KEY MAP
of
UPPER NECHAKO WATERSHED RECONNAISSANCE
1928
SCALE 31.56 MILES TO 1 INCH.

................
**INDEX**

<table>
<thead>
<tr>
<th>Introduction</th>
<th>Page 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route followed</td>
<td>&quot;</td>
</tr>
<tr>
<td>Description of Area</td>
<td>&quot;</td>
</tr>
<tr>
<td>A. Location</td>
<td>&quot;</td>
</tr>
<tr>
<td>B. Area, Sq. Miles</td>
<td>&quot;</td>
</tr>
<tr>
<td>C. Drainage &amp; Topography</td>
<td>&quot;</td>
</tr>
<tr>
<td>Climate</td>
<td>&quot;</td>
</tr>
<tr>
<td>Agriculture</td>
<td>&quot;</td>
</tr>
<tr>
<td>Forest Description</td>
<td>&quot;</td>
</tr>
<tr>
<td>Occurrence, Distribution &amp; Utilization</td>
<td>&quot;</td>
</tr>
<tr>
<td>Quality of Timber</td>
<td>&quot;</td>
</tr>
<tr>
<td>Classification of Areas</td>
<td>&quot;</td>
</tr>
<tr>
<td>Timber Estimates</td>
<td>&quot;</td>
</tr>
<tr>
<td>Reproduction</td>
<td>&quot;</td>
</tr>
<tr>
<td><strong>Appendix</strong></td>
<td>&quot;</td>
</tr>
<tr>
<td>Protection</td>
<td>&quot;</td>
</tr>
<tr>
<td>Management</td>
<td>&quot;</td>
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<tr>
<td>Reconnaissance Costs</td>
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<td>1 Map, Type and Topographic Scale 1 inch = 2 miles.</td>
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**FOREST SURVEYS**
Introduction

The reconnaissance was commenced from Burns Lake on May 28th and completed at Fort Fraser on July 6th. The area examined is situated within the Prince Rupert forest district and embraces an area of approximately 5770 square miles.

For reconnaissance project the services of one canoeman-packer were secured through the offices of the District Forester, Prince Rupert. For transportation a second-hand 17' Chestnut freighting canoe was purchased from N. Schreibner of Ootsa Lake and later stored at Fort Fraser, c/o the District Forester, Prince George.

During period in the field, three fires, evidently started through human agency, were suppressed on following dates - Ootsa Lake 6-5-28; Entiako Lake 18-6-28; Bella Coola Trail 18-6-28.
Route Followed

Commencing at Colleymount, Francois Lake, thence East along Francois Lake to Unocha Creek and the headwaters of the Endako River; thence West to the Nadina watershed and the Sibcola Mountains. Returning from the Nadina watershed my canoe was portaged via road from Southbank to Ootsa Lake P.O. From this point the circle trip was made via Ootsa Lake and the Intata River to Natalkuz Lake and the headwaters of the Nechako River; thence via Euchu Lake, the Tetachuck River and Tetachuck Lake to Eutsuk Lake; thence via the one mile portage to Whitesail Lake; thence downstream along Whitesail River to Tahtsa River and East along Ootsa Lake to Hensen's Landing at the head of Ootsa River. From Hensen's Landing the outfit was portaged seventeen miles overland to Cheslatta Lake; thence via the Murry and Nechako Rivers to Fort Fraser.

All areas intervening and immediately adjoining above described route were investigated from points geographically described on the base map used and projected from triangulation surveys by F. C. Swannell, B.C.L.S.,-- 1920 to 1922.
Boundaries of timber were ascertained by compass readings from high vantage points. Contents of types were found by the strip and sample plot cruising and notes taken on height, density, and general condition of mature and immature timber stands.

Description of Area

Location:

Area reconnoitred is bounded to the North by the Morice River and Ootsa-Francois Lake divides; to the South by the 53rd para. N.Lat; to the East by the 125th Mer. W.Long, and to the West by the Coast Mountains.

Area in Square Miles:

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<tr>
<th>Description</th>
<th>Acres</th>
<th>Percentage</th>
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<td>Merchandiseable Timber</td>
<td>678</td>
<td>12%</td>
</tr>
<tr>
<td>Immature</td>
<td>1364</td>
<td>24%</td>
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<tr>
<td>Non-Merchandiseable</td>
<td>1173</td>
<td>22%</td>
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<td>Clean burned</td>
<td>844</td>
<td>15%</td>
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<td>Cultivation &amp; Grazing</td>
<td>143</td>
<td>2%</td>
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<tr>
<td>Barren</td>
<td>1150</td>
<td>20%</td>
</tr>
<tr>
<td>Water</td>
<td>438</td>
<td>7%</td>
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<tr>
<td><strong>Total</strong></td>
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Drainage & Topography

The Nechako drainage has its source along the eastern slope of the Coast Mountains, West of Gardner Canal, and flowing in a westerly direction for approximately 220 miles, joins the Fraser at Prince George.

The headwaters of the drainage are divided into four main watersheds which with their numerous tributaries have been described as follows:

(1) Nadina River.
(11) Chesletta Lake and Murry River.
(111) Whitesail, Tahtsa, Ootsa Lakes and Rivers.
(1V) Butsuk, Tetachuck, Entiako and Euchu Lakes and tributaries.

Nadina River empties into Francois Lake thence via the Endako River into Fraser Lake.

Ootsa and Butsuk Lake drainages have their junction just West of the 125th Mer. With the Chesletta drainage flowing into the Nechako River via the Murry River, approximately thirty miles South of Stellaco on the Canadian National Railway.

Other then the Nadina River, the lower reaches of the Murry River, the Tetachuck rapids
and the ten mile canyon along the Upper Nechako River, all main waterways over the area examined are navigable.

General topographic features of the Upper Nechako watershed are comparatively similar to those found on the Morice River to the north. (Ref. Report # R.21). High barren mountains of the Coast Mountains form the boundary to the West, falling gradually away to rolling lowland country to the East, with all lake and stream flow tending from West to East.

One of the most interesting geographical features in British Columbia is found within the area examined, namely, the almost continuous circle of lakes and rivers surrounding the Cheslaslie and St. Thomas River watersheds, which comprise a land surface of approximately 1400 square miles. This area can be circumnavigated with but two necessary portages, namely around Tetachuck Falls, and from Fansuk to Whitesail Lake, elevations 2815' and 2725' respectively. Ootsa Lake, elev. 2700' is the usual starting point for this circle trip.

Travelling east from the above point in order to have the rivers in one's favour, the land surface rises gently to the north and south to rolling timbered hills to a maximum elev. of 3500', the same physical features being general along Ootsa River North to
Tetachuck Rapids at high water. Length of Rapids approx. 2 miles.

Tetachuck Falls at high water. Height of Falls 14 feet.
Transporting canoe over the 17 mile portage between Cotsa and Cheslatta Lake. To avoid the Upper Nechako Canyon it is necessary to make this portage to reach Fort Fraser by boat.

Taking canoe down the Murry River during low water.
the Cheslatta watershed and East along Intata and Natalkuz Lakes to the headwaters of the Nechako River, elev. 2650'. Turning West from this junction, Mount. Swannell, elev. 5965½, the most northern peak of the Fawnie Range, stands out as a distinctive feature. Continuing West from Natalkuz to Buchar Lake, two important streams are found, namely Entiako River flowing in from the South through a low undulating lodgepole pine plateau and the Cheslaslie River flowing South-east from its source in the Quanchus Mountains, which, with its many lakes and minor tributaries, enters Buchar Lake from the North. No other highland features are found en route until Buchar Lake has been navigated, the Tetachuck rapids and falls portaged, and the West end of Tetachuck Lake is reached. From this point West to the main coastal divide high barren mountains are general. To the North the land rises in moderately steep evenly surfaced slopes to Butsuk peak in the Quanchus Mountains, average elev. 6,500'. To the South broken lowland country breaks away to a spur of the Coast Range Mountains and the Dean River Divide. Entering Butsuk Lake the mountains become more rugged
Typical Poplar meadow land along Bella Coola trail, Cheslaoie watershed - 4 miles north of Cheslaoie Lake. Such areas are small and scattered.

Cheslatta Lake looking east. Cheslatta Lake is approx. 22 miles in length by 1 mile wide and empties via Murry Lake and River into the Nechako.
Looking west down Big Eutsuk Lake from a point opposite Pondosy Bay. Mountains in the background form the main Coastal divide.

Pondosy Bay from Big Eutsuk Lake. Mountain divide to the Dean River in distance.
and steep, generally breaking sheer away from the Lake
shore to barren peaks. Heading West along Eutsuk Lake
one passes two noteworthy streams, namely, the Tesla
drainage and the St. Thomas River, with their sources
respectively in the Coast and Quanchus Mountains. 

Entering St. Thomas Bay it is necessary at this point
to make a one mile portage via a low pass, elev. 2790',
to Whitesail Lake, where topographic features are found
to be comparatively similar to those found along Eutsuk
Lake, with but one exception, namely, that timbered
mountain slopes are more moderate in steepness and even-
ly surfaced. Travelling in a north-easterly direction
along Whitesail Lake and entering Whitesail River, one
circles around the northern and moderately steep slopes
of the Quanchus Mountains, with undulating lowlands in-
terspersed with swamp land extending north across the
Tahtsa River to the well-timbered slopes of the Mosquito
Mountains. Continuing North through Sinclair Lake and
West along Ootsa Lake to complete the trip by the water-
ways at Ootsa P.O., one important tributary stream is
passed en route, namely, Tahtsa River, a wide fast flow-
ing stream fed by Tahtsa and Troitsa Lakes and draining
a large area of the Coast Mountains.
Junction of Natalkus Lake and headwaters of Nechako River. Elevation 2650'.

Murry Lake looking east towards Nechako River.
Whitesail River, 6 miles down stream from Whitesail Lake.
Leaving the Ootsa and Buntsuk Lake watersheds and travelling North to the west end of Francois Lake, the Hadnia River is found with its outlet in Francois Lake and its source in the Coast Range Mountains. This river is approximately 100' wide, very swift and not navigable beyond a point seven miles from its outlet, and drains a well-timbered valley of approximately 490 square miles in area. Travelling upstream from the river’s source along a narrow valley floor, average elev. 2500', the watershed slopes gently away south to the Mosquito Mountains and Tahtsa River divide, maximum elev. 4500'. To the north the valley rises to benchland and gradual slopes to the Morice River divide, average elev. 4000'. Twenty miles upstream from Francois Lake, at a point where Togetochlain drains in from the north, the valley floor widens to approx. one mile and a half maintaining this width for a distance of approx. six miles, from which point the western extent of the valley gradually rises to its source in the Sibola Mountains and Coast Range.

Three important passes to the coast occur from the above described route, namely -
Lindquist Pass, elev. 3150' - Whitesail Lake to Kimsquit
Smaby  "  "  3200' - Eutsuk  "  "  Kimsquit
Sakumtha  "  "  3250' - Pondosy Bay to Dean River

The last named Pass is reported to be the most accessible and has been fully described in the Mines Annual Report dated 1926, Pages A 147 to A 149. Illustration on Page A 128.

Climate

The Upper Nechako watershed has a moderate climate with a mean annual temperature of 40 deg. F. and annual precipitation, including snow fall of approx. 20 inches. As is found to be the case in the Morice River valley to the north, weather conditions are usually influenced by the severity of weather conditions prevailing along the Coast and usually run to extremes with little break in between seasons. Prevailing winds from the south-west broken by the Coast Range are the cause of a moderate rainfall along the lower reaches of the lake system. Climatic conditions are more severe at the western extremities of the watershed where deep valleys tending west and east, hold back a heavy snowfall until late in the spring season, causing a high stage of water, usually about the end of June.
Occurrence of Seasons.

Spring and Summer - April 1st to Sept. 15th.
Fall - Sept. 15th " Nov. 30th.
Winter - Dec. 1st " March 31st.

Agriculture

There are estimated to be approximately 10,000 acres of land under various stages of cultivation in the area investigated along the Upper Nechako valley, together with 116,000 acres of land, both open and under timber suitable for grazing stock. All areas so estimated are north of the Ootsa, Intata and Natalkuz Lake waterway and do not include areas of arable land under timber suitable for cultivation of which there is a large extent. South of the above line there are no large areas worth consideration from a view point of agriculture. Generally what land is topographically suitable for tillage in this region has been periodically burned to such an extent that the quality of the soil has deteriorated and that the shallow light sandy loam resulting will not bear anything other than scattered grazing and timber cover.
North of Ootsa and Intata Lakes the land chiefly lends itself to stock-raising and mixed farming. The land occupies an undulating plateau with an average elev. of approx. 2800' and has scattered ranges rising from 500 to 1000 feet above lake levels. Around the numerous lakes are found rich arable lands of deep alluvial silt on light clay and gravel subsoils sloping along to benches and semi-open hillsides suitable for grazing. The present outlet for produce is via lake, road and ferry to Burns Lake and the Can.Nat.Rly.

Forest Description

There are two main divisions in type found in the forests of the Upper Nechako, as follows:

**Transient Coast Type:** Found west of a line drawn from the headwaters of the Nadina River; thence south to St. Thomas Bay; thence south-east to the east end of Tesla Lake and south to the Dean River divide.

**Interior Type:** Upper Nechako watershed east of the line as described above.
The Coast transient type forests are made up of a climax type growth of Balsam, Spruce and Hemlock, which, due to poor growing sites, inaccessibility and low volume, would not afford any profitable logging chances under present day standards and at present will be of most value for watershed protection.

Interior forest types are made up of three tree species as follows:

Lodgepole Pine - Pinus Contorta,
Balsam Fir - Abies Amabilis,
Spruce - Picea Engelmanni.

Lodgepole Pine predominates throughout the interior forest and is usually found in pure stands with a scattering growth of small spruce and poor quality balsam interspersed with small poplar.

The scrub sites bearing Pine, Balsam and Spruce are found throughout the main timbered areas and along summits of minor divides, giving way at the higher altitudes to true sub-alpine sites of Balsam Pine to timber line and all main divides.

Evidently due to the occurrence of fire at varying intervals, lodgepole pine is found in all stages and ages of growth from dense, fully-stocked and over-
mature tie stands to large but sparsely timbered stands which occur generally on second-class sites, sufficient only to support a growth of scattered tie trees in mixture with Spruce, Balsam and Poplar.

Southern exposures on the eastern part of the watersheds described from Cheslaslie North to Chelsatta Lake are generally semi-open, with cover running heavy to Poplar and scrub Pine over grazing.

**Occurrence, Distribution and Utilization.**

In relation to the large area covered, merchantable timber stands are small and scattered. The largest area of commercial timber found over the areas examined occurs on the Nadina River watershed, "Area A", where a large unit of Lodgepole Pine tie timber in mixture with Spruce and Balsam was found distributed over the lower slopes and benches to the south of the Nadina River, carrying well up the gradually rising slopes of the Mosquito Mountains to the Nadina-Tahtsa River divide and extending west along the main valley to the burn fronting the lower slopes of the Sibola Mountains.

Though not as large in area and as evenly distributed as the timber on the Nadina watershed, a more uniform and better grade of Pine and Spruce occurs on the Cheslaslie River, "Area G". This stand commences
from the north bank of the Cheslaslie and carries over the east end of Windfall Mountain to the south shore line of Ootsa Lake, "Area I".

Two heavy stands of Pine and scattered small Spruce were found between Lucus Lake and the Nechako River, "Area F", and on the north shore of Whitesail Lake, "Area D", but in both cases, though heavier in volume than those mentioned above, were found to be slightly over-mature and subject to some defect.

Under present utilization Lodgepole Pine may be more suitably utilised for ties, Spruce for sawlogs, and Balsam for pulp.

Owing to distance from market and cost of transporting timber to the Can. Nat. Rly, it is probable that all present stands of timber over the Upper Nechako watershed, other than the large area tributary to the Nadina River, "Area A", will be used only for local consumption and power development, or future railway construction for possible railway routes to the coast.

The chief factor governing transporting main body of timber to the Can. Nat. Rly., would be the impracticability of driving the seven mile box canyon located approximately twenty-five miles down stream from
The Upper Nechako Canyon located approx. 25 miles downstream from Natalkuz Lake and 45 miles south of Fort Fraser. This water is not navigable. Other bad water between the outlet of the Nechako Canyon and Fort Fraser is navigable on moderate and low stages of water.
Views of the Upper Nechako Canyon showing rocks and ledges that may hang up timber for driving purposes. Photo by F.C. Swannell, B.C.L.S.
Natakkuz Lake, ref. photographs attached.

Nadina River timber, "Area A", may be readily logged to the river, driven with stream improvements to Francois Lake and there boomed, towed and again driven via the Badako River to Francois Lake and the Can. Nat. Rly.

Quality of Timber

Lodgepole Pine varies in quality and grade throughout the area. In well-stocked stands the tree is over-mature, tall, straight, free of limbs and defective with red heart rot; has an average d.b.h. of 14 inches, height of 100 feet and would cut out five ties to the tree in an average stand of twenty trees to the acre. On second-class sites the tree is of poor quality, is mature, short, straight, limby but appears sound; has a rapid taper, an average d.b.h. of 12 inches and height of 90 feet and would make three ties to the tree with approximately 15 trees to the acre.

Spruce is of a low grade throughout watersheds examined; is of a medium height generally with a moderate taper; is limby but appears sound and has an average d.b.h. in Coast type 20 inches, Interior
stands of 12 inches.

Balsam is of a poor quality. This tree has from a short to a medium height class; is limby, appears sound in mixture with Pine and Spruce, but decadent and defective with heart rot through coast transient belt. Average d.b.h. - Coast type 20 inches, Interior type 10 inches.
# CLASSIFICATION OF AREAS (IN ACRES)

## UPPER NECHAKO WATERSHED

<table>
<thead>
<tr>
<th>Area</th>
<th>Watershed</th>
<th>March Timber</th>
<th>Immature Timber</th>
<th>Non-March Burned</th>
<th>Barren</th>
<th>Swamp &amp; Water</th>
<th>Cultivation</th>
<th>Grazing</th>
<th>Under Timber</th>
<th>Total Area</th>
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<td>31,200</td>
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<td>14100</td>
<td>12100</td>
<td>5800</td>
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<td>102400</td>
<td>71700</td>
<td>20900</td>
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|              | 424,200 | 872900 | 750900 | 540000 | 722600 | 280600 | 10100 | 81500 | 32500 | 3693800 |
### TOTAL TIMBER ESTIMATE - UPPER NECHAKO WATERSHED

**Saw Timber in thousand board feet, - Ties in Pieces.**

<table>
<thead>
<tr>
<th>Area</th>
<th>Watershed</th>
<th>Merch. Acreage</th>
<th>Hemlock</th>
<th>Spruce</th>
<th>Balsam</th>
<th>Total M.B.M.</th>
<th>Pine Ties</th>
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<tbody>
<tr>
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<td>40,400</td>
<td>107,700</td>
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<td>58,900</td>
<td>153,500</td>
<td>574,000</td>
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### TIMBER ESTIMATE - UPPER NECHAKO WATERSHED

**Interior Type**

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<th>Merch. Acreage</th>
<th>Hemlock</th>
<th>Spruce</th>
<th>Balsam</th>
<th>Total M.B.M.</th>
<th>Pine Ties</th>
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<td>522,200</td>
<td>6,370,000</td>
</tr>
</tbody>
</table>

- Merch.: Merchandise
  - Hemlock
  - Spruce
  - Balsam
- Total M.B.M.: Thousand board feet
- Pine Ties: Thousand pieces
Lodgepole Pine, 60 years old. Benchland type between Mount Swannel and Natalkuz Lake.

80 year old Lodgepole Pine - Spruce benchland type, to north and in lee of Mount Swannel.
Reproduction

Lodgepole Pine is the principal tree species that has reproduced through burn from former forests of lodgepole pine and spruce. Of an approximate total area of 873,000 acres of immature timber cover over the headwaters of the Nechako watershed, very few stands were found to be under 25 feet in height.

Immature timber comprises lodgepole pine stands in all ages and density of growth, from 30 to 90 years of age and in density - "Governed by site and intensity of burn preceding new growth" - from fully stocked and thrifty stands of Pine, and Spruce to sparsely stocked areas of Pine, Spruce, Balsam and Poplar. Understocked stands will predominate throughout the entire area.

The best growth of immature cover will be found in Areas F, H and J, immediately south of the waterways from Tetachuck Lake west to the big bend of the Nechako, and in Area "B" immediately to the north and south of Ootsa Lake.
Protection

The area covered is at present one of moderate fire hazard. During the last seven years thirty-two fires have been reported and evidently caused through human agency. Algatcho, Kluskus and Cheslatic Indians are one of the chief fire causes in this region when travelling the Bella Coola Trail between Algatcho and Fort Fraser during dry weather period following the high water season, July and August. Fires are generally started from smudge and cooking fires which are often not put out, with the result that they break and burn until they die out. By electing Indian honorary fire wardens, issued with badges of authority and selected from the Cheslatta, Algatcho and Kluskus tribes, I believe this hazard may be overcome.

The complete lake circle trip is seldom travelled at present, and having scenic value hardly paralleled in other parts of the Province it will one day become a mecca for tourists and sportsmen
Kluskus and Cheslaslie Indians at Aslim's Fur Post.
Tetachuck crossing, Bella Coola trail.

Clean burned area between Natalkuz and Lucus Lakes reproducing to Lodgepole Pine.
Aslim's Fur Post.
Tetachuck crossing.
coming in from the Canadian National Railway.

For this reason I would recommend that well placed
serviceable protection boards and posters be placed
at the following points:-

Ootsa Lake Post Office,
Junction Tahtsa River and Ootsa Lake;
Both ends Whitesail-Eutsuk Lake portage;
West end Tetachuck Lake;
Headwaters Tetachuck rapids;
Aslim's Fur Post, Tetachuck crossing;
Outlet Natalkuz Lake and headwaters of
Nechako River;
Junction Ootsa Lake and headwaters
Ootsa River;
Junction Nadina River trail and Wistaria
Houston Road.

Also at points along Bella Coola Trail
from Fort Fraser to Tetachuck crossing.

With approx. 80 miles of roads; 280 miles
of trails and 320 miles of navigable waterways, the
area lends natural advantage from a viewpoint of
patrol for protection. The big Eutsuk and Tetachuck
Lake country does not require a patrol at present as
it is seldom travelled, but would recommend that an
assistant ranger be placed with headquarters at Ootsa
Lake to patrol the west end of Ootsa Lake, the Wistaria-
Nadina Road and care of the Nadina Forest, with a
patrolman at Hensen's post on Ootsa Lake to patrol the
Bella Coola horse trail from Chelsatta Lake via Lucas
Section of trail between Natalkuz and Lucus Lakes. Trail has been widened to permit sleigh haul of cattle forage from wild hay meadows to Cotsa Lake. This is a well located horse trail having no excessive grades.
Lake to Tetchuck crossing.

Following trail improvements are needed for protection. The Nadina River trail to Morice Valley via Tagetochlain Lake to be kept open and branch trail from main Nadina trail to Mosquito Hills be blazed out.

Sweeney mine trail along north bank of Tahtsa River to be kept open, and the Chief Louis trail across Cheslaslie watershed from Ootsa River to Quancha Mountains be reblazed.

St. Thomas River trail - St. Thomas Bay to Sand Cabin Bay, be reblazed.

Other main trails throughout areas examined, appear in good condition.

**Recommendation to Management**

That all true forest land tributary to the Nadina River be allocated as a provincial forest to be known as the "Nadina Forest".

The Nadina Valley has an approx. area of 490 square miles, approx. 34 square miles of which have been surveyed for agricultural development, which, when resurveyed will not reach so high an extent in area.

Agricultural land is located along and to the North of the Nadina River and is so disposed that it
may readily be excluded by an intensive examination when the forest boundaries are more definitely placed.

Subject to a stock-taking survey, I would recommend that the forest boundary be tentatively placed as follows:—

Commencing at the North-east corner of Lot 829, Francois Lake; thence South approx. three miles; thence West along the Shelford and Mosquito Hills and Tahtsa River divide to the Sibola Mountains; thence in a Northerly direction to Smoke Mountain; thence following the Morice and Nadina River divide to Bill Nye Lake; thence South-east following the south shore line of Tagetochlain Lake to the North-east corner of Lot 1217; thence following to the South around boundaries of surveyed lots to Nadina River; thence following the south bank of Nadina River and Francois Lake to point of commencement, embracing in all an area of approx. 400 square miles.

Forest Survey

The main physical features of the Nadina watershed have been triangulated by Mr. F.C. Swannell, B.C.L.S. The area has not been contoured. Triangulation
sheets may be had from the Lands Department. The surveyed lots, which may be reached via a good horse trail between Tagetocklain and Francois Lake, will afford good starting points from which to project baselines for control. Food supplies for a party may be obtained at Burns Lake and Cotsa Lake P.O. and stores. Good pasture for horses will be found on Nadina River. Horses, packers and pack-horse equipment may possibly be secured from Hensen's Post, Cotsa Lake, ref. file 068201, or from Messrs. McLean & Fenton, Houston P.O.

Jr. Forester.

Reconnaissance Costs:

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Equipment</td>
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<tr>
<td>Food Supplies</td>
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<td><strong>Total</strong></td>
<td><strong>$ 733.00</strong></td>
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</table>
View Showing part of the Mokula Forest.
Taken from a hill, directly North of and looking
East to the Mokula Hills and Tahiti.
View South and South West to the St. Louis breweries.
Please Note:

For revision of cover map and estimates, see:
- Estimates in Forest Inventory Ledger
- Cover map filed in tracing cabinet, Forest Survey Office.
MAP OF PORTION OF
4. COAST DISTRICT.
BRITISH COLUMBIA.

IN TRIANGULATION AND TOPOGRAPHIC SURVEYS

BY
F. G. Swanneell, B.C.L.S.
1920-1922

-- ALSO, TRAVERSES BY B.C. MIN. EX. G. GEOLOGICAL SURVEY.
-- SURVEY OF 53° PARALLELS BY R. P. Bishop, B.C.L.S.
-- AND VARIOUS LAND SURVEYS.

__ Forest Cover Reconnaissance ___
___ by ___
B. C. Forest Service, 1928 ___