A Recommended Legal Land Designation for the Upper Portion of the Red Mountain Watershed to Protect Grizzly Bear, Mountain Caribou and the Alpine Ecosystem

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EXECUTIVE SUMMARY

There is a renewed interest in promoting the recreational use of the upper portion of the Red Mountain Creek watershed. This area is recognized as having unique ecological values that may require special management considerations. The alpine and subalpine ecosystems are inhabited by grizzly bears (*Ursus arctos)* and mountain caribou (*Rangifer tarandus ssp. caribou*). An old road accesses the alpine area and a cabin located at treeline. The condition of this road allows for motor vehicle access. Because of concern over the potential for an increase in the number of people recreating in the area, thereby increasing the risk of negatively impacting the ecological values in the upper portion of the Red Mountain watershed, the Ministry of Water Land and Air Protection has retained the services of P. Beaudry and Associates Ltd to review the land-use issues in the area and provide a recommended legal land designation along with appropriate objectives that will protect the grizzly bear, mountain caribou and sensitive alpine ecosystems found in the area.

One of the objectives of this project was to collect information about land-use in the Red Mountain area from a variety of sources. Most of the information about the use of this area, by both humans and wildlife, is anecdotal in nature. There is a long history of recreation in the area, as well as documented accounts by early settlers in the late 1800's. A book has also been written about the area by one of the former residents of Penny. Information about this area was collected through interviews of stakeholders and local specialists in natural resource management and recreation. This information was then compiled and used to identify the ecological values within the area, historical land-uses and the potential for future land use activities. We then assessed the spectrum of land designation options suitable for the Red Mountain area that would meet the primary objective of protecting the grizzly bear, mountain caribou and alpine ecosystem. As a final step we provided the Ministry of Water, Land and Air Protection with a recommended land designation that we believe will best protect the sensitive ecosystems of the upper portion of the Red Mountain watershed. We have also provided some recommendations that, if implemented, we believe will assist in the successful management of this area.

It was confirmed that this area had unique values once all information was collected. There were numerous accounts of grizzly bear and caribou sightings. There is a general consensus among stakeholders and specialists that this area requires special consideration for management. Current recreation use in the area is considered low, primarily due to the isolation of the community of Penny, the start of the road located on private land and the long distance required to hike to the area. There is also a general consensus that motorized vehicles should not be used to access the cabin for recreation purposes and that there should be no motorized use beyond the cabin. The primary concern over recreation use in the area, in regards to protecting the identified values, was the impact that a substantial increase in the number of users to the area would have. It was also identified that if motorized vehicles were used to access the cabin and alpine that the number of users would likely increase. Finally most felt that the current level of recreation was likely not having a significant impact on the ecological values in the area.

We reviewed a variety of legal land designation options and other land management strategies that could potentially be applied to the Red Mountain area. Each of these had advantages and

disadvantages and none was considered a perfect fit for the area. Table 1 provides an overview of the options available to manage the Red Mountain area.

At a landscape level there are many tools currently implemented to manage wildlife and alpine ecosystems in the Red Mountain area. The Prince George Land and Resource Management Plan identified Bearpaw Ridge, an area that encompasses Red Mountain, as having high mountain caribou and grizzly bear values. Objectives and strategies have been set to conserve caribou and grizzly bear habitat, as well as alpine ecosystems. There are also other ongoing initiatives that should further address landscape level wildlife management. They are not, however, specific enough to deal with the concerns surrounding the Red Mountain Area.

Our recommendation is to establish a Sensitive Area-Higher Level Plan for the Red Mountain area. The proposed Red Mountain Sensitive Area will cover approximately 1000 ha encompassing the upper portion of the Red Mountain Creek watershed, along with 6.5 km of the existing road. The proposed objectives for the Sensitive Area are as follows:

Objective 1. Prevent the displacement and/or harassment of mountain caribou and grizzly bear by people who use the Red Mountain Area.

Objective 2. Protect vegetation and soils from excessive disturbance.

Objective 3. Maintain an acceptable level of use, primarily recreation, that does not infringe on the above objectives.

In order to ensure the management of this area is successful we recommend that additional measures be taken. A monitoring program will need to be established that collects information regarding damage to vegetation and soils, grizzly bear and caribou use, and the number of people recreating in the area. This information can then be used to determine if recreation use is having a negative impact on the ecological values in the area. We also recommend that access management be practiced on the road to limit access to the area by motorized vehicles. This access management can be accomplished using a graduated approach. A gate located at the boundary of the sensitive area can be put in place to prevent motor vehicles using the road to access the alpine. If the gate fails to prevent motorized vehicles from entering the alpine then the road should be deactivated below the cabin at a confined spot. If this is insufficient then we recommend deactivating the road directly beyond the gate. Furthermore, if user levels increase to a level that is impacting the ecological values in the area, despite the above measures, then a permit or booking system that allows only a certain number of people to recreate in the area may need to be implemented. The final recommendation is to establish a Recreation User Agreement between the user groups in the area. This type of agreement will assist in achieving the objectives for the proposed Red Mountain Sensitive Area, enhance the monitoring program and ensure that the trail, road and cabin are being maintained.

Table 1 Legal land designation and management options for the Red Mountain Area

Designation Option	Act	Size	Designation authority	Who manages	Allows hunting	Allows self propelled non - mechanized recreation	Allows motorized recreation	Wildlife/ Ecosystem Protection	Public level of respect	Applicability to Red Mountain Area
Class A Park	Park Act	No limit	Lieutenant Governor in Council	WLAP	No	Yes	No (Initially) Some possible after management plan.	Yes	High	Medium
Ecological Reserve	Ecological Reserve Act	No limit	Lieutenant Governor in Council	WLAP	No	Reduced	No	Yes	Medium	Medium
Protected Area	Environment and Land Use Act	No limit	Lieutenant Governor in Council	WLAP	Yes	Yes	Yes	Yes	Low	Low
Protection Area	Environment and Land Use Act	No limit	Lieutenant Governor in Council	WLAP (only 1 year)	Yes	Yes	Yes	Yes	Low	Low
Wildlife Habitat Area	Forest Practices Code	2400 ha	Minister of WLAP	WLAP	No	Yes	Objectives established	Yes	Low	Medium
Wildlife Management Area	Wildlife Act	No limit	Lieutenant Governor in Council	WLAP	No	Reduced	No	Yes	Medium	High
Wildlife Habitat Management Area	Land Act	Watershed	Lieutenant Governor in Council	WLAP	Objectives established	Objectives established	Objectives established	Objectives established	Low	Medium
Grizzly Bear Management Area	Wildlife Act	Unknown	Unknown	WLAP	No	Reduced	No	Yes	Not available yet	Low
Resource Management Zone	Forest Practices Code	No Limit	Chief Forester	MoF (past) MSRM (Current)	Objectives established	Objectives established	Objectives established	Objectives established	Low – not well known	Medium

Designation Option	Act	Size	Designation authority	Who manages	Allows hunting	Allows self propelled non - mechanized recreation	Allows motorized recreation	Wildlife/ Ecosystem Protection	Public level of respect	Applicability to Red Mountain Area
Sensitive Area	Forest Practices Code	1000 ha	District Manager	MoF (past) MSRM (Current)	Objectives established	Objectives established	Objectives established	Objectives established	Medium	Very High
Recreational Site and Trail	Forest Practices Code	Site specific (trails, structures and recreation areas	Chief Forester	MoF	Objectives established	Objectives established	Objectives established	Objectives established (indirect protection)	Medium	Medium
Motor Vehicle Prohibition Regulation	Wildlife Act	No Limit	Lieutenant Governor in Council	WALP	Restrictions established based on mode of transport	Yes	Restrictions established	Yes	Medium	Medium
Prohibition Regulations	Land Act	No Limit	Lieutenant Governor in Council	Various Ministries	Restrictions established	Restrictions established	Restrictions established	Restrictions established	Medium	High
Forest Recreation Regulations	Forest Practices Code	Site specific (trails, structures and recreation areas)	District Manager	MoF	Restrictions established	Restrictions established	Restrictions established	Restrictions established (indirect protection)	Medium	High
Recreation User Agreement	Non-legislated	No Limit	None	None (MoF acknowledges)	Objectives established	Objectives established	Objectives established	Objectives established (indirect protection)	Medium	High

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1.0 INTRODUCTION

There is a renewed interest in promoting the recreational use of the upper portion of the Red Mountain Creek watershed. This area is located approximately 100 km southeast of Prince George near the community of Penny. The Red Mountain area is believed to have unique ecological values. The alpine and subalpine ecosystems are inhabited by grizzly bears (*Ursus arctos)* and mountain caribou (*Rangifer tarandus ssp. caribou*). There is a history of recreation in this area, primarily the use of a road that provides access to the area in question and a backcountry cabin. The road in its current condition provides opportunity to access the area by motor vehicle, however this rarely occurs. Most users access the cabin by foot; it is considered to be a difficult hike in the summer and ski in the winter, resulting in a relatively low number of users. The road originates on private land and this too may be a factor that has kept user numbers low. Penny is also isolated and is difficult to reach by motor vehicle.

The renewed interest of recreational use of this area has created a requirement to explore appropriate land designation options to ensure the maintenance of its ecological values. For this reason the Ministry of Water Land and Air Protection has requested a report that recommends a legal land designation and appropriate objectives for the Red Mountain area to protect grizzly bear, mountain caribou and the alpine ecosystem. This report will identify the ecological values in the area, provide a history of use, present current and future uses and identify the risks and mitigation measures associated with these uses. Following this, legal land designation options will be discussed and the advantages and disadvantages of each will be presented. A legal land designation will then be recommended and measurable and monitorable objectives will be presented.

2.0 METHODS

A variety of information was collected to complete this project. Much of the information relating specifically to the Red Mountain area is undocumented or anecdotal in nature. Because of this, information about the area was collected by interviewing specialists, residents of Penny and groups or individuals who have used the area in the past. An initial list of potential people to interview was created and was included in the proposal for the project. Additional people were contacted as our knowledge of the area and the issues surrounding it increased. Ecological and recreational values were identified, as well as the issues surrounding the area. Following this the information was compiled and land designation options, mitigation measures and monitoring strategies for the area were researched.

2.1 Ecological, Recreational Values and Issue Identification

The first step of this project was to identify values and issues surrounding the Red Mountain Creek watershed. Information about recreation values was collected, primarily from the user groups in the area. Appendix 1 provides the list of user groups and individuals in the area whom we interviewed. A questionnaire and map were sent to the groups or individuals. Following this an interview was completed to collect their responses. The questionnaire is provided in Appendix 2. Every effort was made to ensure that all users in the area had an opportunity to express their interests and concerns. Letters and a map requesting input were sent to two local trappers whose trapline boundaries included the Red Mountain Area. A letter and map requesting input was also sent to the Lheidli T'enneh First Nations Band. Information from the PG LRMP and the Crown Land Recreational Conflict Documentation for the Ft. St. James, Vanderhoof, Prince George and Robson Valley LRMP Areas report were also reviewed to identify values and issues surrounding the area.

Specialists with knowledge of the area were contacted in order to identify the ecological and wildlife values and potential risks that recreation use may have on the area. Community watershed and fisheries specialists were also contacted. These interviews focused on the risks, possible impacts and mitigation measures that the identified recreation activities would have on the ecological and wildlife values. Land designation options and potential measurable and monitorable objectives were also discussed. Appendix 1 provides a list of specialists who were contacted.

The final component of this section was collecting information regarding applicable legislation as well as papers related to potential mitigation measures. This was done by searching the internet, the University of Northern British Columbia and College of New Caledonia libraries.

2.2 Land Designation Options

The next component of the project was the identification of potential land designation options using the information collected in the first step. The history, ecological and other values of the area and issues related to the user groups were summarized and major themes were identified. A series of applicable land designation options were identified. Each option was critically assessed, identifying potential costs and benefits. A final land designation was recommended and the rationale for its choice provided. For the recommended option, possible monitoring strategies are provided. Monitoring strategies focus on recreation use in the area and their impact on wildlife and ecological values. Additional recommendations to aid in the management of the area are also provided.

3.0 ECOLOGICAL VALUES

The upper portion of the Red Mountain Creek watershed has a variety of ecological values. The area is comprised of alpine ridges, bowls and a number of small lakes. Clumps of subalpine fir and Englemann spruce and alpine meadow vegetation cover the bowls. It has many attributes

favoured by grizzly bear and mountain caribou, as well as a sensitive alpine ecosystem. Most of the evidence of these ecological values is anecdotal in nature, however the high amount of this evidence signifies the importance of this area. There have been numerous sightings of wildlife and wildlife sign from moose, martin, caribou, grizzly bear, black bear, dear and wolf documented in the log book for the cabin, in the book Grizzly Bear Mountain and in other historical records. The area may have above average features for other wildlife species, but the area has not been surveyed to determine this[1]. Probably hundreds of different wildlife species use the area[2].

Evidence of grizzly bear found in the area appears to be abundant. There are numerous accounts of grizzly bear sightings and activity. A book has been written about the spectacular grizzly bear habitat in the area[3]. The area surrounding the cabin contains numerous south westerly facing avalanche chutes, alpine meadows and sub-alpine parklands, which are preferred habitat types of grizzly bears. Glacier lily (*Erythornium grandiflorum*), a high value spring forage species for grizzly bear[3] is also found in the alpine area.

The upper portion of the Red Mountain Creek watershed on its own is too small to support grizzly bears. The average home ranges for female grizzly bears in the Parsnip River study are 60km^2 (ranging between 8 to 254 km^2)[4]. It is however a valuable component of the grizzly bear habitat values on Bearpaw Ridge, an area well known for its grizzly bear habitat and numerous grizzly bear sightings. Local wildlife biologists believe that there are similar areas with high densities of grizzly bears in the Prince George area, however more inventories and work needs to be done to quantify these[5]. Grizzly bears are blue listed in the Robson Valley and Prince George Forest Districts meaning that the populations are at risk and are considered a species of special concern by the Committee on the Status of Endangered Species in Canada (Appendix 3). There is a general consensus that this area has high grizzly bear habitat value and it should be managed accordingly.

The upper portion of the Red Mountain Creek watershed has high caribou habitat values and it is located on Bearpaw Ridge, which is considered one of the most important areas in northern B.C. for mountain caribou[6]. The area is part of a large contiguous habitat, a critical factor that allows mountain caribou to avoid predators. The road to Red Mountain is one of two access points to the middle of Bearpaw ridge that fragments this caribou habitat. The area is located within the Engelmann Spruce- Subalpine Fir (ESSF) and Alpine Tundra (AT) zones; ESSF forests are considered core mountain caribou habitat.[7] The Red Mountain area is a small spatial component of the annual range for mountain caribou, where the home range sizes can vary between 29 to783 km^2 for the Prince George population (Simpson et al. 1997), however it provides high quality habitat between two sections on Bearpaw Ridge that are not considered highly suitable habitat. The terrain is quite severe surrounding Baldy Mountain to the NW and around Red Mountain to

[1] D. Heard, pers. comm. Nov. 26, 2002.
[2] Ibid.
[3] Boudreau, Jack. 2000. Grizzly Bear Mountain.
[4] D. Siep, pers. comm. Nov. 29, 2002.
[5] D. Heard, pers. comm. Nov. 26, 2002; D. King, pers. comm. Dec. 12, 2002.
[6] D. Siep, pers. comm. Nov. 29, 2002.
[7] Omineca Region Mountain Caribou Ungulate Winter Range Proposal 2000 – Draft. Ministry of Water Land and Air Protection, Prince George, BC.

the SE. The upper portion of the Red Mountain Creek watershed provides gentler slopes (<50%) in many areas, as well as browse potential for the high valued forage *Alectoria* and *Bryoria* lichen.

Mountain caribou are red listed in the Robson Valley Forest District meaning that populations are declining and are considered imperilled sub-nationally (Appendix 3). Flight surveys completed by the Provincial Government have confirmed that mountain caribou use the Red Mountain area. There are 6-20 animals generally found in the Red Mountain Area during the winter months, the most animals that this area could likely support.[8]

Alpine ecosystems have short growing seasons and therefore plants recover slowly from trampling and other damage. There are also numerous "wet" areas that are especially sensitive to disturbance by hiking and motor traffic. Users of the area report large fields of wild flowers during the late spring and summer months. There is the potential that this area has blue and red listed plant species, however no surveys have been conducted[9]. A table of red and blue listed plant species for the Prince George and Robson Valley Forest Districts is provided in Appendix 3.

The headwaters of Red Mountain Creek originate in this area from a small lake located in the alpine. Chinook salmon have been documented in the lower reaches of Red Mountain Creek and it also likely supports populations of rainbow trout and bull trout, although no provincial level inventories have been done on the stream[10]. There is a Domestic Water Supply License on Red Mountain Creek[11]. The license has no ability to restrict or enforce limitations on upstream development.

The rolling terrain of the Red Mountain area is appropriate for many backcountry recreation activities. The relatively open alpine terrain and the limited number of users provide a wilderness experience, beautiful scenery, and a high probability of viewing wildlife. Particular recreational points of interest include an alpine ridge known as "green peak" with good views of Red Mountain, existing access and a cabin for overnight visits. The area also has very suitable terrain for backcountry skiing with many different aspects and the opportunity to ski in the trees or in the alpine bowls. The cabin is a major draw for both summer and winter recreationists. This area is used for access to summer and winter mountaineering on Mount Baldy and Red Mountain. Red Mountain has been named after an exposed deposit of iron oxide stained rock on its SW side, which is visible from this area. In the larger area from ridge to the valley bottom, other recreational features include waterfalls, rock climbing cliffs, lookouts to the Fraser Valley and surrounding mountains, areas with old and antique red cedar groves and other wildlife viewing opportunities. Additionally, there are opportunities to view grizzly bears in the Red Mountain area using a spotting scope along Highway 16 and from view points on Driscoll Ridge.

[8] D. King, pers. comm. Dec. 12, 2002.
[9] C. DeLong, pers. comm. Nov. 26, 2002.
[10] D. Cadden, pers. comm. Nov. 14, 2002.
[11] T. Muirhead, pers. comm. Nov. 14, 2002.

4.0 HISTORICAL USE

The upper portion of the Red Mountain Creek watershed has been an area of special interest since the early 1800's. One account dates back to 1888 when J. Turner Turner over-wintered in the general area of what is now Penny. In search of a wilderness experience, he wrote, in reference to Red Mountain, "Next day failing to observe that one spot held any advantage over another except as regards a southerly aspect, I told the Indians to land us at the foot of a mountain reported to be in the possession of a great quantity of grizzly bears, and, on that account rarely visited by Indians."(L'Heureux 1990). The area was mapped in the WWII (1940's) by the Hales using packhorses. Since the town of Penny was established in 1920's following railroad access to the valley, local residents have hiked and hunted in the Red Mountain area (Penny Reunion Committee 1995). The area has been successfully hunted for grizzly bears since early 1900's until the 1970's.[12] The local residents in Penny voluntarily ended hunting in the 1970's. High levels of grizzly bear hunting occurred in the 1950's and 60's when money was paid for bear rugs[13].

A road was constructed up Red Mountain over a period of 10 years starting in the late 1950s. In the early sixties (~1962) a small cabin was constructed at treeline by a group of Penny residents in the upper portion of the Red Mountain creek watershed. This road is one of two access points up Bearpaw ridge from the side and not the "softer" ends of the ridge[14]. The start of the road is on private land and this has caused some dispute over public access issues and motorized use to reach the cabin. The area has been used primarily by hikers and skiers over the years. Historically there has been very limited snowmobile use, which peaked in the 1970's. Use of motorized vehicles to access the cabin was reduced when the landowner restricted motorized vehicles to cross his property in the late 1970's. Since that time the All terrain Vehicles (ATV's) and 4x4 trucks have occasionally been used to maintain the road and cabin. The private landowner has allowed non-motorized users to cross his property.

In the 1960's and 1970's between 50 and 60 people would use the area in the fall. When the sawmill was active in the 1960's and 1970's and the population in Penny was high, hiking to the area usually involved driving up the road. The high use of this area during that period correlated to the high number of people living in Penny at the time. As the population of Penny has decreased so has the number of recreational visits to the area. Many of the recent and historical users went part way up the road on ATV's or other motorized transport and then hiked the rest of the way.

In 2000 and 2001 a trail was developed on crown land to access the original Red Mountain road and bypass the portion on private land. The initial development of the trail was completed by the proponent of the Red Mountain Commercial Recreation Development Proposal. The proponent did not obtain the necessary permits to construct the trail and he was asked to stop development by Ministry of Forest and BC Lands and Assets representatives. The proponent complied, however trail construction by an unknown party continued and in 2001 it was completed to connect to the road accessing Red Mountain. A bridge was also constructed across Red

[12] J. Stoltz, pers. comm. Nov. 22, 2002; and Boudreau, Jack. 2000. Grizzly Bear Mountain.
[13] J. Stoltz, pers. comm. Nov. 22, 2002.
[14] D. Siep, pers. comm. Nov. 29, 2002.

Mountain Creek. Both the trail and the bridge allowed for ATV access. According to the Ministry of Environment, the bridge was having a negative impact on fish habitat and water quality. There were also reports of ATVs accessing the cabin and the alpine area above the cabin[15].

There was a great deal of concern over the construction of this trail by the residents of Penny, the Ministry of Forests, BC Lands and Assets, the Ministry of Environment and local recreation groups. A meeting was held in Penny on November 1, 2001 and it was chaired by a representative from the Ministry of Environment (MOE) [16]. Consensus was reached at the meeting that the area should remain open for hiking or walking and there should be no destruction of habitat. There was a general consensus that there should be only foot access to the mountain (ie-non-motorized). Discussion of implementing a drop off area for motorized users some distance from the cabin and the alpine was discussed. There was concern that this would be difficult to enforce. MOE indicated that the bridge would be removed and the access route deactivated at the stream. Members of the Penny Community Association indicated that they wanted the trail to remain so there would be public access to the area, which would require a formal proposal to the Ministry of Forests to legitimize the trail.

Following this meeting the bridge over Red Mountain Creek was removed by the Ministry of Environment and the slopes leading to the bridge were recontoured. Two short sections of the trail on the east side of the bridge were deactivated. Three "tank traps" were built on the original road to restrict motorized access to the cabin and alpine area. Two access restriction signs were also placed at the trailhead. Since that time the deactivation has been reactivated by an unknown party and ATVs have used the road to access the cabin. As of November 09, 2002 there was no evidence of ATVs crossing Red Mountain Creek, however there were indications that ATVs were accessing the road through a different access point[17]. There are also numerous old roads and other areas on Crown land where trails have been cut or have the potential to be cut that would connect to the portion of the road on Crown land.

The Penny Community Association submitted a proposal on November 2002 to legitimize the recently developed trail. The Penny Community Association's proposal is currently under consideration by the Ministry of Forests. Other recreational users interviewed are also interested in assisting in trail and cabin maintenance.

5.0 CURRENT AND FUTURE USE

Current and future use mirrors much of what has occurred historically. The use of this area depends primarily on the existence of access and to a lesser extent the cabin located at treeline. Current and future use will depend a great deal on the objectives set for the recommended legal land designation for the upper portion the Red Mountain Creek watershed and on the condition

[15] W. Birkenshaw, pers. comm. Nov. 18, 2002.
[16] Penny Meeting Minutes– November 1, 2001 – 10:00 am. Chaired by Chris Ritchie, Ministry of Environment. Available from Ministry of Water, Land and Air Protection, Prince George, BC.
[17] Field visit to road and trail by P. Beaudry and Associates Employee. November 09, 2002.

of the access. The current and future use presented in this section is based on the assumption that the status quo will remain.

Use of this area depends a great deal on an ability to access the community of Penny. All access points, other than by the Via Rail Passenger train, require traveling over a portion of private land. The road that accesses Penny from Longworth passes over private land on two occasions. Access from Highway 16 crossing the Fraser River requires landing on private property. To date there have been no restrictions placed on the public from crossing private land. The lack of legal public access to Penny could be a factor in the future use of the area. This lack of guaranteed public access could also make enforcement difficult.

5.1 Recreational use

A variety of recreational activities occur in the Red Mountain area. People who recreate in this area value it for similar reasons, primarily the isolation, beautiful scenery and the abundant wildlife. There are two broad philosophies for recreational use in the area: the first accepts the limited use of motorized vehicles to access the cabin and maintain the trail/road and cabin, the second group believes that use of the trail and road should be restricted to foot traffic only, even for maintenance. The majority of users within these two broad groups believe that motorized use in the alpine is not appropriate and the integrity of the area should be protected.

5.1.1 Motorized Access

There is a history of using motorized vehicles to access and maintain the cabin and road. A bulldozer was used to construct the road to the cabin and this has allowed most any type of motorized vehicles to access this area, depending on the condition of the trail at the time. ATV's, dirt bikes and pickup trucks have at one time used all or a portion of the trail. The restriction placed on motorized access across the private land in the 1970's has prevented most motorized vehicles from accessing the cabin and the alpine. It has not been until recently that ATV's have been reported beyond the cabin and into the alpine. The Prince George ATV club does not currently use the area[18]. There is a general consensus, from motorized users and non-motorized users that ATV use should not occur in the alpine.

There is currently very limited snowmobile use in the area. As already mentioned snowmobile use peaked in the 1970's and use drastically declined when the landowner at the trailhead restricted motorized use through his property. The Prince George Snowmobile Club [19]does not currently use the area and they do not see use of the area increasing substantially, primarily due to access difficulties and the limited terrain in the area. The PG Snowmobile Club has had one outing (~1998) to the trails in the cutblocks in the lower valley, around Penny, however they have not visited the area in question. They do however believe that if a viable trail on Crown land allowed for snowmobile access to the alpine that their members would start to use the area.

[18] B. Orr, pers. comm. Nov. 7, 2002.
[19] B. Witt, pers. comm. Nov. 7, 2002.

Both the PG Snowmobile Club and the PG ATV club believe in equal access opportunities to Crown land.

Future motorized use in this area would likely increase if the road was open to unlimited ATV and snowmobile use. If motorized use was allowed for only a portion of the road to a designated drop-off point this would also likely result in an increase in the number of people using the area, depending on the distance required to reach the alpine and cabin from this point. If there is proper access management of the trail, motorized use could be restricted above a specific drop off point. If efforts are made to make the trail inaccessible to ATVs and snowmobiles there will likely be little to no motorized use in the area.

5.1.2 Non-Motorized Access

The primary non-motorized use of the area is for skiing and hiking . The months of most intense use are late August to early October for hiking and from December to mid-April for skiing. It generally receives 8 to 12 visitors in the late summer for hiking and 6 to 20 visitors in the winter, usually spread over 2 to 3 trips[20]. Currently the long road (over 11 km) and the large elevation gain (approx 940 m) make for a difficult hike or ski. That distance and elevation gain are only to the cabin; accessing the alpine and view points require an additional distance of up to 5 km and over 300 meters in elevation. Occasionally a helicopter is used to access the area, however this is rare due to the high cost (the nearest helicopter base is in Prince George). Most of the non-motorized users access the alpine by foot. Current use is substantially lower then in the 1960's and 1970's[21].

There will likely be a slow increase in the number of non-motorized users to this area. The Prince George Backcountry Recreation Society (PGBRS) predicts that more people will use this area as it becomes well known[22]. Many of the areas where local people recreate (Grizzly Den, Raven Lake, the Farm and Torpy Ridge) have access problems for automobiles, especially in the winter. Red Mountain offers year round access due to its proximity to Highway 16, so winter use at Red Mountain will likely increase. There is also a potential to develop a backcountry ski traverse along Bearpaw ridge which would attract more skiers. With that said, the PGBRS does not believe that use of the area will increase substantially. The PGBRS does not support the use of motorized vehicle to access the Red Mountain area.

The Penny Community Associations primary concern is that public access to the Red Mountain area is available[23]. This can be accomplished by having a trail that is entirely located on Crown land. They wish to promote use that preserves the alpine area in its present condition and they do not believe that motorized vehicles should be used to access the area, except to maintain the trail and cabin. Allowing complete public access to the area will likely increase the number of people who use the area, however if a long hike is still required to reach the cabin then use will not increase substantially.

[20] C. Boudreau, pers, comm, Nov. 09, 2002.
[21] Ibid.
[22] T. McConkey, pers. comm. Nov. 20, 2002.
[23] J. Stoltz, pers. comm. Nov. 22, 2002.

Most users believe that the current condition of the trail and cabin is sufficient. A legitimate trail that crosses crown land to access the original trail will be required to allow for public access. The outhouse is the only area that could use improvements. General maintenance of the cabin and trail should be done periodically. It is also a general consensus that firewood should not be collected from the surrounding area, rather it should be brought in from an outside source.

The area is still open to grizzly bear hunting on a limited entry basis, however the area experiences very low levels of hunting. The low level of bear hunting may be a result of limited ATV access. There is currently no use by horses in this area by organized horse groups. Future use by horses would depend a great deal on road access to Penny[24]. The current condition of the road does not allow for people to bring in horse trailers. If road access was improved to Penny there would likely be an increase in horse users to the area.

5.2 Industrial and Commercial Use

There has been no industrial use of the upper portion of the Red Mountain Creek watershed to date. Unofficial guided hunting and hiking has occurred over the years, however no substantial business has resulted. The isolation and access difficulties to the community of Penny may be a major reason for this.

The upper portion of the Red Mountain Creek watershed encompasses primarily sub-alpine forests and alpine vegetation and it has not been targeted for forestry activities. The area within the ESSF forests, generally above 1370 meters is also considered to be caribou "High" habitat. Timber harvesting is not permitted within this area. Carrier Lumber Limited in Prince George currently has timber rights for the area around Penny and they do not have any plans for the area for at least the next five years[25].

There are also two radio repeaters located in the vicinity of the Red Mountain Area. One of these is located within the area of interest and it is maintained periodically by helicopter. Although not an industrial use, the area also experiences helicopter traffic during the annual mountain caribou aerial surveys completed by the Ministry of Water, Land and Air Protection.

Two traplines cover this area, however most of the trapping opportunities are below treeline. The road leading to Red Mountain has not traditionally been used by trappers, however if it was open for motorized access the local trapper would use it by snowmobile[26]. The last time the general area was trapped was in the late 1990's, however the trapper voluntarily stopped to reduce the potential for conflict. There is a history of trapping in the area, however most of it has been within the timber and not in the alpine area above the cabin. Martin would be the targeted animal if trapping was to occur in the area.

[24] S. Dubas, pers. comm. Nov. 19, 2002.
[25] B. Tobin, pers. comm. Jan. 03, 2003.
[26] R. McCoy, pers. comm. Jan. 16, 2003.

In March of 2000 a proposal for commercial recreation purposes was submitted to BC Assets and Land Corporation in the vicinity of Red Mountain Creek[27]. The proposed tenure boundary was to cover the upper portion of the Red Mountain Creek watershed. The proposal requested that motorized vehicles, primarily ATV and snowmobiles, be used to access a proposed lodge located at treeline. The proposal indicated that the primary attraction to this area would be the opportunity to view grizzly bears. The proposal also included backcountry skiing in the winter. There was no indication of intent to use motorized vehicles past the cabin. Upon close consultation with the Ministry of Environment, Lands and Parks, BC Assets and Land Corporation denied the application due to the perceived threat to the grizzly bear in the area from increased human use, primarily motorized activity. The denial also noted that the decision supports direction provided from the Prince George LRMP.

There have been no other official commercial recreation endeavors pursued in the Red Mountain Area. It is not likely that another such proposal would be approved due to the sensitive nature of this area to disturbance. Helicopter use in the area would also likely be deemed incompatible with the mountain caribou and grizzly bear values. If helicopter access became more affordable then use would certainly increase in this area.

There are residents in the community of Penny who would like to develop eco-tourism opportunities in the area. The isolation of Penny has made it difficult to promote the area, however recent exposure through books and media coverage has increased its profile. The Via Rail passenger service between Prince George and Jasper stops in Penny and residents would like to promote the area to take advantage of the opportunity that these visitors provide. Interpretive signs along the proposed trail and existing road have been suggested. Soft uses of the area such as wildlife viewing, photography and llama tours have been discussed and there is interest by some residents to pursue these activities. If more people began visiting Penny, then it is very likely that more people would use the trail and road to Red Mountain.

5.3 First Nations

The Red Mountain area falls within the Lheidli T'enneh Band's traditional area. They acknowledge that the area is valuable, especially in regards to the mountain caribou and grizzly bear habitat found in the area. They believe that public visitation to the area should be kept to a minimum[28]. They suggest that there be no motor vehicle use, for any purpose, above 700 meters in elevation. As well they do not recommend that any commercial recreation tenures be awarded for the area in question. Members of the band currently use the area for hunting purposes.

5.4 Other

Mountain caribou are considered a threatened species by the federal government. A Mountain Caribou Group has been formed and they are developing the Recovery Action Plan that will cover the Bearpaw ridge area[29]. Recommendations from this group may have an impact on future use of the Red Mountain area.

[27] D. Butchart, pers. comm. Jan. 06, 2003.
[28] J. Calvert, letter dated Jan. 09, 2003.
[29] D. Siep, pers. comm. Nov. 29, 2002.

6.0 RISKS, POTENTIAL IMPACTS AND MITIGATION MEASURES

The following three main issues have been identified if there were an increase in use of the Red Mountain area:

- increased human and wildlife interactions resulting in harassment and displacement of wildlife;
- damage of the alpine vegetation; and
- concerns over the ability of the public to access the Red Mountain area.

Risks and potential impacts associated with these issues will be presented in this section along with mitigation measures to minimize any negative impacts.

6.1 Wildlife Disturbance

The most important factor in wildlife disturbance is the number of people using the area, regardless of how they get there. Certain types of wildlife are more sensitive to human disturbance and in some situations an increase in recreational use will displace wildlife from the area (Webster 1997; LeFranc et al. 1987). Whether caribou are habituated to humans and their machines or not, they experience increased stress levels and expend more energy attempting to avoid the disturbance (Webster 1997). High human use will cause wildlife, especially grizzly bears and mountain caribou to avoid the area resulting in a functional loss of habitat. High use of the Red Mountain area could also result in a fragmentation of the contiguous habitat of Bearpaw Ridge for both grizzly bear and caribou. Current access difficulties result in a low risk of fragmentation.

Displacement of caribou in the winter from preferred foraging sites will cause increased energy expenditure and a decline in body condition (Simpson and Terry 2000). Mortality risks to caribou increase when they are displaced into terrain with lower forage quality or higher susceptible to avalanches. Displacement of grizzly bears results in habitat loss with reduced reproduction and decreased population growth (Bunnell 1997). If there is a significant increase in the number of users in the Red Mountain area, the risk of the above occurring is high.

Increased use of the Red Mountain area will likely result in an increase of grizzly bear interactions with people. There are numerous accounts of "close calls" with grizzly bears in this area, as documented in the book Grizzly Bear Mountain (Boudreau 2000). If people are attacked or if bears become too aggressive they will likely be destroyed. An increase in the number of users to areas where there are grizzly bears can also result in bears becoming habituated to human presence and human food and garbage, increasing the potential of destroying problem bears (Min. of Envir. Lands and Parks 1995). This often occurs when people who use an area are uninformed of proper backcountry etiquette and how they should behave in areas where there are bears

Wildlife respond differently to different types of recreational activities. The relative degree of risk among winter backcountry activities to disturb caribou is very high for snowmobiling, high for heli-skiing, moderate for snowcat skiing and low for backcountry skiing and snowshoeing (Simpson and Terry 2000). Management of motorized access will have the most positive benefit on caribou habitat for the area. If the road accessing Red Mountain is open to motorized use there is a high risk for an increase in the number of motorized activities, especially snowmobiling.

Preferred snowmobile terrain is similar to high capability caribou terrain; early winter use of subalpine forests and late winter use of alpine and subalpine ridges. Snowmobiles can significantly disturb caribou; the machines stress the animals resulting in avoidance of trails and snowmobiling areas (Webster 1997). Extensive snowmobile tracks in early winter forage areas compacts the snow, making cratering by caribou for terrestrial lichens energy expensive. There is a high risk that snowmobile use in the Red Mountain area would have a negative impact on wildlife, especially mountain caribou. The severe terrain surrounding the upper portion of the Red Mountain Creek watershed limits the risk of snowmobiles traveling beyond and negatively impacting wildlife outside of the area. It also prevents snowmobiles from entering the upper portion of the watershed from other access points on Bearpaw Ridge.

ATV's when limited to trails would cause minimal displacement and disturbance of wildlife, however the risk of ATV's being used off trails or to harass wildlife is high. ATV's could disturb caribou in the calving season in the alpine and increase mortality rates (Webster 1997). Dirt bikes have similar impacts and risks as ATV's. Both ATV's and dirt bikes are generally not used in the Red Mountain area due to access difficulties. They do however pose a significant risk to the integrity of the Red Mountain area, especially if they are allowed to travel in the alpine above the cabin. ATV use will also increase the number of people using the area, increasing the risk of negatively impacting the alpine ecosystem, specifically the wildlife.

Helicopters are known to cause displacement of caribou (Webster 1997). They likely have a similar impact on grizzly bears. Helicopter use has the potential to impact more of the contiguous habitat of Bearpaw ridge than other types of motorized access as they are not limited to existing trails. This impact will occur mainly in times of bad weather when a variety of routes and landing sites would be used. The risk of disturbance and displacement of wildlife by helicopter access is low because they are more expensive to use then other modes of transport. They are especially costly to use to access the Red Mountain area because the nearest helicopter base is in Prince George. If there was an increase in demand for helicopter access to Red Mountain, costs would decrease, especially if a helicopter was based in Penny. The current risk of helicopters causing significant disturbance to the Red Mountain area is low. This risk may increase as the area becomes well known.

Helicopter skiing would result in a major disturbance to the caribou population since it requires large areas for successful operation (Simpson and Terry 2000), however there does not appear to be any interest in the area as the nearest heli-ski operation is based out of Crescent Spur and they have plenty of available terrain that is much closer. Commercial heli-hiking can also have an impact on wildlife through harassment and displacement. There are currently no commercial

recreation helicopter operations that use this area and the possibility of such an operation being approved for this area is low.

Wildlife respond strongly to people hiking or skiing due to their relatively silent approach and sudden appearance (Webster 1997). The potential to disturb wildlife when riding an animal such as a horse is lower then when traveling on foot (Webster 1997). Horses and llama travelling on designated trails would cause minimal disturbance to wildlife. There is a moderate risk of horses and llamas traveling indiscriminately throughout an area. There are no mountain sheep in the Red Mountain area so there is no risk of disease transmission[30]. The current risks associated with horses or llamas are low for the Red Mountain Area. If access improves to Penny then the risk may increase.

When traveling through an area to a destination, hikers and skiers can increase energy expenditures of wildlife by causing them to flee for extended periods because their time spent in a specific area is much greater then that of a motorized vehicle. When motorized use is similar to the level of use by hikers and skiers, they may actually pose less of a threat to wildlife then do a low number of hikers or skiers. Hikers disturb caribou and grizzly bears more than motorized stimuli because they are perceived as predators (Webster 1997; Bunnell 1997). However, the risk of hiking, skiing or snowshoeing disturbing wildlife over a large area is low when compared to motorized transport because the rate of travel is slow and a large amount of time and effort is required to travel the same distance. This results in low numbers of people using the area and subsequently lowers the possibility of encountering wildlife. If the distance traveled by foot to reach the upper portion of the Red Mountain Creek watershed was decreased (traveling a portion of the trail by a motorized vehicle), use would increase and the risk of humans negatively impacting wildlife would increase proportionally.

6.2 Vegetation Damage

Recreational use of the area can negatively impact the subalpine and alpine vegetation and soils. The vegetation will be physically trampled and bruised by recreational users. Vegetation that grows at higher elevations has a shorter growing season and takes a long time to re-establish after being damaged. Terrestrial motorized recreation has a much higher risk of damaging vegetation than non-motorized recreation because motorized vehicles require larger trails and can quickly travel over extensive areas in a shorter period of time. In the winter snowmobiles can damage vegetation on ridges with little snow protection. ATV's and dirt bikes restricted to trails will limit damage to vegetation, however in wet areas trail width often expands. There is a high risk that some ATV users may leave the trails and cause heavy damage to the vegetation. If access by motor vehicle is restricted, especially ATVs and dirt bikes, the risk to the vegetation in the Red Mountain Area is low.

Damage to vegetation by helicopters is low when limited to established landing sites. In the alpine the potential for a large number of landing sites exists, increasing the risk of causing extensive damage to vegetation. The risk of vegetation damage by helicopters is low because of the low helicopter use in the Red Mountain area

[30] D. Heard, pers. comm. Nov. 26, 2002

Mountain bikes have similar risks to damaging vegetation as ATV's. In Garibaldi Park since mountain bikes have been used on trails, trails have widened, become more deeply rutted and the number of trails has increased[31]. With the current access, the risk of extensive mountain bike use is low as there is a long steep climb to reach the area.

Like wildlife species in the area, horses and llamas will trample and forage on the vegetation. Horses have a high risk of introducing weed seed while llamas have a low risk of introducing weed seed[32]. The risk of vegetation damage is moderate with trail riding due to the slow rate of travel, however in areas of high use in wet conditions vegetation damage can be extensive. The current risk associated with the use of horses and llama is considered to be low for the Red Mountain area.

Hikers and skiers will also trample and bruise vegetation, however due to the narrow trail size and slow speed, present a low risk to damaging vegetation. Hiking trails when heavily used widen in wet ecosystems. There are currently no marked or well defined trails beyond the cabin and this could lead to extensive damage of vegetation, especially if the number of hikers increases. The current risk of hikers causing extensive damage to vegetation is considered low, however if use increases so will the risk..

6.3 Access

Maintaining motor vehicle access allows hunters and poachers easier access. Hunters generally stay close to a vehicle because of the difficulty associated with transporting their kill after a successful hunt, so improving motorized access to the Red Mountain area will likely result in an increase in hunting pressure. Mountain caribou are currently illegal to hunt and grizzly bears are hunted on a limited entry basis. Legal hunting in the Red Mountain area poses a low risk to the wildlife due to hunting regulations and access difficulties.

Poaching has been identified as a significant factor in grizzly bear population declines (McLellan 1988). Poaching of mountain caribou occur in some parts of southeastern and east-central B.C. (Stevenson et al 1994). There is a concern that as the Red Mountain area becomes better known poaching will increase. The risk of wildlife poaching is currently considered low, however if access improved so would the risk.

Managing access to caribou habitat is critical in reducing mortality from natural predators. Roads and trails provide easy access to mountain caribou habitat by wolves. Wolf predation is often responsible for adult mortality and low recruitment in caribou populations (Webster 1997). Caribou use an avoidance strategy to elude predators; if the habitat becomes fragmented and disrupted, they will not be able to avoid predators (Seip and Cichowski 1996). Modes of transport, whether by motorized or non-motorized that create hard-packed trails have been used by wolves to access caribou ranges (Stevenson et al 1994). There is currently a low risk of

[31] C. DeLong, pers. comm. Nov. 26, 2002.
[32] D. Heard, pers. comm. Nov. 26, 2002.

increased predation due to the low number of users and the single access point to the upper portion of the Red Mounatin Creek watershed.

Guidance for access management of the area as it relates to the high value caribou habitat is partially identified in the Ministry of Forests Omineca Region Mountain Caribou Management Zone Strategy. Road construction and forest harvesting are restricted in the forests below the cabin and this decreases the risk of wolf predation on caribou.

Improved access will change the experience of the recreationist whom uses the area for its wilderness attributes. As more people use the area it will displace others who use the area for its wilderness values. Increased use will require more facility maintenance and management of garbage. As a more diverse number of people begin to use an area, the potential for conflict between users increases. If use increases significantly there is a high risk for user conflicts to occur.

The access issue is entangled with resolution of the existing trail concerns. There are currently numerous access points to the existing road, and other opportunities for access along old forestry roads in the area. Though the main road has experienced limited motorized use in recent history, other trails and forestry roads present a high risk of using motorized vehicles to access the Red Mountain area.

6.4 Mitigation Measures

Maintenance of the connectivity of the landscape by reducing access to the entire Bearpaw Ridge area would be the most beneficial for mountain caribou and grizzly bear. The Red Mountain area forms a small part of the home range of these species, however improving access to this area has the potential to negatively impact wildlife over the entire ridge. Since the potential of wildlife displacement by misuse of motorized vehicles is high, limiting the access of motorized vehicles (ATV's, snowmobiles, dirt bikes, etc) from the alpine should be considered. This could be achieved by the installation of a locked gate and/or deactivation of the road in an area of restrictive terrain where bypassing the gate or deactivation would be very difficult.

Limiting the access of motorized vehicles would also require an education program (signage, contact with user groups, etc.). If signage is used to educate the public they will have to be located so that all users of the area pass them. If motorized vehicles were deemed appropriate to allow people to access the area then some sort of permit system may be required to limit numbers.

Control of motorized vehicle access can be achieved with a gate. Gates can be effective if placed in a restrictive area. A locked gate may be ineffective in the winter when snow can be used to ride snowmobiles over the gate. A gate will deter most people from going beyond. There must also be a system in place that limits who has access to the key. There is also interest by a local trapper who indicated he would use the road to access his trapline area. He indicated that he would require snowmobile access to reach a suitable area to put in traps. He also indicated that

his area of interest does not include the alpine areas above the cabin. Having a locked gate would enable him to access the upper portion of the road.

Deactivation can be used to restrict motorized access. A significant portion of the road may require deactivation, since previous deactivation was insufficient. If deactivation is used again it would have to be more substantial. It is acknowledged that deactivation will not stop people who are very motivated, however if substantial deactivation is done then it decreases the likelihood of people trying to circumvent it. It is important to note that the location of the deactivation point in relation to the alpine area is critical. A deactivation point located a fair distance from the alpine will result in a lower number of users compared to one that is relatively close. Using deactivation as a tool would also reduce some of the risks associated with using a gate, however it would prevent the use of ATV for maintenance and access for the trapper. Maintenance of the road and cabin could still be accomplished but it would require more effort and it may exclude certain people from participating.

Since mountain caribou are particularly sensitive to disturbance in the winter when avoidance of humans is energy expensive, a limit on the number of backcountry skiing trips could be considered. As mentioned use is currently very low and it is not likely that the number of users pose a significant threat to the mountain caribou that use the area. Use should be monitored and if it increases to a level that threatens the mountain caribou then either a booking system for the cabin or a permit system, which limits the number of users could be implemented. Limiting further recreational development and access points will also reduce the risk of skiers negatively impacting the area.

To minimize disturbance of wildlife and retain the wilderness experience the number of people who visit could be restricted. This requires a user log or trail counter to identify levels of use and times where use is the most intense. The months of high use are already identified as late August to early October for hiking and from December to Mid April for skiing. Monitoring of use would be required in order to identify when a more formal method to restrict user numbers is required. If user numbers are deemed to high, then a permit or booking system could be implemented. This could be administered by a government agency or one of the user groups.

Permit and reservation systems are usually implemented in areas that receive high use. They can be used simply to ensure that areas do not become too overcrowded, such as at provincial campgrounds, or where it is deemed that recreation use is having too high of an impact on the ecological values in an area. The Bowron Lakes Canoe Circuit[33] uses a booking system to reduce overcrowding and ecological degradation. The West Coast Trail[34] has a quota system to protect ecological values. While these two examples are for areas that receive very high use, the same principles could be applied to the Red Mountain area if recreation reached a level that was considered unacceptable.

Limiting the number of hiking trails developed in areas inhabited by caribou has been shown to reduce impacts on mountain caribou (Simpson and Terry 2000). Identifying and designating specific trails for hiking and campsites will also limit the amount of damage done to vegetation

[33] BC Parks Website. Available at: http://wlapwww.gov.bc.ca/bcparks/
[34] Parks Canada Website. Available at: http://parkscan.harbour.com/pacrim/wctu.htm.

and soils. Designated trails and campsites should be developed using features to contain the hikers. Natural features such as logs, rock faces, ridges; and man-made features such as bridges and boardwalks to avoid wet sites would reduce vegetation trampling by containing traffic (Lesko and Robson, 1975). Designated trails and campsites will limit areas that are trampled and reduce the possibility of random use. Promoting hiking on designated trails and campsites would require education of user groups.

If helicopter use in the area increased substantially, a helipad could be constructed just outside the Red Mountain area boundary that has good low cloud cover access from the Fraser Valley. This would reduce the impact on wildlife and also ensure that the helicopter could fly during bad weather if there was an emergency. It has been recommended that flights should fly a minimum of 300m above the ground to minimize mountain caribou disturbance (Simpson and Terry 2000). This would be appropriate for flights over the entire Bearpaw ridge area. Use of the helipad and flight height restrictions could be achieved by providing information to the local helicopter firms.

7.0 LEGAL LAND DESIGNATION OPTIONS

There are a variety of legal land designation options that would suitably address issues surrounding the Red Mountain Area. Options range from using the current protected areas system, such as parks or ecological reserves, to using the Higher Level Plan (HLP) process to assign legally binding objectives to a particular planning unit. This section provides an overview of the applicable land designation options that could be applied to protect the aforementioned values in the upper portion of the Red Mountain Creek watershed. The advantages and disadvantages of using each option will be presented. Appendix 4 lists reference sources and web-sites used for this section. The Red Mountain area is primarily alpine and subalpine parkland found in caribou high habitat and timber harvesting is not allowed. Therefore any type of legal land designation proposed for this area will not impact the timber harvesting land-base and/or reduce the Annual Allowable Cut.

7.1 Park Lands

The Ministry of Water Land and Air Protection (WALP) manage a large portion of land that collectively falls under the park system. The Protected Areas of British Columbia Act, Park Act, Environment and Land Use Act (ELU Act) and the Ecological Reserves Act can all be used to create park lands. The Lieutenant Governor in Council has the authority to create park lands using an Order in Council (OIC). Land designations that can be applied with these acts include Provincial Parks, Recreation Areas, ELU Protected Areas, ELU Protection Areas and Ecological Reserves. The majority of these lands were designated as a result of the Protected Area Strategy (PAS) that had a goal of protecting 12% of the land base within British Columbia. The current level of protection within the Prince George LRMP is 8.1%, within the 8.3% (+/- 0.25%) planning target that the Land Use Coordination Office (LUCO) established under the Protected Area Strategy (PG LRMP, 1999).

The Protected Areas of BC Act can designate Class A parks and ecological reserves. This act was introduced in 2000 to include the management of these areas in one piece of legislation,

rather than using both the Ecological Reserve Act and the Park Act. The intention was to manage these areas under a protected areas system. This however has not occurred and the Ecological Reserve Act and the Park Act continue to be the primary legislation applied to protected areas.

7.1.1 Provincial Parks

The Park Act identifies four designations: Class A, Class B, Class C and Recreation Area. Each designation allows for different types and levels of recreation use. Class B, Class C and Recreation Area are being phased out of the Park Act and thus are not available for the upper portion of the Red Mountain Creek Watershed.

Class A parks are for the purpose of "preservation of the natural environment for the inspiration, use and enjoyment of the public". Section 9 of the Park Act specifies that a park use permit is limited to those activities "that are necessary to preserve or maintain the recreational values of the park involved". Once a Park is established under the Park Act a variety of regulations automatically apply that are enforced until a management plan for the park is created that addresses specific issues related to the park.

There are many advantages to using the Park Act to establish a Class A Park around the upper portion of the Red Mountain Creek watershed. One advantage is that there is no size restriction for the amount of area that could be protected. Designating this area as a Class A Park would allow resource managers to select an area that better represents mountain caribou and grizzly bear home ranges and use in the area.

Another advantage of designating this area as a Class A Park is that the Park Act has regulations that deal specifically with motorized use within park boundaries[35]. Motorized access of this area is identified as a major concern (see section 6.0). Section 24(1) of Park and Recreation Area Regulation states:

> "No person shall use or operate a motor vehicle, motorcycle or other self propelled vehicle in a park or recreation area except
>
> (a) on a park road,
>
> (b) in an area permitted by a sign or other device, or
>
> (c) as authorized by a park officer.

Section 24(3) further states:

> "No person shall use or operate a snowmobile in a park or other recreation area except
>
> (a) in an area or on a trail as permitted by a sign or other device, or
>
> (b) as authorized by park officer.

This section is valuable because it explicitly states that motorized use is prohibited at the onset.

Parks tend to bring with them a level of respect that other land use designations do not. Most of the public are aware of what a park is and the types of behavior that are generally accepted.

[35] Park and Recreation Area Regulation (1990). http://www.qp.gov.bc.ca/statreg/reg/P/Park/180_90.htm

When people use a park, especially ones located in the backcountry, there seems to be a higher level of respect for the ecological values within the park.

When an area is designated as a park it can create problems. One problem that occurs when an area is designated as a park, is it immediately increases its profile. The park is placed on maps and people generally become more interested in visiting the park to view its special characteristics. This inevitably leads to increased use of the area and some of the risks identified in section 6.0.

An increase in the profile of an area and the subsequent rise in the number of visitors adds to the importance of having adequate enforcement to ensure that the regulations used to protect that area are followed. With the recent cutbacks in provincial funding to BC Parks enforcement has become increasingly more difficult. There has also been an overall reduction in the resources available to manage areas such as these.

Another difficulty that might be faced when establishing this area as a park is that the Prince George LRMP already addressed protected areas. The target for protected areas is met and in the current political and fiscal climate it may be very difficult to get another park approved. The Red Mountain area is in the southern portion of the Hart Ecosection, an area that has 19.5% of its land-base protected[36]. Prior to the LRMP process the Hart Ranges Ecosection had 12% of its land base protected. During the LRMP process 23 applications for new protected areas in the Hart Ecosection were received. The area surrounding Red Mountain was included in these proposals, however due to the high representation in the Hart Ranges already and the fact that the Red Mountain area did not meet some of the protected area criteria as well as other proposed areas, the application was not approved. It is still possible to designate the area as a Class A Park, however it would be a very difficult process to complete and other land designations may work just as effectively to protect its values.

7.1.2 Ecological Reserves

Ecological Reserves are a classification under the *Ecological Reserves Act.* The purpose of the Act is to protect Crown land primarily for ecological purposes. The following areas can be designated an ecological reserve:

1. Areas suitable for research and education purposes in relation to the natural environment;
2. Natural ecosystems that are representative examples;
3. Areas modified by human activity that provide an opportunity to study the recovery of the natural ecosystem;
4. Areas with rare and endangered species in their natural habitat;
5. Areas with unique and rare examples of botanical, zoological or geological phenomena.

Ecological reserves strive to limit human intervention in the natural ecosystem and thus prohibit all extractive activities.

[36] G. Ross, pers. comm. Jan. 07, 2003.

It appears as though Red Mountain could be a candidate for Ecological Reserve status based on the criteria used for designation. The primary advantage of designating it as an Ecological Reserve would be immediate protection of the area. The Ecological Reserve Regulations state that "no person shall prospect for minerals, cut timber, allow domesticated animals to graze, camp, light fires, trap or molest animals, build roads or trails, use motorized vehicles within an ecological reserve, or remove plants, animals or material from the ecological reserve". It would also reduce the number of people using the area and would thus prevent the displacement of the grizzly bear and mountain caribou. While not explicitly stated in the Ecological Reserve Regulations, recreational use within an ecological reserve would be limited.

The history of recreation in the area provides the primary disadvantage to designating the area as an ecological reserve. It will be very difficult to keep people out, especially people with a history of using the area. As with Parks, enforcement will be an issue. Ecological Reserves are also a component of the Protected Areas Strategy and were addressed during the LRMP process. Establishing an ecological reserve would face many of the same difficulties associated with creating a new Park.

7.1.3 Protected and Protection Areas

The Ecological Land Use Act (ELU Act) can be used to designate Protected Areas and Protection Areas. The ELU Act allows for the creation of an Environment and Land Use Committee that makes recommendations to the Lieutenant Governor in Council regarding the environment and resource development. From this, an OIC can be created that takes precedence over all other acts or regulations. The primary result of this type of OIC is that certain activities may be allowed, even if the associated act does not allow for it.

The ELU Act has been used to designate Protected Areas in the following circumstances:

- to allow activities that would contravene the Park Act;
- to hold land for future transfer to another agency;
- for joint management arrangements; and
- to allow further study of areas to determine appropriate management intentions.

Many of these circumstances are identified by land use planning tables, such as the LRMP process. Protected Areas under the ELU Act that allow for further study are most applicable to the Red Mountain area. These study areas usually have significant ecological and/or recreation values, however more information is required to determine what management is required. Designation as a Protected Area under this Act is not limited by time, allowing for suitable research to occur. The primary purpose of Protected Areas under the ELU Act is to allow for areas to be managed under the Park Act while allowing for activities that would normally be prohibited. While this type of designation for the Red Mountain Area may be sufficient to protect it resources, there are other land designations that would accomplish the same thing. There are no size restrictions on Protected Areas and they are managed by the Ministry of Water, Land and Air Protection under the Park Act.

Protection Areas can also be designated under the ELU Act. They are similar to Protected Areas in that they are managed from an OIC. They are however the responsibility of the Minister of Sustainable Resource Management and the Park Act does not apply. Protection Areas appear to allow for a broader range of allowable activities then Protected Areas. They only apply for one year after OIC creation. They also do not have any size restrictions. Due to the short term of a Protection Area, they do not appear to be the best solution for the issues surrounding the Red Mountain area.

7.2 Wildlife Management Lands

There are a variety of legal land designations that specifically address wildlife concerns. The following designations are applicable to the Red Mountain area:

1. Wildlife Habitat Areas[37] – Forest Practices Code of BC Act
2. Wildlife Management Areas[38] – Wildlife Act
3. Wildlife Habitat Management Areas -Land Act

The primary function of these designations is to ensure that wildlife habitat is managed to a level that ensures continued use of this habitat .

7.2.1 Wildlife Habitat Areas

The Ministry of Water Land and Air Protection developed a list of Identified Wildlife in Volume 1 of the Identified Wildlife Strategy[39]. The primary function of the list is to designate species at risk that require special management considerations during forest, range and higher level planning. The Forest Practices Code identifies Wildlife Habitat Areas (WHAs) as one of the mechanisms available to manage Identified Wildlife. WHAs are areas of limiting habitat that are managed using General Wildlife Measures (GWMs). Limiting habitat is integral to the ability of a species to survive and is scarce relative to demand for it. Grizzly bears are classified as Identified Wildlife in the Prince George Forest District and thus they are eligible for WHA consideration. Mountain caribou are currently not on the Identified Wildlife list and thus do not have GWMs associated with them. Volume 2 of the Identified Wildlife for BC will be coming out shortly and it will include mountain caribou[40]. It is expected that GWMs for mountain caribou will be developed. The Omineca Region Mountain Caribou Ungulate Winter Range Proposal and the Prince George-LRMP have already established objectives and strategies that would likely be covered under the proposed mountain caribou GWMs. Establishing this area as a Mountain Caribou WHA would probably be redundant.

WHAs can be as large as 2400ha, however most are currently around 100ha. WHAs for grizzly bears are established based on population and habitat objectives consistent with the Grizzly Bear Conservation Strategy and higher level plans. There are currently two categories of WHAs for

[37] Province of BC. 1999. Managing Identified Wildlife: Procedures and Measures.
[38] Wildlife Management Areas FAQ. Available at: http://wlapwww.gov.bc.ca/wld/wmafaq.htm
[39].Identified Wildlife. Available at: http://wlapwww.gov.bc.ca/wld/identified/
[40] D. Wilson,. Pers. Comm., Jan 04, 2002.

grizzly bears: security and foraging. Security WHAs are intended to fully protect a patch of critical grizzly bear habitat. Foraging WHAs are intended to maintain forage, security and thermal cover while allowing forest development that compliments grizzly bear habitat attributes. Security WHAs have a size range of 1 to 500ha and foraging WHAs have a range of 1 to 250ha, however these can be increased to meet site specific considerations.

There are a number of difficulties that will be encountered if this process is initiated in the Prince George Forest District. The provincial priority for grizzly bear WHAs does not include the Prince George District and thus it will be difficult to initiate the process. Foraging WHAs require that population and habitat objectives be established in the Landscape Unit Level, which has not yet been done for the Landscape Units surrounding Red Mountain area. In the Prince George LRMP, the existing GWMs for grizzly bear foraging and security WHA's are already included in the objectives and strategies of Resource Management Zone #53, which covers the Red Mountain area. Grizzly bear WHAs do not specifically address recreation and in the case of the Red Mountain Area, recreation use is the biggest issue. One final disadvantage is that these types of WHAs do not specifically address mountain caribou and the integrity of the alpine ecosystem.

7.2.2 Wildlife Management Areas

Wildlife Management Areas (WMAs) are designated using section 4 of the Wildlife Act. WMAs are established when conservation and management are considered essential to the existence of wildlife, fish and their habitats. The following habitats can be included in a WMA:

1. Habitat for endangered, threatened, sensitive or vulnerable species;
2. Required habitat for a critical life cycle stage such as spawning, rearing, calving, denning, nesting or winter feeding;
3. Migration routes or other movement corridors, and;
4. Areas containing very productive habitat and/or high species richness.

The minister, with the consent of the Lieutenant Governor in Council, has the power to designate a WMA. The land in question must also be under the administration of WLAP, which often requires a transfer of authority from the Ministry of Forests. As of August 2001 there were 22 WMAs in BC covering 231,516 ha with a size range between 17 ha and 122,787 ha.

There are a variety of advantages to designating WMAs. A major advantage of using WMAs is that site specific objectives and management strategies can be developed that can accommodate a variety of uses. There are also no size restrictions and this allows boundaries to be set that better represent home ranges of species such as grizzly bear and mountain caribou. In addition, WMAs can serve as a mechanism to implement the wildlife/habitat objectives from the Prince George LRMP.

Within a WMA, specific areas can be designated as a Wildlife Sanctuary or as a Critical Wildlife Area. Hunting, taking, trapping, wounding or killing wildlife is prohibited in a Wildlife Sanctuary. These activities are allowed within the broader WMA. A Critical Wildlife Area can

be designated to manage an endangered or threatened species. The presence of mountain caribou in the Upper Portion of the Red Mountain Creek watershed would allow for this area to be designated as so. This would be advantageous if all of Bearpaw Ridge was designated as a WMA because it would allow for the Red Mountain Area to be specifically addressed.

WMAs also have some disadvantages. WMAs require consultation with First Nations, stakeholders and the general public. Consultation is very valuable, however it has already been done during the LRMP process and doing so again would be time consuming. The area in question must also be under the administration of the Minister of Water, Land and Air Protection. This would require a Crown land transfer of administration using the Land Act. This extra step would complicate the process. WMAs also require approval from the Lieutenant Governor in Council.

7.2.3 Wildlife Management Habitat Areas

Wildlife Management Habitat Areas (WHMAs) were created during the Robson Valley Crown Land Plan (RVCLP) process[41]. The RVCLP was endorsed in 1985 by the Ministry of Lands and Parks. The purpose of the plan was to designate areas for specific land and resource management within one of six land use categories. WHMAs include land that provides important habitat for wildlife with the dominant function of these areas to protect and enhance wildlife habitat and to maintain the abundance of wildlife species. The RVCLP was incorporated in the Prince George LRMP and is included in the objectives set for RMZ #52 – Fraser Valley East (PG LRMP 1999).

WHMAs in the RVCLP were officially designated using the Land Act (Section 15- Reserves). The term Wildlife Management Habitat Area was created for this particular plan and it was used to designate specific areas as important to wildlife habitat in what was initially deemed a settlement area. The RVCLP is important because it enables specific areas to be identified that require referral to the Ministry of Water, Land and Air Protection if development in a WHMA is proposed. WHMAs were created specifically for the RVCLP and thus are not very appropriate to the Red Mountain area. However, the ability to create areas such as this using the Land Act and formal planning processes is applicable to the Red Mountain Area. The advantages and disadvantages of using the relevant sections of the Land Act to do this will be discussed in section 7.5.2.

7.3 Other Protected and Recreation Areas

There are a number of other designations used to manage areas of ecological significance, however none of then are suitable or applicable to the Red Mountain Area. Wilderness Areas under the Forest Act; Use, Recreation and Enjoyment for the Public Reserves (UREP Reserve) under the Land Act; and Greenbelt Lands under the Greenbelt Act are either no longer active or are under consideration for removal.

Forest recreation sites and trails under the Forest Practices Code are currently being transferred

[41] K. Ohleman, pers. comm. Jan. 06, 2003.

to other agencies and organizations. The primary focus recreation sites and trails is for recreation. They are not considered an appropriate option for the Red Mountain Area. BC Hydro also develops and maintains recreation areas around BC, however they tend to focus on areas close to their primary operations, such as the lakes created by damming rivers. They are not applicable to the Red Mountain area.

Another land designation option is Biosphere Reserves under United Nations Educational, Scientific and Cultural Organization (UNESCO). Biosphere reserves are designed to act as examples of sustainable development and they require global significance. The area around Red Mountain is currently too small and too obscure at a global level to be eligible for a Biosphere Reserve.

7.4 Landscape Level Planning

There are currently a variety of landscape level policy and management strategies that are applicable to the upper portion of the Red Mountain Creek watershed. Most of them apply to the broad landscape level, however they could be used to specifically address the Red Mountain area.

7.4.1. Mountain Caribou Specific Plans

In 1990 the Omineca Region Mountain Caribou Management Zone Strategy was implemented in the Prince George and Robson Valley Forest Districts and in 1993 the zones were incorporated into policies for both Forest Districts. The following types of mountain caribou habitat zones were created: High, Medium and Corridor. The upper portion of the Red Mountain Creek watershed is considered caribou high habitat. Within this zone timber harvesting is prohibited and access management to limit roads is strictly practiced. There is currently an Omineca Region Mountain Caribou Ungulate Winter Range Proposal being developed that will recommend more specific management objectives and strategies to protect caribou habitat. There is also a federal task force compiling a Recovery Action Plan for mountain caribou due to its threatened status[42]. All of these plans and options deal with mountain caribou at a landscape level, however they may not be site specific enough to adequately deal with the concerns surrounding the Red Mountain Area.

7.4.2 Grizzly Bear Specific Plans

The Grizzly Bear Management Strategy for BC identifies Grizzly Bear Management Areas (GBMAs) as an option for grizzly bear management. There are currently no GBMAs in BC. A draft report from the Grizzly Bear Scientific Panel will be presented by the end of March 2003 to the Minster of WLAP to consider the creation of the following three types of GBMAs[43]:

[42] D. Seip, pers. comm. Nov, 26, 2002.
[43] M. Austin, pers. comm. Jan. 06, 2003.

1. Linkage GBMA- small areas to restore connectivity between isolated areas;
2. Core GBMA- embedded source areas; and
3. Benchmark GBMAs-large areas to protect entire populations or sub-populations.

No hunting will be permitted in these areas. They will likely be enacted through the Wildlife Act under section 40 (Power to prohibit hunting or trapping). It is intended that they are used to provide direction at planning tables. Information regarding size restrictions of these areas and other restricted activities are not available at this time, however they would likely require strict management of recreation.

7.4.3 Higher Level Plans

In British Columbia resource management objectives for public land are developed through strategic land use planning. The Prince George LRMP is a strategic land use plan. It has identified 54 Resource Management Zones, all with specific management objectives and strategies. While impressive in its scope, it is currently implemented only as policy. Policy provides decision makers with guidance, where as *legislation* makes land use objectives legally enforceable. Policy is favourable in some instances because it allows decision makers the flexibility required when dealing with complex issues. However, when difficult situations arise that have conflicting interests and there has been adequate opportunity for all user groups and stakeholder to have input, such as with LRMPs, legislation may be the best option to ensure that objectives are met.

For a strategic land use plan to become legislation, it must be designated a Higher Level Plan (HLP). HLPs are created to provide a legal mechanism to vary and extend provisions of Forest Practices Code legislation to specifically address local resource management issues (Ministry of Forests, 2000). There are currently four types of HLPs under the Forest Practices Code: Resource Management Zone-HLP, Landscape Unit-HLP, Sensitive Area-HLP and Recreation Site and Trail-HLP. Currently when Landscape Units, Sensitive Areas and Recreation Site and Trails have objectives set by the appropriate authority they are automatically designated HLPs.

The policy and procedures for the establishment of HLPs is currently under review for the new Forest Practices and Range Act. The most significant changes are the Ministry of Sustainable Resource Management will now set objectives for Resource Management Zones, Landscape Units and Sensitive Areas. Recreation Site and Trail-HLPs are currently not included in the Forest Practices and Range Act.

7.4.3.1 Higher Level Plans: Landscape Level

Resource Management Zone-HLPs and Landscape Unit-HLPs are planning areas that incorporate a landscape level perspective for resource management. Both types of zones attempt to manage resources with a broader perspective that incorporate all natural resources within their designated areas. It is important to note that the policy and procedures for these areas are

currently under review and they may be changed. This section provides the most up to date information from the Government of BC website.

Resource Management Zones are distinct planning units that are delineated based on bio-physical characteristics, resource issues or resource management direction. RMZs were delineated during the LRMP process and each has a series of objectives and strategies to guide future land-use. The upper portion of the Red Mountain Creek watershed is located within the Bearpaw Ridge/ Pritchard Creek Resource Management Zone (RMZ #53) of the Prince George Land and Resource Management Plan (LRMP) (1999). The management intent for this RMZ is for conservation of caribou habitat and grizzly bear habitat, water quality and backcountry recreation. The primary criteria used to delineate RMZ #53 was critical habitat for mountain caribou. The following objectives for RMZ #53 are applicable to the upper portion of the Red Mountain Creek watershed:

1. Manage grizzly bear habitat to provide opportunity for population levels to increase;
2. Manage caribou habitat to provide opportunity for population levels to increase;
3. Maintain integrity of alpine and sub-alpine ecosystems and habitats;
4. Maintain the integrity of suitable areas for backcountry recreation and tourism

It is important to note that the objectives set within RMZ #53 are not part of a HLP and thus are not legally binding.

The LRMP process was valuable because it achieved stakeholder consensus. RMZ #53 covers a large area and thus incorporates many of the issues surrounding mountain caribou and grizzly bears at a landscape level. However, the objectives for RMZ #53 are not detailed or specific enough to deal with the issues surrounding Red Mountain.

There are numerous advantages to modifying the current objectives of RMZ #53 to better address the caribou and grizzly bear concerns. The current boundary of RMZ #53 encompasses all of Bearpaw Ridge and the Red Mountain area. This by default includes the high quality habitat in the area and better addresses the landscape level concerns and would only require modifying objectives for one planning unit. It would also be appropriate because it could address the recreational access to Bearpaw Ridge.

One of the major disadvantages of designating a Resource Management Zone as a HLP is the amount of time and effort required. The Chief Forester designates objectives for Resource Management Zones, which requires more public involvement, and a higher level of involvement by different agencies than is required for Landscape Unit-HLPs.

Landscape Units are important for managing biodiversity by incorporating conservation measures with integrated resource management. When creating Landscape Units, the initial step after designating specific boundaries is to assign a biodiversity emphasis for each zone. Objectives are then developed that focus on bio-diversity and other resource values. To date the primary emphasis in the Prince George Forest District has been on establishing biodiversity emphasis for landscape units. Old Growth Management Areas have been designated in two

landscape units with complete objectives. There are currently no objectives set for the three Landscape Units encompassing the upper portion of the Red Mountain Creek Watershed.

One of the major advantages of establishing Landscape Unit-HLPs is that it is a locally driven process. If an area is considered to have sufficient concerns then the District Manager can initiate the plan. Objectives for a Landscape Unit-HLP provide certainty for planners and licensees in an area by clarifying development options for the area. Landscape Unit-HLPs objectives require less time to complete than RMZ objectives because they involve less direct public involvement and they are approved by the District Manager, in consultation with a Designated Environment Official.

Landscape Units establishment can be a complicated process; it requires a large amount of planning and co-ordination. Currently the biodiversity emphasis is not set for all the Landscape Units in the Prince George Forest District, and subsequently the objectives for each zone would need to be determined. With the Landscape Unit-HLP process three Landscape Units would have to be addressed requiring more time and resources. Setting objectives for these Landscape Units may also not be specific enough to deal with the Red Mountain area.

7.4.3.2 Higher Level Plans: Site Specific

Sensitive Area-HLPs and Recreational Site and Trail-HLPs are created to manage areas that have unique site specific values. Both of these types of HLPs are applicable to the issues surrounding the upper portion of the Red Mountain Creek watershed. It is important to note that the policy and procedures for these areas are currently under review and they may be changed.

Sensitive Area-HLPs are established to manage or conserve small areas of unique or locally significant forest resources. Sensitive Areas are usually created in areas where forestry has the potential to impact unique resource values. Objectives are set that specifically address the resources in the area. Objectives are set by the District Manager in consultation with a Designated Environment Official. Objectives that apply to recreational resources are not addressed in Sensitive Area-HLPs, rather they are supposed to be addressed in Site and Trail-HLPs. There are, however, examples of Sensitive Areas being used to manage recreation resources.

The Rose Swanson Sensitive Area located in the Vernon Forest District provides an example of the effective implementation of a Sensitive Area-HLP. The primary feature in the area is a network of trails that are used primarily by the residents of Vernon. Two public meetings with stakeholders were held to identify the issues and to provide direction for the objectives and strategies developed to manage the area. The process went relatively quickly mostly because there were very few competing interests. There was very little interest by the forest industry due to forest health concerns and the young age of the timber in the area. The Sensitive Area is surrounded by private land and is within the immediate view shed of Vernon and thus forestry activities would have been limited. The biggest advantage of the process was that it addressed the public concerns for the area and provided an opportunity for the stakeholders to be actively involved in the creation of the area[44].

[44] T. McRae, pers. comm. Jan. 09, 2003.

Sensitive Area-HLPs are not intended to preclude all resource extraction from an area, rather they are used to identify compatible activities. They are valuable because they provide a level of flexibility when determining appropriate activities for an area. Sensitive Area-HLPs can be established in the absence of other HLPs, however upon the establishment of Resource Management Zone-HLPs or Landscape Unit-HLPs, Sensitive Area-HLP objectives must be amended to be consistent with the other HLP objectives. The ability to establish objectives for a Sensitive Area -HLP in the absence of other HLPs is very valuable when urgency is required. Sensitive Area -HLPs are also advantageous because they are developed primarily by the District Manager and a Designated Environment Official. This can simplify the process of establishing a Sensitive Area –HLP, both in time and resources.

The primary weakness of Sensitive Area -HLPs, especially when dealing with wide ranging wildlife species is the size restriction of 1000 ha. It is assumed however that landscape level plans address these types of concerns. Sensitive Area -HLPs are also not widely recognized by the public and thus they will likely not receive the same respect as other forms of legal land designations such as Class A Parks.

Establishing a Sensitive Area -HLP that is readily accessible to the public will require that users are educated about the area. Much of this can be accomplished through the proper use of signage indicating allowable and restricted activities. With this comes a need for enforcement and as discussed in previous sections this will be difficult to accomplish, especially in regards to recreational activities. Sensitive Areas do not have specific measures to deal with the public using an area (ie no ability to ticket people), however they can be used to signify an area as special so other legislation, such as section 105 of the Forest Practices Code, can be put in place. In areas where forestry activities do not pose a threat to the values in the area, Sensitive Area-HLPs are mainly symbolic and they serve to increase the respect for an area by its users.

Recreational Site and Trail HLPs have been eliminated from the first draft of the new Forest Practices and Range Act. There is currently no section that deals with setting objectives for recreation trails and sites, however it is hoped that amendments will be made to the final draft to include recreation sites and trails[45]. It is not likely that any amendments will designate recreation sites and trails as HLPs, however there will likely be a provision that allows for objectives to be set for trails. Recreational Site and Trail-HLPs are presented in this report because the new legislation will likely contain similar components.

Recreational Sites and Trail-HLPs are "established for the purpose of securing Crown land for public recreation and forest interpretation and enabling the minister to develop, rehabilitate or maintain sites or trails to facilitate public use and enjoyment of the forest for recreation and interpretation". Recreational Site and Trail-HLPs require the establishment of objectives and they are normally consistent with Resource Management Zone-HLPs, Landscape Unit-HLPs and Sensitive Area_HLPs. As with Sensitive Area-HLPS, they may also be established in the absence of other HLPs. While the establishment of Recreational Site and Trail HLPs is specifically for recreation purposes, the goal of each site is to provide an overall condition of safety, sanitation, *social acceptability* and *environmental soundness* that compliments other

[45] B. Marshall, pers. comm. Jan. 06, 2002.

recreation programs and facilities. This allows for objectives to be set that specifically address local concerns, such as those related to wildlife and the environment.

The District Manager is required to prioritize the designation of Recreational Site and Trail-HLPs based on the following:

1. Damage to the environment;
2. Public safety;
3. Conflicting recreation uses;
4. Conflicting non-recreation uses; and
5. Anything else that requires an urgent establishment of a site or trail.

The Chief Forester approves the objectives of Recreational Site and Trail –HLP's. Red Mountain appears to be an ideal candidate for immediate designation as it has issues that are covered in the list. If objectives could be set that are legally binding this could help resolve some of the issues. The trail objectives could deal with the specific issues surrounding the trail/road and the cabin, and they would compliment the legal land designation objectives set for the upper portion of the Red Mountain Creek watershed. As with all other designations, enforcement would be the primary weakness of such a plan. It would however be valuable to set legally binding objectives as this would allow for specific actions to be taken if objectives were not met. It would also allow for a degree of public input to ensure that all values were taken into account when the objectives were set.

7.5 Trails and Area Regulation

There are a variety of acts and regulations that specifically address trails and areas where wildlife and the environment are of particular concern. The Wildlife Act contains the Motor Vehicle Prohibition Regulation; the Land Act has sections that deal with Reserves (Sec 15), Conditional Withdrawals (Sec 17) and Prohibition of Use of Crown land in designated areas (Section 66), and; the Forest Practices Code of BC Act has sections 102 and 105 that specifically deal with forest recreation. All of these are applicable to the Red Mountain area.

7.5.1 Wildlife Act

The Motor Vehicle Prohibition Regulation under the Wildlife Act allows for areas to be closed to motor vehicles for a variety of reasons. To specify an area under the Motor Vehicle Prohibition Regulation an OIC must be created. There are numerous areas throughout the province where this regulation has been used. Some areas are closed to hunting, while others are closed to certain activities to prevent wildlife harassment and displacement. The regulation is flexible in that it can specify closure dates and restriction on types of motor vehicles along with associated activities, such as hunting.

When motor vehicles are the major concern in an area these regulations can be quite effective, however when there are multiple issues that do not include only motor vehicle use, such as the

Red Mountain Area, they may not be as appropriate. There are also problems associated with enforcement. A period of adjustment, where education is key, is required for users in the area, especially if there has been historical use by motor vehicles. The success of this regulation depends in large part on cooperation from user groups. Regulations such as this can also create conflict because they explicitly prohibit certain uses. In most cases they are used as a last resort when other means have failed. In areas where there are multiple uses and user groups, yet motor vehicles are the immediate threat, they are best applied as a short term solution until a longer term plan can be put in place that addresses all concerns

7.5.2 Land Act

The Land Act has a variety of measures that enable restrictions to be placed on specific areas. Section 15 of the Land Act, under authority of the Lieutenant Governor in Council, enables Crown land to be put under reserve for any purpose that is in the public interest. Specific terms and conditions can be placed upon the area. Section 17 under authority of the Minister, is more specific in that it enables a portion of Crown land to be designated for a particular use or for the conservation of natural or heritage resources. No examples of either of these were identified. Section 66 of the Land Act under authority of the Lieutenant Governor in Council, prohibits specific uses of Crown land in a designated area. There are currently prohibition regulations for eight areas in BC[46]. All of these areas have some level of motor vehicle prohibition due to the sensitivity of the area.

The applicable sections of the Land Act offer an advantage over the Motor Vehicle Prohibition Regulations in the Wildlife Act by the ability to prohibit or restrict other uses that are non-motorized in nature. They have the same disadvantages as other areas in terms of enforcement and a need for cooperation between user groups to be effective.

7.5.3 Forest Practices Code of BC Act

Forest Recreation is addressed by the Forest Practices Code of British Columbia Act (FPC). Section 102 and Section 105 of the FPC are both applicable to the trail and road accessing the upper portion of the Red Mountain Creek Watershed. Because these sections are under the District Managers control they are often easier to implement then the options under the Land Act or Wildlife Act.

Section 102 deals specifically with constructing, rehabilitating or maintaining a trail on crown land. The District Manager may refuse the proposal if it results in one or more of the following:

1. significant risk to public safety;
2. unacceptable damage to the environment; or
3. unresolvable conflict with other resource users.

[46] Wildlife Act.

Section 105 of the FPC allows the District Manager to restrict, prohibit or attach a condition to recreational use of existing legitimate trails, if this is required to protect a recreation resource or manage public recreation use on Crown land.

The FPC also specifically addresses operation of vehicles on recreation trails in the Forest Recreation Regulations 6(2). Motor vehicles must not be used in a manner on a recreation trail that are likely to do the following:

1. cause damage to a structure or natural resource;
2. endanger, injure or damage people or property;
3. harass, injure or kill wildlife or any other kind of animal.

A major strength of section 102 and 105 of the Forest Practices Code is that it provides an opportunity to deal specifically with the public who use an area through the issuance of tickets through non-compliance. Other types of land designations, such as Sensitive Areas, do not provide a means to directly ticket someone from the general public who contravenes the objectives set for an area. Another advantage of using this designation as that it only requires the approval of the District Manager, where as the other options discussed in this section require higher levels of government for approval. This can be advantageous when time is a limiting factor. These types of legislation could also be used as an interim measure until a longer term option can be implemented. Alternatively it can be used in conjunction with a legal land designation option to act as a deterrent for specific activities deemed incompatible with the resources values in the area.

While these sections of the FPC specifically deal with some of the concerns surrounding Red Mountain, enforcement and education is the key. Traditionally when restrictions are placed on an area under section 102 or 105 there is initially a strong enforcement presence to aid in establishing an adequate level of respect and to educate users. This level of enforcement will be difficult to apply to Red Mountain due to its remote location and the limited enforcement resources at the Ministry of Forests. The reduction of Ministry of Forests personal has also led to discussion as to which Ministry should be responsible when values such as wildlife are at risk. It has been recommended that when areas require restrictions due to wildlife concerns that the Ministry of Water, Land and Air Protection use legislation enforced by their personnel.

8.0 OTHER OPTIONS

This section presents Recreation User Agreements, a non-legislative, local agreement. They can be used in combination with a legal land designation to protect the identified values in areas such as Red Mountain.

8.1 Recreation User Agreements

With the recent cutbacks to government funding the Ministry of Forests has been making a concerted effort to distance itself from recreation management, relying ever more on user groups to manage recreation resources. Recreation User Agreements are becoming increasingly popular. These agreements are generally considered to be non-binding and non-legislative in

nature. The primary goal is to bring user groups together in order to co-operate over the recreational management of the area. There is generally a dispute resolution process in place to deal with any potential conflicts that may arise. A good example of a Recreation User Agreement is the McGregor/Torpy Winter Recreation Agreement.

The McGregor/Torpy Winter Recreation Agreement was initiated after it became apparent that conflict between winter recreationalists, initially between a commercial backcountry ski operator and the Prince George Snowmobile Club (PGSC), was about to become a major issue in the McGregor Mountains northeast of Prince George. The backcountry operator wanted to discourage snowmobile use within their operating area. The McGregor/Torpy Area is also used extensively by recreational backcountry skiers and so the Prince George Backcountry Recreation Society (PGBRS) and the McGregor Wilderness Society (MWS) were soon involved in the discussions leading up to the agreement. These discussions were facilitated by the Ministry of Forests. BC Assets and Lands, and the Ministry of Environment, Lands and Parks were also involved in discussions.

In 2000 a cooperative agreement was reached, with no regulations and no legislation, that designates eight specific areas for snowmobiling, backcountry skiing and multiple uses. The entire premise of this agreement is based on mutual respect for each user group's boundary. The agreement is still in place and there is currently an effort being made, primarily by the PGBRS and the PGSC to expand this agreement to cover the Prince George District. To date it appears as though the boundaries are being respected with only one documented "violation". The role of the Ministry of Forests is currently not known in the current agreement, making it considerably more difficult to further discussions without a facilitator. Recently an independent facilitator was found and the agreement is progressing.

There are many obvious advantages to setting up agreements such as this. The most obvious is a financial savings to the provincial government. They can be tailored to work with the specific issues surrounding an area. Another advantage is that it can bring groups together that may not normally communicate with each other. It provides an opportunity for these groups to educate each other about their particular concerns and to work together to come up with solutions that will work for all the groups. It is also a proactive approach that can identify potential problems and deal with them before they occur or get to big to adequately resolve. User agreements also aid in some of the enforcement issues. The more users you have in an area with an affiliation, the more people you have as "watchdogs". This can be considered an informal monitoring program, as it makes sure the other user groups are following the agreement. They also ensure that an organized group is maintaining any trails or structures in an area.

The major weakness of agreements such as these are that they often require a third party facilitator. The Ministry of Forests has indicated that they do not have the resources to facilitate these processes. This lack of official government involvement makes it very difficult to establish and maintain Recreation User Agreements Another disadvantage to using Recreation User Agreements for an area such as Red Mountain is they are not designed to address concerns around wildlife and other ecological values. They can however provide protection for certain values indirectly by zoning specific areas for different types of recreation. They are also a

medium to educate groups involved in the agreement as to what types of activities compliment the various ecological and wildlife values and which do not.

8.0 RECOMMENDED LEGAL LAND DESIGNATION

We propose that an area of approximately 1000 ha, encompassing the upper portion of the Red Mountain Creek watershed be designated as the Red Mountain Sensitive Area (Figure 1). The proposed boundary follows the height of land encompassing many of the ecological attributes that make the area special. It also encompasses approximately 6.5 km of the existing road used to access the cabin and the alpine area. By incorporating this portion of the road within the Sensitive Area it allows for objectives to be set that deal specifically with the number of users on the road and the mode(s) of transport to reach the alpine and the cabin.

We realize that the area encompassed by the proposed Red Mountain Sensitive Area is too small to adequately protect wide ranging wildlife species such as grizzly bear and mountain caribou. It does however serve to protect the habitat within this area. We believe the objectives set within the Prince George LRMP for RMZ #53 and the Omineca Region Mountain Caribou Ungulate Winter Range Proposal will adequately protect grizzly bear and mountain caribou at the landscape level. Other initiatives such as the Grizzly Bear Conservation Strategy and the Mountain Caribou Recovery Plan being developed will also likely address landscape level concerns.

The ability to set a variety of objectives for the Red Mountain Sensitive Area is one of the primary reasons it is the recommended legal land designation. It is also a locally driven process that only requires District Manager approval, making it one of the simplest legal land designations to establish. The District Manager is well aware of the issues surrounding this area and he will be able to set objectives that are well suited for the Red Mountain Sensitive Area.

There is a high degree of public interest in the Red Mountain Area, as well as differing views on how to manage the area. Setting objectives for this area that incorporate the different values and have effective input from the public will help to ensure that this area is successfully managed. Establishing Sensitive Area objectives does not require direct public consultation, however due to the high amount of public concern for the area, we recommend that direct input from the stakeholders be received. It is very important that the people who recreate and use the area have an opportunity to be involved in the establishment and management of the proposed Red Mountain Sensitive Area if it is to be successful.

Insert figure 1 here

8.1 Proposed Objectives and Strategies for the proposed Red Mountain Sensitive Area

Objectives set for Sensitive Areas indicate a desired future condition of forest resources. The objectives will be part of a Higher Level Plan and will be legally binding. We propose that the following objectives and strategies be used to manage the Red Mountain Sensitive Area:

Objective 1. Prevent the displacement and/or harassment of mountain caribou and grizzly bear by people who use the Red Mountain Sensitive Area.

Strategies:

- Use a graduated approach to access management to minimize motorized access to the area.
- Consider managing future recreational use of the area if wildlife species are unacceptably impacted. A limit on number of recreational users will require the establishment of a monitoring program to determine when people are having an unacceptable impact on the wildlife.
- Educate users of the area as to what activities are appropriate so as not to negatively impact the wildlife in the area.

Objective 2. Protect vegetation and soils from excessive disturbance.

Strategies:

- Designate specific trails, especially in the alpine and sub-alpine.
- Use a graduated approach to access management to minimize motorized access to the area.
- Consider managing future recreational use of the area if vegetation and soils are unacceptably impacted. A limit on number of recreational users will require the establishment of a monitoring program to determine when people are having an unacceptable impact on the vegetation and soils.

Objective 3. **Maintain an acceptable level of use, primarily recreation, that does not infringe on the above objectives.**

Strategies:

- Retain the cabin located at treeline. Improve the condition of the outhouse for safety and environmental concerns.
- Legitimize the trail constructed on Crown land to ensure unfettered public access to the Red Mountain Sensitive Area.
- Construct a bridge across Red Mountain creek that meets applicable fisheries and water quality regulations.
- Transport firewood in from an outside source as needed.
- Maintain road, trail and cabin to an acceptable level that allows for safe use.
- Monitor the number of people who use the trail, road and cabin.
- Encourage user groups to actively participate in the maintenance of the trail, road and cabin.

These objectives and strategies should be presented to stakeholders of the proposed Red Mountain Sensitive Area. These objectives and strategies will provide direction during the consultation process to ensure successful management of the area.

9.0 ADDITIONAL RECOMMENDATIONS

Establishing the Red Mountain Sensitive Area will likely not solve all of the issues currently surrounding the management of the area. Additional work will need to be done to ensure that the objectives for the Sensitive Area are met. This section will provide additional recommendations that should be used in conjunction with the Red Mountain Sensitive Area.

9.1 Access Management

In its current state the road provides relatively easy access for motorized vehicles to the proposed Red Mountain Sensitive Area. There are numerous access points to the existing road, especially in the initial portion located in the valley bottom. Preventing motorized access up the road at a limiting point will be essential to ensure that the objectives for the area are met. Two suitable locations have been identified that should restrict motorized access beyond (Figure 1). If a more suitable location is identified during the consultation process then it should be used.

We propose that a graduated approach be used to control vehicle access to the proposed Red Mountain Sensitive Area. A locked gate should initially be placed at access control point 1 (Figure 1). This would allow for motorized access to this point. If a gate was placed lower down the road it would be difficult to control motorized access from the other access points. Placing a gate at access control point 1 minimizes the risk of vehicles entering the road from other access points. If the gate was located at control point 2 there would be an increase in the number of users due to the ability of people to used motorized vehicles to access a point close to the alpine. The gate would allow for easier maintenance of the road and cabin and access for the trapper. Responsibility for who has access to the key to unlock the gate will have to be decided.

If it was found that the gate was not effective at preventing motorized vehicles from entering the alpine then we recommend that a significant portion of the road at access control point 2 be deactivated to ensure that there is no chance for motorized access beyond. This would still be close enough to the cabin (<2 km) to allow for maintenance.

If it is found that the gate and the deactivation at control point 2 has not prevented people from using motorized vehicles to access the alpine then a significant portion of the road should be deactivated directly beyond the gate. The road is quite steep at this point as it switchbacks up the slope. Re-contouring the slope at this point and putting in a narrow and steep hiking trail would be very effective at preventing motorized access beyond. Maintaining the trail and cabin from this location would be more difficult, however it would still be possible.

Access management for this area will not only apply to motorized vehicles. It is expected, at least for the short term, that the isolation of Penny and the difficult hike to reach the alpine should keep the number of users to the area relatively low. As the popularity of area increases and if access to the community of Penny improves, there will likely be an increase the number of users to the area. If an increase in the number of users if found to be negatively impacting the ecological values in the area beyond an acceptable level, then a permit or booking system along with a quota may have to be implemented. We do not expect that this will occur in the near future, however it is a tool that may eventually be required.

9.2 Monitoring Program

An effective monitoring program should be implemented to ensure that the objectives for the proposed Red Mountain Sensitive Area are met. An inventory of the ecological attributes in the proposed Red Mountain Sensitive Area will need to be completed in order to establish baseline data for comparison. There is very little empirical data available for what types of animals and plants are found in the area. Baseline data should identify the number of animals that use the area, what types of habitat are used and at what time of year mountain caribou and grizzly bears are found in the area. Baseline data should include amount and timing of recreational use. Once baseline data is established it will be important to establish Limits of Acceptable Change to the ecological values identified. Establishing a Level of Acceptable Change is described in Stanky et al (1985) and McCool and Cole (1998). This section will briefly describe some methods that can be used establish baseline data.

Estimating the number of mountain caribou and grizzly bears that use the proposed Red Mountain Sensitive Area will be difficult to accomplish, however it should be possible to determine their relative abundance and relate this to the number of people recreating in the area. A monitoring program should utilize information collected from outside the area to determine what additional factors may be impacting the wildlife that use the Sensitive Area. The combination of the information collected from the monitoring program within the proposed Red Mountain Sensitive Area and other external programs should provide the managers with an indication of what factors are impacting wildlife.

To determine if grizzly bears are being negatively impacted by recreation one of, or a combination of three methods could used. The simplest method is to determine the number of dead grizzly bears within and around the Red Mountain Sensitive Area. This provides an indication of the number of grizzly bears impacted by hunting in the area. The number of dead grizzlies is already collected and is easily obtained. A Level of Acceptable Change for this number can be set and when reached may require limiting human access and hunting.

A more complicated method can be used to determine if grizzly bears are being displaced from the Red Mountain Sensitive Area. A number of permanent sample areas can be established that are annually measured for bear sign and sightings. The Resource Inventory Committee of British Columbia (2000) has published standards that can be used to sample areas. This would allow for a more accurate inventory of habitat use in the Red Mountain Sensitive Area. A Level

of Acceptable Change in the use of the habitat over the baseline values can be set to identify when the impact of recreation is unacceptable.

Another method that could be used to determine the impact of recreationists on grizzly bears and mountain caribou is the use of radio telemetry/GPS collars or regular flight surveys. This type of study can be cost prohibitive, however it will provide the best information. GPS collars that are programmed to take readings on a scheduled basis, such as hourly, can be used to determine where the animals are in relation to the recreationists. This type of information could be used to determine when recreation is having the greatest impacts on caribou and grizzly bear.

Monitoring caribou use in the area could be accomplished through aerial observations of tracks and animal sighting in the winter (Simpson 1987). If more detailed monitoring is required, spring and summer use could be measured by establishing transects or sample plots to collect caribou sign such as tracks, pellets and browse (Quale and Kershaw 1996). This information can be used to estimate relative population size within the Red Mountain Sensitive Area. It will provide an indication over the longer term if recreation is displacing mountain caribou.

Monitoring the number of people, length of stay and time of year that recreation occurs in the Red Mountain Sensitive Area will be a very important component of the monitoring program. This can be done by using a log book located at the cabin or the trail head and/or a trail counter located at the trailhead. Simpson (1987) found that using a voluntary log book resulted in 42% of snowmobilers signing in, so this method may not be accurate enough to effectively monitor use in the area. A trail counter would only keep track of the number of users, however it would not provide information regarding the length of stay by users and their activities. Using both a log book and trail counter would provide better information. This information can then be used in combination with the above wildlife surveys when to develop a correlation between recreation use in the area and wildlife displacement. If use is found to be having a negative impact on the wildlife in the area, than a restriction on recreation may have to be implemented.

For protection of the alpine ecosystems the width of the trails can be measured to determine level of use and sensitivity of the ecosystems. As described in Shelby et al (1990), permanent sample plots or line transects could be established along existing trails and remeasured annually to determine if the trails are increasing in width. The locations of the samples should include wet and dry areas. When the trail width reaches an established target, then restrictions on recreation use may be implemented. This information can also be used to determine relative increases or decreases in the number of users.

It will also be integral to monitor use of the road leading into the Red Mountain Sensitive Area, especially the points where motorized access is controlled. The road can be monitored using permanent sample plots or lines. This information will ensure that methods of controlling access are effective, and if a graduated approach to access management is required.

9.3 Recreation User Agreement

It would be useful to implement a Recreation User Agreement between the groups who currently use the area. This agreement could be incorporated into the objectives for the Red Mountain

Sensitive Area and it should include the portion of the trail and road outside of the Sensitive Area boundary. It will ensure that an organized group or groups make commitments to maintain the trail, road and cabin. Having a Recreation User Agreement will enhance the monitoring program because there will be a means for people to express their concerns and for problems to be identified and solved early on. This process will require a mediator to facilitate development of the agreement. There are numerous groups and individuals who expressed interest in being involved in such a process.

9.4 Improve Public Access to Penny

We recommend that that an access route for motor vehicles be developed that allows for guaranteed public access to Penny. We recognize that this recommendation falls outside of the scope of this report, however the ability to access Penny entirely on public property may be a factor in the use and management of the proposed Red Mountain Sensitive Area. This could be accomplished by re-routing the road access from Longworth around private property and/or by finding a suitable landing point on public land when crossing the Fraser River by boat from the Penny Access road off Highway 16.

APPENDIX 1: CONTACT LIST

Table 2. Contact list for stakeholders.

Organization	Contact	Interest
Horse Council of BC	Steven Dubas *Zone Representative*	Represents recreational horse users in Prince George Area.
Independent	Clarence Boudreau	One of the initial builders of the road and cabin located in the watershed, resident of Penny. Original road crosses Clarence Boudreau's property.
Penny Community Association	Bill Benedict	One of the initial builders of the road and cabin located in the watershed, resident of Penny.
Penny Community Association	James and Lynn Stoltz, Tom and Ann Richardson	Represent the Penny Community Association. They currently have a proposal to legitimize an existing trail to allow for public access to Red Mountain.
McGregor Wilderness Society	Amber Shipley	Currently maintain 2 cabins – 1 at the Farm ski area, 1 on Bearpaw Ridge. They have an interest in the area between Bearpaw Ridge cabin and the Red Mountain cabin
Prince George ATV Club	Bob Orr, President	Represents ATV users in the Prince George area.
Prince George Backcountry Recreation Society	Trevor McConkey, *Vice President*	Represents the 6 major *non-motorized* backcountry user groups in Prince George (Alpine Club of Canada, Caledonia Nordics, Caledonia Ramblers, Sons of Norway, PG Naturalists and UNBC Outdoors Club.) Its members have a history of using the area in question.
Prince George Snowmobile Club	Bill Witt, Vice-chair	Represents snowmobile users in the Prince George Area
Lheidli T'enneh	Jane Calvert	Referral Co-ordinator
Trapper	Robert G. McCoy	A portion of his trapline tenure (717T002) covers the area in question.
Trapper	Ken Hooker	A portion of his trapline tenure (717T003) covers the area in question. (No response)

Table 3. Contact list of various resource specialists.

Organization	Contact	Specialty
Ministry of Forests – Research Branch	Dale Seip, *Regional Wildlife Habitat Ecologist*	Wildlife research, primarily large mammals such as grizzly bear, caribou and wolves
Ministry of Forests –	Jeff Burrows, *Acting*	LRMP issues

Organization	Contact	Specialty
District Office	*Operations Manager*	
Ministry of Water, Land and Air Protection	Doug Heard, *Regional Wildlife Biologist*	Large ungulate research, grizzly bears
Ministry of Forests – Research Branch	Craig Delong, *Regional Ecologist*	Ecosystem classification and relevant research
Ministry of Forests – District Office, Recreation Technician	Warren Birkenshaw, *Recreation Officer*	Ministry of Forests perspective on recreation management in area
Ministry of Sustainable Resource Management	Shannon Carson	LRMP Issues
Ministry of Water Land, and Air Protection	Don Cadden	Fisheries
Independent	Mike Nash	Recreational and ecological interactions. Author Outdoors this Week for Prince George this Week newspaper.
Ministry of Sustainable Development – Community Watersheds	Tom Muirhead	Domestic water supply within community watersheds
Independent	Dave King	Former Regional Habitat Biologist WALP (retired) and avid recreationalist
Ministry of Water, Lands and Air Protection- BC Parks	Gail Ross	PG LRMP and park establishment.
BC Assets and Lands	Dennis Butchart	Reviewed Benedict Proposal for Commercial Recreation in the Red Mountain Area.
Carrier Lumber Ltd.	Bernie Tobin, RPF	Woodlands Superintendent

Table 3. Other resource specialists consulted for particular issues

Resource person	Affiliation
Matt Austin	Ministry of Water, Land and Air Protection, Victoria.
Dennis Butchart	Omineca/Peace Region, BC Asset and Land Corporation
Doug Wilson	Ministry of Water, Land and Air Protection, Prince George,BC
Bill Marshall	Ministry of Forests: Forest Practices Branch-Recreation, Victoria.
Ted McRae	Ministry of Forests, Vernon Forest District
Klause Olemann	BC Assets and Lands

APPENDIX 2: QUESTIONAIRES

Red Mountain Recreation User Questionnaire

1. What type(s) of recreation do you or your members do in the area?

2. Indicate your area of interest on the map. (this will be done at the meeting)

3. List the features of the area that are important to you? Why do you use the area?

4. What is your season(s) of most intense use?

5. Approximately how many visits per year do you or your members make to the area?

6. What is your perspective on future use in the area i.e. increase or decrease in number of users and what types of recreation?

7. What type of development do you require to maintain and/or increase your recreational use in the area?

8. Do you have any current or potential conflicts with other user groups in the area? Can you briefly describe the issues?

9. Do you have any recommendations for methods of co-operating with other users in the area? Do you currently have communication channels for co-operation with other users?

10. If restrictions or outright bans of certain land/recreation use in the area is required to maintain grizzly bear, mountain caribou and the alpine ecosystem, would you support this? Would you support this even if your specific type of recreation is deemed inappropriate? What type of restrictions would you support?

11. Do you believe that a legal land designation will be adequate to protect the identified ecological values in the area? Why or why not? If no what else should or could be done?

12. Please provide any other comments or concerns you have with the Red Mountain area.

Red Mountain Area Wildlife Habitat Questionnaire

1. What are the major habitat issues in this area? What features make this a important wildlife resource? Are there any reports written on this area?

2. What species use the Red Mountain area?

3. Is the upper portion of Red Mountain Creek watershed considered a critical habitat patch for any of these species? Why?

4. Does Red Mountain fall within a Grizzly Bear Management Area?

5. Is the conservation or management of this area considered essential to the continued well being of resident or migratory wildlife? Is this area eligible for a Foraging WHA? Can you recommend any legal land designation strategies that would be appropriate for this area?

6. Do you have any concerns surrounding the area and access to it – in particular the existing road and cabin? Concerns by season or type of access?

7. What are your concerns if this area is developed to provide grizzly bear and other wildlife viewing opportunities? (recreational and commercial) Does this require permits, authority from MWLAP?

8. Do you have concerns for wildlife habitat with horse trips or llama trips in this area? (recreational and commercial)

9. What are some mitigation strategies that could be used to minimize the impact on wildlife? recreation (including helicopters); wildlife viewing; pack trips; etc.

10. Are you aware of any indicators used for monitoring to determine impacts to wildlife? Or projects that are working on them?

11. Please provide any other comments or concerns you have with the Red Mountain area.

APPENDIX 3: BLUE AND RED LISTED SPECIES IN THE PRINCE GEORGE AND ROBSON VALLEY FOREST DISTRICTS

Species in the Prince George Forest District that are red and blue listed

Scientific Name	English Name	Global Rank	Subnational	COSEWIC (Committee on the status of endangered species in Canada)	BC Status
Acipenser transmontanus pop. 3	White Sturgeon (Nechako River population)	G4T1Q	S1		RED
Acipenser transmontanus pop. 4	White Sturgeon (Lower Fraser River population)	G4T2Q	S2		RED
Acipenser transmontanus pop. 5	White Sturgeon (Upper Fraser River population)	G4T1Q	S1		RED
Ardea herodias herodias	Great Blue heron, *herodias* subspecies	G5T5	S3B,S4N		BLUE
Asio flammeus	Short-eared Owl	G5	S3B,S2N	SC (1994)	BLUE
Botaurus lentiginosus	American Bittern	G4	S3B,SZN		BLUE
Colias meadii	Mead's Sulphur	G4G5	S3		BLUE
Cygnus buccinator	Trumpeter Swan	G4	S3S4B,S4N	NAR (1996)	BLUE
Dolichonyx oryzivorus	Bobolink	G5	S3B,SZN		BLUE
Epitheca canis	Beaverpond Baskettail	G5	S3		BLUE
Grus canadensis	Sandhill Crane	G5	S3S4B,SZN	NAR (1979) G. canadensis tabida assessed	BLUE
Gulo gulo luscus	Wolverine, *luscus* subspecies	G4T4	S3	SC (1989) WESTERN POPULATION ONLY	BLUE
Hybognathus hankinsoni	Brassy Minnow	G5	S3S4		BLUE
Martes pennanti	Fisher	G5	S3		BLUE
Myotis septentrionalis	Northern Long-eared Myotis	G4	S2S3		BLUE
Ovis canadensis	Bighorn Sheep	G4	S2S3		BLUE
Rangifer tarandus pop. 1	Caribou (southern population)	G5T2Q	S2	T (MAY 2000) SC (MAY 2002) COSEWIC recognizes two	RED
Rangifer tarandus pop. 15	Caribou (northern mountain population)	G5T4	S3S4	SC (MAY 2002)	BLUE
Salvelinus confluentus	Bull Trout	G3	S3		BLUE
Salvelinus malma	Dolly Varden	G5	S3S4		BLUE
Somatochlora brevicincta	Quebec Emerald	G3	S2S3		BLUE
Thymallus arcticus pop. 1	Arctic Grayling (Williston Watershed population)	G5T1Q	S1		RED
Ursus arctos	Grizzly Bear	G4	S3	SC (MAY 2002)	BLUE

Acorus americanus	American sweet-flag	G5	S2S3		BLUE
Anemone virginiana var. *cylindroidea*	riverbank anemone	G5T?	S1		RED
Apocynum x floribundum	western dogbane	G4G5	S2S3		BLUE
Arnica chamissonis ssp. *incana*	meadow arnica	G5T?	S2S3		BLUE
Callitriche heterophylla ssp. *heterophylla*	two-edged water-starwort	G5T5	S2S3		BLUE
Camissonia breviflora	short-flowered evening-primrose	G5	S1		RED
Carex rostrata	swollen beaked sedge	G5	S2S3		BLUE
Carex scoparia	pointed broom sedge	G5	S2S3		BLUE
Carex sprengelii	Sprengel's sedge	G5?	S1		RED
Carex tenera	tender sedge	G5	S2S3		BLUE
Carex tonsa var. *tonsa*	bald sedge	G4G5T?	S2S3		BLUE
Draba fladnizensis	Austrian draba	G4	S2S3		BLUE
Dryopteris cristata	crested wood fern	G5	S2S3		BLUE
Eriophorum vaginatum ssp. *vaginatum*	sheathed cotton-grass	G5T?	S3		BLUE
Juncus stygius	bog rush	G5	S2S3		BLUE
Malaxis brachypoda	white adder's-mouth orchid	G4	S2S3		BLUE
Malaxis paludosa	bog adder's-mouth orchid	G4	S2S3		BLUE
Megalodonta beckii var. *beckii*	water marigold	G4G5T4	S3		BLUE
Melica smithii	Smith's melic	G4	S2S3		BLUE
Nymphaea tetragona	pygmy waterlily	G5	S2S3		BLUE
Oxytropis jordalii ssp. *davisii*	Davis' locoweed	G4T3	S3		BLUE
Pedicularis parviflora ssp. *parviflora*	small-flowered lousewort	G4T4	S3		BLUE
Platanthera dilatata var. *albiflora*	fragrant white rein orchid	G5T?	S2S3		BLUE
Pyrola elliptica	white wintergreen	G5	S2S3		BLUE
Senecio plattensis	plains butterweed	G5	S2S3		BLUE
Sparganium fluctuans	water bur-reed	G5	S2S3		BLUE

Global and subnational ranking	COEWIC ranking
1 = critically imperilled	E - endangered
2 = imperilled	T - threatened
3 = vulnerable to extripation/extinction	SC - special concern
	NAR - not at risk
4 = apparently secure	DD - data deficient
5 = demonstratablely widespread, abundant and secure.	

Species in the Robson Valley Forest District that are red or blue listed

Scientific Name	English Name	Global Rank	Subnational	COSEWIC (Committee on the status of endangered species in Canada)	BC Status
Acipenser transmontanus pop. 5	White Sturgeon (Upper Fraser River population)	G4T1Q	S1		RED
Ardea herodias herodias	Great Blue heron, *herodias* subspecies	G5T5	S3B,S4N		BLUE
Asio flammeus	Short-eared Owl	G5	S3B,S2N	SC (1994)	BLUE
Botaurus lentiginosus	American Bittern	G4	S3B,SZN		BLUE
Clossiana alberta	Albert's Fritillary	G3	S3		BLUE
Colias meadii	Mead's Sulphur	G4G5	S3		BLUE
Erebia magdalena	Magdalena Alpine	G5	S3		BLUE
Gulo gulo luscus	Wolverine, *luscus* subspecies	G4T4	S3	SC (1989) WESTERN POPULATION ONLY	BLUE
Martes pennanti	Fisher	G5	S3		BLUE
Myotis septentrionalis	Northern Long-eared Myotis	G4	S2S3		BLUE
Numenius americanus	Long-billed Curlew	G5	S3B,SZN	SC (1992)	BLUE
Oeneis bore edwardsi	White-veined Arctic, *edwardsi* subspecies	G5T3	S3		BLUE
Oncorhynchus clarki lewisi	Cutthroat Trout, *lewisi* subspecies	G4T3	S3SE		BLUE
Ovis canadensis	Bighorn Sheep	G4	S2S3		BLUE
Rangifer tarandus pop. 1	Caribou (southern population)	G5T2Q	S2	T (MAY 2000) SC (MAY 2002) COSEWIC recognizes two	RED
Salvelinus confluentus	Bull Trout	G3	S3		BLUE
Somatochlora brevicincta	Quebec Emerald	G3	S2S3		BLUE

Ursus arctos	Grizzly Bear	G4	S3	SC (MAY 2002)	BLUE
Anemone canadensis	Canada anemone	G5	S2S3		BLUE
Botrychium boreale	boreal moonwort	G?	S1		RED
Carex rostrata	swollen beaked sedge	G5	S2S3		BLUE
Carex tonsa var. *tonsa*	bald sedge	G4G5T?	S2S3		BLUE
Draba cinerea	gray-leaved draba	G5	S2S3		BLUE
Eleocharis tenuis	slender spike-rush	G5	S2S3		BLUE
Epilobium ciliatum ssp. *watsonii*	purple-leaved willowherb	G5T?	S2S3		BLUE
Epilobium hornemannii ssp. *behringianum*	Hornemann's willowherb	G5T4	S2S3		BLUE
Erigeron trifidus	three-lobed daisy	G2G3	S2		RED
Eriophorum vaginatum ssp. *vaginatum*	sheathed cotton-grass	G5T?	S3		BLUE
Festuca minutiflora	little fescue	G5	S2S3		BLUE
Minuartia austromontana	Rocky Mountain sandwort	G4	S2S3		BLUE
Salix petiolaris	meadow willow	G5	S2S3		BLUE
Senecio plattensis	plains butterweed	G5	S2S3		BLUE
Solidago gigantea ssp. *serotina*	smooth goldenrod	G5T?	S1		RED
Solidago nemoralis ssp. *longipetiolata*	field goldenrod	G5T5	S2S3		BLUE
Trichophorum pumilum	dwarf clubrush	G5	S2S3		BLUE

APPENDIX 4: - LIST OF RESOURCES

Grizzly Bears

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Webster, L. 1997. The effects of human related harassment on caribou (*Rangifer tarandus*). Report prepared for Min. of Envir. Williams Lake, B.C. 27 p. http://srmwww.gov.bc.ca/car/resinv/wldinv/inventory/caribou/mtncar/harass/impacts.pdf

Legislation

Ecological Reserve Act (1996). www.qp.gov.bc.ca/statreg/stat/E/96103_01.htm#section2

Ecological Reserve Regulations (1975). www.qp.gov.bc.ca/statreg/reg/E/EcolReserve/335_75.htm.

Forest Practices Code of BC Act. http://www.qp.gov.bc.ca/statreg/stat/F/96159_00.htm

Forest Practices Code of British Columbia Act: Forest Recreation Regulation. www.qp.gov.bc.ca/statreg/reg/F/ForestPrac/58_99.htm#section%206

Higher Level Plans: Policy and Procedures – Landscape Units and Objectives. www.for.gov.bc.ca/tasb/legsregs/fpc/hilevel/chap4.htm.

Higher Level Plans: Policy and Procedures – Resource Management Zones and Objectives. www.for.gov.bc.ca/tasb/legsregs/fpc/hilevel/chap4.htm.

Higher Level Plans: Policy and Procedures – Sensitive Areas and Objectives. www.for.gov.bc.ca/tasb/legsregs/fpc/hilevel/chap6.htm.

Higher Level Plans: Policy and Procedures – Interpretive Forest Sites, Recreation Sites, Recreation Trails and Objectives. www.for.gov.bc.ca/tasb/legsregs/fpc/hilevel/chap7.htm

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Proposed Red Mountain Senstive Area Boundary

Legend

- Rail line
- Highway
- Gravel Roads
- Stream
- Cabin
- Original Access Road
- New Trail
- Disturbance or Alpine Cover
- Lake/Wetland
- Proposed Red Mountain Sensitive Area Boundary
- Caribou High Habitat Zone
- Potential Access Control Points

P. Beaudry and Associates Ltd.
Integrated Watershed Management

1 0 1 2 3
Kilometers

Scale: 1:60,000

Base map from Government of BC
TRIM 2 Data Base NAD 83 January 2003

Figure 1. Proposed boundary for the Red Mountain Sensitive Area.