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REPORT

on

THE SEVEN SISTERS MINERAL CLAIMS

at

Cedarvale, B. C.

held by

D. W. MINES, LIMITED.

Prince Rupert, B. C.

Property at

Cedarvale, B. C.

by

HOLLIN FARMIN, S.M.

October 1926

Revised to December 1, 1926.

SUMMARY AND CONCLUSIONS

This report on the Seven Sisters Group of mineral claims held by D. W. Mines, Limited, at Cedarvale, B. C. contains the following statements and opinions:

The property consists of eight claims; five claims of fifteen hundred feet each, along the strike of a strongly mineralised silver-lead, zinc vein, and three claims paralleling them to cover the possible migration of the vein along its dip.

The claims are situated at an elevation of 4000 feet above sea level five and one-half miles from the Canadian trail, six and three-quarters miles long, from the village of Cedarvale. In case ore production proves warranted a road or an aerial tramway could readily be built to the railway.

Geologically the prospect is attractive. The few open cuts which now expose the vein show it to definitely extend over eighteen hundred feet in length and geologic evidence indicates it to be over 8000 feet long. The cross cuts show the vein to be composed of two ore-types: (1) high grade zinc ore two to six feet in width and (2) rich silver-lead ore sometimes in the zinc ore and sometimes in separate lenses of one-half to two feet in width. The vein is deep-seated in origin and may be expected to continue to depth although its tenor can only be proven by development work. The silver content of the lead ore is of primary origin and will not be confined to the surface zone.

The development program herewith recommended will give much information concerning the extent of the ore body by the middle of the approaching summer season.

In conclusion, the Seven Sisters Prospect is a worthy and legitimate mining venture and fully merits careful exploration.

Rollin Farmin, S. M.
Mining Geologist.

Terrace, B. C.
Dec. 1, 1926.

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GENERAL INFORMATION

The Seven Sisters Group of mineral claims is situated in the Omineca Mining Division, British Columbia, on the western slope of Seven Sisters Mountain, approximately six miles south of Cedarvale. Five and one-half miles distant, at the foot of the mountain slope, lie the Skeena River and the Canadian National Railway at a point one hundred and thirty four miles inland from Prince Rupert and forty-two miles west from Hazelton. The freight rate on ore from that point to the Trail Smelter is approximately $10 per ton.

The property is held by option to purchase by B. W. Mines, Limited, of Prince Rupert, B. C. from Stephen Young, Esq., of Cedarvale. Young had a clear title to it as locator of the claims in the group. The group consists of eight claims of fifteen hundred feet square, four of which were located in 1936 to cover the probable continuation of the vein. The spacing and names of the claims are given on the map, p.2.

The claims are accessible at the present time by a good trail from Cedarvale to the property, six and three-quarters miles in length, which is well suited for "raw-hiding." By means of this trail ore can be hauled to the railway during the winter months relatively cheaply.

The annual rainfall of the region is about thirty-five inches. In the winter there is an average snowfall of from four to six feet depth upon the property.

TOPOGRAPHY

The Seven Sisters Mountain is one of a series of rugged peaks lying on the eastern side of the true Coast Range Mountains of British Columbia. The action of alpine glaciers has made the northern slopes of the mountain very rough and precipitous, while the southwestern slope, upon which the claims are located, is comparatively gentle and smooth, with long timbered ridges and ravines running from timberline to the valley floor of the Skeena River.

The Seven Sisters claims are situated one hundred feet above timberline at an elevation of 4800 feet above sea level, about half way up the mountain. The elevation of the Skeena River, five and one-half miles westward, is 500 feet above sea level. Between the claims and the river the flank of the mountain slopes continuously, first at an angle of twenty degrees but gradually flattening toward the river until the broad nearly level valley is reached at an elevation of 1000 feet. The river is rather deeply intrenched in this valley, with a bluff 500 feet high on its eastern bank.

It is probable that the route of ore and concentrates from the claims to the railway will eventually be directly down the flank of the mountain by aerial tramway; however, a road could be built to the property for truck or sleigh hauling. The entire mountain slope below the timber line is covered with forests of fir, spruce, cedar, and hemlock which would supply ample timber for all mining and construction purposes. The accompanying sketch map pictures the situation in detail (p. 4.)

General Geology.

The general geology of the district has been discussed elsewhere[1] so only a brief resume will be given here. The oldest rocks which are well developed in the region are those of the Hazelton formation of Jurassic age[2]. They were intruded in late Mesozoic time by the Coast Range Batholith, composed of diorite, quartz-diorite, and granodiorite. During the latter part of the Cretaceous period some sediments were deposited a few miles to the Northwest of the region under discussion but none in its immediate neighborhood. The presence of intrusive rocks and flow rocks in and upon the Cretaceous sedimentaries indicates that vulcanism extended well into the Tertiary era.

Throughout the district the Hazelton formation has been the country rock bearing the majority of the ore deposits. It is composed principally of quartzites and conglomerates with intercalated strata of tuffaceous material. In the southern part of the district there are flows of andesite, rhyolite and trachyte which are included in the formation. The exact

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[1] Dawson, G. M.: "Report on an Exploration from Port Simpson to Edmonton,": Geol. Surv., Can., Rept. Prog., 1879-80.
McEvoy, James: "Geol. Surv. Can.: Vol. 6, 1893: pp.15 A-16A.
McConnell, R.G.: "Geological Section along the Grand Trunk Pacific Railway from Prince Rupert to Aldermere,": Geol. Surv., Can., Sum. Rept., 1912: pp. 55-62.
" "Portland Canal and Skeena Mining Divisions": Geol. Surv. Can., Mem. 52, 1914.
Hanson, George: "Reconnaissance between Skeena River and Stewart, B. C.": Geol. Surv., Can., Sum. Rep. 1923-25.
Minister of Mines Reports, B.C., for years 1894-97, 1898-1925.

[2] Op. Cit.

thickness of the formation is not known but the writer has observed a thickness of more than eight thousand feet in the Kitsumgallum Valley section. The Hazelton formation has been intruded and dissected by many acidic dikes and sills, often accompanied by quartz veins bearing the ore minerals. These intrusives come from the underlying batholith which is usually several thousand feet below the surface of the Hazelton formation. In the Hazelton there are also intrusive basic dikes--lamphrophyres, andesite, etc.,--that seem to be markedly less abundant than the acidic dikes. It is probable that the basic dikes are of a later stage in the period of vulcanism than are the acidic ones.

The Country Rock.

The country rock containing the Seven Sisters vein is the Hazelton formation above mentioned. It is composed, there, of massive quartzites with occasional layers of resilicified conglomerates which furnish the only horizon markers. The finer grained sediments are in part tuffaceous. Intense compression and the resultant fracturing have obscured the bedding planes of the sediments so that the geologic structure can not be readily determined.

The Vein

The vein strikes North-South and dips eastwardly at an angle varying from twenty to sixty degrees. The width of the vein is from six inches to six feet; the average

width in all exposures is a full two feet. The length of the vein is somewhat uncertain as it is covered at both ends and in the middle portion by glacial till and stream wash. The vein has been definitely traced from the Galore claim across the full length of the Timberline claim and for a short distance into the Sam Slick claim (see p.2.) giving a known vein length of about 1700 feet. What is probably the same vein again outcrops on a bare ridge 3000 feet north of the last exposure on the Sam Slick claim and is exposed for several hundred feet on the Cordilleran and Pacific Claims. The reasons for believing that this is a continuation of the known portion of the vein are (1) the two veins are perfectly alligned in strike and dip, (2) the veins have the same mineral association, i. e., the minerals composing them are in both cases; pyrrhotite, sphalerite, pyrite, galena, with quartz and calcite as minor constituents. Such information as may now be obtained indicates that the vein is in excess of 5000 feet in length and may reasonably be expected to continue further under the overburden of soil and gravel at both ends of that exposed length.

The vein is a replacement deposit whose origin is closely associated with that of a nearby igneous dike of andesite (?) porphyry. The ore occurs in more or less continuous lenses adjacent to the dike. The one cross cut which exposes both ore

and dike shows the ore on both sides of it, with one to ten feet of highly metamorphosed country rock separating the ore shoots from the dike.

The role of the dike in ore deposition was that of a parent intrusive which was sent off by the great underlying molten mass and forced its way upward into the soft sedimentary rocks. Hot solutions bearing the ore ingredients followed the dike in its upward course, permeating the surrounding country rock through the fractures produced by the force of the intrusion and replacing the chemically favored portions of the country rock with ore minerals. Any open fissures which existed near this zone of mineralization would likewise be filled by ore minerals and gangue. The ore bodies resulting from a deposition of this type will be somewhat lenticular, with swells and pinches and very possibly will appear discontinuous in many places.

The Ore.

The ore is composed of the sulfides of zinc, lead, and silver in a gangue of iron sulfides (pyrrhotite and pyrite) and minor amounts of quartz and calcite. The ore may be divided into three types: (1) the zinc ore, (2) the silver-lead ore, and (3) the mixed ore in which the zinc and silver-lead minerals are mixed.

(1) The zinc ore type consists of intimately associated masses of sphalerite (zinc sulfide) and pyrrhotite and pyrite (sulfides of iron). The zinc is in excess of the iron in cuts Nos. 1, 2, 5, & 6 (see geologic map p. 2). Average assays at

these points give about 35% zinc across average vein-widths of two and one-half feet. This type of ore contains only from two to five ounces of silver per ton and but a trace of gold. Outcrops Nos. 7 & 8 have been so thoroughly oxidized that it is difficult to estimate their zinc contents, although pyrrhotite seems to have been more abundant there than elsewhere.

(2) The silver-lead type is composed of galena (lead sulfide) which contains many inclusions of the silver mineral freibergite (sulf-antimonite of silver, copper, iron, etc., known to miners as "gray copper"). The freibergite inclusions range in size from microscopic to five millimeters in diameter. They render the lead ore very rich in silver. A strong shoot of it is exposed by cuts Nos. 3 & 4 (p. 2.). The samples from this shoot averaged about 150 ounces silver per ton across and average width of twelve inches. The lead content was about 70%. Shoots such as this are evidently very rich and it is to be expected that development work will uncover more of them.

The silver content of the lead ore will be markedly variable. It depends on the relative abundance of the freibergite inclusions in the galena and also upon the variable silver content of the freibergite itself. In the opinion of the writer the freibergite is a primary mineral constituent of the vein and not the product of secondary sulfide enrichment. It may, therefore, be expected to occur in greater or lesser abundance along with the galena wherever the lead type of mineralization is found in the vein.

A statement of tonnages, values, and costs of production has no place in this report. I wish to convey a picture of a strongly mineralised vein which is but scantily exposed upon the surface and which merits a thorough exploration. The surface showing is the most promising one I have seen between Prince Rupert and Smithers and it is superior to that of many operating mines.

PROGRAM OF DEVELOPMENT

Work done to date.

Very little work has been done upon the Seven Sisters prospect to date. A foot trail was built from Cedarvale to the property a number of years ago, but it was steep and rough and pack horses could not be taked over it. As a result, the old prospector who held the claims was unable to accomplish more than the digging of a few cross-cuts to expose the vein in half a dozen places and to commence erecting a cabin near the showings.

The property was taken over by D. W. Mines, Limited, Oct. 15, 1926, and since that time a good trail has been built from the village of Cedarvale to the claims. It was especially designed for "rawhide" hauling during the winter months. A permanent camp has been built which will accommodate six men and preparations have been made for a crew of that size to do development work throughout the coming winter.

Work Recommended to be Done.

The writer recommends the following program of development:

During the ensuing winter an inclined shaft should be sunk in the best ore-shoot of the vein (see detail map p. 12). The depth of the shaft should be about eighty feet, provided that the showing seems reasonably continuous. By carrying the ore on the hanging wall side of the shaft it

SKETCH MAP

Showing

TOPOGRAPHY & CULTURE ON

SEVEN SISTERS MINERAL CLAIMS

can be broken down, sacked, and hauled to the railway without interfering with the work of shaft sinking. The high grade shoots encountered can be stoped out and likewise shipped. It is quite possible that the ore thus sold will largely offset the expense of development. If the mineralisation still seems strong at the bottom of the completed shaft, an adequate sump and pump should be installed and drifts should be started horizontally along the vein in both directions at the eighty foot level.

During the spring thaws (presumable in April and May) surface work will be difficult due to the abundant water from melting snows. When the thaws are over the vein should be explored upon the surface by shallow cross-cut channels at 100 foot intervals along its strike. Particular care should be used to try to trace the dike as well as the ore shoots, bearing in mind the possibility of ore bodies being found on both sides of it.

The results of the winter's development work should be thoroughly examined before any larger scale operations be undertaken.

Assays of Samples of Seven Sisters Vein

1. Oxidized Dust Silver 2 oz., per ton Gold Trace
Lead & Zinc removed by oxidation.

2. Pyrite, no galena or Sphalerite
Silver 1.6 oz. Gold---

3. Heavy pyrrhotite, minor sphalerite
Silver trace Zinc 15.6%

4. Mixed galena & Sphalerite.
Silver 30.6 oz. Zinc 15.2% Lead 20.2%

5. do do
Silver 154.0 oz., Zinc 14.9% Lead 24.7%

6. do do " 144.4 oz., " 18.10 " 28.1

7. Heavy Galena " 157. - - - - " 72.0%

8. " " " 136.8 - - - " 63.1%

Report of Douglas Lay, Residential Engineer, in Opinaca Mining District.

Seven Sister Group. This group, consisting of six claims and owned by Steve Young, is situated above timber-line at an elevation of 4,850 feet. No opportunity of inspecting this group having presented itself earlier in the season, an effort was made to do so in the middle of November, when snow was absent from the base of the mountain. The group is distant at least 8 miles from Cedarvale and the objective was reached after a somewhat severe trip, there being at least 3 feet of snow in the vicinity of the group. After the snow was shovelled off the open-cuts, where work had been progressing, a very promising mineralisation was disclosed, showing some nice clean galena with pyrite, zinc-blende, and pyrrhotite. The snow conditions were such that it was quite impossible to form even an approximate idea of widths, but the fact that the galena proved of very excellent grade in silver, coupled with the favourable accompanying mineralisation, strongly indicates the advisability of further work. Obviously, if there is any material amount of galena, such could readily be hand-sorted and packed down to the railway at a profit. There being a depth of some 3 feet of snow, it was consequently not possible to inspect the country-rock near the exposure. The rock in immediate contact with the mineralisation was found to be an igneous dyke. Sedimentary rocks compose the country-rock of Seven Sisters mountain as

a whole. These have been classified by the Geological Survey, Canada, as belonging to the Hazelton group.

Very little work has been done on this mountain, but the existence of ore of the type exposed at the Seven Sisters group, coupled with the adjacent railway transportation, are facts which warrant its close investigation.

Sample of picked galena from the Seven Sisters group assayed: Gold, 0.02 oz.; silver, 226 oz. to the ton; lead 64 per cent.; zinc 6 per cent. A sample consisting mainly of zinc-blende and pyrrhotite assayed: Gold, trace; silver, 4 oz. to the ton; lead, nil; zinc, 20 per cent.

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CHARLES A. BANKS, M. INST. M.M.
MINING ENGINEER
TELEGRAPHIC ADD. "BANKCA" VANCOUVER
CODES (BEDFORD Mc NEILL
MOREING & NEAL

Pacific Building
Vancouver, B. C.

MM 25-130 silver lead - S. Smith 2mi - Cedarville
26 125
27 126 2⅓ pages map indicates property is east of Cedarville
OMER 28-150 1½ v
29 153 8 lines
Also called Dew Mines

December 13th. 1927.

Douglas Lay, Esq.,
District Engineer,
HAZELDON. B.C.

Dear Sir,

You recently were good enough to tell me something about the Seven Sisters Group.

If you have seen it this year, perhaps you could give me a short report on it and your idea of its possibilities, Is a mill warranted at this stage? Perhaps also you could give me the names and addresses of the chief owners.

Kind regards and the Compliments of the Season.

Yours sincerely,

C A Banks

Dec. 23rd 1927.

C.A. Banks, Esq., M.I.M.M.,
Pacific Building,
VANCOUVER, B.C.

Dear Mr Banks,

I have your letter of the 13th inst.

Owing to my absence from this office in the field, delay in reply has been unavoidable, although I regret very much its occurrence.

The "Seven Sisters" group is operated by "D.W. Mines. Ltd.," (incorporated in B.C., but a private company). The President is:-

Governor D.W. Davis,
3625 16th Street Northwest,
Washington, D.C., U.S.A.

I might say that I was on the point of writing you when I received your letter under reply, because subsequent to our chat at the end of last month on the S.S. Prince Rupert, I had a short chat with Governor Davis, to ascertain his views regarding a proposal on the lines you indicated. He expressed his entire ability as to his friends possessing the necessary sinews of war to develop the property in all phases. However, it would , I think, be well for you to drop him a line.

I have unfortunately run into some field work at the time normally reserved strictly for the compilation of the Annual Report, which has left me in a rather unenviable position so far as the latter is concerned. In fact I am "snowed under" with correspondence and report. However, I will complete my report on this group as soon as possible, and forward it to Victoria in advance of the rest of the report, stating that you would like an advance copy.

In the meantime, the following brief description may be of use:-

On the upper western flanks of Seven Sisters mountain, in the more immediate vicinity of an intrusion of batholith, in the argillitites and quartzites of the Hazelton series, there is exposed a replacement mineralization , which can be traced for upwards of a mile in length. It is covered in places with glacial drift, in places the cover is very shallow, and the mineralization can be readily exposed by surface cross-cut trenching. The trend is practically true north and south, and dip, flat, at about 30° into the mountain easterly. The strike of the ore is such, likewise the topography, that all surface exposures are broadly speaking at much the same horizon, they lie between points 4300 and 4500 feet above sea level. Mineralization is essentially pyrrhotite-zinc blende-galena, with concomitant iron pyrites. Some of the galena lenses run to quite good silver values say 200 ozs. per ton. The mineralization appears to follow the bedding planes of the enclosing country, although the latter are somewhat obscured. While quite insufficient work has been done to prove the matter, it seems likely that a band of rock about 300 feet in width will be found to contain parallel mineralized zones.

From the description, it must be apparent that the occurrence lends itself to surface stripping, and that a very great deal of such should be done, prior to extensive underground development. Such work of course can obviously only be prosecuted during the open season, and in winter climatic conditions necessitate underground development. A very great deal of surface trenching yet has to be done to afford the necessary data prior to vigorous underground development. This winter promising ore found at or near the surface is being followed underground. I might add that another geological feature is the persistence of certain igneous dykes, apparently andesite porphyry for great distances in the sedimentaries One of these penetrates the ore zone, and quite possibly has influenced ore deposition.

While this property is still in the prospect stage, it possesses the earmarks of magnitude. It is distant 8 miles by good packtrail from Cedarvale on the C.N.Ry., in a straight line the distance from the railway is probably not more than about half this.

It must therefore be apparent, that when developments justify such, a mill on the railway track , and aerial tram thereto, will dispose of the transportation question.

Cordially reciprocating your kind wishes for the Festive Season,

Yours very truly,

Resident Engineer.