# REPORT

ON

# FRANKLIN MINING CAMP

AND

# NORTH FORK OF KETTLE RIVER

BY

ANDREW G. LARSON

ASSISTED BY

CLARENCE S. VERRILL

Instructions

Victoria, B.C., June 17th 1914

Andrew G. Larson, Esq.,

908 Vancouver Building,

Granville street, Vancouver, B. C.

Dear Sir,

In confirmation of the interview you had with the Honourable the Premier, on the 15th inst., and in extension thereof my understanding of the commission offered you and accepted by you is essentially as follows;

You will proceed with all reasonable despatch to begin, say within a week, to Grand Forks, thence up the North Fork of the Kettle river and there make a personal examination into the mineral possibilities and probabilities of that district of country which would be tributary to or materially affected by or might be expected to supply ore tonnage to a railway constructed and actively operated between the existing railway connections at Grand Forks and what is known as Gloucester Camp on the North Fork of the Kettle river.

It is the desire of the Goevernment to ascertain from a competent and impartial report, what necessity or advisability there is for an extension of the present railway system up the river as far as may be found to be needed.

To this end it is necessary that you not ony ascertain the present resources of the district but form an estimate of what in your expert opinion you would consider a fair probability of the latent possibilities of the undeveloped prospects of the country tributary , if provided with suitable railway accomodations.

I feel that with an engineer of your experience it is not necessary for me to go further into details, but, having explained the reason for the examination to you to leave the rest to your good judgement.

Andrew G. Larson, Esq., June 17th 1914

The Premier would appreciate it if you would also include in your Report mention of any other natural resources of the district that may come under your notice, such as timber, agricultural land etc., which would tend to justify railway extension into the district.

You do not profess to be an expert on these matters but your observations would be of value.

I am, Sir,

Yours truly,

Wm Fleet Robertson

PROVINCIAL MINERALOGIST

# R E P O R T

- on -

# FRANKLIN MINING CAMP

- and -

# NORTH FORK of KETTLE RIVER

- by -

ANDREW G. LARSON

Assisted by CLARENCE S. VERRILL

# I N T R O D U C T I O N

The undersigned have made an examination of the country tributary to the North Fork of Kettle River, including the Franklin Mining Camp, with special reference to the mining, timber, and agricultural resources, and the development of these resources by the construction of a railroad from the present terminus of the Kettle Valley line at Lynch Creek up the East Branch of the North Fork to Franklin.

The following report is made as a result of this examination, and the conclusions have been arrived at after careful consideration of the future possibilities of the district as well as the present conditions.

## GENERAL DESCRIPTION

The country traversed by the North Fork of Kettle River represents a valley about 60 miles long and about one mile wide, extending in a generally North and South direction, with Grand Forks, B.C., as the lower terminus of the valley where the North Fork forms its junction with the main stream.

The general character of the country is undulating with hills rising on either side of the valley to a height of from three to five hundred feet. The river has a comparatively gentle grade throughout its entire length; the altitude above sea level being 1700 feet at Grand Forks and 2800 feet at Franklin, 45 miles to the North, thus giving an average grade of less than one half of one per cent.

The logical route of a railroad line would follow the river very closely and would, therefore, obtain a very easy grade for transportation. (See Map #1).

The land in the valley is fertile and well watered and most of it should be suited for agricultural purposes, being similar in climate and soil to the land in the immediate vicinity of Grand Forks, which had proved so productive under

cultivation, while the uplands above the valley are well adapted for grazing land.

In the country tributary to the main valley there are some very considerable areas of fine timber, including White Pine, Cedar, Larch, Fir, Hemlock and Spruce. (See TIMBER page 27 ).

There is a large amount of Water Power available from the North Fork, the East and West Branches of the North Fork, and from several of the tributary streams, such as Franklin and Gloucester Creeks.

Granby river

NORTH FORK of KETTLE RIVER

Between Lynch Creek and West Branch of North Fork.

## MINERAL RESOURCES

In the general vicinity of Franklin Camp There are a number of promising mining properties which would be well worth the serious consideration of capital for development into producing properties if transportation facilities were provided for by the extension of the railroad from Lynch Creek. Under present conditions the high cost of transportation is practically prohibitive to the development and production of the large mineral resources indicated in this district.

### THE UNION

One property known as the Union is actually producing, however, in spite of the adverse conditions of transportation, and as an instance of what these conditions are, the following facts are significant.

This property is owned by two prospectors, Johnson and McInnis, and the estate of a third, deceased. With no capital these two men have opened up their property and are now shipping from 30 to 40 tons of ore per day to the Granby Smelter at Grand Forks; notwithstanding that it costs them $13.50 per ton for waggon haul from mine to Lynch Creek, $1.50

per ton railroad freight from Lynch Creek to Granby, and $6.75 per ton smelting charge, making $21.75 per ton in addition to the cost of mining and loading into the waggons, which brings the total cost up to approximately $25.00 per ton.

The smelter returns on this ore show an average grade of about $35.00 per ton, in gold and silver, for over 800 tons, the amount which had been shipped at the time of this examination. (See table of smelter shipments and assays, page 20).

From this it will be observed that the property is now yielding a profit of approximately $10.00 per ton. Since the above shipments were made, however, the smelting charge has been reduced from $6.75 to $5.50 per ton, increasing the profit by $1.25 per ton and making the total per ton $11.25 on this grade of ore.

This ore is being mined in two different places on the property, part of it being quarried from the surface where the ore outcropped, (see photo #1) and part being stoped from a tunnel level about 100 feet below the outcrop.

The actual width of the ore which is being mined is about 20 feet, but this only represents a

4"

5"

GLORY HOLE - UNION MINE

Showing with high grade ore mined

portion of the full width of the ore body owing to the fact that only the higher grade portion will stand the high transportation charges. In the tunnel level ore is exposed for a width of 40 feet, and average samples across this 40 feet gave values of $26.30 per ton in gold and silver. (See Description of Samples, page 22).

From this it can readily be seen that while the entire body of ore could be mined at a good profit if it were not for the high cost of transportation, under the present conditions it is only possible to take out the very best of the ore, thus making the operation an extravagant one and preventing the development of the property to its best advantage.

The fact that the Union has been able to produce such a high grade of ore in commercial quantities is a very unusual condition and cannot be expected to prevail for any great length of time. With a railroad to afford reasonable transportation facilities, however, the future of the property would promise exceedingly well, for with an ore body of this size it is reasonable to assume that further development would make possible a steady production of ore of sufficient grade to pay a good profit under the more economical operating conditions.

Because this property was obliged, owing to

5"

3 3/4

SHOWING TUNNEL ON UNION and GLORY HOLE ABOVE.

lack of capital, to pay its own way from the start and that, to do this, it has been necessary, as explained, to mine only the best of the ore, there has not been any systematic development of reserve ore, and it is therefore impossible to measure up "ore in sight." However, the unusually liberal width of the ore bodies exposed and their high value indicate the probable development of a large tonnage, provided the transportation difficulties are overcome so that the lower grade portions of such ore bodies can be profitably mined.

With the railroad extended from Lynch Creek to Franklin, and proper equipment installed for mining operations, the total cost of mining, freight, and smelting this ore should not exceed $10.00 per ton; and judging from present conditions there is every reason to believe that a large tonnage of ore would be developed which would yield a good margin of profit.

In the immediate vicinity of the Union there are several other properties upon which similar geological conditions exist and upon which development work might be reasonably expected to bring about similar results in opening up pay ore in commercial

5"

3 3/4

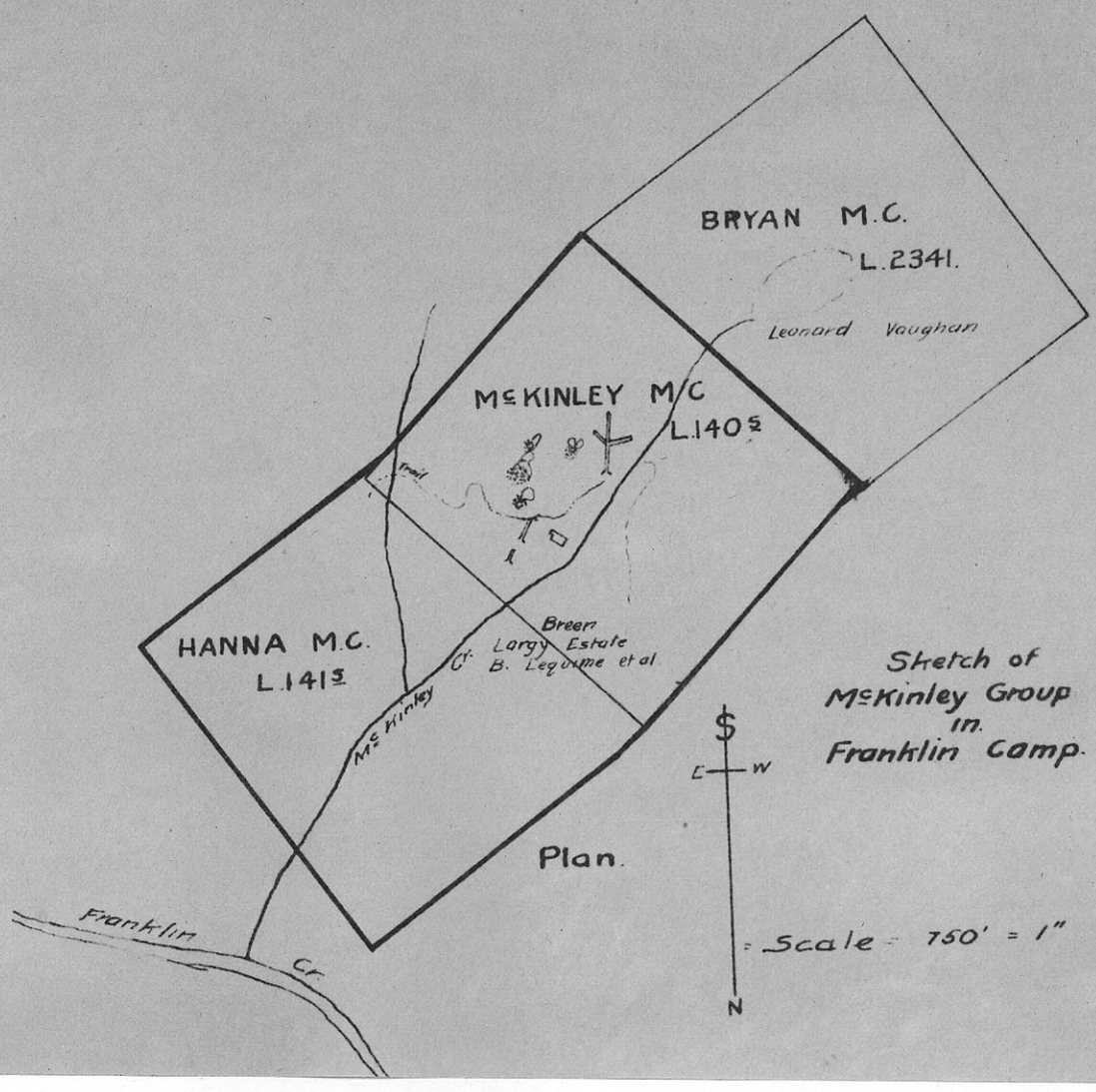
GENERAL VIEW - UNION PROPERTY

quantities. But these other properties have not thus far developed sufficient high grade ore on the surface to operate under the present conditions and the low grade ore cannot be profitably mined without railroad transportation and, therefore, there is comparatively little done on them in the way of development.

McKINLEY

At the McKinley, located 1.5 miles West of the crossing of Franklin Creek by the waggon road to Gloucester (See Map #2), the ore bodies occur as sulphides and oxides of iron carrying copper and gold, but closely associated with the limestone.

The surface exposures on the McKinley show bodies of pyrite-chalcopyrite ore of liberal size, and it is claimed that the results of diamond drilling proved the persistency of this ore at depth, but the results of the diamond drilling were not available for inspection. There are several tunnels on the McKinley which were apparently started with the intention of cutting the ore bodies, but while there is considerable low grade ore exposed in this way, the indications are that these tunnels were run under the dip of the main ore shoots.




Sketch of McKinley Group in Franklin Camp.

Plan.

GENERAL VIEW from UNION, looking EAST.

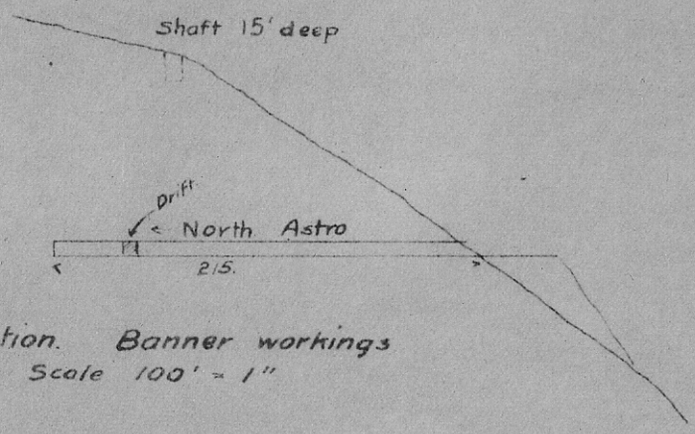
This property is well worthy of further exploration and development work and capital would undoubtedly be forthcoming to undertake such work if transporation facilities were such as would make this grade of ore marketable.

The general character of the ore and its manner of occurrence are similar to the conditions prevailing at Phoenix and Deadwood and there are good possibilities for the development of ore bodies of this character once the transportation difficulties are overcome.

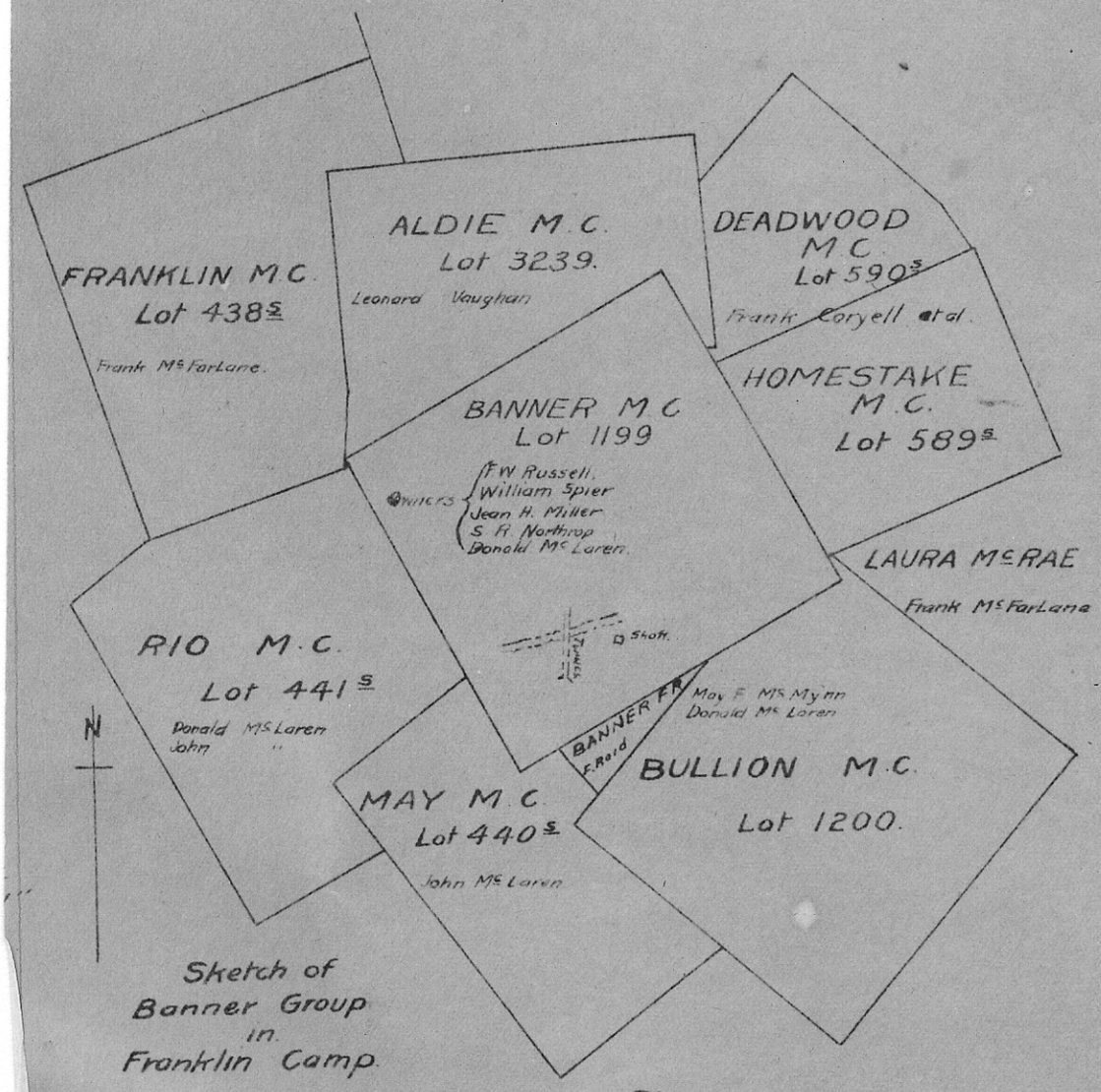
BANNER.

The Banner is one of the pioneer properties of the district. It is located on the East slope of Banner Mountain, and includes the following claims, locally known as the Banner Group:- Aldie, Deadwood, Franklin, Banner, Rio, Homestake, May, Banner Fraction, and Bullion. (See Map #2 and accompanying sketch).

On the Banner claim a tunnel has been driven into the hill for a distance of 215 feet in a generally northerly direction, and has cross-cut an ore body which at this point is 30 feet wide, showing sulphides of copper, lead and zinc in quartz gangue. This is low grade ore, but its liberal width and strong




Section. Banner workings
Scale 100' = 1"




Sketch of
Banner Group
in
Franklin Camp.

Plan.

mineralization are very favourable indications for the development of large bodies of ore which could be profitably mined under economical conditions for transportation and operation.

On the surface, about 100 feet vertically above the tunnel, a shaft has been sunk 15 feet which is entirely in ore and which is apparently part of the same ore body that shows in the tunnel. A general sample from this shaft, representing the average of the ore thus exposed, gave assay results of $22.30 in gold, copper, silver and lead, as follows:-

| | | | |
|---|---|---|---|
| Copper | 4.5% | or | $13.50 |
| Silver | 4.0 oz. | " | 2.00 |
| Gold | .14 " | " | 2.80 |
| Lead | 5% | " | 4.00 |
| | Total Value | | $22.30 |

The value of this ore is very encouraging; and taken into consideration together with the large body of low grade ore exposed in the tunnel, it is strong evidence toward the probable development of large ore bodies of commercial value if transportation facilities were such as to permit of its economical treatment.

This property is well worthy of serious consideration for its further development and fully justifies such work.

OTHER PROPERTIES.

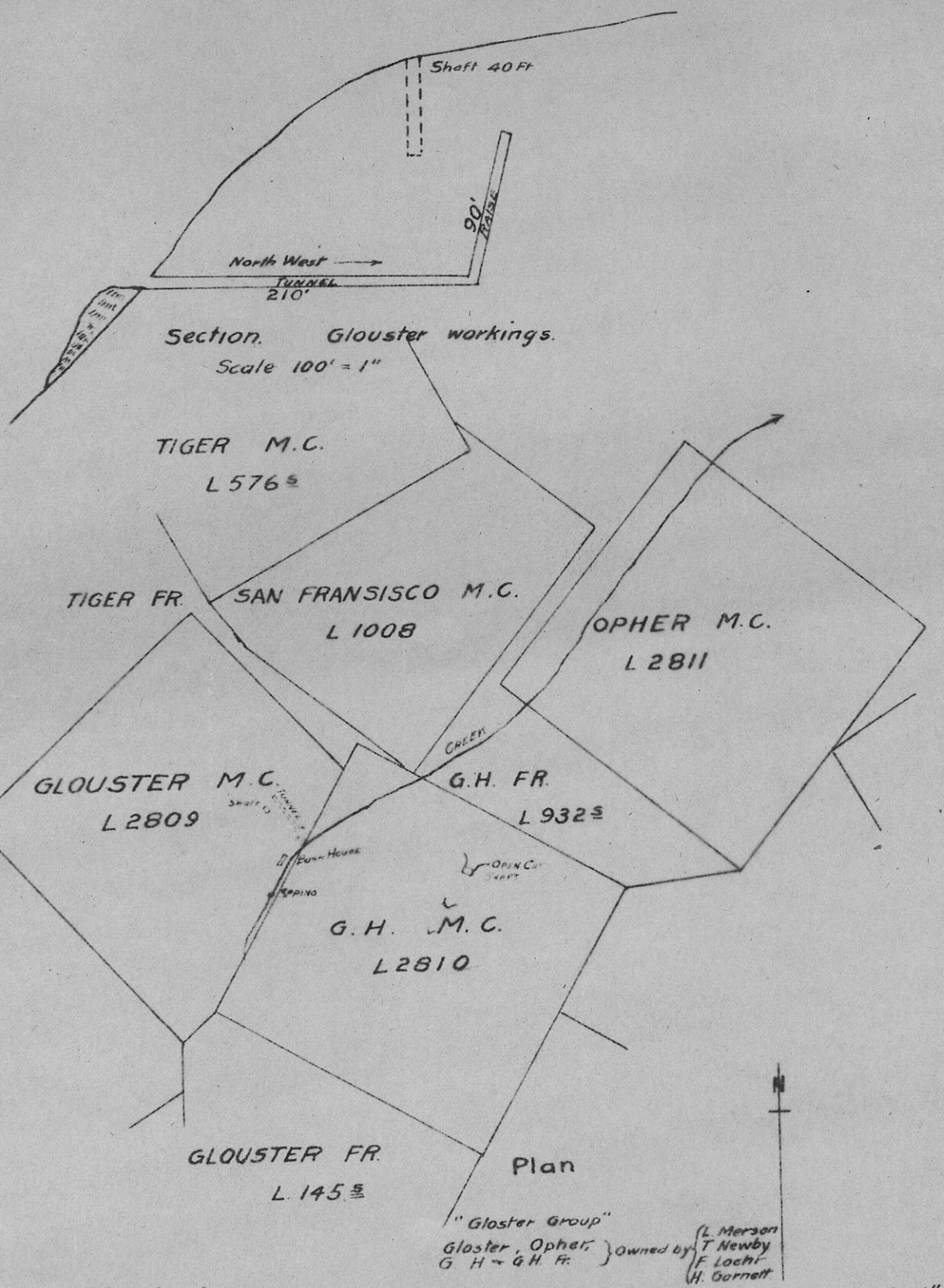
There are a number of other properties in the district which have very favourable indications for the development of a large tonnage of low grade ore which would be marketable with railroad transportation.

The following sketches and brief descriptions of those examined show that the district is not limited to a few isolated properties, but that the mineralized area is large and persistent and that the possibilities of the district as a possible producer are most encouraging considering the conditions under which their owners have been obliged to labour, owing to lack of economical transportation.

GLOUCESTER GROUP.

As shown on the accompanying sketch, this property consists of the following claims: Tiger, Tiger Fraction, San Francisco, Ophir, Gloucester, Gloucester Fraction, G.H., and G.H. Fraction.

The property is situated on the Gloucester




Sketch of
Glouster Group
in
Franklin Camp.

Creek slope of Franklin Mountain. The ore is chiefly copper and iron sulphides occurring in the contact between silicified granodiorite and greenstone.

Development work consists of a 200 foot tunnel with a 90 foot raise and a shaft of 40 feet deep, as shown on sketch.

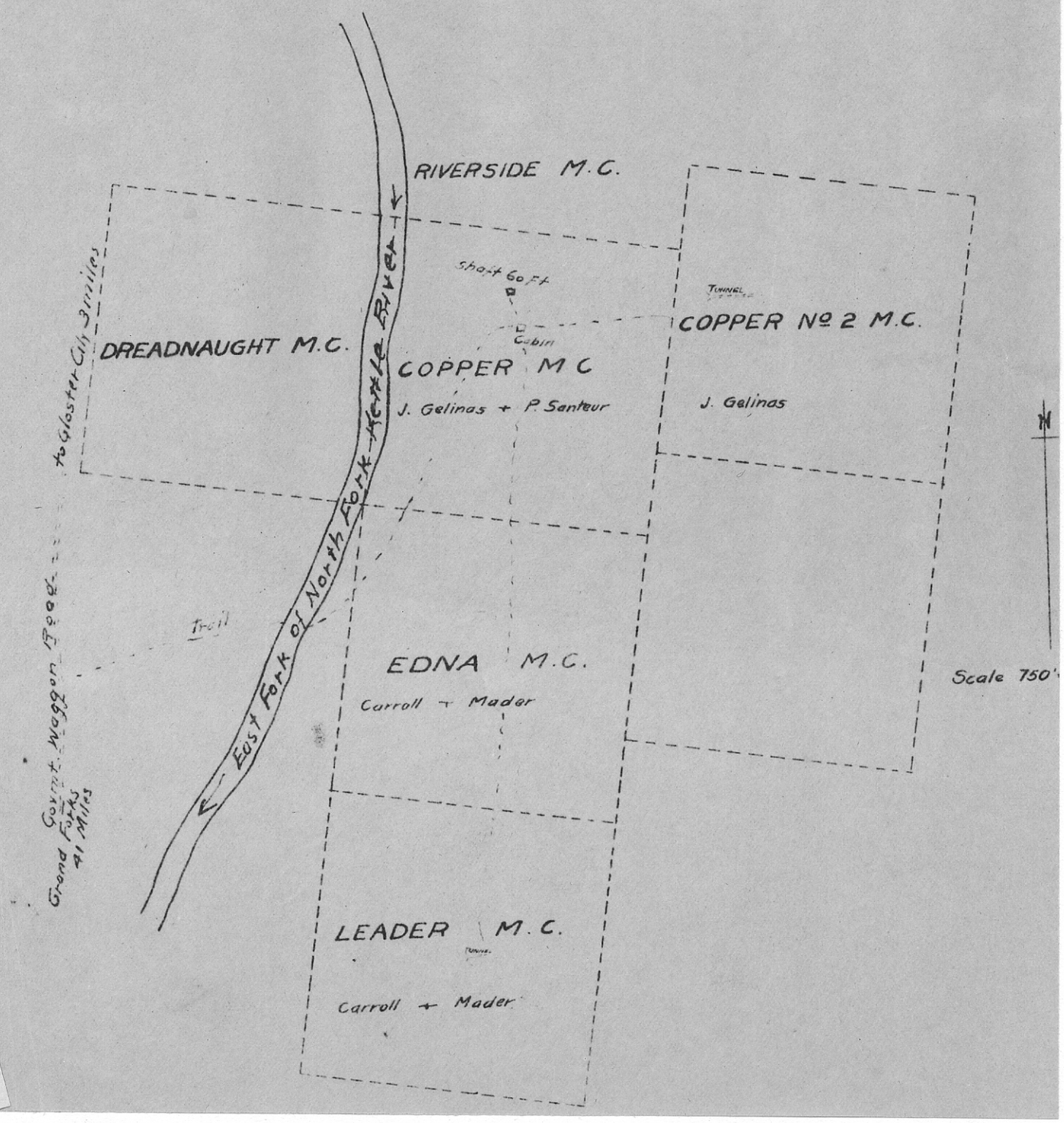
While no large bodies of ore have so far been developed, there is evidence of strong mineralization, and the occurrence of chalcopyrite in the altered granodiorite is a favourable indication for the development of ore of commercial value.

COPPER GROUP

This includes the Riverside, Copper No. 1, Copper No. 2, Dreadnaught, Edna, and Leader Claims, and is situated three miles south of Cloucester City on the East side of the East Branch of the North Fork of Kettle River, as shown on sketch.

The character and manner of occurrence of the ore are very similar to the conditions found on the Gloucester Group, the ore being pyrite and chalcopyrite scattered through quartz which occurs as a silicification of the granodiorite.

There is not sufficient work done on the property to form a conclusive opinion, but the


RIVERSIDE M.C.
DREADNAUGHT M.C.
Shaft 60 Ft
Cabin
COPPER M C
J. Gelinas + P. Santeur
TUNNEL
COPPER Nº 2 M.C.
J. Gelinas
East Fork of North Fork Kettle River
to Gloster City 3 miles
Trail
EDNA M.C.
Carroll + Mader
Scale 750'
LEADER M.C.
Carroll + Mader
Govmt. Wagon Road
Grand Forks
41 Miles

geological conditions and general indications are favourable for the formation of ore and are encouraging for further development.

SILVER QUEEN

This property is located well toward the Southern end of the camp about seven miles South of Gloucester City and one mile North-west of the waggon road from Grand Forks to Franklin and in the locality locally referred to as "Morells Camp."

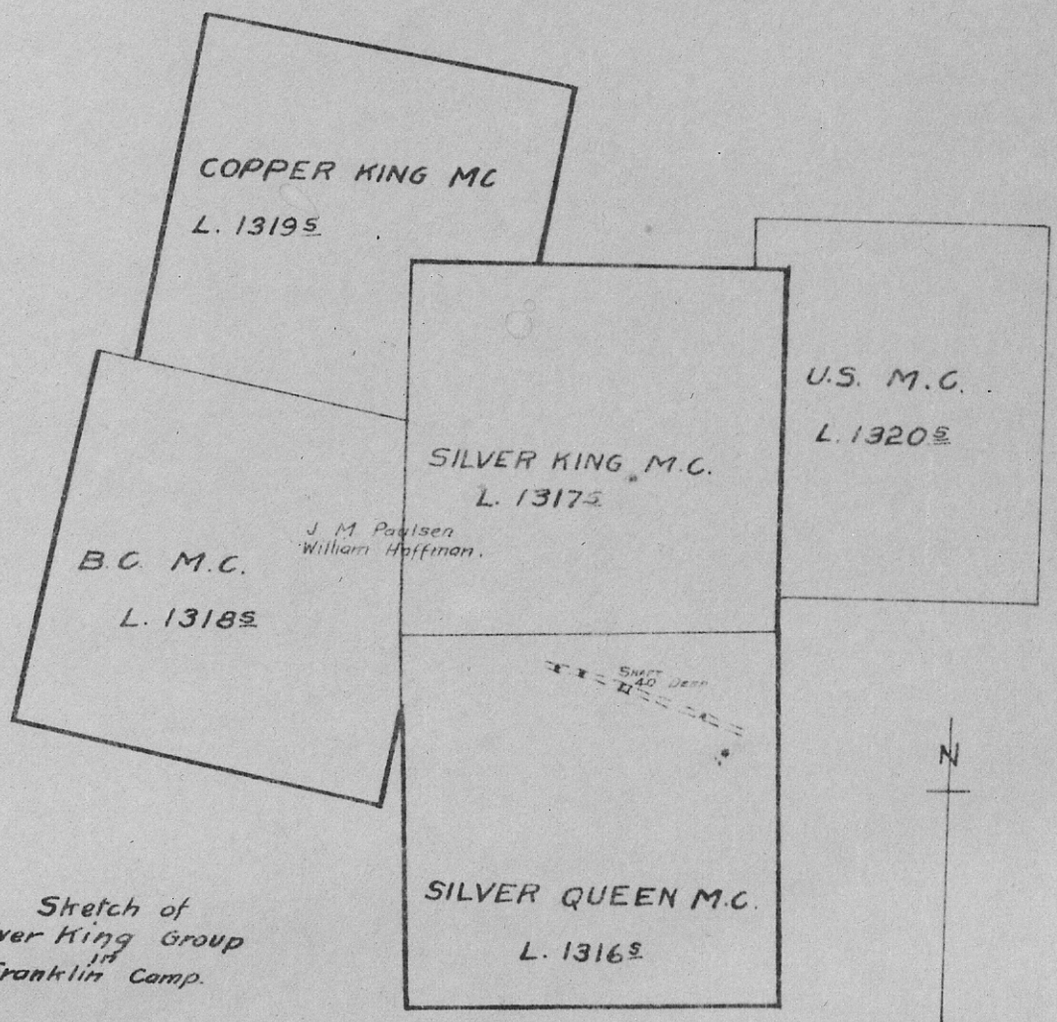
There are five claims in the group, the Silver Queen, Silver King, Copper King, B.C., and U.S.

On the Silver Queen claim a vein is exposed five feet in width, consisting of iron, copper and lead sulphides in quartz gangue.

A shaft, said to be 75 feet deep, has been sunk on the vein, but was full of water at the time of examination.

A general sample of the dump from the shaft gave the following assay results:

| | | | |
|---|---|---|---|
| Silver | 1.4 oz. | or | $00.70 |
| Copper | 1.0% | or | 3.00 |
| Lead | .5% | or | .40 |
| | Total Value | | $ 4.10 |




Sketch of
Silver King Group
in
Franklin Camp.

Scale 150' = 1"

Other properties examined were the Morell Claims just to the South of the Silver Queen; the Golden Zone situated on the East side of Gloucester Creek and apparently on the same strike as the Union; the United Verde on Banner Mountain West of the Union and similar in formation to the Union and Golden Zone; and the Nelson Group on the East side of the East Branch of the North Fork about one-half mile East of the Union.

These properties all have good indications for the possible development of ore in commercial quantities, but at the time of examination sufficient work had not been done on them to form any conclusive opinion as to their prospective value.

GEOLOGY.

The Geology of the district is quite complex and would require a great deal of time to work out with any degree of accuracy, but the following table of the formations taken from Summary Report 1911 Geological Survey of Canada, Page 134 from Report by C. W. DRYSDALE, shows the general rock formations of the district and this with reference to the two geological maps, also from Drysdale's report will serve to give a fairly comprehensive idea of the general geology of the district.

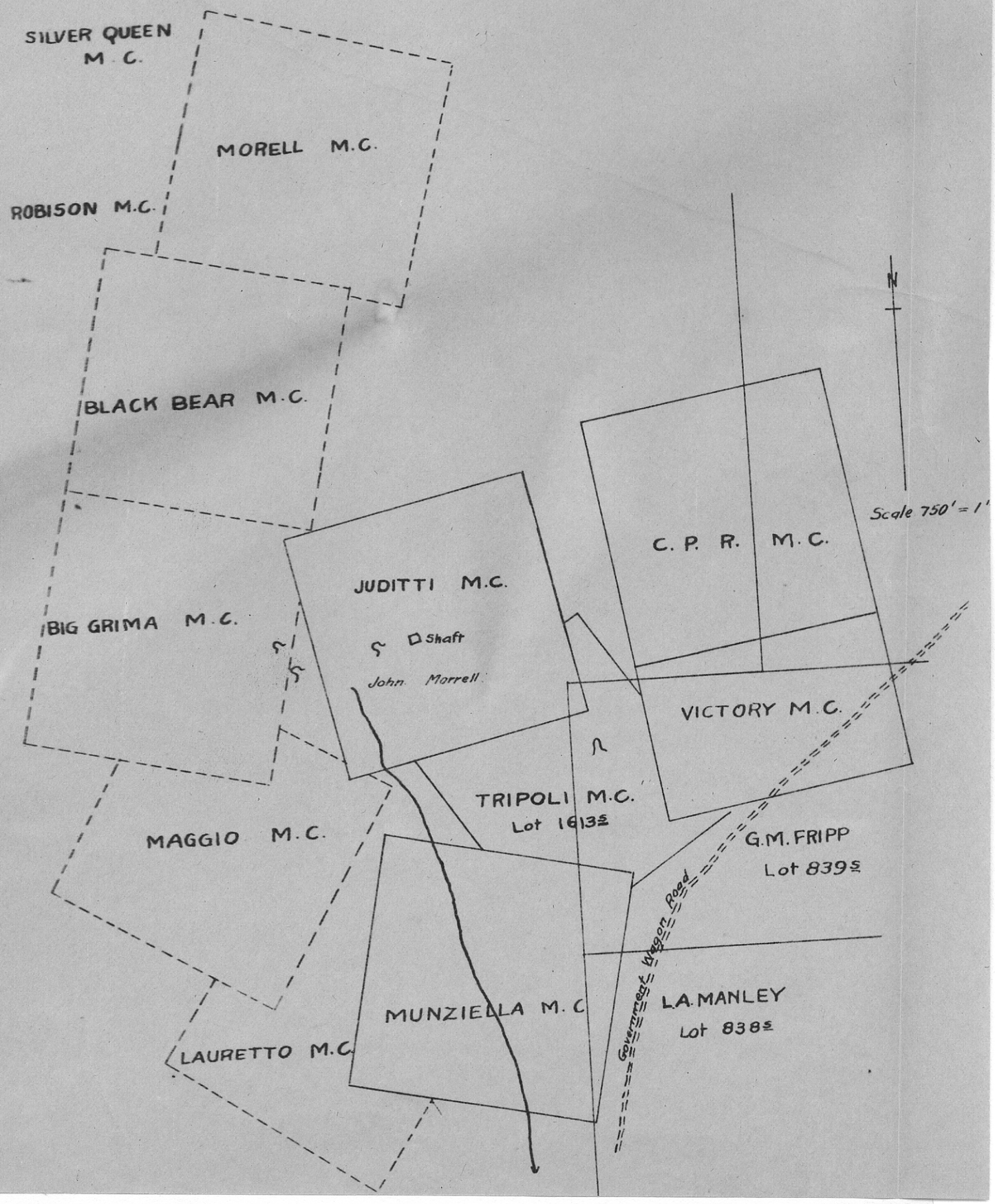

SILVER QUEEN M.C.
MORELL M.C.
ROBISON M.C.
BLACK BEAR M.C.
BIG GRIMA M.C.
JUDITTI M.C.
Shaft
John Morrell
C.P.R. M.C.
N
Scale 750' = 1'
VICTORY M.C.
TRIPOLI M.C.
Lot 1613s
MAGGIO M.C.
G.M. FRIPP
Lot 839s
Government Wagon Road
MUNZIELLA M.C.
L.A. MANLEY
Lot 838s
LAURETTO M.C.

TABLE OF FORMATIONS

| System | Formation | Lithological character |
|---|---|---|
| Quaternary | Superficial deposits | Gravel, sand, silt, boulder clay. |
| Miocene (?) | Midway Volcanic group | Pinkish pulaskite porphyry, dark basic dyke rocks - lamprophyres; quartz porphyry, and lavas ranging from basalt to andesite and rhyolite. |
| | Syenite | Pyroxenites (local term "Black Lead") - syenite. |
| Oligocene (?) | Kettle River formation. | Conglomerate, grit, and tuff. |
| (?) | Monzonite | |
| Post-Jurassic (?) | Granodiorite | Massive igneous rocks from granite to diorite and in places sheared to gneiss. |
| Palaeozoic(Upper?) | Gloucester formation | Crystalline limestone. |
| | Franklin group | Greenstone, altered tuff, jasperoid, and silicified argillite. |

The geological conditions under which the ore occurs vary according to the locality, but in all cases observed the ore occurs as a replacement in the limestone by siliceous solutions, as vein matter deposited in fissures formed by intrusions of the volcanics, or by the mineralization of the rocks themselves as a direct result of the volcanic intrusions.

The mineralized area as represented by "showings" or exposures of ore covers about 20 square miles, extending for about seven miles in a generally North and South direction and being about three miles wide, including the territory bounded by the East Branch of the North Fork of Kettle River on the East, Mineral Hill and Gloucester Creek on the North, and Franklin Creek on the West, with the old Franklin Camp near the Southern portion and Gloucester City as the general centre of operations.

On some of the properties the ore occurs as a replacement in the original formation which has been almost completely silicified. This condition seems to be the case on the Union, and so far as could be judged from the exposures in the Union workings there is no actual vein or walls to clearly define the ore bodies, but where the formation has been thoroughly silicified ore occurs. The siliceous solutions

apparently having been the agency by which the metallic values were carried in solution and deposited, particularly where fissuring has offered opportunity for such deposition. As a result of this condition it is often difficult for the eye to distinguish ore from waste rock and a thorough and systematic sampling and assaying are necessary for successful mining operations.

By reference to the geological maps it will be observed that the geology is exceedingly complex, representing a great variety of rock formations and covering different geological periods and movements which have brought about the present conditions. This complexity of the geology is, however, favourable to the formation of ore; the various contracts and intrusions and resultant fissuring offering good opportunity for the deposition of metal bearing solutions and gases.

Speaking generally the geological conditions of the mineralized area are most favourable to the formation of ore in commercial quantities. The area is large and the mineralization has apparently been quite general and persistent. The indications point toward the development of ore bodies similar to those of the Phoenix and Deadwood Camps, with the additional

advantage of occasional high grade ore bodies like those of the Union.

TONNAGE.

Reserve ore has not been "Blocked out" on any of the properties in the district. It has not been practicable to do this owing to transportation difficulties, as previously explained, and it will not be possible to interest capital in the general development of the camp until this difficulty of transportation has been overcome.

Owing to this lack of the development of reserve ore it is impossible to make any positive or accurate statement as to the actual tonnage of available ore, but so far as can be judged by present conditions there are certainly very strong indications for the development of a large tonnage. Just what these possibilities are in actual figures no one can definitely state at the present time, but it would seem that comparing the present conditions with those of similar camps such as Phoenix and Deadwood when they were in their first stages of development the possibilities are good for the development of a similar production.

## DATA ON UNION MINE 6/26/14.

### ORE SHIPPED TO TRAIL

| Lot | Au. oz. | Ag. oz. | Dry Weight # pounds. |
|---|---|---|---|
| 1 | 0.88 | 20.2 | 57,542 |
| 2 | 0.96 | 32.8 | 72,864 |
| 3 | 0.62 | 32.7 | 48,800 |
| 4 | 0.48 | 29.9 | 60,570 |

239.776 lb.
119.888

### ORE SHIPPED TO GRANBY

| Lot | Au. oz. | Ag. oz. | Dry Tons |
|---|---|---|---|
| 1 | 0.73 | 77.1 | 23,134 |
| 2 | 0.76 | 81.0 | 31,929 |
| 3 | 0.87 | 85.8 | 30,148 |
| 4 | 0.77 | 71.2 | 28,446 |
| 5 | 0.83 | 73.6 | 21,134 |
| 6 | 0.81 | 48.5 | 30,243 |
| 7 | 0.99 | 25.6 | 38,696 |
| 8 | 0.99 | 16.6 | 25,624 |
| 9 | 1.10 | 17.7 | 28,623 |
| 10 | 0.74 | 17.6 | 35,356 |
| 11 | 0.97 | 18.2 | 33,207 |
| 12 | 1.13 | 19.8 | 32,095 |
| 13 | 0.65 | 43.5 | 28,089 |
| 14 | 0.63 | 45.9 | 29,028 |
| 15 | 0.77 | 34.2 | 11,956 |
| 16 | 0.38 | 33.0 | 32,013 |
| 17 | 0.26 | 22.0 | 30,937 |
| | | | 490,658 |
| | | | Wet Tons |
| 18 | .6 | 22.0 | 40,750 |
| 19 | 1.01 | 16.3 | 37,850 |
| 20 | 0.88 | 31.1 | 35,400 |
| 21 | 1.12 | 25.3 | 34,650 |
| 22 | 1.38 | 31.6 | 30,100 |
| 23 | 1.02 | 31.1 | 31,850 |
| | | | 210,600 |
| | (Six Car in transit) | | 821,141 Tons |

Data on Union Mine, contd.

| | | | |
|---|---|---|---|
| Average | Value | Gold | $16.50 |
| " | " | Silver | 18.60 |
| " | " | Total | $35.10 |

ANALYSIS OF LOTS 1 - 15

| Ins. | Fe. | CaO. | S. | Cu. | Au. | Ag. |
|---|---|---|---|---|---|---|
| 76.0 | 4.7 | 4.5 | 1.2 | Tr. | 0.85 | 45.0 |

Freight haul by waggons to Lynch Creek

| | | |
|---|---|---|
| 25.2 miles ... ... ... ... ... | 13.50 | per ton |
| Lynch Creek to Granby ... ... ... | 1.50 | " " |
| Treatment ... ... ... ... ... ... | 6.75 | " " |
| Total cost, not including mining | $21.75 | " " |

Freight haul in by returning waggons $10.00 per ton.

(Signed) W. EATON,

Superintendent.

## DESCRIPTION OF SAMPLES

| | | | | |
|---|---|---|---|---|
| No. 1. | Union Claim 200 feet below working tunnel | Gold | .02 oz. | $00.40 |
| | | Silver | 8.20 oz. | 4.10 |
| | | Total Value | | $ 4.50 |
| No. 2. | Union Claim; taken from side of tunnel under stope, across 20 feet continuous ore. | Gold | .48 oz. | $ 9.60 |
| | | Silver | 65.8 oz. | 32.90 |
| | | Total Value | | $42.50 |
| No. 3. | Union Claim; taken from side of tunnel across 20 feet continuous ore south of No. 2. | Gold | .42 oz. | $ 8.40 |
| | | Silver | 3.6 oz. | $ 1.80 |
| | | Total value | | $10.20 |
| No. 4. | Banner Claim; average of 15 foot shaft all in ore | Gold | .14 oz. | $ 2.80 |
| | | Silver | 4.00 oz. | 2.00 |
| | | Copper | 4.5 % | 13.50 |
| | | Lead | 5.0 % | 4.00 |
| | | Total Value | | $22.30 |
| No. 5. | Silver Queen. | | | |
| | Average of dump from 75 foot shaft | Gold | Trace | |
| | | Silver | 1.4 oz. | $00.70 |
| | | Copper | 1.0 % | 3.00 |
| | | Lead | .5 % | .40 |
| | | Total Value | | $ 4.10 |
| No. 6. | United Verde. Bottom of 15 foot shaft where sinking was in progress. | 0.2 oz. of Silver with traces of gold, Copper and Lead. | | |

Nos. 7 & 8. Surface rock from Mary Ann Claim - Results Nil.

Description of Samples, contd.

| | | |
|---|---|---|
| No. 9. | United Verde. Taken two feet deeper in bottom of same shaft as No. 6. | $3.20 in Gold, with traces of Copper and Silver. |
| No. 10. | Golden Zone. Surface rock. | Results - Nil. |

## LIST of OWNERS of MINERAL CLAIMS IN FRANKLIN CAMP

(Gloucester Camp included).

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Hannah, McKinley Mines, Ltd.
Thuot, J. H. Graham et al
McKinley, McKinley Mines, Ltd.
Bryan, L. Vaughan
Last Chance, W. Minion
Cottage, J.S.C. Fraser et al
Bystander, J. M. Paulsen
Standard
Snowbird, P. Maginnis
Royal Tinto, J. Holm
Sunrise, P. H. Wright
Manhattan, D. Whiteside et al
Climax, H. W. Young et al
Beaver, do.
Silver Horde Fraction, A. J. Fee
Paper Dollar, Mike McDonnell et al
Union Fraction, L. Johnson et al
Idaho, L. Johnson et al
River Elbow, J. Holm
Evening Star, H. C. Kerman et al
Last Chance, W. H. Hoffman
Mary Ann, P. J. Byrne et al
Homestake, A. McDonald et al
Ida, J. Newby et al
Rio, J. McLaren et al
Banner Fraction, A. L. Whiteside et al
Union, Lewis Johnson et al
May, H. McLaren
Bullion, P. Donaldson,
Grand Fraction, F. McFarlane
Alto, F. M. Kerby
Eganville, W. J. Prendergast et al
Eclipse, B. Le Quime et al
Ax, G. B. Todd
Yellow Jacket, B. Le Quime et al
Athelstan, W. J. Prendergast et al
Antelope Fraction, F. M. Kerby
Nellie, W. J. Prendergast et al
Ouray Fraction, P. Kelly et al
Munster, D. Whiteside et al
Waverley, G. E. Massie
Ajax, B. LeQuime et al
I.X.L., J. W. Graham et al
Jumbo, D. Whiteside et al

List of Owners, contd.

Wallace Fraction, D. Whiteside,
Shelby, A. Chisholm
Nakusp, J. West et al
Columbia, A. Chisholm et al
Florence, A. Harkness
Ottawa, J. West et al
Evening Star, W. Minion
Pinto, T. Newby
Iron Hill Fraction, L. D. Wolford et al
Buffalo, J. McDonald
Blue Jay, J. Holm
Tiger, H. B. Cannon et al
Tiger Fraction, T. Newby
Montezuma, H. S. Cayley
Montana, S. Birch et al
San Francisco, A. Dorais et al
Ophir, G. A. McLeod et al
Gloucester do.
G. H. Fraction, do.
G.H. do.
Iron Cap do.
Mountain Lion, H. Watlin et al
Doris Fraction, H. C. Kerman
Chrystal Copper, F. W. Russell et al
White Bear, W. K. White et al
Big Cub, H. C. Kerman
Old Dominion Fraction, E. G. Cummings et al
Mountain Lion, H. Watlin et al
Omar, M. D. Schenk et al
Gloucester Fraction, G. A. McLeod et al
Alert, F. M. Kerby
M.S., C.A.S. Atwood et al
Little Cub Fraction, H. C. Kerman
Lucky Jack, H. C. Kerman et al
Golden Age do.
Newby Fraction do.
Henniken, B. W. Garrison et al
Verde, C. N. Mardon et al
Alpha, F. H. McLaren et al
Buttercup, P. E. Nelson et al
Twilight, H. W. Young et al
Franklin, Mrs. Lindholm
Aldie, L. Vaughan
Violet Fraction, B. W. Garrison et al
Hit or Miss, H. A. McLaren
Deadwood, J. H. Hodson
Maple Leaf, H. W. Young et al
Banner, Jas. McDonald
Black Bear, H. C. Kerman

List of Owners, contd.

Grand Forks Girl, P. J. Byrne et al
Elsie, C. M. Tobiassen et al
Royal Tinto, H. Eyre
Blue Jay, C. E. Anderson,
Acacia Fraction, Donald McCallum
Auto Fraction do.
Active, F. M. Kerby
Last Chance, A. Anderson
Laura McRea, F. McFarlane

## T I M B E R

In the valleys of the East and West Branches of the North Fork and the valleys of the tributary streams, such as Savage Creek, Bluejoint Creek, Meadow Creek, McFarland Creek, etc., there is a large quantity of fine timber which would be made accessible by the extension of the railroad. The following estimate of the quantity, variety and value of this timber was obtained from the Western Pine Lumber Company, of Grand Forks, and from the report of a professional timber cruiser, Mr. B. Bainbridge:-

| Location of Timber | Estimated Quantity |
|---|---|
| 14 Miles from Grand Forks | 58 Million feet |
| 17 to 21 Miles from Grand Forks | 13 " " |
| 21 to 30 " " " " | 15 " " |
| | 86 Million Feet |

The above represents practically all the timber for the first 29 miles north of Grand Forks, except the cottonwood in the river bottoms, suitable only for pulp wood and which is roughly estimated at 110 million feet.

| | |
|---|---|
| West Fork North of C.P.R. B.K. | 140 Million Feet |
| " " C.P.R.B.K. | 40 " " |
| " " Last Limit North | 45 " " |
| Forward: | 225 " " |

| | | | |
|---|---|---|---|
| Brought forward: | 225 | Million | Feet |
| East Fork on Savage Creek | 20 | " | " |
| " " " Bluejoint Creek | 40 | " | " |
| " " " Meadow Creek | 20 | " | " |
| " " " McFarland Creek | 80 | " | " |
| " " " North of ditto. | 30 | " | " |
| | 415 | Million | Feet |
| | 86 | " | " |
| | 501 | " | " |

The average varieties of this timber are estimated as follows:-

| | | | | | |
|---|---|---|---|---|---|
| White Pine | 5% | or | 25 | million | feet |
| Cedar | 25% | or | 125 | " | " |
| Larch | 25% | or | 125 | " | " |
| Fir | 15% | or | 75 | " | " |
| Hemlock | 15% | or | 75 | " | " |
| Spruce | 15% | or | 75 | " | " |
| | 100% | | 500 | Million | Feet. |

The value of this timber per thousand, as standing timber, may be taken as about $2.00, which would mean that there is about One Million Dollars worth of standing timber in the district, which would be made available by the construction of the railroad as contemplated.

By referring to Map #1, showing the location of the timber and the principal mining properties, as well as the location survey of the projected railroad, one may get a general idea of their relative positions.

## AGRICULTURE

The valley of the North Fork of Kettle River and the tributary valleys of the East and West Branches of the North Fork contain a large amount of land which is adapted to agricultural purposes and which should prove largely productive under cultivation if transportation facilities were available for the economical marketing of such produce.

In the valley of the North Fork, between Grand Forks and Franklin, there are some 20,000 acres, taking the average width of the valley as three quarters of a mile and the length as 40 miles, with the addition of probably 10,000 acres in the tributary valleys of the West Fork, and streams like Meadow, Bluejoint, Franklin, and Savage Creek, making a total of approximately 30,000 acres of fertile, well watered land.

The conditions of soil and climate are very similar to those prevailing in the country in the immediate vicinity of Grand Forks, which has proved so productive under cultivation. Between Grand Forks, B.C., and Danville, Washington, there are approximately 2200 acres of land under cultivation at the present

time. The average annual yield of crops from this land at the present time, is about $35.00 per acre, while in ten years the maturity of the young orchards should increase this to about 5000 acres, with a total average production of about $80.00 per acre. The climatic conditions of the valley of the North Fork and its tributaries would be somewhat more severe than those prevailing in the immediate vicinity of Grand Forks, but the difference is not as marked as would at first seem to be the case. The altitude above sea level at Grand Forks is 1700 feet, while the altitude at Franklin Camp, 45 miles up the valley of the North Fork, is only 2800 feet or 1100 feet higher, so that the general average for the valley between Grand Forks and Franklin would be approximately 2250 feet which in this section of the Province is very favorable to the cultivation of good average crops of grain, fruit and vegetables. Figuring the average future yield per acre at $50.00 as against $80.00 for the Grand Forks land, which is certainly conservative, we would have an annual production of $1,500,000.00, from the agricultural resources of this district alone; and it does not seem at all unreasonable that these figures might easily be surpassed, as this does not take into consideration any additional production per acre which might be caused by intensive farming.

There are also large areas of uplands on the rolling hills on both sides of these valleys which should make ideal land for grazing purposes and there is no doubt that there would be a very considerable production from the development of cattle and sheep raising industries if transportation conditions were practicable for such.

## RAILROAD CONSTRUCTION

The distance of approximately 25 miles from the present terminus of the Kettle Valley Line at Lynch Creek to Franklin, following the general course of the North Fork and the East Branch of the North Fork, (See Map #1) would afford an easy grade of only about half of one per cent. The cost of construction of such a road should not be more than the average cost of railroad in British Columbia. There are no serious engineering difficulties to overcome and there is less bridge construction and rock work than is usually found necessary in a line of this length in the average mountain road of the Province.

In comparison with the benefits to be derived from the development of the Agricultural, Mining, and Timber resources of the district, the cost of such a road is almost insignificant.

Without the road, the development of the district is practically impossible, for the reason that people with capital will not invest in the development of resources where the market for their product, be it lumber, grain, or ore, is shut off by transportation costs which eliminate the possibility of profit.

## CONCLUSION

After thorough observation of the various conditions indicative of the future possibilities for the development of the natural resources of the district examined, and after careful consideration of the facts derived from this examination as herein stated, it is our opinion that the development of the agricultural, timber and mineral resources is impracticable under the present conditions of transportation; but that with transportation facilities provided for by the extension of the railroad from Lynch Creek such development would be entirely practicable and in all probability of inestimable value to the Province.

NOTES:

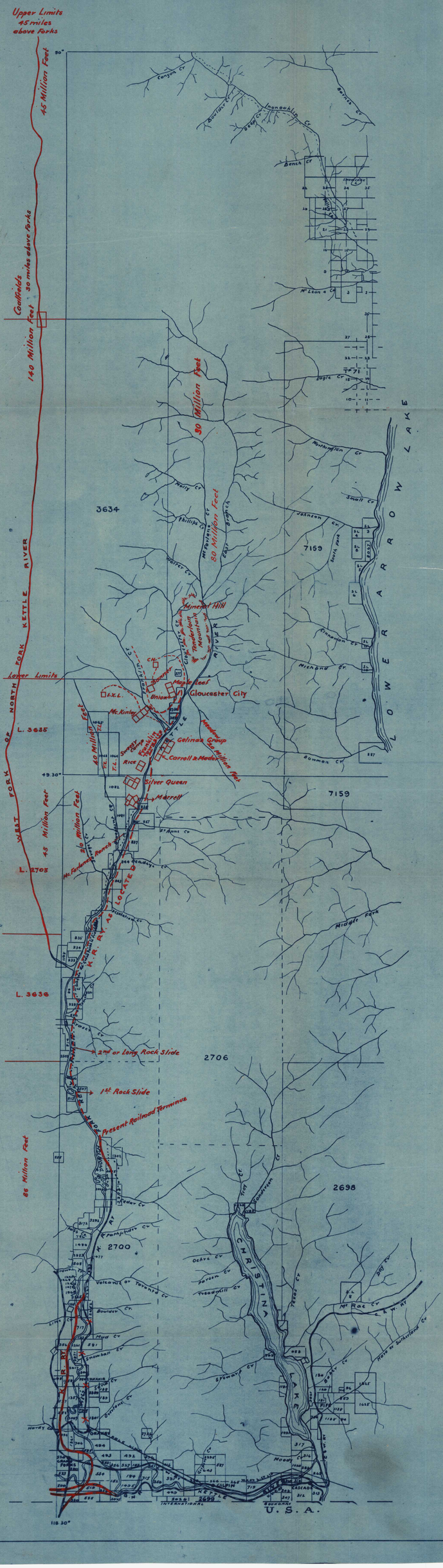
The figures upon which the estimates of timber are based, were supplied by Mr. Mark DeCew, Vice-President of the Western Pine Lumber Company, and by Mr. B. Bainbridge, a professional timber cruiser of Grand Forks, B.C.

The assaying of samples taken by the undersigned was done at the Provincial Laboratory, Victoria, B.C., and by J. O'Sullivan of Vancouver, B.C. All other assays considered are from the Granby Smelter at Grand Forks, and are on shipments of twenty to thirty ton lots of ore from the Union Mine.

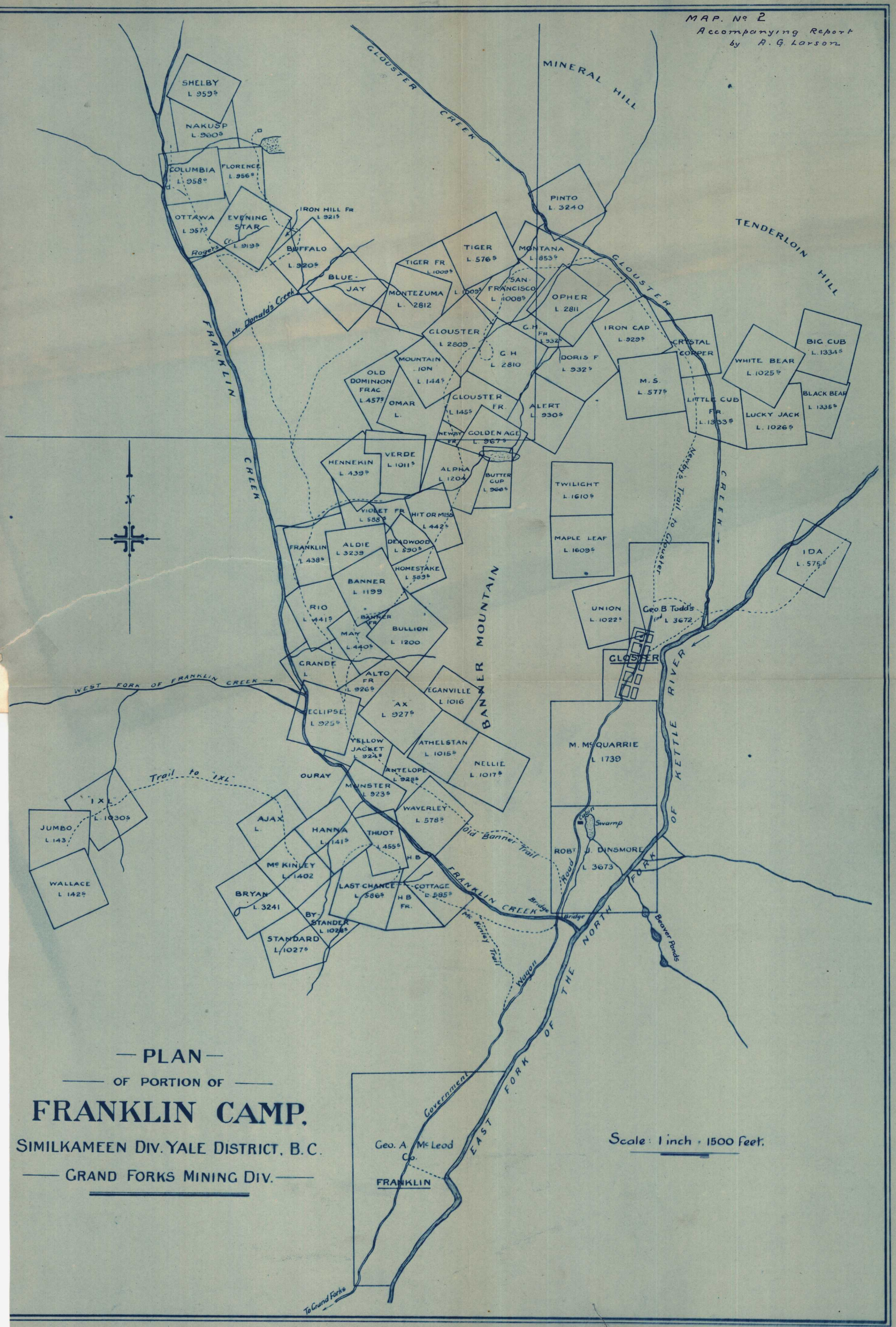
The maps accompanying this report are made from data kindly supplied by Mr. Forbes M. Kerby, B.C. L.S., of Grand Forks, and from the maps published by the B.C. Land Office, Department of Mines, and Geological Survey.

A. G. Larson

MAP. NO. 1
Accompanying Report
by A.G. Larson.



MAP. No 2
Accompanying Report
by A. G. Larson




# — PLAN —
## — OF PORTION OF —
# FRANKLIN CAMP.
## SIMILKAMEEN DIV. YALE DISTRICT, B.C.
## — GRAND FORKS MINING DIV. —

MAP No. 3
Accompanying Report
by A. G. Larson

# GEOLOGICAL MAP

## ACCOMPANYING REPORT ON

# NORTH FORK OF KETTLE RIVER.

Scale: 2 Miles to an Inch.

### EXPLANATION

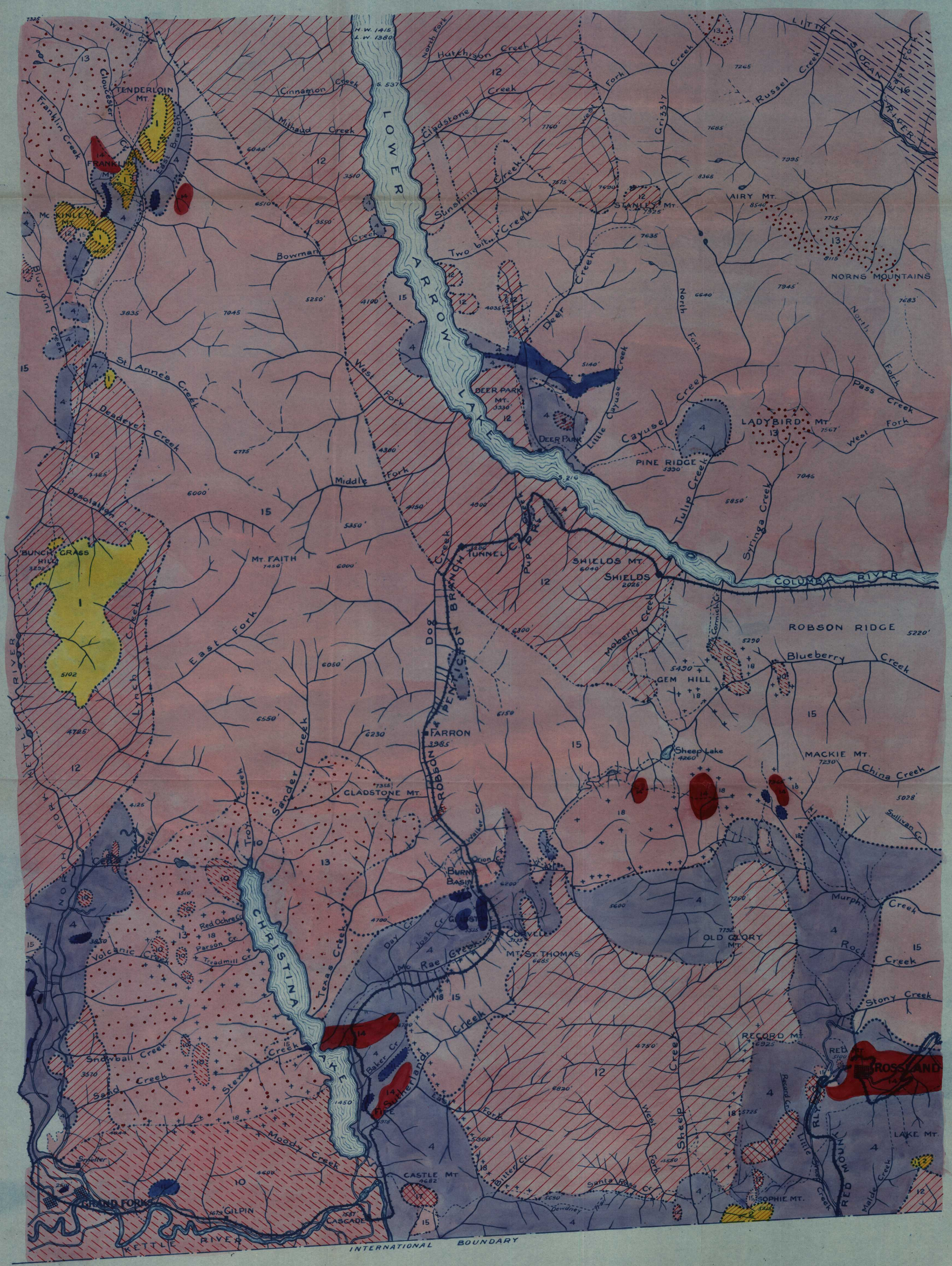
**Volcanic and Sedimentary.**

| | | |
|---|---|---|
| 1 | Volcanic Group. | Tertiary |
| 2 | Sedimentary Group. | Tertiary |
| 3 | Beaver Mountain Volcanic Group. | Post-Cretaceous. |
| 4 | Rossland Volcanic Group. | Carboniferous & Post-Carboniferous. |
| 5 | Cache Creek Series. | Upper or Middle Palæozoic. (Carboniferous in part) |
| 6 | Slocan Series. | |
| 7 | Selkirk Series, Upper? | Cambro-Silurian, Cambrian |
| 8 | Selkirk Series, Lower. | |
| 9 | Nisconlith Series | Lower Cambrian. |
| 10 | Shuswap Series | Crystalline Archæan. |
| 11 | Limestone | |

**Plutonic.**

| | | |
|---|---|---|
| 12 | Rossland Alkali-granite & Syenite. | Tertiary |
| 13 | Valhalla Granite | Post-Cretaceous. |
| 14 | Monzonites | Post-Jurassic(?) |
| 15 | Nelson Granite | |
| 16 | Nelson Gneiss | |
| 17 | Serpentine | Palæozoic. |
| 18 | Rich in Inclusions | |

Geological Boundaries.
Ditto Undefined.
Roads
Pack-trails.
6000′ Altitudes in feet above sea-level.
S. 380′ Soundings in feet.



MAP No 5
Accompanying Report
by A. G. Larson