85-834-14033 8/86

GEOCHEMICAL AND PROSPECTING REPORT

ON THE PAT CLAIM GROUP

LOCATED 70 KM. NORTH OF REVELSTOKE

IN THE REVELSTOKE MINING DIV.

BY

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GOLDSTREAM MINING DIVISION

N.T.S. 82M /9w, 10E S1°40, 118°27 GEOLOGICAL BRANCH ASSESSMENT REPORT

14.053

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I INTRODUCTION

The prospecting and geochemical survey described in this report and carried out by Goldstream operating personnel in the spring and summer of 1985 represents an ongoing and detailed examination of claims held by the Goldstream Div. The purpose of this program is to determine the potential for additional ore reserves in the vicinity of the Goldstream Mine.

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Noranda Exploration carried out extensive ground surveys on the Pat claims south of the Goldstream River at the time of the option agreement with the prospecting team that found the ore zone. This work consisted of geological, geophysical, geochemical and diamond drilling programs. Exploration was directed at locating additional ore structures within a relatively narrow stratigraphic section of graphitic schists of probable early to middle Paleozoic Age.

The goal of the present program is to examine the strata that is exposed on the north side of the Goldstream River and which overlies the Goldstream ore zone. The target of this program is to locate additional ore bearing horizons. This approach is complicated by the fact that some regional data suggests that the immediate mine strata may be inverted¹ and by the fact that the Goldstream Valley is thought to be a fault trace.

A total of 335 geochemical sampling stations were established along 17 kilometers of contour line. At 296 stations soil samples were taken. At 39 stations located on extensive rock outcrop, rock chip samples were taken. In addition to the above,

T. Hoy, Geology of Goldstream Area, M.E.M. P.R. Bulletin 71 pp. 43, 44

I INTRODUCTION (Continued ...)

rock outcrop between stations and outcrop in the vicinity of soil stations were also chip sampled.

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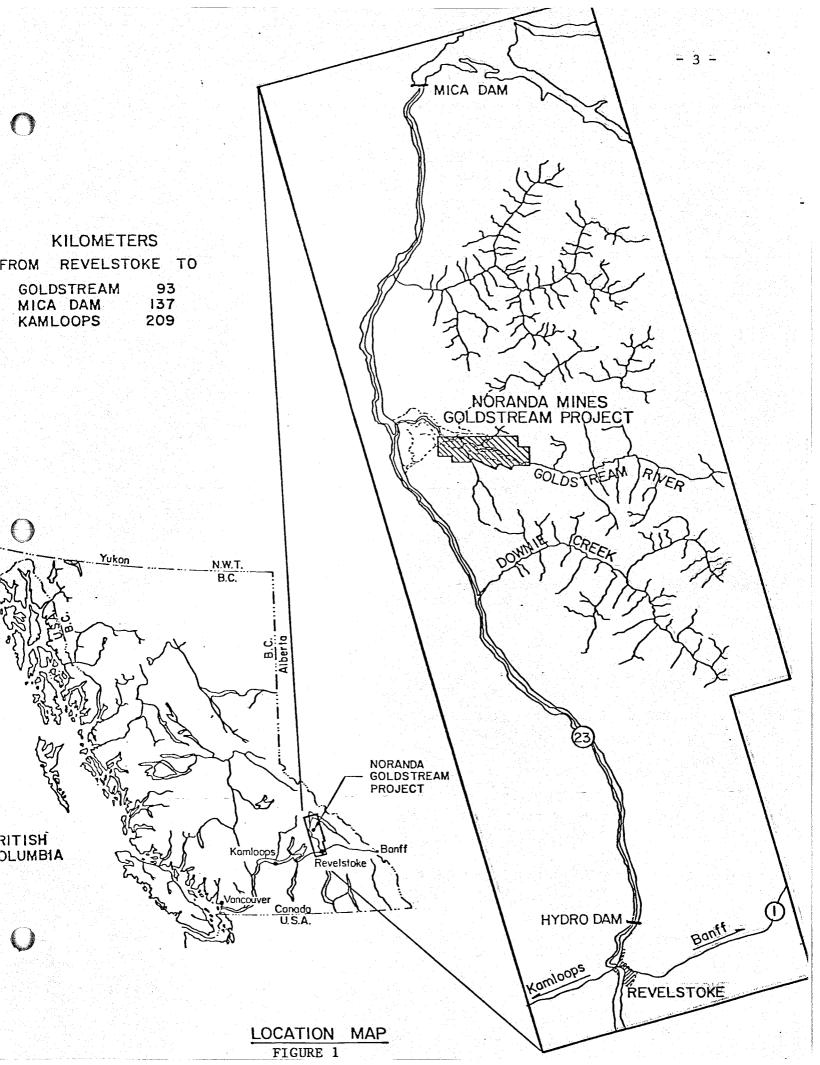
To provide access and to establish base lines and provide survey control, two lines totalling 1.2 kilometers were cut and cleared. A 1.6 kilometer survey traverse was carried out between the two lines along an existing guide trail in the area to provide further survey control.

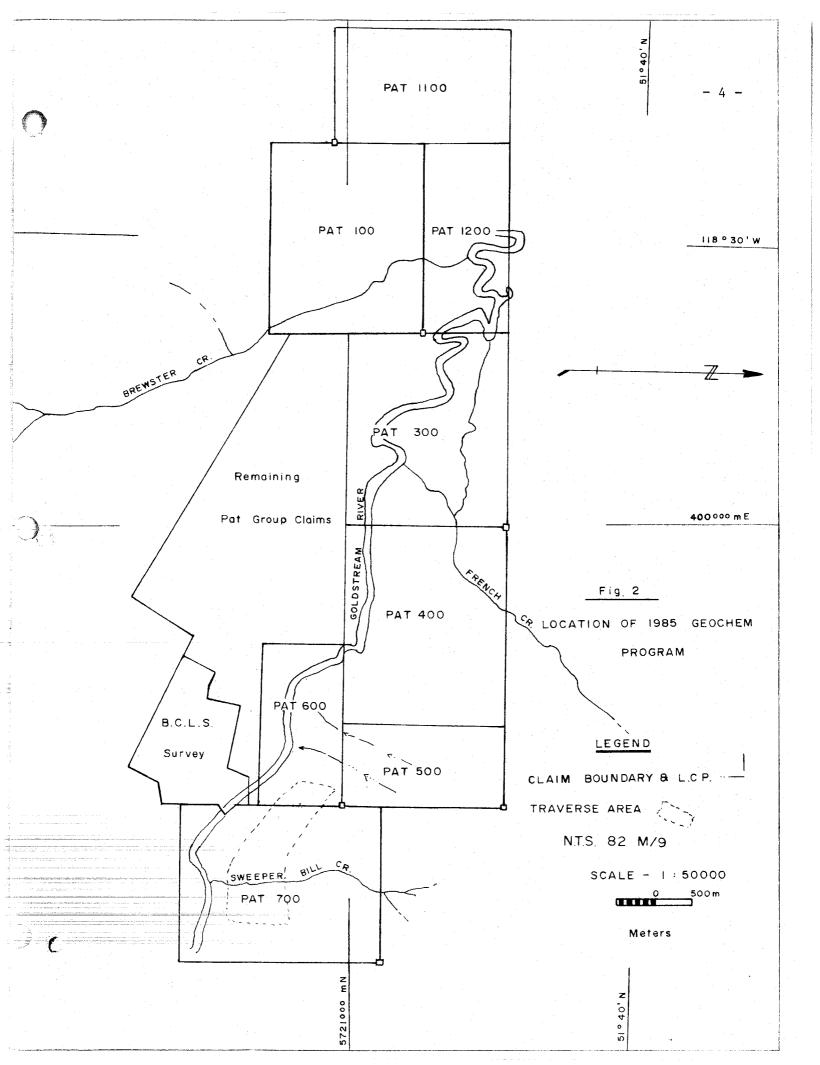
ACCESS AND LOCATION

Maclaren's Goldstream Mine and Pat claim group are located approximately 70 kilometers north of Revelstoke in the Goldstream River valley. Access is by way of Highway 23 north 80 kilometers and east 14 kilometers by way of forestry road up the Goldstream Valley. See figure 1, figure 2.

PHYSIOGRAPHY

The area under investigation lies in the rugged Selkirk Range of southeast B.C. and is part of the interior wet belt. The topography is steep with slopes varying from 10° to +45° and elevations varying from 630 meters A.S.L. in the valley bottom to 2200 meters A.S.L. at the crest of the ridge. Mature stands of cedar cover the lower slopes with mixed fir, spruce and hemlock covering the upper well drained slopes. The traverse area above the 700 meter elevation was burnt off in a large fire about 30 years ago and has regrown in very thick young fir making traverses extremely difficult. Several major slide paths extend across the area and are covered in slide alder.





II SUMMARY AND CONCLUSIONS

The program of soil geochemistry and geological reconnaissance started in 1984 and continued in 1985 has now covered 70% of the claims held by the company north of the Goldstream and east of French Creek.

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Three areas of anomalous geochemistry have been outlined and are discussed in <u>VI</u> of the report. In addition areas of favorable lithology have been located.

The technique of horizontal sampling has proved to be reasonably effective in providing geochemical coverage of the area as a whole but has not provided sufficient rock data to produce a complete bedrock geology plan of the area. More detailed section data is needed in areas of favorable lithology or geochemistry.

Based on the 400 meter section of rocks examined to date it is unlikely that they host any significant economic structures similar to the Goldstream volcanogenic deposit.

III GEOLOGY OF THE SAMPLE AREA

A) Rock Units

The area consists of a sequence of clastics, metasediments, metavolcanics and carbonates. All units are intercalated to some extent but in terms of relative abundance the carbonates are predominately the structurally

A) Continued ...

lowest, the clastics form the majority of section above the carbonates. The metasediments and metavolcanics are relatively minor units within the clastic sequence but may predominate at the top of the section.

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The clastics consist of relatively massive to micaceous Quartzite and Grit. Metasediments are predominately Sericite - Quartz schist and Chlorite - sericite schist. The metavolcanics consist of Chlorite schist and Greenstone. Dark grey limestone, usually micaceous forms the carbonate unit. Two individual samples were tentatively identified as acid intrusives.

B) Structure

The entire area shows a strong regional foliation pattern striking south east and dipping variably to the north east. This pattern is similar and consistent with rocks on the south side of the Goldstream. Local phase 3 folds are common. A change in foliation east of Sweeper Bill Creek suggests a gentle antiform structure in the area but there is no evidence for major folding or faulting in the area.

C) Mineralization

The only mineralization observed in the area is a series of narrow quartz veins carrying minor galena and chalcopyrite. Two of the better mineralized veins carried some silver values as well. The vein set rarely exceeds .5 meters in width and strikes north with steep westerly dips. A) Goals

The principal goal of the program was to systematically sample the rock units which structurally overlie the plunge direction of the Goldstream ore zone. The target of the program was to identify any anomalous geochemical dispersion pattern similar to that which was outlined in the vicinity of the Goldstream ore subcrop.

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In addition to seeking repetitions of structures similar to the Goldstream ore zone, field samples were examined under U.V. light for evidence of (WO_3) scheelite. This was based on a number of minor scheelite showings in the region and somewhat favorable lithology in the sample area. Based on occurrences of Gold and Silver bearing quartz veins in the Ground Hog basin area, similar quartz structures in the study area were assayed for precious metals.

B) Summary of Field Work

The work in this report was carried out on the Pat 200, 600, 700 mineral claims and the Pat 67 2-post claim during the period June 1, 1985 to August 24, 1985. The area on which work was done is bounded by the eastern limit of Pat 700, the Goldstream River on the south and the 2175 m contour elevation on the north west.

In total 335 geochemical sample stations were established at which 296 soil samples and 39 rock chip samples were taken. B) Continued ...

In addition 1.2 kilometers of line was cut and surveyed and 1.6 kilometers of existing trail brushed out and surveyed.

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C) Grid Selection and Sample Spacing

The horizontal contour sampling approach was selected over a rectangular grid system for a number of reasons.

The sample area lies on very steep slopes cut by deep slide path gullies and is covered by very dense secondary growth. This naturally revegetated burn area restricted line of sight compass bearings to 5 - 15 meters and made a rectangular grid system impractical without extensive line cutting.

The strike direction of the regional foliation generally parallels the contour elevations along the steep slopes. It was assumed as a working hypothesis that any ore structure which conformed to the foliation orientation would produce a significant down stope dispersion pattern. Such an anomalous pattern could then be detected by relatively close sample spacing along several contour lines.

D) Line Cutting and Survey Control

Access to the area west of Sweeper Bill Creek was via a foot bridge across the Goldstream River and a survey line cut as part of 1981 B.C.L.S. perimeter survey of Pat 67 and adjoining claims (see map 85-1, 85-2). At the north east corner of Pat 67 a trail was cut as directly upslope as practical to an elevation of 1175 m. The trail was then D) Continued ...

surveyed starting at the legal corner pin by compass transit and chain and stations established at 100 meter horizontal distances.

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Access to the area east of Sweeper Bill Creek was via an old hunting guide trail running along the base of the ridge slope. After this trail had been cleared and surveyed from the B.C.L.S. cut line, a second trail was cut directly up slope along the east ridge of Sweeper Bill Creek to an elevation of 1025 meters. The base line was surveyed and stations established at 100 meter horizontal distances.

Lines were started east and west from these two base lines at known elevations and constant elevation maintained by altimeter. At the end of traverses, relative distances between lines were established by chaining between lines. Altimeter readings were corrected for daily pressure differences by closing traverses to known elevation points.

E) Sampling Procedure

Two man parties chained off 50 meter sample stations, starting at the base line station, along each horizontal contour line. At each sample station a tree was blazed and labelled with the sample station number. Sample pits were dug with soil sample mattocks. Field notes were made of depth of sample, horizons identified, nature of rock fragments encountered, type of forest cover and local topography. E) Continued ...

Samples were labelled with station location data and transported in kraft soil bags. Where sample stations were located on rock outcrop, chip samples and hand specimens were collected and foliation orientation recorded. Rock outcrop encountered between stations was sampled and prospected. The C horizon was sampled where it could be identified; otherwise the first horizon below the organic layer was sampled.

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F) Soils Description

Soils encountered were juvenile mountain soils usually in the order of 10 - 30 centimeters in thickness overlying talus fines and/or glacial till. Usually a true A, humus horizon was lacking except in isolated areas of mature forest cover. There was also a notable ash layer in some samples taken in the old burn area.

G) Analyses Carried Out

All assay determinations were carried out at the Goldstream Mine Laboratory by W. Pollet, Chief Chemist of the Goldstream Div. The laboratory procedures used for the determinations are described in Appendix I of this report. Samples were dried and screened to -80 mesh by field personnel in preparation for assaying.

All of the soil samples have been assayed for the following four elements; Cu, Zn, Pb, Mn for a total of 1184 determinations. In addition 19 rock samples were assayed for Au, Ag, Cu, Zn and Pb to determine if the quartz veining

G) Continued ...

carried any significant precious metal values. Twelve other rock samples were assayed for Cu, Zn, Pb, Mn, Ni, Co, Cr to determine the approximate background values and variability of these elements in the underlying lithology. The results of all assay determinations described above are compiled in Appendix II of this report.

7 ANALYSES OF RESULTS

A) Compilation and Processing of Geochemical Data

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Assay data for the soil program was entered and stored on a floppy disc using a HP.83 desk top computer. This data file was then used in conjunction with programs written by the author for analysis of the geochemical results.

For the elements Cu, Zn, Pb and Mn, means and standard deviations were computed. The data was then sorted into selected intervals, % frequencies calculated and % frequency histograms plotted and printed. The data was then sorted into anomalous categories for printing. The printouts of this computer analysis form Appendix III of this report.

B) Determination of Anomalous Threshold Values

The anomalous threshold value was determined for each element by adding 2 standard deviation values to the mean for each element. Values in the range of mean + 1.0 to 2.0 S. Dev. were considered when establishing trends. Table 1 below lists these values for each element. B) Continued ...

TABLE 1

	Cu(ppm)	Zn(ppm)	Pb(ppm)	Mn(ppm)
Mean	37.1	57.4	26.3	445.1
Standard Deviation	31.6	34.6	22.9	357.1
Threshold Value	100.3	126.6	72.1	1159.3

A fixed criteria was selected to define the threshold of anomalous values rather than a percentile cutoff. The data base can then be compared with previous surveys and additional field data incorporated without affecting the field of anomalous values.

C) Comparisons with Prior Surveys

Two soil programs were carried out on the Pat claim group in the past. An extensive program was carried out in 1975 on the claims south side of the Goldstream River by Norex. In 1984 a limited program of the contour sampling north of the river and west of the present study area was carried out by Goldstream personnel. The results of these programs are compared in Table 2 with the 1985 results.

The FW, HW and ORE INFLUENCE categories in the table are selected areas from the 1975 Norex survey and area within a 1.5 kilometer radius of the ore subcrop. Samples shown in the FW category were over rocks structurally below the Goldstream ore horizon and upslope from the subcrop. Samples in the HW category were taken over rocks that structurally overlie the ore sheet and are upstream from the ore subcrop. Samples in the ORE category were taken directly downslope and downstream from the ore structure.

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C) Continued ...

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TABLE 2

	Copper	Zinc	Lead
1985 PROGRAM - 296 samples			
Mean - p.p.m.	37.1	57.4	26.3
Standard Deviation	31.6	34.6	22.9
1984 PROGRAM - 103 samples			
Mean - p.p.m.	36	62	32
Standard Deviation	41	30	17
FW ROCKS - 165 samples			
Mean - p.p.m.	20	54	27
Standard Deviation	10	21	4
	• A -		
HW ROCKS - 170 samples		· · · ·	
Mean - p.p.m.	24	70	30
Standard Deviation	20	38	7
ORE INFLUENCE - 157 samples			
Mean - p.p.m.	84	147	38
Standard Deviation	230	127	23

As can be seen, the means and standard deviations group closely for all but the ore influence population. The means in this set of data are elevated by a factor of 2-3 for Cu and Zn. What is more notable however is the large increase in the standard deviation value for Cu, in the 8-10 factor range.

This would be consistent with a dispersion pattern produced by mechanical mixing of ore material rather than a more

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C) Continued ...

pervasive weathering process. In interpreting the results of the present program the degree of variance of samples in any anomalous area should be considered along with elevated means.

VI ANOMALOUS SAMPLE LOCATIONS

Three areas of anomalous metal values have been outlined as a result of the geochemical program and are described below.

A) Area 1

The area extends west from the base line on lines ON, 1N, 2N, and 3N and covers an area approximately 300 x 300 meters. All four metals, Cu, Zn, Pb, Mn, are moderately anomalous but individual metal anomalies do not overlap.

The probable source of this anomalous area is a Chlorite schist unit which cuts off the anomaly upslope. The highest concentration of anomalous values occurs immediately downslope from this unit and the anomaly weakens further downslope.

The exception to this is a three-station zinc anomaly on lines 1N and ON. This may be a separate anomalous area associated with a second structurally lower Chlorite-biotite schist just west of the zinc values. The area is further complicated by a number of discordant Quartz veins which carry minor Galena and Chalcopyrite. B) Area 2

This 2-sample copper anomaly is located on line 4N on the west slope of Sweeper Bill Creek. Sample 4N-13E ran 300 p.p.m. and is the highest copper value of the program.

There is also generally favorable lithology in the area consisting of Greenstones, Chlorite schists and Grey limestones similar to the Goldstream lithology. On this basis, the area warrants further work.

C) Area 3

A number of scattered anomalous values occur west of Area 1 to the limits of the sample program. These values probably result from rock types similar to Area 1.

Statement of Author's Qualifications VII

I, Norman W. Berg of 142 Colbeck Road, Revelstoke, British Columbia, have the following qualifications:

- I am a graduate of the University of British Columbia 1) with a B.Sc. majoring in Physics and Geology.
- 2) Following graduation, I worked in Western Canada as a Party Chief and Exploration Manager on various exploration and development projects over a 5 year period.
- 3) For the past 10 years I have been employed as Senior or Chief Geologist at mining properties in B.C. responsible for mining and local exploration geology.
- 4) I am presently employed by MacLaren Forest Products Inc.'s Goldstream Mine as Chief Geologist responsible for exploration and mine geology.

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Norman W. Berg

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VIII Itemized Cost Statement

The field program described in this report was carried out by five employees of MacLaren Forest Products Inc. Goldstream Mining Division. In addition laboratory work was performed on a contract basis at the Goldstream laboratory by the Company's retired chief chemist. These employees are listed below with their equivalent daily wage rates:-

N.W. Berg	Chief Geologist	\$150/day
B.A. Graney	Party Leader	\$140/day
P. Northrop	Party Leader	\$140/day
B. Smith	Field Assistant	\$ 68/day
R. Habermehl	Field Assistant	\$ 68/day

The expenditures in wages have been broken down into the following categories; Line Cutting and Surveying, Geochemical Sampling and Prospecting, Sample Preparation, Assaying.

1) Line Cutting and Surveying

Dates	No. Days	Work Performed	Wages Paid
June 17-21	5	Cut and survey West Base Line	5x\$150=\$750 5x\$140=\$700
July 2,4	2	Cut and survey West Base Line	2x\$150=\$300
			2x\$140=\$280
			2x\$ 68=\$136
July 22,24,30	3	Survey guide trail to East Base Line	3x\$140=\$420
			4x\$ 68=\$272
August 6,19,20	3	Cut and Survey	1x\$150=\$150
		Sweeper Bill BaseLine	3x\$140=\$420
			5x\$ 68=\$340

Total Wages paid for 1) above

\$3768

Itemized Cost Statement (Continued) ... VIII

> 2) Geochemical Sampling and Prospecting

Dates	No. Days	Work Performed	Wages Paid
July 8-Aug 25	22	296 soil samples 98 rock chip samples over 17 km. of contour line	6x\$150 = \$900 17x\$140 =\$2380 39x\$ 68 =\$2652

Total Wages paid for 2) above

\$5932

3) Sample Preparation for Assaying

Dates	No. Days	Work Performed	Wages Paid
July 22,23	2	Screening Samples and sample prepa- ration	2x\$ 68 =\$ 136
July 29,30	2	Screening samples and sample prepa- ration	2x\$ 68 =\$ 136
Total Wages	paid for 3)	above	\$ 272

Assaying of Geochemical Samples 4)

During the periods listed below W. Pollet, Chief Chemist (Retired), returned to the Goldstream laboratory to carry out analyses of field samples. The costs below cover wages, transportation and accommodation for the periods but do not include any costs for laboratory facilities or supplies.

Dates	No. Days	Expenses
Aug 12-14	3	\$619.31
Sept 19-22	3	\$761.13
Total cost of Assaying Unit cost/determination = \$0	.95	\$1290.34

Total of 1) to 4) above

\$11,262.44

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IX

APPENDIX I

Analytical Procedures for Sample Determinations

Procedure for: Cu, Zn, Mn, Fe, Ag

- 1) Weigh 2g sample
- 2) Acid dissolution in conc. HNO3, HCL
- 3) Aliquot and prepare for A A Instrument (Perkin-Elmer 2380)
- 4) Air-Acetylene flame

Procedure for: Molybdenum

- 1) Weigh 2g sample
- 2) Acid dissolution in conc. HNO,, HCL
- 3) Aliquot and prepare for A A Instrument (4000 Perkin-ELmer)
- 4) Nitrous Oxide-Acetylene flame

Procedure for:Tungsten

- 1) Weigh lg sample
- 2) Acid dissolution in (Phosphoric-HCL-HF)
- 3) Filter-aliquot-colour development(Pot. Thiocyanate)
- 4) Spectrophotometric determination Instrument (Spectronic 20)

Procedure for:Mercury

- 1) Weigh 2g sample
- 2) Acid dissolution $(HNO_3 H_2 SO_4 mixture)$
- 3) Flameless Atomic Absorption

Inorganic forms of Hg are extracted and organo-Mercury oxidized by digestion with H_2SO_4 , HNO_3 , HCL, $KMnO_4$. This procedure ensures the total recovery of Hg from soils of high organic content. Instrument used, Perkin-Elmer 4000-Recorder connected.

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APPENDIX II

GEOCHEMICAL ASSAY RESULTS

						- 22 -
	SAMPLE	REC#	CU (PPM)	ZN (PPM)	PB (PPM)	MN (PPM)
	ON-0	1	21	54	24	235
	ON-1E	2	26	65	26	310
	ON-2E	3	40	47	25	150
	ON-3E	4	16	56	24	100
	ON-4E	5	30	56	12	120
	ON-5E	а Б	17	55	21	230
	ON-6E	7	9	24	33	80
	ON-7E	8	13	30	10	60
	ON-8E	9	19	63	19	630
	ON-9E	10	12	35	9	130
	ON-10E	11	24	63	25	600
	ON-11E	12	9	44	19	280
	ON-12E	13	19	44	14	235
	ON-13E	14	9	45	22	90
	ON-14E	15	13	40	21	705
	0N-15E	16	8	45	12	540
2	0N-16E	17	17	50	22	860
	ON-17E	18	10	41	22	100
	ON-18E	19	16	28	21	90
	0N-19E	20	16	78	26	300
	0N-20E	21	10	79	33	115
	ON-21E	22	8	44	13	260
	ON-22E	23	14	45	26	300
	ON-23E	24	23	83	30	385
	ON-G23E	25	41	128	62	1060
	ON-24E	26	30	95	25	480
	0N-26E	27	31	27	15	120
	0N-27E	28	20	47	17	280
	0N-28E	29	8	48	35	140
	0N-29E	30	12	56	30	330
	0N-30E	31	32	60	16	150
	ON-31E	32	22	52	12	250
	0N-32E	33	7	37	13	940
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						- 23 -
\frown	SAMPLE	REC#	CU (PPM)	ZN (PPM)	PB (PPM)	MN (PPM)
\bigcirc	ON-33E	34	17	43	15	95
	ON-34E	35	30	49	18	195
	0N-35E	36	29	57	8	160
	0N-36E	37	17	42	20	220
	0N-37E	38	43	70	35	520
	ON-38E	39	46	92	30	150
	0N-39E	40	53	45	34	1385
	ON-1W	41	43	47	20	165
	ON-2W	42	71	42	36	1040
	ON-3W	43	38	60	29	305
	ON-5W	44	22	193	32	330
	ON-7W	45	21	85	33	875
	ON-8W	46	44	117	30	300
	ON-9W	47	68	105	48	420
	ON-10W	48	44	66	36	410
	ON-12W	49	42	96	42	1970
Θ	ON-13W	50	60	59	36	1070
	ON-14W	51	56	82	40	390
	ON-15W	52	64	64	44	690
	1N-1W	53	23	52	21	290
	1N-2W	54	113	64	42	600
	1N-3W	55	100	54	54	610
	1N-4W	56	108	66	36	530
	1N-5W	57	56	444	55	670
	1N-6W	58	37	353	58	1320
	1N-8W	59	88	89	33	1000
	1N-9W	60	48	116	44	810
	1N-10W	61	86	72	48	760
	1N-11W	62	76	74	59	540
	1N-14W+20	63	244	83	40	1320
-	1N-15W	64	50	56	26	380
	1N-15W+14	65	61	62	44	610
	1N-18W	66	89	54	38	1180
\mathbf{O}	1N-20W	67	68	64	46	930

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	SAMPLE	REC#	CU (PPM)	ZN(PPM)	PB (PPM)	MN(PPM)
U.	1N-0	68	18	75	22	360
	1N-2E	69	13	72	24	400
× .	1N-3E	70	14	48	16	320
	1N-4E	71	44	81	28	800
	1N-5E	72	22	66	18	380
	1N-6E	73	12	54	20	360
	1N-7E	74	10	55	20	2620
	1N-8E	75	19	49	18	530
	1N-9E	76	16	40	22	120
	1N-10E	77	44	52	34	2600
	1N-11E	78	19	58	20	260
	1N-12E	79	22	52	18	180
	1N-13E	80	16	58	18	160
	1N-14E	81	13	72	24	290
	1N-15E	82	14	54	22	640
	1N-16E	83	24	52	16	160
\bigcirc	1N-17E	84	10	66	10	340
. —	1N-18E	85	8	32	10	80
	1N-19E	86	22	48	26	240
	1N-22E	87	44	72	44	770
	1N-26E	88	56	66	26	450
	1N-27E	89	20	40	18	130
	1N-28E	90	34	42	20	220
	1N-29E	91	14	78	120	180
	1N-30E	92	38	65	28	200
	1N-31E	93	28	46	20	600
	1N-32E	94	17	71	15	125
	1N-33E	95	19	40	14	436
	1N-34E	96	15	48	14	275
	1N-35E	97	17	34	15	280
	1N-36E	98	32	33	11	155
	2N-1W	99	79	34	29	310
· · ·	2N-2W	100	78	36	46	650
0	2N-3W	101	100	38	45	925

0	SAMPLE	REC#	CU (PPM)	ZN(PPM)	PB (PPM)	MN(PPM)
	2N-4W	102	98	19	300	560
	2N-5W	103	25	95	68	1470
	2N-5Wup50	104	114	62	68	610
	2N-6W	105	113	52	50	630
	2N-7W	106	61	63	38	625
	2N-8W	107	66	48	46	410
	2N-9W	108	71	37	50	770
	2N-10W	109	79	40	80	865
	2N-11W	110	64	36	24	345
	2N-12W	111	94	60	37	1280
	2N-13W	112	23	67	159	540
	2N-14W	113	59	29	30	500
	2N-15W	114	24	33	20	230
	2N-16W	115	25	63	29	550
	2N-17W	116	21	37	25	240
	2N-18W	117	54	33	29	365
	2N-19W	118	40	35	29	400
	2N-20W	119	28	37	91	610
	2N-21W	120	59	32	40	575
	2N-0	121	50	74	38	260
	2N-1E	122	44	70	24	360
	2N-2E	123	24	46	20	210
	2N-3E	124	36	56	31	380
	2N-4E	125	19	58	15	550
	2N-5E	126	21	49	6	410
	2N-6E	127	39	54	26	250
	2N-7E	128	28	66	10	180
	2N-8E	129	26	49	14	210
	2N-9E	130	18	-26	12	130
	2N-10E	131	24	36	26	150
	2N-11E	132	26	36	20	130
	2N-12E	133	14	46	22	440
	2N-13E	134	16	71	10	340

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	SAMPLE	REC#	CU (PPM)	ZN (FPM)	PB (PPM)	MN(PPM)
	2N-14E	135	16	46	11	1090
	2N-15E	136	26	39	10	230
	2N-16E	137	27	34	18	180
	2N-17E(SS)	138	36	37	18	410
	3N-0	139	18	64	18	710
	3N-1W	140	34	46	16	270
	3N-2W	141	32	34	12	180
	SN-3W	142	42	41	30	520
	3N-4W	143	26	48	12	340
	3N-5W	144	156	60	40	1380
	3N-6W	145	36	68	16	330
	3N-7W	146	28	51	20	560
	3N-8W	147	46	49	44	310
	3N-9W	148	72	51	60	820
	3N-10W	149	88	41	62	810
	3N-11W	150	84	36	26	940
h .	3N-12W	151	24	39	32	860
	3N-13W	152	42	46	44	920
	3N-14W	153	74	48	40	740
	3N-15W	154	66	53	18	530
	3N-1E	155	26	72	10	510
	3N-2E	156	4	24	10	70
	3N-3E	157	17	35	8	260
	3N-4E	158	18	39	6	190
	3N-5E	159	17	39	5	290
	3N-6E	160	8	31	20	150
	3N-7E	161	16	43	24	210
	3N-8E	162	14	58	24	270
	3N-9E	163	10	30	14	420
	3N-10E	164	28	44	16	240
	3N-11E	165	20	31	18	170
	3N-12E	166	12	22	24	120
	3N-13E	167	46	28	30	440
)	3N-14E	168	24	54	32	420

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	SAMPLE	REC#	CU(PPM)	ZN (PPM)	PB (PPM)	MN (PPM)
7	4N-0	169	12	60	16	290
	4N-1W	170	30	38	16	220
	4N-2W	171	14	56	18	310
	4N-3W	172	36	56	24	320
	4N-4W	173	22	44	24	240
	4N-6W	174	14	76	17	320
	4N-7W	175	41	42	26	320
	4N-8W	176	26	60	44	410
	4N-9W	177	32	44	46	220
	4N-10W	178	38	59	90	1080
	4N-1E	179	10	51	5	350
	4N-2E	180	34	64	12	280
	4N-3E	181	6	55	15	170
	4N-4E	182	12	56	26	510
	4N-5E	183	31	40	19	180
	4N-6E	184	11	32	15	140
ALL STREET	4N-7E	185	~	39	13	125
	4N-8E	186	8	34	8	185
	4N-9E	187	33	46	22	270
	4N-10E	188	44	46	25	300
	4N-11E	189	33	43	24	880
	4N-12E	190	40	56	24	205
	4N-13E	191	310	49	25	860
	4N-14E	192	93	38	26	430
	4N-15W	193	24	55	25	160
	4N-17W	194	34	63	13	320
	5N-0	195	32	94	24	280
	5N-1W	196	35	43	25	145
	5N-2W	· 197	25	47	12	175
	5N-3W	198	22	58	11	145
	5N-4W	199	20	49	8	195
	5N-5W	200	18	50	5	280
	5N-6W	201	26	57	12	400
	5N-7W	202	142	52	15	240

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l	SAMPLE	REC#	CU (PPM)	ZN (PPM)	PB (PPM)	MN(PPM)
	5N-8W	203	30	38	9	145
	5N-9W	204	24	65	9	165
	5N-10W	205	25	45	29	440
	5N-11W	206	18	31	21	90
	5N-12W	207	13	27	.38	105
	5N-15W	208	32	57	16	365
	5N-16W	209	18	48	21	385
	5N-18W	210	45	55	22	510
	5N-19W	211	48	44	21	370
	5N-20W	212	44	43	25	390
	5N-21W	213	42	62	20	1300
	5N-1E	214	8	31	9	190
	5N-2E	215	10	44	10	140
	5N-3E	216	11	74	18	160
	5N-4E	217	23	39	24	340
	5N-5E	218	29	45	8	170
	5N-6E	219	11	55	9	340
	5N-7E	220	7	21	10	180
	5N-8E	221	22	19	3	80
	5N-9E	222	30	41	15	165
	5N-10E	223	14	45	50	320
	5N-11E	224	38	34	14	550
	5N-12E	225	23	52	24	240
	5N-13E	226	34	48	20	540
	SB/2N-0	227	15	64	10	200
	SB/2N-1W	228	19	62	20	160
	SB/2N-2W	229	27	61	46	250
	SB/2N-3W	230	23	50	26	180
	SB/2N-3W+30	231	20	41	21	170
	SB/2N-00	232	25	66	11	200
	SB/2N-1E	233	13	56	12	770
	SB/2N-2E	234	23	66	14	240

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l	SAMPLE	REC#	CU (PPM)	ZN (PPM)	PB(PPM)	MN (PPM)
	S8/2N-3E	235	10	82	18	560
	SB/2N-4E	236	41	130	40	310
	SB/2N-5E	237	27	79	30	660
	SB/2N-6E	238	25	104	28	730
	SB/2N-7E	239	51	55	38	800
	SB/2N-SE	240	40	106	41	1070
	SB/2N-9E	241	19	133	24	700
	SB/2N-10E	242	25	60	24	460
	SB/2N-11E	243	20	68	20	480
	SB/3N-0	244	9	71	16	186
	SB/3N-1W	245	11	62	19	118
	SB/3N-2W	246	20	36	22	140
	SB/3N-3W	247	22	53	26	140
	SB/3N-4W	248	39	51	20	250
	SB/3N-6W	249	38	68	29	510
	SB/3N-7W	250	56	58	18	400
	SB/3N-8W	251	46	77	28	560
	SB/3N-1E	252	17	66	17	398
	SB/3N-2E	253	49	58	19	240
	SB/3N-3E	254	21	59	13	313
	SB/3N-4E	255	31	54	22	613
	SB/3N-5E	256	35	66	26	417
	SB/3N-6E	257	76	57	31	479
	SB/3N-7E	258	30	85	26	359
	SB/3N-8E	259	57	53	21	313
	SB/3N-9E	260	29	58	22	824
	SB/3N-10E	261	81	48	36	484
	SB/3N-11E	262	67	64	39	1410
	SB/3N-12E	263	73	54	20	1030
	SB/4N-1W	264	26	66	18	182
	SB/4N-2W	265	21	24	16	101
	SB/4N-3W	266	64	51	21	219
	SB/4N-0	267	31	61	14	166
	SB/4N-1E	268	19	52	10	244

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SAMPLE	REC#	CU (PPM)	ZN (FFM)	PB(PPM)	MN (PPM)
SB/4N-2E	269	47	95	24	270
SB/4N-3E	270	42	56	20	264
SB/4N-4E	271	45	52	16	344
SB/4N-5E	272	39	40	14	174
SB/6N-1W	273	24	47	16	190
SB/6N-2W	274	24	56	26	280
SB/6N-3W	275	64	64	26	350
SB/6N-4W	276	36	68	41	410
SB/6N-5W	277	63	63	28	490
SB/6N-6W	278	49	70	18	470
SB/6N-7W	279	44	62	21	690
SB/6N-8W	280	49	59	26	780
SB/6N-9W	281	77	57	27	960
SB/6N-10W	282	54	52	19	290
SB/6N-11W	283	49	56	19	240
SB/6N-0	284	21	47	11	598
SB/6N-1E	285	42	59	16	820
SB/6N-2E	286	72	54	21	433
SB/6N-3E	287	51	55	12	428
SB/6N-4E	288	45	48	14	286
SB/6N-5E	289	80	66	22	493
SB/6N-6E	290	23	45	17	303
SB/6N-7E	291	62	74	14	376
SB/6N-8E	292	78	82	20	1310
SB/6N-9E	293	49	44	16	900
SB/6N-10E	294	34	52	19	274
SB/6N-11E	295	41	67	17	1100
SB/6N-12E	296	28	60	11	660

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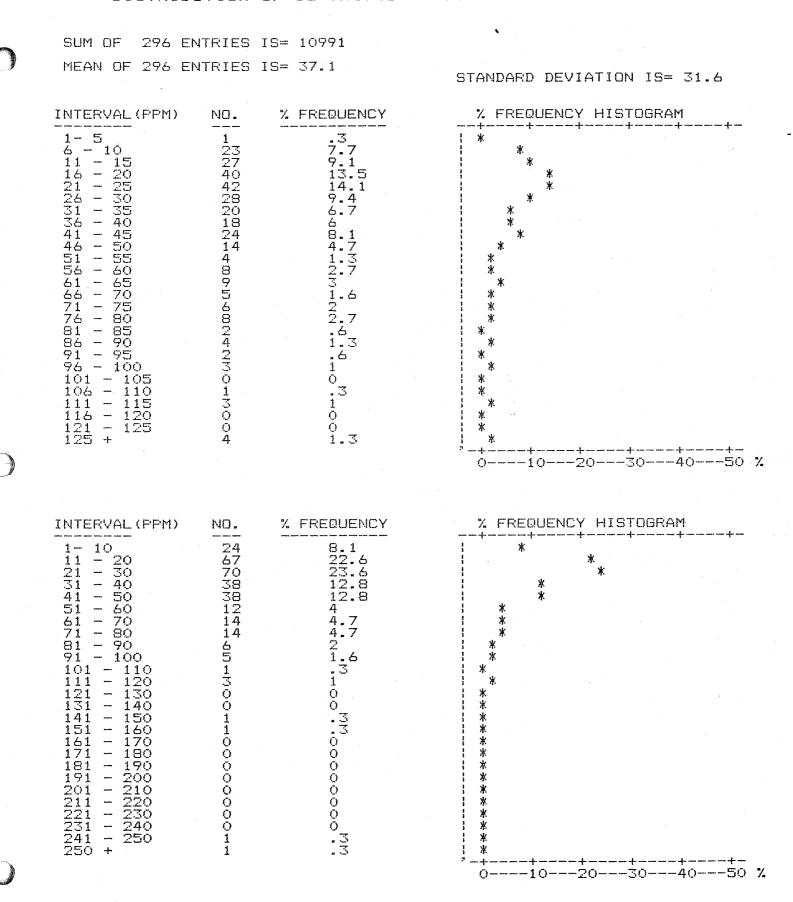
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APPENDIX III

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MEANS, STANDARD DEVIATIONS _______AND % HISTOGRAM PLOTS



DISTRIBUTION OF Cu VALUES - 1985 SOIL PROGRAM

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ANOMALOUS CU VALUES > MEAN+2 STN.DEV= 100.3

SAMPLE CU (PPM) ZN (PPM) PB(PPM) MN (PPM) 1N-2W 1N-4W 1N-14W+20 2N-5Wup50 2N-6W 3N-5W 4N-13E 5N-7W

CU VALUES > MEAN+1 STN.DEV. = 68.7

0N-2W	71	42	36	1040
1N-3W	100	54	54	610
1N-8W	88	89	33	1000
1N-10W	86	72	48	760
1N-11W	76	74	59	540
1N-18W	89	64	38	1180
2N-1W	79	34	29	310
2N-2W	78	36	46	650
2N-3W	100	38	45	925
2N-4W	98	19	300	560
2N-9W	71	37	50	770
2N-10W	79	40	80	865
2N-12W	94	60	37	1280
3N-9W	72	51	60	820
3N-10W	88	41	62	810
3N-11W	84	36	26	940
3N-14W	74	48	40	740
4N-14E	93	38	26	430
SB/3N-6E	76	57	31	479
SB/3N-10E	81	48	36	484
SB/3N-12E	73	54	20	1030
SB/6N-9W	77	57	27	960
SB/6N-2E	72	54	21	433
SB/6N-5E	80	66	22	493
SB/6N-8E	78	82	20	1310

SUM OF 296 ENTRIES IS= 17016 MEAN OF 296 ENTRIES IS= 57.4 STANDARD DEVIATION IS= 34.6 $\begin{array}{r} 1 \\ 1 \\ - \\ 5 \\ 6 \\ - \\ 10 \\ 11 \\ - \\ 15 \\ 16 \\ - \\ 20 \\ 21 \\ - \\ 25 \\ 26 \\ - \\ 30 \\ 31 \\ - \\ 35 \\ 26 \\ - \\ 30 \\ 31 \\ - \\ 35 \\ 36 \\ - \\ 40 \\ 41 \\ - \\ 45 \\ 46 \\ - \\ 50 \\ 51 \\ - \\ 55 \\ 56 \\ - \\ 40 \\ 41 \\ - \\ 45 \\ 46 \\ - \\ 50 \\ 51 \\ - \\ 55 \\ 56 \\ - \\ 40 \\ 61 \\ - \\ 70 \\ 71 \\ - \\ 75 \\ 76 \\ - \\ 80 \\ 81 \\ - \\ 85 \\ 86 \\ - \\ 90 \\ 91 \\ - \\ 75 \\ 76 \\ - \\ 100 \\ 101 \\ - \\ 105 \\ 106 \\ - \\ 110 \\ 111 \\ - \\ 125 \\ 125 \\ + \end{array}$ INTERVAL (PM) NO. % FREQUENCY HISTOGRAM % FREQUENCY + $\overset{O}{\circ}$ 00025812333322148151120204 **** 1 ł Ō ł 0 1.6 2.7 49.4 10.1 12.1 12.5 13.7 7 7 ** * ¥ * * * × * 漱 ¥. 漧 * **** 101 106 111 116 121 125 Ő , • * ÷ 1.3 淋 0----10---20---30---40---50 % INTERVAL (PM) % FREQUENCY % FREQUENCY HISTOGRAM NO. 10 $\frac{1}{11} \frac{1}{211} \frac{1}{311} \frac{1}{511} \frac{1}{$ 0214674196322100000100002 Ō ł × - 20 - 30 - 40 - 50 - 60 - 70 - 80 - 70 - 100 - 110 - 110 - 120 - 140 - 140 - 140 - 150 - 140 - 140 - 200 - 220 - 220 - 220 - 220 - 220 - 250 × . 6 1 .6 4.3 15.8 22.2 15.8 6.4 32 1 4 ж ж * * * * * ж Ж ****** 3 .0000 Ô * + × . 6

DISTRIBUTION OF Zn VALUES - 1985 SOIL PROGRAM

0----10---20---30---40---50 %

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ANOMALOUS ZN VALUES > MEAN+2 STN.DEV= 126.6

SAMPLE	CU (PPM)	ZN (PPM)	PB(PPM)	MN (PPM)
ON-G23E	41	128	62	1060
ON-5W	22	193	32	330
1N-5W	56	444	55	670
1N-6W	37	353	58	1320
SB/2N-4E	41	130	40	310
SB/2N-9E	19	133	24	700

ZN VALUES > MEAN+1 STN. DEV. = 92

0N-24E	30	95	25	480
ON-8W	44	117	30	300
ON-9W	68	106	48	420
ON-12W	42	96	42	1970
1N-9W	48	116	44	810
2N-5W	25	95	68	1470
5N-0	32	94	24	280
SB/2N-6E	25	104	28	730
SB/2N-8E	40	106	41	1070
SB/4N-2E	47	95	24	270

SUM OF 296 ENTRIES IS= 7788 MEAN OF 296 ENTRIES IS= 26.3 STANDARD DEVIATION IS= 22.9 % FREQUENCY HISTOGRAM INTERVAL (PM) % FREQUENCY NO. $\begin{array}{c} 1-5\\ 6-10\\ 11-20\\ 11-20\\ 21-20\\ 21-20\\ 25\\ 26-30\\ 31-35\\ 30\\ -30\\ 31-35\\ 30\\ -40\\ 41-45\\ 40\\ 41-45\\ 46-50\\ 51-55\\ 56-60\\ 61-65\\ 66-70\\ 71-75\\ 76-80\\ 81-85\\ 86-90\\ 91-95\\ 76-100\\ 101-105\\ 106-110\\ 101-105\\ 106-110\\ 101-125\\ 125+ \end{array}$ -**-**---1.3 8.1 14.1 21.9 17.9 13.5 4.3 6 4 3.3 * 42465403820 ł 漱 1 * 棠 * 歉 Ж. * 熂 米 .6 1 ł 漧 * ł 44 M MM 0000 M ł 紫 ** 1 *** **** 1 ō 2 ж . 6 ¥ ; ż ---------------- ---- ---- ----0----10---20---30---40---50 % INTERVAL (PM) NO. % FREQUENCY % FREQUENCY HISTOGRAM + -----9.4 36.1 31.4 10.4 7.4 1.6 1.3 .3 .3 0_ 10 × $\begin{array}{r}
10 \\
- 20 \\
- 30 \\
- 50 \\
- 50 \\
- 50 \\
- 60 \\
- 70 \\
- 80 \\
- 90 \\
- 100 \\
- 11
\end{array}$ 漱 ж ж * * * **** - 100 - 110 - 120 - 130 - 140 - 140 - 150 - 160 - 170 - 180 - 200 - 270 $101 \\ 1111 \\ 121 \\ 131 \\ 141 \\ 151$ **** 161 171 181 191 **** 190 200 210 220 230 240 250 201 211 221 231 241 250 ----* * ł + * +

- 36 -

0----10---20---30---40---50 %

DISTRIBUTION OF Pb VALUES - 1985 SOIL PROGRAM

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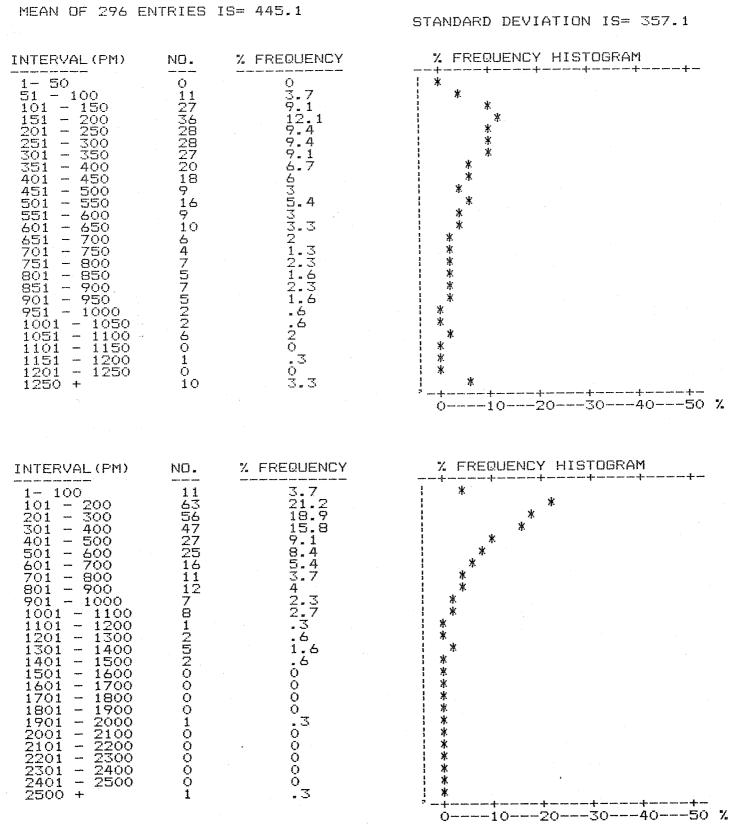
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ANOMALOUS PB VALUES > MEAN+2 STN.DEV= 72.1

SAMFLE	CU (PFM)	ZN (PPM)	FB(FFM)	MN(PPM)
1N-29E	14	78	120	180
2N-4W	98	19	300	560
2N-10W	79	40	80	865
2N-13W	23	67	159	540
2N-20W	28	37	91	610
4N-10W	38	59	90	1080

PB VALUES > MEAN+1 STN.DEV.= 49.2

0N-623E	41	128	62	1060
1N-3₩	100	54	54	610
1N-5W	56	444	55	670
1N-6W	37	353	58	1320
1N-11W	76	74	59	540
2N-5W	25	95	68	1470
2N-5Wup50	114	62	68	610
2N-6W	113	52	50	630
2N-9W	71	37	50	770
3N-9W	72	51	60	820
3N-10W	88	41	62	810
5N-10E	14	45	50	320



DISTRIBUTION OF Mn VALUES - 1985 SOIL PROGRAM

296 ENTRIES IS= 131760

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SUM OF

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ANDMALOUS VALUES > MEAN+2 STN.DEV= 1159.3

SAMPLE	CU (PPM)	ZN (PPM)	FB(FFM)	MN (PPM)
ON-39E	53	45	34	1385
ON-12W	42	96	42	1970
1N-6W	37	353	58	1320
1N-14W+20	244	83	40	1320
1N-18W	89	64	38	1180
1N-7E	10	55	20	2620
1N-10E	44	52	34	2600
2N-5₩	25	95	68	1470
2N-12W	94	60	37	1280
3N-5W	156	60	40	1380
5N-21W	42	62	20	1300
SB/3N-11E	67	64	39	1410
SB/6N-8E	78	82	20	1310

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VALUES > MEAN+1 STN.DEV.= 802.2

C	N-16E	17	50	22	860
C	N-623E	41	128	62	1060
C	N-32E	7	37	13	940
0	N-2W	71	42	36	1040
C	N-7W	21	85	33	875
0	N-13W	60	59	36	1070
1	N-8W	88	89	33	1000
1	N-9W	48	116	44	810
1	N-20W	68	64	46	930
2	N-3W	100	38	45	925
7	N-10W	79	40	80	865
2	N-14E	16	46	11	1090
3	N-9W	72	51	60	820
3	N-10W	88	41	62	810
3	5N-11W	84	36	26	940
3	N-12W	24	39	32	860
3	N-13W	42	46	44	920
4	N-10W	38	59	90	1080
4	N-11E	33	43	24	880
4	N-13E	310	49	25	860
S	B/2N-8E	40	106	41	1070
S	B/3N-9E	29	58	22	824
S	8/3N-12E	73	54	20	1030
S	B/6N-9W	77	57	27	960
S	B/6N-1E	42	59	16	820
S	B/6N-9E	49	44	16	900
S	B/6N-11E	41	67	17	1100

