

ROBB LAKE CLAIMS ASSESSMENT WORK REPORT

DIAMOND DRILLING PROGRAM

MAY - JULY, 1980

ON

CLAIMS Cleo 2, 4, 6

MV 73

Rob 16, 41, 42, 43, 44

LIARD MINING DIVISION

NTS 94B 13E

Approx. 56°55'N 123°42'W

OWNERS: Texasgulf Canada Ltd.
Arrow Inter-America Corp.
Barrier Reef Resources Ltd. (N.P.L.)

MANAGER: Texasgulf Inc.

AUTHOR: R.A.F. Graham

DATE SUBMITTED: September 26, 1980.

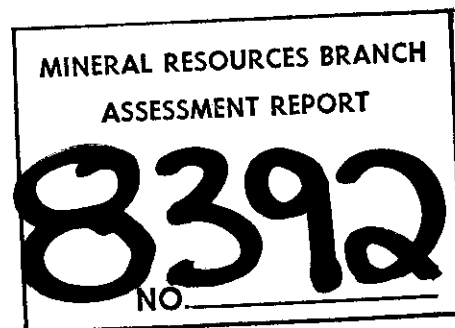


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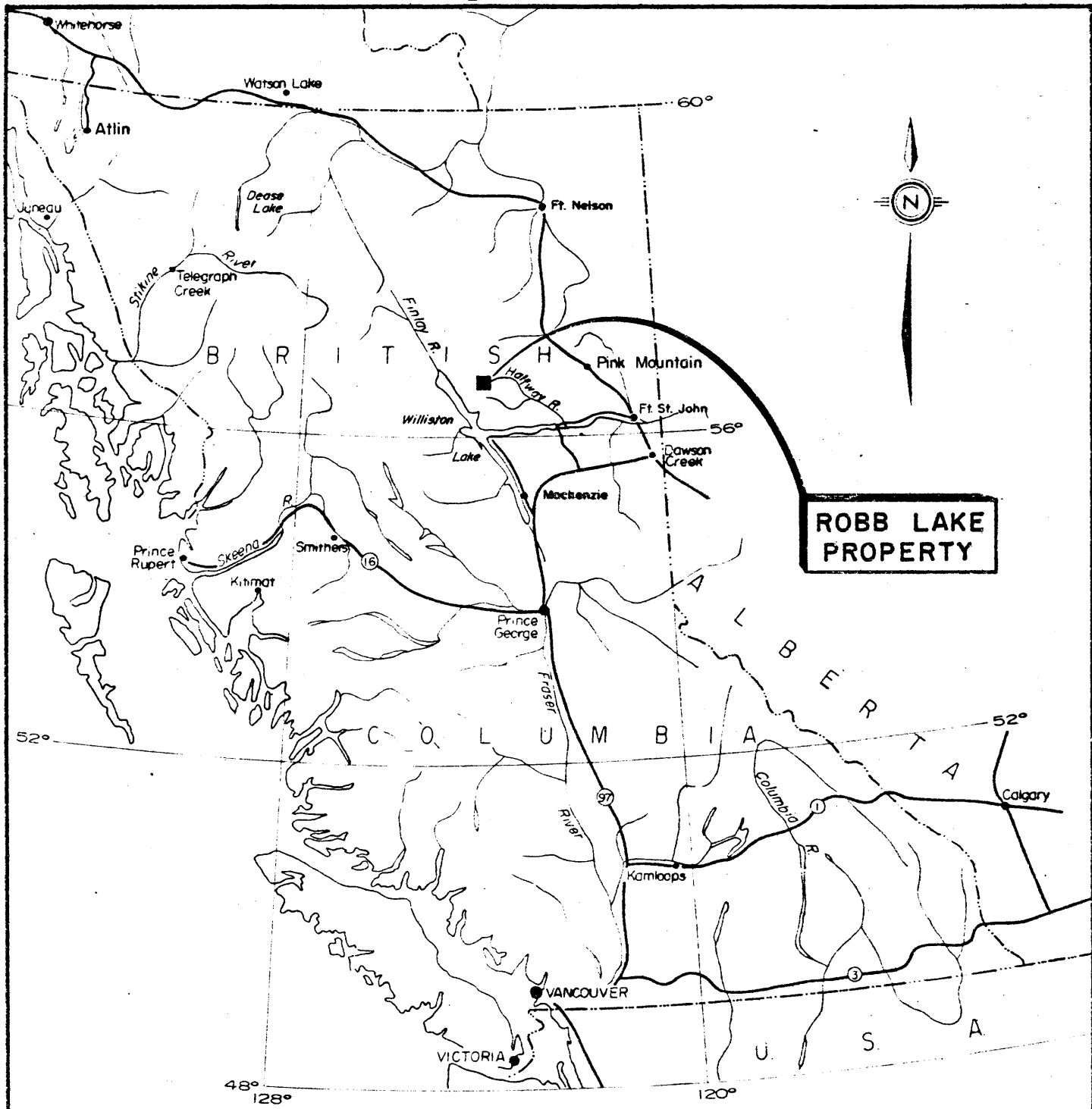
INTRODUCTION

The Robb Lake property is situated near the headwaters of the Halfway River in the Rocky Mountains of northeastern B.C. about 200 km west-northwest of Fort St. John, and about the same distance north of Mackenzie. The closest highway point is on the Alaska Highway about 72 km to the east-northeast of the property near the very small community of Pink Mountain.

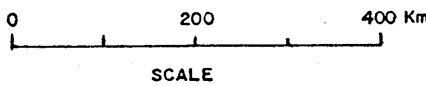
Access to the property is by air and the most suitable points of departure are Fort St. John or Mackenzie. A 915 m gravel airstrip was constructed on the property in 1972 and can be used by a limited number of aircraft types. Robb Lake, 6 km west of camp, can be used to a limited extent by float planes. Good docking facilities are available at the lake.

The Robb Lake claims were staked in 1971, with a few later additions, by Peregrine Exploration (now Barrier Reef Resources), Arrow Inter-America Corp. and Ecstall Mining (now Texasgulf Canada). The three companies later pooled their claims and formed a joint venture to explore them. A total of 427 two-post claims and 16 units of one mineral claim remain in good standing. Each of the three companies owns some of the claims outright. The rest are held jointly by the three. Texasgulf Inc. is manager of the project.

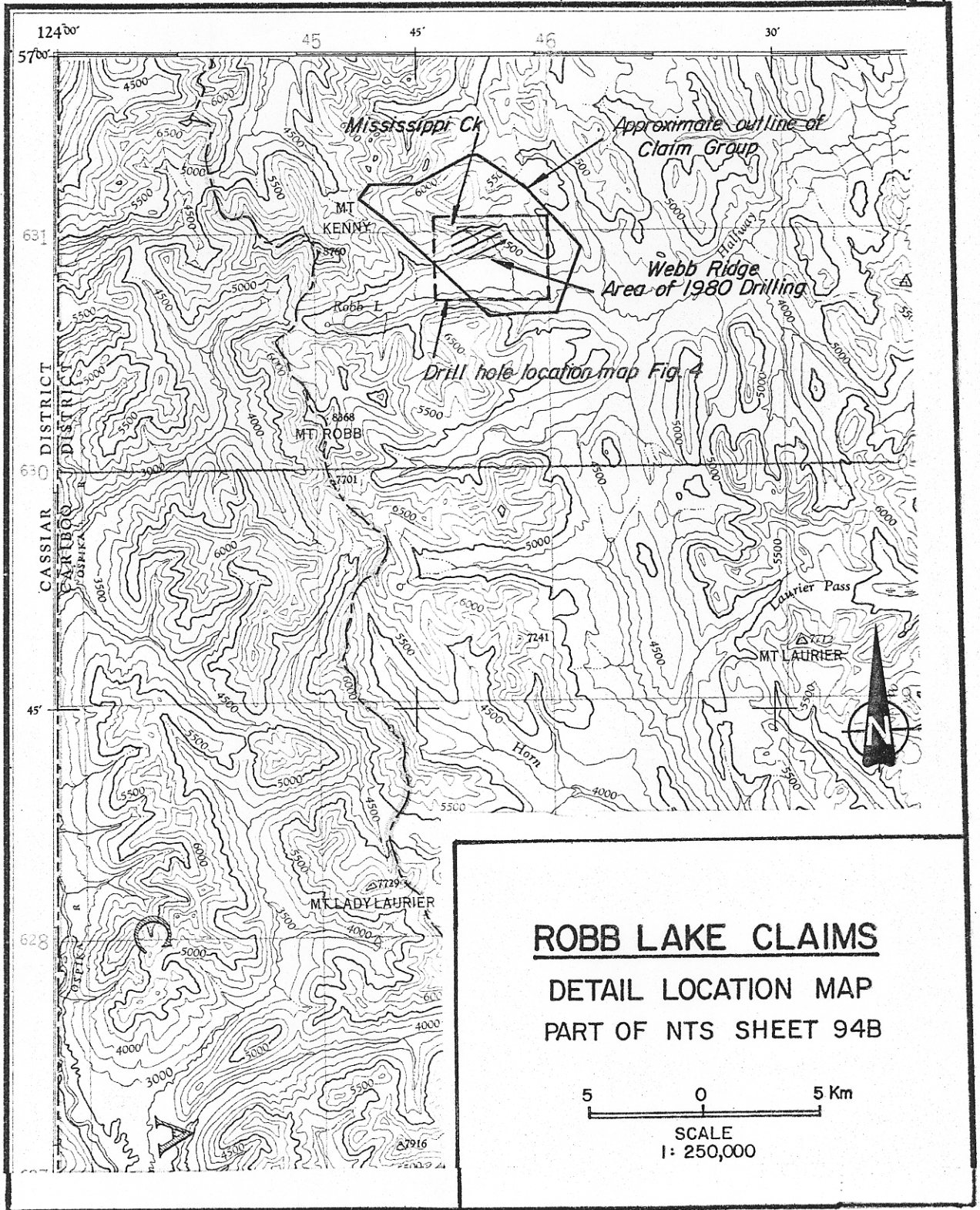
The claims were staked originally to cover lead-zinc showings in carbonates of assumed Middle Devonian age. From 1972 until 1975, successive field programs of geological mapping and diamond drilling added much information on the structure, stratigraphy and mineralization controls in the area. Over the four year period 91 holes totalling 43,478 ft were diamond drilled. Drilling was aimed at a number of showings and in three of them significant mineralization was found. A total of 6.1 million short tons grading 7.3% combined lead and zinc was inferred.



LOCATION MAP
ROBB LAKE JOINT VENTURE



NATIONAL TOPOGRAPHIC SERIES



1980 Robb Lake Assessment Report Figure 2

From 1976 until 1979, the project was dormant. It was reactivated in 1980 when it was decided to carry out a grid diamond drilling program to explore for further zones of mineralization in an area where the potentially mineralized horizons lie at some depth below surface. This was a new approach to exploration at Robb Lake and was taken because mineralization associated with the known surface showings was insufficient to make a viable mining operation.

Mobilization of camp and drill equipment took place in late May. The drilling contract was awarded to Longyear Canada Ltd. One drill machine, a Longyear 38, was engaged continuously on the program from early June till the end of July. In that time ten holes totalling 3502.77 m were drilled. The holes were drilled on nine different claims as follows:

<u>Hole No.</u>	<u>Claim</u>	<u>Total depth (m)</u>
81-80	Rob 16	471.53
82-80	Rob 41	370.94
83-80	Cleo 6	306.93
84-80	Cleo 4	279.81
85-80	MV 73	337.11
86-80	MV 73	325.22
87-80	Rob 44	340.16
88-80	Rob 43	385.88
89-80	Cleo 2	320.34
90-80	Rob 42	364.85

The size of all core is BQ and it is stored at the camp beside the airstrip on the property.

Near the end of the program a survey was made of the collar location and elevation of the first 9 holes.

THIS IS ON THE PROPERTY

RESULTS OF DIAMOND DRILLING

Earlier work had shown that the Devonian carbonate succession in the Robb Lake area is about 700 m thick and that it could be divided into four units: A,B,C,D in descending order. The units of particular economic interest are B and C and each is about 300 m thick. Strata on the property are only slightly folded but had been affected by extensive thrust faulting.

Previous diamond drilling had indicated that the highest grade and most extensive mineralization occurred as continuations of showings found on Webb Ridge. It was also shown that mineralization occurred at two stratigraphic levels, one in mid Unit C, the other in Unit B. Because it appeared that both these units had considerable lateral extensions at a fairly constant level below surface to the south of Webb Ridge it was decided to start a grid drilling program in 1980 to explore both units in this region for further zones of mineralization.

The first hole, No. 81-80 was drilled on Webb Ridge where Unit B mineralization had already been discovered. It confirmed the occurrence of sphalerite and galena in Unit B though grade was much lower than expected. Unit C, which was not previously explored, was found to contain extensive sphalerite and galena and the best intersection over a mineable width was 9.68% Pb and 4.65% Zn over 4 m. Results show a high Pb:Zn ratio, a feature previously noted in Unit B mineralization of this area and so far unique to west Webb Ridge.

Hole 82-80 after passing through two sections of unidentified shale separated by a carbonate resembling Unit B, entered a major breccia body and remained in it over a depth of 298 m to the bottom of the hole. Over about 30 m the breccia contains minor sphalerite and galena. The breccia is probably of solution collapse origin and is presumably part of a body that had been encountered in previous drilling.

Hole 83-80 located close to Mississippi Creek intersected 36 m of overburden, probably morainic material, before entering bedrock of Unit B. The B-C contact was encountered at 64 m and Unit C continues to a fault at 149 m. From the fault to the bottom of the hole at 307 m the section is all part of Unit B. The fault repeats the section and appears to be a thrust which was not recognised during field mapping. No significant mineralization was found in hole 83-80.

Holes 84-80 to 90-80 all intersected essentially the same sequence. They were collared at slightly different stratigraphic levels in Unit B and were drilled to below the central part of Unit C. Significant mineralization was found in Units B and C in hole 84-80. The best section was 0.01% Pb and 5.87% Zn over 4 m in Unit C. In other holes mineralization, mainly sphalerite, is scattered over a thick section in the central part of Unit C but in no case does it approach ore grade. In holes 87-80 and 89-80 none was of great enough significance to assay. In most holes traces of sphalerite and galena occur in Unit B but it was rarely of sufficient importance to assay.

Characteristics of Units B and C are consistent over the area drilled. Both units consist of cyclical shallow water carbonates which have been entirely dolomitized. The base of a typical cycle is represented by sandy grainstones or mudstones deposited, probably, under fairly high energy subtidal conditions. These pass gradually upwards to supratidal carbonate mudstones. The grey colour of the carbonates becomes lighter upwards. The main differences between cycles in the two units is that in Unit B the lower and middle parts of cycles commonly contain quartz sand whereas they do not in Unit C, and the basal part of each cycle in Unit B is much darker than the corresponding part of the cycle in Unit C.

The upper parts of cycles everywhere have been affected by solution activity which has dissolved certain parts of the sedimentary sequence, led to minor stratiform collapse brecciation, and left cavities which have been filled by secondary dolomite. This type of solution effect

is particularly strongly developed in the central and upper part of Unit C. Most of Unit C mineralization occurs in association with this secondary dolomite, though large areas showing solution effects remained unmineralized.

The long section of breccia encountered in hole 82-80 is probably part of a major breccia body cutting much or all of the B-C succession. The breccia appears to have a steeply dipping wall and may be related to solution and collapse along a major joint or fault. It was previously concluded that Unit B mineralization was related to margins and minor offshoots of this body. However current drilling has indicated that some Unit B mineralization may have controls similar to that in Unit C.

CONCLUSIONS

Drilling has shown that stratigraphy and structure south of Webb Ridge are close to what was predicted from surface mapping and previous drilling.

Two zones of significant mineralization were discovered in Unit C, one below known Unit B mineralization and the other remote from any previously known occurrences.

The discoveries show that reconnaissance drilling can be an effective means of exploration.

Evidence of solution activity with associated scattered mineralization is very widespread in the central and upper part of Unit C. Higher grade concentrations of mineralization are small in comparison with the extent of the zone of "alteration". Solution features are less widespread in Unit B and mineralization is much more restricted than in Unit C in the area explored.


R.A.F. Graham

APPENDIX 1

Statement of Qualifications

R.A.F. GRAHAM

APPENDIX 1

Statement of Qualifications

R.A.F. GRAHAM

B.Sc. (Geology) 1962. Queen's University of Belfast

M.Sc. (Geology) 1967. University of Western Ontario

Ph.D. (Geology) 1970. University of Western Ontario

Since 1970, employed in mineral exploration or related geological work.

APPENDIX 2

Statement of Expenditure

APPENDIX 2

Expenditure Statement

SALARIES & BENEFITS: Tg Personnel

J.M. Newell, P.Eng.	June 1-July 31	4 days @ \$220	880.00
G.R. Peatfield, P.Eng.	June 1-July 31	2 days @ \$180	360.00
I.L. Turner, M.Sc.	July 2-July 9	8 days @ \$220	1,760.00
R.A.F. Graham, Ph.D.	May 5-July 31	43 days @ \$175	7,525.00
W. Gardiner, M.Sc.	May 11-June 30	41 days @ \$125	5,125.00
D.A. Bending, M.Sc.	May 28-July 31	59 days @ \$120	7,080.00
G.W. Murray, field assistant	June 1-July 31	61 days @ \$ 40	2,440.00
C.A. Riseborough, field assistant	June 1-July 31	20 days @ \$ 35	700.00
J. Leigh, field assistant	July 2-July 31	30 days @ \$ 35	1,050.00
E. Potsepp, cook	May 29-July 31	57 days @ \$ 90	5,130.00
T.T. Eigard, assistant cook	May 28-July 31	31 days @ \$ 35	<u>1,085.00</u>
			33,135.00

TRAVEL, SUPPLIES, COMMUNICATIONS ETC.

Travel, room & board, fixed-wing resupply and other related costs are charged at \$62.00/man-day.

Tg Personnel: 351 man-days	21,762.00
Helicopter Pilot: 57 man-days	3,534.00
Longyear Canada Ltd. personnel 224 man-days	<u>14,136.00</u>
	39,432.00

HELICOPTER SUPPORT

Tg Bell 47/Soloy (drilling support, 161.8 hours @ \$290 mob & demob)	46,922.00
Okanagan Bell 205 (drill demob) 12.7 hours @ \$1,150	14,600.00
Mapleleaf Aerospatiale A-Star 6.1 hours @ \$450 (support for drill hole survey crew: cost prorated over nine holes)	<u>2,745.00</u>
	64,267.00

FIXED WING CHARTER

(mob & demob only) 17,376.85

DIAMOND DRILLING (Longyear Canada Ltd.)

Contractor's mob & demob charges	6,900.00
Direct drilling costs	188,686.27
Core boxes @ \$0.80/metre	<u>2,802.16</u>
	198,388.43

DRILL SITE PREPARATION & CLEAN-UP

(Bema Industries Ltd.)

Wages, equipment charges plus room & board 15,750.00

SURVEY OF HOLE COLLAR LOCATIONS

(McElhanney Associates Ltd.)

1,040.00

ASSAYS (Bondar Clegg & Co. Ltd.)

164 Pb-Zn assays @ \$11.00

1,804.00

TOTAL

\$371,193.28

Total diamond drilling:- 3502.7 m in ten holes.

Average cost:- \$105.97/metre.

Cost/metre for individual drill holes varies appreciably due to:-

- 1) Site preparation, clean up and survey costs are charged at a fixed price per hole, irrespective of hole depth.
- 2) The variable number of assays in each hole.
- 3) Pro rating mobilization, demobilization and support costs.

APPENDIX 3

Surveyed co-ordinates and elevations
of diamond drill-holes 81-80 to 89-80.

TEXAS GULF INC.
ROBB LAKE JOINT VENTURE

Co-ordinates and Elevation of Drill Holes 81-80 to 89-80 (in feet)

<u>Drill Hole</u>	<u>North</u>	<u>East</u>	<u>Elevation</u>
DDH 81-80	74339	57232	5895.2
DDH 82-80	73742	56599	5616.1
" 83-80	72209	62071	4651.9
" 84-80	72259	60773	4775.8
" 85-80	72397	59627	4789.5
" 86-80	72245	58488	4805.5
" 87-80	72207	57038	4929.6
" 88-80	73248	57027	5313.8
" 89-80	73328	59397	5097.4

APPENDIX 4

Summary logs of diamond drill-core

The following logs are summaries, by the author, of original logs written by Mr. D.A. Bending, the project geologist. Mr. Bending is permanently employed by Texasgulf and is currently registered as a graduate student at the University of Toronto. He is taking an M.Sc. in Geology which includes a thesis involving study of the stratigraphy and geochemistry of the carbonate succession and ores at the Pend Oreille Mine, Washington.

TEXASGULF INC.

DRILL HOLE LOG

HOLE NO.
81-80

PROPERTY: ROBB LAKE
 LOCATION(grid) Northeast B.C. NTS 94B
 LOCATION(survey) 74339N 57232E
 AZIM: ELEV:5895.2 ftDIP: Vert.
 DEPTH: 471.53 m CORE SIZE: 80
 STARTED: June 8, 1980
 COMPLETED: June 13, 1980
 CORE RECOVERY: > 95%

CLAIM: Rob 16
 SECTION:
 LOGGED BY: D.A. Bending
 DATE LOGGED: June 1980
 DRILLING CO.: Longyear Canada Ltd.

DIP TEST

DEPTH	AZIM	DIP
316 m	0	89.1°
468 m	30°	88.2°

DEPTH m		REC'Y	DESCRIPTION
FROM	TO		
0	1.22		<u>Overburden.</u>
1.22	228.30		<u>Unit B.</u>
			Consists entirely of dolomite, bedded for the most part but containing stratabound breccias. Original sedimentary textures usually well preserved in spite of pervasive dolomitization. Unit consists entirely of cycles or rythmites varying in thickness from 1 to 20 m. Rythmites are essentially similar. Each starts at the base with a medium to dark grey medium-grained dolomite commonly containing quartz sand grains which passes up into finer grained, lighter coloured, less quartz-rich dolomite. Sedimentary features occurring include laminated algal mats, birdseye structures, mudcracks, rip-up clast breccias, worm burrows, pelletal dolomite. Thin sandstone or dolomitic sandstone beds occur in a few cycles especially higher in the sequence.
			Solution and redepositional features are common in upper parts of cycles. These include zebra texture (interbanded early grey and later white dolomite) and pseudo breccia (lenticular white dolomite enclosed by early grey dolomite). These features are associated with stratabound layers of rubble breccia consisting of angular fragments of dolomite in a matrix of finer grey dolomite or coarse, later, white dolomite and

DEPTH m		REC'Y	DESCRIPTION
FROM	TO		
1.22	228.30	Cont'd.	with crackle breccia (irregularly fractured dolomite with white dolomite fracture fillings). Minor pyrobitumen and carbonaceous clay occur in local pockets in rubble breccias. Subhedral quartz crystals occur to a small extent in some partially filled cavities. Stylolites are fairly common.
			Disseminated pyrite occurs commonly but usually in very small amounts.
			69.5-75.8. Small amounts of sphalerite and galena occur in slightly carbonaceous matrix of a rubble breccia.
			146-151.3. Sphalerite and galena occur in crackle breccia and in matrix of a rubble breccia.
228.3	471.53		Unit C.
			Consists entirely of dolomite. Bedded for most part but with common layers of stratabound breccia. Contains all the primary and secondary features described for Unit B above but lacks the sandstone beds and general quartz grain content. Burrowed and birdseye sections are more common in Unit C and algal laminated layers less common. Overall colour of Unit C is lighter than Unit B. Zebra rock and pseudo breccia are very extensively developed down to about 365 m but decrease below that level. Cyclicity also becomes less well marked below 365 m, the section becomes more uniform, and small cavities commonly contain no secondary white dolomite.
			320-323. Sphalerite, pyrite, galena related to fine fracture and brecciation with little relative movements of fragments.

TEXASGULF INC.

DRILL HOLE LOG

HOLE NO.
81-80

PAGE NO.
3

DEPTH		REC'Y	DESCRIPTION
FROM	TO		
228.3	471.53	Cont'd.	346.5-353. Sphalerite and galena occur in a zone with extensive stratabound breccia consisting of thin platy fragments of grey dolomite in a matrix of coarse late dolomite. Much of mineralization occurs in fine late fractures cutting the breccia.
			362.7-367.3. Moderately high-grade mineralization consisting of sphalerite galena and minor pyrite. Mineralization follows high angle fractures in a zone with pseudo breccia and some rubble breccia.
			365.1-365.4. Angular Sand Marker. Light grey fine uniform dolomite with scattered quartz grains. Occurs within the mineralized zone but is itself poorly mineralized, containing only fine fracture fillings of sphalerite and galena.
			368.8-384. Minor sphalerite-galena mineralization in zones of pseudo breccia and solution cavities.
			384-390. Minor mineralization, dominantly pyrite, related to high angle fractures and to pseudo-breccia.
			405-408. Mineralization, mainly sphalerite and pyrite, related to pseudo-breccia.
			405-406. Minor sphalerite mineralization related to pseudo breccia.
			471.53 - END OF HOLE.
			<i>R.A.P. Johnson</i>

PROPERTY: ROBB LAKE	TEXASGULF INC. DRILL HOLE LOG	HOLE NO. 82-80
LOCATION(grid) Northeast B.C. NTS 94B		CLAIM: Rob 41
LOCATION(survey) 73742N 56599E		SECTION:
AZIM: ELEV: 5616.1 ft DIP: Vert.:		LOGGED BY: D.A. Bending
DEPTH: 370.94 m CORE SIZE: 80	DIP TEST	DATE LOGGED: June 1980
STARTED: June 14, 1980		DRILLING CO.: Longyear Canada Ltd.
COMPLETED: June 19, 1980		
CORE RECOVERY: > 95%		

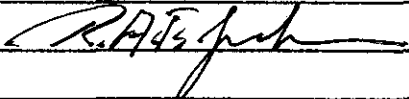
DEPTH	AZIM	DIP
346 m	355°	88.3°
368 m	18°	88°

DEPTH m		REC'Y	DESCRIPTION
FROM	TO		
0	5.6		Overburden.
5.6	20.22		Shale. Dark grey to black, laminated. Brecciated, probably early sedimentary type brecciation. Contains thin lenses and fine disseminations of pyrite.
20.22	48.5		Unit B.
			Bedded dolomite and dolomite breccia. Contains primary and secondary features as described in hole 81-80. Fairly high quartz grain content with some dolomite sandstone beds. Tectonic fracturing starts at 47 m and increases in intensity downwards and causes granulation of shale without veining.
48.5	76.2		Shale. Contact at 48.5 contains gouge and appears to be a fault. Shale is dark-grey to black. Much is well bedded and laminated. Parts contain breccia, probably of early slump origin. Angle of bedding where undisturbed is small. Pyrite common in lenses, some up to 10 cm thick.
76.2	370.94		Breccia. Contact at 76.2 m is gradational with fragments of shale extending 15 cm down into breccia. Minor sphalerite and galena at contact.
			Breccia consists of dolomite fragments and dolomite matrix. Fragments very variable in size and angular. Matrix consists mainly of late coarse white dolomite. Lithology represented by fragments is mainly Unit B down to 272 m. Below that C unit fragments appear. Some fragments of coarse sparry dolomite.

370.94

END OF HOLE.



PROPERTY: ROBB LAKE		<h1>TEXASGULF INC.</h1> <h2>DRILL HOLE LOG</h2>		HOLE NO. 83-80										
LOCATION(grid) Northeast B.C. NTS 94B				CLAIM: Cleo 6										
LOCATION(survey) 72209N 62071E														
AZIM: ELEV: 4651.9 ft DIP: Vert.				SECTION:										
DEPTH: 306.93 m CORE SIZE: BQ		DIP TEST		LOGGED BY: D.A. Bending										
STARTED: June 20, 1980		<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>DEPTH</th> <th>AZIM</th> <th>DIP</th> </tr> <tr> <td>203 m</td> <td>310°</td> <td>89.5</td> </tr> <tr> <td>307 m</td> <td>345°</td> <td>89°</td> </tr> </table>		DEPTH	AZIM	DIP	203 m	310°	89.5	307 m	345°	89°	DATE LOGGED: June 1980	
DEPTH	AZIM			DIP										
203 m	310°	89.5												
307 m	345°	89°												
COMPLETED: June 26, 1980				DRILLING CO.: Longyear Canada Ltd.										
CORE RECOVERY: > 95%														
DEPTH m		REC'Y	DESCRIPTION											
FROM	TO													
0	36.59		Overburden.											
36.59	63.72		<u>Unit B</u>											
			Upper margin contains strong tectonic shearing. Consists of bedded dolomite and dolomite breccias similar to those described previously in hole 81-80. Contains high quartz grain content and dolomitic sandstone beds common.											
63.72	157.0		<u>Unit C.</u>											
			63.72-80. Interbedded quartz rich dolomites and pure quartz sandstones.											
			80-157. Bedded dolomite and dolomite breccias similar to those described for hole 81-80, except that minor quartz grain content occurs at several levels.											
			105-106. Traces of sphalerite and galena in rubble breccia.											
157.0	158.5		Fault zone. Marked by granulated dolomite with low angle shear planes.											
158.5	306.93		<u>Unit B.</u> Bedded dolomite and dolomite breccias similar to Unit B as previously described under hole 81-80. Distinct change to cycles with darker coloured lower members below fault. Increase in sand grain content also evident. Dolomitic sandstone beds common.											
			Traces of galena.											
	306.93		END OF HOLE.											
														

TEXASGULF INC.

DRILL HOLE LOG

PROPERTY: Robb Lake
 LOCATION(grid) Northeast B.C. NTS 94B
 LOCATION(survey) 72259N 60773E
 AZIM: ELEV: 4775.8 ft DIP: Vert.
 DEPTH: 279.81 m CORE SIZE: BQ
 STARTED: June 26, 1980
 COMPLETED: June 30, 1980
 CORE RECOVERY: > 95%

HOLE NO.
84-80

CLAIM: Cleo 4
 SECTION:
 LOGGED BY: D.A. Bending
 DATE LOGGED: July 1980
 DRILLING CO.: Longyear Canada Ltd.

DIP TEST

DEPTH	AZIM	DIP
154 m	130°	89°
276 m	160°	89°

DEPTH m		REC'Y	DESCRIPTION
FROM	TO		
0	20.73		Overburden.
20.73	82.9		Unit B.
			Bedded dolomite and dolomite breccias as described for hole 81-80. Fairly persistent quartz grain content throughout section. Significant development of crackle breccia.
			20-45. Scattered minor sphalerite and galena.
			60-69. Scattered minor sphalerite and galena in zone with crackle breccia.
82.9	279.81		Unit C. Bedded dolomite and dolomite breccias as described for hole 81-80.
			120-134. Rubble breccia with high proportion of small platyclasts and a sparry dolomite matrix.
			90-100.
			117-131 Zones of low grade mineralization consisting mainly of sphalerite with
			166-170 some pyrite in rubble breccias associated with solution and
			181-183 redeposition features in upper parts of cycles.
			218-221
			225-231
			255-256.4 only 15% recovery due to core barrel malfunction.
			256.4-267. Contains short sections of relatively good grade mineralization.
			Almost entirely zinc occurring as sphalerite in zones of rubble breccia and pseudo

TEXASGULF INC.

DRILL HOLE LOG

HOLE NO.
85-80

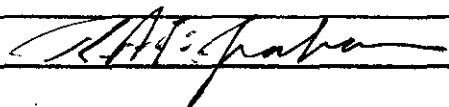
PROPERTY: Robb Lake
 LOCATION(grid) Northeast B.C. NTS 94B
 LOCATION(survey) 72397N 59627E
 AZIM: ELEV: 4789.5ftDIP: Vert.
 DEPTH: 337.11 m CORE SIZE: BQ
 STARTED: July 1, 1980
 COMPLETED: July 4, 1980
 CORE RECOVERY: > 95%

CLAIM: MV 73
 SECTION:
 LOGGED BY: D.A. Bending
 DATE LOGGED: July 1980
 DRILLING CO.: Longyear Canada Ltd.

DIP TEST

DEPTH	AZIM	DIP
163 m	285°	86.6°
325 m	322°	85°

DEPTH m		REC'Y	DESCRIPTION
FROM	TO		
0	13.72		Overburden.
13.72	86.0		Unit B. Bedded dolomite with dolomite breccias, as described for hole 81-80. Brecciation not commonly developed. Mineralization minor. 32-33. Traces sphalerite with extensive pyrite associated with stylolites. 81-86. Traces sphalerite and galena in crackle breccia.
86.0	328.27		Unit C. Bedded dolomite and dolomite breccias as described for hole 81-80. 86.0-193.0. Cycles unrecognisable because of extensive brecciation. Breccias are mostly of rubble type though probably only slight movement of fragments has occurred. Fragments are all of Unit C lithology. Coarse sparry dolomite cement abundant. Traces only of sphalerite and pyrite in breccias. 237. Angular Sand Marker. Developed over about 20 cm. 253.2-269.4. Dolomitic shale. Contacts of shale sub-unit are gradational and it is considered a facies variation within Unit C. Shale med.-dark grey, laminated and has fairly large dolomite content. Contains thin seams and fine disseminations of pyrite. Hard, brittle and competent. Sphalerite and galena essentially absent below brecciated zone. Minor pyrite occurs to bottom of hole.
	337.11		END OF HOLE.



TEXASGULF INC.

DRILL HOLE LOG

PROPERTY: Robb Lake
 LOCATION(grid) Northeast B.C. NTS 94B
 LOCATION(survey) 72245N 58488E
 AZIM: ELEV:4805.5 ft DIP: Vert.
 DEPTH: 325.22 m CORE SIZE: BQ
 STARTED: July 5, 1980
 COMPLETED: July 8, 1980
 CORE RECOVERY: > 95%

HOLE NO.
86-80

CLAIM: MV 73
 SECTION:
 LOGGED BY: D.A. Bending
 DATE LOGGED: July 1980
 DRILLING CO.: Longyear Canada Ltd.

DIP TEST		
DEPTH	AZIM	DIP
160 m	75°	89°
318 m	218.5"	-88.5°

DEPTH m		REC'Y	DESCRIPTION
FROM	TO		
0	11.0		Overburden.
11.0	131.98		Unit B. Bedded dolomites and dolomite breccias as described for hole 81-80. Sphalerite and galena absent. Minor amounts of pyrite disseminated and in fractures and stylolites.
131.98	325.22		Unit C. Bedded dolomite and dolomite breccias as described for hole 81-80. Extensive quartz grain content 136-141. 157-185. Traces of sphalerite associated with rubble breccias, pseudo breccias and crackle breccias. Extensive sparry dolomite matrix to breccias. 238-242. Scattered sphalerite and galena in pseudo breccia. 254.6-255.8. Angular Sand Marker. Scattered quartz grains in fine, uniform, med-grained dolomite. 280-end. Dolomite becomes fairly uniform, light to med-grey, fine to med-grained with small cavities and extensive burrowing features.
	325.22		END OF HOLE.
			<i>D.A. Bending</i>

PROPERTY: ROBB LAKE		TEXASGULF INC. DRILL HOLE LOG		HOLE NO. 87-80										
LOCATION(grid) Northeast, B.C. NTS 94B				CLAIM: Rob 44										
LOCATION(survey) 72207N 57038E				SECTION:										
AZIM: ELEV: 4929.6ftDIP: Vert.				LOGGED BY: D.A. Bending										
DEPTH: 340.16 m CORE SIZE: BQ		DIP TEST		DATE LOGGED: July 1980										
STARTED: July 9, 1980		<table border="1"> <thead> <tr> <th>DEPTH</th> <th>AZIM</th> <th>DIP</th> </tr> </thead> <tbody> <tr> <td>169.2 m</td> <td>50°</td> <td>-89.5°</td> </tr> <tr> <td>326.9 m</td> <td>65°</td> <td>-89°</td> </tr> </tbody> </table>		DEPTH	AZIM	DIP	169.2 m	50°	-89.5°	326.9 m	65°	-89°	DRILLING CO.: Longyear Canada Ltd.	
DEPTH	AZIM			DIP										
169.2 m	50°	-89.5°												
326.9 m	65°	-89°												
COMPLETED: July 13, 1980														
CORE RECOVERY: > 95%														
DEPTH m		REC'Y	DESCRIPTION											
FROM	TO													
0	17.4		Overburden.											
17.4	163.68		Unit B. Bedded dolomite and dolomite breccias as described for Hole 81-80. Birdseye dolomite beds more common than usual in this section of Unit B.											
			57.9 Fault zone. Highly fractured with major fracture planes at a high angle.											
			72.5-74 Fault zone. Major movement zone. Consists of gouge and crushed rock.											
			Marginal fractures at 50° to horizontal or steeper.											
			99.7-100.4. Fault zone. Consists of short sections of crushed rock. Marginal fractures are at a high angle.											
			100.4-105.0 Traces of sphalerite + pyrite in rubble and crackle breccias.											
163.68	340.16		Unit C. Bedded dolomite and dolomite breccias as described for hole 81-80.											
			177-252 Extensive solution activity causing collapse and rubble breccia and extensive sparry dolomite fracture and cavity fillings.											
			205.2 Small amount of brown sphalerite in pseudo breccia											
			206.4 Fine-grained pyrite on fractures over about 30 cms.											
			230 Small amount sphalerite in crackle and rubble breccia over 10 cm.											
			258.8 Traces of sphalerite in coarse sparry dolomite vug fillings.											
			288-310 Fairly uniform, med-grained dolomite with common vugs.											

PROPERTY: Robb Lake		TEXASGULF INC. DRILL HOLE LOG		HOLE NO. 88-80		
LOCATION(grid) Northeast B.C. NTS 94B				CLAIM: Rob 43		
LOCATION(survey) 73248N 57027E				SECTION:		
AZIM:	ELEV:			DIP:	Vert	LOGGED BY: D.A. Bending
DEPTH: 385.88 m		CORE SIZE: BQ		DATE LOGGED: July 1980		
STARTED: July 15, 1980		DIP TEST		DRILLING CO.: Longyear Canada Ltd.		
COMPLETED: July 19, 1980				DEPTH	AZIM	DIP
CORE RECOVERY: > 95%				190.5	315°	-88°
		382.9	330°	-87.5		
DEPTH m		REC'Y	DESCRIPTION			
FROM	TO					
0	2.5		Overburden.			
2.5	163.67		Unit B			
			Bedded dolomite and dolomite breccias as described for hole 81-80.			
			20.4 and 22.4 High angle fracturing and faulting			
			71.95-72.35 Minor high angle fracturing			
			Angle of dip varies from 30° at top of section to 20° at bottom.			
			Traces of sphalerite and pyrite in various types of breccia at:			
			51.2-51.8, 59.5, 60.4-60.7, 61.9-63.7, 69.5-70.1, 73.5-73.8, 89.3-89.6 (with some galena)			
			95.6-97 (with some galena).			
163.67	385.88		Unit C.			
			Bedded dolomite and dolomite breccias as described for hole 81-80			
			163.67-187.2 Fairly high quartz grain content			
			187.2-228 Strong development of pseudo breccias, crackle breccias and rubble breccias with abundant secondary sparry dolomite.			
			228-244. Moderate development of brecciation and dolomite cavity filling.			
			244-end. Only minor development of brecciation in each cycle.			
			187.2-190.9 Traces of sphalerite and galena in pseudo-breccias			
			216.5-217.2 Traces of sphalerite and galena in pseudo-breccias			

PROPERTY: Robb Lake	TEXASGULF INC. DRILL HOLE LOG	HOLE NO. 89-80									
LOCATION(grid) Northeast B.C. NTS 94B		CLAIM: Cleo 2									
LOCATION(survey) 73328N 59397E		SECTION:									
AZIM: ELEV: 5097.4 ft DIP: Vert		LOGGED BY: D.A. Bending									
DEPTH: 320.34 m CORE SIZE:	DIP TEST	DATE LOGGED: July 1980									
STARTED: July 20, 1980		DRILLING CO.: Longyear Canada Ltd.									
COMPLETED: July 23, 1980											
CORE RECOVERY: > 95%											
		<table border="1"> <thead> <tr> <th>DEPTH</th> <th>AZIM</th> <th>DIP</th> </tr> </thead> <tbody> <tr> <td>160 m</td> <td>190°</td> <td>-89°</td> </tr> <tr> <td>318.6</td> <td></td> <td>90°</td> </tr> </tbody> </table>	DEPTH	AZIM	DIP	160 m	190°	-89°	318.6		90°
DEPTH	AZIM	DIP									
160 m	190°	-89°									
318.6		90°									

DEPTH m		REC'Y	DESCRIPTION
FROM	TO		
0	21.34		Overburden.
21.34	143.56		Unit B. Bedded dolomite and dolomite breccias as described for hole 81-80
			130-136 Traces of sphalerite and pyrite in stylolites and minor rubble breccias.
			140-146 Traces of sphalerite and pyrite in minor rubble breccia
143.56	320.34		Unit C.
			Bedded dolomite and dolomite breccias as described for hole 81-80
			151-200 Extensive brecciation of various types and abundant sparry dolomite fracture and cavity filling.
			165-233 Frequent minor traces of sphalerite with assoc. pyrite.
			304-309 Minor traces sphalerite in pseudo breccias
			313-315 Small amount sphalerite with some pyrite in pseudo breccias
			240.2-242.3 Angular Sand Marker.
	320.34		END OF HOLE.

R. H. Graham

PROPERTY: ROBB LAKE		<h1>TEXASGULF INC.</h1> <h2>DRILL HOLE LOG</h2>		HOLE NO. 90-80										
LOCATION(grid) Northeast B.C. NTS 94B				CLAIM: Rob 42										
LOCATION(survey) not surveyed				SECTION:										
AZIM: ELEV: 6813.3ftDIP: Vert				LOGGED BY: D.A. Bending										
DEPTH: 364.92m CORE SIZE: BQ		DIP TEST		DATE LOGGED: July 1980										
STARTED: July 24, 1980		<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>DEPTH</th> <th>AZIM</th> <th>DIP</th> </tr> </thead> <tbody> <tr> <td>207.30</td> <td>50°</td> <td>-88.5</td> </tr> <tr> <td>364.92</td> <td>50°</td> <td>-88°</td> </tr> </tbody> </table>		DEPTH	AZIM	DIP	207.30	50°	-88.5	364.92	50°	-88°	DRILLING CO.: Longyear Canada Ltd.	
DEPTH	AZIM			DIP										
207.30	50°	-88.5												
364.92	50°	-88°												
COMPLETED: July 29, 1980														
CORE RECOVERY: > 95%														
DEPTH m		REC'Y	DESCRIPTION											
FROM	TO													
0	7.62		Overburden.											
7.62	244.0		Unit B.											
			Bedded dolomite and dolomite breccias as described for hole 81-80. Typical section for Unit B.											
			Traces only of sphalerite and galena at 40 and 45 m. Pyrite fairly common through section.											
244.0	364.92		Unit C.											
			Bedded dolomite and dolomite breccias as described for hole 81-80. Intense solution activity, brecciation and secondary dolomite 250-260.											
			Small amounts of pyrite occur throughout the section.											
			Small amounts of sphalerite and galena at 328, 330-332, 337-338 in various breccia types.											
			Angular Sand Marker not reached.											
	364.92		END OF HOLE.											
			<i>R.H. Graham</i>											

APPENDIX 5

Assays of diamond drill-core

D.D.H. No.	Intercept (m)	Length (m)	Sample No.	% Pb	% Zn
81-80	69.47- 69.67	0.20	9052	8.75	7.60
	69.67- 71.31	1.64	53	0.06	0.03
	71.31- 71.81	0.50	54	1.42	4.75
	71.81- 72.27	0.46	55	0.03	0.11
	73.32- 73.69	0.37	56	0.11	0.19
	73.69- 74.05	0.36	57	< 0.01	<0.01
	74.05- 74.79	0.74	58	0.02	0.11
	74.79- 75.79	1.00	59	< 0.01	<0.01
	146.06-147.62	1.56	60	0.32	1.88
	147.62-151.27	3.65	61	1.33	2.90
	299.85-300.85	1.00	62	0.10	0.56
	312.96-313.96	1.00	63	0.47	0.32
	313.96-315.46	1.50	64	1.08	0.63
	315.46-316.96	1.50	65	1.67	0.12
	316.96-318.46	1.50	66	0.28	0.02
	318.46-319.46	1.00	67	0.42	0.16
	320.82-321.82	1.00	68	2.85	3.35
	321.82-323.44	1.62	69	0.14	0.40
	342.80-343.80	1.00	70	0.10	0.23
	346.58-348.08	1.50	71	0.01	0.21
	348.08-349.08	1.00	72	0.10	1.28
	349.08-350.08	1.00	73	<0.01	0.30
	350.08-351.08	1.00	74	0.25	3.42
	351.08-352.08	1.00	75	< 0.01	0.76
	352.08-353.18	1.10	76	< 0.01	0.24

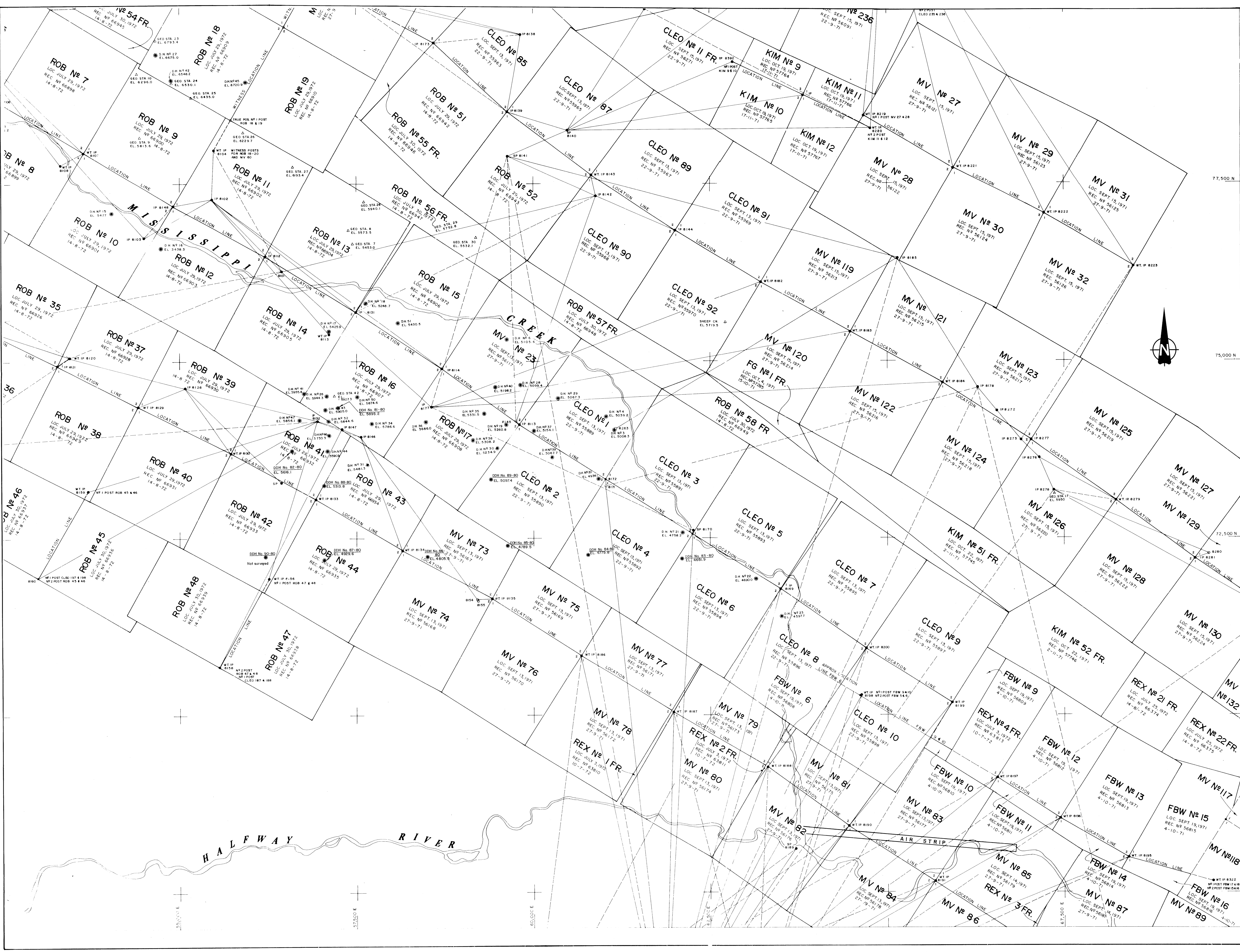
D.D.H. No.	Intercept (m)	Length (m)	Sample No.	% Pb	% Zn
81-80 Cont'd	355.79-356.79	1.00	9077	0.61	1.90
	356.79-357.79	1.00	78	<0.01	0.20
	360.95-361.95	1.00	79	<0.01	0.16
	361.95-362.95	1.00	80	1.40	1.44
	362.95-363.95	1.00	81	0.58	2.02
	363.95-364.95	1.00	82	4.60	5.25
	364.95-365.95	1.00	83	0.08	2.33
	365.95-366.95	1.00	84	15.92	8.10
	366.95-367.95	1.00	85	18.14	2.93
	367.95-368.95	1.00	86	0.14	0.03
	368.95-369.95	1.00	87	0.06	0.12
	369.95-371.95	2.00	88	0.04	0.02
	371.95-372.95	1.00	89	1.46	2.70
	372.95-373.95	1.00	90	0.10	0.23
	373.95-374.95	1.00	91	0.05	0.06
	374.95-375.95	1.00	92	<0.01	0.04
	375.95-376.95	1.00	93	0.04	0.49
	376.95-377.95	1.00	94	0.04	0.12
	377.95-380.95	3.00	95	<0.01	0.16
	380.95-382.95	2.00	96	<0.01	0.12
	382.95-384.95	2.00	97	0.46	2.10
	384.95-385.95	1.00	98	0.01	0.04
	385.95-386.95	1.00	99	0.02	1.47
	386.95-387.95	1.00	9101	0.01	0.37
	399.42-400.42	1.00	02	<0.01	2.72
	400.42-401.42	1.00	03	<0.01	0.11
	404.57-406.57	1.00	04	<0.01	2.02
	406.57-407.32	0.75	05	<0.01	0.93

D.D.H. No.	Intercept (m)	Length (m)	Sample No.	% Pb	% Zn
82-80	233.17-236.17	3.00	5501	0.22	0.38
	236.17-237.89	1.72	02	0.30	1.12
	262.36-263.86	1.50	03	0.10	0.30
	263.86-265.36	1.50	04	0.03	0.29
	265.36-266.86	1.50	05	0.03	0.13
	266.86-268.36	1.50	06	0.03	0.09
	268.36-269.86	1.50	07	<0.01	<0.01
	269.86-271.36	1.50	08	0.01	0.04
	271.36-272.86	1.50	09	0.01	0.01
	272.86-274.36	1.50	10	0.09	0.42
	274.36-275.86	1.50	11	0.12	0.54
	275.86-277.36	1.50	12	0.03	0.60
	277.36-278.86	1.50	13	0.01	0.16
	278.86-280.36	1.50	14	0.04	0.37
	280.36-281.86	1.50	15	0.01	0.04
	281.86-283.65	1.79	16	0.18	0.12
	283.89-285.39	1.50	9113	0.12	0.89
	285.39-286.89	1.50	14	0.04	0.20
	286.89-288.39	1.50	15	<0.01	0.05
	288.39-289.89	1.50	16	0.14	0.52
	289.89-291.39	1.50	17	0.02	0.01
	291.39-292.89	1.50	18	0.20	0.56
	292.89-294.42	1.53	5517	<0.01	<0.01
	294.42-295.92	1.50	9119	0.04	0.02
	295.92-297.42	1.50	20	0.15	0.19
	297.42-298.92	1.50	21	<0.01	0.06
	298.92-300.42	1.50	22	0.04	0.01
	300.42-301.92	1.50	23	<0.01	<0.01
	301.92-303.42	1.50	24	0.02	0.14
	303.42-304.42	1.00	25	0.10	1.04

D.D.H. No.	Intercept (m)	Length (m)	Sample No.	% Pb	% Zn
83-80	102.64-104.24	1.60	5519	<0.01	0.01
	104.24-105.74	1.50	20	1.02	0.50
	263.50-265.10	1.60	9144	0.32	<0.01
	287.82-290.62	2.80	45	0.21	0.04
	305.50-307.00	1.50	46	0.40	0.06
84-80	20.73- 22.27	1.54	5521	1.47	0.45
	22.27- 23.77	1.50	22	0.29	0.09
	23.77- 25.27	1.50	23	0.02	0.01
	25.27- 26.77	1.50	24	0.01	0.01
	26.77- 27.77	1.00	25	0.01	0.02
	27.77- 29.27	1.50	26	1.50	0.13
	29.27- 30.77	1.50	27	0.14	0.02
	30.77- 32.27	1.50	28	0.03	<0.01
	32.27- 33.77	1.50	29	0.24	0.09
	33.77- 35.27	1.50	30	0.06	0.04
	35.27- 36.77	1.50	31	0.05	0.04
	36.77- 38.27	1.50	32	0.33	0.77
	38.27- 39.77	1.50	33	0.19	0.28
	39.77- 41.27	1.50	34	0.03	0.35
	41.27- 42.77	1.50	35	0.10	0.92
	42.77- 44.27	1.50	36	0.01	0.46
		60.27- 61.77	1.50	37	0.02
	61.77- 63.27	1.50	38	0.01	<0.01
	63.27- 64.77	1.50	39	0.09	0.54
	64.77- 66.27	1.50	40	0.08	0.73
	66.27- 68.27	2.00	41	0.01	0.07

D.D.H. No.	Intercept (m)	Length (m)	Sample No.	% Pb	% Zn
84-80 Cont'd	90.85- 92.35	1.50	5542	<0.01	0.34
	92.35- 93.85	1.50	43	0.03	1.24
	93.85- 95.35	1.50	44	<0.01	0.07
	95.35- 96.85	1.50	45	0.03	1.27
	96.85- 98.35	1.50	46	<0.01	0.28
	98.35- 99.85	1.50	47	0.01	0.55
	117.58-119.08	1.50	5548	<0.01	1.11
	119.08-122.08	3.00	49	<0.01	0.10
	122.08-123.58	1.50	50	<0.01	0.01
	123.58-125.08	1.50	51	<0.01	1.28
	125.08-126.58	1.50	52	<0.01	1.56
	126.58-128.58	2.00	53	<0.01	1.54
	128.58-130.58	2.00	54	<0.01	0.52
	166.62-170.82	4.20	5555	0.07	1.01
	181.03-182.68	1.65	56	<0.01	0.92
	218.06-219.16	1.10	57	<0.01	1.32
	219.16-220.16	1.00	58	<0.01	4.00
	220.16-220.96	0.80	59	<0.01	2.35
	225.98-227.98	2.00	60	<0.01	0.37
	227.98-228.98	1.00	61	<0.01	0.84
	228.98-231.05	2.07	62	<0.01	0.84
	256.40-257.40	1.00	63	0.01	9.70
	257.40-258.40	1.00	64	<0.01	5.45
	258.40-259.40	1.00	65	<0.01	1.32
	259.40-260.40	1.00	66	0.01	7.01

D.D.H. No.	Intercept (m)	Length (m)	Sample No.	% Pb	% Zn
84-80 Cont'd	265.49-266.49	1.00	5567	0.01	4.05
	266.49-267.49	1.00	68	<0.01	0.98
85-80	83.90- 85.90	2.00	69	0.27	0.36
86-80	156.25-158.25	2.00	5570	<0.01	0.28
	158.25-160.25	2.00	71	0.04	0.85
	160.25-162.25	2.00	72	0.16	0.03
	162.25-164.25	2.00	73	0.01	0.56
	164.25-166.25	2.00	74	0.07	0.50
	171.49-172.99	1.50	75	<0.01	0.78
	181.55-183.55	2.00	76	<0.01	1.20
	183.55-185.45	1.90	77	<0.01	0.32
	185.45-186.45	1.00	78	0.03	1.11
	186.45-189.45	3.00	79	<0.01	0.06
	189.45-190.45	1.00	80	<0.01	0.49
	239.34-240.34	1.00	5588	0.88	0.60
88-80	61.28- 63.78	2.50	5581	<0.01	0.44
	95.30- 97.30	2.00	5582	0.99	0.31
	260.00-261.00	1.00	5583	0.10	2.40
	277.80-278.80	1.00	5584	<0.01	4.75
	298.38-299.38	1.00	5585	<0.01	2.60
	307.68-309.88	2.20	5586	0.03	1.17



LEGEND

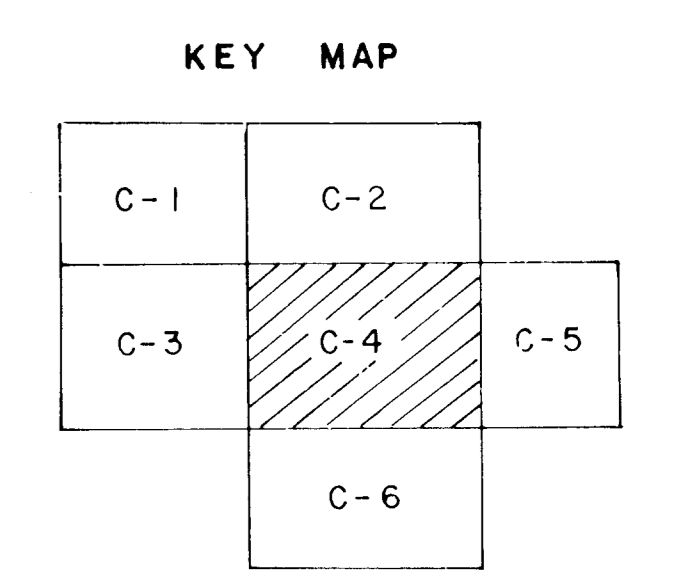
BEARINGS ARE ASTRONOMIC AND ARE DERIVED BY SOLAR OBSERVATION REFERRED TO THE MERIDIAN THROUGH STA. 8101.

CO-ORDINATES WERE DERIVED BY MATCHING PHYSICAL FEATURES ON 1"=500' TOPOGRAPHIC SHEET NO. 4 (BY M.S.E.L. DATED MAY 12, 1972).

ELEVATIONS ARE BY TRIG. HEIGHTING AND ARE REFERRED TO PHOTOGRAMMETRIC SPOT HEIGHTS ON M.S.E.L. SHEET NO. 4. ELEVATIONS ARE APPROXIMATELY GEODETIC.

- IP B202 DENOTES STANDARD B.C.L.S. IRON SURVEY POST WITH NUMBERED ALUMINUM IDENTIFICATION TAG.
- SP B167 DENOTES 12" SPIKE SET IN ROCK WITH NUMBERED ALUMINUM IDENTIFICATION TAG.
- B145 DENOTES TRAVERSE HUB
- DENOTES NO. 1 LOCATION POST
- DENOTES NO. 2 LOCATION POST
- WP DENOTES WITNESS POST
- WT DENOTES WITNESS
- DENOTES TRUE POSITION OF WITNESSED CLAIM POST—NO POST SET IN FIELD
- DENOTES CLAIM POST

FOR CO-ORDINATES OF TRUE CLAIM CORNERS ADJACENT TO WT IP'S SET DURING SURVEY, SEE TABULATED LIST DATED 1972.



NOTE: Original drawing done using measurements of the imperial system and of a scale of 1 in = 500 ft. Scale has been changed to 1:5,000 but grid and elevations are still given in feet.

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
8392
No.

1980 Robb Lake Assessment Report Figure 4
Index see Figure 2

2	SEW/3	1980 drilling, 14. DGH, B1-80 to 90-80, added	RAFG	J.S.	J.M.
1	AM/74	D.H. NO. 30 — NR 52 ADDED		J.S.	J.M.
REV	DATE	REVISION		DR	CH
TEXASGULF INC. ROBB LAKE JOINT VENTURE LOCATION LINE SURVEY OF MINERAL CLAIMS McELHANNEY ASSOCIATES PROFESSIONAL LAND SURVEYORS VANCOUVER, B.C.					
DESIGNED	J.W.K.S.	SCALE: 1	5,000		
DRAWN	K.M.S.	DATE:	NOV 1972		
CHECKED	J.W.K.S.	JOB NO.:	03643-0		
APPROVED	D.S.M.	CLIENT DWG NO.	McASSOC DWG NO.	REV	C-4



LEGEND

EXPIRY DATES BY YEAR

□ 1980	□ 1984	□ 1988
□ 1981	□ 1985	□ 1989
□ 1982	□ 1986	□ 1990
□ 1983	□ 1987	□ 1991 +

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
8392
NO.

R.H. [Signature]

1980 Robb Lake Assessment Report Figure 3

Texasgulf Inc.
ROBB LAKE JOINT VENTURE
COMPOSITE PLAN OF MINERAL CLAIMS
SHOWING 1980 GROUPING

NTS 94B/13

WORK BY	DRAWN BY	DATE	DRW,G NO.
RA FG		SEPT 11, 1980	