

826702

STUMP LAKE
SUMMARY REPORT
OF
SPRING 1988 PROGRAM

92 I/8

MARCH, 1988

GRAEME EVANS

STUMP LAKE PROGRAM SUMMARY

Phase 1 of the Stump Lake property has been completed except the detailed report which will follow on completion of the Phase 2 work at the end of 1988.

Grid Work

52.65 kilometers of grid was established by the end of January.

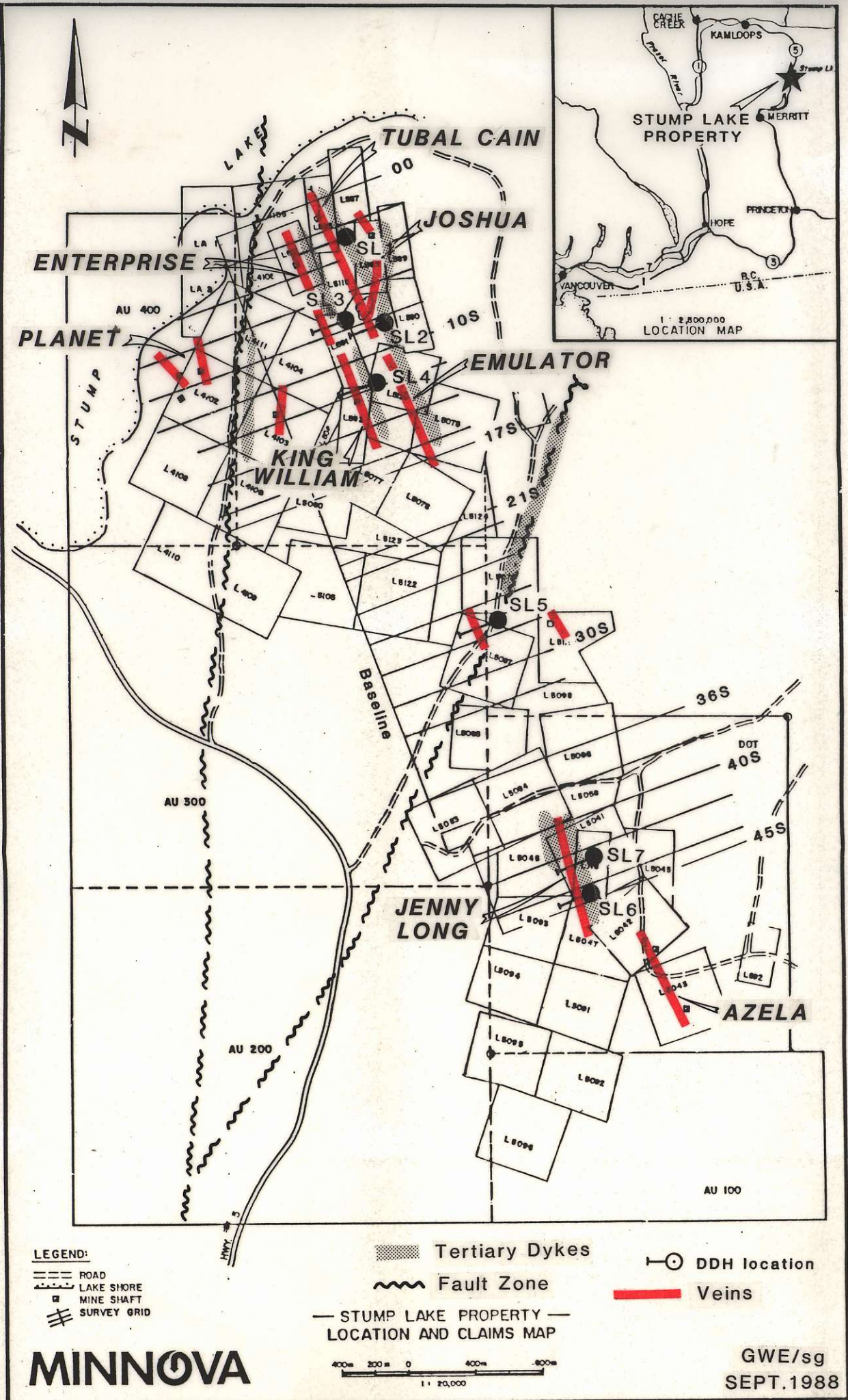
Mag & VLF

48.15 kilometers of a Proton Magnetometer survey crossed the structures with the Quartz veins on lines with a 250° bearing, over a strike length of 4.5 kilometers. The magnetic survey defined several strong anomalies along ore-bearing structures and the Stump Lake fault. Drilling has revealed these are Tertiary Basalt Dykes which have a close affinity to the vein systems.

VLF was carried out over the same lines using two stations (Seattle and Cutler, Maine). Seattle worked particularly well defining the Stump Lake Fault and a parallel fault close to the East Side of Stump Lake. VLF also outlined several weaker trending structures striking 150 - 180° which correlate with ore-bearing structures.

Drilling

From January 29th to February 18th Frontier Drilling completed seven NQ diamond drill holes for a total of 1097.6 m. The holes tested various zones over a strike length of 4.3 kilometers and 39 samples were sent for Assay for Cu, Pb, Zn, Ag, Au and WO₃ and another 98 samples were sent for Lithochemical analysis.

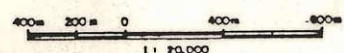


LEGEND:
 --- ROAD
 - - - LAKE SHORE
 □ MINE SHAFT
 ≡ SURVEY GRID

▨ Tertiary Dykes
 ~~~~~ Fault Zone

○ DDH location  
 — Veins

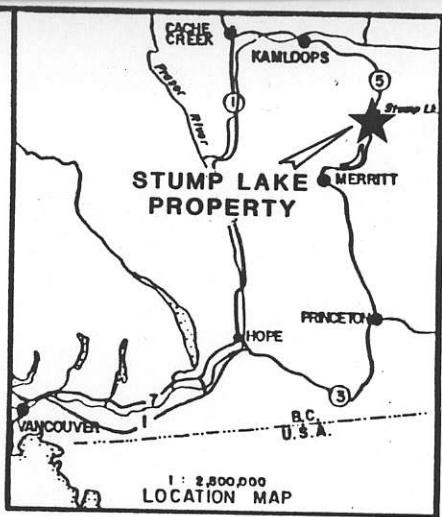
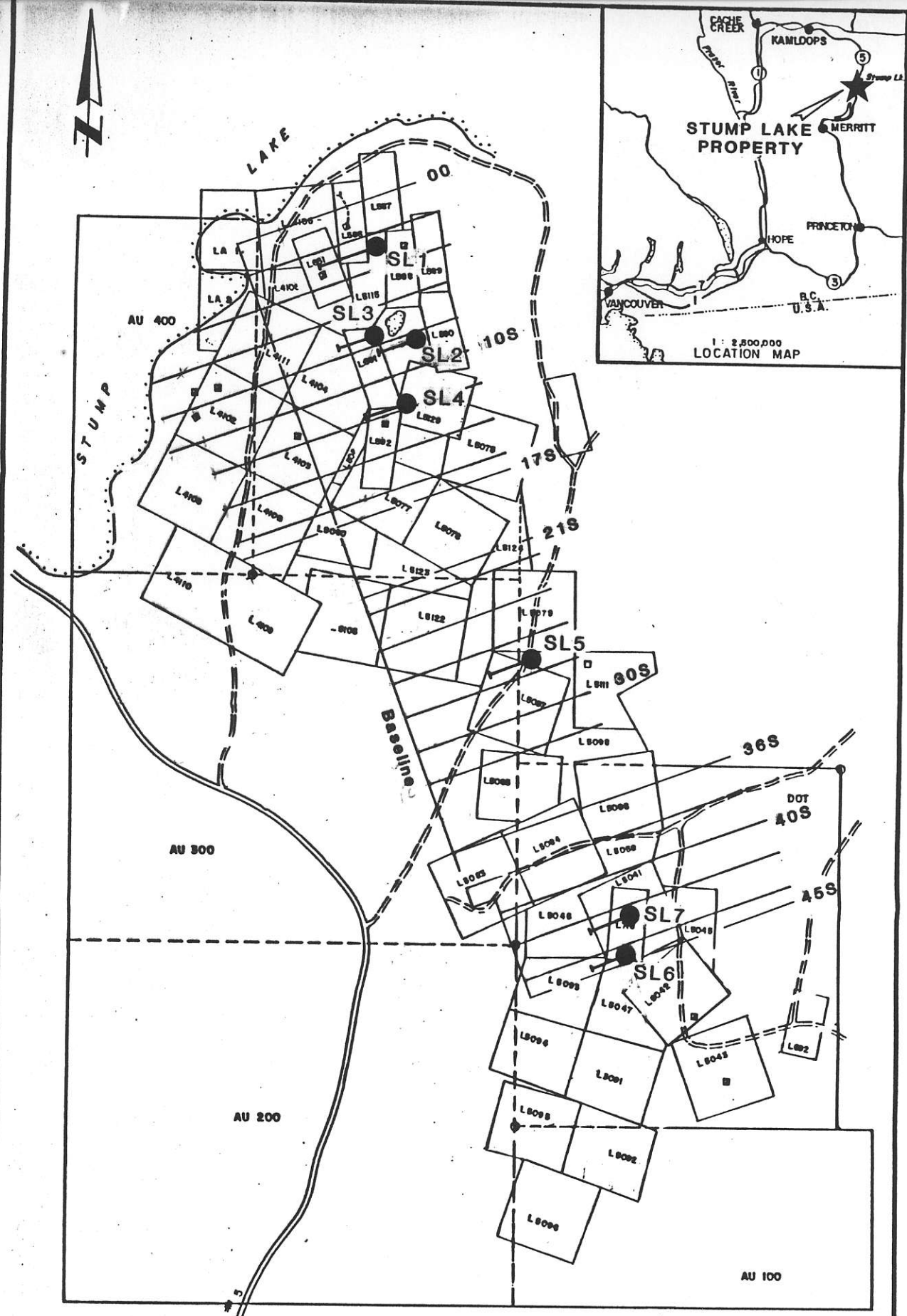
— STUMP LAKE PROPERTY —  
 LOCATION AND CLAIMS MAP



**MINNOVA**

GWE/sg  
 SEPT. 1988

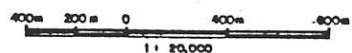




- LEGEND:**
- ROAD
  - LAKE SHORE
  - MINE SHAFT
  - SURVEY GRID

DDH location

— STUMP LAKE PROPERTY —  
LOCATION AND CLAIMS MAP



**MINNOVA**



The drilling supports the surface evidence of large areas of mineralization and alteration over the whole grid area. A surprising relationship is that mineralization occurred at the same time as the formation of the Tertiary Basalt Dykes. This is interesting since a high level Tertiary Epithermal system (Cindy) is known at the North end of Stump Lake and the Stump Lake property may be a deeper base metal rich part of this Epithermal system.

Summary logs are attached but an outline of targets and results are as follows:

SL1 was planned to intersect a triple junction of the Tubal Cain, the King William and the Enterprise vein. The intersection was not hit but the Tubal Cain system was intersected as well as a large unknown parallel structure near the top of the hole.

|                      |                       |                                |
|----------------------|-----------------------|--------------------------------|
| Some better results: | 103.7 - 105.5m (1.8m) | .033% Cu, .68% Zn,             |
|                      | Altered Zone          | .68% Pb, 15.8g Ag,<br>.61g Au  |
|                      | 155.4 - 156.6m (1.2m) | .053% Cu, .48% Zn,             |
|                      | Altered Zone          | .65% Pb, 51.8g Ag,<br>1.92g Au |
|                      | 284.0 - 286.6m (2.6m) | .051% Cu, .18% Zn,             |
|                      | Tubal Cain Zone       | .15% Pb, 31.0g Ag,<br>.41g Au  |

While values are not economic, it is encouraging that >15% of the hole was in alteration.

SL2 tested the junction of the Joshua and Tubal Cain system which was found to lie farther to the South yet. A large amount of parallel Tertiary Basalt Dykes parallel the vein systems and account for the magnetic high. Both vein systems were encountered but values are low.

|             |                     |                                                                            |
|-------------|---------------------|----------------------------------------------------------------------------|
| Joshua Zone | 50.7 - 56.9m (6.2m) | .014% Cu, .01% Zn,<br>.01% Pb, 4.4g Ag,<br>.05g Au, .023% WO <sub>3</sub>  |
| Tubal Cain  | 76.5 - 78.2m (1.7m) | .018% Cu, .12% Zn,<br>.10% Pb, 11.7g Ag,<br>.20g Au, .014% WO <sub>3</sub> |

SL3 tested the extension of the King William vein near a large N - S trending alteration zone.

Results were disappointing with only a thin alteration zone and a parallel Basalt Tertiary Dyke.

|              |                     |                                     |
|--------------|---------------------|-------------------------------------|
| Results are: | 62.5 - 64.3m (1.8m) | 91ppm Cu, 79ppm Zn,<br>Altered Zone |
|              |                     | 50ppm Pb, 14ppm Ag,<br>85ppb Au     |
|              | 65.7 - 66.0m (.3m)  | 95ppm Cu, 1384ppm Zn                |
|              | Quartz Vein         | 303ppm Pb, 53ppm Ag,<br>320ppb Au   |

SL4 tested the King William Vein North of the shaft. It intersected 3 subparallel alteration zones over the length of the hole, including the King William vein.

|                |                     |                                 |
|----------------|---------------------|---------------------------------|
| Results (SL4): | 20.2 - 21.4m (1.2m) | .02% Cu, .10% Zn,               |
|                | Altered Zone        | .09% Pb, 4.2g Ag,<br>1.52g Au   |
|                | 70.0 - 70.4m (.4m)  | .037% Cu, .59% Zn,              |
|                | King William Vein   | .50% Pb, 284.0g Ag,<br>7.24g Au |

SL5 tested vein continuity near the Stump Lake Fault area and many zones of alteration were encountered. The best value was in a quartz vein.

|  |                     |                               |
|--|---------------------|-------------------------------|
|  | 49.6 - 50.1m (0.5m) | .098% Cu, .76% Zn,            |
|  |                     | .13% Pb, 58.7g Ag,<br>.62g Au |

SL6 tested the Jenny Long vein at a multiple intersection to the North of the Shaft. Large zones of alteration were encountered with a higher sulphide content, over a majority of the hole. The alteration is unusual in that it is intense chlorite-epidote alteration rather than the normal bleached clay-silica alteration. The Jenny Long Vein was intersected in the core of this alteration.

|  |                     |                                    |
|--|---------------------|------------------------------------|
|  | 64.5 - 65.4m (0.9m) | .403% Cu, 1.60% Zn,                |
|  |                     | 1.36% Pb, 167g/T Ag,<br>4.31g/T Au |
|  | 96.5 - 98.0m (1.5m) | .047% Cu, .02% Zn,                 |
|  |                     | .02% Pb, 33.7g/T Ag,<br>.73g/T Au  |



SL7 tested the North extension of the Jenny Long Vein system. The hole was bounded by Tertiary Dyke swarms at either end with pyrite veinlets in strong chlorite-epidote alteration in the middle of the hole. This zone likely correlates to the Jenny Long vein and indicates its termination.

No significant assays.

#### Alteration

A brief examination indicates the altered zones are not as silicified as previously thought, but are bleached-clay altered zones with enhanced  $\text{SiO}_2$ ,  $\text{K}_2\text{O}$ ,  $\text{MgO}$  and depleted  $\text{Na}_2\text{O}$  and  $\text{Ba}$ . These zones often contain 5 - 10% disseminated pyrite and I.P. may work effectively defining these zones. Also, a few samples will be sent for XRD analysis in Phase 2.

Phase 2 will be conducted later in the summer consisting of:

- a) detailed grid mapping
- b) mapping and sampling underground workings
- c) lithogeochemical sampling of the surface
- d) possibly some I.P. testing
- e) diamond drill program (approximately 800m) on specific targets
- f) compilation and a report

G. Evans

GE/kf

APPENDIX I  
SUMMARY DRILL LOGS

### SUMMARY SL-1

Location: 3+50S, 8+20E

Azimuth: 250 Dip: -70

|                       |                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------|
| 0-2.3                 | Casing                                                                                                 |
| 2.3-12.2              | Nicola Basalt Tuff                                                                                     |
| 12.2-34.6             | Fault Zone with Tertiary Basalt Dykes (Magnetic)                                                       |
| 34.6-91.6             | Nicola Basalt Fl-Bx                                                                                    |
| 91.6-93.1             | Tertiary Basalt Dyke (Magnetic)                                                                        |
| 93.1-101.3            | Nicola Basalt Fl-Bx                                                                                    |
| 101.3-105.5           | Silicified Zone with Qtz Veins<br>5-10% py, tr Ga, tr Sp, tr Cpy                                       |
| 105.5-153.8           | Nicola Fl-Bx, Tuffs and minor seds with<br>several .5-1.0m silicified zones.                           |
| 153.8-157.1           | Silicified zone with Quartz Veins                                                                      |
| 157.1-195.6           | Nicola Basalt Fl-Bx                                                                                    |
| 195.6-202.2           | Fault Zone with silicification and Quartz Veins<br>with green micas, 1-2% py                           |
| 202.2-281.2           | Nicola Basalt Tuff                                                                                     |
| 281.2-297.2           | Fault Zone with Silicification and Quartz Veins<br>2-5% py, tr Ga, tr Sp<br>The Tubal Cain Vein System |
| 297.2-324.7           | Nicola Basalt Fl-Bx                                                                                    |
| 324.7-335.9           | Tertiary Basalt Dykes (Magnetic)                                                                       |
| 335.9-366.6<br>E.O.H. | Nicola Basalt Fl-Bx with minor Tertiary Basalt Dykes                                                   |

### SUMMARY LOG SL-2

Location: 9+50S, 7+50E

Azimuth: 250 Dip: -45

|           |                                       |
|-----------|---------------------------------------|
| -3.5      | Casing                                |
| 3.5-16.9  | Nicola Basalt Tuff                    |
| 16.9-50.7 | Tertiary Basalt Dyke Swarm (Magnetic) |



L-2 Con't

50.7-57.9 Silicified Zone with Quartz Veins and Green Micas  
5-10% py "Joshua Vein"

57.9-74.1 Nicola Basalt Tuff

74.1-78.2 Silicified Zone with Quartz Veins  
5% py, tr Ga, tr Sp "Tubal Cain Vein"

78.2-79.7 Tertiary Basalt Dyke (Magnetic)

79.7-103.9 Nicola Basalt Tuff  
E.O.H.

SUMMARY LOG SL-3

Location: 8+50S, 6+15E  
Azimuth: 250 Dip: -45

0-3.7 Casing

3.7-62.5 Nicola Basalt Fl-Bx and Tuff

62.5-64.3 Silicified Zone with Green micas  
5% py, tr Ga  
"King William Vein?"

64.3-77.9 Nicola Basalt Tuff

77.9-81.6 Tertiary Basalt Dyke (Magnetic)

81.5-107.3 Nicola Basalt Tuff  
Weak faulting.  
E.O.H.

SUMMARY LOG SL-4

Location: 12+10S, 5+25E  
Azimuth: 250 Dip: -45

0-8.6 Casing

8.6-40.4 Nicola Basalt Tuff

40.4-44.7 Fault Zone with Tertiary Basalt Dykes (Magnetic)

44.7-69.1 Nicola Basalt Fl-Bx and Tuff

69.1-70.9 Quartz Vein and Silicification  
10% py, tr Ga, tr Sp, tr Tet  
"King William Vein"

70.9-101.1 Nicola Basalt Fl-Bx

SL-4 Con't

101.1-104.2 Silicified Zone with Quartz Veins  
10% py, tr Ga, tr Sp, tr Tet

104.2-105.8 Nicola Basalt Tuff  
E.O.H.

#### SUMMARY LOG SL-5

Location: 27+75S, 7+00E

Aximuth: 250 Dip: -45

0-4.9 Casing

4.9-48.3 Nicola Basalt Tuff +/- Sediment Fragments (Lmst, Siltstone)

48.2-50.6 Quartz Vein with Silicification  
3-5% py, tr Ga, tr Sp, tr Tet, tr W03

50.6-80.9 Nicola Basalt Tuff

80.9-89.0 Silicified Zone with 5% Green Micas  
5% py, tr Ga, tr Tet

89.0-124.0 Nicola Basalt Tuff with sediment fragments

124.0-128.6 Silicified Zone with 5% green micas  
Tr py, tr gry sulphide?

128.6-133.2 Nicola Basalt Tuff with Sediment Fragments  
E.O.H.

#### SUMMARY LOG SL-6

Location: 42+00S, 7+20E

Azimuth: 250 Dip: -55

0-6.1 Casing

5.1-38.0 Nicola Basalt Fl-Bx  
Zones with 3-8% py veinlets in strong chl-epid. alteration.

38.0-58.0 Nicola Basalt Tuff

58.0-65.4 Silicified Zone around the "Jenny Long Vein"  
64.5-65.4 the QV with 5% py, 3-5% tet?, 3% sp, 2% qa

65.4-125.8 Nicola Basalt Tuff  
Zones with 2-5% py veinlets in strong chl-epid. alteration.

125.8-130.2 Nicola Basalt Tuff

E.O.H.

SUMMARY LOG SL-7

Location: 41+00S, 8+00E  
Azimuth: 250 Dip: -50

0-3.1 Casing

3.1-35.1 Nicola Basalt Fl-Bx

35.1-42.8 Tertiary Basalt Dyke

42.8-44.7 Nicola Basalt Tuff

44.7-48.0 Tertiary Basalt Dykes

48.0-56.5 Nicola Basalt Tuff

56.5-61.2 Tertiary Basalt Dyke

61.2-136.0 Nicola Basalt Fl-Bx  
Zones with 2-3% py in strong chl-epid. alteration.

136.0-150.6 Tertiary Basalt Dykes

E.O.H.



7+00mE

7+50mE

LEGEND

TERTIARY

- 80 Porphyry basalt dykes
- 70 Alteration (clay + carb + silic.)
- 60 Quartz veins

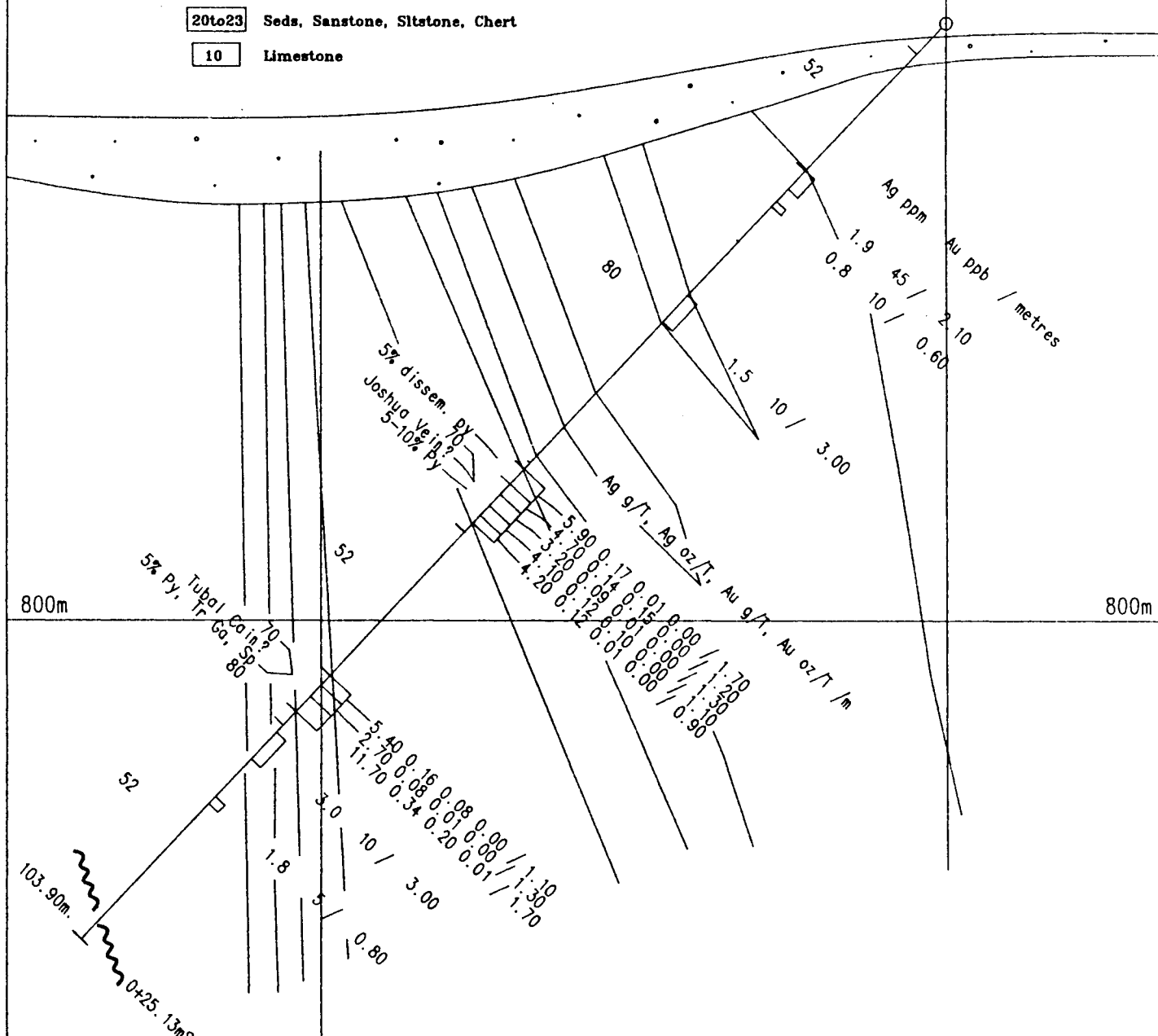
TRIASSIC

- 50to53 Basalt, Fl-bx, Tuff, Flow
- 40 Dacite
- 30 Rhyolite
- 20to23 Seds, Sandstone, Siltstone, Chert
- 10 Limestone

850m

SL-2

850m

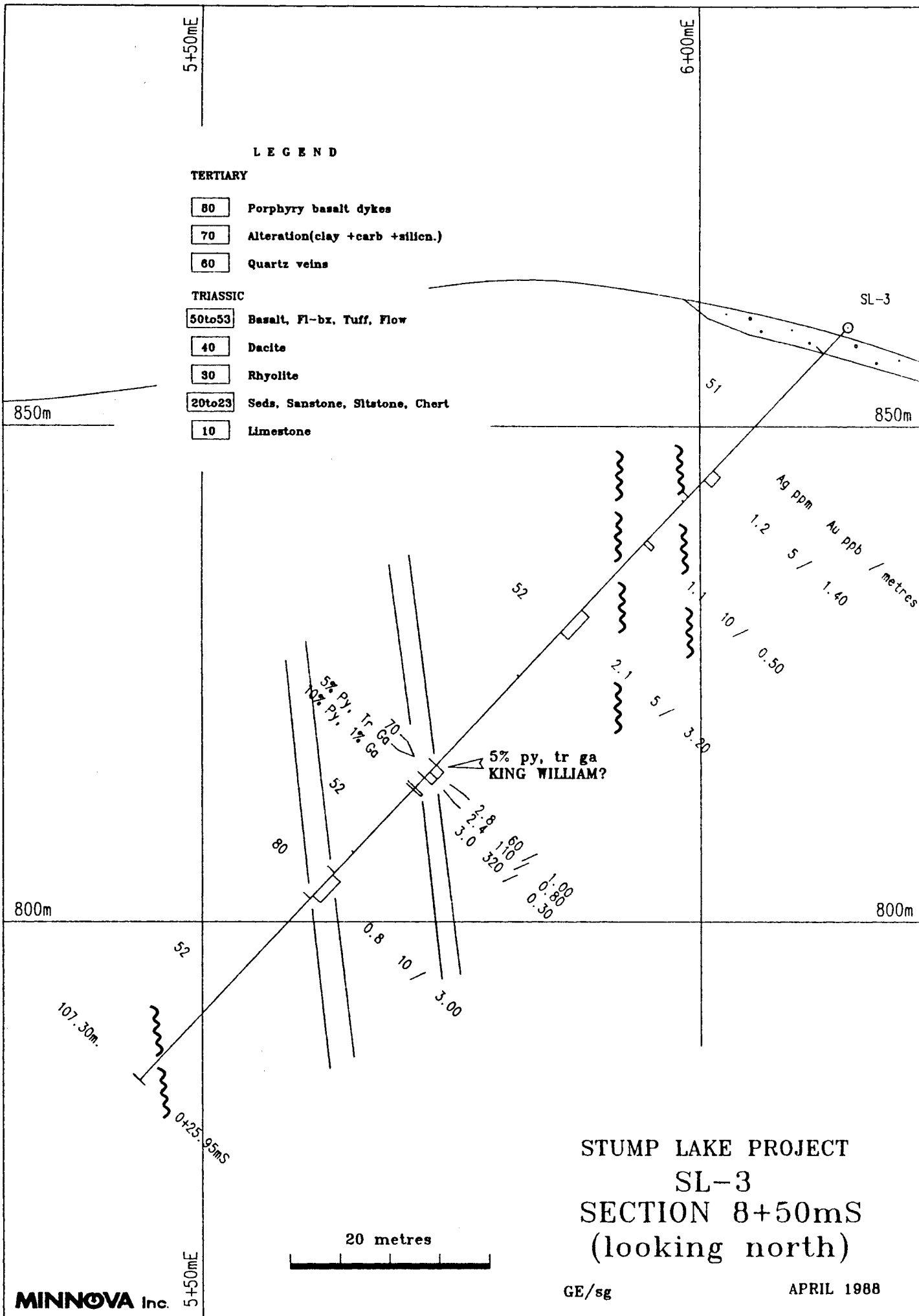


800m

800m

STUMP LAKE PROJECT  
 SL-2  
 SECTION 9+50mS  
 (looking north)

20 metres



**LEGEND**

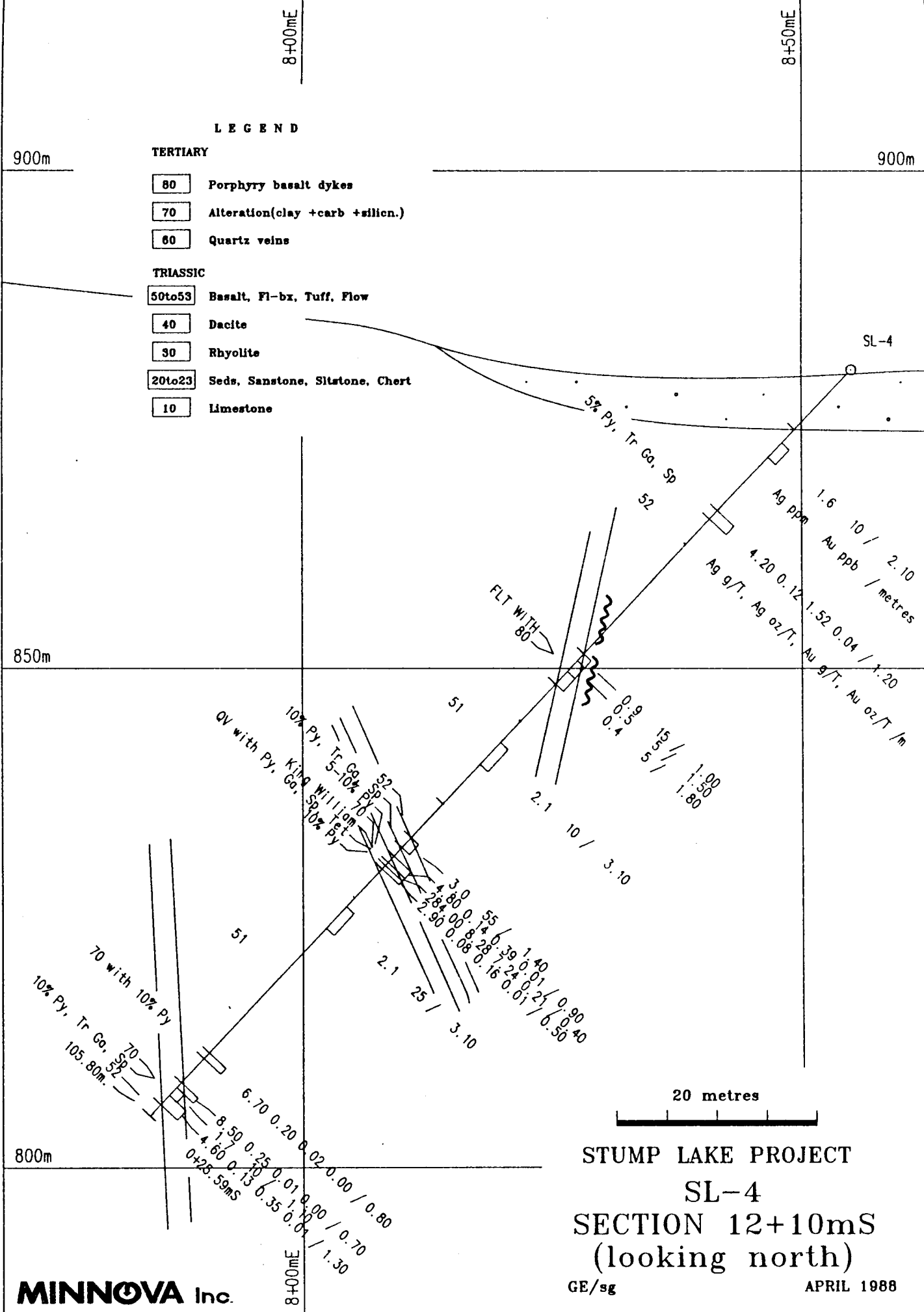
**TERTIARY**

- 80 Porphyry basalt dykes
- 70 Alteration (clay + carb + silic.)
- 60 Quartz veins

**TRIASSIC**

- 50to53 Basalt, Fl-bx, Tuff, Flow
- 40 Dacite
- 30 Rhyolite
- 20to23 Seds, Sandstone, Siltstone, Chert
- 10 Limestone

**STUMP LAKE PROJECT  
SL-3  
SECTION 8+50mS  
(looking north)**



**LEGEND**

**TERTIARY**

- 80 Porphyry basalt dykes
- 70 Alteration (clay + carb + silic.)
- 60 Quartz veins

**TRIASSIC**

- 50to53 Basalt, Fl-bx, Tuff, Flow
- 40 Dacite
- 30 Rhyolite
- 20to23 Seds, Sandstone, Siltstone, Chert
- 10 Limestone

900m

900m

850m

800m

8+00mE

8+50mE

SL-4

5% Py, Tr Co, Sp  
52  
Ag ppm 1.6 10 / 2.10  
Au ppb / metres  
4.20 0.12 1.52 0.04 / 1.20  
Ag g/T, Ag oz/T, Au g/T, Au oz/T / m

FLT WITH 80

10% Py, Tr Co, Sp  
52  
King Williams Sp  
10% Py  
2.1 10 / 3.10

70 with 10% Py  
10% Py, Tr Co, Sp  
105.80m  
6.70 0.20 0.02 0.00 / 0.80  
8.50 0.25 0.01 0.00 / 0.70  
4.60 0.13 0.35 0.04 / 1.30  
0+25.59ms  
2.1 25 / 3.10  
3.0 0.14 0.39 0.40 / 0.90  
4.80 0.28 0.24 0.21 / 0.50  
2.90 0.08 0.16 0.01 / 0.50

20 metres

**STUMP LAKE PROJECT**  
**SL-4**  
**SECTION 12+10mS**  
**(looking north)**

8+00mE



750m

750m

LEGEND

TERTIARY

- 80 Porphyry basalt dykes
- 70 Alteration (clay + carb + silicn.)
- 60 Quartz veins

TRIASSIC

- 50to53 Basalt, Fl-bx, Tuff, Flow
- 40 Dacite
- 30 Rhyolite
- 20to23 Seds, Sandstone, Siltstone, Chert
- 10 Limestone

700m

700m

650m

6+00mE

6+50mE

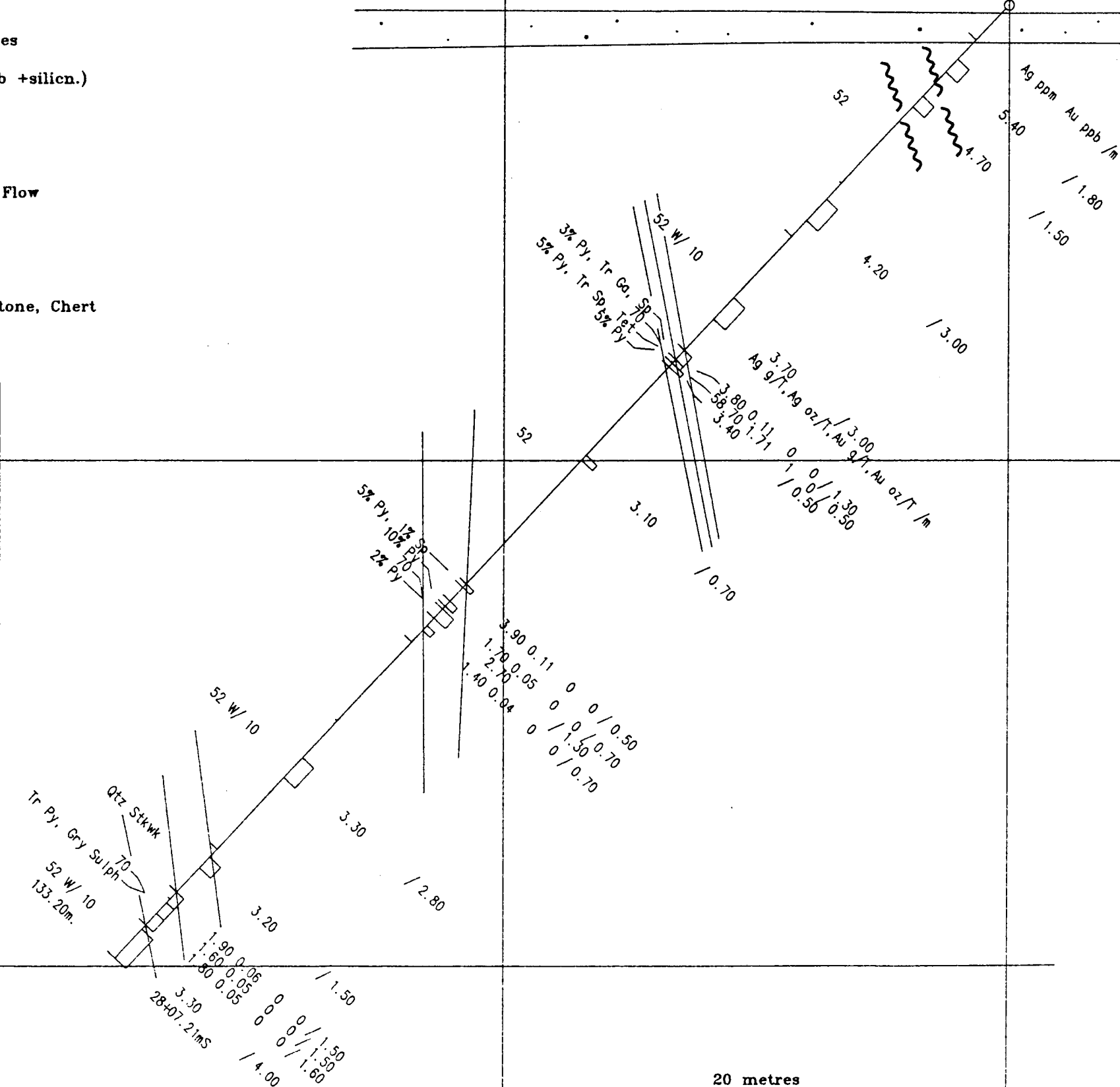
7+00mE

6+00mE

6+50mE

7+00mE

SL-5



STUMP LAKE PROJECT  
 SL-5  
 SECTION 27+75mS  
 (looking north)

6+00mE

6+50mE

7+00mE

7+50mE

850m

850m

800m

800m

750m

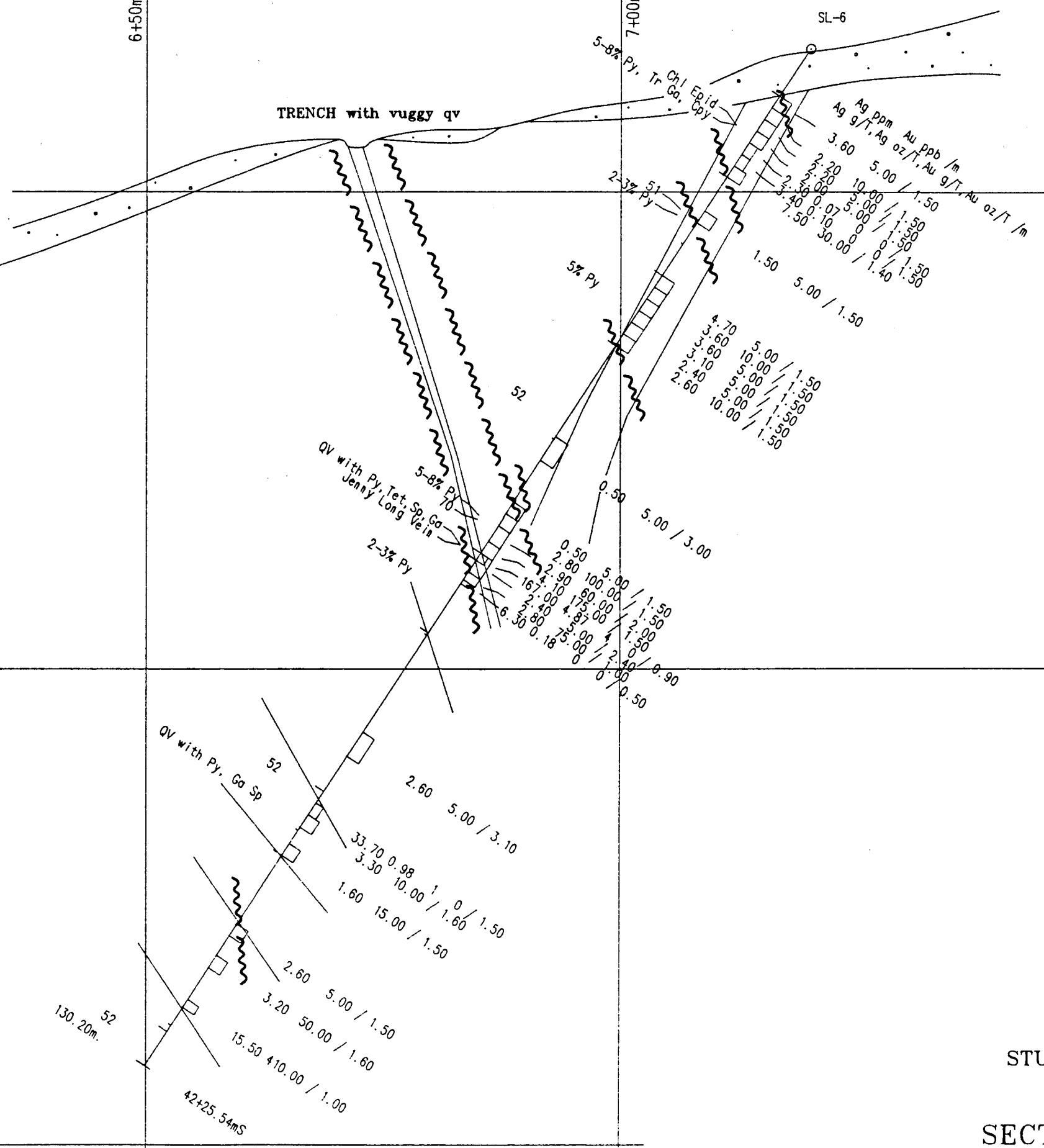
### LEGEND

#### TERTIARY

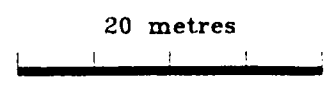
- 80 Porphyry basalt dykes
- 70 Alteration (clay + carb + silicn.)
- 80 Quartz veins

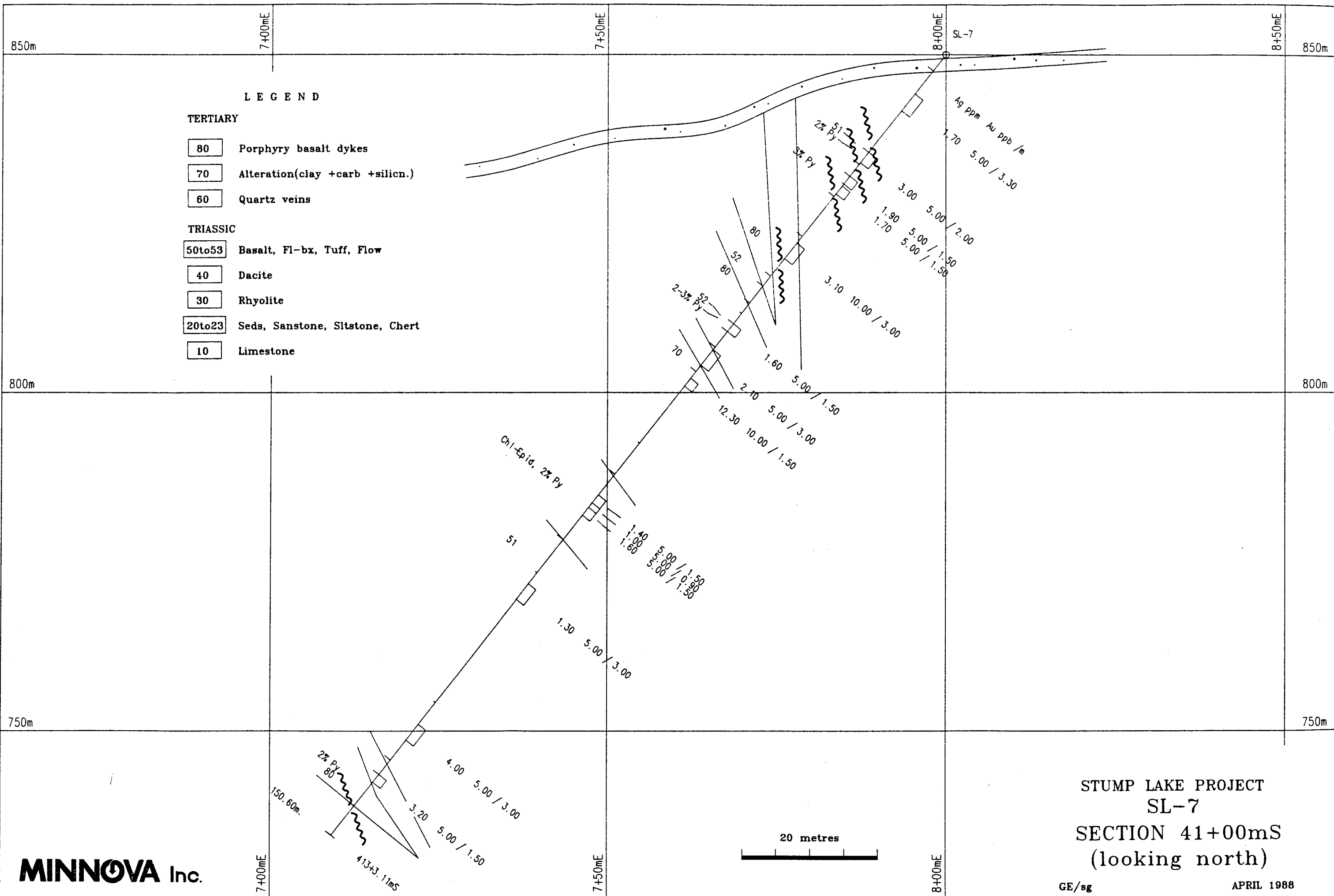
#### TRIASSIC

- 50to53 Basalt, Fl-bx, Tuff, Flow
- 40 Dacite
- 30 Rhyolite
- 20to23 Seds, Sandstone, Siltstone, Chert
- 10 Limestone



STUMP LAKE PROJECT  
 SL-6  
 SECTION 42+00mS  
 (looking north)

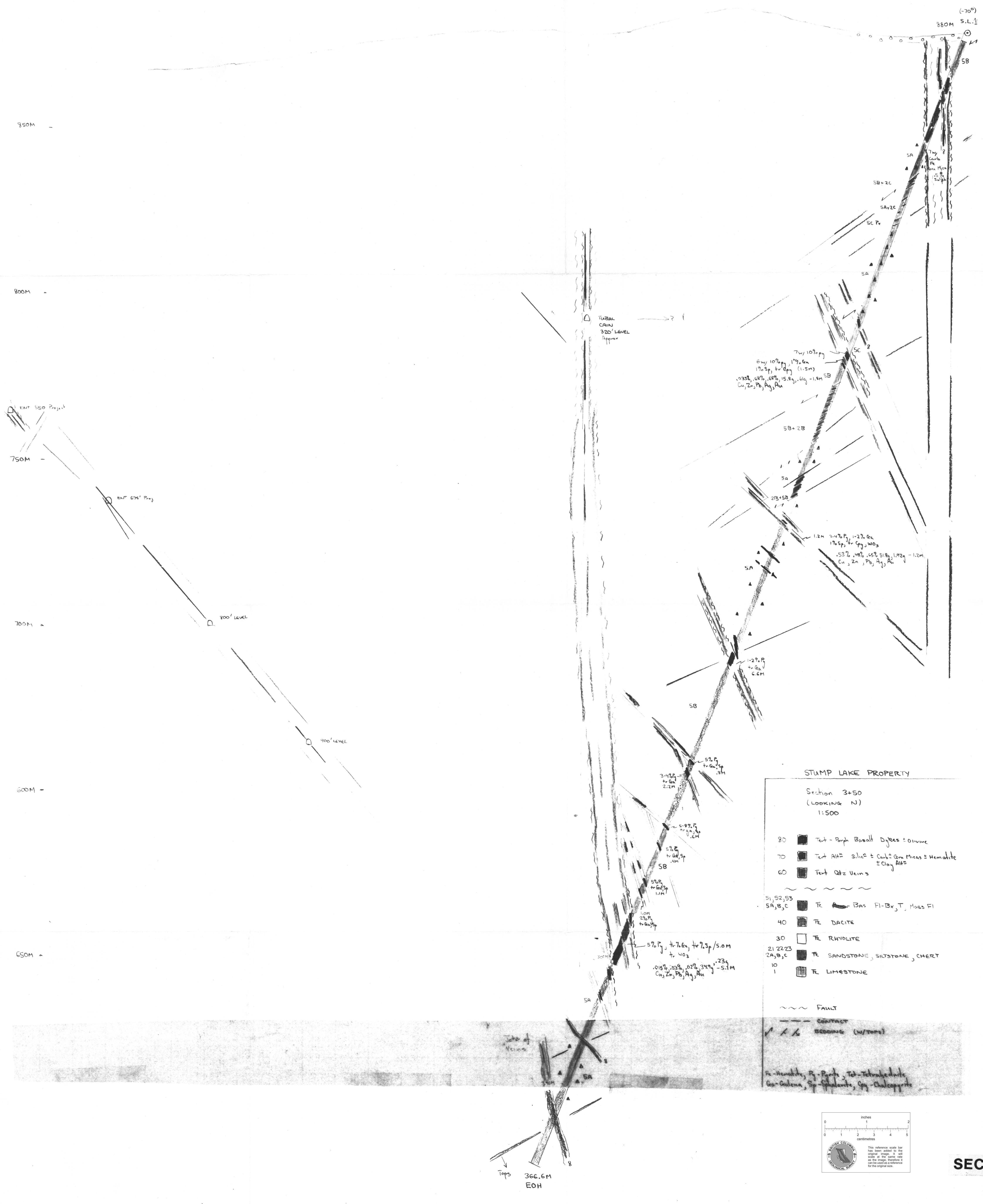




6+00E

7+00E

8+00E



850M

800M

750M

700M

600M

650M

ENT 550 Project

ENT 676' Pcs

700' LEVEL

900' LEVEL

TUBEL CAIN  
320' LEVEL  
Reaper

6w/102pf, 179.6m  
170Sp, tr. Gp (1.5M)  
.033% Cu, .02% Pb, .01% Ag, .01% Au  
Cu, Zn, Pb, Ag, Au

7w/102pf

12m 20.2R, 12.7Gc  
170Sp, tr. Gp, WOs  
.53% Cu, .02% Pb, .01% Ag, .01% Au  
Cu, Zn, Pb, Ag, Au

12.7R  
tr. Gp  
6.6M

52.2R  
tr. Gp  
2.2M

52.2R  
tr. Gp  
2.2M

52.2R  
tr. Gp  
2.2M

52.2R, tr. Gp, tr. Sp / 5.0M  
tr. WOs  
.015% Cu, .002% Pb, .001% Ag, .001% Au  
Cu, Zn, Pb, Ag, Au

STAMP LAKE PROPERTY

Section 3+50  
(LOOKING N)  
1:500

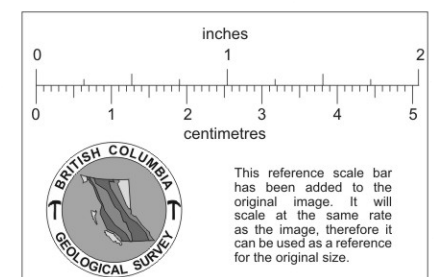
- 80 ■ Test - Rhy Basalt Dykes & Veins
- 70 ■ Test AH2 silic ± Calc Gen. Micas ± Hematite  
± Clay, Alk2
- 60 ■ Test Qtz Veins
- 51, 52, 53 ■ TR Bas Fl-Bx, T, Moss Fl
- SA, B, C ■ TR DACITE
- 40 ■ TR RHYOLITE
- 30 ■ TR SANDSTONE, SILTSTONE, CHERT
- 21, 22, 23 ■ TR LIMESTONE
- 2A, B, C ■ TR LIMESTONE
- 10 ■ TR LIMESTONE
- 1 ■ TR LIMESTONE

~ ~ ~ FAULT

--- CONTACT

/// // // SEDDING (W/TOPS)

R - Hematite, P - Pyrite, T - Tetrahedrite  
Gc - Galena, Sp - Sphalerite, Gp - Chalcopyrite



SECTION 3+50ms

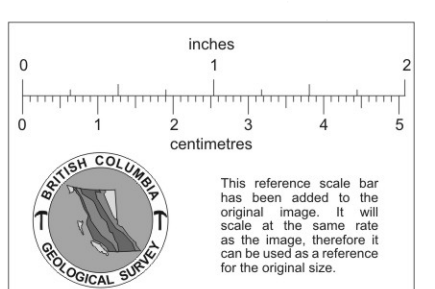
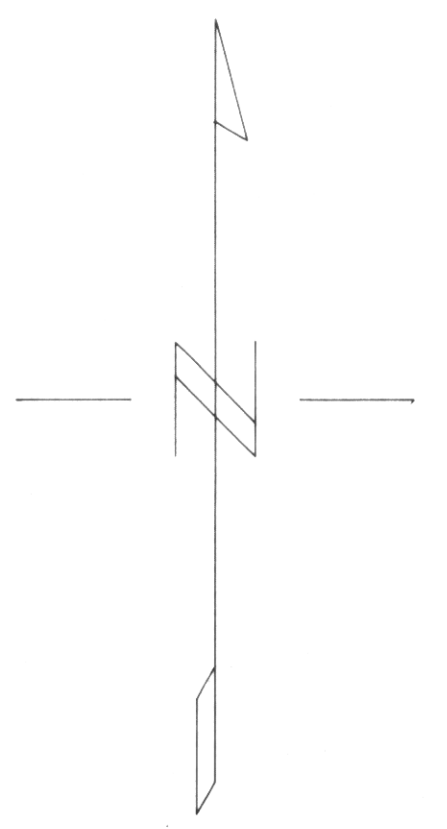
SL-1

Tops  
366.6M  
EOH





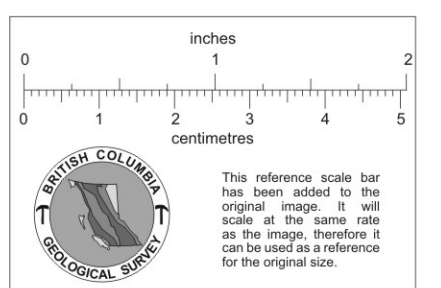
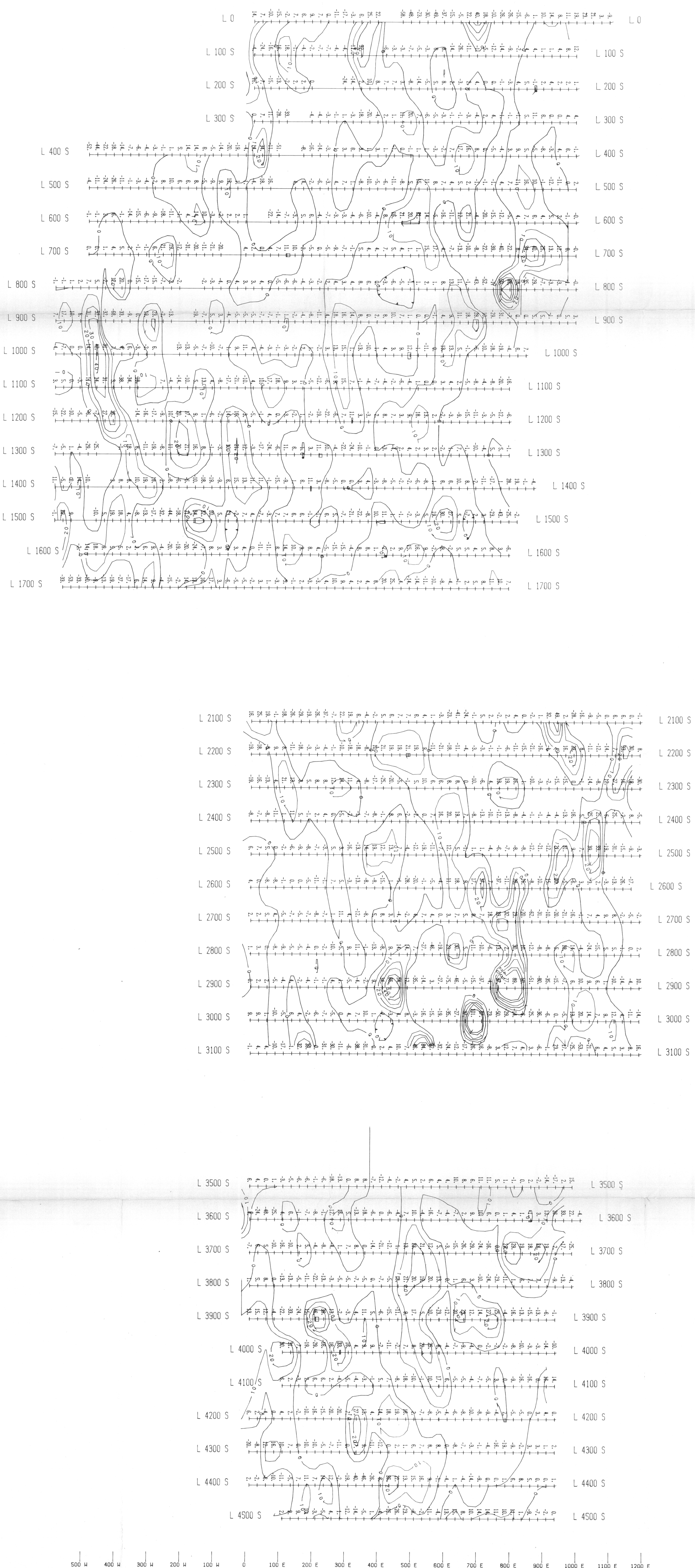
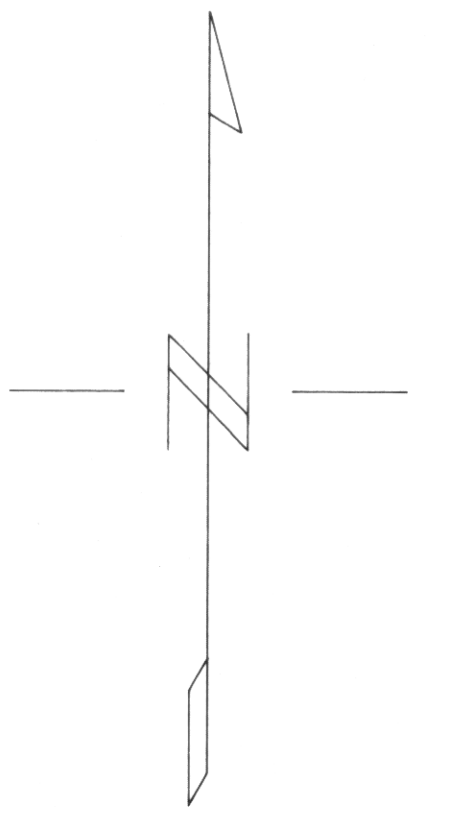




SCALE 1:5000  
0 50 100 150 200 meters

MINNOVA INC.  
STUMP LAKE PROJECT  
PROTON MAGNETOMETER  
RESIDUAL CONTOUR MAP  
PLOTTED VALUE = RECORDED VALUE - 57330  
CONTOUR INTERVAL : 100, 500nT.  
QUEST CANADA EXPLORATION SERVICES INC.





MINNOVA INC.  
STUMP LAKE PROJECT  
VLF-EM  
FRASER FILTERED CONTOUR MAP  
TRANSMITTER STATION = CUTLER  
CONTOUR INTERVAL = 10,50  
QUEST CANADA EXPLORATION SERVICES INC.

500 H 400 H 300 H 200 H 100 H 0 100 E 200 E 300 E 400 E 500 E 600 E 700 E 800 E 900 E 1000 E 1100 E 1200 E