Wildlife Assessment and Recommendations for the Proposed Barbour Rock Recreational Trails

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Prepared for:

Columbia Valley Cycling Society
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1 INTRODUCTION

The Columbia Valley Cycling Society (CVCS) has submitted an application to the Ministry of Forests, Lands and Natural Resource Operations (FLNRO), and Recreation Sites and Trails BC (RSTBC), for a trail system in the Barbour Rock area, which would include new cycling, hiking, and existing motorized trails. The area is located north of Toby Creek Road, between Lillian Lake to ~1 km west of Barbour Lake (Figure 1).

An overview assessment of the current vegetation communities and existing disturbances in the proposed trail area was conducted in April 2016 (VAST 2016), which also included a desktop search for wildlife species and possible wildlife concerns.

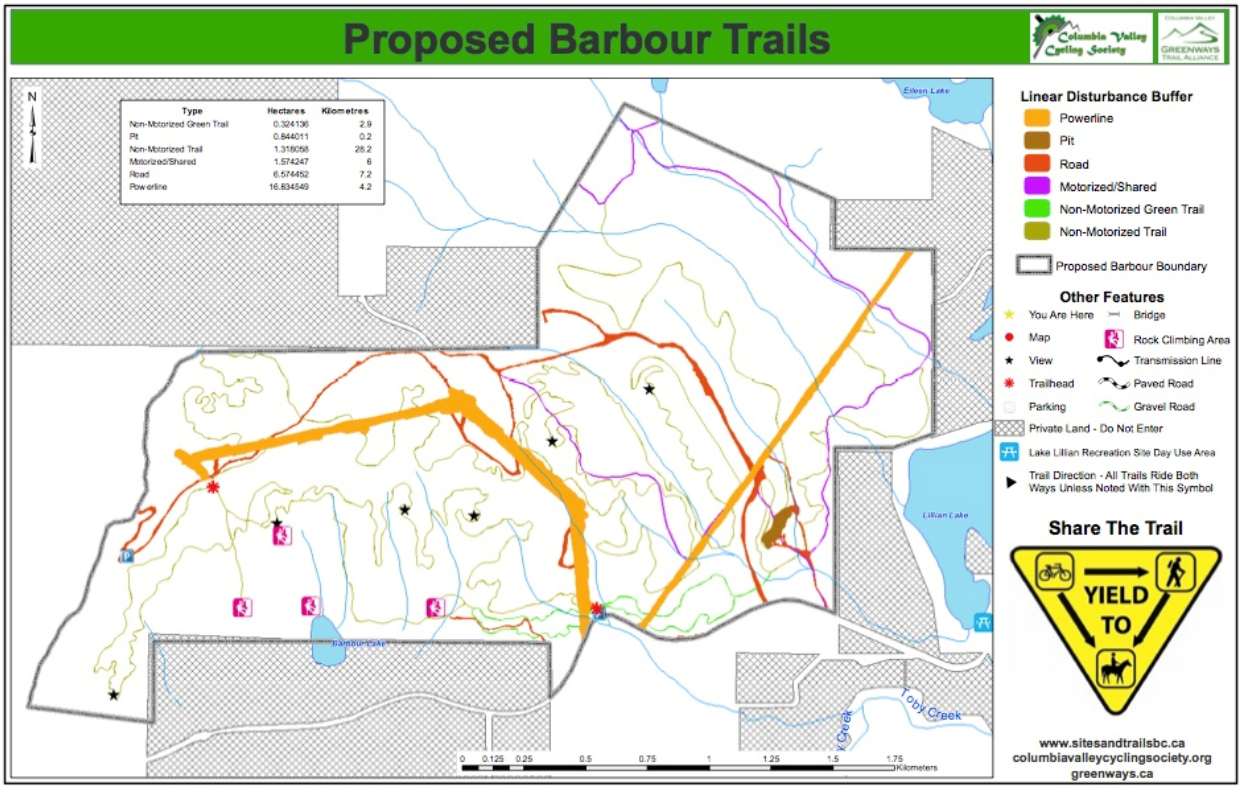

Figure 1. Proposed Barbour Rock Trail System

1.1 Scope of Work

Based on information resulting from the referral process, the CVCS has requested an additional assessment, focused specifically on potential impacts of the proposed trail development on wildlife species-at-risk (SAR), and on concerns raised in referral responses. This report presents the results of this assessment.

2 METHODS

Using mapping of the proposed trail area, provided by the CVCS, a desktop search for possible wildlife SAR was completed, using data from the BC Conservation Data Center's (CDC) to provide a list of at risk species that may occur in the proposed project area. In addition, a field visit to portions of the proposed trail development site was carried out on Dec. 14, 2016. Due to the time of year, the field visit was preliminary in nature, and did not encompass the full area that could be affected by the proposed trail development, but was meant to provide an overview of the types of habitats that occur in the Barbour Rock area.

3 LISTED WILDLIFE SPECIES

3.1 American Badger

A search of the CDC's Species and Ecosystems at Risk database (including masked species) resulted in one listed species (the American Badger (*Taxidea taxus*)) being identified for the proposed trail development area (Figure 2). The database search produced no other federally or provincially listed SAR; however, responses received during the project referral process expressed concerns about a number of other SAR that may be occurring in the Barbour Rock area, based on incidental observations. These species are discussed in Section 3.2 and 3.3 in an effort to address the concerns raised by the stakeholders.

Figure 2. **Search results from the CDC Species at Risk database** (searched Dec. 10, 2016; available at http://www2.gov.bc.ca/gov/content/governments/about-the-bc-government/databc/geographic-data-and-services/imapbc)

The American Badger, which is a provincially red-listed species, as well as ranked as Endangered in Schedule 1 of the federal Species at Risk Act (SARA) has the potential to occur throughout the Barbour Rock area. Badgers are generally associated with open grassland ecosystems, but can be found in almost any location where their two main ecological characteristics occur (*jeffersonii* Badger Recovery Team 2008; Weir and Almuedo 2010). The potential for encountering badger burrows and/or dens in the proposed trail development area, and associated mitigation recommendations have already been presented in VAST (2016), but are summarized below for completeness:

- The site visit conducted by VAST in April 2016 did not identify any evidence of ground squirrels or badgers in the open forest area, which is the most favorable habitat at the project site;
- While there are records of badger activity in the Toby Bench area, and patches of high and very high value badger habitat, these habitat patches are broadly associated with human-modified pastures and agricultural areas where the proposed trail network will not occur;
- A lack of preferred habitat and/or badger/burrow sightings does not entirely preclude the presence of badgers in the Barbour Rock area; consequently, trail crews should be trained in identification of burrows, dens and other signs of badger activities by a Qualified Environmental Professional (QEP) before the start of trail construction. If badger signs are observed during construction, crews should seek guidance on applicable mitigation measures from a QEP. Such measures may include providing a buffer around an active burrow (a minimum buffer radius of 15 m around each burrow entrance is recommended), re-routing the trail to completely avoid areas of badger activity, or, in the case of an active maternal den, ceasing trail construction until the badgers have moved on.

The above-outlined mitigation measures for badger habitat closely align with those put forward by the Habitat Section of FLNRO, whose referral response (Appendix 1) stipulates the following:

"*Final trail locations should be designed to avoid all badger dens and burrows at a distance which will not result in disturbance to the badgers. If there are newly discovered maternal dens encountered during construction, activities must stop and the trail is re-designed to ensure it is of sufficient distance to have no impacts to the badgers. If any new maternal dens are established on completed trails, the trail must be closed immediately and be re-located to sufficiently avoid the den*."

Provided that these procedures are implemented in full, any potential impacts on badgers and their habitat will be minimized.

3.2 Lewis' Woodpecker (LEWO)

A referral response received from the Lake Windemere and District Road & Gun Club (LWDRG) via their website (http://lwdrodgun.com/barbour-rock-recreation-trail-important-information/) expresses the following concerns about the Lewis' Woodpecker (*Melanerpes lewis*), a species listed as Threatened in Schedule 1 under the Species at Risk Act:

"*Two other wildlife species listed under SARA that occupy the Barbour Rock proposed development site are the Lewis Woodpecker and Common Night Hawk (Chordeiles minor). The Lewis Woodpecker now occurs only in one Canadian Province – British Columbia restricted primarily to the southern part of the province. The East Kootenay population is small with concentrations in the Cranbrook/Kimberley and Invermere/Canal Flats areas. The Rod & Gun Club has been active with installing nesting boxes and assisting Environment Canada with yearly surveys. The Barbour Rock area is known to host Lewis Woodpeckers and nesting cavities in trees have been identified…. Because of the rareness of the Lewis Woodpecker alone the Barbour Rock area should see little to no human activity from May – late July during the critical nesting/rearing period*."

In response to these concerns, a detailed search of the Conservation Data Centers mapping and other available data on LEWO was conducted, including searches for critical habitat and known nest locations. An overlay of the proposed trail routing with known LEWO nesting locations (as of 2014) did not show any nests within serval kilometers of the project area. The nearest known nest, based on 2014 data, is located approximately 36 km to the southeast. However, given that the LWDRG is conducting ongoing nest surveys, newer data may be available that show LEWO nests in the Barbour Rock area.

Recommendation

It is recommended that a request be sent to the Canadian Wildlife Service (CWS) for any data more recent than 2014, which identifies nesting locations within the Barbour Rock trail polygon, to ensure that the proposed trail routing either completely avoid these areas, or provides a large enough buffer to ensure this species' nesting, rearing and foraging activities are not affected. If the CWS is not able to release this information, an amended request will be made to check the proposed trail routing, as provided by CVCS, against known nest locations and inform the CVCS of any potential conflicts. This information will allow the trail to be rerouted to avoid impacts.

An additional overlay of the proposed trail network with LEWO critical habitat (available at https://arcmaps.gov.bc.ca/ess/sv/imapbc/) shows that the closest identified critical habitat is just over 3 km to the north (Figure 3); however, no known nests have been identified within this mapped area as of 2014.

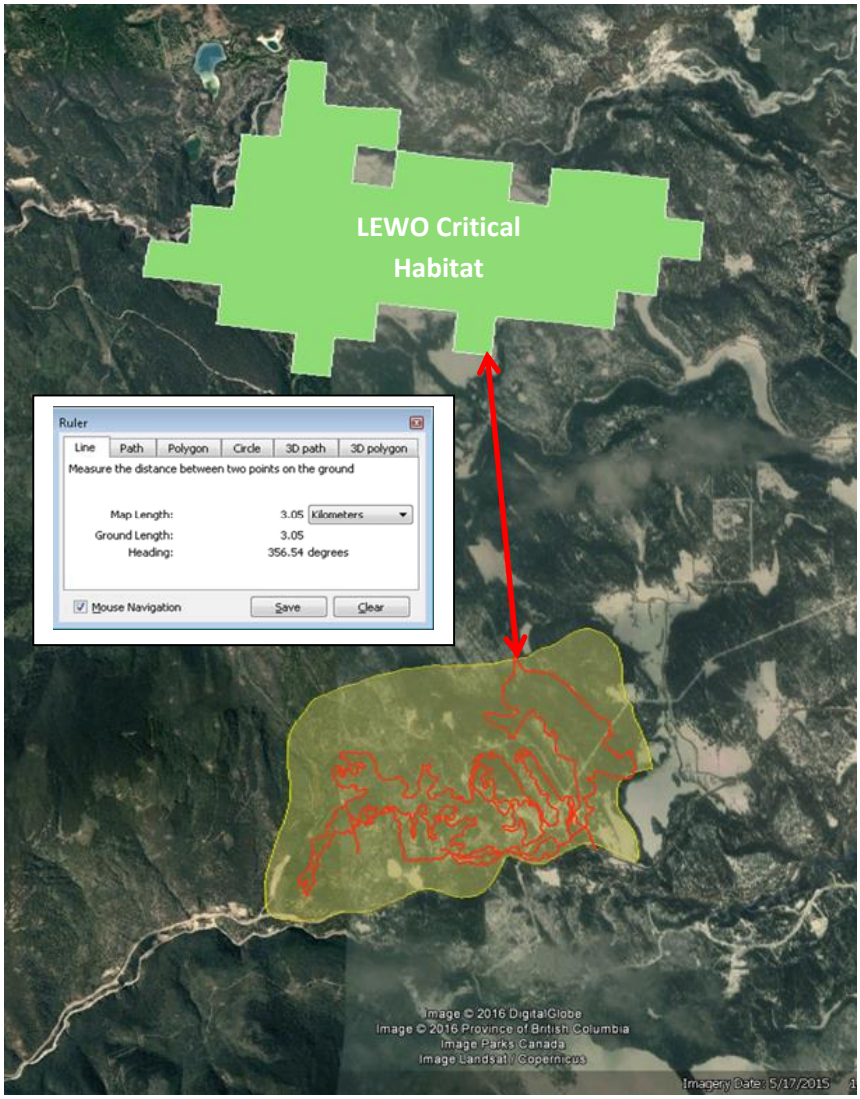

Figure 3. **Distance from the most northern extent of the proposed Barbour Rock trail network to LEWO critical habitat** (available at https://arcmaps.gov.bc.ca/ess/sv/imapbc/)

As stated in the LEWO species profile provided by the federal Species-at-Risk Act Registry (available at http://www.registrelep-sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=589), the most common breeding habitats for this species are open, mature ponderosa pine forests, riparian black cottonwood stands adjacent to open areas, and recently logged or burned coniferous forests with standing snags. Further, essential habitat features are large, standing dead or dying trees (snags) for nesting cavities, and relatively open areas for feeding.

Lewis's Woodpecker typically uses existing nest holes or natural cavities (Bock 1970, Saab et al. 2004; Zhu 2006), but will excavate its own cavities in highly decayed wood (Vierling et al. 2013). LEWO will frequently re-use nest trees and often the same cavity (Linder and Anderson 1998, Cooper and Gillies 2000, Ferguson and Iredale 2007). In foraging areas, an understory layer of shrubs, grass or herbaceous cover that produces berries or provides habitat for insect populations is an important breeding habitat component (Sousa 1983; Cooper and Beauchesne 2000). They will abandon breeding habitats if insect prey abundance is limited (Bock 1970). In B.C., Lewis's Woodpeckers nest in live and dead coniferous and deciduous trees. Of 224 nests found in 2006, 70% were in dead trees, 28% were in live trees, and 2% were in utility poles (Luszcz and Sawicz 2007). Bird detections (usually birds on foraging trips) were generally within ~400 m of their nest location (Environment Canada, 2016a).

Based on information collected during the December 2016 site visit, as well as the site description provided by VAST (2016), the proposed trail system occurs where interior Douglas fir (Fd) dominates, with some lodge pole pine (Pl) occurring with Fd at higher elevations (northern section of the proposed trails) and in areas subject to cold air drainage. The areas observed in the field were predominantly younger, relatively dense second growth forest with few open areas, consisting either of a well-developed shrub layer or patches of grassland. While some Fd snags were observed, the habitat did not contain many of the features preferred by LEWO, such as dry open with fire-maintained features, low stem densities, veteran Ponderosa Pines (Pp) or Fds, abundant wildlife trees, and rich herb and shrub layers, or recently burned (<30 years) Pp and Fd dominated forests with standing snags resulting from stand-destroying fires (Environment Canada, 2016a).

Recommendations

The current plan for trail construction indicates that existing wildlife trees (LEWO or otherwise) be avoided by 1½-2 tree lengths, which should be sufficient to protect existing trees. In addition, a danger tree assessment should be carried out prior to trail development to allow for the removal of trees posing a risk, hopefully before they develop features that make them valuable as a wildlife tree.

In summary, analysis of the currently available data on LEWO nests and critical habitat did not yield any occurrences of either in the proposed project area; however, consideration must be given to the potential for known nests, as indicated by LWDRG, and using all available data on such nest locations (if this information is provided by CWS), trail routing should endeavor to avoid or buffer these trees to ensure LEWO nesting activities are not impacted by trail development.

3.3 Common Nighthawk (CONI)

In its referral response, the LWDRG also expressed concerns about potential impacts on the Common Nighthawk (*Chordeiles minor*).

"The Common Nighthawk is an annual user of the Barbour Rock area for nesting and rearing (confirmed by residents in the area). The Nighthawk is a ground nester laying its camouflage eggs on the bare ground. Both these birds enter the Barbour Rock area starting in May to nest and rearing of young carries through to late July. Both birds are very wary of people in and around their nest sites to a point they will leave the nest immediately or if on return, stay away from the nest until people distance themselves several meters from the area. Our members have confirmed this practise by the birds during yearly surveys. Increased activity in the Barbour Rock area will not be a positive step towards recovery of these species. With the addition of the Common Nighthawk the stakes are even higher for these SARA species to be left alone during such critical times in order to assure their survival and not go the way of the Passenger Pigeon."

The Common Nighthawk, a species listed as Threatened under Schedule 1 of SARA, nests in a wide range of open, vegetation-free habitats, including dunes, beaches, recently harvested forests, burnt-over areas, logged areas, rocky outcrops, rocky barrens, grasslands, pastures, peat bogs, marshes, lakeshores, and river banks. CONI arrives in Canada from early May to mid-June, where females lay an average of two eggs directly on the ground, sometimes in a depression or scrape, up to mid-August. There is evidence that some individuals return to the same general area to nest each year (Campbell et al. 2006, Brigham et al. 2011). A wide range of substrates are used (Campbell et al. 2006), and primary microsite characteristics include more open ground cover with low or no vegetation, adequate camouflage from predators, and nearby shade (Ng 2009, Lohnes 2010, Brigham et al. 2011, Allen and Peters 2012). Depending on the region, incubation lasts from 16 to 20 days, and nestlings remain in the nest from mid-June to late August until they are fully developed by the age of 45 to 52 days (SARA registry, available at http://www.registrelep-sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=986).

As stated in the species' Recovery Strategy (Environment Canada, 2016b), the currently available information is not adequate to identify the habitat necessary for the survival or recovery of the Common Nighthawk in Canada, requiring a number of studies to be completed before the identification of critical habitat can occur.

Recommendations

Without having clearly defined critical habitat area to overlay against the proposed Barbour trail development, gaining information on known nest locations is particularly critical. The proposed trail alignment does traverse areas suitable for CONI nesting; specifically the rocky outcrops in the southwest portion of the area, close to the current rock climbing area (cf. discussion in VAST 2016, Section 6.0). Given the lack of available data on CONI nesting locations in the Barbour Rock area, it is recommended that this information be requested from the LWDRG, or that nest surveys for CONI be conducted in the spring of 2017 to determine potential locations of CONI nests in suitable habitat. Either of these approaches will ensure that the trail routing can be adjusted to completely avoid any sensitive habitat locations used by CONI.

3.4 Westslope Cutthroat Trout (WSCT)

The BC population of the Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*) is listed as a species of Special Concerns in Schedule 1 of SARA. WSCT inhabit rivers, lakes, or small mountain streams that are typically low in productivity and highly oxygenated. Cold, clean water and adequate cover, such as undercut banks, pool-riffle habitat, and riparian vegetation are also important. Spawning habitats require clean unsilted gravel, with pools usually formed by large woody debris, boulders, or bedrock. Rearing and overwintering habitats vary widely depending on life history form. Fry generally make use of lateral habitats with adequate cover, while larger juveniles inhabit pools. Groundwater influx and the

absence of anchor ice are both important to overwintering habitats. Resident forms may remain in natal streams for their entire lifespan, whereas fluvial and adfluvial forms migrate to larger systems with greater potential for growth (SARA Registry, available at http://www.registrelep-sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=860).

None of the waterbodies or streams in the vicinity of the Barbour Rock development currently contains WSCT; however, a concern raised in the LDWRG states the following:

"*Streams flowing into Lake Lillian are prime candidates for reintroduction to take place for this species. The Barbour Rock proposed development shows 2 crossing of Neave Creek using very low level and simply constructed crossings. Raised bridge structures would be needed to assure good fish passage and minimal interaction with fish especially during spawning times*."

The two crossings referred to in the comment above are located on Neave Cree, and are identified as R2 and R3 in VAST (2016). The R2 crossing is highly unlikely to pose a risk to fish passage in its current state, and if the same foundations are used to upgrade the structure, no additional risk to fish passage will occur. The current condition of the stream at R3 (discussed in VAST 2016) is such that fish passage may be challenging at present, and if a re-introduction of WSCT is approved for Lake Lillian and Neave Creek, this crossing will need to be evaluated for passage, regardless of the type of structure. The trail proposal indicates that the new trail will cross upstream of an old road, where higher ground with narrower, well-defined creek channels occur. A boardwalk will be required to cross the riparian area, with bridges crossing the narrow channels upstream of the road disturbance.

Recommendations

There are two options to address the concern raised by the LWDRG:

a) Confirm with the Ministry of Forests, Lands and Natural Resource Operations that a reintroduction of WSCT is planned for Lake Lillian over the next 5-10 years, and if so, consider fish passage during the design of the R3 crossing to ensure that neither the footings nor the actual crossing present a risk to passage down the line. It is recommended that the Fish-stream Crossing Handbook (BC Ministry of Forests, 2012) be consulted to identify the most suitable crossing type for this location; or
b) Reduce the number of proposed trails for this section of Barbour Rocks, such that the portion involving Neave Creek crossings is eliminated. This option would align with the referral response of FLNRO (Appendix 1), which recommends that the number of trails proposed for the Barbour Rock area is reduced, and which shows the section of trail crossing Neave Creek as one to be removed from the proposal.

4 UNGULATE WINTER RANGE

An additional consideration for the proposed trail development in the Barbour Rock area is use by wildlife in the winter, as stated in the FLNRO referral response:

"*The Barbour Rock area provides connectivity values between summer and winter ranges for wildlife and general movement for resident species. When accommodating for these values we assume private land will not provide connectivity given the proliferation of wildlife exclusion fencing in the East Kootenays and limited jurisdiction over those lands. Connectivity can be impacted by high levels of human use which can displace movement, cause avoidance and increase energetic costs. These impacts can be mitigated by reducing the density of trails and their associated use and/or the timing of use. This area is classified as ungulate winter range and winter recreation use can impact those species, especially in severe winters. When reviewing the proposed Kloosifier and Johnson trails, impacts to those winter ranges was thought to be negligible, however, it was anticipated that use would only occur during non-winter months. With the emergence of 'fat tires' and the desire to establish Nordic trails, the suitability of those winter range habitats will be significantly decreased. Winter recreation use on these trails needs to be assessed in its own context*."

An Ungulate Winter Range (UWR) is defined as an area that contains habitat that is necessary to meet the winter habitat requirements of an ungulate species. The Barbour Rock area falls within Ungulate Winter Range U-4-008, which provides habitat to White-tailed and Mule deer, moose, elk, bighorn sheep and mountain goat (Figure 4 and 5).

MOE Region	UWR.ID	Species	Name TFL, TSA, District, etc.	Forest District	SDM /DDM Decision date (d/m/y)	Date of Publication in BC Gazette (d/m/y)	Date of posting on Website (d/m/y)	Date Order takes Effect (d/m/y)	Total Hectares
Kootenay	U-4-008	White-tailed Deer, Mule Deer, Moose, Elk, Bighorn Sheep, Mountain Goat	Invermere TSA	Rocky Mountain	10/02/2005	17/02/2005	17/02/2005	17/02/2005	217,379

Figure 4. **Ungulate Species occurring in U-4-008** (available at http://www.env.gov.bc.ca/wld/frpa/uwr/approved_uwr.html)

Recommendation

Depending on the wildlife management objectives of U-4-008, and the potential for winter use of the proposed trails, the potential exists for disrupting the winter habitat of one or more ungulate species. In the absence of more detailed information on wildlife use at specific locations in the Barbour Rock area, and/or usage statistics of similar trails in the area (e.g. Johnson/Kloosifier), it is recommended that a discussion with FLNRO Habitat Management is initiated to determine how winter use of the trails may be assessed in the context of potential impacts on important ungulate habitat, and to refine which sites within the Barbour Rock area are of particular concern. There may be opportunities to modify the current trail proposal, or implement the reduced trail density, as suggested in the FLNRO referral response.

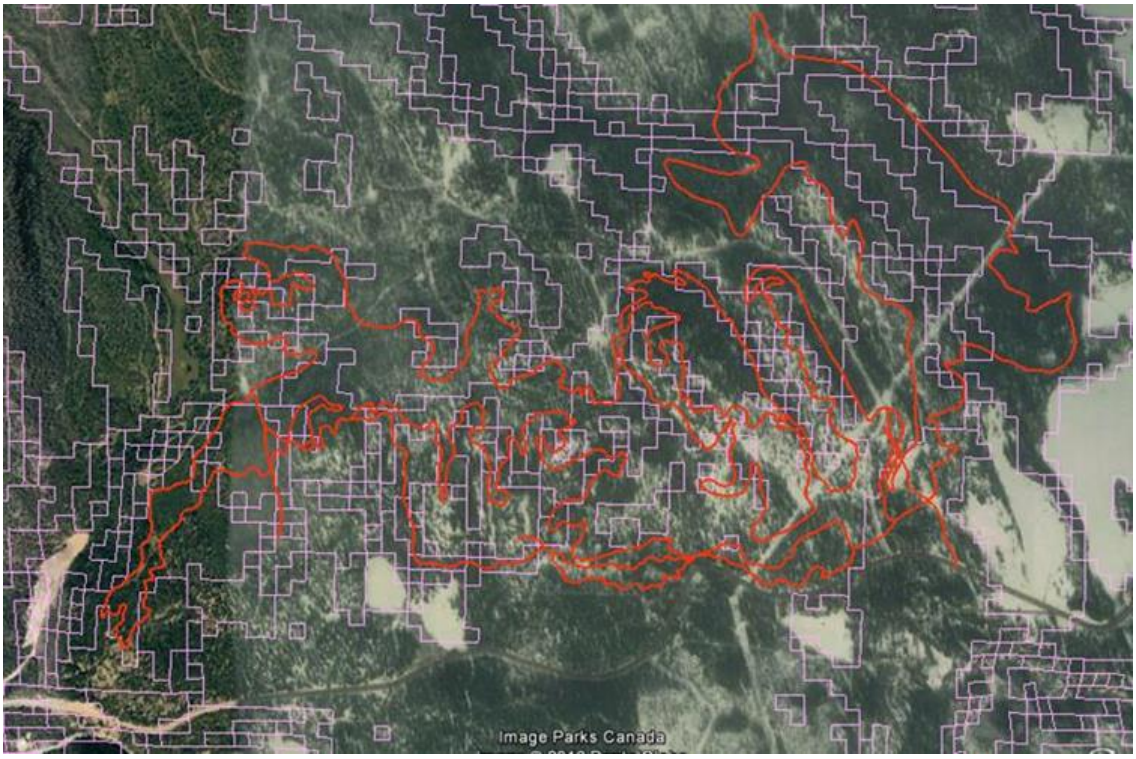

Figure 5. **Ungulate Winter Range U-4-008 (pink lines) relative to the proposed Barbour Rock Trail System (red lines)**

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Appendix 1 – FLNRO Referral Response

To: Aina Cernenoks, Recreation Officer

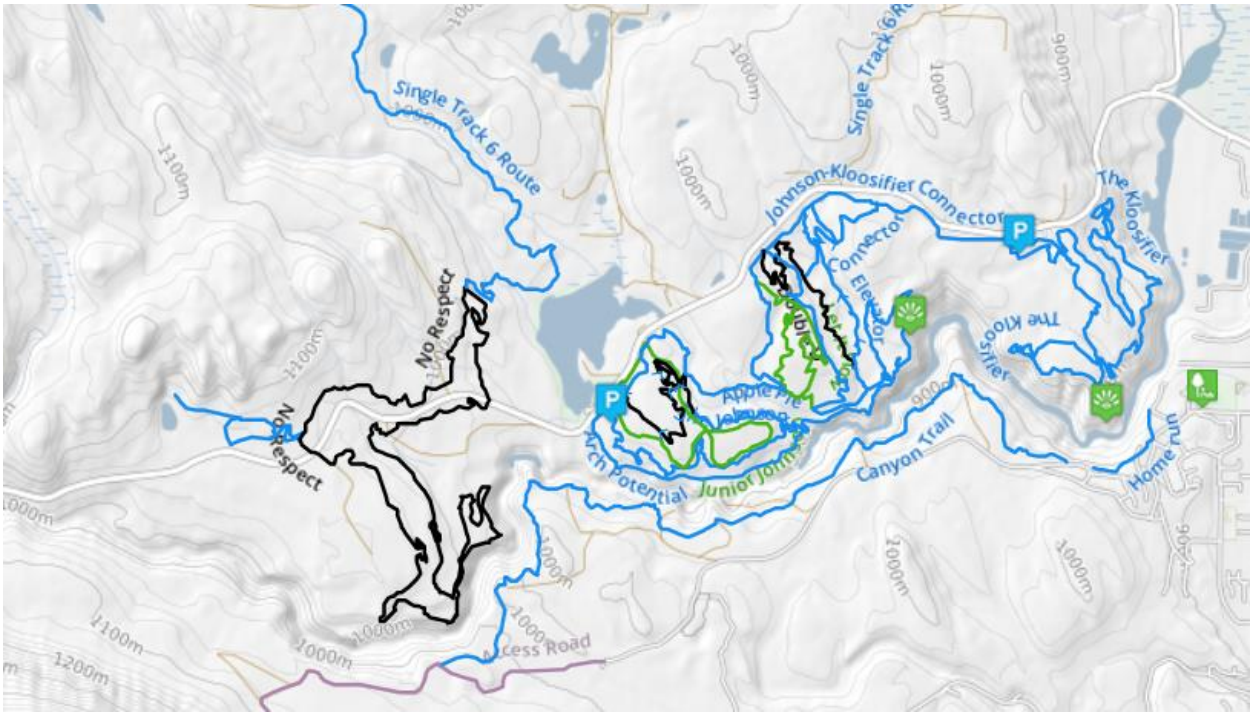
From: Peter Holmes, Habitat Biologist

Re: Proposed Barbour Rock Recreation Site – Referral #86747128 - 003

Please accept the following recommendations and comments regarding the proposed Barbour Rock Recreation Site. It would be preferable if the CVGTA and CVCS conducted an overall trail plan for the upper Columbia Valley and participate in the upcoming broader access management plan being led by Radium Hot Springs and the RDEK. This would allow a better assessment of the cumulative impacts from all forms of recreation. For instance, impacts to wildlife and their habitats would be significantly greater if similar densities of trails are proposed on the remainder of the Toby Benches and Lake Enid area.

The number of illegally constructed trails in the valley is extensive and several are located in sensitive habitats. A large number of these trails require rehabilitation to restore the habitat values. As stated in the proposal, the "benefit to the environment from recreation trails lies mainly by sanctioning the trails thereby removing unauthorized trails." It further mentions "sanctioned and authorized trails are well planned to direct trail users away from sensitive area thereby protecting these fragile areas."

A simple internet search reveals mapping for most of these illegal trails, even on the CVCS website, and many of them appear when using Google Earth™. The figure below from the CVCS website includes two examples of unsanctioned trails (No Respect and Canyon Trail) that are impacting the local mountain goat population. The CVCS has been informed on numerous occasions to avoid these areas as the herd using the mineral lick previously exceeded 60 goats but has been reduced to less than 15 goats, in part due to recreational impacts.



Support for trails in the Barbour Rock area from the Habitat Management Section is dependent on the deactivation of a number of unauthorized trails in the valley. A Deactivation Plan should be developed by RSTBC and all resources, including those from the Southeast Fire Center (Initial Attack Crews), should be re-directed to trail deactivation. Once the Deactivation Plan with timelines has been developed and initiated, the support for the establishment of some trails within the Barbour Rock area will be provided. The trails or portions of trails that require deactivation include:

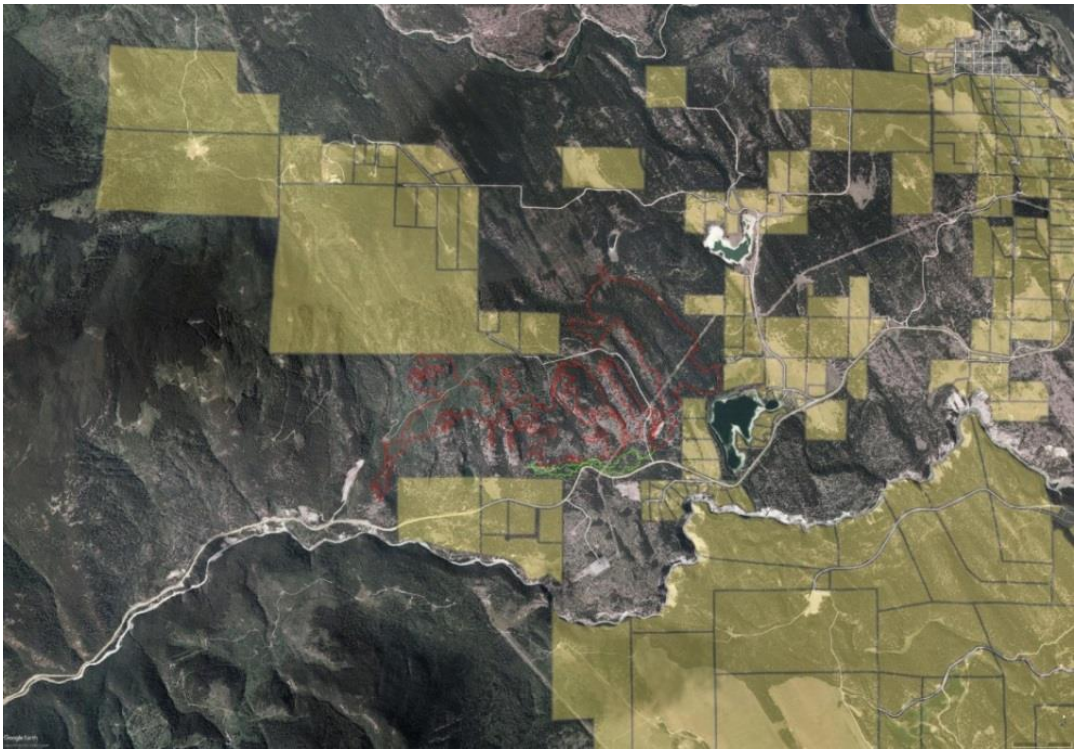
- Canyon Trail
- No Respect
- Badlands Trails
- Columbia Lake East Trails (not including the Spirit Trail)
- Power Wagon Trail (portions)
- Deja View (portions)
- Who's Your Daddy
- Willbilly Wetland

The intent to establish a Recreation Site should include management for all forms of recreation. The proposal includes the establishment of biking and hiking trails but does not address motorized or equestrian use. Although ORV use is limited at this time it can be anticipated that it will increase and result in significant impacts to wildlife and habitat. The identification of ORV trails should be included in the proposal that allows opportunities for those users but ensures their impacts are minimized.

The proposed hiking trail near Barbour Lake does not go to the lake but an existing road and trail to the lake are not identified. The new trail is proposed to cut along the south aspect slope capable of supporting rare grassland communities, however once users are in line of sight to the lake will likely establish their own trails to go to the lake. It would be recommended the existing road to the lake be deactivated for vehicle use and be established as the hiking trail which would minimize disturbance to the adjacent land owner and impacts to the grassland communities.

Other tenures and uses occur within the Barbour Rock area that requires clarification in the plan. Hunting and trapping presently occur within the area and the future of these activities needs to be identified in the plan to ensure their interests are addressed.

The Barbour Rock area provides connectivity values between summer and winter ranges for wildlife and general movement for resident species. The map below shows the proposed trails in context of the private land (yellow). When accommodating for these values we assume private land will not provide connectivity given the proliferation of wildlife exclusion fencing in the East Kootenays and limited jurisdiction over those lands. Connectivity can be impacted by high levels of human use which can displace movement, cause avoidance and increase energetic costs. These impacts can be mitigated by reducing the density of trails and their associated use and/or the timing of use.



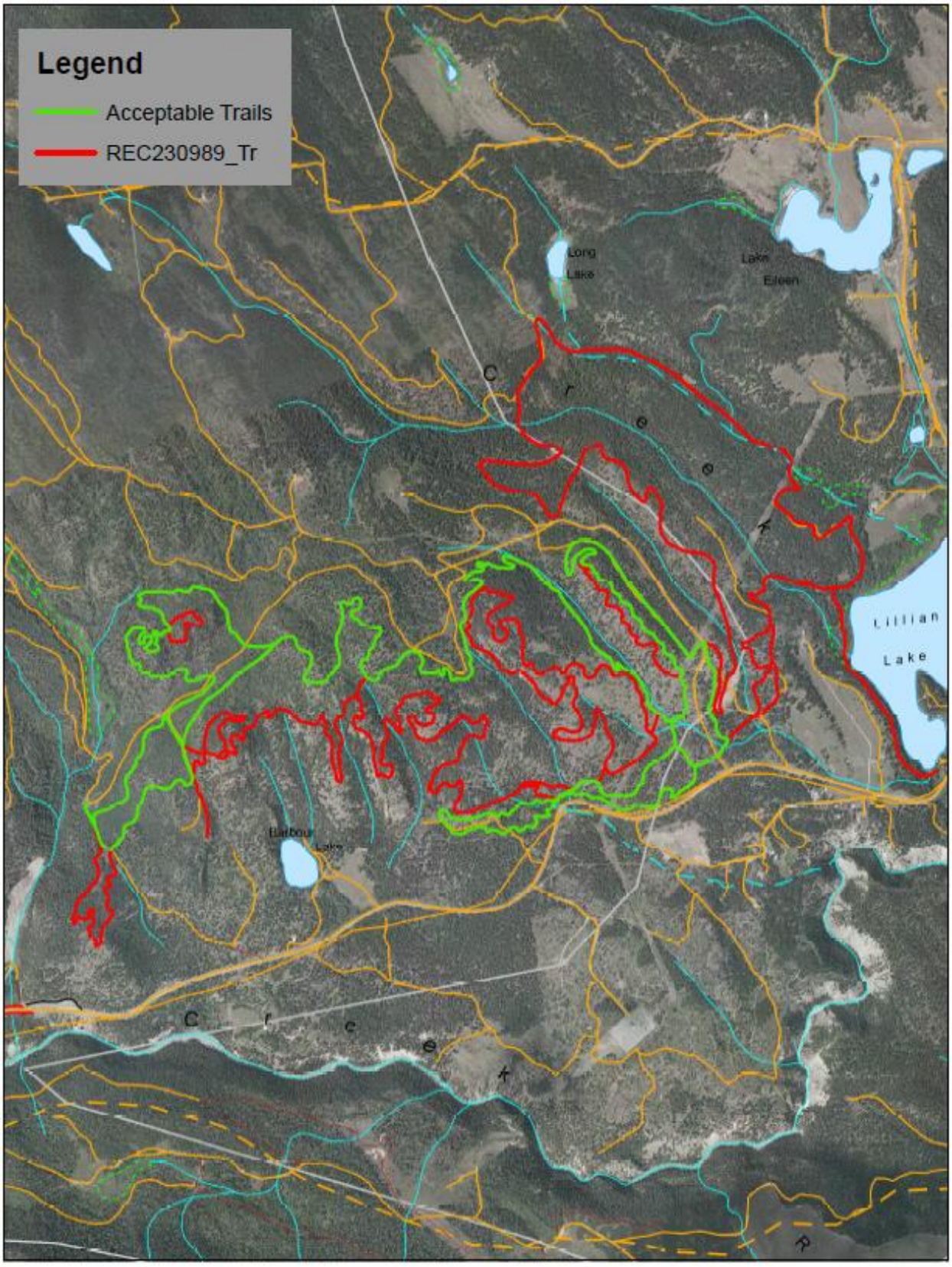
This area is classified as ungulate winter range and winter recreation use can impact those species, especially in severe winters. When reviewing the proposed Kloosifier and Johnson trails, impacts to those winter ranges was thought to be negligible, however, it was anticipated that use would only occur during non-winter months. With the emergence of 'fat tires' and the desire to establish Nordic trails, the suitability of those winter range habitats will be significantly decreased. Winter recreation use on these trails needs to be assessed in its own context.

The VAST Report states, "in the unlikely event an active maternal den is encountered, all trail work in the area should cease immediately until the badgers have moved on." Final trail locations should be designed to avoid all badger dens and burrows at a distance which will not result in disturbance to the badgers. If there are newly discovered maternal dens encountered during construction, activities must stop and the trail be re-designed to ensure it is of sufficient distance to have no impacts to the badgers. If any new maternal dens are established on completed trails, the trail must be closed immediately and be re-located to sufficiently avoid the den.

The majority of plant species at risk identified by Vast Resources are associated with either dry or wet ecosystems. The most effective mitigation option is to avoid trail locations within these habitat types. Many of the drier grasslands within the Barbour Rock area are experiencing forest ingrowth and grass communities, such as bluebunch wheatgrasses/junegrass are being shaded out and replaced by pinegrass. The Ecosystem Restoration Program is attempting to reverse these trends and re-establish those important grassland communities through thinning and prescribed fire. These communities are found on south and south-east aspect slopes and trail construction should be avoided within these sites.

One significant impact to wildlife habitat from recreational trails is the loss of wildlife trees. In BC, over 90 different species of wildlife depend on wildlife trees for part of their life requisite, including Lewis' Woodpecker. These woodpeckers are primary cavity nesters that excavate holes that are subsequently used by other species without the ability to excavate cavities for their nests. The plan suggests avoiding existing wildlife trees by 1½ tree lengths which should protect existing trees; however forest structure is dynamic through time and the creation of wildlife trees will occur throughout the forest. Conducting danger tree assessments will minimize some of the future impacts but this will only retain a small percentage of future wildlife trees near the trails. A recent assessment of the Johnson Trail revealed this danger tree (right) leaning over the junction of three trails and a directional sign. It was one of very few wildlife trees remaining in this area and one of the most valuable.

Given the above concerns and the uncertainty of future trail proposals on the Toby Benches, it is recommended the amount of trails proposed in the Barbour Rock area be reduced. The map below shows the mountain bike trails that are acceptable at this time. If a master trail plan for the Upper Columbia Valley is developed and accepted by the community, there may be opportunity for future trail development in the Barbour Rock area.


Legend
Acceptable Trails
REC230989_Tr
Long Lake
Lake Eileen
Lillian Lake
Barbour Lake