

20145

LOG NO: 10-03	RD.
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**GEOCHEMICAL AND GEOLOGICAL REPORT  
ON THE SANDI PROPERTY  
CARIBOO MINING DIVISION, BRITISH COLUMBIA**

NTS 93A/6W

52° 26' north latitude

121° 23' west longitude

By

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180 Yorston Street  
Williams Lake, B.C. V2G 3Z1

September, 1990

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**20,145**

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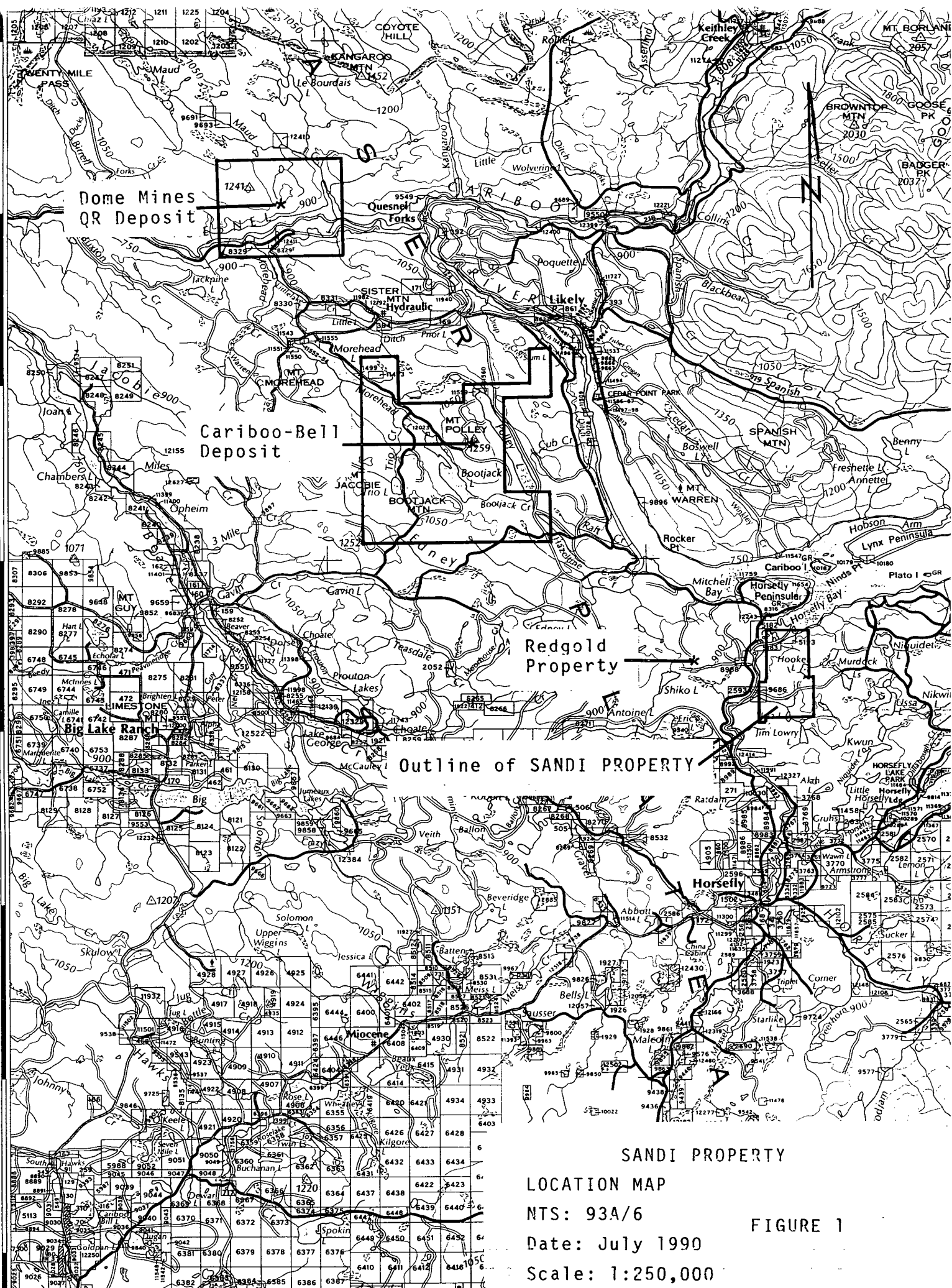
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45'

30'

15'

To Quesnel - 109 kilometres



SANDI PROPERTY

LOCATION MAP

NTS: 93A/6

FIGURE 1

Date: July 1990

Scale: 1:250,000

## **A) INTRODUCTION**

### **1) LOCATION**

The Sandi property is located (Figure 1) in the Cariboo Mining Division, British Columbia, 64 kilometres northeast of the city of Williams Lake and 11 kilometres north of the community of Horsefly. More precisely, it is located at 52 degrees 26 minutes north latitude and 121 degrees 23 minutes west longitude. (National Topographic System Map 93A/6W).

### **2) ACCESS AND PHYSIOGRAPHY**

The Sandi property is readily accessible from Williams Lake via paved highway to the community of Horsefly, from where secondary gravel roads via Horsefly, Nitwit and Murdock Lakes access the property.

The Sandi property covers gentle south and west facing slopes that are dominated by westerly drainages from Hooker and Lea lakes. The elevation on the property varies from 800 to 950 metres above sea level. Vegetation is characterized by mature forests of pine, spruce and fir with

variable undergrowth of alder and devils club.

### 3) PREVIOUS WORK

In August 1973, Hudson's Bay Oil and Gas Company Limited recorded the Hook mineral claims whose northern area covered the same location as the Sandi mineral claims. In 1974 Hudson Bay conducted geological mapping, induced polarization, magnetometer, geochemical soil sampling and percussion drilling programs (assessment report 5088).

From 1974 to 1986 this area has been covered by several claim groups that have no work documented for assessment credit. The last work documented in the Sandi claim area was on the Lea claims, where a limited program of geological mapping and stream sediment sampling was carried out in 1987.

### 4) ECONOMIC CONSIDERATIONS

The Sandi property is linked to the city of Williams Lake by sixty-five kilometres of all-weather gravel or paved road. The infrastructure at Williams Lake would easily

support any development in the Sandi area. High-voltage hydroelectric lines pass within twenty kilometres of the Sandi property. A reliable source of water is readily available from the Horsefly River and there is adequate area on the property for waste and/or tailings disposal.

#### 5) OWNERSHIP

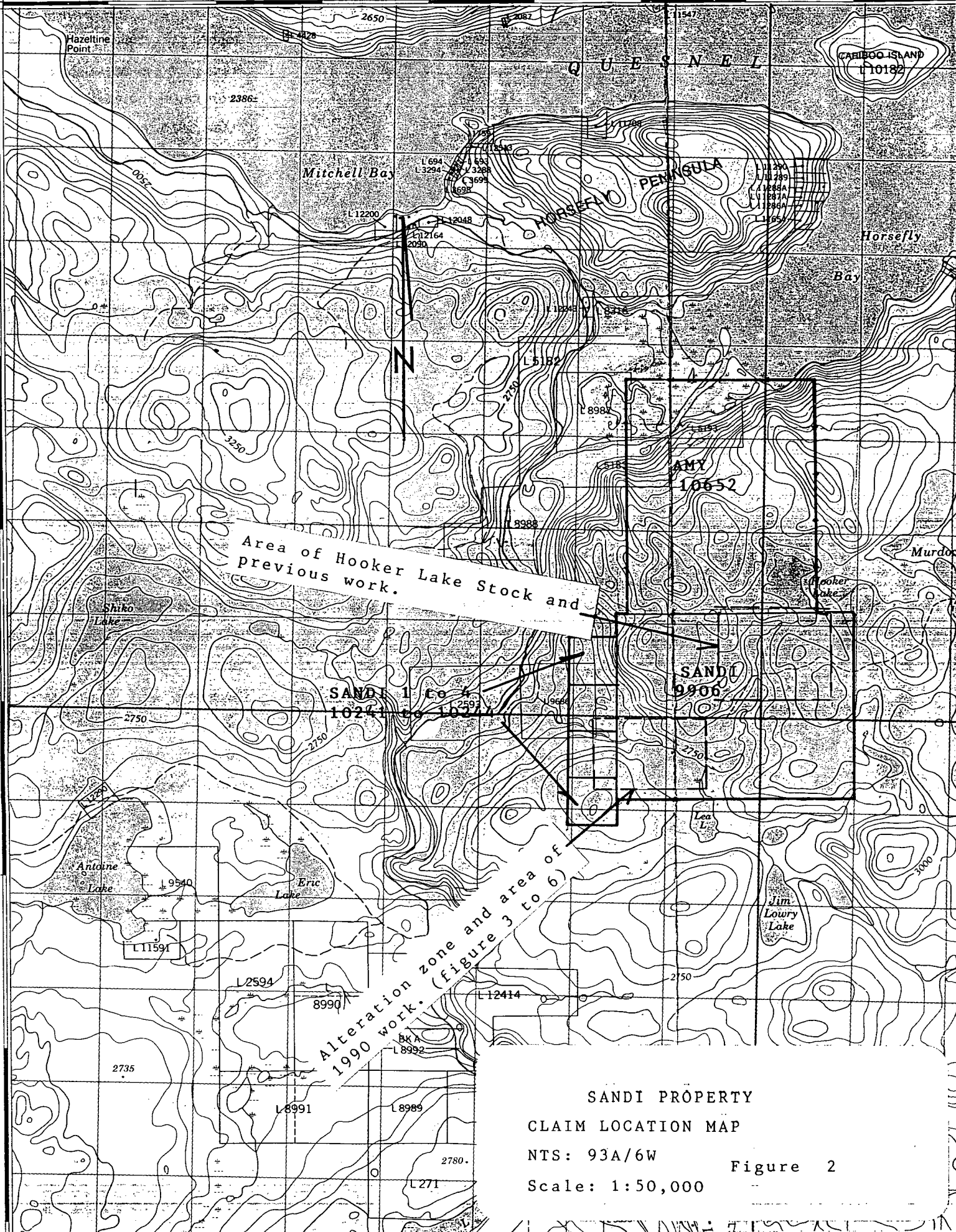
The Sandi Property is comprised of 44 contiguous mineral claim units located in the Cariboo Mining Division (Figure 2). The relevant claim data is given below:

CLAIM NAME	NUMBER of UNITS	RECORD NUMBER	RECORD DATE
Sandi	20	9906	July 6, 1989
Sandi 1	1	10241	Oct. 29, 1989
Sandi 2	1	10242	Oct. 29, 1989
Sandi 3	1	10243	Oct. 29, 1989
Sandi 4	1	10244	Oct. 29, 1989
Amy	20	10652	June 22. 1990



121°30' 603000m. E. 04 05 06 07 25' 08 09 10 11 1

52°30'  
17  
5816000m. N.  
15  
14  
13  
12  
11  
10  
09  
25'  
08  
07  
06  
05



SANDI PROPERTY  
 CLAIM LOCATION MAP  
 NTS: 93A/6W  
 Scale: 1:50,000  
 Figure 2

## 6) PURPOSE OF PROGRAM

The 1987 exploration program on the Lea property showed an area of hydrothermal alteration with pyrite mineralization. The objective of the 1990 program was to geologically and geochemically evaluate this hydrothermal alteration zone, which outcrops in the banks of the main, westerly flowing drainage on the property.

### (B) REGIONAL AEROMAGNETIC SURVEYS

Regional magnetic trends are given on Aeromagnetic Series Map 5239G (Horsefly). Panteleyevs (1987) regional mapping notes that magnetic highs correspond to alkalic intrusive centers and analcite bearing volcanics with magnetic troughs outlining porphyritic basalt flows and flow breccias. This regional trend is well illustrated on the Sandi property where the Hooker Lake stock, basalt flows and tuffs and a hydrothermal alteration zone are within or on the edges of a fairly extensive magnetic high. The regional magnetic highs define the magnetic alkalic intrusives as the "QR" stock, "Mt. Polley" stock and the "Shiko Lake" stock to

the northwest of the "Hooker Lake" stock.

**(C) GEOLOGY**

**1) REGIONAL GEOLOGY**

Geologically the Sandi property is located in a large structurally controlled Upper Triassic to Lower Jurassic depositional feature known as the Quesnel Trough. The Quesnel Trough is defined as a 30 to 60 kilometre wide linear belt of Upper Triassic to Lower Jurassic volcanic and related strata enclosed between older rocks and often invaded by batholiths and lesser intrusions.

Many of the alkalic intrusions are coeval with the volcanic strata and as such represent the conduit for the volcanic lithologies. These alkalic intrusive centres are often recognized as strong regional aeromagnetic anomalies. One such centre is developed as the Hooker Lake stock in the central portion of the property and corresponds to a magnetic alkalic intrusive.

Mineral exploration programs in the Quesnel Trough area in the late sixties to the mid-seventies have led to the discovery of numerous porphyry copper and/or molybdenum prospects and deposits. Several of these porphyry copper prospects and mines that developed in association with alkalic intrusives were noted to have associated gold values. Three of the more significant of these can be summarized as:

<u>Deposit</u>	<u>Reserves</u>
Afton Mine	-24,000,000 tons grading 1.11% copper and .025 oz/ton gold
Cariboo-Bell Deposit	-100,000,000 tons grading 0.4% copper and .021 oz/ton gold
QR Deposit	-950,000 tons grading .21 oz/ton gold

All three deposits are developed in association with an alkalic intrusive complex within an alkalic volcanic to sedimentary enclosing sequence.

The reserves of these deposits suggests the potential for the development of economic copper and/or gold deposits in

this geological environment.

## 2) SANDI PROPERTY GEOLOGY

The interpretation of the Sandi property geology is based on scarce outcrop exposure (figure 2).

The oldest rocks on the Sandi property are Lower Jurassic hornblende and pyroxene basalt flows (unit A) and fine to medium grained mafic tuff (unit B), both of which are moderately magnetic. In the east central area of the property these rocks are hornfelsed and altered in response to the emplacement of a magnetic monzonite to diorite intrusion (unit C) and elsewhere, locally exhibit weak carbonate alteration.

In the west central portion of the property an area of intense hydrothermal alteration is mapped as (unit D). The primary texture of this unit has been erased by moderate to strong carbonate and argillic alteration. This alteration seems to be related to fault or fracture zones in the volcanics. The 1990 geological mapping and geochemical

sampling evaluated the extent of this alteration zone along Lea Creek.

Sulphide mineralization on the Sandi Property was noted as more or less ubiquitous disseminated and veined pyrite and in unit D was found to locally comprise up to 15% of the rock. Minor fine grained chalcopyrite and/or malachite were also noted at two locations in unit D.

#### D) GEOCHEMISTRY

To evaluate the hydrothermal alteration zone in the west central portion of the Sandi property a total of 40 soil samples, 7 rock samples and 1 silt sample were collected and sent to MIN-EN Labs in Vancouver for analysis.

The soil samples were collected at 50 metre intervals on contour soil lines to the south and north of the creek. The -40 mesh silt sample was collected from the main creek close to the western property edge. Seven rock samples were collected from the alteration zone.

## 1) Sample Collection

At each soil sample site a pit of .4 to .7 metres was dug with a mattock or shovel and a sample of "B" horizon soil was collected and placed in a labelled kraft paper envelope.

The stream sediment sample was collected by sieving sediment from the active channel to -40 mesh in the field. This was done by wet sieving into a pan and care was taken not to discard the over flow and suspended fines. Approximately a 1.5 kilogram sample of silt was collected and placed into a numbered plastic sample bag.

Rock samples consisted of random chips from small outcrops and float. All rock samples were placed in plastic bags and labelled with pre-numbered assay tags.

All the soil, silt, and rock samples were sent to Min-En Laboratories in North Vancouver.

## 2) Sample Preparation and Analysis

At the Min-En Laboratory the silt samples were wet sieved to -270 mesh and dried. The soil samples were sieved to -80 mesh. The rock samples were crushed by jaw crusher and pulverized by ceramic plated pulverizer.

Gold analysis by atomic absorption was carried out on a 10 gram subsample of -80 mesh material after a hot aqua regia digestion and a M.I.B.K extraction. A 5 gram subsample was digested as necessary for analysis by ICP for silver, arsenic, barite, cobalt, copper, iron, manganese, molybdenum, nickle, lead antimony and zinc.

## 3) Geochemical Results.

As Min-En completed geochemical analysis of rock and silt samples they prepared hard copies of the results and also downloaded the results onto the ENVOY computer data network. The hard copies were used for field plotting while the results on ENVOY were copied onto disk via modem, cleaned, merged with sample numbers and stored for data



analysis. The cleaned data was stored on disk and recalled for the computer assisted plotting. The geochemical results for all the samples are given as appendix 1 of this report and the results for gold, copper, and arsenic are shown as figures 4, 5 and 6.

#### **GOLD**

The results for gold in soils show a weakly anomalous (> 15 ppb) zone that is coincident with the zone of hydrothermal alteration. The silt sample, taken near the western unit of exposure in this area also returned an anomalous value (38 ppb), and 3 rock samples were found to contain greater than 50 ppb gold.

#### **COPPER**

The results for copper were found to be uniformly low in all samples with the exception of one rock sample that ran 577 ppm. This sample (34569) was also anomalous in arsenic, antimony and gold.

**ARSENIC**

Values for arsenic in soil show a slightly elevated response over the hydrothermal alteration zone with three samples being anomalous (> 50 ppm). These samples are coincident with anomalous gold values.

Results for silver and molybdenum were found to reflect background levels only.

**E) DISCUSSION**

The Sandi property is located in the Upper Triassic - Lower Jurassic structural feature known as the Quesnel Trough.

The Sandi property geology is dominated by alkalic volcanic and volcanoclastic rocks that have been intruded by the magnetic monzonite to diorite Hooker Lake stock.

Hydrothermal alteration as carbonate and bleaching with up to 20% disseminated pyrite has been mapped in the west central

property area.

This program evaluated this alteration zone by limited soil, silt and rock sampling in conjunction with geological mapping. The results show this alteration zone to be anomalous in Au, Cu and As.

The results of this preliminary survey suggest that the Sandi property has potential to host a porphyry copper and/or gold mineralization . The intrusive activity in conjunction with the alteration zone and large untested area, suggest that the Sandi property would have room to host an economic porphyry copper/gold deposit.

To evaluate this potential a program of grid preparation, geochemical sampling (soil and rock), geophysics (magnetometer and induced polarization surveys) and geological mapping followed by diamond drilling is warranted.

**APPENDIX 1**

**Geochemical Results**



COMP: DURFELD GEOLOGICAL MANAG.LTD  
 PROJ:  
 ATTN: R.DURFELD

**MIN-EN LABS — ICP REPORT**  
 705 WEST 15TH ST., NORTH VANCOUVER, B.C. V7M 1T2  
 (604)980-5814 OR (604)988-4524

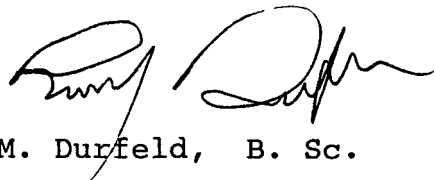
FILE NO: 0V-0794-SJ1+  
 DATE: 90/07/0  
 \* SOIL \* (ACT:F3)

SAMPLE NUMBER	AG PPM	AS PPM	BA PPM	CO PPM	CU PPM	FE PPM	MN PPM	MO PPM	NI PPM	PB PPM	SB PPM	ZN PPM	AU PPB
SS1-90. (SILT)	.5	19	128	18	54	39730	1171	1	24	18	1	51	38
SL1:0+00W	.8	11	60	18	53	34950	571	1	30	18	1	46	15
SL1:0+50W	.8	6	51	18	46	32960	740	1	55	15	1	61	1
SL1:1+00W	.7	7	49	12	26	24140	301	1	31	10	1	40	2
SL1:1+50W	1.0	9	50	16	35	30010	475	1	42	14	1	71	2
SL1:2+00W	1.1	13	46	17	48	31250	673	1	34	18	1	83	5
SL1:2+50W	1.0	16	48	18	47	32960	446	1	47	18	1	54	1
SL1:3+00W	.9	5	37	14	32	28330	506	1	30	16	1	63	3
SL1:3+50W	1.2	19	46	16	71	32370	634	1	39	13	1	59	9
SL1:4+00W	.9	9	37	14	36	29740	340	1	32	13	1	56	6
SL1:4+50W	1.0	16	39	13	62	27410	409	1	30	16	1	42	2
SL1:5+00W	.9	6	53	15	44	28550	608	1	37	11	1	58	1
SL1:5+50W	1.1	10	63	20	84	35960	678	1	57	18	1	64	2
SL1:6+00W	1.0	12	56	19	82	36460	623	1	49	12	1	47	5
SL1:6+50W	1.2	20	53	16	53	30950	582	1	41	18	1	58	1
SL1:7+00W	1.3	17	54	16	80	32220	487	1	51	16	1	61	3
SL1:7+50W	.9	17	74	15	24	29500	380	1	38	17	1	46	1
SL1:8+00W	.5	30	211	21	61	50350	3257	2	15	33	3	192	22
SL1:8+50W	.9	20	323	17	47	43190	840	1	43	21	1	147	1
SL1:9+00W	.7	59	384	15	61	43820	876	1	22	19	3	104	46
SL1:9+50W	1.3	24	104	18	79	35530	850	1	41	20	1	82	10
SL1:10+00W	1.4	81	164	16	59	36190	836	1	29	19	3	91	52
SL1:10+50W	1.6	31	94	16	62	33690	630	1	41	18	1	73	14
SL1:11+00W	1.1	40	116	16	55	35930	610	1	35	22	1	100	38
SL1:11+50W	1.3	37	116	16	63	37860	701	1	36	18	1	87	17
SL1:12+00W	1.4	103	117	18	70	39650	753	1	40	21	8	134	101
SL2:0+00E	1.8	30	144	23	85	41870	1056	1	45	20	1	76	4
SL2:0+50E	1.6	20	120	20	79	39800	863	1	44	21	1	75	2
SL2:1+00E	.8	31	105	20	53	42510	577	1	31	20	1	70	2
SL2:1+50E	.9	19	82	13	37	27030	411	1	33	14	1	80	1
SL2:2+00E	.4	9	96	15	52	37850	431	1	30	16	1	60	24
SL2:2+50E	.4	12	124	15	45	37350	344	1	24	16	1	59	22
SL2:3+00E	1.3	12	219	19	70	41370	1045	1	39	19	1	85	18
SL2:3+50E	.3	26	188	18	67	46300	930	1	19	21	1	101	22
SL2:4+00E	1.0	12	54	15	48	31220	442	1	36	15	1	49	7
SL2:4+50E	1.6	24	61	18	65	34220	632	1	45	17	1	58	1
SL2:5+00E	1.2	16	63	18	48	35330	808	1	43	17	1	54	1
SL2:5+50E	1.1	7	69	18	40	36070	617	1	44	16	1	59	2
SL2:6+00E	1.1	11	50	15	41	30390	412	1	41	15	1	49	1
SL2:6+50E	1.2	5	73	18	41	34780	783	1	49	16	1	73	1
SL2:7+00E	1.4	5	51	18	55	32080	658	1	44	16	1	49	2
SANDY SOIL 1	1.1	1	97	17	38	32850	444	1	37	16	1	67	2
SANDY SOIL 2	1.2	6	44	14	40	29370	209	1	30	14	1	42	1
SANDY SOIL 3	1.1	2	118	17	55	35340	657	1	37	14	1	97	4
SANDY SOIL 4	1.1	4	79	16	36	33250	459	1	40	14	1	77	2

APPENDIX II

COST STATEMENT:

Geochemical Analyses	\$ 709.53
Technical Staff	
Geologist - R.M. Durfeld	
1 man/day at \$350	350.00
Geologist Assistant - A. Hamilton	
6 man/days at \$150	900.00
Sampler - C. Durfeld, G. Kline	
4 man/days at \$40	520.00
Transportation	
Truck Rental	
4 days at \$40	160.00
Fuel	175.00
Report Preparation and Drafting	<u>500.00</u>
Total Cost of Program	\$3,314.53
Field Cost incurred during period June 1, to June 30, 1990	



R. M. Durfeld, B. Sc.

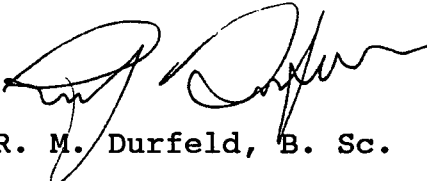
(Geologist)

## APPENDIX III

## STATEMENT OF QUALIFICATIONS

I Rudolf M. Durfeld, do hereby certify:

- 1.) That I am a geologist with offices at 180 Yorston Street, Williams Lake, B.C.
- 2.) That I am a graduate of the University of British Columbia, B. Sc. Geology 1972, and have practiced my profession with various mining and/ or exploration companies and as an independent geologist consultant since graduation.
- 3.) That I am a Fellow of the Geological Association of Canada (Member No: F3025), and am a member of The British Columbia and Yukon Chamber of Mines and the Canadian Institute of Mining and Metallurgy.
- 4.) That this report is based on geochemical sampling and geological mapping conducted under my supervision on the Sandi property during the period June 1st to June 30th, 1990.



R. M. Durfeld, B. Sc.  
(Geologist)



# 20,145

LEGEND

- - outline of the SANDI mineral claims
- - outcrop area
- D - hydrothermal alteration zone with moderate to strong carbonate alteration and veined and disseminated pyrite.
- C - monzonite to diorite - moderately magnetic
- B - fine to medium grained mafic tuff - magnetic
- A - hornblende-pyroxene basalt - moderately magnetic

+32 rock sample site with gold value in ppb.

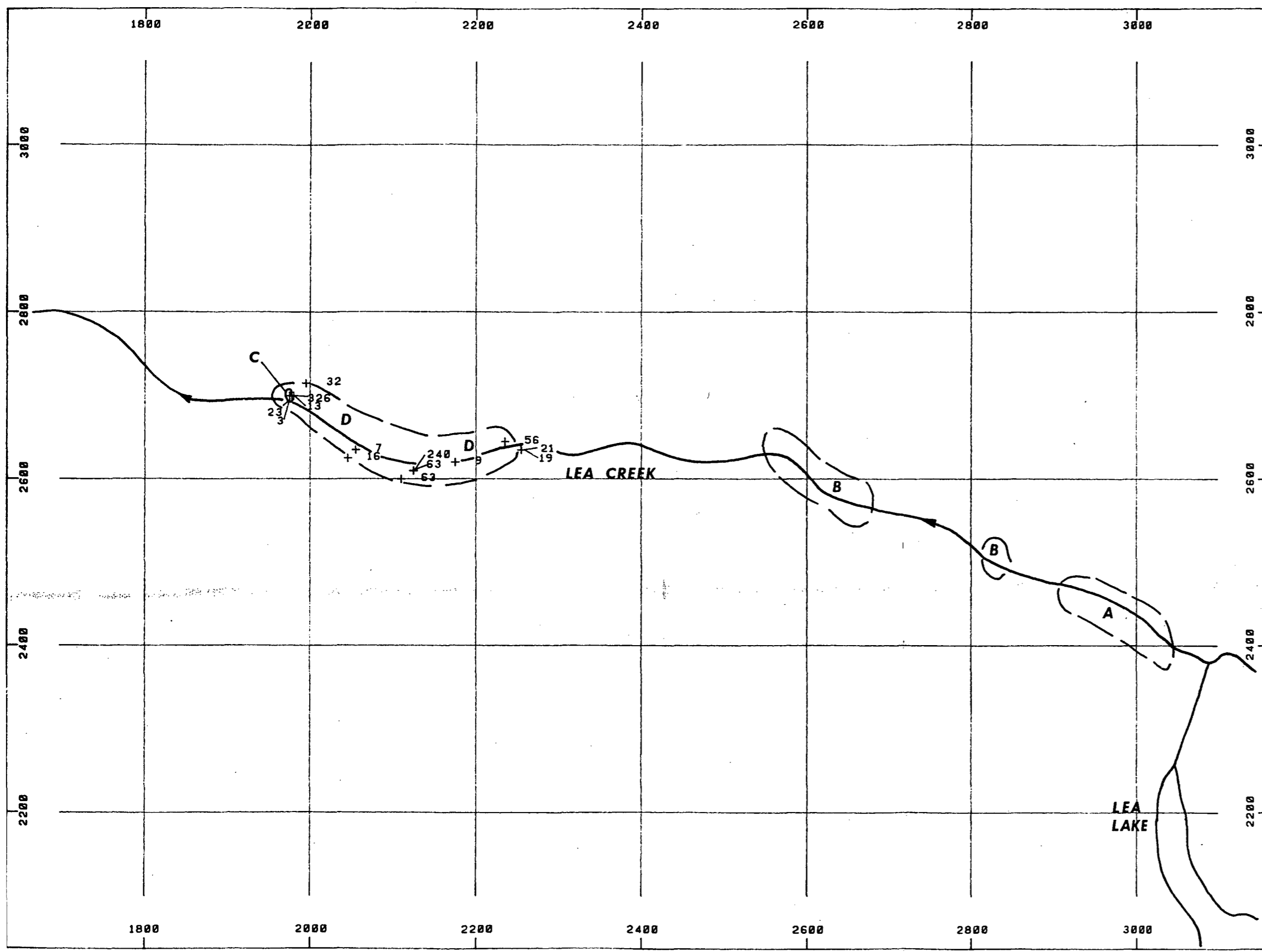
SANDI PROPERTY  
HORSEFLY AREA  
GEOLOGICAL PLAN  
LEA CREEK AREA

Scale 1: 5000.0



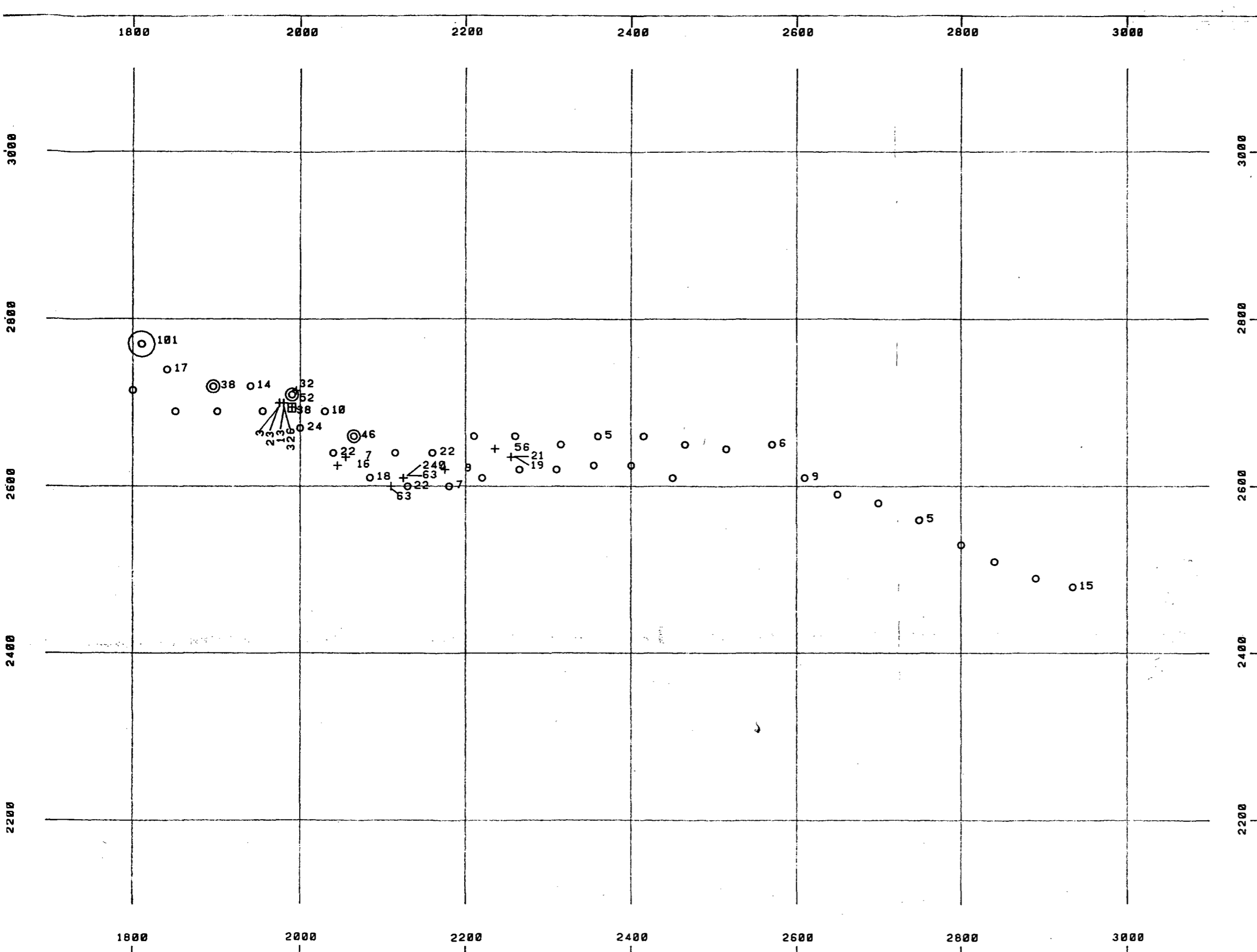
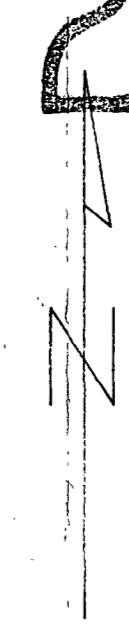
Date: AUGUST 1990      NTS 93A/6W      RMD

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20,145  
LEGEND

- 17 soil sample site and value  
values less than 5 ppb not shown
- ⊙101 circle scaled according to value
- ⊞38 silt sample site and value
- +32 rock sample site and value



SANDI PROPERTY  
HORSEFLY AREA  
GEOCHEMICAL PLAN  
GOLD (PPB)  
Scale 1: 5000.0

Date: AUGUST 1990	NTS 93A/6W	RMD
DURFELD GEOLOGICAL MANAGEMENT LTD.		

20,145  
LEGEND

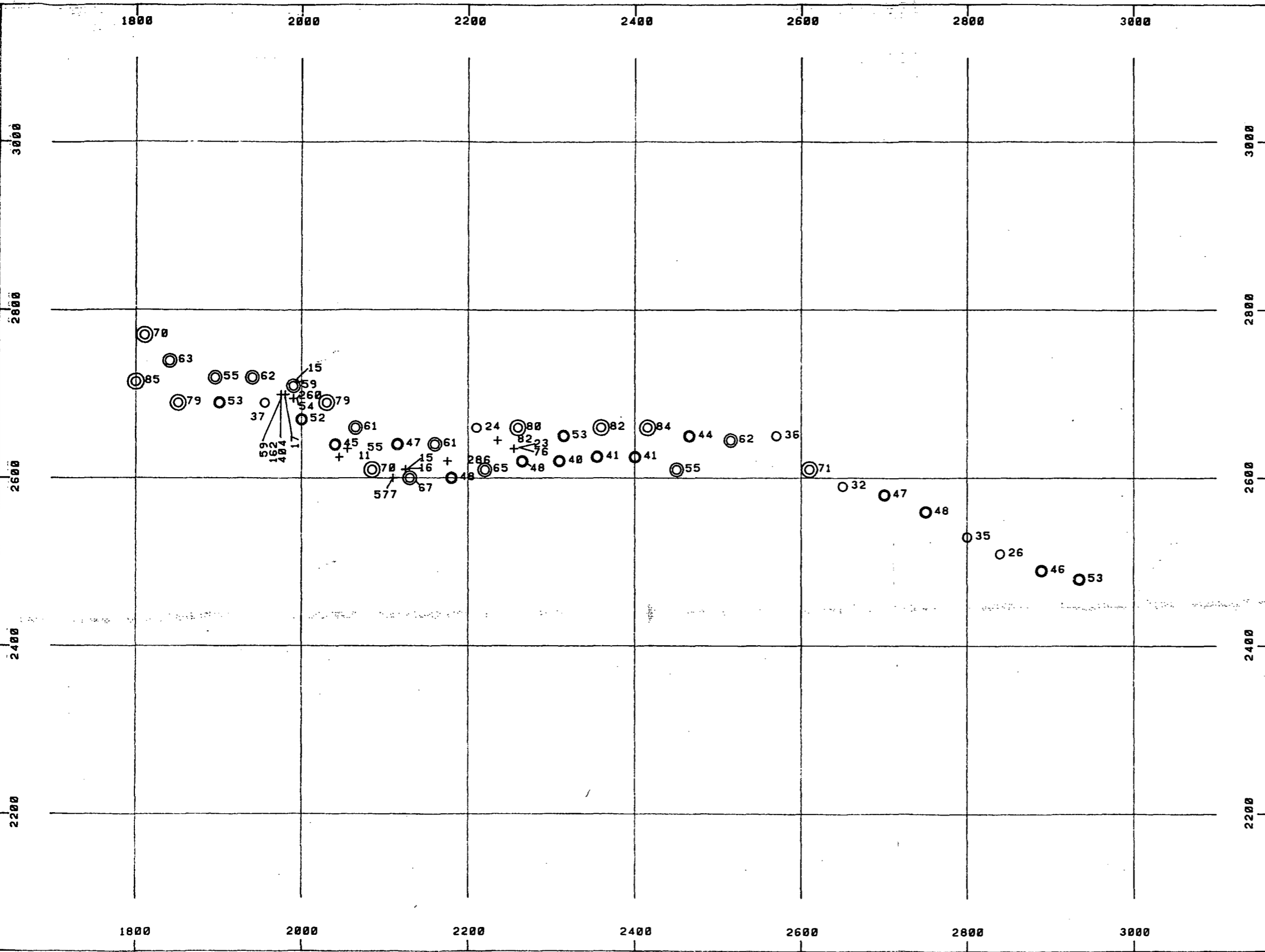
- 17 soil sample site and value
- 101 circle scaled according to value
- ⊞38 silt sample site and value
- +32 rock sample site and value

SANDI PROPERTY  
HORSEFLY AREA  
GEOCHEMICAL PLAN  
COPPER (PPM)  
Scale 1: 5000.0

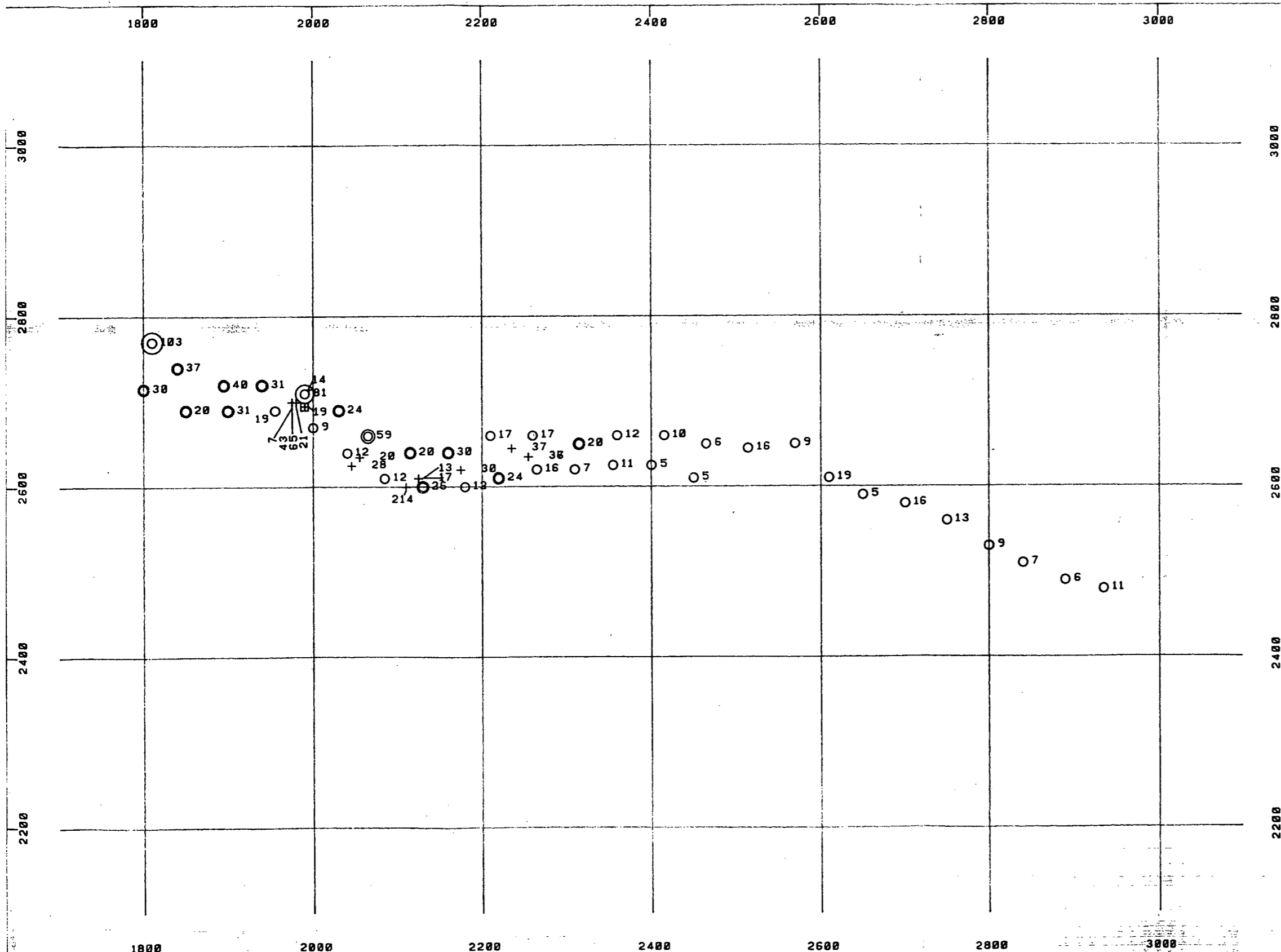


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20,145



LEGEND

- 17 soil sample site and value
- 101 circle scaled according to value
- 38 silt sample site and value
- +32 rock sample site and value

SANDI PROPERTY  
HORSEFLY AREA  
GEOCHEMICAL PLAN  
ARSENIC (PPM)

Scale 1: 5000.0



Date: AUGUST 1990      NTS 93A/6W      RMD

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