

180-#363-#8155

NORCEN ENERGY RESOURCES LIMITED

ASSESSMENT REPORT
GEOLOGICAL MAPPING, GEOCHEMICAL SAMPLING AND
DIAMOND DRILLING PROGRAM
GROUP VIII (TECT 3 - COG 14)

GOLDEN MINING DIVISION,
BRITISH COLUMBIA

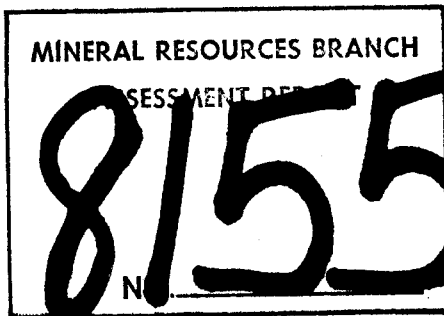
Claims: TECT 3 (412)
COG 14 (333)

Location: 42 km South of Golden, British Columbia

Latitude: 50°57'N

Longitude: 116°52'W

Owner and Operator: Norcen Energy Resources Limited
July 3-13, 24-31, August 7-11,
September 9-22, 24-25, 1979



Handwritten signature

June 12, 1980

L. Smith, P.Geol.

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Diamond Drill Logs

MAPS

1. Land Holdings Map; Crystal Creek Project, British Columbia, (Two Copies).
2. Ag in Soil Geochemical Survey.
3. Cu in Soil Geochemical Survey.
4. Pb in Soil Geochemical Survey.
5. Zn in Soil Geochemical Survey.
6. Detailed Geology.
7. Diamond Drill Hole Location Map.

SUMMARY

Detailed geological mapping, soil geochemical sampling, and diamond drilling was performed within the boundaries of Group VIII (TECT 3 - COG 14) on July 3-13, 24-31, August 7-11, and September 9-22, 24-25, 1979. A total of sixty-three (63) B horizon soil samples were collected along grid lines spaced 50 metres apart with sample locations every 25 metres. These were geochemically analysed in parts per million for copper, lead, zinc, and silver.

A detailed geological mapping program was completed over the grid area. Three diamond drill holes were completed totalling 245.74 metres.

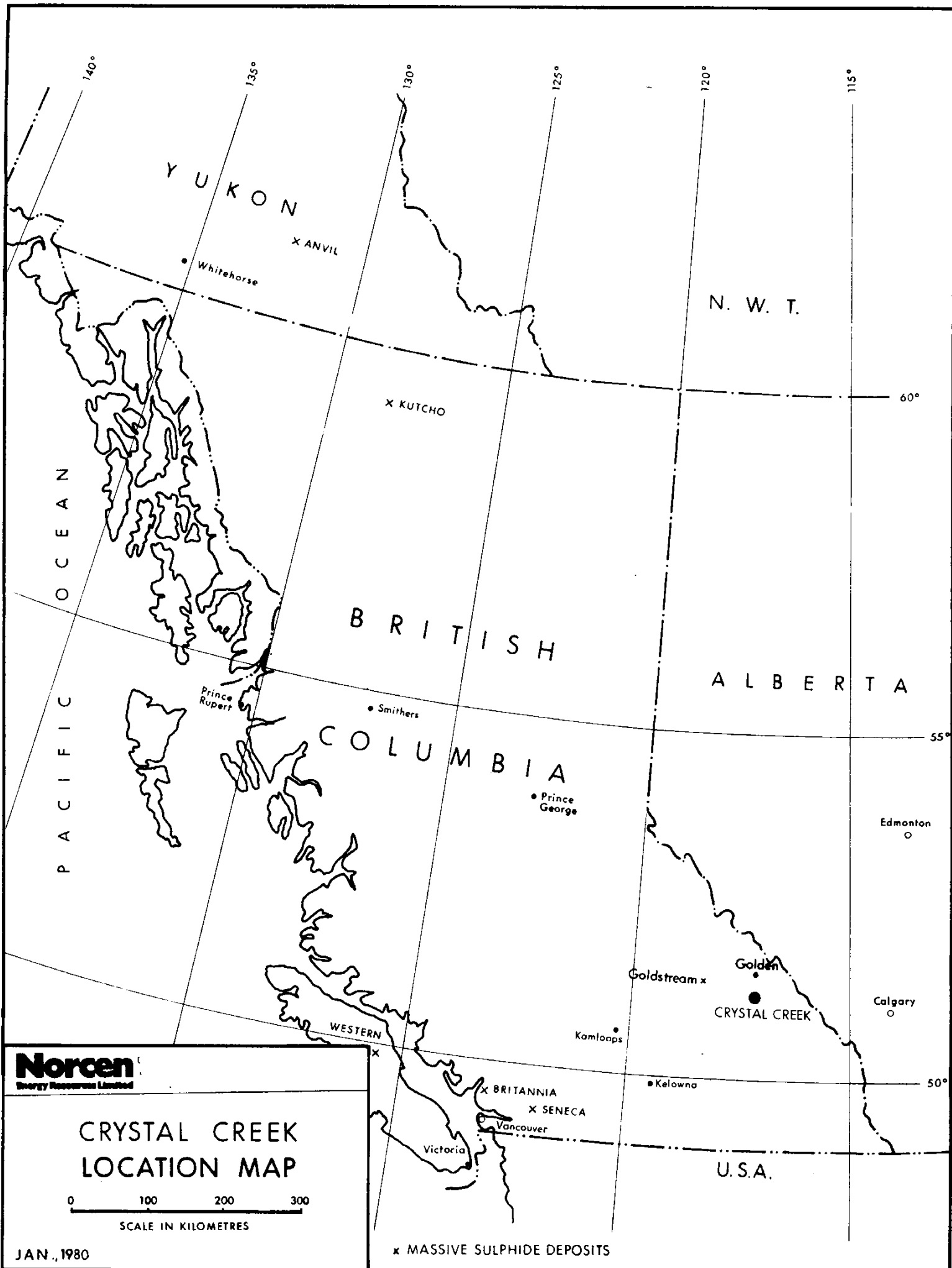
LOCATION AND ACCESS (See Land Holdings Maps, Crystal Creek Project, British Columbia)

The claims are located in the Purcell Mountains approximately 42 kilometres south of Golden, British Columbia. Access is provided by Provincial Highway 95 south from Golden to Parson, followed by 51 kilometres along a gravelled logging road along Vowell Creek.

CLAIM STATUS

The TECT 3 and COG 14 claims form part of the Crystal Creek Property. The TECT 3 and COG 14 claims have been grouped into Group VIII (TECT 3 and COG 14).

<u>Claim Name</u>	<u>Record Number</u>	<u>Recorded Date</u>	<u>Unit Dimensions</u>	<u>No. of Units</u>
TECT 3	412	September 14, 1979	4S X 3W	12
COG 14	333	June 18, 1979	8N X 2W	16



Norcen
Energy Resources Limited





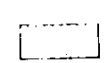
**CRYSTAL CREEK
LOCATION MAP**

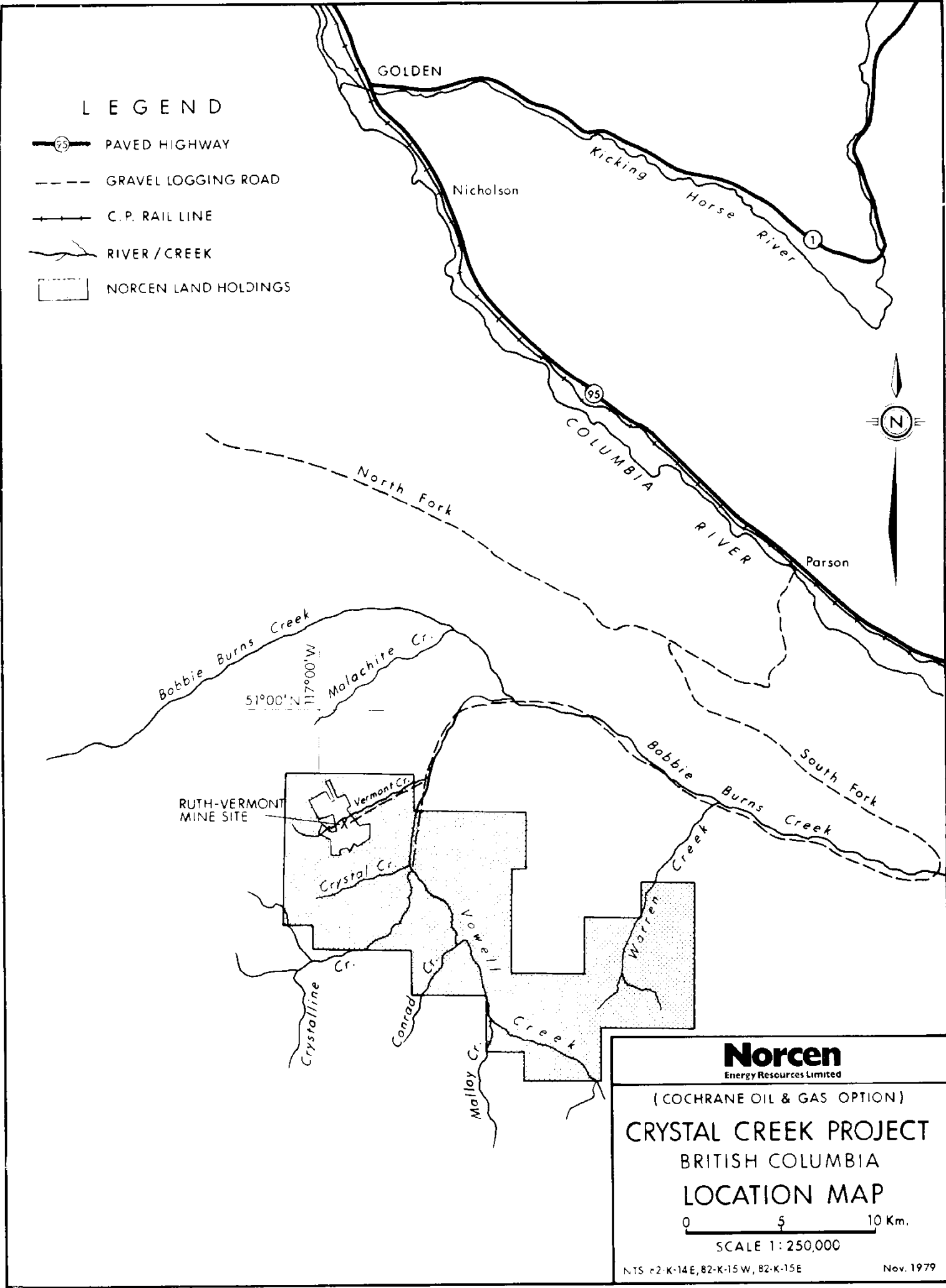
0 100 200 300
SCALE IN KILOMETRES

JAN., 1980

x MASSIVE SULPHIDE DEPOSITS

L E G E N D

-  PAVED HIGHWAY
-  GRAVEL LOGGING ROAD
-  C. P. RAIL LINE
-  RIVER / CREEK
-  NORCEN LAND HOLDINGS



GEOLOGICAL MAPPING

A detailed geological mapping program was carried out between July 2-6, 9-13, and 24-31, 1979. An existing grid was utilized for control in plotting the data. Outcrop exposures are somewhat confined to the roads made during previous drilling programs.

As a generalization the rock types identified on the grid would represent the middle portion of the Horsethief Creek Group as described by Ressor (G.S.C. Memoir 369, Geology of the Lardeau Map Area, East Half, B.C., 1973). Several rock types were identified including a variety of argillites, phyllites, limestone, arkose, quartzite, grits, and quartz pebble conglomerates. A brief description of each is given below.

1. Argillite and Phyllite

Argillite (and its foliated equivalent phyllite) is the predominant rock type located on the grid. Several variations are present ranging from light grey to near black in color, and from massive and structureless to thinly laminated, bedded, and sometimes varved varieties. The darker colored argillites frequently contain pyrite or marcasite crystals. The numerous varieties are commonly interbedded and may or may not be calcareous. Soft sediment and structural deformation is often visible in the laminated and bedded varieties.

2. Limestone

Limestone is not abundant on the grid. Typically the limestone is dark colored, fine grained, impure and interbedded with thin beds of argillite. In several areas, calcareous arkosic or sandy layers were identified and they may represent an impure coarse variety of the limestone.

A unique calcareous unit was located in the eastern portion of the grid. The rock appears to contain oolites or pisolites as well as angular clasts of a variety of rock types common to the local area. The current interpretation is that this represents slump brecciation within a shallow water environment. This carbonate breccia has a thickness of 3 to 5 metres (perhaps locally up to 10 metres) and represents a marker horizon that will assist in the unravelling of the stratigraphy on the Crystal Creek property.

TABLE OF FORMATIONS

ERA	PERIOD OR EPOCH	GROUP OR FORMATION	LITHOLOGY	THICKNESS (feet)	
P R O T E R O Z O I C	W I N D E R M E R E (H A D R Y N I A N)	H O R S E T H I E F C R E E K G R O U P	Varicoloured slate argillite and phyllite; quartzite, grit and quartz-pebble conglomerate; minor limestone	3,000 to 8,000	
		T O B Y F O R M A T I O N	Polymictic conglomerate with pebbles, cobbles, and boulders of varied composition; matrix of impure limestone, shale and quartzite.	0 - 1,500	
	U N C O N F O R M I T Y				
	P U R C E L L (H E L I K I A N)	M O Y I E I N T R U S I O N S		Metadiorite and meta-quartz diorite sills	~ 4,000
		I N T R U S I V E			
		M O U N T N E L S O N F O R M A T I O N	Buff and grey dolomite and dolomitic limestone, slate, argillite, quartzite		
		D U T C H C R E E K F O R M A T I O N	Varicoloured argillite and slate, quartzite, and some carbonate rocks	± 4,000	
		K I T C H E N E R - S I Y E H F O R M A T I O N	Very thinly bedded quartzite, black argillite and some dolomite, sandy dolomite and limy argillite	6,500	
		C R E S T O N F O R M A T I O N	Green chloritic quartzite, grey quartzite with purple laminae, green and grey phyllite and and argillite	8,000	
		A L D R I D G E F O R M A T I O N	Upper division: Sericitic quartzite, argillite, thin-laminated argillite and quartzite	~ 9,500	
Lower division: Fine-grained quartzite			unknown		
B a s e n o t e x p o s e d					

From Ressor 1973, G.S.C. Memoir 369, Geology of the Lardeau Map area, East Half, British Columbia.

3. Quartzite, Arkose, Grits, and Pebble Conglomerates

Rocks of varying clastic composition ranging in grain size up to 10mm are found on the Crystal Creek grid area. For the most part the clastic rocks are light grey and green colored although dark brown and dark grey varieties are present. The coarser varieties are dotted with white and blue quartz clasts. Several arkosic and gritty sections are calcareous. The clastic section would appear to be several tens perhaps hundreds of metres thick with interbeds of argillite (phyllite).

Most of the particles consist of quartz which may occur as aggregates of grains as in the quartz pebble conglomerates. The pebbles in the conglomerates are predominantly of quartz, although feldspar, chert, quartzite, dolomite, and argillite pebbles are recognizable. The coarse (up to 50 mm) pebble conglomerates were not seen on the grid area; however, several outcrops are visible along the main access logging roads to the east.

No sulphide occurrences were located within the boundaries of the Group VIII (TECT 3 - COG 14) claims.

GEOCHEMICAL SOIL SAMPLING

A total of 300 soil geochemical samples were collected at 25 metre intervals along the grid. Sixty-three (63) of these soil samples were collected within the boundaries of Group VIII (TECT 3 - COG 14) claims. The samples were collected below the leached horizon from a brown rusty soil zone that is thought to represent the B horizon. These samples were geochemically analysed by Loring Laboratories Ltd. of 629 Beaverdam Road, N.E. Calgary, Alberta, by atomic adsorption for the elements of lead, zinc, copper, and silver.

The purpose of the geochemical sampling survey over the grid was the two fold; (i) to locate and define specific targets within the known area of zinc-lead-silver mineralization (ii) to outline a set of anomalous values for several elements that could in turn be utilized to define anomalous geochemical areas within the surrounding claim blocks.

A total of 205 B horizon soil samples were collected from adjacent Norcen claim blocks.

A number of characteristics can be tabulated from the soil geochemical surveying for the gridded area:

- 1) The base metal elements of Pb, Zn, Cu, and Ag all outlined areas of known mineralization on the gridded areas.
- 2) Pb and Zn tended to give broad linear anomalies with several values in excess of 0.5% (5 000 ppm).
- 3) Ag and to a lesser degree Cu defined much narrower geochemically anomalous zones. However Cu in particular did not locate at least one area of known mineralization.
- 4) From the statistical analysis there are two distinct populations evident for Pb, Zn, and Ag. This is likely due to the collection of samples directly over mineralization.
- 5) From the statistical analysis, the anomalous values for Pb, Zn, and Ag are extremely high.

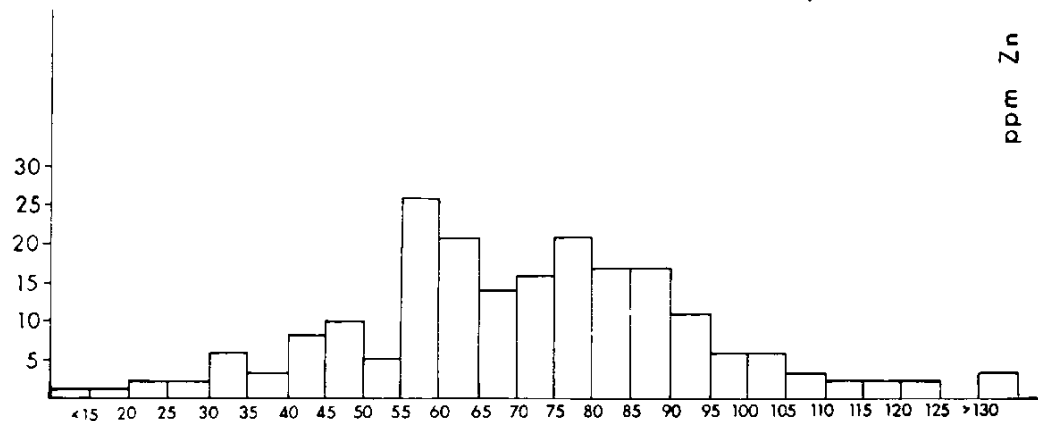
Due to probable biased anomalous values for each element (perhaps with the exception of Cu) a separate statistical analysis was done for the regionally collected samples.

Anomalous Values are Defined by the

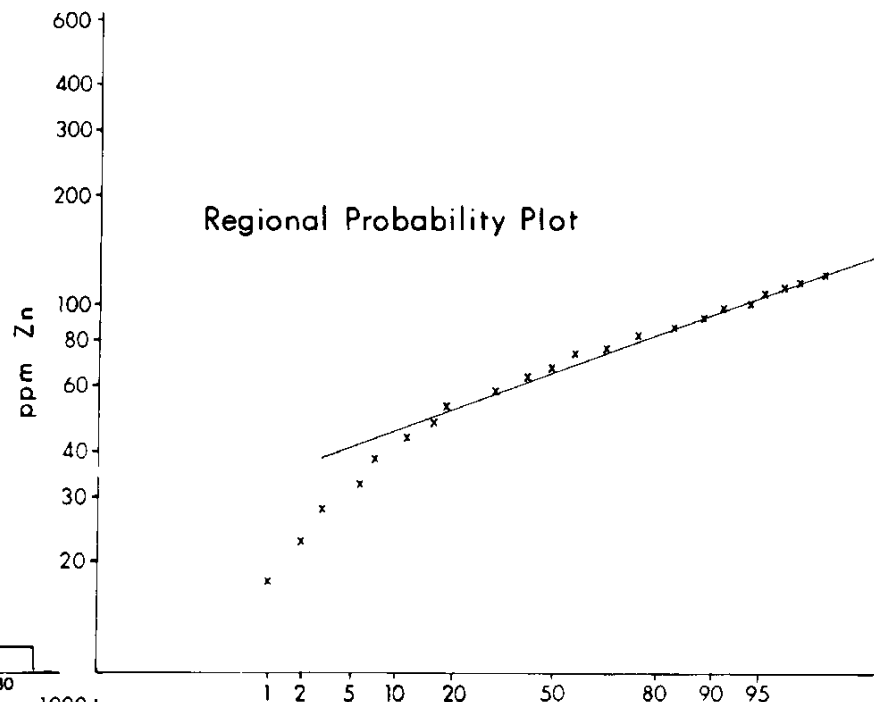
	<u>Upper 5% of the values in ppm</u>	<u>Median plus 2 Standard Deviations in ppm</u>
<u>Gridded Area</u>		
Pb	400	117
Zn	775	544
Ag	2.7	1.9
Cu	47	45
<u>Regional</u>		
Pb	33	32
Zn	108	108
Ag	0.9	0.9
Cu	38	38

Zinc content of soil samples

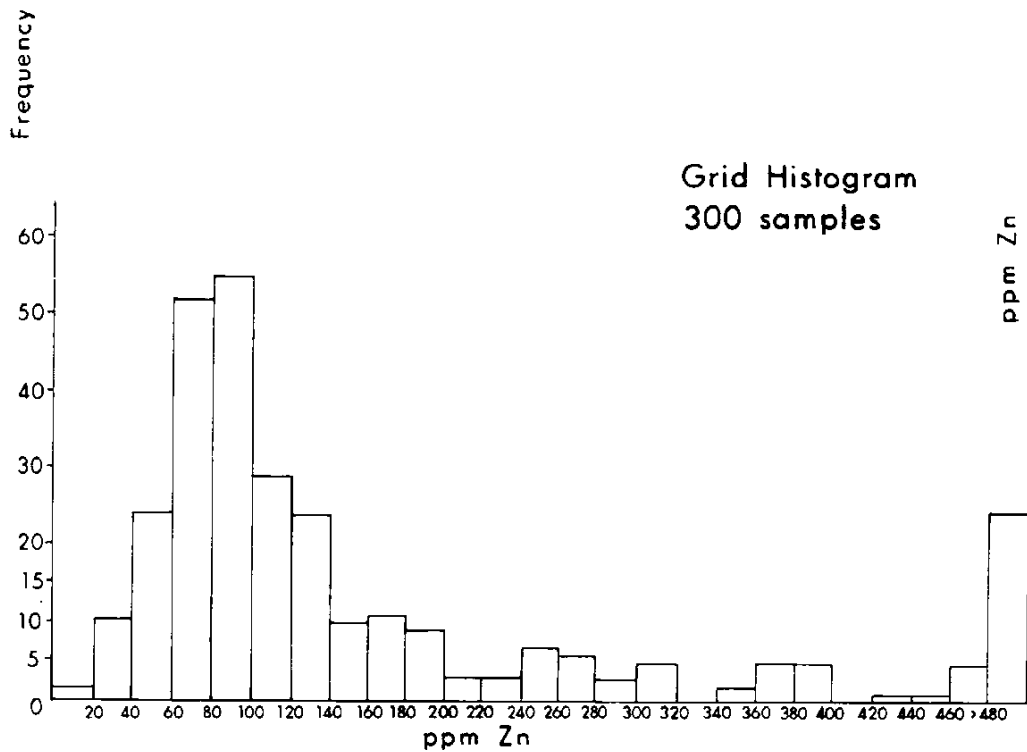
Regional Histogram
205 samples



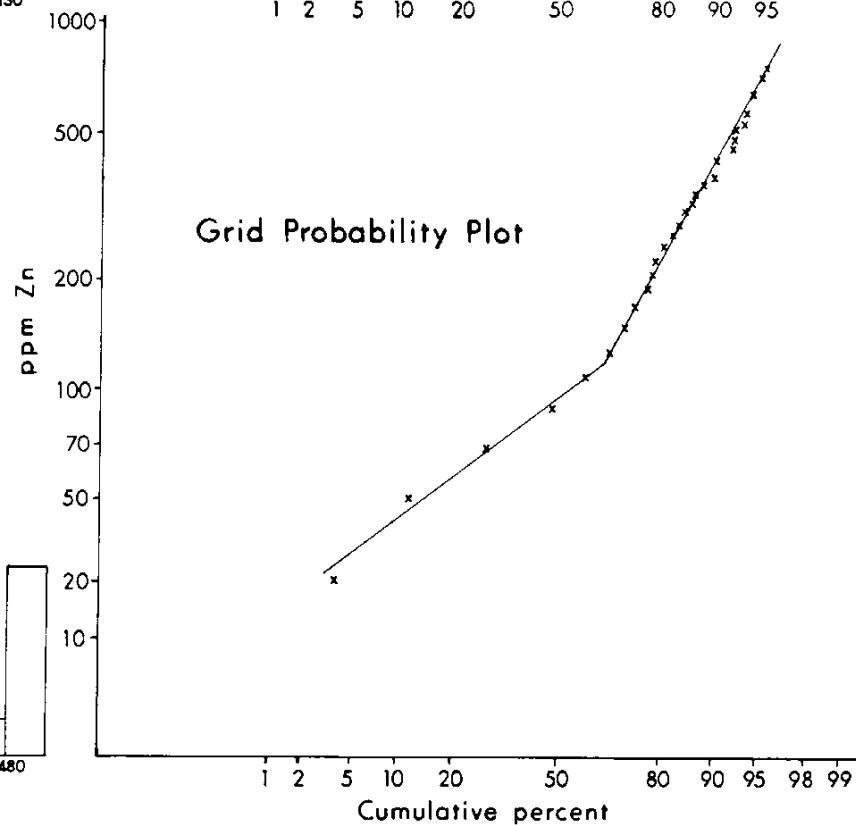
Regional Probability Plot



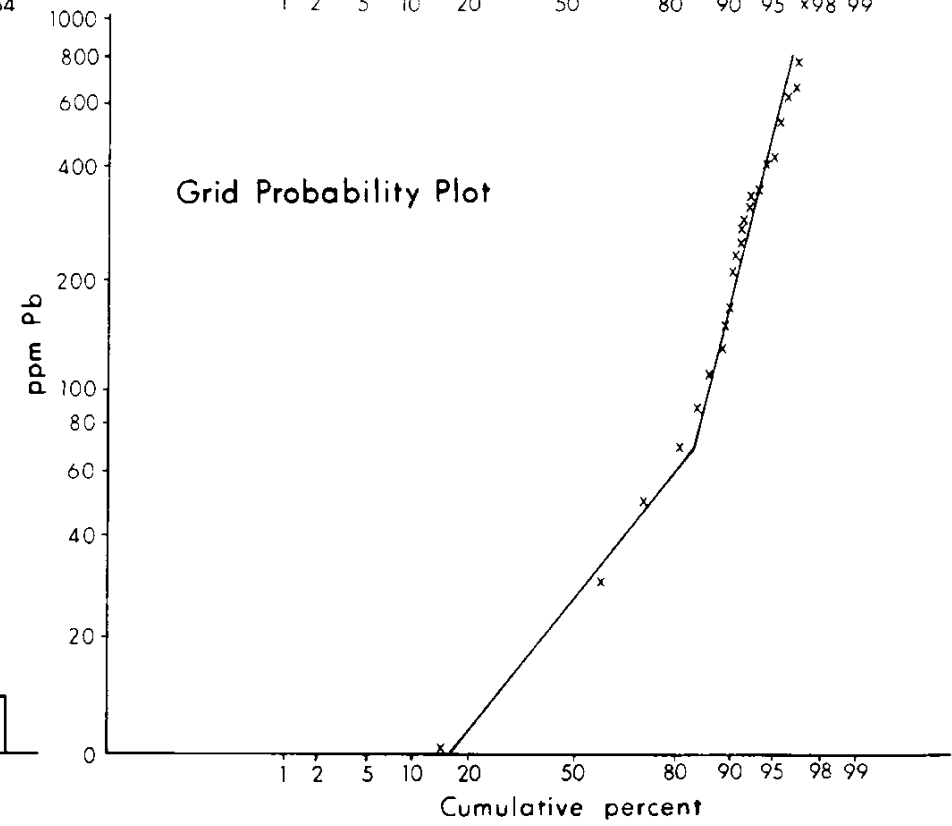
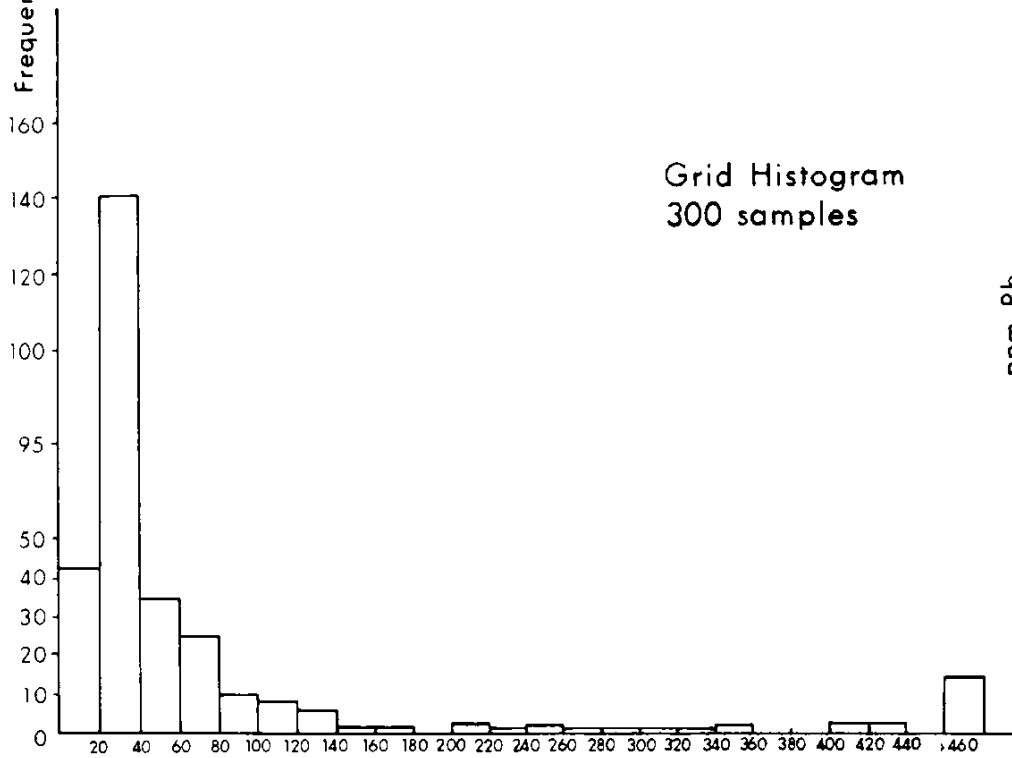
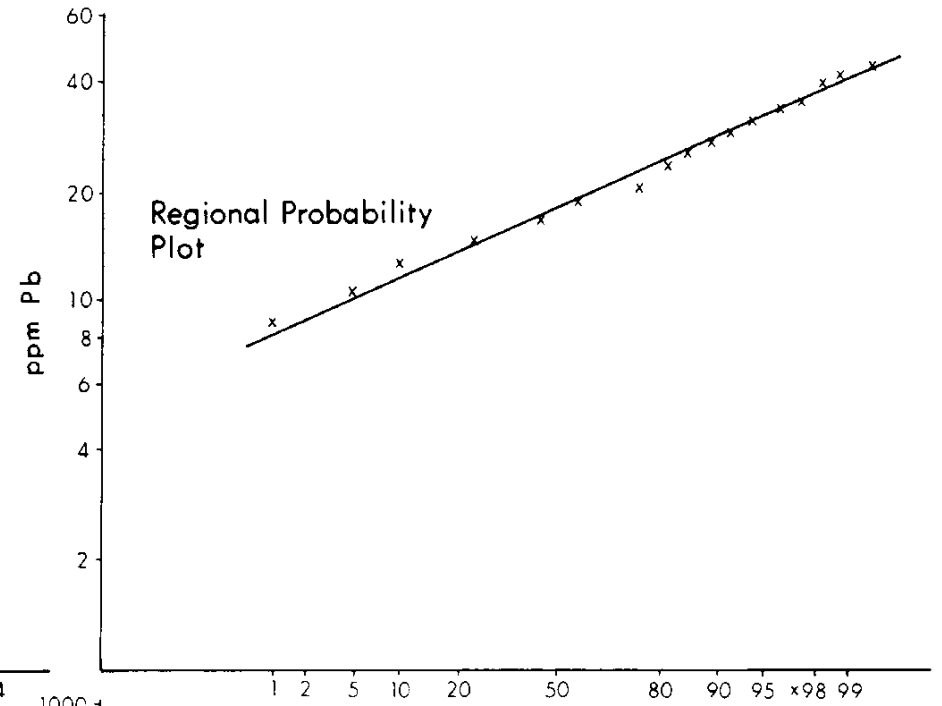
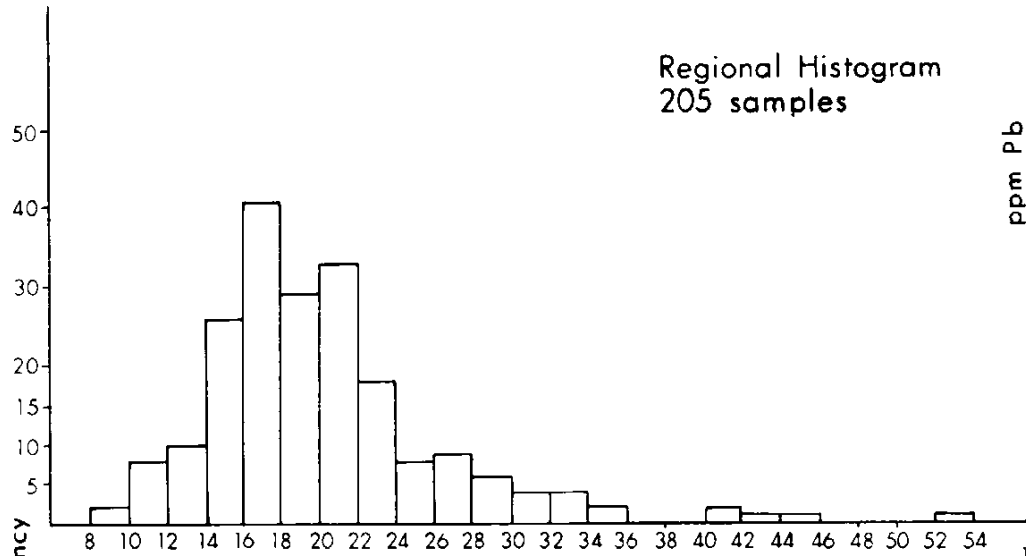
Grid Histogram
300 samples



Grid Probability Plot

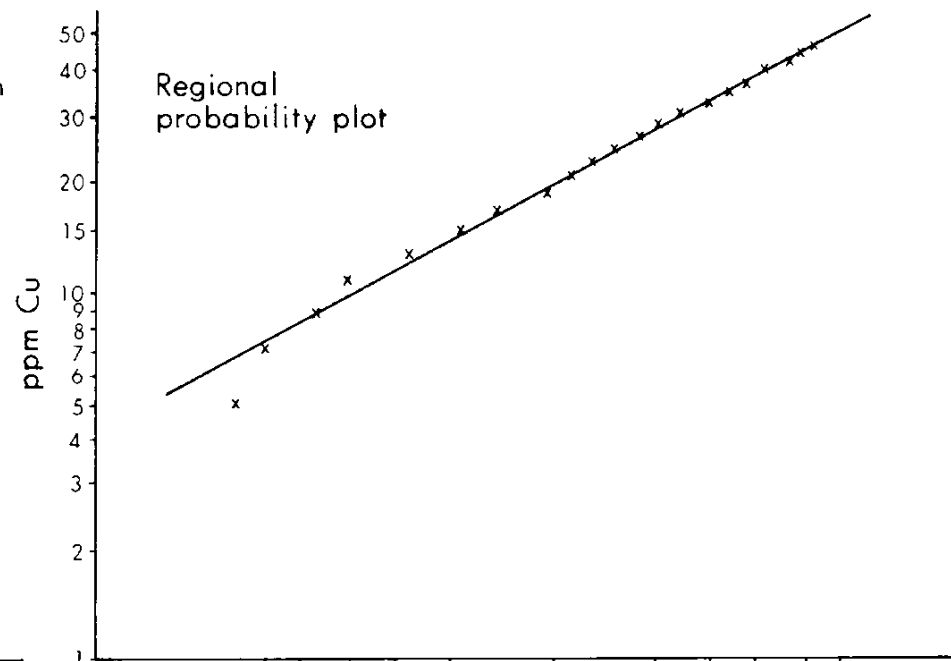
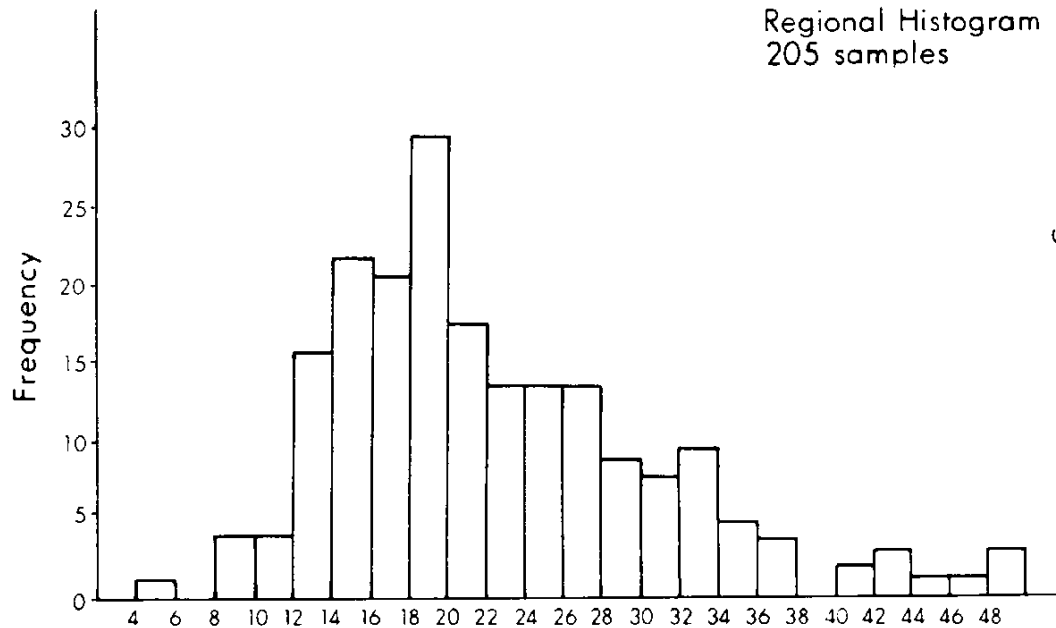


Lead content of soil samples

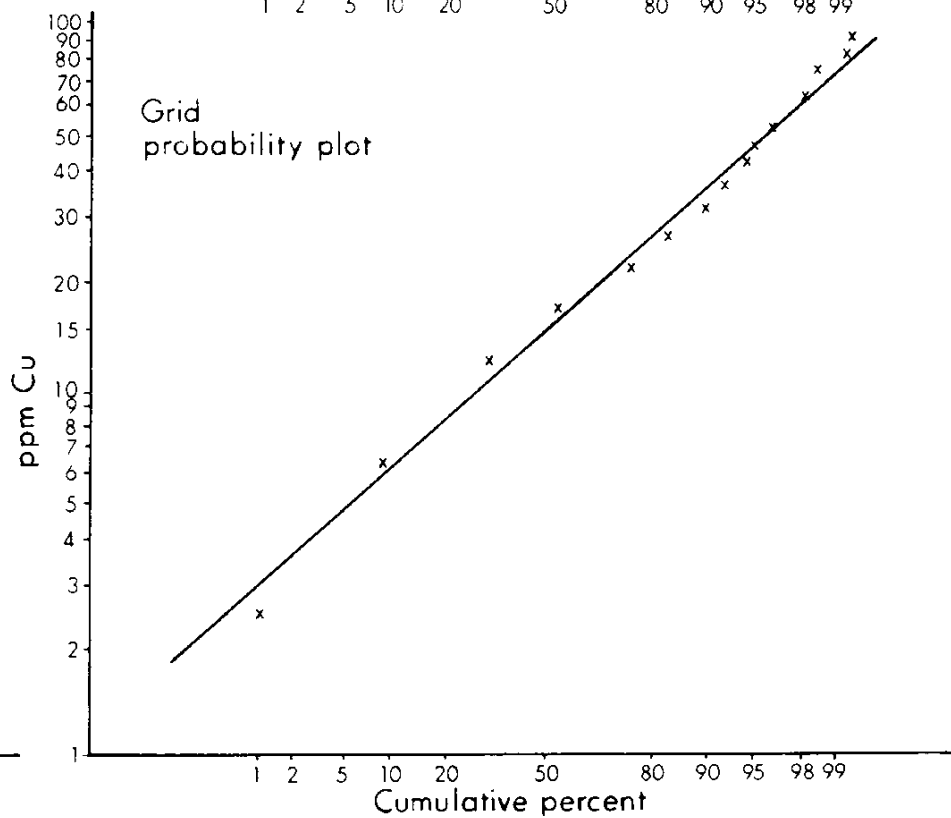
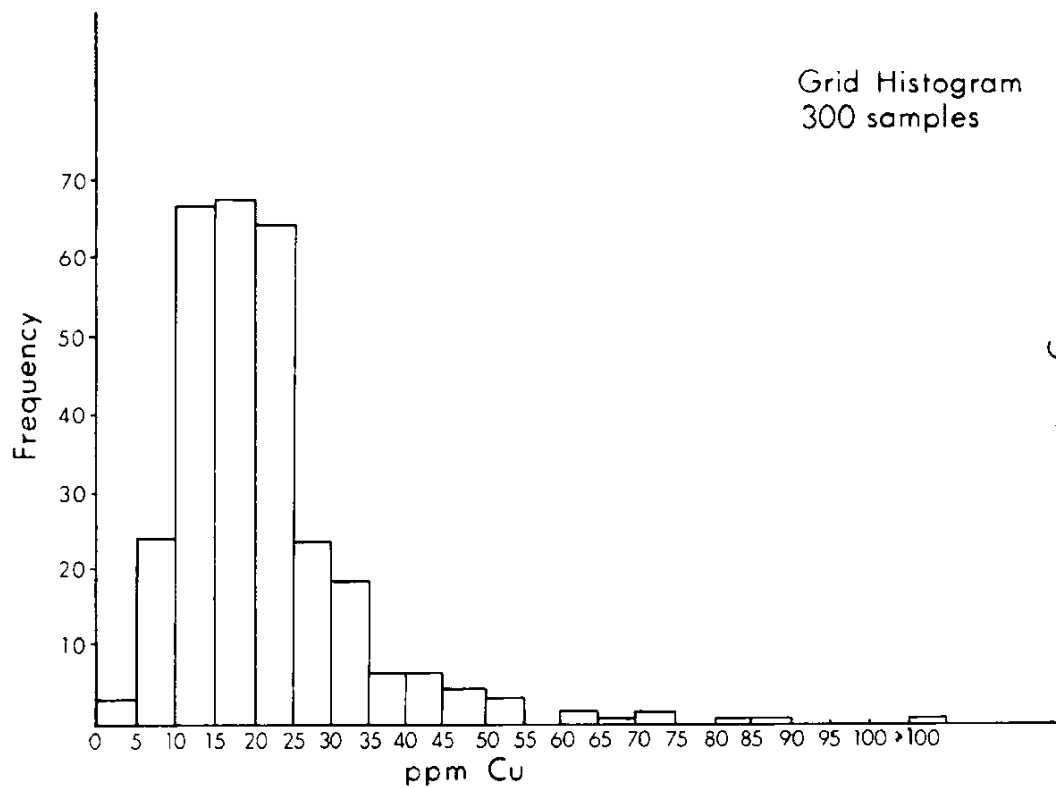


Copper content of soil samples

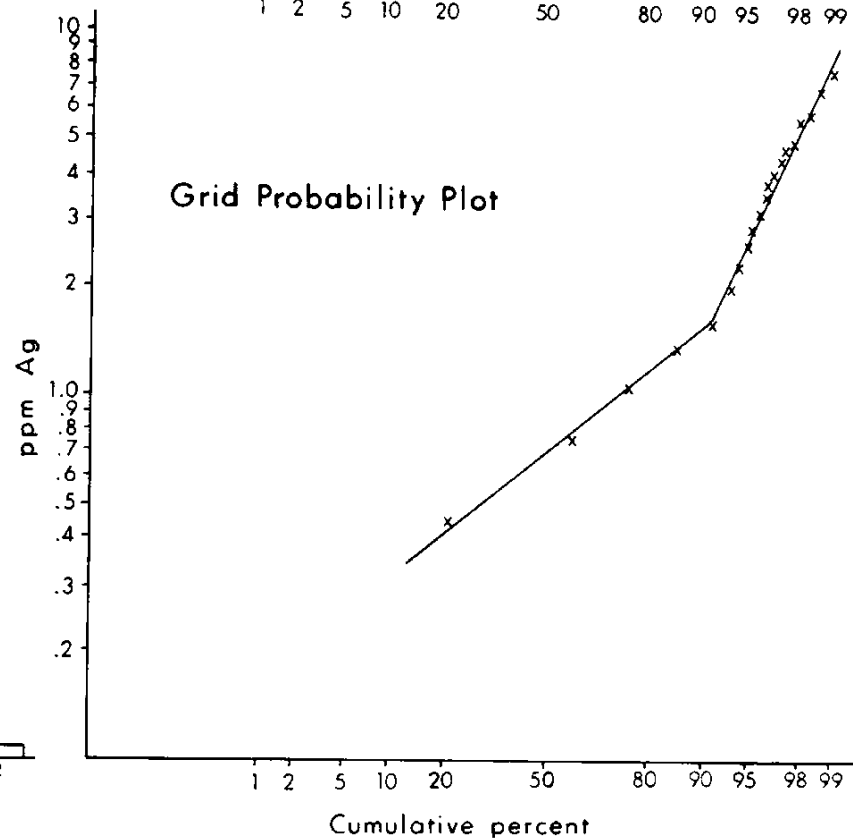
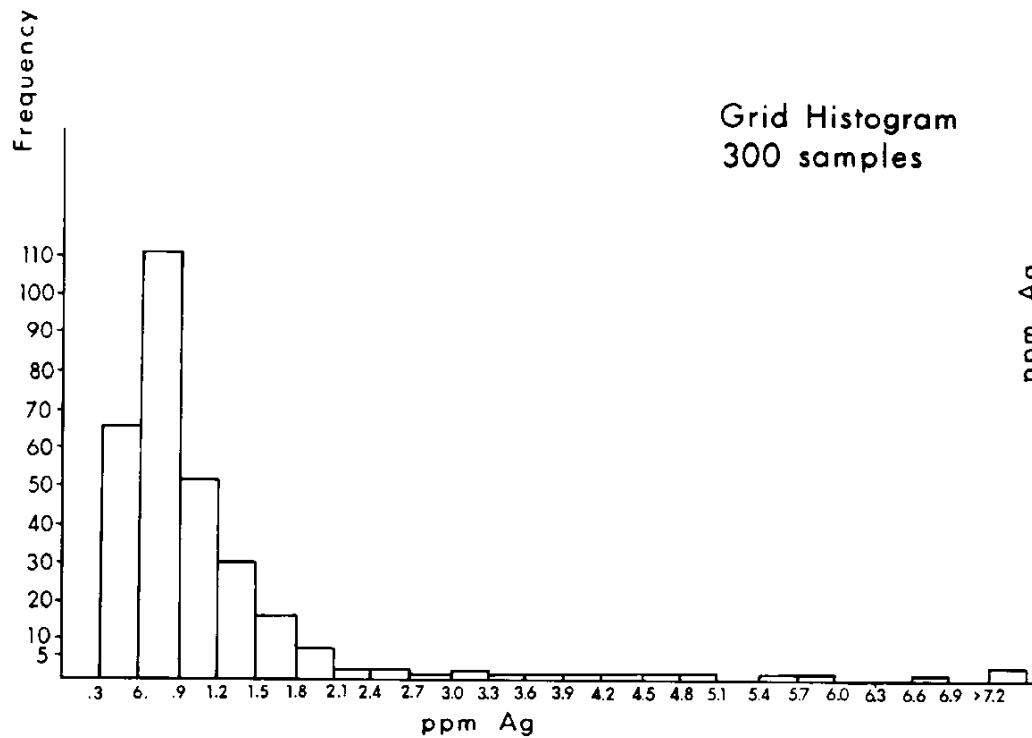
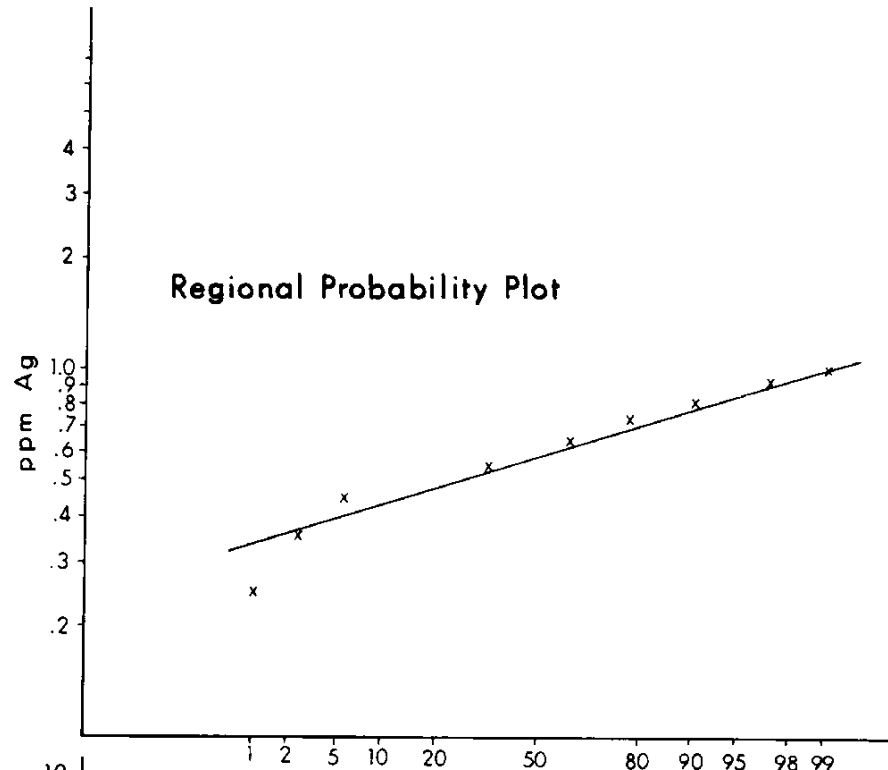
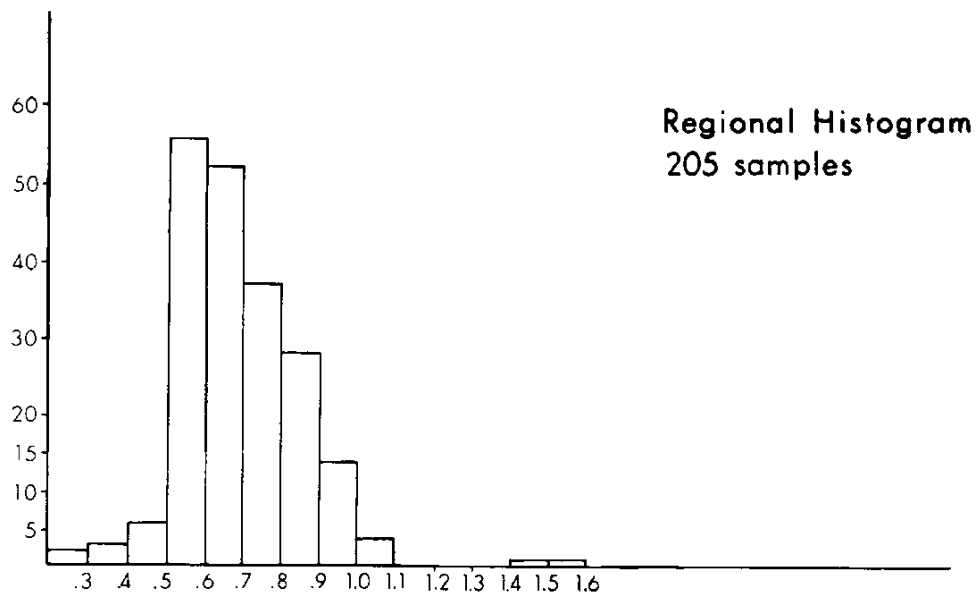
Regional Histogram
205 samples



Grid Histogram
300 samples



Silver content of soil samples



DIAMOND DRILLING

Three diamond drill holes (79-1, 79-2 and 79-3) were completed within the boundary of the Group VIII (TECT 3 - COG 14) claims. This drilling was carried out by Cameron McCutcheon Drilling Limited of Vancouver, British Columbia utilizing a longyear 38 drill.

	<u>At Collar Bearing</u>	<u>Dip</u>	<u>Depth</u>
CC-DDH-79-1	058°	-50°	58.20 metres
CC-DDH-79-2	050°	-75°	123.45 metres
CC-DDH-79-3	050°	-60°	64.90 metres

Several sections from each drill hole were assayed, the results of which are presented below.

<u>Hole #</u>	<u>Assay Tag #</u>	<u>Interval (metres)</u>	<u>Sample width (metres)</u>	<u>%Pb</u>	<u>%Zn</u>	<u>oz/ton Ag</u>	<u>oz/ton Au</u>
79-1	6027-N	24.70-25.00	0.30	0.01	0.02	0.02	0.02
	6028-N	26.20-26.30	0.10	tr	0.01	0.02	0.04
	6029-N	28.25-28.40	0.15	0.01	0.01	0.22	0.03
	1462-0	28.40-28.80	0.40	tr	0.01	0.02	tr
	1461-0	28.80-29.25	0.45	tr	0.01	0.02	tr
	6030 N	29.25-29.70	0.45	tr	0.01	0.08	0.13
	1458-0	29.20-29.83	0.13	tr	0.01	0.02	tr
	1459-0	29.83-29.95	0.12	tr	0.03	0.02	tr
	1460-0	29.95-30.30	0.35	tr	0.01	0.04	0.01
	6031-N	33.70-33.95	0.25	0.01	0.05	0.02	0.04
	6032-N	36.20-36.40	0.20	tr	0.01	0.08	0.02
	6033-N	44.20-45.10	0.90	0.01	0.04	0.04	0.01
	6034-N	45.10-46.10	1.00	0.01	0.13	0.02	0.01
	6035-N	46.10-46.65	0.55	0.02	0.79	0.20	0.01
	6036-N	46.65-47.25	0.60	0.01	0.02	0.04	0.01

<u>Hole #</u>	<u>Assay Tag #</u>	<u>Interval (metres)</u>	<u>Sample width (metres)</u>	<u>%Pb</u>	<u>%Zn</u>	<u>oz/ton Ag</u>	<u>oz/ton Au</u>
79-2	6038-N	17.50- 18.25	0.75	0.02	0.02	0.10	tr
	6037-N	22.90- 23.45	0.55	0.02	0.01	0.18	tr
	6039-N	23.45- 24.15	0.70	0.04	0.04	0.32	tr
	6040-N	24.15- 24.85	0.70	0.02	0.01	0.02	tr
	6041-N	52.50- 53.35	0.85	tr	0.01	0.02	tr
	6042-N	57.15- 57.85	0.60	tr	0.01	0.02	tr
	6043-N	72.30- 73.20	0.90	tr	0.01	0.08	tr
	6044-N	73.20- 74.00	0.80	0.02	0.01	0.02	tr
	6045-N	74.00- 74.35	0.35	tr	0.01	0.58	tr
	6046-N	74.35-75.05	0.70	0.02	0.01	0.06	tr
	6047-N	99.95-100.55	0.60	0.02	0.01	0.02	tr
	6048-N	102.30-102.70	0.40	0.02	0.01	0.06	tr
	6049-N	109.80-110.30	0.50	0.02	0.01	0.24	tr
	6050-N	110-30-111.15	0.85	tr	0.01	0.16	tr
	6051-N	111.15-111.55	0.40	tr	0.01	0.02	tr
	6052-N	116.30-116.70	0.40	tr	0.01	0.04	tr

<u>Hole #</u>	<u>Assay Tag #</u>	<u>Interval (metres)</u>	<u>Sample width (metres)</u>	<u>%Pb</u>	<u>%Zn</u>	<u>oz/ton Ag</u>	<u>oz/ton Au</u>
79-3	1970-0	20.45-21.05	0.60	tr	0.01	0.04	tr
	1971-0	21.05-21.50	0.45	tr	0.01	0.02	tr
	1972-0	31.60-32.00	0.40	tr	0.01	0.02	tr
	1973-0	32.00-32.50	0.50	tr	0.01	0.08	tr
	1974-0	34.70-34.90	0.20	tr	0.01	0.14	tr
	1975-0	36.10-36.40	0.30	tr	0.01	0.06	tr
	1976-0	39.60-40.00	0.40	0.02	0.06	0.02	0.01
	1977-0	56.40-56.80	0.40	tr	0.01	0.02	tr

STATEMENT OF QUALIFICATIONS

I, Laurie James Smith, of the City of Calgary in the Province of Alberta, do hereby state:

1. I am a graduate of the University of Calgary with a BSc degree in Geology.
2. I have been involved in all phases of geological exploration in many areas of Canada (British Columbia, Alberta, Saskatchewan, Northwest Territories, Ontario, Quebec, Nova Scotia, and New Brunswick) since graduation.
3. I personally supervised the geochemical soil sampling, geological mapping, and diamond drilling on Group VIII (TECT 3 - COG 14).
4. I am a member of the Association of Professional Engineers, Geologists, and Geophysicists of Alberta.
5. I am the holder of valid Free Miners Licence Number 197331.

Laurie J. Smith

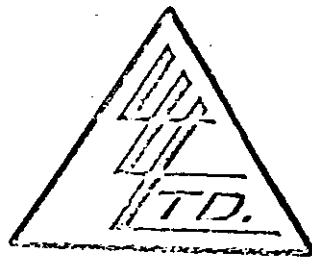
ITEMIZED COST STATEMENT

A.	<u>Geological Mapping, Geochemical Sampling, Diamond Drilling</u> - Supervision and core logging	
	R. Kostiuk - Geochemical Sampler - July 26, 31, 1979 August 7-11, 1979 7 days @\$75.00/day	\$ 525.00
	R. Laird - Geologist - July 3-6, 24-31, August 10-11, 1979 14 days @\$90.00/day	1 260.00
	T. Bojczyszyn - Geologist - September 9-22, 1979 14 days @\$90.00/day	1 260.00
	T. Bojczyszyn - Geologist (Report Writing) December 27, 28, 1979 2 days @\$90/day January 16-18, 31, 1980 4 days @\$125.00/day	180.00 500.00
	L. Smith - Supervision - July 2-6, 9-13, 27-31, September 13-14, 19, 24-25, 1979 21 days @\$125.00/day	2 625.00
	L. Smith - Supervision (Report Writing) December 11, 12, 20, 31, 1979 4 days @\$125.00/day	500.00
B.	<u>Transport</u>	
	4 Wheel Drive Vehicle Rental \$30.00/day X 120 days	3 600.00
	Fuel for vehicle 120 days X \$5.00/day	600.00
C.	<u>Accommodation and Meals</u>	
	60 man days X \$25.00/man day	1 500.00
D.	<u>Assaying</u>	
	63 Geochemical Assays @\$5.00/sample	315.00
	39 Core Sample Assays @\$25.00/sample	975.00
E.	<u>Diamond Drilling</u>	
	245.74 metres @\$135/metre	<u>33 174.90</u>
		\$47 014.90

APPENDIX I

Assay Certificates

1 : Norcen Energy Resources Limited
 715 - 5th Avenue S.W.
 Calgary, Alberta
 T2P 2X7
 ATTN: L. J. Smith



File No. 17610
 Date Aug. 28, 1979
 Samples Soil

Certificate of
 ASSAY of
 LORING LABORATORIES LTD.

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SAMPLE No.	PPM Cu	PPM Pb	PPM Zn	PPM Ag
1050N				
5400N	13	22	48	0.5

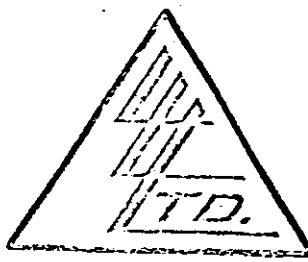
I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES

Objects Retained one month.
 Retained one month
 for specific arrangements
 in advance.

Licensed Assayer of British Columbia

To Norcen Energy Resources Limited
 715 - 5th Avenue S.W.
 Calgary, Alberta
 T2P 2X7
 ATTN: L. J. Smith

File No. 17610
 Date Aug. 28, 1979
 Samples Soil



Certificate of
 ASSAY of
 LORING LABORATORIES LTD.

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SAMPLE No.	PPM Cu	PPM Pb	PPM Zn	PPM Ag
450W	5	10	34	0.8
475W	15	10	64	0.6
500W	17	30	69	0.7

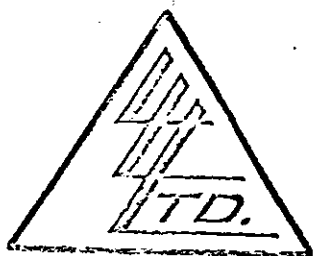
I Herby Certify THAT THE ABOVE RESULTS ARE THOSE
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES

L
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Refracts Retained one month.
 Retained one month
 specific arrangements
 made in advance.

L. J. Smith
 Licensed Assayer of British Columbia

: Norcen Energy Resources Limited
 715 - 5th Avenue S.W.
 Calgary, Alberta
 T2P 2X7
 ATTN: L. J. Smith



File No. 17610
 Date Aug. 28, 1979
 Samples Soil

Certificate of
ASSAY OF
LORING LABORATORIES LTD.

Page 7

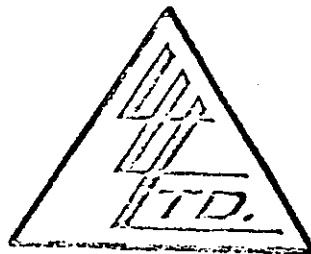
SAMPLE No.	PPM Cu	PPM Pb	PPM Zn	PPM Ag
1050S				
3+75W	17	20	97	1.2
4+COW	24	25	121	1.3
4+25W	23	34	91	0.9
4+50W	14	20	63	0.7
4+75W	21	20	83	0.7
5+COW	17	23	53	1.2

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES

Objects Retained one month.
 Plans Retained one month
 for specific arrangements
 made in advance.

L. J. Smith
 Licensed Assayer of British Columbia

Northern Energy Resources Limited
 715 - 5th Avenue S.W.
 Calgary, Alberta
 T2P 2X7
 A/E: L. J. Smith



File No. 17610
 Date Aug. 28, 1979
 Samples Soil

Certificate of
 ASSAY OF
 LORING LABORATORIES LTD.

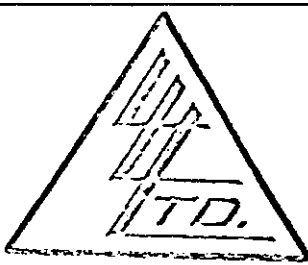
Page 6

SAMPLE No.	PPM Cu	PPM Fe	PPM Zn	PPM Ag
BLOCKS				
3+25W	15	18	116	0.8
3+50W	24	25	80	1.0
3+75W	30	36	158	1.4
4+00W	36	31	113	0.7
4+25W	18	59	109	1.0
4+50W	27	26	87	1.2
4+75W	11	15	53	0.8
5+00W	20	36	86	1.0

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES

Retained one month.
 Retained one month .
 Specific arrangements
 in advance.


 Licensed Assayer of British Columbia



File No. 17610.....
 Date Aug. 28, 1979.....
 Samples Soil.....

T : Norcen Energy Resources Limited
 715 - 5th Avenue S.W.
 Calgary, Alberta
 T2P 2X7
 ATTN: L. J. Smith

Certificate of
 ASSAY of
 LORING LABORATORIES LTD.

Page 5

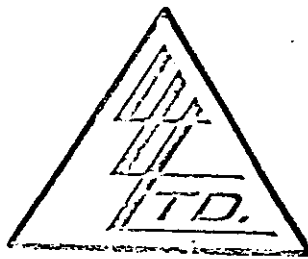
SAMPLE No.	PPM Cu	PPM Pb	PPM Zn	PPM Ag
L150S				
2+50W	12	19	198	1.2
2+75W	31	45	210	0.7
3+00W	23	66	490	0.6
3+25W	32	90	139	0.7
3+50W	17	27	99	1.0
3+75W	28	25	129	1.0
4+00W	14	47	112	1.2
4+25W	5	11	38	0.4
4+50W	17	11	73	0.6
4+75W	5	13	33	0.5
5+00W	11	32	39	0.5

I *Hereby Certify* THAT THE ABOVE RESULTS ARE THOSE
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES

Subjects Retained one month.
 Results Retained one month
 for specific arrangements
 in advance.

L. J. Smith
 Licensed Assayer of British Columbia

To Norcan Energy Resources Limited
 715 -- 5th Avenue S.W.
 Calgary, Alberta
 T2P 2X7



File No. 17610
 Date Aug. 28, 1979
 Samples Soil

ATTN: I. J. Smith

Certificate of
 ASSAY OF
 LORING LABORATORIES LTD.

Page 4

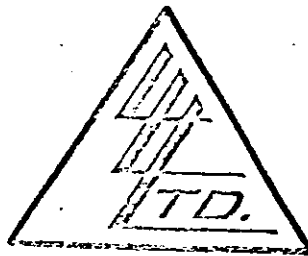
SAMPLE No.	PPM Cu	PPM Pb	PPM Zn	PPM Ag
L200S				
3+00W	14	77	220	0.7
3+25W	44	80	129	0.9
3+50W	19	30	75	0.6
3+75W	14	25	75	1.0
4+00W	4	22	60	0.5
4+25W	8	15	23	1.0
4+50W	5	8	76	0.5
4+75W	7	11	27	0.5
5+00W	9	15	59	0.8

I Herby Certify THAT THE ABOVE RESULTS ARE THOSE
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES

Objects Retained one month.
 If Retained one month
 in specific arrangements
 made in advance.

I. J. Smith
 Licensed Assayer of British Columbia

To Norcen Energy Resources Limited
 715 - 5th Avenue S.W.
 Calgary, Alberta
 T2P 2X7
 ATTN: L. J. Smith



File No. 17610
 Date Aug. 28, 1979
 Samples Soil


Certificate of
 ASSAY of
 LORING LABORATORIES LTD.

Page 3

SAMPLE No.	PPM Cu	PPM Pb	PPM Zn	PPM Ag
1250S				
3+25W	35	520	380	1.0
3+50W	41	35	151	1.0
3+75W	23	41	93	0.8
4+00W	23	28	78	0.6
4+25W	22	33	167	2.2
4+50W	10	30	78	0.5
4+75W	10	31	125	1.0
5+00W	19	22	68	0.7

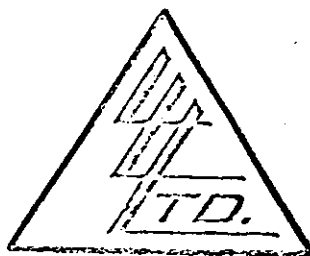
I Herby Certify THAT THE ABOVE RESULTS ARE THOSE
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES

Objects Retained one month.
 Samples Retained one month
 for specific arrangements
 made in advance.



Licensed Assayer of British Columbia

To Norcen Energy Resources Limited
 715 - 5th Avenue S.W.
 Calgary, Alberta
 T2P 2X7
 ATTN: L.J. Smith



File No. 17610
 Date Aug. 28, 1979
 Samples Soil

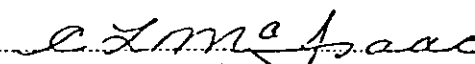
Certificate of
 ASSAY of
 LORING LABORATORIES LTD.

Page 2

SAMPLE No.	PPM Cu	PPM Pb	PPM Zn	PPM Ag
L300S				
3+50W	22	48	89	0.7
3+75W	32	88	125	1.0
4+00W	16	25	60	0.7
4+25W	10	19	47	0.6
4+50W	14	15	110	1.0
4+75W	13	22	60	0.7
5+00W	15	23	98	1.0

I Heroby Certify THAT THE ABOVE RESULTS ARE THOSE
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES

Rejects Retained one month.
 Retained one month
 specific arrangements
 de in advance.


 Licensed Assayer of British Columbia

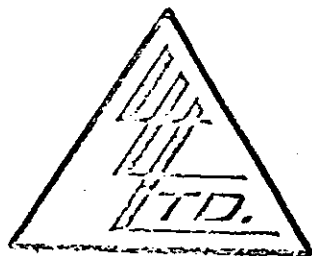
NORCEN ENERGY RESOURCES LIMITED

715 - 5th Avenue S.W.

Calgary, Alberta

T2P 2X7

ATTN: L. J. Smith



File No. 17785

Date Sept. 21, 1979

Samples Core

Certificate of
ASSAY

LORING LABORATORIES LTD.

Page 1

SAMPLE No.	OZ./TON GOLD	OZ./TON SILVER	% Pb	% Zn
<u>CORE SAMPLES</u>				
6027N	.020	.02	.01	.02
6028N	.040	.02	Trace	.01
6029N	.030	.22	.01	.01
6030N	.130	.08	Trace	.01
6031N	.040	.02	.01	.05
6032N	.020	.08	Trace	.01
6033N	.010	.04	.01	.04
6034N	.010	.02	.01	.13
6035N	.010	.20	.02	.79
6036N	.010	.04	.01	.02

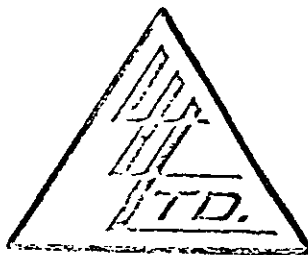
I Herby Certify THAT THE ABOVE RESULTS ARE THOSE
ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES

cts Retained one month.
es Retained one month
ss specific arrangements
e in advance.

edmcj

Licensed Assayer of British Columbia

TORONTO ENERGY RESOURCES LIMITED,
 27th Flr., 715 - 5th Avenue S.W.,
 Calgary, Alberta T2P 2X7



File No. 17889
 Date October 3, 1979
 Samples Cores

ATTN: L. Smith

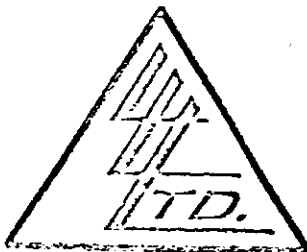
Certificate of
 ASSAY OF
 LORING LABORATORIES LTD.

SAMPLE No.	OZ./TON GOLD	OZ./TON SILVER	% Pb	% Zn
<u>"Core Samples"</u>				
6037-N	Trace	.18	.02	.01
6038-N	Trace	.10	.02	.02
6039-N	Trace	.32	.04	.04
6040-N	Trace	.02	.02	.01
6041-N	Trace	.02	Trace	.01
6042-N	Trace	.02	Trace	.01
6043-N	Trace	.08	Trace	.01
6044-N	Trace	.02	.02	.01
6045-N	Trace	.58	Trace	.01
6046-N	Trace	.06	.02	.01
6047-N	Trace	.02	.02	.01
6048-N	Trace	.06	.02	.01
6049-N	Trace	.24	.02	.01
6050-N	Trace	.16	Trace	.01
6051-N	Trace	.02	Trace	.01
6052-N	Trace	.04	Trace	.01
<p>I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES</p>				

Rejects Retained one month.
 Fees Retained one month
 For specific arrangements
 please call in advance.


 Licensed Assayer of British Columbia

TORCEN ENERGY RESOURCES LIMITED,
 27th Flr., 715 - 5th Avenue S.W.,
 Calgary, Alberta T2P 2X7



File No. 17954
 Date October 10, 1979
 Samples Cores

ATTN: Laurie Smith

Certificate of
 ASSAY OF
 LORING LABORATORIES LTD.

Page # 1

SAMPLE No.	OZ./TON GOLD	OZ./TON SILVER	% Pb	% Zn
1458-0	Trace	.02	Trace	.01
1459-0	Trace	.02	Trace	.03
1460-0	.010	.04	Trace	.01
1461-0	Trace	.02	Trace	.01
1462-0	Trace	.02	Trace	.01

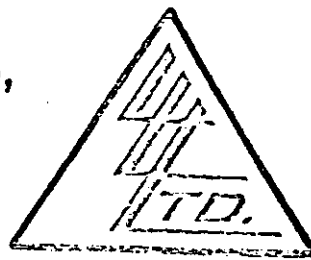
I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES

Refractometers Retained one month.
 Pipettes Retained one month
 Glassware specific arrangements
 to be made in advance.

L. M. Isaac

Licensed Assayer of British Columbia

MINOR ENERGY RESOURCES LIMITED,
 Flr., 715 - 5th Avenue S.W.,
 Calgary, Alberta T2P 2X7



File No. 17954
 Date October 10, 1979
 Samples Cores

Analyst: Laurie Smith

Certificate of
ASSAY OF
LORING LABORATORIES LTD.

Page # 3

SAMPLE No.	OZ./TON GOLD	OZ./TON SILVER	% Pb	% Zn
1970-0	Trace	.04	Trace	.01
1971-0	Trace	.02	Trace	.01
1972-0	Trace	.02	Trace	.01
1973-0	Trace	.08	Trace	.01
1974-0	Trace	.14	Trace	.01
1975-0	Trace	.06	Trace	.01
1976-0	.010	.02	.02	.06
1977-0	Trace	.02	Trace	.01

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES

Retained one month.
 Retained one month
 for arrangements
 and price.

Licensed Assayer of British Columbia

APPENDIX II

Diamond Drill Logs

NORCEN ENERGY RESOURCES LIMITED

DIAMOND DRILL LOGS

PROPERTY: CRYSTAL CREEK

HOLE NUMBER: CC DDH 79-1

SHEET NUMBER: 5 of 5

DESCRIPTION	DEPTH (metres)	% CORE RECOVERY	INTERVAL (metres)	ASSAY NUMBER	%Pb	oz/ton		%W
						Ag	Au	
41.80 - 44.20: light grey pelite, <1/2mm specks, massive								
44.20 - 46.30: laminated with sulphides, light grey pelite, base 100mm has 10mm beds of black pelite	43.00	100						
46.30 - 47.15: dark grey speckled pelite sphalerite in quartz stringers:	44.20	108						
@44.45 4mm								
@45.80 5mm	45.10		0.90	6033N	0.01	0.04	0.04	0.01
46.30 - 46.80: irregular quartz stringers, 20mm, with pyrite and wisps of laminated pelite	46.10	88	1.00	6034N	0.01	0.13	0.02	0.01
@47.80: quartz vein, bedding shallow to core disseminated sulphide sections (pyrite, marcasite):								
44.25-44.55	46.65		0.55	6035N	0.02	0.79	0.20	0.01
44.80-44.90								
45.15-46.10								
46.30-47.60, 47.10-47.60 marcasite up to 15mm, 10% in 50mm beds	47.25		0.60	6036N	0.01	0.02	0.04	0.01
48.09-49.35: dark grey pelite, <1mm specks								
49.35-51.20: interbeds and lamination of dark grey and black pelite	49.40	98						
@51.20: 80 mm angular fragment of black pelite in grey pelite								
51.20-53.50: dark grey speckled pelite disseminated pyrite/marcasite sections:								
50.15-50.20								
52.50-52.60 - steep dipping fractures to core, bedding @40.00: shallow to core	52.40	103						
52.75-55.00: coarse, light grey pelite	55.15	95						
55.00-58.20: interbeds of 5-50mm - limonite stained fractures to bottom of hole								
END OF HOLE	58.20	100						

Casing left in hole.

NORCEN ENERGY RESOURCES LIMITED

DIAMOND DRILL LOGS

PROPERTY: CRYSTAL CREEK

SHEET NUMBER: 1 of 2

N.T.S. NUMBER: 82K/15W

STARTED: Sept. 17/79

COMPLETED: Sept. 21/79 HOLE NUMBER: CC DDH 79-2

CLAIM NAME: TECT 3

COLLAR: L 1 + 22S 3 + 12W

ELEVATION:

BEARING: 35m 031° 77m 036° 120m 041°

LOGGED BY: TOM BOJCZYSZYN

PROPOSED DEPTH:

ULTIMATE DEPTH: 123.45m

DIP: -67° -62° -60°

DESCRIPTION	DEPTH (metres)	% CORE RECOVERY	INTERVAL (metres)	ASSAY NUMBER	%Pb	oz/ton		%W
						%Zn	Ag	
CASING	3.05							
3.05 - 3.35: >1mm white speckled dark grey pelite (white specks are probably dolomite replacements of fine grained pyrite)	5.20	84						
	6.40	86						
	8.20	83						
5.40-6.0: blue grey quartzite with disseminated pyrite	10.95	96						
- 10 mm marcasite crystals are common in light grey quartzite pelite beds	14.00	105						
	17.05	103						
- marcasite replaced by dolomite	19.05	105	0.75	6038N	0.02	0.02	0.10	tr
- notable sulphide rich horizons and replacements common in 10mm beds	21.65	87						
	23.45	100	0.55	6037N	0.02	0.01	0.18	
17.05-18.25: slump breccia (20mm fragments of: laminated white felsite?, black pelite)	26.50	97	0.70	6039N	0.04	0.04	0.32	tr
	28.65	95						
55.75-56.75: platy ankerite crystals in vuggy fractures	31.70	98						
57.35-57.50: minor sphalerite in steep dipping 2mm vuggy fractures	33.65	86						
@65.00: quartz veins with up to 20mm patches of sphalerite	35.65	90						
92.30-92.40: brecciated and contorted black pelite with quartz vein	38.70	102						
	41.75	98						
	44.80	102						
	45.40	75						
	47.85	86						
65.00-120.00: 2-6mm quartz veins with dolomite and ankerite margins are common; steep, shallow, crosscutting sets; few larger quartz veins to 50mm	50.90	95						
	52.10	92						
	53.95	86						
	57.00	100						
	60.05	100						
	63.10	98						
	66.15	93						

NORCEN ENERGY RESOURCES LIMITED

DIAMOND DRILL LOGS

PROPERTY: CRYSTAL CREEK

SHEET NUMBER: 1 of 2

N.T.S. NUMBER: 82K/15W

STARTED: Sept. 22/79

COMPLETED: Sept. 23/79

HOLE NUMBER: CC DDH 79-3

CLAIM NAME: TECT 3

COLLAR: L 1 + 608 2 +65N

ELEVATION:

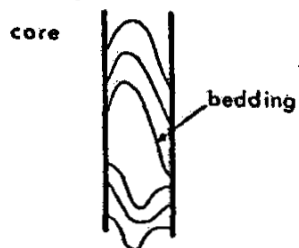
BEARING: 62.80m 048°

LOGGED BY: TOM BOJCZYSZYN

PROPOSED DEPTH:

ULTIMATE DEPTH: 64.00m

DIP: -57°

DESCRIPTION	DEPTH (metres)	% CORE RECOVERY	INTERVAL (metres)	ASSAY NUMBER	%Pb	%Zn	oz/ton		%W
							Ag	Au	
CASING	3.05								
@7.95: superimposed folding	4.10	20							
	7.15	94							
	10.20	97							
	11.60	88							
	12.80	92							
	15.40	92							
3.05 - 11.80: calcareous pelite, 1-5mm calcareous veins common	17.05	103							
17.20 - 17.80: cataclastic quartzite with 20mm X 3mm fragments stretched along foliation	18.60	97							
19.55 - 20.05: black pelite adjacent to quartz veins, possibly graphitic	19.50	111							
32.10 - 32.40 blue grey quartzite	22.55	84							
33.70 - 34.30 with minor disseminated pyrite	23.45	100							
38.60 - 39.50: slump breccia: fragments consist of light grey, medium grey, black pelite; breccia is also cataclastic	25.00	94							
	26.20	108							
	28.95	89							
	32.00	98							
	33.50	77							
39.35 - 39.85: 30mm quartz vein with 10-15% pyrite at margin	34.75	8							
Hole consists of laminated and bedded:	35.35	67	0.20	1974-0	tr	0.01	0.14	tr	
quartzite - (10-50cm) occasional detrital fragments	36.25	94	0.30	1975-0	tr	0.01	0.06	tr	
black pelite - (2-40mm)	38.70	71							

NORCEN ENERGY RESOURCES LIMITED

DIAMOND DRILL LOGS

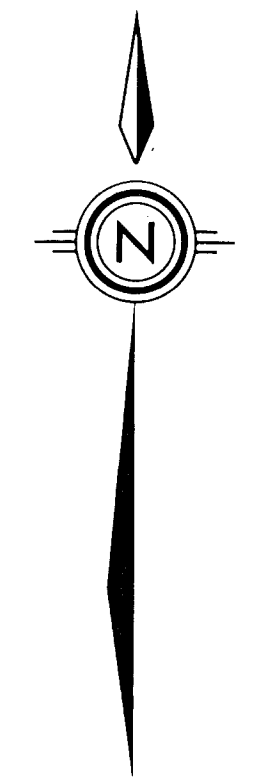
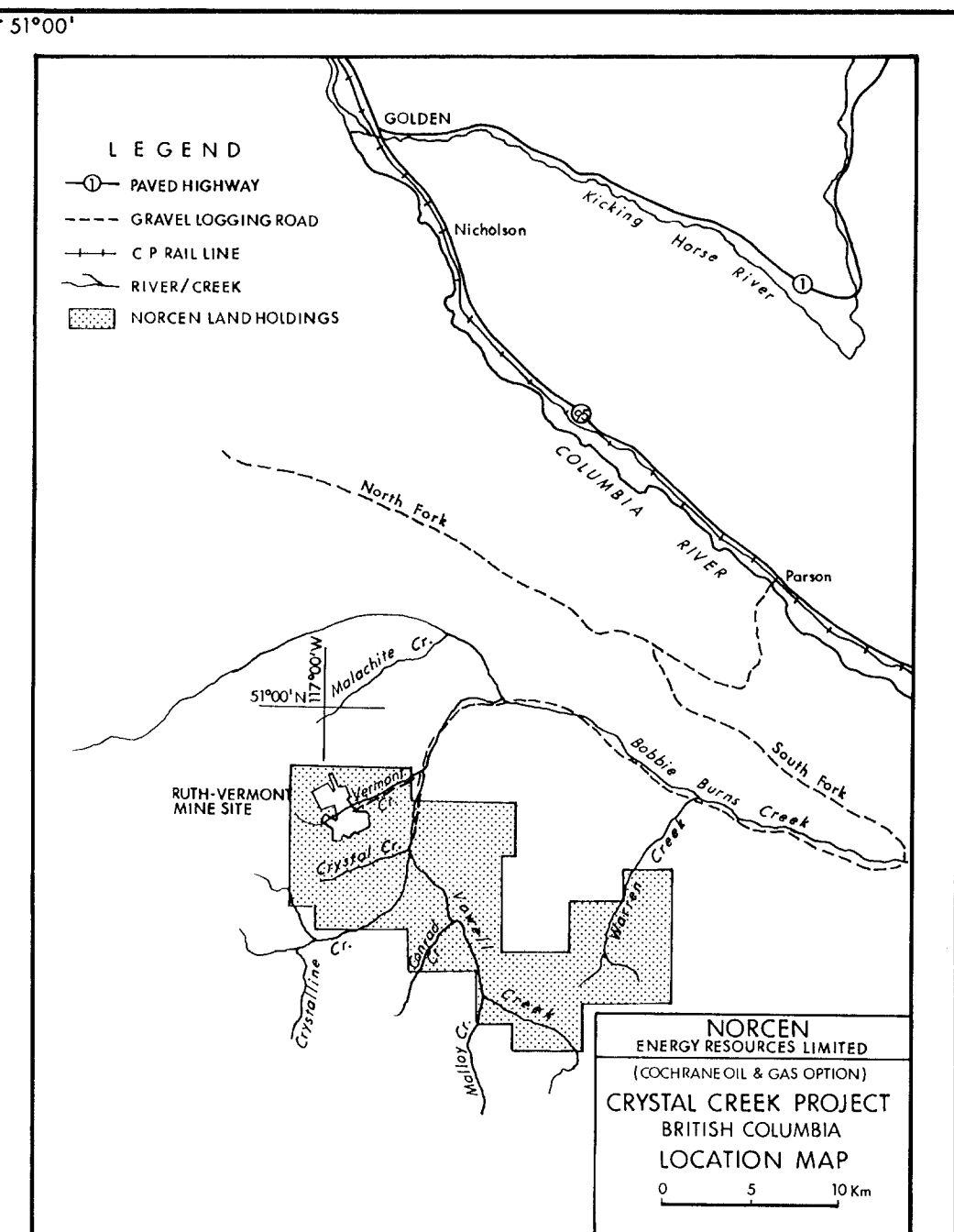
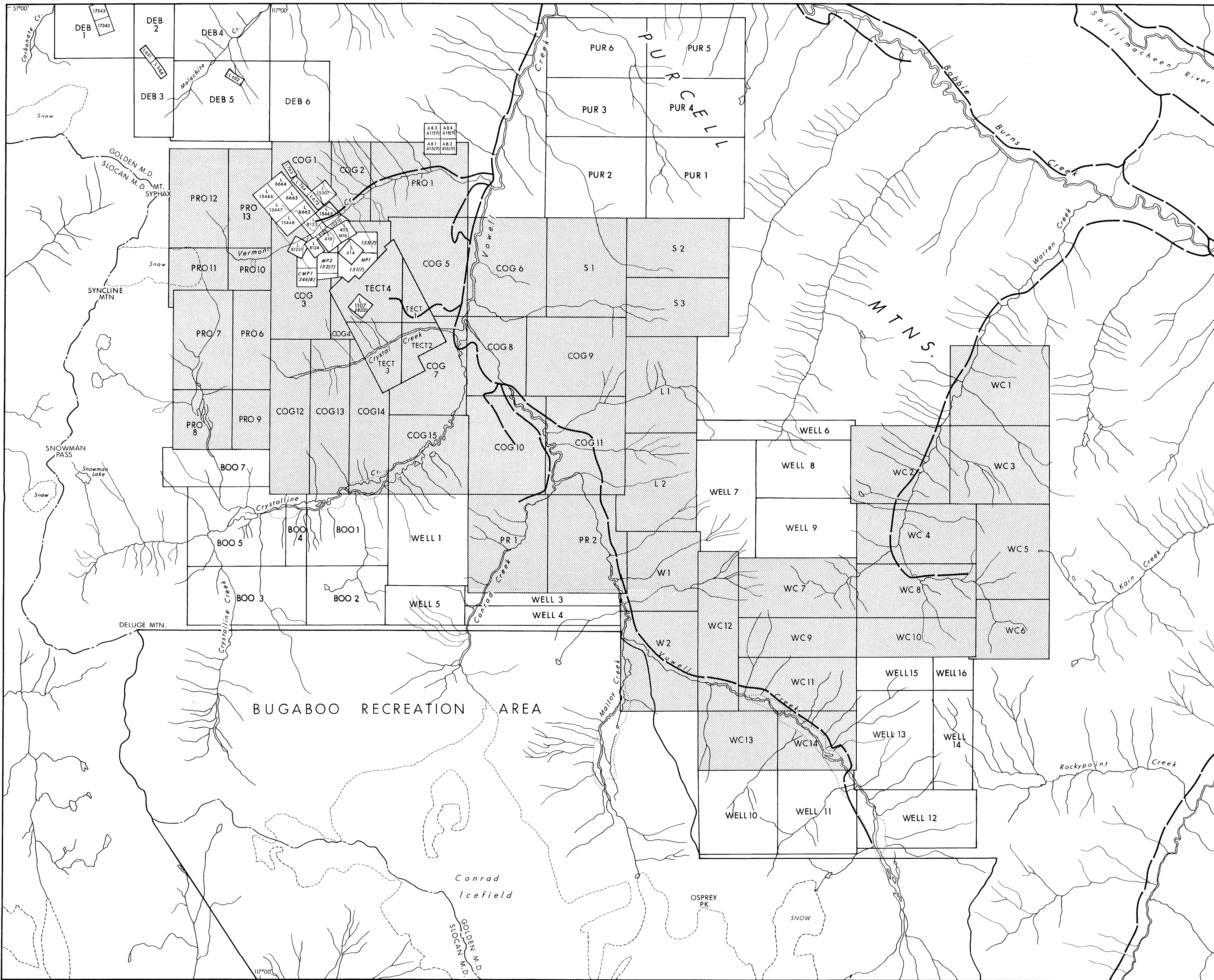
PROPERTY: CRYSTAL CREEK

HOLE NUMBER: CC DH 79-3

SHEET NUMBER: 2 of 2

DESCRIPTION	DEPTH (metres)	% CORE RECOVERY	INTERVAL (metres)	ASSAY NUMBER	%Pb	oz/ton		%W
						%Zn	Ag	
light grey pelite	41.75	92	0.40	1976-0	0.02	0.06	0.02	0.01
grey quartzitic pelite (20 mm - often contorted)								
medium grey pelite - (20-100)	43.90	109						
dark grey pelite - (2-30mm)								
dark grey speckled pelite (10-70mm)	47.10	89						
	50.30	95						
41.00 - 63.00: 1-5mm white quartz and or dolomite veins are common, on occasional 5mm marcasite crystals are completely replaced by quartz or partially replaced along crystal rims.	53.20	102						
	54.85	100						
	57.00	91						
	60.05	95						
	61.85	100						
END OF HOLE	64.00	93						

Casing left in hole.

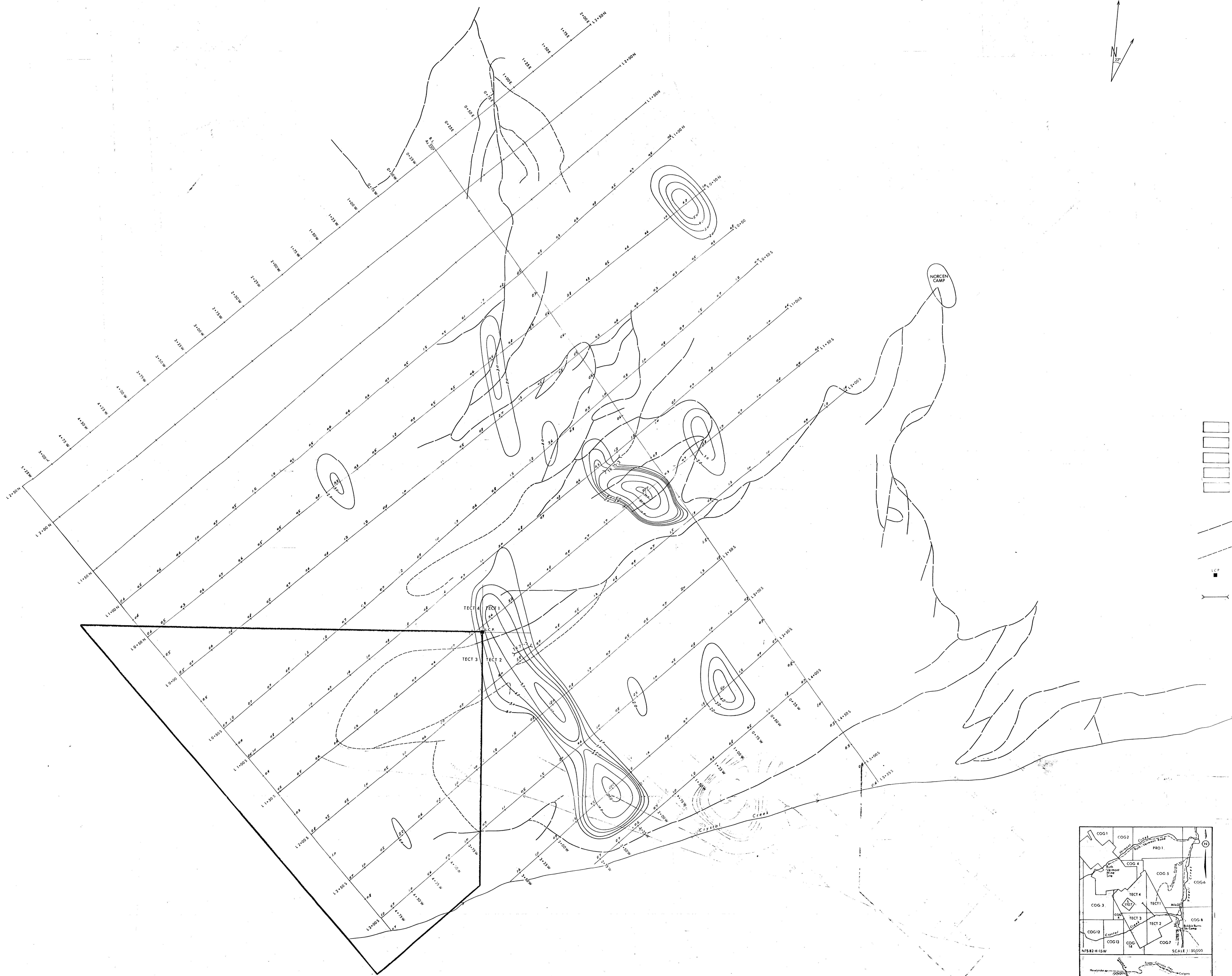


MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
8155

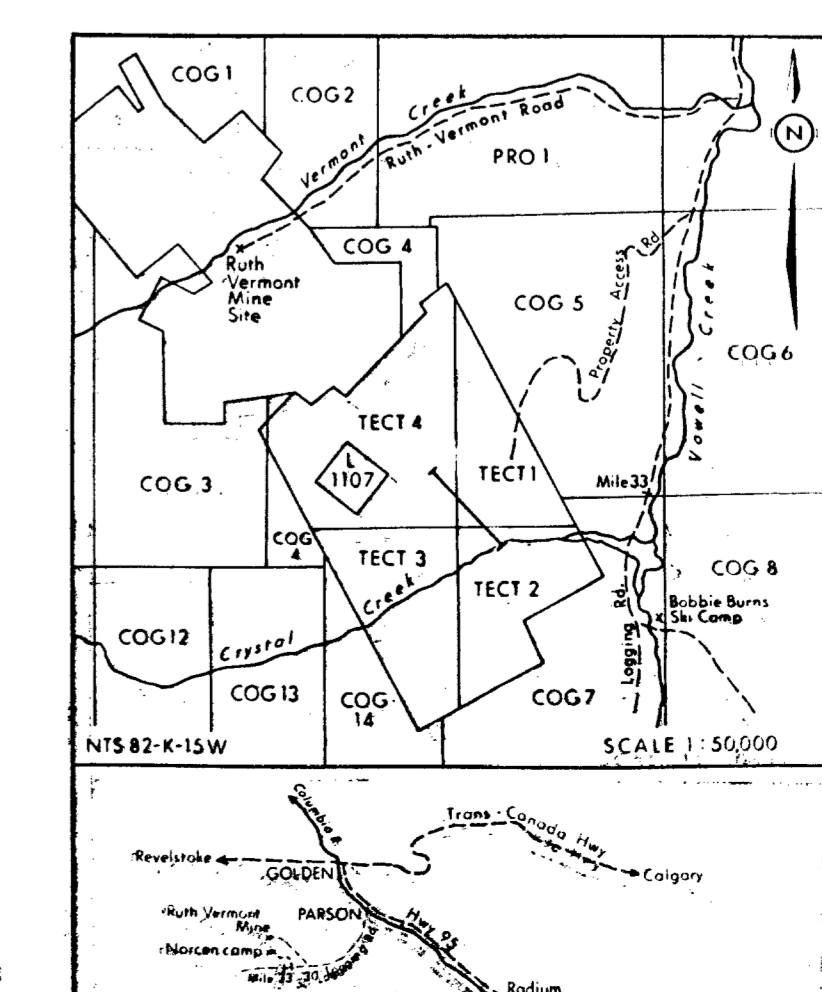
NORCEN LAND HOLDINGS
TRUCK ROAD

Norcen
Energy Resources Limited
(COCHRANE OIL AND GAS OPTION)
CRYSTAL CREEK PROJECT
BRITISH COLUMBIA
LAND HOLDINGS MAP





- 20-30 ppm Ag
- 30-40 ppm Ag
- 40-50 ppm Ag
- 50-100 ppm Ag
- Greater than 10 ppm Ag
- EXISTING ROADS
- NORCEN CAT TRAILS
- LEGAL CORNER POST
- TRENCH

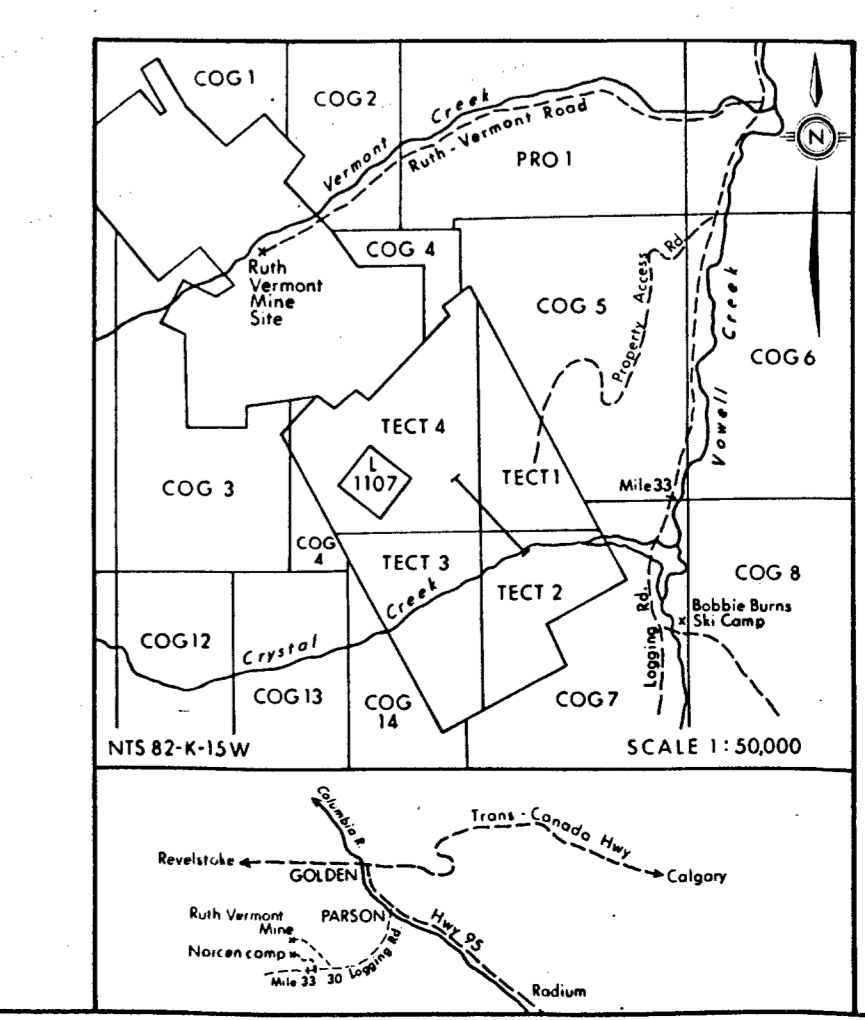
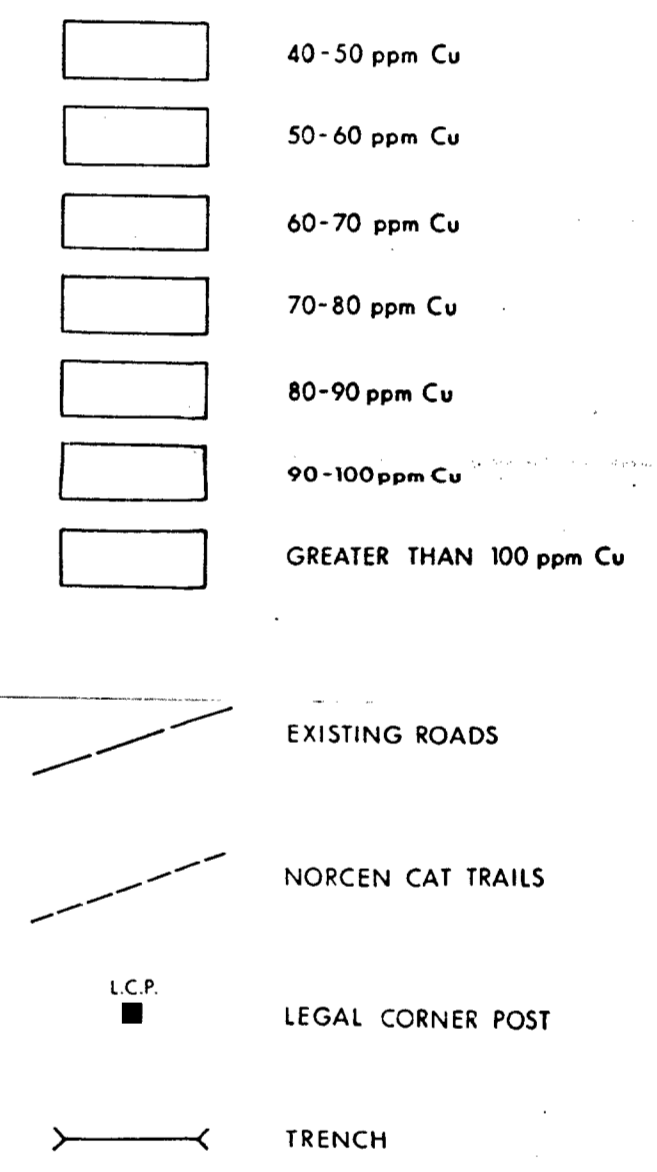
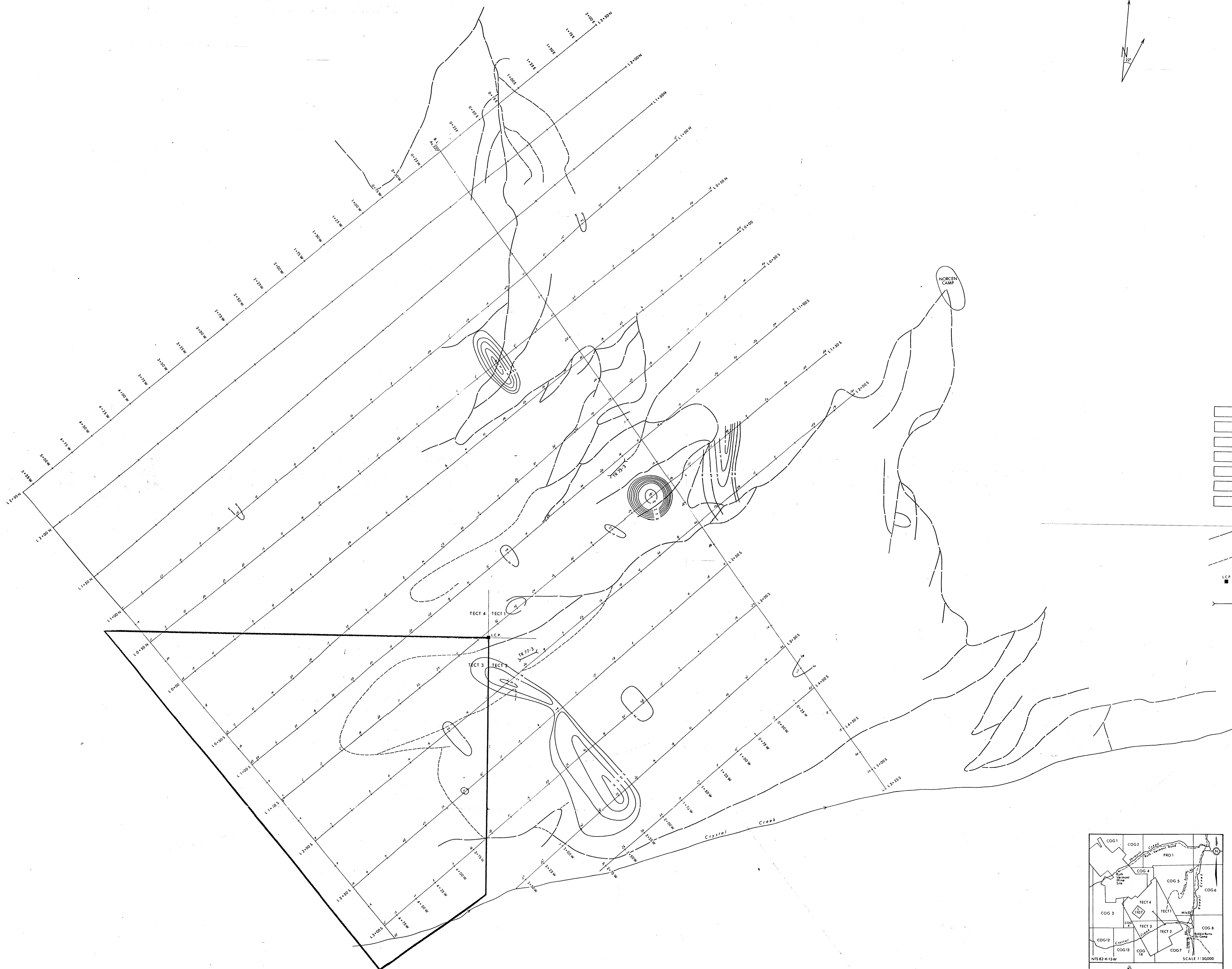


MINERAL RESOURCES BRANCH
 RESOURCES REPORT
8155

Norcen
 Energy Resources Limited
 [COCHRANE OIL & GAS LTD. OPTION]
CRYSTAL CREEK PROJECT
 BRITISH COLUMBIA
 Ag in Soils Geochemical Survey

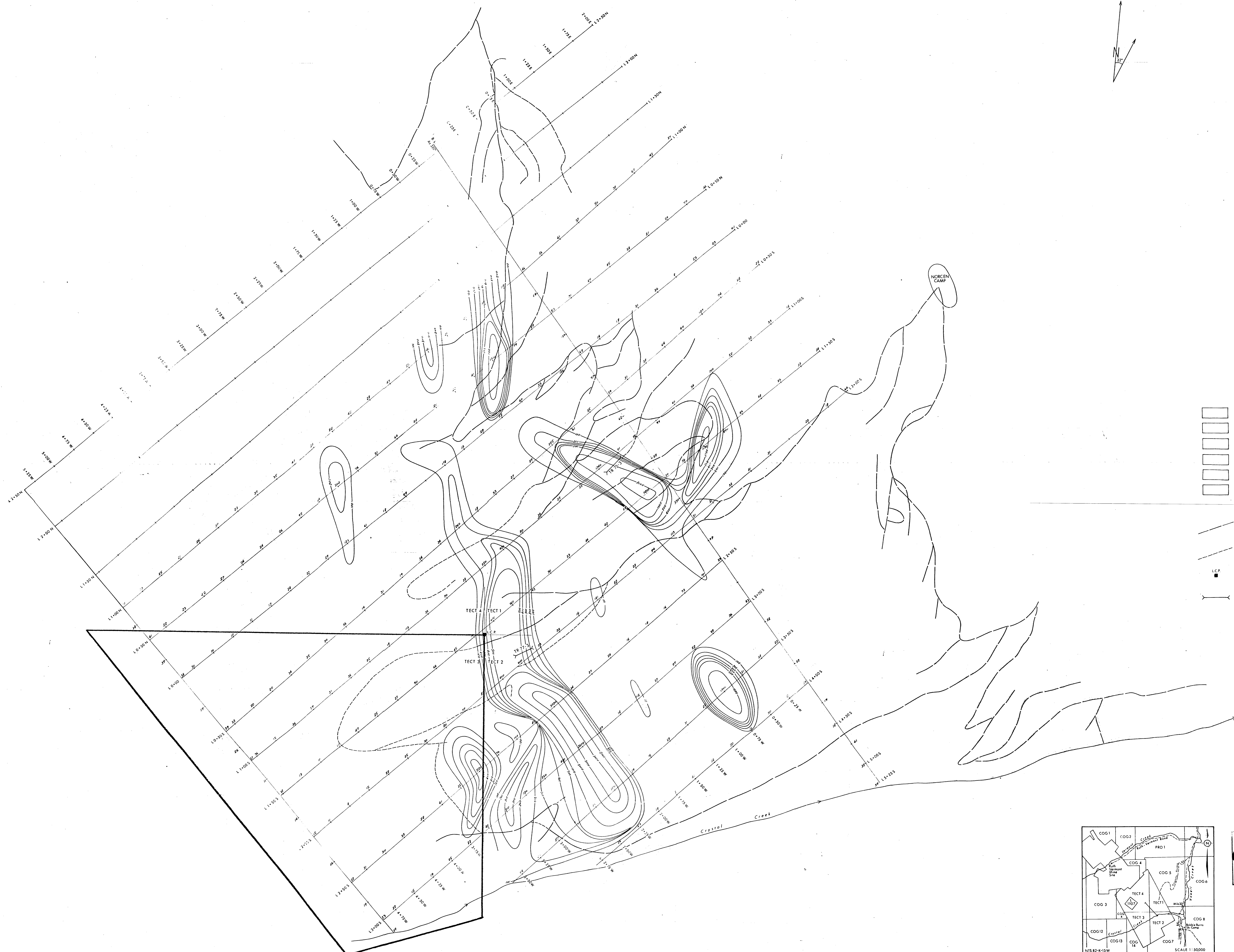
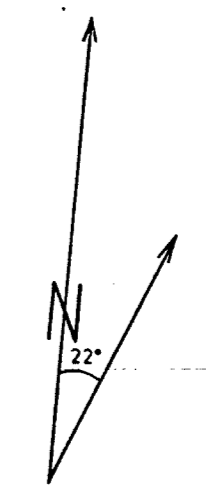
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 0 20 40 100 metres


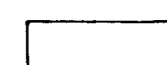
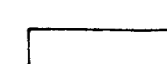

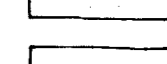
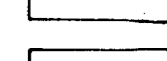




NTS 82-K-15W November, 1979

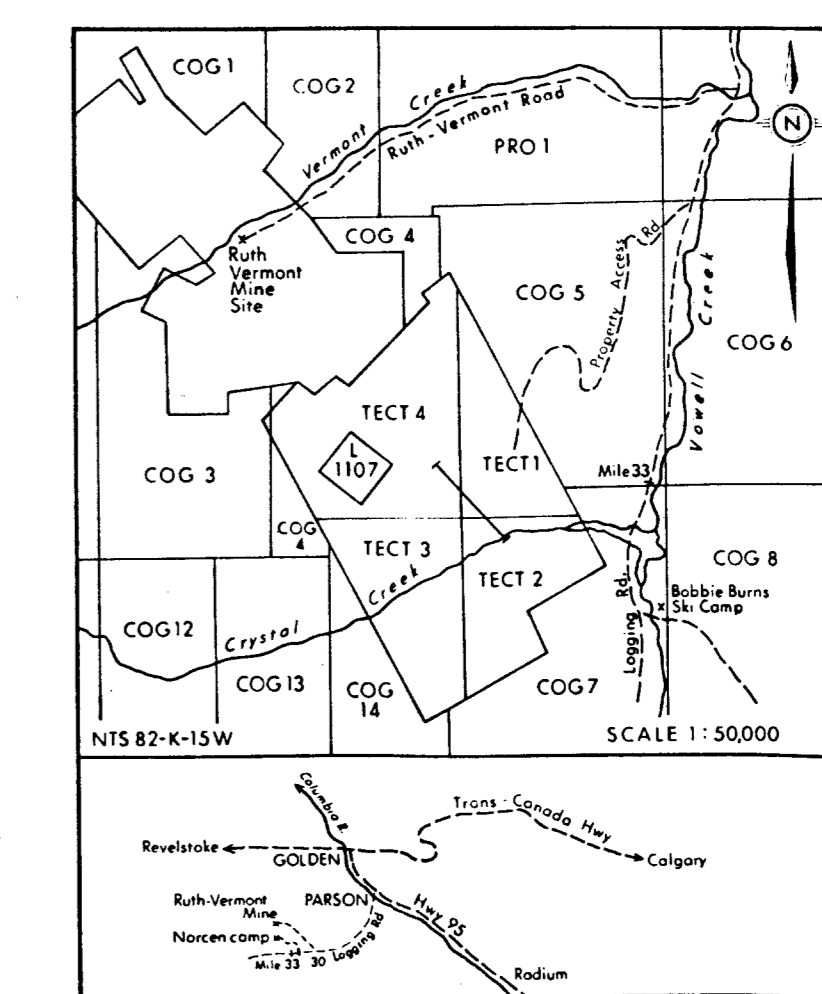


MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
8155
NO.

Norcen
Energy Resources Limited
(COCHRANE OIL & GAS LTD. OPTION)
CRYSTAL CREEK PROJECT
BRITISH COLUMBIA
Cu in Soils Geochemical Survey
0 25 50 75 100 metres
NTS 85-K-15W November, 1979

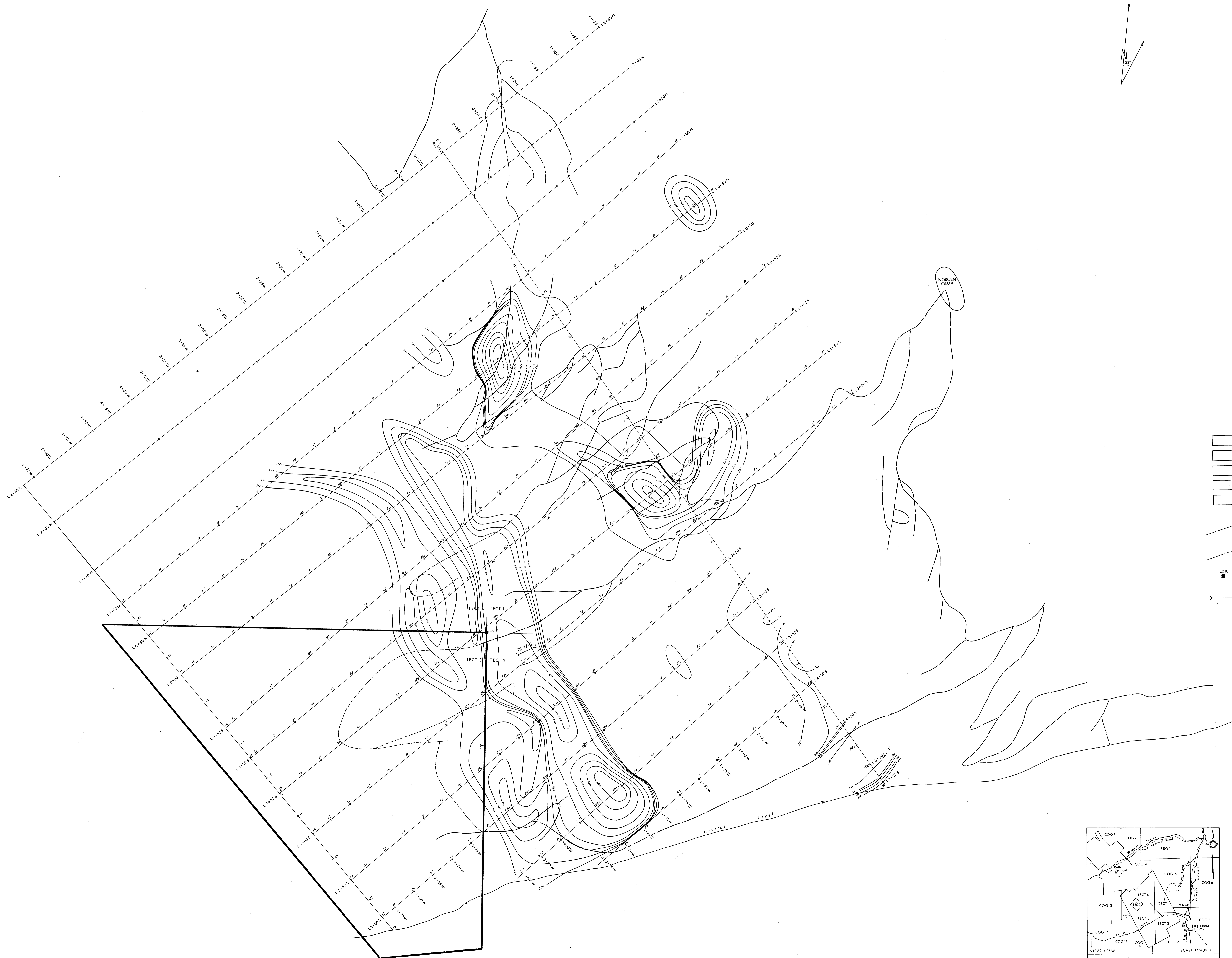




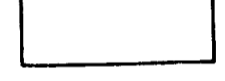
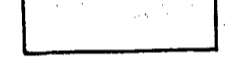
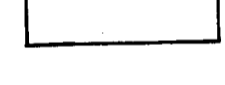
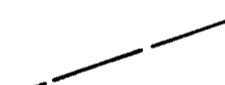



-  100-200 ppm Pb
-  200-300 ppm Pb
-  300-400 ppm Pb
-  400-500 ppm Pb
-  500-1000 ppm Pb
-  Greater than 1000 ppm Pb
-  EXISTING ROADS
-  NORCEN CAT TRAILS
-  LEGAL CORNER POST
-  TRENCH

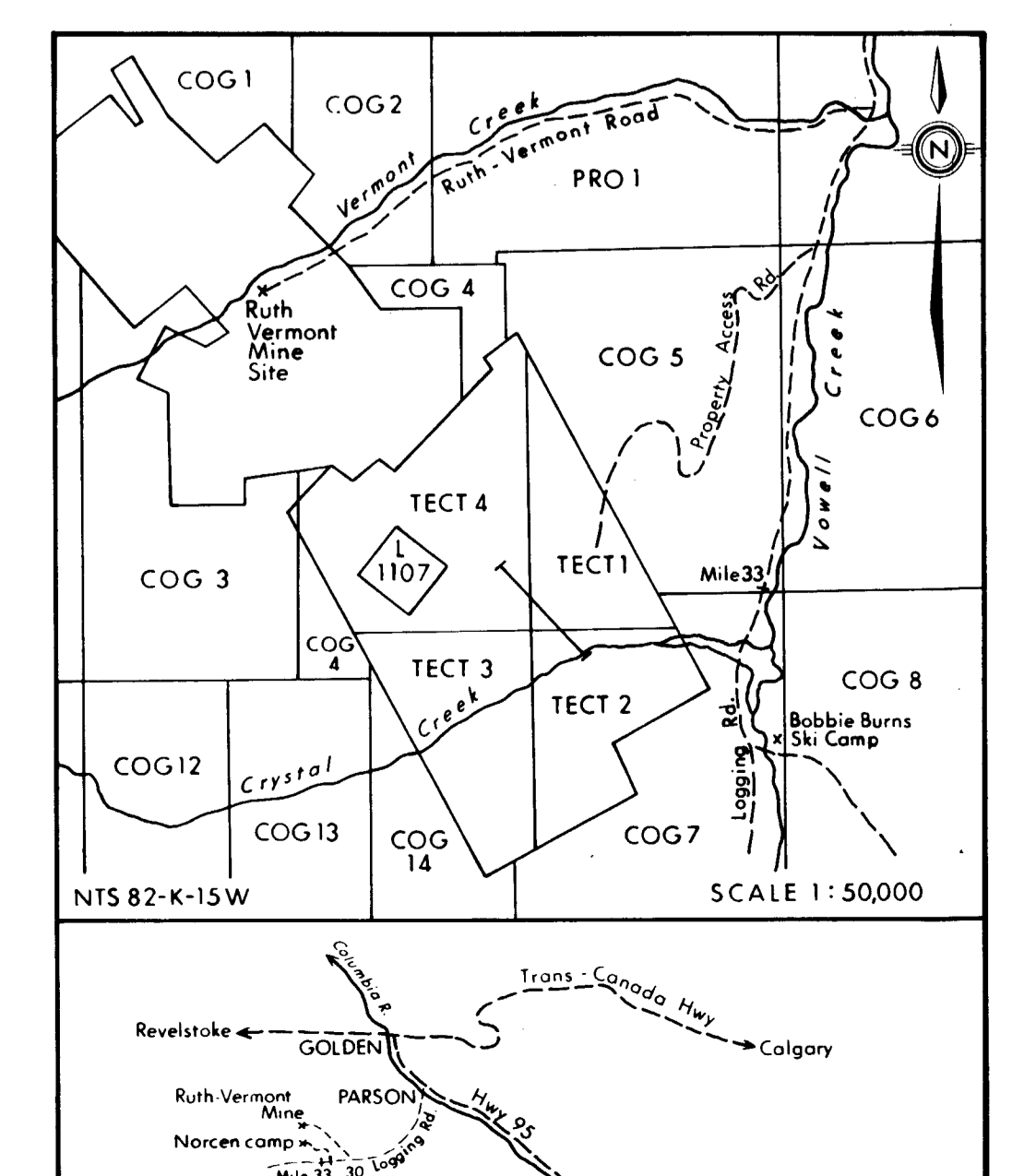


MINERAL RESOURCES BRANCH
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CRYSTAL CREEK PROJECT
BRITISH COLUMBIA
Pb in Soils Geochemical Survey
0 25 50 75 100 metres
NTS 85-K-15W November, 1979



-  200-300 ppm Zn
-  300-400 ppm Zn
-  400-500 ppm Zn
-  500-1000 ppm Zn
-  GREATER THAN 1000 ppm Zn
-  EXISTING ROADS
-  NORCEN CAT TRAILS
-  LEGAL CORNER POST
-  TRENCH



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 NTS 85-K-15-W

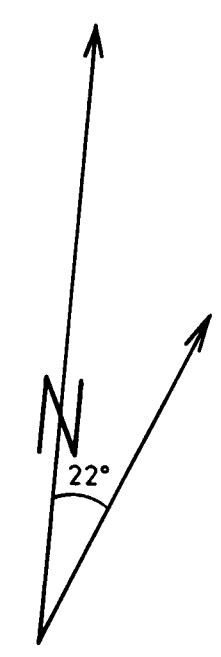
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CRYSTAL CREEK PROJECT
 BRITISH COLUMBIA

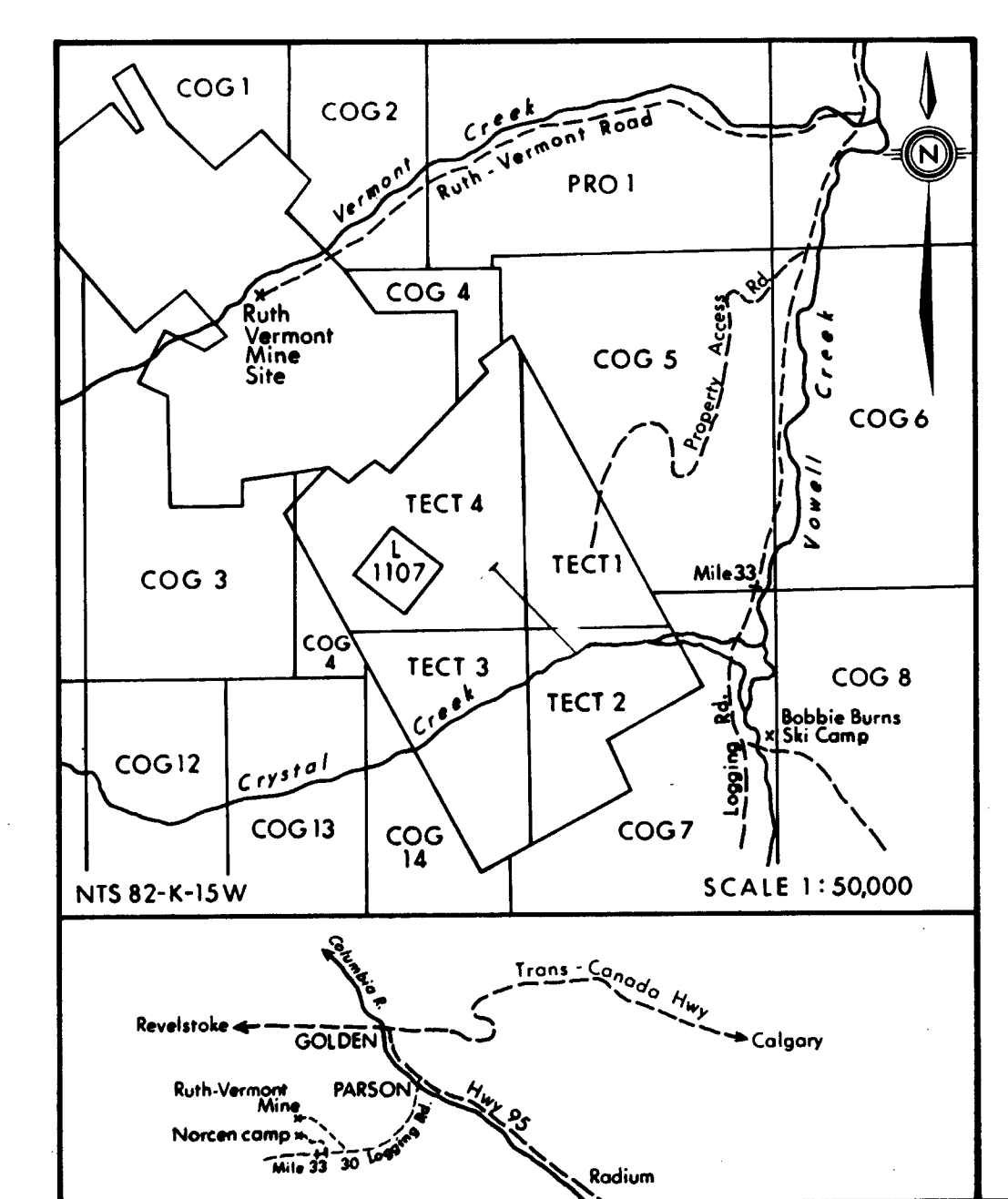
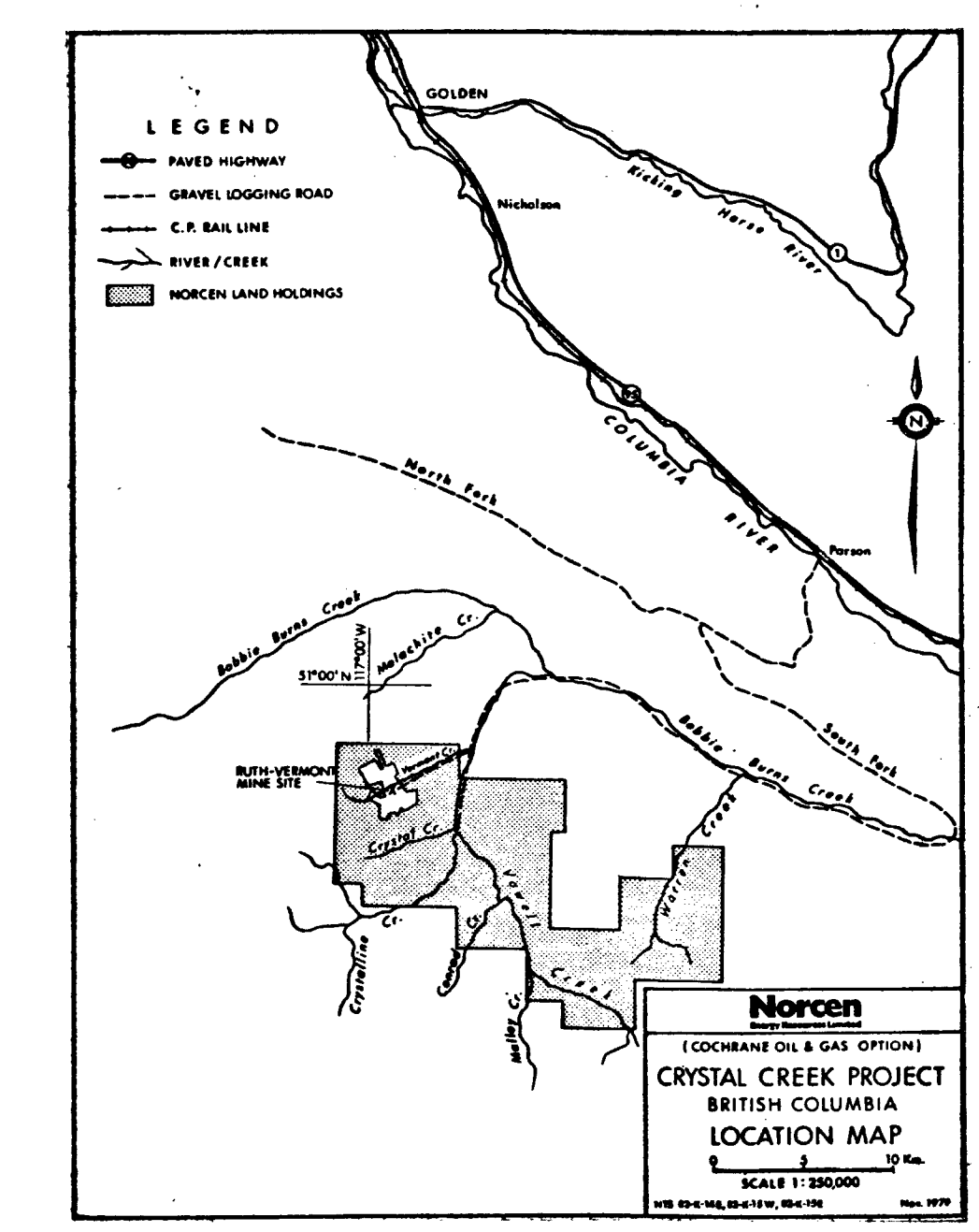
Zn in Soils Geochemical Survey

NTS 85-K-15-W November, 1979



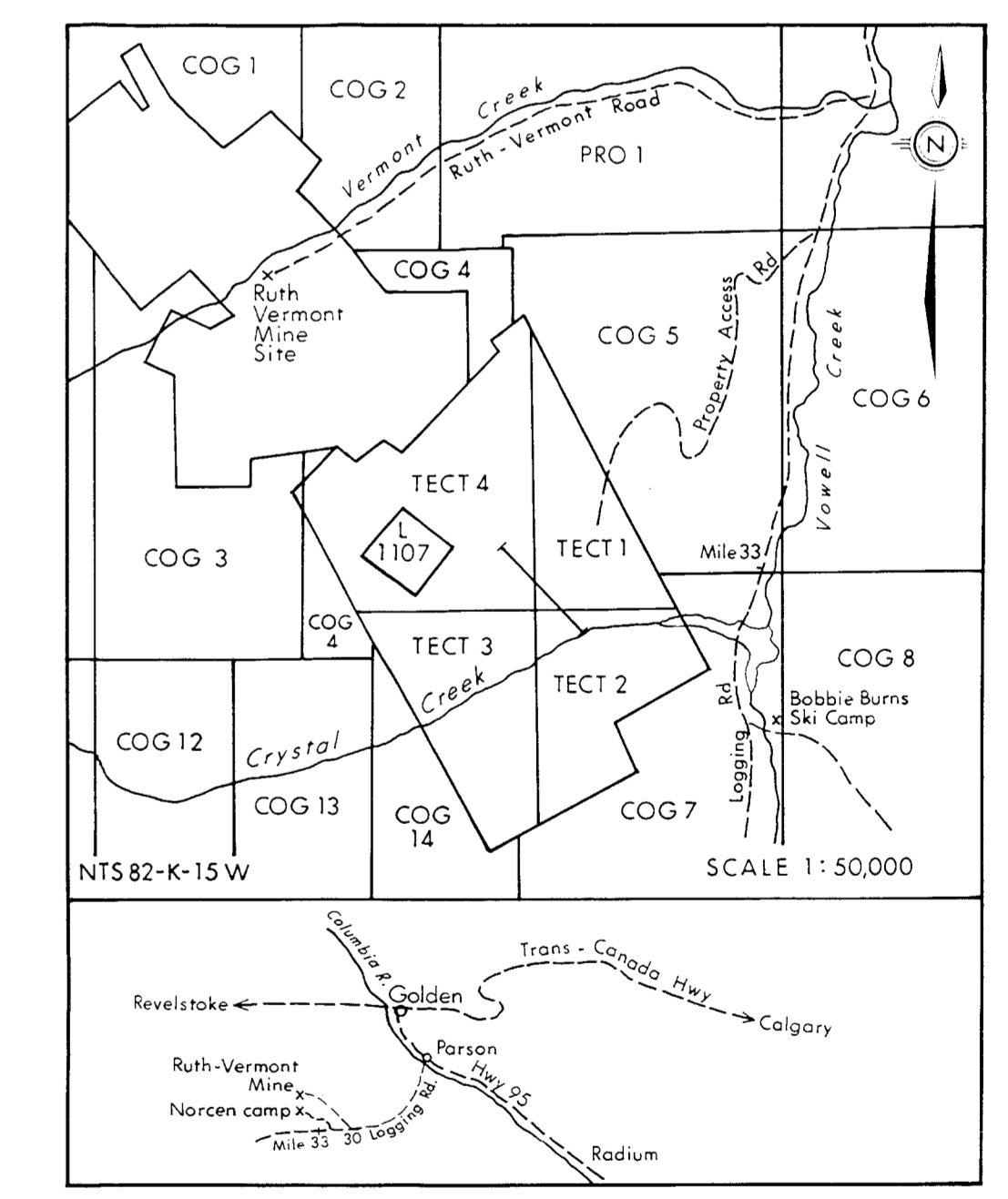
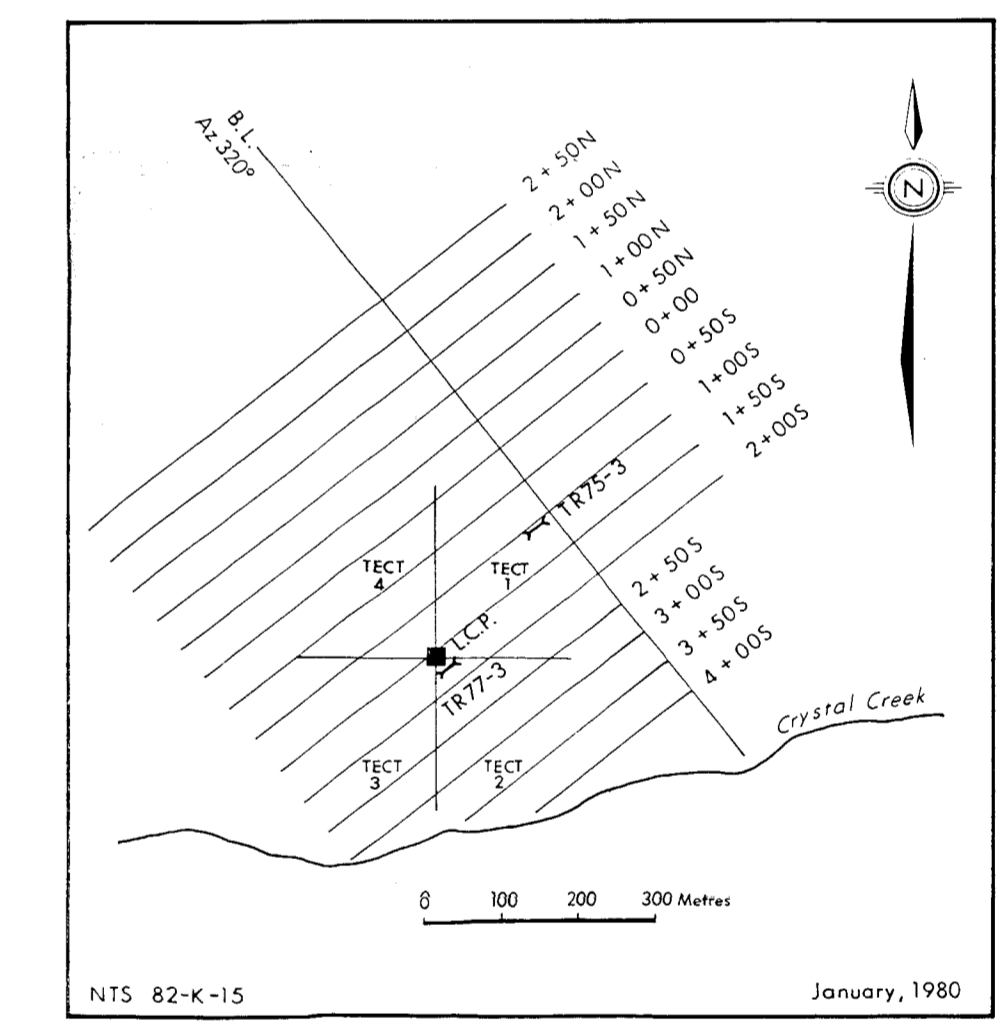
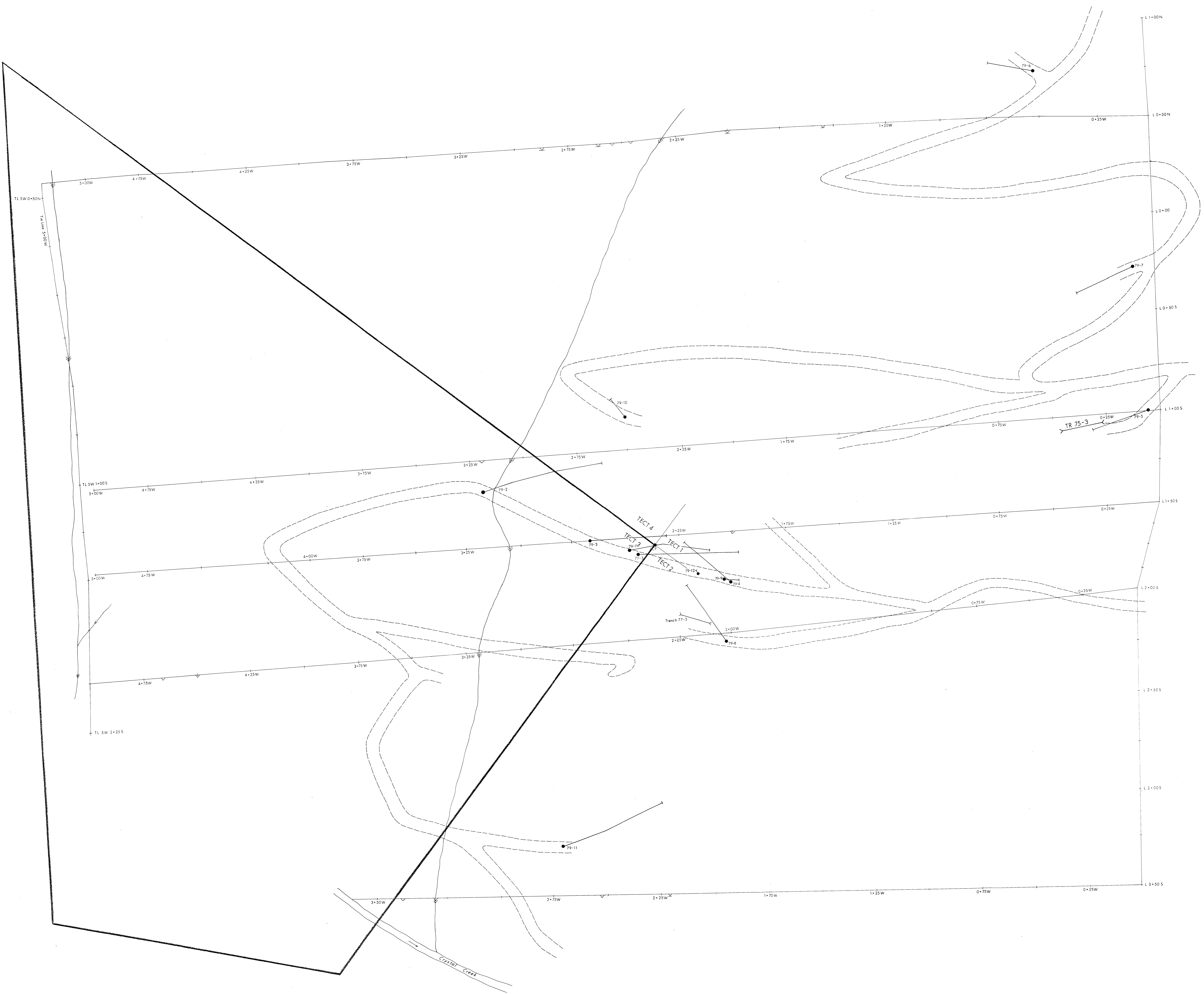
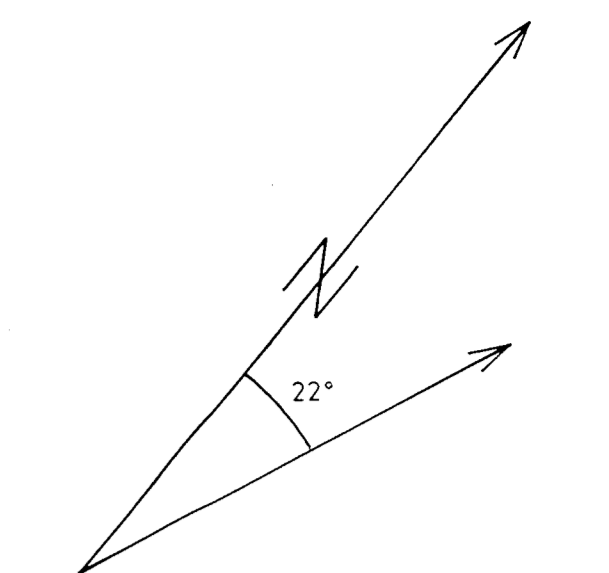
GEOLOGICAL LEGEND:

- 1a ARGILLITE
- 1b LIMY ARGILLITE
- 1c ARKOSIC ARGILLITE
- 2a PHYLITE, WELL DEVELOPED FOLIATION
- 2b PHYLITE, INTERMEDIATE FOLIATION
- 2c PHYLITE, POORLY DEVELOPED FOLIATION
- 2d LIMY PHYLITE
- 2e ARKOSIC PHYLITE
- 3 SCHIST
- 4a ARKOSE
- 4b META-ARKOSE (INCLUDES PHYLITIC ARKOSE)
- 4c LIMY ARKOSE
- 5a MEDIUM-GRAINED GRIT
- 5b COARSE-GRAINED GRIT
- 5c META-GRIT
- 5d LIMY GRIT
- 6a QUARTZ-PEBBLE CONGLOMERATE
- 6b QUARTZ-PEBBLE CONGLOMERATE WITH CHERT
- 6c META-CONGLOMERATE (ELONGATED PEBBLES)
- 7a CARBONATE BRECCIA
- 7b OLITIC CARBONATE BRECCIA
- 8 QUARTZITE
- 9 QUARTZ VEINS
- EXISTING ROADS
- NORCEN CAT TRAILS
- L.C.P. LEGAL CORNER POST
- X OUTCROP
- BOULDER, BOULDER FIELD
- BEDDING - STRIKE / DIP
- FOLIATION - STRIKE / DIP
- JOINT PLANE - STRIKE / DIP
- DIAMOND DRILL HOLE
- TRENCH
- MINERALIZATION (ZINC, LEAD, SILVER)
- W.S. WEATHERED SULPHIDES
- CREEK
- ANTICLINE WITH PLUNGE
- SYNCLINE WITH PLUNGE
- ANTICLINE
- SYNCLINE, OVERTURNED SYNCLINE
- GROUND GEOPHYSICAL CONDUCTOR



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DETAILED GEOLOGY
 E. LAIRD
 November, 1979
 NTS 85-K-15W



- LEGEND**
- CAT TRAILS
 - MAJOR CREEK
 - MINOR CREEK
 - SEEP OR GUILLEY
 - DIAMOND DRILL HOLE
 - CREEK
 - TRENCH

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DIAMOND DRILL HOLE LOCATION MAP
0 5 10 15 20 25 meters
SCALE 1:500
NTS 82-K-15W November 1979