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JOSEPH C. BENNETT
CHAIRMAN OF THE BOARD

34 CENTURY PARK-WAY
SALT LAKE CITY, UTAH 84115
TELEPHONE 801/487-5651

CENTENNIAL DEVELOPMENT COMPANY

July 29, 1974

Mr. Howard Lanier
Vice President
Essex International, Inc.
1550 Wall Street
Fort Wayne, Indiana 46804

Dear Howard:

I am enclosing Don Bryant's critique of the Essex investigation of our Lisbon Valley feasibility study and properties. Not wishing to perpetuate any arguments, I am not sending a copy to your Tucson office and will leave it to you as to whether or not you wish to do so.

Don is speaking for Centennial in his memorandum and I don't believe much can be gained by commenting further.

Sincerely,

Joseph C. Bennett

JCB:pw
Enclosure

cc: D. G. Bryant
G. M. Wallace
bcc: D. P. Bellum

DONALD G. BRYANT

MINING AND MINERAL EXPLORATION CONSULTANT

7060 So. GRAY COURT
LITTLETON, COLORADO 80123
(303) 798-3192

JUL 25 1974

July 17, 1974

To: J. C. Bennett, Chairman
Centennial Development Company

From: Donald G. Bryant

Subj: The poor caliber of the geologic check of Centennial's Lisbon Valley copper deposit by Essex International, Inc.

After six weeks of intensive study of the Lisbon Valley copper deposit feasibility report, the deposit itself and the drill cuttings and core, Essex geologic personnel, apparently under the supervision of B. Temple expressed the following criticisms:

(1) stratigraphy as depicted on the geologic sections in Centennial report did not match the expected structural conditions,

(2) detailed logging of cuttings by Essex personnel did not correlate with the unit boundaries used by Centennial geologists,

(3) visual estimates of grade for the cuttings retained by Centennial did not match the assays,

(4) rotary drilling is not an accurate means of sampling a copper ore body according to J. D. Lowell and indicated by the 5 core holes drilled by Centennial near earlier rotary holes, and

(5) amount of retained rotary cuttings were not sufficient for further study.

The reasoning behind these objections was presented by Bud Temple and Paul Eimon at a meeting in Centennial's offices in Salt Lake City on July 10, 1074. Present at the meeting were Paul Eimon, Don Bellem, Ken Jones and Bud Temple for Essex and Joseph Bennett, James Quigley, and Ray Grant for Centennial Development. I was present as a consultant for Centennial. Based on my experience on the property and my appraisal of the work done by Essex as described by Temple, rebuttals of each criticism are presented in the following paragraphs.

Criticism 1, the non-conformance of Centennial's stratigraphy to conform to the expected structure, was based on some of the feasibility geologic sections which indicated reverse movement, others that showed reverse movement of the upper contact and normal movement of the lower contact of stratigraphic units. These features did not fit the situation expected by Essex that all sense of movement of faults should be "dip-slip". The statement was apparently formulated without any consideration for changes of thickness or strike and dip of the beds, and, more importantly, the very obvious evidence that many of the fault blocks had been rotated (see Plans and Sections by DGB in Feasibility Study).

Criticism 2, the apparent lack of correlation of Centennial stratigraphy with Essex's description of the cuttings, was based on detailed logs of the rotary holes on an interval by interval basis prepared by <u>five</u> junior geologists. Essex did not use the cuttings strip logs prepared by Centennial nor did they prepare any for their own use. The discrepancy, cited by Temple as an example of the poor correlations, was an interval with "only" one percent carbonaceous material which had been picked by Centennial to be Unit No. 8 which is categorized as coal, mudstone and carbonaceous sandstone. On checking the Essex logs and Centennial's strip logs the interval above and below the questioned sample were found to have no carbonaceous material and were definitely beds 7 and 9 respectively (Appendix A). Apparently Essex believed that Unit 8 should have coal beds or at least excessive carbonaceous material throughout its entire lateral extent. To ascribe any significance to this feature and not to study the overall lithologies of the holes as on strip logs indicates that the Essex group has no, absolutely no, conception of the use of stratigraphy in deposits of this type. It is unfortunate that Essex did not acquire the services of a consultant with experience in the Lisbon Valley area and familiar with the local lithologies and stratigraphic column, as Centennial did very early in their exploration program. (W. McDougald)

Criticism 3, the lack of correlation of visual grade estimates to actual assays, was also based on the study of the cuttings retained by Centennial as representative of the intervals assayed. Temple

stated that in 52% of the samples specically compared, the cuttings did not seem to have enough mineralization to account for the grade of Centennial's assays. It is my opinion that visual estimates of the amount of chalcocite in continental sediments are very inaccurate if not impossible. The actual volume percent of chalcocite in a medium-grained sandstone with 15% porosity required to make a 0.8% Cu rock is about a third of one percent. The real shortcoming of Criticism 3, however, is the fact that Essex did not have any assays made to check their visual estimates even though they used about six weeks of Centennial's time.

Criticism 4, reservations regarding the representative nature of samples obtained by rotary drilling especially below the water table, were based on opinions of J. D. Lowell (Appendix B) and on five BX diamond drill holes adjacent to rotary holes. Although the statements made by Lowell may apply to porphyry coppers in the southwest, certainly Lowell nor anyone else can predict the usefulness of different drilling methods to the sampling of sandstone copper orebodies such as those in Lisbon Valley. Several significant facts and possibilities seem to have been overlooked in the formulation of this doubt of the rotary drilling results. The mineralization is predominantly irregularly dispersed in sandstones as local concentrations or "plums" and requires a large sample for accuracy. Inspection of the drill core discloses that in many intervals, especially in conglomeratic beds, the fine-grained materials have been lost by washing. Field work and previous mining has indicated that these finer-grained portions were a source of copper and this provides an obvious explanation for low-grading by diamond drilling. Less obvious would be the washing of interstitial material from equi-granular sandstones! Inspection of the split core emphasizes the need for a large sample as the retained core, obviously, is not representative of the mineralizations because of the irregular concentrations. Many of the mineralized horizons are slightly silicified sandstones which are more competent than the shale and mudstone horizons that are usually waste. This contrast indicates that if "sluffing" below the water table did occur, it would more likely cause the sample to be lowgraded rather than highgraded as the diamond drilling seems to indicate. But even

the possibility of significant non-representative sampling problems is remote because only minor amount of the footage in ore involved sufficient water to cause "sluffing".

Criticism 5, the lack of adequate retained sample from the rotary holes, may be justified but considerable effort was made to ensure its representative character. The Essex practise of retaining the entire sample, especially from a $7\frac{5}{8}$" diameter hole, seems to me to be prohibitively expensive and time consuming. Certainly, this feature is not sufficient reason to ignore the obvious value of this property as presented in the feasibility report.

In conclusion, I believe that the Essex program to check the Lisbon Valley copper feasibility report was ill-conceived, incomplete, and carried out by personnel who did not understand the type of mineralization nor how to work with sedimentary rocks.

Donald G. Bryant

DONALD G. BRYANT 7060 So. GRAY COURT LITTLETON, COLORADO 80123

STRATIGRAPHY

Unit	Formation	Stratigraphic Description	Thickness	Unit
1	Overburden			~~1~~
2	Mancos		0 ft. - 70 ft.	2
3	Dakota	Carbonaceous Shale to Mudstone	10 ft. - 20 ft.	3
4		Buff Medium Grained Sandstone to Mudstone	15 ft. - 25 ft.	4
5		Mudstone to Sandstone	15 ft. - 25 ft.	5
6		Coal to Mudstone and Carbonaceous Sandstone	5 ft. - 20 ft.	6
7		Mudstone to Sandstone	10 ft. - 20 ft.	7
8		Coal to Mudstone & Carbonaceous Sandstone	5 ft. - 20 ft.	8
9		Mudstone	10 ft. - 25 ft.	9
10		Fine to Medium Grained Sandstone to Mudstone	15 ft. - 20 ft.	10
11		Medium Grained Sandstone	20 ft. - 60 ft.	11
12	Burro Canyon	Green Shale - Sandy	5 ft. - 25 ft.	12
13		Medium Grained Sandstone	20 ft. - 40 ft.	13
14		Variagated Red Sandstone	50 ft. - 120 ft.	14
15		Silic Fine Grained Sandstone	40 ft. - 100 ft.	15
16		Medium Grained Sandstone	5 ft. - 30 ft.	16
17	Jmb-Jms-Js-Je-Jc-Jn-Jk-Tw-Tc-Pc			17

By Dave Lowell

Rotary Drilling Procedures in the Mining Industry

Percussion drilling is the lowest cost method in common use in exploration. It produces a mixture of medium sized cuttings and dust when drilling above the water table, and a fine grained, watery sludge below the water table. Some sampling error is involved in separating the assay sample from sludge. With increasing depth of hole the tendency increases for the rock within the sludge to be segregated on the basis of specific gravity (the lighter fraction being blown or washed out of the hole). With increasing depth the degree of contamination also increases (the sample from the bottom of the hole is diluted by rock dislodged by rods slapping the walls of the upper section of open hole). The diameter of a percussion hole is commonly not uniform, particularly below the water table, and this produces non-representative sampling if the high grade mineralization is either harder, or softer, than the lower grade rock.

The rotary drill method produces somewhat coarser cuttings and less dust-size fragments than the percussion, but it also produces sludge below the water table with the resulting sampling problems. Because of the larger hole diameter, rotary holes when drilled below the water table have a greater tendency to sluff in the softer sections than do percussion holes. This can be largely prevented by using commercial drilling mud mixtures instead of clear water as a drilling medium, but drilling mud dilutes the sample and prevents accurate sampling of the drill cuttings. Rotary drilling is more expensive than percussion but permits drilling to greater depths. Ore control information in operating open pit mines is often based on assays of drill cuttings from large diameter blast holes. These holes are also rotary holes, but they differ from exploration rotary holes in several important respects: they are larger and produce about three times the volume of cuttings, the machines are equipped with a large air compressor which produces a very large volume and velocity of air to remove cuttings from the hole, and most important, the holes are drilled in dry rock in open pit benches which have been drained.

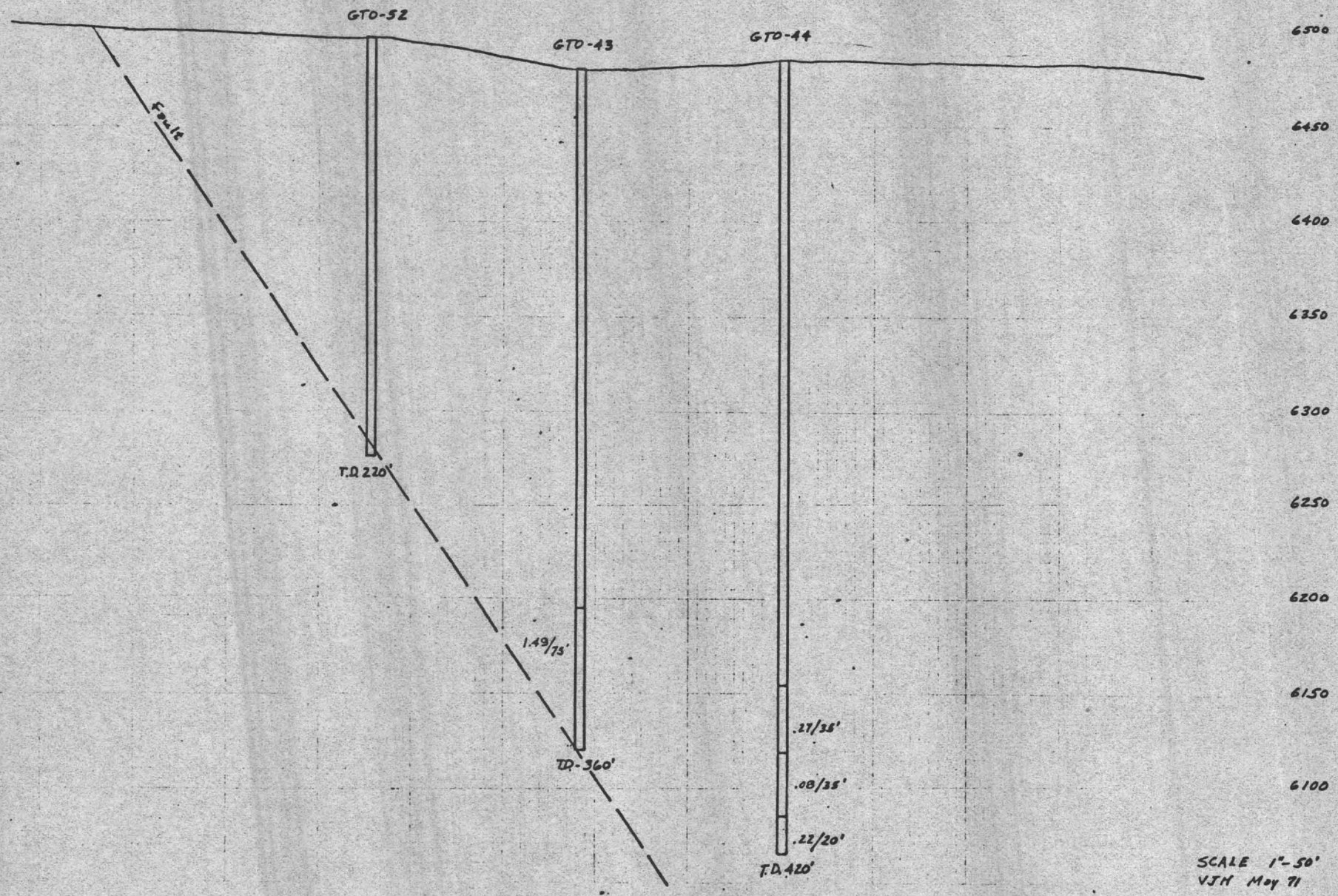
Diamond core drilling produces a solid cylindrical core, and this sample is not contaminated with material above it in the hole. With sufficient care nearly 100% of the section cut by the hole can be recovered as a uniform diameter, continuous sample which is closely representative of the rock penetrated by the hole. The method is the slowest and most expensive of the common exploration drilling methods, but is also the most accurate sampling method, and is much more useful for purposes of geological correlations.

It is common practice in mineral exploration to use low cost drilling methods which produce low precision sampling during the prospecting stage of an exploration project when qualitative sample information will suffice. Percussion and rotary drilling are often used for this purpose.

It is standard practice in copper exploration to use diamond core drilling in the development drilling stage to determine the grade and tonnage of an orebody for mine planning purposes when quantitative information is required.

I know of only one other case in which percussion drilling was used for part of the development drilling of a copper orebody (Lornex orebody, Highland Valley, B. C.), and in this case the sampling precision was found to be too low to be satisfactory. I know of no case in which rotary drilling has been successfully used for develop-

-2+00



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VJH May 71

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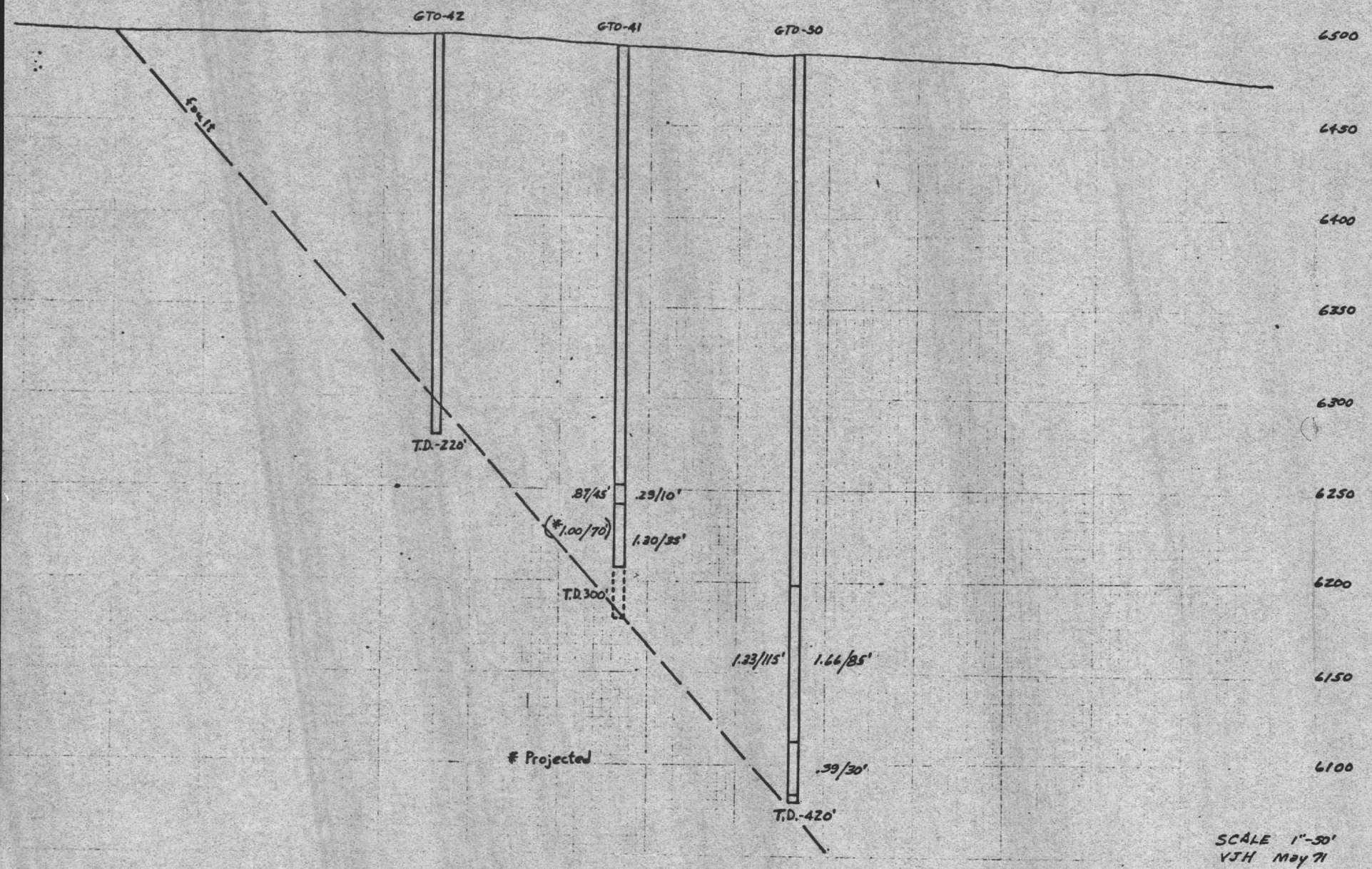

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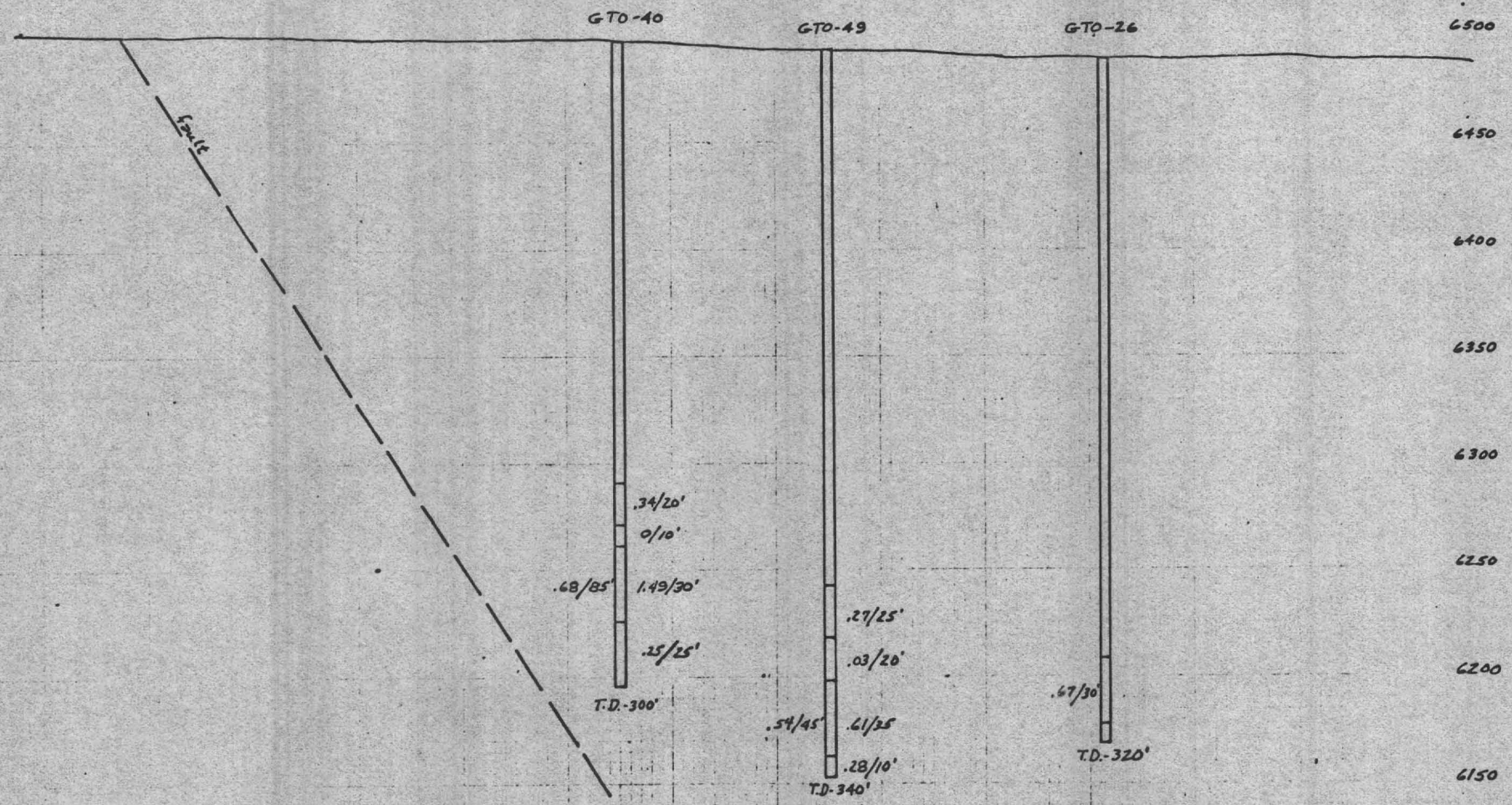

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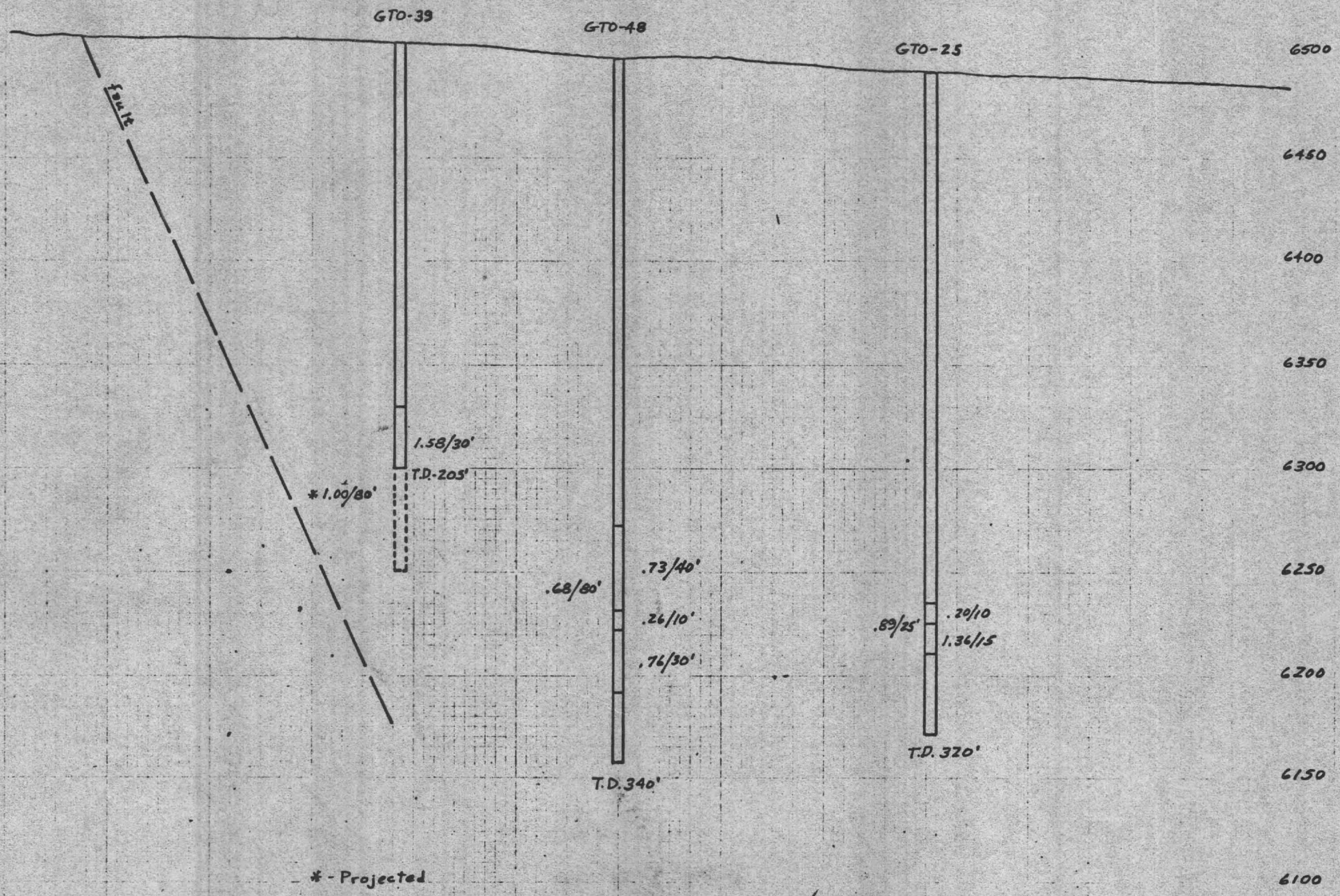

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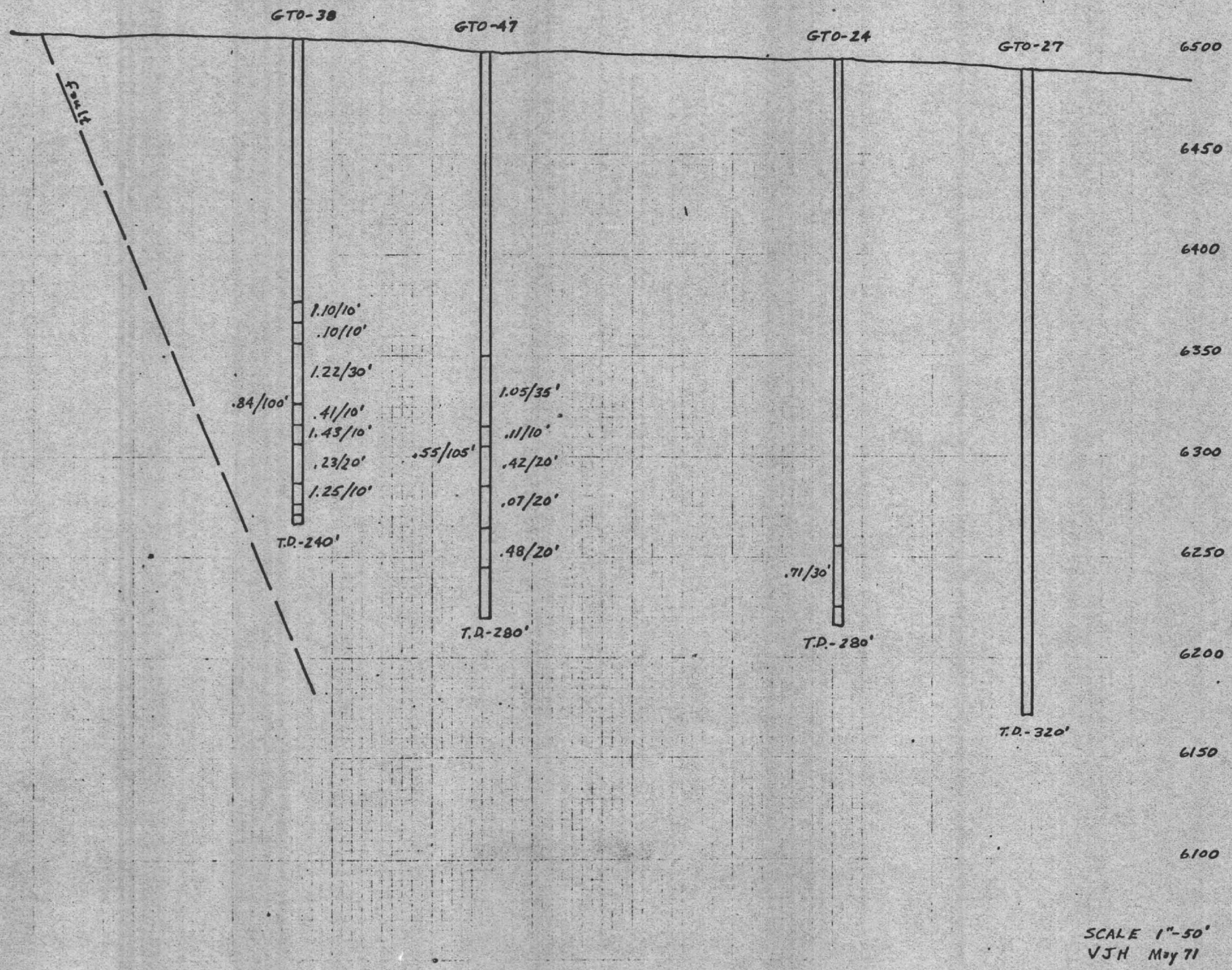

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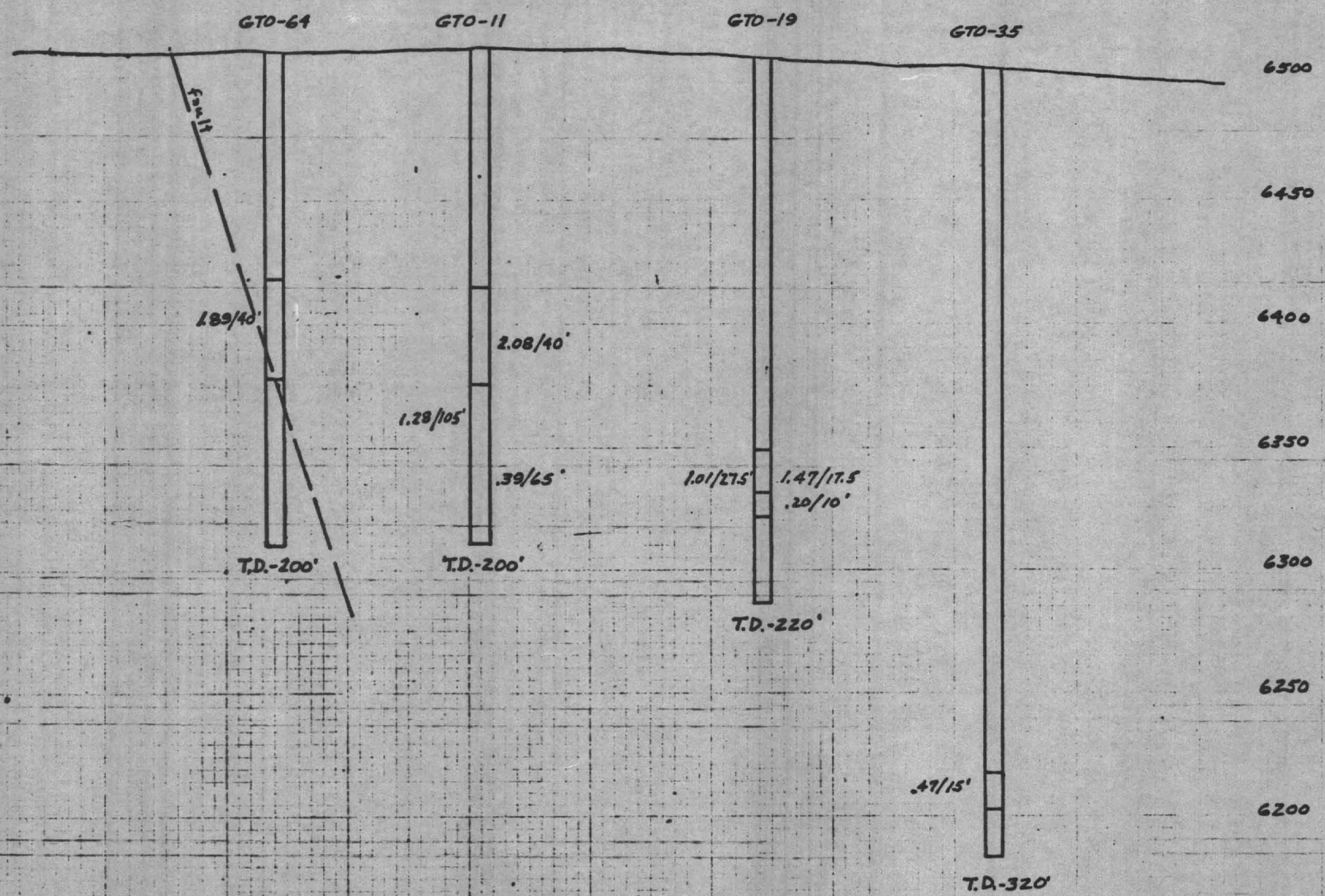

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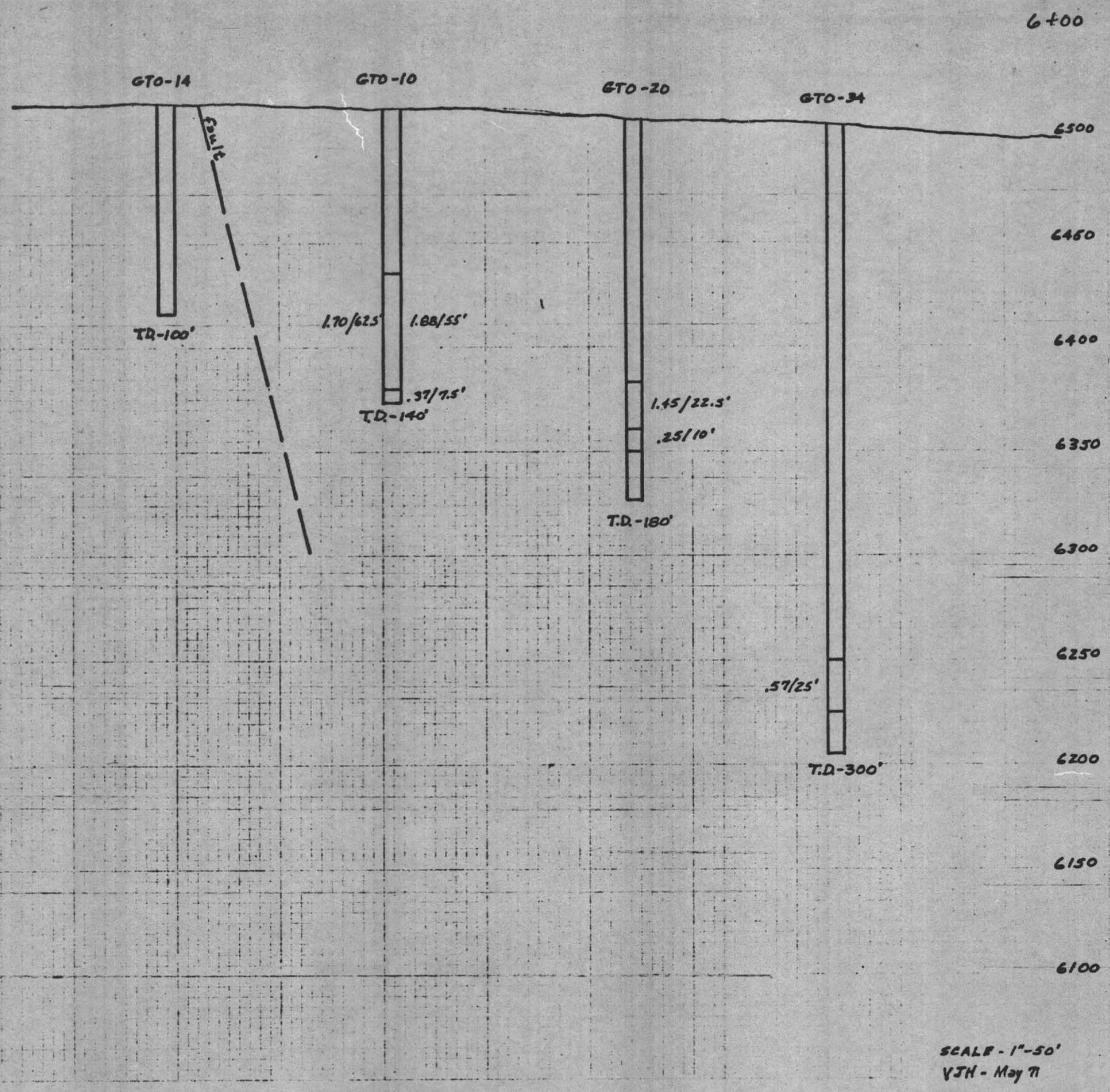
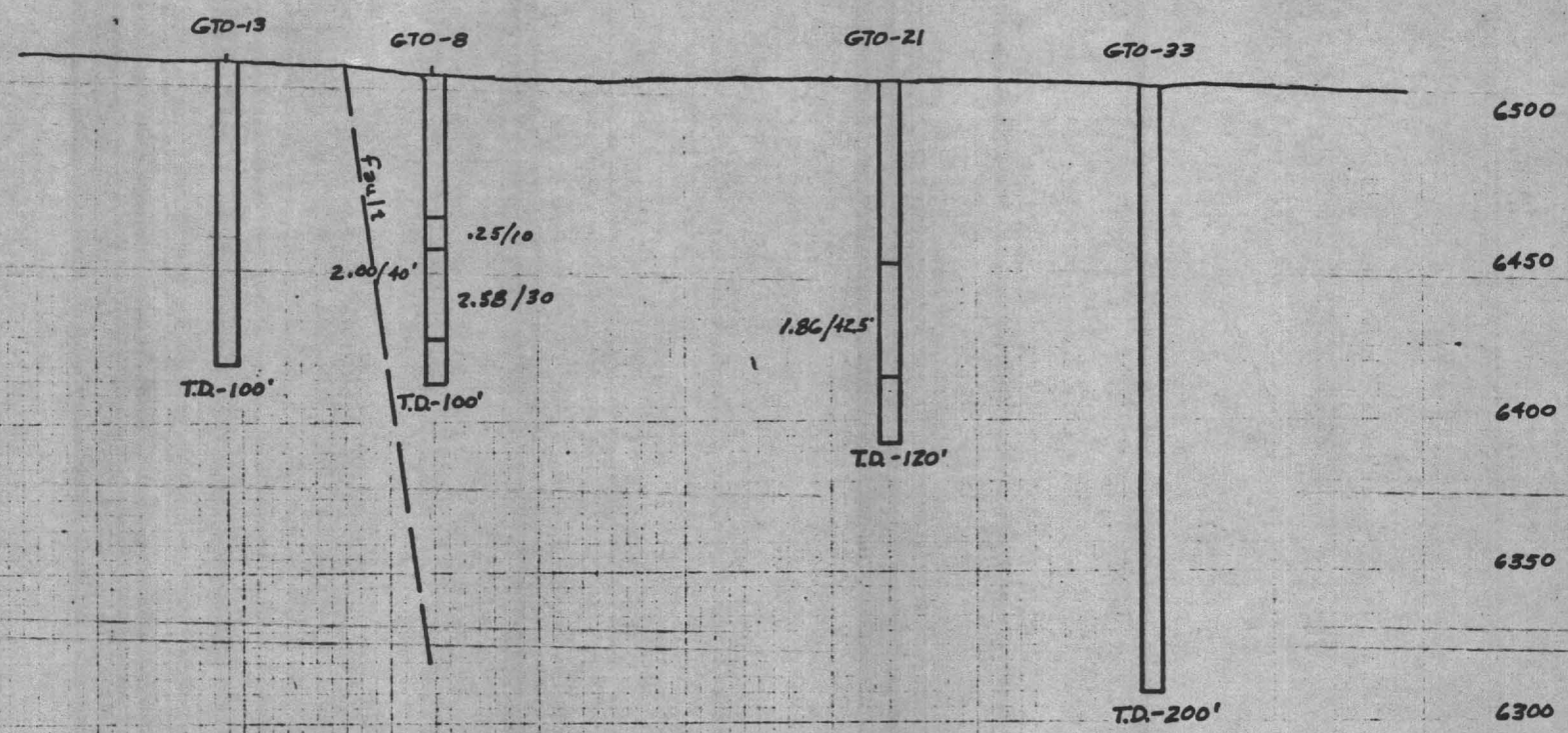
VJH - May 71


6+00
GTO-14
GTO-10
GTO-20
GTO-34
fault
6500
6450
6400
6350
6300
6250
6200
6150
6100
T.D.-100'
1.70/62.5'
1.88/55'
.37/7.5'
T.D.-140'
1.45/22.5'
.25/10'
T.D.-180'
.57/25'
T.D.-300'
SCALE - 1"-50'
VJH - May 71

8+00



SCALE-1"-50'

GTO OREBODY

EXPLANATION

0.20 % Cu

0.20 - 0.40 % Cu

0.40 - 0.80 % Cu

0.80 - 2.00 % Cu

2.00 % Cu

none or

none or not detected (.001% Cu)

VJH 30 June 71

PROPERTY GTO

Hole No. GTO-1 Date Drilled 12-6-70 Col. Elev. _____ Total Depth 120

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		—					
5-10		—					
10-15		—					
15-20		—					
20-25		—					
25-30		—					
		.25					
30-35		.15					
		—					
35-40		—					
40-45		—					
45-50		—					
50-55		—					
55-60		—					
60-65		—					
65-70		—					
		.065					
70-75		.135					
		.065					
75-80		.065					
		.075					
80-85		.035					
		.125					
85-90		.07					
		.06					
90-95		.145					
		.025					
95-100		.015					
		.065					
100-105		.035					
		.07					
105-110		.04					
		.065					

PROPERTY GTO Hole No. GTO-1

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton
110-115		.03		
115-120		.04		
		.04		
		.45		
120-125	Bottom			
125-130				
130-135				
135-140				
140-145				
145-150				
150-155				
155-160				
160-165				
165-170				
170-175				
175-180				
180-185				
185-190				
190-195				
195-200				
200-205				
205-210				
210-215				
215-220				
220-225				
225-230				
230-235				

PROPERTY GTO

Hole No. GTO-2 Date Drilled 12-8-70 Col. Elev. _____ Total Depth 140'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30		.06					
30-35		.06					
35-40		none					
40-45							
45-50							
50-55							
55-60							
60-65		.13					
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY GTO Hole No. GTO-2

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton			
110-115		.13					
115-120		.13					
120-125		.13					
125-130		—					
130-135		—					
135-140		—					
140-145	Bottom						
145-150							
150-155							
155-160							
160-165							
165-170							
170-175							
175-180							
180-185							
185-190							
190-195							
195-200							
200-205							
205-210							
210-215							
215-220							
220-225							
225-230							
230-235							

PROPERTY GTO

Hole No. GTO-3 Date Drilled 12-9-70 Col. Elev. _____ Total Depth 120'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		—					
5-10		—					
10-15		—					
15-20		—					
20-25		.145					
25-30		.145					
30-35		.145					
35-40		none					
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							
110-120							
	Bottom						

PROPERTY GTO

Hole No. GTO-4 Date Drilled 12-9-70 Col. Elev. _____ Total Depth 120

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80		.105					
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							
110-120							
	Bottom						

PROPERTY GTO-

Hole No. GTO-5 Date Drilled 12-10-70 Col. Elev. _____ Total Depth 120'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							
110-120							
	Bottom						

PROPERTY GTO

Hole No. GTO-6 Date Drilled 12-10-70 Col. Elev. _____ Total Depth 100'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105	Bottom						
105-110							

PROPERTY GTO

Hole No. GTO-7 Date Drilled 12-11-70 Col. Elev. _____ Total Depth 100'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45		.06					
45-50							
50-55							
55-60							
60-65							
65-70		none					
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105	Bottom						
105-110							

PROPERTY GTO

Hole No. GTO-8 Date Drilled 12-11-70 Col. Elev. _____ Total Depth 100

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton
0-5		none		
5-10				
10-15				
15-20				
20-25				
25-30				
30-35				
35-40				
40-45		—		
		.12		
45-50		.35		
		.18		
50-55		.16		
		.315		
55-60		2.35		
		4.98		
60-65		2.41		
		3.05		
65-70		1.90		
		1.96		
70-75		2.44		
		2.60		
75-80		2.45		
		3.77		
80-85		2.30		
		.76		
85-90		—		
90-95		—		
95-100		—		
100-105	Bottom			
105-110				

.25/10'

2.58%/30'

2.00%Cu/40'

PROPERTY GTO

Hole No. GTO-9 Date Drilled 12-14-70 Col. Elev. _____ Total Depth 120

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton
0-5		none		
5-10				
10-15				
15-20				
20-25				
25-30				
30-35				
35-40				
40-45				
45-50				
50-55				
55-60				
60-65				
65-70				
70-75				
75-80				
80-85				
85-90		.29		
90-95		.48		
		2.08		
95-100		1.63		
		2.91		
100-105		5.94		
		1.62		
105-110		2.39		
		2.60		

2.16%/30'

PROPERTY GTO Hole No. GTO-9

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton
110-115		3.88		
		1.80		
115-120		.29		
		.14		
120-125	Bottom			
125-130				
130-135				
135-140				
140-145				
145-150				
150-155				
155-160				
160-165				
165-170				
170-175				
175-180				
180-185				
185-190				
190-195				
195-200				
200-205				
205-210				
210-215				
215-220				
220-225				
225-230				
230-235				

PROPERTY GTO

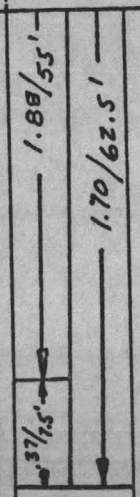
Hole No. GTO-10 Date Drilled 12-16-70 Col. Elev. _____ Total Depth 140'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton
0-5		none		
5-10				
10-15				
15-20				
20-25				
25-30				
30-35				
35-40				
40-45				
45-50				
50-55				
55-60				
60-65				
65-70				
70-75				
75-80		1.02		
80-85		1.37		
		1.51		
85-90		2.65		
		2.86		
90-95		1.86		
		2.47		
95-100		2.64		
		2.55		
100-105		1.74		
		2.54		
105-110		3.84		
		5.48		

PROPERTY GTO Hole No. GTO-10

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton
110-115		2.67		
		1.09		
115-120		.72		
		.68		
120-125		.87		
		.90		
125-130		.80		
		.64		
130-135		.54		
		.07		
135-140		.22		
		.82		
140-145	Bottom			
145-150				
150-155				
155-160				
160-165				
165-170				
170-175				
175-180				
180-185				
185-190				
190-195				
195-200				
200-205				
205-210				
210-215				
215-220				
220-225				
225-230				
230-235				



PROPERTY GTO

Hole No. GTO-11 Date Drilled 12-16-70 Col. Elev. _____ Total Depth 200'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton
0-5		none		
5-10				
10-15				
15-20				
20-25				
25-30				
30-35				
35-40				
40-45				
45-50				
50-55				
55-60				
60-65				
65-70				
70-75				
75-80				
80-85				
85-90				
90-95				
95-100		2.06		
		1.61		
100-105		1.91		
105-110		1.86		
		2.67		
		2.89		

PROPERTY GTO Hole No. GTO-11

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton
110-115		2.37		
		1.08		
115-120		.98		
		1.45		
120-125		5.26		
		3.25		
125-130		3.61		
		.92		
130-135		.85		
		.56		
135-140		.41		
		.42		
140-145		.32		
		.32		
145-150		.32		
		.32		
150-155		.37		
155-160		.37		
		.37		
160-165		.37		
		.37		
165-170		.37		
		.37		
170-175		.17		
		.17		
175-180		.17		
		.17		
180-185		.58		
		.58		
185-190		.58		
		.58		
190-195		.52		
		.52		
195-200		.52		
		.52		
200-205	Bottom			
205-210				
210-215				
215-220				
220-225				
225-230				
230-235				

2.08%/40'

1.28% Cu/105'

.40%/65'

PROPERTY GTO

Hole No. GTO-12 Date Drilled 12-17-70 Col. Elev. _____ Total Depth 80'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton
0-5		—		
5-10		—		
10-15		—		
15-20		—		
		.43		
20-25		.60		
		1.57		
25-30		.90		
		1.56		
30-35		2.18		
		2.49		
35-40		2.27		
		3.20		
40-45		2.20		
		2.98		
45-50		1.64		
		4.18		
50-55		3.42		
		.58		
55-60		.48		
		.03		
60-65		.095		
		.125		
65-70		—		
70-75		—		
75-80		—		
80-85	Bottom			
85-90				
90-95				
95-100				
100-105				
105-110				

1.92% Cu/40'

PROPERTY GTO

Hole No. GTO-13 Date Drilled 12-17-70 Col. Elev. _____ Total Depth 100

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					W. of fault
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105	Bottom						
105-110							

PROPERTY GTO

Hole No. GTO-14 Date Drilled 12-17-70 Col. Elev. _____ Total Depth 100

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					W. of fault
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105	Bottom						
105-110							

PROPERTY GTO

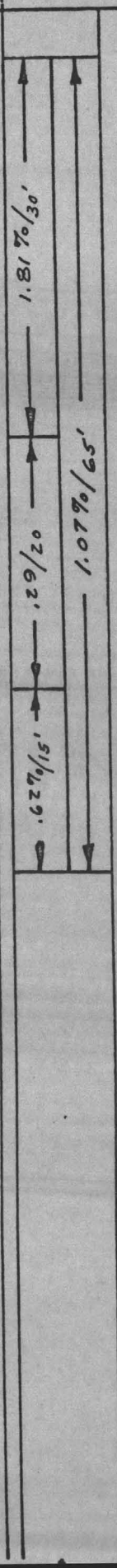
Hole No. GTO-15 Date Drilled 12-18-70 Col. Elev. _____ Total Depth 200'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY GTO Hole No. GTO-15

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton
110-115		—		
115-120		2.615		
		2.64		
120-125		2.20		
		1.15		
125-130		1.35		
		1.95		
130-135		2.04		
		5.00		
135-140		2.32		
		1.00		
140-145		.84		
		.67		
145-150		.255		
		.33		
150-155		.24		
		.23		
155-160		.20		
		.26		
160-165		.45		
		.36		
165-170		.58		
		.72		
170-175		.73		
		.89		
175-180		.31		
		.49		
180-185		—		
185-190		—		
190-195		—		
195-200		—		
200-205				
205-210				
210-215				
215-220				
220-225				
225-230				
230-235				



PROPERTY GTO

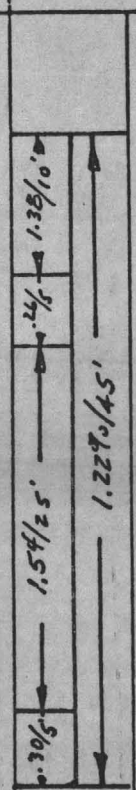
Hole No. GTO-16 Date Drilled 12-18-70 Col. Elev. _____ Total Depth 180'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80		.05					
80-85							
85-90							
90-95							
95-100							
100-105		.09					
105-110		.09					

PROPERTY GTO Hole No. GTO-16

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton
110-115		.09		
		.09		
115-120		.09		
		1.29		
120-125		1.76		
		1.44		
125-130		*1.00		
		.40		
130-135		.11		
		1.03		
135-140		1.74		
		1.48		
140-145		2.10		
		2.22		
145-150		1.98		
		2.20		
150-155		.70		
		.42		
155-160		1.48		
		.38		
160-165		.21		
		.11		
165-170		.12		
		.14		
170-175		.37		
	?	.37		
175-180		.37		
180-185	Bottom			
185-190				
190-195				
195-200				
200-205				
205-210				
210-215				
215-220				
220-225				
225-230				
230-235				



* sample missing - assume average

PROPERTY GTO

Hole No. GTO-17 Date Drilled 12-21-70 Col. Elev. _____ Total Depth 260

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY GTO Hole No. GTO-17

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton
110-115		none		
115-120				
120-125				
125-130				
130-135				
135-140				
140-145				
145-150				
150-155				
155-160				
160-165				
165-170				
170-175				
175-180				
180-185				
185-190		.31		
		.91		
190-195		1.32		
		1.82		
195-200		1.07		
		.95		
200-205		1.13		
		1.73		
205-210		1.02		
		1.16		
210-215		1.38		
		1.80		
215-220		1.13		
		1.63		
220-225		.87		
		.31		
225-230		.17		
		.15		
230-235		.18		
		.24		

1.14%/40'

PROPERTY GTO Hole No. GTO-17

Depth	Elev.	%cu total	%cu acid sol.	Ag oz/ton			
235-240			—				
240-245			—				
245-250			—				
250-255			—				
255-260			—				
260-265	Bottom						
265-270							
270-275							
275-280							
280-285							
285-290							
290-295							
295-300							
300-305							
305-310							
310-315							
315-320							
320-325							
325-330							
330-335							
335-340							
340-345							
345-350							
350-355							
355-360							

PROPERTY GTO

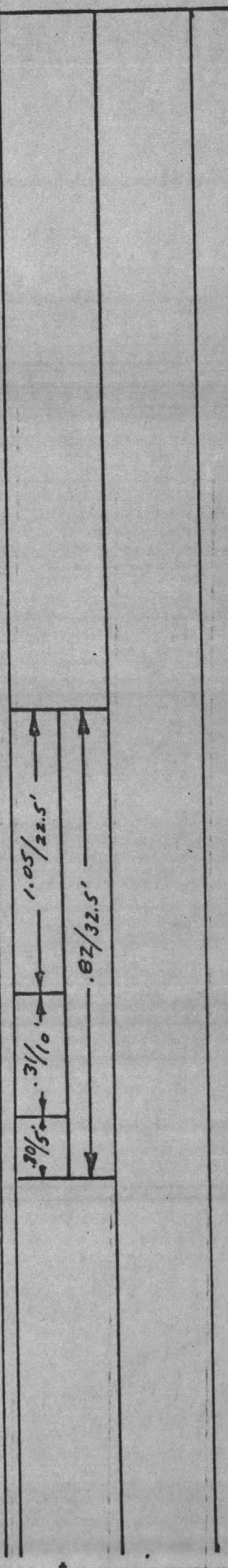
Hole No. GTO-18 Date Drilled 12-28-71 Col. Elev. _____ Total Depth 260'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY GTO Hole No. GTO - 18

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton
110-115		none		
115-120				
120-125				
125-130				
130-135				
135-140				
140-145				
145-150				
150-155				
155-160				
160-165				
165-170		1.235		
170-175		1.270		
		1.060		
175-180		2.300		
		1.165		
180-185		.305		
		.330		
185-190		1.065		
		.680		
190-195		.295		
		.175		
195-200		.410		
		.355		
200-205		1.145		
		.460		
205-210		.175		
210-215		—		
215-220		—		
220-225		—		
225-230		—		
230-235		—		



PROPERTY SENTINEL

Hole No. Z-4 Date Drilled _____ Col. Elev. _____ Total Depth 60'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton
0-5		.129		
5-10		.474		
10-15		.314		
15-20		.567		
20-25		.206		
25-30		.242		
30-35		.649		
35-40		.314		
40-45		.031		
45-50		.02		
50-55		Tr.		
55-60		Tr.		
60-65	Bottom			
65-70				
70-75				
75-80				
80-85				
85-90				
90-95				
95-100				
100-105				
105-110				

0.40% Cu/35'

PROPERTY SENTINEL

Hole No. Z-5 Date Drilled _____ Col. Elev. _____ Total Depth 30'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton
0-5		.422		
5-10		.927		
10-15		1.226		
15-20		.371		
20-25		.072		
25-30		.01		
30-35	Bottom			
35-40				
40-45				
45-50				
50-55				
55-60				
60-65				
65-70				
70-75				
75-80				
80-85				
85-90				
90-95				
95-100				
100-105				
105-110				

0.736% Cu/20'

PROPERTY SENTINEL

Hole No. Z-6 Date Drilled _____ Col. Elev. _____ Total Depth 75'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton
0-5		.309		
5-10		.268		
10-15		.124		
15-20		.072		
20-25		.052		
25-30		.02		
30-35		.02		
35-40		.01		
40-45		.01		
45-50		.01		
50-55		tr.		
55-60		Tr.		
60-65		.02		
65-70		.02		
70-75		.062		
75-80	Bottom			
80-85				
85-90				
90-95				
95-100				
100-105				
105-110				

PROPERTY SENTINEL

Hole No. Z-7 Date Drilled _____ Col. Elev. _____ Total Depth 20'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		.123					
5-10		.062					
10-15		.052					
15-20		.072					
20-25	Bottom						
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY SENTINEL

Hole No. Z-8 Date Drilled _____ Col. Elev. _____ Total Depth 35'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		.072					
5-10		.072					
10-15		.062					
15-20		.041					
20-25		.02					
25-30		.041					
30-35		.062					
35-40	Bottom						
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY SENTINEL

Hole No. Z-9 Date Drilled _____ Col. Elev. _____ Total Depth 25'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		.144					
5-10		.124					
10-15		.165					
15-20		.227					
20-25		.052					
25-30	Bottom						
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY SENTINEL

Hole No. Z-10 Date Drilled _____ Col. Elev. _____ Total Depth 60'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		.433					
5-10		.185					
10-15		.082					
15-20		.052					
20-25		.062					
25-30		.052					
30-35		.031					
35-40		.031					
40-45		.01					
45-50		.01					
50-55		.01					
55-60		.01					
60-65	Bottom						
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY SENTINEL

Hole No. Z-11 Date Drilled _____ Col. Elev. _____ Total Depth 20'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton	
0-5		.474			0.30 % Cu / 15'
5-10		.258			
10-15		.258			
15-20		.133			
20-25	Bottom				
25-30					
30-35					
35-40					
40-45					
45-50					
50-55					
55-60					
60-65					
65-70					
70-75					
75-80					
80-85					
85-90					
90-95					
95-100					
100-105					
105-110					

PROPERTY SENTINEL

Hole No. Z-12 Date Drilled _____ Col. Elev. _____ Total Depth 45

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton
0-5		.155		
5-10		.072		
10-15		.309		
15-20		.206		
20-25		.031		
25-30		.026		
30-35		.041		
35-40		.031		
40-45		.026		
45-50	Bottom			
50-55				
55-60				
60-65				
65-70				
70-75				
75-80				
80-85				
85-90				
90-95				
95-100				
100-105				
105-110				

PROPERTY SENTINEL

Hole No. Z-13 Date Drilled _____ Col. Elev. _____ Total Depth 40

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		.052					
5-10		.052					
10-15		.02					
15-20		.01					
20-25		.01					
25-30		.01					
30-35		.01					
35-40		.036					
40-45	Bottom						
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY GTO Hole No. GTO - 18

Depth	Elev.	%cu total	%cu acid sol.	Ag oz/ton			
235-240		—					
240-245		—					
245-250		—					
250-255		—					
255-260		—					
260-265	Bottom						
265-270							
270-275							
275-280							
280-285							
285-290							
290-295							
295-300							
300-305							
305-310							
310-315							
315-320							
320-325							
325-330							
330-335							
335-340							
340-345							
345-350							
350-355							
355-360							

PROPERTY GTO

Hole No. GTO-19 Date Drilled 12-22-70 Col. Elev. _____ Total Depth 220

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY _____ Hole No. _____

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton
110-115				
115-120				
120-125				
125-130				
130-135				
135-140				
140-145				
145-150				
150-155				
155-160		—		
160-165		.540 .775		
165-170		4.000 1.035		
170-175		1.755 .595		
175-180		1.575 .090		
180-185		.165 .245		
185-190		.315 —		
190-195		—		
195-200		—		
200-205		—		
205-210		—		
210-215		—		
215-220		—		
220-225	Bottom			
225-230				
230-235				

1.47%/17.5'

1.01%/27.5'

.20/10'

PROPERTY

Hole No. CTO-20 Date Drilled 12-22-71 Col. Elev. _____ Total Depth 180

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY GTO Hole No. GTO-20

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton
110-115		—		
115-120		—		
120-125		—		
125-130		.460		
		1.230		
130-135		1.070		
		.830		
135-140		1.060		
		3.350		
140-145		2.265		
		1.300		
145-150		1.330		
		.340		
150-155		.180		
		.160		
155-160		.330		
160-165		—		
165-170		—		
170-175		—		
175-180		—		
180-185	Bottom			
185-190				
190-195				
195-200				
200-205				
205-210				
210-215				
215-220				
220-225				
225-230				
230-235				

1.45%/22.5'

1.07%/32.5'

.25/10'

PROPERTY GTO

Hole No. GTO-21 Date Drilled 12-24-70 Col. Elev. _____ Total Depth 120

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton
0-5		—		
5-10		—		
10-15		—		
15-20		—		
20-25		—		
25-30		—		
30-35		—		
35-40		—		
40-45		—		
45-50		—		
50-55		—		
55-60		—		
60-65		.780		
		1.520		
65-70		1.315		
		1.750		
70-75		1.520		
		2.540		
75-80		3.750		
		2.840		
80-85		2.845		
		2.880		
85-90		.950		
		2.520		
90-95		1.170		
		.910		
95-100		.680		
		.100		
100-105		.180		
105-110		—		

1.86%/42.5'

PROPERTY GTO Hole No. GTO-21

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton			
110-115		—					
115-120		—					
120-125	Bottom						
125-130							
130-135							
135-140							
140-145							
145-150							
150-155							
155-160							
160-165							
165-170							
170-175							
175-180							
180-185							
185-190							
190-195							
195-200							
200-205							
205-210							
210-215							
215-220							
220-225							
225-230							
230-235							

PROPERTY GTO

Hole No. GTO-22 Date Drilled _____ Col. Elev. _____ Total Depth 200'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY GTO Hole No. GTO-22

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton			
110-115		none					
115-120							
120-125							
125-130							
130-135							
135-140							
140-145							
145-150							
150-155							
155-160							
160-165							
165-170							
170-175							
175-180							
180-185							
185-190							
190-195							
195-200							
200-205	Bottom						
205-210							
210-215							
215-220							
220-225							
225-230							
230-235							

PROPERTY GTO

Hole No. GTO-24 Date Drilled 3-9-71 Col. Elev. _____ Total Depth 280'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY GTO Hole No. GTO-24

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton			
110-115		none					
115-120							
120-125							
125-130							
130-135							
135-140							
140-145							
145-150							
150-155							
155-160							
160-165							
165-170							
170-175							
175-180							
180-185							
185-190							
190-195							
195-200							
200-205							
205-210							
210-215							
215-220							
220-225							
225-230							
230-235							

PROPERTY GTO Hole No. GTO- 24

Depth	Elev.	%cu total	%cu acid sol.	Ag oz/ton
235-240		—		
240-245		.295		
245-250		.535		
250-255		.690		
255-260		1.150		
260-265		1.350		
265-270		.215		
270-275		.160		
275-280		.075		
280-285	Bottom			
285-290				
290-295				
295-300				
300-305				
305-310				
310-315				
315-320				
320-325				
325-330				
330-335				
335-340				
340-345				
345-350				
350-355				
355-360				

.71%/30'

PROPERTY GTO

Hole No. GTO-25 Date Drilled 3-9-71 Col. Elev. _____ Total Depth 3

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

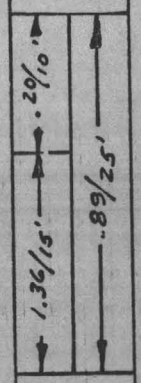
PROPERTY GTO Hole No. GTO-25

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton			
110-115		none					
115-120							
120-125							
125-130							
130-135							
135-140							
140-145							
145-150							
150-155							
155-160							
160-165							
165-170							
170-175							
175-180							
180-185							
185-190							
190-195							
195-200							
200-205							
205-210							
210-215							
215-220							
220-225							
225-230							
230-235							

PROPERTY GTO

Hole No. GTO-25

Depth	Elev.	%cu total	%cu acid sol.	Ag oz/ton
235-240		—		
240-245		—		
245-250		—		
250-255		.045		
255-260		.325		
260-265		.065		
265-270		1.53		
270-275		1.375		
275-280		1.175		
280-285		.06		
285-290		.01		
290-295		.04		
295-300		.015		
300-305		—		
305-310		—		
310-315		—		
315-320		—		
320-325	Bottom			
325-330				
330-335				
335-340				
340-345				
345-350				
350-355				
355-360				



PROPERTY GTO

Hole No. GTO-26 Date Drilled 3-10-71 Col. Elev. _____ Total Depth _____

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY GTO Hole No. GTO-26

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton			
110-115		none					
115-120							
120-125							
125-130							
130-135							
135-140							
140-145							
145-150							
150-155							
155-160							
160-165							
165-170							
170-175							
175-180							
180-185							
185-190							
190-195							
195-200							
200-205							
205-210							
210-215							
215-220							
220-225							
225-230							
230-235							

PROPERTY GTO Hole No. GTO-26

Depth	Elev.	%cu total	%cu acid sol.	Ag oz/ton
235-240		—		
240-245		—		
245-250		—		
250-255		—		
255-260		—		
260-265		—		
265-270		.01		
270-275		.05		
275-280		.02		
280-285		.65		
285-290		1.20		
290-295		.15		
295-300		.05		
300-305		1.55		
305-310		.54		
310-315		.11		
315-320		.05		
320-325	Bottom			
325-330				
330-335				
335-340				
340-345				
345-350				
350-355				
355-360				

PROPERTY GTO

Hole No. GTO-27 Date Drilled 3-11-71 Col. Elev. _____ Total Depth 320'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY GTO Hole No. GTO-27

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton			
110-115		none					
115-120							
120-125							
125-130							
130-135							
135-140							
140-145							
145-150							
150-155							
155-160							
160-165							
165-170							
170-175							
175-180							
180-185							
185-190							
190-195							
195-200							
200-205							
205-210							
210-215							
215-220							
220-225							
225-230							
230-235							

PROPERTY GTO Hole No. GTO-27

Depth	Elev.	%cu total	%cu acid sol.	Ag oz/ton			
235-240		—					
240-245		—					
245-250		—					
250-255		.01					
255-260		.01					
260-265		—					
265-270		—					
270-275		—					
275-280		—					
280-285		.02					
285-290		—					
290-295		—					
295-300		—					
300-305		—					
305-310		—					
310-315		—					
315-320		.015					
320-325	Bottom						
325-330							
330-335							
335-340							
340-345							
345-350							
350-355							
355-360							

PROPERTY GTO

Hole No. GTO-28 Date Drilled 3-12-71 Col. Elev. _____ Total Depth 280

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY GTO Hole No. GTO-28

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton
110-115		none		
115-120				
120-125				
125-130				
130-135				
135-140				
140-145				
145-150				
150-155				
155-160				
160-165				
165-170				
170-175				
175-180				
180-185				
185-190				
190-195		.035		
195-200		.15		
200-205		.54		
205-210		.525		
210-215		.18		
215-220		.19		
220-225		1.315		
225-230		.42		
230-235		.255		

.53%/10'

.19%/10'

.66%/15'

.49%/35'

PROPERTY GTO Hole No. GTO-28

Depth	Elev.	%cu total	%cu acid sol.	Ag oz/ton			
235-240		.04					
240-245		.05					
245-250		—					
250-255		—					
255-260		Tr.					
260-265		Tr.					
265-270		Tr.					
270-275		—					
275-280		—					
280-285	Bottom						
285-290							
290-295							
295-300							
300-305							
305-310							
310-315							
315-320							
320-325							
325-330							
330-335							
335-340							
340-345							
345-350							
350-355							
355-360							

PROPERTY GTO

Hole No. GTO-29 Date Drilled 3-13-71 Col. Elev. _____ Total Depth 200

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton	
0-5		none			
5-10					
10-15					
15-20					
20-25					
25-30					
30-35					
35-40					
40-45					
45-50					
50-55					
55-60					
60-65					
65-70					
70-75					
75-80					
80-85					
85-90					
90-95		1.615			
95-100		2.235			
100-105		1.180			1.34%/35'
105-110		2.020			

PROPERTY GTO Hole No. GTO-29

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton
110-115		1.160		
115-120		.650		
120-125		.525		
125-130		.420		
130-135		.180		
135-140		.250		
140-145		.390		
145-150		.365		
150-155		.380		
155-160		.230		
160-165		.255		
165-170		.110		
170-175		.635		
175-180		.660		
180-185		1.020		
185-190		tr		
190-195		—		
195-200		—		
200-205	Bottom			
205-210				
210-215				
215-220				
220-225				
225-230				
230-235				

PROPERTY GTO

Hole No. GTO-30 Date Drilled 3-15-71 Col. Elev. _____ Total Depth 180'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton
0-5		none		
5-10				
10-15				
15-20				
20-25				
25-30				
30-35				
35-40				
40-45				
45-50				
50-55				
55-60				
60-65				
65-70				
70-75				
75-80				
80-85				
85-90				
90-95				
95-100		.674		
100-105		.434		
105-110		1.922		

PROPERTY GTO Hole No. GTO-30

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton
110-115		2.049		
115-120		1.948		
120-125		2.024		
125-130		4.528		
130-135		1.290		
135-140		.365		
140-145		.308		
145-150		.693		
150-155		.604		
155-160		.333		
160-165		1.089		
165-170		.693		
170-175		—		
175-180		—		
180-185	Bottom			
185-190				
190-195				
195-200				
200-205				
205-210				
210-215				
215-220				
220-225				
225-230				
230-235				

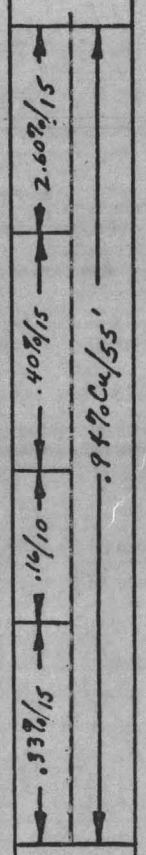
1.26%/75'

PROPERTY GTO

Hole No. GTO-31 Date Drilled 3-19-71 Col. Elev. _____ Total Depth 210'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton
0-5		—		
5-10		—		
10-15		—		
15-20		2.302		
20-25		2.403		
25-30		3.086		
30-35		.352		
35-40		.497		
40-45		.365		
45-50		.132		
50-55		.195		
55-60		.441		
60-65		.321		
65-70		.214		
70-75		—		
75-80		Tr		
80-85		—		
85-90		—		
90-95		—		
95-100		—		
100-105		.107		
105-110		.088		



PROPERTY GTO Hole No. GTO-31

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton
110-115		.069		
115-120		.144		
120-125		.107		
125-130		—		
130-135		—		
135-140		—		
140-145		.100		
145-150		.081		
150-155		.182		
155-160		.270		
160-165		.100		
165-170		.207		
170-175		.800		
175-180		.472		
180-185		.214		
185-190		.081		
190-195		—		
195-200		—		
200-205		—		
205-210		—		
210-215	Bottom			
215-220				
220-225				
225-230				
230-235				

.34%/30'

PROPERTY GTO

Hole No. GTO - 32 Date Drilled _____ Col. Elev. _____ Total Depth 140'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							Lost circulation at 80' - no returns to bottom of hole at 140'.
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY GTO

Hole No. GTO-33 Date Drilled 3-20-71 Col. Elev. _____ Total Depth _____

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY GTO Hole No. GTO-33

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton			
110-115		—					
115-120		—					
120-125		—					
125-130		.08					
130-135		.065					
135-140		.04					
140-145		.15					
145-150		.03					
150-155		.02					
155-160		.015					
160-165		—					
165-170		.015					
170-175		.025					
175-180		.045					
180-185		.016					
185-190		.085					
190-195		.06					
195-200		.02					
200-205	Bottom						
205-210							
210-215							
215-220							
220-225							
225-230							
230-235							

PROPERTY GTO

Hole No. GTO-34 Date Drilled 3-21-71 Col. Elev. _____ Total Depth 300'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY GTO Hole No. GTO-34

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton			
110-115		none					
115-120							
120-125							
125-130							
130-135							
135-140							
140-145							
145-150							
150-155							
155-160							
160-165							
165-170							
170-175							
175-180							
180-185							
185-190							
190-195							
195-200							
200-205							
205-210							
210-215							
215-220							
220-225							
225-230							
230-235		.056					

PROPERTY GTO Hole No. GTO-34

Depth	Elev.	%cu total	%cu acid sol.	Ag oz/ton
235-240		.012		
240-245		.025		
245-250		.025		
250-255		.056		
255-260		.535		
260-265		1.001		
265-270		.340		
270-275		.239		
275-280		.730		
280-285		.025		
285-290		.006		
290-295		—		
295-300		.006		
	Bottom			
300-305				
305-310				
310-315				
315-320				
320-325				
325-330				
330-335				
335-340				
340-345				
345-350				
350-355				
355-360				

.57%/25'

PROPERTY GTO

Hole No. GTO-35 Date Drilled _____ Col. Elev. _____ Total Depth 320'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY GTO Hole No. GTO-35

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton			
110-115		none					
115-120							
120-125							
125-130							
130-135							
135-140							
140-145							
145-150							
150-155							
155-160							
160-165							
165-170							
170-175							
175-180							
180-185							
185-190							
190-195							
195-200							
200-205							
205-210							
210-215							
215-220							
220-225							
225-230							
230-235							

PROPERTY GTO

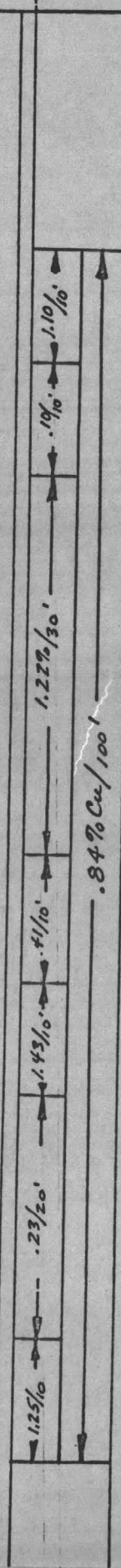
Hole No. GTO-38 Date Drilled 3-17-71 Col. Elev. _____ Total Depth 240

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY GTO Hole No. GTO-38

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton
110-115		—		
115-120		—		
120-125		—		
125-130		—		
130-135		.960		
135-140		1.235		
140-145		—		
145-150		.190		
150-155		2.435		
155-160		2.125		
160-165		.740		
165-170		.200		
170-175		.910		
175-180		.880		
180-185		.370		
185-190		.440		
190-195		.905		
195-200		1.950		
200-205		.420		
205-210		.075		
210-215		.125		
215-220		.280		
220-225		1.220		
225-230		1.275		
230-235		.175		
235-240		.050		
	Bottom			



PROPERTY GTO Hole No. GTO-35

Depth	Elev.	%cu total	%cu acid sol.	Ag oz/ton
235-240		—		
240-245		—		
245-250		—		
250-255		—		
255-260		—		
260-265		.006		
265-270		—		
270-275		—		
275-280		—		
280-285		.075		
285-290		.459		
290-295		.409		
295-300		.529		
300-305		.069		
305-310		.006		
310-315		.012		
315-320		.006		
320-325				
325-330				
330-335				
335-340				
340-345				
345-350				
350-355				
355-360				

.47%/15'

PROPERTY GTO

Hole No. GTO-39 Date Drilled _____ Col. Elev. _____ Total Depth 205'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY GTO Hole No. GTO-39

Depth	Elev.	% Cu total	% Cu acid sol	Ag oz/ton
110-115		none		
115-120				
120-125				
125-130				
130-135				
135-140				
140-145				
145-150				
150-155		.03		
155-160		.02		
160-165		—		
165-170		—		
170-175		.03		
175-180		.785		
180-185		.76		
185-190		.64		
190-195		.94		
195-200		1.64		
200-205		4.69		
	Bottom			
205-210				
210-215				
215-220				
220-225				
225-230				
230-235				

1.58% Cu/50'

Estimate 1.0% Cu/100'

Lost hole at 205' – Estimate based on surrounding hole

PROPERTY GTO Hole No. GTO-39

Depth	Elev.	%cu total	%cu acid sol.	Ag oz/ton
235-240				
240-245				
245-250				
250-255				
255-260				
260-265				
265-270				
270-275				
275-280				
280-285				
285-290				
290-295				
295-300				
300-305				
305-310				
310-315				
315-320				
320-325				
325-330				
330-335				
335-340				
340-345				
345-350				
350-355				
355-360				

PROPERTY GTO

Hole No. GTO-40 Date Drilled 3-18-71 Col. Elev. _____ Total Depth 300

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

PROPERTY GTO

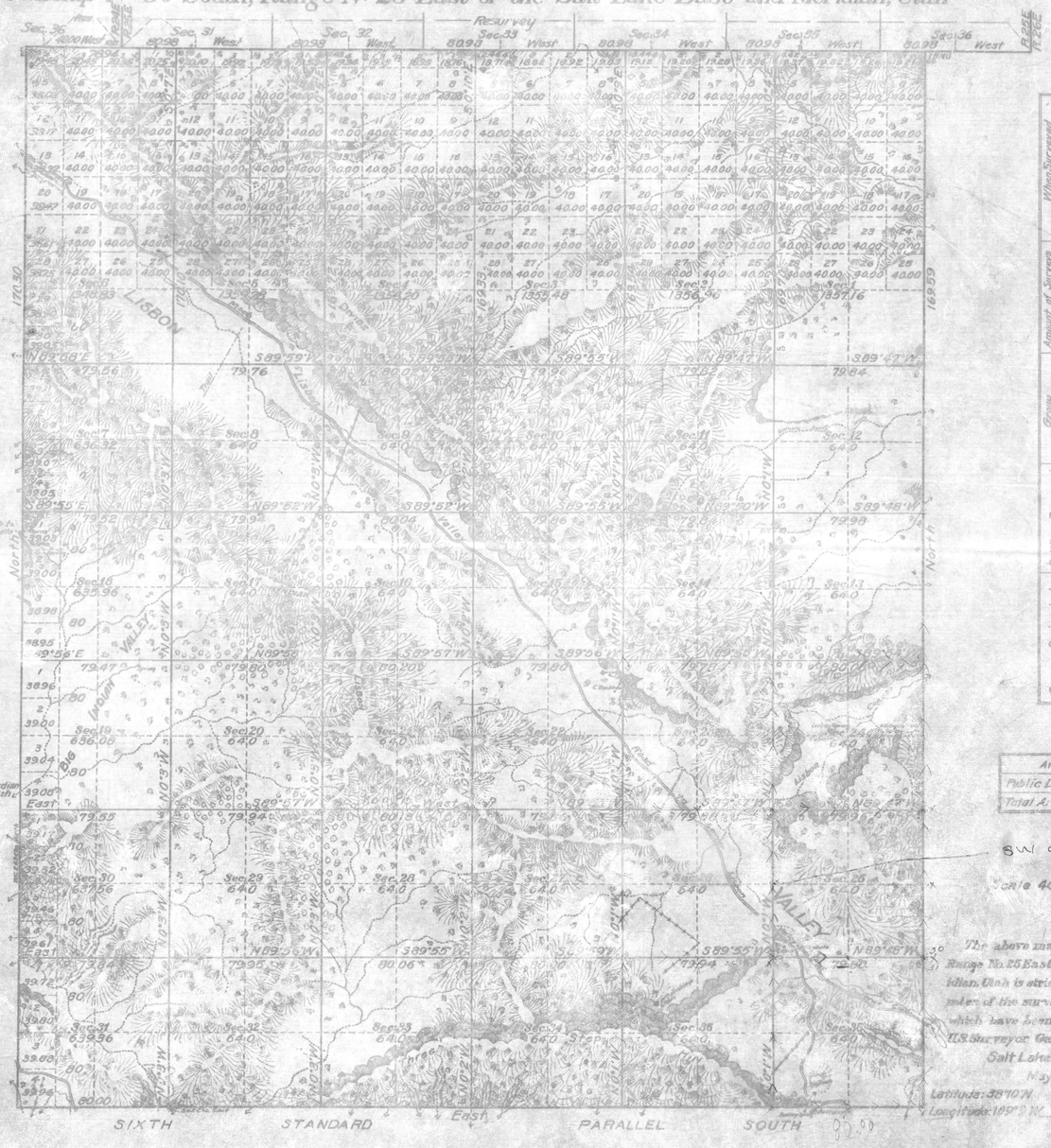
Hole No. GTO-42 Date Drilled 3-21-71 Col. Elev. _____ Total Depth 220'

Coordinates _____ N S _____ E W

Depth	Elev.	% Cu total	% Cu acid sol.	Ag oz/ton			
0-5		none					
5-10							
10-15							
15-20							
20-25							
25-30							
30-35							
35-40							
40-45							
45-50							
50-55							
55-60							
60-65							
65-70							
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							

Township No. 30 South, Range No. 25 East of the Salt Lake Base and Meridian, Utah

Survey accepted Jan. 29, 1918, G.L.O.



Surveys Designated by Solid Lines	Group		Amount of Surveys		When Surveyed	
	When Surveyed		Mls.	Chs.	Lks.	Begun	Completed
Township Lines	N.T. 53	Feb. 3, 1915	65	44	62	July 22, 1916	Sept. 8, 1916
Correction Lines				24	35	July 26, 1916	Aug. 22, 1916
Sixth Street Part South				00	00	Sept. 20, 1916	Aug. 2, 1916
East Boundary			6	7	59	Aug. 4, 1916	Aug. 22, 1916
West Boundary			7	10	30	July 24, 1916	July 26, 1916
Resurvey North Boundary			6	45	88	July 25, 1916	Sept. 9, 1916

Areas in Acres	
Public Land	27,319.19
Total Area	27,319.19

S.W. COR TO ¼ C OR N 0°-18' W

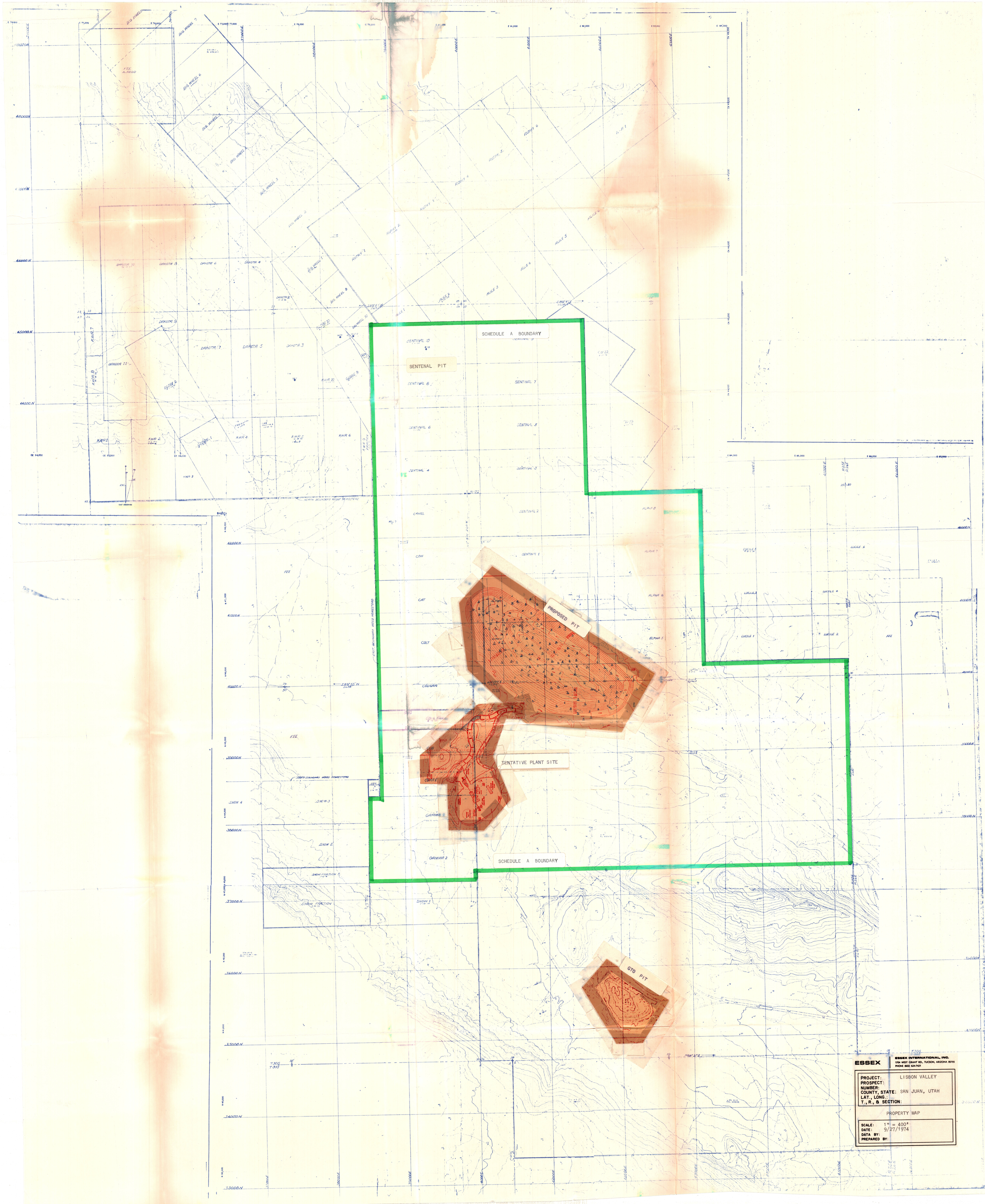
Scale 40 Chains to an Inch

The above map of Township No. 30 South, Range No. 25 East of the Salt Lake Base and Meridian, Utah is strictly conformable to the field notes of the survey thereof on file in this office, which have been examined and approved.

U.S. Surveyor General's Office
Salt Lake City, Utah
May 8, 1917

Latitude: 38°10' N.
Longitude: 109°7' W.

Surveyor General.


SCHEDULE A BOUNDARY
SENTENAL PIT
PROPOSED PIT
TENTATIVE PLANT SITE
SCHEDULE A BOUNDARY
GTO PIT
ESSEX
ESSEX INTERNATIONAL, INC.
1704 WEST GRANT RD., TUCSON, ARIZONA 85705
PHONE (602) 624-7421
PROJECT: LISBON VALLEY
PROSPECT:
NUMBER:
COUNTY, STATE: SAN JUAN, UTAH
LAT., LONG.:
T., R., & SECTION:
PROPERTY MAP
SCALE: 1" = 400'
DATE: 9/27/1974
DATA BY:
PREPARED BY: