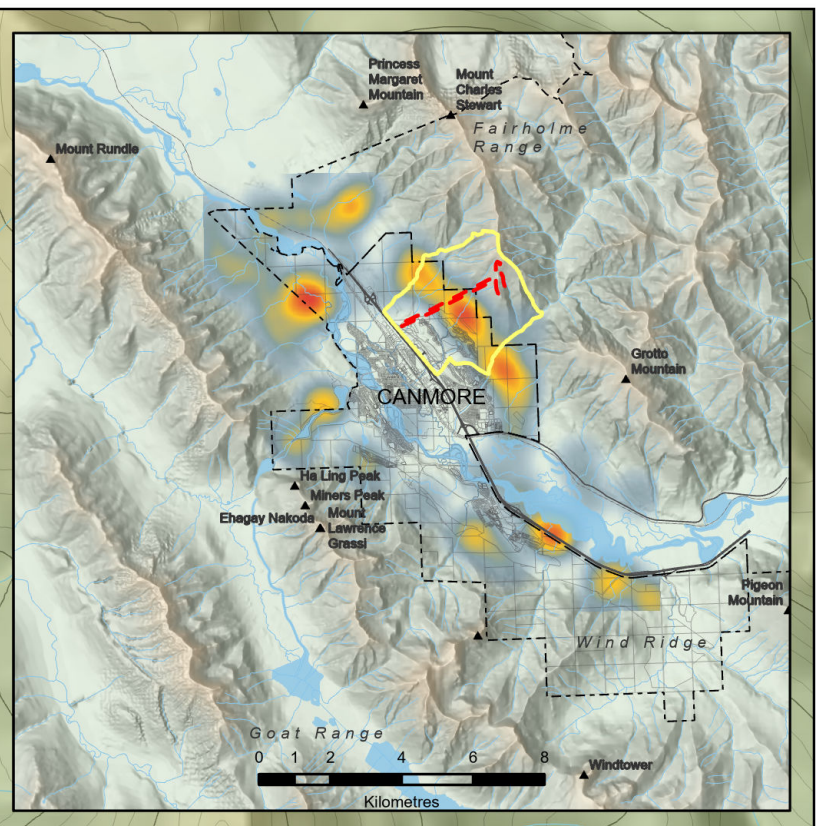
Existing Road
Municipal Boundary
Provincial Park

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BOW VALLEY WILDLAND PROVINCIAL PARK

Tibits Quarry Trail
Montane Traverse Trail
Meander Trail
Harvie Heights Regional Habitat Patch
Johnny's Trail
Upper Silvertip Wildlife Corridor
Lady MacDonald Trail
Cougar Creek Trail
Montane Cut-off Trail
Bow Valley Trail
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Trans-Canada Highway
JUNIOR DEVELOPMENTS
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Town of Canmore
Fairholme Drive
8 Avenue
Railway Avenue
Benchlands Trail
EAGLE TERRACE
Elk Run Boulevard
Bow River
Bridge Road
Rundle Drive
Indian Flats Local Habitat Patch
Horseshoe Loop Trail
Grotto Mountain Trail
CANMORE NORDIC CENTRE PROVINCIAL PARK
CANMORE

1400m
1600m
1800m
2000m
2200m
2400m

Silvertip Gondola
Map 15 - Wolf Camera Detections (Non-Winter)

Date: 2026-09-23

0 100 200 400 600 800
Metres

N

Camera - Normalised Count (per 100 days) - AB Parks 2026
1
5
10

Camera - No Wolf

Probability of Wolf Presence (per day, non-winter)
High
Low

Project Area
Wildlife Study Area
Wildlife Corridor
Habitat Patch
Existing Road

Watercourse
Authorized Recreation Trails
Other Trail (Closed, Illegal, Overgrown, Etc.)
Lakes & Rivers

Building Footprints
Provincial Park
Municipal Boundary

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Silvertip Gondola

Map 16 - Wolf Backtracking and GPS Collar Data

Date: 2026-09-24

0 100 200 400 600 800
Metres

N

Wolf Backtracking by Season (Alberta Parks 2026)
- 1994-2000
- 2000-2008
- 2015-2016
- 2016-2017
- 2021-2022

Wolf GPS Collar Data Tracks (Alberta Parks 2026)
- 2015-2019
- 2020
- 2021
- 2022
- 2024
- 2025

- Project Area
- Study Area Wildlife
- Wildlife Corridor
- Building Footprints
- Habitat Patch
- Provincial Park
- Municipal Boundary
- Watercourse
- Lakes & Rivers
- Existing Road

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Silvertip Gondola

Map 17 - Wolf Predicted Relative Abundance Model

Date: 2026-09-23

0 100 200 400 600 800
Metres

N

Grey Wolf - ABMI 2024

- Category 1 - Low Relative Abundance
- Category 2 - Moderate Relative Abundance
- Category 3 - High Relative Abundance
- Wildlife Study Area
- Project Area
- Wildlife Corridor
- Habitat Patch
- Municipal Boundary
- Provincial Park
- Existing Road
- Authorized Recreation Trails
- Other Trail (Closed, Illegal, Overgrown, Etc.)
- Building Footprints
- Watercourse
- Lakes & Rivers

3.8.1.4.4 Grizzly Bear

Telemetry data provided for the BNP project included records from nine unique grizzly bear collar IDs between 2002 and 2017. Only one collared bear was detected within the Study Area, with detections occurring during summer and fall 2014. No telemetry records were located within the Project Area. Data provided by Environment Canada for the Kananaskis project included up to six collar IDs from 2014 and 2016, with no grizzly bear detections within the Study Area or Project Area. Similarly, data from four collar IDs collected between 2000 and 2003 recorded no grizzly bear detections within the Study Area or Project Area. Most grizzly bear activity identified from radio-collared bears occurred south of Canmore, with some activity within the Harvie Heights Habitat Patch and relatively limited use around Silvertip (Map 18).

Remote cameras recorded two normalized grizzly bear detections within the Study Area, including one during spring and less than one normalized detection during both fall and winter (Map 19). The majority of grizzly bear detections occurred within the Harvie Heights Habitat Patch. The remote-camera utilization distribution model indicates a low probability of grizzly bear presence throughout most of the Study Area. Female grizzly bears with cubs were detected only by cameras located within the Harvie Heights Habitat Patch.

Grizzly bear use of the Study Area is expected to be low given the current level of human use within the Silvertip Wildlife Corridor and the documented tendency of grizzly bears in the Canmore area to avoid areas with high levels of human use (Gibeau, Herrero, McLellan, & Woods, 1998; Chetkiewicz & Boyce, 2009).

Map 20 and Map 21 show the results of the grizzly bear RSF model, with habitat data extracted from the model presented in Table 42. During fall, the Study Area contained 505.4 ha (49%) of low suitability habitat, 268.9 ha (26%) of moderate suitability habitat, and 256.0 ha (25%) of high suitability habitat, with no very high suitability habitat identified. Within the Project Area, 8.3 ha (49%) was classified as low suitability, 6.3 ha (37%) as moderate suitability, and 2.5 ha (15%) as high suitability habitat. The proportion of low suitability habitat was similar between the Project Area and Study Area, while the Project Area contained a greater proportion of moderate suitability habitat and a lower proportion of high suitability habitat. Overall, the Project Area does not contain a disproportionate concentration of higher suitability fall habitat relative to the Study Area.

During spring, the Study Area contained 181.4 ha (18%) of low suitability habitat, 285.1 ha (28%) of moderate suitability habitat, 246.2 ha (24%) of high suitability habitat, and 317.5 ha (31%) of very high suitability habitat. Within the Project Area, 7.2 ha (42%) was classified as low suitability, 1.4 ha (8%) as moderate suitability, 3.7 ha (22%) as high suitability, and 4.7 ha (27%) as very high suitability habitat. Although all suitability classes identified within the Study Area are represented within the Project Area, the Project Area contains a greater proportion of low suitability habitat and a slightly lower proportion of very high suitability habitat than the Study Area. Therefore, the Project Area does not represent a disproportionate concentration of higher-suitability spring habitat based on the RSF model.

During summer, the Study Area contained 372.6 ha (36%) of low suitability habitat, 317.5 ha (31%) of moderate suitability habitat, 81.0 ha (8%) of high suitability habitat, and 259.2 ha (25%) of very high suitability habitat. Within the Project Area, 8.4 ha (49%) was classified as low suitability, 3.5 ha (20%) as moderate suitability, 3.2 ha (19%) as high suitability, and 2.0 ha (12%) as very high suitability habitat. Compared with the broader Study Area, the Project Area contains a greater proportion of low suitability habitat and a lower proportion of very high suitability habitat, indicating that it provides a lower proportion of the highest-suitability summer habitat relative to the surrounding Study Area.

Across seasons, the Project Area contains all RSF suitability classes identified within the Study Area; however, the distribution of habitat suitability generally differs from that of the broader Study Area. The Project Area contains a greater proportion of low suitability habitat and a lower proportion of very high suitability habitat during spring and summer, while fall habitat is predominantly low to moderate suitability.

Overall, the RSF model does not indicate that the Project Area represents a disproportionate concentration of higher-suitability grizzly bear habitat within the Study Area.

Table 42: Baseline Habitat Type for Grizzly Bear in the Study Area (Nielsen, et al., 2006)

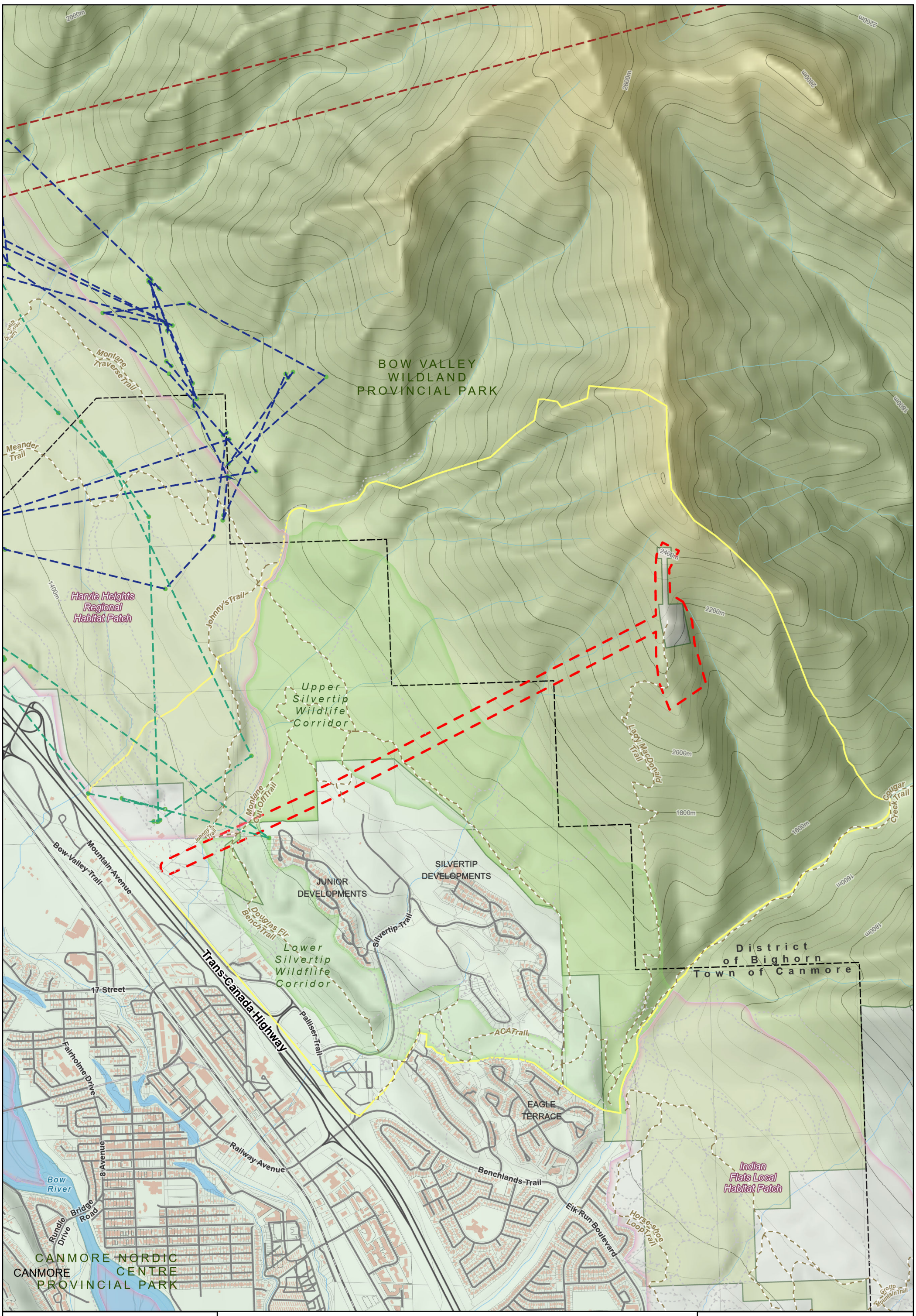
Season	Location	Low ha (%)	Medium ha (%)	High ha (%)	Very High ha (%)	Total Area (ha)
Fall	**Study Are**	505.4 (49%)	268.9 (26%)	256.0 (25%)	0.0 (0%)	1,030.3
	Project Area	17.6 (46%)	17.1 (45%)	3.7 (10%)	0.0 (0%)	38.5
Spring	**Study Area**	181.4 (18%)	285.1 (28%)	246.2 (24%)	317.5 (31%)	38.5
	Project Area	12.4 (32%)	4.5 (12%)	11.6 (30%)	10.1 (26%)	17.0
Summer	**Study Area**	372.6 (36%)	317.5 (31%)	81.0 (8%)	259.2 (25%)	38.5
	Project Area	16.1 (42%)	9.0 (23%)	10.2 (26%)	3.3 (9%)	17.0

Analysis of grizzly bear habitat was derived from Habitat State model results generated by (Nielsen, et al., 2006). The lower half of the Study Area is sink habitat, meaning the use of the habitat presents a high risk of mortality for grizzly bears. This is due to the close proximity of human development. The upper half of the Study Area provides both primary and secondary habitat with a patch of non-critical habitat in the north corner.

Map 22 shows the results of the Habitat State model. Habitat data was extracted from the model and are presented in Table 43. Within the non-sink habitat, primary is dominant, encompassing 317.7 ha or 31% of the Study Area.

Table 43: Baseline Habitat Type for Grizzly Bear in the Study Area (Palm et al. (2025)

Habitat quality		Area (ha)	% of LSA
Sink	Primary	240.0	17.1
	Secondary	175.4	23.4
Non-sink	Primary	317.7	31.0
	Secondary	174.9	17.1



Silvertip Gondola

Map 18 - Grizzly Bear GPS Collar Data

Date: 2026-09-23

0 100 200 400 600 800

Metres

N

GPS Grizzly Bear Collar Data (Alberta and Canada Parks 2026)

- 2001
- 2013
- 2014

- Project Area
- Wildlife Study Area
- Wildlife Corridor
- Habitat Patch
- Provincial Park
- Municipal Boundary
- Existing Road
- Other Trail (Closed, Illegal, Overgrown, Etc.)
- Authorized Recreation Trails
- Building Footprints
- Watercourse
- Lakes & Rivers

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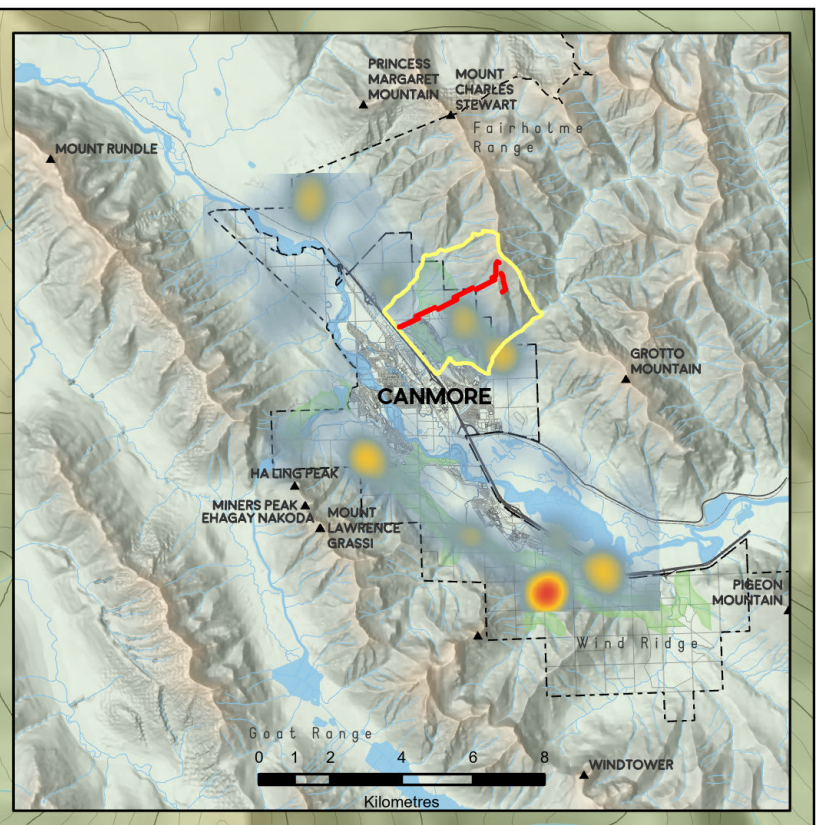
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BOW VALLEY WILDLAND PROVINCIAL PARK

Harvie Heights Regional Habitat Patch

JUNIOR DEVELOPMENTS

SILVERTIP DEVELOPMENTS

EAGLE TERRACE

DISTRICT OF BIGHORN
TOWN OF CANMORE

Indian Flats Local Habitat Patch

CANMORE NORDIC CENTRE PROVINCIAL PARK

Bow River

Trans-Canada Highway

Bow Valley Trail

Mountain Avenue

17 Street

Fairholme Drive

8 Avenue

Bridge Road

Rundle Drive

Railway Avenue

Palliser Trail

Silvertip Trail

Benchlands Trail

Elk Run Boulevard

1400m

1600m

1800m

2000m

2200m

2400m

Silvertip Gondola

Map 19 - Grizzly Camera Detections (All Seasons)

Date: 2026-09-24

0 100 200 400 600 800

Metres

N

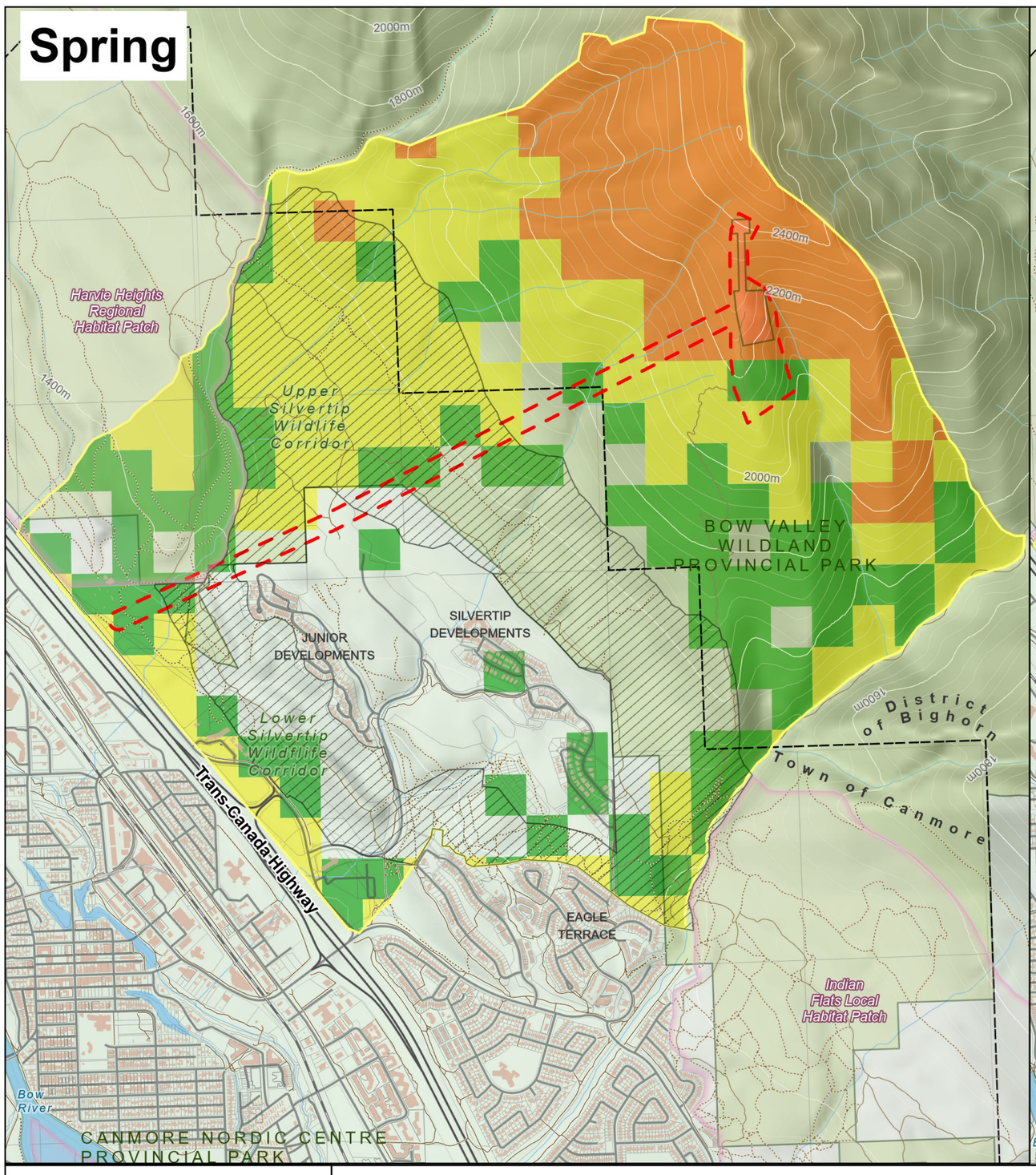
- Camera - No Grizzly Bear
- Camera - Grizzly Bear Detection (winter)
- Camera - Grizzly Bear Detection (non-winter)

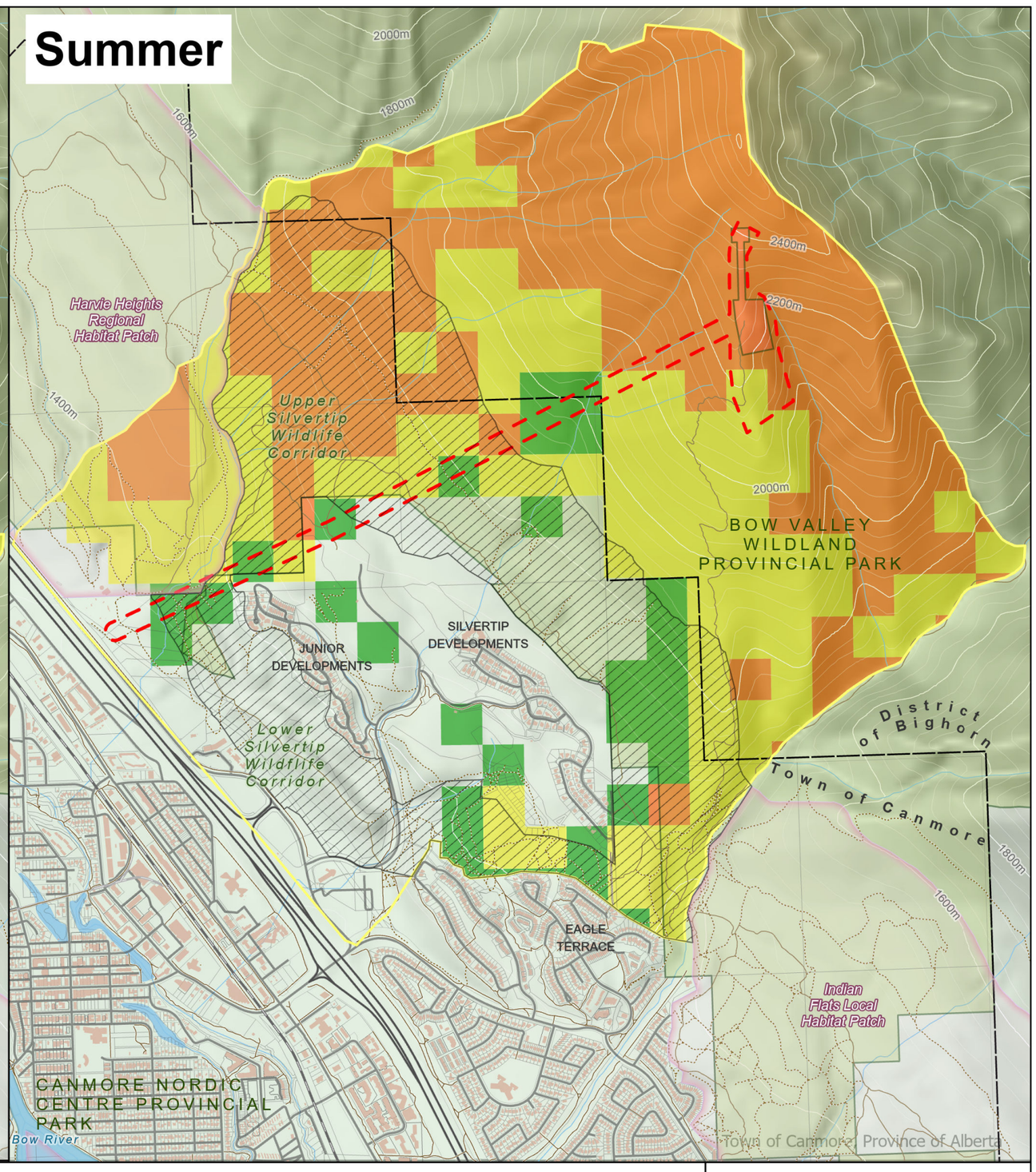
Probability of Grizzly Bear Presence (per day, non-winter)

High

Low

- Project Area
- Study Area
- Wildlife Corridor
- Habitat Patch
- Existing Road
- Building Footprints
- Municipal Boundary
- Provincial Park
- Watercourse
- Lakes & Rivers





Silvertip Gondola

Map 20 - Grizzly Bear Utilization Distribution (Spring & Summer)

Date: 2026-09-23

0 100 200 400 600 800

Metres

N

Grizzly Bear Utilization Distribution Probability (Palm et.al 2025 Provided by Alberta Parks 2026)

- High
- Moderate
- Low

- Project Area
- Wildlife Study Area
- Wildlife Corridor
- Habitat Patch

- Building Footprints
- Provincial Park
- Authorized Recreation Trails

- Other Trail (Closed, Illegal, Overgrown, Etc.)
- Existing Road
- Municipal Boundary

- Watercourse
- Lakes & Rivers

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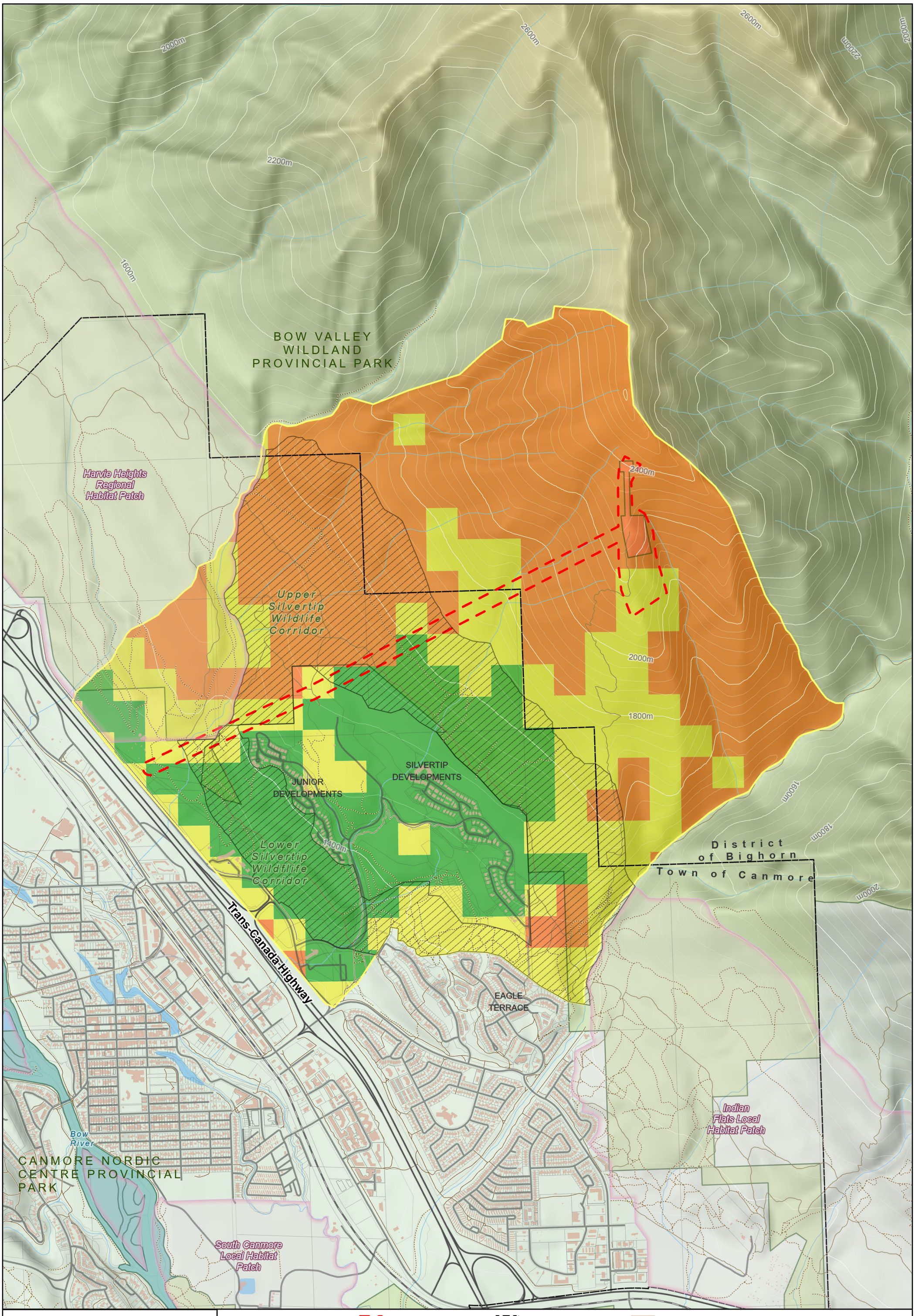
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Silvertip Gondola

Map 21 - Grizzly Bear Utilization Distribution (Fall)

Date: 2026-09-23

0 100 200 400 600 800

Metres

N

Grizzly Bear Relative Grizzly Bear Utilization Distribution Probability (Palm et.al 2025 Provided by Alberta Parks 2026)

- High
- Moderate
- Low

- Project Area
- Wildlife Study Area
- Wildlife Corridor
- Habitat Patch
- Municipal Boundary
- Provincial Park
- Building Footprints
- Lakes & Rivers
- Watercourse
- Existing Road
- Authorized Recreation Trails
- Other Trail (Closed, Illegal, Overgrown, Etc.)

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Silvertip Gondola

Map 22 - Grizzly Bear Habitat States

Date: 2026-09-23

0 100 200 400 600 800
Meters

N

Grizzly Bear Habitat States (Nielsen et. al. 2006, provided by Alberta Parks)

- Primary Habitat
- Secondary Habitat
- Primary Sink Habitat
- Secondary Sink Habitat

- Project Area
- Wildlife Study Area
- Wildlife Corridor
- Habitat Patch
- Authorized Recreation Trails

- Other Trail (Closed, Illegal, Overgrown, Etc.)
- Exisiting Road
- Building Footprints
- Municipal Boundary

- Provincial Park
- Watercourse
- Lakes & Rivers

3.8.1.4.5 Black Bear

Jacques Whitford Environment Limited (2005) conducted wildlife monitoring between 1992 and 2005 and reported that black bear use within the Study Area occurred primarily within the USWC. A total of 26 black bear signs were recorded within the USWC, compared with six signs within the LSWC.

Remote cameras recorded 42 normalized black bear detections within the Study Area (Map 23 to Map 25). During the spring foraging season, 11 normalized detections were recorded, followed by 13 during summer, 13 during fall, and six during winter. During spring, black bear activity was concentrated primarily within the Georgetown-CNC Habitat Patch and USWC (Map 23). Moderate to high probabilities of presence were also identified along Cougar Creek within the USWC. During summer, the highest probability of presence occurred within the Georgetown-CNC, Wind Valley, and Indian Flats Habitat Patches, as well as the USWC (Map 24). During fall, the highest probability of presence occurred within the USWC and Indian Flats Habitat Patch (Map 25).

Black bears were detected within the wildlife corridors during all foraging seasons. Female black bears with cubs were recorded in both the LSWC and USWC, indicating that the corridors continue to provide habitat and movement opportunities for different sex and age classes.

Telemetry data provided for the BNP project included records from nine black bear collar IDs between 2019 and 2022 (Map 26). Four individuals were recorded within the Study Area during both summer and spring, with detections occurring in 2019, 2020, 2021, and 2022. Three of these individuals were also detected within the Project Area on four occasions during 2020 and 2022, including three detections during summer and one during spring.

Map 27 presents the black bear habitat model. A total of 842.1 ha of black bear habitat occurs within the Study Area. Most of this habitat is classified as unconstrained primary foraging habitat, which represents 32.1% of the Study Area, followed by unconstrained primary habitat at 20.9%. Unconstrained secondary and tertiary habitat represent 6.9% and 4.2% of the Study Area, respectively (Table 44). Constrained habitat is considered restricted habitat that may provide some ecological benefits, such as foraging opportunities, but is also subject to negative effects associated with increased mortality risk, often due to proximity to human activity.

Table 44: Habitat Available within the Local Study Area for Black Bears (Cascade, 2026)

Habitat quality		Area (ha)	% of Study Area
Unconstrained	Primary foraging	328.5	32.1
	Primary	214.3	20.9
	Secondary	71.1	6.9
	Tertiary	43.4	4.2
Constrained	Primary foraging	34.6	3.4
	Primary	57.0	5.6
	Secondary	26.8	2.6
	Tertiary	66.5	6.5

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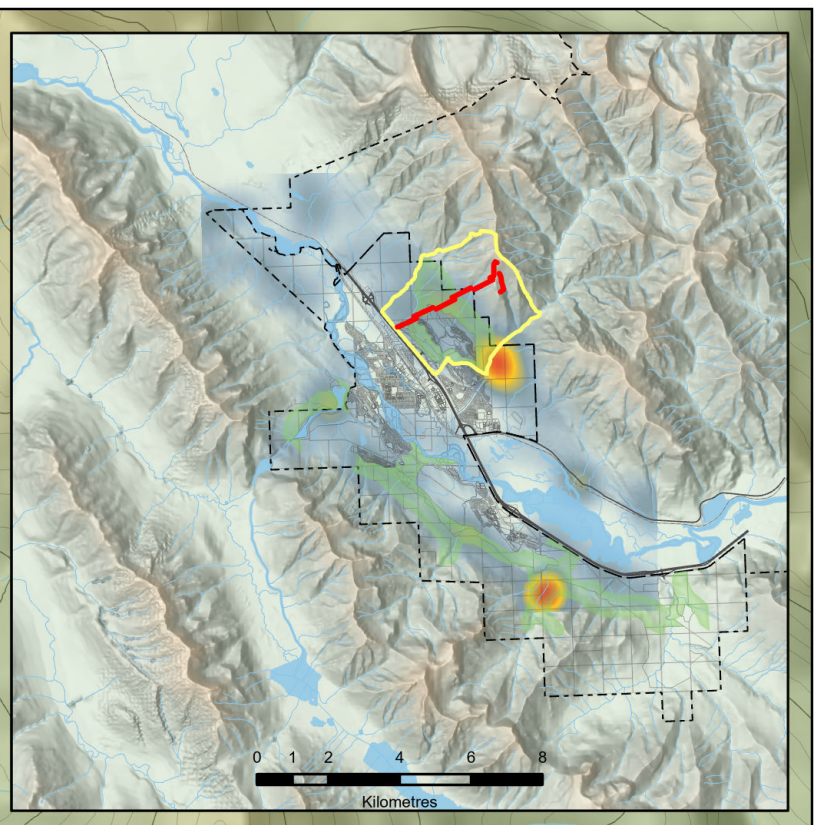
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BOW VALLEY WILDLAND PROVINCIAL PARK

Trip 1's Quarry Trail
Montane Traverse Trail
Meander Trail
1600m
Harvie Heights Regional Habitat Patch
Johnny's Trail
Montane Cut-off Trail
2200m
2000m
1800m
Lady MacDonald Trail
Cougar Creek Trail
1600m
1800m
JUNIOR DEVELOPMENTS
SILVERTIP DEVELOPMENTS
Douglas Fir Bench Trail
1400m
Trans-Canada Highway
ACA Trail
EAGLE TERRACE
District of Bighorn
Town of Canmore
Indian Flats Local Habitat Patch
Horse-shoe Loop Trail
Grotto Mountain Trail
Bow River
CANMORE NORDIC CENTRE PROVINCIAL PARK

Silvertip Gondola

Map 23 - Black Bear Camera Detections (Spring)

Date: 2026-09-23

0 100 200 400 600 800
Metres

N

Camera - Normalised Count (per 100 days) - AB Parks 2026

- 1
- 10
- Camera - No Black Bear

Probability of Black Bear Presence (per day, Spring)

- High
- Low

- Project Area
- Wildlife Study Area
- Wildlife Corridor
- Habitat Patch
- Exisiting Road
- Authorized Recreation Trails
- Other Trail (Closed, Illegal, Overgrown, Etc.)
- Lakes & Rivers
- Watercourse
- Municipal Boundary
- Provincial Park
- Abandoned Rail Line
- Main Rail Line
- Highway
- Existing Roads

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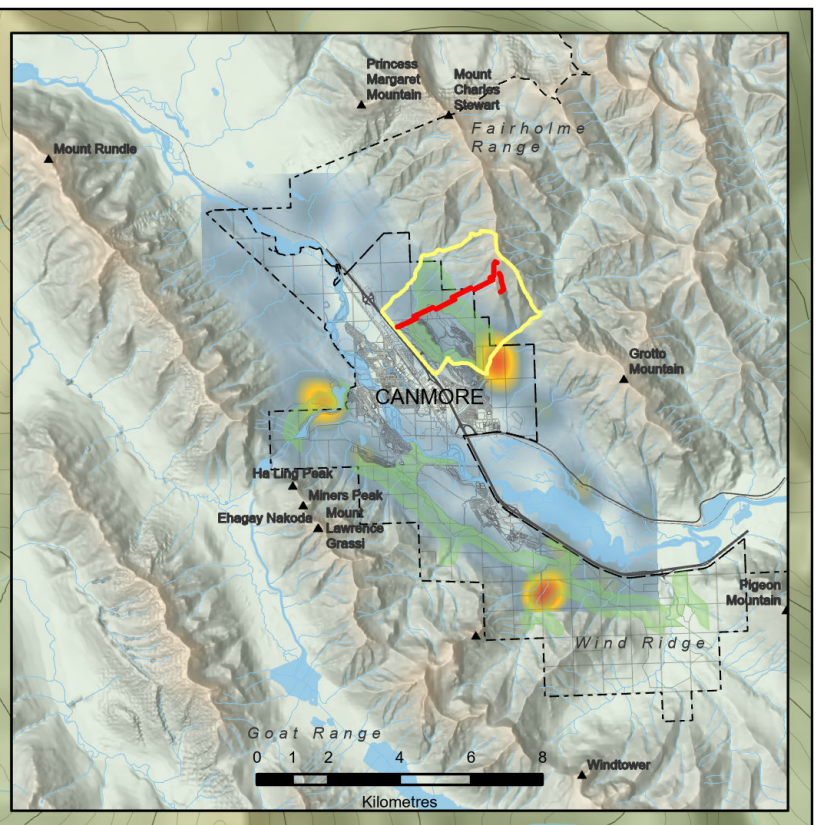
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Meander Trail
Harvie Heights Regional Habitat Patch
Johnny's Trail
Montane Cut-off Trail
Lady MacDonald Trail
Cougar Creek Trail
JUNIOR DEVELOPMENTS
SILVERTIP DEVELOPMENTS
Douglas Fir Bench Trail
Trans-Canada Highway
ACA Trail
EAGLE TERRACE
District of Bighorn
Town of Canmore
Indian Flats Local Habitat Patch
Horse-shoe Loop Trail
Grotto Mountain Trail
Bow River
CANMORE NORDIC CENTRE PROVINCIAL PARK
CANMORE
1600m
2200m
2000m
1800m
1400m

Silvertip Gondola

Map 24 - Black Bear Camera Detections (Summer)

Date: 2026-09-23

0 100 200 400 600 800
Metres

N

Camera - Normalised Count (per 100 days) - AB Parks 2026

- 1
- 10
- Camera - No Black Bear

Probability of Black Bear Presence (per day, summer)

- High
- Low

- Project Area
- Study Area
- Wildlife Corridor
- Habitat Patch
- Watercourse
- Other Trail (Closed, Illegal, Overgrown, Etc.)
- Authorized Recreation Trails
- Lakes & Rivers
- Exisiting Road
- Municipal Boundary
- Provincial Park

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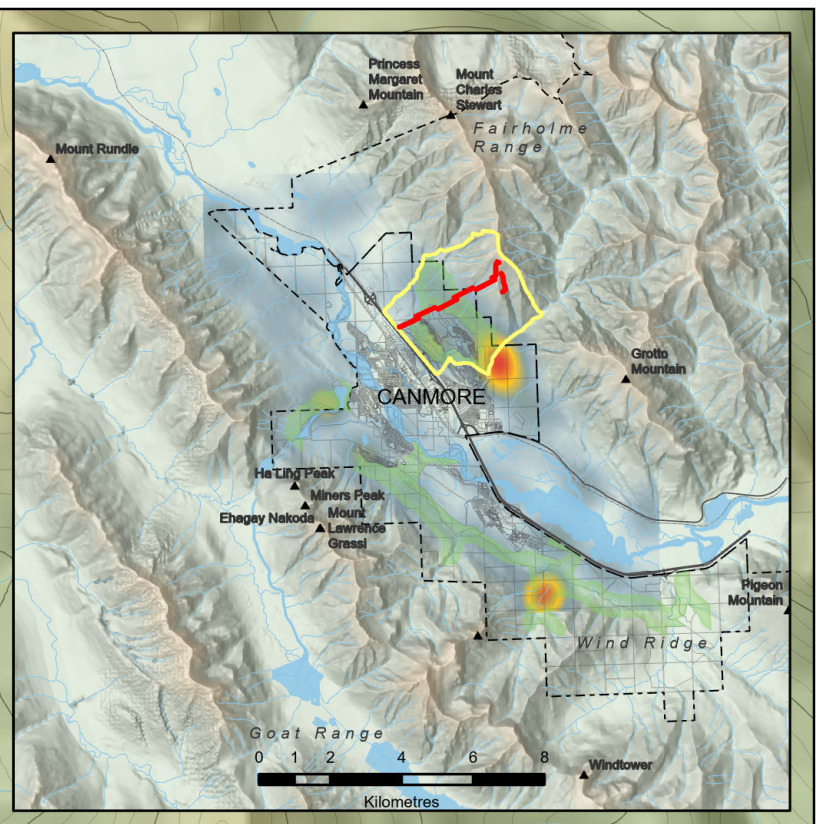
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BOW VALLEY WILDLAND PROVINCIAL PARK

Trip 1s Quarry Trail
Montane Traverse Trail
Meander Trail
1600m
2200m
Harvie Heights Regional Habitat Patch
Johnny's Trail
Montane Cut-off Trail
Johnny's Trail
Douglas Fir Bench Trail
1400m
JUNIOR DEVELOPMENTS
SILVERTIP DEVELOPMENTS
Trans-Canada Highway
ACA Trail
Lacy MacDonald Trail
2000m
1800m
Cougar Creek Trail
1600m
1800m
District of Bighorn
Town of Canmore
EAGLE TERRACE
Indian Flats Local Habitat Patch
Horse-shoe Loop Trail
Bow River
CANMORE NORDIC CENTRE PROVINCIAL PARK
CANMORE

Silvertip Gondola

Map 25 - Black Bear Camera Detections (Fall)

Date: 2026-09-23

0 100 200 400 600 800
Metres

N

Camera - Normalised Count (per 100 days) - AB Parks 2026

1

10

Camera - No Black Bear

Probability of Black Bear Presence (per day, Fall)

High

Low

Project Area
Study Area
Wildlife Corridor
Habitat Patch
Municipal Boundary

Building Footprints
Provincial Park
Lakes & Rivers
Watercourse
Exisiting Road

Authorized Recreation Trails
Other Trail (Closed, Illegal, Overgrown, Etc.)

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BOW VALLEY
WILDLAND
PROVINCIAL PARK

SILVERTIP
DEVELOPMENTS

District
of Bighorn
Town of Canmore

Indian
Flats Local
Habitat Patch

2000m
2600m
2400m
2200m
2000m
1800m
1600m
1400m

Mountain Avenue
17 Street
Railway Avenue
Bow Valley Trail
Trans-Canada Highway
Palliser Trail
Silvertip Trail
Benchlands Trail
Elk Run Boulevard
Bridge Road
Bow River

Silvertip Gondola

Map 26 - Black Bear GPS Collar Data

Date: 2026-09-23

0 100 200 400 600 800
Metres

N

GPS Black Bear Collar Data (Alberta and Canada Parks 2026)
- 2019
- 2020
- 2021
- 2022

- Project Area
- Wildlife Study Area
- Wildlife Corridor
- Habitat Patch
- Exisiting Road
- Other Trail (Closed, Illegal, Overgrown, Etc.)
- Authorized Recreation Trails
- Watercourse
- Municipal Boundary
- Provincial Park
- Building Footprints
- Lakes & Rivers

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BOW VALLEY WILDLAND PROVINCIAL PARK

CANMORE NORDIC CENTRE PROVINCIAL PARK

Harvie Heights Regional Habitat Patch

Upper Silvertip Wildlife Corridor

Lower Silvertip Wildlife Corridor

Indian Flats Local Habitat Patch

South Canmore Local Habitat Patch

JUNIOR DEVELOPMENTS

SILVERTIP DEVELOPMENTS

EAGLE TERRACE

District of Bighorn

Town of Canmore

Montane Traverse Trail
Meander Trail
Johnny's Trail
Curlew Trail
Douglas Fir Bench Trail
Silvertip Trail
Lady MacDonald Trail
Cougar Creek Trail
Mountain Avenue
Bow Valley Trail
17 Street
Trans-Canada Highway
Palliser Trail
ACA Trail
Fairholme Drive
8 Avenue
Railway Avenue
Bridge Road
Benchlands Trail
Elk Run Boulevard
Horse-shoe Loop Trail
Grotto Mountain Trail
Horse Meadows Connector Trail
Bow River

2400m
2200m
2000m
1800m
1600m
1400m

Silvertip Gondola

Map 27 - Black Bear Predicted Habitat Suitability

Date: 2026-09-23

0 100 200 400 600 800
Metres

N

Black Bear Predicted Habitat (Cascade 2022)

- Primary Foraging
- Primary
- Secondary
- Tertiary
- Primary Foraging Constrained
- Primary Constrained
- Secondary Constrained
- Tertiary Constrained
- Project Area
- Wildlife Study Area
- Habitat Patch
- Wildlife Corridor
- Municipal Boundary
- Provincial Park
- Lakes & Rivers
- Watercourse
- Exisiting Road
- Other Trail (Closed, Illegal, Overgrown, Etc.)
- Authorized Recreation Trails
- Existing Road

3.8.1.4.6 Elk

During the field visits (July 26 and 27, 2017 and July 28 to 30, 2026), elk were not observed. However, various wildlife signs of elk including scat (Photo 24) and feeding signs of stripped aspen bark (Photo 25) were found within the Project Area, confirming the presence of elk. During a previous wildlife field survey by Cascade for Block 10 of the Silvertip properties a herd of 23 elk were observed in the Study Area in October 2018 (Cascade Environmental Resource Group Ltd., 2019).



Photo 24: Elk scat observed within the Study Area. July 27, 2017.



Photo 25: Signs of elk bark stripping on aspen tree within Study Area. July 27, 2017.

Elk activity is concentrated around anthropogenically modified foraging areas, including the Silvertip Golf Course, and appears to be relatively consistent among years (Duke & Quinn, 2009). Callaghan and Jevons (2001) assessed elk habitat use using transect data collected in the Benchlands between 1999 and 2000. The highest density of elk activity occurred in the vicinity of Silvertip, particularly along the lower bench east of the Cougar Creek development, while lower elk densities were observed east of Cougar Creek and across the broader wildlife corridor. The study indicated that elk preferentially used habitat closer to human infrastructure. Callaghan and Jevons (2004) similarly found that elk extensively used both the USWC and LSWC, with a strong preference for the golf course and frequent use of the connection between the two wildlife corridors. Elk also preferred habitat with higher diffuse solar insolation and lower hiding cover.

Chinook Co. (2011) conducted pellet count surveys and winter transect monitoring in the Study Area in 2010. A total of 60 elk were observed during the winter transect survey, with the highest concentration of pellet groups recorded in the central Study Area. High concentrations of pellets were also recorded on the golf course fairways. Pellet densities of 1 to 5 groups/100 m² were observed within the proposed Project Area. During the winter transect survey, elk were primarily observed within the USWC, with fewer observations in the LSWC.

Garrow and Everett (2013) conducted pellet count surveys and winter transect monitoring in the Study Area in 2013. During April and May, the highest pellet densities (5–17 groups/100 m²) were recorded at the western end of the LSWC and on the Silvertip central golf course fairways. Winter transect surveys conducted between January and March showed that elk presence was concentrated primarily within the LSWC and the Silvertip central golf course fairways, with activity rates of up to 1.490 tracks/24 hours. These results suggest that elk preferentially use lower-elevation habitat during winter and were consistent with the findings of Lee, Managh and Darlow (2010).

Matrix Solution Inc. (2017) conducted pellet count surveys and winter transect monitoring in the Study Area in 2016 and 2017. During May and June, the highest pellet densities were recorded within the LSWC, the central Silvertip golf course fairways, and the eastern portion of the USWC. Winter transect observations showed that elk activity was concentrated primarily in the eastern portion of the USWC.

Remote cameras within the Study Area identified 200 normalized elk detections, including 81 during winter and 119 during the non-winter period. During both periods, the highest probability of elk presence occurred south of Canmore, with relatively low levels of activity within the Study Area (**Map 28** and **Map 29**).

Telemetry data analyzed by MSES (2020) indicated that elk spent approximately 22% of their time within the LSWC and only 5% within the USWC. This pattern may indicate that elk use the LSWC and Silvertip property as a refuge from predators (MSES, 2020). GPS collar data presented in **Map 30** was generated from 104,054 locations of 18 GPS-collared elk in the Bow Valley between 2008 and 2011, using data provided by Alberta Sustainable Resource Development. Of these records, 1,850 locations from five individuals occurred within the Study Area between 2008 and 2009, while no locations were recorded within the Study Area during 2010 or 2011. 21 locations from four elk were recorded within the Project Area from 2008 and 2009. Overall, the radio-collar data indicate that most elk activity in the Bow Valley occurs south of the Trans-Canada Highway, particularly around the South Canmore Habitat Patch. Within the Study Area, elk primarily used the LSWC (**Map 30**).

Backtracking data provided by Alberta Parks indicate that elk use the LSWC, USWC, and central Study Area for movement across the landscape (**Map 30**). However, the LSWC appears to be used more extensively for movement than the USWC, consistent with the telemetry data reported by MSES (2020). A total of 223 independent elk track observations were recorded within the Study Area, representing an estimated 5,407 animals and a cumulative track length of 208,991 m. Within the Project Area, elk tracks were recorded on 83 occasions, representing an estimated 356 animals and a cumulative track length of 7,343 m.

Primary elk habitat occurs in relatively small patches throughout the lower portions of the Study Area. Table 45 summarizes the habitat types available within the Study Area, with secondary habitat representing the most abundant habitat type and primary habitat the least abundant.

Table 45: Elk Habitat Available within the Study Area (Cascade, 2026)

Habitat quality	Area (ha)	% of Study Area
Primary	56.4	5.5
Secondary	127.6	12.5
Tertiary	118.5	11.6

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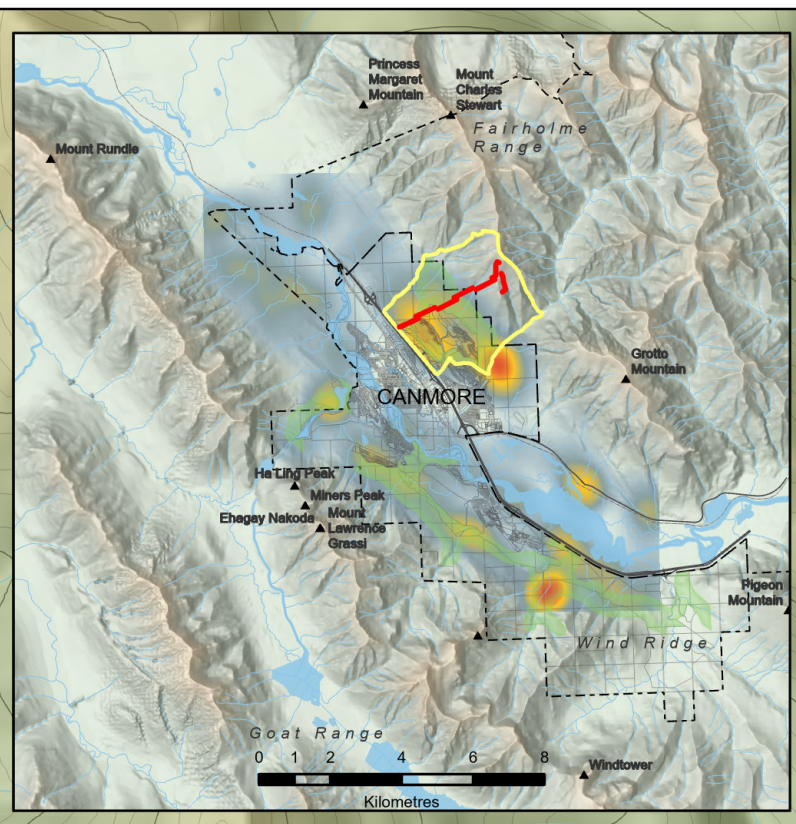
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BOW VALLEY WILDLAND PROVINCIAL PARK

Tibits Quarry Trail
Montane Traverse Trail
Meander Trail
1400m
Harvie Heights Regional Habitat Patch
Johnny's Trail
Montane Cut-off Trail
2400m
2200m
Lady MacDonald Trail
2000m
1800m
1600m
Cougar Creek Trail
Johnny's Trail
Mountain Avenue
Bow Valley Trail
JUNIOR DEVELOPMENTS
SILVERTIP DEVELOPMENTS
Douglas Fir Bench Trail
Silvertip Trail
Trans-Canada Highway
District of Bighorn
Town of Canmore
17 Street
Fairholme Drive
Palliser Trail
ACA Trail
EAGLE TERRACE
Railway Avenue
8 Avenue
Bow River
Benchlands Trail
Elk Run Boulevard
Indian Flats Local Habitat Patch
Horse-shoe Loop Trail
Rundle Drive
Bridge Road
CANMORE NORDIC CENTRE PROVINCIAL PARK
CANMORE
Grotto Mountain Trail

Silvertip Gondola

Map 28 - Elk Camera Detections (Non-Winter)

Date: 2026-09-23

0 100 200 400 600 800
Metres

N

Camera - Normalised Count (per 100 days) - AB Parks 2026

- 1
- 10
- 100

Camera - No Elk

Probability of Elk Presence (per day, non-winter)

- High
- Low

- Project Boundary 80m
- Wildlife Study Area
- Wildlife Corridor
- Habitat Patch
- Watercourse
- Exisiting Road
- Authorized Recreation Trails
- Other Trail (Closed, Illegal, Overgrown, Etc.)
- Existing Road
- Municipal Boundary
- Building Footprints
- Provincial Park
- Lakes & Rivers

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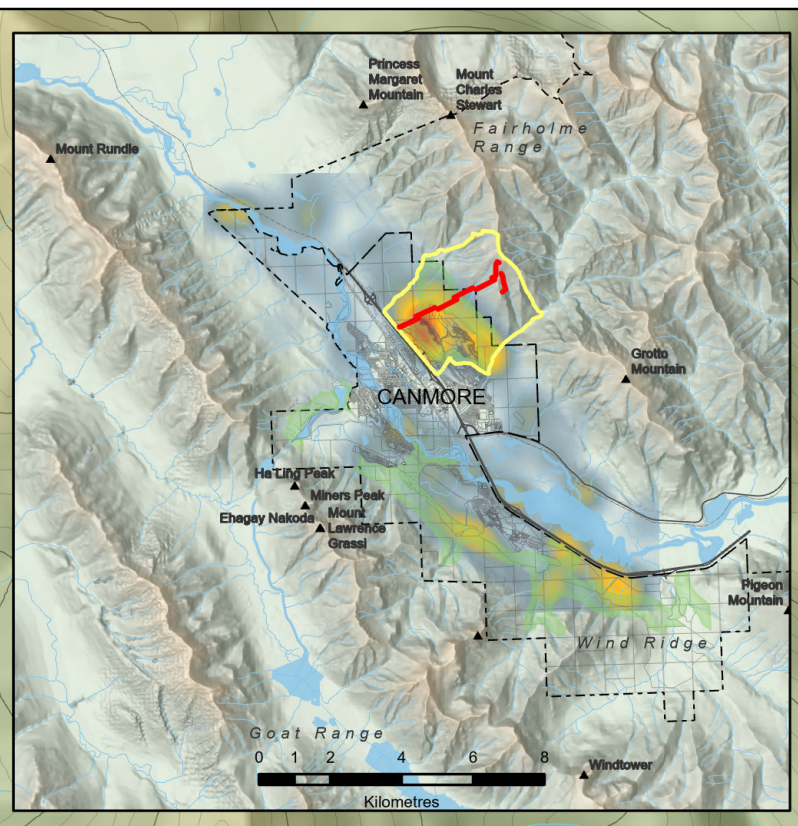
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BOW VALLEY WILDLAND PROVINCIAL PARK

Harvie Heights Regional Habitat Patch

1400m
1600m
1800m
2000m
2200m
2400m

JUNIOR DEVELOPMENTS

SILVERTIP DEVELOPMENTS

Silvertip Trail

Trans-Canada Highway

Palliser Trail

Bow Valley Trail

Mountain Avenue

17 Street

Fairholme Drive

8 Avenue

Railway Avenue

Benchlands Trail

Elk Run Boulevard

EAGLE TERRACE

District of Bighorn

Town of Canmore

Indian Flats Local Habitat Patch

Bow River

Rundle Drive

Bridge Road

CANMORE NORDIC CENTRE PROVINCIAL PARK

CANMORE

Silvertip Gondola

Map 29 - Elk Camera Detections (Winter)

Date: 2026-09-23

0 100 200 400 600 800
Metres

N

Camera - Normalised Count (per 100 days) - AB Parks 2026

1
10
100

Camera - No Elk

Probability of Elk Presence (per day, winter)

High
Low

Project Boundary 80m
Wildlife Study Area
Habitat Patch
Wildlife Corridor
Exisiting Road
Authorized Recreation Trails
Other Trail (Closed, Illegal, Overgrown, Etc.)
Watercourse
Existing Road
Municipal Boundary
Provincial Park
Lakes & Rivers

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Silvertip Gondola

Map 30 - Elk Backtracking and GPS Collar Data

Date: 2026-09-24

0 100 200 400 600 800
Metres

N

Elk Backtracking by Season (Alberta Parks 2026)
- 1998- 2000
- 2000-2001
- 2001-2002
- 2002-2003
- 2003-2004
- 2004-2005

Elk GPS Collar Data (Alberta Parks 2022)
- 2008
- 2009
- 2010

- Project Area
- Wildlife Study Area
- Habitat Patch
- Wildlife Corridor
- Authorized Recreation Trails
- Other Trail (Closed, Illegal, Overgrown, Etc.)
- Existing Road
- Watercourse
- Municipal Boundary
- Building Footprints
- Provincial Park

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BOW VALLEY WILDLAND PROVINCIAL PARK
Montane Traverse Trail
Meander Trail
Harvie Heights Regional Habitat Patch
Johnny's Trail
Upper Silvertip Wildlife Corridor
Lady MacDonald Trail
Cougar Creek Trail
Johnny's Trail
Mountain Avenue
Bow Valley Trail
JUNIOR DEVELOPMENTS
SILVERTIP DEVELOPMENTS
Silvertip Trail
Lower Silvertip Wildlife Corridor
17 Street
Trans-Canada Highway
Palliser Trail
AC4A Trail
Fairholme Drive
8 Avenue
Railway Avenue
Bridge Road
Bow River
EAGLE TERRACE
Benchlands Trail
Elk Run Boulevard
Horse-shoe Loop Trail
Indian Flats Local Habitat Patch
Grotto Mountain Trail
Horse Meadows Connector Trail
South Canmore Local Habitat Patch
CANMORE NORDIC CENTRE PROVINCIAL PARK
Town of Canmore
District of Bighorn

Silvertip Gondola
Map 31 - Elk Predicted Habitat Suitability

Date: 2026-09-23

0 100 200 400 600 800
Meters
N

Elk Predicted Habitat (Cascade 2022)
- Primary
- Secondary
- Tertiary

- Project Area
- Wildlife Study Area
- Habitat Patch
- Wildlife Corridor
- Lakes & Rivers
- Building Footprints
- Provincial Park
- Municipal Boundary
- Existing Road
- Authorized Recreation Trails
- Other Trail (Closed, Illegal, Overgrown, Etc.)
- Watercourse

3.8.1.4.7 Bighorn Sheep

During the winter season, bighorn sheep appear to have an activity centre on the mid- to high-elevation slopes of Lady MacDonald (Miistakis Institute, 2010). Additional activity centres were identified in the Banff National Park and the Indian Flat patch; however, these did not appear to be connected to the Lady MacDonald activity centre based on the area covered by the available snow-tracking data (Miistakis Institute, 2010).

Remote cameras within the Study Area identified 91 normalized detections of bighorn sheep, including 39 during winter and 52 during the non-winter period. During winter, the highest probability of presence was located at the base of the Grotto Traverse Route Trail and near Cougar Creek Canyon (Map 32). During the non-winter period, the highest probability of presence was located near the Stewart Creek underpass at the base of the Grotto Mountain Traverse Route Trail, with a lower probability of presence near the top of Lady MacDonald (Map 33).

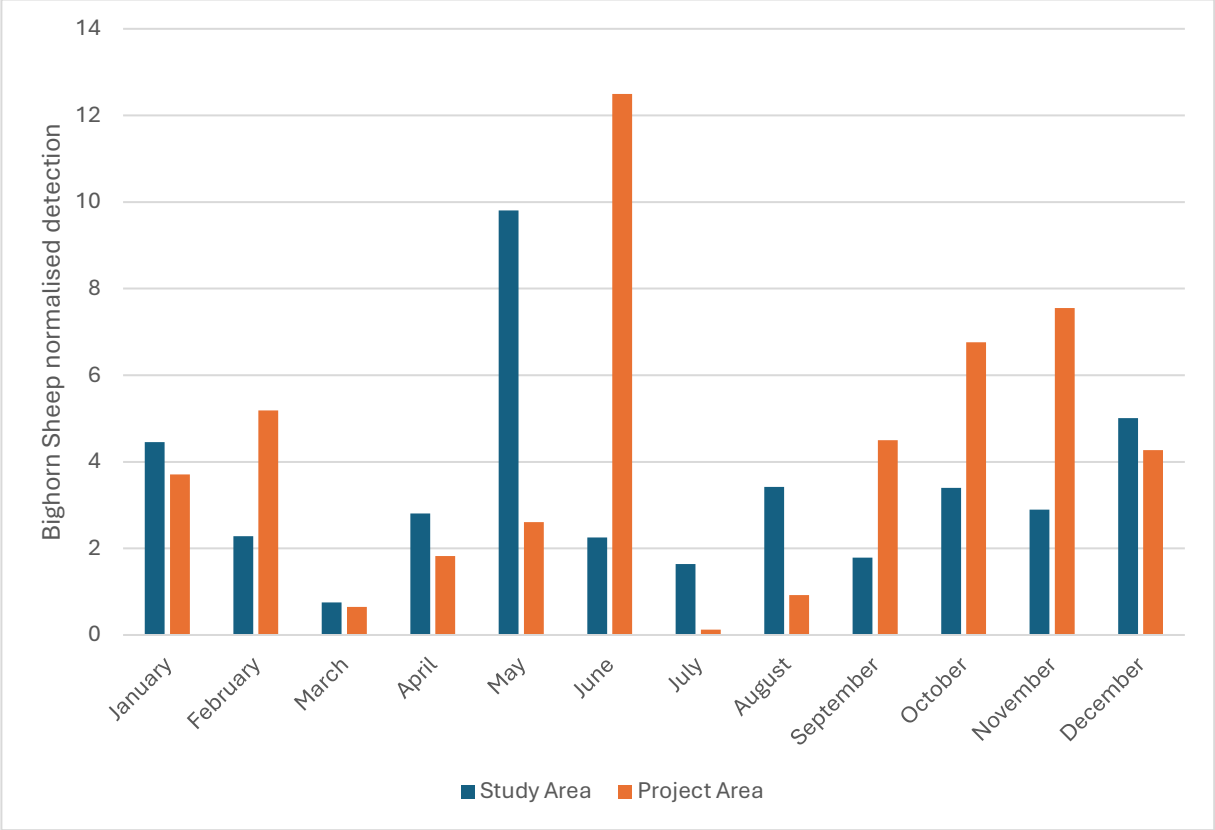


Figure 2: Normalized bighorn sheep detection in the Study Area and the Project Area.

Figure 2 presents normalized bighorn sheep detections within the Study Area and Project Area. Bighorn sheep were detected within both areas during multiple seasons, indicating that the Study Area and Project Area are used by bighorn sheep throughout the year.

Based on the available camera data, lambs were observed on four occasions at three locations (LMS 1, LM1, and LMS 8) between 2017 and 2019, within or immediately adjacent to the Project Area (See Appendix C-1).

The typical lambing season occurs between May and July (Demarchi, 2004); however, the lamb observations recorded by the cameras occurred between August and November. This likely indicates

that lambing occurred elsewhere, with ewes and lambs subsequently moving toward the upper slopes of Lady MacDonald later in the season.

Map 34 presents the bighorn sheep Predicted Habitat Model, which indicates that potential lambing and foraging habitat is concentrated primarily near the upper slopes of Lady MacDonald and not within the Gondola footprint. A total of 85.5 ha of potential foraging habitat was identified within the Study Area, representing 8.3% of the Study Area. Table 46 presents the potential lambing habitat identified within the Study Area. Secondary lambing habitat was the most abundant class, comprising 11.7 ha, while primary lambing habitat was the least abundant, comprising 3.3 ha. All mapped lambing habitat occurs in proximity to foraging habitat. Evidence of bighorn sheep use within the Study Area is presented in **Photo 26** and **Photo 27**.

Table 46: Bighorn Sheep Lambing Habitat in the Study Area (Cascade, 2026)

Habitat quality	Area (ha)	% of Study Area
Primary	3.3	0.3
Secondary	11.7	1.1
Tertiary	8.2	0.8

An RSF model was also analyzed (Poole, Serrouya, Teske, & Podrasky, 2016). The RSF results are generally consistent with the Predicted Habitat Model developed by Cascade, with higher predicted use occurring near the proposed location of the upper station near the top of Lady MacDonald (Map 35). The RSF results (Table 47) indicate that habitat within the Study Area is predominantly classified as low predicted-use habitat, with 621.6 ha (60.7%) falling within this category. Moderate predicted-use habitat accounts for 140.5 ha (13.7%), while 201.8 ha (19.7%) is classified as high predicted-use habitat and 59.8 ha (5.8%) as very high predicted-use habitat. Overall, approximately 25.5% of the existing condition of the Study Area is classified as high or very high predicted-use habitat.

Within the Project Area, low predicted-use habitat comprises 16.2 ha (42.2%), while moderate predicted-use habitat accounts for 2.4 ha (6.3%). High predicted-use habitat comprises 15.6 ha (40.6%), and very high predicted-use habitat comprises 4.2 ha (10.9%). Thus, approximately 51.5% of the Project Area is classified as high or very high predicted-use habitat, compared with 25.5% of the Study Area. Most of the predicted high and very high use habitat within the Project Area occurs at higher elevations above the USWC, including at the proposed location of the upper station on Mount Lady MacDonald. This indicates that, relative to the Study Area as a whole, the Project Area contains a disproportionately high representation of habitat predicted to have high to very high use by bighorn sheep.

The camera and RSF results provide complementary but distinct information regarding bighorn sheep use of the Study Area. The camera data provide evidence of actual bighorn sheep occurrence and indicate that the species uses the Study Area and Project Area during multiple seasons. In contrast, the RSF model identifies areas with relatively higher predicted habitat use based on the environmental characteristics included in the model and does not necessarily indicate that bighorn sheep are currently using all areas classified as high or very high relative potential predicted-use habitat. The concentration of high and very high predicted-use habitat near the proposed upper station is nevertheless relevant when considering potential effects on bighorn sheep, particularly when considered together with the observed camera detections and lamb observations in and around the Project Area.

Table 47: Bighorn Sheep Resource Selection Function Model (Poole *et al*, 2026) in the Study Area and Project Area.

Location	Predicted Relative Habitat Use	Area (Ha)	Percentage
Study Area	Low	621.6	60.7
Study Area	Moderate	140.5	13.7
Study Area	High	201.8	19.7
Study Area	Very High	59.8	5.8
Project Area	Low	16.2	42.2
Project Area	Moderate	2.4	6.3
Project Area	High	15.6	40.6
Project Area	Very High	4.2	10.9



Photo 26: View of two bighorn sheep captured by wildlife camera #2. September 23, 2017.



Photo 27: View of Big horn sheep scat near the location of the proposed Summit Lodge. July 28, 2026.

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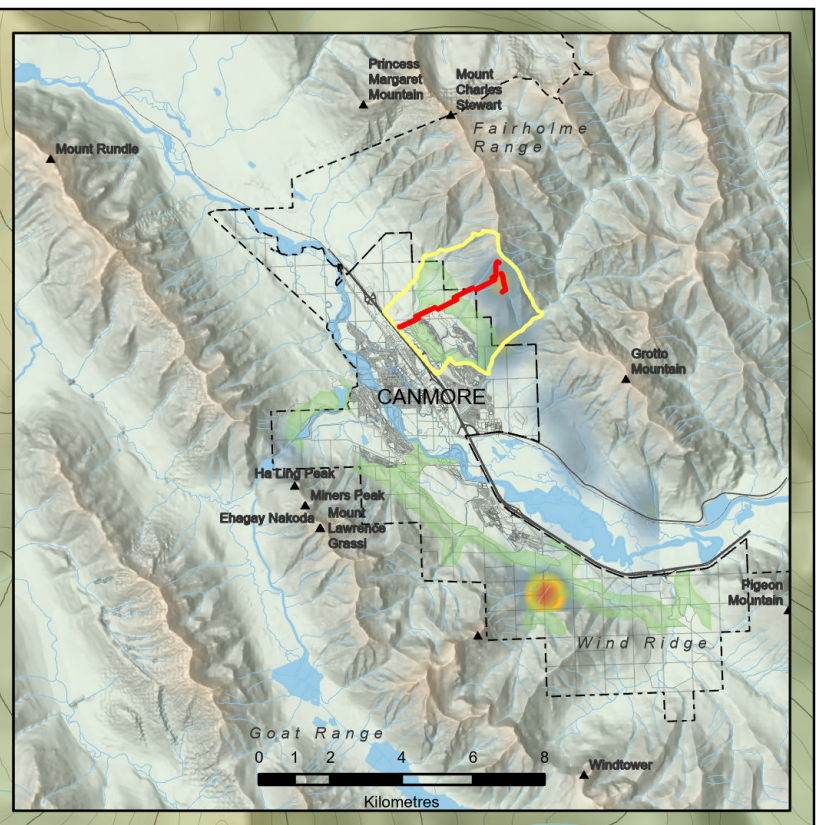
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BOW VALLEY WILDLAND PROVINCIAL PARK

Harvie Heights Regional Habitat Patch

JUNIOR DEVELOPMENTS

SILVERTIP DEVELOPMENTS

EAGLE TERRACE

CANMORE NORDIC CENTRE PROVINCIAL PARK

CANMORE

Trans-Canada Highway

Bow-Valley-Trail

Mountain Avenue

Silvertip Trail

Palliser Trail

17 Street

Fairholme Drive

8 Avenue

Railway Avenue

Benchlands Trail

Elk Run Boulevard

Rundle Drive

Bridge Road

Bow River

1400m

1600m

1800m

2000m

2200m

2400m

0.1
0.5
0.5
4.6
0.7
11.5
3.8
0.5
3.6
3.1
5.2
17.1
0.1
3
5.9
0.1
0.4

District of Bighorn

Town of Canmore

Indian Flats Local Habitat Patch

Silvertip Gondola

Map 32 - Bighorn Sheep Camera Detections (Winter)

Date: 2026-09-23

0 100 200 400 600 800
Metres

N

Camera - Normalised Count (labeled sheep per 100 days) - AB Parks 2026

1
10
100

Camera - No Bighorn Sheep

Probability of Bighorn Sheep Presence (per day, winter)

High
Low

Project Area
Wildlife Study Area
Municipal Boundary
Provincial Park
Wildlife Corridor

Exisiting Road
Authorized Recreation Trails
Other Trail (Closed, Illegal, Overgrown, Etc.)
Habitat Patch

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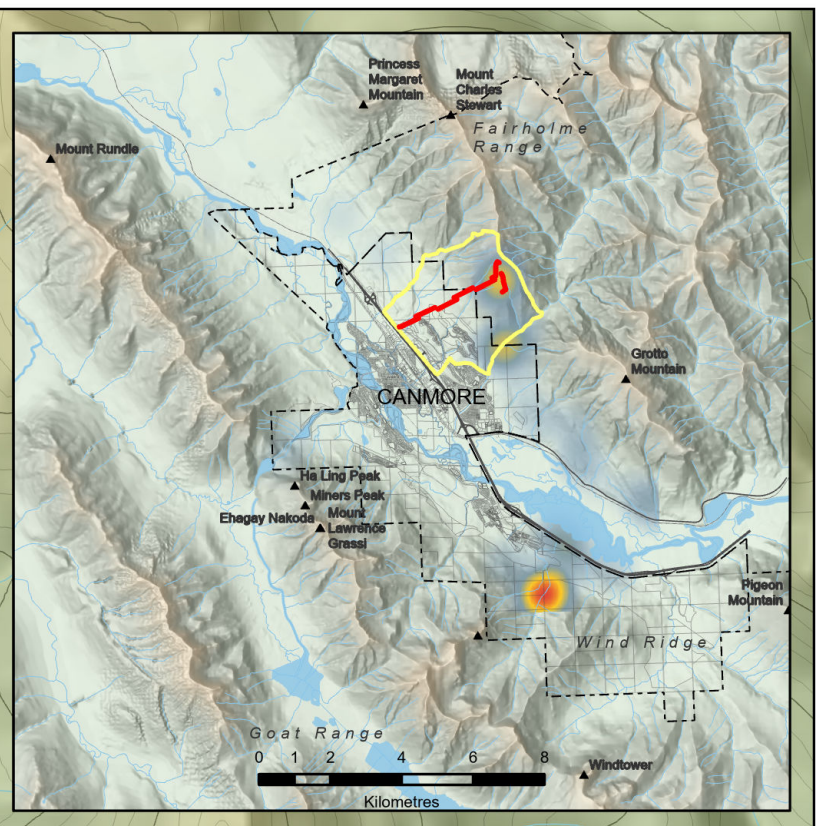
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SILVERTIP DEVELOPMENTS
EAGLE TERRACE
Fairholme Drive
8 Avenue
Railway Avenue
Benchlands Trail
Elk Run Boulevard
Horseshoe Loop Trail
Indian Flats Local Habitat Patch
Grotto Mountain Trail
Bow River
Rundle Drive
Bridge Road
CANMORE NORDIC CENTRE PROVINCIAL PARK
CANMORE

1400m 1600m 1800m 2000m 2200m 2400m

0.2 0.1 0.8 0.9 1.7 1.8 1.1 0.4 3.1 14.5 4.4 5.9 9.1 4.4 12.1 38.1 0.2 3.2 0.2 5.1 1.3 0.4 0.5 0.8

District of Bighorn
Town of Canmore

Silvertip Gondola

Map 33 - Bighorn Sheep Camera Detections (Non-Winter)

Date: 2026-09-23

0 100 200 400 600 800
Metres

N

Camera - Normalised Count (labled: sheep per 100 days) - AB Parks 2026

1
10
100

Camera - No Bighorn Sheep

Probability of Bighorn Sheep Presence (per day, non-winter)

High
Low

Project Area
Wildlife Study Area
Wildlife Corridor
Watercourse
Exisiting Road

Authorized Recreation Trails
Other Trail (Closed, Illegal, Overgrown, Etc.)
Habitat Patch
Municipal Boundary

Provincial Park
Building Footprints

Silvertip Gondola

Map 34 - Bighorn Sheep Predicted Habitat Suitability

Date: 2026-09-23

0 100 200 400 600 800

Metres

N

Camera capture locations (Alberta Parks)

- Individuals born in the same year image was captured (Young of the Year)

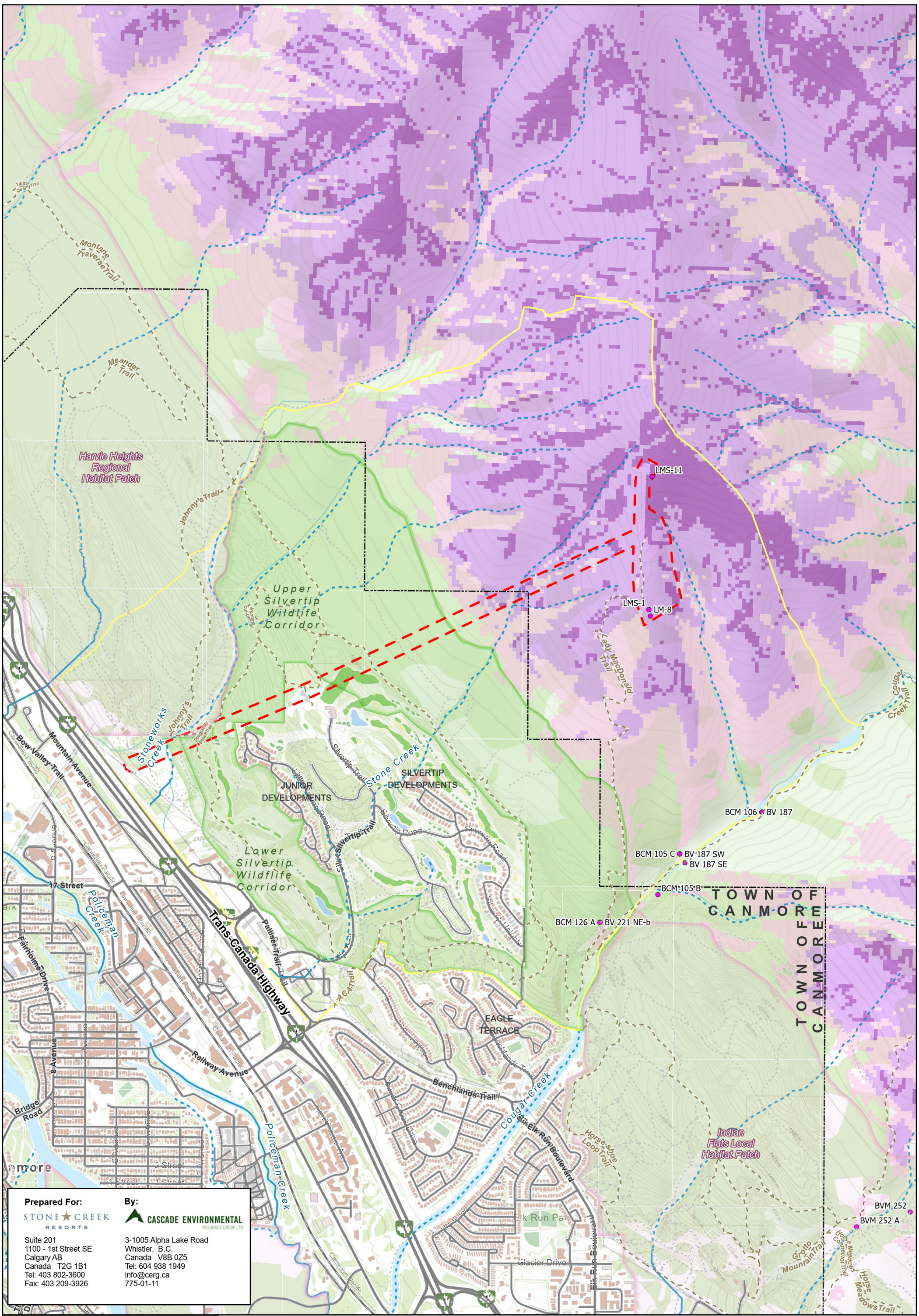
Predicted Habitat Suitability (Cascade 2022)

- Primary Lambing
- Secondary Lambing
- Tertiary Lambing
- Foraging Habitat

- Project Area
- Wildlife Study Area
- Habitat Patch
- Wildlife Corridor

- Existing Road
- Other Trail (Closed, Illegal, Overgrown, Etc.)
- Authorized Recreation Trails
- Watercourse

- Municipal Boundary
- Provincial Park
- Lakes & Rivers



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Silvertip Gondola

Map 35 - Bighorn Sheep Resource

Date: 2026-09-23

0 100 200 400 600 800

Metres

N

Camera capture locations (Alberta Parks)

- Young of Year: Individuals born in the year captured

BHS RSF Poole et. al - courtesy Alberta Parks

- Moderate
- High
- Very High
- Project Area
- Wildlife Study Area
- Municipal Boundary
- Intermittent Watercourse
- Watercourse
- Wildlife Corridor
- Habitat Patch
- Existing Road
- Municipal Boundary
- Authorized Recreation Trails
- Other Trail (Closed, Illegal, Overgrown, Etc.)

3.8.1.5 Wildlife Species of Concern

Results of the species at risk search can be found in Table 48. There are twenty-three (24) species that have the potential to occur in the Study Area.

Audio recordings identified the presence of great blue heron (*Ardea herodias*) and black-crowned night-heron (*Nycticorax nycticorax*). However, Due to the lack of permanent aquatic habitat within the Study Area, these detections are attributed to transient individuals, and the site is not anticipated to support sustained populations.

Table 48: Species at Risk potentially occurring in the Study Area

Common Name	Scientific Name	General Status of *Alberta Wild Species* (2020)	COSEWIC Status	SARA Status	*Schedule 6 of Alberta Wildlife Regulations*
Reptiles					
Wandering garter snake	*Thamnophis elegans*	Sensitive	Not Assessed	No Status	Not Listed
Birds					
Clark's nutcracker	*Nucifraga columbiana*	Sensitive	Not Assessed	No Status	Not Listed
Brown creeper	*Certhia americana*	Sensitive	Not Assessed	No Status	Not Listed
Broad-winged hawk	*Buteo platypterus*	Sensitive	Not Assessed	No Status	Not Listed
Peregrine falcon	*Falco peregrinus*	At Risk	Not at Risk	Special Concern	Endangered
Northern pygmy-owl	*Glaucidium gnoma*	Sensitive	Not Assessed	No Status	Not Listed
Barred owl	*Strix varia*	Sensitive	Not Assessed	No Status	Not Listed
Common nighthawk	*Chordeiles minor*	Sensitive	Special Concern	Special Concern	Not Listed
Black-backed woodpecker	*Picoides arcticus*	Sensitive	Not Assessed	No Status	Not Listed
Pileated woodpecker	*Dryocopus pileatus*	Sensitive	Not Assessed	No Status	Not Listed
Olive-sided flycatcher	*Contopus cooperi*	May Be At Risk	Special Concern	Special Concern	Not Listed
Western wood-pewee	*Contopus sordidulus*	May Be At Risk	Not Assessed	No Status	Not Listed
Evening grosbeak	*Hesperiphona vespertina*	Secure	Special Concern	Threatened	Not Listed
Western tanager	*Piranga ludoviciana*	Sensitive	Not Assessed	No Status	Not Listed
Mammals					

Common Name	Scientific Name	General Status of *Alberta Wild Species* (2020)	COSEWIC Status	SARA Status	*Schedule 6 of Alberta Wildlife Regulations*
Northern long-eared bat	*Myotis septentrionalis*	May Be At Risk	Endangered	Endangered	Endangered
Little brown myotis	*Myotis lucifugus*	May Be At Risk	Endangered	Endangered	Endangered
Silver-haired bat	*Lasionycteris noctivagans*	Sensitive	Endangered	No Status	Not Listed
Hoary bat	*Aeorestes cinereus*	Sensitive	Endangered	No Status	Not Listed
Grizzly bear	*Ursus arctos*	At Risk	Special Concern	Special Concern	Endangered
Fisher	*Pekania pennanti*	Sensitive	Not Assessed	No Status	Not Listed
Wolverine	*Gulo gulo*	May Be At Risk	Special Concern	Special Concern	Not Listed
Canada lynx	*Lynx canadensis*	Sensitive	Not at Risk	No Status	Not Listed
Bobcat	*Lynx rufus*	Sensitive	Not Assessed	No Status	Not Listed
Insects					
Western bumble bee	*Bombus occidentalis*	Not listed	Threatened	Not listed	Not listed

It is an offense under SARA, Sections 32 and 33 to do the following:

A. *Kill, harm, harass, capture or take an individual of a listed species that is extirpated, endangered or threatened;*
B. *Damage or destroy the residence of one or more individuals of a listed endangered or threatened species.*

As per section 34 of the *Act*, section 32 and 33 only apply on federal lands unless the species is aquatic or a species of migratory birds protected under the *Migratory Birds Convention Act (*1994*)*. In addition, the Governor in Council can issue an order making section 32 and/or 33 applicable on private land with respect to individuals of a listed wildlife species. Therefore, migratory birds and their nests are protected anywhere they occur, while the little brown myotis and northern long-eared bat habitat is only protected on federal lands. The peregrine falcon and the grizzly bear are protected as species listed as "Endangered" in the Alberta's *Wildlife Act* Schedule 6.

Wandering garter snake

The wandering garter snake (*Thamnophis elegans*) is a wide-ranging and habitat-generalist subspecies found in a variety of environments, including grasslands, open forests, meadows, and mountainous terrain, typically in close association with water. It is commonly found around lakes and slow-flowing streams, though it also occurs in deserts, plains, and forests. The species is found across a wide elevational range, from sea level to nearly 4,000 m elevation. During winter, individuals hibernate communally, often retreating into rocky crevices or talus slopes (Whitaker, 2014). No observations of this species occurred during field visits.

Clark's nutcracker
Clark's nutcracker (*Nucifraga columbiana*) is a permanent resident of high-elevation coniferous forests throughout western North America. In summer, the species prefers semi-open, mixed stands of pine, fir, and spruce growing on steep slopes and ridges, interspersed with meadows and streams, generally near the subalpine tree line. The species is largely non-migratory, undertaking only altitudinal movements to lower elevations in late fall as food availability declines (Tomback, 1998). The species is closely associated with whitebark pine (*Pinus albicaulis*) and other large-seeded conifers as a primary food source. The presence of this species in the area was confirmed based on auditory and visual records obtained during fieldwork conducted in July 2026.

Brown creeper
The brown creeper (*Certhia americana*) inhabits coniferous and mixed coniferous-deciduous forests and requires large trees, whether living or dead, for both foraging and nesting. The species forages by climbing tree trunks from the base upward, using its slender, decurved bill to glean bark-dwelling invertebrates before flying to the base of a nearby tree to repeat the process (Poulin, 2020). In the Rocky Mountain portion of its range, the species is more strongly associated with older, structurally complex conifer stands than with young second-growth forest. The presence of this species in the area was confirmed based on auditory records obtained during fieldwork conducted in July 2026.

Broad-winged hawk
The broad-winged hawk (*Buteo platypterus*) is a common breeder in large deciduous and mixed-deciduous forests of northeastern and north-central North America. It is a secretive species while nesting, with pairs spending most of their time beneath the forest canopy hunting for insects, amphibians, reptiles, mammals, and birds, becoming considerably more conspicuous during migration, when large flocks may form (Goodrich, 2020). This species was not observed during the field visits.

Peregrine falcon
The peregrine falcon is found in a variety of habitats from arctic tundra, sea coast and prairies to urban centres. Nesting habitat consists of cliff ledges or crevices and in some instance tall buildings or bridges with close proximity to good foraging habitat. Sufficient abundance of prey species is also an important characteristic of suitable habitat for the peregrine falcon (COSEWIC, 2017). A possible peregrine falcon was observed flying near the top of Lady MacDonald on July 26, 2017. The Project Area does not provide suitable nesting habitat.

Northern pygmy-owl
The northern pygmy-owl (*Glaucidium gnoma*) is a small, diurnal owl whose range broadly overlays the mountain ranges of western North America. As a diurnal forest-dwelling raptor, the species is itself vulnerable to predation by larger hawks and owls, and nesting females in particular face elevated predation risk during incubation and brooding (Deshler, 2023). In Alberta, the species has been documented along the eastern slopes of the Rocky Mountains in coniferous and mixed forest habitat (Piorecky, 2003). The presence of this species in the area was confirmed based on auditory records obtained during fieldwork conducted in July 2026.

Barred owl
The barred owl (*Strix varia*) is fairly common in mature deciduous and mixed forests, including swamps, riparian forest, and upland stands. It is typically a cavity nester, most often nesting in large trees in old forests, and is often used as an indicator species in the management of mature forest habitat (Bierregaard, 2025). In Alberta, the species' distribution and habitat selection along the eastern slopes of the Rocky Mountains has been specifically studied (Piorecky, 2003). The presence of this species in the area was confirmed based on auditory records obtained during fieldwork conducted in July 2026.

Common nighthawk
Common Nighthawks require open ground or clearings for nesting. The species breeds in a wide range of open habitats including sandy areas (e.g., dunes, eskers, and beaches), open forests (e.g., mixedwood and coniferous stands, burns, and clearcuts), grasslands (e.g., short-grass prairies, pastures, and grassy plains), sagebrush, wetlands (e.g., bogs, marshes, lakeshores, and riverbanks), gravelly or rocky areas

(e.g., outcrops, barrens, gravel roads, gravel rooftops, railway beds, mines, quarries, and bare mountain tops and ridges), and some cultivated or landscaped areas (e.g., parks, military bases, airports, blueberry fields, orchards, cultivated fields). The female lays eggs directly on the on soil or bare rock in sites with more open ground cover with low or no vegetation, adequate camouflage from predators, and nearby shade (Environment Canada, 2016).

The Study Area is located within the distribution range of common nighthawk; however, the species was not observed during the bird surveys conducted between 1992, 2002 and 2026. Therefore, the species is unlikely to occur in the Project Area or Study Area.

Black-backed woodpecker
The black-backed woodpecker *(Picoides arcticus)* is a burn specialist, occurring year-round in coniferous forests of northern Alberta, with the highest densities typically recorded in young burned stands where it forages on wood-boring insects. The species is adapted to forests with high densities of standing dead trees, and fire suppression and post-fire salvage logging are considered detrimental to its habitat (Alberta Biodiversity Monitoring Institute., 2023). The presence of this species in the area was confirmed based on auditory records obtained during fieldwork conducted in July 2026.

Pileated woodpecker
The pileated woodpecker (*Dryocopus pileatus*) is a permanent resident of mature deciduous, coniferous, and mixed forests. In Alberta, the species has been found to select large dead and damaged trees at the substrate scale and to favour older forest stands at the territory scale (Bonar, 2001). Only large-diameter trees provide sufficient girth to contain nest and roost cavities, so populations are of concern where late-successional forest is converted to younger stands (Bull, 2020). The presence of this species in the area was confirmed based on auditory records obtained during fieldwork conducted in July 2026.

Olive-sided flycatcher
The olive-sided flycatcher is most often associated with natural forest openings; forest edges near natural openings (such as wetlands) or open to semi-open forest stands and will use human-made openings (such as clearcuts). The species will use early successional forest, although the presence of tall snags and residual live trees for foraging and nesting is essential (COSEWIC, 2018).

The olive-sided flycatcher was observed on the Stone Creek Property in 1993 and 1996. However, no record of the species was found on the SARA mapping data provided by the government of Alberta, which gathers data from 1961 to 2011. Based on the lack of records on the provincial database, the two sightings in 1993 and the three sightings in 1996, the species is unlikely to occupy the study area on a regular basis.

Western wood-pewee
The western wood-pewee *(Contopus sordidulus)* breeds in open wooded areas across western North America. In summer, the species occupies evergreen forests, woodlands, coniferous forests, and both open- and closed-canopy forest stands, generally favouring drier environments (Gasparella, 2004). This species was not observed during the field visits.

Evening grosbeak
The evening grosbeak *(Hesperiphona vespertine)* is a widespread inhabitant of Canada's coniferous and mixed forests. Nesting habitat generally features large, mature and old mixedwood forest stands with a high proportion of fir, white spruce, or trembling aspen, with a diversified structure and relatively open canopy. Presence and abundance are closely tied to spruce budworm outbreaks, an important food source for the species (COSEWIC, 2016). The Canadian population has declined by over 90% since the early 1970s, among the steepest declines recorded for any landbird (COSEWIC, 2016). The presence of this species in the area was confirmed based on auditory records obtained during fieldwork conducted in July 2026.

Western tanager
The western tanager *(Piranga ludoviciana)* occurs broadly in open coniferous and mixed woodlands across western North America in summer, making it a quintessential element of western forest bird communities (Hudon, 2020). In Alberta, the species has been documented to nest, on average, earlier than in nearby jurisdictions to the south. Nests are generally placed well out from the trunk on a horizontal branch of a coniferous tree. This species was not observed during the field visits.

Northern Long-eared bat
The northern Long-eared bat *(Myotis septentrionalis)* was assessed by COSEWIC as Endangered in the same 2013 report as the little brown myotis, reflecting shared threats from white-nose syndrome, which has caused severe declines documented at hibernacula in Ontario, Quebec, New Brunswick, and Nova Scotia (COSEWIC, 2013). The species typically roosts under loose bark or in cavities of both live and dead trees during the summer maternity season and hibernates in caves and abandoned mines over winter. The presence of this species in the area was confirmed based on auditory records obtained during fieldwork conducted in July 2026.

Silver-haired bat
The silver-haired bat *(Lasionycteris noctivagans)* is a solitary, migratory tree bat. Individuals seek shelter under loose bark, in dead trees or snags, and inside hollow tree cavities, most commonly in willow, maple, and ash trees. The species was designated Endangered due to inferred population declines in excess of 50% over three generations, driven primarily by mortality at wind energy facilities during fall migration (COSEWIC, 2023). The presence of this species in the area was confirmed based on auditory records obtained during fieldwork conducted in July 2026.

Hoary bat
The hoary bat *(Aeorestes cinereus)* is a large-bodied, solitary tree-roosting bat found across Canada in summer and during fall migration. The species meets Endangered criteria based on an inferred reduction of more than 50% in its index of abundance, driven primarily by mortality at wind energy facilities (COSEWIC, 2023). Individuals typically roost at least 3–5 m above ground in dense foliage of trees and shrubs (Keller, 1987). The presence of this species in the area was confirmed based on auditory records obtained during fieldwork conducted in July 2026.

Little Brown myotis
The little brown myotis *(Myotis lucifugus)* overwinters in cold and humid hibernacula typically in caves and mines. During the summer, females establish maternity colonies, often in buildings or large-diameter trees. Foraging occurs over water, along waterways, forest edges, and in gaps in the forest (COSEWIC, 2013). The presence of this species in the area was confirmed based on auditory records obtained during fieldwork conducted in July 2026.

Grizzly bear
Grizzly bear *(Ursus arctos)* is listed as threatened under the Alberta *Wildlife Act*. The grizzly bear is known to occur in the Study Area. Extensive research using radio-telemetry collars and wildlife camera have been conducted in the Study Area. Details of the baseline conditions can be found in Section 3.8.1.4.4. This species was not observed during the field visits.

Fisher
Fisher *(Pekania pennanti)* is found throughout the forested regions of Alberta and is most common in the Boreal Forest and Foothills Natural Regions, most commonly occurring in mature and old coniferous and mixedwood stands (Alberta Biodiversity Monitoring Institute, 2023). In a mixed-wood forest of central Alberta, fisher locations were found on significantly steeper slopes than random sites, and fishers preferentially used continuous forest blocks greater than 2 km² in area (Meyer, 2007). Fishers depend on structurally complex forest with abundant coarse woody debris and cavity trees for resting and denning. This species was not observed during the field visits.

Wolverine
Wolverine *(Gulo gulo)* is a wide-ranging carnivore with specific habitat requirements for den sites; dens may be classified as natal or maternal and are constructed in boulders, under deadfall, or in snow tunnels, often at higher elevations including tundra habitats (COSEWIC, 2003). The Canadian population likely exceeds 10,000 mature individuals, though declines have been documented in the southern portion of the range, including British Columbia (COSEWIC, 2014). This species was not observed during the field visits.

Canada lynx
Canada Lynx *(Lynx canadensis)* is closely tied to the distribution of the North American boreal forest. Lynx habitat can generally be described as moist boreal forest with cold, snowy winters and a high-density snowshoe hare prey base; in mountainous areas, lynx use scattered moist forest types with high hare densities within a matrix of other habitats (U.S. Fish & Wildlife Service, n.d.). Lynx are most common in boreal, sub-boreal, and western montane forests, preferring older regenerating stands (>20 years) and generally avoiding younger stands (Poole K. , 2003). This species was not observed during the field visits.

Bobcat
The bobcat *(Lynx rufus)* is a highly adaptable mesocarnivore. In Alberta, bobcats occupy a variety of habitats, including the dry, rugged terrain of the southern part of the province near Lethbridge and Medicine Hat, as well as foothills and forest-edge habitat, and their ability to tolerate lower snow depths makes them more common in the southern and central regions of the province, in contrast to Canada lynx, which favour the deeper-snow boreal forests of northern Alberta (Blyth, 2024). Bobcat and Canada lynx ranges overlap along the southern edge of lynx range and the northern edge of bobcat range, generally in southern boreal and montane forest (Sultaire, 2016). This species was not observed during the field visits.

Western bumble bee
Western Bumble Bee *(Bombus occidentalis)* lives in a diverse range of habitats, including mixed woodlands, farmlands, urban areas, montane meadows and into the western edge of the prairie grasslands. Like many bumble bees, it typically nests underground in abandoned rodent burrows or within hollows in decaying wood (COSEWIC, 2014). The presence of the western bumble bee was confirmed in Canmore based on the data from the Alberta Conservation Information Management System (ACIMS) online maps. This species was not observed during the field visits.

3.8.1.6 Key Wildlife and Biodiversity Wildlife Zones

Key Wildlife and Biodiversity Zones (KWBZ) are a combination of key winter ungulate habitats and potential habitat for high biodiversity (Government of Alberta, 2015) Typically, Key Wildlife and Biodiversity Zones occur along major rivers and in the case of this project, it is delineated within the Bow River valley. The river valley landforms provide topographic variation and site productivity conditions that provide increased levels of biodiversity and good winter habitat for ungulate species (Government of Alberta, 2015). Ungulates may enter a negative metabolic energy balance during late fall and winter as food is less accessible and harsher conditions such as snow are prevalent. Ungulates minimize energy expenditures during the winter by selecting localized and familiar habitats that provide high quality and abundant food and reduce movement with increased time spent resting in these locations (Government of Alberta, 2015). The Key Wildlife and Biodiversity Zone is contained within the lower mountain and valley bottom and is within the Project Area and Study Area.

The Government of Alberta's Recommended Land Use Guidelines for KWBZs provide guidance for land-use activities occurring within designated zones. Key considerations include minimizing vegetation clearing and habitat disturbance, avoiding or minimizing new access development, minimizing activities during the restricted activity period, and maintaining wildlife movement and habitat connectivity. The KWBZ therefore represents an existing wildlife management consideration for the Project and was

incorporated into the assessment of potential effects on wildlife habitat, movement and sensory disturbance.

3.8.1.7 Wildlife Corridors

The Study Area contains the USWC and the LSWC to the south while the Project Area bisects both the USWC and the LSWC. The corridors connect two wildlife habitat patches; the Harvie Heights Regional Habitat Patch and the Indian Flats Habitat Patch.

The USWC and LSWC for Silvertip Resort were identified and mapped during the initial planning and development of the resort in the early 90's. Silvertip Resort produced a Master Plan with consideration to the wildlife corridors which was approved by the Town of Canmore in 1993. The Study Area Structure Plan (ASP) was accepted and adopted as bylaws by the Town of Canmore in 2001 and updated in 2007. The ASP included developable areas adjacent to the USWC and LSWC (Urban Systems, 2007).

A brief breakdown of the history of land use planning of the Silvertip Resort and USWC and LSWC is provided below and is quoted directly from the Silvertip ASP (Urban Systems, 2007):

- Hyatt Regency Canmore Master Plan – adopted by Town of Canmore Council by Bylaw 30-90 in December 1990.
- Land use approvals reached through amendments to Town of Canmore Land Use Bylaw.
- A Report titled *The Preservation of Wildlife Populations in the Bow Valley, Alberta: The Banff National Park Proposal to Neighbouring Municipalities* was published.
- The developer completed a study titled *Preliminary Wildlife Study and Analysis of Ungulate Travel Corridors on the CADCO Property.*
- Wildlife corridors in Silvertip were identified and mapped.
- The 1990 Master Plan was reviewed to determine how the approved development plan influenced the travel corridors. Discussions with the Town, the Owner, the Province, and Parks Canada officials outlined how travel corridors should be delineated and protected.
- Amendment to the Master Plan was prepared and adopted by Bylaw in August 1993. The Bylaw modified the Master Plan by:
    - Redesigning the golf course and relocating a number of holes consistent with the recommendations of the Wildlife Studies.
    - Realigning some of the roadways.
    - Eliminating previously approved development sites that were located within the lower travel corridor.
    - Reducing the amount of highway commercial land.
    - Eliminating public interpretive centre based on the recommendations of the Wildlife Studies.
- A second amendment to the Master Plan was approved in 1995, allowing for minor reconfiguration of golf course.
- Construction started in 1993. Between 1993 and 1998, the golf course and utility infrastructure were put in place.
- Re-examination of Master Plan in 1998, with the addition of "Village Design Guidelines" on how the project could be modified to become a comprehensively designed, pedestrian oriented, recreational resort development.

- The Town requested an ASP for the Master Plan area in 2000.
- The was ASP adopted by Town Council in 2001, incorporating the previously approved Master Plan.
- An amendment was made to the ASP in 2007 to revise the Village Design Guidelines. The ASP amendment incorporated provisions to align with Town policies that evolved since the ASP was adopted in 2001.

Three official multi-use trails are located within the wildlife corridors around Silvertip Resort (Map 3). The Douglas Fir Bench Trail is located in the western portion of the LSWC and is closed between December 1 and June 15. The Alberta Conservation Association (ACA) Trail is located in the eastern portion of the LSWC and is not subject to seasonal closure. The Montane Traverse Trail is located along the bottom of the USWC and is also subject to seasonal closure from December 1 to June 15. The popular Lady Macdonald hiking-only trail starts outside the Study Area but later enters the USWC on the southeast side and exits again on the northeast side. The trail density is low when considering the official trails within the corridors, but there are a number of unsanctioned trails that serve to increase the opportunity for human-wildlife encounters.

General guidelines to use the trails includes:

- Keep dog on leash;
- Give wildlife space;
- Secure wildlife attractants; and
- Carry bear spray.

3.8.1.7.1 Human Use of the Corridors

Jacques Whitford Stantec AXYS Limited, (2009) described the human use of the Study Area during the winter of 2007 and 2008. Higher levels of human activity were recorded in the LSWC compared to the USWC. Domestic dog tracks were also recorded and were most often observed in the LSWC, while the USWC had lower levels of dog activity. Duke & Quinn, (2009) also assessed the level of human activity in Canmore's Benchland corridor (LSWC) between 1999 and 2009. Generally, a low to medium human activity was observed in the Benchland except when in close proximity to residential development areas such as the Silvertip Resort and golf course where human activity is higher. The study showed that human activity patterns increased over the 10-year period and also confirmed that the level of human activity is lower in the USWC than the LSWC.

The Strava and Trail Forks heat map data shows aggregated, publicly recorded movements of people who choose to use these phone applications to record their activities (accessed 2026). This information is displayed as relative intensity of use on the trails within the area derived from such activities as, hiking, trail running, and cycling recorded. The highest level of trail use is located on the official trails with the most uses recorded on the Montane Traverse Trail in the USWC followed by the Montane cut-off trail connecting the Montane Traverse to the Douglas-fir BenchTrail. Unauthorized trail use is recorded in the USWC and the LSWC. The information from these apps is a guideline and limited to public sharing of information on their recreational habits.

Authorized and unauthorized (closed, illegal, overgrown, etc.) trail density was calculated for the USWC at 5.34 km of trail per 1 km^2 of wildlife corridor and the LSWC was calculated at 10.6 km. Assuming an average trail width of 1 m, it is calculated to be 0.6% of the USWC and 1.1% of the LSWC as trails. Authorized trail density was calculated at 2.8 km for USWC and 2.3 km for the LSWC per 1 km^2 with around 0.2% of each corridor are affected by trails (Town of Canmore, 2024b).

Based on the analysis of the camera data, hiking was the most frequent human use at all camera groups (58% of the human activity recorded). The second most frequent human activity was running followed by

biking (17% and 15% respectively). The highest level of human activity was detected by the cameras located along the Cougar Creek/ Horseshoe Loop Trail and along the Montane Traverse Trail (BV 189 SE and BV 254). Hiking was the most frequent activity at the majority of camera locations with the exception of BCM 069, where hunters were more common and BCM 070, BCM 092 and BVM 190, where biking was more common. Other activities include angling, climbing, dogsledding, e-biking, fat biking, hunting, skiing, snowshoeing, horse riding, workers and use of motorized vehicles. These activities combined represent approximately 9% of human activities in this area. Off leash dogs have been shown to have the single greatest potential impact on wildlife usage of corridors and habitat areas (Bow Corridor Ecosystem Advisory Group, 1999). Studies conducted which measure heart responses of free ranging elk to various stimuli, found that free ranging dogs and people with leashed dogs resulted in significantly elevated heart rates and long withdrawal responses (Bow Corridor Ecosystem Advisory Group, 1999).

A study by Hojnowski (2017) showed that extensive human use may negatively impact the ability of wildlife to use habitat in the Bow Valley. Hikers and off leash dogs have the potential to spatially displace wildlife from habitat. The study showed that recreation and human infrastructure were significant predictors of temporal displacement of wildlife. Off leash dogs were the most consistently negative influence on wildlife. Dogs may affect animal physiology and energy expenditure by raising stress levels or increasing flight distances (Hojnowski, 2017). Figure 3 shows that hikers and runners are the human activities most frequently associated with off-leash dogs in the Study Area.

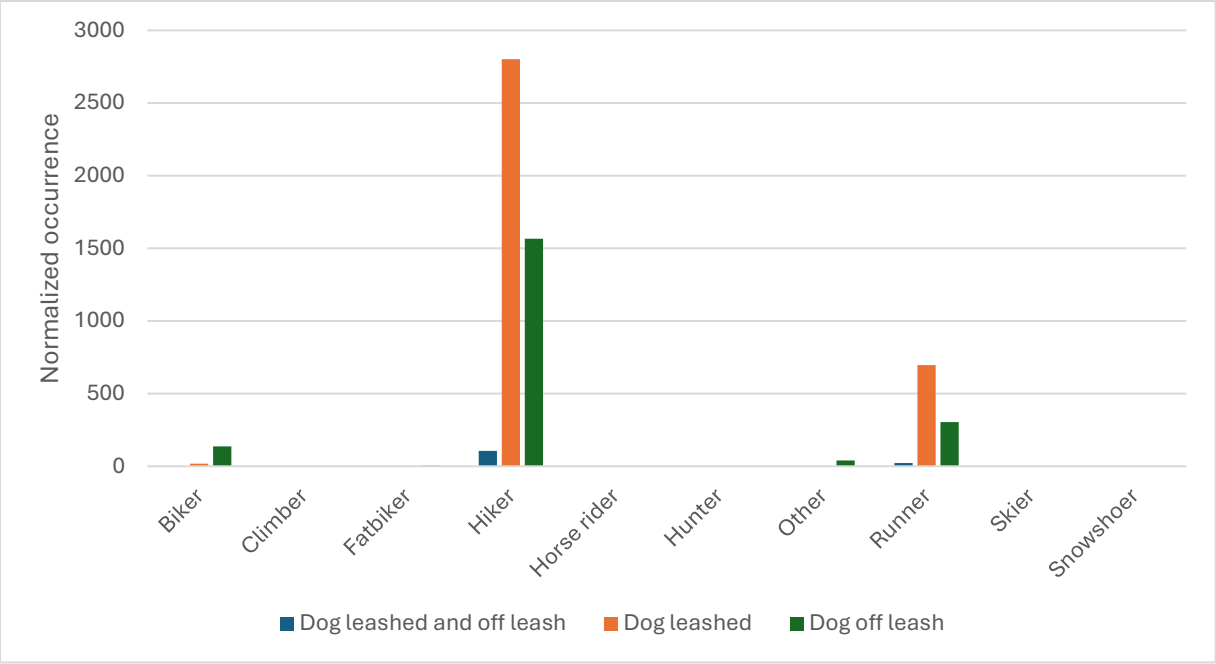


Figure 3: Normalized Occurrence of On and Off Dog Leash Occurrence of each Type of Human Activities within the Study Area

The cameras located along the Lady MacDonald Trail (BV 221 NE-c, Cougar Rock Dam) showed the highest occurrence of off leash dogs. The camera along the Douglas Fir Bench Trail (LSC 002) and the two cameras located along the Montane Traverse Trail (BV156 and BV 189 SE) also showed high proportion of on and off leash dogs. The camera located along the Cougar Creek Trail also detected a considerable number of dogs on and off leash. The data suggest that the proportion of on leash dogs is higher than off leash dog on the official trails while the proportion of off leash dogs is higher than the proportion of on leash dogs on the unauthorized trails.

Human activity is an important factor influencing wildlife use of movement corridors and habitat adjacent to recreational infrastructure. Research conducted in the Canadian Rocky Mountains has demonstrated that increasing recreational activity on trails results in reduced use of adjacent habitats by large mammals, including wolves and elk, with the strongest avoidance occurring immediately adjacent to trails and extending several hundred metres into surrounding habitat (Rogala, et al., 2011). The study found that both wolves and elk progressively avoided areas near trails as human activity increased, resulting in indirect habitat loss and a reduction in the functional availability of otherwise suitable habitat. In mountainous landscapes, where valley bottoms often provide the most productive habitat and serve as primary wildlife movement corridors, increased human activity can further reduce habitat connectivity and concentrate wildlife into smaller areas (Rogala, et al., 2011).

Wildlife responses vary among species and according to the intensity of human activity. At low levels of recreational use, some prey species may temporarily benefit from reduced predator activity near trails; however, as human activity increases, both predators and prey exhibit avoidance of areas adjacent to trails, diminishing the ecological function of wildlife corridors (Rogala, et al., 2011). The authors concluded that human activity can influence wildlife at fine spatial and temporal scales, altering habitat selection, movement behaviour, predator–prey interactions, and ultimately the functional effectiveness of wildlife corridors. These findings indicate that existing and future recreational use should be considered when evaluating baseline wildlife movement and habitat connectivity within the study area.

Human activity associated with recreational trails is recognized as an important factor influencing wildlife habitat use and movement within mountain landscapes. A recent study conducted in the central Canadian Rocky Mountains found that non-motorized recreation significantly reduced detection rates of grizzly bears and wolves in areas with high levels of human use, demonstrating that both species avoided areas of concentrated recreational activity (Thompson, Paczkowski, Whittington, & St. Clair, 2025). The study showed that the effects of human disturbance extend beyond the trail itself, with approximately 50% of the maximum reduction in wildlife use occurring within 267 m of trails for grizzly bears and 576 m for wolves. Although the influence of human activity declined with distance, measurable effects extended up to approximately 1.8 km for grizzly bears and 6.1 km for wolves, highlighting the cumulative influence of recreation across trail networks.

The authors concluded that human use should be considered at the landscape scale because the cumulative effects of multiple trails and varying levels of recreational activity can reduce the functional availability of wildlife habitat and movement corridors. Their findings suggest that the intensity of human use, rather than simply the presence of a trail or other linear feature, is an important driver of wildlife responses. In landscapes containing interconnected trail networks and recreational infrastructure, increasing human activity has the potential to reduce habitat connectivity and the effectiveness of wildlife corridors for disturbance-sensitive species, particularly large carnivores such as grizzly bears and wolves.

3.8.1.7.2 Development and Construction Adjacent to the Corridors

Development adjacent to wildlife corridors can affect wildlife movement, habitat quality, and ecological function through both direct and indirect pathways. McCallum and Paquet (1997) identified the principal effects of development on wildlife populations as the physical loss of habitat, habitat fragmentation, habitat alienation through disturbance, habitat alteration, changes in the proportion of available habitat types, and changes in the spatial arrangement of habitats. Collectively, these changes can alter the composition of biological communities, reduce species abundance and diversity, and affect wildlife populations differently depending on species-specific habitat requirements and behavioural responses (McCallum & Paquet, 1997). These findings are supported by long-term observations in the Bow Valley, where development has contributed to species displacement and population declines in the absence of mitigation measures (WSP Canada Inc., 2017a). Appropriate mitigation and land management measures, however, can reduce or avoid many of these impacts and help maintain wildlife corridor function (WSP Canada Inc., 2017a).

The Upper and Lower Silvertip Wildlife Corridors occur within an increasingly developed landscape where residential neighbourhoods, transportation infrastructure, recreational trails, and associated human activity influence wildlife movement and habitat use. The 2024 *Management Recommendations and Implementation Plan for the Lower Silvertip Wildlife Corridor* (Town of Canmore, 2024b) identifies expanding residential development, increasing recreational use, and the proliferation of unauthorized trails as the primary factors affecting corridor function. Although the corridors continue to provide important movement pathways for wildlife, these existing stressors reduce the amount of secure habitat available for movement and increase the potential for human–wildlife interactions, particularly where development and recreational activities are concentrated.

Research conducted in the Bow Valley further demonstrates that the cumulative effects of development and human use extend beyond the physical footprint of infrastructure. Whittington et al. (2022) found that grizzly bears and wolves avoided areas near towns and areas with high trail and road densities, particularly while engaged in foraging and resting behaviours. Under existing conditions, anthropogenic development reduced the availability of high-quality habitat by approximately 36% for grizzly bears and 46% for wolves relative to reference conditions, while overall wildlife connectivity through the Bow Valley was reduced by approximately 85%. The study concluded that the combined influence of urban development, transportation infrastructure, recreational trails, and associated human activity degrades habitat quality and reduces wildlife corridor functionality, with the greatest effects occurring where these disturbances are concentrated.

These existing conditions provide the baseline for evaluating the potential effects of the proposed gondola. The assessment therefore considers whether project construction and operation, could further influence wildlife movement, habitat connectivity, and the functional effectiveness of the Upper and Lower Silvertip Wildlife Corridors.

3.8.1.8 Human-Wildlife Interactions

3.8.1.8.1 Human-Wildlife Activity

A comparison of normalized human and wildlife camera detections provides information on patterns of human and wildlife use within the Study Area. Overall, normalized human activity was higher than wildlife activity across the study area when considering combined detections; however, relative use varied considerably among camera locations (Figure 4). Cameras near popular trails and developed areas generally recorded greater human activity, while cameras farther from concentrated human use tended to record higher wildlife activity. BV 221 NE-c was a notable exception, with very high human activity (6,080.6 normalized occurrences) and moderate wildlife activity (4457.03 normalized occurrences), likely reflecting its proximity to the Mount Lady MacDonald trail.

The highest wildlife activity, based on normalized detections, was recorded at BCM 092 A (127.9), followed by BVM 223 (119.9), LSC 007 (99.3), BCM 092 B (96.2), and LSC 006 (85.8), while the lowest occurred at LMS-6 (0.1), LMS-11 (0.2), LM-9 and LMS-12 (0.4), and LMS-8 (1.7). Human activity was highest at BV 221 NE-c (6,080.6), followed by BV 189 SE (3,621.8), BV 156 (2,236.2), BVM 124 (2,217.6), and BCM 091 (2,058.6), and lowest at LM-9 (0.3), BVM 191 (0.4), BCM 105 A and BCM 091 A (0.6), and BCM 069 (0.6).

Several locations showed notable overlap between human and wildlife use. BVM 223 showed the most balanced activity, with approximately 120 normalized wildlife occurrences and 118.4 normalized human occurrences and is located near the Palliser Trail in the LSWC. BV 221 NE-b and LSC 001 also recorded relatively high levels of both human and wildlife activity. Other locations, including BV 221 NE-c, BVM 189, BVM 190, BCM 092, and LSC 005, recorded substantially higher human activity while still showing measurable wildlife use. These locations represent areas where wildlife use coincides with regular human activity and may be relevant to the assessment of potential human–wildlife interactions.

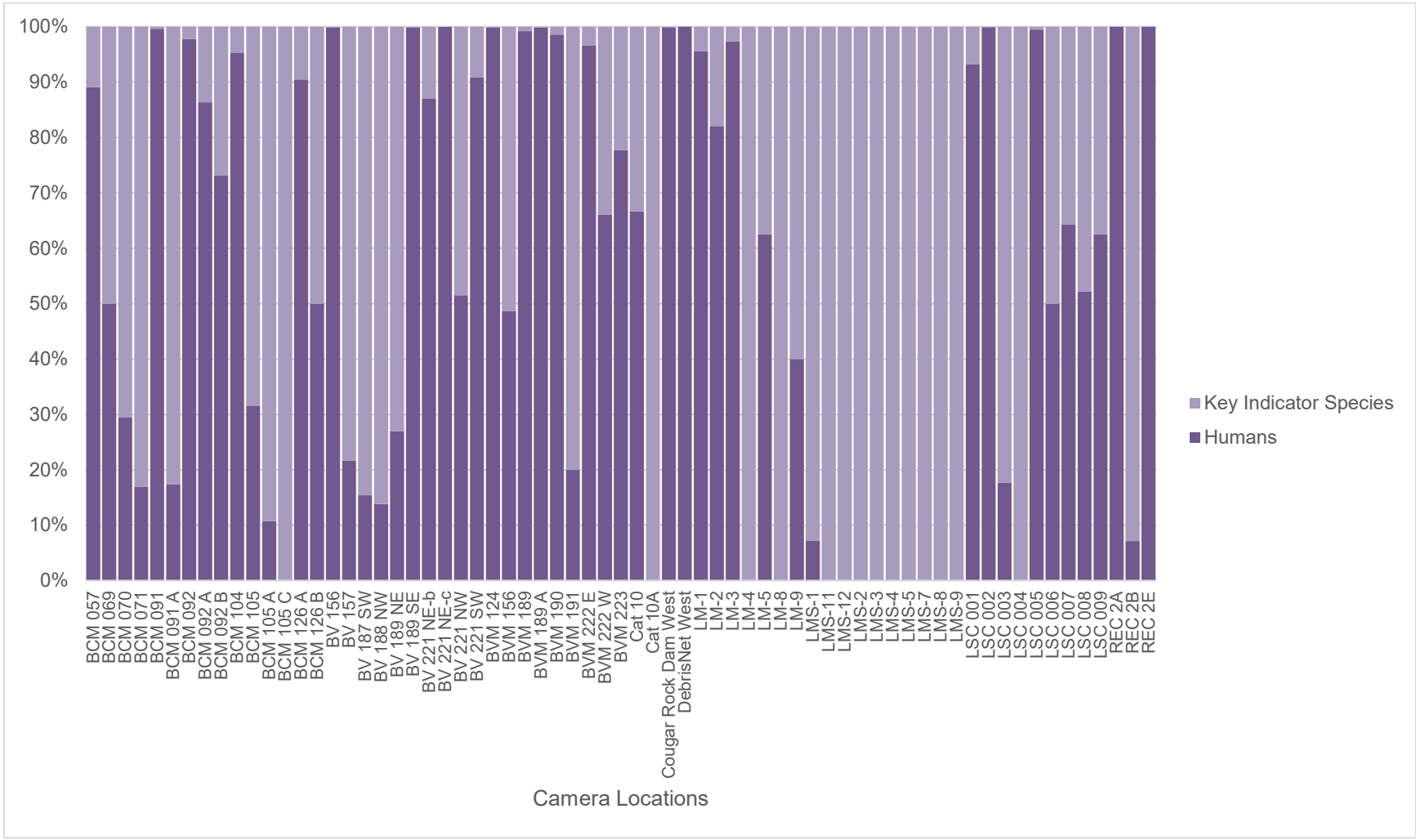


Figure 4: Proportion of Normalized Detections per Camera for Humans and Key Indicator Species in the Study Area

3.8.1.8.2 Human-Wildlife Encounters

Human activity is a well-established driver of wildlife behavioural change and human–wildlife encounters. Research conducted throughout the Bow Valley has shown that increasing recreational use, residential development, transportation corridors, and other forms of human disturbance influence the distribution, movement, and behaviour of large mammals, particularly black bears, grizzly bears, and cougars. Although many wildlife responses involve spatial or temporal avoidance of people, repeated exposure to anthropogenic attractants or recreational activities can increase the likelihood of human–wildlife encounters and associated management actions. Where animals become food-conditioned or habituated to human presence, relocation or destruction may be required, creating localized mortality sinks that can negatively affect regional populations and reduce habitat connectivity.

Honeyman (2007) reported that between 2000 and 2007, five grizzly bears were relocated, and one adult male grizzly bear was destroyed as a result of human–bear conflicts within the Study Area. During the same period, 25 black bears were relocated or destroyed following conflicts with people. Approximately 70% of documented human–bear interactions recorded between 1985 and 2005 involved wildlife sightings rather than direct conflicts, while approximately 65% of interactions recorded between 2001 and 2005 occurred during berry season, highlighting the influence of seasonal food resources on encounter frequency. More recent studies throughout the Bow Valley continue to identify anthropogenic attractants, recreational activity, and expanding urban development as primary drivers of human–bear interactions, emphasizing the importance of proactive attractant management and maintaining secure movement corridors to reduce conflict.

Cougar conflict patterns have similarly been linked to increasing urban development and the concentration of prey species within residential areas. Reported cougar occurrences in the Bow Valley increased annually from 2000 to 2013, with 59 occurrences recorded in 2013, the highest annual total in the available record. However, Alberta Environment and Protected Areas noted that part of the increase prior to 2013 may reflect improved reporting beginning in 2006, when public reporting of wildlife occurrences was promoted through Kananaskis Emergency Services. Brisbane (2015) reported increasing cougar incidents and associated mortalities across Alberta between 2001 and 2013, with the highest number of reported incidents occurring in the Bow Valley during 2013. Approximately three-quarters of reported conflicts occurring within the Town of Canmore, where anthropogenic attractants, including deer feeding and bird feeders that indirectly attract prey species, contributed to elevated cougar activity. More recent research has demonstrated that cougars frequently adjust their movements in response to human activity, often using developed landscapes during periods of reduced human use while avoiding areas experiencing high recreational activity during daylight hours.

A summary of human–wildlife conflict data provided by Alberta Environment and Parks for the Study Area (Government of Alberta, 2020) is presented in Table 49. A separate human–wildlife conflict dataset compiled by Alberta Parks and the International Bear Association (IBA) is presented in Table 50 and includes records collected between 2018 and 2025. Because these datasets were compiled by different organizations using different reporting methodologies, they were analyzed independently and are not directly comparable. The Alberta Environment and Protected Areas dataset documents annual conflict totals ranging from 1 to 30 incidents between 2000 and 2018, while the EPA and IBA dataset records between 1 and 59 incidents annually from 2018 to 2025 (Table 50). Individually, each dataset provides a representative overview of annual variation in human–wildlife interactions within the Study Area (Figure 5 and Figure 7).

Table 49: Summary of the human-wildlife conflict in the Study Area between 2000 and 2018 (EPA, 2020).

Year	Species					Grand Total
	Bear (Not Specified)	Black Bear	Cougar	Coyote	Grizzly bear	
2000			1			**1**
2001		1				**1**
2003	1	7		1		**9**
2004	1	1			2	**4**
2005		1			4	**5**
2006		9			10	**19**
2007		3	4	1	2	**10**
2008			6		1	**7**
2009		1	3	1	18	**23**
2010					22	**22**
2011	3		4			**7**
2012	7	17	2		4	**30**
2013	1		8			**9**
2014	5	7	1		1	**14**
2015	5	9	2			**16**
2016	1	18	1		1	**21**
2017		6				**6**
2018	1	15	1		1	**18**
Grand Total	**25**	**95**	**33**	**3**	**66**	**223**

Table 50: Summary of the human-wildlife conflict in the Study Area between 2018 and 2025 (EPA, 2020)

Year	Data Source	Species				Grand Total
		Bear (Not Specified)	Cougar	Wolf	Elk	
2018	All Reports	17	1			**18**

Year	Data Source	Species				Grand Total
		Bear (Not Specified)	Cougar	Wolf	Elk	
	IBA Conflict	4				**4**
2019	All Reports	17				**17**
	IBA Conflict	1				**1**
2020	All Reports	55	2		2	**59**
	IBA Conflict	34	1		2	**37**
2021	All Reports	17	1		4	**22**
	IBA Conflict	2				**2**
2022	All Reports	27	1		2	**30**
	IBA Conflict	1				**1**
2023	All Reports	9	1		2	**12**
	IBA Conflict	1			1	**2**
2024	All Reports	14			4	**18**
	IBA Conflict	1				**1**
2025	All Reports	18			8	**26**
	IBA Conflict	1			1	**2**
Grand Total		**219**	7		**26**	**252**

Table 51 summarizes the reported causes of human–wildlife conflicts for each species within the Study Area between 2000 and 2018. The most common conflict attractants were non-native vegetation and native vegetation, accounting for 31 and 29 reported incidents, respectively, primarily involving black bears and grizzly bears. “Unnatural vegetation” refers predominantly to conflicts occurring on or adjacent to the golf course. For cougars, the leading causes of conflict were associated with carcasses and domestic animals, accounting for nine and five reported incidents, respectively. There is no data available for cause of interaction for the 2018 to 2025 data set.

Table 51: Summary of the causes of human-wildlife conflict in the Study Area between 2000 and 2018 (EPA,2020).

Causes of the conflict	Species					Grand Total
	Bear (Not specified)	Black Bear	Cougar	Coyote	Grizzly bear	
BBQ		2				**2**
Bird Feeder		1				**1**
Carcass (Wildlife)			9			**9**
Domestic Animal			5			**5**
Garbage					1	**1**
Human Food					1	**1**
Insects					2	**2**
Natural Vegetation	2	13			14	**29**
Ornamental Fruit Tree	3	4				**7**
Unknown	20	56	19	3	30	**128**
Unknown Vegetation		7				**7**
Unnatural Vegetation		13			18	**31**
Grand Total	**25**	**96**	**33**	**3**	**66**	**223**

A comparison of reported human–wildlife conflict incidents by species (Figure 6) indicates that black bears were involved most frequently, accounting for 95 recorded conflicts, followed by grizzly bears with 66 recorded conflicts. Cougar and coyote conflicts were reported less frequently, with 33 and 3 incidents recorded, respectively. No human–wildlife conflicts involving elk were documented within the Study Area between 2000 and 2018.

For the 2018 to 2025 data set, a comparison of reported human-wildlife conflict incidents by species (Figure 7) indicates that bears were involved most frequently, although species was not specified. They accounted for 219 recorded conflicts, followed by elk with 26 conflicts. Cougar conflicts were reported less frequently, with 7 incidents recorded. No human-wildlife conflicts involving wolves were documented within the Study Area between 2018 and 2025.

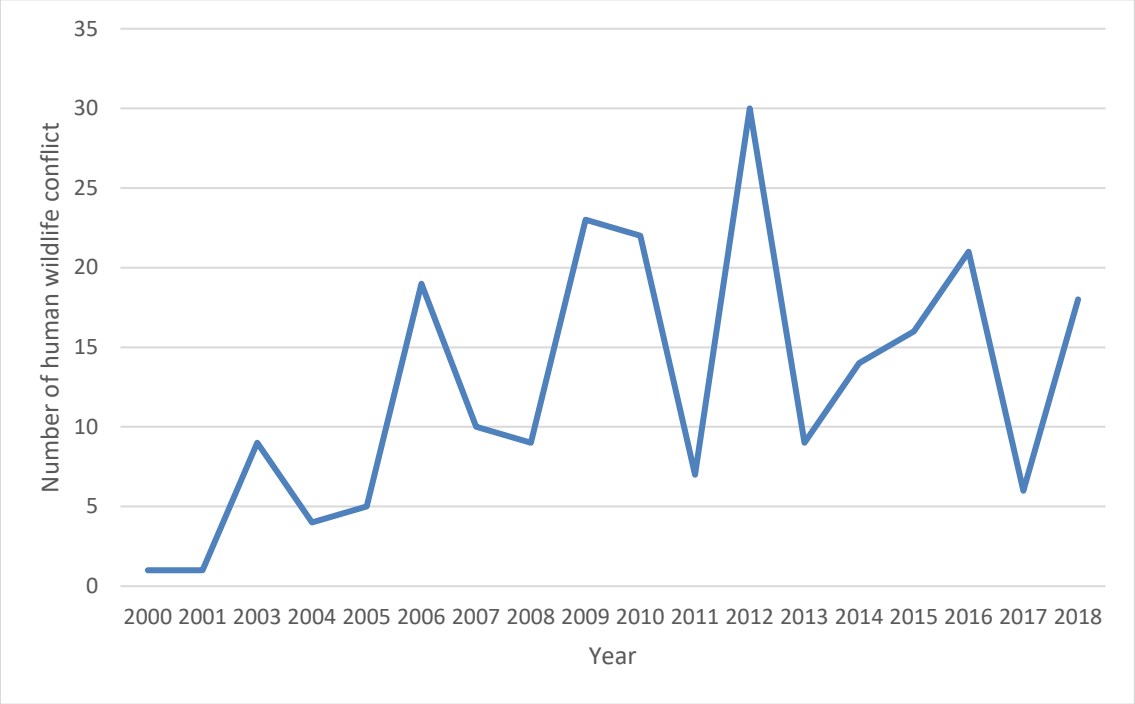


Figure 5: Number of human-wildlife conflict in the Study Area between 2000 and 2018 (EPA, 2020).

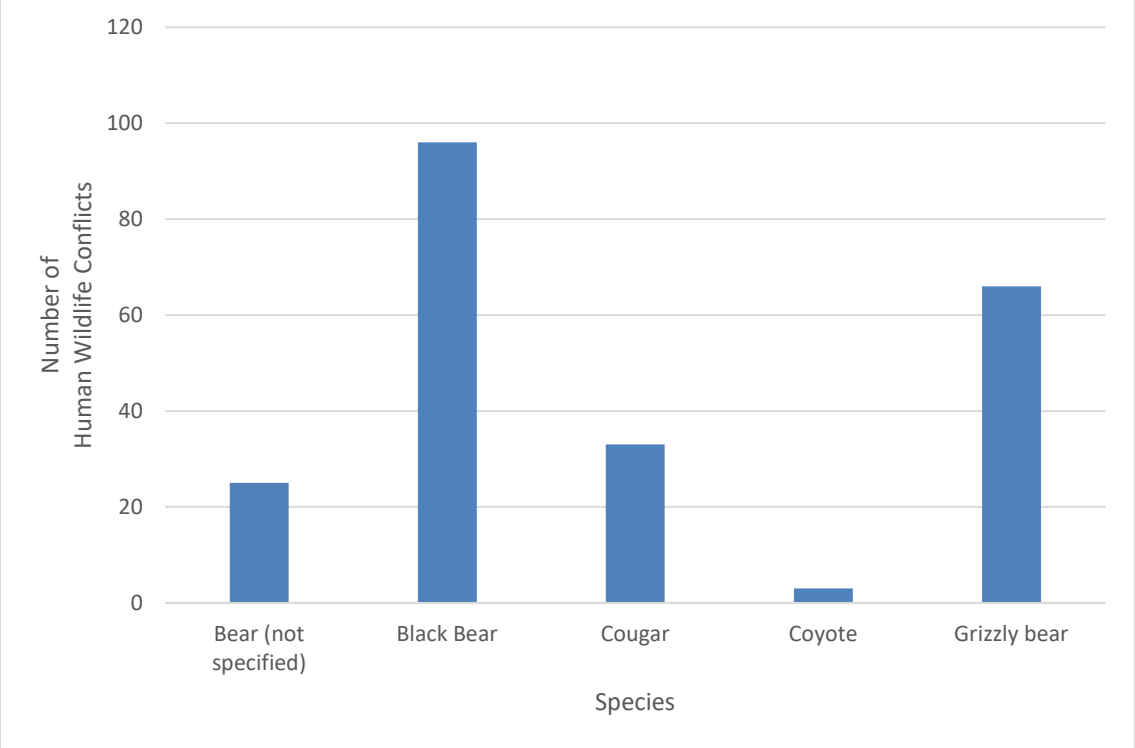


Figure 6: Number of human-wildlife conflicts per species in the Study Area between 2000 and 2018 (EPA, 2020).

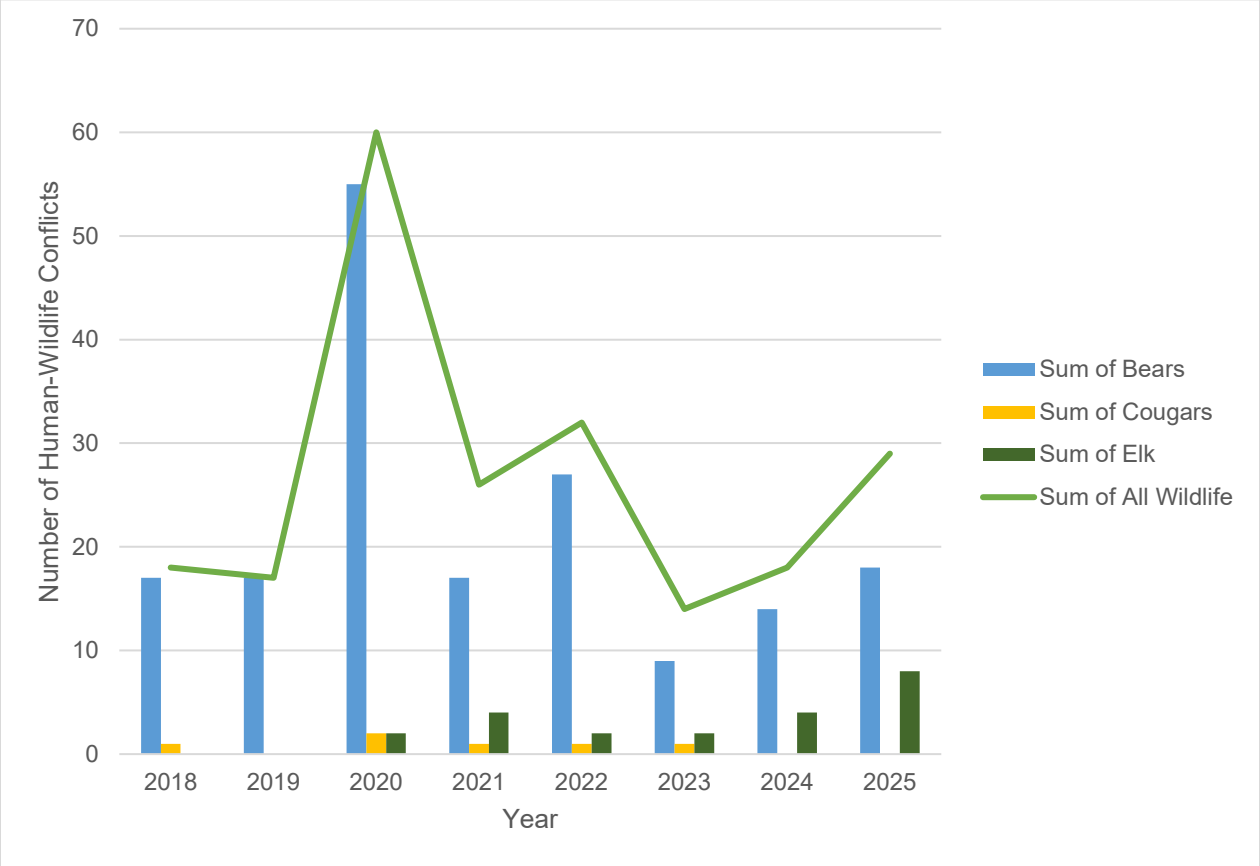


Figure 7: Number of human-wildlife conflicts per species in the Study Area between 2018 and 2025 (EPA, 2026).

Figure 8 summarizes reported human–wildlife interactions by species between 2018 and 2025, separated into IBA conflict and non-conflict reports. Bears accounted for the majority of reports, with 174 total reports, including 45 conflict reports and 129 non-conflict reports. Elk had 22 total reports, including 4 conflict reports and 18 non-conflict reports, while cougars had the fewest reports, with 6 total reports, including 1 conflict report and 5 non-conflict reports. Overall, non-conflict reports were more frequent than IBA conflict reports for all three species groups.

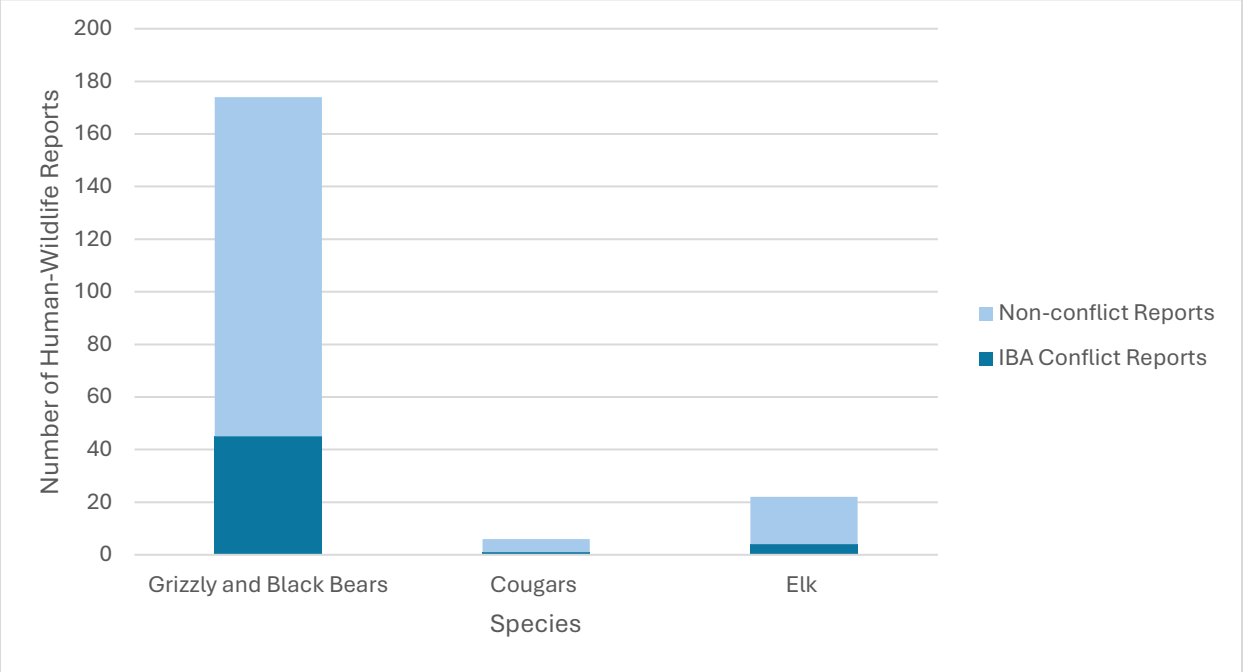


Figure 8: Number of IBA Conflict and Non-Conflict Reports by Species in the Study Area (EPA, 2026).

3.8.2 Impact Assessment

The Project has the potential to affect wildlife and wildlife habitat through several pathways, including temporary construction disturbance, permanent and temporary changes to habitat quantity and quality, sensory disturbance, changes in wildlife movement and connectivity, increased human access and recreation, human-wildlife interactions, vegetation management, and wildfire mitigation activities. The magnitude and significance of these effects are expected to vary among species according to their tolerance of human activity, habitat requirements, movement behaviour, and existing use of the Study Area.

The assessment considers both direct effects associated with the physical footprint of the proposed Gondola and indirect effects associated with changes in human activity and wildlife behaviour. This distinction is particularly important because the proposed Gondola is an aerial structure with a relatively small permanent ground footprint. Consequently, the primary potential effects on wildlife movement are expected to be associated with behavioural responses to construction activity, operational noise, and visual stimuli, rather than physical obstruction of movement or substantial increases in human use of the wildlife corridors directly attributable to the Gondola.

Increased recreational use of trails within the wildlife corridors by gondola users is not anticipated to represent a substantial project-related effect. Although gondola users could access trails within the wildlife corridors following their gondola experience, these trails are not directly accessible from the upper gondola terminal and would require users to independently choose to access them following their gondola experience. The Montane Traverse and Douglas Fir trails primarily provide opportunities for connectivity, exercise, and mountain biking experiences and do not include tourism-oriented features such as viewpoints or rest areas that would be expected to attract substantial use by Gondola visitors (McElhanney, 2026). Consequently, any increase in trail use attributable specifically to gondola users is expected to be limited and indirect. Some spillover use is possible; however, increases in recreational trail use are more likely to reflect broader changes in visitation and population within the Canmore area than a substantial increase attributable specifically to the Gondola (McElhanney, 2026). Nevertheless, existing and potential future recreational trail use within the wildlife corridors has been considered in the

assessment of human-wildlife interactions and movement connectivity. Accordingly, the assessment focuses on the potential for changes in human activity and associated wildlife responses to influence movement patterns, habitat use, and the continued function of the wildlife corridors.

The Silvertip Wildlife Corridors remain functional; however, the corridors are considered ecologically vulnerable in some locations because of increasing recreation, development, and topographic constraints. The Management Recommendations and Implementation Plan for the Lower Silvertip Wildlife Corridor (MRIP) (Town of Canmore, 2024b) identified increasing human presence and recreational disturbance as key existing and future pressures on wildlife habitat and corridor function.

Accordingly, the assessment considers the proposed Gondola in the context of existing anthropogenic disturbance and broader future changes in recreational use within the Study Area rather than assessing the Gondola in isolation. This is consistent with recent research in the Bow Valley demonstrating that cumulative human activity, including recreational trail use, can influence habitat use by large carnivores over substantially larger areas than the immediate footprint of individual infrastructure features (Thompson, Paczkowski, Whittington, & St. Clair, 2025).

3.8.2.1 Construction

Construction activities have the potential to negatively affect wildlife through temporary sensory disturbance, vegetation clearing, localized habitat loss, increased human presence, increased vehicle and helicopter activity, wildlife displacement, and direct mortality or injury. Construction may also temporarily alter wildlife movement patterns by increasing the resistance of areas adjacent to active construction sites.

The effects of construction are expected to be temporary and localized. The majority of habitat changes associated with the Gondola will occur during operation and are discussed in Section 4.5.3. Construction effects discussed below are therefore focused on effects that are specific to the construction period, including temporary disturbance and construction-related wildlife hazards.

3.8.2.1.1 Habitat Quantity and Quality

Construction activities within and outside the KWBZ will result in localized temporary disturbance and permanent habitat loss associated with tower foundations, terminal areas, and other permanent infrastructure. The extent of permanent habitat loss is small relative to the amount of available habitat within the Study Area. The Gondola right-of-way will not be completely cleared; vegetation management will primarily consist of selective topping of trees where required to maintain operational clearances. Consequently, construction of the Gondola will retain much of the existing forest structure along the alignment.

Construction noise and other sensory disturbance may temporarily reduce habitat effectiveness in areas immediately adjacent to active work sites. Potential sources of disturbance include heavy equipment, vegetation clearing, helicopter operations, worker activity, vehicle movement, and other construction-related noise. The magnitude of this effect will depend on the intensity, duration, frequency, and predictability of construction activities, as well as the distance between construction activities and wildlife.

Wildlife response to construction disturbance is expected to vary among species. Wary carnivores such as grizzly bears and wolves are generally more sensitive to human activity than species such as elk that have demonstrated substantial tolerance of human development in the Bow Valley. In contrast, elk have been observed actively moving toward active heavy machinery during site clearing in the Study Area (Buffler, 2021), suggesting that construction activity does not necessarily result in avoidance by all species.

The response of wildlife to construction should therefore be considered in terms of both displacement and behavioural adaptation. Temporary avoidance of active construction areas is expected for some individuals and species, but this is not necessarily equivalent to permanent habitat loss. Where

alternative habitat is available nearby, displaced animals may temporarily shift their habitat use until construction is complete.

3.8.2.1.2 Movement and Connectivity

Construction activities may temporarily affect wildlife movement through behavioural avoidance of active work areas. The effect is expected to be greatest during periods of intensive construction activity, particularly where heavy equipment, helicopter operations, or concentrated worker activity occur near areas used for wildlife movement.

The proposed Gondola will not create a continuous physical barrier to wildlife movement. The towers and terminals will occupy a relatively small area, and animals will be able to move beneath and around the aerial infrastructure. Consequently, construction-related effects on connectivity are expected to result primarily from temporary behavioural avoidance rather than physical fragmentation.

The potential for temporary displacement is greater for species that are sensitive to human activity. Wolves and grizzly bears, in particular, may temporarily avoid areas with high levels of human activity. Recent Bow Valley research found that cumulative recreational activity can substantially reduce detection rates of wolves and grizzly bears, emphasizing that human activity can influence habitat effectiveness beyond the immediate footprint of a disturbance feature (Thompson, Paczkowski, Whittington, & St. Clair, 2025).

Construction scheduling should therefore consider periods when wildlife movement is particularly important. Where practical, construction activities should be scheduled to avoid sensitive seasonal periods identified for the key indicator species.

For elk, the potential effect is expected to be lower because of their demonstrated tolerance of human activity in the Bow Valley and their documented use of developed environments.

3.8.2.1.3 Human-Wildlife Interaction

The KI species are generally expected to avoid active construction areas due to increased levels of human activity and construction disturbance. Potential risks to wildlife during construction include open excavations, exposure to hazardous materials, and wildlife attractants associated with construction activities. Open excavations may trap, injure, or result in the mortality of wildlife if appropriate mitigation measures are not implemented.

Bears

During the construction phase, grizzly bears and black bears may be susceptible to hazards associated with open excavations and exposure to chemicals or other hazardous materials left unattended on-site. In addition, inadequate waste management or improperly stored food and other attractants could draw bears into the construction area. Bears that become habituated to human activity or food-conditioned through access to anthropogenic attractants may become a human–wildlife conflict concern, potentially resulting in management actions that could reduce their likelihood of survival (Government of Alberta, 2011); (Government of Alberta, 2026).

Wolves

Wolves generally avoid areas with concentrated human activity and are not expected to frequently use the Study Area. In Alberta's Rocky Mountains and foothills, wolves occurred less frequently in areas with high densities of industrial features, except where prey such as elk or mule deer were frequently detected, suggesting that wolves may avoid industrially developed areas because of perceived human encounter risk (Boczulak, Boucher, Ladle, Boyce, & Fisher, 2023). Given their limited use of the area and tendency to avoid areas of concentrated human activity, construction of the gondola is unlikely to substantially increase the potential for human–wolf interactions. Direct risks associated with construction

activities, such as open excavations or access to construction-related attractants, should nevertheless be managed through standard wildlife mitigation measures.

Cougars

Cougars may alter their habitat use and movement patterns in response to human activity. In the Canmore area, cougar habitat selection during the non-winter season was negatively associated with road density, indicating avoidance of areas with greater road infrastructure (Chetkiewicz & Boyce, 2009). Local monitoring of the Canmore Benchlands also documented reduced cougar movement in portions of the corridor following 2005, including limited movement in the lower corridor between Harvie Heights and the Silvertip Golf Course (Lee, Managh, & Darlow, 2010). Given the apparent avoidance of areas with greater human activity, construction of the gondola is unlikely to substantially increase the potential for human–cougar interactions. However, cougars may enter human-use areas where prey or other attractants are readily available (Government of Alberta, 2026). Construction activities should therefore be managed to minimize direct hazards and avoid creating attractants that could draw cougars into active work areas.

Lynx

Lynx have limited documented use of the Study Area based on camera monitoring and available wildlife movement information. Lynx have also been documented to avoid human recreation at the local scale, while adjusting the timing of habitat use to reduce exposure to human activity (Thorsen, et al., 2022). The gondola development is therefore unlikely to substantially increase the potential for human–lynx interactions. Standard construction mitigation measures should nevertheless be implemented to minimize potential direct hazards to wildlife.

Elk

During the construction phase, open excavations may trap, injure, or result in the mortality of elk if appropriate mitigation measures are not implemented. Elk and other wildlife may also encounter construction-related materials, including chemicals such as antifreeze, which can be toxic if ingested and may result in mortality (McCallum & Paquet, 1993). Proper storage and disposal of hazardous materials, combined with measures to prevent wildlife access to excavations, should therefore be implemented throughout construction.

Bighorn Sheep

Bighorn sheep may be sensitive to construction-related human activity and sensory disturbance, particularly helicopter operations. Construction activities within or near areas used by bighorn sheep may result in temporary changes in behaviour, reduced foraging, or displacement from areas immediately surrounding active work sites. Helicopter activity is of particular concern because studies have documented strong behavioural responses by bighorn sheep to low-flying helicopters, including fleeing and changes in habitat use (Bleich V, 1993). In Banff National Park, recent research also documented changes in habitat use and movement behaviour by bighorn sheep during sensitive periods associated with lambing, indicating that responses to human disturbance can vary seasonally (Brushett, Whittington, Macbeth, & Fryxell, 2023). However, lambing is unlikely to occur in the Study Area. Consequently, helicopter operations, heavy equipment, and other intensive construction activities have the potential to temporarily reduce habitat effectiveness or displace individual sheep from areas adjacent to active construction. These effects are expected to be temporary and localized and would be minimized through implementation of pre-construction surveys, management of helicopter activity, and other construction-related wildlife mitigation measures.

3.8.2.1.4 Impacts to Wildlife Species of Concern

Construction of the proposed Gondola is expected to involve localized vegetation clearing at tower and station sites and along portions of the gondola alignment, as well as grading, ground disturbance, equipment operation, and increased human activity and noise. These activities have the potential to affect species of conservation concern through direct loss or alteration of habitat, destruction of nests, roosts, or other wildlife features, direct mortality, and temporary sensory disturbance or displacement from areas adjacent to active construction. The magnitude and likelihood of these effects will depend on the habitat present within individual work areas, the timing and duration of construction, and the extent to which active nests, roosts, dens, or other sensitive features overlap the construction footprint.

Vegetation clearing is expected to represent the primary mechanism of direct habitat loss during construction. Complete removal of trees and other vegetation associated with ski-area and ropeway infrastructure can contribute to localized habitat loss and fragmentation for forest-associated wildlife (Prendergast, 2011). Ground disturbance can also result in longer-term alteration of soil and vegetation communities, particularly in alpine and subalpine environments where recovery can be slow even where restoration measures are applied (Hudek, 2020). Construction-related noise, machinery, lighting, and human presence may additionally result in temporary behavioural avoidance or displacement from areas surrounding active work sites.

Wandering garter snake

Ground disturbance and vegetation clearing in rocky, talus, and other potentially suitable habitat could result in direct mortality or displacement of individuals. The risk may be greatest during periods when snakes are concentrated near hibernacula, including fall ingress and spring emergence. Where suitable hibernation features occur within or immediately adjacent to construction areas, construction activities could therefore result in localized effects. Overall, effects are expected to be minor given the localized nature of the construction footprint.

Clark's nutcracker

Vegetation clearing at tower and station sites could remove mature conifers that provide seed resources used for foraging. Given the species' high mobility and ability to forage over relatively large areas, individuals are expected to shift foraging activity to suitable habitat surrounding active construction areas. Construction-related disturbance is therefore expected to result primarily in localized and temporary changes in habitat use, with minor overall effects anticipated.

Brown creeper

Clearing of mature forest along the gondola alignment and at station sites could remove nesting and foraging habitat, particularly where mature trees, complex understory, and suitable bark-foraging substrates occur. If clearing overlaps mature, structurally complex forest supporting active breeding territories, direct habitat loss and potential nest loss could occur. Effects are expected to be limited where clearing is confined to younger, previously disturbed, or structurally simple forest.

Broad-winged hawk

Removal of large-diameter live or dead trees during the breeding period (approximately May–July) could result in direct loss of active nests and associated mortality of eggs or young. Construction activity near active nests could also result in temporary disturbance or nest abandonment. The potential for effects is therefore greatest where mature forest within the clearing footprint supports active breeding territories.

Peregrine falcon

No suitable cliff-ledge or crevice nesting habitat for peregrine falcon has been identified within the Study Area. Construction activities are therefore not expected to result in direct habitat loss or nest disturbance for this species.

Northern pygmy-owl

Vegetation clearing could remove nest cavities, mature trees, and foraging perches within suitable forest habitat. Construction-related noise and human activity could also temporarily displace individuals from habitat immediately adjacent to active work areas, particularly during the breeding season. Effects are expected to be localized to suitable forest overlapping the construction footprint and its immediate surroundings.

Barred owl

Removal of mature trees containing large cavities could eliminate suitable nesting or roosting features. If clearing occurs during the breeding period (approximately March–August), active nests could be lost, and construction activity could result in disturbance or displacement of breeding individuals. The potential magnitude of effects will depend on the presence of suitable cavity trees and active territories within the clearing footprint.

Common nighthawk

Ground-disturbing activities, including tower pad grading and access construction, could result in direct destruction of nests or eggs where work overlaps open, sparsely vegetated, or gravel substrates used for nesting. The risk is greatest during the breeding period (approximately late May–August), when eggs and flightless young may be present and are difficult to detect. Effects are expected to be localized to suitable nesting habitat within the construction footprint.

Black-backed woodpecker

Construction is not expected to meaningfully affect black-backed woodpecker in the absence of suitable recently burned or beetle-affected forest habitat within the construction footprint. Where suitable standing dead or recently killed trees are present, clearing could remove important nesting and foraging substrates. The potential for effects is therefore dependent on the occurrence of suitable disturbance-associated habitat within the areas to be cleared.

Pileated woodpecker

Removal of large-diameter snags and decadent live trees could eliminate suitable nesting and roosting cavities. If clearing occurs during the breeding period (approximately April–July), active nests could be directly affected, potentially resulting in nest loss or mortality of eggs or young. Effects are expected to be localized to mature forest containing suitable cavity trees within the clearing footprint.

Olive-sided flycatcher

Clearing of forest openings, wetland-edge habitat, and trees or snags used as elevated foraging perches could result in localized loss or alteration of suitable habitat. Where clearing overlaps active breeding territories during the breeding season, construction activity could also disturb nesting birds or result in direct loss of nests, eggs, or young. The potential for effects will depend on the occurrence of suitable nesting and foraging habitat within the construction footprint.

Western wood-pewee

Breeding-season clearing of open or semi-open coniferous and mixed wood stands could result in direct loss of active nests where clearing overlaps breeding territories. Construction-related noise and activity may also temporarily displace individuals from habitat immediately adjacent to active work areas. Effects are expected to be localized to suitable breeding habitat within and immediately surrounding construction areas.

Evening grosbeak

Clearing of mature mixed wood stands containing suitable spruce, fir, and aspen could result in localized loss of nesting and foraging habitat. If clearing overlaps active breeding territories during the breeding season, direct nest loss or disturbance could occur. Given the species' substantial range-wide population

decline, even localized effects warrant consideration; however, the expected magnitude of effects will depend on the extent and quality of suitable habitat within the construction footprint.

Western tanager

Breeding-season clearing of open coniferous and mixed wood stands could result in localized loss of active nests where clearing overlaps breeding territories. Construction-related disturbance may also temporarily alter habitat use in areas immediately adjacent to active work sites. Effects are expected to be localized given the limited extent of the proposed clearing.

Northern myotis

Clearing of mature forest containing suitable loose-bark, cavity, or other roost features during the summer maternity period (approximately May–August) could result in direct loss of roost habitat. Where maternity roosts are present, clearing could also result in mortality of non-volant young. The potential for effects will depend on the presence of suitable roost trees within the clearing footprint and the timing of clearing.

Silver-haired bat

Removal of mature deciduous trees containing loose bark, cavities, or other suitable roost features during the summer roosting and maternity period could result in direct loss of roost habitat and, where maternity roosts are present, potential mortality of dependent young. Effects are expected to be localized to forest areas containing suitable roost features.

Hoary bat

Clearing of mature trees and dense foliage used for summer roosting could result in localized loss of roost habitat and displacement of individuals. The potential for direct mortality would be greatest where clearing occurs while individuals or dependent young are occupying roosts.

Little brown myotis

Removal of trees, cavities, loose bark, or suitable rock features used for summer roosting could result in direct loss of roost habitat. Clearing during the maternity period could also result in mortality of non-volant young where maternity roosts are present. The magnitude of effects will depend on the occurrence of suitable roost features within the construction footprint.

Grizzly bear

Impact to grizzly bear from construction is addressed in Section 3.8.2.1.1

Fisher

Clearing of mature, structurally complex forest containing suitable canopy cover and coarse woody debris could result in localized loss of habitat and potential displacement from areas surrounding active construction. Effects are expected to be greatest where mature forest on suitable terrain is removed. Given the localized extent of the proposed clearing, effects are expected to be limited to the immediate construction footprint and adjacent areas subject to disturbance.

Wolverine

Construction-related noise, machinery, human presence, and other sensory stimuli could result in temporary avoidance of active work areas and adjacent high-elevation habitat. Given the species' sensitivity to human disturbance and relatively large home ranges, construction activity may temporarily alter local habitat use. Effects are expected to be primarily behavioural and temporary, with the magnitude dependent on the timing, duration, and intensity of construction activities.

Canada lynx

Impact to lynx from construction is addressed in Section 3.8.2.1.1

Bobcat

Given the species' relatively high tolerance of fragmented and edge habitats, construction effects are expected to be minor. Clearing and construction activity may result in temporary displacement from the immediate work area and localized loss of habitat, but substantial effects on habitat availability or movement are not anticipated.

Western bumble bee

Clearing of meadow, shrubland, wetland-edge, and forest-transition habitats during the active flight season (approximately May–September) could reduce floral forage resources and, where suitable nesting habitat is present, result in disturbance or destruction of nests. Ground disturbance could also affect overwintering queens or underground nest sites, depending on the timing and location of construction. The potential magnitude of effects will depend on the presence and quality of suitable forage and nesting habitat within areas proposed for clearing or ground disturbance.

3.8.2.2 Operation

During operation, the proposed Gondola has the potential to affect wildlife through:

- permanent habitat loss associated with tower foundations and terminal infrastructure;
- localized changes to vegetation structure;
- visual and acoustic disturbance from moving cabins and associated equipment;
- periodic maintenance activities;
- increased human use and recreation within the Study Area;
- changes in wildlife movement and temporal activity;
- increased human-wildlife interactions; and
- wildfire mitigation and vegetation-management activities.

Unlike construction disturbance, operational effects will persist for the life of the project. However, operational disturbance will be substantially more predictable and spatially consistent than construction activity. Predictability can facilitate behavioural adjustment by some wildlife species. The presence of the Gondola should therefore not be assumed to result in permanent avoidance by all species.

The Mount Norquay Gondola Development Proposal Wildlife Assessment provides a useful comparison because it evaluated the effects of a proposed gondola in another Bow Valley landscape. That assessment identified human-wildlife conflict associated with increased human activity as the highest-ranked potential impact to grizzly bears, while barriers to movement were ranked lower and were primarily associated with road and recreational activity rather than the physical gondola itself.

This distinction is particularly relevant to the proposed Project. The principal operational concern is expected to be the potential increase in human activity within an already heavily used Study Area, rather than the physical presence of the aerial Gondola alone.

The LSWC currently contains substantial recreational use. The MRIP identifies walkers, runners, and mountain bikers as users of the corridor and notes that recreational use has contributed to proliferation of non-designated trails and ecological degradation. The MRIP also identifies human use as highest in the eastern portion of the corridor and documents a network of designated and non-designated recreational trails.

The operational effects of the proposed Gondola must therefore be considered in combination with existing and future recreational use. This is consistent with Thompson et al. (2025), who found that cumulative human trail use in the Bow Valley was associated with reduced detection rates of grizzly bears

and wolves. Their analysis demonstrated that effects extended beyond individual trails, emphasizing that the ecological consequence of increased human use may be substantially greater than the physical footprint of the infrastructure generating that use.

3.8.2.2.1 Habitat Quantity and Quality

The permanent loss of wildlife habitat associated with the Gondola will be restricted primarily to the terminal areas and tower foundations. The Gondola right-of-way will not be completely cleared, and vegetation management will consist primarily of selective tree topping where required to maintain operational clearances.

Consequently, the Project will not create a continuous linear clearing through the forest. Forest canopy, understory vegetation, and much of the existing stand structure will remain along the alignment. Permanent habitat loss will therefore represent a very small proportion of the habitat available within the Study Area.

Nevertheless, the right-of-way may alter habitat quality locally by increasing forest edge and creating a narrow area of more open vegetation. Edge effects can alter vegetation composition and forage availability and may benefit some species while reducing habitat suitability for others. The ecological consequence of this change will therefore depend on species-specific habitat requirements.

For example, open and shrub-dominated habitat created along the Gondola alignment may increase forage availability for elk and potentially improve berry-producing vegetation used by bears. Hamer (1996) documented increased berry production by buffaloberry under more open canopy conditions. Similarly, the creation of shrub habitat may provide localized benefits to lynx where shrub cover and associated prey are limiting.

However, habitat improvement for a species should not automatically be interpreted as an ecological benefit if the resulting habitat also increases the likelihood of human-wildlife conflict. For example, a productive shrub community beneath the Gondola could attract bears into an area with high levels of recreational use. The Mount Norquay assessment similarly identified the interaction between habitat enhancement and increased human activity as an important consideration for grizzly bear management.

Therefore, habitat quantity and habitat effectiveness are considered separately in this assessment. The direct loss of habitat is expected to be low, but localized changes in habitat effectiveness may occur if wildlife are displaced from otherwise suitable habitat because of increased human activity.

Cougar

During summer, the proposed Gondola will result in the loss of 0.4 ha of cougar habitat. The habitat loss will primarily involve low- to moderate-quality habitat (Ranks 2 and 3). Approximately 0.01 ha of Rank 5 habitat will be lost, representing approximately 0.005% of Rank 5 habitat within the Study Area (Table 52).

During winter, approximately 0.6 ha of cougar habitat will be affected, with most of the affected area consisting of low-quality habitat (Rank 1). Approximately 0.2 ha of Rank 6 habitat will be affected, representing approximately 0.03% of Rank 6 habitat within the Study Area (Table 53).

These losses represent a very small proportion of available cougar habitat. In addition, available data indicate that cougar use of the Study Area is relatively low compared with the Upper Silvertip Wildlife Corridor (USWC). Consequently, direct habitat loss associated with the Gondola is not expected to measurably affect cougar habitat availability at the population level.

Cougars are considered relatively tolerant of moderate human disturbance and may alter the timing and location of movements to avoid periods of greater human activity (Knopff, 2011). Golder Associates (2013) similarly documented increased nocturnal use of areas near human development by cougars.

Consequently, cougar response to the Gondola is expected to be primarily behavioural rather than through direct habitat loss.

Table 52: Change to Cougar Habitat from Operations within the Study Area During the Summer (Chetkiewicz & Boyce, 2009)

Habitat Quality	Habitat Impacted (ha)	Habitat impacted (% of the habitat in the Study Area)
1	0.00	0.0
2	0.71	0.2
3	0.37	0.1
4	0.09	0.1
5	0.01	0.005

Table 53: Change to Cougar Habitat from Operations within the Study Area During the Winter (Chetkiewicz & Boyce, 2009)

Habitat Quality	Habitat Impacted (ha)	Habitat impacted (% of the habitat in the Study Area)
1	0.90	0.4
2	0.02	0.02
3	0.01	0.0
4	0.05	0.1
5	0.00	0.0
6	0.20	0.03

Lynx

The proposed Gondola will result in the loss of approximately 1.18 ha of lynx habitat. Most of the affected habitat is predicted to have low to moderate relative abundance (Table 54).

Lynx are not known to occur consistently within the Study Area (Apps, 2000), and the highest-quality modeled habitat occurs in the Harvie Heights Habitat Patch west of the Study Area, where predicted human use is lower. Consequently, the Project is unlikely to measurably affect the quantity of high-quality lynx habitat within the broader landscape.

The selective vegetation management associated with the Project may locally increase shrub cover. Where this results in increased snowshoe hare habitat, the resulting vegetation change could provide localized foraging benefits for lynx. However, this potential benefit should be considered uncertain because the Project has not been demonstrated to increase prey abundance.

Table 54: Change to Lynx Habitat from Operations in the Study Area (Alberta Biodiversity Monitoring Institute, 2020)

Predicted Relative Abundance	Area (ha)	% of Study Area
Category 1	0.03	0.05
Category 2	0.72	0.24
Category 3	0.43	0.06

Wolf

The proposed Project will result in the loss of approximately 1.18 ha of Wolf habitat. Most of the affected habitat is predicted to have moderate relative abundance (Table 55).

Although the absolute area affected is small, the presence of moderate- to high-quality habitat within the Project area warrants consideration because wolves are sensitive to human disturbance. Wolves in the Bow Valley have been shown to avoid areas with high levels of human activity (Whittington, St. Clair, & Mercer, 2005; Golder Associates, 2013), and existing human activity within the Study Area may already influence wolf habitat use (Miistakis Institute, 2010).

The potential effect of the Project should therefore be interpreted primarily as a potential change in habitat effectiveness, rather than simply habitat loss. Recent research in the Bow Valley found that areas with relatively high human disturbance had substantially fewer wolf detections than areas with lower disturbance and that cumulative human use around trails influenced wolf habitat use over a large spatial area (Thompson, Paczkowski, Whittington, & St. Clair, 2025).

Wolves may initially avoid the immediate vicinity of the Gondola because of novel visual and acoustic stimuli. However, the predictability of Gondola operations may allow behavioural adjustment over time. This response should be considered uncertain, and it would be inappropriate to assume complete habituation. The more important long-term determinant of wolf habitat use is expected to be the intensity and distribution of human activity within the corridor.

Table 55 shows that the project will impact habitat with moderate to high predicted relative abundance. However, wolves are very sensitive to high-intensity human activities and disturbances (Whittington, St. Clair, & Mercer, 2005), and are already avoiding areas in the Study Area where prey density is highest, likely due to the level of human use in the wildlife corridor (Miistakis Institute, 2010). Wolves do avoid new visual disturbances for up to several weeks. Wolves may initially avoid the immediate vicinity of the gondola during early operation due to the novel visual and acoustic stimuli associated with moving cabins. However, because these stimuli are predictable and continuous, wolves are expected to habituate over time, as has been documented for other forms of consistent anthropogenic disturbance. The more important determinant of long-term wolf use is expected to be the level of human activity within the corridor rather than the physical presence of the gondola infrastructure itself.

Table 55: Change to wolf Habitat from Operations in the Study Area (ABMI, 2020)

Predicted Relative Abundance	Habitat Impacted (ha)	Habitat impacted (% of the habitat in the Study Area)
Category 1	0.03	0.05
Category 2	0.90	0.20
Category 3	0.25	0.05

Grizzly Bear

Grizzly bear use of the Study Area is expected to be relatively low given the existing level of human activity within the Silvertip Wildlife Corridor and the documented tendency of grizzly bears in the Bow Valley to avoid areas with high human use (Gibeau, Herrero, McLellan, & Woods, 1998; Donelon, 2004; Chetkiewicz & Boyce, 2009).

A total of approximately 1.2 ha of grizzly bear habitat will be affected by the proposed Gondola across all habitat suitability classes and seasons (Table 56). During the fall, approximately 0.73 ha of low predicted habitat use, 0.38 ha of moderate predicted habitat use, and 0.06 ha of high predicted habitat use will be affected, with no effects on very high predicted habitat use. During the summer, approximately 0.71 ha, 0.24 ha, 0.15 ha, and 0.07 ha of low-, moderate-, high-, and very high predicted habitat use, respectively, will be affected. During the spring, approximately 0.71 ha, 0.05 ha, 0.27 ha, and 0.16 ha of low-, moderate-, high-, and very high predicted habitat use, respectively, will be affected. These habitat losses represent between 1.04% and 5.71% of the corresponding habitat within the Study Area, depending on season and habitat suitability class.

The RSF results indicate that when habitat function is considered, approximately 0.56 ha of primary habitat and 0.03 ha of secondary habitat will be affected, representing approximately 0.18% and 0.02% of these habitat types within the Study Area, respectively (Table 57). An additional 0.16 ha of primary sink habitat and 0.11 ha of secondary sink habitat will be affected, representing approximately 0.07% and 0.06% of the respective habitat types. These results indicate that the area of functional primary and secondary habitat directly affected by the Project is small relative to the amount of corresponding habitat available within the Study Area.

The direct loss of habitat is therefore small. However, the potential ecological significance of the Project is greater than the area of habitat lost because the Gondola may alter human use and potentially increase recreation within the Study Area. This is further discussed in the human wildlife interaction section (3.8.2.2.4). Recent research from the Bow Valley provides particularly relevant evidence. Thompson et al. (2025) found that grizzly bear detections declined with increasing cumulative human use and that the influence of recreational activity extended substantially beyond the immediate vicinity of individual trails. This suggests that increased recreational use associated with the Gondola could reduce the effective availability of otherwise suitable habitat even where that habitat is not physically removed.

Grizzly bears can tolerate some predictable and well-managed human activities (Coltrane & Sinnott, 2015), and bears have continued to be observed in the vicinity of established gondola operations such as the Lake Louise sightseeing gondola (Lake Louise, 2022). However, these observations should not be interpreted as evidence that increased recreational use is without ecological consequence. Rather, they demonstrate that predictable infrastructure does not necessarily result in complete habitat abandonment.

The right-of-way may also create localized habitat that is attractive to bears. Open vegetation can increase forage availability and buffaloberry production (Hamer, 1996), while south-facing openings may provide early spring green-up and late-season forage. This creates a potential ecological trade-off: vegetation changes may improve forage availability while simultaneously increasing the likelihood of bear use in an area with high human activity.

Consequently, the principal concern for grizzly bears is not the small amount of direct habitat loss but the potential interaction between attractive habitat, increased human use, and human-bear conflict.

Table 56: Change to grizzly bear Predicted Habitat Use from Operations in the Study Area (Nielsen, et al., 2006)

	Habitat Impacted (ha)				Habitat impacted (% of the habitat in the Study Area)			
Season	**Low**	**Moderate**	**High**	**Very high**	**Low**	**Moderate**	**High**	**Very high**
Spring	0.71	0.05	0.27	0.16	5.71	1.04	2.31	1.57
Summer	0.71	0.24	0.15	0.07	4.45	2.73	1.49	2.08
Fall	0.73	0.38	0.06	0.00	4.17	2.22	1.69	-

Table 57: Change to grizzly bear Habitat from Operations in the Study Area (Palm et al. (2025)

Habitat Type	Habitat Impacted (ha)	Habitat impacted (% of the habitat in the Study Area)
Primary	0.56	0.18
Secondary Sink	0.11	0.06
Primary Sink	0.16	0.07
Secondary	0.03	0.02

Black Bear

Approximately 0.8 ha of black bear habitat will be affected by the proposed Gondola (Table 58). Most of the affected habitat is classified as unconstrained habitat, including approximately 0.2 ha each of unconstrained primary foraging and primary habitat.

The loss of unconstrained primary foraging habitat represents approximately 0.07% of available habitat of this type within the Study Area, while the loss of unconstrained primary habitat represents approximately 0.10%.

Direct habitat loss is therefore expected to be negligible at the landscape scale. As with grizzly bears, however, localized changes in vegetation may increase forage availability along the right-of-way. Increased edge habitat may benefit black bears where shrub and berry production increases.

The potential benefit of increased forage should be considered in combination with human use. If black bears are attracted to productive vegetation along the Gondola alignment while human activity also increases, the probability of human-bear encounters could increase. Consequently, the ecological effect is best characterized as a localized change in habitat quality and use rather than a simple net increase or decrease in habitat value.

Table 58: Change to Black Bear Habitat from Operations in the Study Area (Cascade, 2026)

Habitat Quality		Habitat Impacted (ha)	Habitat impacted (% of the habitat in the Study Area)
Constrained	Primary Foraging	0.1	0.15
	Primary	0	0
	Secondary	0.1	0.23

Habitat Quality		Habitat Impacted (ha)	Habitat impacted (% of the habitat in the Study Area)
	Tertiary	0.1	0.13
Unconstrained	Primary Foraging	0.2	0.07
	Primary	0.2	0.10
	Secondary	0.01	0.01
	Tertiary	0.2	0.36

Elk

The proposed Gondola will result in the loss of approximately 0.16 ha of elk habitat (**Table** 59). Only 0.01 ha of primary grassland habitat will be affected, representing approximately 0.01% of primary elk habitat available within the Study Area.

Elk in the Bow Valley exhibit a high degree of tolerance to human development and may select developed areas where predation risk is reduced (Hebblewhite & Merril, 2009; Kloppers, St. Clair, & Hurd, 2005). The opening of forest canopy beneath the Gondola may increase browse availability and create additional edge habitat.

Consequently, the direct effect of the Gondola on elk habitat quantity is expected to be negligible. The more important consideration is that increased habitat attractiveness could increase elk use of areas also frequented by people, potentially increasing human-elk interactions and habituation.

Table 59: Change to Elk Habitat from Operations in the Study Area (Cascade, 2026)

Habitat Quality	Habitat Impacted (ha)	Habitat impacted (% of the habitat in the Study Area)
Primary	0.01	0.01
Secondary	0.09	0.07
Tertiary	0.07	0.05

Bighorn Sheep

In the Project Area, the proposed Gondola will result in the loss of approximately 0.22 ha of bighorn sheep habitat (Table 60), including approximately 0.21 ha of foraging habitat and 0.01 ha of potential tertiary lambing habitat. Based on the RSF model, the Project could affect approximately 1.18 ha of modeled bighorn sheep habitat across the low, moderate, high, and very high predicted habitat-use classes (Table 61). Of this area, approximately 0.25 ha is classified as low predicted habitat use, 0.64 ha as high predicted habitat use, and 0.29 ha as very high predicted habitat use. No area classified as moderate predicted habitat use would be affected. The area affected within the high and very high predicted habitat-use classes represents approximately 0.32% and 0.14% of the respective modeled habitat within the Study Area.

The affected foraging habitat identified in Table 60 represents approximately 0.2% of modeled foraging habitat within the Study Area. The modeled lambing habitat affected by the Project is tertiary habitat, and it is not known whether this area is actually used for lambing because specific lambing sites have not

been identified. The RSF results indicate that some of the area affected by the Project occurs within areas of high and very high predicted habitat use; however, the RSF model represents relative habitat use at the landscape scale and does not confirm that the affected areas are actively used by bighorn sheep.

Bighorn sheep can exhibit substantial tolerance to predictable human activity. Lee et al. (2019) documented physiological responses to human activity at relatively close distances, but the potential for behavioural habituation has also been documented in the Bow Valley. The Mount Norquay wildlife assessment (Lee, Ford, Sanderson, & Clevenger, 2019) identified bighorn sheep lambing habitat as potentially sensitive to increased human activity where suitable lambing habitat occurs within the zone of influence of infrastructure and recreational activity. Given the small area of habitat affected relative to the amount of habitat available within the Study Area, and the limited extent of permanent habitat loss associated with the Project, and the moderate bighorn sheep use documented by project-specific monitoring, effects on bighorn sheep habitat availability are expected to be limited. The RSF results identify areas of potentially suitable habitat within the Project Area, but the available camera data indicate that these areas are not currently used extensively by bighorn sheep.

No mineral licks were identified within the Project footprint and therefore no direct effects on mineral licks are expected.

Table 60: Change to Bighorn Sheep Habitat during Operation in the Study Area (Cascade, 2026)

Habitat Type	Habitat Impacted (ha)	Habitat impacted (% of the habitat in the Study Area)
Foraging Habitat	0.21	0.2
Tertiary Lambing Habitat	0.01	0.1

Table 61: Change to Bighorn Sheep predicted habitat use during Operation in the Study Area (Poole et al., 2016)

Predicted habitat use	Habitat Impacted (ha)	Habitat impacted (% of the habitat in the Study Area)
Low	0.25	0.13
Moderate	0.00	0.00
High	0.64	0.32
Very High	0.29	0.14

3.8.2.2.2 Movement and Connectivity

The proposed Gondola is not expected to create a physical barrier to wildlife movement because it is an elevated structure and the permanent ground footprint is limited to tower and terminal locations. Wildlife will remain able to move beneath the Gondola alignment.

The principal potential effect on movement and connectivity is therefore behavioural avoidance resulting from human activity and sensory disturbance, rather than physical obstruction.

This distinction is supported by the Mount Norquay Gondola Wildlife Assessment (Lee, Ford, Sanderson, & Clevenger, 2019), where modeling indicated that the gondola itself was a relatively minor contributor to movement impacts compared with roads and recreational activity. For wolves and cougars, the assessment identified increased human activity associated with the access road and summer recreation as the principal concern for connectivity.

Similarly, recent Bow Valley research indicates that cumulative human use can influence habitat use by wolves and grizzly bears over large spatial areas (Thompson, Paczkowski, Whittington, & St. Clair, 2025).

The MRIP identifies both the upper and lower Silvertip Wildlife Corridors as important areas for maintaining wildlife movement and connectivity, with the LSWC identified as particularly important for ungulate movement (Town of Canmore, 2024b). The proposed Gondola will cross and potentially influence movement within both corridors; however, because the structure will be elevated and wildlife will remain able to move beneath the alignment, it is not expected to substantially reduce the physical permeability of either corridor. The primary concern for both the upper and lower corridors is therefore the potential for behavioural avoidance associated with human activity and sensory disturbance. Maintaining movement opportunities through both corridors will depend not only on retaining physical connectivity beneath the Gondola alignment but also on limiting additional human activity and disturbance within the corridors.

Cougar

Cougars are considered resilient to moderate levels of human disturbance and have demonstrated an ability to continue using fragmented landscapes by altering their spatial and temporal patterns of movement (Knopff, 2011). Because the proposed gondola is an elevated structure with a limited ground footprint, it is not expected to create a physical barrier to cougar movement. The predictable visual and acoustic disturbance associated with gondola operations is also expected to result in a low level of behavioural response, particularly following habituation. The greater influence on cougar movement within the wildlife corridor is expected to remain the existing level of human activity on recreational trails, particularly during the snow-free season when trail use is highest.

Lynx

Lynx are not known to consistently occur within the Study Area and available habitat models indicate that the highest quality habitat occurs west of the study area. Consequently, the proposed gondola is not expected to measurably influence lynx movement or habitat connectivity. The limited ground footprint of the gondola infrastructure is unlikely to alter landscape permeability for this species.

Wolf

Wolves exhibit strong behavioural responses to human disturbance and generally avoid areas with high levels of human activity (Golder Associates, 2013). Increased human presence associated with the proposed gondola could result in localized avoidance of the immediate area beneath the gondola, particularly during periods of high recreational activity. However, the gondola is an elevated structure with a limited ground footprint and is therefore not expected to create a physical barrier to wolf movement. Research in the Bow Valley has demonstrated that wolves respond more strongly to the cumulative effects of roads, trails, and associated human activity than to individual infrastructure features, with habitat connectivity being influenced primarily by the distribution and intensity of anthropogenic disturbance across the landscape (Whittington, Hebblewhite, Baron, Ford, & Paczkowski, 2022).

Wolves have also been shown to modify their temporal movement patterns in response to increased human activity and road traffic, increasing their use of habitats during periods when human activity is lower (Percy, 2003). A similar behavioural response is anticipated within the LSWC and USWC, where wolves may preferentially use the corridor during nighttime or other periods of reduced human activity. Given the existing level of recreational use within the wildlife corridor, human activity is likely already influencing wolf movement. Consequently, the operational effects of the gondola itself are expected to be secondary to the effects of existing human use within the corridor that are not directly associated with Gondola operations.

Grizzly and Black Bear

Grizzly bears exhibit strong avoidance of areas with high levels of human activity, and studies in the Bow Valley indicate that bears typically avoid areas within approximately 200 m of high-use trails and 500 m of high-use roads (Donelon, 2004). Existing recreational use within the LSWC and USWC likely already

reduces the frequency with which some grizzly bears use portions of the corridor during periods of high human activity. However, recent research in the Bow Valley demonstrates that grizzly bear connectivity is influenced primarily by the cumulative effects of anthropogenic disturbance, including towns, roads, trails, and associated human activity, rather than by individual infrastructure features (Whittington, Hebblewhite, Baron, Ford, & Paczkowski, 2022). Because the proposed gondola is an elevated structure with a limited ground footprint, it is not expected to create a physical barrier to bear movement, and any operational effects on connectivity are expected to be secondary to the existing level of human use within the corridor that are not directly associated with Gondola operations.

Grizzly and black bears have also been shown to modify their temporal activity patterns in response to human disturbance by increasing nocturnal activity in developed landscapes (Donelon, 2004); (Percy, 2003). A similar behavioural response may occur within the Silvertip Wildlife Corridor, with bears preferentially moving through the corridor during periods of lower human activity. Bears that continue to regularly use the corridor despite existing levels of human activity are likely to exhibit greater tolerance of people. However, increased habituation to humans can increase the likelihood of human-bear conflicts and subsequent wildlife management actions, potentially reducing individual survival. Consequently, the operational effects of the gondola itself are expected to be limited, while the level of recreational activity within the wildlife corridor is expected to remain the primary factor influencing bear movement and connectivity.

Elk

Elk regularly occur within developed portions of the Bow Valley and have demonstrated a high degree of behavioural adaptation to human presence. The proposed gondola is not expected to create a barrier to elk movement because the infrastructure will be elevated and permanent ground disturbance is limited to tower and terminal locations. Elk are therefore expected to continue moving through the corridor under and adjacent to the gondola, although localized behavioural responses may occur during periods of elevated human activity, particularly during construction and maintenance activities or as a result of existing and future recreational use of the corridor.

Bighorn Sheep

Bighorn sheep are expected to experience minimal effects on movement and connectivity as a result of the Project. The proposed gondola alignment does not intersect important escape terrain, and sheep occupying the upper slopes of Mount Lady Macdonald are expected to continue moving through high-elevation habitats largely unaffected by gondola operations. Existing camera data indicate that sheep movements are predominantly oriented east of the Project Area, suggesting that the gondola is unlikely to interfere with regular movement patterns. In addition, studies in the Bow Valley have demonstrated that bighorn sheep readily habituate to predictable human activities and infrastructure, including aerial gondolas, further supporting the conclusion that operational effects on movement will be low (Lee, Ford, Sanderson, & Clevenger, 2019).

3.8.2.2.3 Habitat Fragmentation and Edge Effects

The proposed Gondola Project may result in limited fragmentation of wildlife habitat because the alignment will not be completely cleared. Unlike a conventional road or continuously cleared linear feature, the Project will retain substantial forest cover beneath and adjacent to the alignment.

Consequently, the Project is not expected to substantially reduce landscape connectivity through direct physical fragmentation. The principal potential fragmentation effect is indirect and may result from behavioural avoidance of areas with increased human activity.

The distinction between structural connectivity and functional connectivity is important. Structural connectivity refers to the physical continuity of habitat, while functional connectivity refers to the ability and willingness of wildlife to move through that habitat. The proposed Gondola Project is expected to

have little effect on structural connectivity because it would not physically obstruct wildlife movement through the corridor. The primary potential effect on functional connectivity would be indirect, through changes in wildlife behaviour or movement patterns in response to increased human activity, including recreational use of trails within the corridor.

This is particularly relevant to grizzly bears and wolves. Thompson *et al.* (2025) demonstrated that cumulative recreational activity can reduce habitat use by both species over distances substantially greater than the width of individual trails.

The MRIP similarly identifies increasing recreational use and proliferation of non-designated trails as major challenges to LSWC functionality. It is therefore critical that the Project does not result in increased human use within wildlife corridors. In this regard, the gondola may help support corridor functionality by concentrating visitor use within designated access and trail networks and reducing the incentive to use the Lady McDonald trail.

Vegetation changes along the gondola alignment will create localized edge habitat. These changes may increase forage and shrub production and could benefit elk, black bears, grizzly bears, and potentially lynx. However, increased attractiveness to wildlife could also increase the potential for human-wildlife interactions where recreational use is high.

Overall, the Project is not expected to substantially increase physical habitat fragmentation or reduce structural connectivity. Given that substantial increases in human use of the wildlife corridors attributable to the Project are not anticipated, effects on functional connectivity are expected to be primarily associated with localized and temporary behavioural responses to construction disturbance and, to a lesser extent, ongoing operational noise and visual stimuli. The elevated configuration of the Gondola and retention of forest cover beneath the alignment would maintain ground-level movement through the corridors and minimize the potential for the Project to physically obstruct wildlife movement.

3.8.2.2.4 Human Wildlife Interaction

The proposed Project is expected to increase visitation to the broader area surrounding the Project Area, including the adjacent Lady Macdonald recreation area and, indirectly, the LSWC and USWC. The Gondola itself would not provide direct access to trails within the wildlife corridors; however, an increase in recreational use of trails within the Upper and Lower Silvertip Wildlife Corridors attributable specifically to Gondola users is expected to be minimal. The Gondola would not provide direct access to these trails, and the trails do not provide viewpoints, rest areas, or other tourism-oriented features that would be expected to attract Gondola visitors as a destination following their Gondola experience. The Montane Traverse and Douglas Fir trails are primarily used for connectivity, exercise, and mountain biking experiences by local and existing recreational users. Although some limited spillover use by Gondola visitors is possible, users would need to independently choose to access these trails rather than being directed or naturally drawn to them by the Gondola experience (McElhanney, 2026). Consequently, any increase in recreational use within the wildlife corridors attributable to the Project is expected to be limited and substantially less than the increase in visitation expected in the immediate Gondola area.

The Study Area forms part of a larger network of wildlife corridors within the Bow Valley, where maintaining connectivity and minimizing disturbance are important for wildlife movement. The Bow Corridor Ecosystem Advisory Group (BCEAG) identifies the Upper and Lower Study Areas as wildlife corridors and recognizes recreational trail density and human use as considerations in maintaining corridor function (Bow Corridor Ecosystem Advisory Group, 2012). Similarly, the 2024 MRIP for the LSWC identifies increasing residential development, recreational use, and unauthorized trail networks as key anthropogenic pressures affecting corridor function.

Human use of wildlife corridors can result in displacement of wildlife and reduced habitat effectiveness (Bow Corridor Ecosystem Advisory Group, 2012). Previous research in and around The Town of Canmore found that recreation and associated infrastructure can influence wildlife occurrence and behaviour, with hikers and off-leash dogs spatially displacing several species (Hojnowski, 2017).

Increasing visitation throughout the Silvertip and Lady Macdonald trail networks could therefore increase disturbance where recreation overlaps with areas used by wildlife. These findings provide context for the importance of managing existing and broader future recreational use within the corridors, but are not expected to represent a substantial project-related effect given the limited anticipated increase in trail use attributable specifically to Gondola users.

The Town of Canmore's Human–Wildlife Coexistence Implementation and Action Plan identifies human activity, off-leash dogs, wildlife attractants, and recreation management as important considerations for reducing human–wildlife conflict. Recommended actions include reducing off-leash dog use, managing wildlife attractants, and improving public education and recreation practices (Town of Canmore, 2024a). These measures are particularly relevant in the Study Area, where existing recreational use and broader changes in visitation may continue to influence human–wildlife interactions.

At higher levels of human activity, some wildlife may avoid areas of concentrated use or alter the timing and spatial pattern of habitat use. Habituation and food conditioning can also increase the potential for human–wildlife conflict, particularly where wildlife have access to anthropogenic food sources or become accustomed to human presence (Town of Canmore, 2024a). Human–wildlife conflict can result in management actions, including relocation or removal of individual animals. In the Central Rockies, human-related mortality has been an important source of grizzly bear mortality, with management removals representing a substantial component of recorded human-caused mortality (Benn & Herrero, 2002). Areas that provide attractive habitat or food resources while also having elevated mortality risk may therefore function as attractive sinks (Nielsen, et al., 2006).

Grizzly and Black Bear

Black bears and grizzly bears are expected to represent a primary concern regarding increased human–wildlife interactions within the Study Area. The proposed development may alter habitat conditions and create disturbed edges that could provide localized forage opportunities for bears. Productive south-facing slopes and other seasonal forage areas may be used by grizzly bears, including areas supporting berry-producing vegetation such as buffaloberry (Hamer, Herrero, & Brady, 1991; Nielsen, et al., 2006). The presence of attractive forage within areas of increasing human use could increase the potential for encounters between bears and recreationists.

Grizzly bears have been documented using the area between the USWC and LSWC for movement across the landscape (Golder Associates, 2017; Whittington, Hebblewhite, Baron, Ford, & Paczkowski, 2022). Existing development patterns within Silvertip may constrain wildlife movement by reducing the availability of suitable movement routes and increasing the potential for wildlife to encounter areas of concentrated human activity. The proposed Gondola development may further alter access to portions of this movement area between the corridors, although the implications for wildlife movement will depend on the final development footprint and associated mitigation measures. Although the recreational footprint directly associated with the Gondola is largely outside the wildlife corridors, the Gondola is not expected to substantially increase recreational use of trails within the USWC or LSWC. The Gondola does not provide direct access to these trail networks, and the Montane Traverse and Douglas Fir trails do not provide tourism-oriented features such as viewpoints or rest areas that would be expected to attract substantial use by Gondola visitors. Although some limited spillover use is possible, any increase in trail use attributable specifically to the Gondola is expected to be minimal and indirect.

Human–bear conflict is a primary concern because encounters involving bears can result in management responses, including relocation or removal of individuals. Grizzly bears in the Bow Valley and surrounding Rocky Mountain landscape have experienced substantial human-caused mortality, with management removals representing an important component of recorded human-caused mortality (Benn & Herrero, 2002). Where wildlife are attracted to productive habitat or anthropogenic food resources in areas with elevated human-caused mortality risk, these areas may function as attractive sinks (Nielsen, et al., 2006). Consequently, existing and broader future recreational use of wildlife movement areas remains relevant to human–bear conflict risk, particularly where wildlife attractants and recreation activities overlap.

The risk of human–bear conflict is therefore considered primarily in relation to the existing and broader future pattern of human use within the Study Area rather than a substantial increase in recreational use directly attributable to the Gondola. Given that the Gondola would not directly provide access to the wildlife-corridor trail network and substantial increases in trail use attributable specifically to Gondola users are not anticipated, a substantial increase in human–bear encounters resulting from the Project is not anticipated. Wildlife attractants and construction- and operation-related sources of food should nevertheless be effectively managed to minimize opportunities for habituation, food conditioning, and conflict.

Cougars

Cougars have been documented using the area between the LSWC and USWC as a movement corridor, and this area has been identified as potentially important for carnivore movement ((Bow Corridor Ecosystem Advisory Group, 2012; Whittington, Hebblewhite, Baron, Ford, & Paczkowski, 2022). Existing development patterns may influence cougar movement through the area by restricting access to portions of the landscape and altering movement pathways.

The Gondola is not expected to substantially increase recreational use of existing trails within or adjacent to the wildlife corridors. The Gondola does not directly provide access to these trail networks, and the trails are primarily used for connectivity, exercise, and mountain biking rather than as tourism destinations. Although some limited spillover use by Gondola visitors is possible, any increase in trail use attributable specifically to the Project is expected to be minimal and indirect.

Consequently, the potential for increased human–cougar encounters attributable specifically to the Gondola is expected to be limited. Increased visitation associated with the Project could result in some additional recreational use of existing trails within and adjacent to the wildlife corridors, potentially increasing the opportunity for human–cougar encounters. Although the Gondola does not directly provide access to these trail networks, increased visitation to the surrounding area could indirectly contribute to greater recreational use of areas currently used by cougars. Increased dog use may also contribute to encounters at the interface between developed and natural areas, particularly where dogs are off-leash or recreation occurs within cougar habitat (Morrison, Boyce, Nielsen, & Bacon, 2014). The Town of Canmore has identified off-leash dogs and recreation management as important components of reducing human–wildlife conflict (Town of Canmore, 2024a).

Wolves

Wolves generally avoid areas with high levels of human activity and may therefore have limited use of the Study Area. Wolves may also alter their spatial distribution in response to industrial development and associated human encounter risk, although prey availability can influence this response (Boczulak, Boucher, Ladle, Boyce, & Fisher, 2023). Given the limited documented use of the area by wolves, the potential for increased human–wolf conflict is expected to remain relatively low. Nevertheless, wildlife attractants such as unsecured garbage, pet food, and intentional feeding should be managed to minimize opportunities for habituation and food conditioning (Town of Canmore, 2024a).

Lynx

Similarly, lynx are expected to be minimally affected by increased human–wildlife interactions due to their limited documented use of the Study Area. Camera monitoring and previous wildlife assessments indicate relatively low lynx occurrence within the assessment area. Increased recreation is therefore unlikely to substantially increase the potential for direct human–lynx interactions or conflict.

Elk

Elk in the Bow Valley can become habituated to human activity and development, and habituated individuals may concentrate in developed areas, increasing the potential for human–wildlife conflict (Kloppers, St. Clair, & Hurd, 2005).

Moderate elk use of the Study Area suggests that the species may interact with existing and future recreation areas. However, the Gondola is not expected to substantially increase recreational use of the wildlife-corridor trail network. The Project does not propose new trails within the wildlife corridors, and the Gondola would not directly provide access to these trail networks. The Montane Traverse and Douglas Fir trails are primarily used for connectivity, exercise, and mountain biking rather than as tourism destinations, and any increase in trail use attributable specifically to Gondola visitors is expected to be minimal and indirect.

Where recreational use overlaps with areas used by elk for foraging, movement, or seasonal activities, localized behavioural responses or increased opportunities for human–elk encounters could occur, particularly during sensitive periods such as calving. These potential effects are associated primarily with existing and broader future recreational use within the Study Area rather than a substantial increase in trail use attributable to the Gondola.

Bighorn Sheep

Bighorn sheep have been documented using the Project Area, which is already subject to substantial human use. The proposed Gondola would introduce additional human presence into an area where sheep are currently exposed to recreational and other human activity. The Project would affect a limited amount of escape terrain; however, potential escape terrain remains available in close proximity within the Study Area. Camera monitoring did not indicate use of the Project Area as lambing habitat, and the modeled lambing habitat affected by the Project is classified as tertiary habitat, representing relatively low suitability for lambing.

Bighorn sheep can respond behaviourally to human recreational activity where recreation overlaps with areas used for foraging, movement, or seasonal activities. Papouchis et al. (2001) found that hikers elicited stronger responses from bighorn sheep than vehicles or mountain bikers, with responses generally increasing when human activity approached at similar elevations and when sheep were farther from escape terrain. However, Lee *et al.* (2019) indicates that bighorn sheep can habituate to predictable human presence, suggesting that responses to recreation may vary depending on the nature, frequency, and predictability of human activity. Given the existing level of human activity in the Project Area, sheep using the area may already be habituated to some degree to regular human presence, and the incremental effect of additional predictable human activity may therefore be less than would be expected in a relatively undisturbed area.

Localized behavioural responses may nevertheless occur where construction or operational activity overlaps with areas used by sheep, particularly during periods of higher-intensity activity. Given the existing high level of human use, the potential for habituation to predictable human presence, the availability of potential escape terrain nearby, the limited extent of habitat affected, and the relatively low suitability of the affected modeled lambing habitat, substantial additional effects on bighorn sheep are not anticipated.

Wildfire Mitigation

Wildfire mitigation activities associated with the Project have the potential to affect wildlife and wildlife habitat through vegetation removal, changes to stand structure, increased access, temporary sensory disturbance, and changes to habitat composition.

Where feasible, wildfire mitigation should prioritize retention of mature trees and understory vegetation, avoid unnecessary widening of linear clearings, and maintain vegetation structure that provides wildlife cover and movement opportunities.

The potential effects of wildfire mitigation should also be considered in relation to the existing management objectives for the LSWC. The MRIP identifies fire safety as one of the issues that must be addressed as part of management of human use within the corridor. Consequently, wildfire mitigation should be designed to reduce fire risk while maintaining the ecological function of the wildlife corridor.

Vegetation management may have species-specific effects. Reducing dense forest cover may locally increase forage availability for elk and berry-producing shrubs used by bears, while extensive removal of mature forest could reduce cover for species that depend on forested habitat. The net effect will therefore depend on the spatial extent and configuration of wildfire mitigation.

If wildfire mitigation activities require periodic maintenance, these activities should be scheduled, where practicable, outside sensitive wildlife periods and coordinated with the broader vegetation management program.

3.8.2.2.5 Impacts to Wildlife Species of Concern

Birds

Elevated gondola cables represent a potential operational collision hazard for birds moving through the Project Area. A recent systematic review of the effects of downhill skiing and associated infrastructure found that most studies assessing ski-lift cables reported or suggested impacts to birds, with Galliformes appearing particularly vulnerable (Brambilla & Roseo, 2025). The review also identified collision mortality as a potentially under-recognized effect because collisions can be difficult to detect and actual fatality rates are challenging to quantify. Although the available literature is largely based on ski-lift systems and species in alpine environments, the findings indicate that elevated cable infrastructure represents a relevant potential impact pathway for birds.

The likelihood of collision will vary among species and individuals depending on flight behaviour, habitat use, flight height, visibility of the cables, and frequency of use of the Project Area. The magnitude of collision risk for the species considered in this assessment cannot be reliably quantified based on available information. Consequently, potential bird–cable interactions are considered for all bird species with the potential to occur within the Project Area, rather than being identified as a species-specific effect.

Bats

Elevated cable infrastructure may also present a potential collision or entanglement pathway for bats during nocturnal movements. The magnitude of this risk is uncertain and would depend on the frequency and manner in which bats use the Project Area and interact with the elevated infrastructure. This potential effect is considered for all bat species assessed, rather than being specific to a particular species.

Wandering garter snake

Permanent loss or alteration of basking and hibernation habitat could occur where tower or station footprints overlap suitable rocky or talus features. Increased human activity associated with Gondola stations could also increase the potential for incidental encounters with individuals. However, given the localized extent of permanent habitat disturbance and the species' mobility and ability to use a range of habitat types, operational effects are expected to be minor.

Clark's nutcracker

Permanent removal of mature conifers within tower and station footprints would result in a localized reduction in seed-producing trees and associated seed-caching resources. The species' high mobility and ability to forage over large areas are expected to allow individuals to continue using suitable habitat surrounding the Project. No substantial operational disturbance pathway has been identified, and effects are expected to be minor.

Brown creeper

Permanent loss of mature trees within the Project footprint would reduce locally available nesting and foraging substrate. The creation of forest edges may also alter microclimatic conditions and increase the potential for windthrow in adjacent retained stands, potentially reducing habitat quality beyond the direct clearing footprint. Given the localized extent of clearing and availability of surrounding forest habitat, operational effects are expected to be minor.

Broad-winged hawk

Permanent loss of forest habitat and mature trees within the Project footprint could reduce locally available nesting and foraging habitat. Ongoing human activity and operational noise near stations and towers may also reduce habitat use in the immediate vicinity of infrastructure, particularly where active nesting territories overlap areas of regular activity. However, the species' use of the Study Area is expected to be limited by the availability of suitable habitat and its association with mature forest, and significant operational effects are not anticipated.

Northern pygmy-owl

Permanent clearing may reduce forest interior habitat and remove potential nest trees and foraging perches. Conversely, the creation of forest edges and openings may increase the availability of hunting perches and edge habitat in some locations. These effects may partially offset one another, and substantial operational effects are not anticipated given the limited extent of permanent habitat alteration.

Barred owl

Permanent removal of mature trees containing suitable nesting or roosting cavities could reduce habitat availability locally. Ongoing human activity near stations may also reduce habitat suitability where active territories overlap areas of regular disturbance. Given the localized footprint and availability of surrounding forest habitat, operational effects are expected to be minor.

Peregrine falcon

No suitable cliff-ledge or crevice nesting habitat has been identified within or adjacent to the Study Area. Although individual peregrine falcons foraging or moving through the area could potentially encounter the elevated cable infrastructure, the likelihood of meaningful interaction is expected to be low given the species' flight behaviour and maneuverability. No significant operational effects are anticipated.

Common nighthawk

The Study Area occurs within the species' broader distribution; however, common nighthawk was not documented during previous bird surveys or during the 2026 field investigations. In addition, suitable breeding habitat within the Project footprint appears limited. The species is therefore considered unlikely to regularly use the Project Area, and operational effects are not anticipated.

Black-backed woodpecker

Black-backed woodpeckers are strongly associated with recently burned or beetle-affected coniferous forest containing high densities of standing dead trees (Alberta Biodiversity Monitoring Institute., 2023).

No recent burn habitat is known to occur within the Study Area. Consequently, suitable habitat for the species is limited, and the Project is not expected to result in meaningful operational effects.

Pileated woodpecker

Permanent removal of large-diameter snags and decadent live trees could reduce locally available nesting and roosting habitat. Individuals occupying territories that overlap the Project could continue to use suitable mature forest surrounding the permanent footprint, although localized reductions in habitat quality may occur. Given the species' relatively large territory size and the limited extent of habitat removal, operational effects are expected to be minor.

Western wood-pewee

Permanent changes to forest structure could reduce some nesting habitat but may also create additional edge and open-canopy conditions suitable for foraging. Given the species' tolerance of edge habitat and the availability of surrounding suitable habitat, the operational effect is expected to be minor at the population level.

Olive-sided flycatcher

Permanent forest openings created by the Gondola alignment and station clearings may provide some habitat characteristics favoured by olive-sided flycatchers, including open edges and elevated residual snags used as foraging perches. However, increased human activity immediately around stations or other regularly occupied infrastructure could reduce the suitability of otherwise suitable habitat in localized areas. Overall, operational effects are expected to be minor, provided that vegetation management maintains suitable structural features where practicable.

Evening grosbeak

Permanent loss of mature mixed wood forest within the Project footprint would contribute to localized loss of nesting and foraging habitat for a species of conservation concern. Given the limited extent of habitat loss and the uncertainty regarding collision risk, operational effects are expected to be localized; however, the species' conservation status warrants consideration of appropriate mitigation where feasible.

Western tanager

Permanent clearing would result in localized loss of nesting and foraging habitat but would also create edge and open-canopy conditions that may continue to be used by the species. Given its broad habitat tolerance and the availability of surrounding forest habitat, operational effects are expected to be minor at the population level.

Little brown myotis

Permanent loss of trees containing suitable roost features could reduce available summer roost habitat. Elevated cable infrastructure may also introduce a potential collision or entanglement pathway for bats during nocturnal movements; however, the magnitude of this risk for the species in the Project Area is uncertain. Operational effects are therefore expected to be localized, with the primary potential effect associated with loss of roost habitat.

Northern myotis

Permanent removal of trees containing cavities, loose bark, or other suitable roost features could reduce summer roost habitat. Elevated cable infrastructure may also present a potential collision or entanglement pathway during nocturnal movements. The magnitude of this potential effect is uncertain and would depend on the frequency with which bats use the Project Area and interact with the elevated infrastructure. Operational effects are expected to be localized.

Silver-haired bat

Permanent loss of suitable roost trees could reduce available summer roosting habitat. The elevated cable infrastructure may also present a potential collision or entanglement pathway during nocturnal movements, particularly given the species' migratory behaviour. However, the magnitude of collision risk associated specifically with gondola cable infrastructure is uncertain.

Grizzly bear

Impact to grizzly bear from operation is addressed in Section 3.8.2.2.1

Fisher

Permanent clearing could result in localized loss and alteration of mature forest habitat. Changes in forest structure along the cleared corridor may also reduce habitat continuity in the immediate vicinity of the Project. Human activity associated directly with stations and maintenance activities could further reduce habitat use near infrastructure. However, given the limited extent of the permanent footprint and the availability of surrounding forest habitat, substantial operational effects are not anticipated.

Wolverine

The primary potential operational effect for wolverine is behavioural disturbance associated with human activity and the presence of permanent infrastructure. Wolverines generally avoid areas with high levels of human use, and the existing level of human activity in the Study Area may already limit regular use of the area by wolverines. The Gondola would introduce regular aerial movement, operational noise, and human activity; however, given the existing level of human use, the incremental increase associated with the Gondola may have a limited effect on an area that is already subject to reduced wolverine use. The Gondola itself would not constitute a physical barrier to movement, and the potential for additional human activity within the wildlife corridors would be indirect because the Gondola does not directly provide access to corridor trails. Increased visitation to the surrounding area could nevertheless result in some additional recreational use of existing trails. Operational effects are therefore expected to be primarily behavioural and localized.

Canada lynx

Impact to lynx from operation is addressed in Section 3.8.2.2.1

Bobcat

Permanent habitat alteration is expected to be limited in extent. The species' tolerance of fragmented and edge habitat may allow it to continue using the Project Area and surrounding habitat following construction. The creation of forest edges may also provide additional foraging opportunities in some areas. Operational effects are therefore expected to be minor.

Western bumble bee

Permanent clearing could reduce existing floral resources and nesting habitat where suitable meadow, shrubland, or forest-transition habitat is present. Conversely, portions of the cleared corridor could develop into meadow or shrubland and provide additional floral resources over time if appropriately managed. Ongoing vegetation management, trampling, and other recreational activity could reduce the suitability of these areas for foraging or nesting. Overall, operational effects will depend on the vegetation communities that develop within disturbed area and how these areas are managed.

3.8.2.2.6 Resilience and Recovery

The resilience of key indicator species to the proposed Project varies considerably.

Elk and bighorn sheep are expected to have relatively high resilience to predictable human activity because both species have demonstrated substantial tolerance of development and recreation in the Bow Valley. Cougars are also expected to exhibit relatively high behavioural flexibility and may adjust movement patterns spatially or temporally in response to disturbance.

Lynx are expected to be minimally affected because their occurrence within the Study Area is inconsistent and the highest-quality modeled habitat occurs outside the Project Area.

Wolves and grizzly bears are expected to have lower resilience to increasing human activity because both species are relatively sensitive to human disturbance and require extensive areas of connected habitat. Recent Bow Valley research indicates that cumulative recreational activity can reduce habitat use by both species over substantial spatial scales (Thompson, Paczkowski, Whittington, & St. Clair, 2025).

The ability of wildlife to recover following construction disturbance is expected to be relatively high because most construction effects will be temporary and the majority of the forest structure along the gondola alignment will remain intact. Recovery of vegetation disturbed during construction will occur over time, although vegetation recovery at tower and terminal locations will be constrained by permanent infrastructure.

Behavioural recovery will depend on the degree to which wildlife perceives operational activities as predictable and the extent to which human use increases. If human activity remains localized and predictable, some species may continue to use habitat adjacent to the gondola. However, increasing or unpredictable human use could reduce habitat use and delay behavioural recovery, particularly for species that are more sensitive to human disturbance.

3.9 Terrain and Soils

3.9.1 Baseline Information

This section describes the terrain and soil resources within the Project Area.

3.9.1.1 Surficial Geology and Topography

The Project Area is located within the Bow Valley on the southwest side of Mount Lady Macdonald in the Fairholme Range of the Canadian Rocky Mountains. To the east of the Project Area are several ranges of foothills before reaching the prairies. To the west is the Great Divide, a large flat-bottomed depression that separates the Rocky Mountains from the remainder of the Canadian Cordillera. The Fairholme Range consists primarily of resistant Devonian-age carbonates composed of dolomite and limestone. Valley floors and lower slopes are composed of weaker Mesozoic-age clastic rocks (Belyea, 1960; Toop & de la Cruz, 2002; Edwards W. , 1979).

The Bow Valley topography has been carved by streams between glaciation events, with three known glacial events occurring approximately 10,000 years ago. The western Bow Valley has a broad valley floor with three levels of benchlands on the lower mountain slopes. The Project Area is located on the north side of the valley, which has well-formed benchlands and is coarser than the south side. The lower elevations of the Study Area are situated on moraine deposits, which consist of very poorly sorted or unsorted sediments deposited directly by glacial ice. The upper Study Area, throughout the Upper Silvertip Wildlife Corridor (USWC), is composed of colluvium and rubble across the lower mountain slopes. The lowest elevations of the Study Area and part of the base of the Project Area are situated within the lower floodplain, consisting of fluvial deposits of gravel, sand, silt, and clay. The depositional area on the lower portion of the slope is referred to as the Canmore Kame Terrace (Toop & de la Cruz, 2002; Alberta Parks, 2018).Kame terraces flank the Canmore Valley and are composed of fluvial sands and gravels deposited by glacial meltwater ponding. Since glacial retreat, the kame terraces have been eroded and reworked by flood events and raveling from the adjacent over steepened upper mountain slopes (BGC Engineering Inc., 2015).

Colluvial deposits are materials that have been moved to their current location by direct, gravity-induced processes and are generally poorly sorted. Colluvial deposits within the Study Area originated during the Holocene, as did the fluvial deposits. Fluvial deposits consist of materials deposited by streams and rivers and are often poorly to well sorted. Moraines consist of materials, or till, deposited directly by glaciers, and the morainal materials within the Study Area originated during the Pleistocene. The bedrock of the Study Area, described below, originated during the Upper Paleozoic period. The Canmore Kame Terrace crosses the lower portion of the Study Area. Kame terraces are geologic features formed by fluvial deposits within former glacial lakes situated between the glacier and the mountainside (Alberta Parks, 2022).

The surficial geology of the Canmore area consists of colluvial deposits on upper slopes and bedrock at the highest elevations (Alberta Environment and Parks, 2017). The lower slopes consist of moraines and fluvial deposits, the latter of which makes up the valley bottoms (Alberta Environment and Parks, 2017; Jevons, 2017). The exposed bedrock in the upper third of the Study Area is from the Upper Paleozoic period, while the lower Study Area is from the Lower Mesozoic period (Alberta Parks, 2022; Alberta Parks, 2018). Map 36 illustrates the geological conditions of the Study Area.

The Project Area rises from near the valley bottom of the Bow River Valley to a ridge dividing the Stone Creek and Cougar Creek drainages. Elevation ranges from 1,335 m at the base of the proposed gondola alignment to 2,250 m at the upper terminus. The slope gradient increases with elevation, from nearly level at the base to approximately 86% along the upper portion of the alignment

3.9.1.2 Soil Types and Distribution

The Project Area is located within the Soil Correlation Area of the Montane, Subalpine and Alpine areas of west-central Alberta is composed of a combination of glacial deposits, outwash, alluvium, and fan deposits (Alberta Soil Information Centre, 2016). The Project Area spans an upper elevation area of bedrock, a mid-mountain area of glacial morainal deposits consisting of stony sandy till, and a lower elevation area consisting of alluvium, fan deposits, outwash, and morainal deposits (Edwards W. , 1979).

Three soil groups are present in the Study Area.

The BSPSP11/l4hd covers the lower half of the Study Area. This forms part of a large soil polygon that spans the lowest slopes of the Bow Valley from Lac des Arcs in the east to near Castle Junction in the west. The soil polygon is composed of the ZUN, BEAUPRE, and SPRUCE RIDGE soil series. It is well drained, with long, very strongly sloping terrain. The soils consist of gravel, silt, loam, clay, and humus.

The CAZU1/l4hd soil polygon is located on the mid-slopes of Mount Lady Macdonald and consists of the CAW and ZUN soil series. These soils are well drained and occur on very strongly sloping terrain.

The ZUN1/DL soil polygon extends through the valley bottom and occurs along the southern boundary of the LSA, including a portion of the base area. ZUN1 represents miscellaneous and undifferentiated mineral soils (Alberta Parks, 2022).

Soil groups do not cover the entirety of the Study Area, as the upper elevations of the Project Area have no classified soils due to the presence of colluvial deposits and bedrock (Map 36).

BPSP11 is the most common soil type within the Study Area. This soil is 35% BEAUPRE, which is Orthic Eutric Brunisol on medium textured (L, CL) till, deposited by glacial ice. The soil is also 35% SPRUCE RIDGE that is Orthic Gray Luvisol on medium textured till (L, CL), that is excessively stony and moderately calcareous. The soil polygon contains lesser amounts of Regosolic soils that are coarser textured than the dominant soil types in this polygon.

CAZU1 is a small soil polygon located at the mid mountain slopes of Mount Lady Macdonald. Soils are 50% CAW, Orthic Humic Regosol on medium textured (L, SiL, SiCL, CL, SCL) materials, not till, and over softrock. CAW developed on colluvial materials which are massive to moderately well stratified. The remaining 50% are ZUN miscellaneous undifferentiated mineral soils.

l4hd represents the landform that is inclined with bedrock, high relief landform, dissected, with a limiting slope of 35%. This landform is present throughout most of the Project Area.

ZUN1 polygon extends through the valley bottom, making up the common soil type for the Town of Canmore. This is miscellaneous and undifferentiated mineral soils. "DL" represents disturbed land, as this occurs through areas of town development and is not in a natural state (Alberta Parks, 2022).

Project activities from development and operational activities may affect soils directly within the Project Area and the surrounding Study Area, which includes nearby exposed slopes and waterbodies that are at risk for erosion. Soil classifications and their distributions are provided on Map 36 and are described below in Table 62. Soils are not classified in the high mountain slopes as the terrain surface here is mainly colluvial deposits and bedrock.

Table 62: Soils within the Study Area

Soil Polygon and Soil Series	% of Soil Polygon	Subgroup	Drainage	Slope Gradient (%)	Slope Length (m)	Soil Texture	Parent Material
BSPSP11/l4hd	69.5 ha (38% of LSA)						
1. BEAUPRE	35	Orthic Eutric Brunisol	Well	35	700	SL (0-5cm), L (5-41cm), SL (41-61cm), L (61-100cm).	Moderately fine textured (SCL, CL, SiCL)
2. SPRUCE RIDGE	35	Orthic Gray Luvisol	Well	35	600	Leaf litter (-4-0cm), SiL (0-15cm), CL (15-120cm)	Gravelly, moderately fine
3. ZUN	35	Orthic Regosol	Well	35	1300	CL (1-100cm)	Variable texture (not differentiated)
CAZU1/l4hd	14.9 ha (8% of LSA)						
1. CAW	50	Cumulic Humic Regosol	Well	35	600	SL (0-22cm), Organic (22-41cm), SCL (41-70cm), Bedrock	Moderately fine textured
2. ZUN	50	Orthic Regosol	Well	35	800	CL (0-100cm)	Variable texture (not differentiated)
ZUN1/DL	4.5 ha (2% of LSA)						
1. ZDL	100	-	-	-	-	-	Undifferentiated

3.9.1.3 Erosion Sensitive and Saline-Sodic Soils

The Agricultural Land Resource Atlas of Alberta mapping indicates that the Canmore area is mainly medium textured soils and has low amounts of saline soils (<10%) and solonetzic soils (<10%). Most sodic soils in Alberta are classified as Solonetzic soils (Alberta Government, 2010). Organic soils throughout Canmore are low (<10%). The risk of water erosion on bare, unprotected mineral soil is severe, while the risk of wind erosion is negligible (Agriculture and Agri-Food Canada, 2005). No examples of sodic soils are identified within the study area. Some areas of saline soils are expected to be located near Trans Canada Highway due to heavy application of road salt.

Factors determining site specific erosion potential include soil type, slope steepness, and length of slope. Additionally, soils with faster infiltration rates, higher levels of organic matter and improved soil structure have a greater resistance to erosion. Silt, silty loam, loam or fine sandy soils with weak structure are more susceptible to water erosion. Soil classes present within the Study Area are presented in Table 63.

The following erosion analysis uses slope definitions from the National Soil DataBase (Government of Canada, 2022).

The BSPSP11 polygon contains minimal organic matter and is mostly sandy loam and silty loam, providing a soil erodibility of medium to high. The slope-gradient is extremely steep with a long slope length. In combination, these soils have a high erosion potential.

The CAZU1 polygon contains low to moderate organic matter and is composed of sandy loam and clay loam. This soil type has a medium erodibility. The slope-gradient is extremely steep and long. In combination, these soils have high erosion potential.

The ZUN1 polygon is composed of undifferentiated soil materials. This slope-gradient is low with moderate length. As such, these soils have low erosion potential.

Vegetation cover reduces potential for soil erosion through protection from raindrop impact, slowing runoff, and increasing surface water infiltration (Ritter, 2012). As the soil polygons CAZU1 and BSPSP11 are naturally vegetated within the Study Area, the soil erosion potential is low. The soil erosion potential is only high when the area is non-vegetated.

Table 63: Soil types and their Potential Erodibility

Soil Type	Soil Erodibility
Heavy Clay	Low
Clay	Low
Silt clay	Medium
Sandy clay	Low
Silty clay loam	Medium
Clay loam	Medium
Sandy clay loam	Medium
Silty loam	High
Loam	High
Sandy loam	Medium
Silt	High
Loamy Sand	Low
Sand	Low

Table 64: Effect of Slope Gradient and Slope Length on Erosion Potential

Slope Gradient	Slope Length	Erosion Potential		
		Low	Medium	High
Gentle	Moderate	Low	Low	Moderate
	Long	Low	Moderate	High
Moderate	Moderate	Low	Moderate	High
	Long	Moderate	High	High
Steep	Moderate	Moderate	High	High
	Long	Moderate	High	High

Silvertip Gondola

Map 36 - Soils and Terrain

Date: 2026-09-24

0 50 100 200 300 400 500

Metres

N

Surface Geology Condition

- Bedrock
- Colluvial Deposits
- Fluvial Deposits
- Moraine

- Soils
- Project Area
- Soils Study Area
- Wildlife Corridor
- Lakes & Rivers

- Municipal Boundary
- Other Trail (Closed, Illegal, Overgrown, Etc.)
- Authorized Recreation Trails
- Exisiting Road
- Existing Road

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3.9.2 Impact Assessment

Potential impacts to geology and soils include disturbance associated with earthworks for gondola and building construction, installation of underground services, vegetation clearing, and increased risk of erosion and sediment transport from exposed soils and stockpiled materials. Most anticipated soil and terrain effects are expected during construction; localized operational effects may also occur from foot traffic, maintenance activities, and off-trail trampling.

3.9.2.1 Construction

3.9.2.1.1 Project activities and soil disturbance

Disturbance to soil and terrain within the Project Area has the potential to affect environmental resources, particularly through increased erosion and sedimentation that could result in sediment-laden runoff to downstream aquatic environments. Construction activities with the potential to disturb soils include vegetation clearing and grading for the base terminal and mid-station. Ground disturbance and vegetation removal will also be required for gondola tower bases, while vegetation modification will occur along the gondola alignment. Sediment stockpiles will be present during site preparation for the base terminal and mid-station. Soil disturbance is expected to be minimal in the upper-mountain development areas due to the limited presence of soils.

The lower slopes of Mount Lady Macdonald consist of the Canmore Kame Terrace, which is incised by Stone and Stoneworks Creeks. The upper slopes of Mount Lady Macdonald have been identified as potentially contributing to rockfall and debris accumulation in the upper reaches of Stone Creek.

3.9.2.1.2 Surface Disturbance

The Project will require localized earthworks associated with the installation of gondola tower footings and burial of servicing where feasible. The exact number of towers and their sizes are yet to be determined. However, based on current conceptual design, approximately 27 gondola towers are proposed, with the largest footing expected to be 4.88 m x 3.66 m. This represents an estimated footprint of 17.86 m² per tower footing. Each tower structure will require an excavated depth of approximately 1.83 m. The stations will be larger at about 10.97 m x 4.27 m, excavation depth of approximately 3.66 m. Earthworks will otherwise be limited, with no extensive grading or other major excavations proposed. The estimated surface disturbance associated with the Project development areas is displayed in Table 65, which identifies the estimated area of soil disturbance associated with each Project development and the soil type that may be affected.

Table 65: Estimated Construction Surface Disturbance

Development	Estimated Surface Disturbance m^2	Soil Type Impacted
Gondola Towers	482.22	BPSP11, CAZU1, colluvial
Base Station	46.84	BPSP11, and ZUN1/DL
Mid-Station	46.84	BPSP11
Upper Station	46.84	Bedrock and colluvial

The proposed gondola alignment will require relatively little modification of soils or terrain for installation. Vegetation modification along the gondola alignment is not anticipated to require grubbing. As the alignment will involve removal or modification of vegetative cover while maintaining the underlying ground surface and soils, soil disturbance associated with vegetation modification along the alignment is expected to be minimal.

The anticipated soil disturbance is primarily localized to the base terminal, mid-station, and gondola tower locations. Given the relatively limited extent of permanent soil disturbance in relation to the overall Project Area, effects on local and regional landscape productivity and ecological integrity are expected to be limited to small areas of disturbance. Temporary changes to landscape character and aesthetics may occur during construction due to vegetation clearing, exposed soils, and construction activities; however, these effects are expected to be reduced following reclamation and revegetation. Following construction, reclaimed areas are expected to support future vegetation establishment and maintain the existing general land-use function of the Project Area.

3.9.2.1.3 Soil Erosion and Sedimentation

Under baseline conditions, soil erosion potential is considered low due to the naturally vegetated state of the Project Area. During construction, erosion potential may increase where soils are disturbed, particularly within the base area, mid-station, and gondola tower locations on lower to mid-slopes where BPSP11 and CAZU1 soils are present. The potential for erosion will be greatest on steeper slopes and in areas where larger areas of soil are exposed. Mitigation measures can be implemented to reduce soil mobility and erosion potential during construction, including at gondola tower locations.

3.9.2.1.4 Slope Stability and Geohazards

A low rockfall hazard has been identified for the upper-mountain developments. Appropriate mitigation measures can be implemented to manage the potential for rockfall and associated terrain instability during construction.

Rainfall and snowmelt events may temporarily increase the potential for soil erosion, sediment transport, and localized slope instability within disturbed areas. Exposed soils, stockpiled materials, and areas where vegetation is removed may be particularly susceptible to runoff during heavy rainfall or rapid snowmelt. These effects may be more pronounced on steep slopes or where drainage is concentrated because of construction activities.

3.9.2.1.5 Soil Contamination and Soil Quality

Potential risk of soil contamination may occur during construction activities, with a lower potential during operation associated with leaks or failures of utility infrastructure. Fuel leaks from machinery, accidental releases of lubricants, hydraulic fluids, and other petroleum hydrocarbons could occur during equipment operation, refuelling, maintenance, or equipment failure. Additional potential sources include improper storage or handling of hazardous materials, spills during material transfer, concrete washout, and the disposal or burial of construction wastes. Imported fill or previously disturbed soils could also represent a potential source of contamination if materials are not appropriately characterized prior to use.

The potential sites for soil contamination will be during construction of the gondola stations and towers due to the use of heavy equipment and the disturbance and handling of soils. To minimize the potential for contamination, fuels, lubricants, and other hazardous materials should be stored in appropriately labelled and contained areas, and refuelling and equipment maintenance should be conducted in designated areas away from waterbodies and drainage pathways where practicable. Construction equipment should be routinely inspected and maintained to identify and address leaks. Spill response materials should be readily available, and any spills should be contained and cleaned up promptly in accordance with the Project's Spill Response procedures.

Where a release of hazardous material results in contaminated soil, the affected soils should be isolated, excavated, and appropriately characterized from analysis samples. Contaminated soil should be segregated from clean soils, temporarily stored on an impermeable and appropriately contained surface, and transported to an appropriately authorized facility for treatment or disposal. Clean soil should not be used to dilute or cover contaminated material. Any suspected pre-existing contaminated soils

encountered during excavation should be managed in accordance with applicable contaminated-sites requirements and the under the direction of an appropriately qualified professional, where required.

Concrete and cement-containing materials should be managed to prevent contact with soils and drainage pathways, with concrete washout conducted in designated contained areas. Following remediation, affected areas should be backfilled with suitable clean material and stabilized or revegetated as appropriate.

During operation, the potential for soil contamination is expected to be low and would primarily be associated with leaks or failures of utility pipes or other buried infrastructure. Regular inspection, maintenance, and monitoring of utility infrastructure should be undertaken to identify and address leaks or failures before they result in significant soil contamination. Any identified leaks should be repaired promptly, and contaminated soil should be managed in accordance with applicable requirements.

3.9.2.1.6 Revegetation and Reclamation

Revegetation will return the excavated and disturbed soils of the Kame Terrace area to a low forb and shrub condition following construction. The upper mountain developments (Summit Lodge, alpine trails, and viewing platform) will be located primarily on exposed, weathered bedrock and talus material. Revegetation opportunities along this portion of the lift line will therefore be limited to small pockets of soil encountered during construction. Successful revegetation will reduce the potential for soil erosion to negligible levels. Steep slopes, thin soils and exposed bedrock will be constraining to reclamation. In addition, the southerly aspect of the upper elevations of the project area will result in drier conditions that may be constraining to reclamation efforts. Additional management of water application on steep slopes may be required to ensure successful revegetation.

3.9.2.2 Operations

3.9.2.2.1 Operational Soil Disturbance

Potential impacts to soil and terrain during operations will include disturbance from increased foot traffic on trails, off-trail trampling, and maintenance activities. Machinery and vehicles required for maintenance may also result in localized soil disturbance. These impacts are anticipated to be low to negligible. Mitigation measures may include measures to discourage off-trail trampling, protect riparian areas, maintain alpine vegetation in trampled or eroded areas, and implement work plans and training for maintenance staff to reduce the risk of soil disturbance.

Additional impacts to soils and terrain are expected primarily during the construction phase, when soils will be temporarily exposed. Mitigation measures can be implemented to reduce the potential for erosion and sedimentation and to keep sediment within localized areas, thereby minimizing the potential for effects on downstream or downslope environments. Impacts during Operations are expected to be low to negligible. Long-term mitigation measures can be implemented throughout Operations to monitor and reduce potential impacts associated with maintenance activities and foot traffic. As mitigation measures are expected to reduce potential negative impacts to soils and terrain from Project activities to low or negligible levels, no cumulative effects assessment is required.

3.9.2.2.2 Decommissioning

The project is intended to be permanent, therefore there would be no decommissioning of project infrastructure or associated ground disturbance.

3.9.2.2.3 Woody Debris Management

Vegetation clearing required for the gondola stations, towers, and associated construction areas will generate woody debris that may be mulched or temporarily stored within the Project Area. Mulching and storage of woody debris may result in several types of potential impacts to soil and terrain.

Mulching can provide benefits by returning organic material to the soil and reducing exposed soil; however, excessive application of woody mulch or prolonged storage in concentrated piles may adversely affect soil quality. Thick layers of mulch can limit light and water infiltration, inhibit the establishment and growth of native vegetation, and alter natural nutrient cycling during decomposition. Decomposition of large quantities of woody material may temporarily immobilize soil nitrogen and could affect nutrient availability for revegetation. Concentrated piles may also smother existing vegetation and create localized areas of poor soil condition.

Storage of woody debris and mulch can also increase the potential for wildfire, particularly where large volumes of dry woody material are accumulated. The risk may increase during dry periods and where piles are located near retained forest vegetation or other combustible materials. Large or poorly managed piles may also retain moisture and decompose, potentially affecting surrounding vegetation and soil conditions.

Temporary storage of woody debris may increase the disturbed footprint if dedicated areas are required for stockpiling, chipping, or processing. These areas may require additional clearing, grading, or equipment access, resulting in additional soil disturbance, compaction, and potential erosion. Stockpiles located on slopes could also obstruct drainage pathways or contribute to sediment movement if soil and woody material are mobilized during precipitation events.

4 Mitigation Measures

4.1 Air Quality and Noise

No mitigation measures are required for air quality or noise once the project is in operation as effects are anticipated to be negligible. During the construction phase of the project, the following mitigation measures are recommended to minimize potential adverse effects during construction:

- Restrict unnecessary vehicle and equipment idling;
- Maintain construction equipment in accordance with manufacturer specifications;
- Apply water or other approved dust suppressants to exposed soils, unpaved travel surfaces, and material stockpiles, as required;
- Limit the extent and duration of exposed soil surfaces;
- Progressively stabilize and revegetate disturbed areas following completion of construction activities;
- Cover or secure fine materials during transport where possible;
- Suspend dust generating activities during periods of excessive wind when required.

To minimize noise complaints the following measures are recommended:

- Restrict construction activities to approved working hours where applicable.
- Establish consistent helicopter flight paths that avoid sensitive wildlife periods where feasible.
- Communicate construction schedules with neighbouring landowners and stakeholders as appropriate.

Implementation of these measures is expected to effectively reduce emissions of particulate matter, dust, and minimize the potential for noise complaints during construction activities. Mitigation measures during Gondola operation are not applicable as operational noise levels are expected to remain low and localized to the Project Area.

4.2 Hydrology

No mitigation measures are required for hydrogeology as the Project is not anticipated to affect or have the potential to affect groundwater resources, no wetlands or seepage areas exist within the Study Area and no water wells are anticipated to be drilled or used at any stage of the project.

4.3 Aquatic Environment

The project should develop a site-specific Construction Environmental Management Plan (CEMP) prior to construction to provide a framework for managing potential effects on hydrology, surface water quality, and aquatic and riparian environments. The CEMP should be informed by the final project design, construction methods, and anticipated interactions with surface water and drainage features.

The primary mitigation objective is to maintain surface water quality, natural drainage patterns, and aquatic and riparian habitat by minimizing erosion, sedimentation, changes to surface water flows, and the release of deleterious substances.

4.3.1 Construction

The following measures should be implemented during construction:

- Service lines crossing above creek beds should be installed when streams are dry, where feasible, to minimize disturbance to flowing water and aquatic habitat.
- Construction activities should be halted during high-rainfall or flood events where there is an increased risk of erosion, sediment transport, or uncontrolled runoff.
- An Erosion and Sediment Control Plan (ESC Plan) should be prepared and implemented to minimize erosion and sedimentation of downstream waterbodies. Temporary erosion protection measures should be installed before disturbed areas are left inactive and maintained until the areas have been stabilized.
- Riparian areas should be clearly delineated with construction fencing prior to commencement of work. Silt fencing or other appropriate sediment-control measures should be installed where construction activities occur within or adjacent to riparian areas.
- Exposed soils should be revegetated or otherwise stabilized as soon as possible following construction to minimize erosion and sediment-laden runoff to downstream aquatic environments.
- Construction access, staging, laydown, and equipment storage areas should be located away from waterbodies and riparian areas wherever possible.

4.3.1.1 Surface Water and Drainage Management

The CEMP should include a Stormwater Management Plan to maintain natural drainage patterns and minimize changes to surface water flows and permeability within the project area.

- Vegetated and permeable ground surfaces should be retained or maximized throughout the Project Area where possible.
- The final placement and design of gondola towers and associated infrastructure should be reviewed by a qualified geotechnical engineer to minimize the potential for slope erosion and sedimentation of waterbodies, particularly where development occurs adjacent to Stone Creek beneath or near the gondola alignment.
- Snow removed from roads and developed areas should be stored where meltwater will not drain directly to waterbodies or riparian areas.
- Snow storage areas should minimize the potential for salt, gravel, sediment, and other accumulated road materials to enter surface waters during snowmelt.

4.3.1.2 Spill and Hazardous Materials Management

The CEMP should minimize the potential for fuels, chemicals, wastes, and other deleterious substances to enter surface water or groundwater.

- Fuels, chemicals, hazardous materials, and wastes should be securely stored and managed in appropriately contained areas located away from waterbodies, drainage features, and riparian areas wherever practicable.
- Spill response materials should be readily available at active work areas and equipment staging areas.
- Spills should be contained, cleaned up, and reported in accordance with the Spill Management Plan and applicable regulatory requirements.

The CEMP should also include dust management procedures.

- Water should be used for dust suppression where required rather than chemical dust suppressants to minimize the potential for chemical runoff to downstream waterbodies.

4.3.2 Operations

During operations, the primary mitigation objective is to maintain natural drainage patterns and surface water quality and to minimize the potential for erosion, sedimentation, and release of deleterious substances associated with gondola operations and maintenance activities. The following measures should be implemented during operations:

- Natural drainage patterns and surface water flows should be maintained throughout the Project Area. Drainage infrastructure should be inspected regularly and maintained to prevent blockages, erosion, or concentrated runoff.
- Areas surrounding gondola towers, stations, access routes, and other project infrastructure should be monitored for evidence of erosion, slope instability, or concentrated runoff. Identified erosion concerns should be addressed promptly using appropriate stabilization measures.
- Snow storage areas should be located and managed to prevent snowmelt containing elevated concentrations of sediment, salt, gravel, or other accumulated materials from draining directly to waterbodies or riparian areas.
- The use and storage of fuels, lubricants, cleaning products, and other potentially deleterious substances during gondola maintenance should be managed to minimize the potential for accidental releases to surface water or groundwater.
- Spill response materials should be maintained at gondola stations and other locations where fuels, lubricants, or hazardous materials are stored or used. Any spills should be contained, cleaned up, and reported in accordance with the applicable regulatory requirements.
- Maintenance activities requiring ground disturbance, vegetation removal, or work near waterbodies should be planned to minimize disturbance to aquatic and riparian environments and should incorporate appropriate erosion and sediment-control measures where required.
- Water used for cleaning or maintenance activities should not be discharged directly to waterbodies, drainage features, or riparian areas unless appropriately managed and authorized.
- Any observed changes in surface water quality, drainage patterns, erosion, sedimentation, or aquatic habitat associated with project operations should be documented and addressed through adaptive management.

4.4 Vegetation

4.4.1 Vegetation Associations

Mitigation measures for vegetation impacts analyzed for the Project are provided below.

4.4.1.1 Site Planning Stage

- Design ropeway tower footings within non-vegetated barren rock areas rather than forested areas wherever possible between Stone Creek and Summit Lodge Area (Map 5).
- Minimize clearing of vegetation within the ropeway alignment by continuing to consider height of towers, overhead electrical lines and gondola carriages against existing tree height to allow for separation from the trees below. Trees should be topped if required under ropeway alignment rather than removed where feasible.
- Minimize vegetation disturbance within the ropeway alignment by continuing to consider above ground insulated water and sanitary sewer utility infrastructure to slip between trees from the Silvertip Mid-Station Terminal to the Summit Base Lodge.

- Design ropeway tower footing to minimize vegetation removal on steep slopes adjacent to Stone Creek (Map 5) to retain ecological function of plants in protecting aquatic resources.
- Retain native vegetation wherever possible within the three areas of the terminals and include native vegetation relevant to the surrounding ecosite phases in landscaped areas to mitigate fragmentation and connectivity impacts to plant species in these areas.

4.4.1.2 Construction Phase

- Retain existing ground vegetation and trees where possible within the Project Area.
- Delineate clearing boundaries prior to site clearing works on the ground to prevent unnecessary encroachment of vegetation.
- Existing access roads and trails should be used wherever possible to limit vegetation removal.
- Retain wood waste from vegetation clearing where feasible, which can be used in areas that are ecologically appropriate and consistent with wildlife and safety requirements, for habitat enhancement opportunities, such as scattering along forest edges as coarse woody debris.
- Retain wildlife features such as snags or other standing trees in various stages of decomposition wherever possible.
- Any disturbed areas from construction activity outside permanent footprints should be replanted with native trees and shrubs consisting of species identified as relevant to its ecosite phase (Map 5, Table 25). Shrubs and trees selected for replanting should also consider in its ability to provide security cover for wildlife.

4.4.2 Plant Species of Concern

4.4.2.1 Site Planning Stage

- Avoid limber pine occurrences for ropeway tower location in site design as detailed on Map 6. All ground improvement and infrastructure must be at minimum outside the dripline (vertical line extending down from the outermost branches of the tree) of limber pine. Avoid limber pine and whitebark pine occurrences as detailed in (Map 6) in site design for the Summit Lodge. All ground improvement and infrastructure must be at minimum outside the dripline of the limber pine and whitebark pine which is at minimum outside the dripline.
- Avoid limber pine and white bark pine occurrences in site design for the trail viewing platforms and trail alignments at the Summit Lodge Area (Map 6). All ground improvement and infrastructure at minimum be outside the dripline of the limber pine and whitebark pine. Priority is to avoid and prevent impacting whitebark pine and limber by careful planning and design (Whitebark Pine Ecosystem Foundation of Canada, 2026).
- If avoidance is not possible in site design planning for any whitebark pine or limber pine tree detailed on Map 6 or during construction, the project team must contact the Provincial Whitebark and Limber Pine Recovery Team co-chairs (GOA.EndangeredPine@gov.ab.ca) to develop a rationale describing how the mitigation hierarchy has been utilized to avoid impacts. The rationale must describe how avoidance procedures have been developed and how impacts will be minimized and if residual impacts will occur and if compensation is required (Whitebark Pine Ecosystem Foundation of Canada, 2026).. Both species are legally listed as endangered species under Schedule 6 of the Alberta Wildlife Regulation under the *Wildlife Act,* which prohibits the wilful molestation, disturbance, or destruction of the species.

- If avoidance and mitigation options have been thoroughly explored and are not feasible, options for financial contribution to priority recovery plan actions (Whitebark Pine Ecosystem Foundation of Canada, 2026) may be available including:
    - operational nursery seedling production (takes 3 years, $1.25 to $1.75 per seedling);
    - covering the cost of disease resistance testing (~$1350-1700 CAD per tree, takes 7 years);
    - supporting seedling planting for restoration in areas identified by the recovery team – may require horse packing or helicopter transport of seedlings;
    - covering cost of helicopter access to remote sites for seed collection (2 visits) and monitoring (1 visit);
    - retaining experienced contractors to collect data and cones of putatively disease resistant trees following recovery team protocols.

4.4.2.2 Construction Phase

- Produce a detailed Construction Environmental Management Plan (CEMP) that includes considerations for whitebark pine and limber pine prior to construction to ensure mitigation measures are clearly presented to contractors completing the works in the area of occurrences.
- Retain an appropriately qualified environmental professional to monitor works within close proximity to limber pine and whitebark pine occurrences.
- Provide education to workers on the importance and identification of whitebark pine and limber pine to mitigate accidental removal during development.
- A QEP must mark locations of all whitebark pine and limber pine in the vicinity of construction area with flagging tape prior to construction for clear delineation for construction personnel.
- Use water diversion and/or erosion and sediment control structures (e.g., water bars, silt fencing) to prevent erosion and sediment deposition onto root area of limber pine and whitebark pine occurrences.
- Revise or eliminate reclamation seed mixes in areas where whitebark pine and limber pine are present to minimize interspecies competition.
- Plan the construction schedule to occur during frozen conditions if possible, to preserve the seedbank.

4.4.3 Ecological Communities of Concern

4.4.3.1 Site Planning Stage

- Design ropeway tower footings to be outside of the ecological community of concern or minimize vegetation removal by situating them within the non-vegetated barren rock areas of the polygon (Map 5).
- Minimize clearing of vegetation within the ropeway alignment by continuing to consider height of towers, overhead electrical lines and gondola carriages against existing tree height to allow for separation from the trees below. Trees should be topped if required under ropeway alignment rather than removed where feasible.
- Minimize vegetation disturbance within the ropeway alignment by continuing to consider above ground insulated water and sanitary sewer utility infrastructure to slip between trees.

- Follow limber pine mitigation measures described above to protect this protected species within the ecological community.

4.4.3.2 Construction Phase

- Retain existing ground vegetation and trees where possible within the ecological community.
- Delineate clearing boundaries prior to site clearing works on the ground to prevent unnecessary encroachment of vegetation.
- Follow mitigation measures for limber pine as above when construction activities are occurring in this area.

4.4.4 Old Growth Forests

4.4.4.1 Site Planning Stage

- Design footprints for Summit lodge to reduce impacts within the old growth forest area.
- Design associated Summit Lodge trail network to reduce vegetation removal in old growth forest area by adjusting alignment to field fit around trees.
- Consider boardwalks and fencing on trail network within Old Growth Area to prevent braiding of trails and off-trail use leading to trampling of vegetation.

4.4.4.2 Construction Phase

- Retain existing ground vegetation and trees where possible within the old growth forest area.
- Delineate clearing boundaries prior to site clearing works on the ground to prevent unnecessary encroachment of vegetation.
- Retain snags and large CWD within the mature climax area (Map 5) wherever possible to retain important old forest structural attributes.

4.4.5 Invasive Species

The following measures shall be implemented during construction and operation to prevent the introduction and spread of invasive plants within the Project Area and to adjacent lands.

- All vehicles, construction equipment, and machinery shall arrive on site free of soil and vegetation. Equipment, including tracks, undercarriages, tires, buckets, and attachments, shall be thoroughly cleaned before entering the Project Area and prior to leaving the site to prevent the transport of invasive plant propagules to new locations.
- Excavation equipment shall minimize unnecessary movement within invasive plant infestations. Buckets shall not be overfilled, and contaminated soil or vegetation shall be handled carefully to prevent material from being dropped or dispersed during transport.
- Imported soil, gravel, mulch, topsoil, and other fill materials shall be obtained from clean, weed-free sources. Seed mixes and nursery stock used for landscaping or restoration shall be certified weed-free and composed of native species appropriate for the site.
- Disturbed areas shall be revegetated as soon as practical following construction to reduce the availability of bare ground for invasive plant establishment. Revegetation shall use native species suitable for the local ecosystem.
- Invasive plant material generated during management or construction activities shall be contained during transport by bagging or covering loads to prevent the release or spread of seeds and

vegetative fragments. Plant material shall be disposed of at an approved facility that accepts invasive plant waste.

- Soil contaminated with invasive plant propagules shall not be redistributed within uncontaminated areas of the Project. Contaminated soil shall either be buried on site in accordance with applicable regulatory guidance (e.g., beneath a designated landscaped area where appropriate) or transported to an approved receiving facility authorized to accept invasive-contaminated soils.
- Construction personnel shall inspect work areas for invasive plant infestations before commencing earthworks and avoid disturbing infestations where feasible. Where avoidance is not possible, contaminated areas shall be managed to prevent further spread.
- During the operational phase, boot brush stations shall be installed at key trailheads or access points where appropriate to reduce the transfer of seeds by trail users.
- Educational signage shall be installed at trailheads and other public access points to encourage visitors to remain on designated trails, clean footwear and equipment before entering the trail network, and report any new invasive plant observations.

4.5 Wildlife

Prior to construction and operation, the mitigation commitments identified in this assessment, and informed by the final Project design, construction methods, and operational activities, should be provided to the contractor as specific wildlife management and human–wildlife conflict requirements. These requirements should provide a clear and practical framework for implementing applicable mitigation measures and should complement, rather than duplicate, the broader Human-Wildlife Coexistence Plan. Requirements should address wildlife encounters, access management, attractant management, vegetation clearing, lighting, construction disturbance, and wildlife monitoring, as applicable to the final Project design and activities. Where an Environmental Management Plan (EMP) is developed for the Project, applicable construction-phase wildlife mitigation requirements should be incorporated into the EMP. Mitigation has been developed in consideration of applicable federal, provincial, and municipal legislation, policies, and guidance, including the *Migratory Birds Convention Act*, *Wildlife Act*, the Alberta Bighorn Sheep Management Plan (Government of Alberta, 1993), the Wildlife Corridor and Habitat Patch Guidelines for the Bow Valley (Bow Corridor Ecosystem Advisory Group, 2012), the Study Area Structure Plan (Urban Systems, 2007), the recommendations of the Canmore Human-Wildlife Coexistence Implementation and Action Plan (Town of Canmore, 2024a),.Development Mitigation Guidelines for Ecological Corridors (Miistakis Institute , 2025) and the Town of Canmore Human-Wildlife Coexistence Strategy (Town of Canmore, 2018). The mitigation hierarchy of avoidance, minimization, reclamation, and adaptive management has been applied where practical. These mitigations were developed in accordance with the Human Wildlife Coexistence Guide for All-Season Resorts (Government of Alberta, 2026) and therefore can serve as a human wildlife coexistence plan.

The primary mitigation objective is to maintain the functional characteristics of the USWC and LSWC by limiting permanent habitat loss, maintaining habitat connectivity, minimizing sensory disturbance and human activity within the corridors, preventing wildlife attraction and habituation to humans, and maintaining opportunities for wildlife to move through and around the project area.

4.5.1 General Project Design and Planning

The Project has been designed to minimize permanent disturbance to wildlife habitat and movement. The gondola is an elevated structure, therefore does not form a continuous ground-level linear barrier to wildlife movement. Permanent habitat loss will be largely restricted to the gondola terminals and tower foundations, while vegetation management beneath the gondola alignment will primarily consist of selective tree topping required to maintain operational clearances.

The gondola alignment should be maintained as narrow as feasible, and all Project-related disturbance should be confined to the approved project footprint. Temporary work areas, access routes, staging areas, laydown areas, and equipment storage areas should be located outside high-value wildlife habitat and areas identified as important movement routes wherever possible.

The Project should avoid unnecessary expansion of the cleared or disturbed area over the life of the project. The retention of existing vegetation and forest structure is particularly important within the wildlife corridors because linear disturbance can alter habitat structure and movement behaviour even where a physical barrier is not created.

The Project should also avoid the creation of new permanent access routes where existing roads, trails, and access infrastructure can be used. Where temporary access is required during construction, access should be removed and disturbed areas reclaimed following completion of the relevant construction activity.

Wildlife monitoring should be undertaken during construction and operation to assess the effectiveness of mitigation measures and identify unexpected or unanticipated effects on wildlife movement, habitat use, and human–wildlife interactions. The scope and frequency of monitoring should be informed by the results of baseline studies, the final project design, and the potential for residual effects identified through the assessment. Monitoring results should be used to inform adaptive management where monitoring identifies effects that are greater than anticipated or mitigation measures are not achieving their intended outcomes. This will be further discussed in Section 6.

4.5.2 Construction

Construction represents the period of greatest potential for sensory disturbance, temporary habitat displacement, direct wildlife mortality, and increased human activity within the project area. Construction activities should therefore be planned to minimize the duration, spatial extent, and intensity of disturbance.

4.5.2.1 Restricted Periods

Where feasible, construction activities should be scheduled to avoid periods when bighorn sheep may be particularly sensitive to disturbance. Particular consideration should be given to bighorn sheep that may use the upper elevations of the Study Area. Although the presence of lambing areas within the Study Area has not been confirmed, mid-May through mid-July is considered a potentially sensitive period because ewes may give birth and select isolated, rugged terrain for lambing, where disturbance can result in displacement from important habitat (Brushett, Whittington, Macbeth, & Fryxell, 2023). The November–December rut and January–April winter period represents additional periods of elevated sensitivity when sheep may be more physiologically stressed and spatially concentrated (Lassis & Fest-Bianchet, 2022).

Given the duration and nature of the proposed construction program, construction cannot reasonably be restricted to a single season. Where construction during these potentially sensitive periods cannot be avoided, pre-construction wildlife surveys should be conducted to determine whether bighorn sheep, including ewes and lambs, are present in or adjacent to the work area. If sheep are detected, appropriate spatial and/or temporal avoidance measures should be implemented in consultation with the qualified environmental professional.

All vegetation clearing should comply with applicable requirements under the *Migratory Birds Convention Act* and the *Alberta Wildlife Act*. Where vegetation clearing is required during the bird nesting period, typically March 1 to August 31, a qualified environmental professional should assess the area for active nests and implement appropriate avoidance measures. The timing of nesting varies among species and therefore a fixed calendar window should not be considered a substitute for site-specific assessment.

Construction during sensitive wildlife periods should be avoided where possible. Where work cannot reasonably be scheduled outside these periods, a qualified environmental professional should assess the proposed activity and determine whether additional spatial, temporal, or operational mitigation is required.

4.5.2.2 General Construction Mitigation

The following measures should be implemented during construction:

- Wildlife mitigation commitments identified in the EA should be incorporated into contractor and project requirements and implemented during construction and operation, as applicable. Requirements should include measures to prevent or minimize human–wildlife interactions, including worker behaviour around wildlife and sensitive wildlife habitat, wildlife attractant management, reporting and response procedures for wildlife encounters, access and speed management, vegetation clearing, and protocols for working in or near areas of identified wildlife sensitivity. These requirements should be communicated to applicable project personnel and contractors prior to commencement of the relevant activities and applied based on the final construction methods, access arrangements, work areas, and operational procedures.
- Clearly delineate the approved Project footprint prior to construction and restrict vegetation clearing, ground disturbance, equipment storage, and material laydown to the minimum area required for construction.
- Avoid unnecessary disturbance to adjacent wildlife habitat, particularly habitat within and immediately adjacent to the Upper and Lower Silvertip Wildlife Corridors.
- Construction activities should generally be restricted to daylight hours, approximately 07:00 to 19:00, where feasible. Exceptions should be limited to activities that cannot reasonably be completed during daylight hours.
- Noise-generating equipment should be properly maintained and fitted with mufflers, silencers, or other noise-control equipment.
- Electric equipment should be used where possible to reduce noise and emissions.
- Workers and contractors should receive wildlife awareness training prior to commencing work. Training should address wildlife identification, appropriate responses to wildlife encounters, wildlife attractant management, prohibition of feeding or harassment, reporting requirements, and procedures for encountering bears, cougars, elk, wolves, or other large mammals.
- Pets should not be permitted within active construction areas.
- All food, garbage, petroleum products, chemicals, and other potential wildlife attractants should be securely stored in wildlife-resistant containers or enclosed facilities.
- Food waste should be removed from the project area regularly and should not be stored overnight in unsecured containers.
- Chemicals, antifreeze, fuels, and other potentially toxic substances should be stored in a manner that prevents access by wildlife and minimizes the potential for spills.
- Spill response materials should be maintained at active work areas and equipment staging areas. Spills should be contained and reported in accordance with applicable regulatory requirements.
- Deep excavations and trenches should be covered or otherwise secured when inactive. Where excavations remain open overnight, they should be inspected for trapped wildlife before work resumes. Wildlife captured in excavations should be reported to the Qualified Biologist and managed in consultation with the appropriate regulatory authority.

- Temporary fencing should be installed around excavations, hazardous work areas, and other locations where wildlife entry could result in injury or mortality.
- Construction traffic should be managed to minimize wildlife-vehicle collision risk. Vehicle speeds should be limited to 50 km/h on project access roads unless a lower speed is required by site-specific conditions.
- Drivers should be instructed to remain alert for wildlife, particularly during dawn, dusk, and periods of reduced visibility.
- Vehicle trips should be consolidated where possible to reduce unnecessary traffic within the wildlife corridors.
- Construction materials, equipment, and debris should not be stored in a manner that could obstruct wildlife movement through the Upper or Lower Silvertip Wildlife Corridors.
- If large mammals enter an active work area and there is a reasonable risk of injury, harassment, or conflict, work should be temporarily suspended and the animal allowed to leave the area without being pursued or harassed.
- Wildlife incidents, mortalities, near misses, and observations of concern should be documented and reported to the EM and Project Lead.

These measures are consistent with the Canmore Human-Wildlife Coexistence Implementation and Action Plan (Town of Canmore, 2024a), which identifies attractant management, wildlife exclusion, public education, and adaptive monitoring as key components of reducing human-wildlife conflict. The Plan specifically identifies food waste and other attractants as important contributors to bear habituation and conflict in Canmore.

4.5.2.3 Wildlife Attractants and Human-Wildlife Conflict

Wildlife attractant management should be a primary component of the CEMP because the project is located within an area already subject to substantial human use and where wildlife may be exposed to food and other anthropogenic attractants. The following measures should be implemented:

- Wildlife-resistant garbage and food-waste containers should be used at all construction areas.
- Garbage should not be allowed to accumulate on site.
- Food waste should be removed from the project area frequently and should not be left unsecured overnight.
- Workers should not feed wildlife or intentionally approach wildlife.
- Food and personal items capable of attracting wildlife should be stored inside wildlife-resistant vehicles, containers, or buildings.
- Construction workers should not leave food, coolers, pet food, or other attractants unattended.
- Wildlife sightings and encounters should be reported to the QEP.
- Repeated wildlife encounters should trigger an investigation of potential attractants and, where appropriate, additional mitigation.
- If bears or other wildlife become habituated to the construction area, additional access restrictions or attractant controls should be implemented.

4.5.2.4 Wildlife Movement and Corridor Protection

The gondola is elevated and will not constitute a continuous physical barrier to wildlife movement. However, construction activities, temporary fencing, equipment, personnel, and increased traffic could temporarily reduce the effectiveness of portions of the Upper and Lower Silvertip Wildlife Corridors. Accordingly:

- Temporary construction fencing should be restricted to areas where it is required for worker safety or wildlife exclusion.
- Temporary fencing should not extend unnecessarily across the wildlife corridor.
- Where fencing is required, gaps or wildlife passage points should be incorporated where safe and practical.
- Construction equipment and materials should not be stored within identified movement routes.
- Access roads should not be widened or extended beyond the approved project footprint.
- Construction personnel should remain within designated work areas and access routes.
- New informal trails created by workers or equipment should be prevented and rehabilitated promptly.
- If monitoring identifies repeated displacement of wildlife from a corridor segment, the project should evaluate whether construction timing, access, noise, lighting, or other activities can be modified.

This approach is particularly important because fencing and other linear features can reduce wildlife access to habitat even where they are intended to reduce human-wildlife conflict. The Canmore Human-Wildlife Coexistence Implementation and Action Plan (Town of Canmore, 2024a) specifically recommends monitoring fencing to ensure that it does not inadvertently disrupt wildlife corridors or increase habitat fragmentation.

4.5.2.5 FireSmart and Vegetation Management

Any FireSmart treatment associated with the project should be coordinated with wildlife habitat objectives. FireSmart activities should not automatically be treated as habitat removal; rather, treatment prescriptions should seek to reduce wildfire risk while maintaining habitat structure and connectivity where possible.

Where wildfire mitigation or FireSmart activities are required as part of project development, they should be designed to minimize adverse effects on wildlife habitat and corridor function. FireSmart treatments should, where technically feasible:

- prioritize treatment of vegetation immediately adjacent to buildings and critical infrastructure;
- avoid unnecessary removal of mature trees outside the required treatment area;
- retain vegetation that contributes to wildlife movement and screening;
- retain snags and coarse woody debris where they do not represent an unacceptable wildfire or safety risk;
- maintain habitat connectivity between retained forest patches;
- avoid creating continuous linear openings that could increase edge effects or facilitate human access;
- retain shrub and understory vegetation where feasible;
- avoid treatment during sensitive wildlife periods where practical; and

- incorporate wildlife habitat objectives into vegetation-treatment prescriptions.

The Canmore Human-Wildlife Coexistence Implementation and Action Plan (Town of Canmore, 2024a) specifically recommends integrating FireSmart programs with habitat enhancement because surrounding habitat configuration influences wildlife use of developed areas. The Plan identifies the loss of open forest and grassland habitat as one factor contributing to increased wildlife use of urban areas and recommends habitat management that encourages wildlife use away from developed areas.

Where vegetation removal occurs temporarily during construction, disturbed areas should be reclaimed as soon as possible following completion of construction.

4.5.2.6 Wildlife Species of Concern

These Measures are intended to reduce or avoid the impacts identified above and should be refined in consultation with a Qualified Environmental Professional (QEP) and relevant regulatory authorities.

Wandering garter snake

- Schedule vegetation clearing and ground disturbance in rocky and talus, outside of the spring emergence period (approximately April–May) and fall hibernacula ingress period (approximately September–October), where feasible.
- Conduct a pre-clearing habitat sweep by a qualified biologist to identify rock piles, talus, or riparian features with potential to support hibernacula or basking sites within the clearing footprint.
- Where a hibernaculum or concentration area is identified within the footprint, retain the feature and establish an appropriate exclusion buffer, or develop a site-specific relocation/salvage protocol.
- Retain rock and woody debris piles outside the clearing footprint where they do not conflict with infrastructure siting.

Bird

- Schedule all vegetation clearing activities, including tree-top removal, outside the general nesting bird window (approximately April 1 to August 31) where operationally feasible, consistent with the requirements of the *Migratory Birds Convention Act, 1994* (MBCA). Where vegetation clearing cannot be avoided during the nesting bird window, a bird nest survey (BNS) shall be conducted by a qualified biologist no more than three to five days prior to the commencement of clearing activities, in accordance with best management practices. Retain large-diameter snags and cavity trees outside the clearing footprint where feasible, to preserve nesting substrate for cavity-nesting species (e.g., brown creeper, pileated woodpecker, barred owl, northern pygmy-owl).
- Conduct pre-construction raptor nest surveys in suitable stands for broad-winged hawk, and confirm the continued absence of peregrine falcon nesting habitat; establish an appropriate buffer (e.g., 100–200 m, species-dependent) around any active raptor nest identified, to be refined in consultation with a QEP.
- Survey open or gravel substrate areas proposed for grading (e.g., tower pads, access trails) for common nighthawk nests prior to ground disturbance during the breeding season; flag and buffer any active nests until fledging is confirmed.
- Minimize the width and extent of the vegetation clearing footprint and flag retention areas.

Mammals

- Conduct pre-construction Autonomous Recording Unit (ARU) surveys to characterize bat activity and identify potential roost habitat; avoid removal of trees with cavities, loose bark, or other roost

features during the summer maternity roosting period (approximately June 1 to August 31) where feasible.

- Where removal of a confirmed or potential bat roost tree cannot be avoided during the maternity period, conduct a pre-removal emergence survey.
- Retain wildlife trees (snags, cavity trees, coarse woody debris) outside the clearing footprint where they do not conflict with infrastructure safety requirements.

Western bumble bee

- Where clearing of meadow. shrubland and forest-transition habitat during the active flight season cannot be avoided (approximately May to September), conduct a pre-clearing pollinator habitat survey to identify concentrations of floral resources or potential nest/hibernaculum sites (e.g., rodent burrows, dense grass tussocks).
- Minimize ground and soil disturbance in retained meadow and shrubland habitat adjacent to the clearing footprint to protect potential underground nests and hibernacula.
- Retain identified high-value floral resource patches outside the clearing footprint where feasible.
- Restrict use of herbicides or pesticides within or adjacent to retained foraging habitat during construction.

4.5.3 Operations

Operational mitigation should focus on maintaining the functionality of the Upper and Lower Silvertip Wildlife Corridors, minimizing additional human-wildlife interactions, preventing wildlife habituation and food conditioning, limiting unnecessary sensory disturbance, and maintaining habitat connectivity.

Operational mitigation should recognize that the primary long-term concern identified in the impact assessment is not the physical presence of the elevated gondola itself, but the potential increase in human activity associated with the project, particularly recreational use, dogs, and associated wildlife attractants.

4.5.3.1 Access Management

Access management should be implemented to prevent the Project from indirectly increasing human use of sensitive wildlife habitat or reducing the effectiveness of the Silvertip Wildlife Corridors. The following measures are recommended:

- New informal trails should be discouraged and closed or rehabilitated where they develop.
- Project infrastructure should not be used to facilitate unauthorized access into sensitive wildlife habitat.
- Access to maintenance areas should be restricted to authorized personnel.
- Maintenance vehicle and helicopter access should be minimized to the extent practicable.
- Maintenance activities should be scheduled outside sensitive wildlife periods where possible.
- Off-trail recreational access should be discouraged within the wildlife corridors where increased visitation associated with the Project results in greater recreational use and could increase wildlife disturbance.

Given the results of the impact assessment, particular attention should be given to increased human use of the Lower and Upper Silvertip Wildlife Corridor and areas where recreational trails approach suitable habitat for bears, bighorn sheep, and other wildlife.

4.5.3.2 Off-Leash Dogs

Dogs should be managed as a specific component of the operational management strategy.

- Dogs should remain on leash except within formally designated off-leash areas.
- Only service dogs will be allowed on the Gondola premises.
- Signage should identify the potential consequences of dogs approaching wildlife.
- Off-leash dog bylaws should be communicated to gondola users and visitors.
- The Project operator should support enforcement of applicable municipal requirements.
- Repeated wildlife-dog encounters should be documented and reviewed to identify locations where additional signage or access management is warranted.

The Canmore Human-Wildlife Coexistence Implementation and Action Plan (Town of Canmore, 2024a) identifies off-leash dogs as a persistent source of wildlife conflict and recommends maintaining or increasing enforcement capacity, improving signage, and communicating the applicable penalties.

4.5.3.3 Wildlife Attractant Management

The Project should adopt wildlife-attractant management standards consistent with applicable Town of Canmore requirements and the recommendations of the Canmore Human-Wildlife Coexistence Implementation and Action Plan (Town of Canmore, 2024a). At a minimum:

- All garbage and food waste generated by the gondola facility should be stored in wildlife-resistant containers.
- Food waste should be removed frequently and should not accumulate on site.
- Waste storage areas should be enclosed and inaccessible to wildlife.
- Outdoor food preparation areas should not have unsecured food waste or grease.
- Wildlife should not be intentionally fed or provided with food.
- Fruit-bearing ornamental vegetation should not be planted where it could attract bears or other wildlife.
- Landscaping should prioritize native, non-attractive vegetation where practicable.
- Wildlife attractants associated with maintenance activities should be managed in the same manner as operational waste.
- Wildlife incidents should be recorded and reviewed to determine whether they are associated with specific attractants or locations.

The Canmore Human-Wildlife Coexistence Implementation and Action Plan (Town of Canmore, 2024a) identifies fruit-bearing vegetation, residential waste, and other anthropogenic food sources as important attractants for black and grizzly bears and emphasizes continued enforcement of proper waste management.

4.5.3.4 Wildlife Exclusion Fencing

Fencing should be used selectively and only where necessary to prevent wildlife from entering areas where interactions with people could result in injury, habituation, or management conflict and:

- fence design should be selected based on the species intended to be excluded;

- fencing should not unnecessarily obstruct wildlife movement through the Upper or Lower Silvertip Wildlife Corridors;
- wildlife passage should be maintained around fenced areas where practicable;
- fencing should be inspected regularly for wildlife entrapment;
- fencing should not create dead-end movement routes;
- fence locations should be reviewed if monitoring identifies increased wildlife use of adjacent areas; and
- additional fencing should be considered only where monitoring demonstrates a recurring wildlife-human conflict or safety concern.

The Canmore Human-Wildlife Coexistence Implementation and Action Plan (Town of Canmore, 2024a) recommends wildlife exclusion fencing around recreation areas where elk-human interactions are frequent, while also emphasizing the need to monitor fencing to ensure it does not fragment habitat or disrupt wildlife corridors.

For the Project, fencing should therefore be viewed primarily as a conflict-management tool rather than a general corridor-management measure. Continuous fencing along the wildlife corridor should not be implemented unless specifically supported by wildlife monitoring and corridor-function objectives.

4.5.3.5 Lighting

Lighting associated with the gondola should be designed to minimize effects on wildlife movement and nocturnal activity.

- Lighting should be directed toward areas where illumination is required.
- Fixtures should be shielded to limit light spill into the Upper and Lower Silvertip Wildlife Corridors.
- Lighting should be minimized in areas that do not require continuous illumination.
- Motion sensors or timers should be used where possible.
- Sky glow should be minimized.
- Lighting should be limited to the minimum intensity necessary for safety.
- New lighting should avoid creating continuous illuminated corridors through otherwise dark habitat.

These measures are consistent with the Wildlife Corridor and Habitat Patch Guidelines (Bow Corridor Ecosystem Advisory Group, 2012) and are particularly relevant to species that may alter their temporal activity patterns in response to human disturbance.

4.5.3.6 Human-Wildlife Coexistence and Public Education

A wildlife-awareness and human-wildlife coexistence program should be developed for gondola users, employees, contractors, and visitors. The program should include:

- information regarding appropriate behaviour around wildlife;
- instructions to never feed wildlife;
- information on proper garbage and food-waste disposal;
- requirements for dogs to remain leashed where applicable;
- information on maintaining appropriate distances from wildlife;

- instructions for responding to encounters with bears, cougars, elk, wolves, and bighorn sheep;
- information regarding the importance of the Upper and Lower Silvertip Wildlife Corridors;
- information discouraging off-trail travel; and
- procedures for reporting wildlife sightings and conflicts.

Signage should be strategically located at gondola facilities, and other areas where human and wildlife activity overlap.

The Canmore Human-Wildlife Coexistence Implementation and Action Plan (Town of Canmore, 2024a) recommends a multifaceted public education program using signage, websites, social media, email communications, and other outreach mechanisms. It also specifically recommends increasing signage concerning ungulates and improving signage regarding off-leash dogs.

For the Project, public education should therefore extend beyond bears and include information on elk, bighorn sheep, cougar, wolves, and other species potentially encountered by visitors.

4.5.3.7 Habitat Connectivity and New Trails

No new trails are proposed to be constructed within the Upper or Lower Silvertip Wildlife Corridors. This is particularly important because the impact assessment identified existing recreational use as a major source of wildlife disturbance within the Silvertip Wildlife Corridors. Accordingly, the Project should avoid measures that unnecessarily increase trail density or facilitate unrestricted access into currently less-disturbed habitat.

4.5.3.8 Wildlife Species of Concern

Surveys should be conducted before construction and spatial and temporal avoidance measures should be implemented if special status wildlife are detected.

Mitigation measures for potential wildlife species of concern are as follows:

Wandering garter snake

- Maintain a vegetated or rock-feature buffer around any known hibernacula or concentration areas identified during construction.
- Provide wildlife awareness training to maintenance staff on snake identification and avoidance of unnecessary disturbance to rock features during trail and corridor maintenance.
- Apply reduced speed limits for maintenance vehicles on access roads adjacent to known denning or basking habitat during seasonal movement periods.

Birds

- Evaluate and, where technically and economically feasible, install bird flight diverters or cable-marking devices on cable spans identified as higher collision risk, to reduce collision mortality for forest passerines and other volant species.
- Restrict routine maintenance activities involving vegetation disturbance during the general nesting bird window, or conduct pre-work nest sweeps where restriction is not feasible.
- Use shielded, downward-directed, and minimally intensive outdoor lighting at stations to reduce nocturnal disorientation effects on birds.
- Retain forested buffers around station areas where feasible to reduce edge effects on forest-interior species.

- Provide visitor education/signage discouraging off-trail access into retained forest and known raptor or owl nesting areas during the breeding season.
- If detected monitor common nighthawk nesting areas within maintained gravel substrate during the operational breeding season and apply temporary flagging/buffers around active nests.

Mammals

- Discourage or restrict off-trail visitor access into retained forest and high-value carnivore habitat through signage, trail design, and visitor education.
- Evaluate technically feasible measures to minimize potential bat interactions with the gondola cable infrastructure, informed by available evidence on bat flight behaviour, echolocation, and collision avoidance. Where monitoring identifies bat activity or interactions with the cable corridor, additional mitigation measures should be evaluated and implemented where technically feasible.
- Minimize nighttime lighting at stations and along the corridor to reduce disturbance to nocturnal bat activity and associated insect prey availability.
- Apply reduced speed limits and access restrictions on maintenance roads within or adjacent to known wildlife movement corridors.

Western bumble bee

- Revegetate disturbed areas with a native, pollinator-friendly seed mix providing season-long floral resources, to help offset construction-phase habitat loss.
- Adopt an integrated vegetation management approach for ongoing maintenance that avoids broad-spectrum herbicide use, favouring manual or targeted mechanical vegetation control.
- Schedule any necessary vegetation maintenance outside the peak flight season where feasible.
- Provide visitor and staff education on avoiding trampling of meadow and shrubland habitat adjacent to trails and station areas.

4.5.3.9 Wildlife Monitoring and Adaptive Management

A wildlife monitoring and adaptive management program should be implemented during construction and operation. This is further discussed in Section 6.

4.6 Terrain and Soils

The construction phase may have a high potential for erosion and sedimentation potential when soils are exposed. There may also be a potential for rockfall hazard during upper mountain developments. The following mitigation measures should be applied to reduce potential impacts:

- Create a CEMP that will include a Sediment and Erosion Management Plan to address all exposed soils and earthworks during construction including trenches, stockpiles, excavation, vegetation clearing and grading. This plan will include measures to protect waterbodies and riparian areas from sediment-laden runoff. This plan will provide Erosion and Sediment Control (ESC) BMPs to protect waterbodies, riparian areas and environmentally sensitive areas.
- A dust management protocol will be included in the CEMP to address sediment mobilization by wind. This will include dust suppression mitigation measures, stockpile locations and emissions management from vehicles and machinery.
- Any disturbed soils are to be revegetated as soon as possible with native plants and hydroseed where suitable to reduce the risk of sediment-laden runoff and erosion.

- A QEP will ensure construction activities adhere to the CEMP and will recommend any additional mitigation measures as needed.

To minimize the impact of temporary storage of woody debris, it should be mulched or removed progressively rather than stored in large quantities for extended periods. Mulch should be applied at an appropriate depth and distributed over areas identified for revegetation or erosion control rather than placed in thick concentrated layers. Woody debris storage areas should be located on stable, previously disturbed areas where practicable, away from waterbodies and drainage pathways, and managed to minimize wildfire risk. Temporary storage areas should be restored and stabilized following removal of the material.

Tree removal should be avoided wherever practicable, and felled timber and woody debris should be removed from the Project Area where feasible. Where removal requires machinery, equipment use should be managed to minimize soil disturbance and compaction. In difficult-to-access areas, or where mechanized removal would result in significant impacts to existing soils or vegetation, woody material may be bucked into smaller lengths and removed by hand where practicable. At the discretion of the biologist monitoring construction, suitable woody material may also be retained on site in small mammal habitat brush piles. Any decision to retain woody debris on site should consider the potential for increased fuel loading and wildfire risk.

5 Residual Impacts

5.1 Air Quality and Noise

The Project's contribution to residual air quality effects is expected to be minimal. Construction-related emissions of NO_x and $PM_{2.5}$ will be temporary, localized, and limited to the construction period, while no meaningful operational emissions are anticipated, any operational emissions are expected to be negligible. Project-related noise effects are anticipated to occur primarily during construction activities. Operational noise generated by the gondola system is expected to be low and localized. No residual effects are anticipated from the project.

5.2 Hydrogeology

No residual effects on the hydrogeology are anticipated in the construction or operation phase of the project.

5.3 Hydrology

No residual effects on the hydrology are anticipated in the construction or operation phase of the project.

5.4 Surface Water Quality

5.4.1 Construction

Land clearing and increasing impervious surfaces may impact the quantity of surface water and flows. Potential residual impacts are anticipated to be minimal as mitigation measures are implemented in the design phase of the project to maintain existing drainage patterns and incorporate no net increase in stormwater runoff in the design of the project.

5.4.2 Operations

The primary potential residual impact of operations on surface water quality is anticipated to be minimal if the Erosion and Sediment Control Plan is followed.

5.5 Climate Change

The Project should be unaffected by climate change over its lifespan. With a prime objective of nature viewing, changing temperatures or precipitation levels are unlikely to affect the visitors' desire to experience sweeping vistas of the Rocky Mountains. No residual effects to the gondola are anticipated with respect to climate change.

5.6 Aquatic Ecology

No residual effects on the aquatic ecology are anticipated in the construction or operational phase of the project.

5.7 Vegetation

5.7.1 Construction

The primary potential residual effect of construction on vegetation is loss of vegetation to clearing. The magnitude will depend on the mitigation measures followed to ensure that clearing of species and ecological communities of concern and old-growth vegetation associations are avoided or minimized. Vegetation impacts are viewed as temporary if the area can be vegetated post construction.

5.7.2 Operations

Impact analysis shows the operation phase which includes all development footprints will have a small area of permanent/residual impact on the vegetation associations within the Study Area, with 11 ecosite phases out of 29 impacted. Total permanent impact areas within vegetated polygons equals 0.55 ha and there is a 2% permanent disturbance within the Project Area vegetated polygons (27.62 ha) and 0.4% within the Study Area vegetated polygons (131.7 ha). No residual impacts to plant species at risk are anticipated if mitigation measures are followed. Small areas of residual impact have the potential to occur for ecological communities at risk and old growth forest areas at 0.01 ha (0.3% of total occurrence within Study Area) and 0.21 ha (2.1% of total occurrence within Study Area) respectively.

5.8 Wildlife

5.8.1 Construction

The primary potential residual effect of construction on wildlife is sensory disturbance associated with construction activities, including noise, helicopter use, vegetation clearing, and increased human activity. The magnitude and spatial extent of construction-related sensory disturbance will depend on the final construction methods, equipment, timing, and noise levels. Implementation of the proposed mitigation measures, including timing restrictions, minimization of unnecessary disturbance, and monitoring of wildlife and sensitive features, is expected to reduce the potential for significant adverse effects.

5.8.2 Operation

The residual effects of Project operation are expected to vary among habitat, movement and connectivity, sensory disturbance, and human-wildlife interactions. Overall, the residual effect of Project operation on human-wildlife interactions is expected to be low.

5.8.2.1 Wildlife habitat

Permanent habitat loss will occur where Project infrastructure occupies habitat. The total area of habitat affected is small relative to the amount of habitat available within the Study Area, and species-specific assessments indicate that the majority of affected habitat is of low to moderate suitability or represents a small proportion of the available habitat for the species assessed. The largest potential habitat effects are associated with grizzly bear, black bear, and bighorn sheep; however, the areas affected represent a small proportion of the available modeled habitat for these species. Habitat loss will therefore be permanent but spatially limited. Overall, the residual effect of Project operation on wildlife habitat quantity and quality is expected to be low.

5.8.2.2 Movement and connectivity

The elevated gondola structure is not expected to constitute a substantial physical barrier to terrestrial wildlife movement through the Upper and Lower Silvertip Wildlife Corridors. The principal potential effect on movement and connectivity is instead associated with increased human activity, recreational use, and associated disturbance. Some wildlife may alter the timing or location of movements in response to increased human presence. However, the gondola itself is expected to provide a relatively consistent and predictable source of disturbance, and the proposed access-management, trail-management, public education, and monitoring measures are intended to limit or reduce additional disturbance within the corridors. Wildlife may also habituate to predictable operational activity over time. Overall, the residual effect of Project operation on wildlife movement and connectivity is expected to be low, provided that access to sensitive habitat is effectively managed and no substantial increase in informal trail development occurs.

5.8.2.3 Sensory disturbance

Operational sensory disturbance will be associated primarily with the predictable and continuous presence and movement of gondola cabins, as well as maintenance activities and increased human activity at the terminals and along associated trails. The elevated gondola is not expected to result in substantial additional sensory disturbance for all species because existing recreational use and human activity already occur within the Study Area. Nevertheless, species-specific responses may occur, including changes in temporal activity patterns or localized displacement. Maintenance activities will be limited and managed through scheduling and access controls where practicable. Overall, the residual effect of operational sensory disturbance is expected to be low.

5.8.2.4 Human-wildlife interactions

The principal long-term concern associated with Project operation is the potential increase in human activity in and around the Upper and Lower Silvertip Wildlife Corridors, particularly through increased recreational use, off-leash dogs, and wildlife attractants. These factors have greater potential to affect wildlife than the physical presence of the elevated gondola itself. Increased human presence may result in localized displacement, changes in wildlife behaviour, or increased wildlife-human encounters. Carnivores may be particularly sensitive to increased human activity and attractants, while bighorn sheep may be relatively tolerant of predictable human activity and may habituate to regular recreational use. However, increased or novel recreational activity in areas of suitable bighorn sheep habitat could still result in localized behavioural changes or displacement, particularly where activity occurs in areas that are currently less disturbed.

The proposed access management, dog management, wildlife-attractant controls, public education, and adaptive management measures are expected to substantially reduce the potential for wildlife-human conflicts. The primary potential change associated with Project operation is increased human activity at the upper elevations, particularly around the summit and upper terminal, where recreational use may extend into areas currently subject to less intensive human use. Dogs would not be permitted on the gondola, and wildlife-attractant and access controls would be managed through Project operations. Consequently, the potential for increased wildlife-human encounters or localized displacement is expected to be primarily associated with changes in human use at the summit and surrounding upper-elevation areas, rather than the continued presence of development and human activity at the base and mid-station. Wildlife management actions could be implemented if monitoring indicates an increase in wildlife-human conflicts or other unexpected effects.

Overall, the residual effects of Project operation on wildlife are expected to be low as discussed in Sections 1.2.2 and 3.8.2.2.4. Uncertainty remains to the extent to which Project operation may increase or decrease recreational use and human-wildlife interactions within the Upper and Lower Silvertip Wildlife Corridors. Monitoring and adaptive management programs will allow access, recreation, and wildlife-management measures to be adjusted if needed.

5.8.2.5 Wildlife species of concern

Following implementation of the proposed mitigation measures, residual effects on wildlife species of concern are expected to be localized and generally minor. Permanent loss or alteration of habitat will remain at tower and station footprints and along maintained portions of the Gondola alignment; however, the limited extent of permanent disturbance, retention of surrounding habitat, and revegetation of disturbed areas will reduce the magnitude of habitat-related effects. Potential residual effects associated with disturbance, wildlife movement, and human activity are expected to be primarily localized and behavioural, with pre-construction surveys, spatial and temporal avoidance, vegetation management, visitor and maintenance staff education, access management, and operational monitoring reducing the potential for direct mortality, disturbance, and displacement. Potential interactions between wildlife and elevated Gondola infrastructure, including bird and bat interactions with cables, remain uncertain and will be considered through operational monitoring and adaptive management where warranted. Overall,

residual effects on wildlife species of concern are expected to be low in magnitude, localized, and unlikely to result in measurable population-level effects.

5.9 Terrain and Soils

Most anticipated soil and terrain effects are expected during construction and mitigation measures applied. Localized operational effects may also occur from foot traffic, maintenance activities, and off-trail trampling.

5.9.1 Construction

The Project will require localized earthworks associated with the installation of gondola tower footings and burial of servicing where feasible. The proposed gondola alignment will require relatively little modification of soils or terrain for installation. Given the relatively limited extent of permanent soil disturbance in relation to the overall Project Area, effects on local and regional landscape productivity and ecological integrity are expected to be limited to small areas of disturbance. Temporary changes to landscape character and aesthetics may occur during construction due to vegetation clearing, exposed soils, and construction activities; however, these effects are expected to be reduced following reclamation and revegetation. Residual impacts from construction are considered low due to the small footprint and minimal ground works as long as sediment and erosion control mitigation measures are implemented.

5.9.2 Operations

Following construction, disturbed areas are expected to support future vegetation establishment and maintain the existing general land-use function of the Project Area. Residual impacts from operations are considered low due to the relatively small footprint and expected vegetation reclamation.

6 Monitoring

Stone Creek will retain a qualified environmental specialist who will monitor all project activities throughout the construction phase of the project for compliance with the Construction Environmental Management Plan (CEMP) and all current federal, provincial and local legislation. The EM will conduct regular visits and will increase the frequency of visits during sensitive works or during concerning weather conditions. The EM will have the authority to halt works if any non-compliances to the CEMP, permitting or current legislation is observed. The EM may recommend increased maintenance or the application of additional mitigation measures as needed.

6.1 Climate Change

Construction

- Monitor weather conditions, wildfire activity, and relevant emergency alerts throughout construction.
- Schedule weather-sensitive works to avoid forecasted extreme precipitation high winds, extreme heat, and periods of elevated wildfire risk where possible.
- Suspend or modify construction activities where required during periods of elevated wildfire danger, extreme weather, or other conditions that present an unacceptable risk to workers or the project.
- Implement a site-specific ESC plan that accounts for the steep and mountainous terrain.
- Develop and implement a construction-phase wildfire response plan that includes fire prevention measures, emergency contacts, evacuation procedures, designated muster areas, and procedures for suspending work during elevated wildfire conditions. Maintain firefighting equipment appropriate to the construction activities and ensure equipment is positioned where it can be accessed quickly.
- Conduct post-event inspections of construction areas, slopes, drainage systems, ESC measures, access routes, and temporary structures following significant climate-related events before work resumes.

Operation

- Maintain vegetation and combustible material management around buildings, stations, electrical infrastructure, and other critical facilities in accordance with applicable wildfire risk-management requirements. Manage potential ignition sources and maintain appropriate fire suppression equipment.
- Incorporate climate-related hazards into inspection, maintenance, and asset-management programs, with particular attention to gondola towers, stations, electrical systems, drainage infrastructure, access roads, and other critical infrastructure.
- Maintain and regularly inspect drainage systems, culverts, ditches, channels, and erosion-control features to ensure they can effectively convey runoff during intense precipitation events. Remove accumulated sediment and debris as required.
- Establish operational thresholds for high winds, lightning, extreme precipitation, wildfire, and other severe weather conditions that trigger reduced operations, temporary closure, or evacuation.

6.2 Aquatic Environment

A qualified Environmental Monitor (EM) should be retained during construction to monitor compliance with the CEMP and associated mitigation measures.

- The EM should monitor erosion and sediment-control measures, riparian protection, surface water management, and spill prevention.
- Erosion, sedimentation, spills, or other environmental incidents with the potential to affect aquatic environments should be documented, reported, and managed in accordance with the applicable CEMP procedures.
- Erosion and sediment-control measures should be inspected regularly and following significant rainfall events, with deficiencies corrected promptly.

The EM will monitor for the following to ensure protection of downstream fish and fish habitat during the construction phase:

- The EM will monitor for construction activity compliance with the CEMP.
- The EM will monitor the weather for upcoming flood or high precipitation events that could increase surface flows within the Study Area. The EM should monitor the construction site immediately before and after wet weather periods to ensure the effectiveness of ESC measures.
- If surface flows are present within the Study Area, the EM will monitor turbidity levels in any potentially impacted waterbodies to ensure no deleterious substances, such as sediment-laden waters, leave the Project Area. The EM will recommend additional ESC measures if sediment-laden runoff is observed from construction areas. All flowing surface waters leaving the Project Area must comply with the most up to date version of the Environmental Quality Guidelines for Alberta Surface Waters (Alberta Government, 2018).
- The EM will monitor the preservation of riparian areas identified on Map 3.
- The EM will monitor for establishment of revegetated areas.

6.3 Vegetation

The following should be adhered to for monitoring of mitigation measures of vegetation:

- The EM will monitor for compliance with the CEMP during construction.
- The EM will conduct targeted surveys for potential plant species or plant communities at risk, in areas identified in Map 5 prior to vegetation clearing or potential vegetation disturbance throughout construction. Any identified species or communities of concern will be reported to Alberta Environment and Protected Areas. The EM or the AEP will recommend protective buffers from development or relocate to suitable habitat where suitable.
- The EM will monitor the effectiveness of construction fencing surrounding riparian vegetation and species or communities of concern. The EM will recommend the addition of silt fencing where sediment-laden runoff from project activities is a concern.
- The EM will oversee the revegetation of exposed soils and the landscaper's adherence to the landscaping plan.
- The EM will confirm the successful establishment of revegetated or landscaped areas no later than two years after the construction phase is complete. If established vegetation is less than 50% successful in any area, Stone Creek will be required to apply additional revegetation measures in these identified areas.

The monitoring of impacts to slow growing alpine vegetation through trampling and invasive species spread will be the responsibility of Stone Creek throughout the operations phase. Stone Creek will conduct regular inspections along the trail network and adjacent to all structures. Signage will be applied in areas prone to trampling and invasive species will receive ongoing maintenance as needed.

6.4 Wildlife

Stone Creek will retain a qualified Environmental Monitor (EM) to monitor Project activities throughout the construction phase for compliance with the Construction Environmental Management Plan (CEMP), applicable permit conditions, and current federal, provincial, and municipal legislation and requirements. The EM will conduct regular site inspections throughout construction, with monitoring frequency increased during environmentally sensitive activities, periods of increased wildlife activity, or adverse weather conditions that may increase the risk of environmental effects.

The EM will document environmental observations, mitigation implementation, and any deficiencies identified during site inspections. Where non-compliance or an environmental concern is identified, the EM will notify the appropriate Project personnel and recommend corrective actions. Where authorized under the CEMP or applicable permits, the EM will have the authority to require that work be modified or temporarily suspended until appropriate mitigation or corrective measures have been implemented. The EM may also recommend increased monitoring, maintenance, or additional mitigation where monitoring indicates that existing measures are not effective.

Construction

Wildlife monitoring during construction will focus on confirming implementation and effectiveness of mitigation measures, minimizing wildlife disturbance and human-wildlife interactions, and identifying conditions that may require additional or adaptive mitigation. The following measures should be implemented:

- The EM shall monitor construction activities for compliance with the wildlife-related requirements of the CEMP, applicable permits, and wildlife legislation.
- The EM shall monitor the Project Area and adjacent habitats for wildlife presence and activity, with particular attention to the Upper and Lower Silvertip Wildlife Corridors and areas where construction activities occur near suitable wildlife habitat.
- The EM shall monitor construction activities for evidence of wildlife disturbance, displacement, or recurring wildlife use of active work areas and recommend additional mitigation where warranted.
- The EM shall record wildlife observations and all reported wildlife-human interactions or encounters involving construction personnel. Particular attention shall be given to encounters involving bears, cougars, wolves, elk, and bighorn sheep.
- The EM shall monitor solid waste, food waste, and other potential wildlife attractants to confirm that waste is stored and managed appropriately and that construction activities do not contribute to wildlife food conditioning or increased human-wildlife conflict.
- The EM shall monitor worker compliance with wildlife-awareness requirements, including appropriate behaviour around wildlife, maintaining appropriate distances, not feeding wildlife, and complying with applicable requirements for dogs.
- The EM shall monitor open trenches, excavations, and other potential wildlife traps associated with utility installation. Trenches and excavations shall be covered or otherwise secured when inactive, where practicable, and inspected prior to resuming work to confirm that wildlife has not become trapped.
- The EM shall monitor fencing, barriers, and other temporary structures to confirm that they do not unnecessarily obstruct wildlife movement or create wildlife entrapment hazards.
- The EM shall monitor construction access and temporary work areas to ensure that unnecessary access into adjacent wildlife habitat is minimized and that construction activities do not result in the development or facilitation of informal trails.

- The EM shall monitor for wildlife mortality or injury associated with construction activities and immediately report any incidents to the Project environmental representative and relevant regulatory authorities where required.
- The EM shall confirm that appropriate spill response equipment, including complete and readily accessible spill kits, is available at active work areas and that spills are managed in accordance with the CEMP and applicable regulatory requirements.
- Where monitoring identifies recurring wildlife use of active work areas, increased wildlife-human interactions, wildlife mortality or injury, wildlife trapping, or evidence that mitigation measures are not effective, the EM shall recommend additional or adaptive mitigation measures. These may include temporary work stoppages, additional exclusion measures, modified work timing, enhanced waste management, increased site monitoring, or other measures appropriate to the identified risk.
- Wildlife observations, interactions, incidents, mitigation deficiencies, corrective actions, and recommendations shall be documented in the EM's monitoring records and incorporated into regular environmental monitoring reports.

Operation

Operational wildlife monitoring shall assess whether the predicted residual effects of the Project are occurring and whether the proposed operational mitigation measures are effective. Monitoring should focus on the primary long-term concerns identified in the impact assessment, including increased human activity, wildlife-human interactions, wildlife displacement, changes in wildlife movement or temporal activity, and changes in use of the Upper and Lower Silvertip Wildlife Corridors. The monitoring program should be adaptive and allow additional mitigation to be implemented where monitoring identifies unexpected or increasing effects.

6.4.1.1 Wildlife Use and Movement

Monitoring shall assess wildlife use of the Project Area and adjacent portions of the Upper and Lower Silvertip Wildlife Corridors to identify potential changes in wildlife use following Project operation.

Monitoring should include:

- Wildlife observations within the Project Area and adjacent portions of the Upper and Lower Silvertip Wildlife Corridors.
- Documentation of species, date, time, location, behaviour, and apparent response to gondola operation or human activity where observed.
- Monitoring of wildlife movement through areas beneath and adjacent to the gondola alignment to identify evidence of continued use of the corridors.
- Where practicable, comparison of wildlife observations and movement patterns with available pre-construction information to identify potential changes in wildlife use following Project operation.
- Particular attention to species identified as key indicators in the impact assessment, including cougar, lynx, wolf, grizzly bear, black bear, elk, and bighorn sheep.
- Monitoring for evidence of displacement, avoidance, or changes in temporal activity in areas adjacent to the gondola and associated recreational trails.

Where monitoring identifies a substantial or sustained reduction in wildlife use or evidence that wildlife movement through the corridors is being disrupted, the cause shall be evaluated and additional mitigation considered.

6.4.1.2 Human-Wildlife Interactions

Because increased human activity is considered the primary long-term operational concern, monitoring shall specifically assess changes in human-wildlife interactions associated with gondola operation.

The Project operator shall maintain a wildlife incident log documenting:

- wildlife-human encounters;
- wildlife-dog encounters;
- wildlife entering developed or high-use recreational areas;
- wildlife exhibiting habituated or food-conditioned behaviour;
- wildlife mortality or injury;
- wildlife conflicts requiring intervention or management action; and
- locations and circumstances associated with recurring wildlife interactions.

The frequency, species, location, and nature of incidents shall be reviewed periodically to identify trends or recurring conflict areas. Where monitoring identifies an increase in wildlife-human interactions relative to baseline conditions or recurring conflict at a particular location, additional measures shall be considered, including increased signage, access restrictions, temporary trail closures, additional wildlife exclusion measures, or enhanced enforcement.

6.4.1.3 Wildlife Attractants and Waste Management

The operator shall monitor waste storage and handling throughout operation to ensure that the Project does not create wildlife attractants or contribute to food conditioning.

Monitoring shall confirm that:

- garbage and food waste are stored in wildlife-resistant containers;
- waste is removed at an appropriate frequency;
- waste storage areas remain secure and inaccessible to wildlife;
- outdoor food preparation areas are maintained free of unsecured food waste and grease;
- wildlife are not intentionally fed; and
- landscaping and maintenance activities do not create unnecessary wildlife attractants.

Any wildlife incidents associated with attractants shall be documented and investigated, and corrective measures shall be implemented where necessary.

6.4.1.4 Access, Trails, and Recreation

Operational monitoring shall assess whether Project operation results in increased recreational use or unauthorized access into sensitive wildlife habitat or the Upper and Lower Silvertip Wildlife Corridors.

Monitoring should include:

- changes in trail use associated with gondola operation;
- development of new informal trails;
- off-trail recreational use within the wildlife corridors;
- access into sensitive wildlife habitat;

- compliance with applicable dog-leash requirements; and
- use of Project infrastructure to facilitate unauthorized access.

Monitoring results should be reviewed periodically with the Government of Alberta where appropriate. New informal trails or areas of concentrated off-trail use should be evaluated to determine whether they have the potential to reduce habitat effectiveness, increase wildlife disturbance, or affect corridor function.

6.4.1.5 Sensory Disturbance and Wildlife Response

Operational monitoring shall assess wildlife responses to the presence and operation of the gondola, particularly where wildlife use occurs near the gondola alignment or associated recreational areas.

Where feasible, monitoring should document:

- changes in wildlife behaviour in response to gondola operation;
- changes in wildlife activity periods or timing;
- repeated avoidance of areas adjacent to the gondola;
- evidence of habituation to predictable gondola activity; and
- differences in wildlife response between the gondola alignment and surrounding areas.

The results should be considered together with operational noise monitoring, where applicable, to determine whether observed wildlife responses are consistent with the predicted effects.

6.4.1.6 Wildlife Monitoring and Adaptive Management

Operational wildlife monitoring results shall be reviewed periodically to determine whether mitigation measures remain effective. Monitoring data should be summarized annually, or at a frequency agreed upon with the applicable regulatory authorities, and should identify trends in wildlife use, movement, human-wildlife interactions, wildlife conflict, access, and mitigation effectiveness.

Where monitoring identifies unexpected or increasing effects, adaptive management measures shall be implemented as appropriate. Potential measures may include:

- additional wildlife-awareness signage and public education;
- increased enforcement of access or dog restrictions;
- temporary or seasonal trail closures;
- modifications to recreational access;
- additional wildlife exclusion measures;
- enhanced wildlife-attractant controls;
- changes to maintenance activities or scheduling;
- modifications to lighting;
- increased monitoring frequency; or
- additional species-specific mitigation.

The monitoring program should be reviewed periodically and modified as necessary based on monitoring results, changes in wildlife use, regulatory requirements, or new information. Monitoring results should be shared with relevant provincial agencies where appropriate to support coordinated management of the Upper and Lower Silvertip Wildlife Corridors.

6.5 Terrain and Soils

The EM will monitor compliance with the CEMP. It will be the responsibility of the Project Manager to monitor weather patterns to determine application of water for dust suppression on dirt roads or exposed soils in adherence to the CEMP.

The EM will monitor mitigation measures to protect waterbodies and riparian areas from erosion, sedimentation and potential runoff from site. The EM will apply a water quality monitoring program when and where applicable to ensure any surface runoff from the project area complies with the most current Environmental Quality Guidelines for Alberta Surface Waters.

Stone Creek is responsible for the installation and maintenance of all ESC measures. The EM will monitor the functionality of mitigation measures and may recommend maintenance or additional measures as needed. The EM will also monitor stockpile placement and coverage during wind or precipitation.

Following completion of construction, the EM will oversee the revegetation of all disturbed soils.

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APPENDICES

Appendix A. Acoustic Survey Reports

McElhanney Consulting Services Ltd.
#203 - 502 Bow Valley Trail
Canmore, AB, T1W 1N9
Tel: (403) 609 - 3992
www.mcelhanney.com

Stone Creek – Lady MacDonald Gondola	Sounds Levels at points of Interest in Silvertip, Canmore
Date:	April 20, 2017
Our Reference:	2531-20702-00-2000

To: **Jon Astolfi**,
Stone Creek Resort

From: **Bruno Mannsberger**, P.Eng., Project Manager
McElhanney Consulting Services Ltd.

Background

As part of the general review of the sites associated with the proposed gondola from Palliser Trail to The Lady Macdonald Tea House area with a mid-station adjacent to the Silvertip golf clubhouse, a sound level study has been undertaken. The intent of the sound study was to determine the ambient sound levels at various locations at different distances from the Trans-Canada Highway.

Locations of Interest

The six sampling locations are indicated in Appendix A. The samples were taken between 11:30 am and 12:30 pm on Thursday April 20, 2017. At the time the weather was overcast, light winds, approximately 8°C and the roads were dry. These locations were chosen for the following reasons:

- Location 1- On Palliser Trail adjacent to the proposed gondola lower terminus.
- Location 2 - On the Silvertip golf course, at a point where the proposed gondola alignment passes over the hole 1 green area.
- Location 3 - At the end of Aspen Glen Road adjacent to the closest residential areas to the proposed gondola line.
- Location 4 - The north side of the closest residential properties on Aspen Glen Road.
- Location 5 – Adjacent to the staff accommodation at the end of Silvertip Trail.
- Location 6 - The closest residential area to the proposed line at the highest community by elevation on the northwest end of Stonecreek Road.

Ambient Sound Level

Four ambient sound levels were recorded at each location. The maximum and minimum values of both dB A weighting (dBA) and dB C weighting were recorded. dBA is the most commonly used sound measurement since it has a similar weighting to the human ear and filters out lower and higher frequencies that the average person cannot hear. dBC is unfiltered, and as such is weighted towards the low frequency sounds not captured in the dBA weighting.

The ambient sound levels were taken with the sound meter directed towards the proposed gondola. Careful attention was taken to ensure that there were no extraneous sounds such as planes/helicopters or other peak sounds recorded.

The manufacturer's details of the specific equipment used for the sound level measurements are included in Appendix B.

Ambient Sound Level

The following table provides the results of the sound level testing. While this is not an exhaustive set of data, it provides indicative sound levels around the proposed gondola alignment.

Location	Position	Sound Level				Comments
		dBA (dB)		dBC (dB)		
		Min	Max	Min	Max	
1	Adjacent Highway	63.5	79.7	78.7	86.8	Highway noise very distinct due to proximity to TCH.
2	Golf Course	45.9	48.3	53.7	57.7	This area is located in a slight depression and surrounded by trees.
3	Little Ravine Road	46.9	51.1	51.0	57.7	The road between houses had faint background sound from gas expansion in a regulator attached to an adjacent home.
4	Rear of Little Ravine Road	46.2	49.3	53.1	57.8	This area is open to the golf course but there are trees located between the test location and the highway
5	Silvertip Trail	45.2	46.9	52.9	55.8	The test was taken at the northwest end of the Silvertip Trail adjacent to the staff accommodation.
6	Stonecreek Road	44.8	47.9	49.8	53.1	This test was taken at the northwest end of the road.

Conclusion

The sound level measurements taken are representative of the ambient sound levels in the vicinity of the proposed gondola

The results confirm the intuitive assumption that the ambient sound levels decrease the further the distance from The Trans Canada Highway. Minimum ambient noise levels only vary by 1.7dB (dBA) and 3.9dB (dBC) between locations 2 and 6 however the maximum noise levels vary between 4.2dB (dBA) and 4.7dB (dBC).

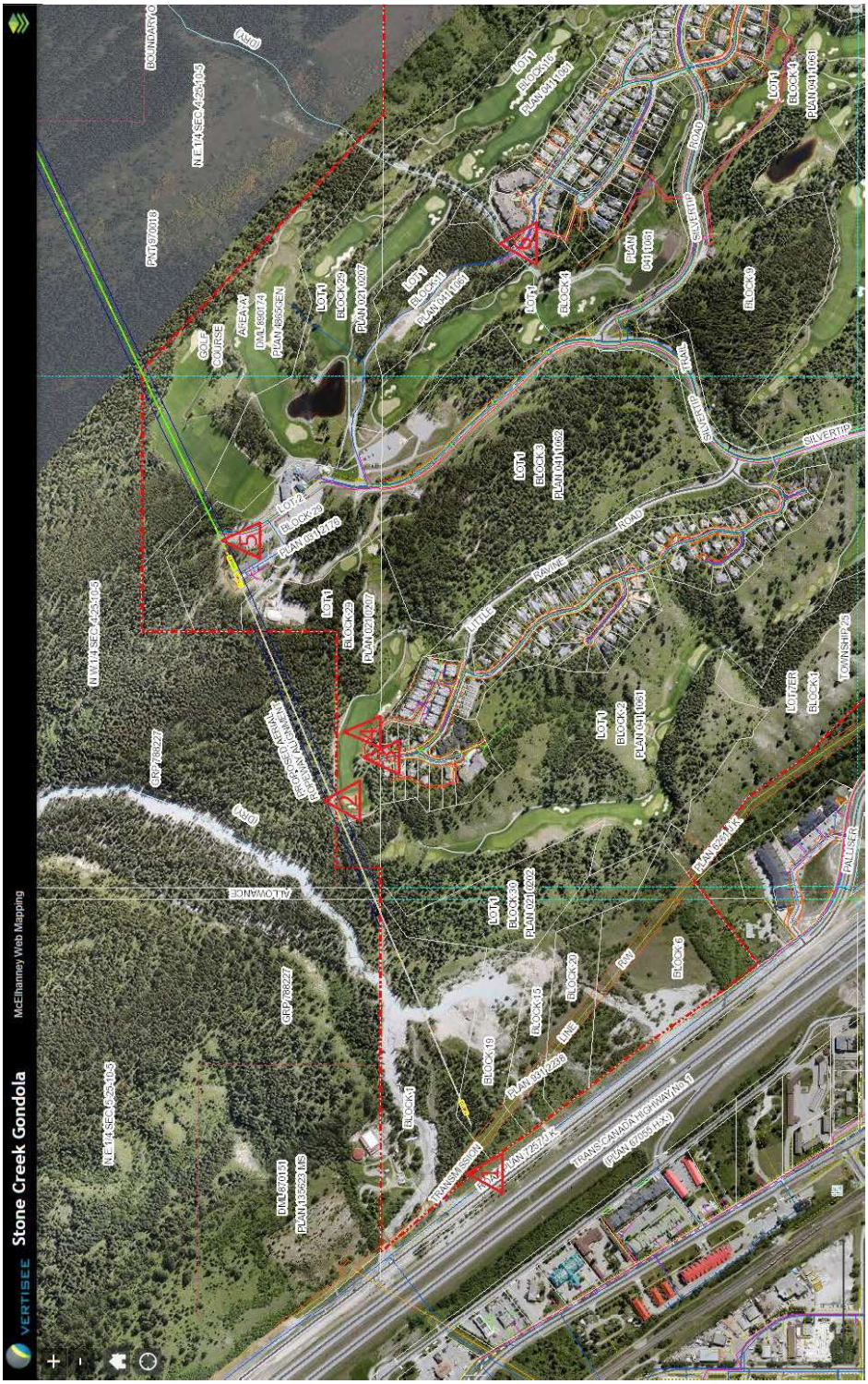
If there are any questions or discussion related to this, please feel free to give me a call.

Report Prepared By:



Bruno Mannsberger, P.Eng.
Division Manager | Mechanical and Structural Engineering

Appendix A – Key Plan



Appendix B – Sound Level Meter Description

HOLDPEAK 882A Digital Decibel Sound Level Meter Tester 30-130 dBA and 30-130dBC Audio Noise Measurement(CE,ISO,ROHS,GMC)

Specifications:
Accuracy: 1.5 dB (under reference conditions)
Frequency Range: 31.5 Hz~ 8.5K Hz
Linearity Range: 50 dB
Measuring Level: 30~130 dBA, 30~130 dBC
Frequency weighting: A, C
Digital Display: 5 digits
Resolution 0.1dB
Display 0.5 secretary
Bar graph: 50 dB scale at 1 dB step for monitoring current sound pressure level display period: 50 mS
Level Ranges 30-80 dB 50-100 dB 60-110 dB 80-130 dB
Over Indicate over Range: Under Indicate less than Lower Limit of the Range.
AC Output: 0.707 Vrms at FS output Impendence Approx 600¸
DC output: 10 mV / dB Output Impedance Approx 100¸
Time Weighting: Fast / Slow
Microphone: 1/2 inch Electret Condenser Microphone
Max: Maximum Hold
Self Calibration Time: 10 sec (every turn on)
Operating Temperature: 0 to 40
Operating Humidity: 10% to 80% RH
Storage Temperature: -10 to 60
Storage Humidity:10% to 70%RH

McElhanney Consulting Services Ltd.
#203 - 502 Bow Valley Trail
Canmore, AB, T1W 1N9
Tel: (403) 609 - 3992
www.mcelhanney.com

Stone Creek – Lady MacDonald Gondola	Representative Gondola Sound Levels Poma 6-Passenger Gondola – Lake Louise
Date:	March 30, 2017
Our Reference:	2531-20702-00-2000

To: **Jon Astolfi**,
Stone Creek Resort

From: **Bruno Mannsberger**, P.Eng., Project Manager
McElhanney Consulting Services Ltd.

Background

Stone Creek is interested in the representative sound levels associated with the operation of a gondola. A sound meter has been used around the gondola at the Lake Louise Ski Area on March 26, 2017 to provide representative sound levels at various distances from the main components of the gondola.

Ambient Sound Level

The ambient sound level was taken at a point approximately equal distant from any of the operating ropeways at the Lake Louise Ski Area in a wooded area away from any ski runs. Careful attention was taken to ensure that there were no skiers on the runs adjacent to the measurement area at the time of the measurement. The spot chosen to determine the ambient sound level was at approximately the same elevation as the support tower and span measurements (tower 21 and 22) at an elevation of approximately 2170 m. The gondola was visible from the area, however there was no detectable sound associated with the gondola. The only discernable sound was the Trans Canada Highway in the valley below. The measurement location was approximately 3.9 km from closest point of the Trans Canada Highway. The Trans Canada highway is at an elevation of 1560 m at its closest point

Table 1 – Ambient Conditions

Location	Sound Level (dBA)	Distance to Gondola	Temperature	Wind	Microphone height above snow	Gondola Speed
Wooded Area	75.2 to 79.4	275 m	2°C / Sunny	<10 kph from the west	1.2 m	5.0 m/s

The manufacturer's details of the specific equipment used for the sound level measurements are included in Appendix A.

Gondola Sound Level

The following table provides the results of the sound level testing. While this is not an exhaustive set of data, it provides indicative values of what the sound levels around an operating gondola can be expected to be.

Location	Position	Sound Level (dBA)		Distance to Gondola	Comments
		Rope Only	Carrier Passing		
Drive Station	Unload Area		75.2 to 79.4	7 m	Cabins are always present therefore there is no rope only measurement
	Mid Terminal	75.2 to 76.8	79.4 max	9 m	Maximum sound intensity is related to the cabins exiting the terminal, note the close proximity of Towers 23, 24, 25
	Adjacent to Terminal	59.1 to 63.2	74.0 max	51 m	
	Adjacent to Terminal	52.9 to 55.1	57.4 max	114 m	
Tower 21 to 22	Mid-span at Ground Level	43.2 to 47.1		91 m & 113 m	Carrier passing overhead had no impact on sound levels. Distances refer to the two adjacent towers. Measurements taken directly on the alignment
Support Tower	Directly Underneath	56.6 to 59.7	70.5	5 m to cabin	Tower 18 – This is a heavily loaded and short tower by comparison to others and would be expected to have a higher sound level
	Adjacent to Tower	47.6 to 49.8	53.7	57 m	
Hold Down Tower	Directly Underneath	71.9 to 74.2	91.8	4 m to cabin	Tower 10 – This is a short, heavily loaded hold-down tower in a confined location with a bank adjacent to the tower and is the loudest hold down tower. The tower walkways had a resonance sound at the operating speed which added to the overall sound levels. Carriers passed over this tower simultaneously on the uphill and downhill side.
	Adjacent and Uphill of tower	49.3 to 51.2	53.2	87 m[†]	
Return Terminal	Mid Terminal	73.1 to 74.8	81.2	7 m	This was the only sound level reading recorded since there was a band playing and while the music was faint at the terminal, beyond the terminal it was more apparent than the lift sound.

[†] This is the distance away from the tower, it is parallel to the gondola alignment with a 26 m offset from the closest rope, therefore there is a component of the sound level that will be attributed to the rope vibration. It was not possible to get a true offset reading due to the snow conditions in the surrounding area.

Individual figures are included in Appendix B for each sound level measurement to indicate the surrounding conditions and the relationship to the gondola.

Conclusion

The sound level measurements taken are representative of the sound produced by an operating gondola under normal running conditions

Based on the above results, it is recommended that further sound level readings be taken adjacent to the lift into the wooded areas to have a better understanding of the effects of trees and ground cover as well as to consider any specific frequencies that may be intrusive to wildlife as well as to adjacent residences.

As well, it may be necessary to replicate some specific sound measurements based on the Lady MacDonald gondola alignments with respect to areas of interest.

If there are any questions or discussion related to this, please feel free to give me a call.

Report Prepared By:



Bruno Mannsberger, P.Eng.
Division Manager | Mechanical and Structural Engineering

Appendix A – Sound Level Meter Description

HOLDPEAK 882A Digital Decibel Sound Level Meter Tester 30-130 dBA and 30-130dBC Audio Noise Measurement(CE,ISO,ROHS,GMC)

Specifications:
Accuracy: 1.5 dB (under reference conditions)
Frequency Range: 31.5 Hz~ 8.5K Hz
Linearity Range: 50 dB
Measuring Level: 30~130 dBA, 30~130 dBC
Frequency weighting: A, C
Digital Display: 5 digits
Resolution 0.1dB
Display 0.5 secretary
Bar graph: 50 dB scale at 1 dB step for monitoring current sound pressure level display period: 50 mS
Level Ranges 30-80 dB 50-100 dB 60-110 dB 80-130 dB
Over Indicate over Range: Under Indicate less than Lower Limit of the Range.
AC Output: 0.707 Vrms at FS output Impendence Approx 600¸
DC output: 10 mV / dB Output Impedance Approx 100¸
Time Weighting: Fast / Slow
Microphone: 1/2 inch Electret Condenser Microphone
Max: Maximum Hold
Self Calibration Time: 10 sec (every turn on)
Operating Temperature: 0 to 40
Operating Humidity: 10% to 80% RH
Storage Temperature: -10 to 60
Storage Humidity:10% to 70%RH

Appendix B – Sound Level Measurement Figures

(Pictures taken at measurement location in the same orientation as the microphone)



Figure 1: Ambient Sound Level Measurement - Deer Run Trees



Figure 2: Drive Terminal Unload Area



Figure 3: Adjacent to Drive Terminal



Figure 4: Adjacent to Drive Terminal - 51 m



Figure 3: Adjacent to Drive Terminal - 114 m





Figure 4 & 7 : Span From Tower 21 to 22



Figure 5: Under Support Tower



Figure 9: Adjacent to Support Tower - 57 m



Figure 6: Under Hold Down Tower



Figure 11: Adjacent to Hold Down Tower - 87 m



Figure 12: Return Terminal

CASCADE ENVIRONMENTAL
RESOURCE GROUP LTD

Memorandum

DATE: **April 7, 2017**

TO: **Jon Astolfi, Stone Creek Resort**

FROM: **Natasha Dudley, Cascade Environmental Resource Group Ltd.**

RE: **Silvertip Aerial Passenger Ropeway**
Acoustic Measurements of Representative Gondola – Sea to Sky Gondola

CERG File #: **775-01-02**

Background

As part of the Environmental Impact Study for Stone Creek's proposed Silvertip Aerial Passenger Ropeway, Cascade Environmental Resource Group Ltd. (Cascade) conducted acoustic measurements of the Sea to Sky Gondola in Squamish, BC. The intent was to use the sound levels at the Sea to Sky Gondola as a representative of those that the Silvertip gondola would produce. The Sea to Sky Gondola was used as a representative since the gondola structure, alignment, and proximity to a major highway are expected to be similar.

Methodology

On March 30, 2017 Kersti Vaino, B.Sc., R.B.Tech., and Natasha Dudley, B.Sc., B.I.T. used a sound meter (manufacturer's specifications in Appendix A) to collect sound levels at various distances perpendicular to the lift line from key components of the gondola. Key components included the drive station and base terminal, the upper terminal, the different tower type, and between tower spans. The eight-passenger Sea to Sky Gondola is manufactured by Doppelmayr and was running at 2.5-3.9 meters per second on the survey date. Weather conditions during the survey were sunny and 9°C with winds of less than 31 km/h. The microphone was held at a height of 1.2 m and pointed towards the gondola line during sound readings.

Results

Ambient Sound Levels

The ambient sound level was recorded in a forested area over the crest of a small hill on a trail from the upper terminal area. From this location, the gondola was not audible and the only audible sounds were the faint speech of visitors and humming of a generator both from a distance.

Another reading was taken at the bridge over Olesen Creek at high flow on the Sea to Summit Trail. This measurement was taken to compare gondola noise to a loud noise found naturally in the environment.

Table 1: Ambient Sound Level at Upper Base Area of Sea to Sky Gondola.

Location	Sound Level (dBA)	Distance to Gondola
Forested Trail near Upper Terminal	30.0-40.4	90 m
Olesen Creek Bridge (sound of cascading water)	77.1-94.1	370 m

Gondola Sound Levels

Sound levels measured at various distances from gondola towers, terminals and ropeways are presented in Table 2. Photographs of each measurement site are provided in Appendix B.

Table 2: Sound Levels Relative to Key Gondola Components at Sea to Sky Gondola.

Location	Position	Distance to Gondola	Distance to Highway	Sound Level (dBA)		Comments
				Rope Only	Carrier Passing	
Drive Station Terminal	Upload Area	5 m	94 m		73.5-75.4	Carriers present in upload area at all times.
	Adjacent to Terminal	60 m	101 m		57.3-59.1	Measured in parking lot. Highway and terminal noise audible.
Between Drive Station and First Support Tower	Adjacent to Ropeway	86 m	90 m		53.0-55.7	Measured on forested trail. Could not discern when carrier passing. Highway and gondola audible.
	Adjacent to Ropeway	195 m	130 m		55.3-56.4	Measured on forested trail. Could not discern when carrier passing.
First Support Tower	Adjacent to Tower	70 m	410 m	51.3-52	54.4-55.0	Tower is heavily loaded. Measured on evacuation route trail. Highway and gondola audible.
	Directly Beneath Tower	20 m	410 m	53.7-57.0	55.0-58.8	Tower is heavily loaded. Highway and gondola audible.
Between Two Towers	Directly Beneath Ropeway	25 m	610 m	40.4-41.6	47.7-51.9	Measured on Upper Shannon Falls trail. Highway and gondola audible. Distance to nearest tower is approximately 75 m.
	Adjacent to Ropeway	35 m	620 m		41.1-42.5	Unable to discern when carrier passing. Measured on Upper Shannon Falls trail. Highway and gondola audible.
	Adjacent to Ropeway	86 m	533 m		42.7-44.1	Unable to discern when carrier passing. Measured on Upper Shannon Falls trail. Highway and gondola audible.

Between Hold Down Tower and Upper Terminal	Adjacent to Ropeway	100 m	1885 m		41.3-43.2	Unable to discern when carrier passing. Upper terminal audible. Distance to upper terminal is 180 m.
Hold Down Tower	Adjacent to Tower	30 m	1490 m		41.7-43.5	No discernible difference in reading when carrier passing over tower.
	Directly Beneath Tower	20 m.	1530 m	43.4	46.9	Hold down tower did not have walkway grates at top and was not noticeably louder than other support towers.
Upper Terminal *Upper Terminal*	Unload area	5 m	2040 m		71.2 -75.5	Carriers were present in the terminal at all times.
	Adjacent to Terminal	36 m	2040 m		45.5-47.1	Taken on suspension bridge. Distant ambient chatter of visitors audible.
	Adjacent to Terminal	68 m	2065 m		45.0-49.9	Measured while nearby visitors not talking.
	Adjacent to Terminal	208 m	2075 m		39.0-40.2	Measured on trail south of upper terminal. Terminal just audible.
	Adjacent to Terminal	365 m	1770 m		45.5-47.0	Measured at viewing platform overlooking the Chief. Gondola not audible; primary noise from Olesen Creek.
Chief Trail	Adjacent to Ropeway	495 m	710 m		45.8-42.7	Gondola not audible, primary noise from Olesen Creek.

Conclusions

These measurements are a representation of sound levels for a gondola operating in proximity to a major highway under normal running conditions.

Level of gondola noise seemed to depend on proximity to gondola, with noise levels highest at gondola terminal stations and directly below towers. The noise level of the gondola seemed to dissipate fairly quickly with distance from the gondola. Higher noise levels on the trails near the lower towers are likely due to the proximity to Highway 99.

Topography and vegetation cover seemed to have a significant effect on noise level and on whether the primary noise came from the gondola or from other sources such as Highway 99 and Olesen Creek.

Prepared by:



Natasha Dudley, B.Sc., B.I.T.
Environmental Technician
Cascade Environmental Resource Group Ltd.

With support and review provided by:



Kersti Vaino, B.Sc., R.B.Tech.
Environmental Technologist
Cascade Environmental Resource Group Ltd.

Appendix A – Sound Level Meter Manufacturer Description

HOLDPEAK 882A Digital Decibel Sound Level Meter Tester 30-130 dBA and 30-130dBC Audio Noise Measurement (CE,ISO,ROHS,GMC)

Specifications:

Accuracy: 1.5 dB (under reference conditions)

Frequency Range: 31.5 Hz~ 8.5K Hz

Linearity Range: 50 dB

Measuring Level: 30~130 dBA, 30~130 dBC

Frequency weighting: A, C

Digital Display: 5 digits

Resolution 0.1dB

Display 0.5 secretary

Bar graph: 50 dB scale at 1 dB step for monitoring current sound pressure level display period: 50 mS

Level Ranges 30-80 dB 50-100 dB 60-110 dB 80-130 dB

Over Indicate over Range: Under Indicate less than Lower Limit of the Range.

AC Output: 0.707 Vrms at FS output Impendence Approx 600¸

DC output: 10 mV / dB Output Impedance Approx 100¸

Time Weighting: Fast / Slow

Microphone: 1/2 inch Electret Condenser Microphone

Max: Maximum Hold

Self Calibration Time: 10 sec (every turn on)

Operating Temperature: 0 to 40

Operating Humidity: 10% to 80% RH

Storage Temperature: -10 to 60

Storage Humidity:10% to 70%RH

Appendix B.



Photo 1. Ambient sound level measurement on forested trail. March 30, 2017.



Photo 2. Olesen Creek Bridge. March 30, 2017.



Photo 3. Drive station terminal. March 30, 2017.

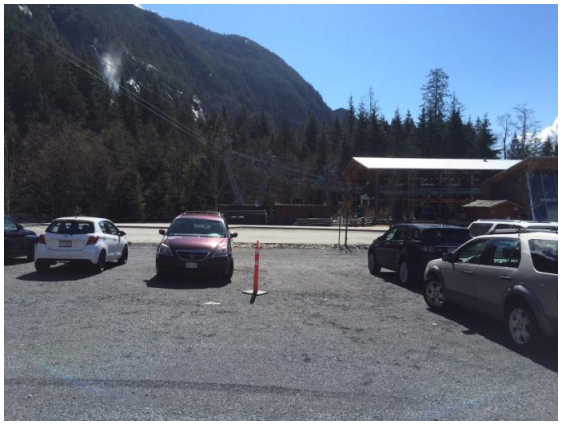


Photo 4. Adjacent to drive station terminal. March 30, 2017.



Photo 5. Between drive station terminal and first tower at height on Lower Shannon Falls Trail. March 30, 2017.

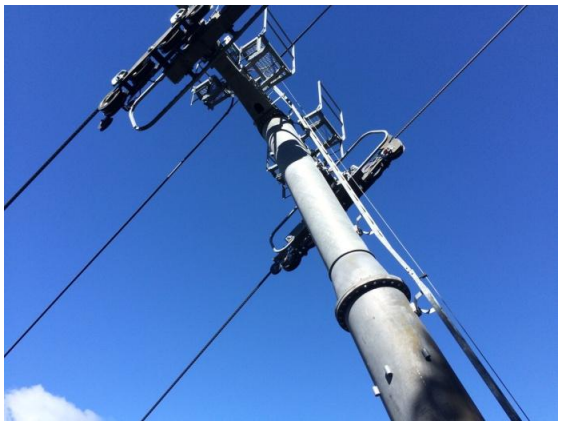


Photo 6. First tower at height. March 30, 2017.



Photo 7. Between two towers, directly under ropeway. March 30, 2017.

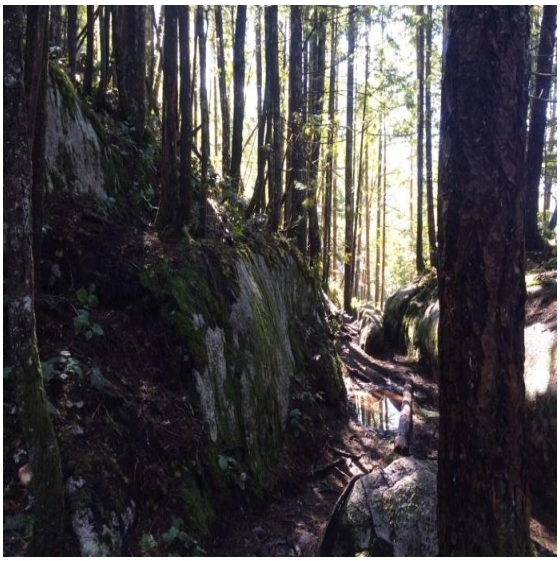


Photo 8. Between two towers, adjacent to ropeway. March 30, 2017.



Photo 9. Between hold down tower and upper terminal. March 30, 2017.

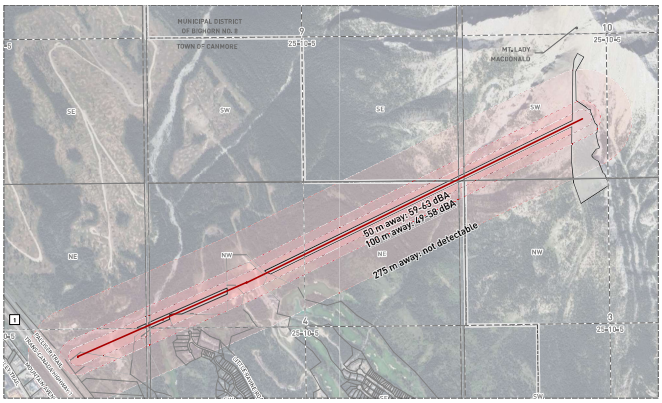


Photo 10. Adjacent to hold down tower. March 30, 2017.

STONE ★ CREEK RESORTS

SILVERTIP® CANMORE ★ ALBERTA

TECHNICAL STUDY: NOISE IMPACTS



UNDERSTANDING SOUND: EXISTING CONDITIONS & FUTURE GONDOLA OPERATIONS

Why This Study Matters

To understand how a future gondola may sound, two studies were completed:

- Ambient Sound Study (Silvertip): measured existing sound levels across the community (McElhanney, April 20, 2017)
- Gondola Sound Study (Lake Louise): measured sound from an operating gondola system (McElhanney, March 30, 2017)

Together, these provide a real-world comparison between current conditions and expected gondola sound.

What Does Silvertip Sound Like Today?

Sound levels in Silvertip vary depending on location and proximity to the Trans-Canada Highway.

- Near Highway: 63–80 dBA (traffic is the dominant sound)
- Residential Areas: 45–58 dBA
- Golf Course / Mid-slope: 46–58 dBA

*dBA (A-weighted decibels) measures noise levels by adjusting sound frequency to match the human ear's sensitivity, heavily used to assess environmental and occupational noise. It focuses on frequencies heard in human speech, where 0-20 dBA is near silence, 60 dBA is normal conversation, and >85 dBA causes hearing damage.

In general, sound levels decrease with distance from the highway, and residential areas are relatively consistent. This means Silvertip is a quiet but not silent environment, with existing background noise already present.

Location	Position	Sound Level				Comments
		dBA (dB)		dBC (dB)		
		Min	Max	Min	Max	
1	Adjacent Highway	63.5	79.7	78.7	86.8	Highway noise very distinct due to proximity to TCH.
2	Golf Course	45.9	48.3	53.7.7	57.7	This area is located in a slight depression and surrounded by trees.
3	Little Ravine Road	46.9	51.1	51.0	57.7	The road between houses had faint background sound from gas expansion in a regulator attached to an adjacent home.
4	Rear of Little Ravine Road	46.2	49.3	53.1	57.8	This area is open to the golf course but there are trees located between the test location and the highway
5	Silvertip Trail	45.2	46.9	52.9	55.8	The test was taken at the northwest end of the Silvertip Trail adjacent to the staff accommodation.
6	Stonecreek Road	44.8	47.9	49.8	53.1	This test was taken at the northwest end of the road.

What Does a Gondola Sound Like?

Measurements from a similar gondola at Lake Louise show:

Along most of the route (between towers):

- 43–47 dBA
- Passing cabins are not noticeably audible
- Comparable to quiet residential background sound

Location	Position	Sound Level (dBA)		Distance to Gondola	Comments
		Rope Only	Carrier Passing		
Drive Station	Unload Area		75.2 to 79.4	7 m	Cabins are always present therefore there is no rope only measurement
	Mid Terminal	75.2 to 76.8	79.4 max	9 m	Maximum sound intensity is related to the cabins exiting the terminal, note the close proximity of Towers 23, 24, 25
	Adjacent to Terminal	59.1 to 63.2	74.0 max	51 m	
	Adjacent to Terminal	52.9 to 55.1	57.4 max	114 m	
Tower 21 to 22	Mid-span at Ground Level	43.2 to 47.1		91 m & 113 m	Carrier passing overhead had no impact on sound levels. Distances refer to the two adjacent towers. Measurements taken directly o. Office or alignment
Support Tower	Directly Underneath	56.6 to 59.7	70.5	5 m to cabin	Tower 18 - This is a heavily loaded and short tower by comparison to others and would be expected to have a higher sound level
	Adjacent to Tower	47.6 to 49.8	53.7	57 m	
Hold Down Tower	Directly Underneath	71.9 to 74.2	91.8	4 m to cabin	Tower 10 - This is a short, heavily loaded hold-down tower confined location with a bank adjacent to the tower and is the loudest hold down tower. The tower walkways had a resonance sound at the operating speed which added to the overall sound levels. Carriers passed over this tower simultaneously on the uphill and downhill side.
	Adjacent and Uphill of tower	49.3 to 51.2	53.2	87 m*	
Return Terminal	Mid Terminal	73.1 to 74.8	81.2	7 m	This was the only sound level reading recorded since there was a band playing and while the music was faint at the terminal, beyond the terminal it was more apparent than the lift sound.

*This is the distance away from the tower, it is parallel to the gondola alignment with a 26 m offset from the closest rope, therefore there is a component of the sound level that will be attributed to the rope vibration. It was not possible to get true offset reading due to the snow conditions in the surrounding areas.

Near infrastructure (localized areas only):

- Under towers: ~56–70 dBA
- Near terminals (very close): ~73–81 dBA
- These higher sound levels occur only close to mechanical components

How Sound Changes with Distance

Sound from gondola infrastructure drops quickly:

- ~50 m away: 59–63 dBA
- ~100 m+ away: 49–58 dBA
- ~275 m away: not detectable
- At greater distances, existing sounds (like highway noise) dominate.

Putting It Together

Typical Sound Levels (dBA):

- Existing residential (Silvertip): 45–50 dBA
- Gondola along alignment: 43–47 dBA
- Gondola near towers/terminals: higher, but localized
- Along most of the route, gondola sound is similar to existing conditions

Key Takeaways

- Silvertip already has existing background sound, primarily from transportation
- Gondola sound along most of the route is low and comparable to current conditions
- Higher sound levels are localized near terminals and towers
- Sound decreases quickly with distance and landscape features

Appendix B. Vegetation Supporting Information

Prepared For:
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Suite 201
1100 - 1st Street SE
Calgary AB
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By:
CASCADE ENVIRONMENTAL RESOURCE GROUP LTD.
3-1005 Alpha Lake Road
Whistler, B.C.
Canada V8B 0Z5
Tel: 604 938 1949
info@cerg.ca
775-01-11

BOW VALLEY WILDLAND PROVINCIAL PARK
CANMORE NORDIC CENTRE PROVINCIAL PARK
Montane Traverse Trail
Meander Trail
Harvie Heights Regional Habitat Patch
Johnny's Trail
Upper Silvertip Wildlife Corridor
Lower Silvertip Wildlife Corridor
Montane Cut Off Trail
Douglas Fir Bench Trail
Silvertip Trail
Lady MacDonald Trail
Cougar Creek Trail
JUNIOR DEVELOPMENTS
SILVERTIP DEVELOPMENTS
EAGLE TERRACE
District of Bighorn
Town of Canmore
Mountain Avenue
Bow Valley Trail
17 Street
Trans-Canada Highway
Palliser Trail
ACA Trail
Fairholme Drive
Railway Avenue
8 Avenue
Bridge Road
Benchlands Trail
Elk Run Boulevard
Horse-shoe Loop Trail
Indian Flats Local Habitat Patch
South Canmore Local Habitat Patch
Bow River
Horse Meadows Connector Trail
Grotto Mountain Trail
Horse Meadows Trail
2400m
2200m
2000m
1800m
1600m
1400m

Silvertip Gondola
Appendix B-1 - Cascade Field Data Collection

Date: 2026-09-25

0 50100 200 300 400 500
Metres

N

Cascade Field data collection

2026
- Plot
- Limber pine; Whitebark pine
- Observations

2021
- Plot
- Observation

2018
- Plot
- Observation

2017
- Plot
- Observation
- Watercourse Points
- Project Area

- Vegetation Study Area
- Wildlife Study Area
- Wildlife Corridor
- Habitat Patch
- Exisiting Road
- Authorized Recreation Trails
- Other Trail (Closed, Illegal, Overgrown, Etc.)
- Authorized Recreation Trails
- Watercourse
- Municipal Boundary
- Building Footprints
- Provincial Park
- Lakes & Rivers

Appendix B-2. Vegetation found within the Study Area

Common Name	Scientific Name
Trees	
Aspen	*Populus tremuloides*
Balsam poplar	*Populus balsamifera*
Douglas-fir	*Pseudotsuga menziesii*
Engelmann spruce	*Picea engelmannii*
Jack pine	*Pinus banksiana*
Limber pine	*Pinus flexilis*
Lodgepole pine	*Pinus contorta*
Subalpine fir	*Abies lasiocarpa*
White spruce	*Picea glauca*
Whitebark pine	*Pinus albicaulis*
Shrubs	
Bearberry	*Arctosphylos uva-ursi*
Barratt's willow	*Salix barrattiana*
Canada buffalo-berry	*Shepherdia canadensis*
Common bearberry	*Arctostaphylos uva-ursi*
Common blueberry	*Vaccinium myrtilloides*
Choke cherry	*Prunus virginiana*
Creeping juniper	*Juniperus horizontalis*
Creeping mahonia	*Mahonia repens*
Dog daisy	*Leucanthemum vulgare*
Dogwood	*Cornus stolonifera*
False azalea	*Menziesia ferruginea*
Green alder	*Alnus viridis*
Ground juniper	*Juniperus communis*
Grouseberry	*Vaccinium scoparium*
Low bilberry	*Vaccinium myrtillus*
Mountain lover	*Paxistima myrsinites*
Prickly rose	*Rosa acicularis*
Purple clematis	*Clematis occidentalis*
Rock willow	*Salix vestita*
Saskatoon	*Amelanchier alnifolia*
Shrubby cinquefoil	*Potentiall fruticosa*
Snowberry	*Symphoricarpus albus*
Thimbleberry	*Rubus parviflorus*
Twinflower	*Linnaea borealis*
Undifferentiated currant	*Ribes* spp.
Undifferentiated rose	*Rosa* spp.

Common Name	Scientific Name
Undifferentiated willow	*Salix* spp.
White meadowsweet	*Spiraea betulifolia*
Wild red currant	*Ribes triste*
Herbs	
Alpine goldenrod	*Solidago multiradiata*
Alaskan bellflower	*Campanula alaskana*
Alpine hedysarum	*Hedysarum alpinum*
Autumn gentian	*Gentianella amarella*
Basket-of-gold	*Aurinia saxatilis*
Bear-grass	*Xerophyllum tenax*
Blunt-leaved orchid	*Fabenaria obtusata*
Bracted orchid	*Dactylorhiza viridis*
Bunchberry	*Cornus canadensis*
Canada thistle	*Cirsium arvense*
Clasping-leaved twisted-stalk	*Streptopus amplexifolius*
Common dandelion	*Taraxacum officilnale*
Common fireweed	*Epilobium angustifolium*
Common yarrow	*Achillea millefolium*
Cow parsnip	*Heracleum lanatum*
Cream-colored vetchling	*Lathyrus ochroleucus*
Creeping mahonia	*Berberis repens*
Cut-leaved anemone	*Anemone multifida*
Early blue violet	*Biola adunca*
Elephant head	*Pedicularis groenlandica*
Fairy slipper	*Calypso bulbosa*
Field chickweed	*Cerastium arvense*
Graceful cinquefoil	*Potentilla gracilis*
Green false hellebore	*Veratrum eschscholtzii*
Harebell	*Campanula rotundifolia*
Hawkweed	*Hieracium spp.*
Heart-leaved arnica	*Arnica cordifolia*
Hooker's pussytoes	*Antennaria hookeriana*
Hooker's thistle	*Cirsium hookerianum*
Lindley's aster	*Aster ciliolatus*
Meadow horsetail	*Equisetum pratense*
Mountain shooting star	*Dodecatheon conjugens*
Nodding onion	*Allium cernuum*
Northern bedstraw	*Galium boreale*
Northern green orchid	*Platanthera hyperborea*
One-sided wintergreen	*Moneses uniflora*

Common Name	Scientific Name
Paintbrush	*Castilleja spp.*
Pale vetchling	*Lathyrus ochroleucus*
Pasture sagewort	*Artemisia frigida*
Prairie selaginella	*Selaginella densa*
Red and white baneberry	*Actaea rubra*
Red clover	*Trifolium pratense*
Round-leaved orchid	*Orchis rotundifolia*
Showy aster	*Aster conspicuus*
Shrubby cinquefoil	*Dasiphora fruticosa*
Siberian aster	*Eurybia sibirica*
Silky perennial lupine	*Lupinus sericeus*
Silverberry	*Elaeagnus commutata*
Silvery perennial lupine	*Lupinus argenteus*
Slender blue beardtongue	*Penstemon procerus*
Small-leaved everlasting	*Antennaria parvifolia*
Smooth blue aster	*Symphyotrichum laeve*
Spreading dogbane	*Apocynum androsaemifolium*
Star-flowered Solomon's-seal	*Maianthemum stellatum*
Sticky purple geranium	*Geranium viscosissimum*
Sugarscoop	*Tiarella unifoliata*
Sweet-scented bedstraw	*Galium triflorum*
Toadflax	*Linaria vulgaris*
Tall buttercup	*Ranunculus acris*
Tall larkspur	*Delphinium glaucum*
Three-flowered avens	*Geum triflorum*
Undifferentiated cinquefoil	*Potentialla* spp.
Undifferentiated evelastings	*Antennaria* spp.
Undifferentiated goldenrod	*Solidago* spp.
Undifferentiated hedysarum	*Hydysarm* spp.
Undifferentiated locoweed	*Oxytropis* spp.
Veiny meadow rue	*Thalictrum venulosum*
Western Canada violet	*Viola canadensis*
White camas	*Zigadenus elegans*
Wild blue flax	*Linum lewisii*
Wild strawberry	*Fragaria virginiana*
Wild vetch	*Vicia americana*
Woolly groundsel	*Packera cana*
Woolly yarrow	*Achillea millefolium var. lanulosa*
Yellow angelica	*Angelica dawsonii*
Yellow beardtongue	*Penstemon confertus*

Common Name	Scientific Name
Yellow columbine	*Aquilegia flavescens*
Yellow false dandelion	*Agoseris glauca*
Yellow sweet-vetch	*Hedysarum spp.*
Grasses	
Bluebunch fescue	*Festuca idahoensis*
Bluebunch wheat grass	Agropyron spicatum
Bog-sedge	*Carex magellanica* ssp. *Irrigua*
Foothills rough fescue	*Festuca campestris*
Fowl bluegrass	*Poa palustris*
Fringed brome	*Bromus ciliatus*
Green needle grass	*Nassella viridula*
Hairy wild rye	*Elymus innovatus*
Interior sedge	*Carex interior*
June grass	*Koelaria macrantha*
Kentucky bluegrass	*Poa pratensis*
Longstyle rush	*Juncus longistylis*
Northern wheat grass	*Agropyron cristatum*
Open sedge	*Carex aperta*
Parry oat grass	*Danthonia parryi*
Pine reed grass	*Calamagrostis rubescnes*
Richardson needle grass	*Stipa richardsonii*
Rocky Mountain fescue	*Festuca saximontana*
Rough fescue	*Festuca scabrella*
Slender arrow-grass	*Triglochin palustris*
Slender wheat grass	*Agropyron trachycaulum*
Spike rush	*Eleocharis guingueflora*
Spike trisetum	*Trisetum spicatum*
Timothy	*Phleum pratense*
Tufted hair grass	*Deschampsia cespitosa*
Undifferentiated oat grass	*Danthonia* spp.
Undifferentiated sedge	*Carex* spp.
Undifferentiated wheat grass	*Agropyron* spp.
Mosses/Lichens	
Brown moss	*Drepanocladus aduncus*
Copper wire moss	*Pohlia nutans*
Dog lichen	*Peltigera canina*
Knight's plume moss	*Ptilium crista-castrensis*
Pixie cup lichen	*Cladonia pyxidata*
Red-stemmed feather moss	*Pleurozium schreber*
Reindeer lichen	*Cladonia rangiferina complex*

Common Name	Scientific Name
Rocky Mountain spikemoss	*Selaginella densa*
Schreber's moss	*Pleurozium schreber*
Stair-step moss	*Hylocomium splendens*
Studded leather lichen	*Peltigera aphthosa*

Appendix C. Wildlife Supporting Information

Prepared For:
STONE CREEK RESORTS
Suite 201
1100 - 1st Street SE
Calgary AB
Canada T2G 1B1
Tel: 403 802-3600
Fax: 403 209-3926

By:
CASCADE ENVIRONMENTAL RESOURCE GROUP LTD
3-1005 Alpha Lake Road
Whistler, B.C.
Canada V8B 0Z5
Tel: 604 938 1949
info@cerg.ca
775-01-11

BOW VALLEY WILDLAND PROVINCIAL PARK

CANMORE NORDIC CENTRE PROVINCIAL PARK

REC 1D: 1yrs
REC 1F: 1yrs
REC 1B: 1yrs
REC 1C: 1yrs
REC 1A: 1yrs
BV 124: 3yrs
REC 1E: 1yrs
BCM 041: 3yrs
BV 125: 8yrs
BVM 124: 4yrs
BCM 057: 3yrs
BV 157: 8yrs
REC 2D: 1yrs
BCM 058: 3yrs
BVM 158: 4yrs
BV 158: 3yrs
BCM 070: 3yrs
BCM 071: 3yrs
BVM 156: 4yrs
LM-5: 2yrs
REC 2B: 1yrs
REC 2C: 1yrs
REC 2E: 1yrs
REC 2A: 1yrs
LM-4: 2yrs
BV 156: 5yrs
BCM 069: 3yrs
BVM 191: 4yrs
LM-2: 2yrs
LM-3: 2yrs
LSC 001: 1yrs
LM-1: 2yrs
BCM 092: 3yrs
BVM 190: 4yrs
BVM 189: 4yrs
BCM 091 A: 3yrs
BV 189 NE: 8yrs
BCM 091: 3yrs
BVM 189 A: 1yrs
BV 189 SE: 8yrs
BCM 105: 3yrs
BV 188 NW: 8yrs
Cat 10: 3yrs
Cat 10A: 3yrs
LSC 003: 1yrs
LSC 002: 1yrs
LSC 004: 1yrs
BCM 092 A: 3yrs
BCM 092 B: 3yrs
BVM 223: 4yrs
BVM 222 W: 4yrs
BCM 104: 3yrs
BVM 222 E: 4yrs
LSC 007: 1yrs
LSC 009: 1yrs
LSC 006: 1yrs
LSC 005: 1yrs
LSC 008: 1yrs
BV 221 NW: 8yrs
BV 221 NE-c: 3yrs
BV 221 NE-b: 8yrs
BCM 126 A: 4yrs
Cougar Rock Dam East: 2yrs
DebrisNet East: 3yrs
BV 221 NE-a: 6yrs
BCM 126 B: 3yrs
BV 221 SW: 8yrs
BV 221 SE: 5yrs
BCM 126 C: 3yrs
BV 221 W: 4yrs
BVM 221 A: 4yrs
BV 254: 5yrs
BCM 126: 3yrs
BCM 138: 3yrs
BV 254 NE: 8yrs
BCM 139: 3yrs
BV 253: 4yrs
BCM 139 A: 3yrs
BV 253 W: 1yrs
BV 253 NW: 8yrs
BCM 125: 3yrs
BV 220 NW: 5yrs
BVM 220 A: 4yrs
BVM 220 B: 4yrs
BCM 125 A: 3yrs
BV 220 SW: 5yrs
BCM 105 A: 3yrs
BV 221 NE-d: 8yrs
BCM 105 B: 3yrs
BCM 105 C: 3yrs
BV 187 SW: 8yrs
BV 187 SE: 3yrs
BCM 106: 3yrs
BV 187: 8yrs
LMS-12: 3yrs
LMS-11: 3yrs
LMS-9: 3yrs
LMS-10: 3yrs
LMS-8: 3yrs
LMS-7: 3yrs
LMS-6: 3yrs
LMS-4: 3yrs
LM-9: 3yrs
LMS-5: 3yrs
LMS-3: 3yrs
LMS-2: 3yrs
LMS-1: 3yrs
LM-8: 3yrs
BCM 102: 3yrs
Cat 7A: 3yrs
Cat 7: 3yrs
BVM 252 A: 3yrs
BCM 159: 3yrs
BV 286: 3yrs
BVM 286 A: 3yrs
BVM 286: 2yrs
BCM 160: 3yrs

Harvie Heights Regional Habitat Patch
South Canmore Local Habitat Patch
Indian Flats Local Habitat Patch

Montane Traverse Trail
Meander Trail
Johnny's Trail
Montane Cut-Off Trail
Lady MacDonald Trail
Cougar Creek Trail
Bow Valley Trail
Mountain Avenue
Douglas Fir Bench Trail
Silvertip Trail
ACA Trail
Palliser Trail
Trans-Canada Highway
Fairholme Drive
8 Avenue
Railway Avenue
Bridge Road
Benchlands Trail
Elk Run Boulevard
Horse-shoe Loop Trail
17 Street
Bow River

JUNIOR DEVELOPMENTS
SILVERTIP DEVELOPMENTS
EAGLE TERRACE

1600m
1800m
2000m
2200m
1400m

District of Canmore
District of Bighorn

Silvertip Gondola
Appendix C-1 - Wildlife Camera and Acoustic Autonomous Recording Unit Locations
Date: 2026-09-25

0 100 200 400 600 800
Metres

N

- Acoustic Autonomous Recording Unit - Cascade July 2026 (ARU)
- Wildlife Camera Locations - Id : years active (Alberta Parks 2026)
- Project Area
- Vegetation Study Area
- Wildlife Study Area
- Wildlife Corridor
- Habitat Patch
- Existing Road
- Authorized Recreation Trails
- Other Trail (Closed, Illegal, Overgrown, Etc.)
- Watercourse
- Municipal Boundary
- Abandoned Rail Line
- Main Rail Line
- Highway
- Existing Roads
- Building Footprints
- Cadastre
- Provincial Park
- Lakes & Rivers

Appendix C-2. Wildlife Camera Data Information

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
BCM 004	Bow Corridor Monitoring	Research	812	3	Bow Valley	POINT (612579 5666834)
BCM 005	Bow Corridor Monitoring	Research	776	3	Bow Valley	POINT (612049 5666591)
BCM 006	Bow Corridor Monitoring	Research	543	3	Bow Valley	POINT (611232 5665820)
BCM 007	Bow Corridor Monitoring	Research	643	3	Bow Valley	POINT (609749 5665725)
BCM 008	Bow Corridor Monitoring	Research	841	3	Bow Valley	POINT (609576 5665309)
BCM 012	Bow Corridor Monitoring	Research	590	3	Bow Valley	POINT (610151 5664298)
BCM 013	Bow Corridor Monitoring	Research	808	3	Bow Valley	POINT (611183 5665235)
BCM 014	Bow Corridor Monitoring	Research	733	3	Bow Valley	POINT (612038 5665665)
BCM 015	Bow Corridor Monitoring	Research	563	3	Bow Valley	POINT (612525 5666201)
BCM 016	Bow Corridor Monitoring	Research	677	3	Bow Valley	POINT (613928 5666178)
BCM 028	Bow Corridor Monitoring	Research	797	3	Bow Valley	POINT (614374 5665773)
BCM 029	Bow Corridor Monitoring	Research	682	3	Bow Valley	POINT (613423 5665640)
BCM 030	Bow Corridor Monitoring	Research	497	3	Bow Valley	POINT (612606 5665525)
BCM 031	Bow Corridor Monitoring	Research	820	3	Bow Valley	POINT (611835 5664512)
BCM 032	Bow Corridor Monitoring	Research	599	3	Bow Valley	POINT (611122 5664492)
BCM 032 A	Bow Corridor Monitoring	Research	739	3	Bow Valley	POINT (610466 5663994)
BCM 037	Bow Corridor Monitoring	Research	548	3	Bow Valley	POINT (611353 5662943)
BCM 038	Bow Corridor Monitoring	Research	628	3	Bow Valley	POINT (612391 5663455)

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
BCM 038 A	Bow Corridor Monitoring	Research	613	3	Bow Valley	POINT (611559 5663629)
BCM 039	Bow Corridor Monitoring	Research	808	3	Bow Valley	POINT (612448 5663891)
BCM 040	Bow Corridor Monitoring	Research	629	3	Bow Valley	POINT (613510 5664426)
BCM 041	Bow Corridor Monitoring	Research	608	3	Bow Valley	POINT (614540 5664563)
BCM 057	Bow Corridor Monitoring	Research	576	3	Study Area	POINT (615585 5664068)
BCM 058	Bow Corridor Monitoring	Research	480	3	Bow Valley	POINT (614634 5663604)
BCM 059	Bow Corridor Monitoring	Research	808	3	Bow Valley	POINT (613360 5663338)
BCM 060	Bow Corridor Monitoring	Research	650	3	Bow Valley	POINT (612530 5662984)
BCM 061	Bow Corridor Monitoring	Research	724	3	Bow Valley	POINT (611666 5662544)
BCM 066	Bow Corridor Monitoring	Research	837	3	Bow Valley	POINT (612153 5660939)
BCM 067	Bow Corridor Monitoring	Research	771	3	Bow Valley	POINT (612809 5662201)
BCM 068	Bow Corridor Monitoring	Research	588	3	Bow Valley	POINT (613519 5662287)
BCM 069	Bow Corridor Monitoring	Research	663	3	Study Area	POINT (614867 5662991)
BCM 070	Bow Corridor Monitoring	Research	528	3	Study Area	POINT (615703 5663599)
BCM 071	Bow Corridor Monitoring	Research	781	3	Study Area	POINT (616338 5663424)
BCM 091	Bow Corridor Monitoring	Research	609	3	Study Area	POINT (616840 5662572)
BCM 091 A	Bow Corridor Monitoring	Research	634	3	Study Area	POINT (616849 5662974)
BCM 092	Bow Corridor Monitoring	Research	656	3	Study Area	POINT (615307 5662647)

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
BCM 092 A	Bow Corridor Monitoring	Research	605	3	Study Area	POINT (615668 5661971)
BCM 092 B	Bow Corridor Monitoring	Research	599	3	Study Area	POINT (615862 5662010)
BCM 094	Bow Corridor Monitoring	Research	601	3	Bow Valley	POINT (613433 5661511)
BCM 095	Bow Corridor Monitoring	Research	616	3	Bow Valley	POINT (612915 5660484)
BCM 095 A	Bow Corridor Monitoring	Research	719	3	Bow Valley	POINT (613112 5660362)
BCM 095 B	Bow Corridor Monitoring	Research	744	3	Bow Valley	POINT (612760 5660455)
BCM 096	Bow Corridor Monitoring	Research	699	3	Bow Valley	POINT (611781 5660070)
BCM 100	Bow Corridor Monitoring	Research	793	3	Bow Valley	POINT (612614 5659622)
BCM 101	Bow Corridor Monitoring	Research	513	3	Bow Valley	POINT (613501 5660051)
BCM 102	Bow Corridor Monitoring	Research	741	3	Bow Valley	POINT (614727 5660232)
BCM 104	Bow Corridor Monitoring	Research	629	3	Study Area	POINT (616357 5661826)
BCM 105	Bow Corridor Monitoring	Research	612	3	Study Area	POINT (617254 5662563)
BCM 105 A	Bow Corridor Monitoring	Research	538	3	Study Area	POINT (617487 5661939)
BCM 105 B	Bow Corridor Monitoring	Research	535	3	Bow Valley	POINT (617884 5661943)
BCM 105 C	Bow Corridor Monitoring	Research	589	3	Study Area	POINT (617997 5662168)
BCM 106	Bow Corridor Monitoring	Research	583	3	Bow Valley	POINT (618437 5662408)
BCM 125	Bow Corridor Monitoring	Research	610	3	Bow Valley	POINT (618179 5661663)
BCM 125 A	Bow Corridor Monitoring	Research	620	3	Bow Valley	POINT (618252 5661414)

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
BCM 126	Bow Corridor Monitoring	Research	613	3	Bow Valley	POINT (617592 5661014)
BCM 126 A	Bow Corridor Monitoring	Research	662	4	Study Area	POINT (617574 5661785)
BCM 126 B	Bow Corridor Monitoring	Research	616	3	Study Area	POINT (617387 5661417)
BCM 126 C	Bow Corridor Monitoring	Research	631	3	Bow Valley	POINT (617714 5661252)
BCM 126 D	Bow Corridor Monitoring	Research	498	3	Bow Valley	POINT (617877 5661372)
BCM 129	Bow Corridor Monitoring	Research	661	3	Bow Valley	POINT (615108 5659789)
BCM 129 A	Bow Corridor Monitoring	Research	736	3	Bow Valley	POINT (615105 5659566)
BCM 130	Bow Corridor Monitoring	Research	642	3	Bow Valley	POINT (614094 5659133)
BCM 130 A	Bow Corridor Monitoring	Research	606	3	Bow Valley	POINT (613802 5658922)
BCM 131	Bow Corridor Monitoring	Research	715	3	Bow Valley	POINT (612356 5658914)
BCM 134	Bow Corridor Monitoring	Research	652	3	Bow Valley	POINT (614186 5658553)
BCM 135	Bow Corridor Monitoring	Research	551	3	Bow Valley	POINT (614904 5658376)
BCM 136	Bow Corridor Monitoring	Research	694	3	Bow Valley	POINT (615870 5659149)
BCM 137	Bow Corridor Monitoring	Research	644	3	Bow Valley	POINT (616049 5659506)
BCM 138	Bow Corridor Monitoring	Research	616	3	Bow Valley	POINT (617686 5660759)
BCM 139	Bow Corridor Monitoring	Research	524	3	Bow Valley	POINT (618142 5660827)
BCM 139 A	Bow Corridor Monitoring	Research	661	3	Bow Valley	POINT (618355 5660701)
BCM 159	Bow Corridor Monitoring	Research	675	3	Bow Valley	POINT (619014 5660167)

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
BCM 160	Bow Corridor Monitoring	Research	608	3	Bow Valley	POINT (618755 5659875)
BCM 161	Bow Corridor Monitoring	Research	590	3	Bow Valley	POINT (617887 5659095)
BCM 162	Bow Corridor Monitoring	Research	652	3	Bow Valley	POINT (616245 5658304)
BCM 162 A	Bow Corridor Monitoring	Research	797	3	Bow Valley	POINT (616864 5658819)
BCM 163	Bow Corridor Monitoring	Research	588	3	Bow Valley	POINT (615633 5657654)
BCM 164	Bow Corridor Monitoring	Research	458	3	Bow Valley	POINT (614982 5657841)
BCM 169	Bow Corridor Monitoring	Research	638	3	Bow Valley	POINT (615845 5656896)
BCM 170	Bow Corridor Monitoring	Research	697	3	Bow Valley	POINT (616332 5657119)
BCM 171	Bow Corridor Monitoring	Research	572	3	Bow Valley	POINT (617951 5657834)
BCM 171 A	Bow Corridor Monitoring	Research	634	2	Bow Valley	POINT (617224 5658361)
BCM 172	Bow Corridor Monitoring	Research	644	3	Bow Valley	POINT (618640 5659155)
BCM 173	Bow Corridor Monitoring	Research	702	3	Bow Valley	POINT (619460 5659164)
BCM 174	Bow Corridor Monitoring	Research	545	3	Bow Valley	POINT (619865 5659534)
BCM 198	Bow Corridor Monitoring	Research	570	3	Bow Valley	POINT (620009 5658694)
BCM 199	Bow Corridor Monitoring	Research	782	3	Bow Valley	POINT (619940 5657914)
BCM 200	Bow Corridor Monitoring	Research	625	3	Bow Valley	POINT (618433 5657399)
BCM 201	Bow Corridor Monitoring	Research	592	3	Bow Valley	POINT (617207 5656746)
BCM 202	Bow Corridor Monitoring	Research	634	3	Bow Valley	POINT (616948 5656760)

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
BCM 210	Bow Corridor Monitoring	Research	643	3	Bow Valley	POINT (617364 5656364)
BCM 210 A	Bow Corridor Monitoring	Research	582	3	Bow Valley	POINT (617957 5655924)
BCM 211	Bow Corridor Monitoring	Research	863	3	Bow Valley	POINT (618970 5656669)
BCM 212	Bow Corridor Monitoring	Research	605	3	Bow Valley	POINT (619595 5656737)
BCM 213	Bow Corridor Monitoring	Research	506	3	Bow Valley	POINT (620057 5657786)
BCM 214	Bow Corridor Monitoring	Research	667	3	Bow Valley	POINT (621557 5657756)
BCM 242	Bow Corridor Monitoring	Research	712	3	Bow Valley	POINT (621944 5657404)
BCM 243	Bow Corridor Monitoring	Research	644	3	Bow Valley	POINT (621501 5656910)
BCM 244	Bow Corridor Monitoring	Research	696	3	Bow Valley	POINT (620029 5656460)
BCM 245	Bow Corridor Monitoring	Research	544	3	Bow Valley	POINT (619518 5655752)
BCM 246	Bow Corridor Monitoring	Research	547	3	Bow Valley	POINT (618708 5655380)
BCM 254	Bow Corridor Monitoring	Research	675	3	Bow Valley	POINT (618548 5654729)
BCM 256	Bow Corridor Monitoring	Research	683	3	Bow Valley	POINT (620494 5655682)
BCM 258	Bow Corridor Monitoring	Research	728	3	Bow Valley	POINT (622060 5656841)
BCM 286	Bow Corridor Monitoring	Research	670	3	Bow Valley	POINT (621399 5655275)
BCM 287	Bow Corridor Monitoring	Research	563	3	Bow Valley	POINT (620565 5654818)
BCM 297 A	Bow Corridor Monitoring	Research	654	3	Bow Valley	POINT (622044 5654743)
BV 124	HUMR	Research	788	3	Bow Valley	POINT (615258 5664633)

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
BV 125	HUMR	Research	2204	8	Bow Valley	POINT (614539 5664562)
BV 126	HUMR	Research	713	3	Bow Valley	POINT (613865 5664691)
BV 156	HUMR	Research	1646	5	Study Area	POINT (616196 5663252)
BV 157	HUMR	Research	2217	8	Study Area	POINT (615640 5663676)
BV 158	HUMR	Research	696	3	Bow Valley	POINT (614717 5663570)
BV 187	HUMR	Research	2457	8	Bow Valley	POINT (618436 5662407)
BV 187 SE	HUMR	Research	604	3	Bow Valley	POINT (618026 5662120)
BV 187 SW	HUMR	Research	2533	8	Study Area	POINT (617996 5662167)
BV 188 NW	HUMR	Research	2491	8	Study Area	POINT (617253 5662562)
BV 189 NE	HUMR	Research	2511	8	Study Area	POINT (616848 5662973)
BV 189 SE	HUMR	Research	2406	8	Study Area	POINT (616839 5662571)
BV 220 NW	HUMR	Research	1466	5	Bow Valley	POINT (618180 5661650)
BV 220 SW	HUMR	Research	1481	5	Bow Valley	POINT (618249 5661380)
BV 221 NE-a	HUMR	Research	1921	6	Bow Valley	POINT (617585 5661582)
BV 221 NE-b	HUMR	Research	2601	8	Study Area	POINT (617573 5661784)
BV 221 NE-c	HUMR	Research	664	3	Study Area	POINT (617622 5661853)
BV 221 NE-d	HUMR	Research	2645	8	Bow Valley	POINT (617883 5661942)
BV 221 NW	HUMR	Research	2662	8	Study Area	POINT (617458 5661887)

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
BV 221 SE	HUMR	Research	1514	5	Bow Valley	POINT (617709 5661253)
BV 221 SW	HUMR	Research	2634	8	Study Area	POINT (617386 5661416)
BV 221 W	Bow Valley 2017	Research	653	4	Bow Valley	POINT (617876 5661371)
BV 252	HUMR	Research	713	3	Bow Valley	POINT (619147 5660418)
BV 253	Bow Valley 2017	Research	864	4	Bow Valley	POINT (618140 5660826)
BV 253 NW	HUMR	Research	2313	8	Bow Valley	POINT (618354 5660700)
BV 253 W	Bow Valley 2017	Research	166	1	Bow Valley	POINT (618217 5660620)
BV 254	Bow Valley 2017	Research	1065	5	Bow Valley	POINT (617591 5661013)
BV 254 NE	HUMR	Research	2362	8	Bow Valley	POINT (617685 5660758)
BV 259	HUMR	Research	1163	4	Bow Valley	POINT (612960 5660569)
BV 259 A	Bow Valley 2017	Research	1030	5	Bow Valley	POINT (612902 5660461)
BV 285	HUMR	Research	2238	8	Bow Valley	POINT (619732 5659831)
BV 286	HUMR	Research	792	3	Bow Valley	POINT (618190 5659991)
BV 287	HUMR	Research	2619	8	Bow Valley	POINT (618108 5659280)
BV 288	HUMR	Research	734	3	Bow Valley	POINT (616667 5659195)
BV 289 N	HUMR	Research	2270	8	Bow Valley	POINT (615107 5659788)
BV 289 S	HUMR	Research	2250	8	Bow Valley	POINT (615104 5659565)
BV 290	HUMR	Research	724	3	Bow Valley	POINT (614444 5659422)

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
BV 291	HUMR	Research	2242	8	Bow Valley	POINT (613415 5659346)
BV 292 E	HUMR	Research	1371	5	Bow Valley	POINT (612725 5659506)
BV 292 W	HUMR	Research	715	3	Bow Valley	POINT (612216 5659430)
BV 293	HUMR	Research	1879	6	Bow Valley	POINT (611912 5659563)
BV 317	HUMR	Research	1523	5	Bow Valley	POINT (619954 5658724)
BV 318	HUMR	Research	710	3	Bow Valley	POINT (619319 5658721)
BV 319	HUMR	Research	2429	8	Bow Valley	POINT (618168 5658099)
BV 320	HUMR	Research	2627	8	Bow Valley	POINT (617223 5658360)
BV 322	HUMR	Research	726	3	Bow Valley	POINT (615934 5658553)
BV 323	HUMR	Research	730	3	Bow Valley	POINT (614399 5658476)
BV 324	HUMR	Research	678	3	Bow Valley	POINT (613450 5658870)
BV 348	HUMR	Research	1566	5	Bow Valley	POINT (622088 5657398)
BV 349	HUMR	Research	2521	8	Bow Valley	POINT (621556 5657755)
BV 350	HUMR	Research	735	3	Bow Valley	POINT (620362 5657715)
BV 351	HUMR	Research	2570	8	Bow Valley	POINT (619939 5657913)
BV 352	HUMR	Research	689	3	Bow Valley	POINT (618158 5657573)
BV 354	HUMR	Research	1033	5	Bow Valley	POINT (616264 5657103)
BV 355	HUMR	Research	2487	8	Bow Valley	POINT (615632 5657653)

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
BV 356	HUMR	Research	764	3	Bow Valley	POINT (614736 5657805)
BV 382	HUMR	Research	631	3	Bow Valley	POINT (621681 5655967)
BV 384	HUMR	Research	764	3	Bow Valley	POINT (619304 5656220)
BV 385	HUMR	Research	2628	8	Bow Valley	POINT (618969 5656668)
BV 386	HUMR	Research	2172	8	Bow Valley	POINT (617363 5656363)
BV 386 NW	Bow Valley 2017	Research	354	2	Bow Valley	POINT (617086 5656842)
BV 387	HUMR	Research	752	3	Bow Valley	POINT (616747 5656710)
BV 415	HUMR	Research	2537	8	Bow Valley	POINT (621398 5655274)
BV 416	HUMR	Research	755	3	Bow Valley	POINT (620630 5655483)
BV 417	HUMR	Research	2158	8	Bow Valley	POINT (619536 5655735)
BV 418	HUMR	Research	748	3	Bow Valley	POINT (618988 5655100)
BV 448	HUMR	Research	747	3	Bow Valley	POINT (621292 5654657)
BV 449	HUMR	Research	2304	8	Bow Valley	POINT (620564 5654817)
BV 450	HUMR	Research	774	3	Bow Valley	POINT (619014 5655007)
BV 451	HUMR	Research	2417	8	Bow Valley	POINT (618547 5654728)
BV 59	HUMR	Research	2500	8	Bow Valley	POINT (613927 5666177)
BV 60	HUMR	Research	758	3	Bow Valley	POINT (613132 5666526)
BV 61	HUMR	Research	2242	8	Bow Valley	POINT (612524 5666200)

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
BV 92	HUMR	Research	777	3	Bow Valley	POINT (614183 5665551)
BV 93	HUMR	Research	2629	8	Bow Valley	POINT (613422 5665639)
BV 94	HUMR	Research	638	3	Bow Valley	POINT (612774 5665691)
BV 97	Bow Valley 2017	Research	1667	6	Bow Valley	POINT (609748 5665724)
BVM 092	Bow Valley Monitoring	Research	597	4	Bow Valley	POINT (614380 5665209)
BVM 094	Bow Valley Monitoring	Research	942	4	Bow Valley	POINT (612605 5665524)
BVM 095	Bow Valley Monitoring	Research	1003	4	Bow Valley	POINT (611231 5665819)
BVM 096	Bow Valley Monitoring	Research	1015	4	Bow Valley	POINT (610411 5665688)
BVM 124	Bow Valley Monitoring	Research	873	4	Study Area	POINT (615583 5664067)
BVM 126	Bow Valley Monitoring	Research	689	4	Bow Valley	POINT (613509 5664425)
BVM 127	Bow Valley Monitoring	Research	824	4	Bow Valley	POINT (612109 5664928)
BVM 128	Bow Valley Monitoring	Research	1052	4	Bow Valley	POINT (611121 5664491)
BVM 129	Bow Valley Monitoring	Research	1021	4	Bow Valley	POINT (610150 5664297)
BVM 130	Bow Valley Monitoring	Research	818	4	Bow Valley	POINT (609841 5664861)
BVM 156	Bow Valley Monitoring	Research	1086	4	Study Area	POINT (616337 5663423)
BVM 158	Bow Valley Monitoring	Research	681	4	Bow Valley	POINT (614633 5663603)
BVM 159	Bow Valley Monitoring	Research	618	4	Bow Valley	POINT (613064 5663177)
BVM 160	Bow Valley Monitoring	Research	879	4	Bow Valley	POINT (612391 5663454)

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
BVM 161	Bow Valley Monitoring	Research	839	4	Bow Valley	POINT (611558 5663628)
BVM 162	Bow Valley Monitoring	Research	958	4	Bow Valley	POINT (610724 5663718)
BVM 189	Bow Valley Monitoring	Research	891	4	Study Area	POINT (615945 5662654)
BVM 189 A	Bow Valley Monitoring	Research	234	1	Study Area	POINT (616842 5662570)
BVM 190	Bow Valley Monitoring	Research	943	4	Study Area	POINT (615306 5662646)
BVM 191	Bow Valley Monitoring	Research	1049	4	Study Area	POINT (614866 5662990)
BVM 192	Bow Valley Monitoring	Research	888	4	Bow Valley	POINT (613533 5662326)
BVM 193	Bow Valley Monitoring	Research	913	4	Bow Valley	POINT (612529 5662983)
BVM 194	Bow Valley Monitoring	Research	979	4	Bow Valley	POINT (611352 5662942)
BVM 195	Bow Valley Monitoring	Research	1003	4	Bow Valley	POINT (610931 5663104)
BVM 220 A	Bow Valley Monitoring	Research	743	4	Bow Valley	POINT (618178 5661662)
BVM 220 B	Bow Valley Monitoring	Research	740	4	Bow Valley	POINT (618251 5661413)
BVM 221 A	Bow Valley Monitoring	Research	811	4	Bow Valley	POINT (617712 5661251)
BVM 222 E	Bow Valley Monitoring	Research	1002	4	Study Area	POINT (616356 5661825)
BVM 222 W	Bow Valley Monitoring	Research	918	4	Study Area	POINT (615861 5662009)
BVM 223	Bow Valley Monitoring	Research	892	4	Study Area	POINT (615667 5661970)
BVM 225	Bow Valley Monitoring	Research	808	4	Bow Valley	POINT (613432 5661510)
BVM 226	Bow Valley Monitoring	Research	857	4	Bow Valley	POINT (612278 5661084)

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
BVM 227	Bow Valley Monitoring	Research	914	4	Bow Valley	POINT (611928 5661874)
BVM 252	Bow Valley Monitoring	Research	355	2	Bow Valley	POINT (619302 5660256)
BVM 252 A	Bow Valley Monitoring	Research	699	3	Bow Valley	POINT (619013 5660167)
BVM 258	Bow Valley Monitoring	Research	696	4	Bow Valley	POINT (613500 5660050)
BVM 258 A	Bow Valley Monitoring	Research	1027	4	Bow Valley	POINT (613111 5660361)
BVM 259 B	Bow Valley Monitoring	Research	931	4	Bow Valley	POINT (612759 5660455)
BVM 259 C	Bow Valley Monitoring	Research	420	2	Bow Valley	POINT (612691 5660291)
BVM 260	Bow Valley Monitoring	Research	525	4	Bow Valley	POINT (611780 5660069)
BVM 284	Bow Valley Monitoring	Research	612	4	Bow Valley	POINT (620013 5659038)
BVM 286	Bow Valley Monitoring	Research	335	2	Bow Valley	POINT (618775 5659989)
BVM 286 A	Bow Valley Monitoring	Research	707	3	Bow Valley	POINT (618848 5659958)
BVM 288	Bow Valley Monitoring	Research	974	4	Bow Valley	POINT (616314 5659465)
BVM 290	Bow Valley Monitoring	Research	799	4	Bow Valley	POINT (614093 5659132)
BVM 292	Bow Valley Monitoring	Research	809	4	Bow Valley	POINT (612091 5659325)
BVM 293	Bow Valley Monitoring	Research	392	3	Bow Valley	POINT (611916 5659006)
BVM 317	Bow Valley Monitoring	Research	786	4	Bow Valley	POINT (620502 5658202)
BVM 318	Bow Valley Monitoring	Research	436	4	Bow Valley	POINT (619301 5658696)
BVM 321	Bow Valley Monitoring	Research	808	4	Bow Valley	POINT (616244 5658303)

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
BVM 322	Bow Valley Monitoring	Research	873	4	Bow Valley	POINT (615145 5658564)
BVM 323	Bow Valley Monitoring	Research	940	4	Bow Valley	POINT (614185 5658552)
BVM 324	Bow Valley Monitoring	Research	841	4	Bow Valley	POINT (613801 5658921)
BVM 325	Bow Valley Monitoring	Research	943	4	Bow Valley	POINT (612632 5658824)
BVM 326	Bow Valley Monitoring	Research	655	4	Bow Valley	POINT (611598 5658821)
BVM 348	Bow Valley Monitoring	Research	702	4	Bow Valley	POINT (622107 5657385)
BVM 350	Bow Valley Monitoring	Research	784	4	Bow Valley	POINT (620220 5657790)
BVM 352	Bow Valley Monitoring	Research	871	4	Bow Valley	POINT (618432 5657398)
BVM 353	Bow Valley Monitoring	Research	864	4	Bow Valley	POINT (617950 5657833)
BVM 354	Bow Valley Monitoring	Research	781	4	Bow Valley	POINT (616284 5657122)
BVM 382	Bow Valley Monitoring	Research	676	4	Bow Valley	POINT (621906 5656916)
BVM 383	Bow Valley Monitoring	Research	927	4	Bow Valley	POINT (620143 5656174)
BVM 384	Bow Valley Monitoring	Research	872	4	Bow Valley	POINT (619424 5656720)
BVM 386 B	Bow Valley Monitoring	Research	569	4	Bow Valley	POINT (616979 5656786)
BVM 387	Bow Valley Monitoring	Research	807	4	Bow Valley	POINT (616709 5656680)
BVM 388	Bow Valley Monitoring	Research	833	4	Bow Valley	POINT (615844 5656895)
BVM 416	Bow Valley Monitoring	Research	798	4	Bow Valley	POINT (620493 5655681)
BVM 418	Bow Valley Monitoring	Research	986	4	Bow Valley	POINT (618707 5655379)

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
BVM 419	Bow Valley Monitoring	Research	867	4	Bow Valley	POINT (617956 5655923)
BVM 448	Bow Valley Monitoring	Research	688	4	Bow Valley	POINT (622043 5654742)
BVM 450	Bow Valley Monitoring	Research	1051	4	Bow Valley	POINT (618890 5654542)
CNC 10	CNC Wildlife Project	Research	397	3	Bow Valley	POINT (611113 5664536)
CNC 12	CNC Wildlife Project	Research	135	2	Bow Valley	POINT (612144 5660911)
CNC 12-A	CNC Wildlife Project	Research	471	2	Bow Valley	POINT (612599 5660711)
CNC 13	CNC Wildlife Project	Research	52	1	Bow Valley	POINT (612714 5661637)
CNC 15	CNC Wildlife Project	Research	410	3	Bow Valley	POINT (612143 5663883)
CNC 16	CNC Wildlife Project	Research	311	3	Bow Valley	POINT (612839 5664375)
CNC 17	CNC Wildlife Project	Research	541	3	Bow Valley	POINT (613039 5660724)
CNC 18	CNC Wildlife Project	Research	226	2	Bow Valley	POINT (613565 5661493)
CNC 2	CNC Wildlife Project	Research	333	3	Bow Valley	POINT (610977 5663093)
CNC 3	CNC Wildlife Project	Research	291	3	Bow Valley	POINT (610582 5663804)
CNC 4	CNC Wildlife Project	Research	393	3	Bow Valley	POINT (609963 5664666)
CNC 5	CNC Wildlife Project	Research	374	3	Bow Valley	POINT (610227 5665851)
CNC 5-A	CNC Wildlife Project	Research	339	2	Bow Valley	POINT (610662 5665855)
CNC 7	CNC Wildlife Project	Research	385	3	Bow Valley	POINT (612307 5661987)
CNC 8	CNC Wildlife Project	Research	320	3	Bow Valley	POINT (611696 5662351)

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
CNC 9	CNC Wildlife Project	Research	121	2	Bow Valley	POINT (611444 5663705)
CNC 9-A	CNC Wildlife Project	Research	249	2	Bow Valley	POINT (611636 5663705)
CNC Powerline		Research	160	2	Bow Valley	POINT (612879 5660507)
Cat 1	Bobcat Project	Research	233	3	Bow Valley	POINT (621123 5655311)
Cat 10	Bobcat Project	Research	214	3	Study Area	POINT (617094 5662405)
Cat 10A	Bobcat Project	Research	214	3	Study Area	POINT (617095 5662406)
Cat 11	Bobcat Project	Research	194	3	Bow Valley	POINT (610287 5665842)
Cat 11A	Bobcat Project	Research	197	3	Bow Valley	POINT (610288 5665843)
Cat 12	Bobcat Project	Research	216	3	Bow Valley	POINT (612107 5659270)
Cat 12A	Bobcat Project	Research	216	3	Bow Valley	POINT (612108 5659271)
Cat 1A	Bobcat Project	Research	233	3	Bow Valley	POINT (621124 5655312)
Cat 20A	Bobcat Project	Research	103	1	Bow Valley	POINT (611115 5664538)
Cat 6	Bobcat Project	Research	207	3	Bow Valley	POINT (620084 5658834)
Cat 6A	Bobcat Project	Research	207	3	Bow Valley	POINT (620085 5658835)
Cat 7	Bobcat Project	Research	227	3	Bow Valley	POINT (618693 5660210)
Cat 7A	Bobcat Project	Research	187	3	Bow Valley	POINT (618694 5660211)
Cat 8	Bobcat Project	Research	229	3	Bow Valley	POINT (613400 5665510)
Cat 8A	Bobcat Project	Research	229	3	Bow Valley	POINT (613401 5665511)

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
Cell R1	BMA 5	Research	158	1	Bow Valley	POINT (609567 5665678)
Cougar Rock Dam East	Cougar Creek Flood Mitigation	Research	155	2	Bow Valley	POINT (617637 5661684)
Cougar Rock Dam West	Cougar Creek Flood Mitigation	Research	125	2	Study Area	POINT (617625 5661722)
Deadmans Culvert	Wildlife Crossing Structures	Research	475	2	Bow Valley	POINT (622158 5655652)
Deadmans Northwest Jumpout	Wildlife Crossing Structures	Research	5146	15	Bow Valley	POINT (622147 5655652)
Deadmans South Jumpout	Wildlife Crossing Structures	Research	5582	17	Bow Valley	POINT (622037 5655523)
DebrisNet East	Cougar Creek Flood Mitigation	Research	796	3	Bow Valley	POINT (617645 5661699)
DebrisNet Trail	Cougar Creek Flood Mitigation	Research	1605	6	Bow Valley	POINT (617625 5661656)
DebrisNet West	Cougar Creek Flood Mitigation	Research	824	3	Study Area	POINT (617617 5661724)
ERV 014	Environmental Review	Research	568	3	Bow Valley	POINT (619854 5658240)
ERV 015	Environmental Review	Research	378	3	Bow Valley	POINT (619962 5658186)
ERV 016	Environmental Review	Research	814	3	Bow Valley	POINT (619934 5658031)
ERV 017	Environmental Review	Research	543	2	Bow Valley	POINT (620219 5657968)
ERV 020	Environmental Review	Research	384	3	Bow Valley	POINT (612127 5661065)
ERV 021	Environmental Review	Research	737	3	Bow Valley	POINT (611979 5661320)
ERV 022	Environmental Review	Research	291	3	Bow Valley	POINT (612221 5661410)
ERV 023	Environmental Review	Research	519	3	Bow Valley	POINT (612473 5661047)
GDU 001	Grassi Lakes Day Use Environmental Review	Research	86	1	Bow Valley	POINT (613109 5660355)

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
GDU 002	Grassi Lakes Day Use Environmental Review	Research	166	1	Bow Valley	POINT (612832 5660446)
GDU 003	Grassi Lakes Day Use Environmental Review	Research	136	1	Bow Valley	POINT (612386 5660007)
HH Culvert	Wildlife Crossing Structures	Research	530	2	Bow Valley	POINT (613426 5664222)
KCTM 49	Kananaskis Country Trail Monitoring	Research	609	3	Bow Valley	POINT (618987 5655101)
KCTM 89	Kananaskis Country Trail Monitoring	Research	311	2	Bow Valley	POINT (613453 5658878)
LM-1	Lady Mac	Research	356	2	Project Area	POINT (615376 5662761)
LM-2	Lady Mac	Research	300	2	Project Area	POINT (615546 5662851)
LM-3	Lady Mac	Research	310	2	Project Area	POINT (615685 5662884)
LM-4	Lady Mac	Research	369	2	Project Area	POINT (616332 5663201)
LM-5	Lady Mac	Research	362	2	Project Area	POINT (616433 5663277)
LM-8	Lady Mac	Research	780	3	Project Area	POINT (617802 5663456)
LM-9	Lady Mac	Research	780	3	Project Area	POINT (617845 5663647)
LMS-1	Lady Mac - Silvertip	Research	772	3	Project Area	POINT (617793 5663491)
LMS-11	Lady Mac - Silvertip	Research	820	3	Project Area	POINT (617791 5664214)
LMS-12	Lady Mac - Silvertip	Research	685	3	Study Area	POINT (617815 5664230)
LMS-2	Lady Mac - Silvertip	Research	767	3	Project Area	POINT (617858 5663582)
LMS-3	Lady Mac - Silvertip	Research	723	3	Project Area	POINT (617798 5663646)
LMS-4	Lady Mac - Silvertip	Research	809	3	Project Area	POINT (617751 5663766)

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
LMS-5	Lady Mac - Silvertip	Research	813	3	Project Area	POINT (617859 5663800)
LMS-6	Lady Mac - Silvertip	Research	692	3	Project Area	POINT (617778 5663862)
LMS-7	Lady Mac - Silvertip	Research	625	3	Project Area	POINT (617812 5663944)
LMS-8	Lady Mac - Silvertip	Research	693	3	Project Area	POINT (617779 5664009)
LMS-9	Lady Mac - Silvertip	Research	718	3	Project Area	POINT (617750 5664013)
LSC 001	Lower Silvertip Wildlife Corridor Monitoring	Research	178	1	Study Area	POINT (615422 5662681)
LSC 002	Lower Silvertip Wildlife Corridor Monitoring	Research	186	1	Study Area	POINT (615464 5662381)
LSC 003	Lower Silvertip Wildlife Corridor Monitoring	Research	158	1	Study Area	POINT (615693 5662389)
LSC 004	Lower Silvertip Wildlife Corridor Monitoring	Research	125	1	Study Area	POINT (615864 5662157)
LSC 005	Lower Silvertip Wildlife Corridor Monitoring	Research	157	1	Study Area	POINT (616242 5661589)
LSC 006	Lower Silvertip Wildlife Corridor Monitoring	Research	154	1	Study Area	POINT (615990 5661705)
LSC 007	Lower Silvertip Wildlife Corridor Monitoring	Research	147	1	Study Area	POINT (616586 5661716)
LSC 008	Lower Silvertip Wildlife Corridor Monitoring	Research	97	1	Study Area	POINT (616725 5661585)
LSC 009	Lower Silvertip Wildlife Corridor Monitoring	Research	168	1	Study Area	POINT (617025 5661564)
REC 1A	Rec Pilot	Research	60	1	Bow Valley	POINT (615123 5664813)
REC 1B	Rec Pilot	Research	123	1	Bow Valley	POINT (615107 5664811)
REC 1C	Rec Pilot	Research	76	1	Bow Valley	POINT (615203 5664843)
REC 1D	Rec Pilot	Research	109	1	Bow Valley	POINT (615235 5664850)

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
REC 1E	Rec Pilot	Research	123	1	Bow Valley	POINT (615059 5664760)
REC 2A	Rec Pilot	Research	99	1	Study Area	POINT (615675 5663302)
REC 2B	Rec Pilot	Research	124	1	Study Area	POINT (615723 5663325)
REC 2C	Rec Pilot	Research	95	1	Study Area	POINT (615628 5663332)
REC 2D	Rec Pilot	Research	118	1	Study Area	POINT (615598 5663679)
REC 2E	Rec Pilot	Research	124	1	Study Area	POINT (615563 5663261)
Rundle Forebay	Wildlife Crossing Structures	Research	5922	17	Bow Valley	POINT (612035 5659407)
Stewart Creek Underpass	Wildlife Crossing Structures	Research	5820	18	Bow Valley	POINT (619398 5656548)
Stewart North Jumpout	Wildlife Crossing Structures	Research	5346	17	Bow Valley	POINT (620823 5655741)
Stewart South Jumpout	Wildlife Crossing Structures	Research	5760	17	Bow Valley	POINT (620871 5655588)
TCH Culvert	Wildlife Crossing Structures	Research	801	3	Bow Valley	POINT (619061 5656790)
TSM 130	TSMV MAMP Remote Camera Program	Research	559	2	Bow Valley	POINT (613499 5659058)
TSM135	TSMV MAMP Remote Camera Program	Surveillance	616	3	Bow Valley	POINT (614809 5658475)
TSM163A	TSMV MAMP Remote Camera Program	Surveillance	744	3	Bow Valley	POINT (615478 5658548)
TSM163B	TSMV MAMP Remote Camera Program	Surveillance	744	3	Bow Valley	POINT (615174 5658177)
TSM164	TSMV MAMP Remote Camera Program	Surveillance	741	3	Bow Valley	POINT (615201 5657687)
TSM169	TSMV MAMP Remote Camera Program	Surveillance	744	3	Bow Valley	POINT (615977 5657160)
TSM171	TSMV MAMP Remote Camera Program	Surveillance	743	3	Bow Valley	POINT (617000 5658041)

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
TSM210	TSMV MAMP Remote Camera Program	Surveillance	705	3	Bow Valley	POINT (617861 5656112)
TSM245A	TSMV MAMP Remote Camera Program	Surveillance	743	3	Bow Valley	POINT (619635 5656198)
TSM245B	TSMV MAMP Remote Camera Program	Surveillance	743	3	Bow Valley	POINT (619830 5655935)
TSM255A	TSMV MAMP Remote Camera Program	Surveillance	744	3	Bow Valley	POINT (619565 5655259)
TSM255B	TSMV MAMP Remote Camera Program	Surveillance	665	3	Bow Valley	POINT (619830 5654923)
TSM286A	TSMV MAMP Remote Camera Program	Surveillance	620	3	Bow Valley	POINT (621047 5654707)
TSM286B	TSMV MAMP Remote Camera Program	Surveillance	629	3	Bow Valley	POINT (621130 5654604)
TSM286C	TSMV MAMP Remote Camera Program	Surveillance	744	3	Bow Valley	POINT (621546 5654745)
TSM287	TSMV MAMP Remote Camera Program	Surveillance	744	3	Bow Valley	POINT (620396 5654615)
Zone 1N	Eastern Bow Valley	Research	891	4	Bow Valley	POINT (619000 5655000)
Zone 1S	Eastern Bow Valley	Research	1179	4	Bow Valley	POINT (619001 5655001)
Zone 2N	Eastern Bow Valley	Research	1230	4	Bow Valley	POINT (619002 5655002)
Zone 2S	Eastern Bow Valley	Research	1180	4	Bow Valley	POINT (619006 5655006)
Zone 3N	Eastern Bow Valley	Research	1099	4	Bow Valley	POINT (619003 5655003)
Zone 3S	Eastern Bow Valley	Research	1208	4	Bow Valley	POINT (619004 5655004)
Zone 4N	Eastern Bow Valley	Research	1234	4	Bow Valley	POINT (619005 5655005)
Zone 4S	Eastern Bow Valley	Research	1130	4	Bow Valley	POINT (619007 5655007)
Zone 5N	Eastern Bow Valley	Research	1168	4	Bow Valley	POINT (619008 5655008)

Location	Project	Purpose	Number of days active	Number of years active	Study Area	Coordinates UTM 11
Zone 5S	Eastern Bow Valley	Research	1189	4	Bow Valley	POINT (619009 5655009)
Zone 6N	Eastern Bow Valley	Research	1214	4	Bow Valley	POINT (619010 5655010)
Zone 6S	Eastern Bow Valley	Research	1174	4	Bow Valley	POINT (619011 5655011)

Appendix C-3: Wildlife Species List

Table C-3.1. Species of Birds Observed in the Study Area Between 1993 and 2002

Common Name	Scientific name
Common Redpoll	*Acanthis flammea*
Sharp-shinned Hawk	*Accipiter striatus*
Spotted Sandpiper	*Actitis macularius*
Red-winged Blackbird	*Agelaius phoeniceus*
Blue-winged Teal	*Anas discors*
Mallard	*Anas platyrhynchos*
American Pipit	*Anthus rubescens*
Great Blue Heron	*Ardea herodias*
Cedar Waxwing	*Bombycilla cedorum*
Ruffed Grouse	*Bonasa wnbellus*
Canada Goose	*Branta canadensis*
Great Horned Owl	*Bubo virginianus*
Common Goldeneye	*Bucephala clangula*
Barrow's Goldeneye	*Bucephala islandica*
Red-tailed Hawk	*Buteo jamaicensis*
Wilson 's Warbler	*Cardellina pusilla*
Pine Siskin	*Carduelis pinus*
Hermit Thrush	*Catharus guttatus*
Swainson's Thrush	*Catharus ustulatus*
Brown Creeper	*Certhia americana*
Evening Grosbeak	*Coccothraustes vespertinus*
Northern Flicker	*Colaptes auratus*
Common Flicker	*Colaptes auratus*
Olive-sided Flycatcher	*Contopus borealis*
Western Wood-Pewee	*Contopus sordidulus*
American Robin	*Corvus brachyrhinchos*
American Crow	*Corvus brachyrhynchos*
Common Raven	*Corvus corax*
Blue Jay	*Cyanocitta cristata*

Common Name	Scientific name
Blue Grouse	*Dendragapus obscurus*
White-winged Crossbill	*Dendroica coronata*
Townsend 's Warbler	*Dendroica townsendl*
Pileated Woodpecker	*Dryocopus pileatus*
Western Flycatcher	*Empidonax difficilis*
Yellow-bellied Flycatcher	*Empidonax flaviventris*
Least Flycatcher	*Empidonax minimus*
Dusky Flycatcher	*Empidonax oberholsen*
Brewer's Blackbird	*Euphagus cyanocephalus*
Spruce Grouse	*Falcipennis canadensis*
Merlin	*Falco colwnbarius*
Prairie Falcon	*Falco mexicanus*
American Kestrel	*Falco sparverius*
MacGillivray 's Warbler	*Geothlypis tolmiei*
Common Yellowthroat	*Geothlypis trichas*
Cassin 's Finch	*Haemorhous cassinii*
Bald Eagle	*Haliaeetus leucocephalus*
Barn Swallow	*Hirundo rustica*
Varied Thrush	*Ixoreus naevius*
Dark-eved Junco	*Junco hyemalis*
Ring-billed Gull	*Larus delawarensis*
Tennessee Warbler	*Leiothlypis peregrina*
Hairy Woodpecker	*Leuconotopicus villosus*
Red Crossblll	*Loxia curvirostra*
Lincoln's Sparrow	*Melospiza lincolnii*
Common Merganser	*Mergus merganser*
Brown-headed Cowbird	*Molothrus ater*
Townsend's Solitaire	*Myadestes townsendi*
Townsend 's Solitaire	*Myadestes townsendz*
Clark 's Nutcracker	*Nucifraga columbiana*
Osprey	*Pandion haliaetus*

Common Name	Scientific name
Black-capped Chickadee	*Parus atricapillus*
Mountain Chickadee	*Parus gambelz*
Boreal Chickadee	*Parus hudsonicus*
House Sparrow	*Passer domesticus*
Savannah Sparrow	*Passerculus sandwichensis*
Fox Sparrow	*Passerella iliaca*
Lazuli Bunting	*Passerina amoena*
Grey Jay	*Perisoreus canadensis*
Black-headed Grosbeak	*Pheucticus melanocephalus*
Black-billed Magpie	*Pica pica*
Downy Woodpecker	*Picoides pubescens*
Three-toed Woodpecker	*Picoides tridactylus*
Spotted Towhee	*Pipilo maculatus*
Western Tanager	*Piranga ludoviciana*
Vesper Sparrow	*Pooecetes gramineus*
Ruby-crowned Kinglet	*Regulus calendula*
Golden-crowned Kinglet	*Regulus satrapa*
Bank Swallow	*Riparia riparia*
Rufous Hummingbird	*Selasphoras rufus*
Yellow-rumped Warbler	*Setophaga coronata*
Yellow Warbler	*Setophaga petechia*
American Redstart	*Setophaga ruticilla*
Townsend's Warbler	*Setophaga townsendi*
Mountain Bluebird	*Sialia currucoides*
Red-breasted Nuthatch	*Sitta canadensis*
Red-caped Sapsucker	*Sphyrapicus nuchalis*
American Goldfinch	*Spinus tristis*
Brewer's Sparrow	*Spizella breweri*
Clay-colored Sparrow	*Spizella pallida*
Chipping Sparrow	*Spizella passerina*
Calliope Hummingbird	*Stellula calliope*

Common Name	Scientific name
Eastern Kingbird	*Stemus vulgaris*
Great Gray Owl	*Strix nebulosa*
Western Meadowlark	*Sturnella neglecta*
European Starling	*Sturnus vulgaris*
Tree Swallow	*Tachycineta bicolor*
Violet-green Swallow	*Tachycineta thalassina*
House Wren	*Troglodytes aedon*
American Robin	*Turdus migratorius*
Western Kingbird	*Tyrannus verticalis*
Orange-crowned Warbler	*Vennivora celata*
Cassin 's Vireo	*Vireo cassinii*
Warbling Vireo	*Vireo gilvus*
Solitary Vireo	*Vireo solitarius*
Mourning Dove	*Zenaida macroura*
White-crowned Sparrow	*Zonotrichia leucophrys*

Table C-3.2. Mammal Species Potentially Occurring in the Study Area.

Common Name	Scientific name
Masked shrew	*Sorex cenereus*
Dusky shrew	*Sorex monticolus*
Water shrew	*Sorex palustris*
Pygmy shrew	*Mircrosorex hoyz*
Least chipmunk	*Eutamias minimus*
Yellow pine chipmunk	*Eutamias amoenus*
Columbian ground squirrel	*Spermophilus columbianus*
Red squirrel	*Tamiasciurus hudsonicus*
Northern flying squirrel	*Glaucomys sabrinus*
Deer Mouse	*Peromyscus maniculatus*
Meadow vole	*Microtus pennsylvannicus*
Red-backed vole	*Myodes rutilus*
Long-tailed vole	*Microtus longicaudis*

Common Name	Scientific name
House mouse	*Mus musculus*
Western jumping mouse	*Zapus princeps*
Bushy-tailed wood rat	*Neotoma cinerea*
Little brown bat	*Myotis lucifugus*
Long-legged bat	*Myotis volans*
Big brown bat	*Eptesicus fuscus*
Hoary bat	*Lasiurus cinereus*
Snowshoe hare	*Lepus americanus*
Domestic rabbit	*Oryctolagus cuniculus*
American porcupine	*Erethizon dorsatum*
Coyote	*Canis latrans*
Red fox	*Vulpes vulpes*
Wolf	*Canis lupus*
Cougar	*Felis concolor*
Lynx	*Felis lynx*
Bobcat	*Felis rufus*
American black bear	*Ursus americanus*
Grizzly bear	*Ursus arctos*
Wolverine	*Gulo gulo*
Fisher	*Martes pennanti*
American marten	*Martes americana*
Long-tailed weasel	*Mustela frenata*
Short-tailed weasel	*Mustela erminea*
Least weasel	*Mustela nivalis*
Striped skunk	*Memphitis memphitis*
Elk	*Cervus canadensis*
White-tailed deer	*Odocoileus virginianus*
Mule deer	*Odocoileus hemionus*
Moose	*Alces alces*
Bighorn sheep	*Ovis canadensis*
Mountain goat	*Oreamnos americanus*