

DEPARTMENT OF FORESTRY  
Forest Research Branch

Report  
Blood Indian Reserve  
Timber Limit

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## REPORT

### Blood Indian Reserve

#### Timber Limit

The Superintendent of the Blood Indian Reserve at Cardston, Alberta, has requested a plan, to be presented to the Band Council, for the management of the Indian Reserve Timber Limit. Orderly cutting for sustained yield of roundwood is envisioned. To this end, the Forest Research Branch of the Department of Forestry has co-operated with the Indian Affairs Branch of the Department of Citizenship and Immigration.

At present, the Indians are cutting haphazardly along the roads and seismic lines within the Timber Limit and the slash is being left in an unsightly and hazardous accumulation. The desire is to establish an allowable annual cut and to cut each year in a designated spot which can be properly controlled by the Indians themselves.

The map and cruise report prepared by C.P. Brett (See Appendix A) shows that half of the Timber Limit is covered by rangeland, aspen parkland and swamp. The remainder is covered by lodgepole pine forest of which about half is mature and suitable for the requirements of the Reserve for posts and rails. The rest is immature and includes a variable amount of spruce.

Because of the slow rate of tree growth in this area, the cruise report recommends that the immature, as well as the mature, timber be harvested. However, the immature timber on the north half of the Limit is generally open-grown and limby and much of it is too small for posts and rails. The patchy mixture of types does not lend itself readily to

orderly cutting and satisfactory regeneration. In the south-east quarter of the Timber Limit the immature timber is growing on steep, open slopes which are prone to erosion and difficult of access, harvest and regeneration. This area is also of high esthetic value, being broadside to the Chief Mountain Highway through Waterton Lakes National Park.

The allowable annual cut based on the Brett recommendation would provide one-half to two-thirds of the estimated requirements of the Reserve. A cut based on mature pine only will be far below the requirements and it is recognized that the Band will have to seek a large part of their requirements outside the Reserve. The balancing of requirements from outside the Reserve can be done on either an annual or periodic basis.

The mature pine (types 2, 5, 6) covers 780 acres (Appendix A). Type 8, though "immature" has timber large enough to be of value; this covers 43 acres. On a rotation of 80 years, as recommended by the Brett report, the area cut annually would be slightly more than 10 acres.

In consultation with Mr. G. Morcom of the Blood Indian Agency, it has been considered advisable to present to the Band a plan for cutting in strips. The plan is to cut strips 1 chain wide by any convenient length. It is further suggested what the cut strips be left for 5 years to regenerate. This means that the cut strips will not be widened for a period of 5 years after each cut. The present plan proposes that all standing material within the strip will be cut. Branches will be lopped and scattered and all tops laid in contact with the ground. Stumps will be less than one foot high and there will be no burning of slash. It is expected that

cutting will be done during the during the winter. However, it is recommended that at an early opportunity after snowmelt, a bulldozer will be run through the previous winter's cut to expose mineral soil to provide a favorable seedbed. If scarification cannot be carried out before the heat of midsummer, the area will be left untouched because one-quarter to one-third of the seed from lodgepole pine slash is released during the first summer.

The exact sequence of strip layout is not critical. The simplest method will be alternate strips of cut and leave. The leave strip can be retained for five years then cut and regenerated from slash on the ground. An alternative method is to leave several strip widths which can be cut progressively at five-year intervals.

A demonstration strip 1 chain by 20 chains has been laid out. This will be cut by a Band work crew to indicate potential recovery of products and to show what is expected of the operation. On the approval of the Band Council this operation can be carried further. This proposed plan is subject to modification as circumstances and experience dictate.

APPENDIX A

REPORT ON  
BLOOD TIMBER LIMIT  
BLOOD INDIAN BAND  
CARDSTON, ALBERTA.

by

C.P. Brett

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REPORT ON  
BLOOD TIMBER LIMIT

A. PURPOSE OF THE REPORT

As a part of the recent economic surveys carried out on the Blood Indian Reserve, funds were set aside during the 1962-63 fiscal year for an examination of forest resources on the Blood Timber Limit, a 3600 acre lot situated within the boundaries of Waterton Lakes National Park at the confluence of the Belly and North Belly Rivers. It was previously considered by the former Superintendent, Mr. K.V. Brown and the Blood Council that milling or roundwood operations might possibly be established on the limit.

B. METHODS

During July, 1962 a forest survey party composed of two student foresters, two survey assistants, all from British Columbia and Mr. C.P. Brett, B.C. Regional Forester, examined the area over a period of ten days.

The area was photographed in September, 1961 thus enabling separation of the various forest and land types on aerial photographs prior to the survey.

Random sampling of all major forest types was limited to 1/5 acre plots or less. In general, the forest cover is extremely variable and of doubtful value. The extent of the survey is therefore commensurate with the apparent value of the limit and the practicability of obtaining exact information on minor forest types.

All stems 0" d.b.h. (diameter breast height) and over were measured and tallied. Appropriate tree heights and ages were recorded for each forest type.

In addition to the above, general observations on such subjects as fire, insect and logging history, soil composition, ground vegetation, shrubs, topography, aspect and moisture conditions were duly recorded on each sample plot.

The survey information was compiled and the area mapped in Vancouver during the spring of 1963. This report was produced by the B.C. Regional Forester, Mr. Brett.

C. TABLES

1. Land Classification

| <u>Type No.</u> | <u>Description</u>                                    | <u>Area (Acres)</u> |
|-----------------|---|---------------------|
| 1               | Immature Pine   | 82                  |
| 2               | Mature Pine   | 611                 |
| 3               | Immature Pine   | 317                 |
| 4               | Open Range, Meadow                                    | 700                 |
| 5               | Mature Pine   | 32                  |
| 6               | Mature Pine   | 138                 |
| 7               | Immature Pine, Spruce                                 | 497                 |
| 8               | Immature Spruce, Pine                                 | 43                  |
| 9               | Non Commercial Cover-Aspen<br>with minor Spruce, Pine | 1,002               |
| 10              | Swamp, Water  | 108                 |
| 11              | Rights-of-Way   | 70                  |
|                 | TOTAL   | <hr/> 3,600 acres   |



2. Forest Description

| <u>Type No.</u> | <u>Description</u>  | <u>Average Height (feet)</u> | <u>Average Diameter (inches)</u> | <u>Average Age (years)</u> | <u>Density Stems/Acre</u> |
|-----------------|---------------------|------------------------------|----------------------------------|----------------------------|---------------------------|
| 1               | Pine                | 30                           | 4                                | 40                         | 1400                      |
| 2               | Pine                | 35                           | 4                                | 83                         | 2500                      |
| 3               | Pine                | 40                           | 6                                | 50                         | 550                       |
| 5               | Pine                | 55                           | 7                                | 75                         | 250                       |
| 6               | Pine                | 45                           | 6                                | 87                         | 650                       |
| 7               | Pine (Spruce)       | 35                           | 4                                | 45                         | 800                       |
| 8               | Spruce (Pine)       | 60                           | 8                                | 85                         | 400                       |
| 9               | As n (Spruce, Pine) | 0-35                         | 0-10                             | 1-75                       | -                         |

3. Estimated Fencepost, Rail Inventory

| <u>Type No.</u> | <u>Area (acres)</u> | <u>2" Rail</u> | <u>3" Rail</u> | <u>4" Post</u> | <u>5" Post</u> | <u>6" Post</u> | <u>7" Post</u> | <u>8" Post</u> |
|-----------------|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                 |                     |                |                | (per acre)     |                |                |                |                |
| 1               | 82                  | 150            | 150            | 200            | 120            | 50             | -              | -              |
| 2               | 611                 | 100            | 320            | 600            | 200            | 170            | 30             | -              |
| 3               | 317                 | -              | 20             | 35             | 120            | 170            | 40             | 20             |
| 5               | 32                  | 10             | 10             | 20             | 20             | 30             | 30             | 30             |
| 6               | 138                 | 10             | 50             | 75             | 75             | 100            | 75             | 75             |
| 7               | 497                 | 50             | 80             | 200            | 170            | 50             | 35             | -              |

D. DESCRIPTION

1. Location

The Blood Timber Limit, comprising an area of approximately 3600 acres is situated 18 miles south west of Cardston, Alberta. The Belly River forms the east boundary of the limit. The north fork of the Belly River enters the limit on the southern boundary and joins the Belly River on the eastern boundary.

The Waterton Lakes - Chief Mountain road (Class 1 Trunk Highway) crosses the limit near the north boundary. Numerous, well-cleared survey lines, roads and trails make all parts of the limit accessible with the

exception of the high plateau in the south west corner.

## 2. Topography and Drainage

The limit is characterised by a high plateau in the south west corner. The plateau slopes downward to the Chief Mountain road on the north and the Belly River on east, giving the area a general north and east aspect.

For the most part, the limit is gently rolling country, with the exception of slopes immediately adjacent to the plateau. These slopes are relatively steep.

Drainage direction is generally to the east into the Belly River and its north fork. Numerous permanent and semi-permanent swamps are found on the area. As a result, access to some areas, notably the central west boundary and near the north fork of the Belly River will be difficult during the wet seasons.

## 3. Soils

The Soil Survey of the Pincher Creek - Lethbridge area (1940) includes the area in the brown soil zone. Soil textures vary considerably and although loam predominates there are numerous sand, gravel and sandy clay soils in the limit.

## 4. Forest and Land Types

As noted previously, the forest cover is extremely variable, due, no doubt, to frequent disturbances such as fire, logging or clearing. As a result it has been necessary in many cases to group various minor forest

types into larger and more practical classifications.

Insofar as forest stand age is concerned, all types are immature. However, due to such factors as characteristically over-dense stands, poor site quality and short growing season, it has been recognized that several types (2,5,6,7) have passed the period when maximum growth occurs and that little will be gained by postponing their harvest.

Due to the foregoing limiting factors regarding tree growth, there is insufficient material of sawlog size to support any sort of logging or sawmilling operation.

Based on an annual rotation of 80 years (which is in this situation the average time required to grow suitable rail and fence post material) the area will support a yearly harvest on 20.9 acres as follows:

| Type No. | Acres to be cut | 2" Rails | 3" Rails | 4" Posts | 5" Posts | 6" Posts | 7" Posts | 8" Posts |
|----------|-----------------|----------|----------|----------|----------|----------|----------|----------|
| 1        | 1.0             | 150      | 150      | 200      | 120      | 50       | -        | -        |
| 2        | 7.6             | 760      | 2432     | 4560     | 1520     | 1292     | 228      | -        |
| 3        | 4.0             | -        | 80       | 140      | 480      | 680      | 160      | 80       |
| 5        | 0.4             | 4        | 4        | 8        | 8        | 12       | 12       | 12       |
| 6        | 1.7             | 17       | 85       | 128      | 128      | 170      | 128      | 128      |
| 7        | 6.2             | 310      | 496      | 1240     | 1054     | 310      | 217      | -        |
| TOTAL    | 20.9            | 1241     | 3247     | 6276     | 3310     | 2514     | 745      | 220      |

Perhaps the most significant characteristic of the timber limit is the small portion of well stocked forest land (less than 50% of total area).

Almost 1/3 of the limit is occupied by non commercial forest cover consisting of aspen, black cottonwood, willow, brush and scattered

spruce, pine and balsam. Patches of spruce and pine within the type might possibly be utilized, however, may not be considered as a major productive area. It is for this reason that no estimates of timber volumes are provided for this type.

Certainly, a reasonable amount of fuelwood could be taken from type 9. However, the distance from market, the availability and low cost of alternative sources of heat mitigate against the continued use of wood for fuel in this area.

The remaining area of the limit is occupied by open range, meadowland, swamp, water and rights-of-way. The open range and meadows coupled with grazing areas under forest cover in type 9 comprise an asset of unquestionably large value. It is evident that no use is made of the grazing capacity of the limit or adjacent valuable meadows in Waterton Park to the west.

Some portions of the range land undoubtedly require development work, however, with minimal effort 100 head of cattle could be supported on this area.

##### 5. Logging Chance

As noted previously general access is good. Type 2, which is situated on the plateau is presently isolated but access could be obtained at fairly low cost. During the spring and autumn some areas will be isolated because of wet road conditions.

The topography is gently rolling and as such indicates relatively easy logging conditions. For the most part trees may be skidded by hand,

horse or small tractor to bush trails or roads. Thence the material can be skidded or hauled by small or medium trucks to a central preparation area on the limit. If the roads were conditioned for all weather use, tree length logs could be transported directly into Cardston or to some other central point for preparation.

## E. CONCLUSIONS

### 1. Range Resources

The potential agricultural resources of the Blood Timber Limit exceed the present potential of the timber resources. Under capable managements either by lease or under Band control the area could become a source for significant annual revenues. The potential value of hay on the large 350 acre meadow near the Belly River is at least \$10,000 per annum. It is believed that far greater returns are possible on the whole area under management.

### 2. Timber Resources

The potential value of the timber resources is not large. Any thought of sawmilling must be put aside due to the lack of sizeable sawlogs and the slow growth rate of the timber.

Some fuelwood can be obtained from the area, although in view of more economical alternatives it is unlikely that a significant market will ever develop.

Some potential exists for the production of fence posts, corral rails, etc. All estimates contained herein are conservative and therefore

present the minimal possibilities.

Any further thought which may be given to the establishment of a fencepost-rail operation must be tempered by additional information such as:

- (a) Extent and continuity of market.
- (b) Value of finished product.
- (c) Cost of producing finished product.
- (d) Cost of continuing forest programs.
  - i - fire protection.
  - ii - road development.
  - iii - tree seeding and planting.

Such information should be obtained and analyzed locally.

One factor which may have a bearing on decisions concerning the forest resources is the fact that there surely must be a demand for wood products by the Blood Band for use on their vast Reserve. It is important therefore, that the needs of the community be considered before proceeding with the commercial exploitation of the timber resources.

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