

**Peace Arm Stone Sheep  
Ungulate Winter Range (UWR)  
(U-7-006) Report**

**Mackenzie Forest District  
Omineca Region**

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## Table of Contents

Table of Contents .....	2
Background .....	3
Peace Arm Site Description .....	3
General Assessment Methodology .....	3
Species Account Information.....	4
Land Designation .....	5
Mackenzie Land and Resource Management Plan LRMP – Resource Direction .....	5
Forestry Resource Impacts.....	6
Other Resource Impacts .....	7
Management Objectives - Desired Habitat Condition .....	7
Appendix 1 - Summary of Consultation .....	10
Appendix 2 – Literature Cited .....	12
Appendix 3 – Peace Arm Stone Sheep UWR Area Maps .....	13

## Background

High and low elevation south facing slopes north of the Peace Arm of Williston Reservoir contain critical winter habitat for the last significant population of Stone's sheep (*Ovis dalli stonei*) at the southern extent of their range in BC. A few small, isolated herds exist further south of the Peace Arm, with the Pine River currently marking the southern extent of their distribution in BC (Wood and Hengeveld 1998). The rainshadow effect on the lee side of the Rocky Mountains and the common Chinook winds result in lower snow accumulations, which provides good Stone's sheep habitat in combination with the sandstones and shales of the foothills area (DeLong et al. 1994). The north Peace Arm area currently supports a resident population of 75-100 Stone's sheep (PFWWCP, data on file).

## Peace Arm Site Description

This Ungulate Winter Range (UWR) includes two areas, both with south-facing alpine slopes and lower elevation, south or west-facing areas of rocky outcrop interspersed with timber, on the north side of the Peace Arm of Williston Reservoir between 1200 and 1900 metres in elevation (Map 1, appendix 2 ). The UWR area includes the AT un, ESSFmvp4, ESSFmv4, BWBSmw1 and BWBSmw2 biogeoclimatic zones.

The Natural Disturbance Type (NDT) for these Biogeoclimatic zones are:

Biogeoclimatic Zone	Natural Disturbance Type (NDT)
ESSFmvp4 (moist very cold – Graham)	NDT 2
BWBSmw1 (moist warm – Peace) BWBSwk2 (wet cool – Graham)	NDT 3
AT un (Alpine Tundra) ESSFmvp4 (wet very cold parkland - Graham)	NDT 5

Snow depths are low to moderate: measurement taken in the winter of 1990 showed 53 cm at 740 meters elevation (Wood, 1993).

## General Assessment Methodology

Significant research has been conducted on Stone S heep north of the Peace Arm in recent years. These sheep acted as a source population for a transplant to the south Peace Arm in the early 90's; a few of the source herd sheep were radio-collared at that time and their movements and habitat use monitored (Backmeyer, 2000). A more recent study was

initiated in 1999, involving the radio-collaring and monitoring of several sheep wintering at both high and low elevations primarily in response to concerns about winter tick infestations (M. Wood, PFWWCP, personal communications). This study is ongoing and involves monitoring of seasonal movements patterns, habitat use, lamb survival, population size, winter tick infestation, and other health parameters. An aerial winter survey conducted in 2000 confirmed a minimum of 65 sheep between the Nabesche River and Butler Ridge (Wood and Schwantje, in prep). The area was re-surveyed in April 2002 and 72 sheep were sighted (PFWWCP, data on file).

## Species Account Information

### Winter Ecology and Habitat Requirements – Biological Rationale

Scientific Name: *Ovis dalli stonei*  
Species Code: M\_OVDA  
Status: Yellow-listed (any indigenous species or subspecies (taxa) which is not at risk in British Columbia).

#### Provincial Range -

Thermal Cover - Stone sheep (blue-listed) are mountain ungulates that utilize alpine and subalpine habitats. Stone sheep have very specific requirements for key and limited habitat types. They need windblown, grassy slopes as winter range; steep, secure natal areas where ewes can safely bear their lambs; steep rugged cliffs where they can escape from predators; and access to mineral licks. Thus, in order to maintain Stone sheep populations, escape terrain, winter forage and migration routes need to be maintained. Given the available information, thermal cover is not considered limiting to stone sheep populations and therefore should not be included in the ungulate winter range objectives at this time.

Although mountain sheep have minimal direct conflict with forest harvesting activities, maintaining forested corridors between alpine areas is also important to avoid isolation of sub-populations. Therefore, minimizing fragmentation and maintaining landscape-level connectivity during land use planning is recommended.

Winter Forage - Stone sheep forage on windswept ridges where they feed predominantly on grasses and sedges. Seip (1983) reported Stone sheep near Fort Nelson preferred forage grasses include *Poa* spp. Backmeyer (1995) found radio-collared transplanted Stone sheep (Peace Arm) used primarily alpine habitats as well as shrub/grass communities and conifer bluffs (escape terrain/thermal cover) during winter.

Potential risk factors to Stone sheep include fire suppression, which has resulted in the loss of grazing habitat due to encroachment of woodlands/shrubs. In addition, wild sheep easily catch diseases carried by domestic sheep. Therefore, every effort must be made to avoid any contact between wild and domestic sheep.

Access Management and Human Disturbance - Increased road access, poaching, and all-terrain vehicle (ATV) use are potential risk factors that need to be addressed near sheep winter ranges.

Similar to mountain goats, the potential impact helicopters and other human disturbances (aircraft, blasting) have on Stone sheep varies with the timing (season), frequency and duration of disturbance (Stockwell, 1991, Bleich et al. 1994. Frid 1996).

## Land Designation

This UWR is located within the Mackenzie Timber Supply Area and is within the operating area of Slocan Forest Products Ltd. Abitibi Consolidated Company of Canada retains tenured cutblocks and roads within in Peace Arm area.

There are no Wood Lot Tenures or Tree Farm Licences within the UWR area.

## Mackenzie Land and Resource Management Plan LRMP – Resource Direction

This UWR is located within the and Zone #26 Schooler - General Resource Management Zone and Zone #24 Nabesche – General Resource Management Zone, of the Mackenzie Land and Resource Management Plan.

Zone #26 Schooler – General Resource Management Zone – The intent of this zone is to manage for a wide array of extractive and non-extractive uses and values where emphasis may shift from time to time in specific areas to maintain opportunities for timber, mineral and oil and gas development balanced against other values such as wildlife and wildlife habitat, fish and fish habitat, heritage and culture, scenic areas and recreation. With specific management objectives to:

Objective - Manage wildlife populations at sustainable levels to meet both consumptive and non-consumptive use levels, consistent with the management direction of each RMZ.

Within a “General” RMZ the LRMP as identified that connectivity of important habitats, **must be** designed at the landscape level to ensure that there is no impact to timber supply during the term of that plan.

With the seral stage retentions targets:

Seral stage retention targets for mature and old forests by biogeoclimatic variant subzone within each natural disturbance type is to be achieved within the RMZ as detailed in the following table.			
Natural Disturbance Type (NDT)	Biogeoclimatic Zone	Mature and Old Forest (%)	Old Forest (%)
NDT 1	ESSF	>36	>19
NDT 2	SBS	>31	>9

	ESSF & SWB	>28	>9
NDT 3	SBS & BWBSa	>23	>11
	ESSF	>23	>14

Plan patch size distribution to emulate natural disturbance patterns as detailed in the following table.

### Patch Size Distribution

Natural Disturbance Type (NDT)	<40 ha	40 – 80 ha	80 – 250 ha *
NDT 1	30-40	30-40	20-40
NDT 2	30-40	30-40	20-40

Natural Disturbance Type (NDT)	<40 ha	40 – 250 ha	250 – 1000 ha *
NDT 3	10 – 20	10 – 20	60 - 80

\* or larger if required for caribou management, forest health or if natural disturbance pattern dictates.

Zone #25 Nabesche – General Resource Management Zone (RMZ) - The intent of this zone is to manage for a wide array of extractive and non-extractive uses and values where emphasis may shift from time to time in specific areas to maintain opportunities for timber, mineral and oil and gas development balanced against other values such as wildlife and wildlife habitat, fish and fish habitat, heritage and culture, scenic areas and recreation. With specific management objectives to:

Objective - Manage wildlife populations at sustainable levels to meet both consumptive and non-consumptive use levels, consistent with the management direction of each RMZ.

This zone has the same connectivity, seral stage retention targets and patch size objectives as Zone #26 Schooler RMZ (above).

## Forestry Resource Impacts

There are no proposed or approved category A cut blocks within the proposed UWR area. The proposed area has a gross area of 5,248.2 ha, of which 442.6 ha is within the Timber Harvesting Land Base (THLB). There is an Environmental Sensitive Area (ESA) impact budget of 4,045 ha for the Mackenzie TSA. We are recommending no commercial forest harvesting (100% netdown) within this UWR, we will use 442.6 ha of that ESA budget.

### Peace Arm Stone Sheep UWR Timber Impact Summary (ha)

UWR Unit No.	Gross Area	THLB	% Net Down <sup>1</sup>	THLB Budget Used
2	609.4	18.7	100	18.7
3	95.4	17.6	100	17.6
6	674.8	31.8	100	31.8
7	270.7	61.9	100	61.9
8	184.2	59.9	100	59.9

9	229.1	32.1	100	32.1
10	1676.4	72.6	100	72.6
11	291.4	64.0	100	64.0
12	1079.4	78.1	100	78.1
13	137.4	5.9	100	5.9
Total	5248.2	442.6	100	442.6

<sup>1</sup>Base upon management objectives

## Other Resource Impacts

This is a moderate geothermal potential east of Schooler Creek, the Mineral Title Map showed no active mineral tenures within this UWR. A data search (August 2002) show no known gas fields within the area of the UWR, the “Butler” field is located east of this area. There was historical placer activity in this area (Branham Flats between 1931 to 1940), which is now flooded by the Williston Reservoir. The designation of this UWR should not present any conflicts to this claim or other mineral development. However, there may be concerns with oil and gas exploration and development at higher elevation.

## Management Objectives - Desired Habitat Condition

### Warning

The following planning objectives are a unofficial consolidation of the management objectives established within the legal order pertaining to this Ungulate Winter Range. Official ungulate winter range orders may be accessed and downloaded from this Web Site [http://wlapwww.gov.bc.ca/wld/uwr/ungulate\\_app.html](http://wlapwww.gov.bc.ca/wld/uwr/ungulate_app.html) .

While every attempt has been made to ensure accuracy and completeness, these management objectives cannot be guaranteed. Users should always refer to the official order, which maybe amended from time to time,

Maintain Stone Sheep winter ranges to provide high suitability foraging opportunities (desired habitat attributes include: burns, south and west-facing windswept ridges, conifer bluffs, shrub/grass communities), screening and snow interception cover. This will be accomplished by applying the following specific management objectives to the proposed UWRs:

### **Timber Harvesting**

No commercial forest harvesting within these winter range units.

### **Forest Health**

Manage forest health to reduce conflicts between Stone Sheep and bark beetle management. Limit harvest to forest health sanitation control activities judged not to be a detrimental impact to habitat.

Maintain a mature forested buffer (200 m no harvest zone) adjacent to escape terrain/thermal cover or forested movement trails and licks.

### **Range Management**

Within all UWR units

- Manage for Stone Sheep to reduce forage conflicts between Stone Sheep and livestock and also to reduce disease transfer between Stone Sheep and domestic sheep.
- Livestock use will not exceed more than 10% of current year's alpine and sub-alpine grasses, sedges, rushes, forbs and shrub growth.
- Avoid livestock use of critical escape terrain, including but not limited to, steep slopes, rocky bluffs and cliffs, undisturbed forage sites adjacent to escape terrain.
- No livestock grazing should occur on south facing slopes until shrub leaf-out.
- New range development features such as, but not limited to, waterholes, fences, salt blocks, corrals, access road and trails will not be developed within the UWR unit.
- To reduce disease transfer between wild sheep and domestic sheep, do not allow domestic sheep within UWR unit for grazing or vegetation control.

### **Fire Management**

Within all UWR units:

- Minimize the amount of shrub encroachment on grazing areas
- Limit fire suppression within winter range units, which do not pose a significant risk to adjacent forest lands.
- Reflect UWR objectives in the Ministry of Forest District Fire Management Plan.
- Allow for prescribe fires or natural fires within winter range units area to reduce loss of grazing habitat due to encroachment of woodlands/shrubs.

### **Access Management**

Within all UWR units:

- Maintain Stone Sheep winter range by minimizing human disturbance and access.
- Where reasonable alternatives exist, plan the location and design of major/secondary access routes to avoid the winter range units.



- Where road/trails are constructed within these winter ranges, de-build or plant road/trails to limit access to escape terrain/thermal cover, forested movement trails and licks.

## Appendix 1 - Summary of Consultation

Contact Name	Response / Comments
Romona Blackwell MRSM – Mineral Planner Omineca-Peace Region	<ul style="list-style-type: none"> <li>• Designation of this UWR would not conflict with mineral tenure development</li> </ul>
Dan Boulianne – Senior Planning Forester Abitibi Consolidated	<ul style="list-style-type: none"> <li>• Report sent for Review and comment (Feb. 7/03)</li> <li>• E-mail to Dan Boulianne (March 14/03) requesting comments from Abitibi.</li> <li>• Received a e-mail from James Rockwood – Planning Forester (March 17/03) advising me they review the proposal and would be responding soon.</li> <li>• Received a e-mail from Dan Boulianne (March 23/03) indicating the this UWR was now not in their operating area and had sent the report to Slocan for comments.</li> <li>• No further response from Abitibi expected.</li> </ul>
Lars Hulstein – Slocan Mackenzie Operations	<ul style="list-style-type: none"> <li>• Received the report (March 24/03) from Dan Boulianne due to changes in re-alignment of operating areas between Slocan and Abitibi.</li> <li>• Phone Lars on April 2/03, he has received the reports and will comment soon.</li> <li>• Received detailed comments on Peace Arm Stone Sheep UWR on April 11, 2003.</li> </ul> <p>- Would like to see a adaptive management feedback loop to insure the UWR area and objectives get updated as our understanding and information improves.</p> <p>- Limited support for the UWR. Recommend using a process like the current “Ospika” goat project procedures for this area, and management via that approach.</p> <p>- Concern over the existing mainline road access within 2km of the proposed UWR have been addressed by limiting this objective to “new” access roads.</p>
Bill Warner – Manager BC Timber Sales Office Prince George	<ul style="list-style-type: none"> <li>• Report sent for Review and comment (Feb. 7/03)</li> <li>• Jim Reid – BC Timber Sales, e-mail response (March 26/03), where he does not see any real issues with this UWR and only limited conflicts with forestry.</li> </ul>
Dave Francis – District Manager Mackenzie Forest District	<ul style="list-style-type: none"> <li>• Report sent for Review and comment (Feb. 7/03)</li> <li>• E-mail to Bruce Armstrong (operations manager) March 14/03 requesting comments from the</li> </ul>

Contact Name	Response / Comments
	<p>Mackenzie District.</p> <ul style="list-style-type: none"> <li>• Meet with Bruce Armstrong (March 31/03) requesting comments from Mackenzie District.</li> <li>• Phone call to Stefan Tack – Zone Officer (April 2/03) requesting comment on the UWR.</li> <li>• E-mail sent to Bruce Armstrong on April 22, 2003, requesting comments, if no response back by April 28, 2003, we will assume there are no conflicts with the Peace Arm UWR.</li> <li>• Received an e-mail from Bruce Armstrong (April 22, 2003, the district didn't have any specific concerns with the proposal.</li> </ul>
<p>Chief Bernie Metecheah – Halfway River First Nation</p>	<ul style="list-style-type: none"> <li>• Report sent for Review and comment (Feb. 7/03)</li> <li>• Contacted the Halfway River First Nation office on April 2/03, we will have to resend the report due to change in the chief position. It is now Chief Joyce Morin.</li> <li>• FAX sent April 2/03 requesting confirmation of UWR areas are within traditional territory.</li> <li>• No response back.</li> <li>• May 15, 2003 a final letter was sent to Chief Joyce Morin requesting comments/input within two weeks, No response back.</li> </ul>
<p>Chief Johnny Pierre – Tsay Key Dene First Nation</p>	<ul style="list-style-type: none"> <li>• Report sent for Review and comment (Feb. 7/03)</li> <li>• Contact from Trever Toma – TKD Band Office (Feb 25/03) to setup a presentation to Chief and Council (April?)</li> <li>• 2 Messages left for Trever Toma to contact me.</li> <li>• FAX sent April 22, 2003 requesting confirmation of UWR areas are within traditional territory and for any comments</li> <li>• May 15, 2003 a final letter was sent to Chief Johnny Pierre requesting comments/input within two weeks, No response back.</li> <li>• Meeting June 5, 2003 with Robert and Trever Toma to review UWR for Northern Caribou and talk about the Peace Arm UWR's</li> <li>• June 18, 2003 received a phone call from Robert Toma, where they support the establishment of the three UWR along the Peace Arm</li> </ul>

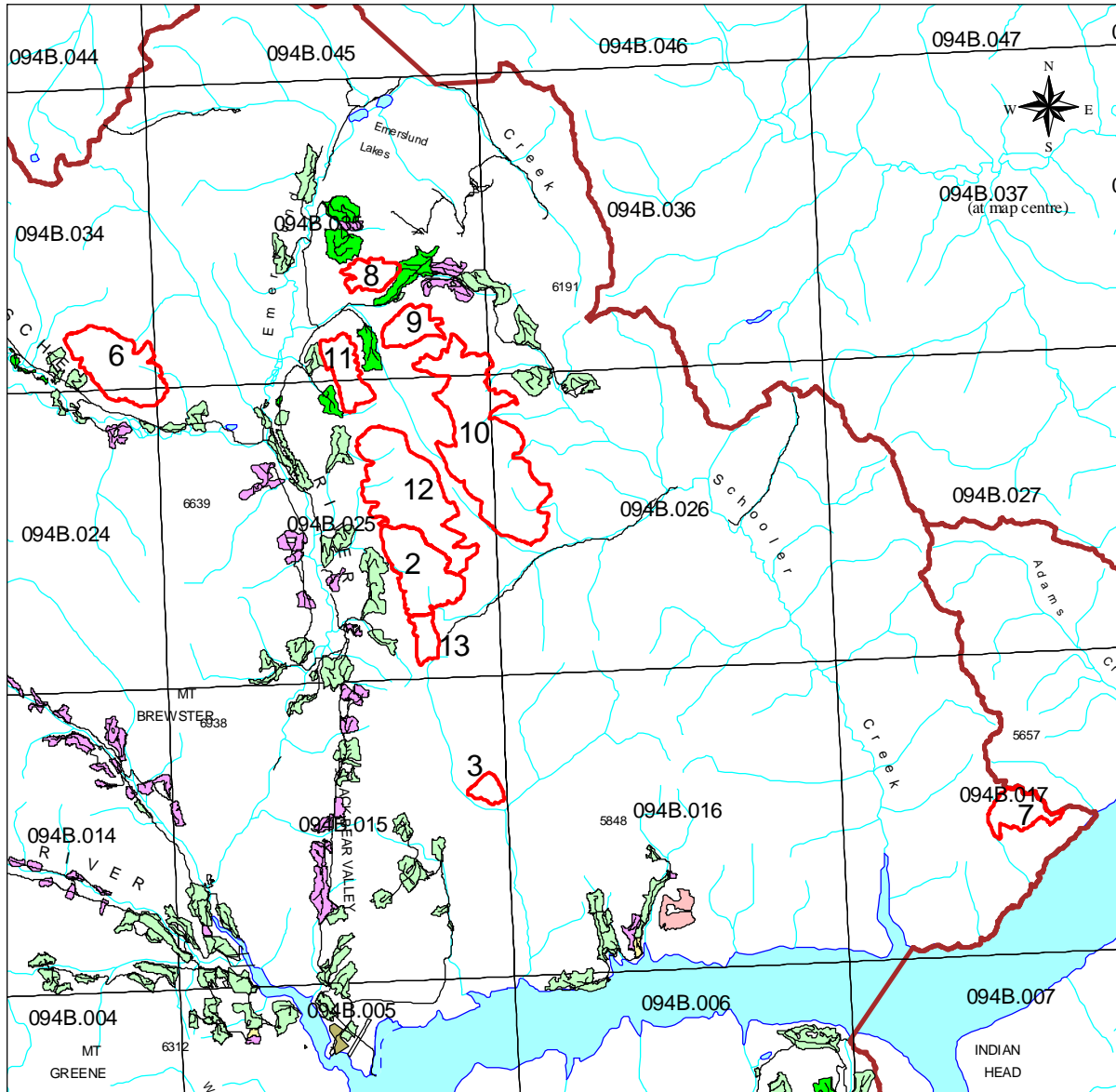
## **Appendix 2 – Literature Cited**

- Backmeyer R. 1995. Mount Frank Roy Stone Sheep Transplant. Peace/Williston Wildlife Program. BC. Environment. 24 pp.
- Backmeyer, R. 2000. Seasonal habitat use and movements of transplanted and source herd Stone's sheep, Peace Arm of Williston Reservoir (1990 – 1994). Peace/Williston Fish and Wildlife Compensation Program Report #226. 21 pp. plus appendices
- Bleich, V.C., R.T. Bowyer, A.M. Pauli, M.C. Nicholson and R.W. Anthers. 1994. Mountain sheep (*Ovis Canadensis*) and helicopter surveys: ramifications for the conservation of large mammals, *Biological Conservation* 70: 1-7.
- DeLong, C., D. Tanner, and M.J. Jull. 1994. A field guide for site identification and interpretation for the Northern Rockies portion of the Prince George Forest Region. Ministry of Forests Land Management Handbook Number 29. Ministry of Forests, Prince George, BC. 141 pp.
- Frid, A. 1996. Responses by Dall's sheep to helicopter disturbance: preliminary data from the southwest Yukon. *Caprinaea News*: Nov, pp 3-6.
- Seip, D. 1983. Stone sheep study - Fort Nelson
- Stockwell, C.A. G.C. Bateman and J. Berger. 1991. Conflicts in national parks: a case study of helicopters and bighorn sheep time budgets at the Grand Canyon. *Biological Conservation* 56: 317-328.
- Wood, M.D. and P.E. Hengeveld. 1998. Mt. Frank Roy/Mt. Monteith Stone's sheep transplant evaluation. Peace/Williston Fish and Wildlife Compensation Program Report #174. 14 pp.
- Wood, M.D. and H. M. Schwantje. In prep. Ecology and Health of Stone's sheep (*Ovis dalli stonei*) wintering at low elevation in north-eastern BC. Year 1 Progress Report (1999/2000). Peace/Williston Fish and Wildlife Compensation Program. Prince George, BC.

### ***Appendix 3 – Peace Arm Stone Sheep UWR Area Maps***

- Map 1 – Water and Transportation (scale 1:250,000)
- Map 3 – Timber Harvesting Land Base Map (scale 1:250,000)

# Map 1 - Peace Arm Stone Sheep UWR



1:250,000

2 0 2 Kilometers

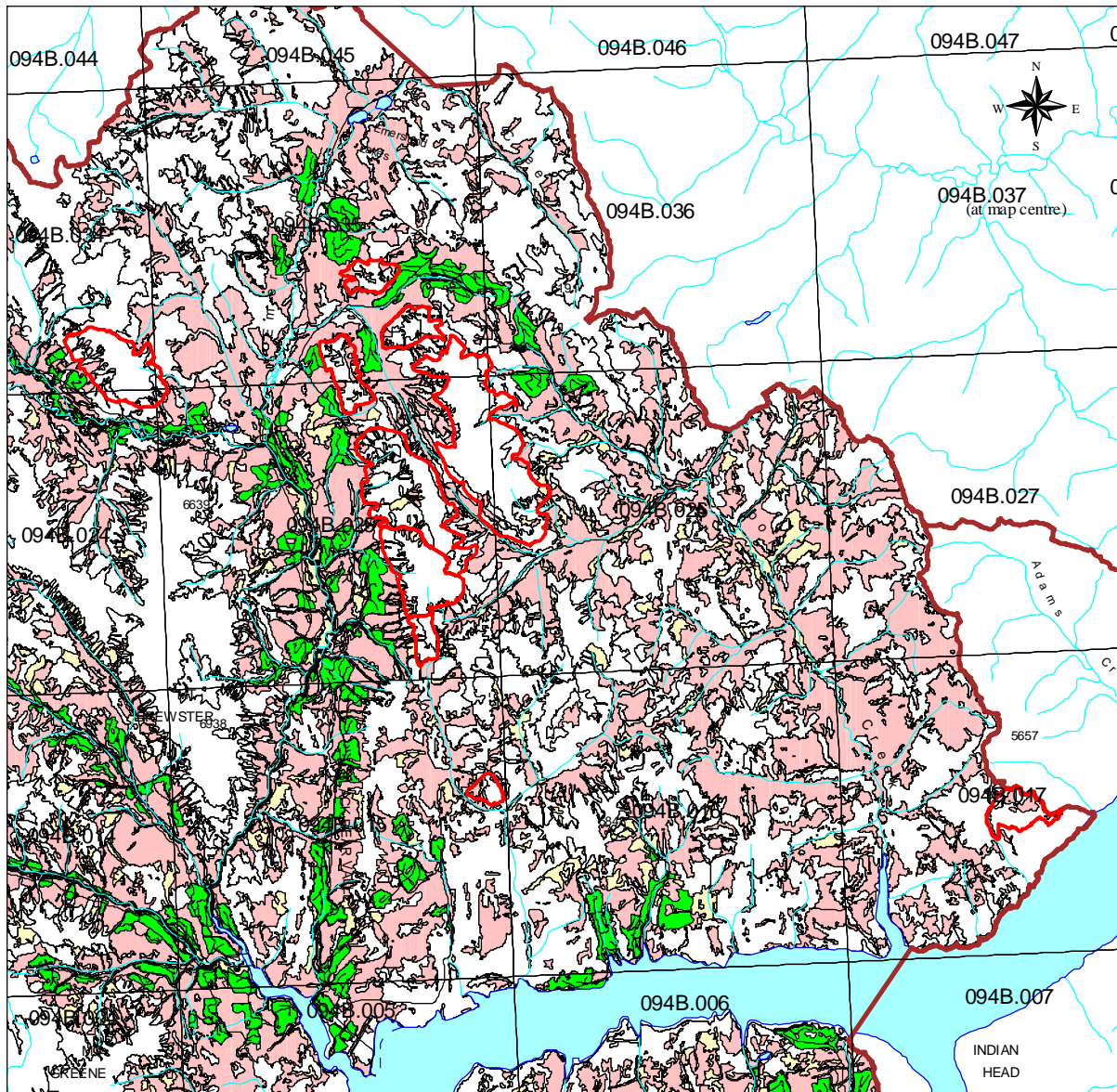


- |                           |                                   |
|---------------------------|-----------------------------------|
| Peace Arm Stone Sheep UWR | Logged - SR <3m                   |
| Peace Arm Stone Sheep UWR | Free To Grow                      |
| Nabesche Roads            | Infrastructure                    |
| Nabesche Roads            | Road Landing                      |
| Nabesche Blocks.shp       | ISB, 1:20,000 Scale Mapsheet Grid |
| Approved Cat A            | 1:20,000 (BCGS) Mapsheet Grid     |
| Proposed Car A            | FOR, Ministry of Forest Districts |
| Logged                    | - Outlined, 1:20K                 |
| Logged - Recently         | Forest District                   |

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# Map 3 - Peace Arm Stone Sheep UWR



1:250,000

2 0 2 Kilometers



- |                                   |                        |
|-----------------------------------|------------------------|
| Peace Arm Stone Sheep UWR         | Nabesche blocks.shp    |
| Peace Arm Stone Sheep UWR         | Nabesche blocks.shp    |
| Nabesche Roads                    | Peace dmk thlb.shp     |
| Nabesche Roads                    | Contributing           |
| ISB, 1:20,000 Scale Mapsheet Grid | Partially Contributing |
| 1:20,000 (BCGS) Mapsheet Grid     | Non Contributing       |
| FOR, Ministry of Forest Districts | Excluded               |
| - Outlined, 1:20K                 |                        |
| Forest District                   |                        |

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