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## RECONNAISSANCE GEOCHEMICAL REPORT

ON THE

DECE MINERAL CLAIM

# GEOLOGICAL BRANCH ASSESSMENT REPORT

for Canadian United Mine als Ltd Operator and

> Robert Holland Owner

FILMED

NTS 93L/10E Omineca Mining Division

NOV 5 1986 VANCOUVER, B.C. Longitude 126°38'W

Latitude 54043'N

Robert Holland, B.Sc., F.G.A.C. Holland Geoservices Ltd.

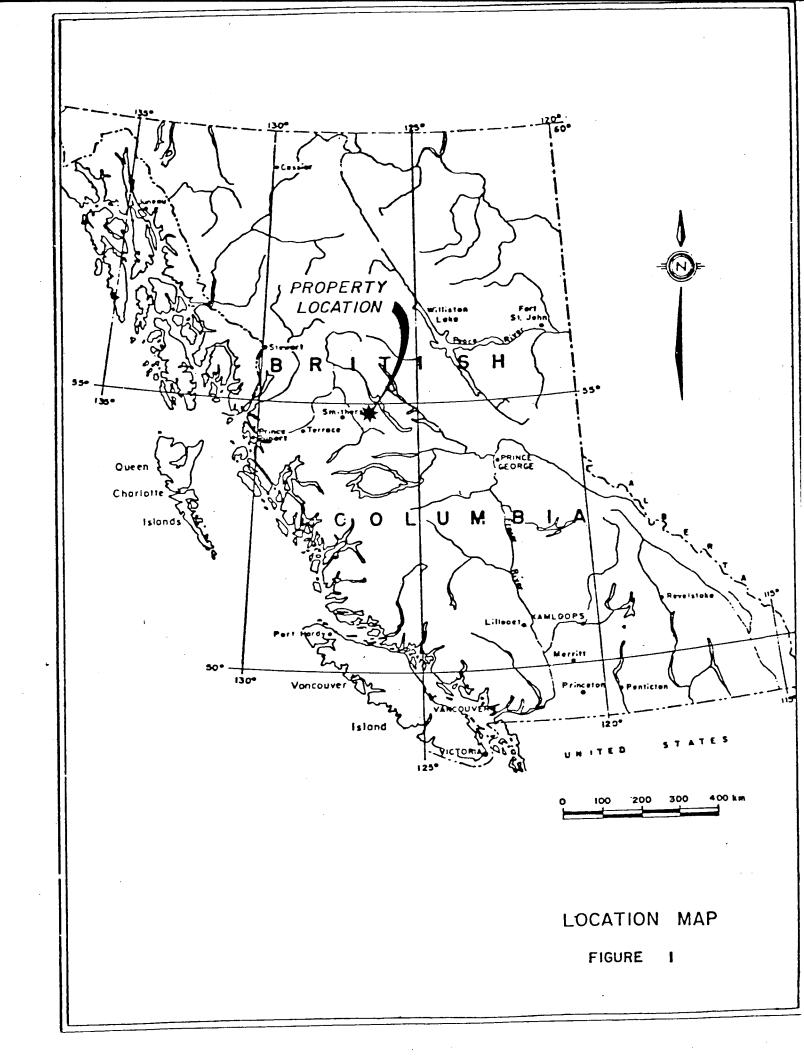
October 29, 1986

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## SUMMARY

The Dece claim, consisting of 12 claim units, is owned by Robert Holland, and is subject to an informal option agreement with Canadian United Minerals Ltd. of Vancouver, B.C. The property is located on the southern flank of Dome Mountain, within 2 kilometers of important high grade gold-silver mineralization associated with the Dome Mountain gold camp. Recent work by Canadian United Minerals Ltd. on Dome Mountain has outlined roughly 250,000 tonnes of ore grading approximately 16 grams per tonne gold and 78 grams per tonne silver in their Boulder Creek zone.

In 1986, a soil geochemistry grid was established over much of the claim area, as part of a larger reconnaissance soil geochemistry program carried out on behalf of Canadian United Minerals Ltd. in the Dome Mountain area. This, combined with a previous limited soil program from 1984, has outlined a number of small, scattered, mainly copper-silver-arsenic anomalies within the claim vicinity. The most significant of these is a small, strongly anomalous copper-silver-lead-arsenic-gold zone with values to 80 ppm Cu, 2.6 ppm Ag, 403 ppm Pb, 689 ppm As and 85 ppb Au. More detailed follow up soil geochemistry is required on all anomalies to determine their size, strength and significance.

### LOCATION AND ACCESS

The Dece claim is located in north central British Columbia, 34 kilometers east southeast of the town of Smithers and 33 kilometers north of the town of Houston. The property lies along the northeast edge of Deception Lake, four kilometers south southeast of the peak of Dome Mountain. Elevations within the property range from 1080 to

1325 meters, and the terrain is generally moderate to gently sloping with flat and marshy ground in the lower regions. Much of the claim has been clear cut, but uncut areas are well timbered by balsam fir with lesser spruce and poplar.

Access to the property from Smithers is via the Babine and Chapman Lake Forest Roads, approximately 60 kilometers, to Guess Creek and then by a secondary logging road which bisects the property roughly 9 kilometers to the west. Alternate road access can also be made from the Round Lake farming district, via the Guess Lake Road which connects with the above mentioned secondary logging road. This route, though much shorter, is rougher and deteriorates considerably between Guess and Deception Lakes. Helicopter access is also available from at least five bases in Smithers and Houston.

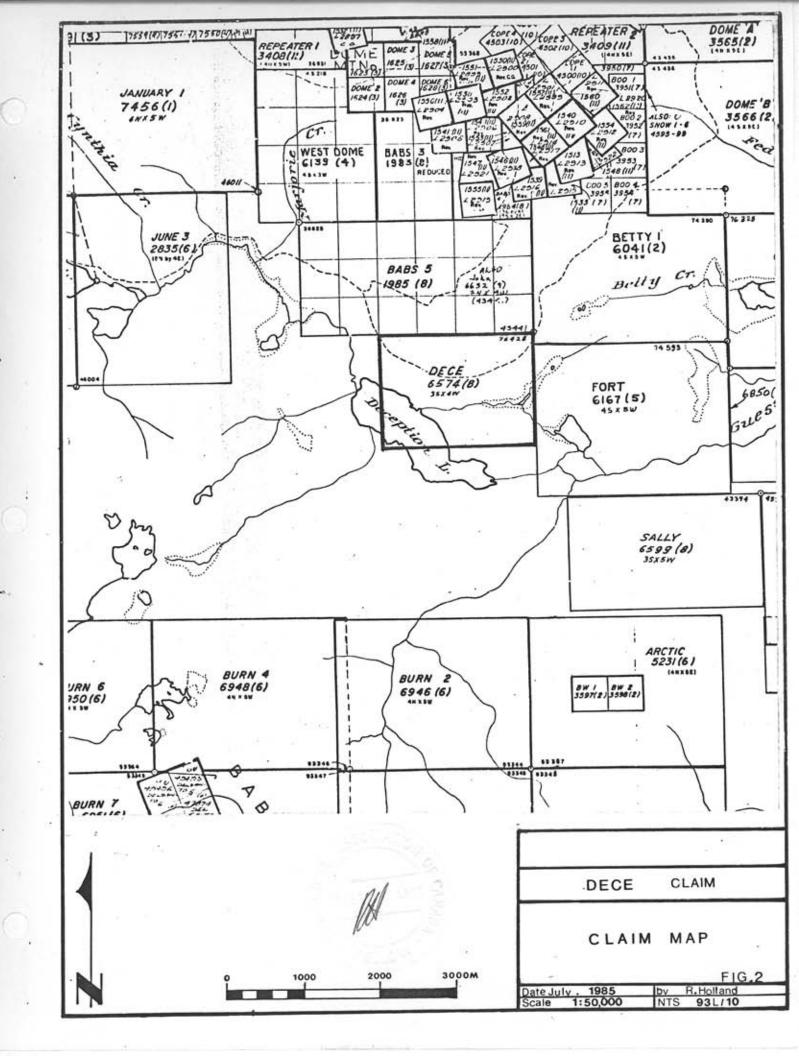
The town of Smithers, located approximately 700 kilometers north of Vancouver, is an important government and supply centre for the outlying Bulkley Valley region. The area is serviced by major highway and railway systems as well as airport facilities with daily scheduled flights to Vancouver, Prince George and Terrace.

## CLAIM STATUS

The Dece claim, record number 6574, consists of 12 claim units located in the Omineca Mining Division of British Columbia as shown in Figure 2. The claim record date is August 13, 1984 and has a current expiry date of 1987.

#### INTRODUCTION

Mineral exploration in the Dome Mountain area dates



back to 1898, and important gold mineralization was first reported in 1914. The Dome Mountain gold camp saw extensive development on a number of veins between 1916 and 1925 and again from 1932 to 1935. A shipment of 2235 tonnes of ore was reported from the Free Gold occurrence in 1940. 1940 to the 1970's, only sporadic work and development was conducted on Dome Mountain. In the early 1980's, Reako Exploration and Panther Mines did further underground and surface work at the Free Gold and by 1984 had recovered a total of 7931 grams (255 ounces) of gold and 14,617 grams (470 ounces) of silver using a small portable mill. 1984, Noranda Exploration Co. Ltd. acquired an option on many of the Dome Mountain claims and conducted a program of soil geochemistry, geological mapping, trenching and diamond drilling. Canadian United Minerals Ltd. subsequently acquired Noranda's option and, with partner Teeshin Resources Ltd., has succeeded in intersecting, in the Boulder Creek zone, an estimated reserve of almost 250,000 tonnes. The estimated grade of this zone is about 16 grams per tonne gold and 78 grams per tonne silver.

The Dece claim lies less than 2 kilometers south of the Dome Mountain gold camp and within 3 kilometers of the Boulder Creek zone. The property was investigated for porphyry copper deposits during the mid-1970's by Sumac Mines Ltd., who conducted reconnaissance soil geochemistry and 64 line-kilometers of I.P. Four strongly conductive zones and a resistivity low, with coincidental copper-zinc soil responses, were outlined and tested with four diamond drill holes totalling 582 meters. A number of gold soil anomalies were also outlined but apparently not followed up. The property was subsequently acquired by Noranda Exploration Co. Ltd. who carried out geological mapping, soil geochemistry, magnetometer, electromagnetic and I.P. surveys, and then drilled two diamond drill holes totalling 253.5 meters. Results and location of Noranda's work are not

available at this time.

The Dece claim was staked in July 1984, by Robert Holland, to cover the previous gold soil geochemistry. A limited soil grid was completed the same year under the supervision of Holland Geoservices Ltd. This work outlined a small but strong coincidental gold-silver-copper-arsenic-lead anomaly and several weaker gold, silver and copper responses. In 1986, an informal agreement was made with Canadian United Minerals Ltd. to acquire the property. Much of the claim area was covered as part of their regional reconnaissance soil program for Dome Mountain. A total of 212 samples were collected from on or about the Dece claim.

## GEOLOGY

Much of the following geological description is summarized from MacIntyre (1985). The Dome Mountain area is underlain predominantly by subaerial to submarine volcanic, volcaniclastic and sedimentary rocks of the Hazelton Group. The Hazelton Group is an island-arc assemblage that was deposited in the northwest trending Hazelton Trough during Early to Middle Jurassic time. Three major formations have been recognized in the Smithers area. The oldest, thickest and most extensive is the Telkwa Formation which is comprised of subaerial and submarine pyroclastic and flow rocks with lesser intercalated sedimentary rocks. Within the Dome Mountain area, the Telkwa Formation forms part of the Babine Shelf facies which separates the subaerial Howson facies to the west from the submarine Kotsine facies to the east. The Nilkitkwa Formation conformably to disconformably overlies the Telkwa Formation. East of Dome Mountain, it is comprised of marine sedimentary rocks with intercalated rhyolite to basalt flows. West of Dome Mountain, it consists of mainly red pyroclastic rocks. The Smithers Formation disconformably overlies the Nilkitkwa Formation and is comprised of fossiliferous sandstone, siltstone and lesser intercalated felsic tuff.

Several small elongated plugs or dykes of fine to medium grained diorite or diabase intrude the Hazelton Group rocks on Dome Mountain. These mafic rich intrusions are probably Jurassic in age, and therefore members of the Topley Intrusions. Outcrops of altered quartz porphyry and porphyritic quartz monzonite, with related quartz veining, have also been reported on Dome Mountain.

The Dece claim is underlain by greywacke, graphitic argillite and dacitic to andesitic tuffs and flow rocks possibly belonging to the Nilkitkwa Formation. No detailed geological information is available for the property area and outcrop exposure is limited.

## MINERALIZATION

At least 12 major vein and mineralized structures have been investigated on Dome Mountain. Most trend northwest, dipping steeply northeast or southwest; however several, including the Boulder Creek zone, trend northeast. Most of the veins are hosted in foliated and altered tuff, both paralleling and crosscutting the foliation. Wall rock alteration consists largely of sericite-quartz-carbonate replacement and varies vein to vein from minor to intense.

Sulfide mineralization occurs mainly as pyrite with lesser amounts of sphalerite-chalcopyrite-tetrahedrite-galena-arsenopyrite in order of decreasing abundance. Gold occurs, associated with sulfide mineral boundaries, as electrum containing 18 to 23% silver. Silver also occurs

as 2 to 4% in tetrahedrite. Silver to gold ratio is roughly 5 to 1. No economic mineralization is known to occur on the Dece claim; however, quartz veining and disseminated pyrite have been reported in drill core.

## SOIL GEOCHEMISTRY

A program of reconnaissance soil geochemistry was undertaken by Canadian United Minerals Ltd., in 1986, to cover a large portion of the Dome Mountain-Mount McKendrick highland area. The Dece claim, which adjoins ground controlled by Canadian United Minerals Ltd., was included in this area as part of an informal agreement with Robert Holland, owner. Work was carried out on a contract basis by Holland Geoservices Ltd. of Surrey, B.C. under the direction of the author.

In the vicinity of the Dece claim, flagged baseline 75+00E was run at an azimuth of 320° with flagged and compassed cross lines run at 50° and 230°. Cross lines were established at 250 meter intervals with stations and samples at 50 meter spacings along each line. A total of 212 soil samples were collected from approximately 1200 meters of baseline and portions of eight cross lines on or in the vicinity of the Dece claim. Samples were collected using a prospector's mattock, as nearly as possible from the B soil horizon. An effort was made to avoid organic rich, leached or disturbed material. If a good sample could not be collected at a station, an effort was made to collect one from nearby. A total of 7 samples were missed entirely due to swampy terrain.

Samples were collected in labelled kraft soil bags and shipped to Acme Analytical Labs in Vancouver, B.C. for analysis. At the lab, the samples were oven dried overnight, then screened to -80 mesh. A 0.5 gram sample of screened material was digested with 3ml of aqua regia (3-1-2 HCl-HNO<sub>3</sub>-H<sub>2</sub>0) at 95° for 1 hour and then diluted to 10ml with distilled water. The solution was then analysed by standard ICP (inductively coupled argon plasma) techniques for copper, lead, zinc, silver and arsenic. No analyses were done for gold in 1986 due to the extra expense involved and the erratic and unreliable nature of the results. All results are reported in parts per million (ppm).

## Treatment of Data

A total of 4019 samples were collected as part of the regional program in the vicinity of Dome Mountain. Results of these analyses were subjected to computerized normal histogram plots for each element, and mean and standard deviation calculations were made. The anomalous threshold was taken as the mean plus two standard deviations. Strongly anomalous thresholds were chosen arbitrarily at approximately twice the anomalous threshold. Some rounding was done for convenience. This technique yields results which are compatible with threshold numbers used by Noranda and other operators in the area. Histogram plots are shown in Appendix 1 and threshold levels are summarized below:

Element	Background	Anomalous	Strongly Anomalous
Copper	0-55 ppm	56-100 ppm	100 ppm+
Lead	0-25 ppm	26- <b>5</b> 0 ppm	50 ppm+
Zinc	0-240 ppm	241-400 ppm	400 ppm+
Silver	0-0.7 ppm	0.8-1.4 ppm	1.4 ppm+
Arsenic	0-35 ppm	36-100 ppm	100 ppm+

Results for the Dece claim area, including values from 65 samples collected in 1984, are plotted by element in Figures 3 to 7. The wide line spacing and low sample den-

sity are not conducive to standard sample contouring techniques. Anomalous values are, therefore, denoted by an open triangle and strongly anomalous values by a solid triangle.

## Discussion of Results

A number of anomalous and strongly anomalous values were obtained from the 1984 and 1986 soil programs as summarized below. Many of these samples were anomalous for two or more elements, particularly Cu-Ag (13) and Cu-Ag-As (6). Copper and silver gave the strongest response, both in terms of number and strength of anomalies, and were largely coincidental. Arsenic, while considerably weaker, also showed a correlation with copper and silver. Lead and zinc, for the most part, were low throughout the claim area, with the few scattered anomalous values being weak. While there is no prominent correlation of anomalous lead and zinc values with the other elements, some enrichment in the form of high background or subanomalous values, particularly for lead, was noted around many of the coppersilver-(arsenic) highs.

Element	No. of Anomalous	No. of Strongly Anomalous	Maximum <u>Value</u>
Copper	27	7	150 ppm
Lead	4	1	403 ppm
Zinc	3	0	310 ppm
Silver	22	4	2.6 ppm
Arsenic	13	2	689 ppm

No strong grouping or clustering of anomalous values was noted, although several areas show weak concentrations of highs. The most important of these is the area of the 1984 grid in the center of the Dece claim. Over half of the anomalous readings occur in this area. A second cluster

of values occurs just north of the northwest corner of the claim. Individual anomalies, as is common for the area, are difficult to assess due to the low sample density and anomalous sample scatter. Some of the more significant anomalies are summarized below:

- 1) DL4+50E, 2+50 to 3+00S (1984) anomalous to strongly anomalous for copper (to 80 ppm), silver (to 2.6 ppm), lead (to 403 ppm), arsenic (to 689 ppm) and gold (to 85 ppb).
- 2) L92+50N, 68+00 to 70+50E (off claim) anomalous to strongly anomalous for copper (to 117 ppm), silver (to 1.4 ppm) and arsenic (to 45 ppm).
- 3) L77+50N, 80+00 to 80+50E (off claim) anomalous for copper (to 108 ppm), silver (to 1.3 ppm) and arsenic (to 38 ppm) with high background zinc.
- 4) L77+50N, 70+10E anomalous for copper (150 ppm), silver (1.0 ppm) and arsenic (46 ppm) with high background lead and zinc.
- 5) L87+50N, 69+00E anomalous for copper (100 ppm), silver (1.3 ppm) and zinc (247 ppm) with high background lead and arsenic.
- 6) at least eight other scattered, one or two sample sites with anomalous to strongly anomalous values for either copper or silver.

### CONCLUSIONS AND RECOMMENDATIONS

In the course of soil geochemistry work done to date, a number of scattered anomalies have been outlined on and about the Dece claim. Almost all of these are small in size and no overall pattern or grouping could be distinguished, largely due to low sample density. One of these anomalies contained very strong values, particularly for silver (2.6 ppm), lead (403 ppm), arsenic (689 ppm) and gold (85 ppb). All others were considerably weaker with values principally in copper, silver and lesser

arsenic. Zinc and lead values were low throughout the claim area, although weakly anomalous and subanomalous values often occur associated with copper-silver highs.

The scattered and erratic appearance of the anomalous zones in this area is typical of the Dome Mountain gold camp. Similar results were obtained in areas of tighter grid and sample spacing and associated with known mineralization, including the Boulder Creek zone. Soil geochemistry has proven effective in these areas dispite the weak initial responses. Based on this, the importance of each of the anomalous zones in the vicinity of the Dece claim cannot be determined until more detailed follow up sampling is carried out.

It is recommended that all anomalous sample sites be followed up by fifteen sample mini grids, similar to those done by Noranda Exploration on Dome Mountain. More extensive soil sampling, prospecting and backhoe trenching should be conducted on any sites which respond favorably. In addition, it is suggested that backhoe trenching be conducted in the vicinity of the 1984 line 4+50E, 2+50S to try and locate the source of this very strongly anomalous zone.

### SELECTED REFERENCES

- B.C. Dept. of Mines Annual Reports of the Minister of Mines, 1916, p. 130-133; 1918, p. 122-124; 1922, p. 100-104; 1923, p. 111-113; 1924, p. 96-97; 1933, p. 98; 1934, p. c11; 1938, p. B15-20; 1940, p. A57-58; 1951, p. 113.
- B.C. Min. of Mines and Pet. Res., Exploration in B.C., 1975, p. 141; 1978, p. E220.
- Geol. Surv. of Canada, Open File 351, Smithers, B.C., 93L, 1976.
- Lang, H. (1941), Houston Map Area, British Columbia, Geol. Surv. Canada, Paper 40-18, p. 9-11.
- MacIntyre, D.G. (1985), Geology of the Dome Mountain Gold Camp, B.C. Ministry of Energy, Mines and Pet. Res., Paper 1985-1.
- Scott, T.C., Report of the Diamond Drilling on the Zuk, Tak and Dek Group, B.C. Assessment Report 5435, March 1975.
- Suzuki, T, Kawasaki, K, Rodgers, T., Report on a Geophysical Survey of the Tak and Zuk Claims, B.C. Assessment Report 5374, Dec. 1974.
- Tipper, H.W., Richards, T.A. (1976), Jurassic Stratigraphy and History of North Central British Columbia, Geol. Surv. Canada, Bull. 270, p. 73.

## STATEMENT OF COSTS

The following costs were incurred by Holland Geoser-vices Ltd. on behalf of Canadian United Minerals Ltd. for work conducted on or about the Dece claim near Deception Lake. This work was carried out during the period July 27 to October 29, 1986.

Camp Costs 8.5 man-days @ \$20/day		\$170.00
Geochemical Analysis (Cu, Pb, Zn, Ag, 212 samples @ \$4.75/sample	As)	1007.00
Drafting 7 hours @ \$20/hr		140.00
Equipment and Supplies		165.00
Equipment Rental 3 days @ \$20/day		60.00
Office Costs clerical - 8 hours @ \$10/hr printing & copying		80.00 243.49
Transportation (gas)		30.00
Truck Rental 3 days @ \$30/day		90.00
Wages R. Holland, geologist-supervisor 6 days @ \$200/day Aug. 4, 5, Sept. 22	?	
Oct. 16, 20, 23, 27-29 T. Wilkins, field assistant 2 days @ \$125/day		1200.00
July 27, 28, 30 M. Allen, field assistant		250.00
1.5 days @ \$125/day July 30, 31 B. Ryan, field assistant		187.50
1.5 days @ \$125/day July 29, 30, Aug.1 S. George, field assistant		187.50
1.5 days @ \$125/day July 29, 31		187.50
	Total Costs	\$3997.99



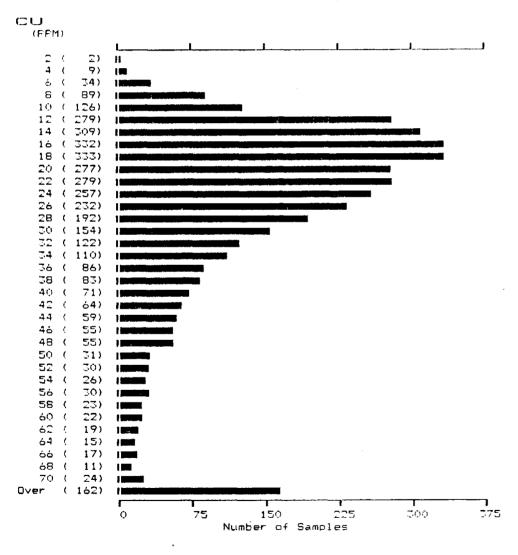
## QUALIFICATIONS

- I, Robert Holland, of 13451 112A Avenue, Surrey, British Columbia, hereby certify that:
- 1) I am a graduate of the University of British Columbia (1976) and hold a B.Sc. degree in geology.
- 2) I am currently employed as a consulting geologist with Holland Geoservices Ltd. of 13451 112A Avenue, Surrey, British Columbia.
- 3) I have been employed in my profession by various mining exploration companies for the past ten years.
- 4) I am a Fellow of the Geological Association of Canada.
- 5) I am the registered owner of the Dece claim and hold a 100% undivided interest in it.
- 6) The information contained in this report was obtained as a result of field work carried out on the property by Holland Geoservices Ltd., under my supervision.

Robert Holland, B.Sc., F.G.A.C. geologist

# APPENDIX

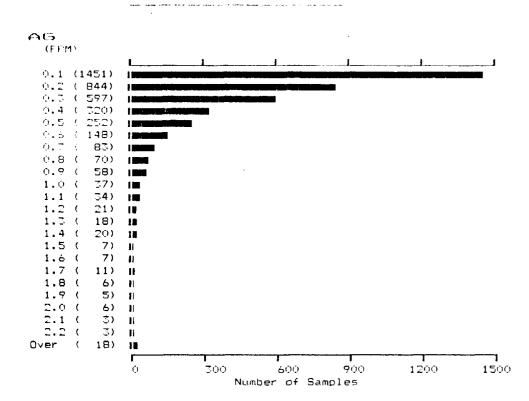
HISTOGRAM PLOTS



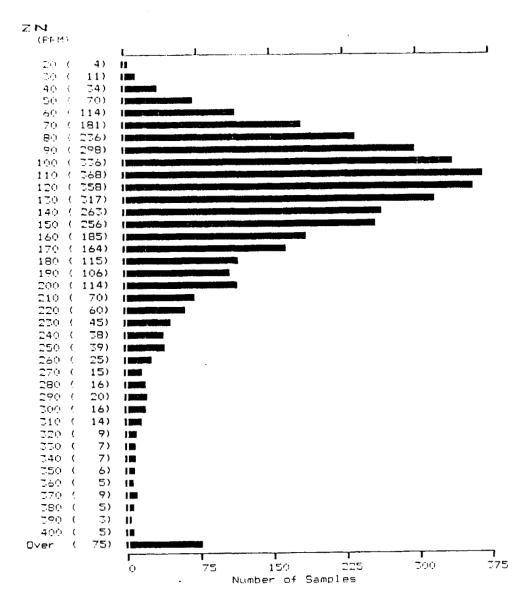
4019 Samples Maximum: 1840 Mean: Minimum: 2 Standard Deviation:

29

27

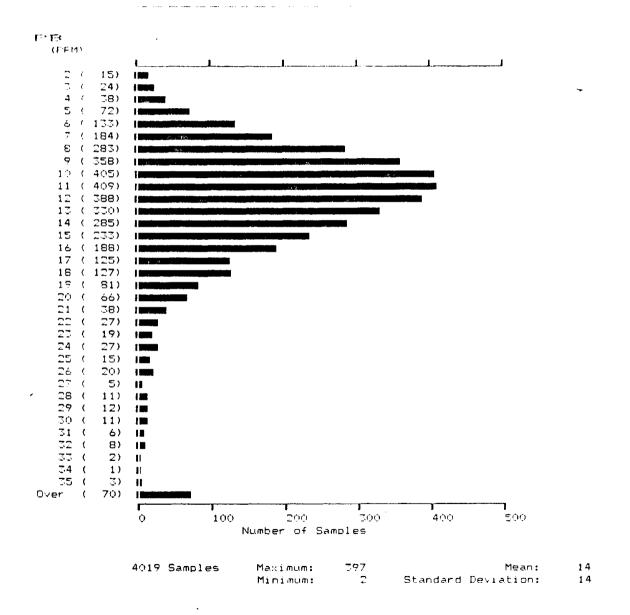


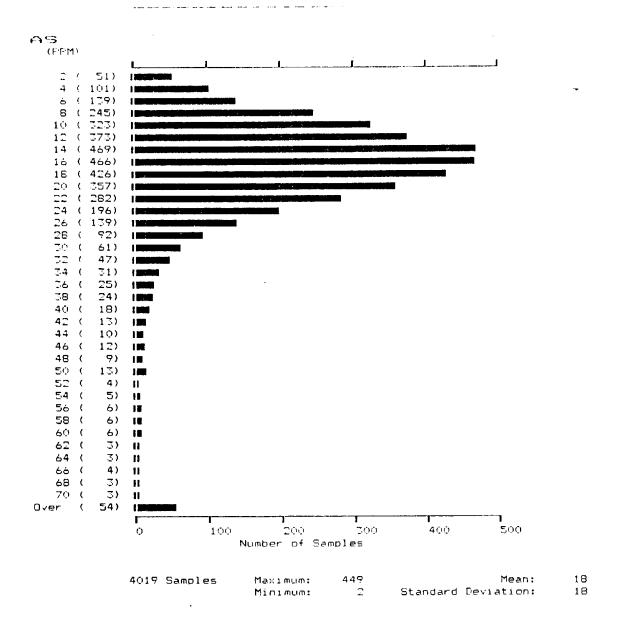
4019 Samples Maximum: 10.5 Mean: 0.3 Minimum: 0.1 Standard Deviation: 0.4

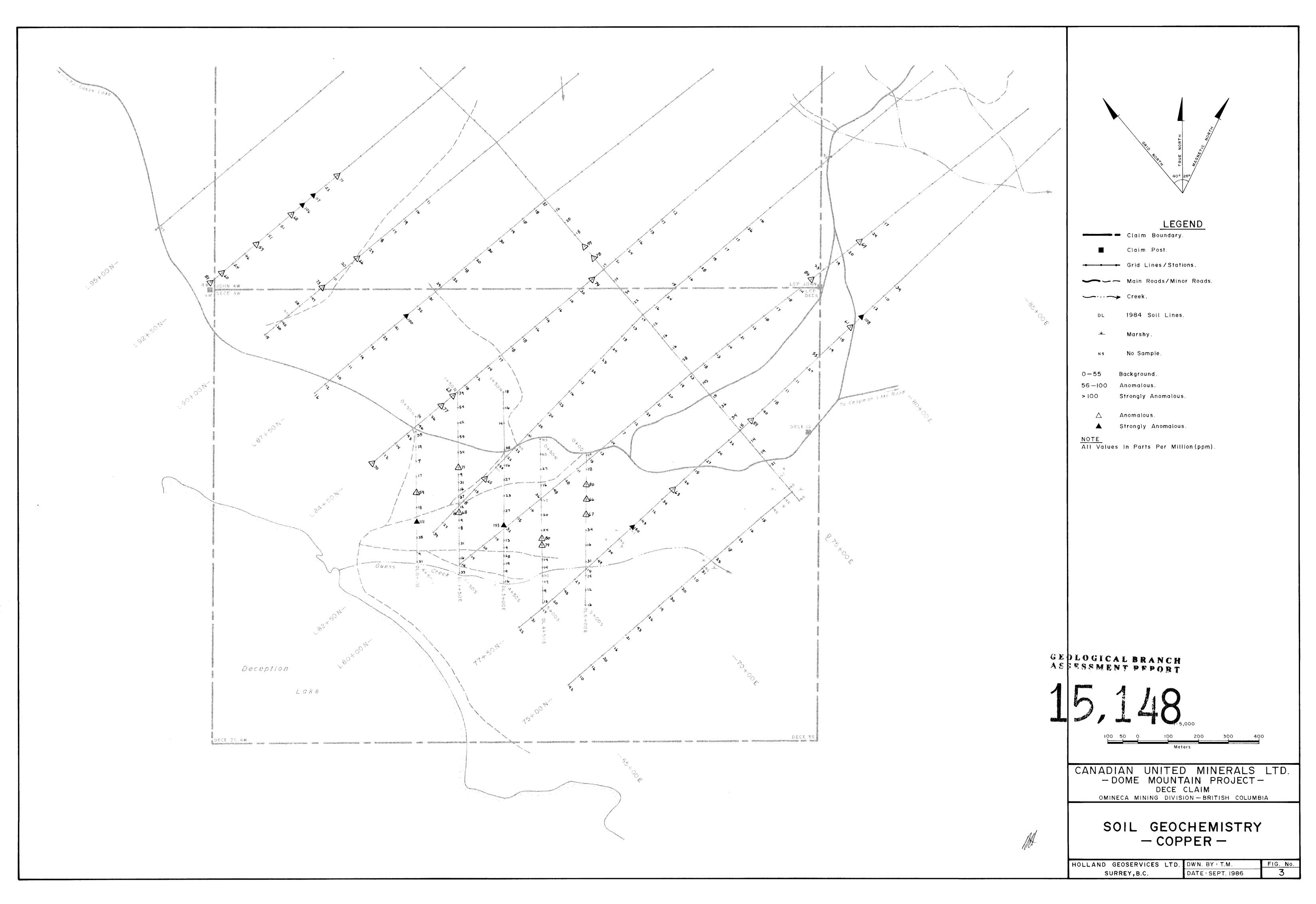


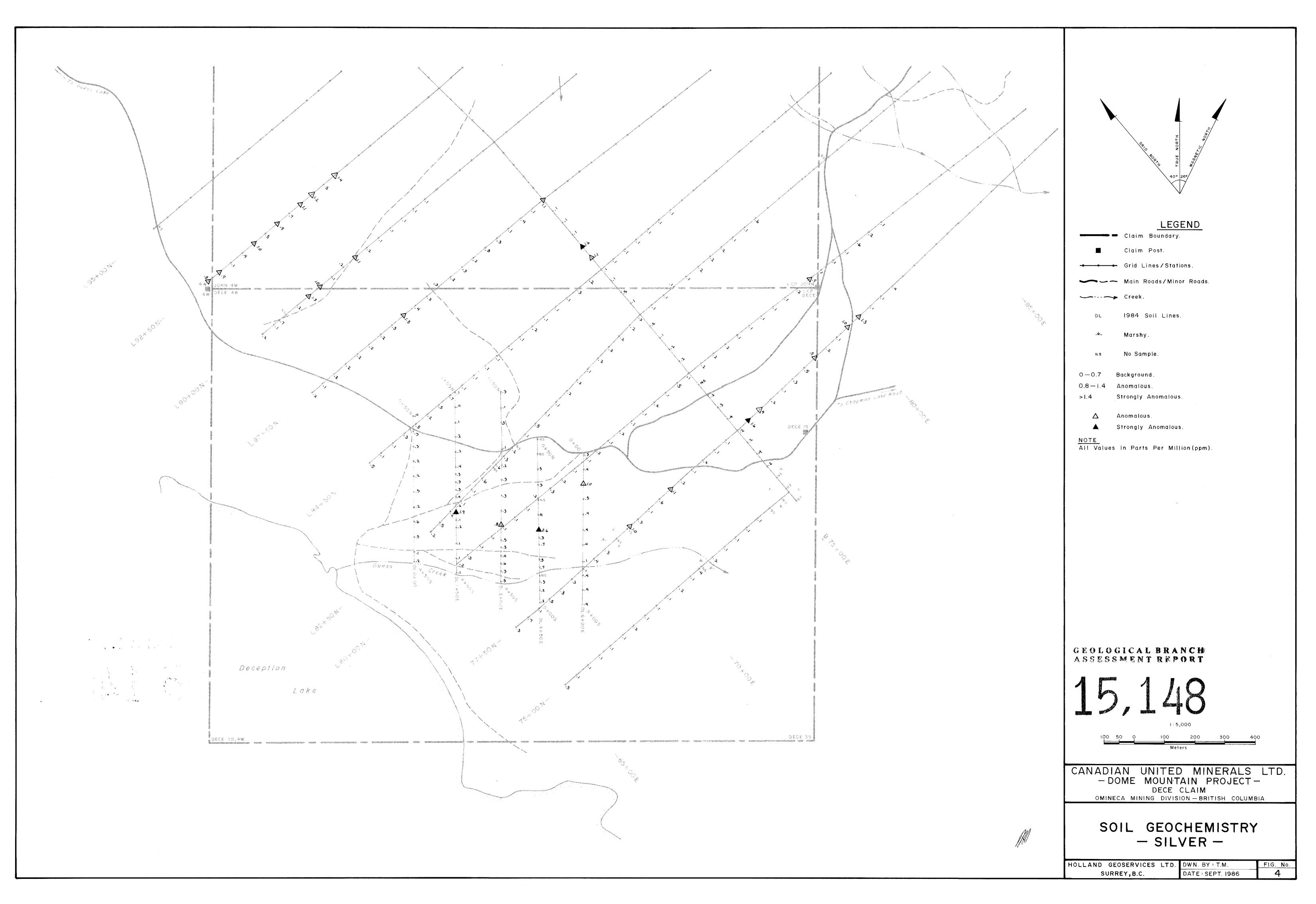
4019 Samples Maximum:

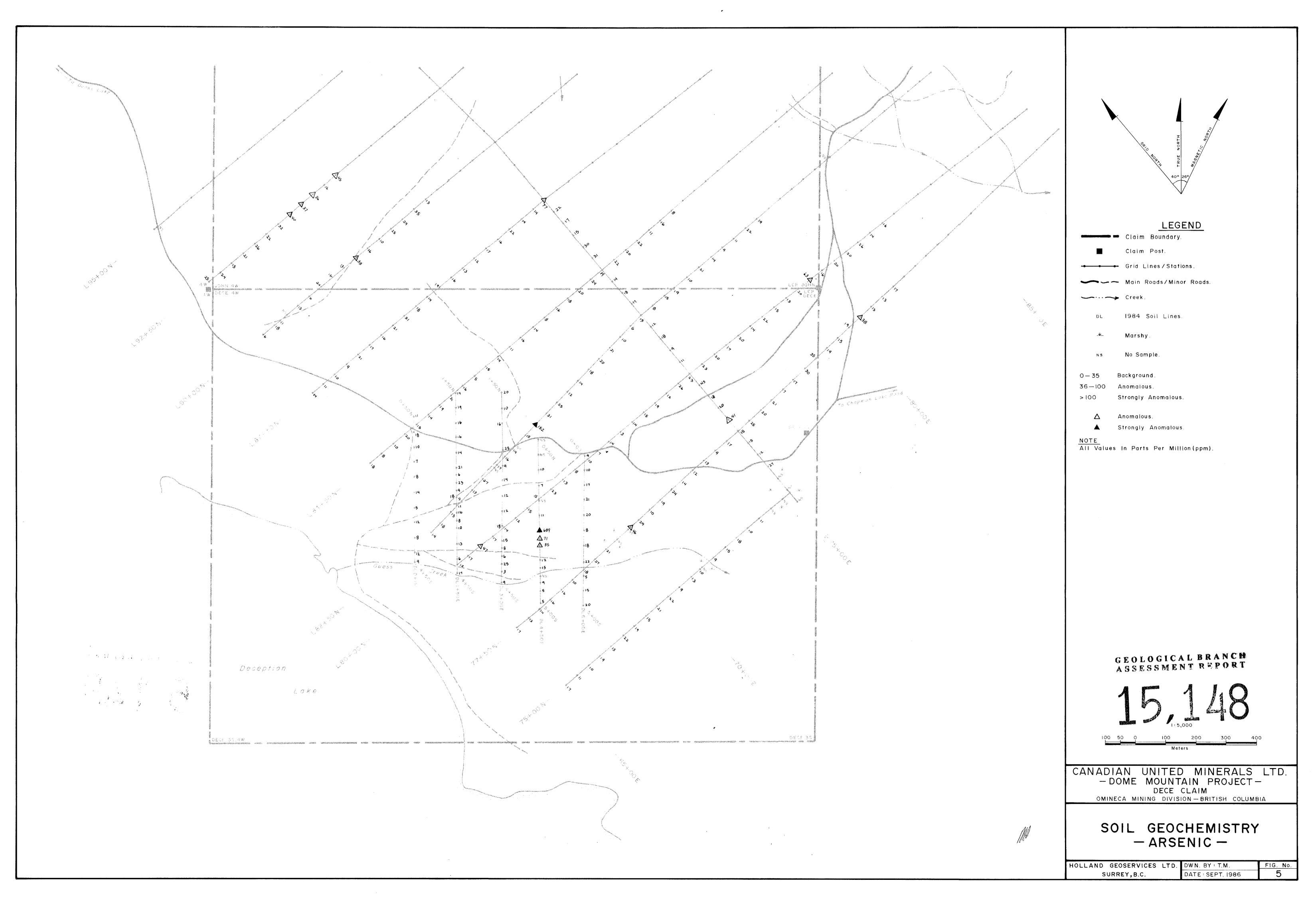
Maximum: 2052 Minimum: 17 Mean: Standard Deviation: 140 97

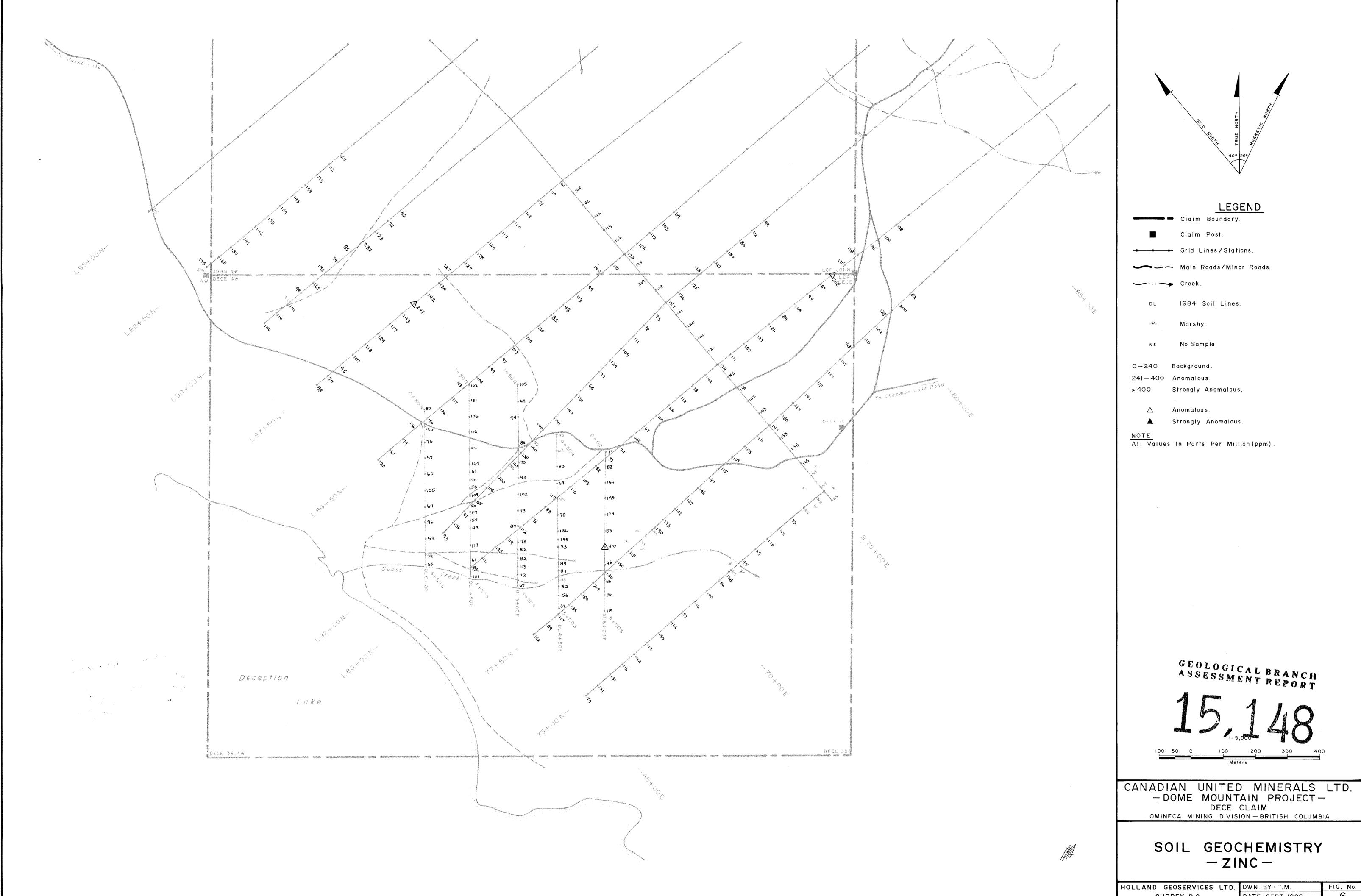












SOIL GEOCHEMISTRY

SURREY, B.C. DATE: SEPT. 1986 FIG. No. 6

