

**Mountain Goat Ungulate Winter Range Proposal**  
**for the**  
**Fort St. James Forest District**  
**(Report U-7-019)**

Prepared By:

Joanne Vinnedge, MSc, RPBio<sup>1</sup>  
Darren Fillier RPF, RPBio<sup>2</sup>

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<sup>1</sup> BC Ministry of Environment, Environmental Stewardship Division, Omineca Region, 2537 Stones Bay Rd., Fort St. James, BC, V0J 1P0.

<sup>2</sup> BC Ministry of Environment, Environmental Stewardship Division, Skeena Region, 3726 Alfred Ave., Smithers, BC V0J 2N0

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## 1.0 Executive Summary

The Omineca and Skeena Regions within the Environmental Stewardship Division of Ministry of Environment (MOE) propose to establish 309,671 hectares and associated General Wildlife Measure, of mountain goat ungulate winter range (UWR) in the Fort St. James Forest District. Establishment is via the Government Actions Regulation of the *Forest and Range Practices Act* (FRPA).

MOE used and considered the best science and knowledge that was available throughout the development of this UWR proposal.

Approval of units identified for mountain goat UWR will result in the removal of 2677.5 ha of Timber Harvest Land Base (THLB); within the allocated 6,855 hectares of Type 1 UWR budget still available for the Fort St. James Forest District, and consistent with implementation policy.

Stakeholder responses received were supportive of the proposal, while most of the First Nations responses were generally supportive, but were very concerned that the GWM would only apply to FRPA activities, and not all mining activities.

An extensive summary of UWR identification methodology, results, forest licensee, interagency and First Nation consultation is presented for MOE Deputy Minister consideration. Given current mountain goat conservation values as well as legislative and policy adherence, it is recommended that UWR U-7-019 be established.

## 2.0 Introduction

### ***Legal Authority:***

The Environmental Stewardship Division of the Ministry of Environment (MOE) is charged with the task of developing Ungulate Winter Range (UWR) areas and General Wildlife Measures (GWMs) to ensure winter survival for ungulate species in the Omineca and Skeena Regions. Under the authority of sections 12(1) of the Government Actions Regulation (B.C. Reg. 582/2004) of the Forest and Range Practices Act (FRPA), UWR can be established for specified ungulate species. Section 9(2) of the same regulation provides the means to establish GWMs for a UWR. General Wildlife Measures accompany a designated UWR area and consider key life requisites.

The overall intent of candidate ungulate winter ranges is to:

- 1) Identify the areas that are necessary for the winter survival of mountain goat,
- 2) Meet the wildlife objectives set out in the Fort St. James LRMP, and
- 3) Minimise the impact to timber supply.

### 3.0 Study Area

The study area includes approximately 2.8 million hectares within the Fort St. James Forest District. The northern two-thirds are predominantly mountainous with wide, flat valleys. Ecosections include the Eastern Skeena Mountains and Southern Omineca Mountains. The southern third of the study area includes portions of the Babine Uplands and Manson Plateau Ecosections, characterised by wide valleys and more rolling upland and rounded mountains (Demarchi, 1996).

Identified mountain goat ungulate winter range areas encompass 309,671 hectares of habitat, ranging in elevation from 1000 to 2473 metres above mean sea level. Alpine tundra and subalpine parkland/scrub encompass the majority of the proposed mountain goat UWR polygons (Table 1), with some overlap into treed portions of the Englemann Spruce-Subalpine Fir (ESSF), Interior Cedar Hemlock (ICH), Sub-boreal Spruce (SBS) and Spruce-Willow-Birch (SWB) Biogeoclimatic zones.

**Table 1.** Proportion of Mountain Goat Ungulate Winter Range within Biogeoclimatic subzones within the Fort St. James Forest District.

| Biogeoclimatic Zone or subzone                                      | Area (ha) | Proportion of UWR (%) |
|---|-----------|-----------------------|
| BAFAun (Alpine Tundra - undifferentiated Boreal Altai Fescue)       | 106110.6  | 34.3                  |
| ESSFmc (Engelmann spruce-subalpine fir – moist cold)                | 57993.8   | 18.7                  |
| ESSFmcp (Engelmann spruce-subalpine fir – moist cold parkland)      | 58300.3   | 18.8                  |
| ESSFmv1 (Engelmann spruce-subalpine fir – Nechako moist very cold)  | 192.6     | 0.1                   |
| ESSFmv3 (Engelmann spruce-subalpine fir – Omineca moist very cold)  | 19737.2   | 6.37                  |
| ESSFmvp (Engelmann spruce-subalpine fir – moist very cold parkland) | 29480.7   | 9.5                   |
| ESSFwv (Engelmann spruce-subalpine fir – wet very cold)             | 16974.8   | 5.5                   |
| ESSFwvp (Engelmann spruce-subalpine fir – wet very cold parkland)   | 5975.0    | 1.9                   |
| ICHmc1 (Interior Cedar Hemlock – Nass moist cold)                   | 1377.9    | 0.4                   |
| SBSmc2 (Sub-boreal Spruce – Babine moist cold)                      | 692.5     | 0.2                   |
| SBSwk3 (Sub-boreal Spruce – Takla warm cool)                        | 206.6     | 0.1                   |
| SWBmk (Spruce Willow Birch - moist cool)                            | 2806.4    | 0.9                   |
| SWBmks (Spruce Willow Birch - moist cool scrub)                     | 9654.6    | 3.1                   |

| Biogeoclimatic Zone or subzone | Area (ha) | Proportion of UWR (%) |
|--------------------------------|-----------|-----------------------|
| Total alpine                   | 106110.6  | 34.3                  |
| Total subalpine parkland/scrub | 103410.6  | 33.3                  |
| Total treed                    | 99981.8   | 32.3                  |

## 4.0 Mountain Goat Ecology and Habitat Requirements

### **Species Account Information: Mountain Goat**

Scientific Name: *Oreamnos americanus*

Species Code: M\_ORAM

Status: Yellow-listed.

### **Winter Range Characteristics**

As with many ungulates, winter is a critical season for mountain goats (Poole *et al.* 2009). Movements are restricted by deep snow conditions. The suitability of an area as mountain goat winter range is strongly influenced by the presence of escape terrain (Triton 2002, Gross *et al.* 2002). Favourable escape terrain is associated with open or exposed rock outcrops that have rugged slopes ranging from 35° to 60° (McNay *et al.* 2006, Poole *et al.* 2009). The distance of dispersal from escape terrain is generally not over 500m (Gross *et al.* 2002, Poole and Heard 2003).

Interior ecotypes of mountain goats will use lower elevations to escape heavy snows and cold temperatures, and upslope higher elevation areas where wind scouring exposes vegetation and mobility is improved. Warmer solar aspects are also important, indicating more favourable conditions of lower snow depth, sublimation and thermal melting (Poole *et al.* 2009).

Mountain goat winter habitat selection may differ during higher snowfall winters or in areas with greater snowfall, selecting lower elevation dense forests, versus greater use of alpine in either shallow, dry snow areas or in winters of low snow cover (Poole *et al.* 2009). Cliffs, overhangs, caves and scattered ledges or dense conifer clumps provide cover in alpine areas (Poole *et al.* 2009). Lower elevation forested conditions provide both forage and thermal cover.

Mountain goats are generalist herbivores. Winter diets include conifers such as subalpine fir (*Abies lasiocarpa*), grasses, forbs, mosses, and lichens (Blower 1982, Fox

and Smith 1988). Conifer browse is particularly important during winter, particularly in coastal or interior deep snow areas (Poole *et al.* 2009).

## 5.0 Methodology

Proposed mountain goat ungulate winter range polygons were developed through a Bayesian modeling approach, using Netica®, ESRI's ArcView®, and Microsoft Access® to help select the candidate areas (McNay *et al.* 2006). Model development was based on a series of consultative workshops (Hengeveld 2003), and further refined through an additional workshop for the purpose of application within the Fort St. James Forest District. The mountain goat UWR modeling procedure used a combination of terrain (TRIM), forest cover and Baseline Thematic Mapping to predict areas that provided the most suitable escape terrain and associated winter range attributes. Model structure emphasized identification of escape terrain, which was then extended to describe winter range characteristics using solar loading, forage terrain, and a forage-weighted distance buffer around escape terrain. Escape terrain was modelled using a measure of steep slope, rocky land cover, and surface roughness. Thermal cover, however, was not considered a limiting factor to the value of an ungulate winter range polygon in the Bayesian model applied in this study to delineate goat winter range polygons (McNay *et al.* 2006).

The model was iteratively assessed against relocations of radio-collared goats in 3 study areas located in the adjacent Mackenzie Forest District prior to applying the model in the Fort St. James Forest District.

A validation exercise was then undertaken to determine the accuracy of the habitat supply model for selecting mountain goat UWR polygons. Fifty-seven randomly-sampled polygons (including 7 polygons identified as escape terrain, but not UWR), were flown and evaluated to determine if the UWR designation was a correct classification. Methodology and results are summarised in Sulyma (2006).

In addition to the Geographic Information System (GIS) evaluation of winter range capability, other reviews were also completed. These were:

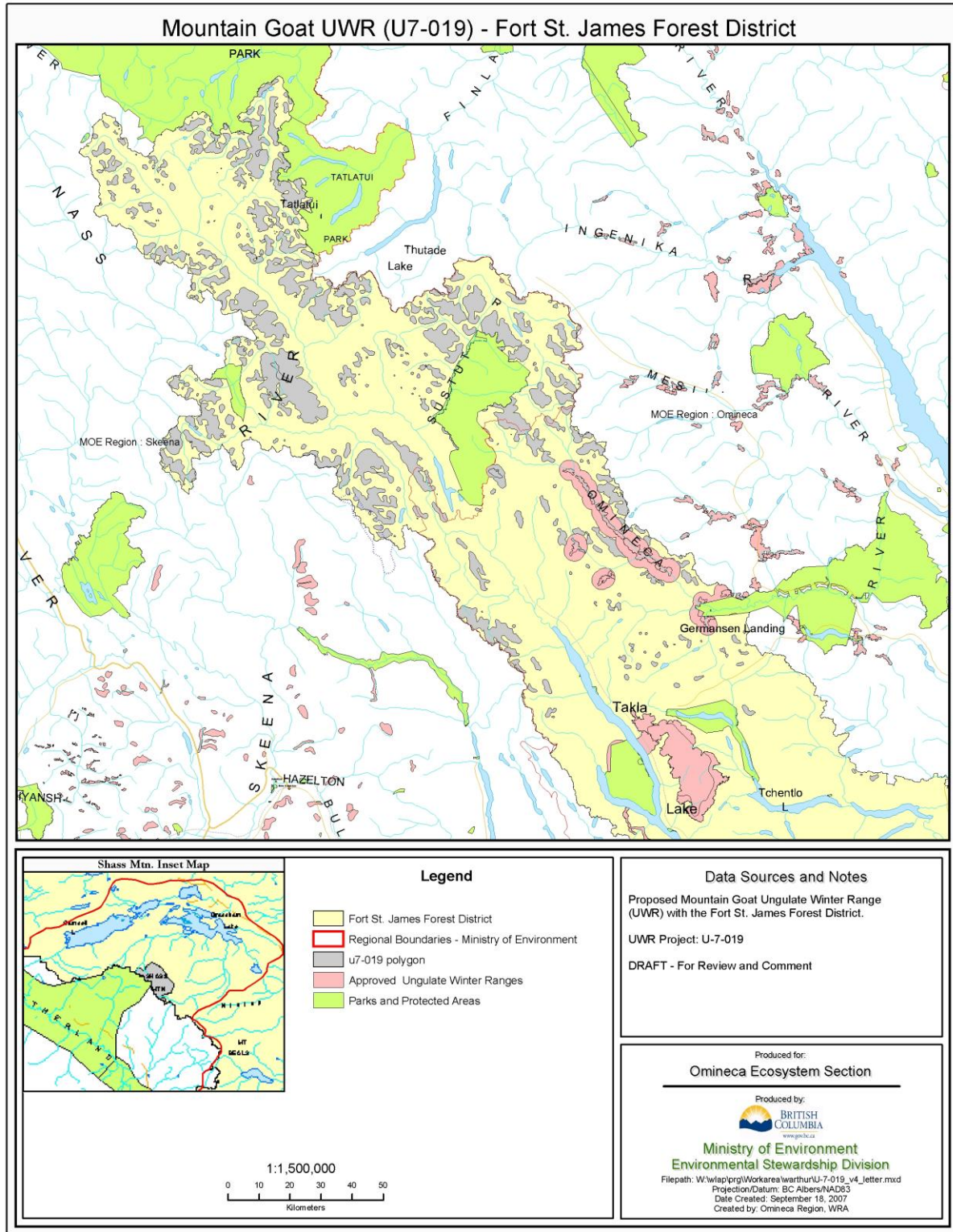
- A review of any historical data (survey or anecdotal) collected within the area on ungulate distribution and habitat use patterns (Schultze 1994, Hazelwood 1980, Hazelwood 1981);
- An assessment of the specific winter mountain goat habitat characterizing the area (Sulyma 2006);
- Analysis of potential impacts to forest and non-timber resources using a GIS; and,
- Consideration of the social objectives detailed in the Fort St. James LRMP.

## 6.0 Results

Model application to the Fort St. James study area resulted in the prediction of 309,503 hectares of mountain goat winter range. Any polygons that overlapped with parks and protected areas or approved UWRs (specifically UWR U7-003 and U7-015) were deleted. An additional area above 1500m on Mt. Shass, near Fort St. James, is known to support a small isolated population of mountain goats, and was added based on anecdotal information. Each distinct polygon was assigned a unique unit number, for tracking purposes. Resultant polygons are summarised in Figure 1.

The validation exercise indicated that while sampled polygons contained some areas that were not characteristic of UWR, a large portion of many of the identified polygons did contain habitat characteristics expected in mountain goat winter range. Mountain goat use was documented in 35 of 50 polygons, and all polygons that contained goat locations or tracks were assessed as either preferred or equivocal range. The validation procedure indicated the model performed well (89% correct classification rate).

Figure1. Proposed mountain goat UWR within the Fort Saint James Study Area





## 7.0 Fort St. James Land and Resource Management Plan (LRMP)

The Fort St. James LMRP was completed in 1999. General Management Direction provided direction specific to mountain goats and was intended to apply across the Plan area for all land and resource activities. In addition, site-specific objectives or strategies were provided for some specific Resource Management Zones.

### **General Management Direction**

#### **Mountain Goat**

Objective — Manage alpine habitats and adjacent areas to maintain mountain goat populations.

Identify, survey and map goat habitat.

Identify and provide movement corridors between mountain ranges to prevent fragmentation of populations.

Avoid or minimize broadcast burning on high elevation blocks to reduce impact on subalpine goat habitat.

Retain open mature and old forest stands in goat winter range areas below the treeline (i.e., steep bluffs, cliffs).

Harvesting adjacent to goat habitat should mimic natural openings.

In mountain goat habitat, endorse access management planning with the intent of deactivating non-essential roads and minimizing the amount and duration of new access.

Timing elements of resource development in the proximity of valuable goat habitat will be considered.

Objective — Mitigate impacts of access to mountain goat habitat.

Where practical, locate main haul roads away from identified mountain goat habitat.

Manage motorized vehicle access on secondary roads in proximity to identified mountain goat habitat.

Design cutblocks and roads adjacent to goat habitat to reduce access to mountain goats and reduce visual exposure of mountain goats.

Where possible, maintain appropriate buffers around identified mountain goat habitat features.

Mountain goats are mentioned specifically in the following Resource Management Zones:

Takla-Middle Resource Management Zone (RMZ):

Objective — Manage valuable habitats for a variety of species.

Consider the maintenance of habitat when integrating resource development plans with:

- caribou and goat habitat on Mt. Sidney Williams, Pyramid Peak and Tsitsutl Mountain

If appropriate, consider applying some form of special management designation.

Mitchell RMZ:

Objective - Manage for the goat population on Mitchell Range.

Inventory the goat population

Develop and implement strategies to maintain viable goat populations.

Hogem RMZ:

Objective — Manage valuable habitats for a variety of species.

Consider the maintenance of habitat when integrating resource development plans with:

- mountain goat habitat below Silver and Groundhog/Twin creeks

Bait RMZ:

Objective — Manage valuable habitats for a variety of species.

Consider the maintenance of habitat when integrating resource development plans with:

- a) the Bait Mountain range.

Sustut RMZ

Objective — Manage valuable habitats for a variety of species.

Consider the maintenance of habitat when integrating resource development plans with:

- Bear Lake and upland habitats

Inventory and map habitat capability/suitability for grizzly bear, mule deer, moose, mountain goat and caribou, for use in developing a Co-ordinated Access Management Plan.

Skeena RMZ:

Objective — Manage for the goat population on the Kitlangas range.

Increase education for pilots and other aircraft personnel about the potential impacts of repeated harassment to goat populations.

Objective — Manage valuable habitats for a variety of species.

Conduct habitat inventories in association with habitat capability/suitability mapping to identify specific wildlife habitat areas (grizzly bear, mule deer, moose, mountain goat, caribou high and caribou medium), for use in developing a Co-ordinated Access Management Plan.

#### Squingula, Upper Omineca, Upper Sustut, Groundhog and Canyon Lake RMZs:

Objective — Manage valuable habitats for a variety of species.

Conduct habitat inventories in association with habitat capability/suitability mapping to identify specific wildlife habitat areas (grizzly bear, mule deer, moose, mountain goat, caribou high and caribou medium), for use in developing a Co-ordinated Access Management Plan.

The identification of Ungulate Winter Range areas necessary for the winter survival of mountain goats helps to address in part, the first General Management Direction objective, as well as some of the specific Resource Management Zone objectives. However, all of the Fort St. James LRMP management direction with respect to mountain goats is non-legal guidance. The Forest Practices Board has recognized that early strategic land use plans such as the Fort St. James LRMP were developed under the assumption that they would be implemented under the *Forest Practices Code of British Columbia*, with its strategic to operational hierarchy. The implementation of the *Forest and Range Practices Act* placed significant reliance on a 'non-legal' realm to maintain the social license set out in the strategic land use plans (Forest Practices Board, 2008).

## **8.0 General Wildlife Measures (GWM)**

The Environmental Stewardship Division of the Ministry of Environment, Omineca and Skeena Regions recommends the following proposed General Wildlife Measure be established for the ungulate winter range UWR U7-019:

**GWM 1** – Within all U7-019 Mountain Goat Ungulate Winter Range Units:

- a) Timber harvesting and road and trail construction must not occur within the mountain goat winter range units except where provided for by GWM (b).
- b) GWM (a) does not apply where guyline tiebacks are required to facilitate timber harvesting
- c) Trees felled in accordance with GWM (b) or section 2(3) of the *Forest Planning and Practises Regulation* that fall within the mountain goat winter range must be retained on-site.

Exemption from this General Wildlife Measure is described as per Appendix 1.

## 9.0 Resource Impacts

### 9.1 Forest and Range Resource Impacts

Impacts to forest tenure holders from the implementation of the GWM for this UWR should be minimal. Approval of units identified for mountain goat UWR in the Fort St. James Forest District will result in the removal of 2677.5 ha of Timber Harvest Land Base (THLB); within the allocated 6,855 hectares of Type 1 UWR budget still available for the Fort St. James Forest District, and consistent with implementation policy.<sup>3</sup>

The Timber Supply Assessment was completed by Bill Arthur, Senior Ecosystem Biologist, Ministry of Environment, Omineca Region.

Forestry activities should have limited impacts on Fort St. James mountain goat UWR, given the proposed UWR units are all high elevation areas characterized by steep slopes, rock and alpine conditions that have minimal overlap with the THLB. Although mountain goat related GWM's are more conservative as they propose 100% retention within polygon boundaries, the overlap between the THLB and polygon area is minimal due to these UWR characteristics.

Mountain Goat UWR units overlap with two range tenures, RAN072666 and RAN0076439. The proposed GWM is not anticipated to impact these tenures.

There are no overlaps with proposed mountain goat UWR units and Woodlots.

### 9.2 Other Resource Impacts

The designation of this UWR should present only minimal conflicts to mineral exploration or development. As stated by Sulyma (2006), for activities not under the guidance of FRPA (e.g., commercial recreation), designation of UWR will provide awareness of key features for wintering mountain goats and permit the evaluation of activities such that winter range values are not compromised (e.g., Wildlife Guidelines for Backcountry Tourism/Commercial Recreation).

### 9.3 Other Ungulate Winter Ranges

Currently-approved UWRs (U7-003 and U7-015) for northern caribou (*Rangifer tarandus*) showed overlap with proposed mountain goat UWR polygons during the modelling process. Boundaries between U7-015 and this UWR (U7-019) have been designed such that no spatial overlap exists. Suitable mountain goat UWR polygons within U7-003 are located within Caribou High management zones where timber

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<sup>3</sup> Timber Supply Review removal of Environmentally Sensitive Areas (ESA<sub>W1</sub> and ESA<sub>W2</sub>) resulted in the allocation of 8,000 ha of THLB budget to be applied to Type 1 UWR. (Timber Supply Branch, MOFR) in the Fort St. James Forest District. 1,145 ha were applied to U7-002 (Fort St. James mule deer UWR), and 6,855 ha are still available for allocation.

harvesting and road building is already excluded, and are therefore excluded from this proposal.

## **10.0 Stakeholder Review/Impacts**

### **10.1 Forest Licensees**

All Forest Licensees that operate in the Fort St. James Forest District were referred the UWR package in September, 2007. An additional request for feedback regarding material adverse impacts or undue constraints on the ability of a tenure holder to exercise their rights was sent in October 2008. In general, questions were received about consistency with current UWR budget allotment, or the risk that UWR units may cut off or constrain access to other THLB. No Forest Licensees indicated any material or adverse impact on delivered wood costs and/or placement of undue constraint on their ability to exercise their agreement holder rights. Supportive feedback was received from both Canfor and the District of Fort St. James Community Forest.

Forest Licensee responses are summarised as follows:

**Apollo Forest Products** – Questioned why the new polygons were different from the original section 7 notice areas, and asked about consistency with the UWR budget numbers for Ft. St. James.

MOE response – the new linework is based on a more refined model, as well as validation work. Better product. Proposal is within UWR budget allotment.

**BC Timber Sales** – No formal comments received.

**Canfor** – 1) Regarding material adverse impacts, Canfor expressed concern that a UWR polygon could effectively cut off/constrain access to THLB that is outside the UWR. Wanted wording to allow road access in those rare instances. 2) As per Apollo Forest Products comment, wanted to know about the accounting for the remaining UWR budget. 3) Expressed concern re. tight timeline for feedback re. material adverse effects. 4) Received response indicating no material adverse impacts anticipated. 5) Received some wording suggestions.

MOE Responses: 1) Outlined the exemption process which would allow for road access if necessary. 2) Explained that we have a UWR budget accounting process, and are consistent with our allotment. 3) Acknowledged concern re. timeline. Noted limited response from Canfor given the 4 referrals they'd received, and asked for feedback re. referral coordination. Did not receive reply. 5) Adjusted some wording as per suggestions, and left in reference to leaving CWD on site for biodiversity function and other ecosystem benefits.

Canfor stated they do not have significant concerns with U7-019 and in fact support the UWR.

**District of Fort St. James – Community Forest** – Received supportive email.

**Pope and Talbot/Conifex** – No formal comments received (Pope&Talbot underwent bankruptcy during the referral period). Conifex replied they had no information to provide re. material adverse impacts.

### **No responses were received from:**

|                     |                                     |
|---------------------|-------------------------------------|
| Canyon Tree Farms   | Stuart Lake Lumber                  |
| Carrier Lumber      | Brave Holdings                      |
| T'ugus Timber       | Za Marie Economic Development Corp. |
| B&T Forest Products |                                     |

## **10.2 Other Resource Agencies**

Government agencies to which the referral document was sent include:

- Ministry of Agriculture and Lands - Integrated Land Management Bureau (ILMB)
- Ministry of Energy, Mines and Petroleum Resources,
- Ministry of Forests and Range, Fort St. James Forest District,
- Ministry of Tourism, Culture and the Arts

ILMB indicated while they had no significant input, they liked the referral format. The Ministry of Forests and Range, Fort St. James Forest District, provided a letter of support after receiving some clarification with respect to haul corridors and forest health activities. No comments were received from the other resource agencies.

## **10.3 First Nations**

An email and hard copy package of the proposed UWRs was mailed to all affected First Nations and a minimum of 2 follow-up phone calls or emails were made. Meetings were held to discuss the proposal with those First Nations that indicated a willingness to meet.

### **Consultation Summary – Omineca Region**

First Nation consultation within the Omineca Region involved 10 First Nations: Halfway River, Kwadacha, McLeod Lake, Nak'azdli, Takla Lake, Tlazt'en, Tsay Keh Dene, West Moberly, Wet'sewet'en and Yekooche. Consultation activities included telephone calls, letters, information packages, e-mails and face-to-face meetings over 18 months. Supportive emails were received from Kwadacha, Nak'azdli and Tlazt'en First Nations.

Takla Lake and Tsay Keh Dene First Nations were generally supportive of the initiative, but were very concerned that the GWM would only apply to FRPA activities, and not mining. While no formal comment letter was received from the Takla Band, MOE staff did meet with them three times, had a number of discussions, and received informal comments. Concerns expressed were similar to those of Tsay Key Dene and Kwadacha – the UWR approach is not holistic enough, and needs to be large and look at connectivity issues. Very importantly, they felt the UWR designation should not apply only to Forest and Range activities, but also to mining. They are very concerned about mining activities.

West Moberly staff indicated they had no capacity to look at this proposal, but provided some general UWR comments. They stressed that under First Nation law, the UWR designation must apply to all human activity, not just Forestry. The priority should be

first for conservation purposes, then second for access for First Nations, then finally access for all others (eg. industry, snowmobiles, heli-ski). The approach to protecting UWRs should be broader – areas need to be buffered, cumulative impacts need to be considered, and a broader, more holistic way of looking at the land needs to be used.

### **Consultation Summary – Skeena Region**

First Nation consultation within the Skeena Region involved five First Nations: Gitksan; Nisga'a; Lake Babine Nation; Kaska Dena; and Tahltan. Consultation activities included telephone calls, letters, information packages, e-mails and face-to-face meetings over 11 months. Ample time and opportunity was provided to discuss issues, ask and answer questions and comment on the proposal. First Nation communities were engaged in this proposal at the Band level with technical staff and at the House level with individual Chiefs, representatives and community members.

Letters of support were received from the Gitksan and Tahltan First Nations. Nisga'a, Lake Babine Nation and Kaska Dena did not provide direct correspondence. Consultation activities adhered with respective Treaty and Short Term Forestry Agreement consultation processes. As such, this consultation effort ought to fulfill MOE policy and established due-diligence.

A complete consultation summary regarding this proposal is provided in separate Regional documents.

## 11.0 Literature Cited

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## Appendix 1- Exemption from UWR U7-019 GWM

The following information is intended to provide background information and support to the legal order establishing U7-019. This appendix is not part of the legal order.

1. As per section 2(2) of the Government Actions Regulation, the order entitled “ORDER – Ungulate Winter Range #U7-019” does not apply in respect of:
  - a. Any of the following entered into before the order takes effect:
    - i. A cutting permit;
    - ii. A road permit;
    - iii. A timber sale license that does not provide for cutting permits;
    - iv. A forestry license to cut issued by a timber sales manager under section 47.6(3) of the *Forest Act*;
    - v. A minor tenure.
  - b. A declared area;
  - c. Areas described in section 196(1) of the *Forest and Range Practices Act*, and
  - d. Areas referred to in section 110 of the *Forest Planning and Practices Regulation*.

In these instances the requirement to comply with the order and the General Wildlife Measures does not apply.

2. Authority to consider an exemption from these General Wildlife Measures is provided in Section 92(1) of the *Forest Planning and Practices Regulation*. An exemption may be provided if the Minister’s delegate is satisfied that the intent of the General Wildlife Measure will be achieved or that compliance with the provision is not practicable, given the circumstances or conditions applicable to a particular area.

If an exemption is desired, an exemption application should be submitted to the Minister’s delegate (Regional Manager - Ministry of Environment, Omineca or Skeena Region, depending where the UWR unit is located) with a rationale describing the nature of the problem and options to integrate winter range conservation with proposed forest practices. An exemption form ([295KB Word doc](#)) from general wildlife measures for ungulate winter ranges (UWR) or wildlife habitat areas (WHA) can be found at <http://www.env.gov.bc.ca/wld/frpa/index.html>.

This submission will assist in timely consideration of the matter, and will inform the conditions, if any, of the exemption that may be granted prior to commencement of activities. Upon receipt of a complete exemption application, a determination will normally be made within 14 days of receipt of the application. Incomplete packages will be returned to the proponent for re-submission.