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82K/5W mostly & 82L/8E

REPORT ON GEOCHEMICAL SURVEY

BIG LEDGE GROUP - CLAIMS Nos. B.L. 36 to 89

Upper Arrow Lake - Twenty Miles North of Nakusp, B. C.

Latitude N. 50° Longitude W. 118° N/E Quadrant

Period: June 15th to September 15th, 1951

D. C. Malcolm

UNDER SUPERVISION OF LEONARD TELFER, PROFESSIONAL ENGINEER

FORM -10-46—N.D.N.—220

THE NSOLIDATED MINING & SMELTING COMPANY
OF CANADA, LIMITED

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REPORT OF GEOCHEMICAL SURVEYING,
PERFORMED BY THE CONSOLIDATED MINING
AND SMELTING COMPANY OF CANADA LIMITED ON
THE BIG LEDGE GROUP IN THE SLOCAN MINING DIVISION

The work was done under the supervision of Leonard Telfer, a Professional Engineer of the Province of British Columbia, by Douglas Malcolm, an Engineer-in-Training in the Association of Professional Engineers of British Columbia, with the following experience:

Graduated University of British Columbia in Geological Engineering in 1935.

1935 - Geological Survey of Canada.

1936 to 1951 - Mines Division, Consolidated Mining and Smelting Company of Canada Limited.

The report is signed by Leonard Telfer and Douglas Malcolm. Attached to the report are a plan of the work and a statement of the expenditures made in that regard, all duly certified.

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BIG LEDGE GEOCHEMICAL SURVEY

THE CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA, LIMITED

BIG LEDGE

Geochemical Prospecting

Mine Series 1551 — October, 1951

1. SUMMARY

The Geological Division of the Consolidated Mining and Smelting Company of Canada, Limited mapped the area to the east of the Big Ledge property in 1950. They were unable to trace the extension of the mineralization owing to the overburden, but by mapping a parallel limestone bed they were able to show the approximate location of the "Ledge" through the map area. This continuation was staked in 1951 and a geochemical survey was made over the new claims. A narrow belt of zinc-rich soil, as illustrated in the attached plan, was found extending to Upper Arrow Lake. Three outcrops of sulphides surface along the belt.

2. LOCATION AND TOPOGRAPHY

The Big Ledge is situated on the west side of Upper Arrow Lake opposite St. Leon hot springs. It lies along the western tributaries of Pingston Creek, a large stream which parallels Upper Arrow Lake and lies three miles west of the lake. Pingston Creek flows to the south from near Arrowhead to 18 miles to the south, where it enters Upper Arrow Lake. A 2000-foot high ridge separates the lake, elevation 1400 feet, from the steep-walled Pingston Creek valley.

The western claims are on a broad ridge lying between Ledge Creek on the north and Trout Creek on the south. The ridge reaches an elevation of 7140 feet at the west end of the property and drops into Pingston Creek, where the elevation is 2000 feet.

Up to elevations of 5000 to 5500 feet the claims are heavily timber covered. Between Pingston Creek and the Adventurer claim there is a heavy forest growth. Trees four to eight feet in diameter are common. East of Pingston Creek the ridge has been logged and is now dry and slash covered on its eastern slope. The western slope is a precipice.

3. GENERAL GEOLOGY

(a) Superficial Geology

The claims lying between Pingston Creek and the Adventurer M.C. are heavily drift covered. C.E. Cairnes, Geol. Surv. Can. Sum. Rept. 1923, Part A, believes it is a bench composed chiefly of glacial materials accumulated during Pleistocene time and re-worked by Pleistocene streams. Where it can be seen, in the creeks, it consists of water sorted beds of sand and gravel covered with a thick soil cover. In places it must be at least 60 feet in depth, while in other parts it is very shallow.

East of Pingston Creek some small similar benches cover the slopes but outcroppings of rock are common.

(b) Bedrock Geology

The area is underlain by highly metamorphosed and granitized rocks of the Shuswap Series. A succession of graphitic limestones, quartzites, graphitic schists and mica schists. One to three bands of dense sulphides were found in some sections of the zone but these are not continuous nor are they confined to a single horizon.

(c) Mineralization

The surface outcrops of the mineralized zone contains less than 1% zinc.

4. GEOCHEMICAL SURVEY

(a) Introduction

The study of secondary dispersion patterns derived from mineral deposits is a widely used and well established prospecting method. Generally prospectors can, by the study of metallic float or by panning, locate a deposit. The geochemical method used in this survey is simply a study of the secondary dispersion pattern over the deeply covered eastern extension of the Big Ledge, using dithizone indicator to give a comparison between the amount of zinc in the soils derived from above the ledge and the amount of zinc in soils derived from the barren hanging and footwall rocks.

(b) Soil Sampling

Samples were taken, closely spaced, along lines approximately at right angles to the trend of the mineralization. The lines were surveyed from the claims by Brunton compass and chain. They were at irregular intervals. The samples were obtained by catching the cuttings from a 1½ inch by 4 ft. wood auger hole from 1 to 3 feet deep. The cuttings were placed in a 4 inch by 6 inch pulp envelope which was marked with the line and sample number.

Previous experimental work by Consolidated had shown that this type of soil sample was suitable. Work done by Ray E. Gilbert for the New Park Mining Company in Utah, (American Mining Congress, Aug. 28, 1950) showed that the topsoil in general contains as much or more zinc than any layer other than that found on the bedrock surface. F.L. Hubbard, (Soil Science Vol. 50, pp. 53 to 55, 1940) explains this enrichment of the topsoil as being caused by the action of plants in bringing the zinc from the subsoil, subsequently decaying and leaving the heavy metal fixed in the soil.

On the Big Ledge approximately 2,000 samples were taken between the Adventurer M.C. and the Upper Arrow Lake.

(c) Testing Procedure

New chemical techniques for measuring small quantities of zinc in the soils and plants have been developed during the last few years. Consolidated Mining and Smelting Company of Canada, Limited, has been experimenting in southern B.C. in a method using dithizone indicator to give a comparison test in the amounts of zinc in various soils. The method is not quantitative in itself but the amounts of zinc may be determined exactly by color comparison with check samples assayed by quantitative or spectrographic methods. On the Big Ledge work the amount of zinc in the soil was not of importance to the work but a sharp difference was desired between soils obtained over the mineralization from those found over the barren rocks. Experiments were run over the tested section of the "Ledge" by varying the strength of the dithizone solution and regulating the Ph values until a weak positive test was obtained over a 15 ft. section of the vein which contained less than 1% zinc and was covered by about 40 feet of glacial gravel. This same area showed negative tests where no zinc had been found in the previous exploration work.

The analytical use of dithizone as an indicator is based on the extraction of the metals to be detected by shaking a solution of dithizone in carbon tetrachloride with an aqeous solution of the metallic salt. A complex salt is formed which is soluble in the carbon tetrachloride and, if the reaction is complete, this salt imparts its color (usually red) to the carbon tetrachloride. The dithizone solution in

(c) Testing Procedure (Continued)

carbon tetrachloride is green and if none of the heavy metals are present the solution remains green. The completeness of the test depends on the strength of the dithizone solution and on the acidity and strength of the metallic salt solution. The strength of the dithizone solution and the acidity of the aqueous solution are varied to give the desired reaction. On the Big Ledge a 0.00[illegible] weight by [illegible] solution of dithizone in carbon tetrachloride was used with an aqueous solution with a Ph of 5.5.

The strength of the aqueous solution depends on the solubility of the metal salt found in the soil and the time taken to dissolve the salt. There are many zinc minerals found in the soils and these have variable solubilities in water. On the Big Ledge the work did not require a knowledge of the amount of zinc in the soil so no attempt was made to completely dissolve the zinc salts. Instead, a comparison was made of the amount of zinc which would dissolve from the samples in water in a given time.

Ten cc's of the soil was shaken with 40 cc's of water for one minute and allowed to settle for three minutes. Fifteen cc's of the solution, buffered to a Ph of 5.5, was tested with three cc's of the dithizone solution. No difficulty was found in telling when the sample was directly derived from mineralized or unmineralized sections of the surface and we believe that the ground waters are of similar composition throughout the area tested. That is to say that the percentages of the different zinc salts in the soil would be constant over the claim group.

(d) Results

The results of the tests are shown on the attached plan. Sulphide deposits of similar grade and appearance to those on the tested portion of the Ledge were found to be connected by zinc bearing soils and to be exposed in three places on the eastern claims.

Report by:

D C Malcolm

D.C. Malcolm
Geological Engineer in Training

Endorsed by:

I. Telfer
Professional Engineer No. 1762

DCM:hma
Western Exploration Office
October 3, 1951

THE CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA, LIMITED

Expenditures - Big Ledge

Geochemical Prospecting

1951

Wages

	$
Student 2 months	627.85
Prospector 2 months	487.15
Supervision	952.60

Transportation

	$
Truck	162.00
Boat	240.00

Supplies

	$
Food	450.00
Camp	120.00
Chemical	50.00
Office	10.00
Surveying	20.00

~~Estimated~~ Total $3,119.85

D. C. Malcolm.

Endorsed by

P.L.Barron,
Branch Accountant.

DCM:ljp

approx. 118°00'

LEGEND

POSITIVE TEST

NEGATIVE TEST

SULPHIDE OUTCROP

LEDGE CREEK

Creek

SUNSHINE CREEK

Creek

PINGSTON CREEK

Creek

UPPER ARROW LAKE

1401'

3000'

5000'

4000'

3000'

2000'

3000'

B.L. 78 B.L. 80

B.L. 67 B.L. 69 B.L. 75 B.L. 77

B.L. 65 B.L. 68

B.L. 66 B.L. 74 B.L. 76

B.L. 57 B.L. 56 B.L. 59 B.L. 63 B.L. 64 B.L. 87

B.L. 61

B.L. 51 B.L. 53 B.L. 55 B.L. 58 B.L. 60 B.L. 62 B.L. 86 B.L. 88

B.L. 49 B.L. 50 B.L. 52 B.L. 54

B.L. 47 B.L. 48 B.L. 82 B.L. 83

B.L. 45 B.L. 46 B.L. 84 B.L. 85

B.L. 38. B.L. 40. B.L. 41 B.L. 43

B.L. 34 B.L. 35 Fr. B.L. 36 B.L. 37 B.L. 39 B.L. 44

B.L. 42.

B.L. 33 Fr. B.L. 15 B.L. 16 ADVENTURER L.1067 B.L. 89 Fr B.L. 70 B.L. 71 B.L. 72 B.L. 73

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MAP #1

DRAWN BY D.C.M.		TRACED BY		THE CONSOLIDATED MINING & SMELTING CO. OF CANADA LTD.	PROPERTY: BIG LEDGE GEOCHEMICAL SURVEY
REVISED BY	DATE	REVISED BY	DATE		SCALE 1" = 1000'
				AREA: SLOCAN M.D., B.C.	DATE: 22,10,51 PLATE NO.

FORM 699