REPORT ON

GEOLOGICAL, GEOCHEMICAL AND GEOPHYSICAL SURVEYS, AND HAND TRENCHING

by

P. J. S. BOYLE - B. Sc.

on the

ROUGH NO. 1 to 9 CLAIMS

Situated west of Gataga River

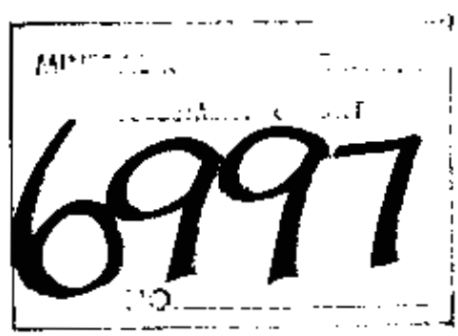
in the Liard Mining Division B. C.

58° 16'N 126° 10'W
N.T.S. 94L/8E

owned by

TEXASGULF CANADA
LTD.

September 1978 Calgary, Alberta



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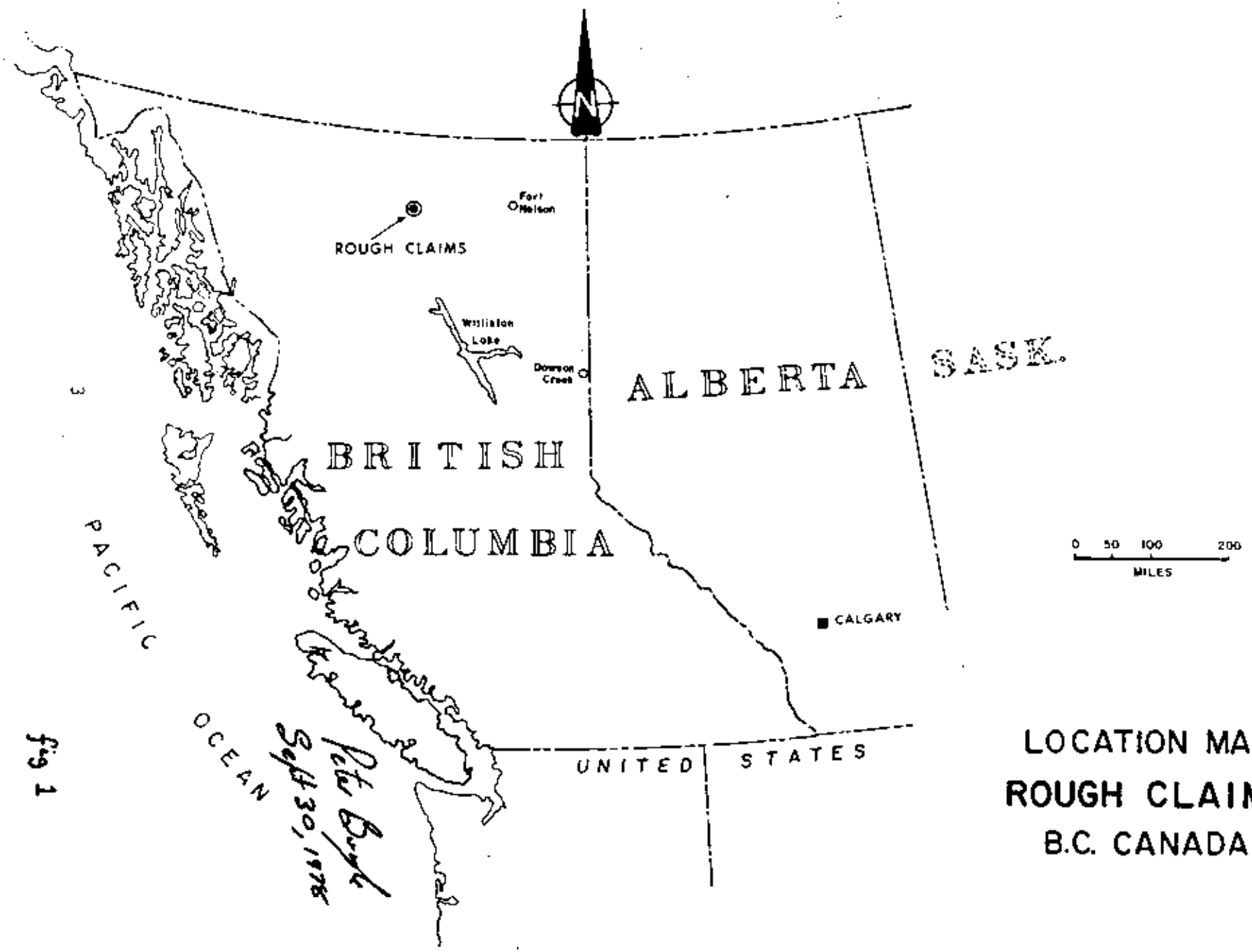


fig 1

LOCATION MAP
ROUGH CLAIMS
B.C. CANADA

SUMMARY

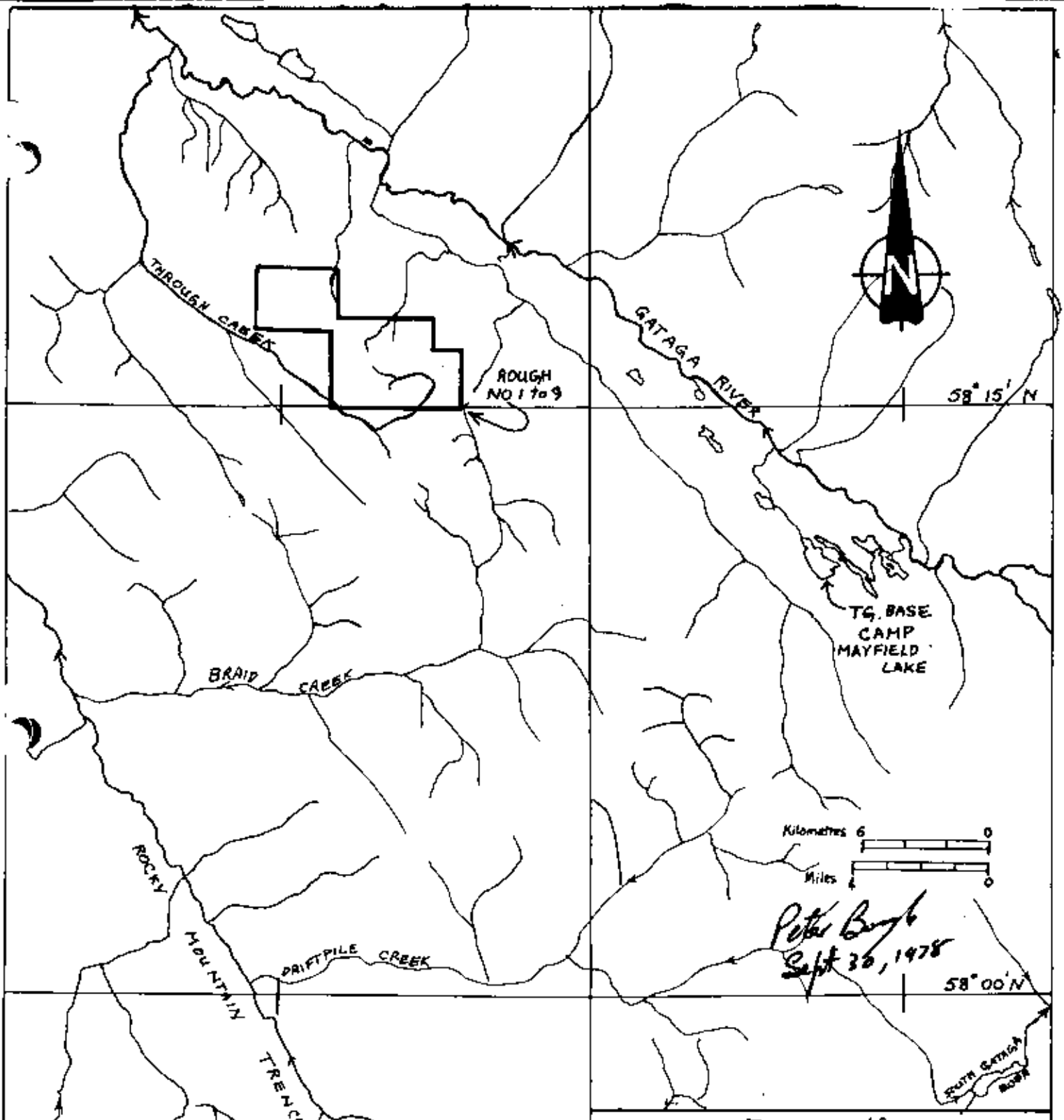
This report describes the results of the $48,000 August 1978 field program undertaken on the Rough Property in the Cataga River Area of northeastern British Columbia.

Geochemically anomalous zones outlined by the 1977 soil sampling program were examined in some detail by trenching, "fill in" soil sampling, by extending the soil sampling grid, and prospecting.

Attempts to sample the massive sulphide zone at the limestone contact were only partly successful, the thickness of the overburden at some locations being greater than was expected. The trenching problems reflect the complex geological structure in the vicinity of the limestone contact. Trenching did however, confirm the presence of some sphalerite and galena at the locations tested. Detailed soil sampling in the vicinity of the 1977 AB-3 lead anomaly centered at 244 + 00N, 156 + 00E, confirmed the existance of geochemically anomalous soils in this area. A zone 150 meters wide and 350 meters long was outlined where lead values greater than 1000 ppm were reported. Trenching in the vicinity has not explained the highly anomalous values. Extensions to the 1977 soil sampling grid in the north western portion of the property were effected. Prospecting did locate some minor occurrences in the area . The northern extent of the geochemically anomalous trend delimited these occurrences. Prospecting in the vicinity of the 1977 AB-4 geochemical anomaly located mineralized float at the headwall of the cirque. This mineralization proved to have come from two sources, from the limestone contact, and from veins cutting adjacent Silurian brown weathering shales.

Geological mapping of the structure and stratigraphy progressed. The complexity of the structure and the difficulty of obtaining dip and strike information from the intensely deformed and foliated bedrock exposures have caused considerable delay in sorting out the geological picture on this property.

A geophysical orientation study using Mag, Shootback EM, VLF (Radem), Horizontal Loop EM, and IP was completed in the central area of the property (totaling 24 line Km.) The results indicate that the zinc rich sulphides do not have a detectable characteristic geophysical signature. However, the survey did indicate that some geological interpretation of the results may be possible. Additional field work detailing the geological and geochemical data



Texasgulf Inc
MINERALS EXPLORATION DIVISION CALGARY, ALBERTA

REGIONAL LOCATION PLAN

ROUGH NO 1 to 9 CLAIMS

NTS 94-L-8(E)

fig 2

Scale: 1:250,000	Date Sept 1/78	Drawn By PBoyle

base will permit further interpretation of these results.

INTRODUCTION

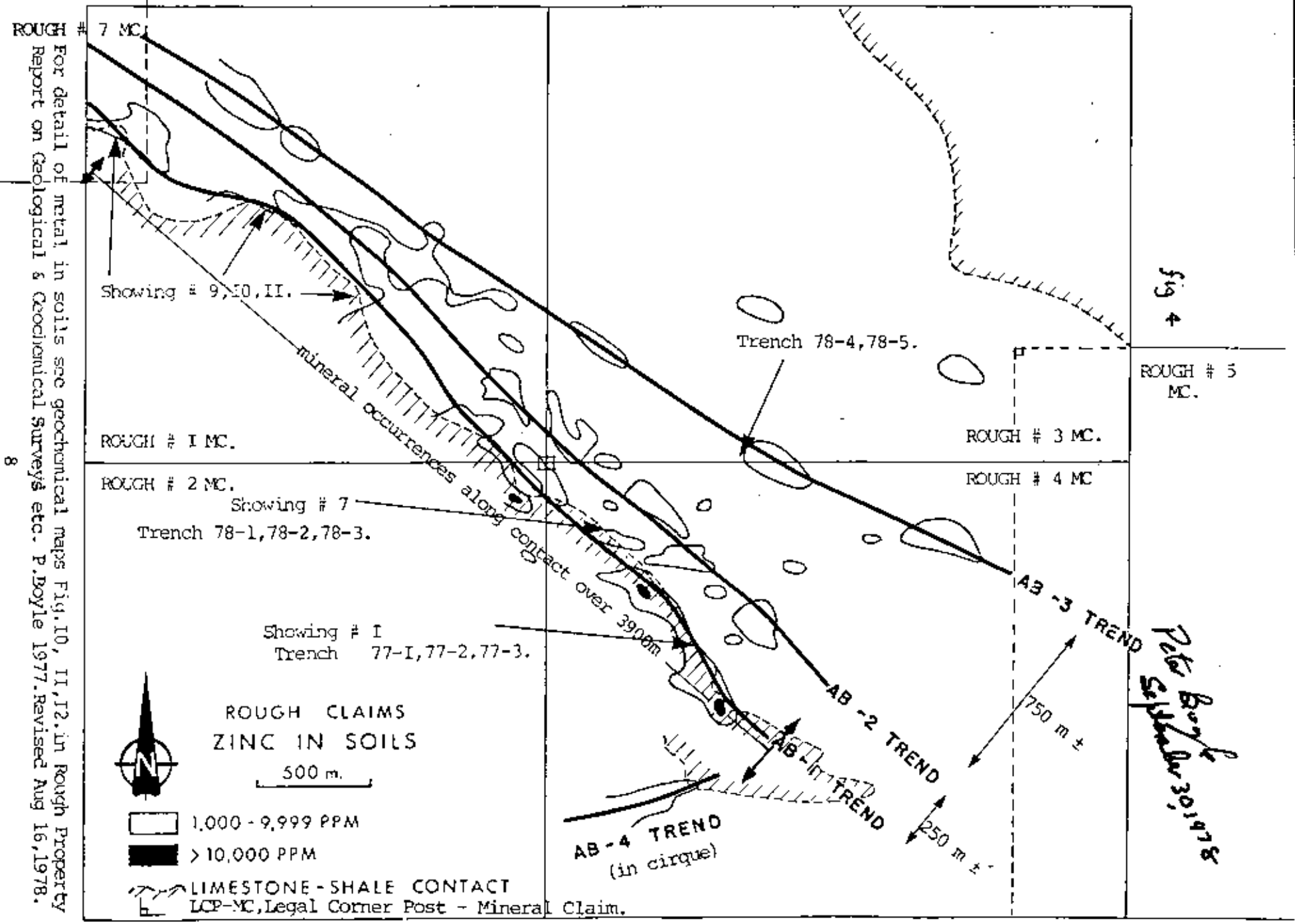
A massive sulphide zone containing sphalerite, galena and pyrite was located in the hills west of the Gataga River at lat 58°15'45"N long 126°9'30"W during the 1976 field season. The Rough Property was staked in late August 1976.

Subsequent prospecting and geological mapping of the Rough Property in August 1977 located numerous high grade sphalerite galena outcrop occurrences over a distance of 3900 meters along the limestone-shale contact. Trenching permitted limited sampling of the massive sulphide zone. It was determined that interesting Zn Pb grades occurred within a horizon whose stratigraphic thickness was in excess of 10 meters in the vicinity of the trenches. A reconnaissance soil sampling grid was established in order to permit a more rapid evaluation of the shales lying within the claim boundaries. Four geochemically anomalous zones were outlined; AB-1, AB-2, AB-3 and AB-4 respectively (see fig 3 & fig 4).

The 1978 program on the Rough Property was designed to test the geological model as it affected the distribution, continuity and grade of the massive sulphide zone. Additional soil sampling, trenching and prospecting was proposed to evaluate the significance of the 1977 geochemical anomalies. A geophysical orientation study was also proposed.

The work completed during the 1978 season and described in this report involved; structural and stratigraphic mapping, trenching, soil sampling and geophysics. Work was undertaken by; the trenching crew provided by Bema Industries Ltd., (Vancouver); and by personnel from Texasgulf Inc. (Calgary, Vancouver, Toronto and Timmins).

For detail of metal in soils see geochemical maps, Fig. 10,11,12 in Rough Property Report on Geological & Geochemical Surveys etc.' P Boyle 1977. Revised Aug 16,1978.



For detail of metal in soils see geochemical maps Fig. 10, 11, 12 in Rough Property Report on Geological & Geochemical Surveys etc. P. Boyle 1977. Revised Aug 16, 1978.

CONCLUSION

1) The distribution of high grade mineralization along the limestone-shale contact appears erratic. However the geological model evolved for the property indicates that the mineral potential at depth may be significant. The model indicates that the mineralized black cherty shale outcrops on the western limb of broad synclinal structure and that it should be possible to trace the mineralization down dip.

To date soil geochemistry and prospecting have proven successful in outlining the zinc sulphide zone on the property. Further trenching may be expected to aid in outlining the subcropping mineralization. The area of principle interest on the property lies in the vicinity of trench 77-2 (78 Extension). Ultimately the mineralization will have to be tested at depth, in this area, by a limited diamond drilling program.

2) The distribution of primary mineralization on the property in the massive sulphide zone is controlled by the shale facies distribution. The mineralized black cherty shale intertongues with, and stratigraphically overlies the limestone. The pink-red color and fine grained character of the sphalerite indicate that it may be syngenetic in origin.

Thrusting related to the Laramide Orogeny has isoclinally folded the sedimentary units exposed on the property. Large scale sympathetic chevron folding is evident on the limbs of the broader structures. The mineralized cherty shale has been severely brecciated and numerous small scale chevron folds are evident in the more carbonaceous parts of the unit. The brecciation and deformation have permitted some remobilization of the sulphides. Secondary medium grained yellow sphalerite is evident in samples.

Faulting transverse to the strike of the limestone-shale contact has permitted further remobilizaiton of the mineralization. The resultant high grade zones commonly show large grey euhedral sphalerite crystals within the sulphide mass. Extensive replacement of brecciated chert fragments by white quartz and sphalerite is also evident. White quartz veins are assocciated with these faults.

3) The validity of the "Lead Anomaly" on the vicinity of 244 + 00N 156 + 00E has been established by resampling. A number of small springiron gossans and red iron stained soil areas coincide with the anomalous areas. Baritic chert outcrop and float, apparently derived from within the Gunsteel shales, was found along the anomalous trend. No lead on zinc sulphides were observed in this area. The data does not permit a full evaluation of this anomaly at this time.

Peter Boyle

Peter Boyle

LOCATION, ACCESS & TERRAIN

Figure 2 shows the location of the Rough Claims 8 km southwest of the Gataga River at Lat. 58° 15'N, Long. 126° 10' W (N.T.S. 94L/8E).

Access at present is by helicopter from the Texasgulf base camp, at Mayfield Lake 23 km to the southeast. Fixed wing support originates in Watson Lake. Mobilization and demoblization by float plane, was through Muncho Lake at Mile 464 on the Alaska Highway, 95 km north of the base camp.

A cat trail ends 23 km east of the Rough Claims, at the divide between the West Toad and Gataga Rivers.

From the broad Garaga River floor at 2700' elevation the hills rise abruptly to northwest trending limestone peaks over 6500' high. A parallel ridge of limestone cliffs and spires lies 4 km to the southwest. The western side of the second limestone ridge drops precipitously to 4500' elevation, into the valley of the northwesterly flowing tributary of Through Creek. The property lies between the two limestone ridges in an area of east-west trending, rounded, hog back, grass covered ridges. The ridges are deeply incised by small tributary creeks which drop precipitously down to the valley floors. The grass and scrub covered sides of the ridges are very steep. In the northern portion of the property the creeks drain to the north and east, directly to the Gataga River. The creek draining the southern portion of the property describes an arc looping east , south , and then west , to join up with the west flowing tributary of Through Creek.

There is more than 70% outcrop exposure of the limestone. Large talus slopes are found at the foot of cliffs. Alpine soil over the shale is thin and poorly developed, outcrop is largely restricted to the incised gullies.

The tree line at the north end of the property lies at 5200' elevation . To the south it lies below 4700'.

Peter Bradley Sept 30, 1978

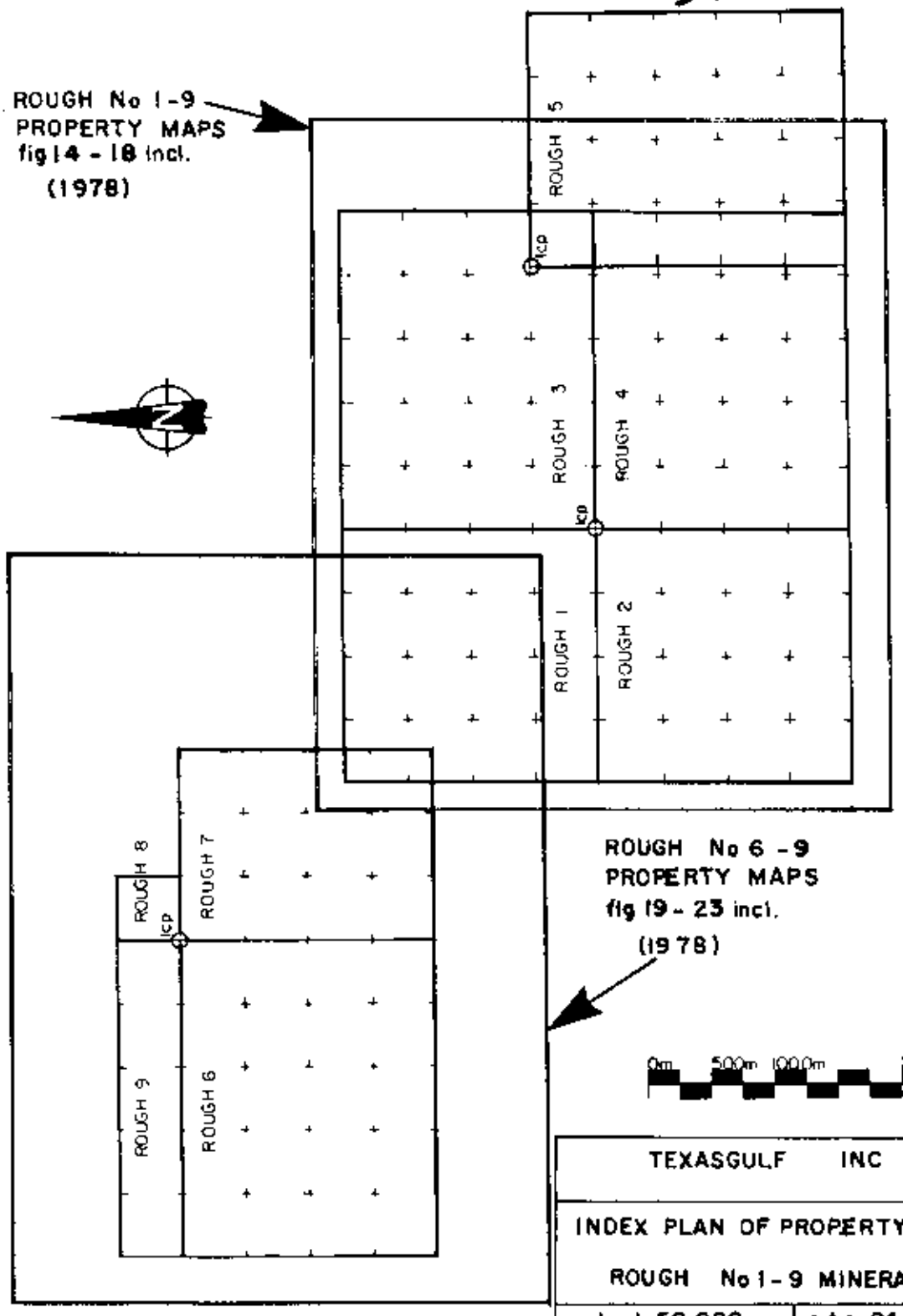


fig 5

SURVEY GRID

In order to provide control for the geological and geochemical surveys, a total of 17.8 line km of grid were layed out, involving a base line, grid lines at 100 meter intervals and tie lines. Sample stations were marked at 25 and 50 meter intervals with pickets. All lines were compass controlled, and distances were measured with a survey chain. The lines were brushed out to approximately one meter width, using hand held tools, where the lines dropped down to the tree line. Altimeter readings were taken at each station and the data was compiled to make the base map at a scale of 1:5000 (fig. 18 & 23) .

The "Legal Corner Post" for Mineral Claims Rough No. 1, No. 2, No. 3 & No. 4 is located at grid 250 + 00N, 150 + 00E, Grid north is set at 315° azimuth.

OWNERSHIP

The Rough Property comprises a total of 130 units (8030 acres) in nine contiguous mineral claims owned by Texasgulf Canada Ltd. The property was first staked in 1976. There is no record of previous work in the immeditate area.

REGIONAL GEOLOGY

The Rough Claims lie 20 km northeast of the Rocky Mountain Trench, a locus of right lateral normal faulting, at least since Cambrian time. Most significant movement occured during the Cretaceous. These movements are evident in the resultant thrusted belt of rocks which comprise the mountains east of the Rocky Mountain Trench.

The Cambrian Atan Group parconformably overlies the Hadrynian rocks in the region. Two main facies have been mapped within the Atan Group, an eastern and lower clastic facies, and a western partly coeval carbonate- shale facies. The carbonate is commomly brecciated . The uppermost beds are a very fine grained blue limestone. The carbonate-shale transition marks the limit of a clean platform type, shallow water,limestone environment.

The shales overlying the Atan carbonate are correlated with the Road River Formation. The presence of occasional shell and coral fragments, burrows, and worm traces suggest that some of these sediments were deposited in relatively shallow water conditions.

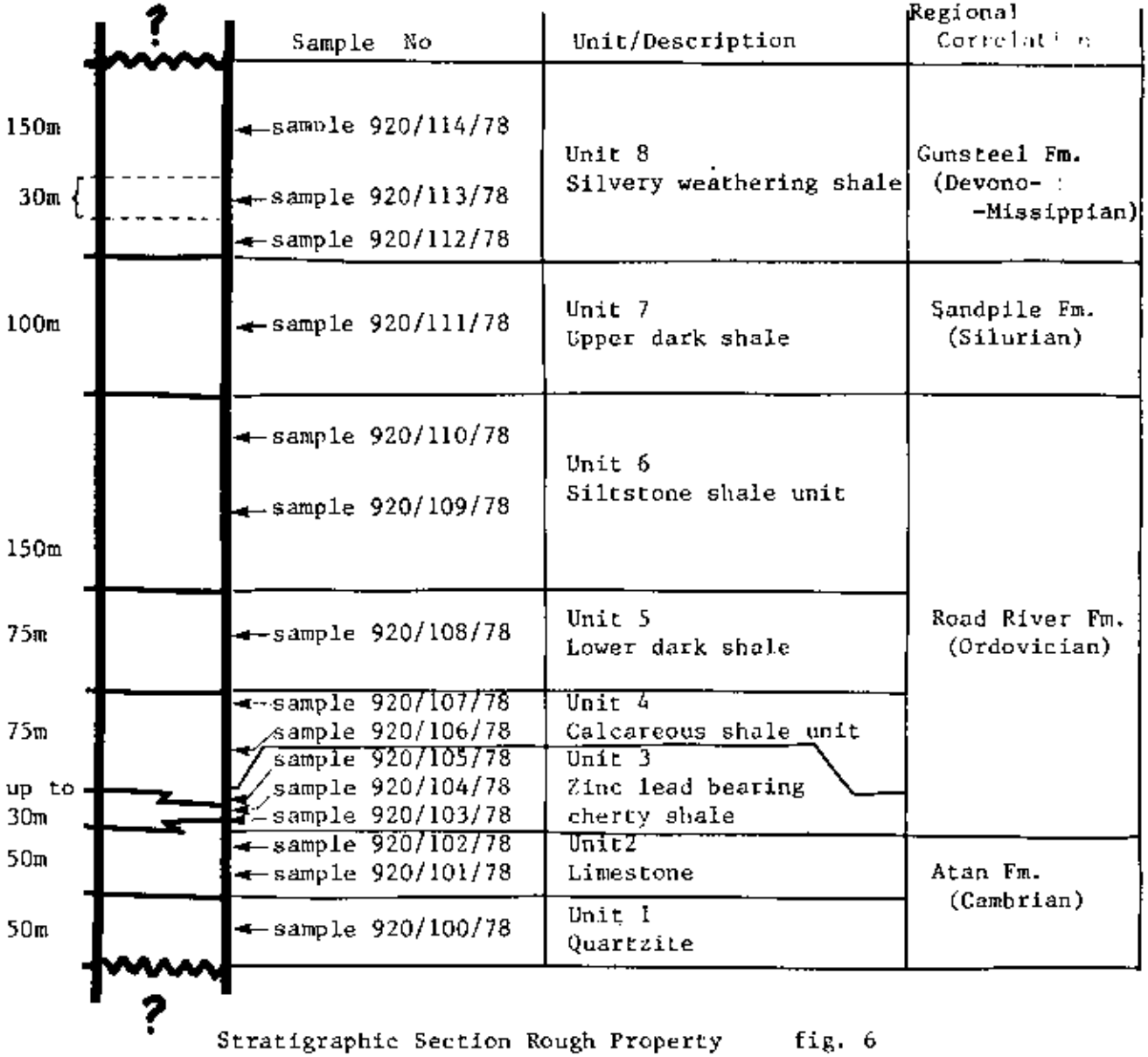
The Sandpile Formation is represented in this area by a distinct brown weathering shale containing very poorly preserved Silurian graptolites.

Overlying the Sandpile Formation are silver weathering shales of the Gunsteel Formation, believed to be of Devono-Mississippian age. Near the base of the Gunsteel a baritic unit is found. Baritic beds have been traced northward from South Gataga Lake and Driftpile Creek which are reported to contain Devono-Mississippian shelly fauna. This baritic bed has been traced on the Rough Property where it is highly siliceous.

PROPERTY GEOLOGY

Results and conclusions derived from the structural and stratigraphic mapping done on the Rough Property during August 1978 are detailed on Appendix A, this report. A suite of rocks representative of the section described below is stored in Calgary. Samples were collected fron east to west along the ridge top between grid location 238 + 00N, 172 + 00E and 245 + 00N, 155 + 00E. Additional samples were collected at selected sites on the property in order to complete the suite.

Peter Boyle Sept 30, 1978



Stratigraphic Section Rough Property fig. 6

ROCK SUITE LITHOLOGICAL DESCRIPTIONS - ROUGH PROPERTY

SAMPLE 920/100/78

Quartzite

- 90 % Quartz grains 5% Siderite 5% Shale clasts.
- Light grey quartz grains (roundness 5, 1mm - 2mm dia.), well sorted ,graded bedding 1 cm to 2 cm thick, scattered siderite blebs 1mm dia. are common in some beds, non calcareous clastic shale frags (roundness 2½, 4mm - 10 mm dia.) in some beds, interstitial to qtz. grains are occasional dolomite grains, calcite veining is common.
- Weathering light grey and light brown.

SAMPLE 920/101/78

Limestone

- 95% Sparry calcite, 5% Calcareous micrite
- Light grey blue very fine grained grainstone (less than 10% interstitial micrite), extensive tectonic brecciation, randomly orientated fractures filled with white sparry calcite. The sample appears to be slightly recrystalized.
- Weathering blue grey.

Sample 920/102/78

Limestone

- 90% Sparry calcite, 5% Calcareous micrite, 5% Shale lenses.
- Light blue grey very fine grained grainstone, locally dolomitized, in some beds scattered non calcareous shale lenses and whisps 1 mm - 2m thick 3mm - 5m long containing some sphalerite grains, bedding indistinct and massive.
- Weathering blue grey.

SAMPLE 920/103/78

Fault Gouge

- Numerous black and grey chert frags and limestone frags 2mm - 5 mm dia., dark red iron oxide is common, and carbonaceous slickensides are present on samples, no sulphides.

SAMPLE 920/104/78

Mineralized Cherty Black Shale

- 2% - 6% Sph, 1% Py, 70 % Chert, 10% Shale 13% Qtz.
- Non calcareous black shale is interbedded with dark grey black chert layers, the black shale is fine grained and fissile, disseminated very fine grained pink red sphalerite is associated with the fissile shale. White sparry qtz. has penetrated the shale interbeds preferentially, light brown yellow medium grained sphalerite is associated with the white qtz. veins, sphalerite and pyrite grains are distributed along hairline fractures in the chert. Mineralized bands of black shale are separated by relatively unmineralized bands of chert 1cm - 5cm thick.
- Rusty weathering,(greenish in vicinity of sulphides).
- Sample from trench 77-2 (78 Extension).

SAMPLE 920/105/78

Mineralized Cherty Black Shale

- 6% - 40% Sph, 4% Py, 2% Ga, 22%± Chert 7%± Shale, 15% White qtz.
- Very well mineralized samples show irregular layers of angular grey cherty fragments (10mm - 20mm diameter, roundness 2) within a sphalerite rich groundmass. Smaller chert fragments (1mm - 10mm diameter, roundness 1½) distinctly orientated, are scattered through the groundmass. The chert is very fine grained and the fragments have a brecciated appearance. Fine fractures within the fragments are filled with quartz and sphalerite. Replacement of the chert fragments by yellow medium grained sphalerite and white qtz. is evident. Redish-yellow medium grained sphalerite is associated with small chert fragments, scattered pyrite and galena grains, some shale fragments and whisps in the sulphide rich layers and bands (2 mm - 5 cm). Recrystalization of the sphalerite rich groundmass has resulted in the forming of large grey very coarse grained euhedral sphalerite crystals (1cm - 2cm dia.) which are assocciated with white quartz. Replacement of the chert fragments is particulary evident in the vicinity of the grey sphalerite. Occasionally gypsum crystals are present.
- Weathering Exposure of the fresh sulphides to air rapidly results in oxidation. Fresh sulphides exposed in trench 77-1 had a very rusty appearance after one winter. Deeper

weathering of the sulphides results in redish yellow, black, grey-white, and greenish surface staining and the development of sulphide boxworks . Where the sulphides are in intermitted contact with surface waters it was very difficult to obtain a fresh sulphide sample. Weathering of sulphide rich frost heaved blocks, on well drained ridge tops resulted in a very distinctive yellow gossan material comprised of limonite and occasional large shale and chert fragments showing little or no sulphides.

- Sample from trench 77-2 (78 Extension).

SAMPLE 920/106/78

Calcareous Shale Unit

- Very fine grained light grey calcareous laminations interbedded with dark grey non calcareous platy fissile shale, very strongly foliated.
- Weathering light brown and grey, calcareous.

SAMPLE 920/107/78

Calcareous Shale Unit

- As above but more competent forming blocks and slabs, less calcareous
- Weathering light grey green, calcareous

SAMPLE 920/108/78

Lower Dark Shale

- Soft fissile dark grey-black shale non calcareous, very fine grained, poorly developed slaty cleavage, massive indistinct bedding.
- Weathering dark grey.

SAMPLE 920/109/78

Siltstone-shale Unit

- Dark blue-grey medium grained non calcareous slaty shale, thin bedding (indistinct).
- Dull brown weathering.

SAMPLE 920/110/78

Siltstone-shale Unit

- Silty blue grey med grained slaty shale calcareous interbeds 2cm - 5cm.
- Dull brown weathering (calcareous) and orange brown weathering (non calcareous or dolomitic)

SAMPLE 920/111/78

Upper Dark Shale

- Dark blue grey soft shale, poorly developed slaty cleavage, very fine grained, laminated shale, locally massive bedded and calcareous.
- Weathering black or dark grey.

SAMPLE 920/112/78

Silver Weathering Shale

- Black locally siliceous, carbonaceous shale, finely laminated, strong cleavage.
- Weathering silver white-bluish grey on dry surfaces.

SAMPLE 920/113/78

Baritic Chert	- Greenish grey very fine grained chert containing minor barite is intercalated with the above black shale, barite rosettes are locally present and some Ba rich interbeds are present,minor pyrite is found along fractures. - Weathering results in a distinct red stained soil in the vicinity of the cherty horizon. (Samples from trench 78-5).

SAMPLE 920/114/78

Silver Weathering Shale	- Same as sample 920/112/78

TRENCHING - Results and Comments

In order to provide samples of fresh rock and hopefully to expose mineralization, five trenches were excavated and trench 77-2 was extended. The trenches were excavated using a gas plugger and dynamite. Trench 78-3 was excavated by hand. The locations of the trenches are detailed below. The bottom of each was mapped and a geological plan was prepared detailing the lithologies (fig. 8 to 13incl.).

TRENCH 78-1 (see fig. 8)

Location of the start of trench west end. Grid 245 + 96N, 149 + 49E
Elevation 5885' approx.
Direction of trench - az 032° from location picket
Dimensions of trench - 17.6 meters X 2 meters X 1 meter
Overburden Removed - 30 cu meters
Rock Removed - 5 cu meters
Comments - Trench sampled relatively weathered, cherty black shale containing sphalerite and minor galena. The east end of the trench failed to reach bedrock. Limestone outcrop at west end of trench.

TRENCH 78-2 (see fig 9)

Location of the start of trench - west end. Grid 244 + 85N, 149 + 42E
Elevation - 5870' approx.
Direction of trench - az 038° from location picket
Dimensions of trench - 20.5 meters X 2 meters X 1 meter
Overburden Removed - 10 cu meters
Rock Removed - 31 cu meters
Comments - Trench sampled black slightly cherty shale,some traces of sphalerite galena and pyrite. Limestone outcrop at west end of trench. Limestone - black cherty shale contact appears faulted. Brown weathering calcareous shale outcrops at west end of trench.

TRENCH 78-3 (see fig. 10)

Location of start of trench - west end. Grid 243 + 55N 148 + 13E

Elevation - 5640' approx.

Direction of Trench - az 038° from location picket

Dimension of Trench - 6.5 meters X 2 meters X 1 meter

Overburden Removed - 13 cu meters

Rock Removed - Nil

Comments - Trench incomplete failed to reach bedrock -not sampled.

TRENCH 78-4 (see fig. 11)

Location of start of trench - west end. Grid 244 + 03N 155 + 87E

Elevation - 5900' approx.

Direction of Trench - az 045° from location picket

Dimesion of Trench - 14 meters X 1.5 meters X 1 meter

Overburden Removed - 21 cu meters

Rock Removed - Nil

Comments - Black shale exposed, some rusty areas. Trench failed to reach competent unweathered bedrock. No sulphide mineralization observed.

TRENCH 78-5 (see fig. 12)

Location of start of trench - west end. Grid 245 + 20N 155 + 76E

Elevation - 5915' approx.

Direction of Trench - az 048° from location picket

Dimension of Trench - 11.5 meters X 1 meter X 1.5 meters

Overburden Removed - 17.25 cu meters

Rock Removed - Nil

Comments - Black shale interbedded with massive siliceous barite (some witherite also observed). Black and red layers of iron oxide rich soil are seen in the trench walls . Rusty shale and weathered black shale outcrop at west end of the trench . The trench failed to reach competent unweathered bedrock .

TRENCH 77-2 (78 extension) (see fig. 13)

Location of the start of trench - west end. Grid 240 + 12N, 148 + 24E

Elevation - 5500' approx.

Direction of trench - 020° azimuth

Dimensions of trench - 15 meters X 1.5 meters X 1 meter

Overburden Removed - Nil

Rock Removed - 22.5 cu meters

Comments - Trench deepened. Exposed unweathered sphalerite galena bearing black cherty shale. Limestone outcrop at west end of trench. Black cherty shale shows Comb Pb Zn grade of 4.4% over 10 meters.

PIT 77-A (see fig. 7)

Location of start of pit - west end. Grid 246 + 00N, 149 + 70E approx.

Elevation - 5875' approx.

Dimension of pit - 4 meters X 4 meters X 1 meter

Overburden Removed - 8 cu meters

Rock removed - 8 cu meters

Comments - Weathered black cherty rusty boulder (7 meters X 8 meters X 1meter) with green oxide on the underside. Grab samples of weathered rock show traces galena, sphalerite and sphalerite box works. Fresh rock from the blasted boulder is extremely well mineralized Source of boulder appears to be local

PIT 78-A. 78-B, 78-C (see fig. 7)

Location of pit - between Grid 245 + 80N, 149 + 50E
and Grid 245 + 25N, 149 + 60E

Elevation - 5875' approx.

Dimension of pit 78-A 10 meters X 5 meters X 1 meter,
78-B 4 meters X 6 meters X 1½ meters,
78-C 4 meters X 3 meters X 1 meter.

Overburden Removed - 27.5 cu meters

Rock removed - 23 cu meters

Comments - 8 weathered black cherty rusty boulders lying between trench 78-1 and 78-2 were blasted. Weathering as on boulder at pit 77-A. Numerous very high grade, sphalerite (galena) unweathered rock fragments were exposed in pit. Two boulders were not as well mineralized as the others. The boulders have been frost-heaved vertically from the subcrop , with relatively little lateral transport,apparently indicating the presence of very well mineralized subcrop. Limestone outcrop was exposed in pit 78-C.

PIT 78-D (see fig. 7)

Location of start of pit - west end. Grid 243 + 80N, 149 + 80 E approx.

Elevation - 5750' approx.

Dimension of pit - 6 meters X 2 meters X 1½ meters

Overburden Removed - 12 cu meters

Rock Removed - 6 cu meters

Comments - Weathered black cherty shale with traces of sphalerite boxworks. Twelve meters south of smithsonite occurrences (encrusting boulders by stream). The pit did not expose unweathered bedrock. The pit did expose the black cherty shale/brown non calcareous shale contact as seen in trench 78-2. Samples from pit show badly fractured black cherty shale with traces of sphalerite.

Note Detailed plans of pits were not prepared.

Sampling and Analytical Procedure

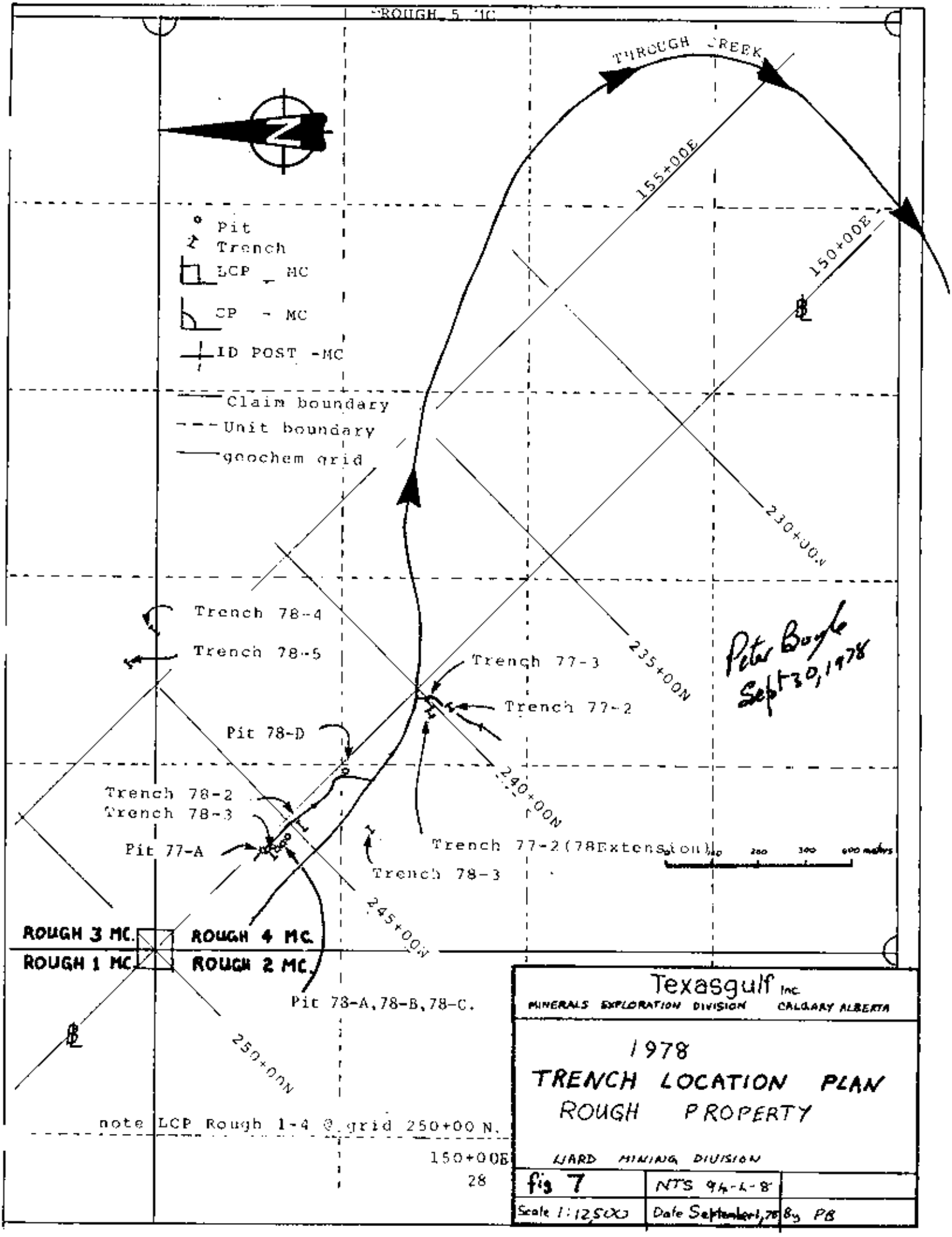
A channel sample approximately 1 cm deep and 3 cm wide was taken at the bottom of trench 78-1, 78-2 and 77-2 (78 extension). Fresh rock surface was sampled where possible. Deep weathering was evident in the softer less cherty shale. A sample interval approximately 1 meter was employed. In practice the sample length was determined by the visible distribution of sulphides.

Bedding dip and strike measurements were made with a Brunton compass, distances were measured in meters with a steel rule or a survey chain.

Trench 78-4 and 78-5 did not reach unweathered bedrock. However, rock chip geochemical samples and some soil samples (largely comprised of rock fragments) were collected. The number of chips and rock fines being representative of a sample location. Samples were collected at stations where geological observations were made. A detailed description of the character of all samples was recorded.

Sample were collected in plastic bags or Kraft envelopes (35 lb. wet strength, air dried, and shipped to Bondar Clegg and Company Ltd. Laboratories in North Vancouver. At the lab, channel samples and rock chip samples were crushed and the 100 mesh fraction was prepared for assay or analysis. The soil samples were sieved to obtain the -80 mesh fraction,and analysed for Pb Zn and Cu using hot Aqua Regia extraction and Atomic Absorbtion analytical techniques.

Results , quoted as percent or ppm total metal , are detailed on the trench plans (fig 8 - 13 incl.).



Texasgulf Inc.
MINERALS EXPLORATION DIVISION CALGARY ALBERTA

1978
TRENCH LOCATION PLAN
ROUGH PROPERTY

LIARD MINING DIVISION

fig 7	NTS 94-L-8
Scale 1:12500	Date September, 78 By PB

ROUGH PROPERTY · PROJ. 920/78

TRENCH 78-1 SECTION & PLAN

SAMPLING & GEOLOGY

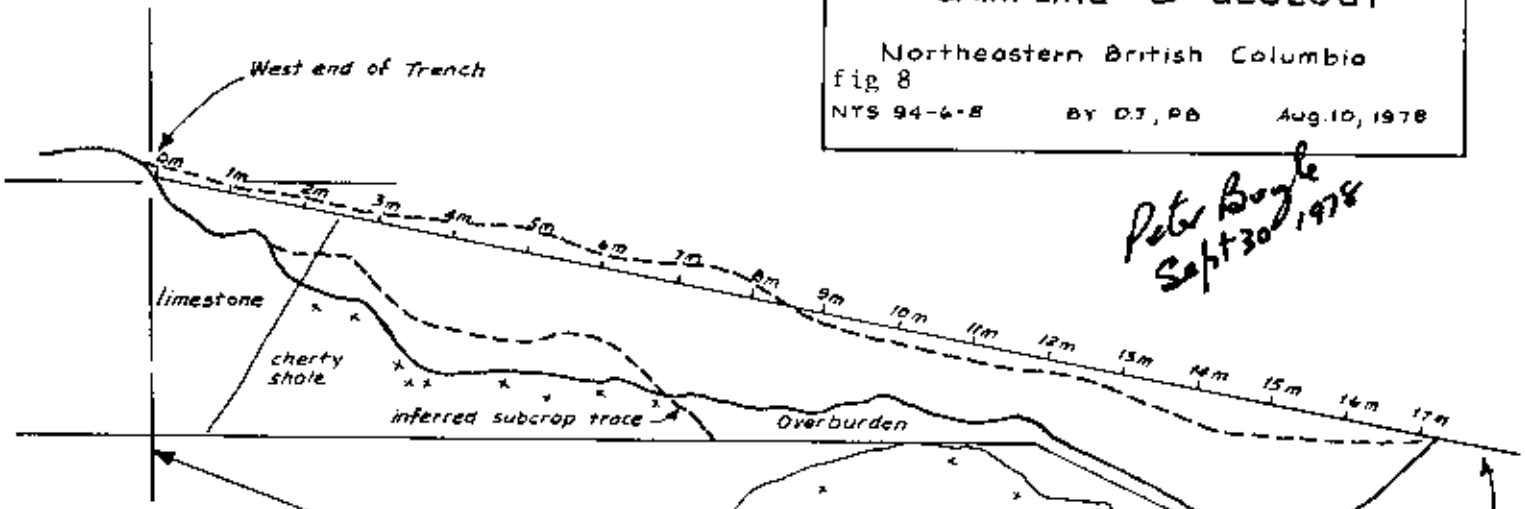
Northeastern British Columbia

fig 8

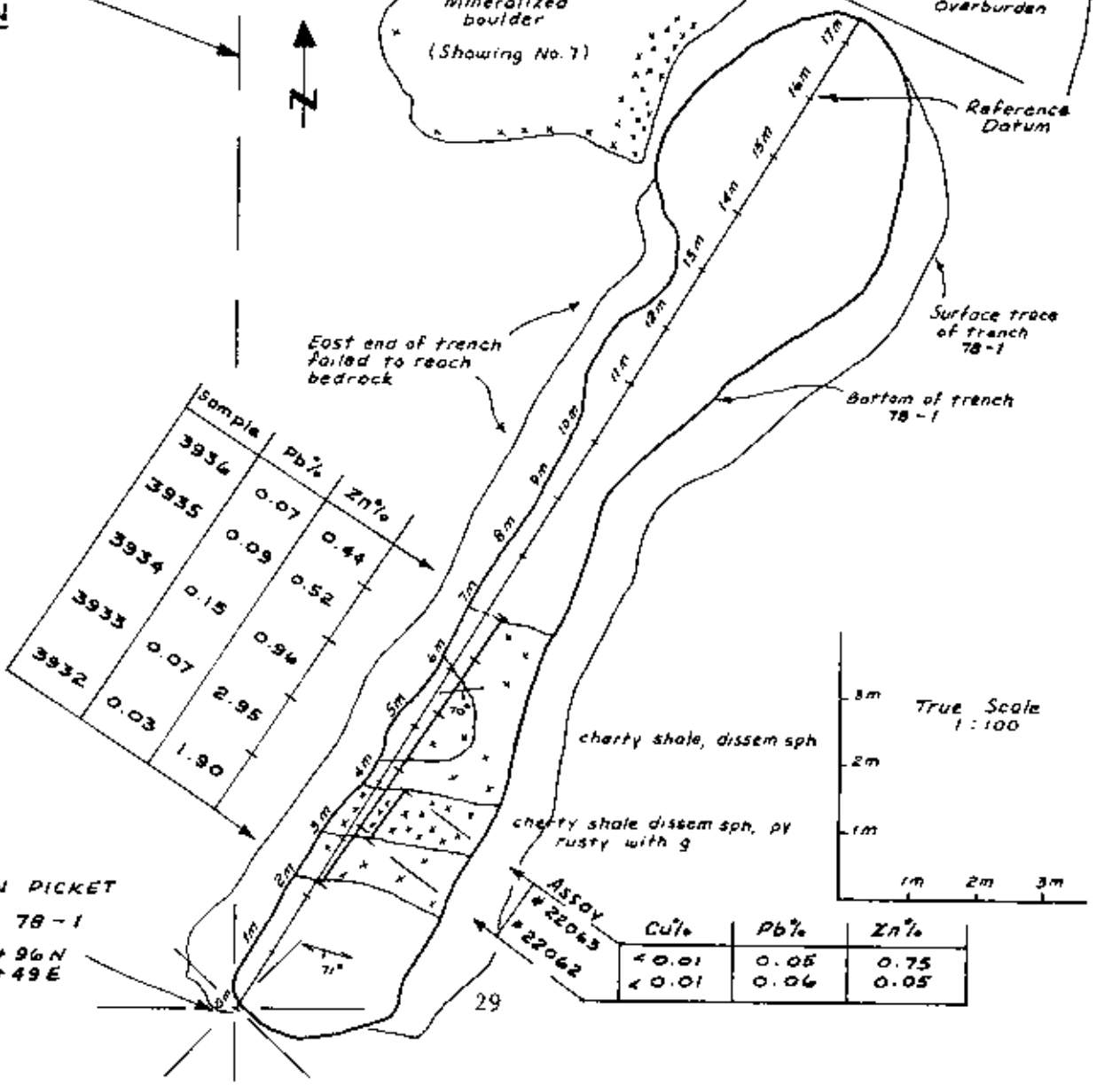
NTS 94-6-8 BY D.T, P.B Aug.10, 1978

Peter Bugle Sept 30, 1978

SECTION Looking North at wall of trench 78-1



PLAN

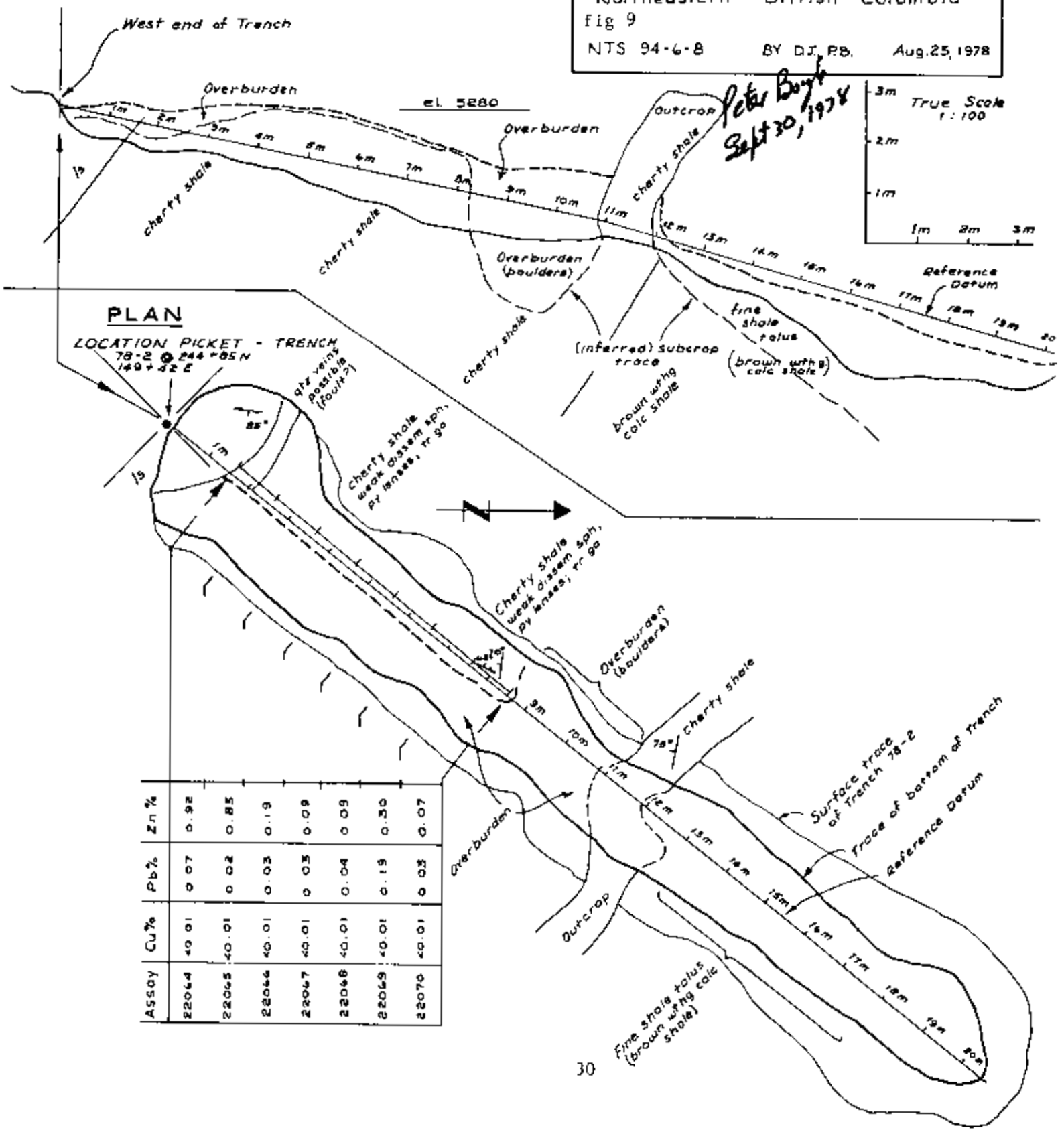


Sample	Pb%	Zn%
3936	0.07	0.44
3935	0.09	0.52
3934	0.15	0.94
3933	0.07	2.95
3932	0.03	1.90

Assay #	Cu%	Pb%	Zn%
22063	< 0.01	0.05	0.75
22062	< 0.01	0.06	0.05

SECTION Looking North at wall of Trench 78-2

ROUGH PROPERTY PROJ. 920/78
TRENCH 78-2 SECTION & PLAN
SAMPLING & GEOLOGY
Northeastern British Columbia
fig 9
NTS 94-6-8 BY DJ, PB. Aug.25, 1978



Assay	Cu%	Pb%	Zn%
22064	<0.01	0.07	0.92
22065	<0.01	0.02	0.85
22066	<0.01	0.03	0.19
22067	<0.01	0.05	0.09
22068	<0.01	0.04	0.09
22069	<0.01	0.19	0.30
22070	<0.01	0.05	0.07

ROUGH PROPERTY PROJ. 920/78

TRENCH 78-3 SECTION & PLAN

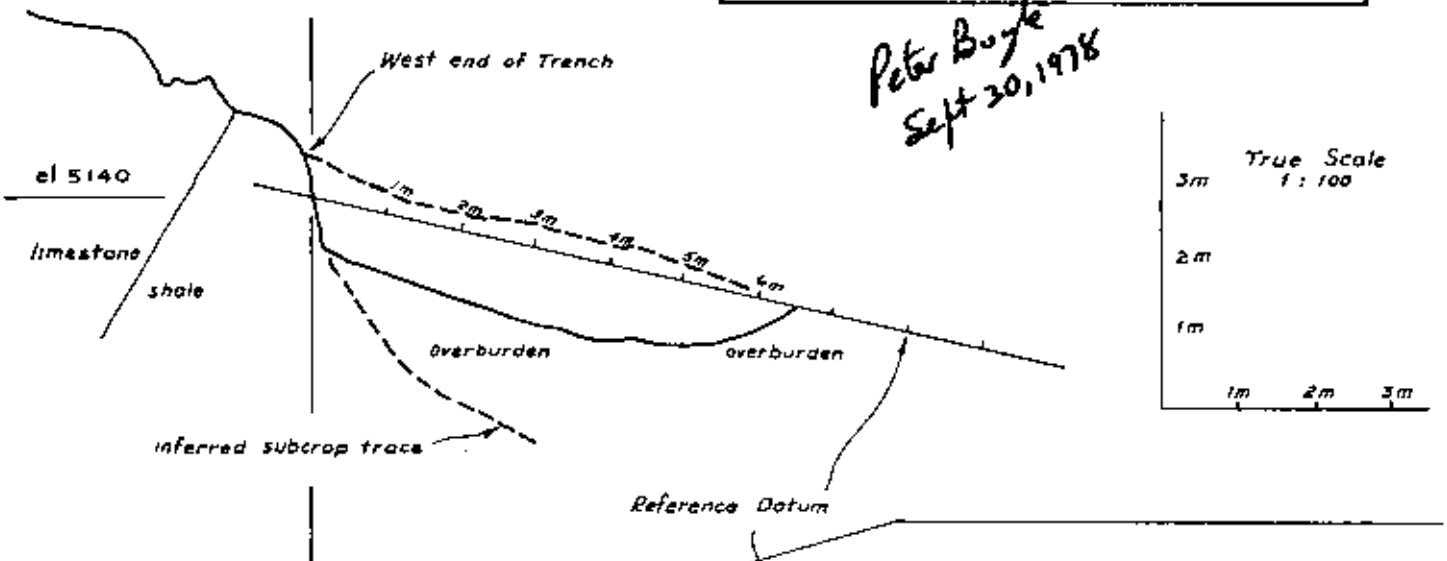
GEOLOGY

Northeastern British Columbia

NTS 94-4-8 By D.J., P.B. Aug. 25, 1978

Fig 10

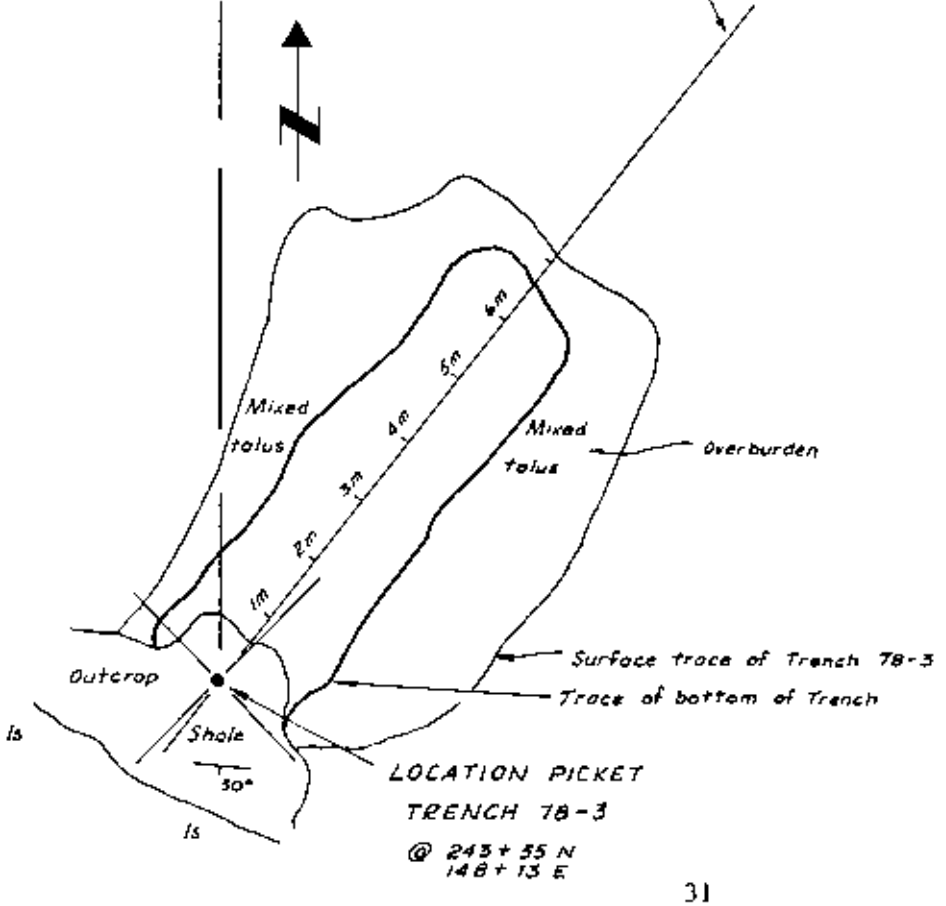
SECTION Looking North at wall of Trench 78-3



Peter Boyle
Sept 30, 1978

Trench 78-3 (incomplete)

PLAN



Texasgulf Inc

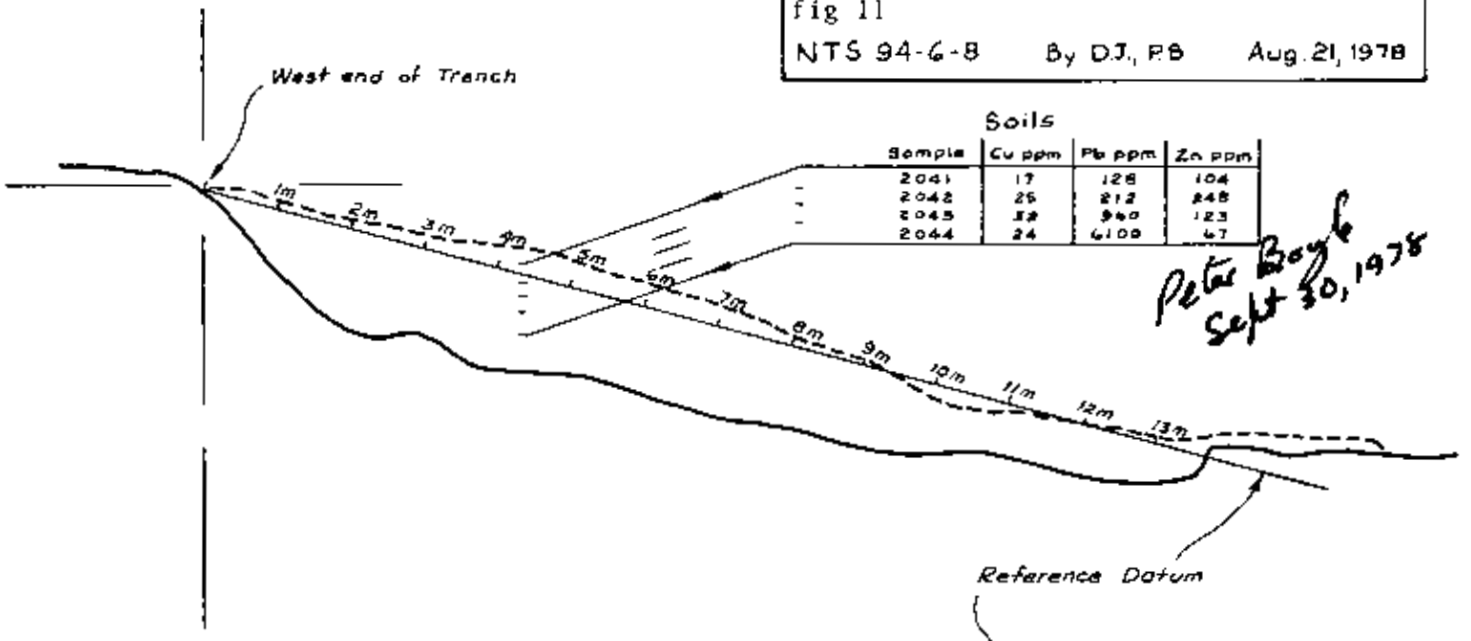
ROUGH PROPERTY PROJ. 920/78
TRENCH 78-4 SECTION & PLAN
SAMPLING & GEOLOGY

Northeastern British Columbia

fig 11

NTS 94-6-8 By D.J., P.B Aug. 21, 1978

SECTION Looking at North wall of Trench 78-4

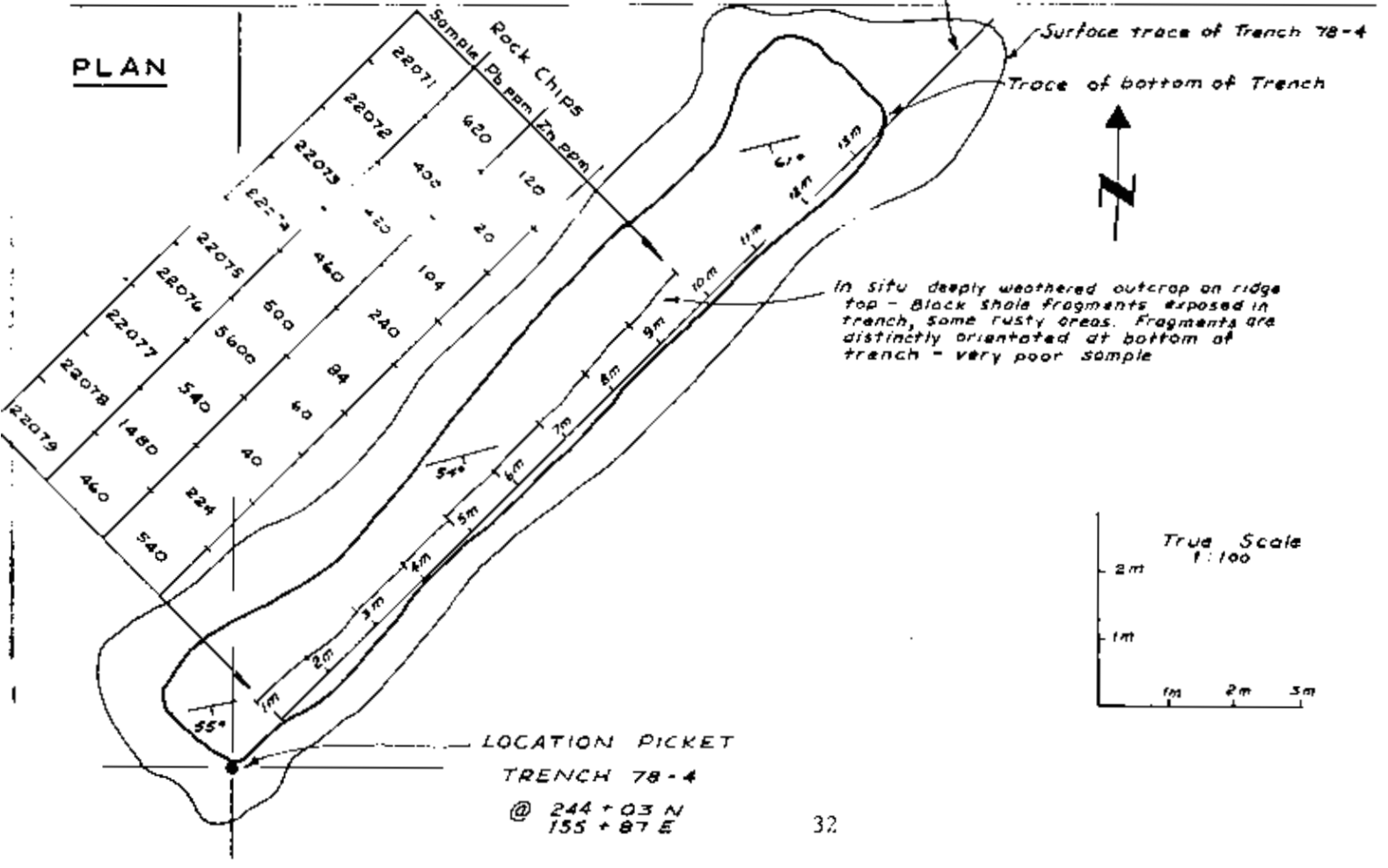


Soils

Sample	Cu ppm	Pb ppm	Zn ppm
2041	17	128	104
2042	25	212	848
2043	32	940	123
2044	24	6100	47

Peter Boyle
Sept 30, 1978

PLAN



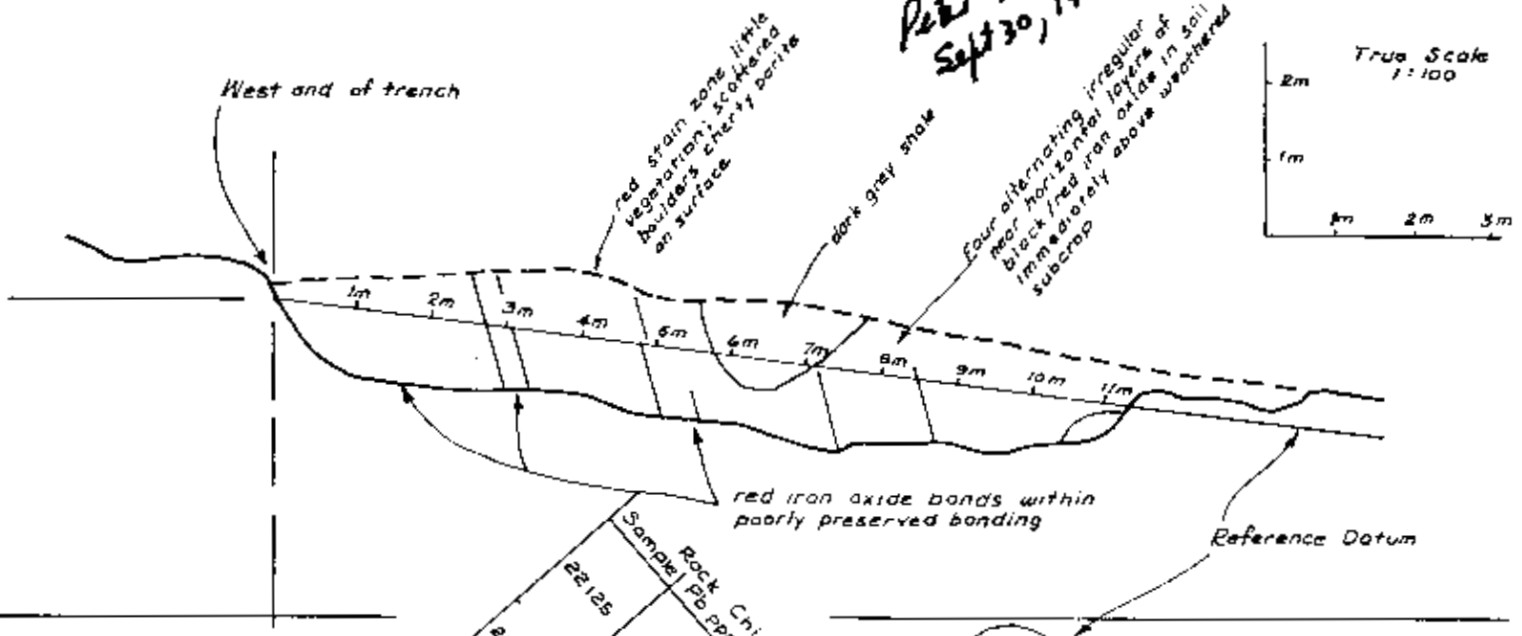
ROUGH PROPERTY PROJ. 920/78
TRENCH 78-5 SECTION & PLAN
SAMPLING & GEOLOGY

Northeastern British Columbia

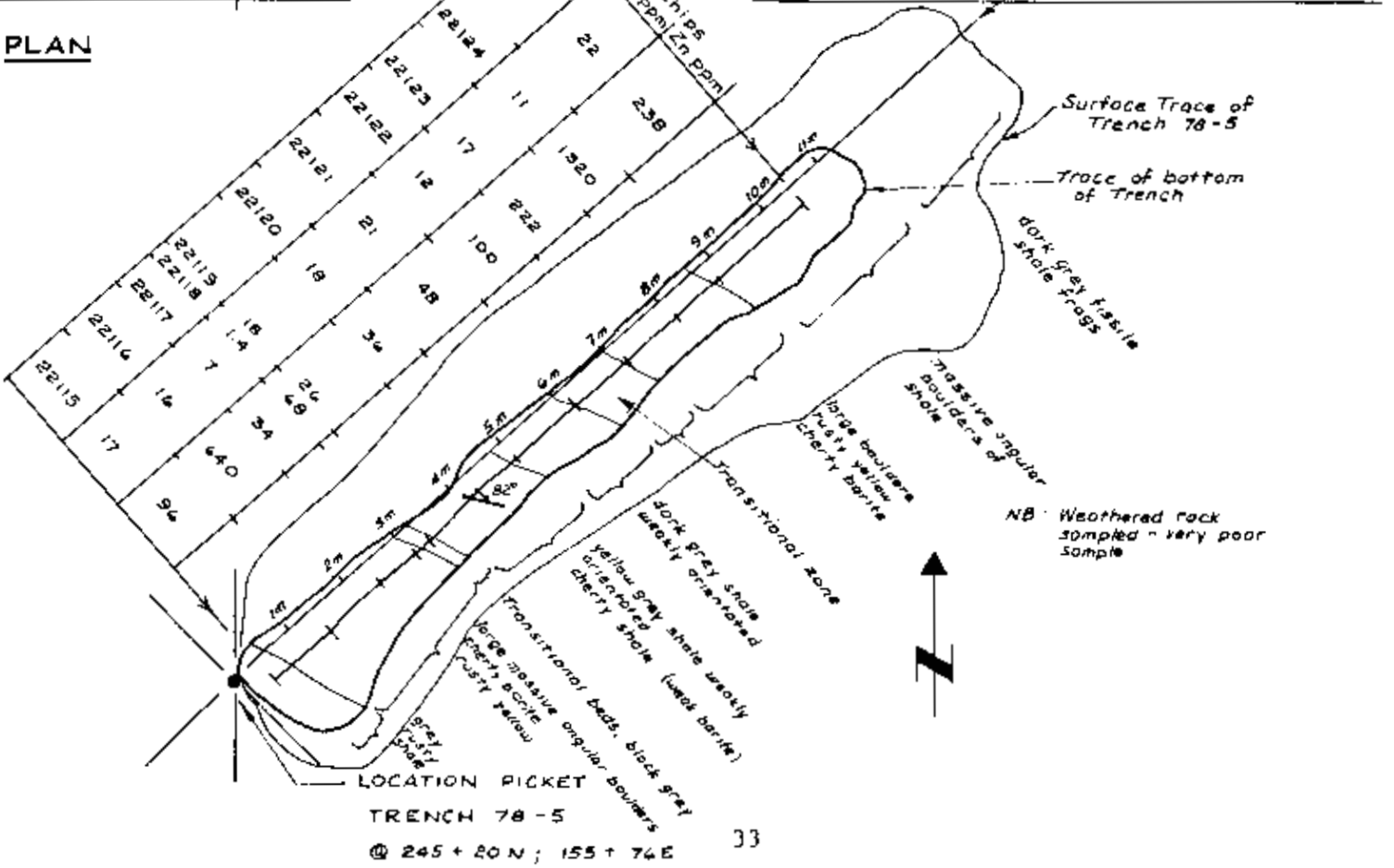
fig. 12
NTS 94-4-8 By D.J., P.B. Aug 25, 1978

Peter Burke Sept 30, 1978

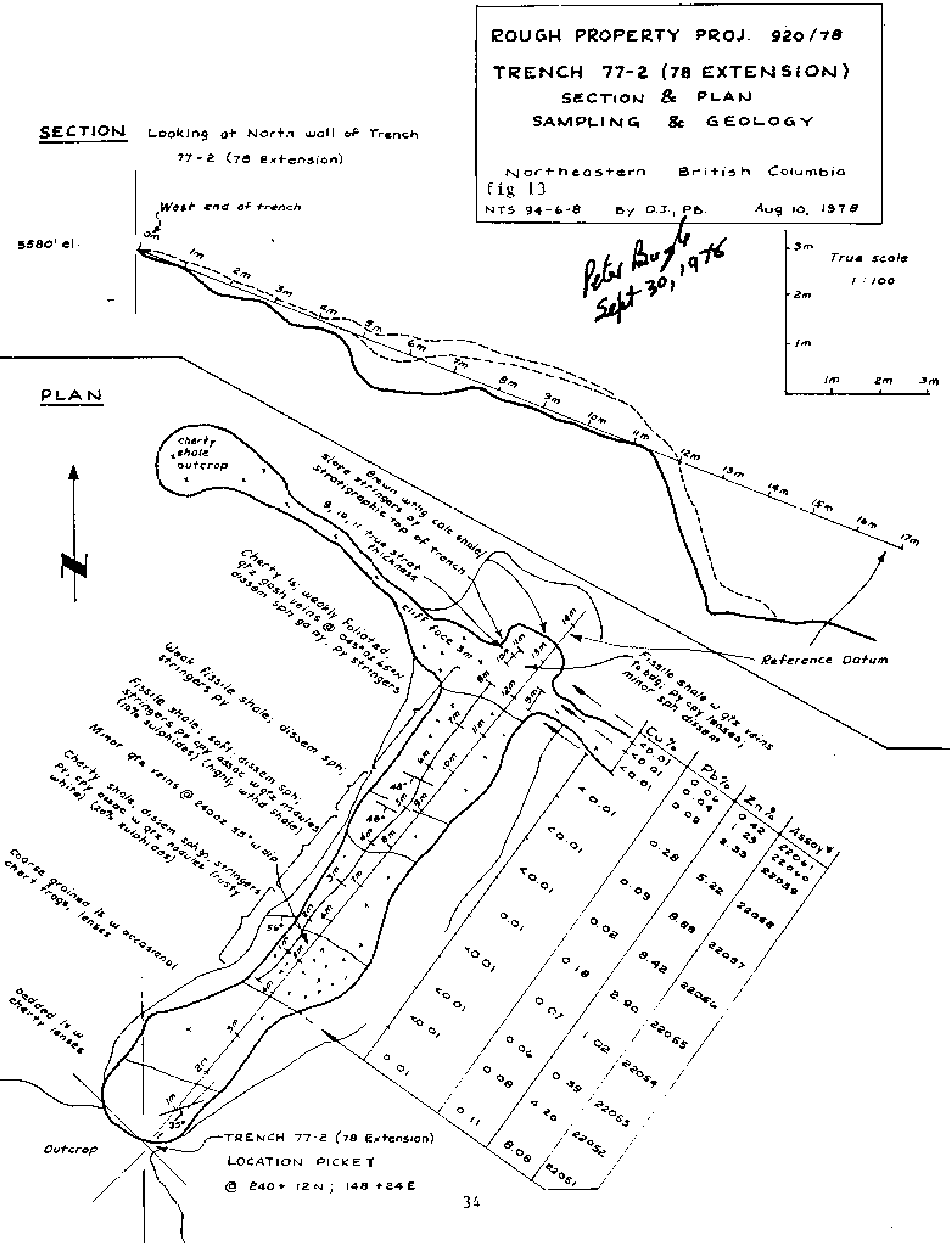
SECTION Looking at north wall of Trench 78-5



PLAN



Texasgulf Inc



GEOCHEMISTRY - Results and Conclusions

1) Soil sampling during the 1978 field season in the vicinity of 244 + 00N 156 + 00E, (the 1977 AB-3 geochemical anomaly see fig 3 & 4), confirmed the presence of highly anomalous lead content in the soils. Detailed soil sampling was completed over the area of interest. A 25 meter X 100 meter grid was layed out totalling 4.5 line km, picketed at each station. A total of 197 soil samples were collected.

In 1977 reconnaissance soil sampling program outlined a broad coherent lead anomaly. A total of 16 samples showed lead values greater than 200 ppm. In the vicinity of 244 + 00N, 156 + 00E, 5 samples outlined an area of highly anomalous soil values greater than 100 ppm Pb, and , or greater than 1000 ppm Zn.

This area was resampled during August 1978. Lead values greater than 200 ppm were obtained from 104 sample sites. The distribution of these anomalous soil values is similar to that recognized from the 1977 results. However 29 of these samples show lead in soil values between 1000 and 3200 ppm total metal. Samples with a high zinc content ranging between 1000 and 6800 ppm were found to coincide with highly anomalous lead values (greater than 1000 ppm) at 12 stations. The remaining 13 high zinc values appear to lie upslope from the Pb anomaly.

The results suggest that this geochemical anomaly has not been closed off to the south of station 241 + 00N, 158 + 00E. Additional soil sampling between lines 235 + 00N and 241 + 00N and between stations 158 + 00E and 163 + 00E should close of the anomaly. Line cutting will be necessary in some areas. Sampling should be done over a 25 meter by 100 meter grid. On the valley floor the geochemical response may not be significant due to the extensive cover.

Siliceous barite float and outcrop has been located along this geochemically anomalous trend. Scattered small springiron gossans and red stained soils are also present. Trenches 78-4 and 78-5 which failed to reach unweathered outcrop did indicate the presence of pyrite disseminated and filling fractures in the shale and siliceous barite. Rusty soil is very evident in the trenches. Soil samples taken from trench 78-4 showed lead values between 128 ppm and 6100 ppm. Zinc and copper values were low. Rock chip samples from the same trench showed similar results.

Testing of this geochemical anomaly to date has not explained the highly anomalous lead values. However, the regional significance of the Devono-Mississippian barite unit and related barite/pyrite unit, which is locally associated with economic Pb-Zn mineralization, suggests that galena may be associated with a massive sulphide zone. The presence of the sulphide zone on the property maybe indicated by this geochemical anomaly.

2) The 1977 sampling program in the northwest corner of the property indicated the presence of anomalous lead and zinc in soils at the north end of the grid. Examination of these results indicated the presence of two anomalous zones which were designated the 1977 AB-1 and AB-3 trends (see fig. 3 and fig. 4). The 1978 program in this area was designed to determine the northern extent of these anomalous trends by soil sampling and prospecting. The grid base line was extended north from line 271 + 00N approximately 3.3 km. A total 13.3 line km of base line and grid lines were picketed. The grid was sampled at 50 meter intervals in selected areas. A total of 160 soil samples were collected.

The 1977 program located a sphalerite occurrence at station 273 + 00N 147 + 00E. This occurrence lies at the limestone - shale contact . Its location coincides with that of the 1977 AB-1 geochemical trend. The northern end of this trend was delimited by a zinc anomaly where the

zinc values ranged between 1100 ppm and 5600 ppm. The only anomalous lead value in this area, 230 ppm, was obtained at the same station as the highest zinc value. The 1978 sampling delimited the northern extent of this trend at line 277 + 00 N. These samples contained between 1170 ppm and 5000 ppm Zn. Two of these samples contained significantly anomalous lead (260 ppm and 1640 ppm Pb). The metal values reflect the character and style of mineralization observed at the limestone - shale contact. The distribution of values reflects the subcrop trace of this mineralization.

The 1977 soil sampling results outlined an anomalous Pb Zn trend, designated as the 1977 AB-4 geochemical trend in this area. Soil sampling during the 1978 field season north of line 271 + 00N extended this anomalous trend 600 meters north. Eight samples contained between 1030 ppm and 4600 ppm Zn. Three of these samples collected at station 274 + 00N, 157 + 50E, 274 + 50N, 158 + 00E, and 275 + 00N, 157 + 00E had anomalous lead values 310 ppm, 240 ppm, 270 ppm, respectively. A copper anomaly coincides with the lead zinc anomaly. Seven highly anomalous copper values are noted with values between 103 ppm and 135 ppm Cu. This anomaly is "open" to the north. The anomalous zone lies in very close proximity to a number of springiron gossans. A small sphalerite bearing vein was observed cross cutting the black shales in this area just to the west of the anomaly at 272 + 00N 150 + 40E Hydrozincite was observed coating graphitic shales at 273 + 00N 150 + 80E. Azurite associated with white quartz vein material cutting a dark grey shale was observed in float at 274 + 00N, 151 + 50E

North of line 277+ 00N only 3 isolated anomalous lead values were recorded at 310 + 00N 142 + 00E, 302 + 00N 143 + 50 E and at station 920-104-78. The Pb in soil values were respectively 220 ppm, 240 ppm and 300 ppm. The zinc in soil results were unremarkable north of line 278 + 00N in the sampled areas, as were the copper values. No further soil sampling is warranted in this area at this time.

3) The following stream sediment samples were collected during the 1977 field season from the creek located on Rough #3 MC draining northward to the Cataga River

Sample #	Sample Location	Pb	Zn
GC 1175	920/8011/78 approx	30 ppm	650 ppm
GC 1176	920/8015/78 approx	312 ppm	3200 ppm
GC 1177		230 ppm	3000 ppm
GC 1178		80 ppm	1040 ppm
GC 1179		20 ppm	185 ppm

It was determined statistically that copper values greater than 68 ppm Cu, lead values greater than 68 ppm Pb, and zinc values greater than 1168 ppm Zn. were highly anomalous.

Detailed examination of this creek during August 1978 located siliceous barite in float and outcrop at location 920/1/78, 920/8023/78 and 920/8024/78. Stream sediment samples were collected from the main creeks and tributary creeks in the area. The following sediment samples showed highly anomalous lead and/or zinc contents.

Sample Location	Cu	Pb	Zn
920/8000/78	87 ppm	230 ppm	1235 ppm
920/8001/78	36 ppm	275 ppm	NS
920/8002/78	109 ppm	260 ppm	1460 ppm
920/8003/78	125 ppm	281 ppm	12380 ppm
920/8004/78	156 ppm	360 ppm	4550 ppm
920/8005/78	113 ppm	53 ppm	1395 ppm
920/8007/78	88 ppm	112 ppm	1520 ppm
920/8009/78	61 ppm	61 ppm	1740 ppm
920/8010/78	84 ppm	125 ppm	2330 ppm
920/8011/78	64 ppm	50 ppm	1290 ppm
920/8012/78	99 ppm	161 ppm	3730 ppm
920/8014/78	67 ppm	140 ppm	1705 ppm

The anomalous lead and zinc values are only found in one stream, whose headwaters drain the silver weathering shales.Within these shales the siliceous barite unit located at 920/1/78. Thus the source of the metal lies in close proximity to the siliceous barite horizon.

Sampling and Analytical Procedure

1) A total of 246 soil and stream sediment samples were collected on Rough #1, #3, and #4 Mineral Claims and claimed for assessment credit. Lead, Zinc and Copper - (total metal) results are shown on the geochemical plans (Fig 14 to 23 incl). In the vicinity of grid location 244 + 00 N 156 + 00E soil samples were collected along the lines at 25 meter intervals. The spacing between grid lines was 100 meters. The grid established in the northwest corner of Rough #1 Mineral Claim was soil sampled at 50 meter X 100 meter intervals. Stream sediment samples were collected from areas which had attracted particular interest. The samples were collected between August 4th and August 30, 1978.

2) A total of 117 soil samples were collected on Mineral Claims Rough #6, #7, and #9 and were claimed for assessment purposes. A total of 10.85 line km of base and grid lines were established. Sampling was done over selected areas at 50 X 100 meter intervals. Samples were collected between August 4th and August 8th 1978.

3) Samples were taken by personnel from Texasgulf Inc. A statement of qualifications of personnel who actually conducted the survey is included in Appendix D.

4) Where possible the B soil horizon was sampled. However, the alpine soil development is very poor and a large proportion of rock fragments were seen in each sample. Some samples were collected from grass covered old talus slopes where the sample may contain 50% rock fines. Soil sampling pits were dug to a depth of 10 to 30 cm using a short handled mattock.

5) Soil samples were collected in numbered Kraft paper bags, air dried, and shipped to Bondar-Clegg and Co. Ltd. in North Vancouver. At this lab, the -80 mesh fraction was analysed for Pb, Zn and Cu., using hot Aqua Regia extraction and Atomic Absorption analytical techniques. Results are quoted as ppm. total metal.

6) Stream sediment samples were prepared , digested , and analysed by the same procedure as were the soil samples .

Peter Boyle

Peter Boyle

APPENDIX A

GEOLOGICAL REPORT

October 1978 Memo by Dr. R.A.F. Graham

Texasgulf memo

Date October 27, 1978

To J.F. Macdougall
P.J.S. Boyle
Location Calgary

From R.A.F. Graham
Location Vancouver

Subject INTERPRETATIONS FROM GEOLOGICAL MAPPING ON ROUGH CLAIMS, August,1978

In July a week was spent mapping on the Rough claims with a view to gaining a better understanding of the stratigraphy, structure and distribution of mineralization. A 1:10,000 scale map has been produced but should be considered a simplified or generalized representation of the geology subject if necessary to modification or correction at a later date. Many details of the complicated structure could not be mapped on that scale and location inaccuracies are probable because of lack of detail on the topographic base map, an enlargement of the N.T.S. 1:250,000 scale map.

The essential feature of the property is a major northwesterly trending shale belt flanked on each side by minor limestone. It has now been fairly well established that the belt is synclinal and that the two limestone zones represent the same unit exposed on opposite limbs of the overturned, northeasterly verging synclinal structure. The shales overlie the limestone and span a wide time interval. Stratiform mineralization or important indications of it occurs at at least two stratigraphic levels: one at the base of the shale sequence in contact with the limestone and the other at a much higher level in the shales.

The stratigraphic sequence has been divided into eight units, which are briefly described on the following page starting with the youngest. The shale sequence comprises units 3 to 8.

ROUGH GROUP STRATIGRAPHIC SECTION

Unit No.		Thickness
8	Silver weathering shale	at least 150m
	Usually black, fairly brittle shale. Commonly slightly carbonaceous and partly cherty. Locally almost completely silicified. Finely bedded or laminated but bedding usually obscured by strong cleavage. Contains small amounts of disseminated pyrite. Distinctive silvery bluish-grey weathering (on dry surfaces).	
	8a. In lower part Unit 8 contains a cherty-sub-unit about 30m thick. This dominantly a rusty weathering greenish grey, thin-bedded chert. Some intercalated black shales. Contains small amounts of barite locally.	
7	Upper Dark Shale	100m
	Dark grey soft fissile shale. Finely bedded but cleavage dominant feature. Some thin orange weathering chert or calcareous beds. Unit becomes blacker and carbonaceous towards southwest. Variable weathering colours but on steep slopes usually appears black.	
6	Siltstone-shale Unit	150m
	Grey, brown and greenish-grey interbedded siltstones and shales. Thin bedded but cleavage dominates over bedding. Weathers to platy fragments, very thin in shales to thicker in siltstone. Some distinctive orange-brown weathering calcareous and dolomitic beds. Major part of unit dull brown weathering.	
5	Lower Dark Shale	75m
	Soft fissile dark grey shales. Dark grey weathering. Unit can be identified with certainty only on east side of property.	
4	Calcareous Shale Unit	75m
	Grey calcareous shales and silty shales with some purer limestone beds. Thin bedded but cleavage surfaces dominant over bedding. In west calcareous beds interbedded with darker grey non calcareous soft fissile shales and locally more competent siltstones. Much of unit is tan or light brown weathering. Probably gradational with unit 5.	

Unit No.		Thickness
3	Zinc-lead bearing cherty shale	up to 30m
	Medium and dark grey chert, silicified siltstone and shale. Varies from thin bedded to fairly massive. Pyritic and rusty weathering.	
2	Limestone	50m
	Fairly pure fine-grained to micritic limestone. Pale grey to light grey. Differential weathering indicates some partial dolomitization. Bedding indistinct and obscured by tectonic layering and brecciation.	
1	Quartzite	
	Variable quartzites. Thickness not estimated.	

with the unit containing significant mineralization on Placer's DP property to the southeast. It is possible that the cherty sub-unit 8a containing traces of barite correlates with the base-metal bearing cherty barite sub-unit on Placer's property.

Exploration over this upper unit is not yet as complete as over the lower cherty unit. Geological mapping has shown that the silvery weathering shale occurs along the synclinal core in a belt crossing the property and widening from northwest to southeast down the plunge of the synclinal structure. Further refinement of the unit boundaries and prospecting within it are possible but both will be hampered by lack of outcrop. I.P. and E.M. surveys have been proved inapplicable because of graphite and disseminated pyrite in the succession but further soil geochemical surveys may be helpful. Eventually it will probably become necessary to diamond drill to determine the source of the soil anomalies. Considering the limited value of further surface work drilling may even be advisable as the next phase of the program.

R.A.F. Graham

RAFG:kdl

elongated in a downslope direction. Grades of three selected samples are high, between 28 and 40% combined lead-zinc, and associated siltstones contain over 1% zinc. The zone however is strictly limited in size and is considered of little significance in itself, though it tends to throw some interest on nearby black carbonaceous shales, over which the soil values of lead and zinc are anomalous.

Mineralization in the original waterfall showing is in rocks which may be as old as Cambrian. It occurs in a well defined stratigraphic unit which, although not of regional scale, extends well beyond the property limits. Traces of mineralization especially zinc, are extensive within the unit but zones of economic significance are much smaller and seem to be confined to darker and more shaly parts of the unit near and just north of the waterfall. High grade pods seem very limited in extent at surface and so far have been indicated only by what appear to be large frost-heaved boulders. Surface exploration of the mineralized unit by geological and geochemical methods has essentially been completed. Geophysical methods, E.M., I.P. and magnetometer, have been tried but found inapplicable in the environment containing graphite, disseminated pyrite and lacking magnetic minerals. Drilling now seems to be the appropriate method to explore the possible large sub-surface expression of the mineralized unit on the west limb of the synclinal structure. This should be started in the vicinity of the high grade boulders. For planning drilling locations it can be assumed that the fairly steep southwesterly dip of the unit at surface continues for some distance in the sub-surface.

The source of the major lead anomaly northeast of the waterfall showing has not yet been found but it overlies the uppermost unit, the silvery weathering shales, which can be correlated lithologically, with a good degree of certainty,

cherty unit are numerous from the area of the waterfall southward. North of the waterfall, exposure frequency decreases but the unit can be traced northward beyond the property limits. On the eastern limb of the syncline only one exposure of the cherty unit has been found and it is just north of the property boundary.

In the vicinity of the waterfall, the unit is up to about 30m thick and is composed of dark grey silicified shales. Elsewhere it appears to be thinner, in the order of 5-10m, and composed of lighter grey chert or silicified siltstone. Highest grades of mineralization consisting of sphalerite, pyrite and minor galena, occur in the dark silicified shales. Lighter grey cherty lithologies to the south contain fairly persistent but low-grade mineralization in the form of disseminated sphalerite and pyrite. North of the dark silicified shales along the western limb of the syncline, although exposures are few, mineralization appears to become very scattered and low grade. On the eastern limb of the syncline the only exposure of the mineralized horizon contains no visible sphalerite or galena but reacts in places with zinc spot test solution.

Another zone of mineralization is indicated by the major lead soil anomaly found northeast of the original waterfall showings. The anomaly occurs over silvery weathering shales of unit 8, including the outcrop area of sub-unit 8a, rusty weathering greenish-grey cherts with intercalated black shales and traces of barite. Very little outcrop occurs in the vicinity of the anomaly. Most of the area is covered by a metre or more of fine shale talus and prospecting in this has failed to indicate a source for the lead. Two short trenches were dug to bedrock but did not reveal any mineralization. However they uncovered only a small part of the stratigraphic succession. Further detail soil sampling this year has confirmed the occurrence of the lead anomaly.

A third area of mineralization occurs 600m south of the original waterfall showing. This consists of lead-zinc mineralization in calcite veins in calcareous siltstones of unit 6. The occurrence is on a talus slope without any in situ bedrock. Mineralized fragments occur in a zone about 20m wide and somewhat

Because of intense folding which has caused both thickening and thinning the thickness of the units is difficult to determine and figures given should be taken as a rough guide only. Unit 1 quartzite has been considered the basal unit on the property but is not the lowest unit exposed in the area. It is probably Lower Cambrian in age and conformable with uppermost Proterozoic sediments. The overlying limestone, unit 2, may also be Lower Cambrian. Unit 3, the zinc-lead bearing cherty shale is in sharp contact with the limestone unit below. Where its upper boundary can be seen it appears to be gradational with the overlying calcareous shales. The calcareous shales, unit 4, are probably part of the Kechika Formation, a widespread calcareous shale unit of Upper Cambrian to Lower Ordovician age. The correlation of the next three units, nos. 5-7, is less certain but all three may be part of the Road River Formation, a regional dark shale facies of Ordovician to Silurain age. The uppermost unit, the silvery weathering shale, appears from evidence from the DP Property to the south, to represent the basal part of the Black Clastics group, a widespread regional group of probable Middle or Upper Devonian age.

The whole stratigraphic succession is folded into a synclinorium overturned to the northeast. Minor folds within the major structure are numerous and commonly isoclinal. Minor, northeasterly directed thrusting occurs. Its effects are more easily seen in the western part of the property where slices of limestone have been thrust over incompetent younger shales.

Lead-zinc mineralization of the Waterfall showings, which led to the staking of the Rough claims, occurs in a fairly extensive cherty unit, unit 3, at the base of the calcareous shale. The unit is hard and resistent and has a distinctive dark brown weathering. Although it is more closely related sedimentalogically to the overlying soft calcarous shales, in the field it can be traced more easily with reference to the top of the underlying, resistent limestone. On the western limb of the syncline exposures of the

LEGEND

- 8 — SILVERY WEATHERING SHALE. Black shale commonly slightly cherty
- 8a — Chert sub-unit, some black shale and minor barite
- 7 — UPPER DARK SHALE. Soft fissile dark grey shale with few orange weathering silica or calcite rich beds
- 6 — SILTSTONE SHALE UNIT. Buff brown weathering, commonly platy siltstones and shales
- 5 — LOWER DARK SHALE. Soft fissile dark grey shales
- 4 — CALCAREOUS SHALE UNIT. Calcareous shales and some siltstones and limestones, commonly orange to light brown weathering
- 3 — ZINC LEAD BEARING HORIZON. Chert and cherty black shale
- 2 — LIMESTONE
- 1 — QUARTZITE
- THRUST FAULT
- AREA WITH MAJOR LEAD SOIL ANOMALY

ROUGH No. 1
ROUGH No. 2
ROUGH No. 3
ROUGH No. 4
ROUGH No. 5

7/8 Interfolded

Waterfall

Pb - Zn in calcite veins

A

B

Texasgulf Inc.

ROUGH CLAIMS

GEOLOGY

NTS 94L/8E

WORK BY	DRAWN BY	DATE	DRWG NO.
R.A.K.G.	E.R.	2nd NOV. 1978	Fig A-1

200 0 200 400 600 800
Contours in Feet — Scale in Metres Approx 1:10,000

To Accompany: "Report on Geological, Geochemical and Geophysical Surveys, and Hand Trenching on the Rough Property" by P. Boyle, September 1978.

SW

NE

7000

6000

5000

4000

3000

2000

A

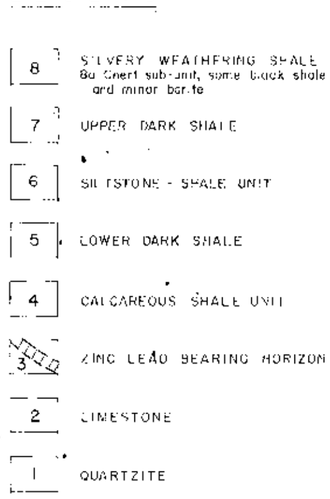
B

Waterfall Showing

4/5/6

4/5/6

8a



To Accompany: "Report on Geological, Geochemical and Geophysical Surveys, and Hand Trenching on the Rough Property" by P. Boyle, September 1978.

Texasgulf Inc.

ROUGH CLAIMS
CROSS SECTION

SKETCHED IMPRESSION OF POSSIBLE MAJOR STRUCTURAL FEATURES

WORK BY	DRAWN BY	DATE	DRW,G NO.
R A F G.	E R	2nd NOV 1978	Fig A-2

Horizontal & Vertical Scales approx 1:10,000

200 0 200 400 600 800 m

Elevations in Feet Scale in Metres

APPENDIX B

GEOPHYSICAL ORIENTATION SURVEY REPORT

November, 1978 Memo by Dr J.A.Slankis

TEXASGULF INC. November 23,1978

REPORT ON GEOPHYSICAL WORK

ON THE

ROUGH CLAIMS

INTRODUCTION

A geophysical program consisting of horizontal loop EM, VLF, horizontal shootback EM, I.P. and magnetics was carried out over parts of three claims within this claim group. The purpose of this program was twofold: to evaluate the general utility of various geophysical methods in exploring for the type of mineralization found on this property and, more immediately, to attempt to trace known mineralization under drift covered areas.

The selection of three of the above methods (shootback, VLF and magnetics) was based on the apparent success Canex Placer Ltd. had had with them on their nearby Driftpile project.

EQUIPMENT, SURVEY PARTICULARS AND EVALUATION OF METHODS

A. Magnetics:

Geometrics G836 magnetometer, proton precession, total field, ± 5 gamma sensitivity.

Diurnal corrections were made by initially reading the Base Line in loops and then using the Base Line values to correct the cross-line readings.

Only the Base Line and two cross-lines were run because it was immediately apparent that there is neither significant susceptibility contrast between the limestone and the shales nor any variation within the shales (Map B-1)

B. Shootback EM:

Crone Geophysics CEM, horizontal mode shootback, 1830 Hz, 100 metre coil separation.

Tests were carried out with all three available frequencies (390, 1830 and 5010 Hz) to determine the optimum frequency for this area.

The central part of the grid was surveyed with this instrument (Map B-2) and although the results seem to show some correlation with those from the other EM methods, it proved impossible to interpret the data. Clearly, in this area the method does not give the good results that were obtained by Canex Placer on their DP property. Our lack of success is attributed to more severe topography and very high background conductivities in the shales.

C. VLF:

Crone Geophysics RADEM.

Dip angles were measured using the 18.6 KHz signal from the VLF transmitter at Seattle (Jim Creek), Washington. Field strength measurements were attempted but the variations exceeded the range of the instrument.

Over the shales, VLF gave reliable results only along traverses with moderate topographic relief. Elsewhere there was an obvious correlation between topography and dip angles, with cross-overs occurring at or near topographic highs and reverse cross-overs in gulleys. Consequently, there are cross-overs on the map (B-3) which have not been marked as anomalies.

D. Horizontal Loop EM:

Apex Parametrics MaxMin II, 80 metre coil separation, 222 Hz and 1777 Hz.

Somewhat surprisingly, in view of the problems we had expected to have with the steep topography, this method gave the best and most interpretable results. Except for two or three suspect readings, most of the possible topographic errors were avoided by careful use of the tilt indicators on the transmitting and receiving coils. Although the survey was carried out using frequencies of 222 Hz and 1777 Hz, the low frequency appear more reliable, the high conductivity of the shales badly distorts the high frequency responses (Maps B-4 and B-5).

E. Induced Polarization

Crone Geophysics N250 IP transmitter, 250 watts, battery powered.

Crone Geophysics N-IV IP receiver, Newmont type.

Dipole - dipole array, a=25 metres, n=1.

Within the conductive shales, the survey suffered from the low power of this portable unit. In most instances the n=1 readings are fairly reliable (Maps B-6 and B-7); however, attempts to use larger n values failed due to inadequate signal levels at the receiver.

No attempt was made to obtain systematic IP coverage, the survey was limited to a few profiles over known mineralization and a geochemical anomaly. In all instances it was evident that the shales contain sufficient chargeable material to mask any minor amounts of chargeable sulphides that might be associated with significant sphalerite mineralization.

INTERPRETATION

The results can be characterized as having local correlation to the known geology but lacking correlation over any appreciable distance. There is no distinctive response over the known sphalerite mineralization.

The main conductivity feature is the highly conductive zone A which lies immediately east of the limestone-shale contact north of Line 244N but diverges eastward from the contact south of this line. VLF conductor A generally coincides with the western edge of the horizontal loop anomaly while conductor A' seems to represent either the eastern edge or a more conductive section within the conductor. North of Line 244N the known Pb-Zn mineralization lies within this conductor although the high conductivity does not arise from the presence of either sphalerite or galena. Most likely zone A is a graphite-pyrite rich horizon in the shales.

South of Line 244N, there is no EM anomaly along the contact. The IP shows somewhat lower conductivities east of the contact but not low enough to produce an EM response.

Obviously, the nature of the host rock for the mineralization changes around Line 244N, possibly as a result of the inferred fault in this area. However, unless there is Zn-Pb mineralization in zone A south of Line 244N, it must be concluded that the mineralization is related to the limestone-shale contact rather than to a stratigraphic horizon within the shales. Consequently, geophysical trends cannot be used to extrapolate known mineralization into drift-covered areas with any certainty!

Among the other EM anomalies only C and D may be of possible interest because of the presence of scattered but generally coincident geochemical anomalies. However, there is no evidence for any correlation between the Pb-Zn mineralization and conductivity.

Some detailed investigation was carried out on the high Pb-Zn geochemical results around 156E on Lines 244N and 242N but the results are not conclusive. The IP shows an approximately coincident chargeability high at 155+75E on Line 244N and the high frequency horizontal loop indicates a poorly conductive zone in the same area. However, the latter anomaly extends west to 154+15E and, consequently, it is doubtful whether it is significant. The IP high may be significant but it should be noted that there are equally high chargeabilities to the east where the geochemistry is non-anomalous.

CONCLUSIONS

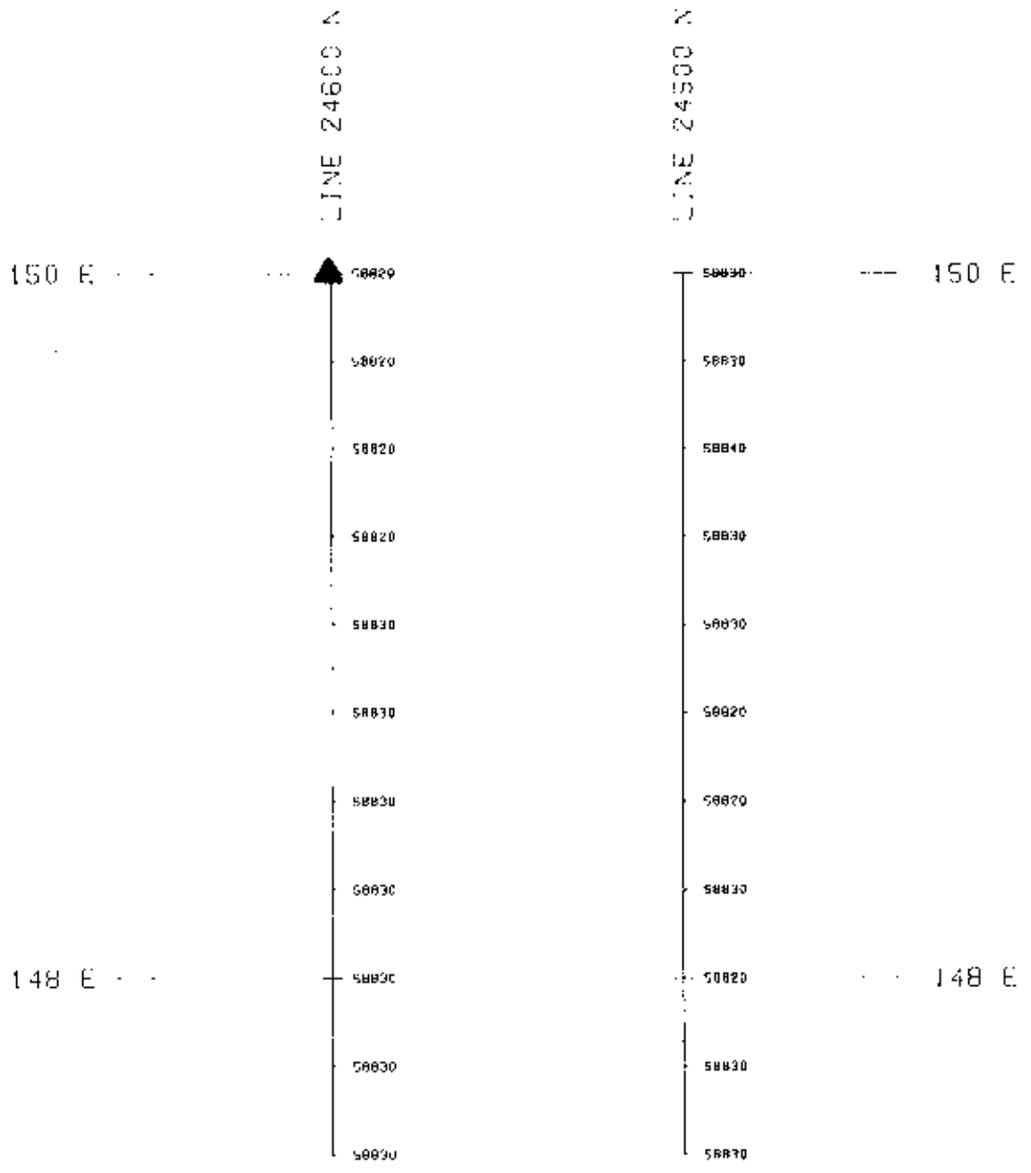
Regretfully I must conclude that geophysics is not a primary method in exploring for the type of sulphide mineralization found on the Rough property. In view of the lack of any distinctive response over the economic sulphides, geophysical surveys may be useful in extrapolating geological trends but not in directly locating mineralization. However, it is obvious that a great deal of geological information must be available to guide the geophysical interpretation.

J. A. Slankis

See 1978

Rough Property Assessment Report fig. 5 - "Index Plan of Property Maps" and fig. 7 - "1978 Trench Location Plan" in order to relate geophysical survey to property grid, trench locations and claim boundaries.

KEY MAP



To Accompany: "Report on Geological, Geochemical and Geophysical Surveys, and Hand Trenching on the Rough Property", by P. Boyle, September 1978.

LEGEND

INSTRUMENT : GEOMETRICS G836
TYPE : PROTON PRECESSION, TOTAL FIELD
READINGS IN GAMMAS
▲ MAGNETIC BASE STATION

0 40 80 120 160 200
METRES (1:2000)

TEXASGULF INC.

MAGNETIC SURVEY

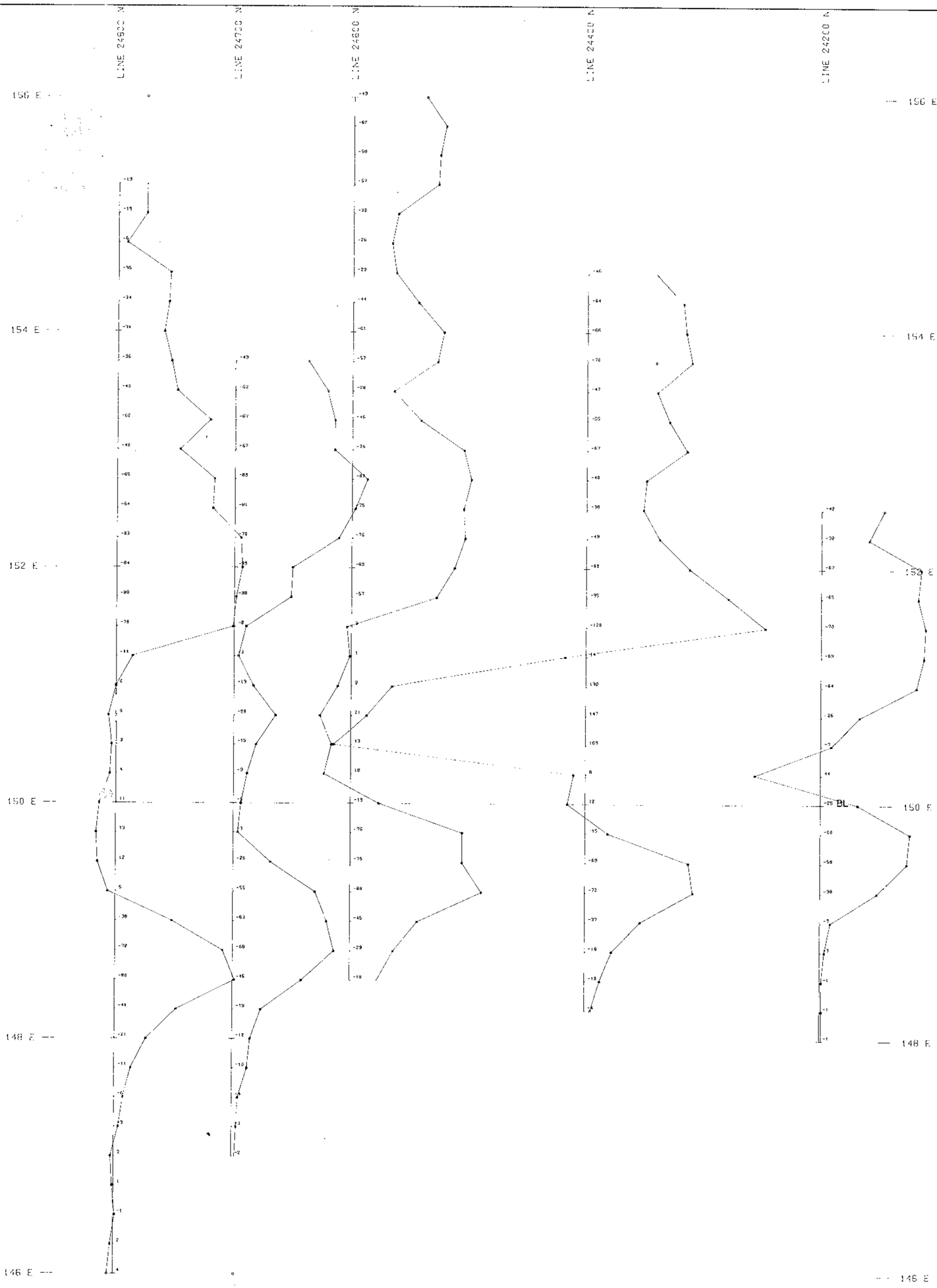
ROUGH CLAIMS

NTS:94-L-8 PROJ. #920

WORK BY	DATE
	1978

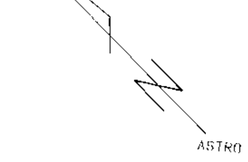
B-1

23/10/78



See 1978 Rough Property Assessment Report fig. 5 - "Index Plan of Property Maps" and fig. 7 - "1978 Trench Location Plan" in order to relate geophysical survey to property grid, trench locations and claim boundaries.

KEY MAP



LEGEND

INSTRUMENT: Crone CEM
FREQUENCY: 1830 Hz
COIL CONFIGURATION: HORIZONTAL SHOOTBACK
COIL SPACING: 100 Metres
PROFILE SCALE: 1"= 20°

To Accompany: "Report on Geological, Geochemical and Geophysical Surveys, and Hand Trenching on the Rough Property" by P. Boyle, September 1978.

0 40 80 120 160 200
METRES (1:2000)

TEXASGULF INC.

SHOOTBACK SURVEY

ROUGH CLAIMS

NTS: 94-L-8 PROJ. # 920

WORK BY | DATE: 1978

B-2

LINE 25300 N
LINE 24800 N
LINE 24600 N
LINE 24400 N
LINE 24200 N
LINE 24000 N
LINE 23800 N
LINE 23600 N
LINE 23400 N
LINE 23200 N
LINE 23000 N

158 E
156 E
154 E
152 E
150 E
148 E
146 E

A
A'
B
B'
C
C'
D
D'
E
E'
BL.

See 1978

Rough Property Assessment Report fig. 5 - "Index Plan of Property Maps" and fig. 7 - "1978 Trench Location Plan" in order to relate geophysical survey to property grid, trench locations and claim boundaries.

KEY MAP

ASTRO

To Accompany: "Report on Geological, Geochemical and Geophysical Surveys, and Hand Trenching on the Rough Property" by P. Boyle, September 1978.

LEGEND

—O— Conductor

DIP ANGLE (DEGREES)

18 E

INSTRUMENT : CRONE RADEM
STATION : Seattle Wash.
PROFILE SCALE : DIP ANGLE 1 CM= 10°

W DIPS E DIPS

0 40 80 120 160 200
METRES (1:2000)

MINISTRY OF ENERGY, MINES & PETROLEUM RESOURCES
6997

TEXASGULF INC.

V L F SURVEY

ROUGH CLAIMS

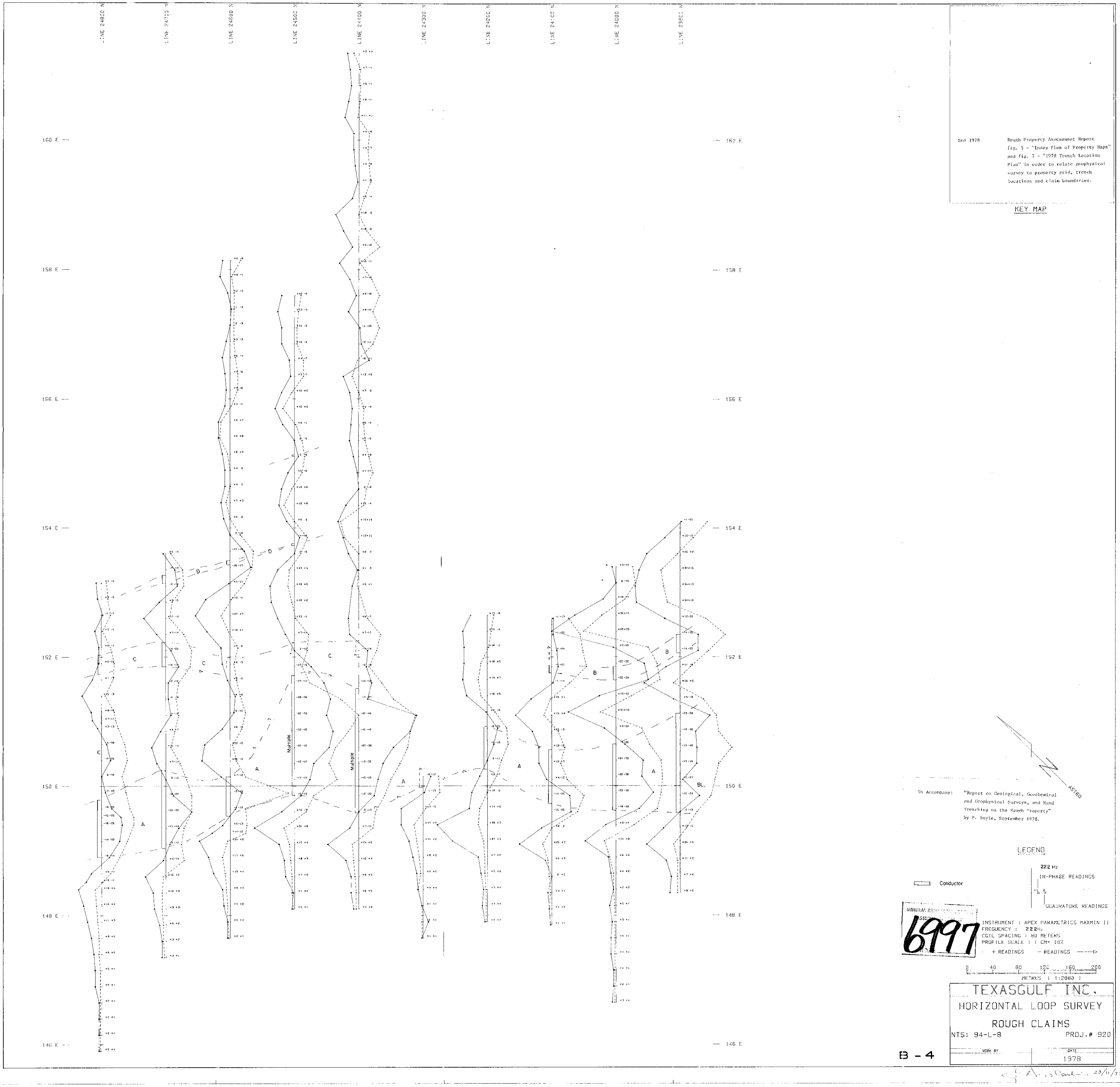
NTS: 94-L-8 PROJ. #920

DRAWN BY

DATE
1978

B-3

23/0/78


LINE 24800 N
LINE 24700 N
LINE 24600 N
LINE 24500 N
LINE 24400 N
LINE 24300 N
LINE 24200 N
LINE 24100 N
LINE 24000 N
LINE 23900 N
160 E
158 E
156 E
154 E
152 E
150 E
148 E
146 E
A
B
BL
C
D
Multiple
See 1978
Rough Property Assessment Report fig. 5 - "Index Plan of Property Maps" and fig. 7 - "1978 Trench Location Plan" in order to relate geophysical survey to property grid, trench locations and claim boundaries.
KEY MAP
ASTRO
To Accompany:
"Report on Geological, Geochemical and Geophysical Surveys, and Hand Trenching on the Rough Property" by P. Boyle, September 1978.
LEGEND
Conductor
222 Hz
IN-PHASE READINGS
QUADRATURE READINGS
INSTRUMENT : APEX PARAMETRICS MAXMIN II
FREQUENCY : 222Hz
COIL SPACING : 80 METERS
PROFILE SCALE : 1 CM= 10%
+ READINGS
-- READINGS
0
40
80
120
160
200
METRES (1:2000)
6997
TEXASGULF INC.
HORIZONTAL LOOP SURVEY
ROUGH CLAIMS
NTS: 94-L-8
PROJ.# 920
WORK BY
DATE
1978
B - 4

LINE 24800 N | LINE 24700 N | LINE 24600 N | LINE 24500 N | LINE 24400 N | LINE 24300 N | LINE 24200 N | LINE 24100 N | LINE 24000 N | LINE 23900 N

160 E — 158 E — 156 E — 154 E — 152 E — 150 E — 148 E — 146 E

A B C D BL.

' See 1978 Rough Property Assessment Report fig. 5 - "Index Plan of Property Maps" and fig. 7 - "1978 Trench Location Plan" in order to relate geophysical survey to property grid, trench locations and claim boundaries.

KEY MAP

To Accompany: "Report on Geological, Geochemical and Geophysical Surveys, and Hand Trenching on the Rough Property" by P. Boyle, September 1978.

ASTRO

LEGEND

Conductor

1777 Hz
IN-PHASE READINGS
-5 -17
QUADRATURE READINGS

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
6997

INSTRUMENT : APEX PARAMETRIC - MAXMIN II
FREQUENCY : 1777 Hz
COIL SPACING : 80 METERS
PROFILE SCALE : 1 CM= 20%
+ READINGS — READINGS

0 40 80 120 160 200
METRES (1:2000)

TEXASGULF INC.

HORIZONTAL LOOP SURVEY

ROUGH CLAIMS

NTS: 94-L-8 PROJ.# 920

WORK BY	DATE
	1978

B-5

LINE 24700 N

LINE 24800 N

LINE 24900 N

LINE 25000 N

160 E

158 E

156 E

154 E

152 E

150 E

148 E

BL

See 1978 Rough Property Assessment Report fig. 5 - "Index Plan of Property Maps" and fig. 7 - "1978 Trench location Plan" in order to relate geophysical survey to property grid, trench locations and claim boundaries.

KEY MAP

To Accompany: "Report on Geological, Geochemical and Geophysical Surveys, and Hand Trenching on the Rough Property" by P. Boyle, September 1978.

ASTRO

LEGEND

TRANSMITTER : CRONE 250 WATT I.P. TRANSMITTER
RECEIVER : CRONE N-10 I.P. RECEIVER

CHARGING TIME : 2.0 SECONDS
OFF TIME : 2.0 SECONDS
DELAY TIME : 0.45 SECONDS
INTEGRATION TIME : 0.45 SECONDS

ELECTRODE CONFIGURATION : DIPOLE-DIPOLE
A = 25 METRES N = 1

READINGS : APPARENT CHARGEABILITY IN MILLISECONDS

B = PLOTTING POINT

0 40 80 120 160 200
METRES (1:2000)

TEXASGULF INC.

I.P. SURVEY (CHARGEABILITY)

ROUGH CLAIMS

NTS:94-L-8 PROJ. #920

WORK BY

DATE
1978

B-6

LINE 24700 N

LINE 24600 N

LINE 24500 N

LINE 24400 N

160 E

158 E

156 E

154 E

152 E

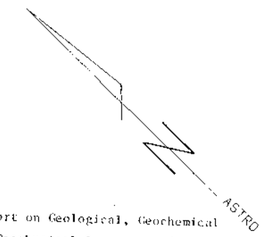
150 E

148 E

BL.

See 1978 — Rough Property Assessment Report fig. 5 - "Index Plan of Property Maps" and fig. 7 - "1978 Trench Location Plan" in order to relate geophysical survey to property grid, trench locations and claim boundaries.

KEY MAP



To Accompany: "Report on Geological, Geochemical and Geophysical Surveys, and Hand Trenching on the Rough Property" by P. Boyle, September 1978.

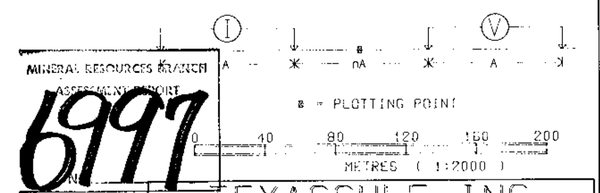
LEGEND

TRANSMITTER : CRONE 250 WATT IP TRANSMITTER
RECEIVER : CRONE N-10 I.P. RECEIVER

CHARGING TIME : 2.0 SECONDS
OFF TIME : 2.0 SECONDS
DELAY TIME : 0.45 SECONDS
INTEGRATION TIME : 0.45 SECONDS

ELECTRODE CONFIGURATION : DIPOLE-DIPOLE
A = 25 METRES N = 1

READINGS : APPARENT RESISTIVITY IN OHM-METERS



MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
6997

EXASGULF INC.

I.P. SURVEY (RESISTIVITY)

ROUGH CLAIMS

NTS:94-L-8 PROJ. #920

WORK BY

DATE 1978

B-7

23/10/78

APPENDIX C

STATEMENT OF EXPENDITURES

1) Geological Survey (Rough #3 & #4 MC)
2) Trenching (Rough #3 & #4 MC)
3) Geochemical Survey (Rough #1, #3 & #4 MC)
4) Geophysical Survey (Rough #3 & #4 MC)
5) Geochemical Survey (Rough #6, #7, & #9 MC)
6) Report Preparation (Rough #1,to #9 MC 's incl)

STATEMENT OF EXPENDITURES

ROUGH 3 & 4 M.C.'s

(Geology and Sampling)

SALARIES AND FRINGE BENEFITS - TEXASGULF, INC.

P. Boyle, B.Sc. - Supervision Period August 1-15	6 days @ $90	540.00	
R.A.F. Graham, Ph.D. Period August 16-26	8 days @ $135	1,080.00	
G.R. Peatfield, P.Eng. Period August 16-23	1 day @ $130	130.00	
D. Jewett, Geologist Period August 1-15	7 1/2 days @ $100	750.00	
D. Cameron, Assistant Period August 5-15	3 1/2 days @ $35	122.50	
		2,622.50	2,622.50

CAMP EXPENSES

26 man-days @ $25	650.00	
Pro-rated share of camp mob., demob.	800.00	
	1,450.00	1,450.00

HELICOPTER SUPPORT

Texasgulf Bell 206B	8 hrs @ $300	2,400.00

ANALYTICAL COSTS

20 rock chips analyzed @ $3.35	67.00	
5 samples assayed @ $11.00	55.00	
20 samples assayed @ $15.50	310.00	
5 samples assayed @ $16.00	80.00	
	512.00	512.00

MISCELLANEOUS

Travel (pro-rated)	400.00	
Shipping	50.00	
Communications	50.00	
	500.00	500.00
		7,484.50

Pro-rating	Rough #2 (10%)	748.45
	Rough #3 (25%)	1,871.13
	Rough #4 (65%)	4,864.92
		7,484.50

Peter Boyle

Peter Boyle

STATEMENT OF EXPENDITURES

ROUGH 3 & 4 M.C.'s

(Trenching)

BEMA INDUSTRIES LTD.

Trenching crew : (Period Aug 2-21, 1978)	I. Johnson	156 hrs @ $16.00	2,496.00	
	C. Johnson	182 hrs @ $12.00	2,184.00	
	W. Coller	183 hrs @ $12.00	2,196.00	
			6,876.00	6,876.00
CAMP EXPENSES				
58 man-days @ $25.00/day			1,450.00	
Pro-rated share of camp mob., demob.			2,000.00	
			3,450.00	3,450.00
HELICOPTER SUPPORT				
Texasgulf Bell 206B		10 hrs @ $300/hr.		3,000.00
EQUIPMENT RENTAL				
Drill rental		18 days @ $30/day		540.00
SUPPLIES & SERVICES - BLASTING				
Explosives, B-line, caps, fuse, etc.			1,350.00	
Magazine rental			50.00	
Box for caps (purchase)			100.00	
			1,500.00	1,500.00
MISCELLANEOUS				
Shipping costs (explosives)			415.00	
Communications			100.00	
Fuel, oil, etc.			25.00	
Travel 2 x $240.00			480.00	
			1,020.00	1,020.00
				16,386.00

Pro-rating	Rough #3 (25%)	4,096.50
	Rough #4 (75%)	12,289.50
		16,386.00

Peter Boyle

Peter Boyle

STATEMENT OF EXPENDITURES

ROUGH 2, 3 & 4 M.C.'s

(Geophysics)

SALARIES AND FRINGE BENEFITS - TEXASGULF, INC.

J.A. Slankis, Ph.D., P.Eng. - Supervision Period August 1-10	10 days @ $135.00	1,350.00	
W.A. Gasteiger - Geophysicist Period August 1-10	10 days @ $115.00	1,150.00	
C. Ravenhurst - Assistant Period August 1-10	10 days @ $55.00	550.00	
		3,050.00	3,050.00

CAMP EXPENSES

30 man-days @ $25.00	750.00	
Pro-rated share of camp mob., demob.	1,050.00	
	1,800.00	1,800.00

HELICOPTER SUPPORT

Texasgulf Bell 206B	10 hrs @ $300.00	3,000.00

EQUIPMENT RENTAL

Geophysical equipment rental	400.00

MISCELLANEOUS

Travel 3 x $240	720.00	
Shipping costs	250.00	
Communications	50.00	
Report preparation	150.00	
	1,170.00	1,170.00
		9,420.00

Pro-rating	Rough #2 (5%)	471.00
	Rough #3 (20%)	1,884.00
	Rough #4 (75%)	7,065.00
		9,420.00

Peter Boyle

Peter Boyle

STATEMENT OF EXPENDITURES

ROUGH 1, 3 & 4 M.C.'s

(Grid Establishment & Geochemical Sampling)

SALARIES AND FRINGE BENEFITS - TEXASGULF, INC.

P. Boyle, B.Sc. - Supervision Period August 1-24	4 1/2 days @ $90	405.00	
D. Jewett, Geologist Period August 10-24	2 days @ $100	200.00	
P. Hubacheck, Geologist Period August 1-7	1 1/2 days @ $85	127.50	
W. Gardiner, Geologist Period August 1-7	2 days @ $60	120.00	
A. Eunson, Assistant Period August 1-24	2 days @ $35	70.00	
D. Cameron, Assistant Period August 1-22	4 days @ $35	140.00	
D. Mann, Assistant Period August 1-7	1 1/2 days @ $35	52.50	
		1,115.00	1,115.00

CAMP EXPENSE

17 1/2 man-days @ $25	437.50	
Pro-rated share of camp mob, demob.	600.00	
	1,037.50	1,037.50

HELICOPTER SUPPORT

Texasgulf Bell 206-B	7 hrs @ $300	2,100.00

ANALYTICAL COSTS

246 soil samples & stream sediment samples @ $2.85	701.10

MISCELLANEOUS

Travel (pro-rated)	300.00	
Shipping	100.00	
Communications	50.00	
	450.00	450.00
		5,403.60

Pro-rating	Rough #1 (40%)	2,161.44
	Rough #3 (45%)	2,431.62
	Rough #4 (15%)	810.54
		5,403.60

(Seven line km grid and base line.)

Peter Boyle
Peter Boyle

STATEMENT OF EXPENDITURES

ROUGH 6,7, & 9 M.C.'s

(Grid Established & Geochemical Sampling)

SALARIES AND FRINGE BENEFITS - TEXASGULF, INC.

P. Boyle, B.Sc. - Supervision Period August 4-8, 1978 1 day @ $90	$90.00	
D. Jewett, Geologist Period August 4-8, 1978 4 days @ $100	$400.00	
P. Hubacheck, Geologist Period August 4-8, 1978 4 days @ $85	$340.00	
W. Gardiner, Geologist Period August 4-8, 1978 4 days @ $60	$240.00	
A. Eunson, Assistant Period August 4-8, 1978 3 days @ $35	$105.00	
D. Cameron, Assistant Period August 4-8, 1978 4 days @ $35	$140.00	
D. Mann, Assistant Period August 4-8, 1978 5 days @ $35	$175.00	
	$1490.00	$1490.00

CAMP EXPENSE

25 man-days @ $25	$625.00	
Pro-rated share of camp mob, demob.	$804.60	
	$1429.60	$1429.60

HELICOPTER SUPPORT

Texasgulf Bell 206-B 7 hrs @ $300		$2100.00

ANALYTICAL COSTS

117 soil samples @ $2.85		$333.45

MISCELLANEOUS

Travel (pro-rated)	$428.00	
Shipping	$48.00	
Communications	$71.00	
	$547.00	$547.00
		$5900.05

10.85 line km grid and base line

Peter Boyle

Peter Boyle

STATEMENT OF EXPENDITURES

ROUGH #1 to #9 M.C's INCL.

(Report Preparation)

SALARIES AND FRINGE BENEFITS - TEXASGULF INC.

P. Boyle, B.Sc. - Geologist Period September 1 - November 30, 1978	20 days @ $ 90	$1800.00	
P. Hubacheck, B.Eng. - Geologist Period September 1 - November 30, 1978	5 days @ $ 85	$ 425.00	
J. Slankis, Ph.D. - Geophyicist Period September 1 - November 30, 1978	5 days @ $135	$ 675.00	
R.A.F. Graham, Ph.D. - Geologist Period September 1 - November 30, 1978	5 days @ $135	$ 675.00	
		$3575.00	$3575.00

MISCELLANEOUS COSTS

Typing	4 days @ $ 35	$ 140.00	
Drafting	8 days @ $ 55	$ 440.00	
Printing		$ 80.00	
Stationery, etc.		$ 20.00	
		$ 680.00	$ 680.00
			$4255.00

Pro-rating	Rough #1	(6%)	$ 255.30
	Rough #2	(8%)	$ 340.40
	Rough #3	(19%)	$ 808.45
	Rough #4	(54%)	$2297.70
	Rough #6, #7 & #9	(13%)	$ 553.15
			$4255.00

Peter Boyle

Peter Boyle

APPENDIX D

STATEMENT OF QUALIFICATIONS

STATEMENT OF QUALIFICATIONS

I, Peter J. S. Boyle hereby certify that:

1) I am a geologist
2) I am a gradute of the University of Saskatchewan, (Saskatoon) with a BSc in geology (1972)
3) Since 1972 I have been engaged in mineral exploration in British Columbia.
4) I have been employed by Texasgulf Inc. since 1974.
5) I personally supervised and participated in the field work and have assessed and interpreted all the data resulting from the work.
6) I have held a BC Blasters Certificate since 1975.

D. Jewett Geologist BSc

D. Jewett obtained his BSc at the University of British Columbia in 1967. He has been employed as a geologist by Texasgulf since 1969. He has worked on massive sulphide projects throughout Canada.

F. Graham Geologist PhD

F. Graham obtained his BSc at Queens University, Belfast in 1963. In 1967 he completed his MSc at Western University, Ontario. He received has PhD in 1970 from Western University. Since 1974 he has been employed as a geologist by Texasgulf Inc. in lead, zinc exploration in Europe and North America.

Peter Boyle

Peter Boyle

STATEMENT OF QUALIFICATIONS

P. Hubacheck Geologist BEng

P. Hubacheck was employed by Texasgulf Inc. as a geologist during the summer of 1977. He obtained his degree from the South Dakota School of Mines in May 1977.

This is his 5th summer of employment with Texasgulf Inc., and he is well regarded by his supervisors.

W. Gardiner Geologist BSc MSc

W. Gardiner is employed by Texasgulf Inc. as a geologist during the summer of 1977. He obtained his degree from Memorial University New Brunswick, 1975.

In May 1978 he finished has MSc in Mineral Exploration at McGill University, Quebec. He is a conscientious and competent field geologist.

D. Mann Assistant

Mr. Mann is enrolled in his 3rd year of Geology at Acadia University Nova Scotia.

This is his third summer's work with Texasgulf. He is a keen and thoroughly capable field assistant.

D. Cameron Assistant

Mr. Cameron is enrolled in his 2nd year of Geology at Carlton University.

This is his first summer in the field. He is a keen and capable field assistant.

A. E. Euenson Assistant

Mr. Euenson is enrolled in his 3rd year of Geology at the University of Manitoba. This was his third season of geological related field work.

Peter Boyle
Peter Boyle

STATEMENT OF QUALIFICATIONS

J. A. Slankis — Senior Geophysicist PhD

J. A. Slankis obtained his BASc from the University of Toronto in 1962. In 1965 he completed his MSc at Western University. He obtained his PhD at McGill University in 1971.

J. A. Slankis has supervised projects on behalf of Texasgulf Inc., throughout Canada since 1971.

W. Gasteiger — Geophyicist BSc Eng.

W. Gasteiger obtained his degree in geophysics from Queens University in 1972. Since 1973 he has been employed by Texasgulf Inc. on projects throughout Canada.

C. Ravenhurst — Geophysicist BSc

C. Ravenhurst obtained his BSc (Geophysics) in 1978 from the University of Western Ontario. This is his third field season of geophysical related work with Texasgulf.

Peter Boyle

Peter Boyle

TEXASGULF INC.
REGIONAL EXPLORATION CALGARY

ROUGH No. 1 TO No. 9 CLAIMS

Pb ppm - TOTAL METAL

SOIL SAMPLING

HEADWATERS OF THROUGH CREEK

DATE:	BY:	NTS:	C.I. = 100'
AUG. 4/77 Revised: Sept. 1/78	P. BOYLE	94-L-8	SCALE = 1:5,000

TO ACCOMPANY 1978 ASSESSMENT REPORT

FIG. 14

Compiler/Author Peter Boyle

Date Sept 30, 1978

0 250 500
METERS

LEGEND

RED	>1,000 ppm
ORANGE	200 - 999
YELLOW	100 - 199
BLUE	50 - 99
	0 - 49

LEGEND

MINERAL CLAIM
LEGAL CORNER POST

MINERAL CLAIM ID POST, 500 meters

Stream sediment sample

Soil sample

ROUGH No. 1
ROUGH No. 2
ROUGH No. 3
ROUGH No. 4
ROUGH No. 5
ROUGH No. 7

HORSE TRAIL TO SMASS LAKES

HORSE TRAIL TO THROUGH CREEK

THROUGH CREEK

TYPE OF MATERIAL SAMPLED: ALPINE SOILS, "B" HORIZON
ANALYTICAL PROCEDURE: - 80 MESH, HOT AQUA REGIA, ATOMIC ABSORPTION
ANALYSIS: BY BONDAR CLEGG LABORATORIES, VANCOUVER

TEXASGULF INC.
REGIONAL EXPLORATION CALGARY

ROUGH No. 1 TO No. 9 CLAIMS

Zn ppm - TOTAL METAL

SOIL SAMPLING

HEADWATERS OF THROUGH CREEK

DATE:	BY:	NTS:	C.I. = 100'
AUG. 4/77 Revised Sept.1/78	P. BOYLE	94-L-8	SCALE = 1: 5,000

TO ACCOMPANY 1978 ASSESSMENT REPORT

FIG. 15

Compiler / Author Peter Boyle

Date Sept 30, 1978

0 250 500
METERS

LEGEND

RED	> 10,000 ppm
ORANGE	2,000 - 9,999
YELLOW	1,000 - 1,999
BLUE	500 - 999
GREEN	250 - 499
	0 - 249

LEGEND

MINERAL CLAIM
LEGAL CORNER POST

o Stream sediment sample
x Soil sample

ROUGH No. 1
ROUGH No. 3
ROUGH No. 7
ROUGH No. 5
ROUGH No. 2
ROUGH No. 4

HORSE TRAIL TO SWAMP LAKES

HORSE TRAIL TO THROUGH CREEK

THROUGH CREEK

TYPE OF MATERIAL SAMPLED: ALPINE SOILS, "B" HORIZON
ANALYTICAL PROCEDURE: - 80 MESH, HOT AQUA REGIA, ATOMIC ABSORPTION
ANALYSIS: BY BONDAR CLEGG LABORATORIES, VANCOUVER

TEXASGULF INC.
REGIONAL EXPLORATION CALGARY

ROUGH No. 1 TO No. 9 CLAIMS

Cu ppm - TOTAL METAL

SOIL SAMPLING

HEADWATERS OF THROUGH CREEK

DATE:	BY:	NTS:	C.I.: 100'
AUG 4/77 Revised: Sept. 1/78	P. BOYLE	94-L-8	SCALE: 1:5,000

TO ACCOMPANY 1978 ASSESSMENT REPORT

FIG. 16

Compiler/Author Peter Boyle

Date Sept. 30, 1978

0 250 500
METERS

LEGEND

RED	> 100 ppm
ORANGE	50 - 99
YELLOW	25 - 49
	0 - 24

LEGEND

MINERAL CLAIM
LEGAL CORNER POST
MINERAL CLAIM LAY-LINE 500 metres
Stream sediment sample
Soil sample

ROUGH No. 1
ROUGH No. 3
ROUGH No. 7
ROUGH No. 5
ROUGH No. 2
ROUGH No. 4

HORSE TRAIL TO SMASH LAKES

HORSE TRAIL TO THROUGH CREEK

THROUGH CREEK

TYPE OF MATERIAL SAMPLED: ALPINE SOILS, "B" HORIZON
ANALYTICAL PROCEDURE: -80 MESH, HOT AQUA REGIA, ATOMIC ABSORPTION
ANALYSIS: BY BONDAR CLEGG LABORATORIES, VANCOUVER

TEXASGULF INC.
REGIONAL EXPLORATION CALGARY

ROUGH No. 1 TO No. 9 CLAIMS

SAMPLE LOCATION MAP

SOIL SAMPLING

HEADWATERS OF THROUGH CREEK

DATE: AUG. 4/77 Revised Sept 1/78	BY: P. BOYLE	NTS: 94-L-8	C.I. = 100' SCALE = 1:5,000

TO ACCOMPANY 1978 ASSESSMENT REPORT

FIG. 17

Compiler/Author Peter Boyle

Date Sept 20, 1978

0 250 500
METERS

LEGEND

MINERAL CLAIM LEGAL CORNER POST

MINERAL CLAIM ID POST, 500 meters

o Stream sediment sample

x Soil sample

ROUGH No. 1

ROUGH No. 3

ROUGH No. 7

ROUGH No. 5

ROUGH No. 2

ROUGH No. 4

HORSE TRAIL TO SUMAS LAKES

HORSE TRAIL TO THROUGH CREEK

THROUGH CREEK

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
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TEXASGULF INC.
REGIONAL EXPLORATION CALGARY

ROUGH No. 1 TO No. 9 CLAIMS

TOPOGRAPHY

SOIL SAMPLING GRID

HEADWATERS OF THROUGH CREEK

DATE: AUG. 4/77 Revised Sept.1/78	BY: P. BOYLE	NTS: 94-L-8	C.I. = 100' SCALE = 1: 5,000

TO ACCOMPANY 1978 ASSESSMENT REPORT

FIG. 18

Compiler/Author Peter Boyle

Date Sept 30, 1978

0 250 500
METERS

LEGEND

MINERAL CLAIM
LEGAL CORNER POST

MINERAL CLAIM 10 POST, 500 meters

Stream sediment sample

Soil sample

ROUGH No. 1

ROUGH No. 3

ROUGH No. 7

ROUGH No. 5

ROUGH No. 2

ROUGH No. 4

HORSE TRAIL TO SMALL LAKES

HORSE TRAIL TO THROUGH CREEK

THROUGH CREEK

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
6997

TEXASGULF INC.
MINERAL EXPLORATION CALGARY

ROUGH No. 6 to No. 9 CLAIMS

Pb ppm – TOTAL METAL

SOIL SAMPLING

DATE:	BY:	NTS:	C.I.: 500'
SEPT. 25, 1978	P. BOYLE	94-L-8	SCALE: 1:5,000

TO ACCOMPANY: 1978 ASSESSMENT REPORT

FIG. 19

GATAGA RIVER AREA, LIARD MINING DIVISION

COMPILER / AUTHOR: Peter Boyle

DATE: Sept 30, 1978

LCP (LEGAL CLAIM POST)

CP (CORNER POST)

ID POST

0 250 500
METERS

RED	>1,000 ppm
ORANGE	200 - 999
YELLOW	100 - 199
BLUE	50 - 99
	0 - 49

ROUGH No. 9 | ROUGH No. 8
ROUGH No. 6 | ROUGH No. 7

ROUGH No. 1

WATERSHED RIDGE

6000'
5500'
5000'
6500'

LINE 397+00N
LINE 278+00N
LINE 271+00N
LINE 285+00E
LINE 143+00E
LINE 153+00E
BASE LINE 150+00E

MINERAL RESOURCES BRANCH
6997

TEXASGULF INC.
MINERAL EXPLORATION CALGARY

ROUGH No. 6 to No. 9 CLAIMS

Zn ppm - TOTAL METAL

SOIL SAMPLING

DATE:	BY:	NTS:	C.I.: 500'
SEPT. 25, 1978	P. BOYLE	94-L-8	SCALE: 1:5,000

TO ACCOMPANY: 1978 ASSESSMENT REPORT

FIG. 20 GATAGA RIVER AREA, LIARD MINING DIVISION

COMPILER / AUTHOR Peter Boyle

DATE: Sept 30, 1978

LCP (LEGAL CLAIM POST)

CP (CORNER POST)

ID POST

0 250 500
METERS

RED	> 10,000 ppm
ORANGE	2,000 - 9,999
YELLOW	1,000 - 1,999
BLUE	500 - 999
GREEN	250 - 499
	0 - 249

N

ROUGH No. 9 ROUGH No. 8
ROUGH No. 6 ROUGH No. 7
ROUGH No. 1

WATERSHED RIDGE

6000'
5500'
6500'
5000'

LINE 303+00N
LINE 297+00N
LINE 288+00N
LINE 278+00N
LINE 271+00N
LINE 162+00E
LINE 182+00E
LINE 202+00E
BASE LINE 150+00E

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TEXASGULF INC.
MINERAL EXPLORATION CALGARY

ROUGH No. 6 to No. 9 CLAIMS

Cu ppm - TOTAL METAL

SOIL SAMPLING

DATE:	BY:	NTS:	C.I.: 500'
SEPT. 25, 1978	P. BOYLE	94-L-8	SCALE: 1:5,000

TO ACCOMPANY: 1978 ASSESSMENT REPORT

FIG. 21 GATAGA RIVER AREA, LIARD MINING DIVISION

COMPILER / AUTHOR Peter Boyle

DATE: Sept 30, 1978

LCP (LEGAL CLAIM POST)
CP (CORNER POST)
ID POST

0 250 500
METERS

RED	> 100 ppm
ORANGE	50 - 99
YELLOW	25 - 49
	0 - 24

ROUGH No. 9
ROUGH No. 8
ROUGH No. 6
ROUGH No. 7
ROUGH No. 1
WATERSHED RIDGE
5000'
5500'
6000'
6500'
LINE 393+00N
LINE 297+00N
LINE 278+00N
LINE 271+00N
LINE 382+00E
LINE 352+00E
BASE LINE 350+00E
LINE 152+00E

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TEXASGULF INC.
MINERAL EXPLORATION CALGARY

ROUGH No. 6 to No. 9 CLAIMS

SAMPLE LOCATION MAP

SOIL SAMPLING

DATE:	BY:	NTS:	C.I.: 500'
SEPT. 25, 1978	P BOYLE	94-L-8	SCALE: 1:5,000

TO ACCOMPANY: 1978 ASSESSMENT REPORT

FIG. 22

GATAGA RIVER AREA, LIARD MINING DIVISION

COMPILER / AUTHOR Peter Boyle

DATE: Sept 30, 1978

LCP (LEGAL CLAIM POST)

CP (CORNER POST)

LO POST

0 250 500
METERS

x023 SAMPLE LOCATION NUMBER
i.e. SAMPLE 920/023/78

ROUGH No. 9 ROUGH No. 8
ROUGH No. 6 ROUGH No. 7
ROUGH No. 1

WATERSHED RIDGE

TEXASGULF INC.
MINERAL EXPLORATION CALGARY

ROUGH No. 6 to No. 9 CLAIMS

TOPOGRAPHY

DATE:	BY:	NTS:	C.I.: 500'
SEPT: 25, 1978	P. BOYLE	94-L-8	SCALE: 1:5,000

TO ACCOMPANY: 1978 ASSESSMENT REPORT

FIG. 23

GATAGA RIVER AREA, LIARD MINING DIVISION

COMPILER / AUTHOR Peter Boyle

DATE: Sept 30 / 1978

LCP (LEGAL CLAIM POST)

CP (CORNER POST)

ID POST

0 250 500
METERS

ROUGH No. 9
ROUGH No. 8
ROUGH No. 6
ROUGH No. 7
ROUGH No. 1

WATERSHED RIDGE

6000
5500
5000
6500