

180-11348 # 6

NORCEN ENERGY RESOURCES LIMITED

ASSESSMENT REPORT
GEOLOGICAL MAPPING, GEOCHEMICAL SAMPLING AND
DIAMOND DRILLING PROGRAM
GROUP V (TECT 4 - COG 4)

GOLDEN MINING DIVISION,
BRITISH COLUMBIA

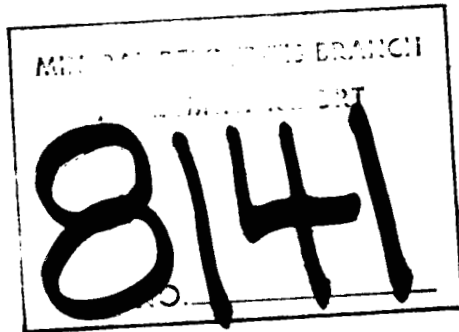
Claims: TECT 4 (413)
COG 4 (323)

Location: 40 km South of Golden, British Columbia

Latitude: 50°57'N

Longitude: 116°58'W

Owner and Operator: Norcen Energy Resources Limited
July 27-31, August 14-17, 24, 27-31,
September 1, 6-14, and October 1-8, 1979



L. Smith

June 11, 1980

L. Smith, P.Geol.

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SUMMARY

Detailed geological mapping, soil geochemical sampling, and diamond drilling was performed within the boundaries of Group V (Tect 4 - Cog 4) on July 27-31, August 14-17, 24, 27-31, September 1, 6-14, and October 1-8, 1979. A total of sixty-four (64) 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. One diamond drill hole was completed to a depth of 84.75 metres.

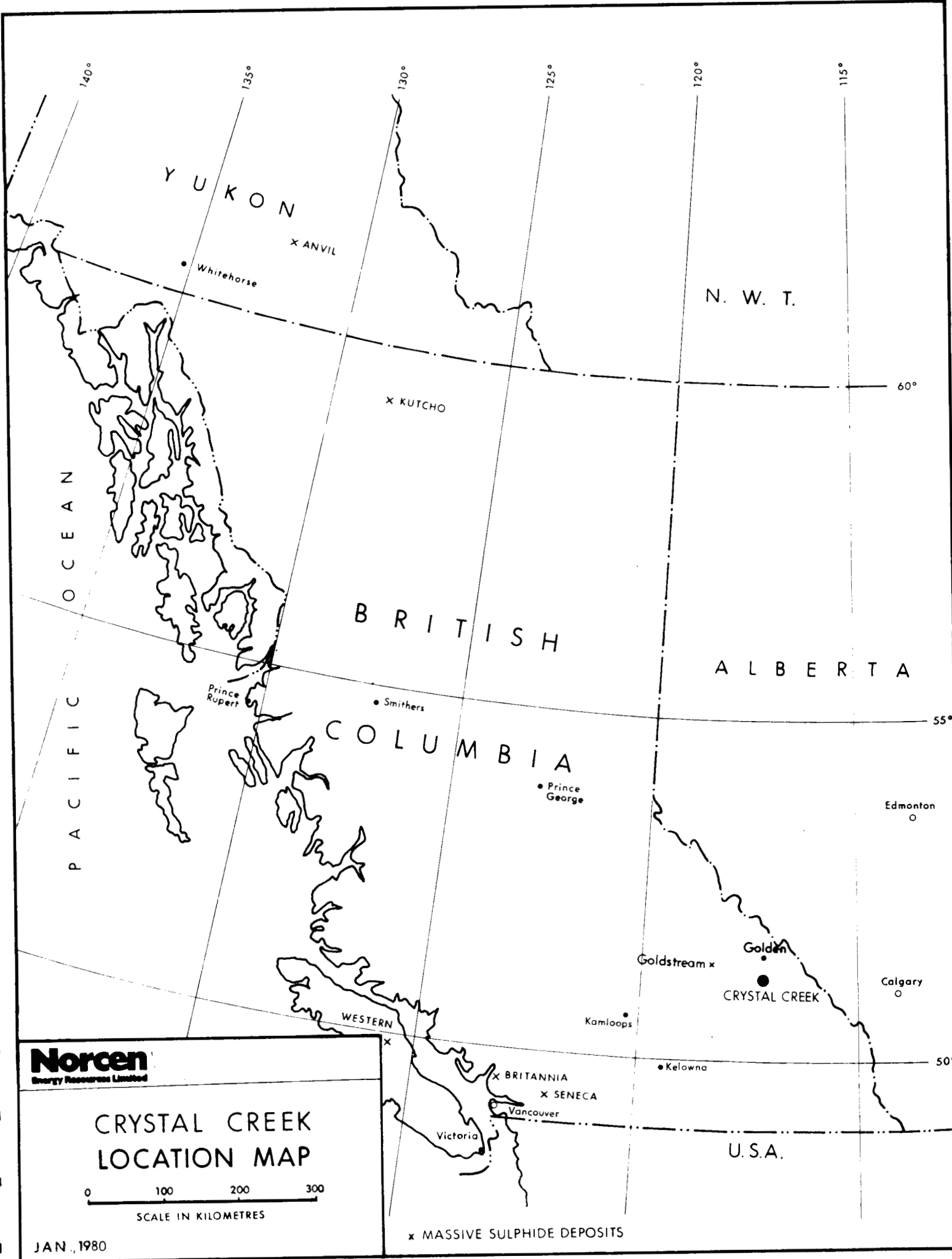
LOCATION AND ACCESS (See Land Holdings Maps, Crystal Creek Project, British Columbia)

The claims are located in the Purcell Mountains approximately 40 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 4 and COG 4 claims form part of the Crystal Creek Property. The TECT 4 and COG 4 claims have been grouped into Group V (TECT 4 and COG 4).

<u>Claim Name</u>	<u>Record Number</u>	<u>Recorded Date</u>	<u>Unit Dimensions</u>	<u>No. of Units</u>
TECT 4	413	September 14, 1979	5N X 4W	20
COG 4	323	June 18, 1979	6S X 3E	18



Norcen
Energy Resources Limited


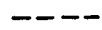
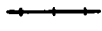


CRYSTAL CREEK LOCATION MAP



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

GOLDEN

Nicholson

Kicking Horse River

1

COLUMBIA RIVER

Parson

North Fork

Bobbie Burns Creek

51°00'N 117°00'W

Malachite Cr.

RUTH-VERMONT MINE SITE

Vermont Cr.

Crystal Cr.

Bobbie Burns Creek

South Fork

Crystalline Cr.

Conrad Cr.

Malloy Cr.

Warren Cr.



Norcen
Energy Resources Limited

(COCHRANE OIL & GAS OPTION)
CRYSTAL CREEK PROJECT
BRITISH COLUMBIA
LOCATION MAP

0 5 10 Km.

SCALE 1: 250,000

NTS 82-K-14E, 82-K-15W, 82-K-15E

Nov. 1979

GEOLOGICAL MAPPING

A detailed geological mapping program was carried out between August 27-31 and September 6-14, 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 V (Tect 4 - COG 4) claims.

GEOCHEMICAL SOIL SAMPLING

A total of 300 soil geochemical samples were collected at 25 metre intervals along the grid. Sixty-four (64) of these soil samples were collected within the boundaries of Group V (TECT 4 - COG 4) 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.

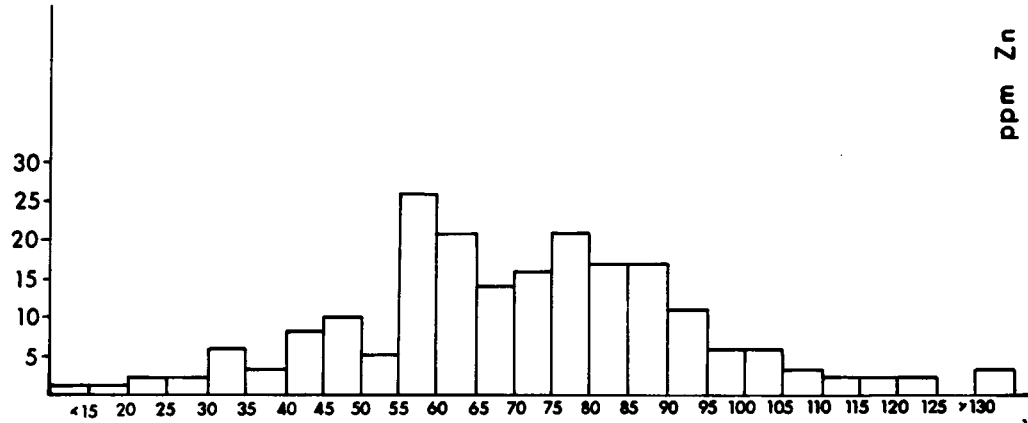
Due to probable biased anomalous values for each element (perhaps with the exception of Cu) a separate statistical analysis was done for the regionally collected samples.

Anomalous Values are Defined by the

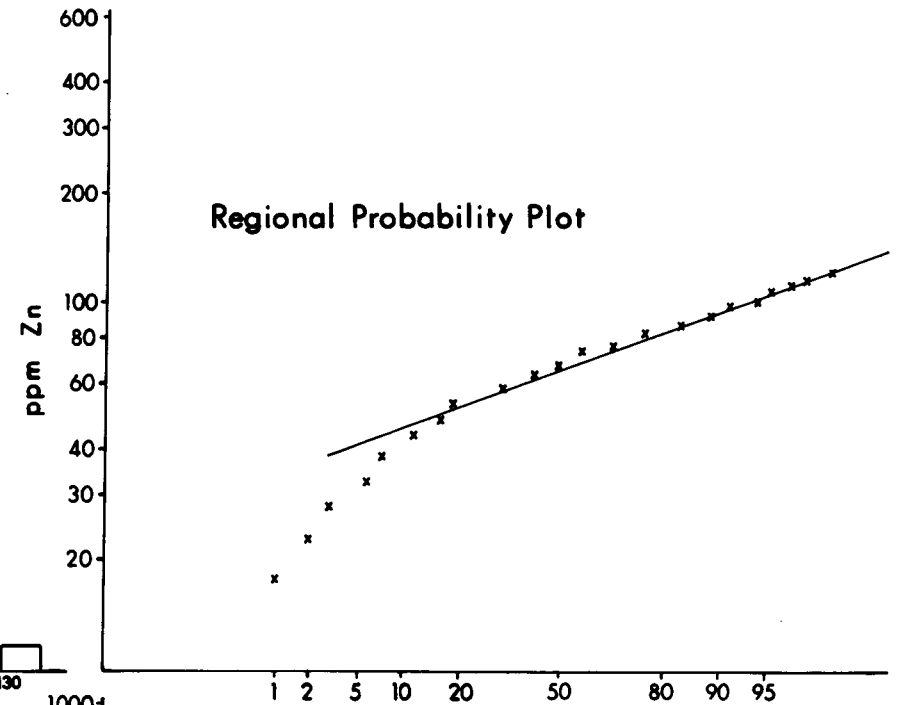
	<u>Upper 5% of the values in ppm</u>	<u>Median plus 2 Standard Deviations in ppm</u>
<u>Gridded Area</u>		
Pb	400	117
Zn	775	544
Ag	2.7	1.9
Cu	47	45
<u>Regional</u>		
Pb	33	32
Zn	108	108
Ag	0.9	0.9
Cu	38	38

Zinc content of soil samples

Regional Histogram
205 samples

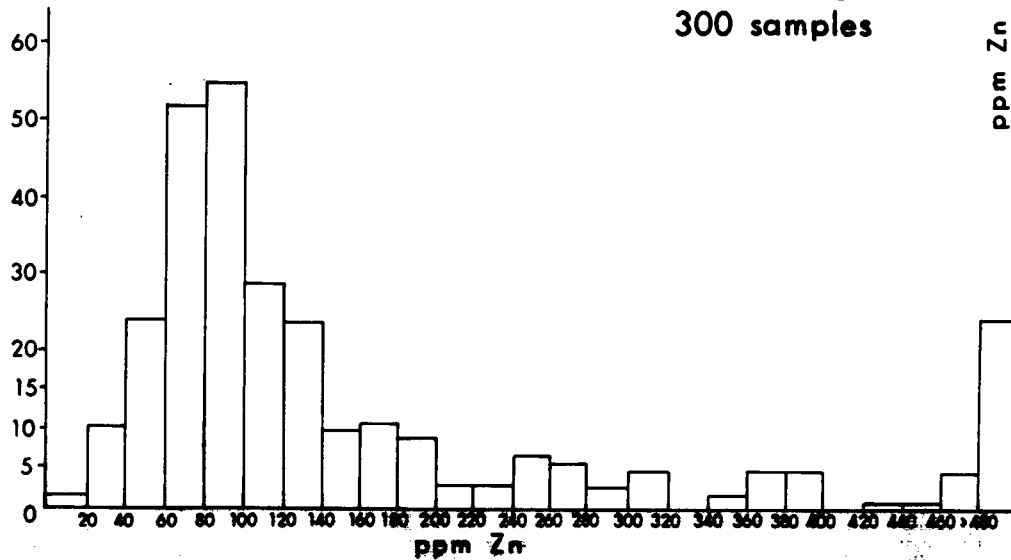


Regional Probability Plot

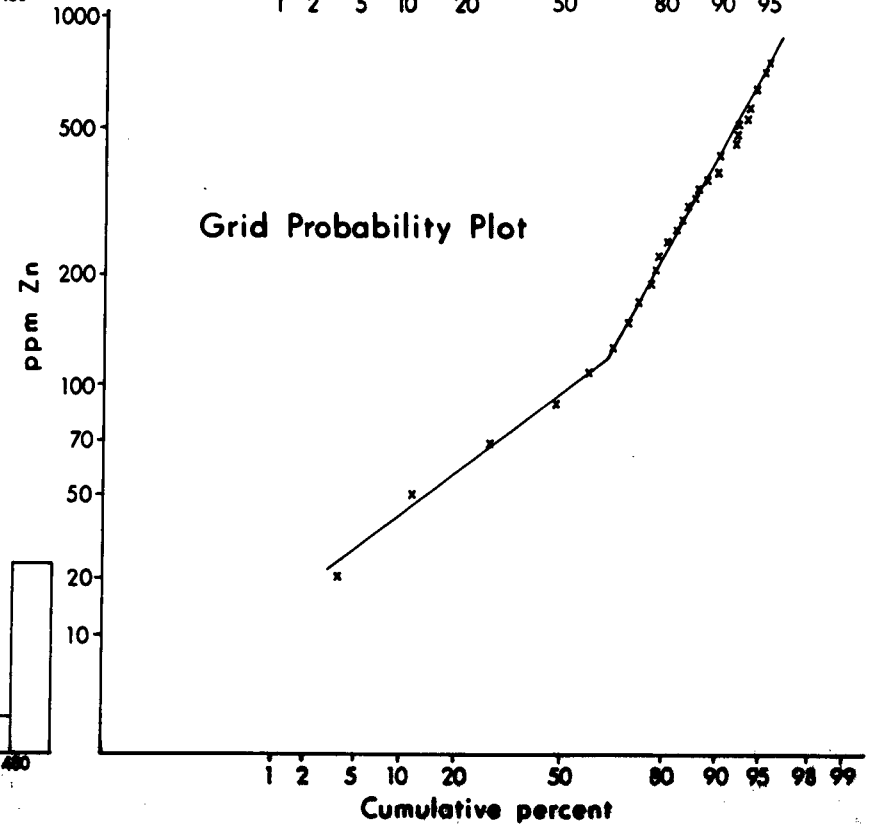


Frequency

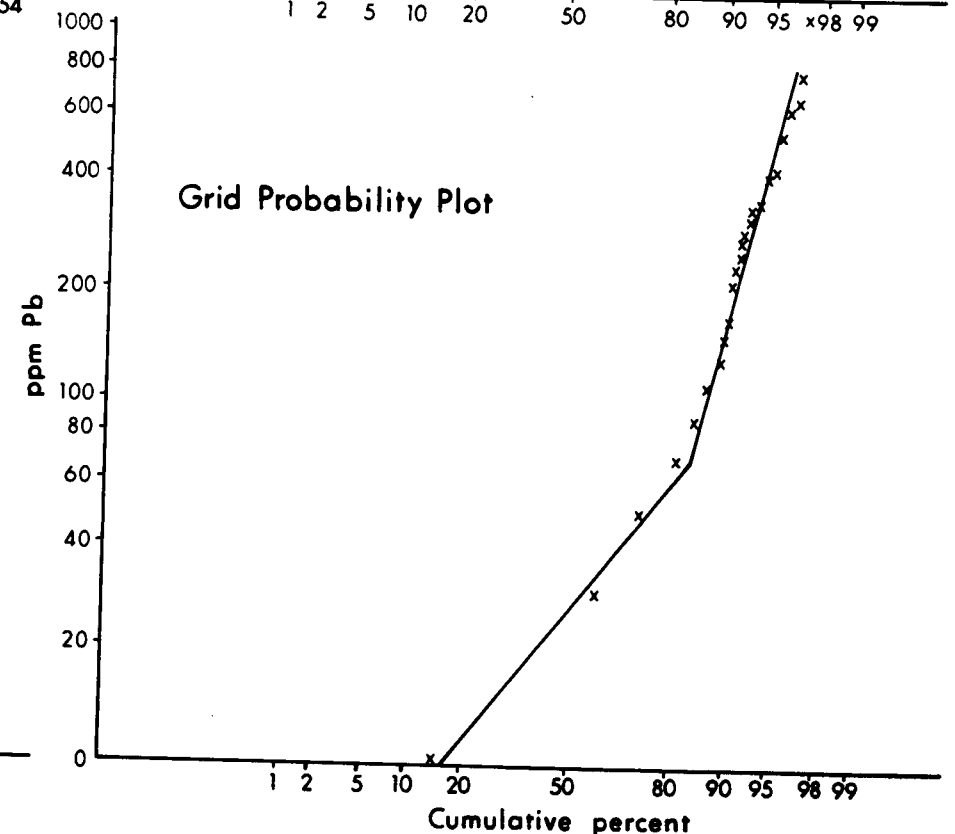
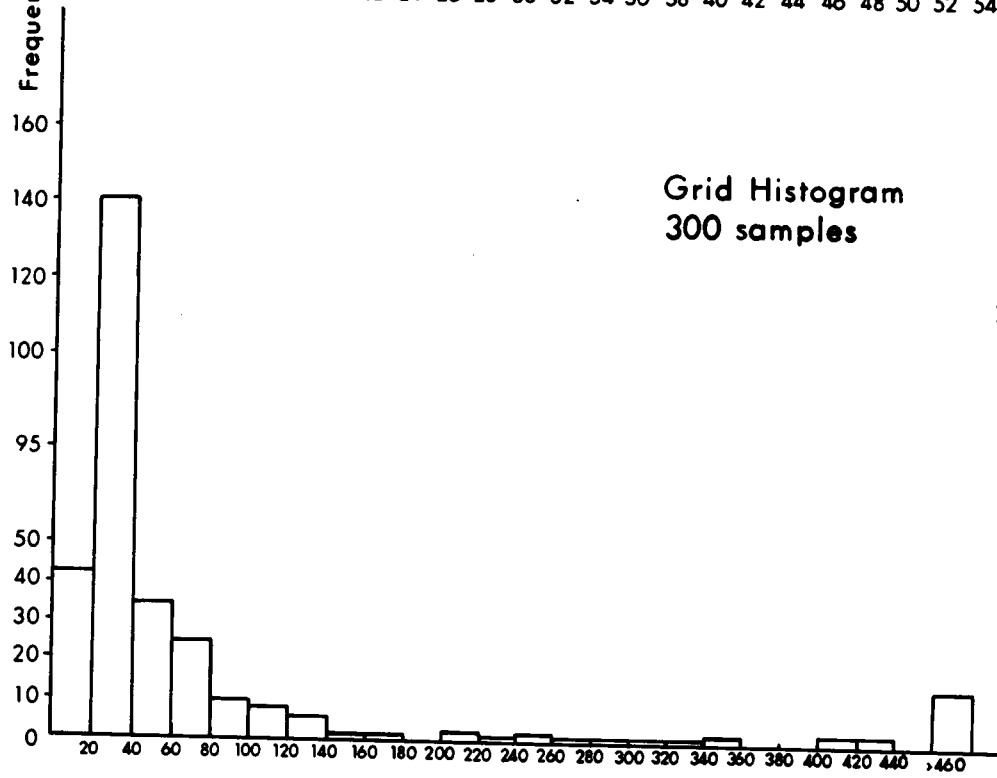
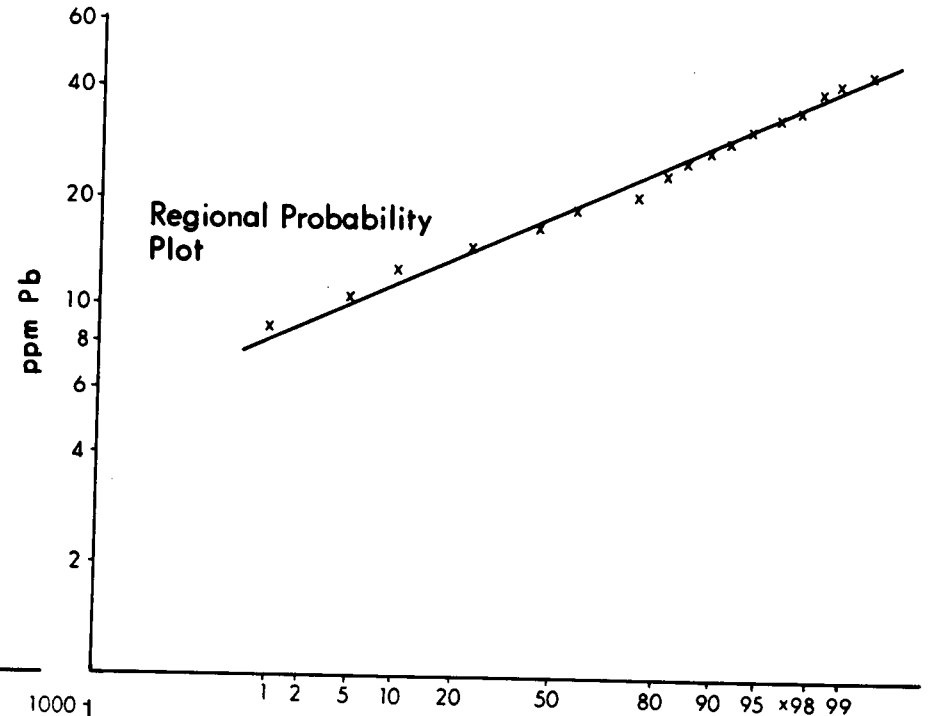
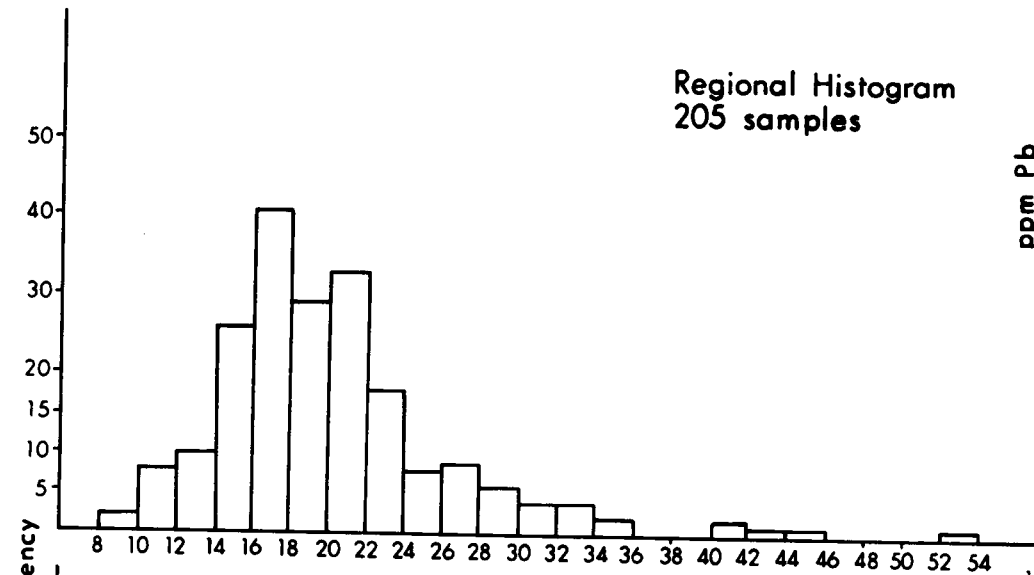
Grid Histogram
300 samples



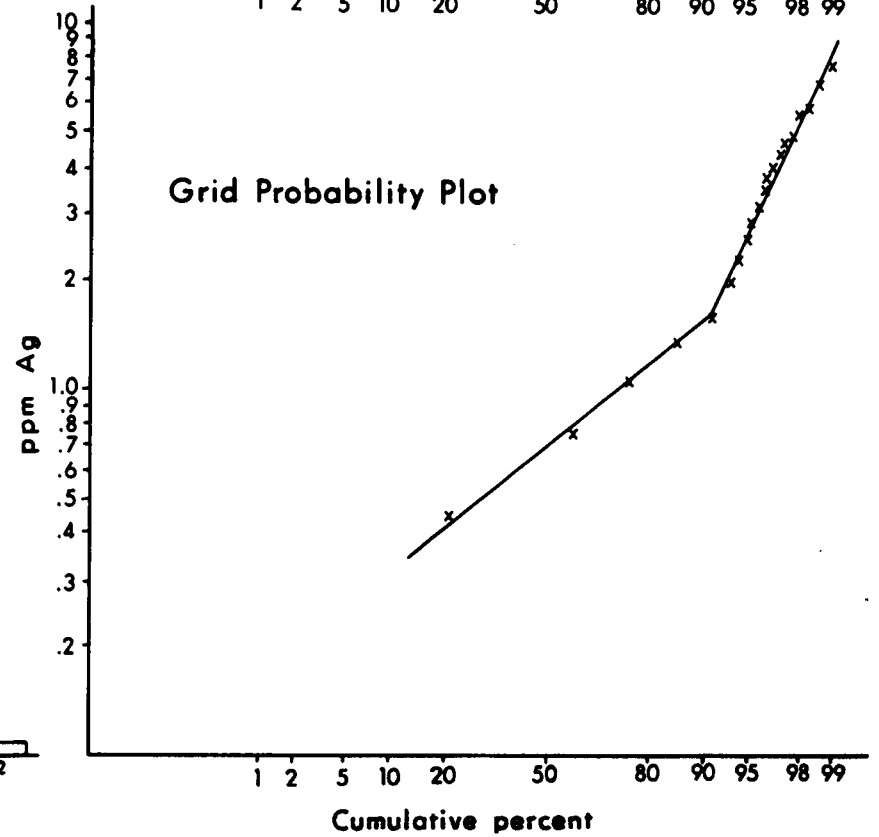
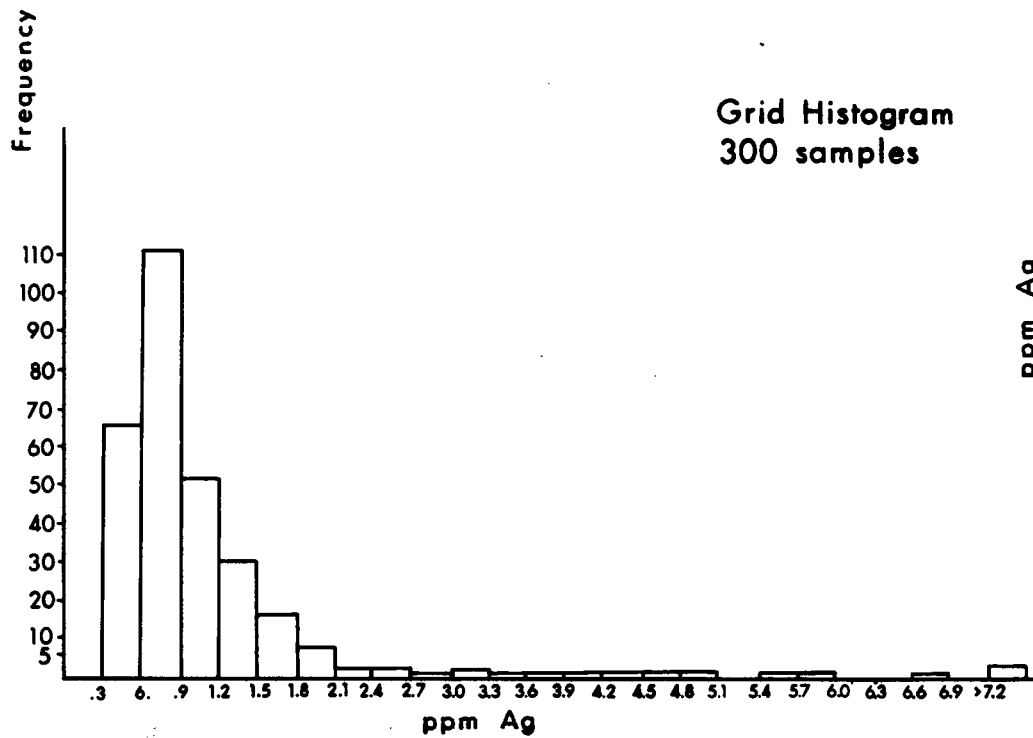
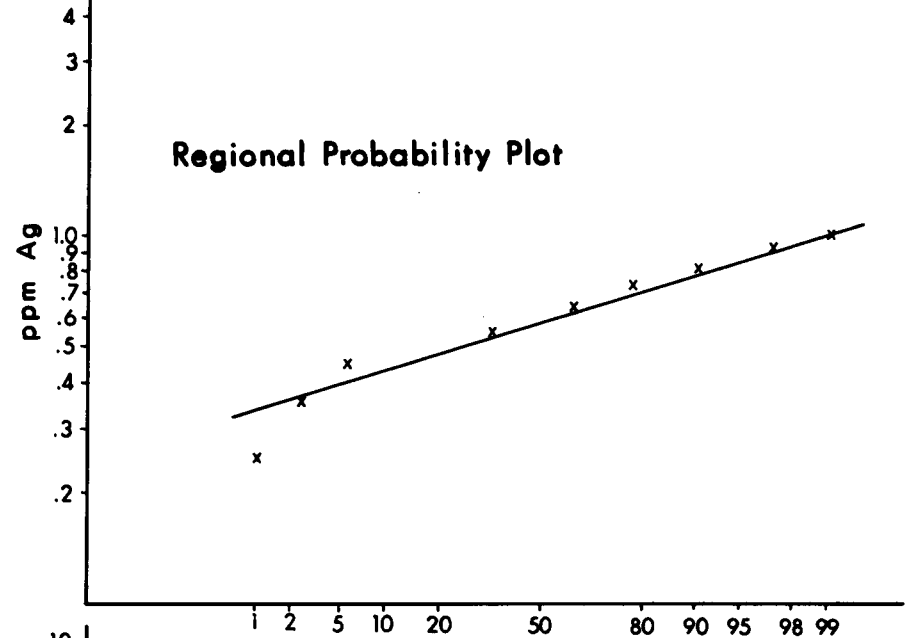
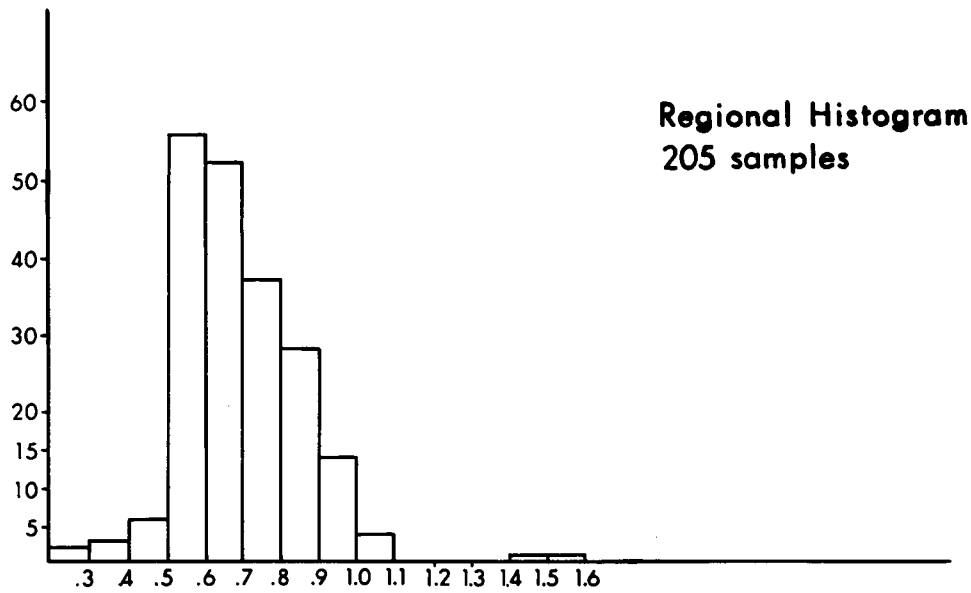
Grid Probability Plot



Lead content of soil samples

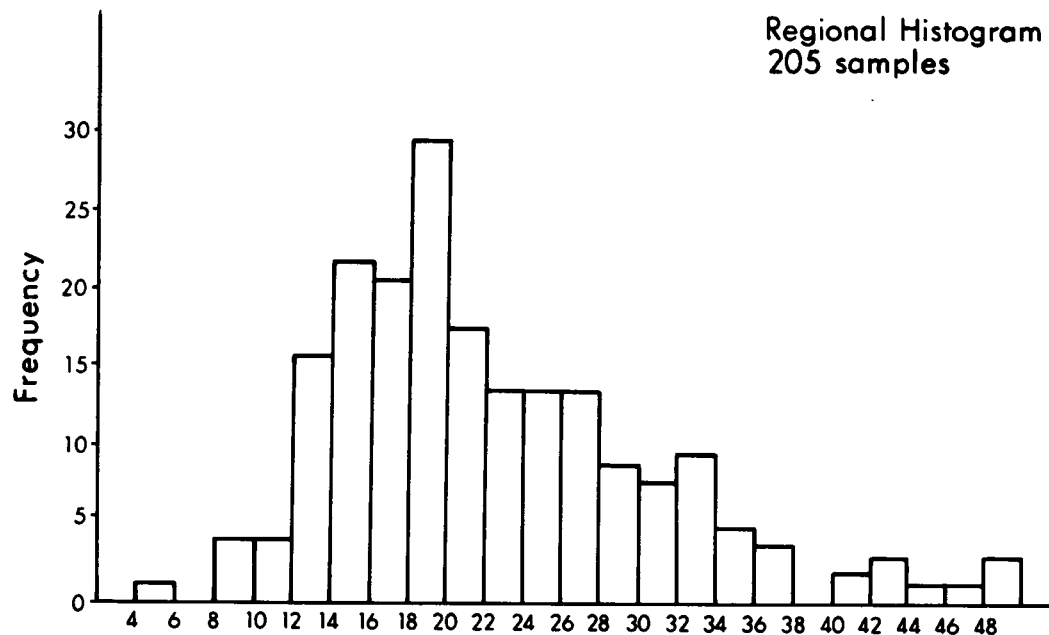


Silver content of soil samples

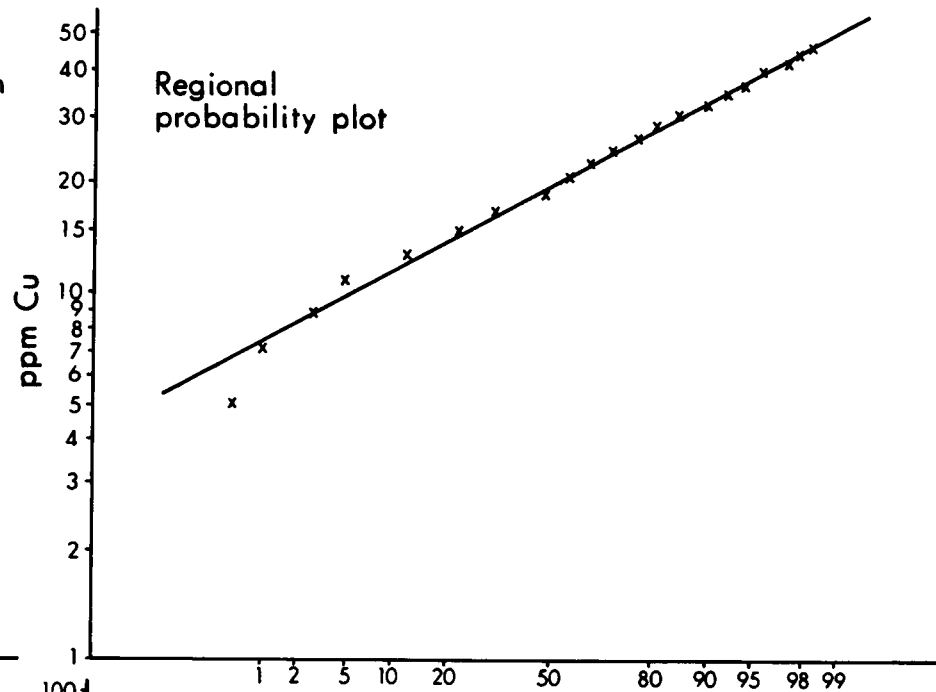


Copper content of soil samples

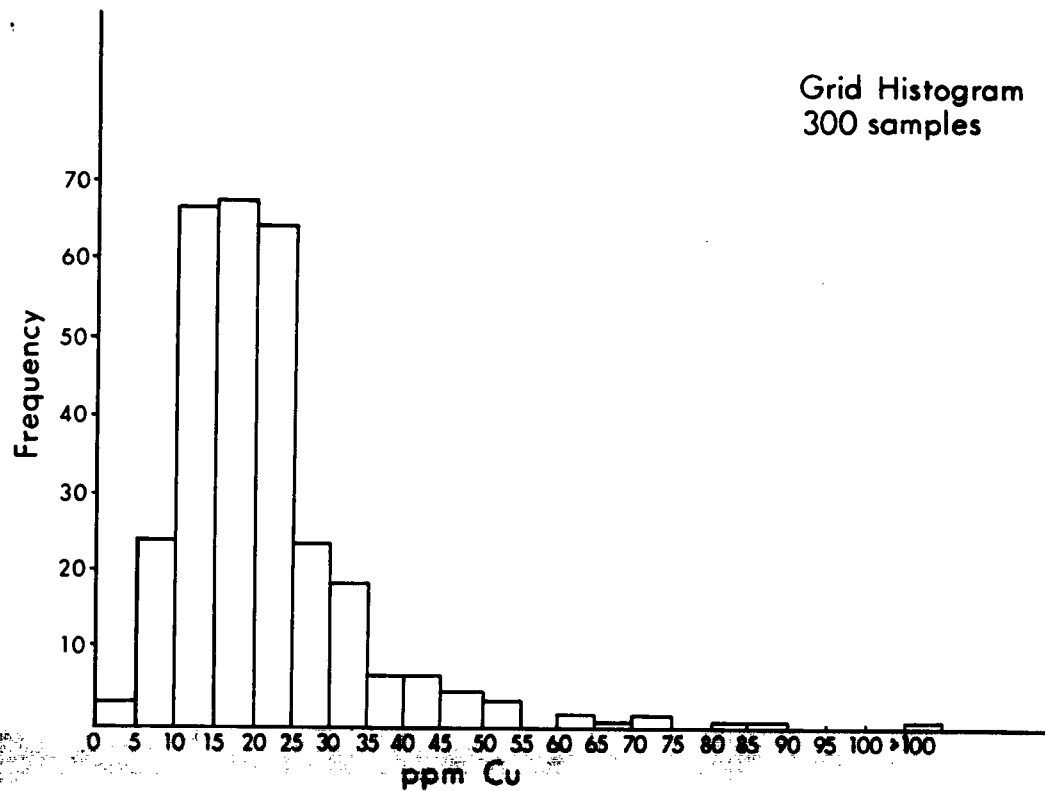
Regional Histogram
205 samples



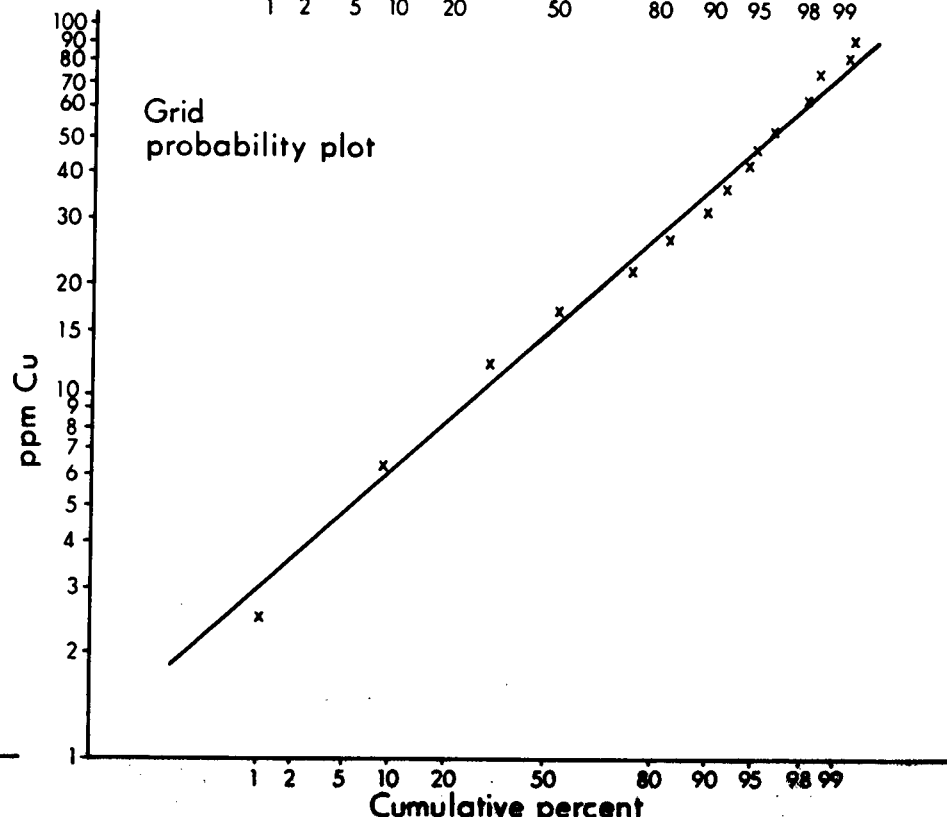
Regional probability plot



Grid Histogram
300 samples



Grid probability plot



DIAMOND DRILLING

One diamond drill hole (79-10) was completed within the boundary of the Group V (TECT 4 - COG 4) 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-79-10	280°	-89°	84.75 metres

Several sections from this 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>
79-10	1901-0	9.04-9.70	0.30	tr	0.01	0.02	tr
	1902-0	10.95-11.10	0.15	tr	0.02	0.02	tr
	1903-0	11.50-12.40	0.90	tr	0.03	0.02	tr
	1904-0	35.40-36.00	0.60	tr	0.01	0.02	tr
	1905-0	36.00-36.60	0.60	tr	0.02	0.02	tr
	1502-0	57.05-57.45	0.40	0.42	0.90	0.06	0.01
	1503-0	57.45-57.90	0.45	0.10	0.55	0.02	0.01
	1504-0	57.90-58.80	0.90	0.02	0.02	0.02	tr
	1505-0	58.80-59.75	0.95	0.02	0.04	0.02	0.01
	1506-0	59.75-60.20	0.45	0.02	0.02	0.02	tr
	1507-0	60.20-60.65	0.45	0.06	0.03	0.02	tr
	1508-0	60.65-61.25	0.60	0.14	0.82	0.02	0.01
	1509-0	61.25-61.55	0.30	0.12	0.54	0.10	0.01
	1510-0	61.55-62.65	1.10	0.78	2.25	0.06	tr
	1511-0	62.75-63.40	0.65	0.02	0.06	0.02	0.01
	1512-0	63.40-64.00	0.60	0.02	0.04	0.02	0.01
	1513-0	64.00-64.60	0.60	0.08	0.15	0.62	tr
	1514-0	73.15-75.00	1.85	tr	0.02	0.02	tr
	1515-0	75.00-76.15	1.15	tr	0.01	0.02	tr
	1516-0	76.15-78.05	1.90	tr	0.01	0.02	tr
		Composite					
		56.25-57.90		0.15	1.30	0.03	0.01
		(1.65m/5.4 ft.)					
		60.65-62.65		0.48	1.56	0.06	0.01

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 V (TECT 4 - COG 4).
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. Kostiuik - Geochemical Sampler - August 14-16, 24, and 31 September 1, 1979 6 days @\$75.00/day	\$ 450.00
	R. Laird - Geologist - August 14-17, 27-31, September 6-14, 1979 18 days @\$90.00/day	1 620.00
	J. Chapman - Geologist - October 4-8, 1979 5 days @\$90.00/day	450.00
	T. Bojczyszyn - Geologist - September 7, 10-12, October 1-5, 1979 9 days @\$90.00/day	810.00
	T. Bojczyszyn - Geologist (Report Writing) February 31, March 6, 1980 2 days @\$125.00/day	250.00
	L. Smith - Supervision - October 4-5, 1979 2 days @\$125.00/day	250.00
	L. Smith - Supervision (Report Writing) January 21-25, February 11, 18-22, 1980 11 days @\$175.00/day	1 925.00
B.	<u>Transport</u>	
	4 Wheel Drive Vehicle Rental \$30.00/day X 60 days	1 800.00
	Fuel for vehicle 60 days X \$5.00/day	300.00
C.	<u>Accommodation and Meals</u>	
	40 man days X \$25.00/man day	1 000.00
D.	<u>Assaying</u>	
	64 Geochemical Assays @\$5.00/sample	320.00
	15 Core Sample Assays @\$25.00/sample	375.00
E.	<u>Diamond Drilling</u>	
	84.75 metres @\$135/metre	<u>11 441.25</u>
		\$20 991.25

APPENDIX I

Assay Certificates

NORCEN ENERGY RESOURCES LIMITED,
 7th Flr., 715 - 5th Avenue S.W.,
 Calgary, Alberta T2P 2X7



File No. 16032
 Date October 19, 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
"Core Samples"				
1502-0	.010	.06	.42	.90
1503-0	.010	.02	.10	.55
1504-0	Trace	.02	.02	.02
1505-0	.010	.02	.02	.04
1506-0	Trace	.02	.02	.02
1507-0	Trace	.02	.06	.03
1508-0	.010	.02	.14	.82
1509-0	.010	.10	.12	.54
1510-0	Trace	.06	.78	2.25
1511-0	.010	.02	.02	.06
1512-0	.010	.02	.02	.04
1513-0	Trace	.62	.08	.15
1514-0	Trace	.02	Trace	.02
1515-0	Trace	.02	Trace	.01

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

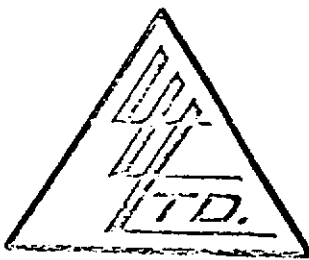
Refractometers Retained one month.
 Retained one month
 specific arrangements
 made in advance.

Ed M. Isaac

Licensed Assayer of British Columbia

NORCEN ENERGY RESOURCES LIMITED,
 7th Flr., 715 - 5th Avenue S.W.,
 Calgary, Alberta T2P 2X7

File No. 18032
 Date October 19, 1979
 Samples Cores



ATTN: Laurie Smith

Certificate of
 ASSAY OF
 LORING LABORATORIES LTD.

Page # 2

SAMPLE No.	OZ./TON GOLD	OZ./TON SILVER	% Pb	% Zn
1516-0	Trace	.02	Trace	.01

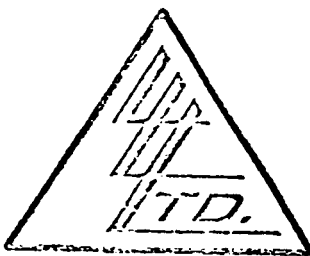
I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES

Objects Retained one month.
 s Retained one month
 s specific arrangements
 ce in advance.

[Signature]

Licensed Assayer of British Columbia

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



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

ATN: L. J. Smith

Certificate of
ASSAY
 LORING LABORATORIES LTD.

Page 6

SAMPLE No.	PPM	PPM	PPM	PPM
	Cu	Pb	Zn	Ag
L00S 2+25W 2+50W 2+75W 3+00W	31	28	139	0.7
	18	80	360	1.6
	22	35	153	0.8
	20	112	470	1.8
1+75W 2+00W	11	18	74	0.6
	22	260	620	1.7

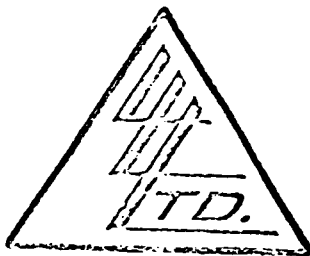
I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES

s Retained one month.
 Retained one month
 s) cific arrangements
 in vance.

C. L. M. A. S. A. S. E.
 Licensed Assayer of British Columbia

To NORCEM ENERGY RESOURCES LIMITED,
 7th Flr., 715 - 5th Avenue S.W.,
 Calgary, Alberta T2P 2X7

File No. 16032
 Date October 19, 1979
 Samples Cores



ATTN: Laurie Smith

Certificate of
 ASSAY of
 LORING LABORATORIES LTD.

Page # 7

SAMPLE No.	OZ./TON GOLD	OZ./TON SILVER	% Pb	% Zn
1901-0	Trace	.02	Trace	.01
1902-0	Trace	.02	Trace	.02
1903-0	Trace	.02	Trace	.03
1904-0	Trace	.02	Trace	.01
1905-0	Trace	.02	Trace	.02

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
 specific arrangements
 in advance.

L. M. J. J. J.

Licensed Assayer of British Columbia

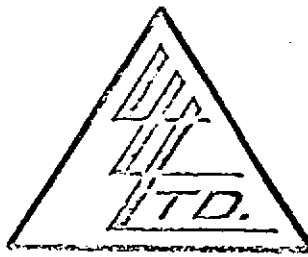
Norcen Energy Resources Limited

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 2+25W	23	34	183	1.0
2+50W	14	34	340	0.9
2+75W	8	19	360	1.2
3+00W	21	31	87	0.7
3+25W	6	14	77	0.8
3+50W	33	36	93	0.7
1050N				
0+75W	82	1310	6300	3.5
1+00W	8	41	176	0.4
1+25W	12	22	88	0.5
1+50W	19	20	96	0.5
1+75W	11	29	120	0.9
2+00W	62	64	430	1.2
2+25W	15	31	72	0.5

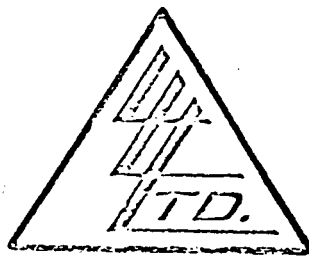
I Herby Certify THAT THE ABOVE RESULTS ARE THOSE
ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES

Refracts Retained one month.
Pb's Retained one month
Ass specific arrangements
see in advance.

L. J. Smith

Licensed Assayer of British Columbia

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



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

ATTN: L. J. Smith

Certificate of
 ASSAY OF
 LORING LABORATORIES LTD.

Page 8

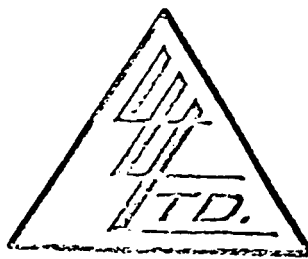
SAMPLE No.	PPM Cu	PPM Pb	PPM Zn	PPM Ag
1050N 2+50W	11	76	87	0.3
2+75W	70	204	460	3.2
3+00W	20	44	113	0.8
3+25W	10	95	172	0.5
3+50W	17	26	120	0.5
3+75W	13	24	54	0.5
4+00W	25	34	92	0.6
4+25W	23	27	68	0.7
4+50W	24	42	85	0.6
4+75W	27	23	78	0.3
1100N				
0+25W	29	118	280	0.8
0+50W	12	410	181	1.7
0+75W	24	25	86	0.6
1+00W	15	21	80	0.5
1+25W	20	340	380	1.5
1+50W	14	25	88	0.5
1+75W	18	47	110	0.7
2+00W	14	28	64	0.6
2+25W	33	42	98	0.4

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

Refracts Retained one month.
 Retained one month
 specific arrangements
 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
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SAMPLE No.	PPM Cu	PPM Pb	PPM Zn	PPM Ag
L10CN 2+50W	11	22	58	0.4
2+75W	14	24	63	0.5
3+00W	18	46	105	0.5
3+25W	13	35	360	1.2
3+50W	21	37	83	1.5
3+75W	45	23	71	0.5
4+00W	26	39	108	0.7
4+25W	17	26	72	1.0
4+50W	10	21	46	0.6
4+75W	20	25	72	0.6
5+00W	8	13	42	0.5

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

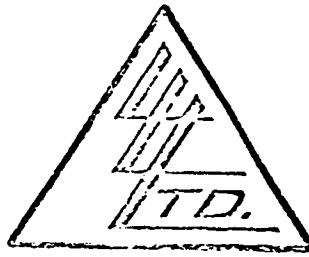
■ Rejects Retained one month.
 ■ s Retained one month
 ■ ss specific arrangements
 ■ ue in advance.

..... *exmofuae*

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
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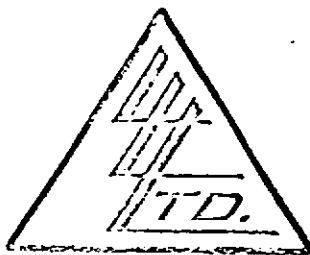
SAMPLE No.	PPM Cu	PPM Pb	PPM Zn	PPM Ag
00+225W	13	29	106	1.0
250W	11	18	460	0.8
275W	21	61	194	1.2
300W	39	123	166	1.2
325W	12	29	132	0.8
350W	11	22	61	0.6
375W	12	24	70	0.7
400W	10	17	50	0.5
425W	8	11	60	0.8
450W	5	10	34	0.8

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

Rejects Retained one month.
 Losses Retained one month
 For specific arrangements
 advise in advance.

Licensed Assayer of British Columbia

Morcan 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 11

SAMPLE No.	PPM Cu	PPM Pb	PPM Zn	PPM Ag
125W	31	28	300	0.8
150W	14	14	53	0.5
175W	16	178	710	1.1

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
 in advance.

E. M. Isaac

Licensed Assayer of British Columbia

APPENDIX II

DIAMOND DRILL LOGS

NORCEN ENERGY RESOURCES LIMITED
DIAMOND DRILL LOGS

PROPERTY: CRYSTAL CREEK

SHEET NUMBER: 1 of 2

NUMBER: 82K/15W

STARTED: Oct. 5/79

COMPLETED: Oct. 9/79

HOLE NUMBER: CC DDH 79-10

CLAIM NAME: TECT 4

COLLAR:

ELEVATION:

BEARING: 17.04 278° 32m 290° 56m 281°

LOGGED BY: TOM BOJCZYSZYN

PROPOSED DEPTH:

ULTIMATE DEPTH: 84.75

DIP: -84° -85° -81°

DESCRIPTION	DEPTH (metres)	% CORE RECOVERY	INTERVAL (metres)	ASSAY NUMBER	%Pb	%Zn	oz/ton		%W
							Ag	Au	
CASING	3.05								
5.20 - 9.60: certain horizons are calcareous	4.25	83							
- black laminated lenses are deformed in calcareous pelite	5.20	95							
- echlelon veins perpendicular to bedding are composed of	7.90	83							
quartz in the pelite portion and calcite in the calcareous	10.95	88							
portion	13.40	77							
10.95: superimposed folding	16.45	72							
14.95: black pelite laminate have minor displacement along	19.20	107							
foliation planes (15° to core)	20.10	94							
17.35 - 26.60: calcareous pelite	22.25	109							
- marcasite is often replaced by quartz and dolomite in non-	23.15	94							
calcareous sections while in calcareous section marcasite in	24.40	96							
extreme cases is completely replaced by calcite									
- salt and pepper fine grained grit:	26.20	105							
24.25 - 24.85	28.65	98							
26.20 - 26.90	31.70	90							
27.00 - 31.30 quartzite to fine grained grit (towards base),	34.75	97							
disseminated pyrite to lmm	36.60	95							
(few pentagonal crystals)	38.25	103							
Siliceous pelite:	39.95	97							
33.90 - 34.40	44.90-46.20			0.01	1909-0	18.59	0.13	52.46	0.04
35.70 - 38.25	47.45 - 49.60								
44.20 - 44.50		41.15	100						
hexagonal lmm pyrite > 5% in sections:	41.90	100							
35.70 - 37.50	43.40	100							
38.25 - 41.45 (includes 10mm marcasite crystals and lmm	44.65	96							
radiating clusters of arsenopyrite)	45.80	117							
43.55 - 44.65 (5mm marcasite, pentagonal lmm pyrite,	47.25	83							
lmm arsenopyrite)	49.70	75							
46.65-46.95: white specks of dolomite - replacement of fine									
grained pyrite	52.75	67							

NORCEN ENERGY RESOURCES LIMITED
DIAMOND DRILL LOGS

PROPERTY: CRYSTAL CREEK

HOLE NUMBER: CC DDH 79-10

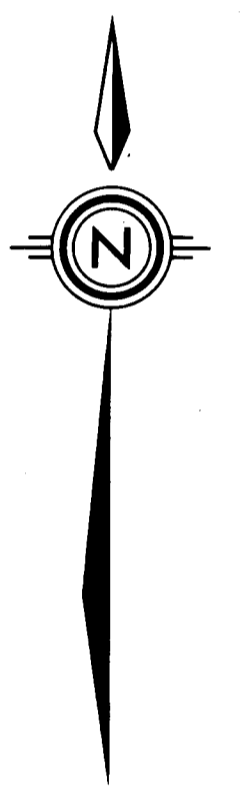
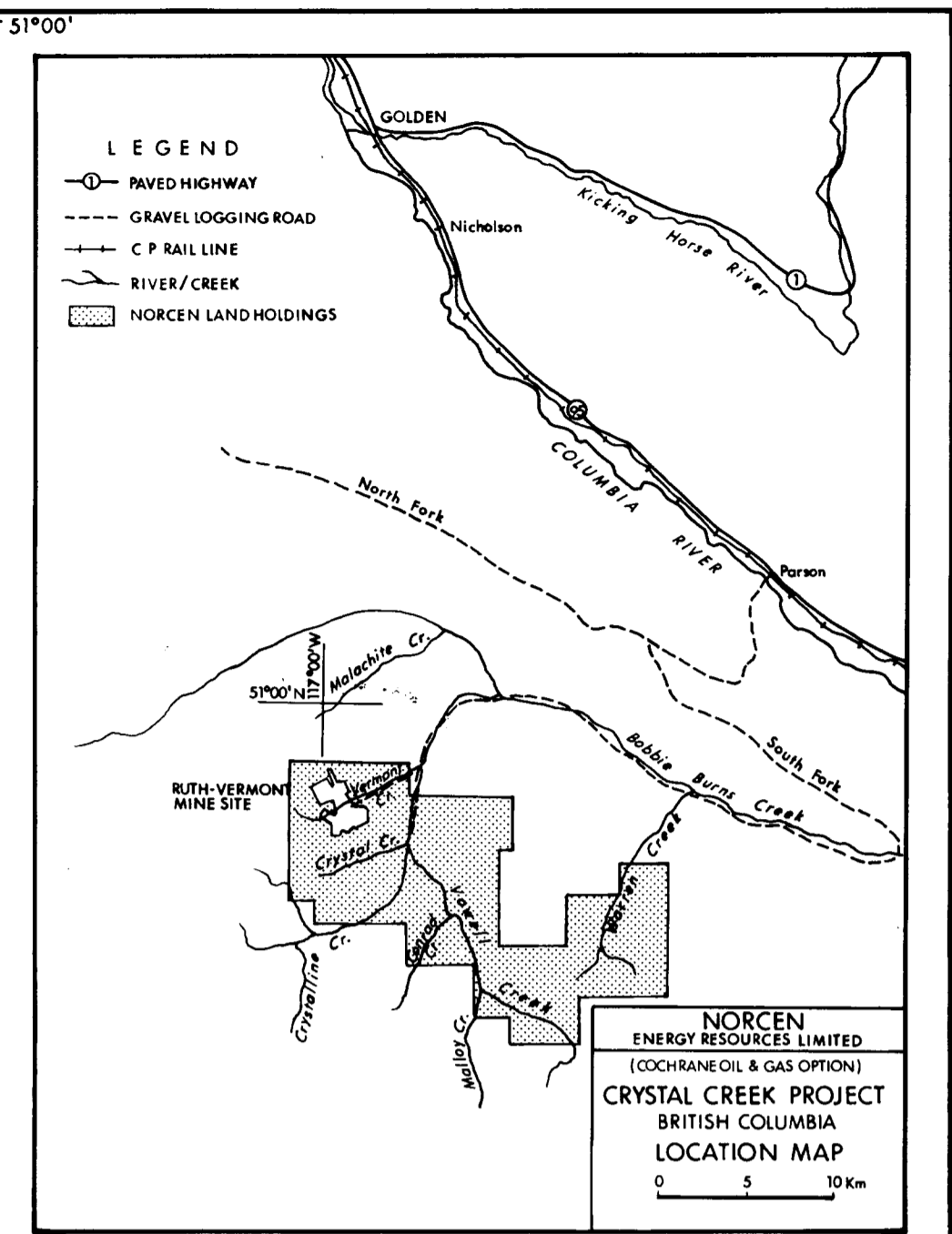
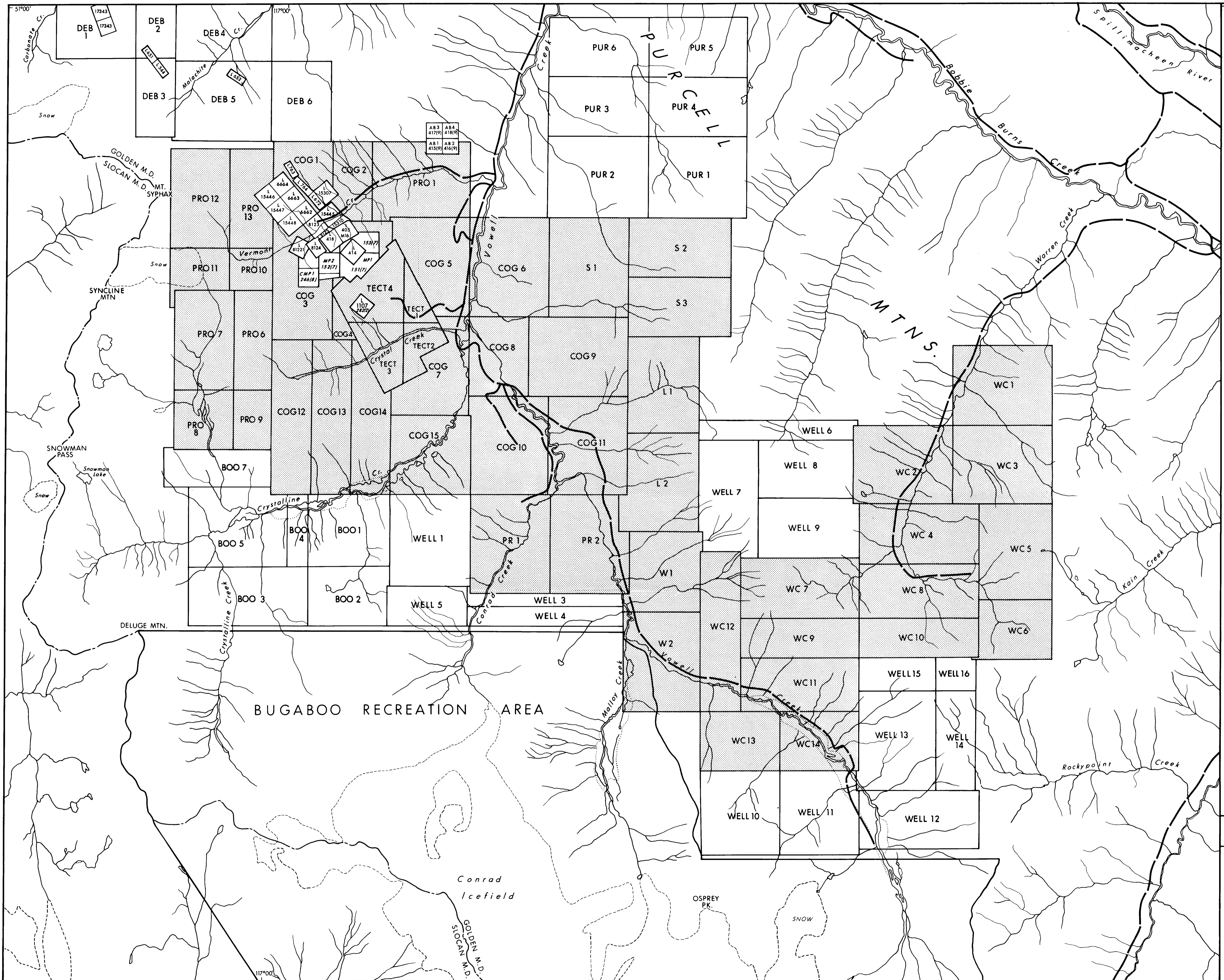
SHEET NUMBER: 2 of 2

DESCRIPTION	DEPTH (metres)	% CORE RECOVERY	INTERVAL (metres)	ASSAY NUMBER	oz/ton			%W
					%Pb	%Zn	Ag	
49.60 - 52.15: black pelite								
50.35 - 52.15: subeuhedral hexagonal 1mm cluster of pyrite (5mm) and 5mm marcasite crystals - pyrite, marcasite polymorphism?	53.35	28						
	54.25	63						
	56.25	87						
56.75 - 57.25: siliceous section, massive sulphide horizons (20mm), quartz dolomite veins, 5mm dolomite crystals with 5mm clusters of black sphalerite, laminated black pelite, fine grained grit sections, disseminated pyrite <1/10mm, 10mm marcasite crystals (50% replaced by quartz dolomite)			0.60	1499-0	0.04	2.55	0.02	0.01
			0.20	1501-0	0.02	0.05	0.02	0.01
	57.45	116	0.40	1502-0	0.42	0.90	0.06	0.01
	57.90	188	0.45	1503-0	0.10	0.55	0.02	0.01
	58.80	66						
	59.75	95						
	60.65	128	0.45	1507-0	0.06	0.03	0.02	tr
			0.60	1508-0	0.14	0.82	0.02	0.01
	61.55	105	0.30	1509-0	0.12	0.54	0.10	0.01
Reduction to BQ	62.65	82	1.10	1510-0	0.78	2.25	0.06	tr
57.15: fractures perpendicular to bedding carry minor galena	63.40	87	0.65	1511-0	0.02	0.06	0.02	0.01
61.55: 5mm marcasite replaced 50% by galena	64.00	125	0.60	1512-0	0.02	0.04	0.02	0.01
61.75 - 62.75: broken rock, black pelite, becomes graphitic at base, after 62.65 powdered black pelite and graphite, disseminated pyrite throughout black pelitic sections	64.60	67	0.60	1513-0	0.08	0.15	0.62	tr
	65.20	100						
	68.25	39						
Entire hole consists of laminated and interbedded:	70.10	92						
dark grey pelite: 1/2, 1, 5, 20, 30, 40(mm)	71.95	49						
medium grey pelite: 1/2, 1, 5, 10, 20, 40, 1400(mm)	73.15	88						
light grey pelite: 1/2, 1, 5, 40, 100 (mm)								
black pelite: 1, 2, 10, 50 (mm)	75.80	32						
pale yellow, white speckled pelite: 100m	76.15	35						
	78.05	42						
	79.55	100						
	82.30	93						
Veins are common throughout hole: quartz, calcite, dolomite, ankerite, siderite (1, 4, 10mm)	83.20	89						
Often veins will have quartz core and ankerite rim	83.80	92						
END OF HOLE	84.75	79						

Casing left in hole.

Vuggy quartz veins: 27.00, 34.00
No water return.

Rods jammed in hole, freed, subsequent BQ reduction.



8141

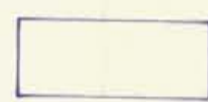
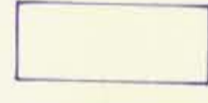

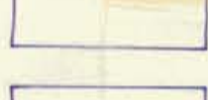





NORCEN LAND HOLDINGS
 TRUCK ROAD

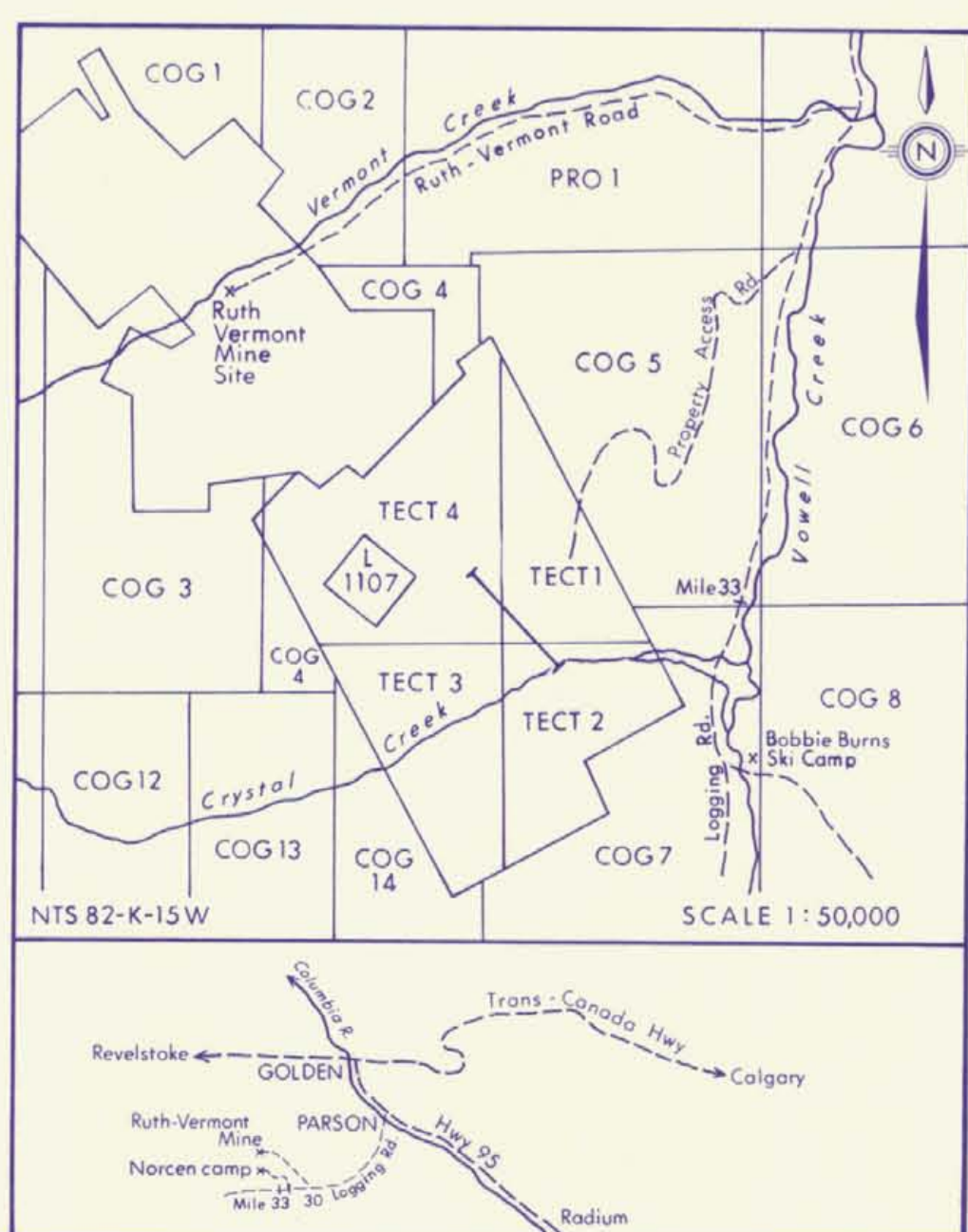
Norcen
 Energy Resources Limited

(COCHRANE OIL AND GAS OPTION)
CRYSTAL CREEK PROJECT
 BRITISH COLUMBIA
LAND HOLDINGS MAP



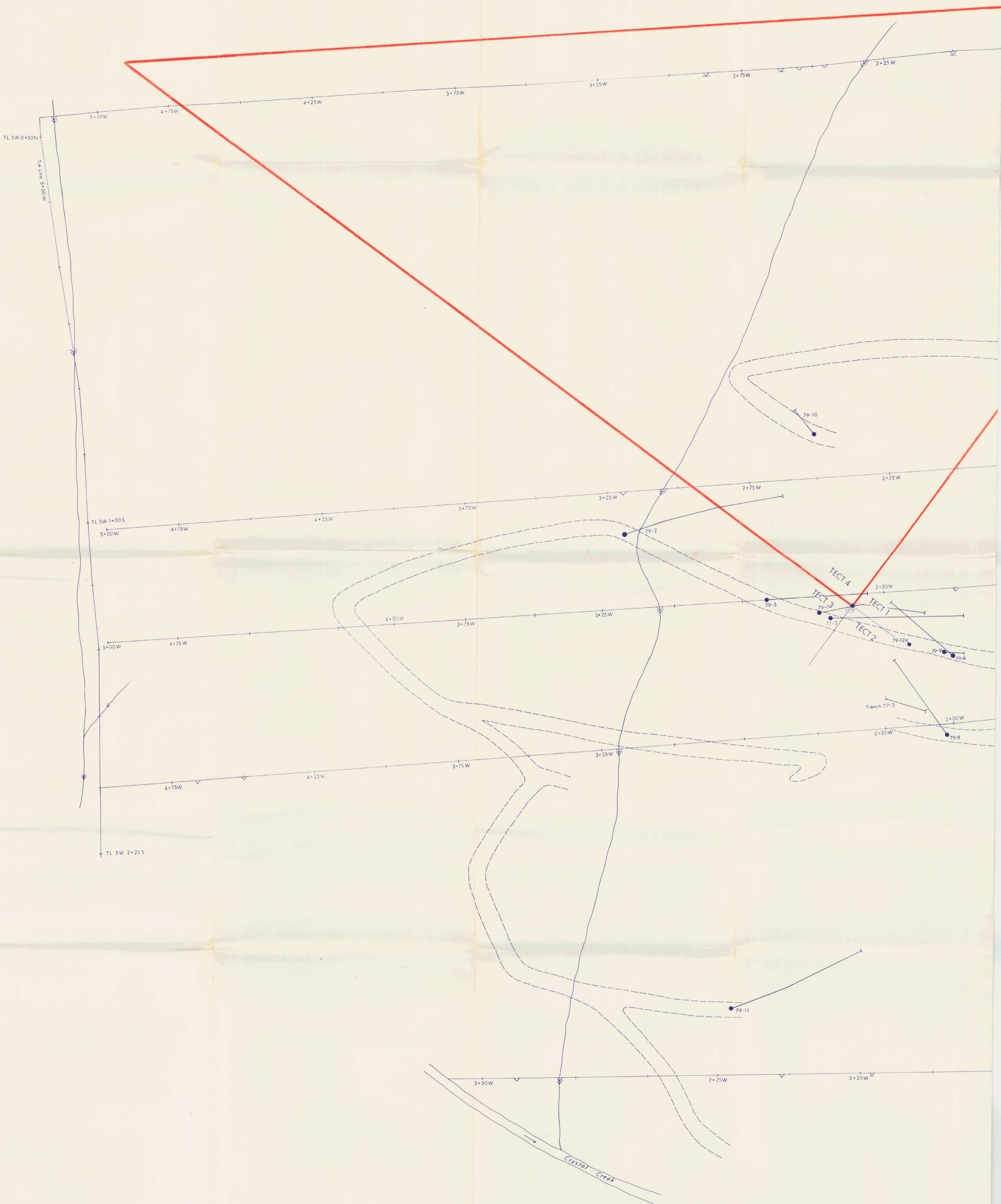


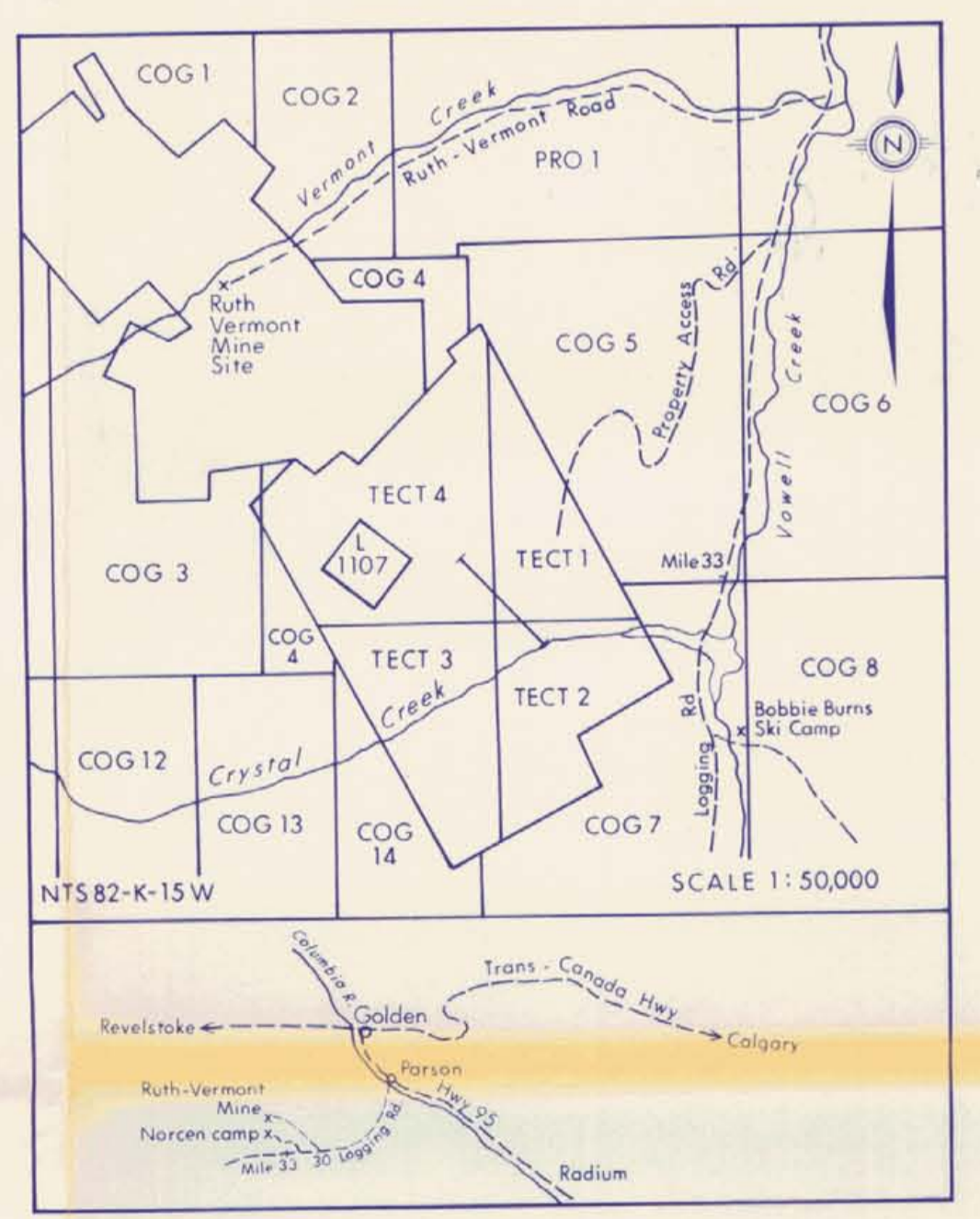
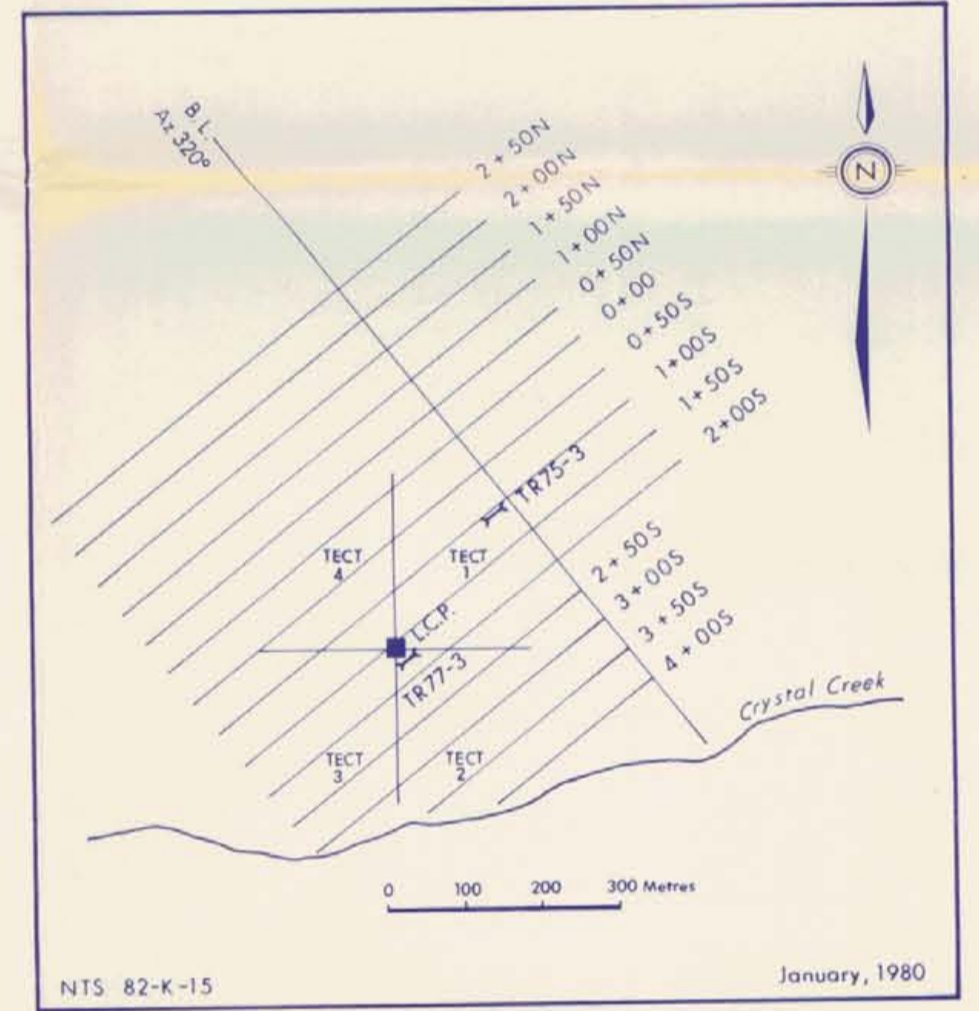
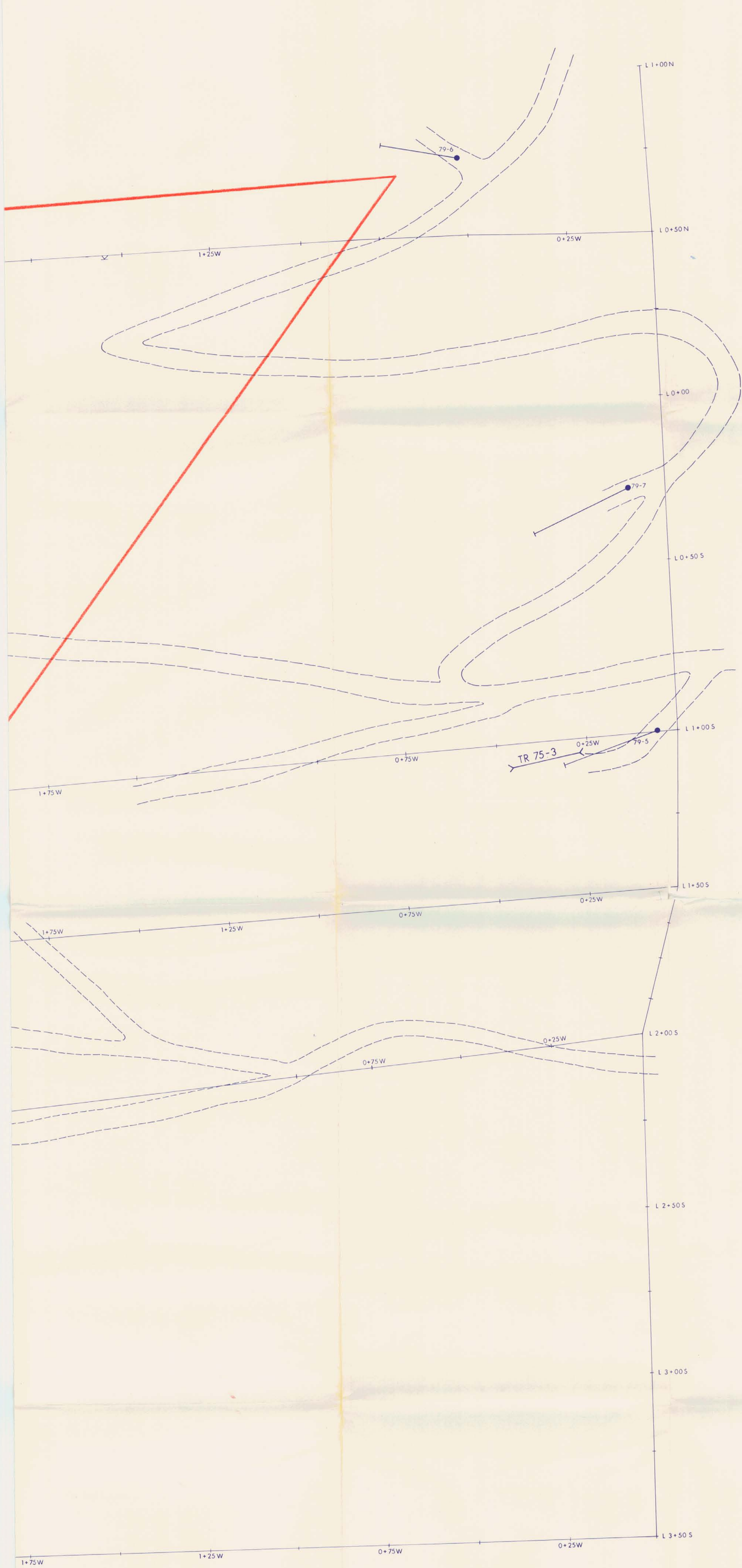
-  2.0 - 3.0 ppm Ag
-  3.0 - 4.0 ppm Ag
-  4.0 - 5.0 ppm Ag
-  5.0 - 10.0 ppm Ag
-  Greater than 10 ppm Ag
-  EXISTING ROADS
-  NORCEN CAT TRAILS
-  L.C.P. LEGAL CORNER POST
-  TRENCH



MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
8141
NO.

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





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

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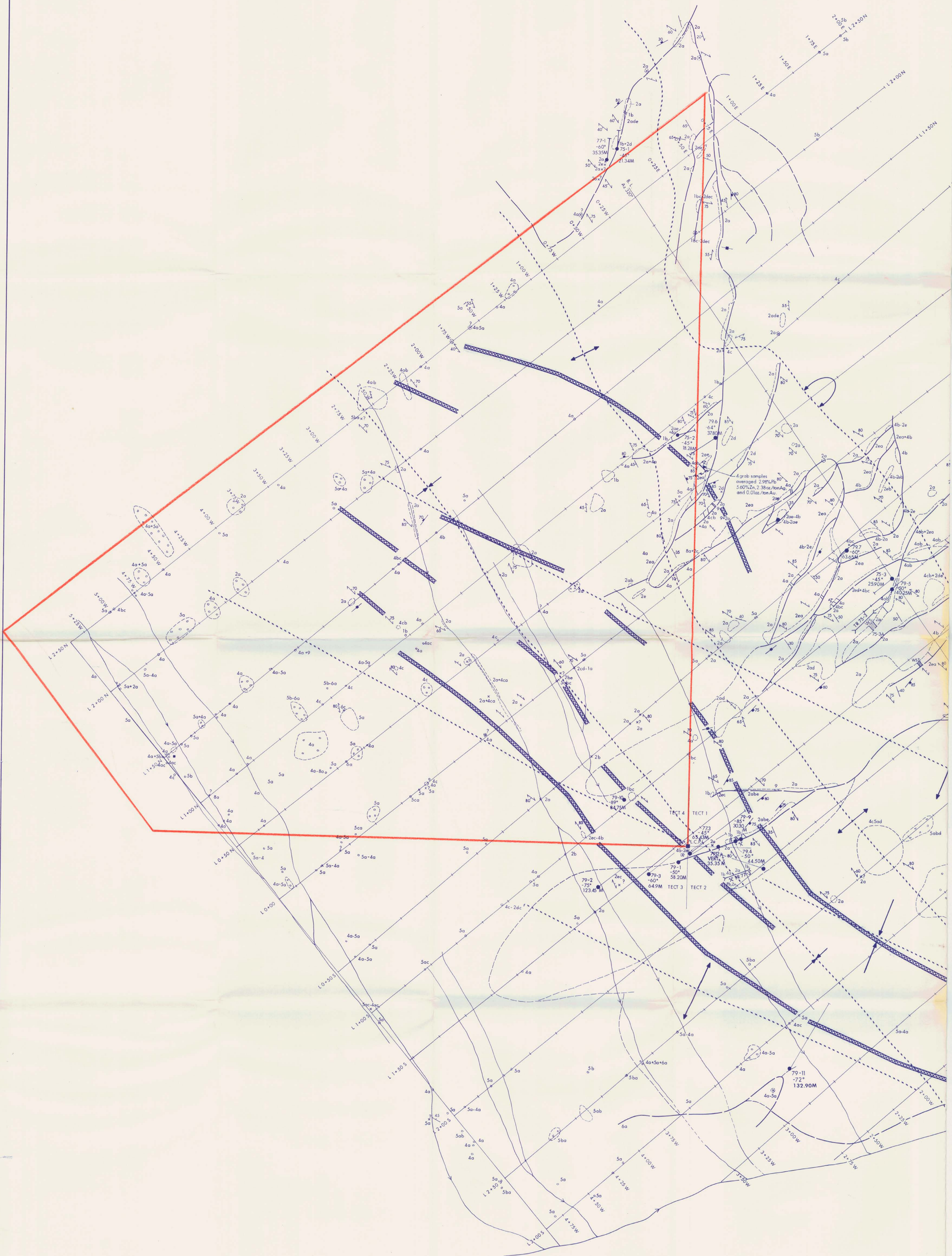
(COCHRANE OIL & GAS LTD OPTION)

CRYSTAL CREEK PROJECT
BRITISH COLUMBIA

DIAMOND DRILL HOLE LOCATION MAP

0 5 10 15 20 25 metres
SCALE 1:500

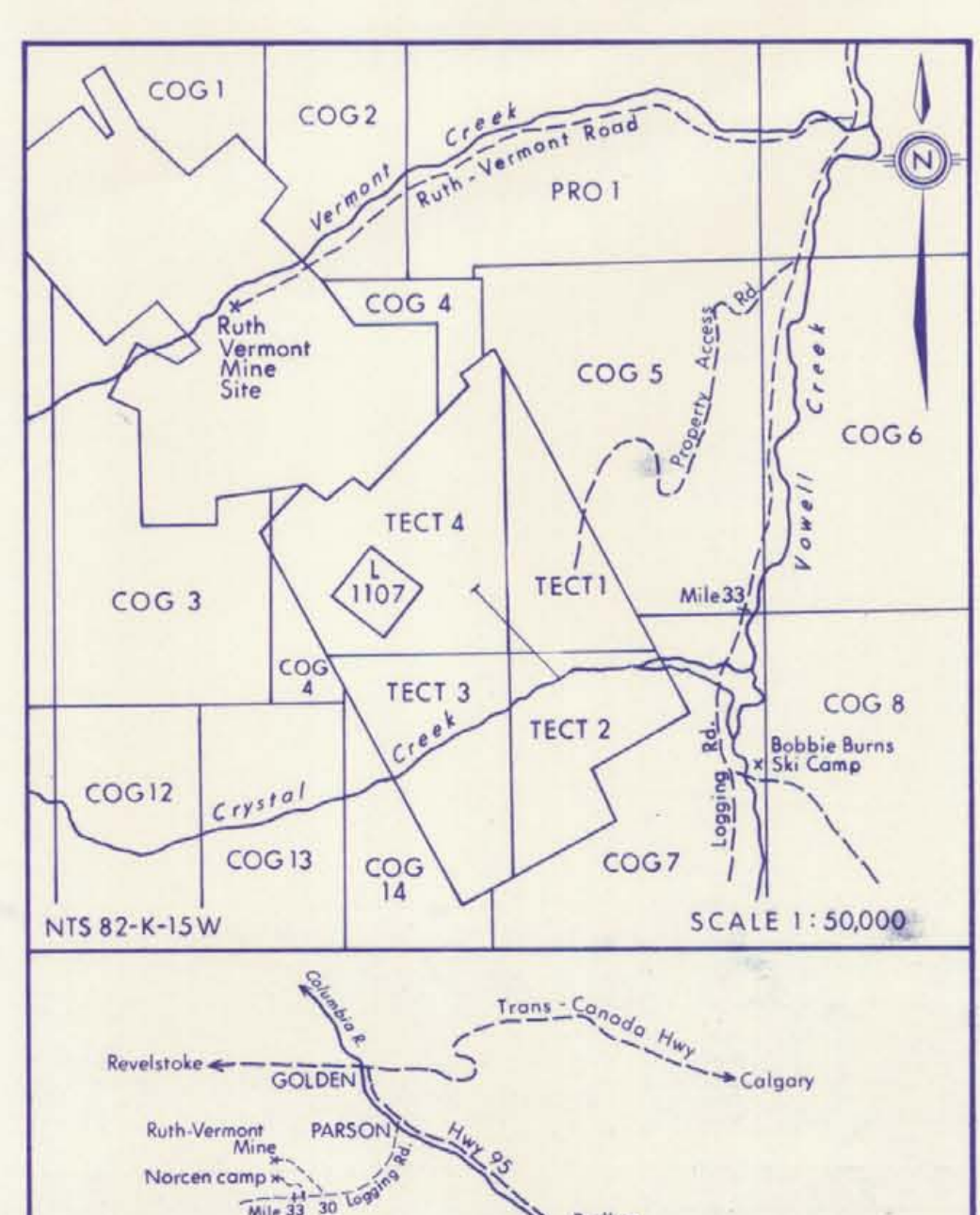
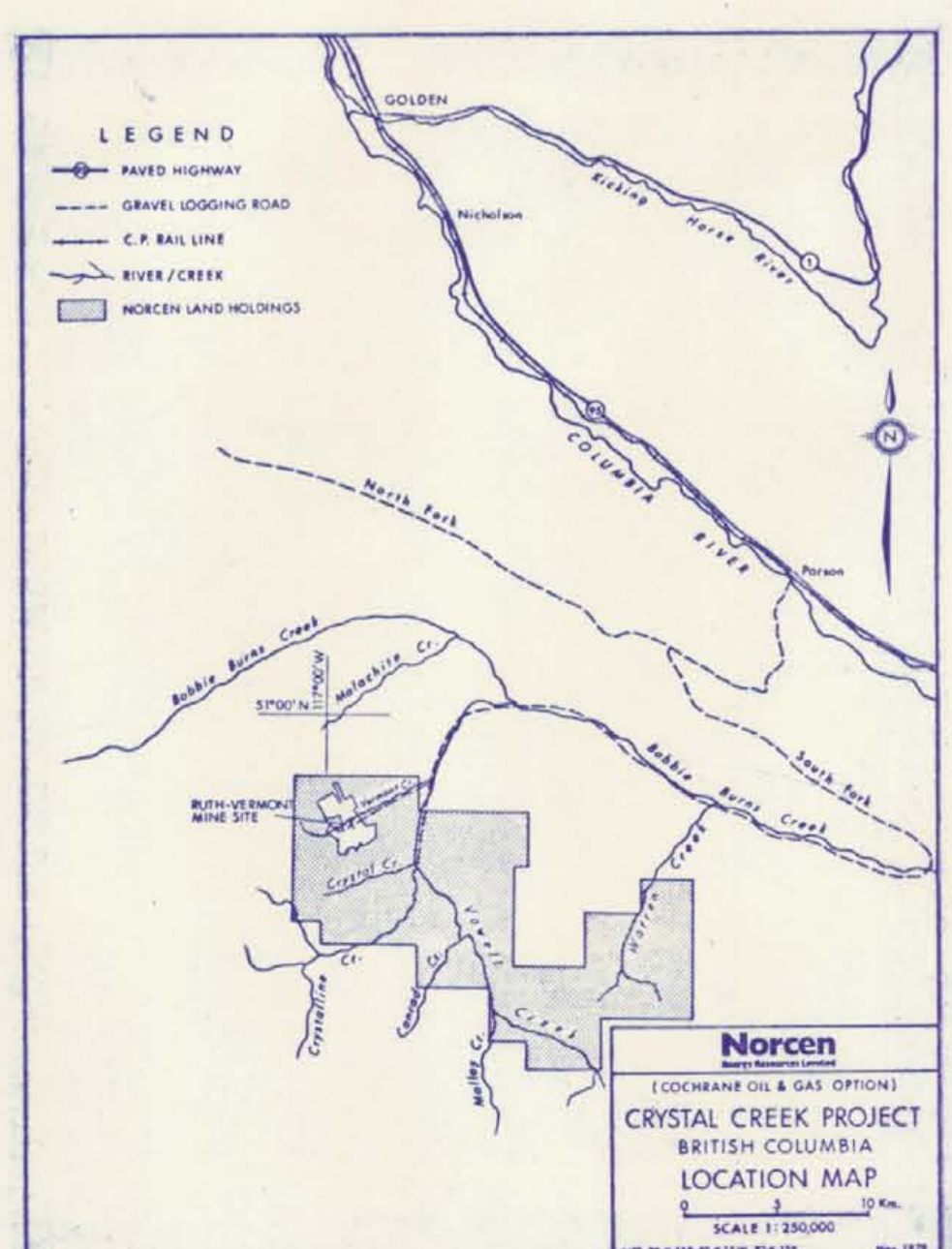
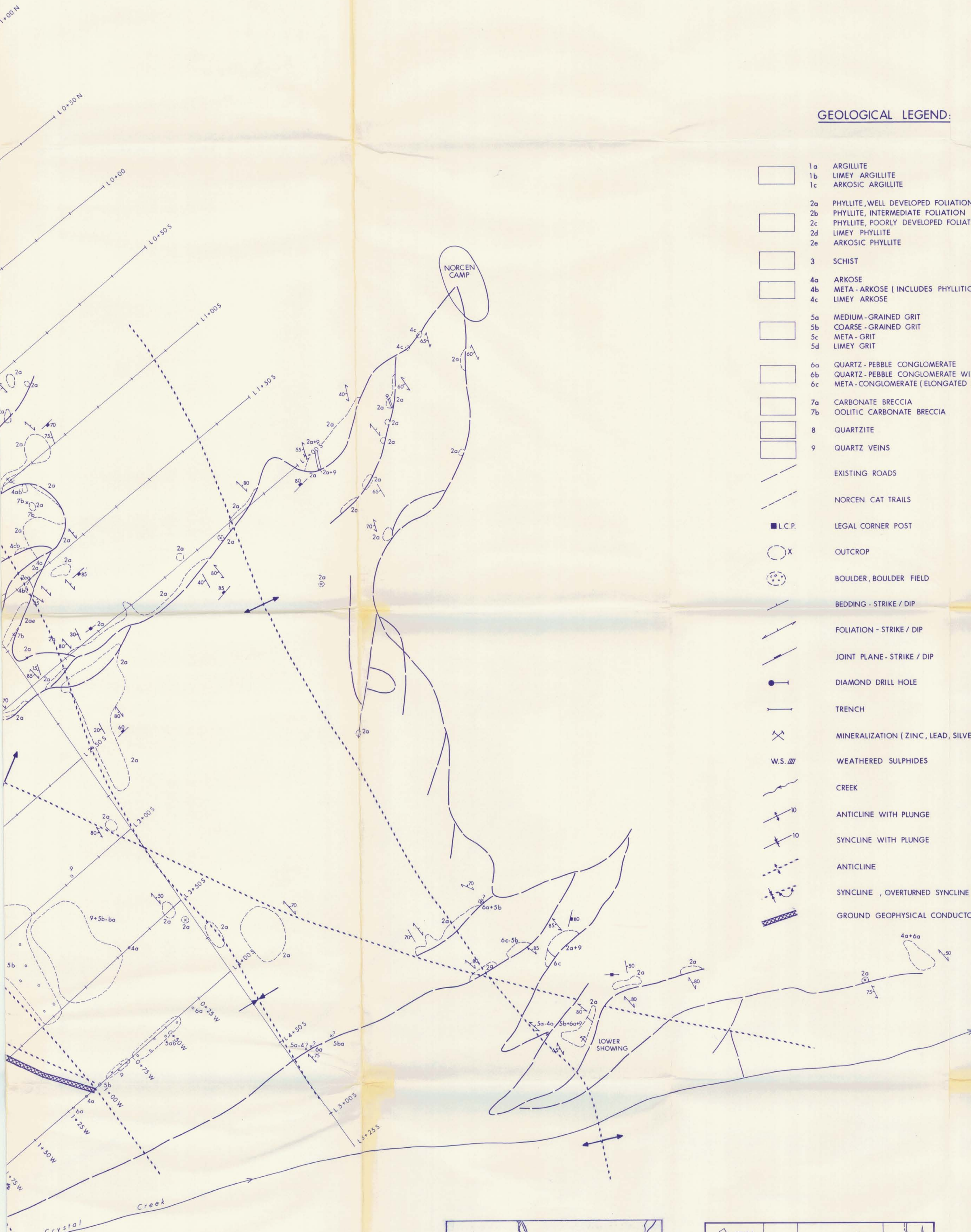
NTS 82-K-15W November, 1979





GEOLOGICAL LEGEND:

- 1a ARGILLITE
- 1b LIMY ARGILLITE
- 1c ARKOSIC ARGILLITE
- 2a PHYLLITE, WELL DEVELOPED FOLIATION
- 2b PHYLLITE, INTERMEDIATE FOLIATION
- 2c PHYLLITE, POORLY DEVELOPED FOLIATION
- 2d LIMY PHYLLITE
- 2e ARKOSIC PHYLLITE
- 3 SCHIST
- 4a ARKOSE
- 4b META-ARKOSE (INCLUDES PHYLLITIC 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 OOLITIC 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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CRYSTAL CREEK PROJECT

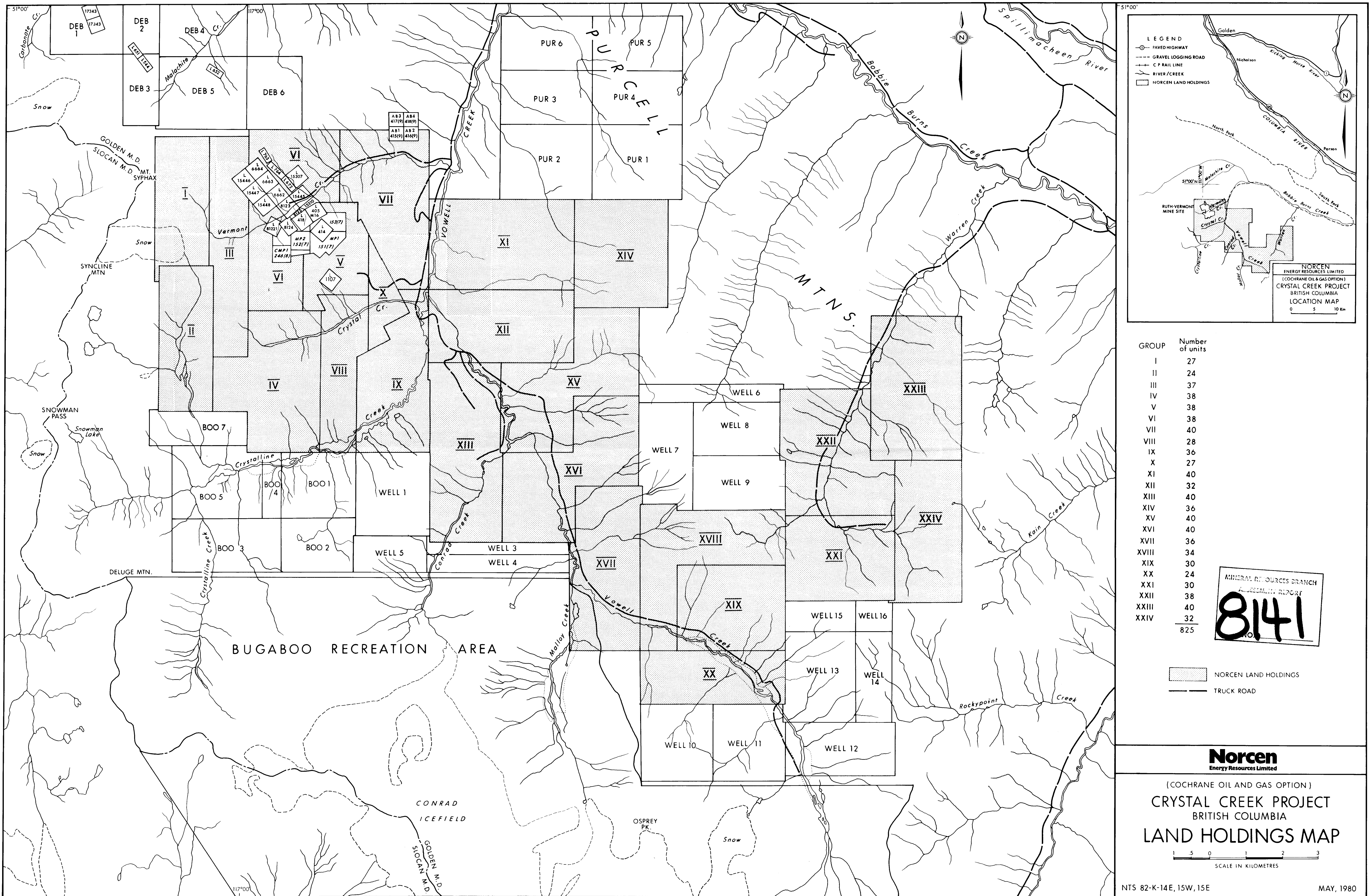
BRITISH COLUMBIA

DETAILED GEOLOGY

0 25 50 75 100 metres

R. LAIRD
November, 1979

NTS 85-K-15W



GROUP	Number of units
I	27
II	24
III	37
IV	38
V	38
VI	38
VII	40
VIII	28
IX	36
X	27
XI	40
XII	32
XIII	40
XIV	36
XV	40
XVI	40
XVII	36
XVIII	34
XIX	30
XX	24
XXI	30
XXII	38
XXIII	40
XXIV	32
TOTAL	825

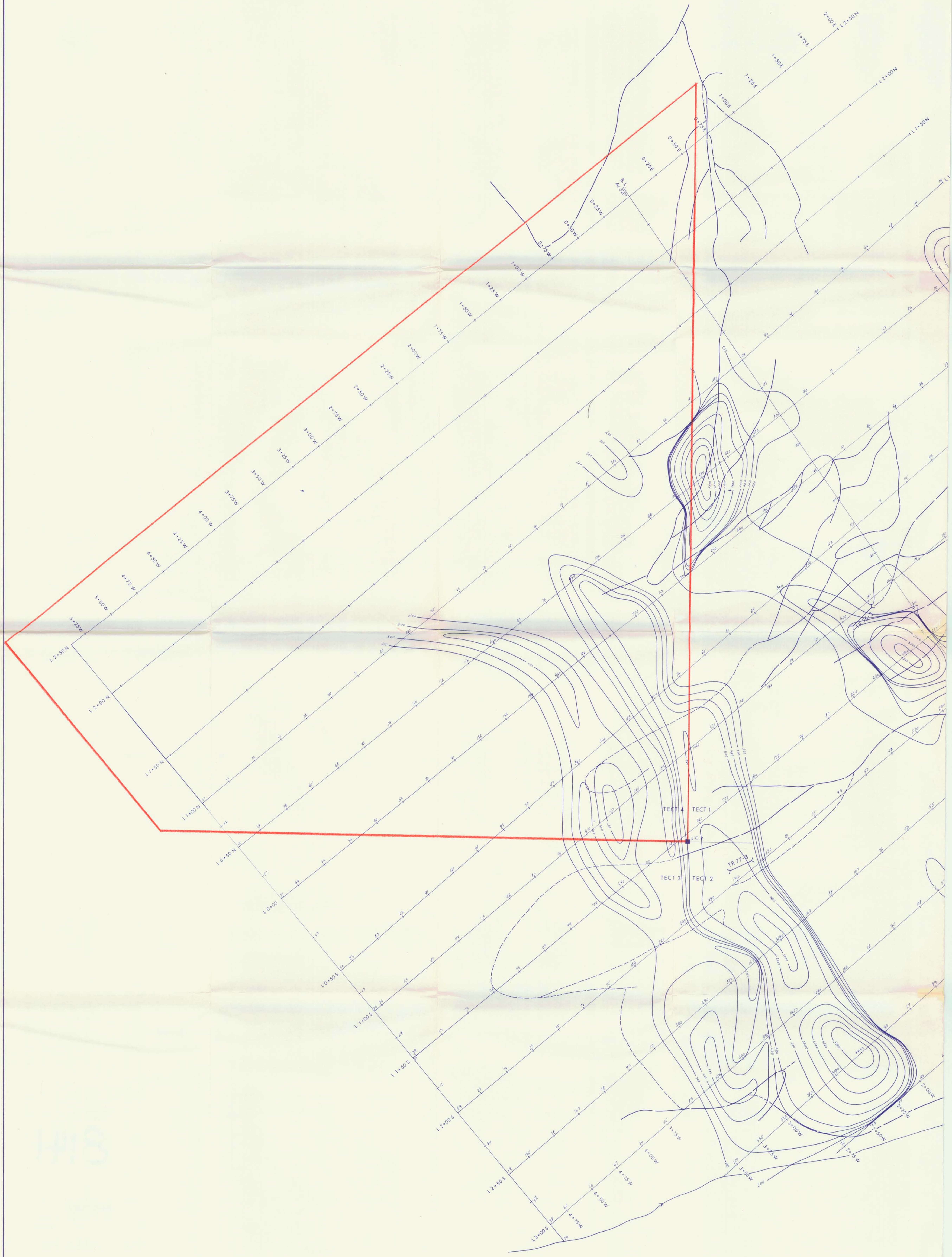
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NORCEN LAND HOLDINGS
TRUCK ROAD

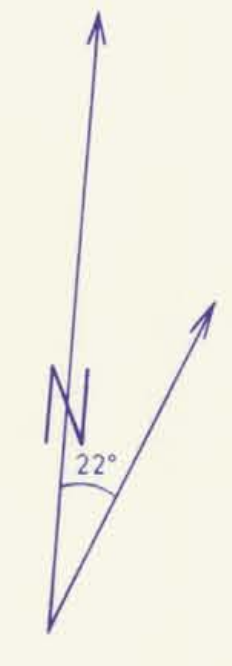
Norcen
Energy Resources Limited

(COCHRANE OIL AND GAS OPTION)
CRYSTAL CREEK PROJECT
BRITISH COLUMBIA
LAND HOLDINGS MAP

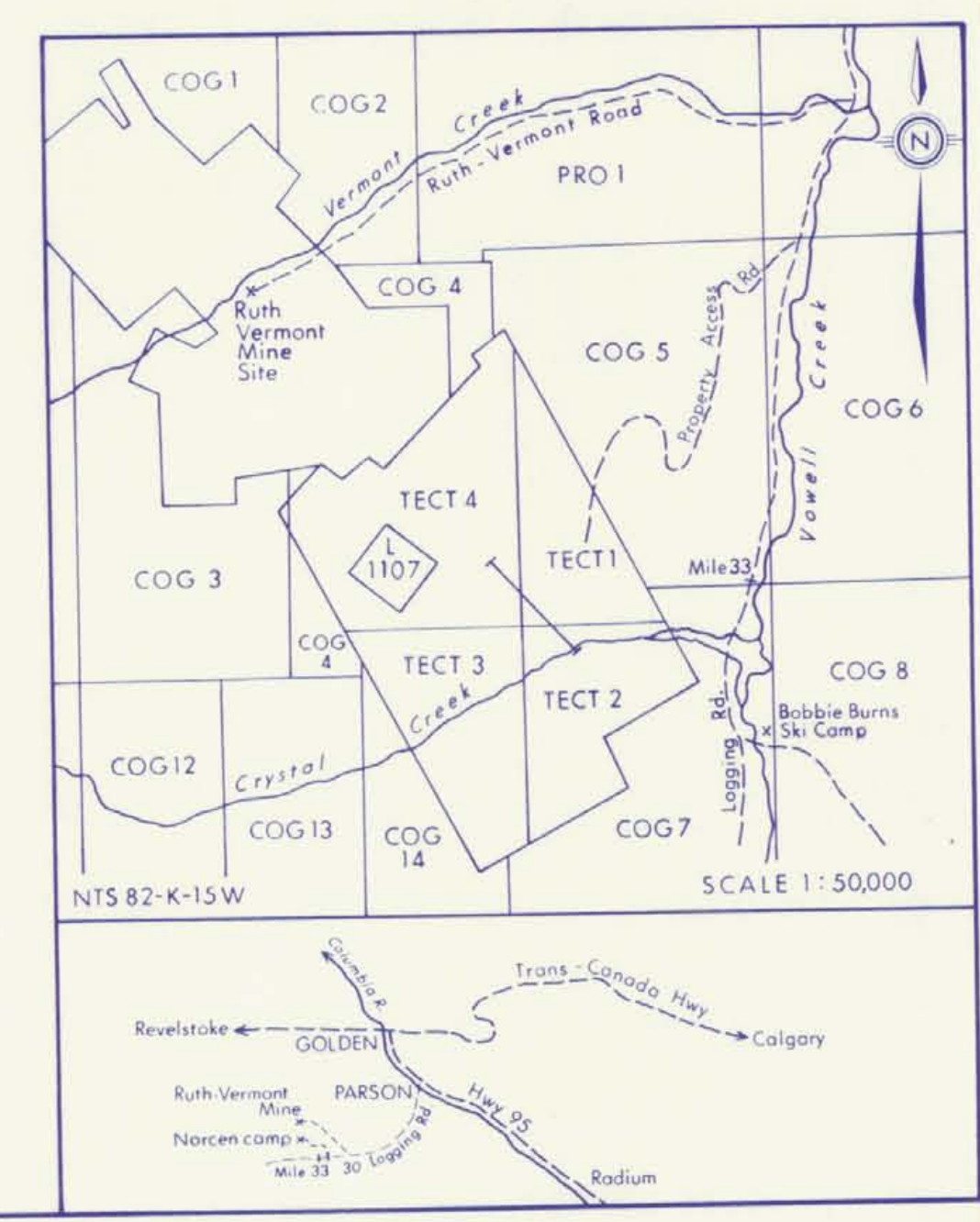
1 5 0 1 2 3
SCALE IN KILOMETRES



400 N



- 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
- L.C.P. LEGAL CORNER POST
- TRENCH



MINERAL RESOURCES BRANCH
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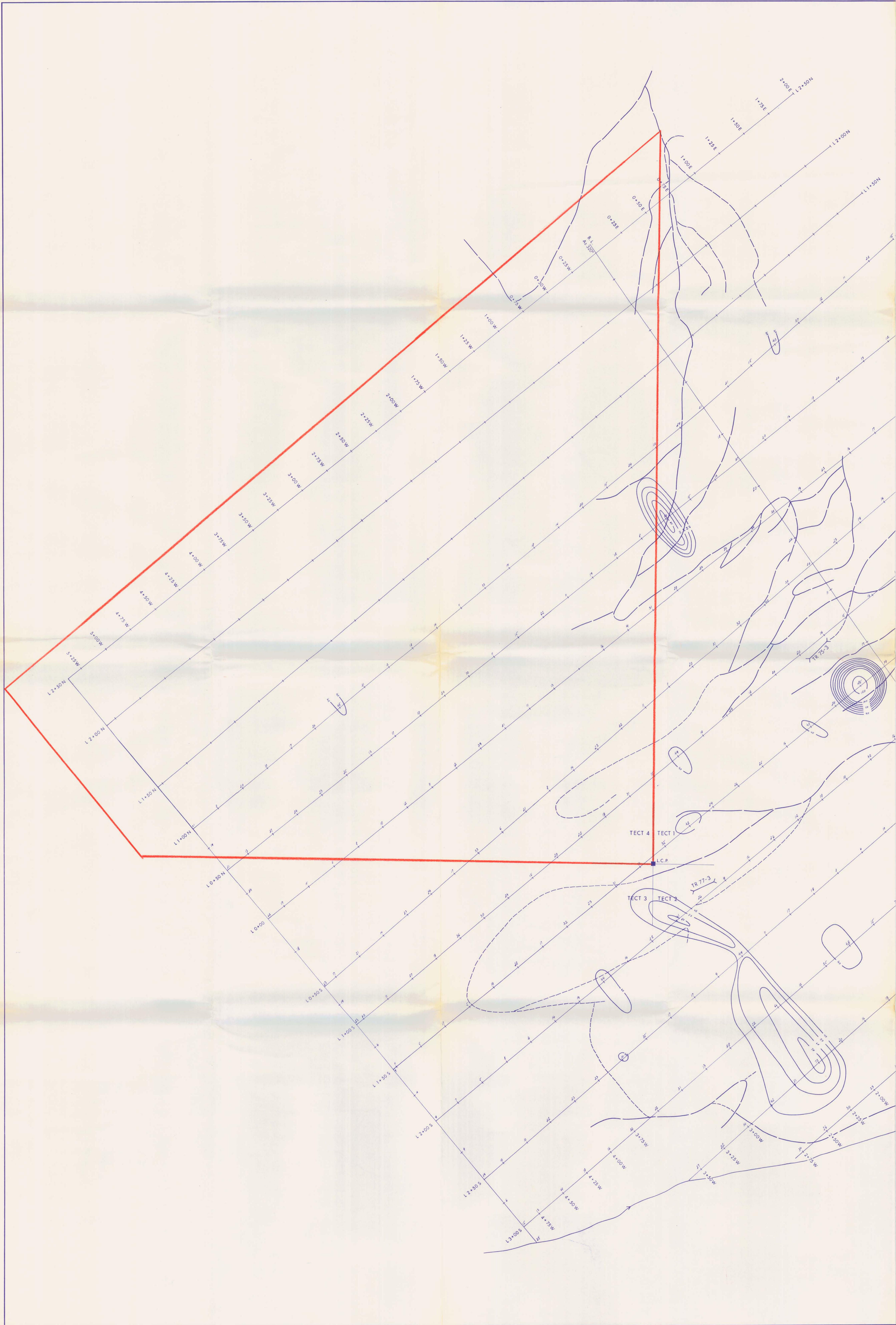
CRYSTAL CREEK PROJECT

BRITISH COLUMBIA

Zn in Soils Geochemical Survey

0 25 50 75 100 metres

NTS 85-K-15W November, 1979





L1+00N

L0+50N

L0+00

L0+50S

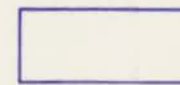

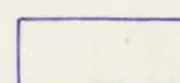
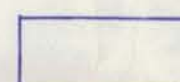

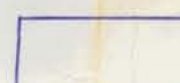
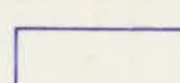




L1+00S

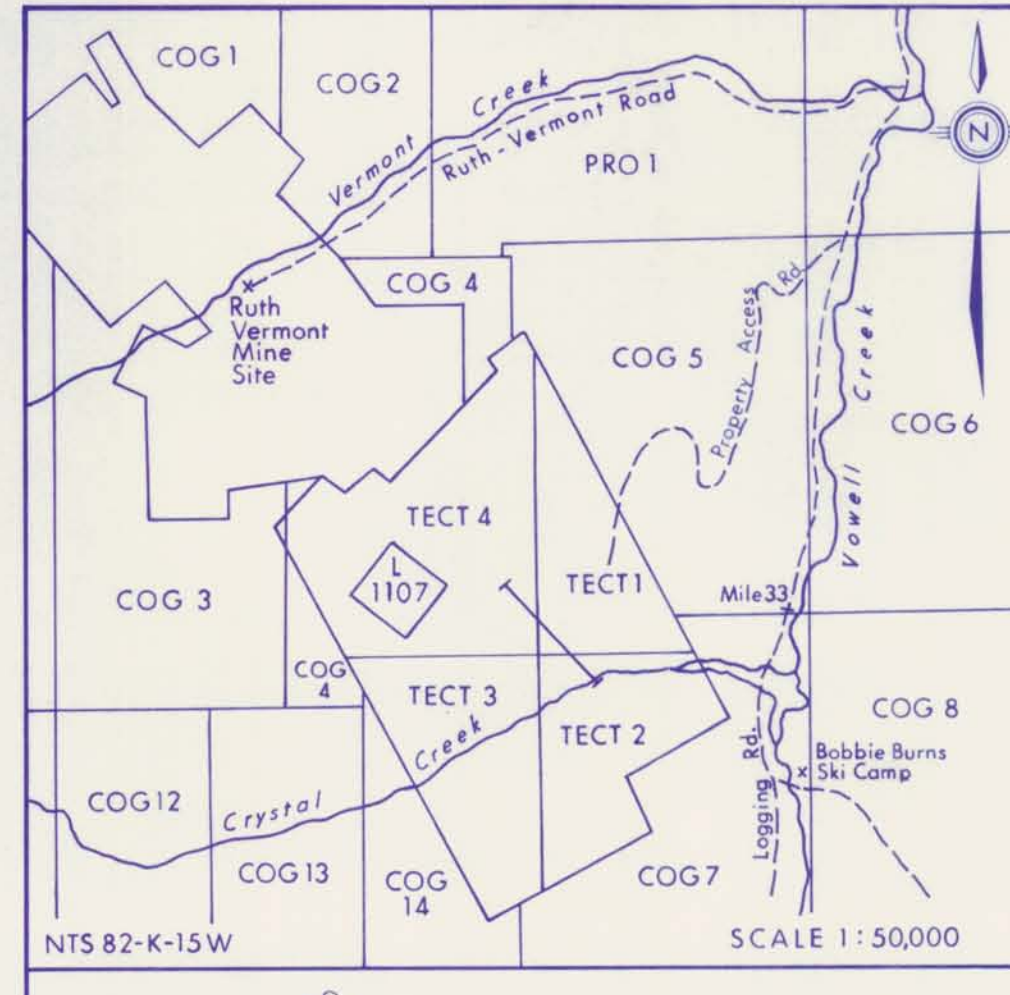
L1+50S

L2+00S

NORCEN CAMP



-  40-50 ppm Cu
-  50-60 ppm Cu
-  60-70 ppm Cu
-  70-80 ppm Cu
-  80-90 ppm Cu
-  90-100 ppm Cu
-  GREATER THAN 100 ppm Cu
-  EXISTING ROADS
-  NORCEN CAT TRAILS
-  L.C.P. LEGAL CORNER POST
-  TRENCH



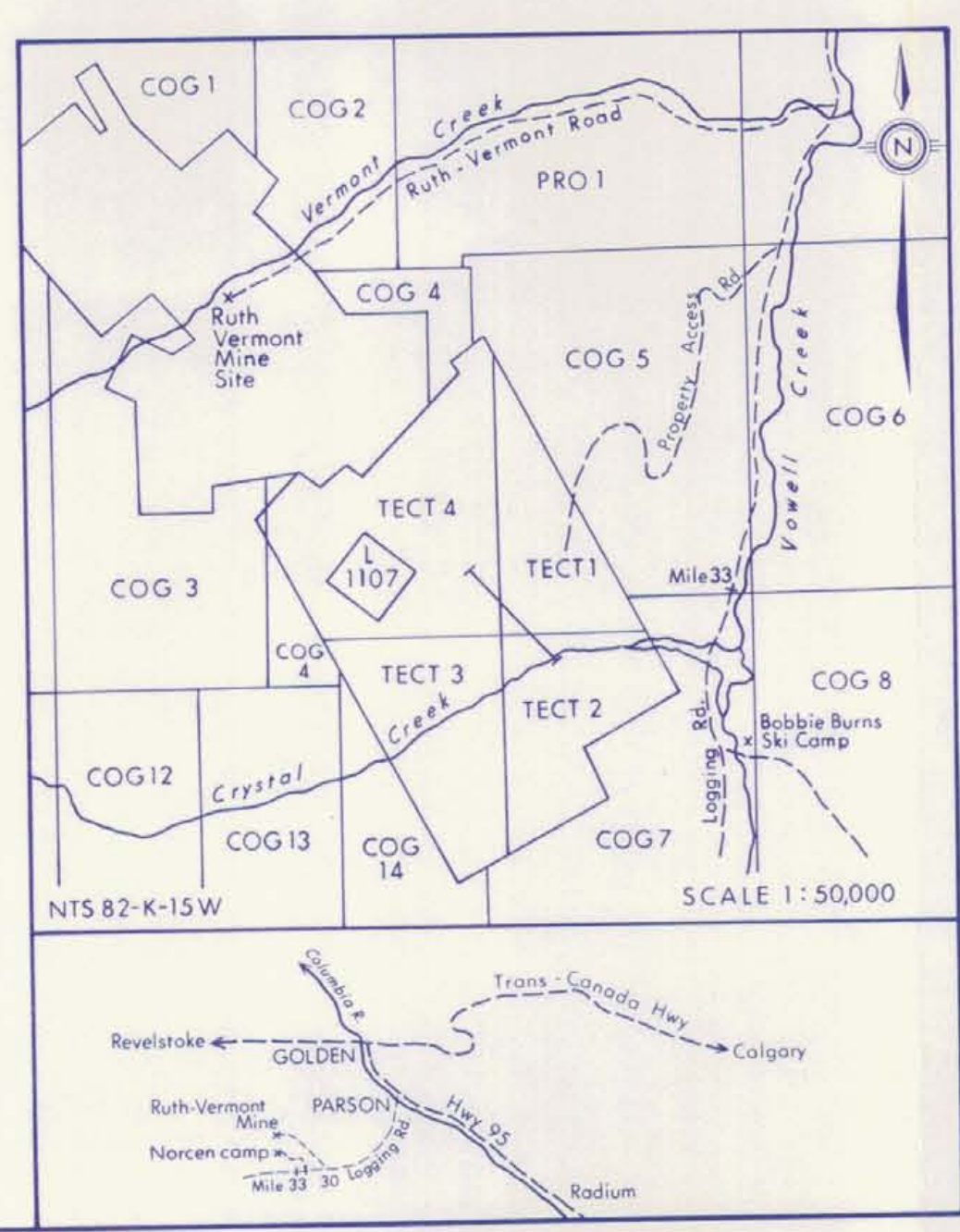
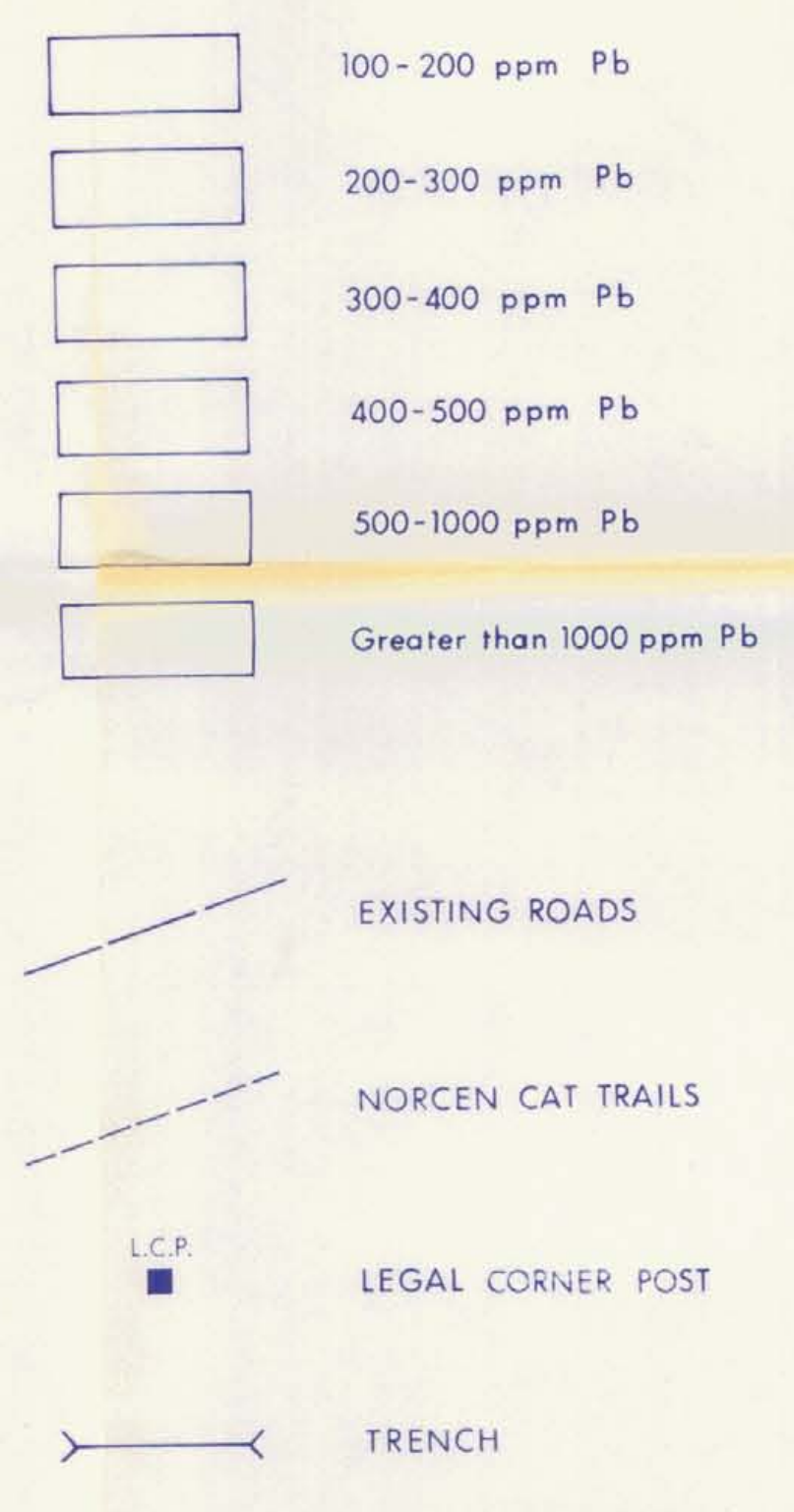
MINERAL RESOURCES BRANCH
8141
110.

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(COCHRANE OIL & GAS LTD. OPTION)
CRYSTAL CREEK PROJECT
BRITISH COLUMBIA
Cu in Soils Geochemical Survey
0 25 50 75 100 metres
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