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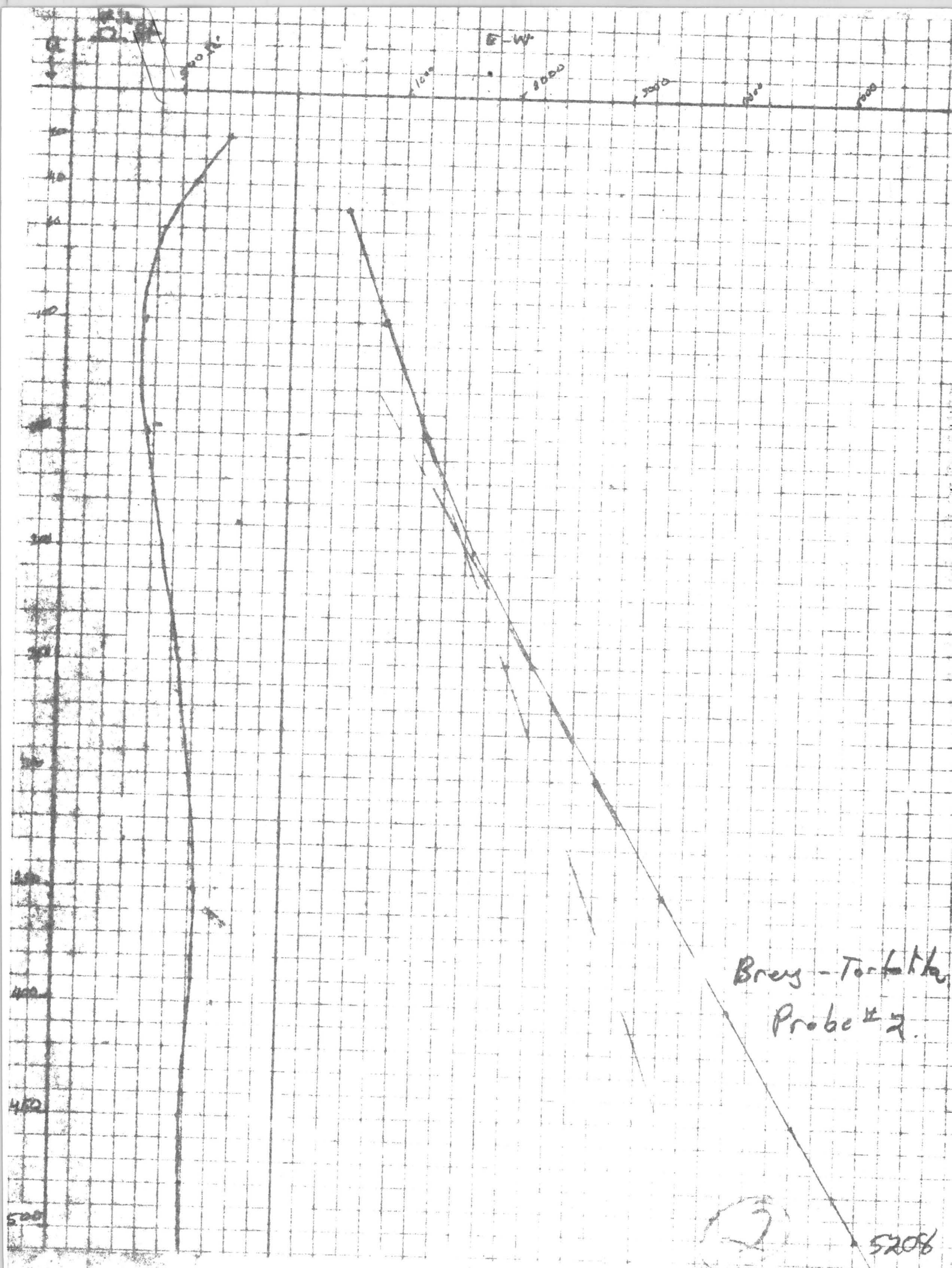
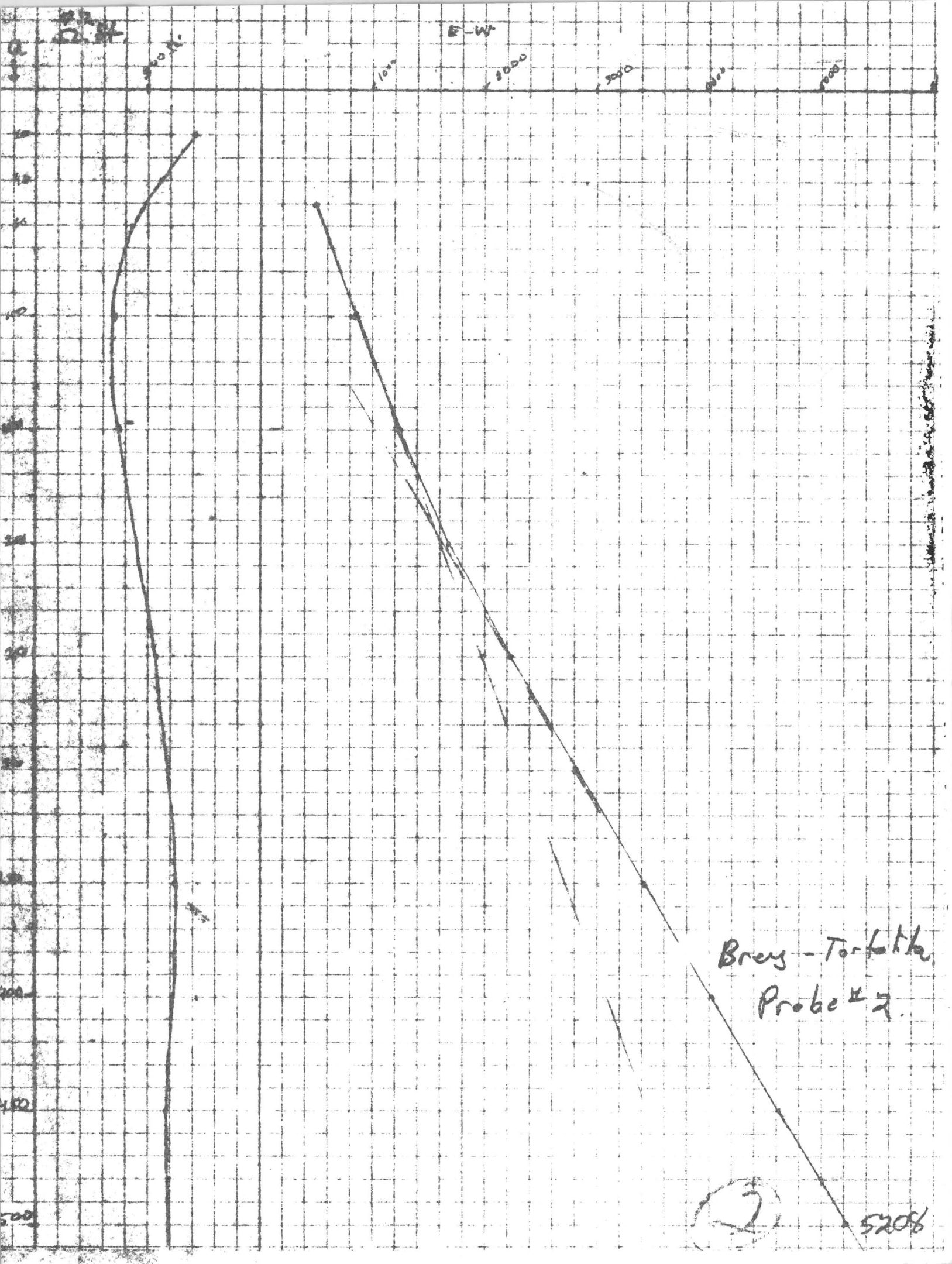
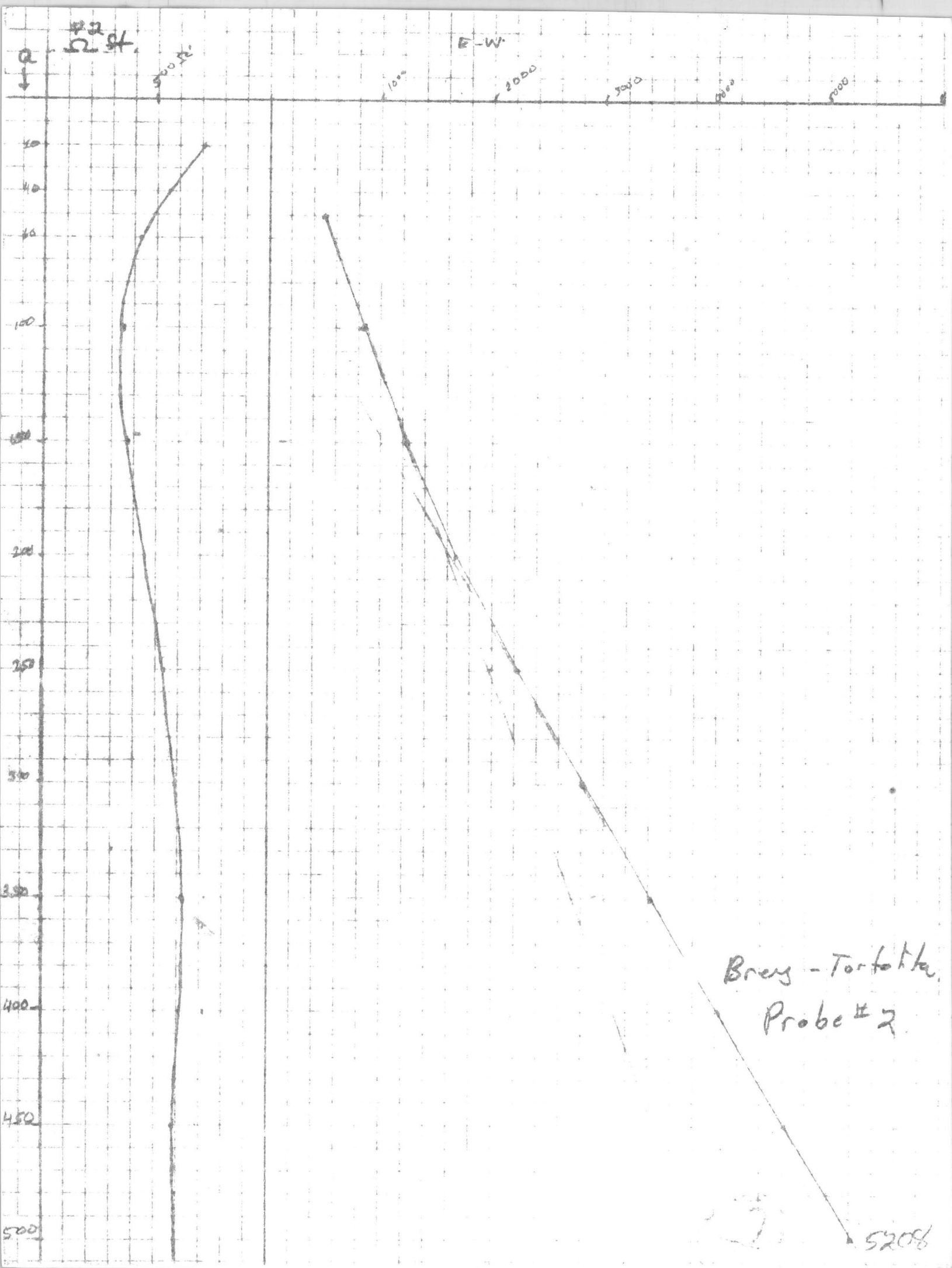
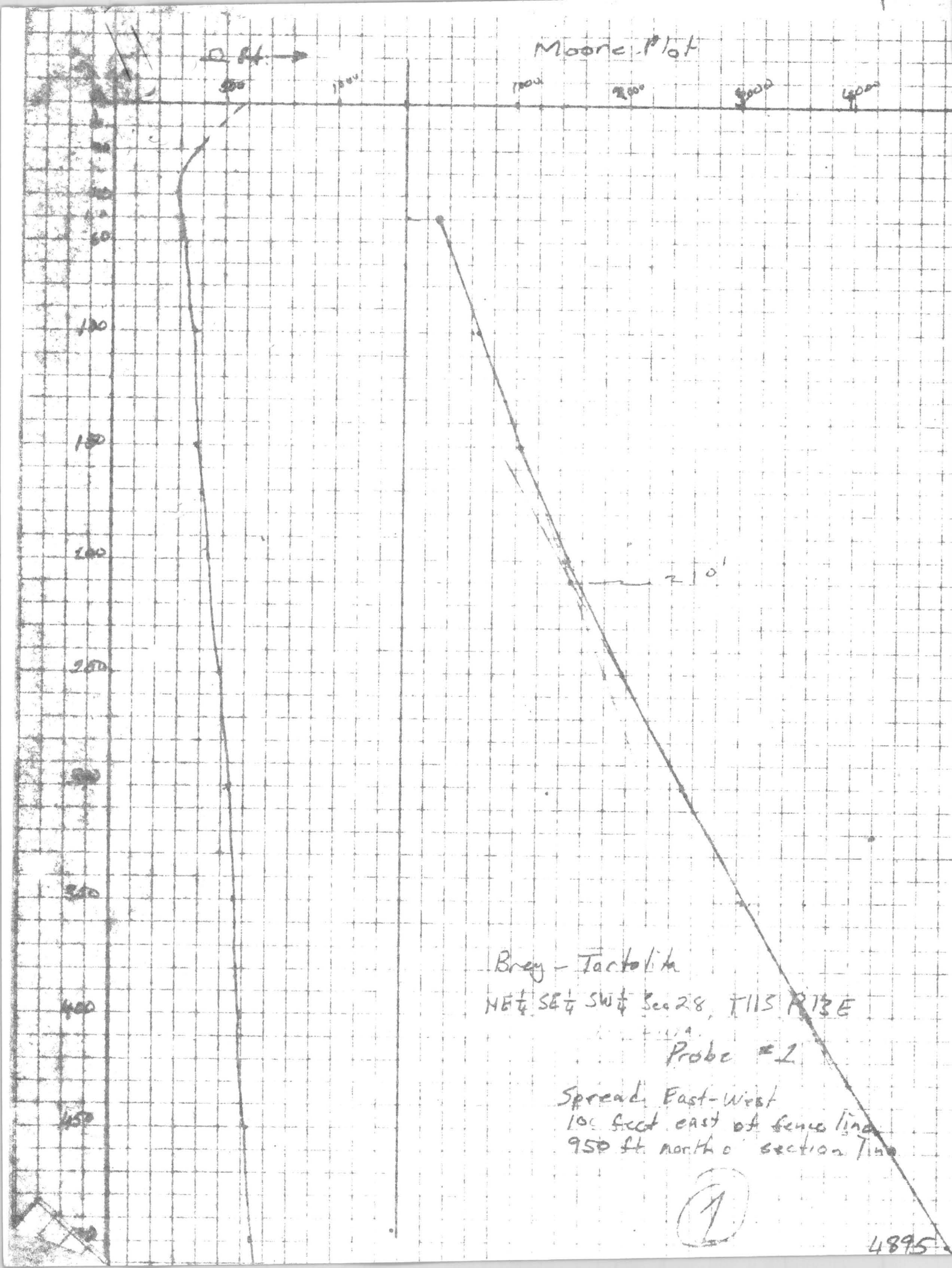
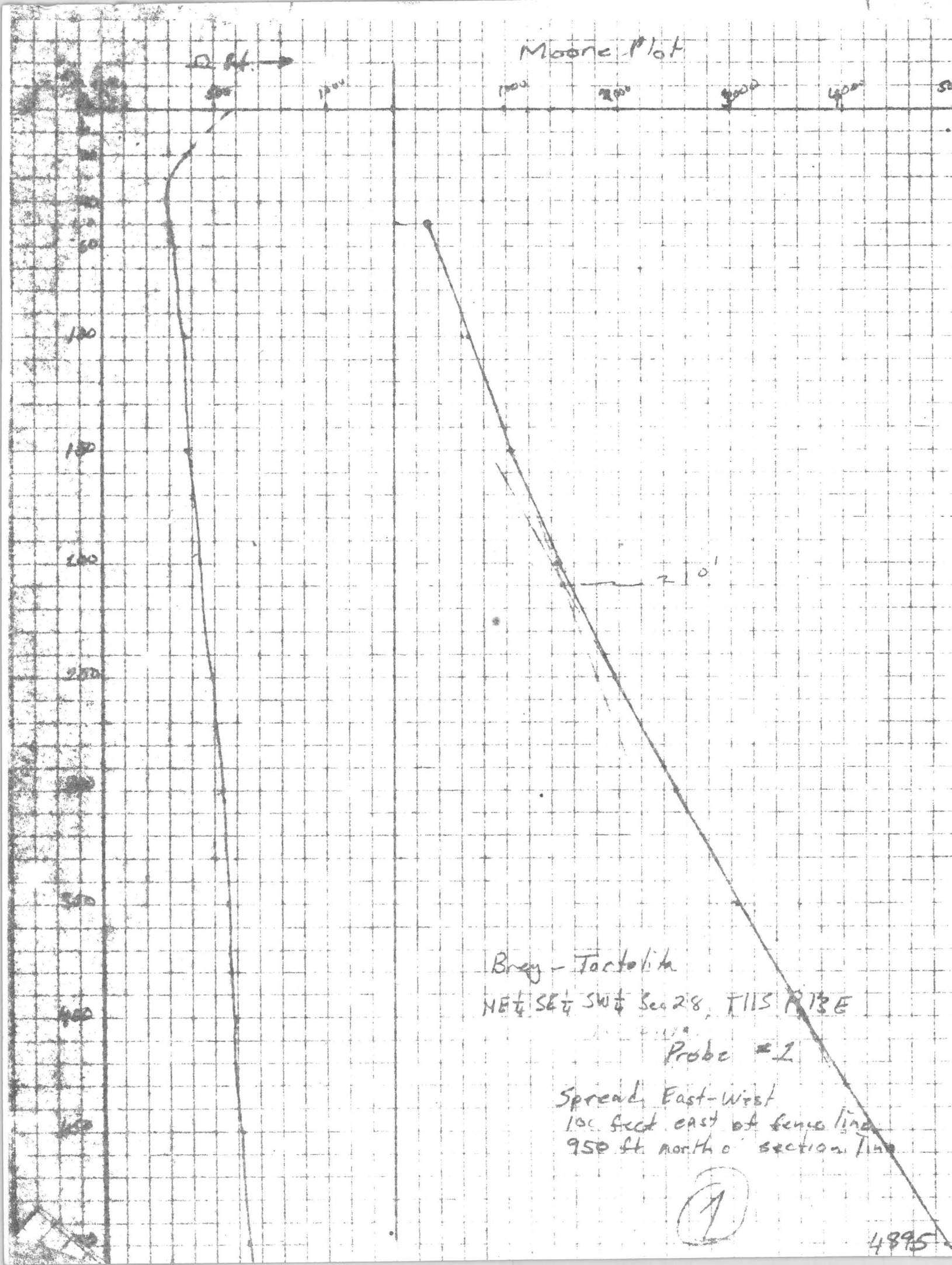

E-W
1000
2000
3000
4000
5000
40
100
400
450
500
Brey - Tortolita
Probe # 2.
5208

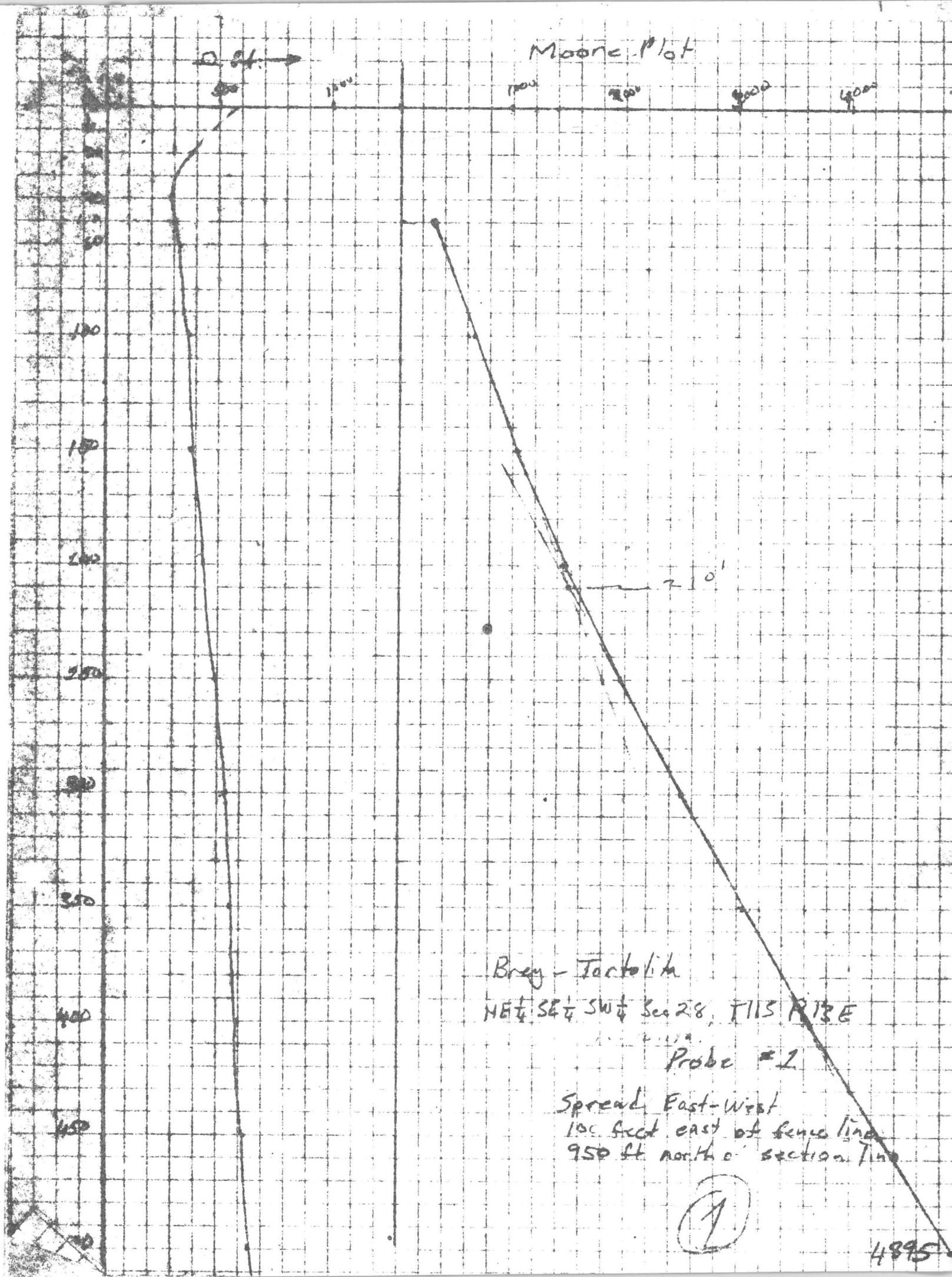

E-W
1000
2000
3000
5208
Brey - Tortolita
Probe # 2.

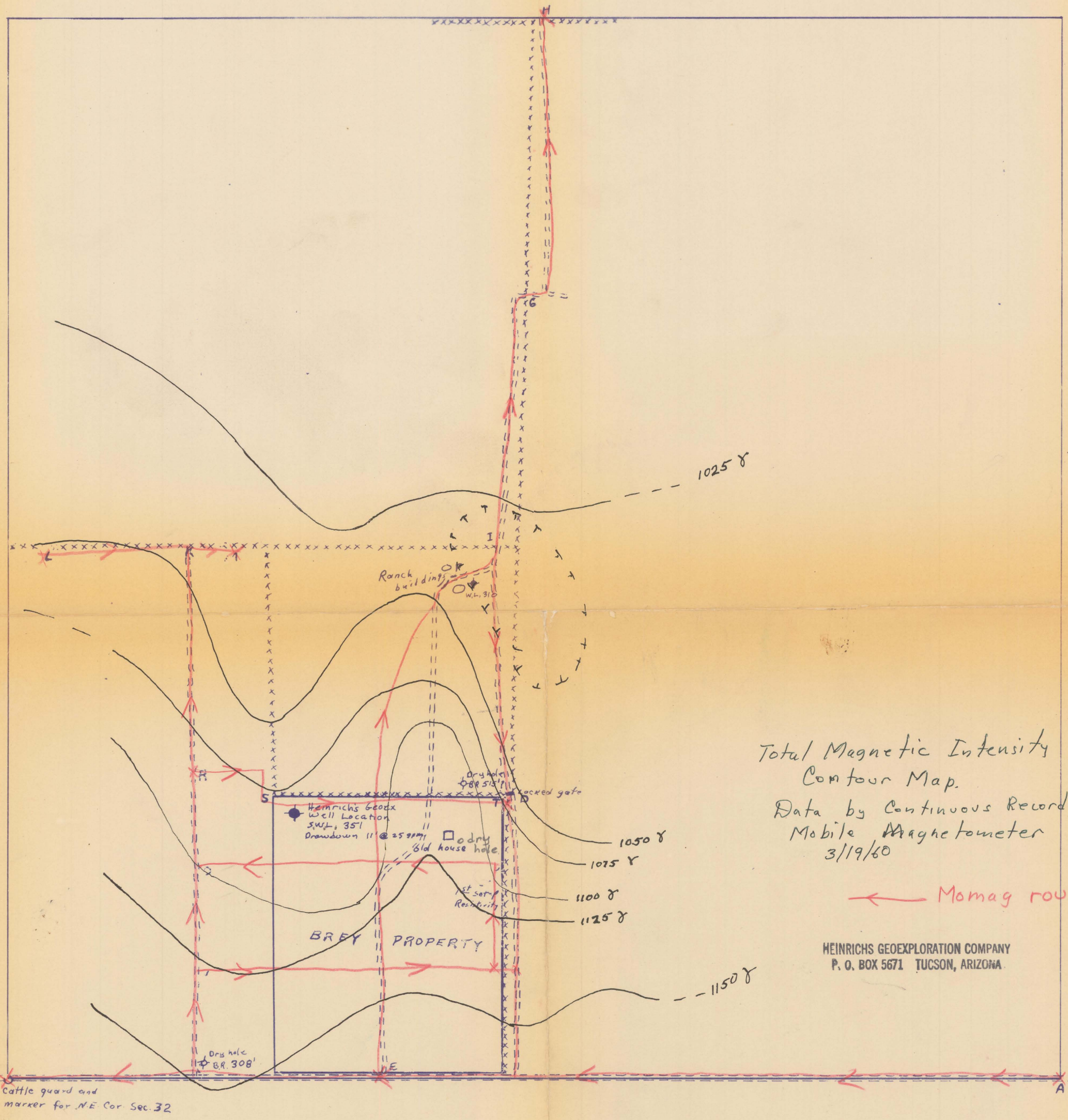


#2 Ω ft.
Q
E-W
500 Ω
1000
2000
3000
4000
5000
20
40
60
100
150
200
250
300
350
400
450
500
Brey - Tortolita
Probe # 2
5208

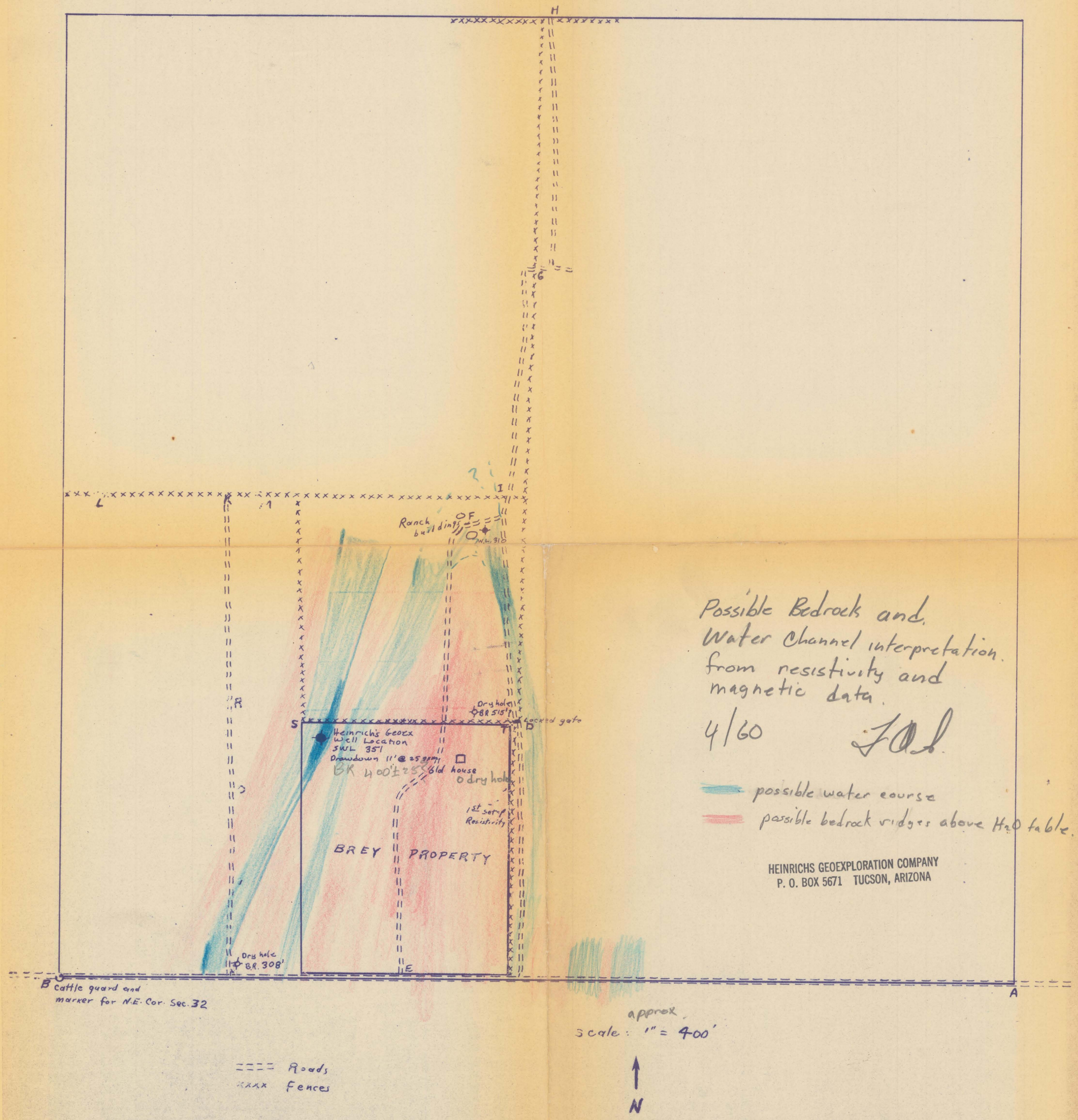

Moore Plot
Ω ft →
500
1000
1000
2000
3000
4000
60
100
150
200
250
300
350
400
450
≈ 10'
Brey - Tortolita
NE¼ SE¼ SW¼ Sec 28, T11S R13E
Probe #1
Spread East-West
100 feet east of fence line
950 ft north of section line
1
4895

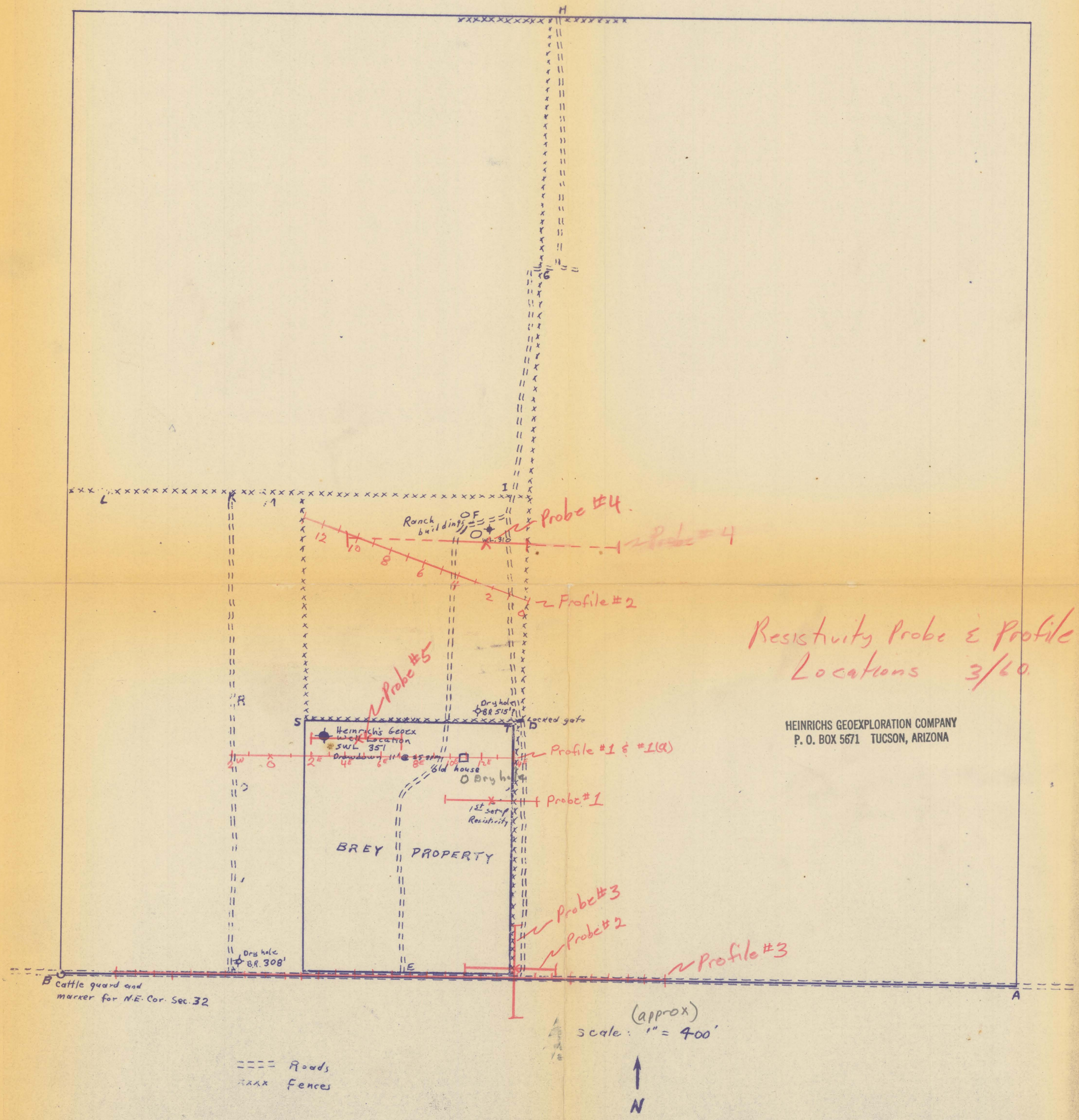

Moore Plot
Ω ft.
500
1000
1000
2000
3000
4000
100
150
200
250
300
400
450
≈ 10'
Brey - Tortolita
NE¼ SE¼ SW¼ Sec 28, T11S R13E
Probe #1
Spread East-West
100 feet east of fence line
950 ft north of section line
1
4895


Moore Plot
Ω ft.
500
1000
1000
2000
3000
4000
100
150
200
250
300
350
400
450
≈ 10'
Brey - Tortolita
NE¼ SE¼ SW¼ Sec 28, T11S R13E
Probe #1
Spread East-West
100 feet east of fence line
950 ft north of section line
1
4895



Brey- H_2O
Pima County
Az

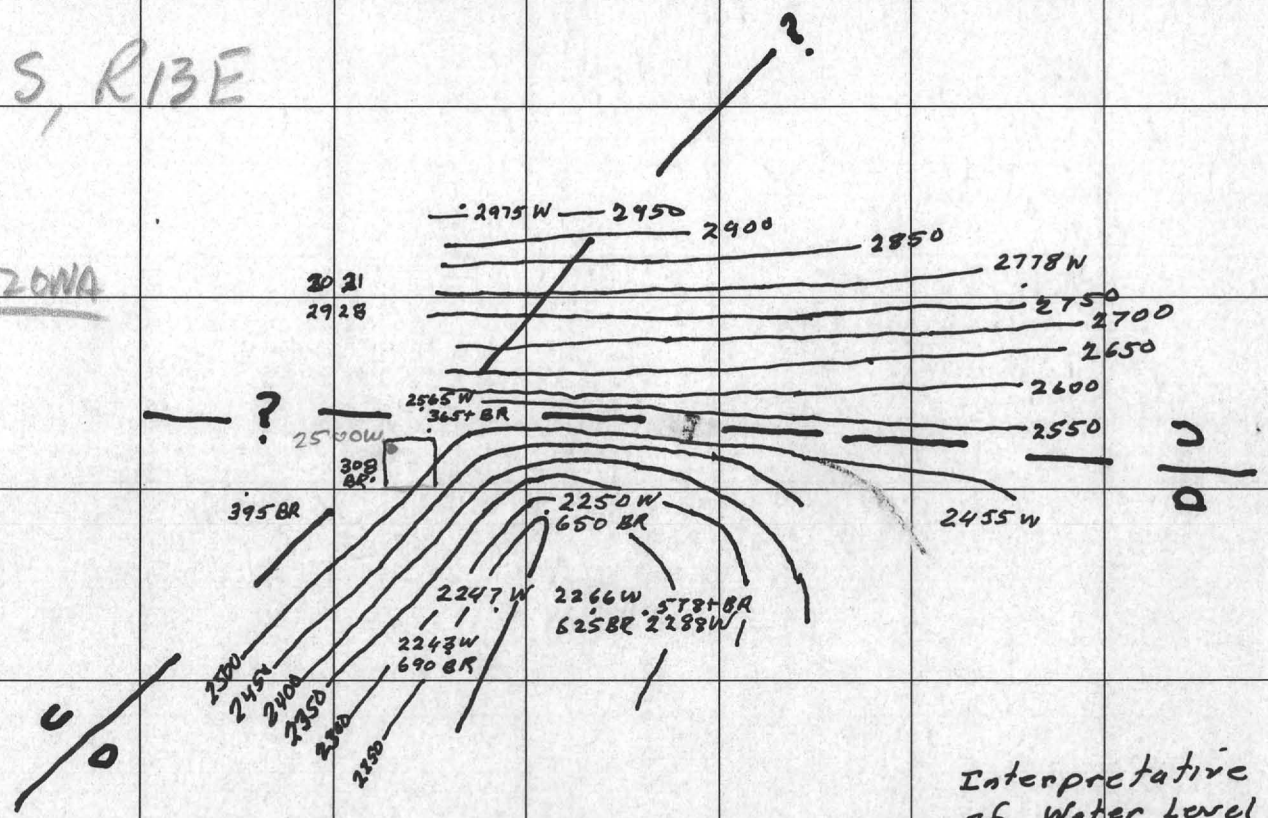

H
G
I
L
K
J
R
S
T
D
E
B
A
Ranch buildings
OF
S.W.L. 310
Dry hole
B.R. 515'?
Locked gate
Heinrich's Geoex
Well Location
SWL 351
Drawdown 11' @ 25 gpm
BR 400'± 255'
old house
dry hole
1st set of
Resistivity
BREY PROPERTY
Dry hole
B.R. 308'
cattle guard and
marker for N.E. Cor. Sec. 32
Possible Bedrock and
Water Channel interpretation
from resistivity and
magnetic data.
4/60
possible water course
possible bedrock ridges above H_2O table.
HEINRICHS GEOEXPLORATION COMPANY
P. O. BOX 5671 TUCSON, ARIZONA
approx.
scale: 1" = 400'
N
==== Roads
xxxx Fences


Resistivity Probe & Profile Locations 3/60.
HEINRICHS GEOEXPLORATION COMPANY
P. O. BOX 5671 TUCSON, ARIZONA
Probe #4
Profile #2
Probe #5
Profile #1 & #1(a)
Probe #1
Probe #3
Probe #2
Profile #3
Ranch buildings
Heinrichs Geoex well Location
SWL 351
Drawdown 11' @ 25 gpm
Old house
Dry hole
1st setup Resistivity
Dry hole B.R. 515'
Locked gate
Dry hole B.R. 308'
BREY PROPERTY
Cattle guard and marker for N.E. Cor. Sec. 32
(approx)
Scale: 1" = 400'
N
==== Roads
xxxx Fences

FORM 1006

SALT LAKE BLUE

Sec 28
SE¼-SW¼ T11S, R13E
G&SR. B.&M.
Pima County, ARIZONA

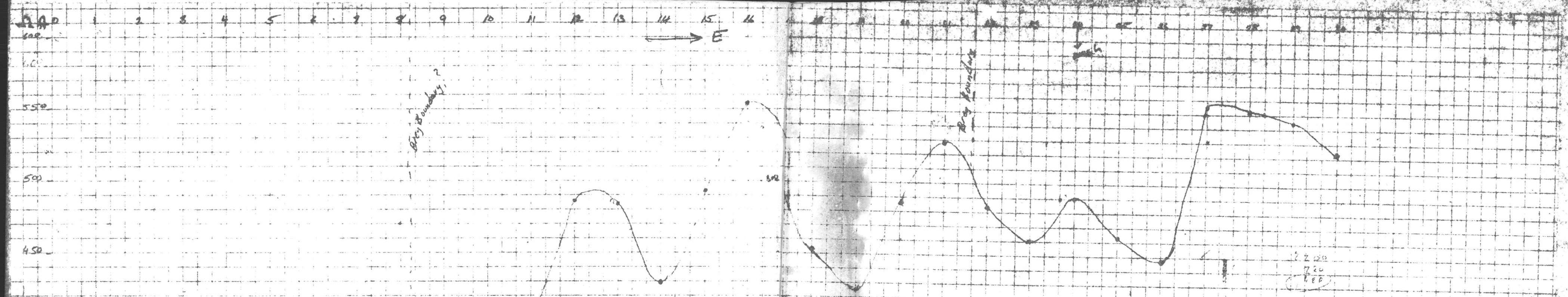


Interpretative Contour Map of Water Level Elevations and structural hypothesis

• 2247 W = water level elev.
690 BR = depth to Bedrock

HEINRICHS GEOEXPLORATION COMPANY
P. O. BOX 5671 TUCSON, ARIZONA

4/60

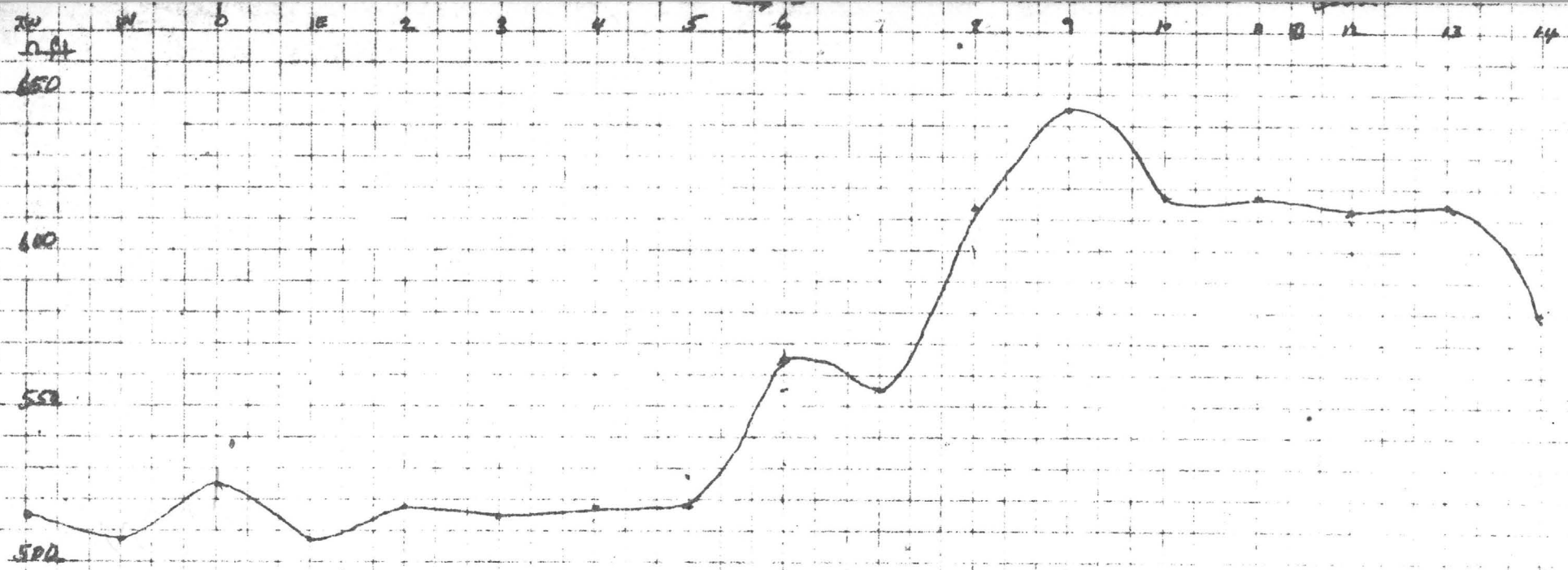


Profile #3 Brey-Tacbolita.
25/March/60

a = 200 ft.

H Scale = 100 ft

HEINRICHS GEOEXPLORATION COMPANY
P. O. BOX 5671 TUCSON, ARIZONA



Profile # 1(a)

Brey Tortolita

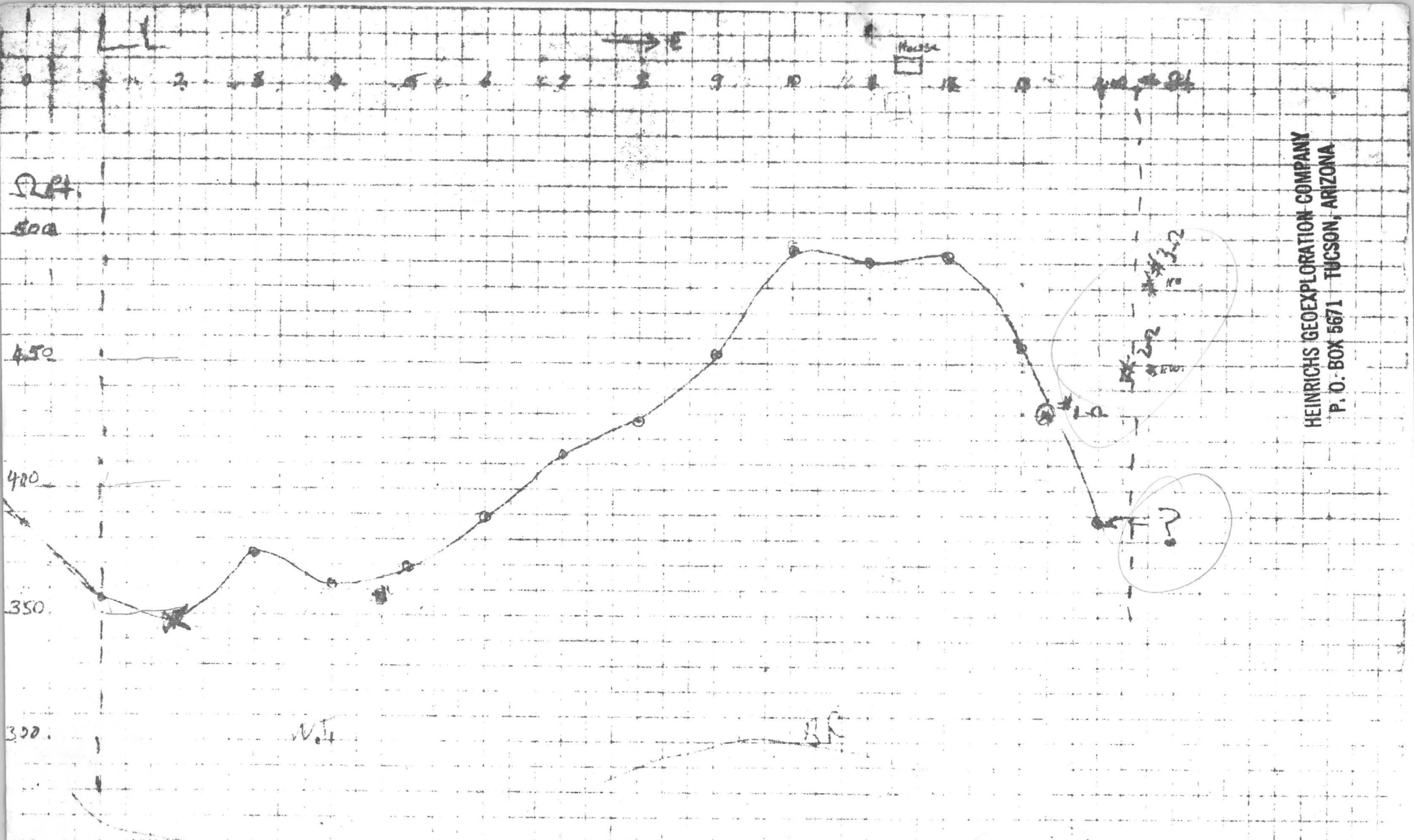
a = 500 ft

24/March/60

H Scale ▭ = 100'

V Scale □ = 10 Ω ft

HEINRICHS GEOEXPLORATION COMPANY
P. O. BOX 5671 TUCSON, ARIZONA



HEINRICHS GEOEXPLORATION COMPANY
P. O. BOX 5671 TUCSON, ARIZONA

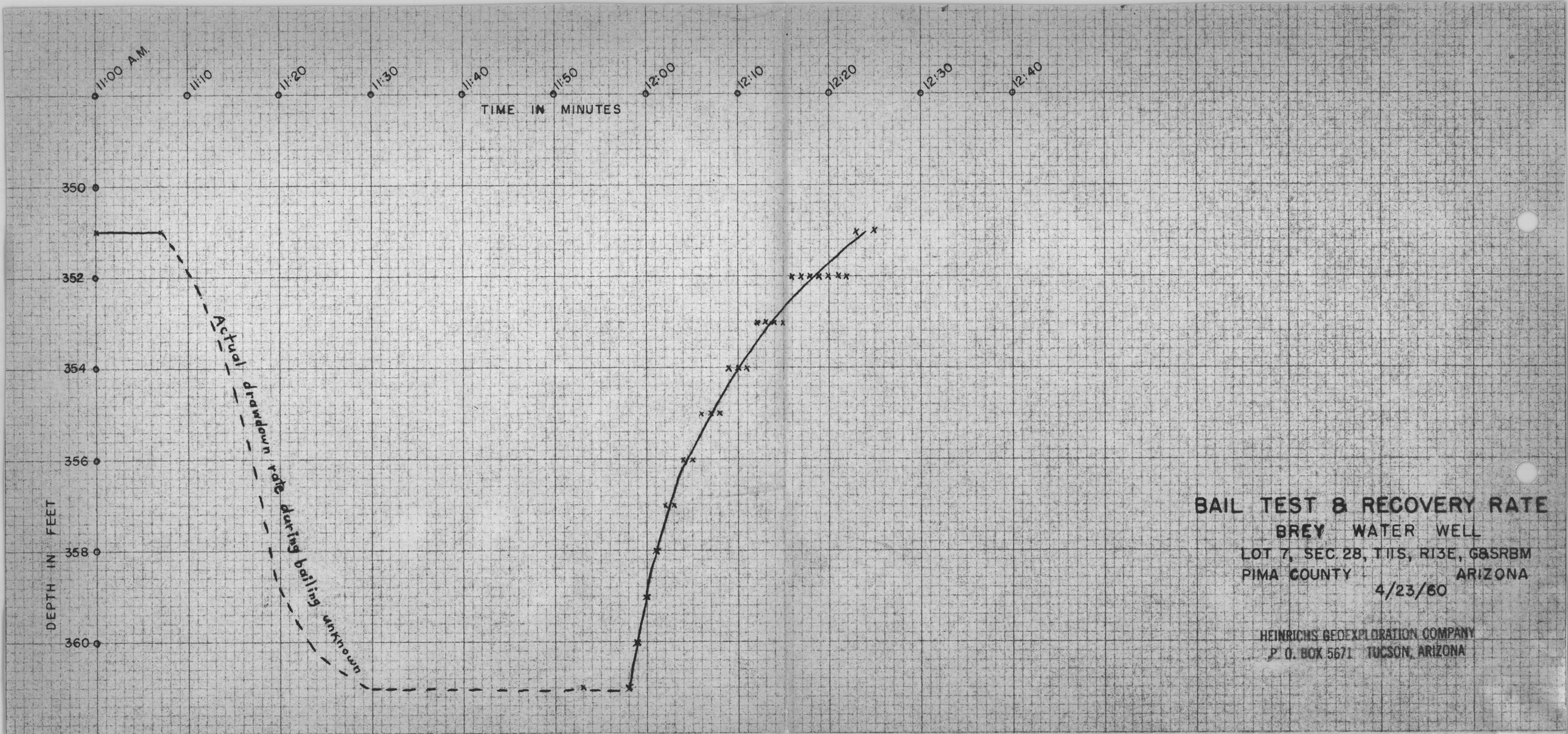
Brey - Tortolita

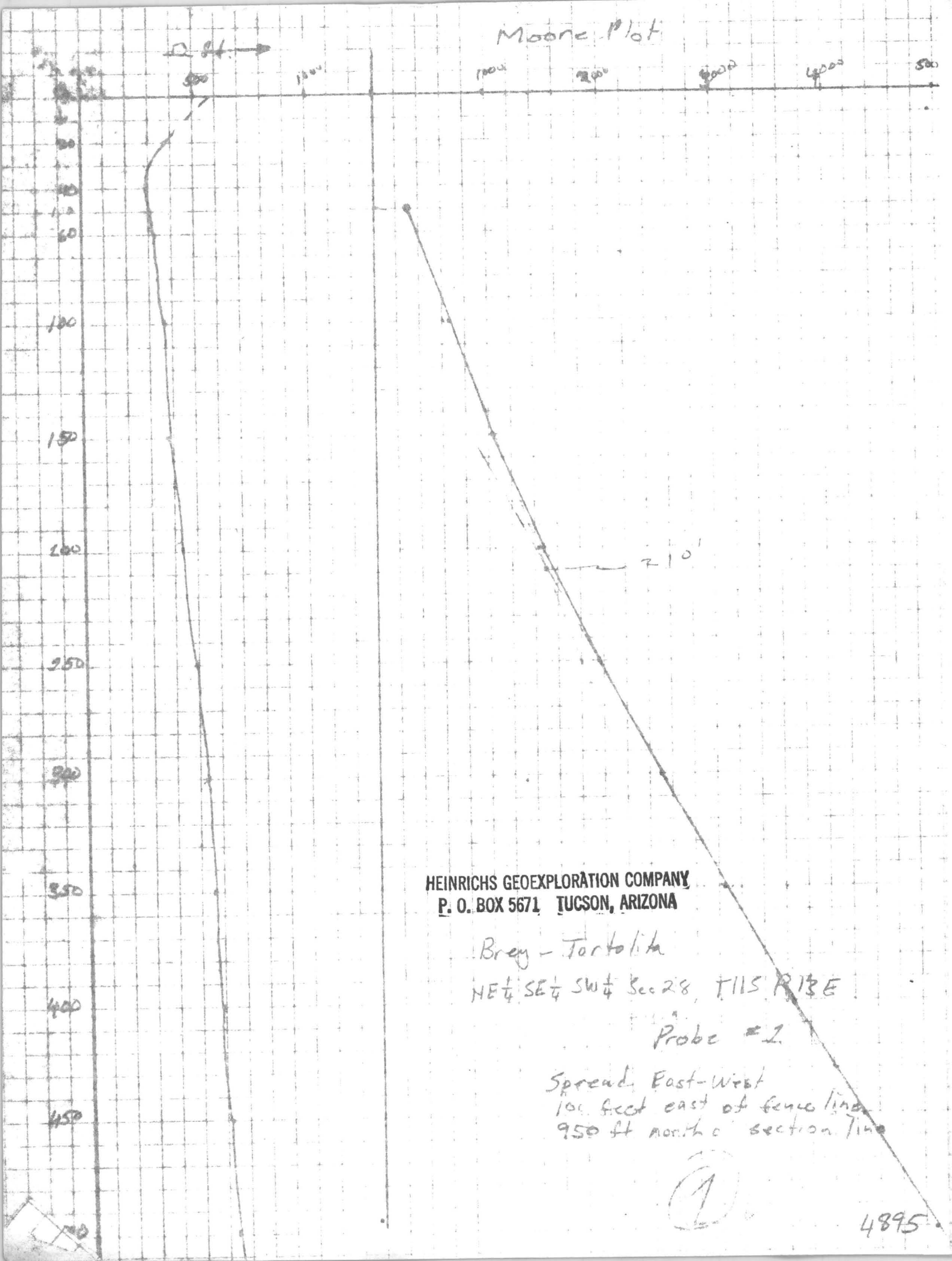
West → East Profile #1 23 / March / 60

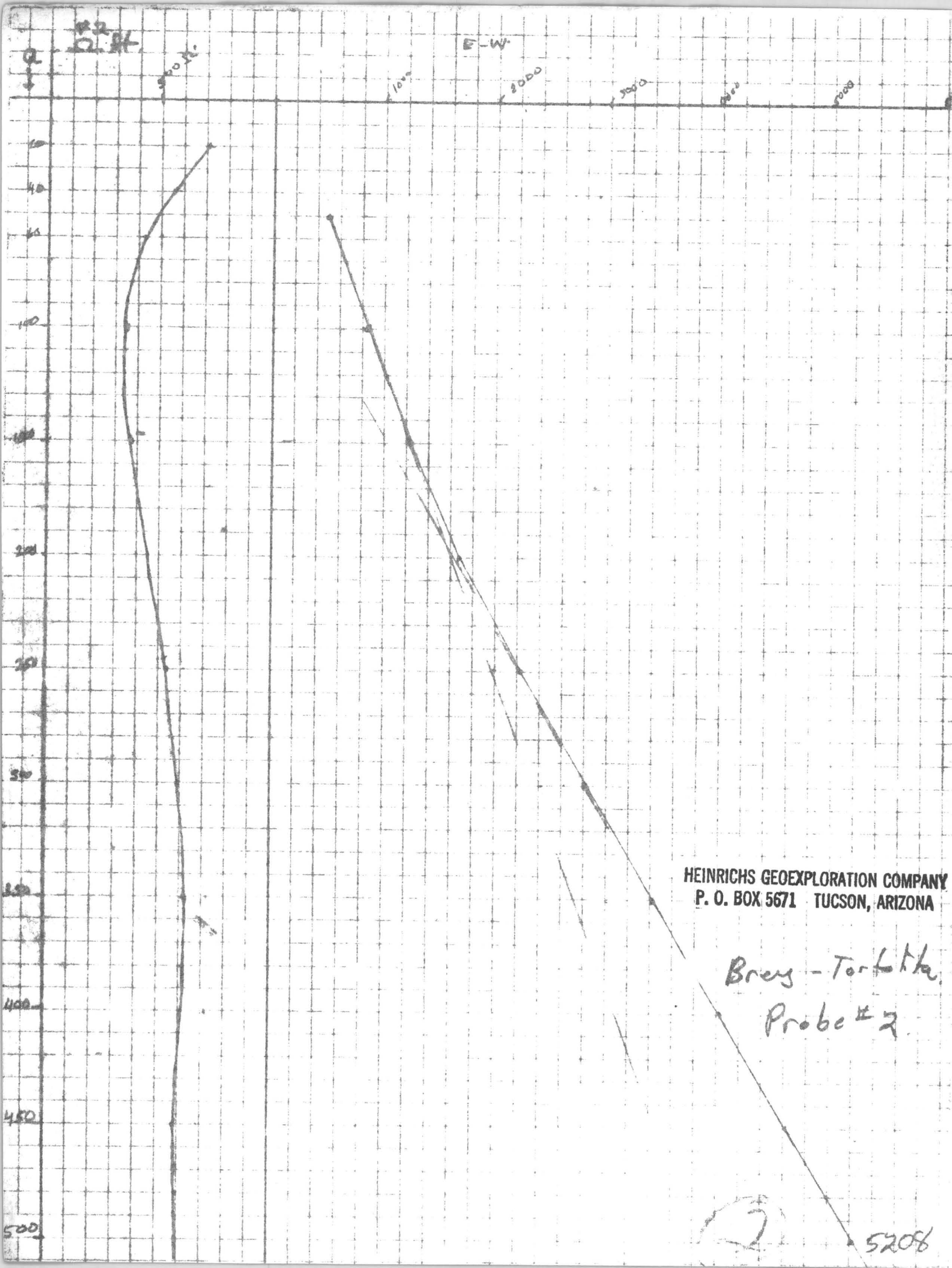
a = 200 ft

V scale: 1 ▨ = 10 Ω ft

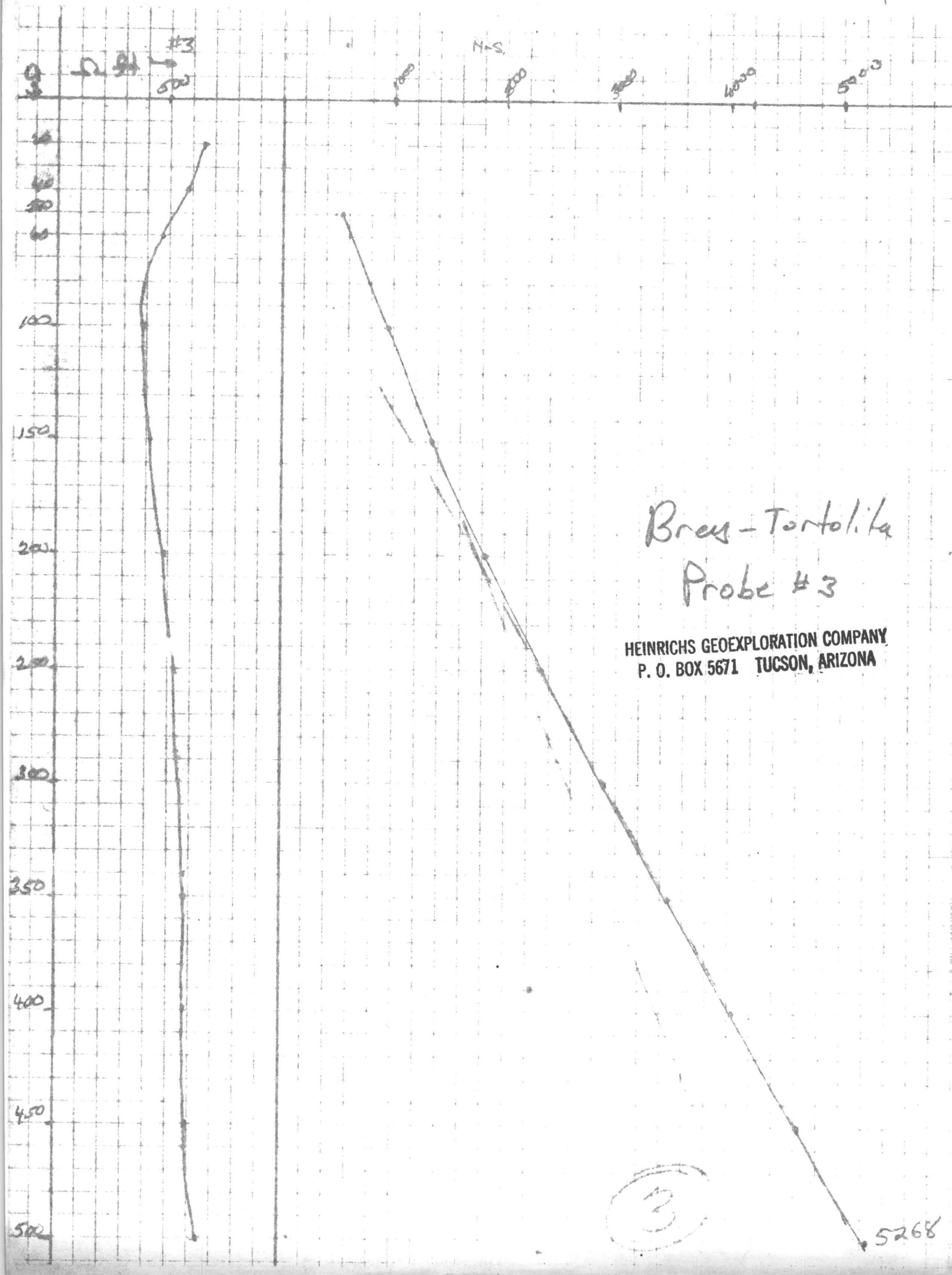
H scale 3 □ = 100 ft


11:00 A.M.
11:10
11:20
11:30
11:40
11:50
12:00
12:10
12:20
12:30
12:40
TIME IN MINUTES
350
352
354
356
358
360
DEPTH IN FEET
Actual drawdown rate during bailing unknown
BAIL TEST & RECOVERY RATE
BREY WATER WELL
LOT 7, SEC 28, T11S, R13E, G&SRBM
PIMA COUNTY ARIZONA
4/23/60
HEINRICHS GEOEXPLORATION COMPANY
P. O. BOX 5671 TUCSON, ARIZONA


Moore Plot
Ω ft.
500
1000
1000
2000
3000
4000
500
60
100
150
200
250
300
350
400
450
≈10'
HEINRICHS GEOEXPLORATION COMPANY
P. O. BOX 5671 TUCSON, ARIZONA
Brey - Tortolita
NE¼ SE¼ SW¼ Sec 28, T11S R13E
Probe #1
Spread East-West
100 feet east of fence line
950 ft north of section line
1
4895



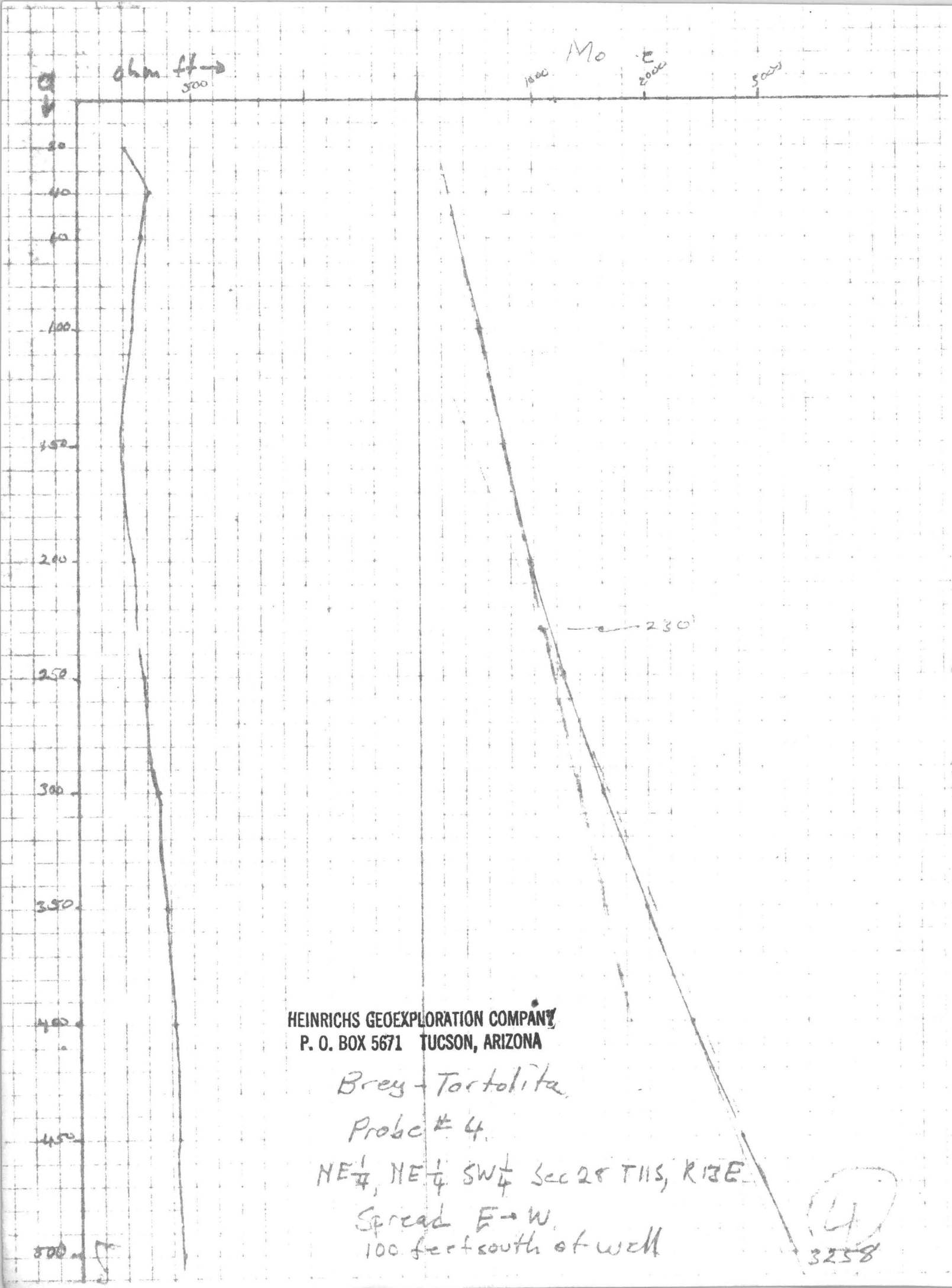
#2
Ω ft
E-W
1000
2000
3000
4000
5000
40
60
100
200
250
300
400
450
500
HEINRICHS GEOEXPLORATION COMPANY
P. O. BOX 5671 TUCSON, ARIZONA
Brey - Tortolita
Probe #2
5208



Brey-Tortolita
Probe #3

HEINRICHS GEOEXPLORATION COMPANY
P. O. BOX 5671 TUCSON, ARIZONA

3

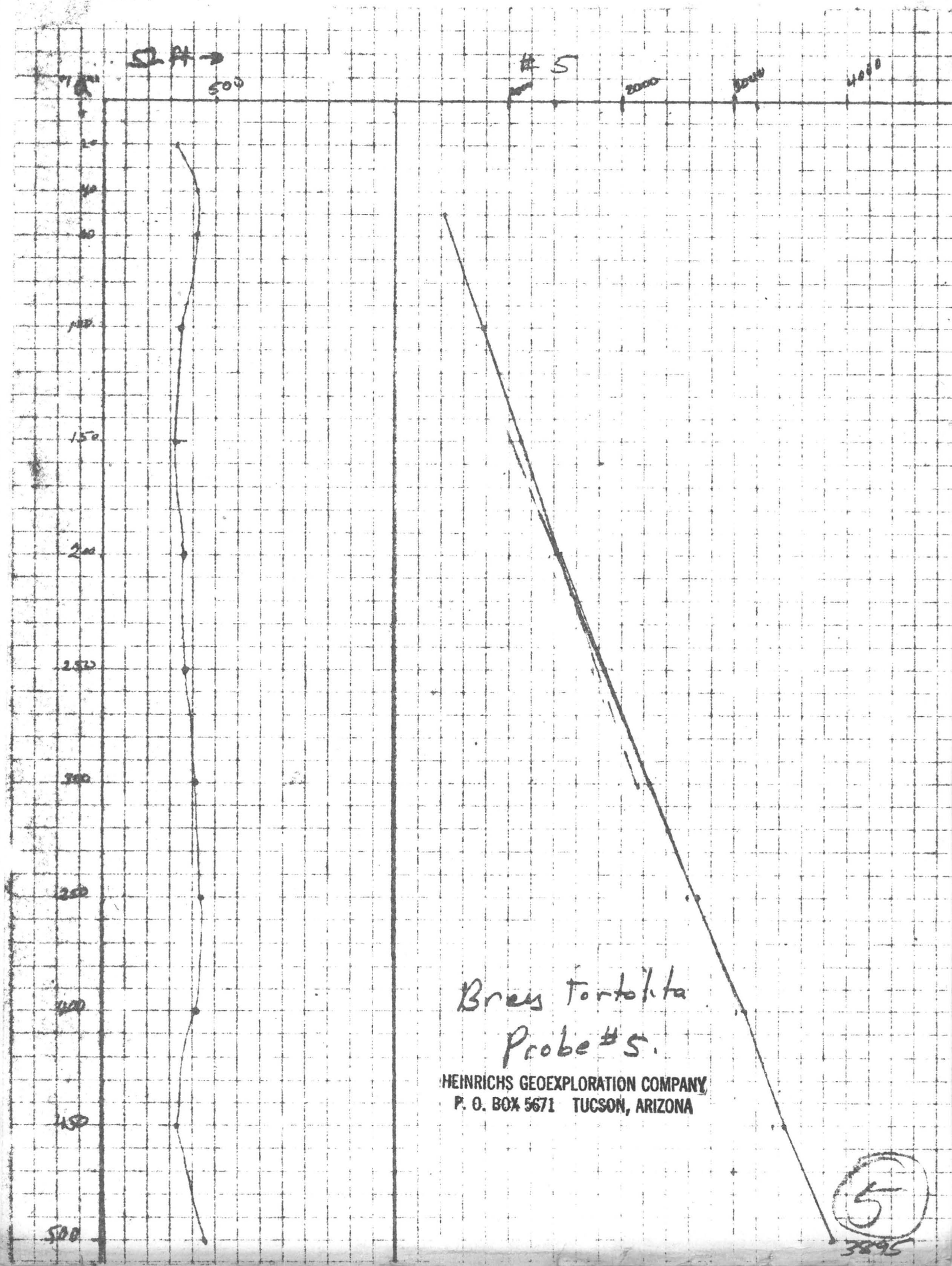


HEINRICHS GEOEXPLORATION COMPANY
P. O. BOX 5671 TUCSON, ARIZONA

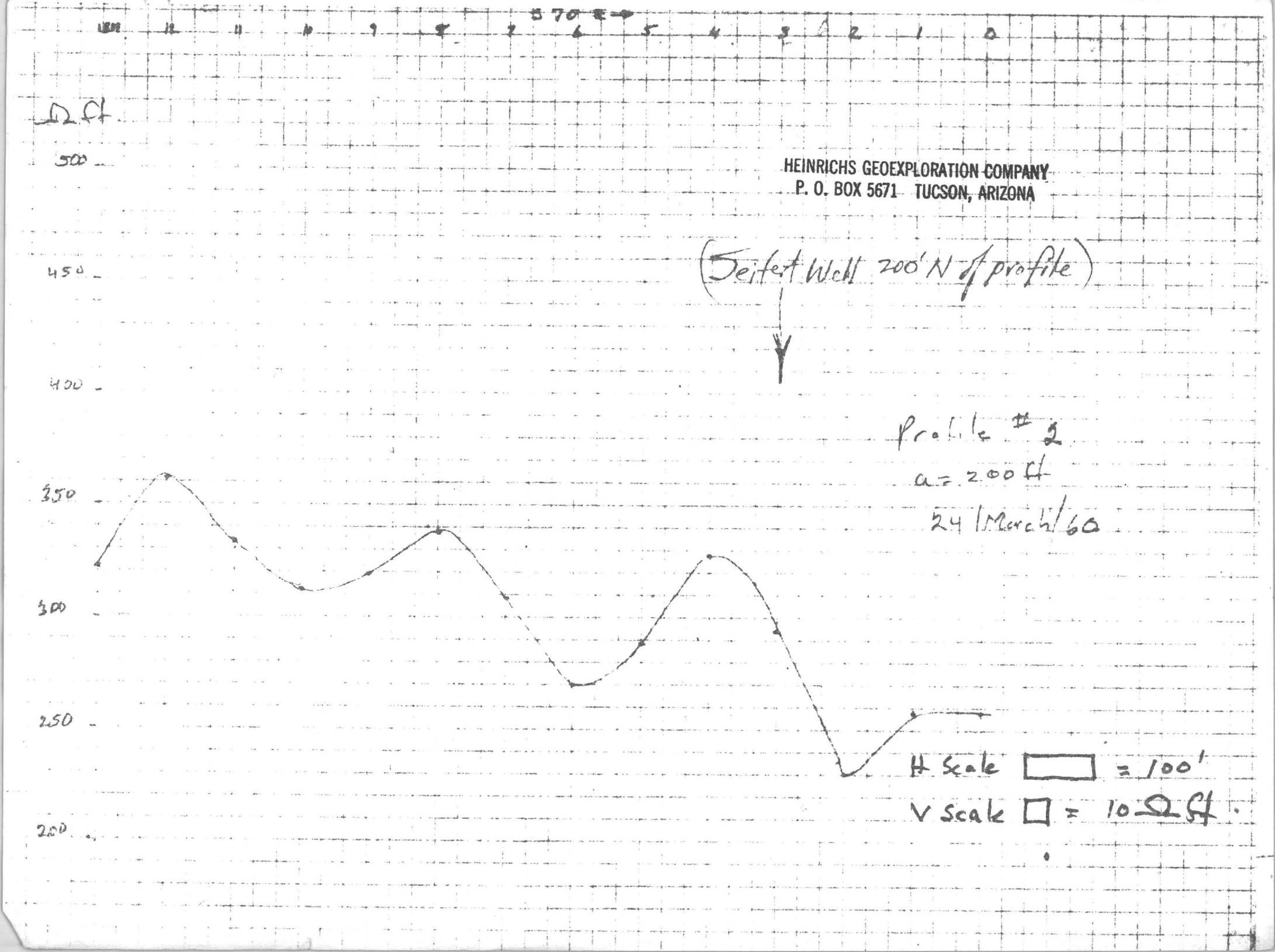
Brey - Tortolita
Probe # 4.
NE¼, NE¼ SW¼ Sec 28 T11S, R13E
Spread E → W.
100 feet south of well

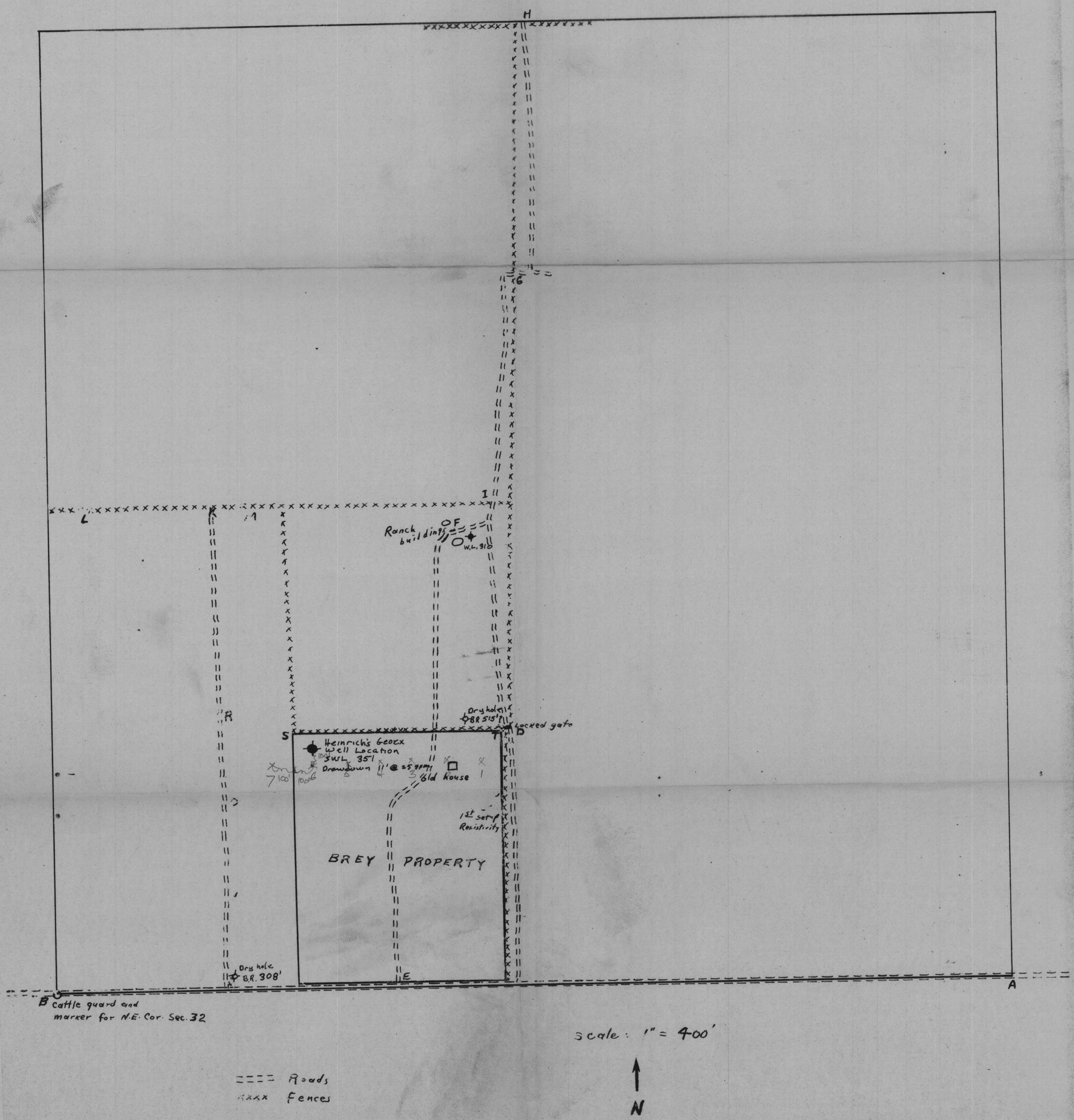
4

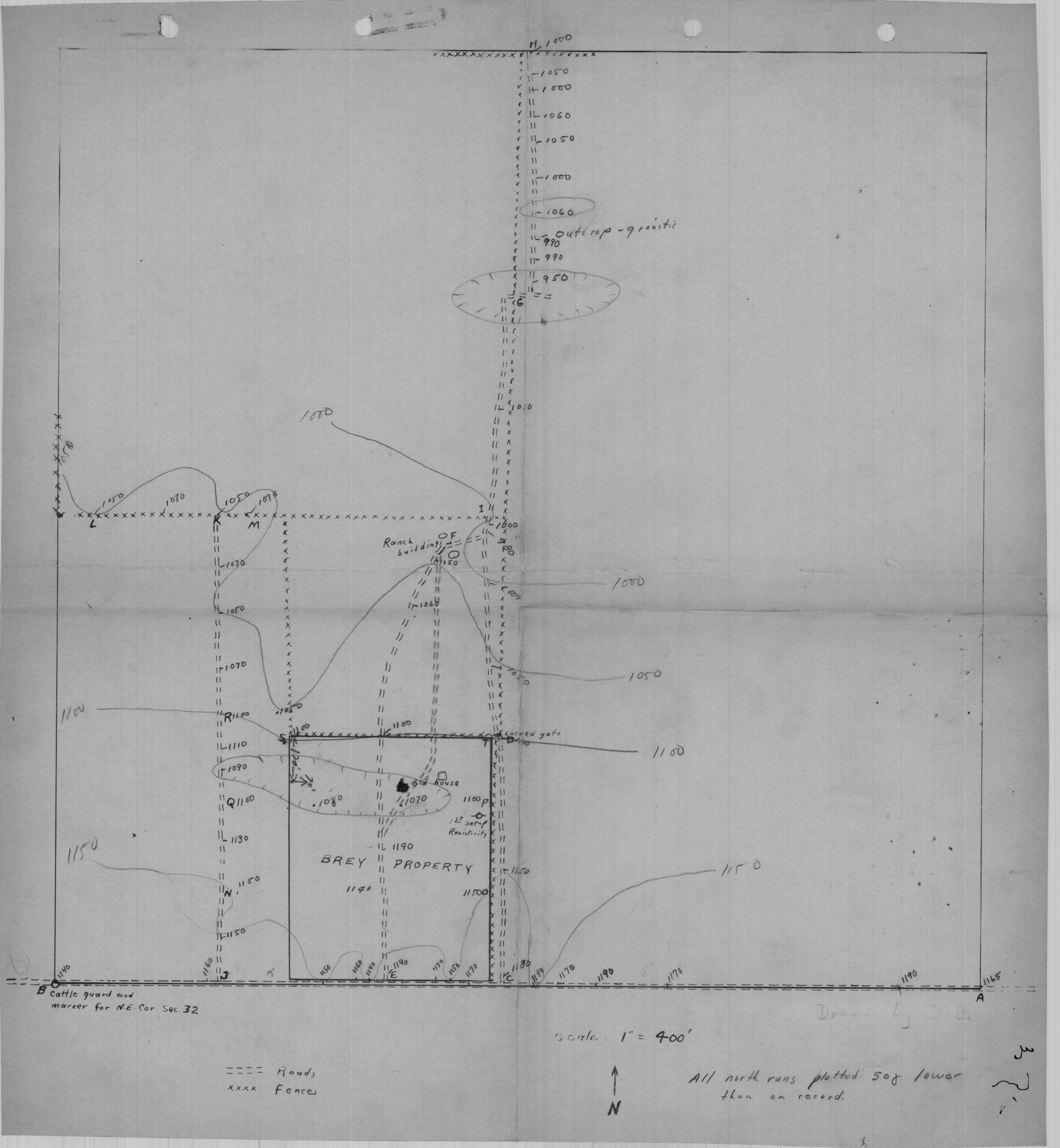
3258

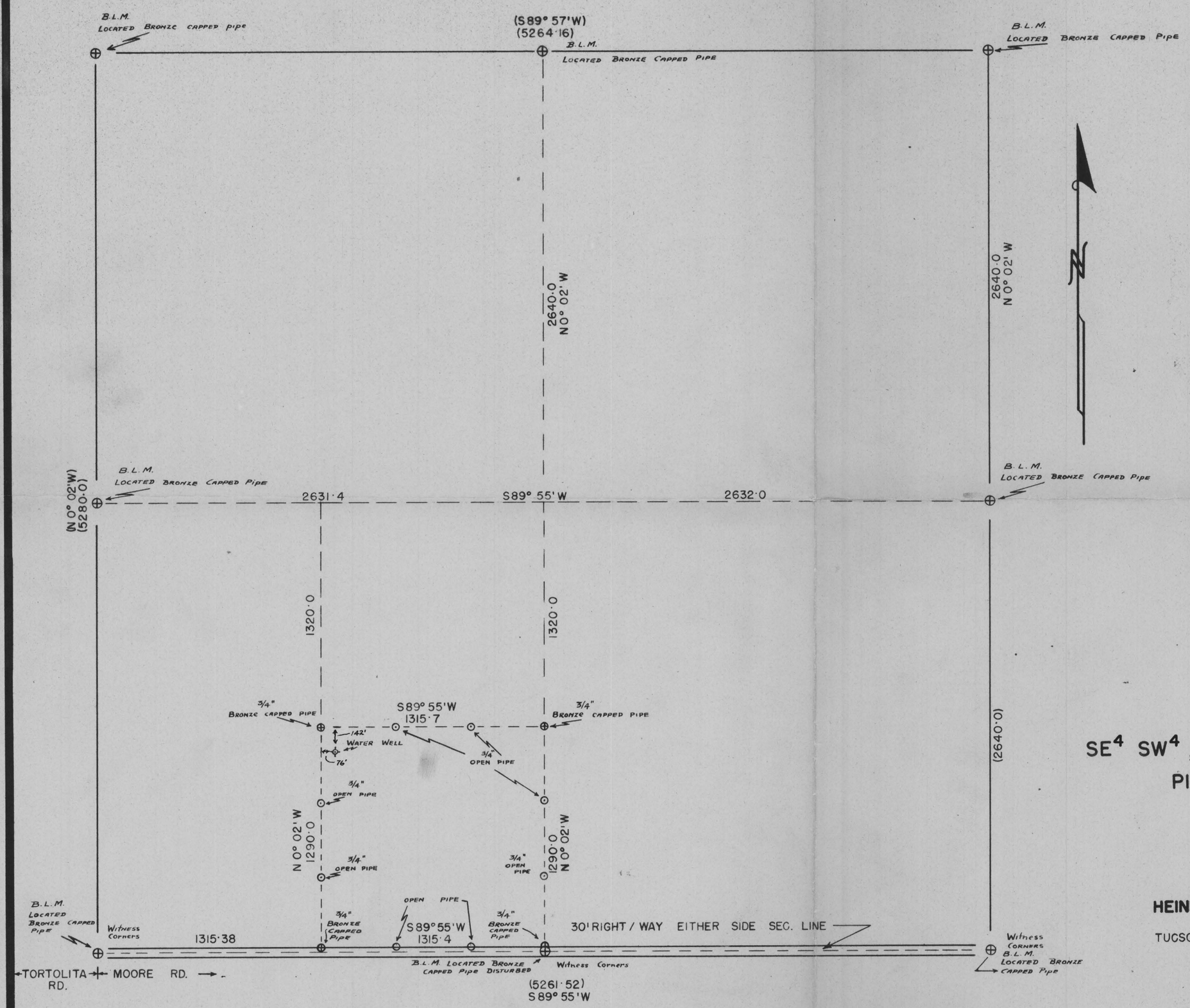


Ω ft →
500
#5
2000
3000
4000
20
40
60
100
150
200
250
300
350
400
450
500
Brey Tortolita
Probe #5.
HEINRICHS GEOEXPLORATION COMPANY
P. O. BOX 5671 TUCSON, ARIZONA
5
3895


570
12 11 10 9 8 7 6 5 4 3 2 1 0
Ω ft
500
450
400
350
300
250
200
HEINRICHS GEOEXPLORATION COMPANY
P. O. BOX 5671 TUCSON, ARIZONA
(Seifert Well 200' N of profile)
Profile # 2
a = 200 ft
24 March 60
H Scale = 100'
V Scale = 10 Ω ft


H
G
I
L
K
J
Ranch buildings
OF
W.L. 318'
R
Dry hole
BR 515'
Locked gate
S
T
D
Heinrich's Geotx
Well Location
SWL 351
Drawdown 1' @ 25 gpm
Old house
1st setup
Resistivity
BREY PROPERTY
E
Dry hole
B.R. 308'
A
B cattle guard and
marker for N.E. Cor. Sec. 32
scale: 1" = 400'
N
==== Roads
xxxx Fences


H
1000
1050
1000
1060
1050
1000
1060
Outcrop - granitic
990
990
950
G
1010
1000
1050
1050
1070
1050
1070
L
K
M
I
1000
Ranch buildings
OF
(A) 1050
1060
1000
1050
1050
1070
1050
1100
R 1100
1100
1100
Locked gate
1100
S
T
D
1110
1090
Old house
1080
1070
1100 P
Q 1100
1st setup Resistivity
1130
1140
BREY PROPERTY
1150
1150
1150
1140
1150
N
1150
1150
1140
1160
J
1150
1160
1140
1190
E
1170
1150
1170
1180
C
1140
1170
1190
1170
1190
1165
B
A
cattle guard and marker for N.E. Cor. Sec. 32
Drawn by J.B.
Scale: 1" = 400'
==== Roads
xxxx Fences
N
All north runs plotted 50 ft lower than on record.



6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

LOCATION PLAN

SE¼ SW¼ Sec. 28, T11S, R13E, GSRB&M

Scale 1" = 3 miles

GENERAL NOTES

1. All Section & ¼ Corners found.
2. Bronze capped corners established at NE, NW, SE, SW corners of property.
3. Line markers established, open ended 3/8" pipe evenly spaced at perimeter of property as indicated.
4. All monuments established one foot inside property line.
5. Bearings & distances established from G.L.O. Plat of T11S, R13E, G.S.R.B.&M. indicated in brackets.

SURVEY OF
SE^4 SW^4, SEC. 28, T11S, R13E, G.S.R.B.&M.
PIMA COUNTY, ARIZONA

FOR

HAROLD E. BREY

BY

HEINRICHS GEOEXPLORATION CO.

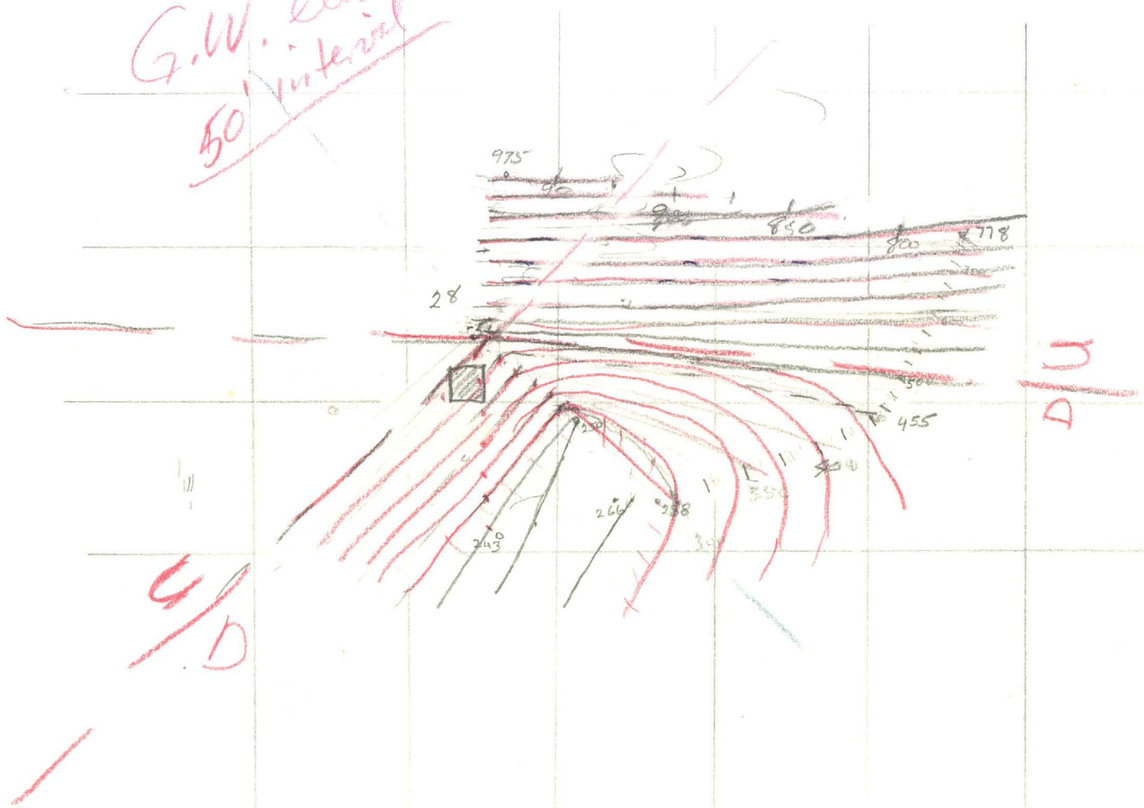
TUCSON ARIZONA

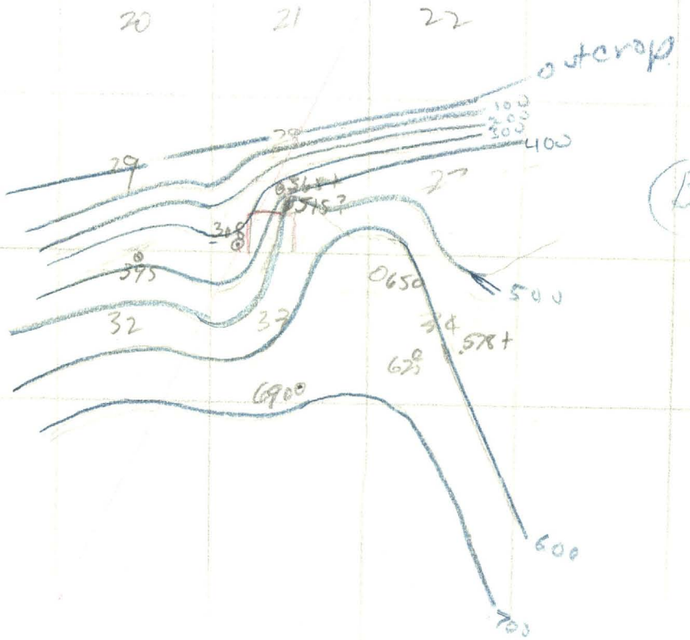
JULY, 1960

SCALE 1" = 500'

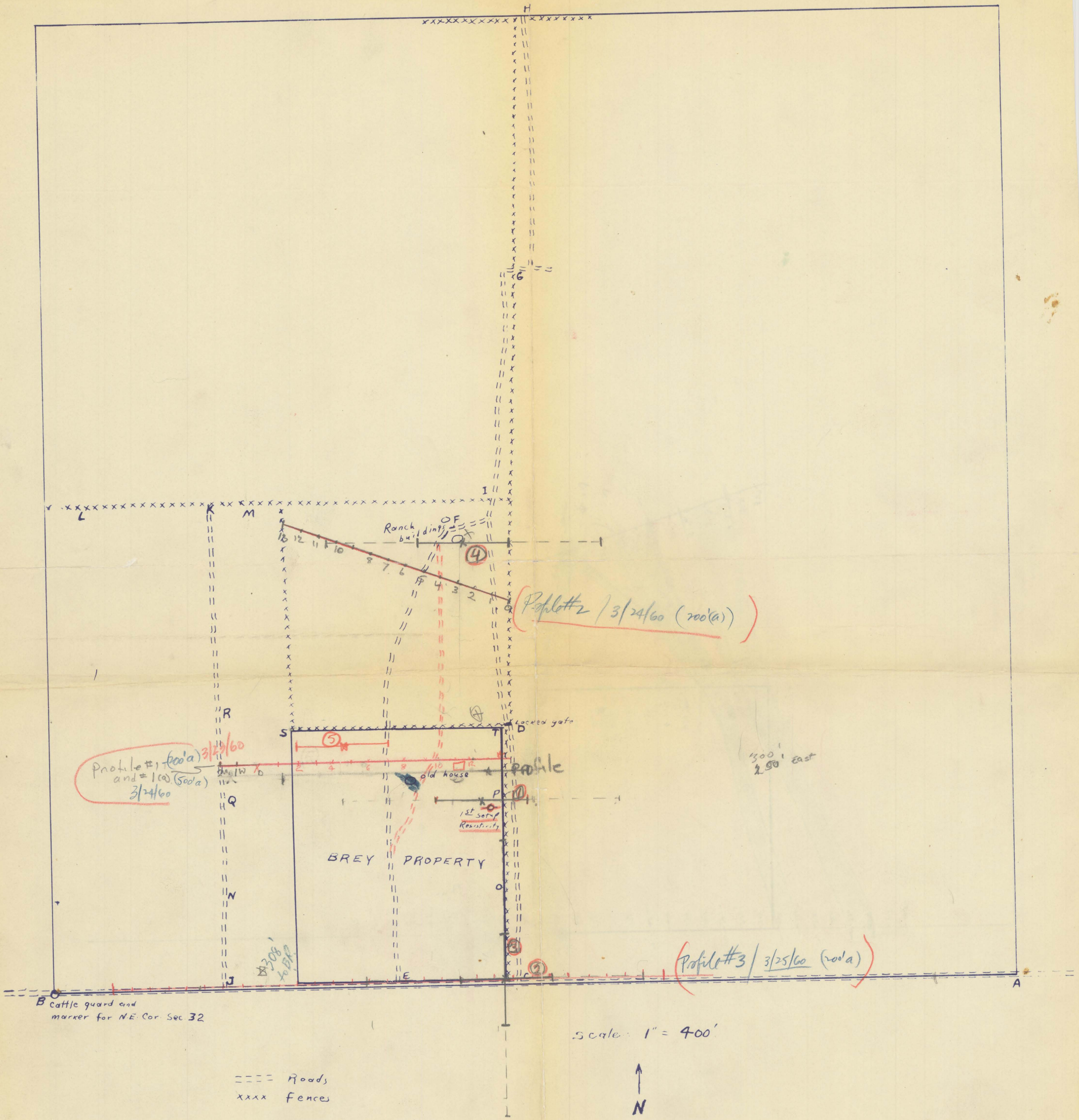
Registered Professional Engineer (Mining)
CERTIFICATE EXPIRES
WALTER E. HEINRICHS JR.
DEC. 31, 1960
ARIZONA, U.S.A.

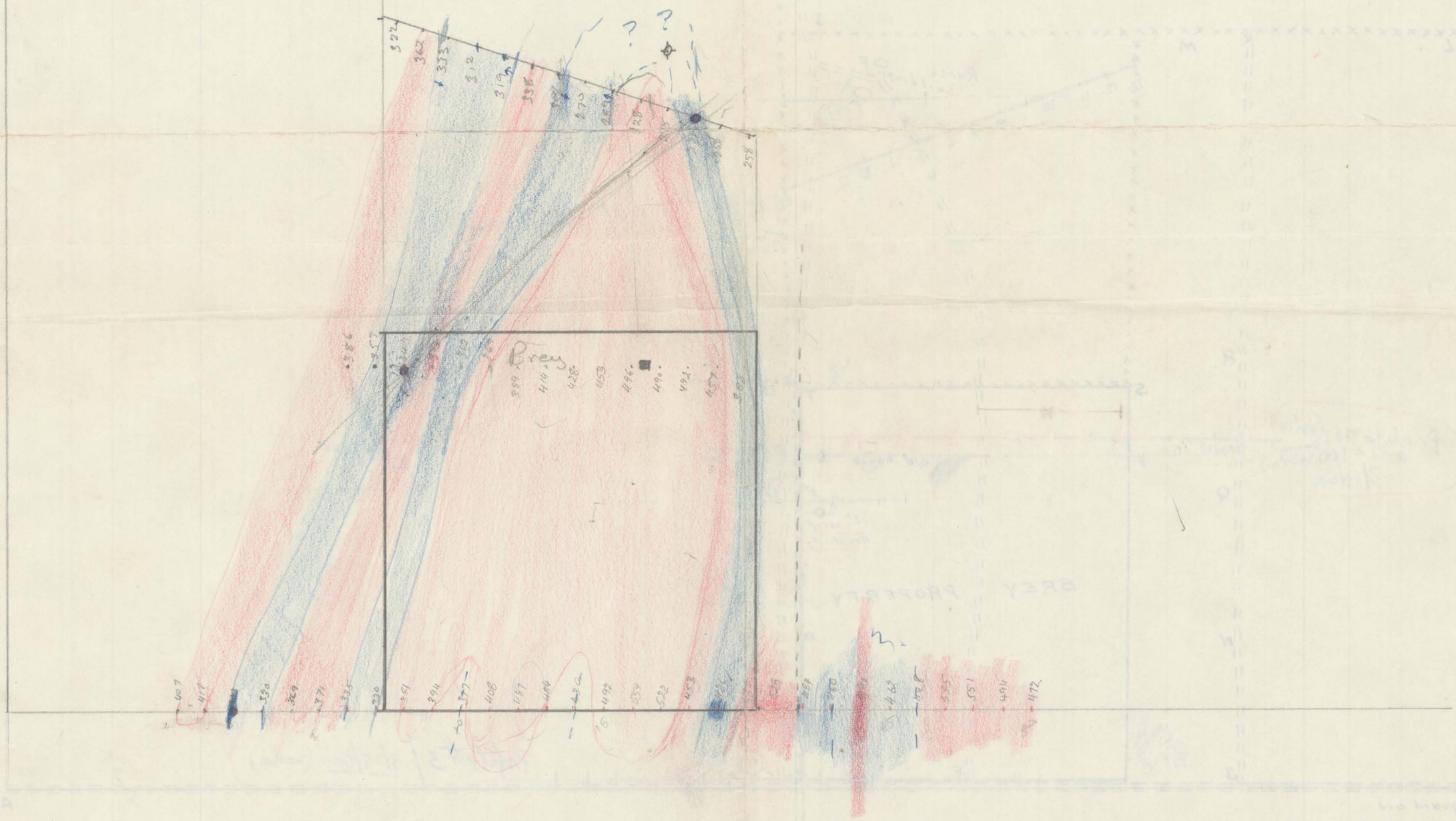
G.W. elev
50' interval

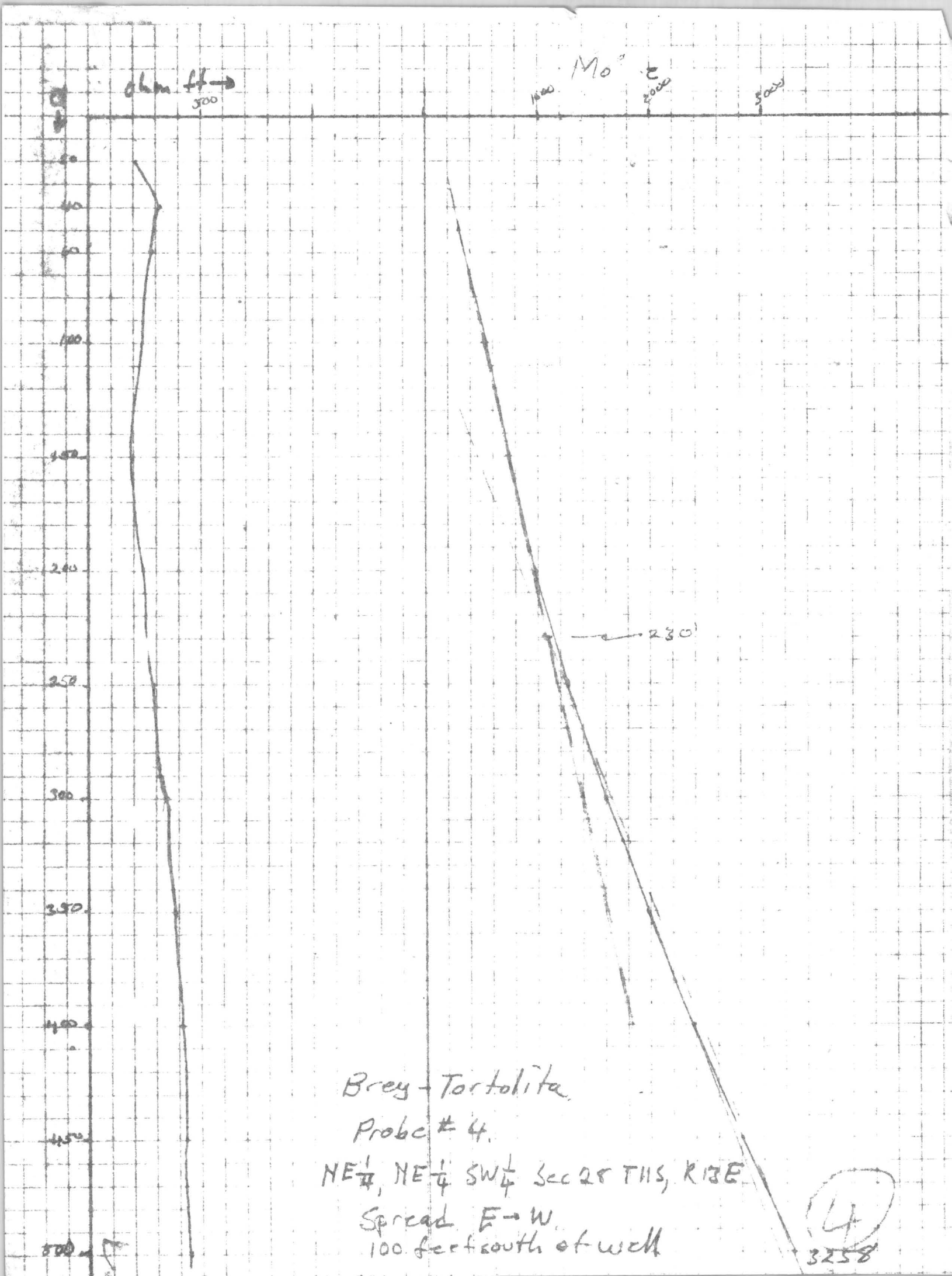




(B.R. Granite?)
100' interval.


H
G
I
L
K
M
Ranch buildings
OF
4
Profile #2 / 3/24/60 (200'(a))
R
Locked gate
S
T
D
5
Profile #1 (200'a) 3/23/60
and #1(a) (500'a)
3/24/60
W
Profile
old house
300' east
200' east
P
1st set of Resistivity
Q
BREY PROPERTY
N
O
3
2
Profile #3 / 3/25/60 (200'a)
J
E
C
A
B
cattle guard and
marker for N.E. Cor. Sec 32
Scale: 1" = 400'
==== Roads
xxxx Fences
N

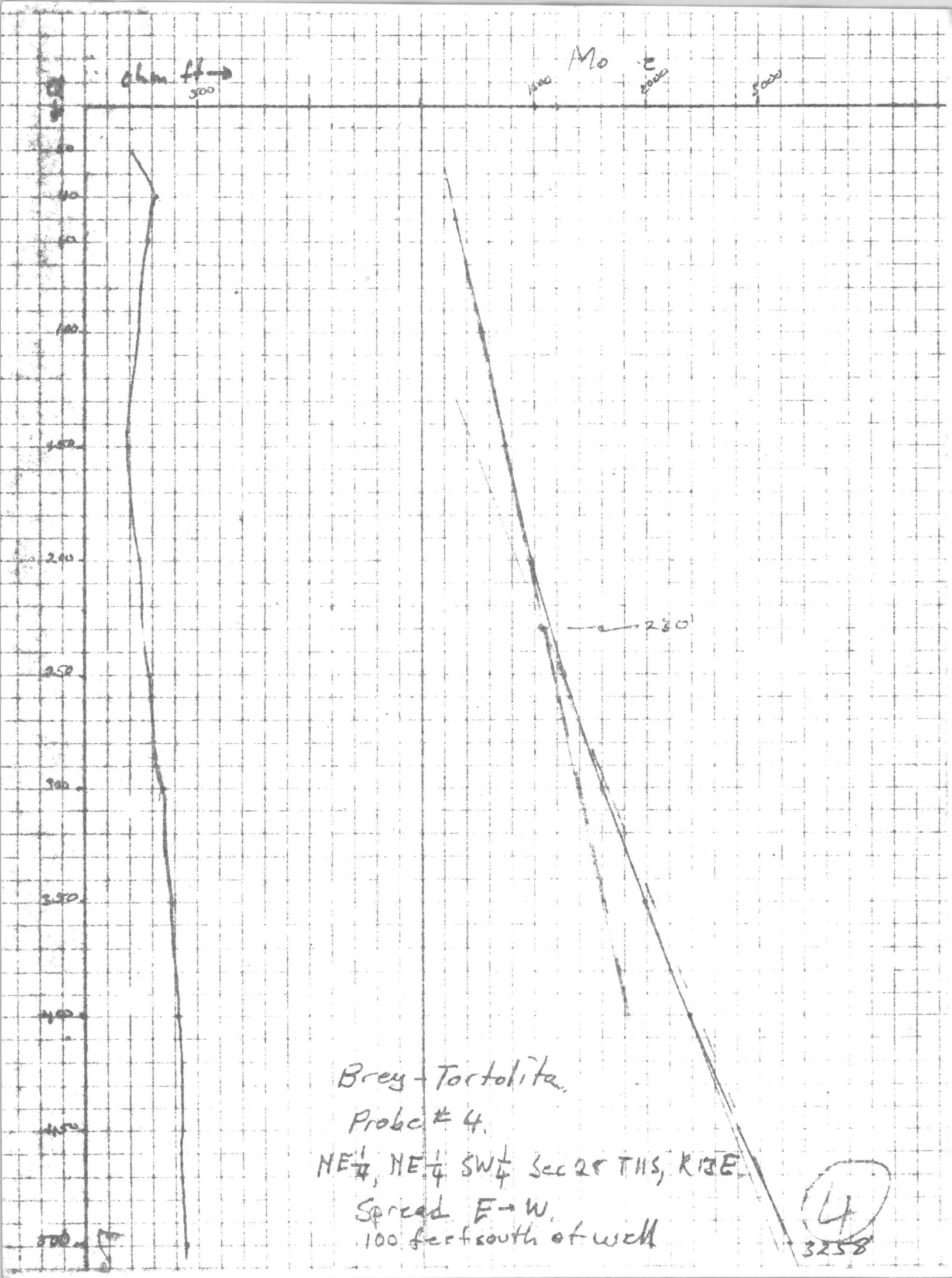

Prey



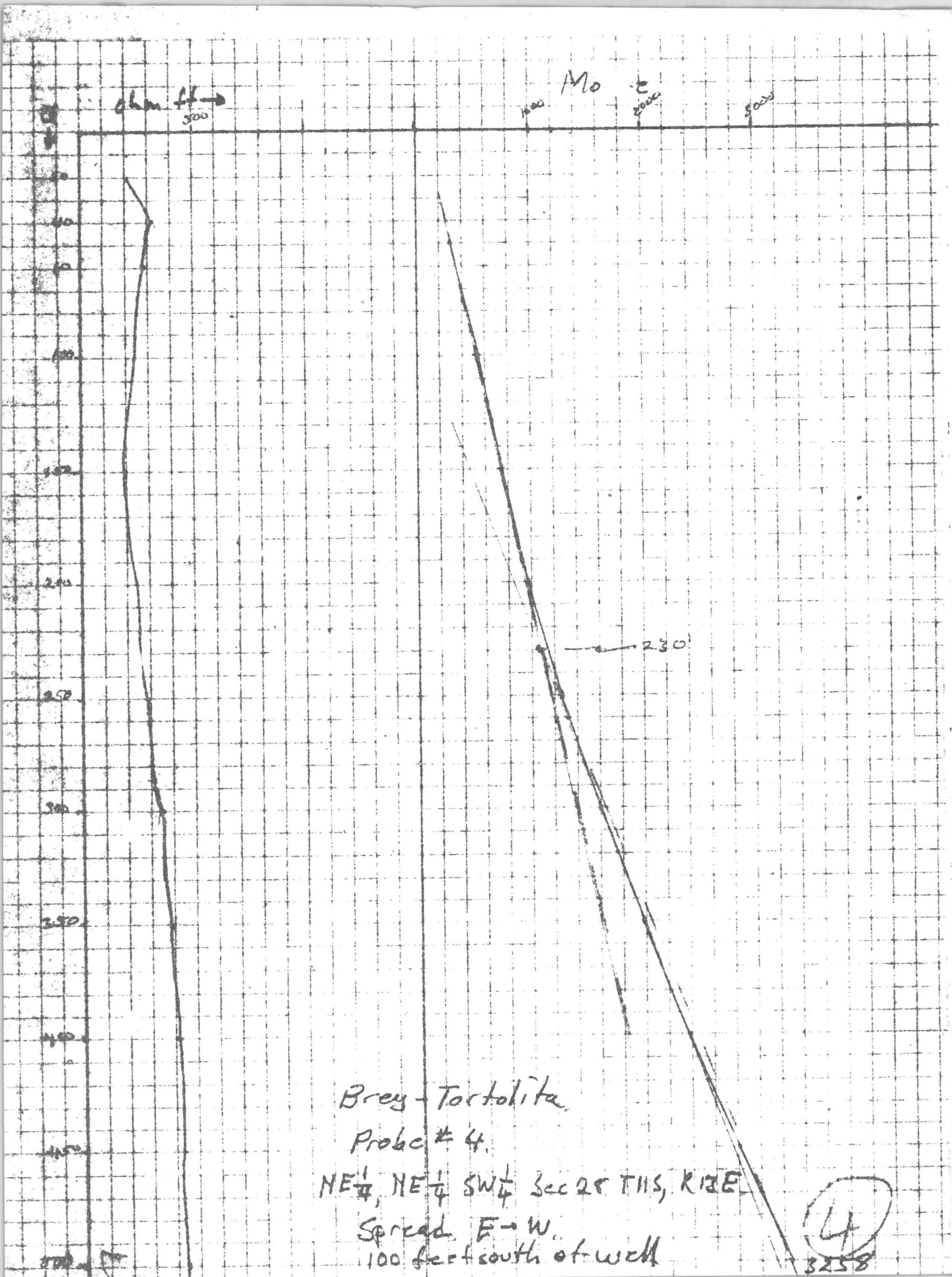
Brey - Tortolita
Probe # 4.
NE¼, NE¼ SW¼ Sec 28 T11S, R13E
Spread E → W.
100 feet south of well

4

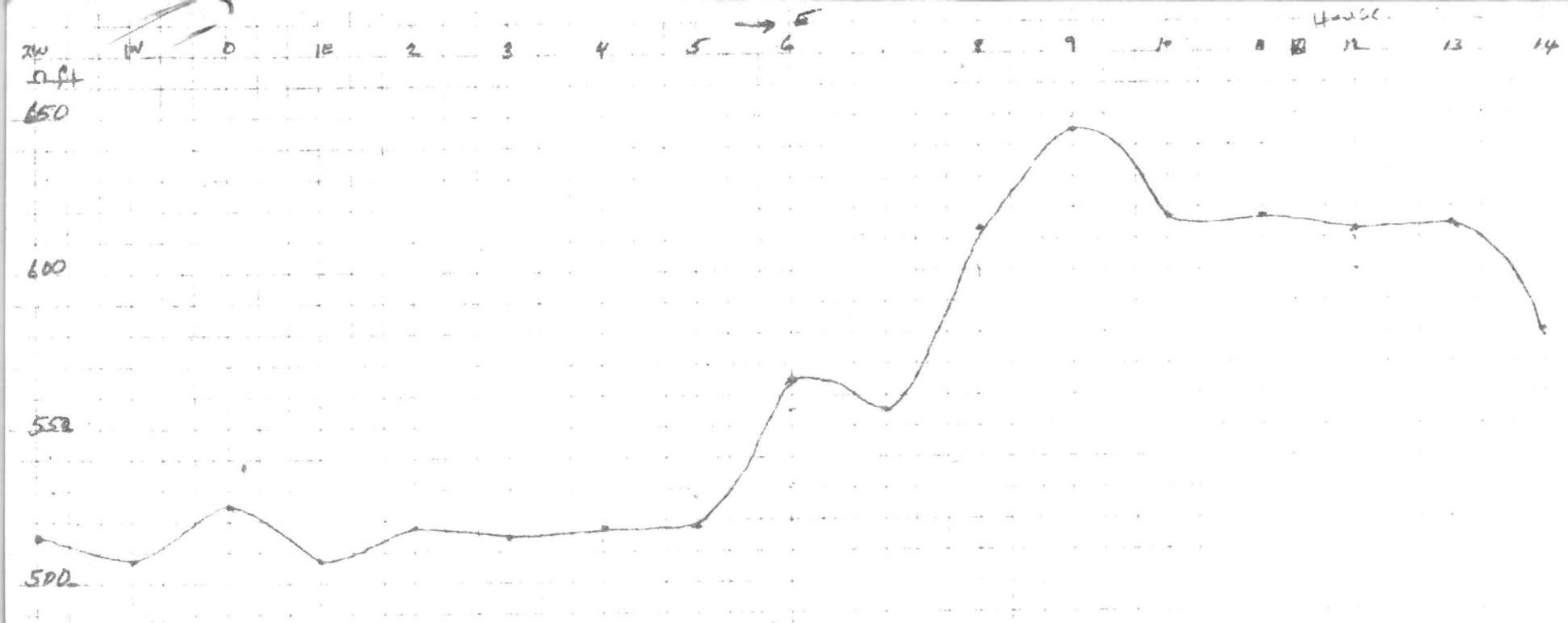
3258



ohm ft →
500
Mo
1000
2000
5000
40
60
100
150
200
250
300
350
400
450
500
230'
Brey - Tortolita.
Probe # 4.
NE 1/4, NE 1/4 SW 1/4 Sec 28 T11S, R13E
Spread E → W.
100 feet south of well
4
3258



ohm ft →
500
Mo
1000
2000
5000
230'
Brey - Tortolita
Probe # 4.
NE 1/4, NE 1/4 SW 1/4 Sec 28 T11S, R13E
Spread E → W.
100 feet south of well
4
3258



Profile # 1(a)

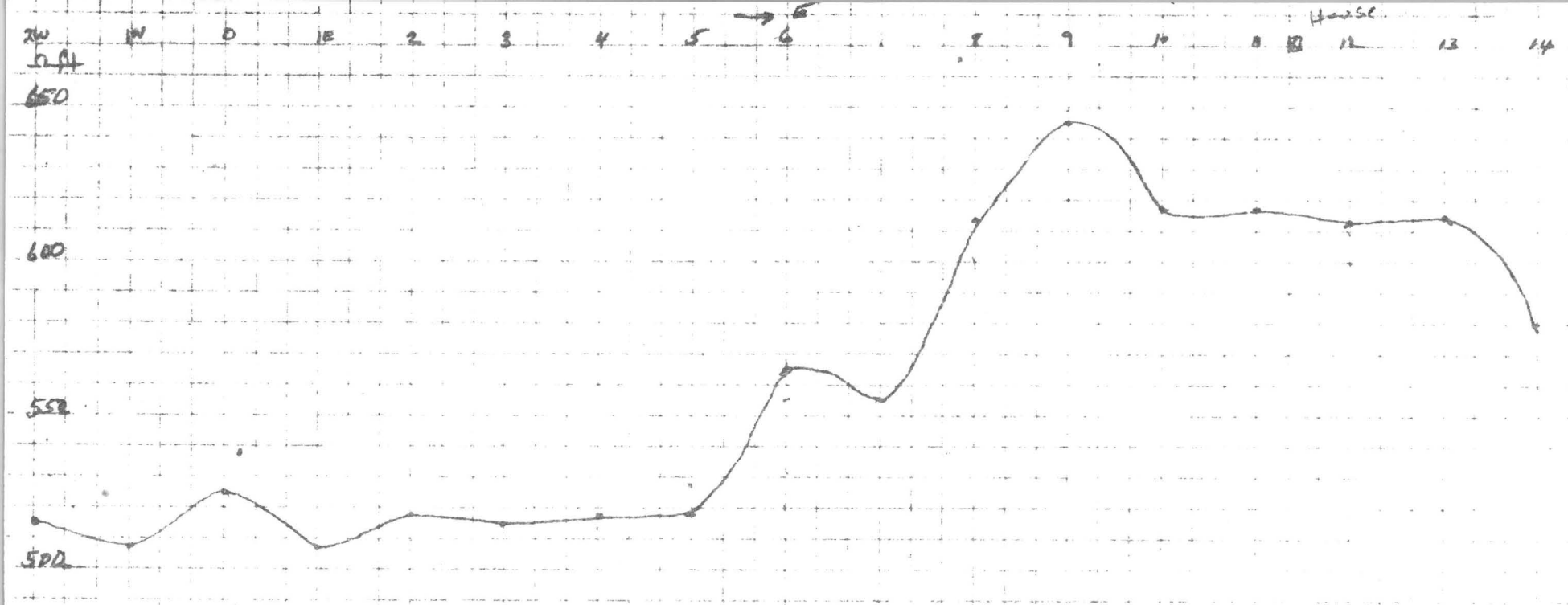
Brey Tortolita

a = 500 ft

24/March/60

H Scale ▭ = 100'

V Scale □ = 10 Ω ft



Profile # 1(a)

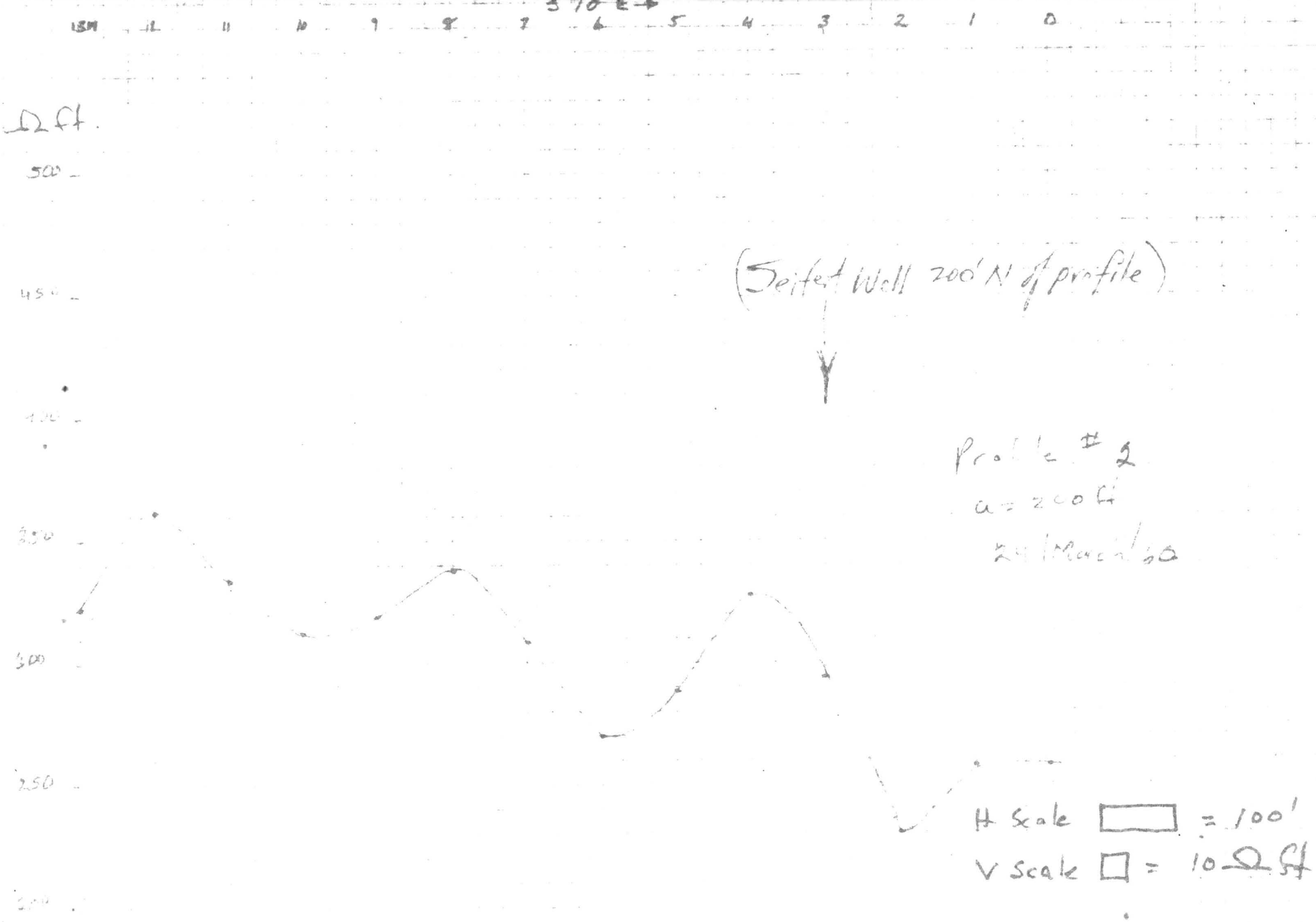
Brey Tortolita

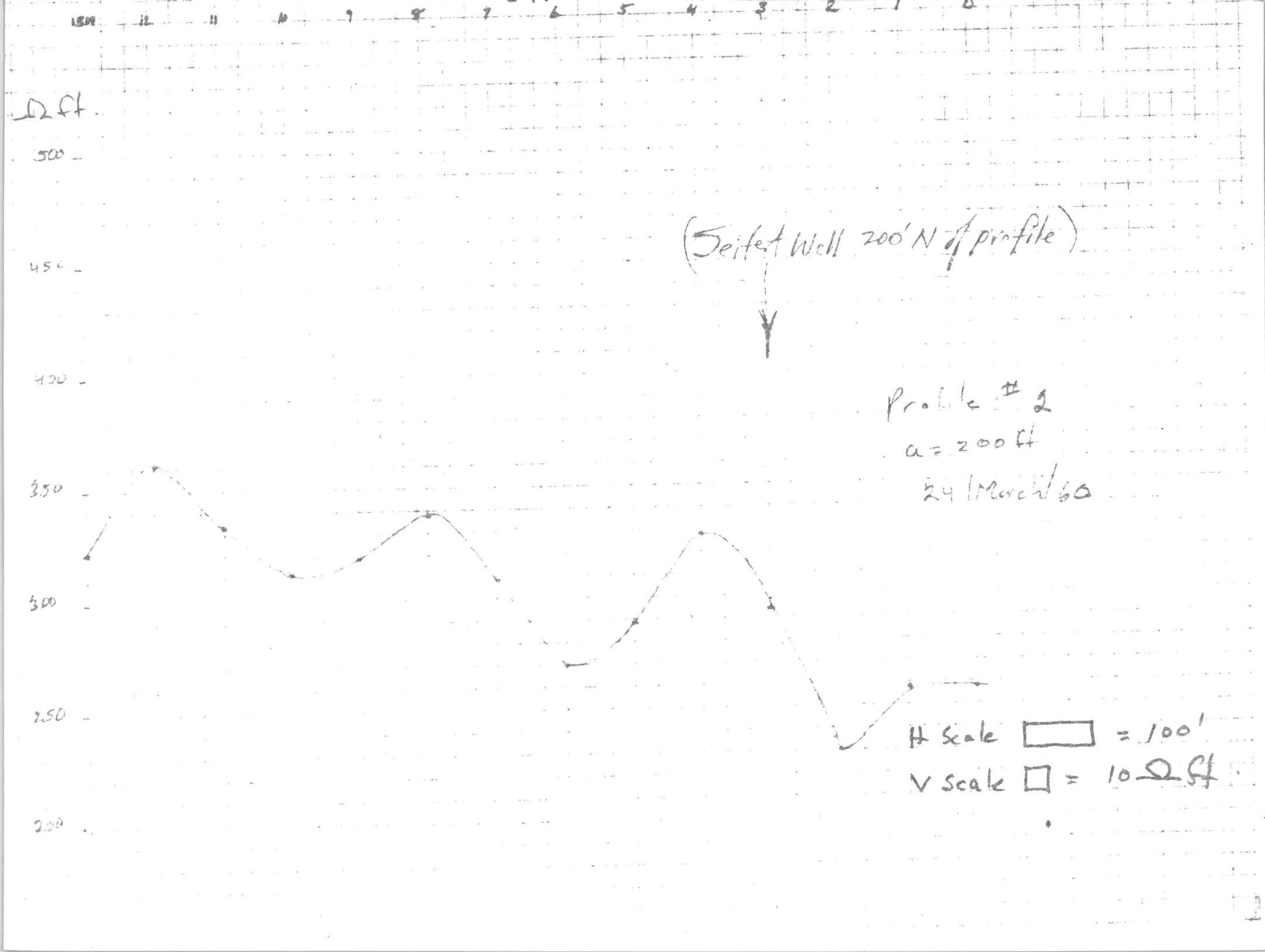
a = 500 ft

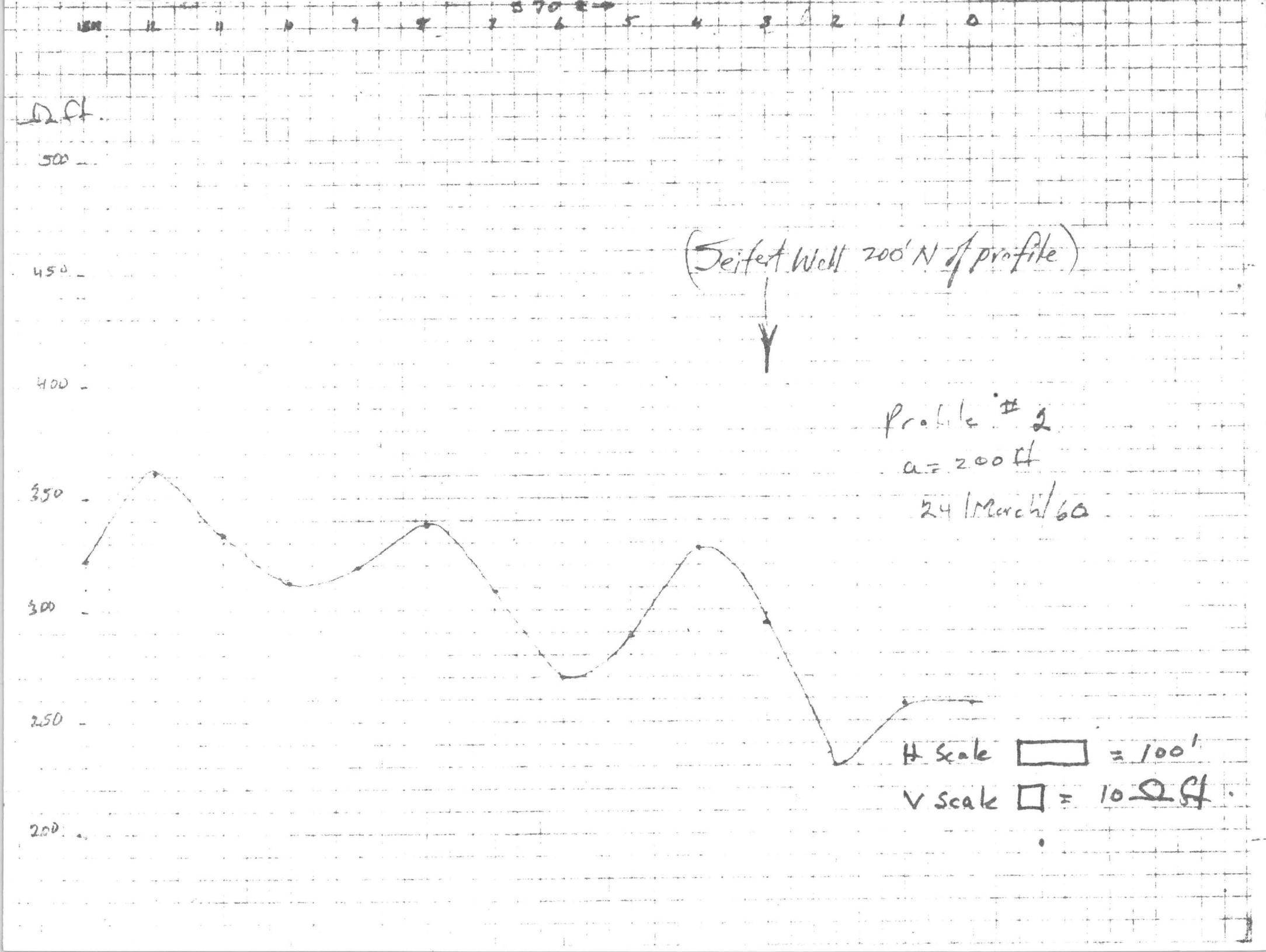
24/March/60

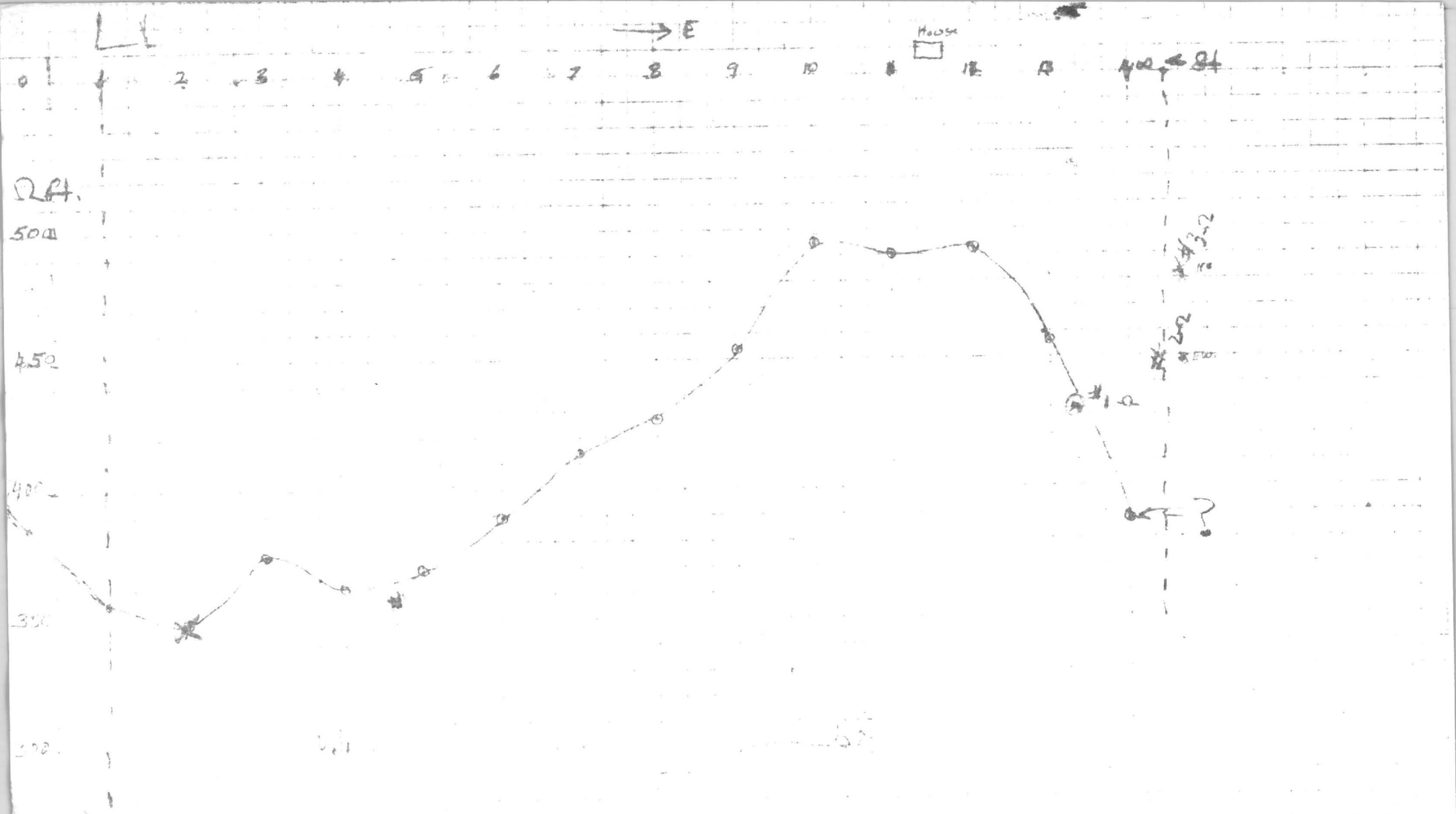
H Scale ▭ = 100'

V Scale □ = 10 Ω ft


370 E →
15M 12 11 10 9 8 7 6 5 4 3 2 1 0
Ω ft.
500
450
400
350
300
250
200
(Seifert Well 200' N of profile)
Profile # 2
a = 200 ft
24 March 80
H Scale = 100'
V Scale = 10 Ω ft


Ω ft.
500
450
400
350
300
250
200
(Seifert Well 200' N of pinfile)
Profile # 2
a = 200 ft
24 March 60
H Scale = 100'
V Scale = 10 Ω ft


Ω ft.
500
450
400
350
300
250
200
(Seifert Well 200' N of profile)
Profile # 2
a = 200 ft
24 March 60
H Scale = 100'
V Scale = 10 Ω ft.



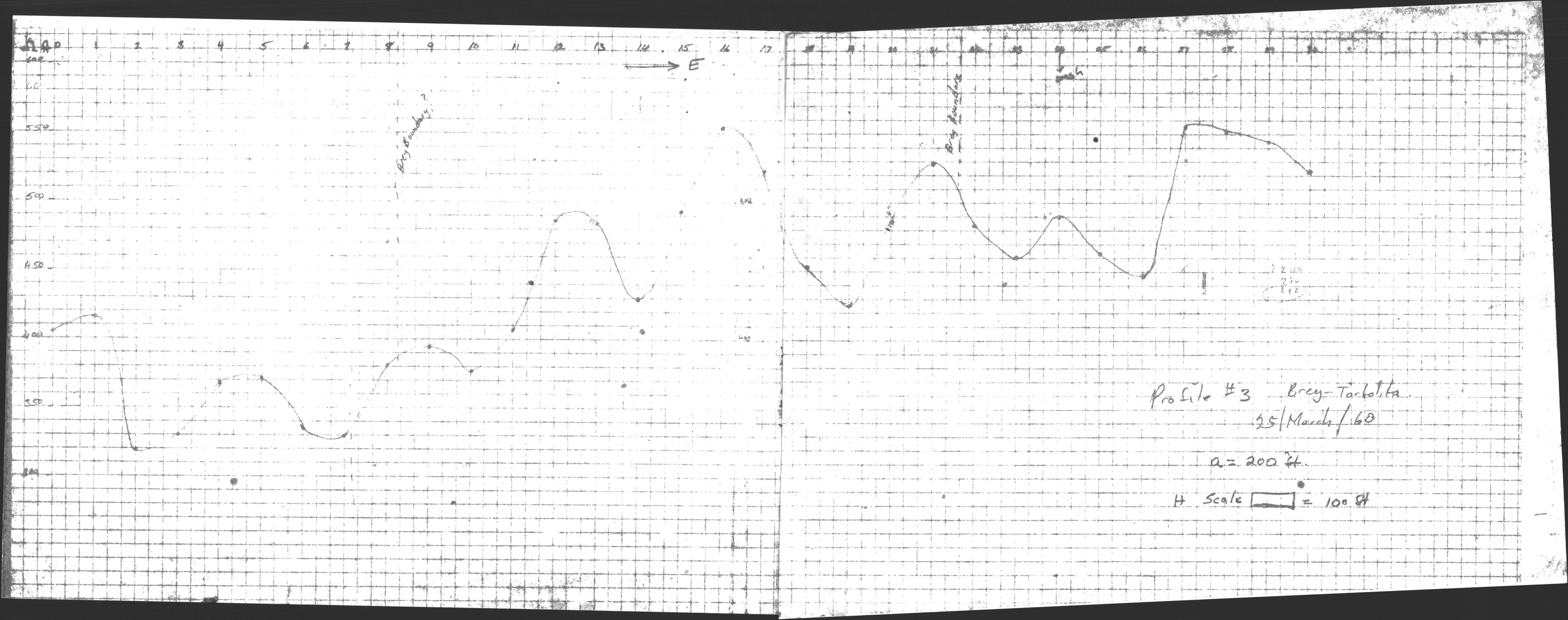
Brey - Tortolita

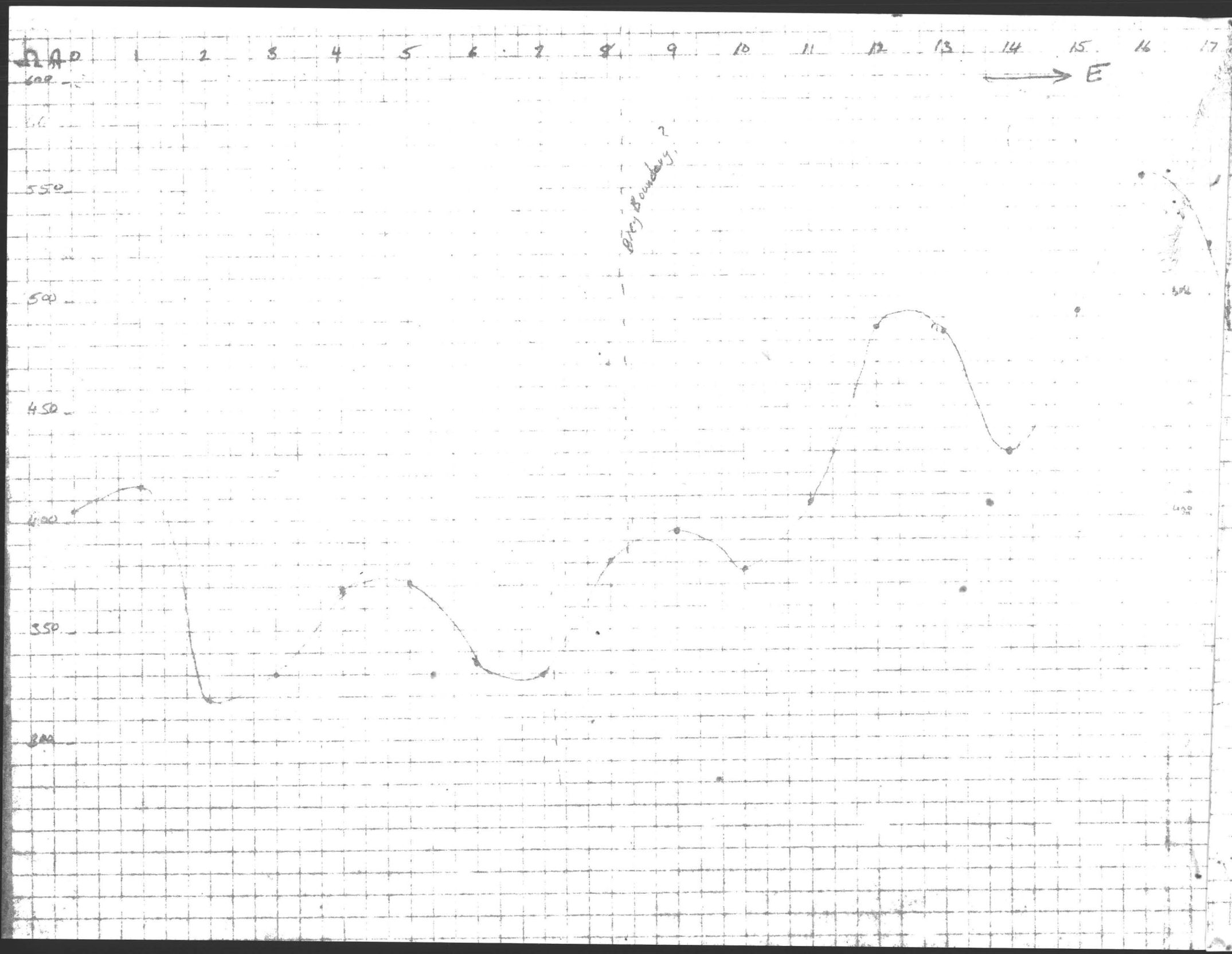
West → East Profile

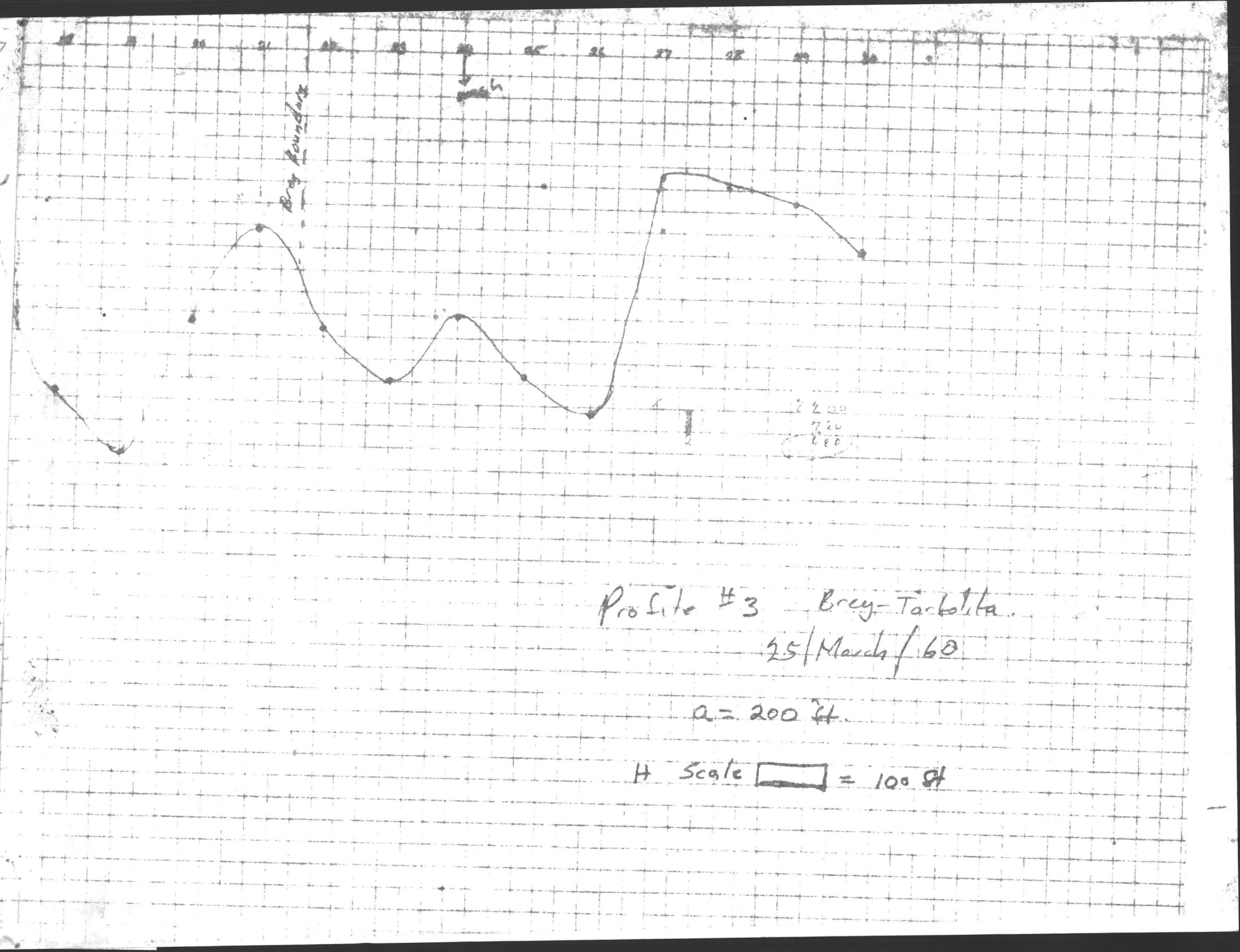
a = 200 ft

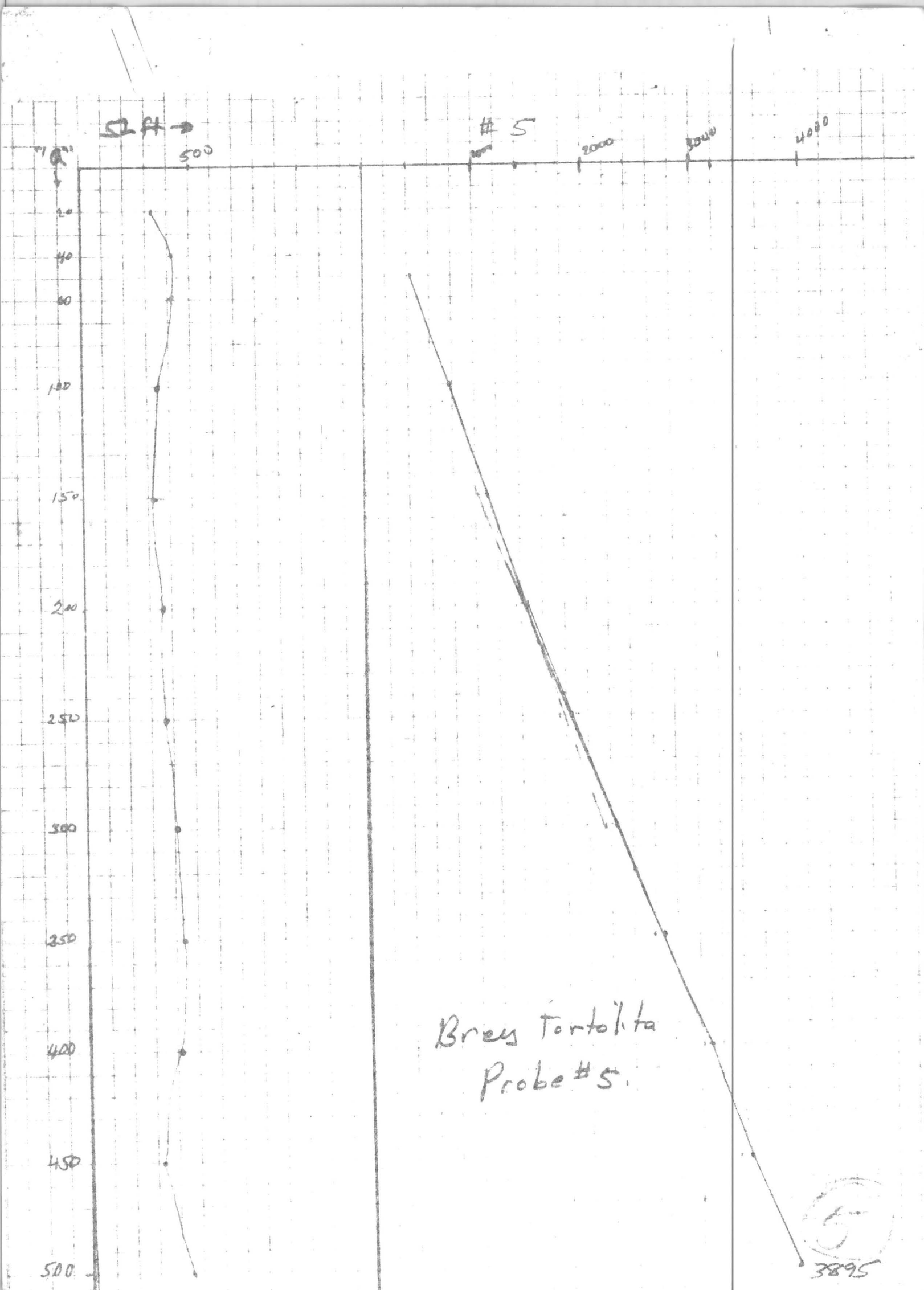
V scale 1 □ = 10 Ω ft

H scale 3 □ = 100 ft

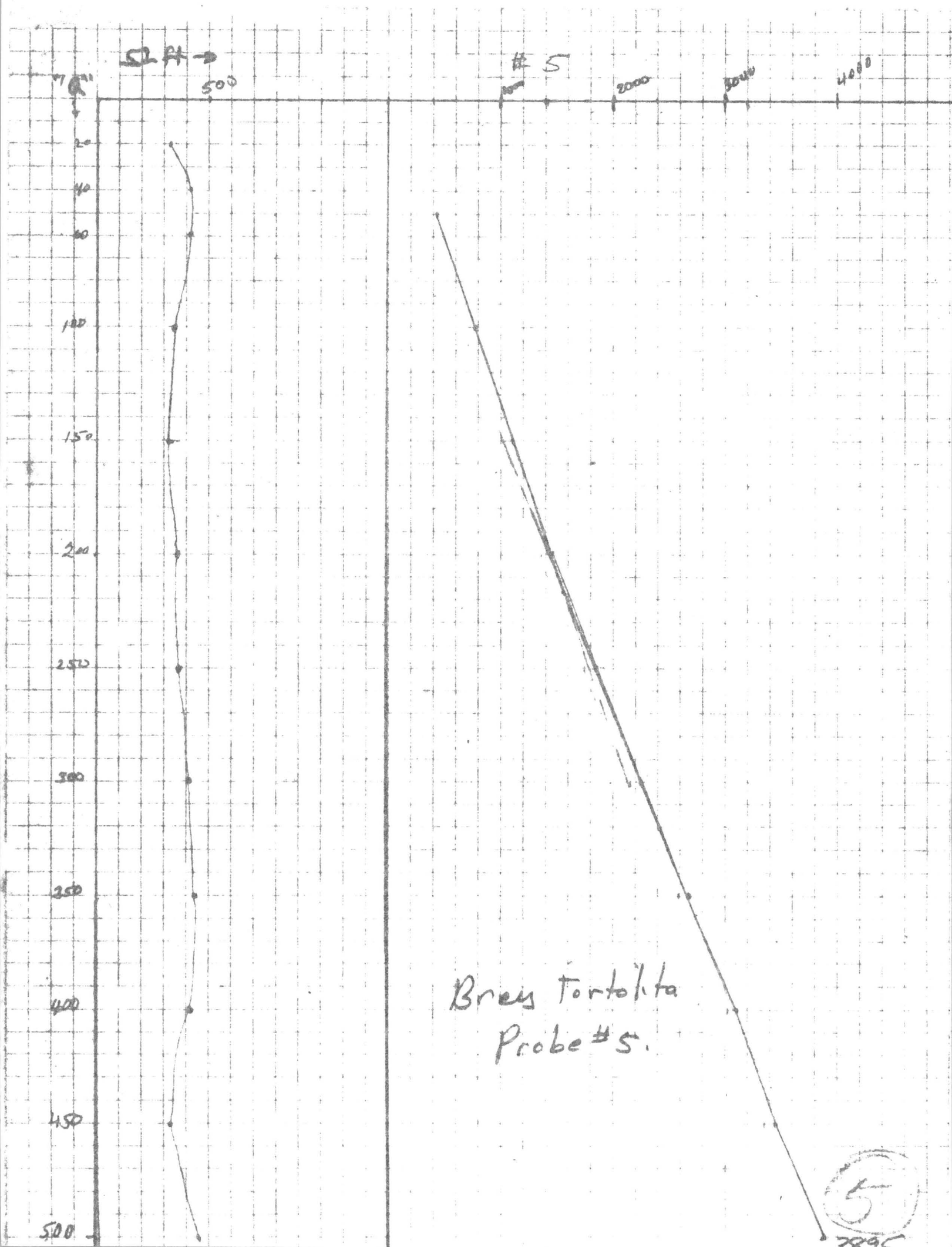

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
E
600
550
500
450
400
350
300
Brey Boundary ?
Brey Boundary
h
Profile #3 Brey-Tarbolita.
25/March/60
a = 200 ft.
H Scale = 100 ft


MAD
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
E
600
550
500
450
400
350
300
Brey Boundary ?

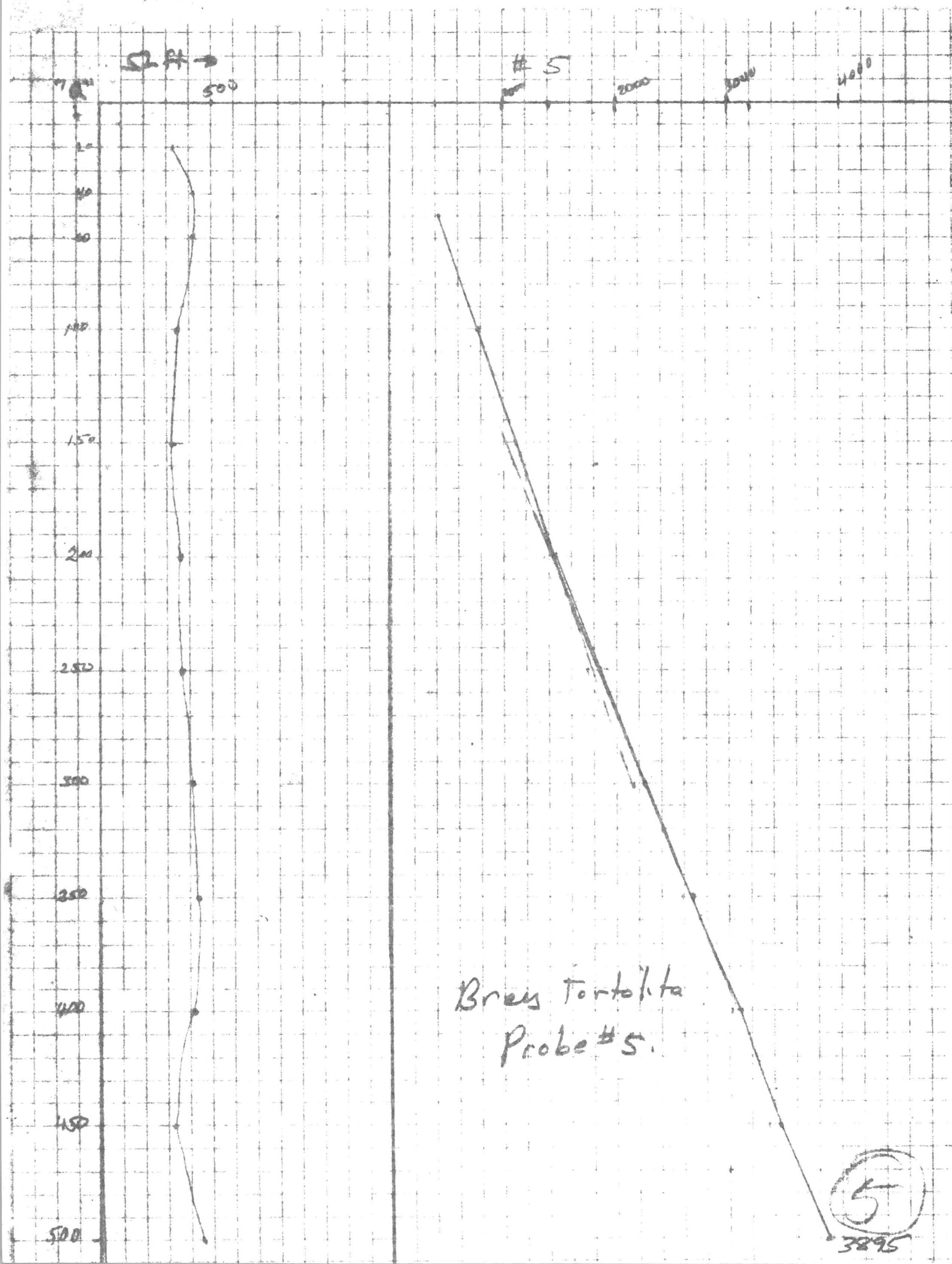

Brey Boundary
Profile #3 Brey-Tarbolita
25/March/60
a = 200 ft.
H Scale = 100 ft

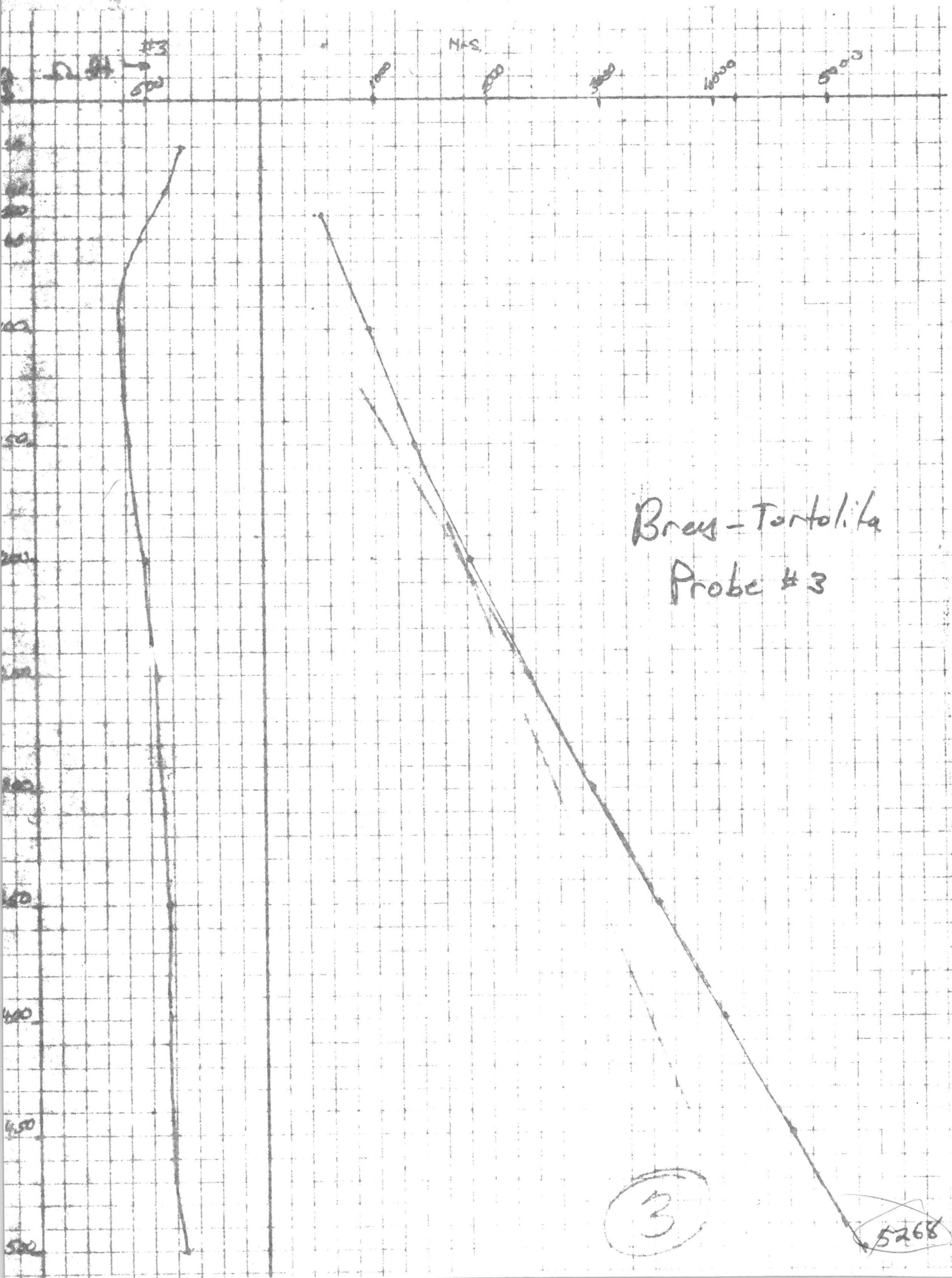


52 ft →
5
"Q"
500
1000
2000
3000
4000
20
40
60
100
150
200
250
300
350
400
450
500
Brey Tortolita
Probe #5.
3895

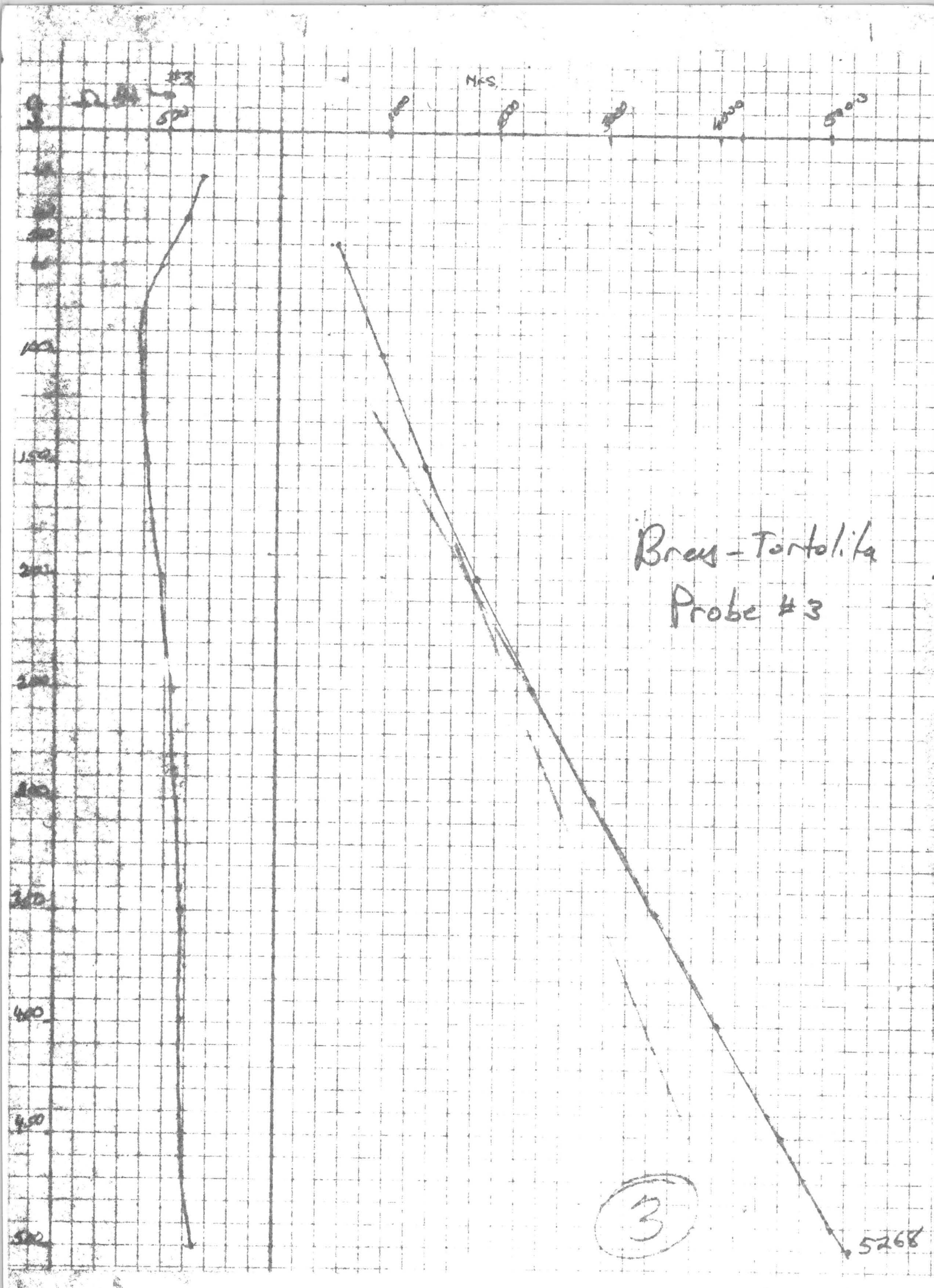


Ω ft →
5
500
2000
3000
4000
20
40
60
100
150
200
250
300
350
400
450
500
Brey Tortolita
Probe #5.
5

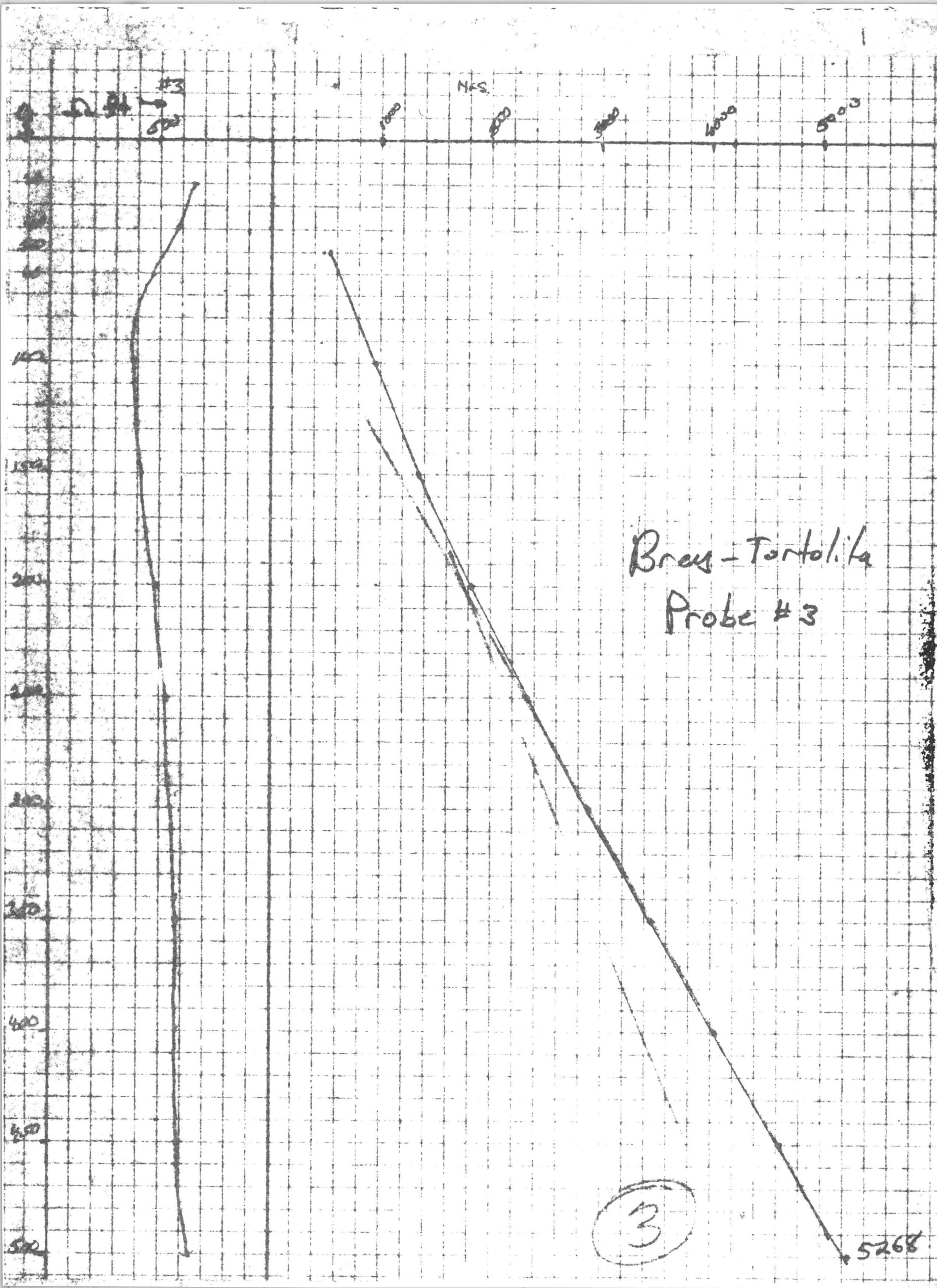

Ω ft →
500
#5
1000
2000
3000
4000
20
40
60
100
150
200
250
300
350
400
450
500
Brey Tortolita
Probe #5.
5
3895



#3
Ω
500
1000
2000
3000
4000
5000
Brey-Tortolita
Probe #3
3
5268



Ω #3
Mcs.
500
1000
2000
3000
4000
5000
100
150
200
250
300
400
450
500
Brey-Tortolita
Probe #3
5268
3



#3
Ω
MFS
500
1000
2000
3000
4000
5000
100
150
200
250
300
350
400
450
500
Brey-Tortolita
Probe #3
5268
3

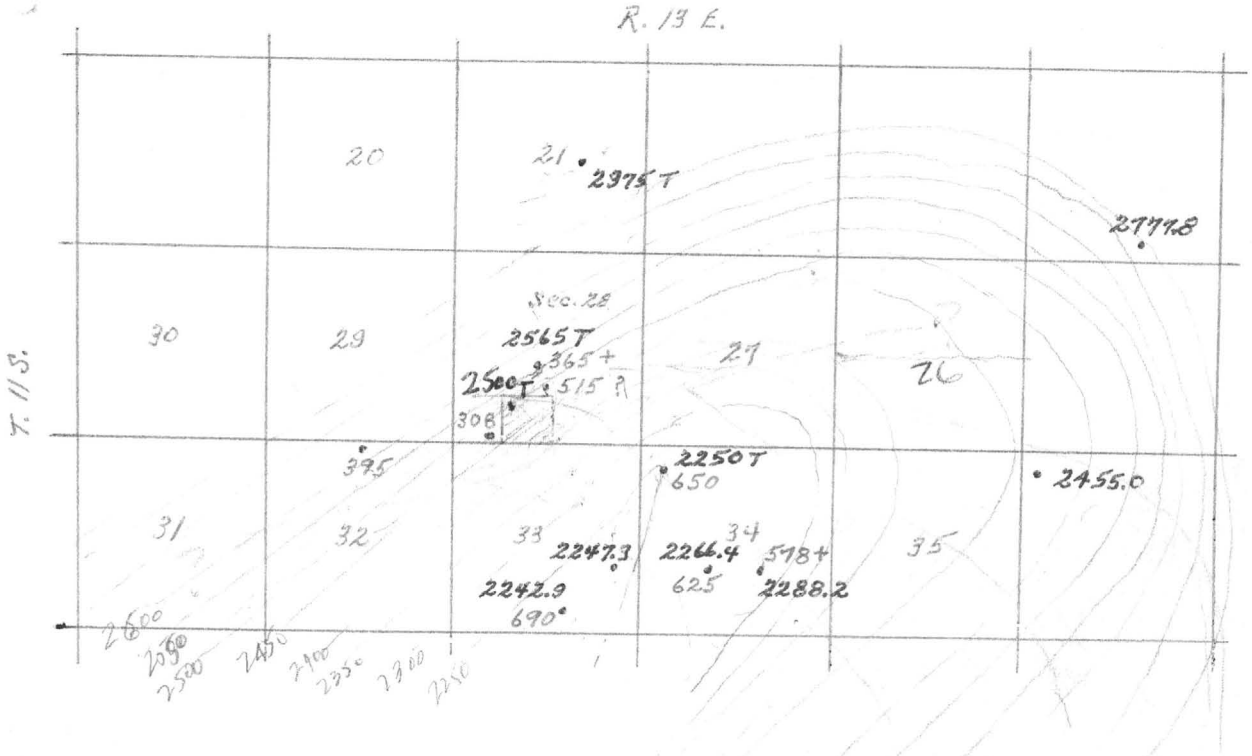
PROJ. #560
3-17-60

Water Development Corporation

CONSULTANTS IN GROUND-WATER HYDROLOGY

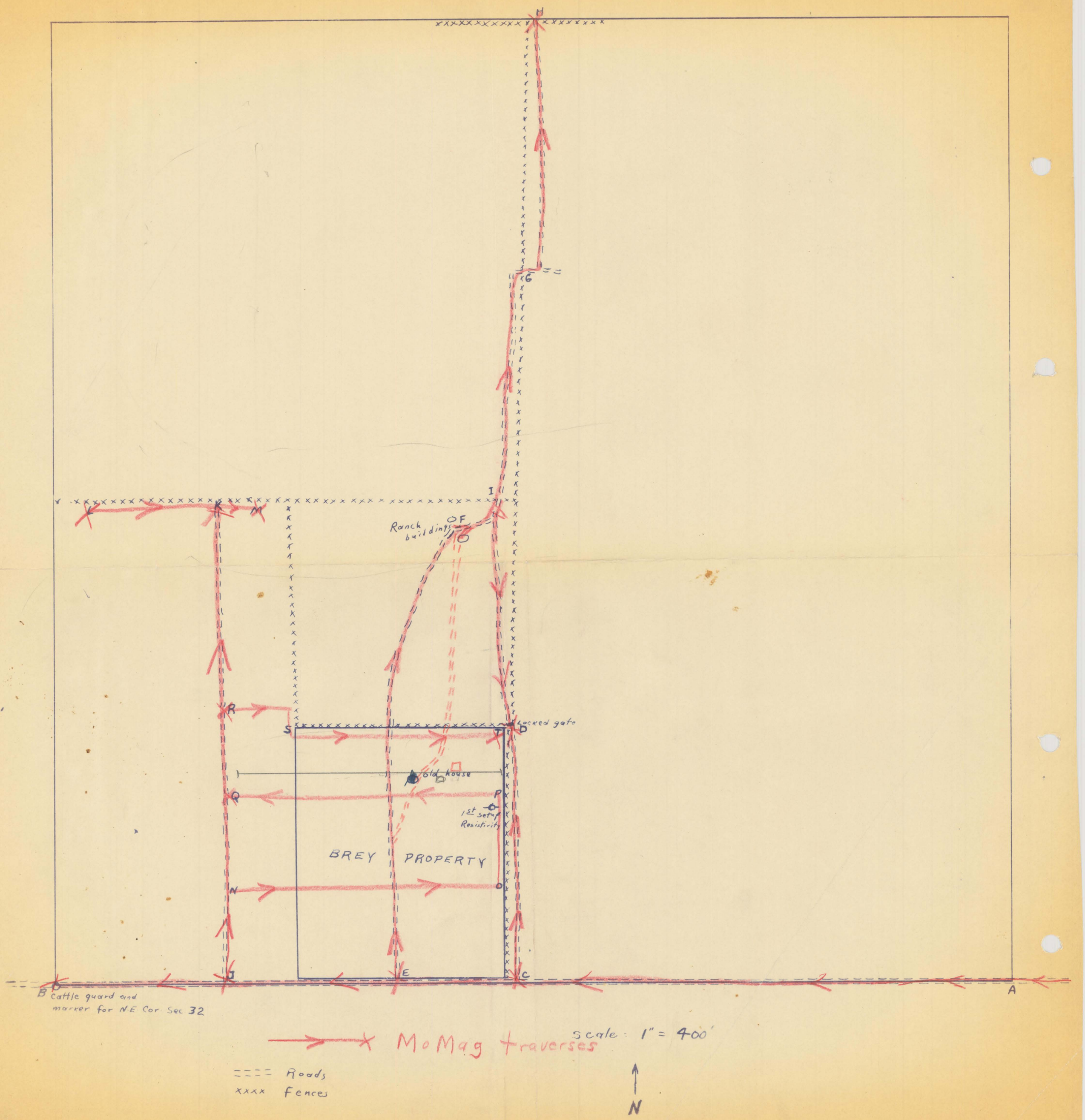
3938 SANTA BARBARA AVE.
TUCSON, ARIZONA

PHONE: EAST 6-1133
CABLE: WADEVCO, TUCSON



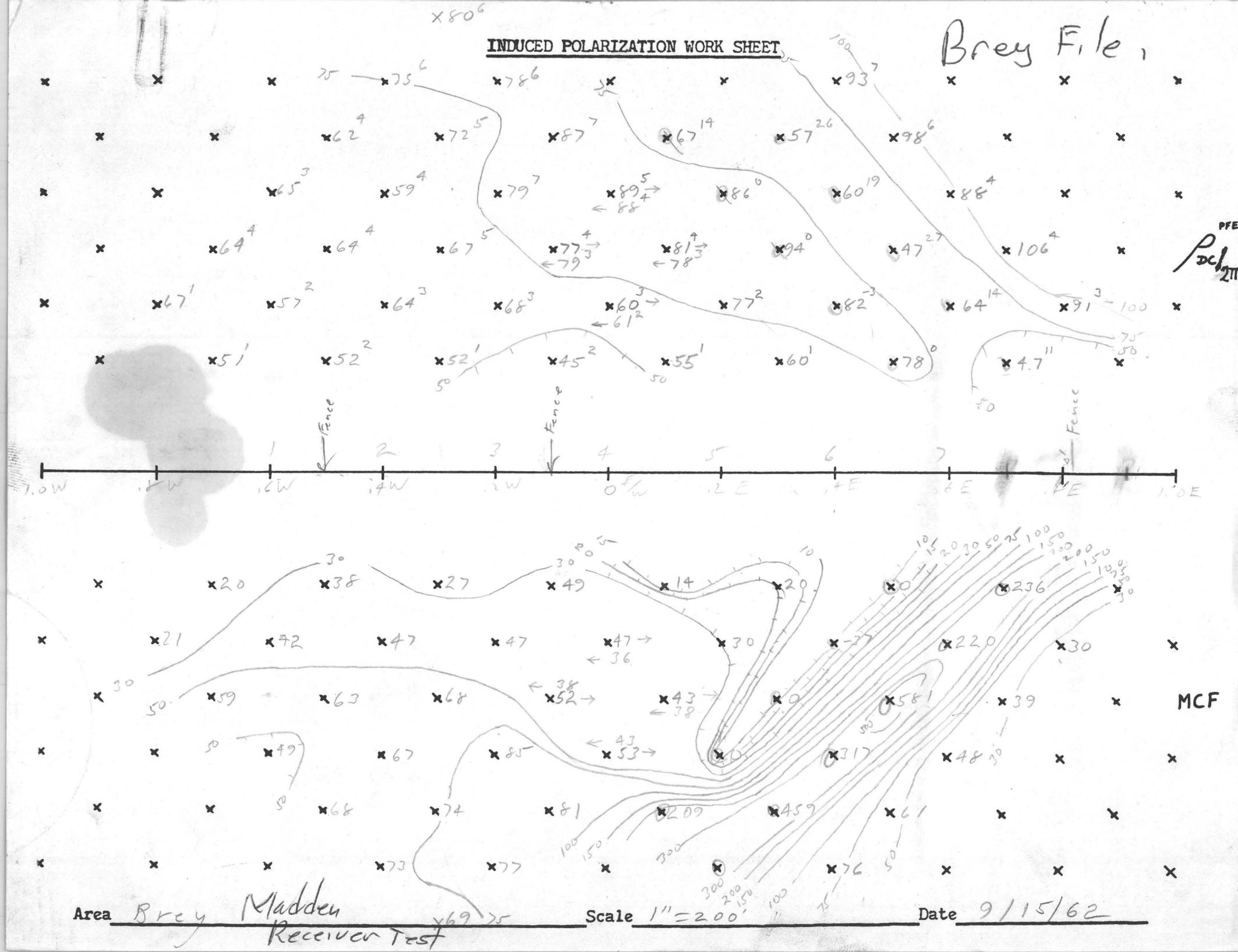
SKETCH MAP SHOWING LOCATIONS OF SOME WELLS NEAR THE BREY RANCH, SE¼ SW¼ SEC. 28, T. 11 S., R. 13 E. OTHER WELLS NOT SHOWN ARE LISTED IN THE ACCOMPANYING TABLE.

- BLUE FIGURES INDICATE ALTITUDE (FT) OF WATER LEVEL ABOVE SEA LEVEL WHEN MEASURED. "T" MEANS ALTITUDE AT LAND SURFACE ESTIMATED FROM TOPOGRAPHIC MAPS, U.S.G.S. FOR ALL OTHERS, THIS WAS DETERMINED BY LEVELLING.
- RED FIGURES INDICATE DEPTH (FT) TO BEDROCK, AS REPORTED BY DRILLER. "+" MEANS BEDROCK NOT ENCOUNTERED AT DEPTH SHOWN.


H
G
I
F
Ranch buildings
L
K
M
R
S
T
D
Locked gate
old house
Q
P
1st setup Resistivity
BREY PROPERTY
N
O
J
E
C
B
Cattle guard and marker for N.E. Cor. Sec 32
A
MoMag traverses
scale: 1" = 400'
Roads
Fences
N

INDUCED POLARIZATION WORK SHEET

Brey File,



Area Brey Madden Receiver Test

Scale 1" = 200'

Date 9/15/62

INDUCED POLARIZATION SENDER NOTES

Project: BREY Line: E. Date: 15 SEP 62

Send	3-4	2-3	1-2	4-5	3-4	2-3	1-2	5-6	4-5	3-4	2-3	1-2
Receive	.3E-.4E	→	→	.4E-.6E	→	→	→	.6E-.8E	→	→	→	→
Time												
Range X_2	750	—	—	—	—	—	—	—	—	—	—	—
Current	1500	—	—	—	—	—	—	—	—	—	—	—

Send	6-7	5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3	1-2
Receive	.8E-1.0E	→	→	→	→	→	1.0-1.2E	→	→	→	→	→
Time	—	—	—									
Range X_2	—	—	—	—	—	—						
Current	—	—	—	—	—	—						

INDUCED POLARIZATION SENDER NOTES

Project: Bray Line: West end Date: 15 SEPT 66

Send	4-5	5-6	6-7	3-4	4-5	5-6	6-7	2-3	3-4	4-5	5-6	6-7
Receive	.12"-.4"	→	→	.4"-.6"	—	—	→	.6"-.8"	—	—	—	→
Time												
Range X_2	750	—	—	—	—	—	—	—	—	—	—	—
Current	1500	—	—	—	—	—	—	—	—	—	—	—

Send	1-2	2-3	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5	5-6	6-7
Receive	.8"-1.0"	—	—	—	—	→	1.0-1.2"	—	—	—	—	→
Time	—											
Range X_2	750	—	—	—	—	/						
Current	1500	—	—	—	—	/						

INDUCED POLARIZATION - RECEIVER NOTES PAGE _____

Project: Brey Line: Brey - Westend Int.Cal _____ Date: _____

Send	4-5	5-6	6-7	3-4	4-5	5-6	6-7	2-3	3-4	4-5	5-6	6-7
Rec.	.2W-.4W	→		.4W-.6W	→			.6W-.8W	→			
Time												
DC-1	100R	30R	30R	100R	30R	30R	10R	100R	30R	30R	40R	10R
DC-2	547	663	142	697	614	144	519	694	714	54	419	115
Σ												
DC-3												
Dc-4 Dc	113	37.9	19.6	131	36.3	19.7	11.0	131	39.7	16.6	9.80	6.18
Σ												
DC-AV												
AC-1	1.2%	2.2%	3%	1.4%	3.2%	3.9%	3.8%	2%	3%	4.5%	6.7%	7%
AC-2												
Σ												
S. P.			-4.3	+2.2	+2.3							
AC-N												
				120								

INDUCED POLARIZATION - RECEIVER NOTES PAGE _____

Project: Bray Line: Bray-Westend Int.Cal _____ Date: _____

Send	1-2	2-3	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5	5-6	6-7?
Rec.	.8"-1.0"					→	1.0-1.2"					
Time												
DC-1	100R	30R	30R	10R	10R	3R	30R	10R	10R	3R	3R	3R
DC-2	668	592	35	220	39	570	766	910	278	840	536	289
Σ												
DC-3												
V DC-4	128	35.4	15.9	7.41	5.12	3.47	41.6	16.04	8.11	4.42	3.35	2.48
Σ												
DC-AV												
AC-1	1%	2.4%	4%	4%	5.3%	6%	1.4%	3.8%	3.7%	4.3%	5.5%	5.5%
AC-2												
Σ												
S. P.	0.9	would	not back				+6.2					
AC-N												

INDUCED POLARIZATION - RECEIVER NOTES PAGE _____

Project: Brey Line: East End Int.Cal _____ Date: _____

Send	3-4	2-3	1-2	4-5	3-4	2-3	1-2	5-6	4-5	3-4	2-3	1-2
Rec.	.2E-.4E	→		.4E-.6E	→			.6E-.8E	→			
Time												
DC-1	100R	30R	30R	100R	30R	30R	10R	300R	100R	30R	10R	3R
DC-2	755	647	125	858	958	163	529	136	28	250	497	945
Σ												
DC-3	138.2	37.4	19.1	150.8	48.3	20.3	11.10	195	51.0	23.4	10.72	4.78
Dc-4								← Hence at 18E				
Σ												
DC-AV											(747)	
AC-1	0.8%	2.8%	4%	1.2%	2.3%	3.5%	4.7%	0	-3%	0%	0%	14%
AC-2												
Σ												
S. P.												
AC-N	-6.6			+3.3		+2.3		-1.8	+9.2			
	+74											

INDUCED POLARIZATION - RECEIVER NOTES PAGE _____

Project: Brey Line: East End Int.Cal _____ Date: _____

Send	6-7	5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3	1-2?
Rec.	.8-1.0E	→					1.0-1.2E	→				
Time												
DC-1	100R	30R	10R	10R			100	30	10	10	3R	
DC-2	571	720	571	226	? 26%	?	75	338	517	187	762	
Σ												
DC-3	Fence at .8E →											
Dc-A	116.1	39.9	11.61	7.50			56.8	26.6	10.97	7.01	4.14	
Σ												
DC-AV												
AC-1	11%	14%	27%	19%	3R							
AC-2			(325	117	727	132 10R	2.7%	4.2%	4.2	(6%) 153	(7%) 674	
Σ			8.56	16.20	4.03							
S. P.	?						-6.3					
AC-N												

HEINRICHS GEOEXPLORATION COMPANY

INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project Brey Line East End Field date 15/Sept Data page_____ Comp. date 16/Sept. Comp by_____

(A) Send	3-4	2-3	1-2	4-5	3-4	2-3	1-2	5-6	4-5	3-4	2-3	1-2
(B) Receive	.2-.4E	→	→	.4-.6E	→	→	→	.6-.8E	→	→	→	→
(C) n separation	1	2	3	1	2	3	4	1	2	3	4	5
(D) I	1500	→	→	→	→	→	→	→	→	→	→	→
(E) Vdc (avg)	138.2	37.4	19.1	150.8	48.3	20.3	11.10	195	51.0	23.4	10.72	4.78
(F) DCcal												
(G) Kn x 10^{-3}	.6	2.4	6.0	.6	2.4	6.0	12.0	.6	2.4	6.0	12.0	21.0
(H) ρ dc=ExFxGx10^3/D	55.4	59.8	76.5	60.3	77.4	81.2	88.8	78.1	81.6	93.6	86.0	67.1
(I) Vac Σ												
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.												
(M) ρ dc/ρac=ExL/K	1.008	1.028	1.040	1.012	1.023	1.035	1.047	1.000	.990	1.000	1.000	1.140
(N) PFE=(M-1)(10^2)	0.8	2.8	4.0	1.2	2.3	3.5	4.7	0.0	-3	0.0	0.0	14.0
(O) MCF=(M-1)(10^5)/H	14	47	52	20	30	43	53	0	-37	0	0	209
ρac/2π x 2π	348	376	480.	379	486	510	558	490.	512	588	540	421

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	6-7	5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3	1-2
(B) Receive	.8-1.0E	→	→	→	→	→	1.0-1.2E	→	→	→	→	→
(C) n separation	1	2	3	4	5	6	2	3	4	5	6	7
(D) I	1500	→	→	→	→	→	→	→	→	→	→	→
(E) Vdc (avg)	116.1	39.9	11.61	7.50	?		56.8	26.6	10.97	7.01	4.14	?
(F) DCcal												
(G) Kn x 10^{-3}	.6	2.4	6.0	12.0	21.0	33.6	2.4	6.0	12.0	21.0	33.6	50.4
(H) ρ dc=ExFxGx10^3/D	46.5	63.5	46.5	60.0	56.6	?	90.9	166.3	87.8	98.1	92.8	
(I) Vac Σ												
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$					4.03	?						
(L) AC-DC cal.												
(M) ρdc/ρac =ExL/K	1.110	1.140	1.270	1.190	1.260		1.027	1.042	1.042	1.060	1.070	
(N) PFE=(M-1)(10^2)	11.0	14.0	27.0	19.0	26.3		2.7	4.2	4.2	6.0	7.0	
(O) MCF=(M-1)(10^5)/H	23.6	220	581	317	459		30	39	48	61	76	
ρac/2π x 2π	292	399	292	377	355		571	668	551	616	583	

HEINRICHS GEOEXPLORATION COMPANY

INDUCED POLARIZATION SURVEY COMPUTATION SHEET

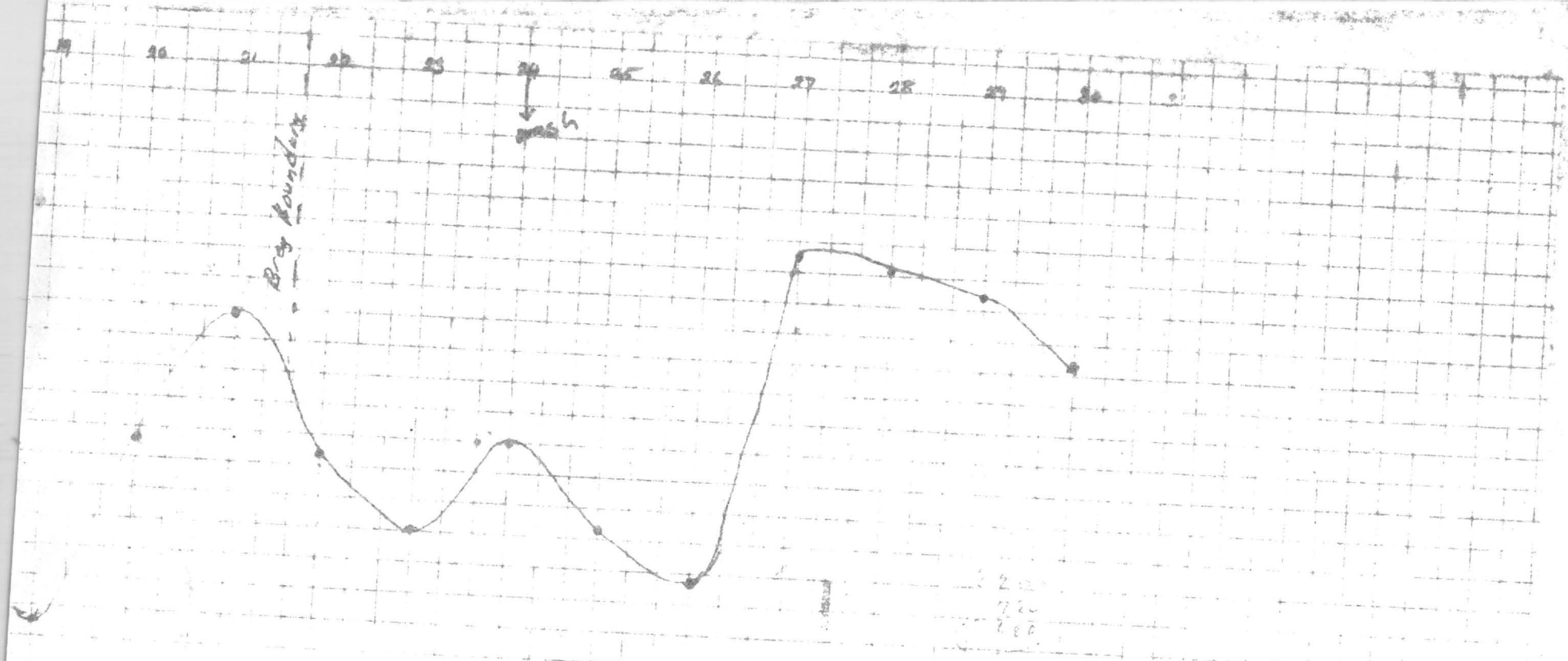
Page_____

Project Brey Line Westend Field date 15/Sept Data page_____ Comp. date 16/Sept Comp by_____

(A) Send	4-5	5-6	6-7	3-4	4-5	5-6	6-7	2-3	3-4	4-5	5-6	6-7
(B) Receive	.2w-.4w	→	→	.4w-.6w	→	→	→	.6w-.8w	→	→	→	→
(C) n separation	1	2	3	1	2	3	4	1	2	3	4	5
(D) I	1.500	→	→	→	→	→	→	→	→	→	→	→
(E) Vdc (avg)	113	37.9	19.6	131	36.3	19.7	11.0	131	39.7	16.6	9.80	6.18
(F) DCcal												
(G) Kn x 10^{-3}	.6	2.4	6.0	.6	2.4	6.0	12.0	.6	2.4	6.0	12.0	21.0
(H) ρ dc=ExFxGx10^3/D	45.2	60.6	78.4	52.4	68.1	78.8	88.0	52.4	63.5	66.5	78.57	86.6
(I) Vac Σ												
(J) AC noise x 2												
(K) Vac(corr) $=\sqrt{I^2 - J^2}$												
(L) AC-DC cal.												
(M) ρ dc/ρac=ExL/K												
(N) PFE=(M-1)(10^2)	2.2	2.2	3.0	1.4	3.2	3.0	3.8	2.0	3.0	4.5	6.7	7.0
(O) MCF=(M-1)(10^5)/H	49	36	38	27	47	38	43	38	47	68	85	81
$\rho_{dc}/2\pi \times 2\pi$	284	381	492	329	428	495	553	329	399	418	493	544

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	1-2	2-3	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5	5-6	6-7
(B) Receive	.8-1.0w	→	→	→	→	→	1.0-1.2w	→	→	→	→	→
(C) n separation	1	2	3	4	5	6	2	3	4	5	6	7
(D) I	1500	→	→	→	→	→	→	→	→	→	→	→
(E) Vdc (avg)	128	35.4	15.9	7.41	5.12	3.47	41.6	16.04	8.11	4.42	3.35	2.48
(F) DCcal												
(G) Kn x 10^{-3}	.6	2.4	6.0	12.0	21.0	33.6	2.4	6.0	12.0	21.0	33.6	50.4
(H) ρ dc=ExFxGx10^3/D	51.2	56.6	63.6	59.3	71.6	77.6	66.5	64.2	64.9	61.9	75.1	80.0
(I) Vac Σ												
(J) AC noise x 2												
(K) Vac (corr) $=\sqrt{I^2 - J^2}$												
(L) AC-DC cal.												
(M) ρdc/ρac =ExL/K												
(N) PFE=(M-1)(10^2)	1.0	2.4	4.0	4.0	5.3	6.0	1.4	3.8	3.2	4.2	5.5	5.5
(O) MCF=(M-1)(10^5)/H	20	42	63	67	74	77	21	59	49	68	73	69
$\rho_{dc}/2\pi \times 2\pi$	322	355	399	372	450	487	418	403	408	389	472	502

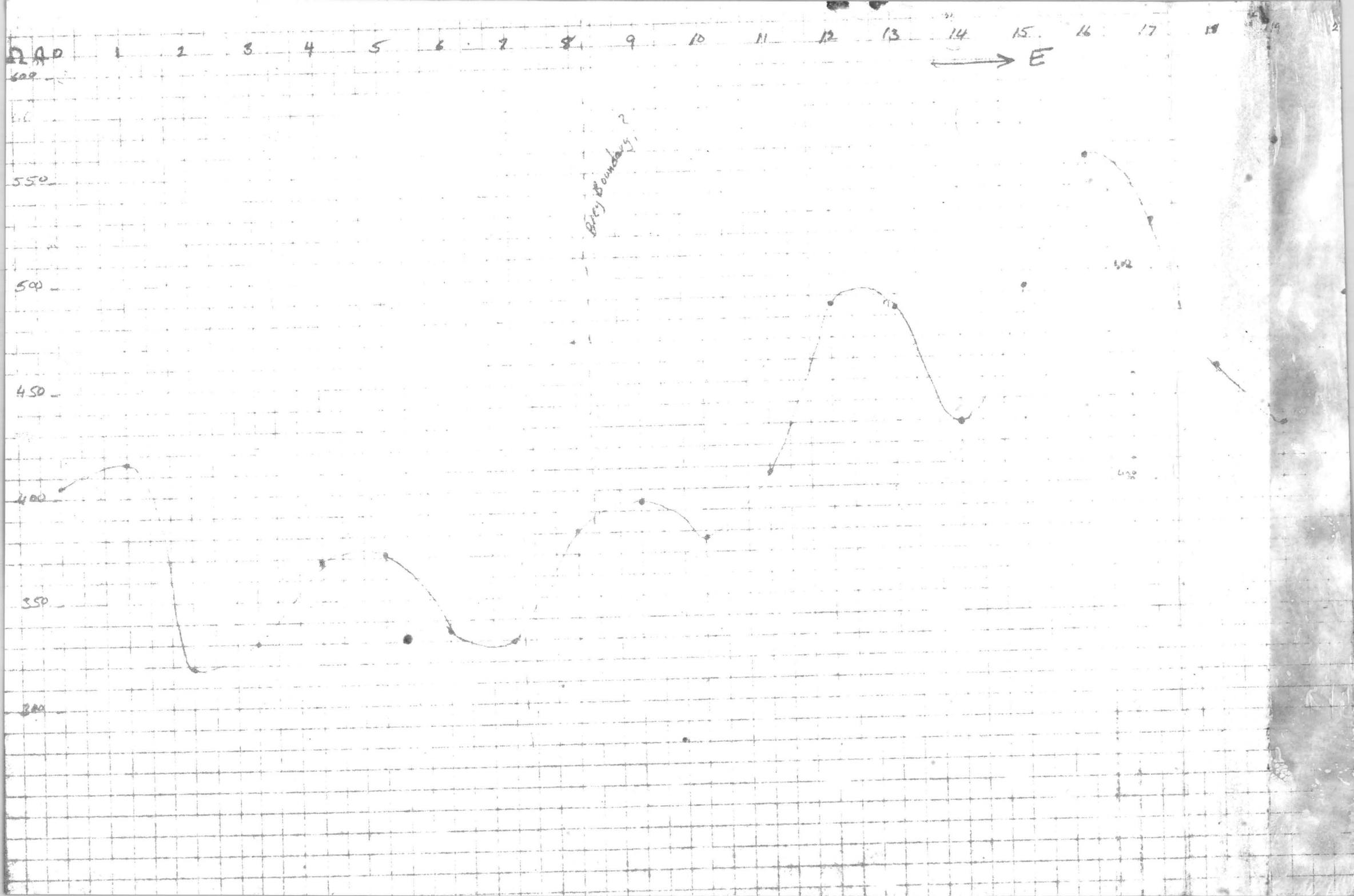


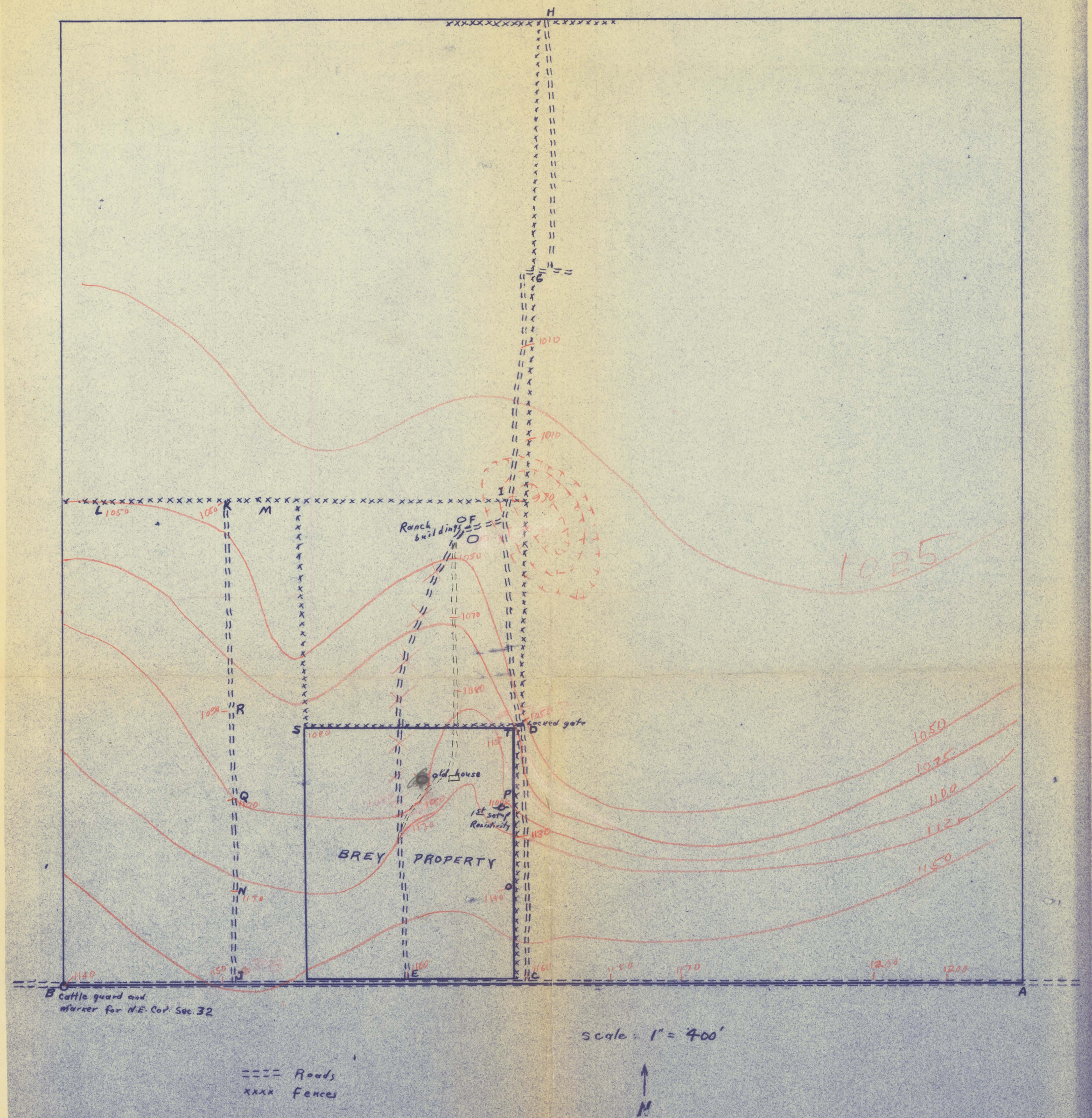
Profile #3 Bray-Tarbolita

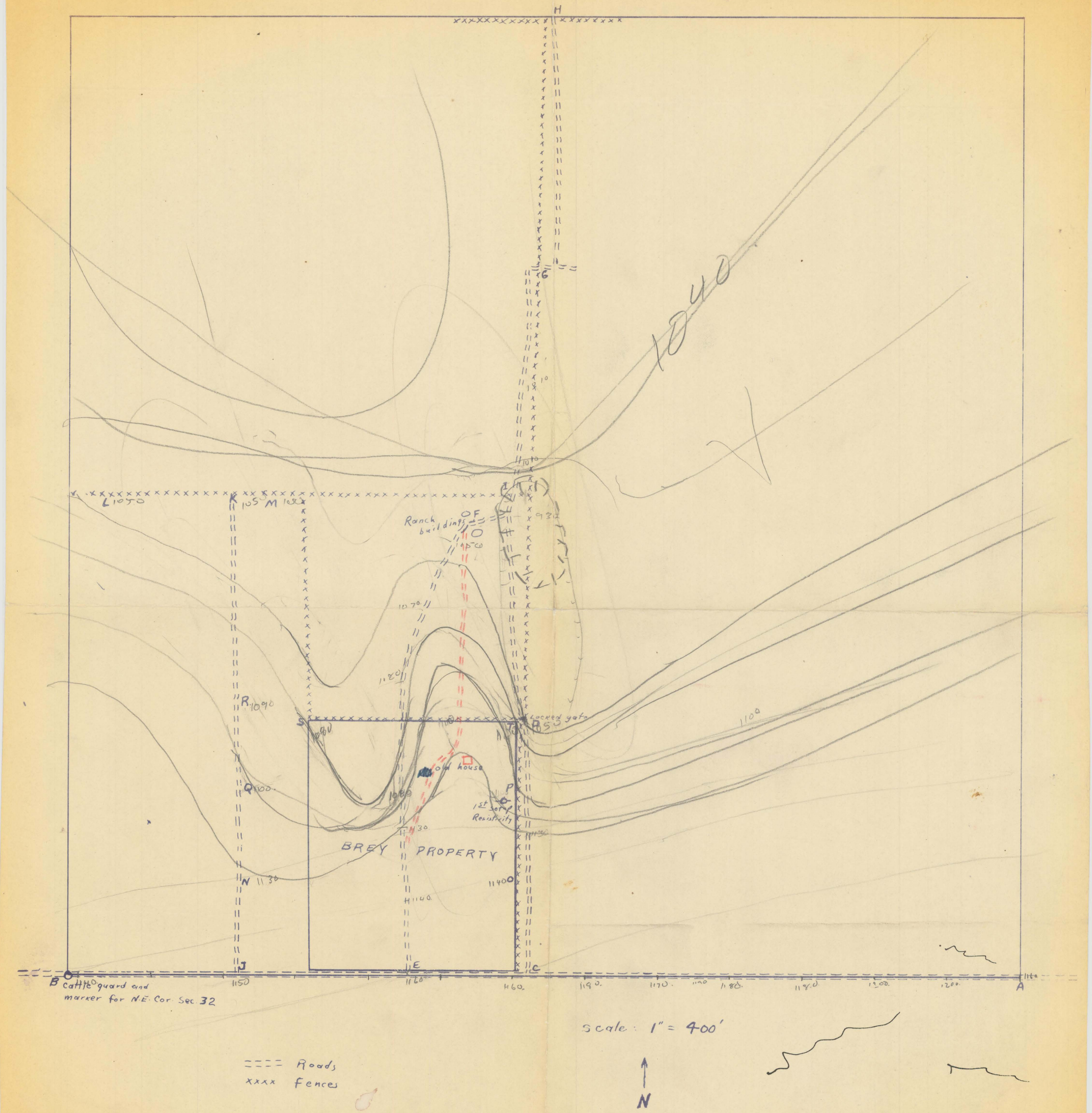
25/March/60

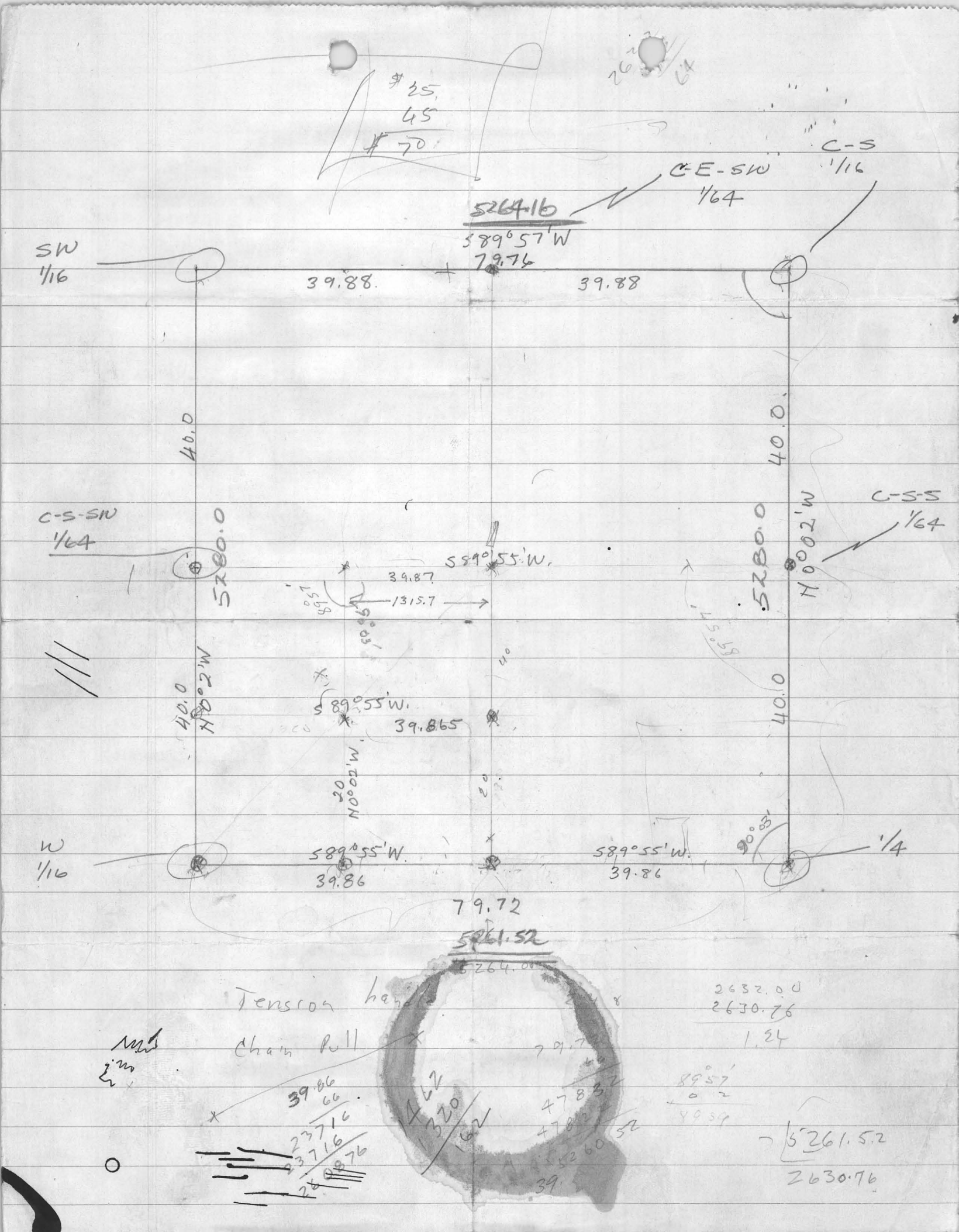
a = 200 ft.

H Scale ▭ = 100 ft


Ω A D
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
E
600
550
500
450
400
350
300
Grey Boundary?


H
G
I
F
O
L
K
M
Ranch buildings
1050
1070
1080
1010
1025
R
S
T
D
Locked gate
Old house
P
1st set of Resistivity
Q
BREY PROPERTY
N
O
J
E
C
B
A
Cattle guard and marker for N.E. Cor. Sec. 32
1050
1075
1100
1125
1150
1140
1160
1170
1180
1200
scale: 1" = 400'
N
==== Roads
xxxx fences


H
G
L 1050
K 1050
M 1080
Ranch buildings
OF
1040
1070
1080
R 1090
S 1080
T
Locked gate
Old house
Q 1100
P
1st set of Resistivity
BREY PROPERTY
N 1130
1140
J
E
C
B cattle guard and marker for N.E. Cor. Sec. 32
1150
1160
1170
1180
1190
1200
A
Scale: 1" = 400'
==== Roads
xxxx Fences
N


#25
45
#70
C-S
1/16
C-E-SW
1/64
5264.16
S89°57'W
79.76
SW
1/16
39.88
39.88
40.0
40.0
C-S-SW
1/64
C-S-S
1/64
5280.0
5280.0
N0°02'W
S89°55'W.
39.87
1315.7
S89°55'W.
39.865
N0°02'W
W
1/16
S89°55'W.
39.86
S89°55'W.
39.86
1/4
79.72
5261.52
Tension handle
Chain Pull
2632.00
2630.76
1.24
5261.52
2630.76

HAROLD Brey
Property

TR. MK. REG. U.S. PAT. OFF.

ORIGINAL COPR. 1910 BY J. O. PARKER

Subdivision

SE4 SW4 Sec. 28

T11S R13E
GSRB&M
ARIZONA

July 1 - 7, 1960

Inst.	D. Crockett
Chainman	L. Ethawageshik
"	W. Safford
Ast.	Chris Ludwig

MADE IN U.S.A.

LEFAX, PHILADELPHIA, PA

(1)

Notes:

1, July 1960

Set 32' site Rod @ C-S-SW 1/64

Set 16' site @ SE Cor - Section 28

Located W 1/16 Cor Sited To SE Cor Sect 28

2, July 1960

Set up on S 1/4 Cor and Turned

Angle 180°3' To North Bearing &

Began Traverse To North 1/4 Cor -

Foresite Set @ 90°3'

5, July 1960

Set up on N/E Corner of Section 28

Foresited N 1/4 Cor of Section 28

S 89°59'W ∢ - Turned South 90°2' ∢

Began Traverse To East

1/4 Cor of Section 28

6, July

Set up on E 1/4 Cor & Traversed

1315.7' West & West To West

1/4 Cor

Set up on 1315.7 Pt, Turned

90°3' ∢ To The South - Traversed

1320' To NW Cor of Bryland

Continued on To South Section

Line

(1)

TR MK REG. U.S. PAT. OFF.

- STILL UNABLE TO SITE FROM W 1/16

- RAN EAST TO So 1/4 COR

NOTE: ANGLE TURNED = 0°3' ERROR

ORIGINAL COPR. 1910 BY J. O. PARKER

(2)

7-1-60

STA	TO		DIST	CUM DIST	H.∠
W 1/16					
	TP1		100	100	
			100	200	
			100	300	
			100	400	
			100	500	
			100	600	
			300	900	
			300	1200	
			300	1500	
			300	1800	
			300	2100	
			300	2400	
	S 1/4 COR. SECTION 28		230.76	2630.76	

7-2-60

S 1/4 COR SECTION 28		FORESIGHT			90° 3'
	T.P.		100	100	180° 3'
			100	200	
			100	300	
			100	400	
			100	500	
			100	600	
			100	700	
			100	800	
			100	900	
			100	1000	

CONT

TR. MK. REG. U.S. PAT. OFF.

ORIGINAL COPR. 1916 BY J. O. PARKER

ERROR = 1.9' LONG

LINE = 0±

30' RIGHT-OF-WAY - NOTE - LINE RUNS
HITS CORNER FENCE APPROX. 6' EAST OF
POST - Red Head put FENCE LINE
IN POST FOR LINE

MADE IN U.S.A.

KEFAX, PHILADELPHIA, PA

(3)

7-2-60

STA	TO		DIST	CUM DIST	H A
S 1/4 COR SECTION 28				1000	180°3'
	TP		100	1100	
			100	1200	
			100	1300	
	N/E COR OF S/E 1/4 OF S/W 1/4		20	1320	
			55	1375	
			100	1475	
			100	1575	
			100	1675	
			100	1775	
			100	1875	
			100	1975	
			100	2075	
			100	2175	
			100	2275	
			100	2375	
			100	2475	
			100	2575	
			65	2640	→
			100	2740	
			100	2840	
			100	2940	
			100	3040	
			100	3140	
			100	3240	
			100	3340	
			100	3440	
			100	3540	
				CONT	

TR. MK. REG. U.S. PAT. OFF.

ORIGINAL COPR. 1919 BY J. O. PARKER

→ (FENCE CORNER - FENCE RUNS TO WEST) →	NOTE: N/E COR BROY PROPERTY GATE
(EAST/WEST FENCE)	NOTE; DIST = 0 ± LINE = .5' WEST OF PIPE W/STEEL PIN

(4)

7-2-60

STA	TO		DIST	CUM DIST	H ∢
S1/4 COR SECTION 28				3540	180° 3'
			100	3640	
			100	3740	
			100	3840	
			100	3940	
			100	4040	
			100	4140	
			100	4240	
			100	4340	
			100	4440	
			100	4540	
			100	4640	
			100	4740	
			100	4840	
			100	4940	
			100	5040	
			100	5140	
			100	5240	
			40	5280	

TR. MK. REG. U.S. PAT. OFF.

ORIGINAL COPR. 1910 BY J. C. PARKER

ERROR:

DIST = .1' SOUTH

LINE = 2.0' WEST

(5)

7-5-60

STA	TO		DIST	CUM DIST	H∠
N/E COR SECTION 28					
	N 1/4 COR SECT 28		Forest		S89°57'W
N/E COR SECT 28					
	TP 1		100	100	S0°2'E
			100	200	
			100	300	
			100	400	
			100	500	
			100	600	
			100	700	
			100	800	
			100	900	
			100	1000	
			100	1100	
			100	1200	
			100	1300	
			100	1400	
			100	1500	
			100	1600	
			100	1700	
			100	1800	
			100	1900	
			100	2000	
			100	2100	
			100	2200	
			100	2300	
			100	2400	

(b)

7-5-60

STA	TO		DIST	CUM DIST	HA
N/E COR SECT 28				2400	50° 2' E
	TP		100	2500	
			100	2600	
E1/4 COR SECT 28			40	2640	
E1/4 COR SECT 28		FORE SITE		0	359° 58'
	TP		100	100	269° 55'
			100	200	
			100	300	
			100	400	
			100	500	
			100	600	
			100	700	
			100	800	
			100	900	
			100	1000	
			100	1100	
			100	1200	
			100	1300	
			100	1400	
			100	1500	
			100	1600	
			100	1700	
			100	1800	
			100	1900	
			100	2000	
			100	2100	

(6)

TR. MK. REG. U.S. PAT. OFF.

ORIGINAL COPR. 1910 BY J. O. PARKER

LINE = 0±
DIST = 1.7' SOUTH

@ 1320' N & S Fence

Begin Big Wash

(7)

7-5-60

STA	TO		DIST	CUM DIST	H.∡
E 1/4 COR SECT 28				2100	
	TP		100	2200	
			100	2300	
			100	2400	
			100	2500	
			100	2600	
	E 1/4 COR SECT 28		32	2632	
		7-6-60			
E 1/4 COR SECT 28				0	
	TP		100	100	
			100	200	
			100	300	
			100	400	
			100	500	
			100	600	
			100	700	
			100	800	
			100	900	
			100	1000	
			100	1100	
			100	1200	
			100	1300	
			15.7	1315.7	
			100	1415.7	
			100	1515.7	
			100	1615.7	
			100	1715.7	

TR. MK. REG. U.S. PAT. OFF.

ORIGINAL COPR. 1918 BY J. O. PARKER

(2') LINE: 2' ±
DIST = 0 ± west

2.5' west of No.-So. Fence

(8)

7-6-60

STA	TO		DIST	CUM DIST	HA
E 1/4 COR SECT 28				1715.7	
	TP		100	1815.7	
			100	1915.7	
			100	2015.7	
			100	2115.7	
			100	2215.7	
			100	2315.7	
			100	2415.7	
			100	2515.7	
			100	2615.7	
			15.7	2631.4	
S 1/8 W COR SECT 28	W 1/4 COR SECT 28	FORESITE			0°
	TP		100	100	89°57
			100	200	
			100	300	
			100	400	
			100	500	
			100	600	
			100	700	
			100	800	
			100	900	
			100	1000	
			100	1100	
			100	1200	
			100	1300	
			20	1320	
			80	1400	

(8)

TR MK. REG. U.S. PAT. OFF.

ORIGINAL COPR. 1910 BY J. C. PARKER

LINE = 0 ±
DIST = .2' WEST

PT @ E\W FENCE LINE

@ 1462' - 76' EAST TO WELL

(9)

7-6-60

STA	TO		DIST	CUM DIST	
B1/4 COR Sect 28				1400	
	TP		100	1500	
			100	1600	
			100	1700	
			100	1800	
			100	1900	
			100	2000	
			100	2100	
			100	2200	
			100	2300	
			100	2400	
			100	2500	
			100	2600	
			10	2610	
			30	2640	
S1/4 COR Section	B1/4 COR 28		FORESIGHT	0	0° 0'
	TP		100	100	
			100	200	
			100	300	
			100	400	
			100	500	
			100	600	
			100	700	
			100	800	
			100	900	
			100	1000	
			100	1100	

TR. MK. REG. U.S. PAT. OFF.

ORIGINAL COPR. 1919 BY J. O. PARKER

PROPERTY LINE = (S/W) COR BREY LAND
30 NORTH OF SOUTH SECTION LINE
SOUTH SECTION LINE

(10)

7-6-60

STA	To		Dist	Cum Dist
S/W COR SECT 28				1100
	TP		100	1200
			100	1300
	S/W COR SET LINE BREY PROPERTY S/W COR SECT 28		15.4	1315.4
			1315.4	2630.8

7-7-60

SET COPPERWELDS @ ALL FOUR CORNERS OF BREY PROPERTY. IN ADDITION TWO (2) 1½" GALVANIZED PIPES 18" LONG WERE SET EQUA DISTANCE ON ALL FOUR (4) SIDES OF THE PROPERTY AS SHOWN IN DIAGRAM - COPPERWELDS & PIPES WERE DRIVEN IN GROUND TO ALLOW 4" ABOVE SURFACE.

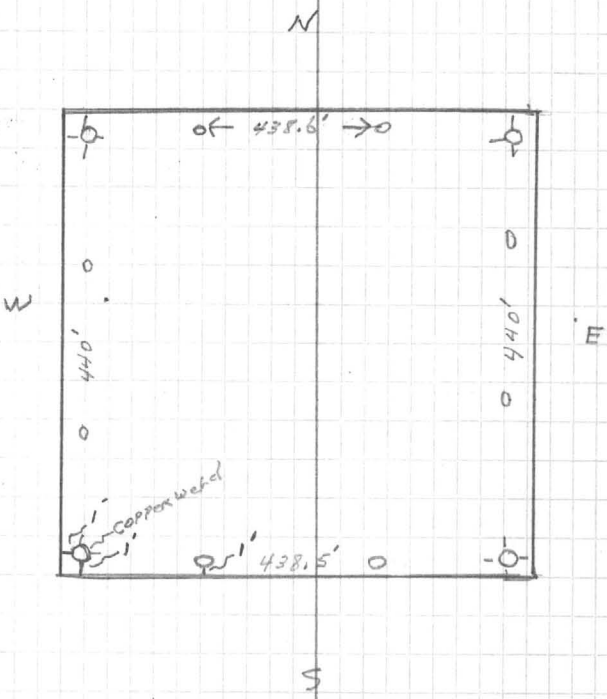
MOORE Rd WIDTH MEASURED @ S/W & S/E CORNERS OF BREY PROPERTY = 20'

ORIGINAL COPR. 1910 BY J. O. PARKER

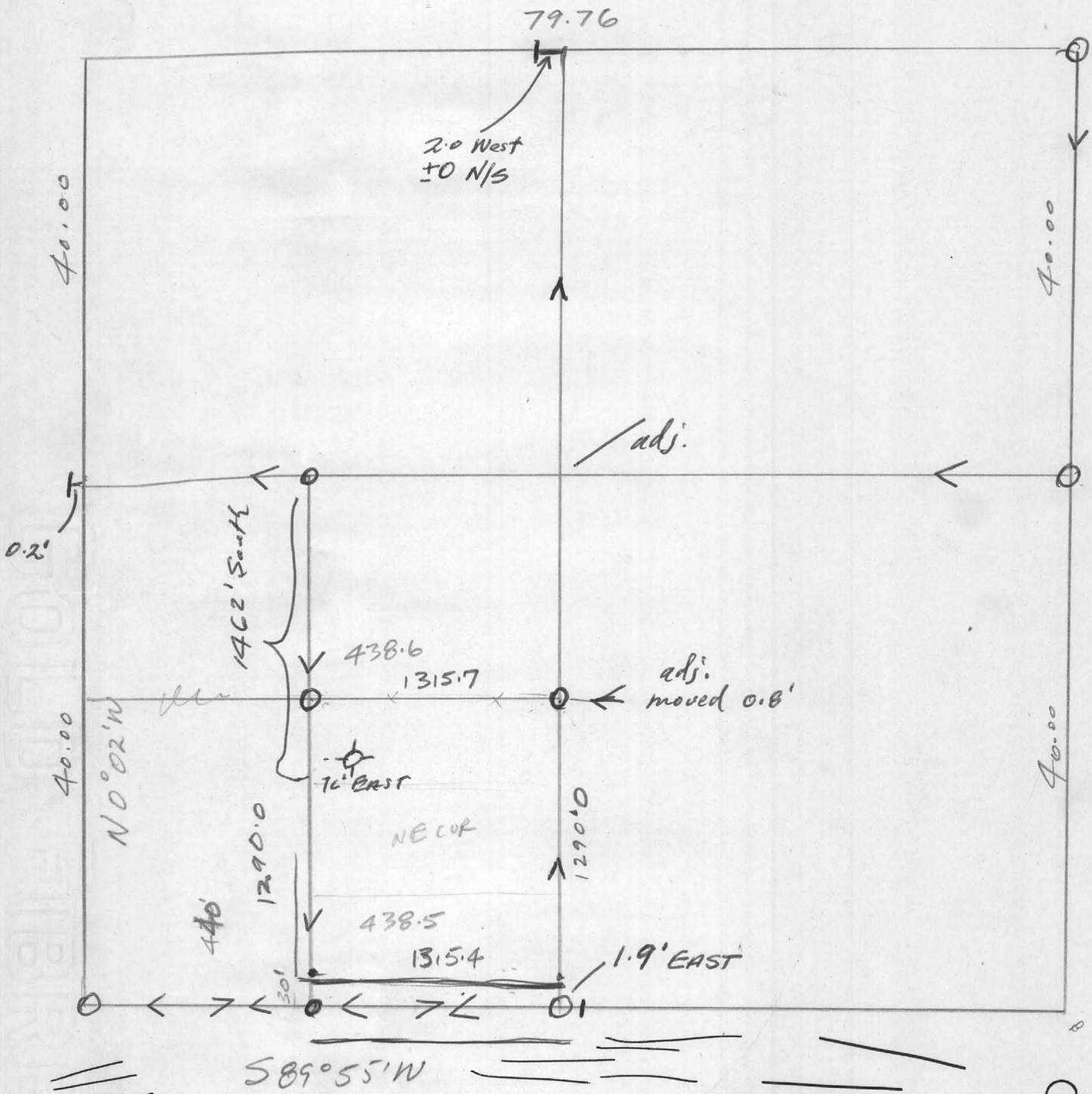
TR. MK. REG. U. S. PAT. OFF.

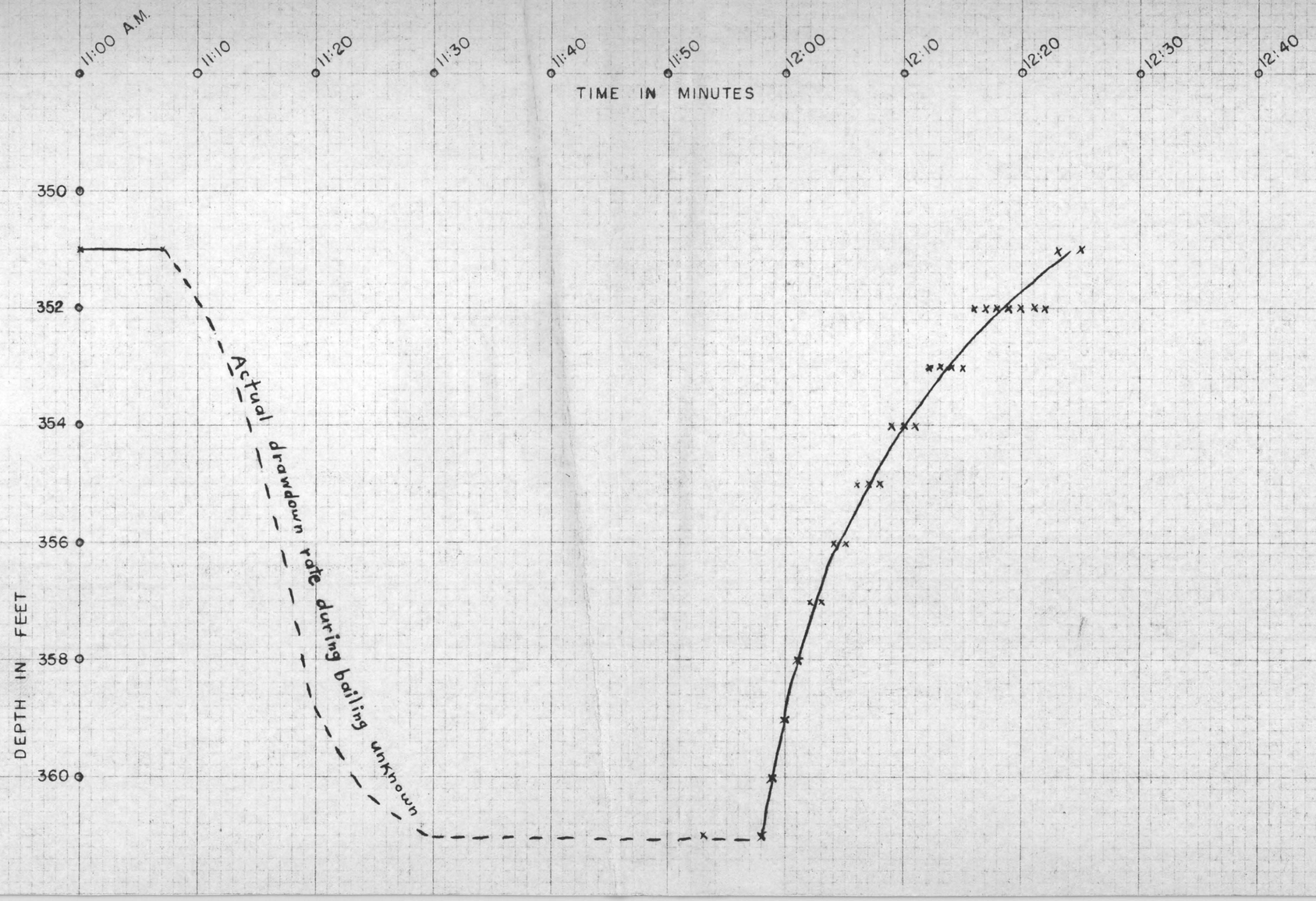
(10)

Line = 0±
Dist = 0±



LEFAX, PHILADELPHIA, PA.


79.76
2.0 West
±0 N/S
40.00
40.00
adj.
0.2'
1462' South
438.6
1315.7
adj.
moved 0.8'
40.00
40.00
N0°02'W
7.1' EAST
NE COR
1290.0
1290.0
440'
438.5
1315.4
1.9' EAST
30'
S89°55'W



BAIL TEST & RECOVERY RATE

BREY WATER WELL

LOT 7, SEC. 28, T11S, R13E, G&SRBM

PIMA COUNTY ARIZONA

4/23/60

HEINRICHS GEOEXPLORATION COMPANY

P. O. BOX 5671 TUCSON, ARIZONA

HEINRICHS GEOEXPLORATION COMPANY
MINERAL ENGINEERING CONSULTANTS AND CONTRACTORS
GEOPHYSICAL, GEOLOGICAL AND ECONOMIC APPRAISALS
TUCSON, ARIZONA

RECEIVED JUN 25 1960

WALTER E. HEINRICHS, JR.
E. GROVER HEINRICHS

PHONE: MAIN 2-4202
806-808 WEST GRANT ROAD
MAIL: P. O. BOX 5671

June 13, 1960

Mr. Harold E. Brey
2029 Bronson Blvd.
Kalamazoo, Michigan

Dear Mr. Brey:

Concerning an accurate, legal survey of your land, Parcel 7, in Section 28, T11S, R13E, Pima County, Arizona, we previously gave you an off-the-cuff estimate of $500.00 for the job.

Our charges would be $130.00 per day for a four man crew consisting of an instrument man, two chainmen and a fourth man who would cut brush, keep notes, set stakes, and do anything else necessary to expedite the survey. In addition there are vehicle charges for which, on this particular job, we would charge $12.00 a day to include both the vehicle and the mileage. Finally, an accurate map would be prepared and copies of it made, at a charge of $10.00 per hour. We estimate two to three field days will be needed for the actual surveying.

2½ days @ $130.00----------	$325.00
Vehicle charge, 3 days-----	36.00
12 capped pipes @ .75¢-----	9.00
12 hrs. on map----------	120.00
	$490.00

Depending on the number of Bureau of Land Management Section Corners and ¼ corners that can be located on the ground around Section 28, the surveying might entail either more or less time than estimated. Since several of them have been reported, we feel confident that probably less time will be required and so submit our bid for the job on a daily basis as stated above but furthermore agree to fully complete the job in sound engineering fashion for a maximum charge of $500.00, in the event that our daily charges should amount to more.

It is our understanding that capped iron pipes are to be set 12 inches inside the boundary of the property, equally spaced, four to a side, or a total of twelve stakes.

If the above bid is accepted, please indicate your agreement to the conditions as explained above by signing the enclosed copy as provided and return to Heinrichs GEOEXploration Company.

Very truly yours,

HEINRICHS GEOEXPLORATION CO.

E. Grover Heinrichs

E. Grover Heinrichs

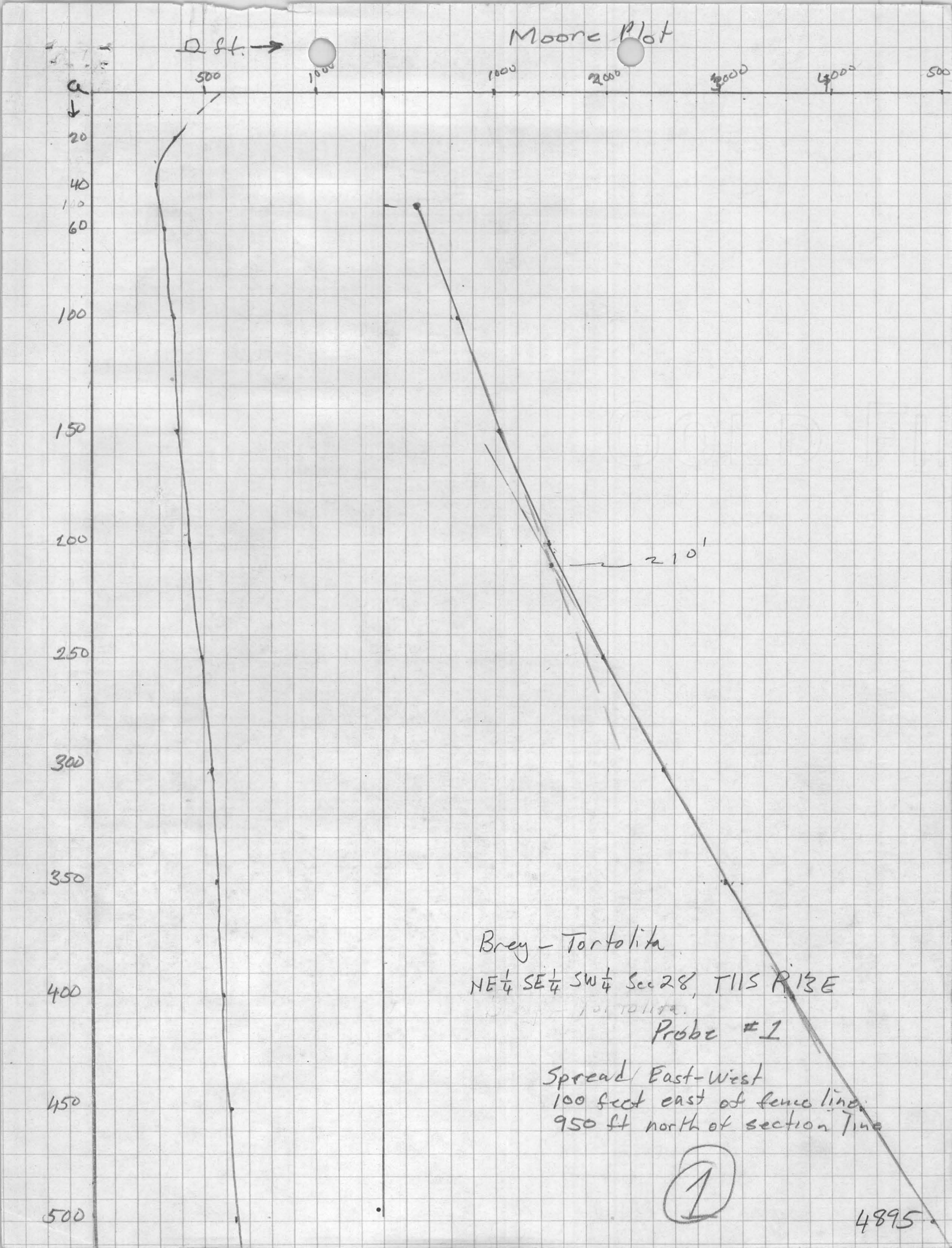
Accepted: Harold E. Brey

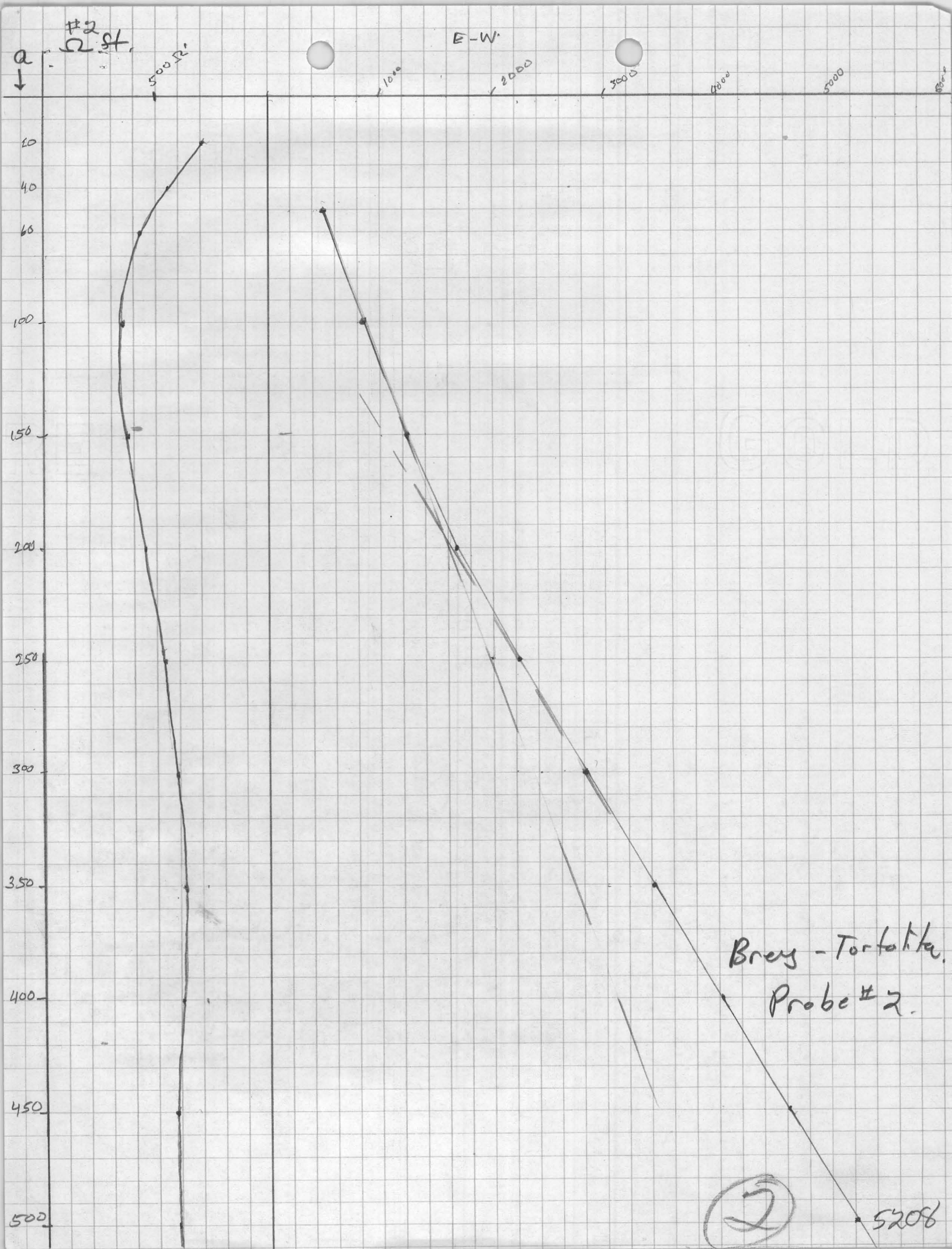
Harold E. Brey

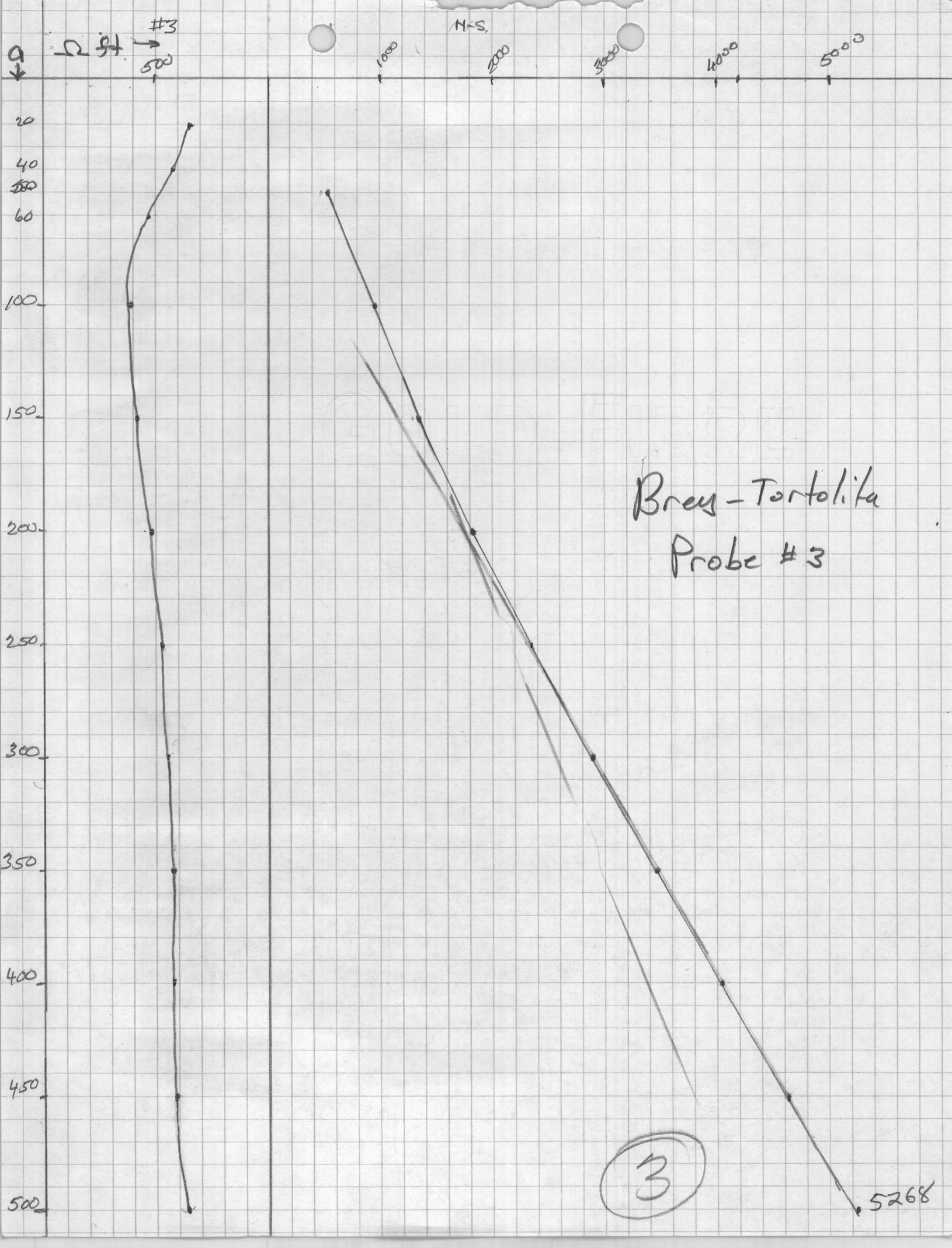
Date: 6-23-60

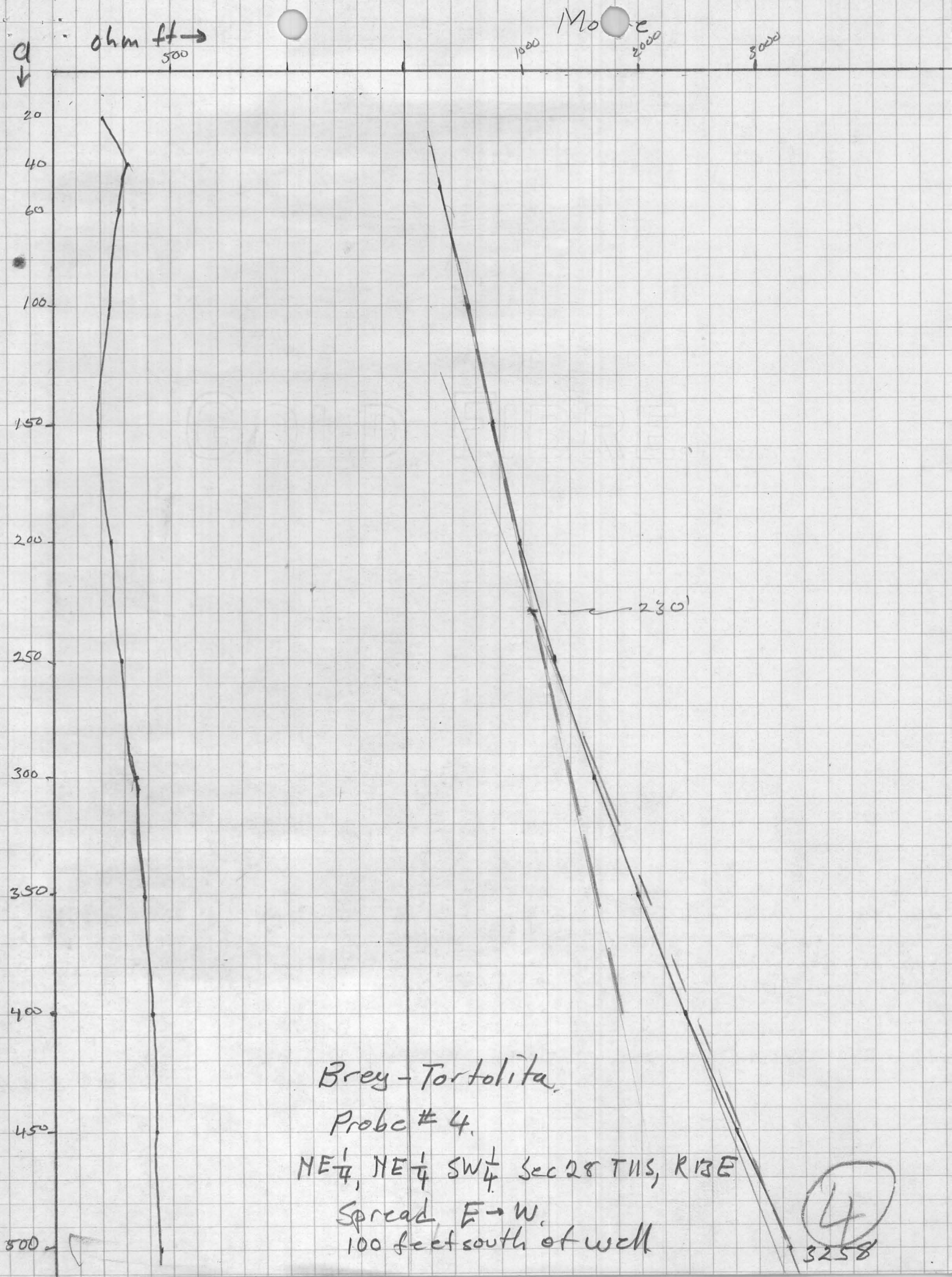
EGH:jh

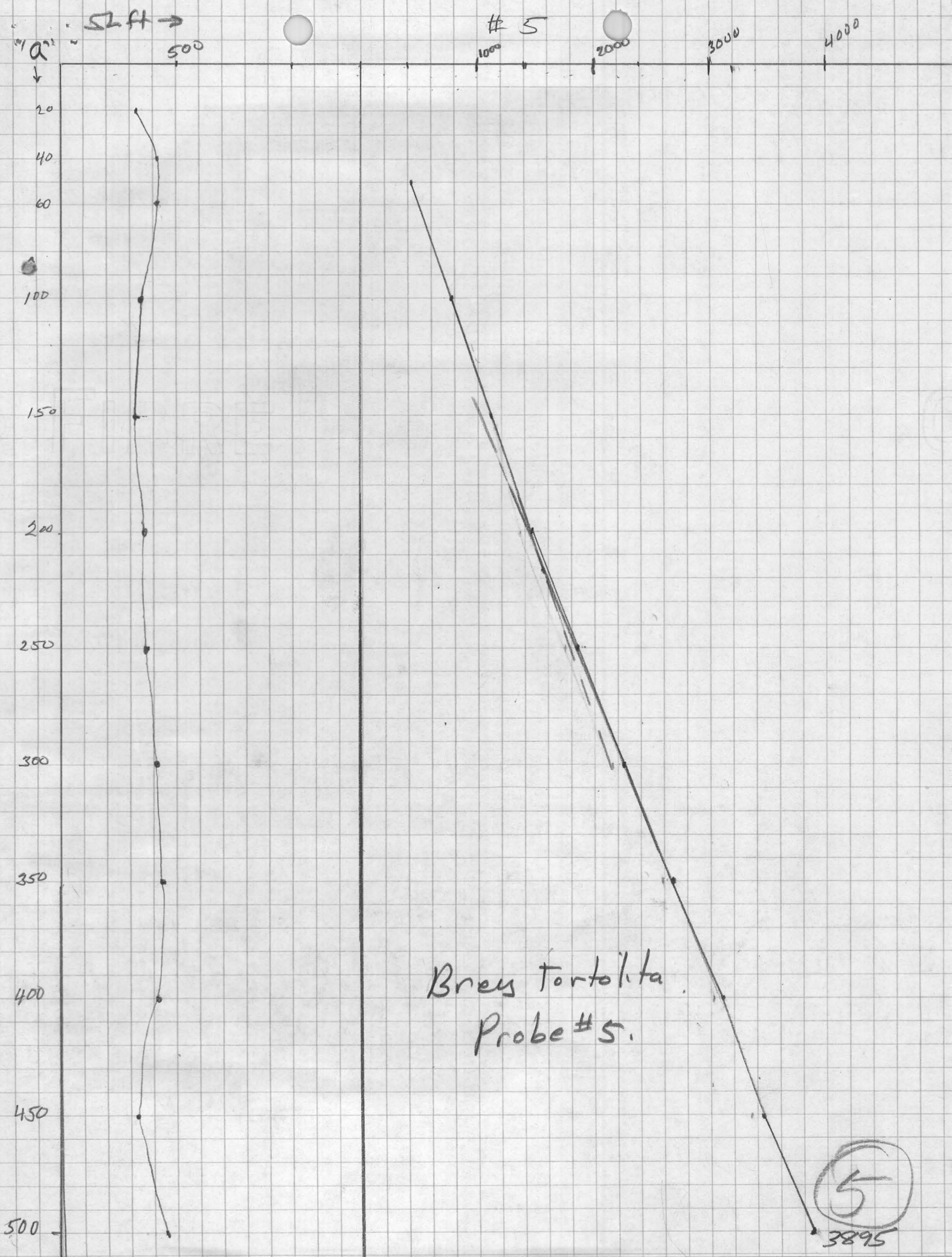
CC: 1 enclosed
F. Gerold.


Moore Plot
Q ft. →
500
1000
1000
2000
3000
4000
500
Q ↓
20
40
60
100
150
200
250
300
350
400
450
500
210'
Brey - Tortolita
NE¼ SE¼ SW¼ Sec 28, T11S R13E
Probe #1
Spread East-West
100 feet east of fence line
950 ft north of section line
1
4895

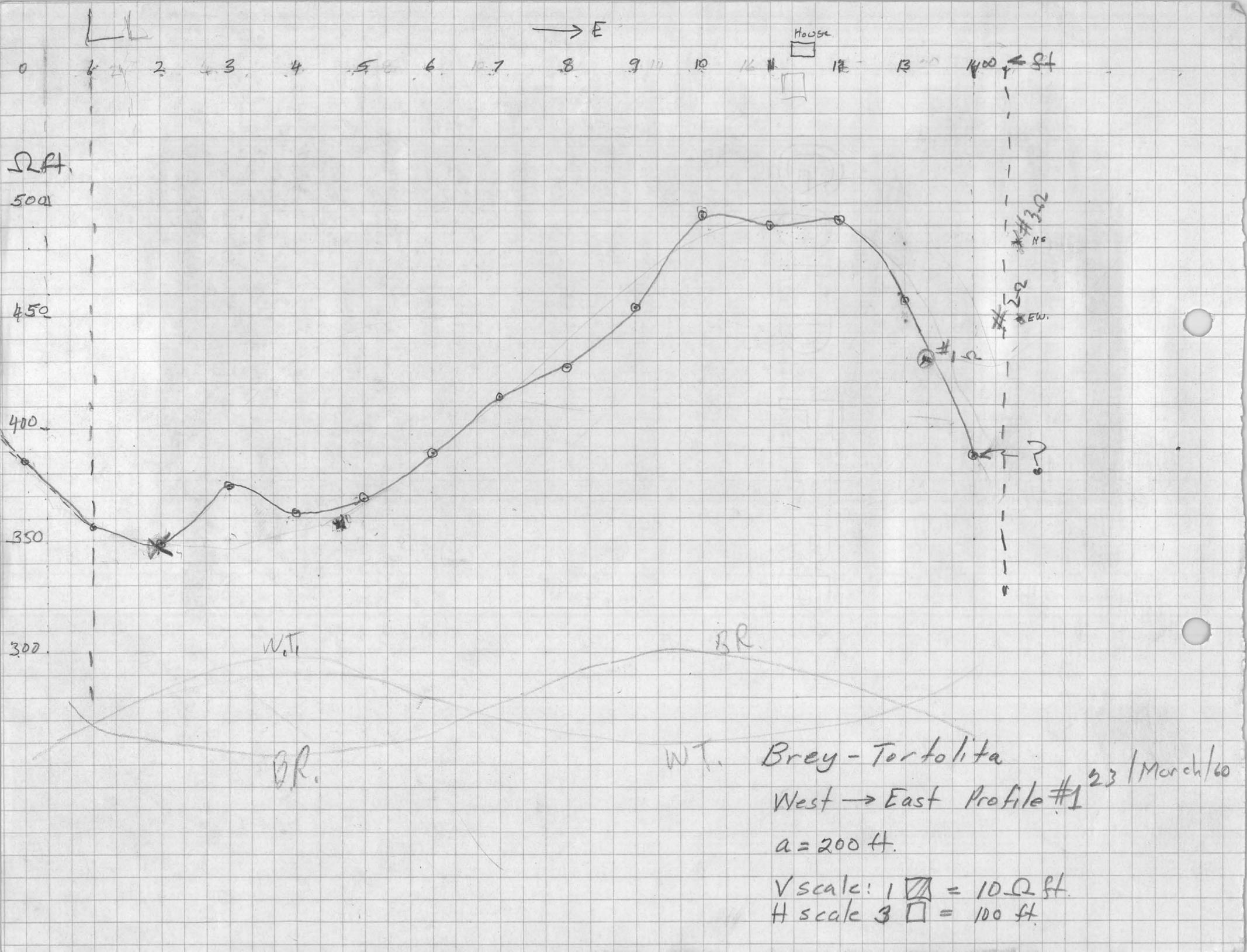

#2
Ω ft.
a
500 Ω
E-W
1000
2000
3000
4000
5000
6000
20
40
60
100
150
200
250
300
350
400
450
500
5206
Brey - Tortolita.
Probe #2.
2


#3
Ω ft
500
M-S
1000
2000
3000
4000
5000
20
40
60
100
150
200
250
300
350
400
450
500
Brey-Tortolita
Probe #3
3
5268


a
ohm ft →
500
1000
2000
3000
20
40
60
100
150
200
250
300
350
400
450
500
230'
3258'
Brey - Tortolita.
Probe # 4.
NE 1/4, NE 1/4 SW 1/4 Sec 28 T11S, R13E
Spread E → W.
100 feet south of well
4



52 ft →
5
"a"
500
1000
2000
3000
4000
20
40
60
100
150
200
250
300
350
400
450
500
Brey Tortolita
Probe #5.
5
3895



Brey - Tortolita

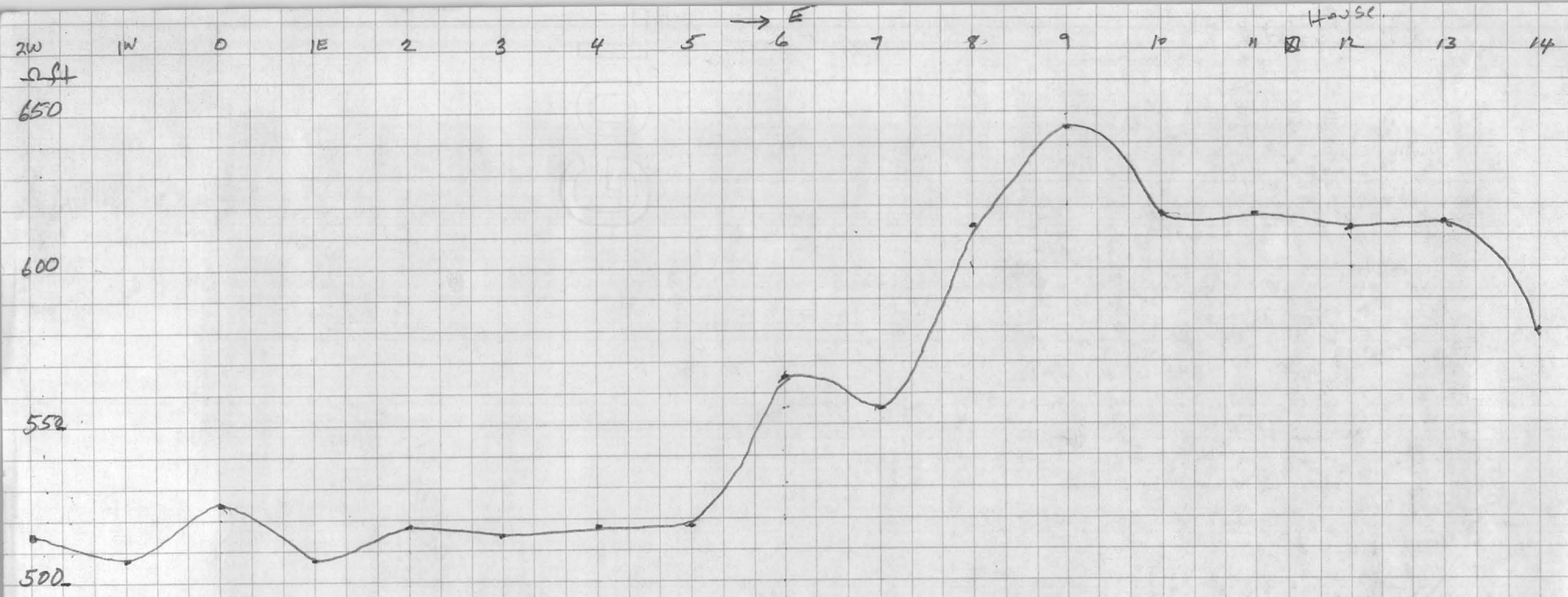
West → East Profile #1

23 / March / 60

a = 200 ft.

V scale: 1 ▨ = 10 Ω ft.

H scale 3 □ = 100 ft.



Profile # 1(a).

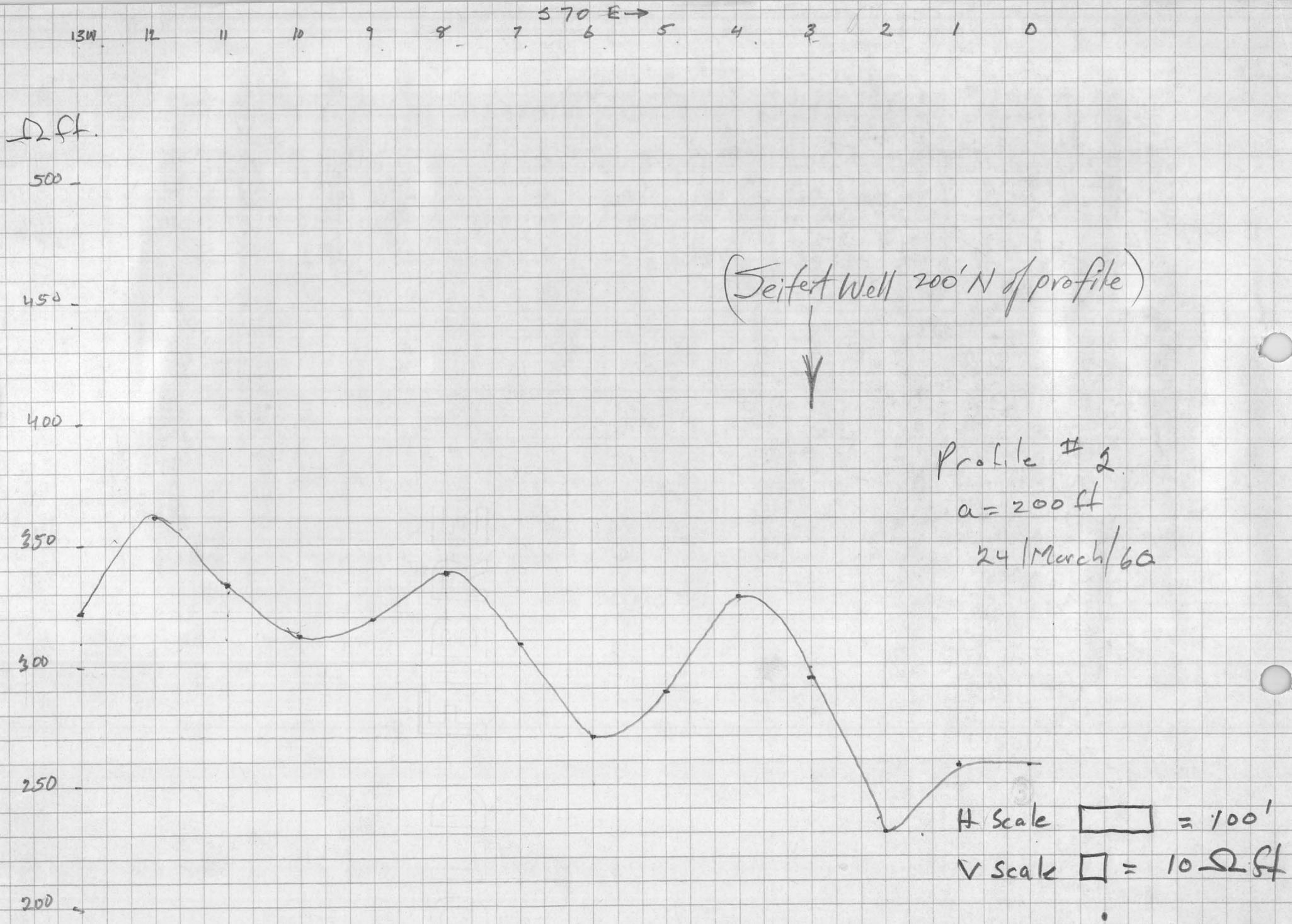
Brey Tortolita

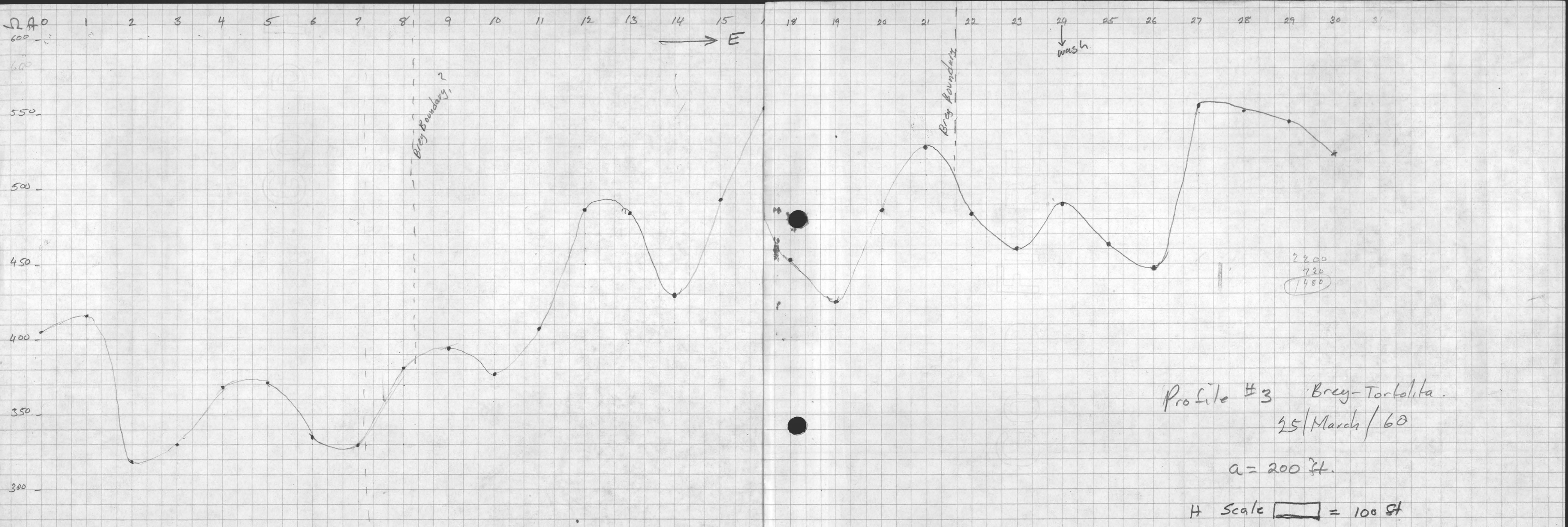
a = 500 ft.

24/March/60

H Scale ▭ = 100'

V Scale □ = 10 Ω ft

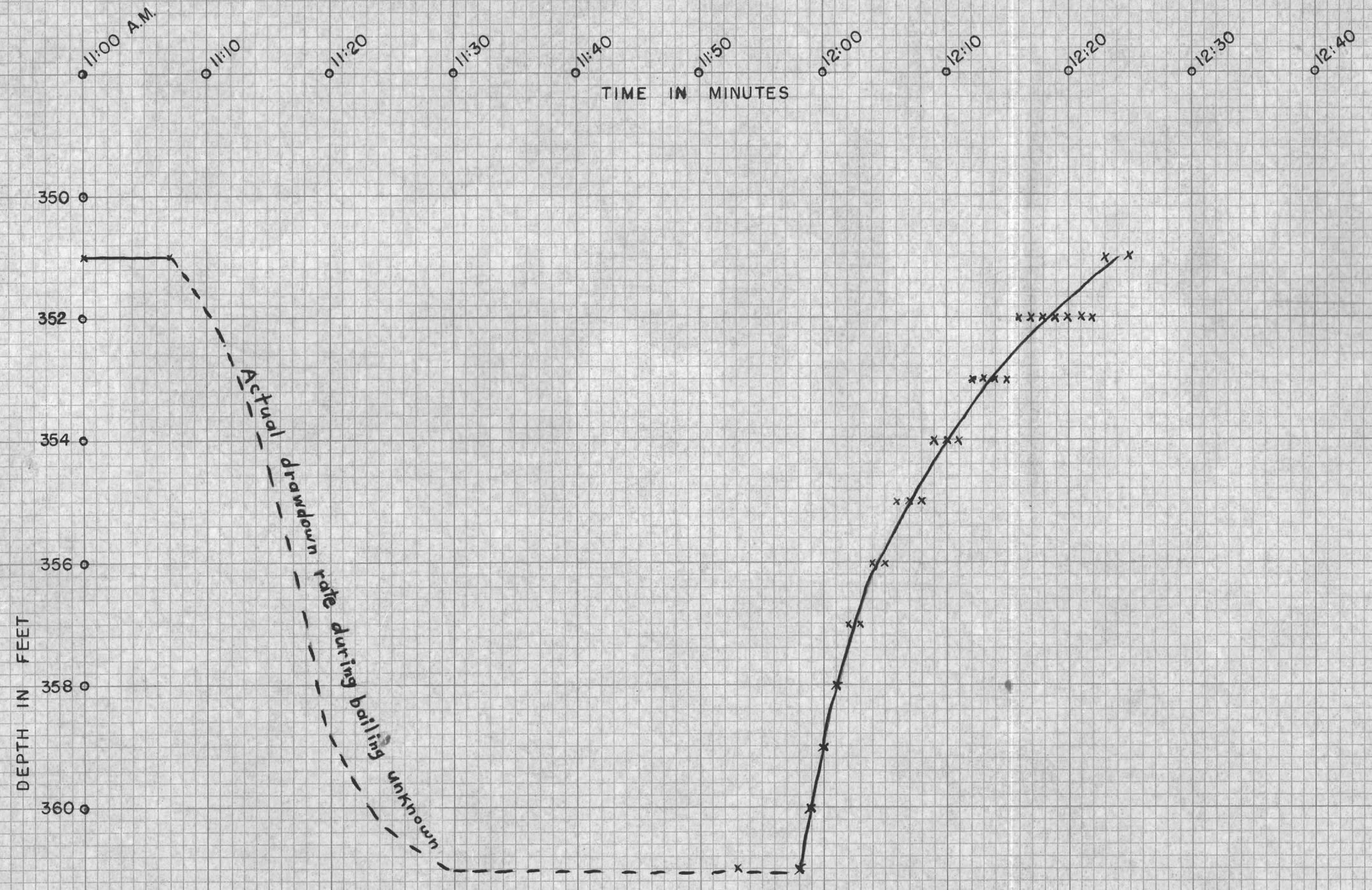

S 70 E →
13W 12 11 10 9 8 7 6 5 4 3 2 1 0
Ω ft.
500
450
400
350
300
250
200
(Seifert Well 200' N of profile)
Profile # 2
a = 200 ft
24/March/60
H Scale = 100'
V Scale = 10 Ω ft



Profile #3 Brey-Torbolita.
25/March/60

a = 200 ft.

H Scale ▭ = 100 ft



BAIL TEST & RECOVERY RATE

BREY WATER WELL

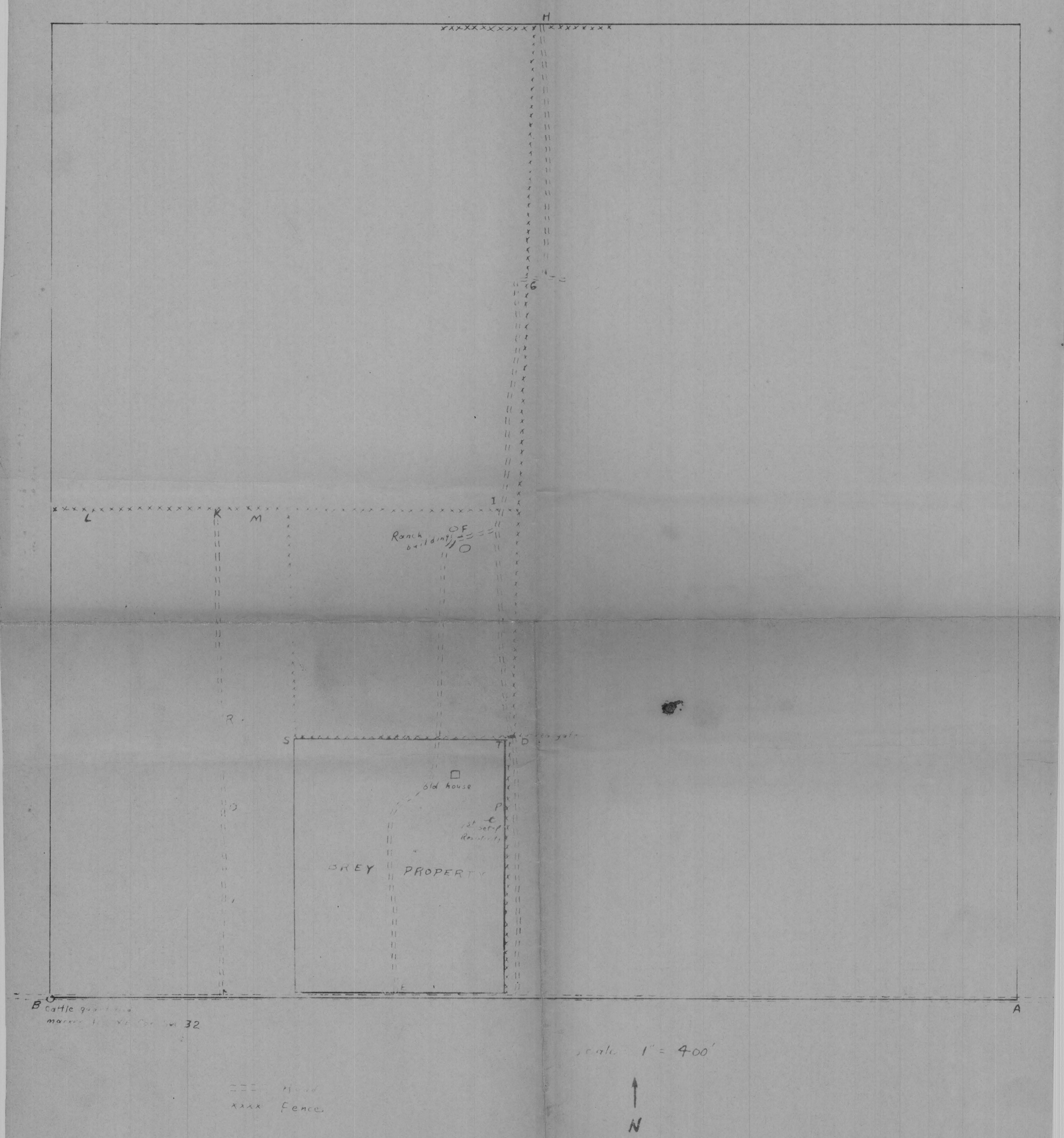
LOT 7, SEC. 28, T11S, R13E, G&SRBM

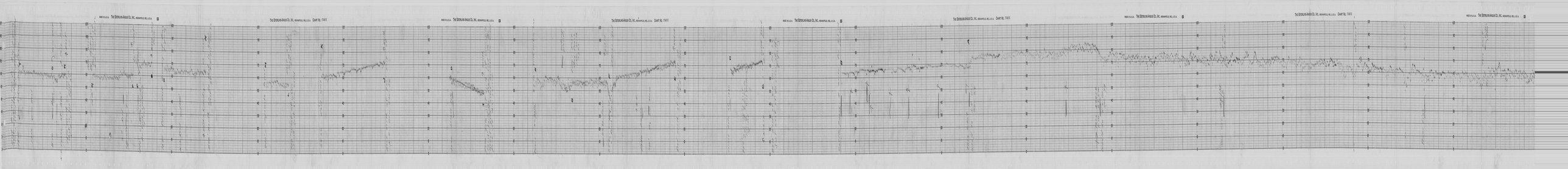
PIMA COUNTY ARIZONA

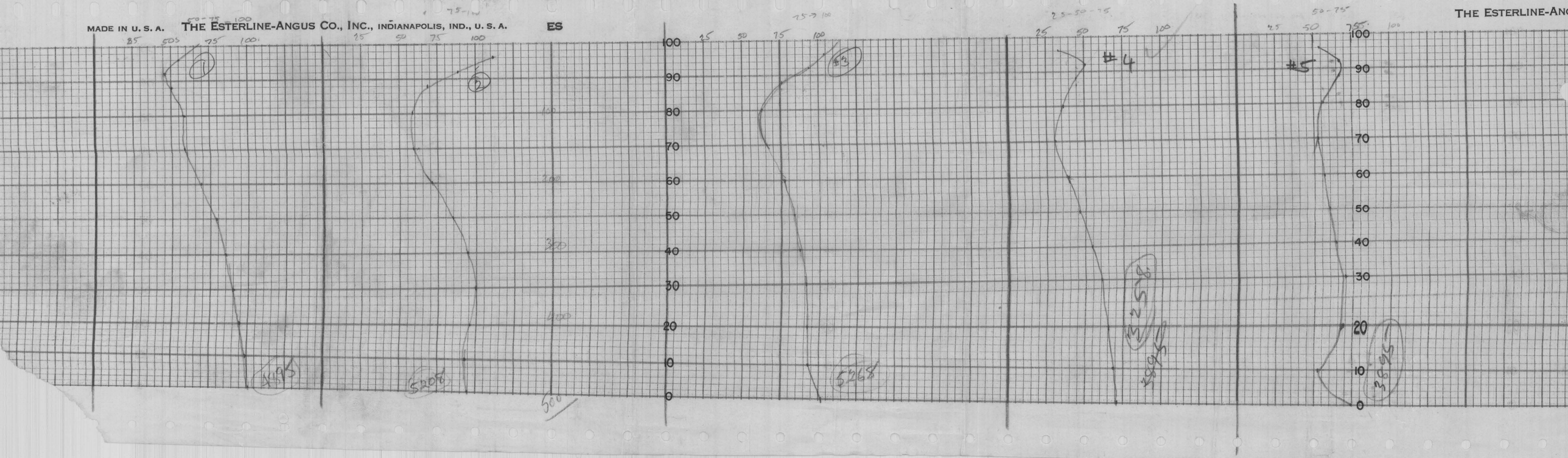
4/23/60

HEINRICHS GEOEXPLORATION COMPANY

P. O. BOX 5671 TUCSON, ARIZONA


H
G
I
L
K
M
Ranch buildings
F
O
R
S
T
D
Old house
P
1st Setup Residents
BREY PROPERTY
E
B
Cattle guard
A
32
scale 1" = 400'
N
Road
Fence


MID-U.S.A. The DITTOLINE-ARGO Co., INC. MEMPHIS, TN., U.S.A.
Chart No. 17077


MADE IN U. S. A.
THE ESTERLINE-ANGUS CO., INC., INDIANAPOLIS, IND., U. S. A.
ES
THE ESTERLINE-ANG
#4
#5
4895
5208
5268
3258
3895
3895

Parallel to be west as per record: At the point of intersection,
Set an iron post, 3 ft.long, 2 ins. in diam., 26 ins. in the ground, for closing cor. of secs.2 and 3, marked on brass cap,

T10S R13E
S34

S 3	S 2
C	C

T11S
1921

from which,
A palo verde, 5 ins. in diam.,brs.S.43½°E.,237 lks. dist., marked T11S R13E S2 CC BT.
A mesquite,8 ins.in diam.,brs.S.79½°W.,265 lks.dist., marked T11S R13E S3 CC BT.
Land, mountainous, and gently rolling.
Soil,rocky, 3rd and 4th rate, granite formation.
Timber, palo verde, mesquite, and ironwood.
Undergrowth, catclaw, cactus, ocotillo and greasewood.

From the cor.of secs. 33 and 34,on the S. bdy.of Tp., hereinbefore described,
N.0°2'W., bet. secs. 33 and 34.
Over nearly level land, sloping slightly to the S. and SW. thru. scattering timber and dense undergrowth.
39.00 Dim road, brs.NE. and SW.
40.00 Set an iron post, 3 ft.long, 1 in. in diam., 26 ins. in the ground, for ¼ sec.cor., marked on brass cap,

¼
S33 | S34

1921

from which,
A palo verde, 14 ins. in diam.,brs.S.9½°E., 140 lks.dist., marked ¼ S 34 BT.
A palo verde,12 ins. in diam.,brs.N.7°W.,78 lks.dist., marked ¼S 33 BT.
51.80 Wash,50 lks.wide, course S. 30°W.
60.00 Dim road, brs.NE. and SW.
80.00 Set an iron post, 3 ft.long, 2 ins. in diam.,26 ins.in the ground, for cor.of secs.27,28, 33 and 34, marked on brass cap,

T11S | R13E
S28 | S27
S33 | S34

1921

from which,
A mesquite,3 ins. in diam.,brs.N.85°E.,49 lks.dist., marked BT.
A mesquite, 4 ins. in diam.,brs.S.76½°E.,158 lks.dist., marked BT.
A mesquite,6 ins. in diam.,brs.S.2½°W.,51 lks.dist., marked T11S R13E S33 BT.
A mesquite,4 ins.in diam.,brs.N.42°W.,85 lks.dist., marked BT.
Land, nearly level.
Soil,gravelly, granite formation, 2nd rate.
Timber, palo verde, ironwood and mesquite.
Undergrowth, greasewood, black brush and cactus.

N.89°54'E., on a random line, bet. secs.27 and 34.
40.00 Set temp.¼ sec.cor.
79.92 Intersect the cor. of secs. 26,27, 34 and 35.
Thence,
S.89°54'W., on a true line, bet. secs.27 and 34.
Over nearly level land, sloping slightly to the S. and SW., thru. scattering timber and dense undergrowth.
16.70 Wash,20 lks.wide, course S.
29.90 Center of wash, 100 lks.wide, course S.
39.96 Set an iron post, 3 ft.long, 1 in. in diam., 26 ins.in the ground, for ¼ sec.cor., marked on brass cap,

¼ S 27

S 34
1921

from which,
A palo verde, 10 ins. in diam., brs.N.33½°W., 132 lks.dist., marked ¼ S 27 BT.
A mesquite, 6 ins. in diam.,brs.S.56°40'W., 130 lks.dist., marked ¼ S 34 BT.
40.02 Old road, brs.N. and S.
56.62 Dim road, brs. NE. and SW.
62.90 Wash, 70 lks.wide, course S.
64.02 Dim road, brs.N. and S.
68.40 Wash, 50 lks.wide, course S.30°W.
79.20 Dim road, brs.NE. and SW.
79.92 The cor.of secs. 27,28, 33 and 34.
Land, nearly level.
Soil,sandy and gravelly, 2nd and 3rd rate.
Timber, palo verde,ironwood and mesquite.
Undergrowth, greasewood, catclaw, black brush and cactus.

N.0°2'W., bet. secs.27 and 28.
Over nearly level land, sloping slightly to the SW. and S., thru. scattering timber and dense undergrowth.
30.40 Road, brs.NE. and SW.
34.00 Wash,10 lks.wide, course SW.
40.00 Set an iron post, 3 ft. long, 1 in. in diam., 26 ins. in the ground, for ¼ sec.cor., marked on brass cap,

¼
S28 | S27

1921

from which,
A palo verde, 6 ins. in diam.,brs.S.27°E., 20 lks.dist., marked ¼ S 27 BT.
A palo verde, 10 ins. in diam.,brs.N.4½°W.,72 lks.dist., marked ¼ S 28 BT.
45.40 Road, brs.E. and W. From this point, T.Trevan's house brs.E. about 20 chs.dist.
70.00 Leave sandy soil, thence over rocky land.
80.00 Set an iron post, 3 ft. long, 2 ins. in diam., 20 ins.in the ground to bed rock, and raise a mound of stone around post, for cor.of secs.21,22,27 and 28,marked on brass cap,

T11S | R13E
S21 | S22
S28 | S27

1921

from which,
A giant cactus (double) brs.N.33°E.,46 lks. dist., marked cross (x).
A palo verde,4 ins.in diam.,brs.S.64°E.,96 lks.

Chains.

from which,
A mesquite, 4 ins. in diam., brs. N.45°E., 46 lks. dist., marked BT.
A mesquite, 5 ins. in diam., brs. S.80°E., 29 lks. dist., marked BT.
A palo verde, 6 ins. in diam., brs. S.77°W., 41 lks. dist., marked T11S R13E S32 BT.
A mesquite, 5 ins. in diam., brs. N.49°W., 83 lks. dist., marked T11S R13E S29 BT.
Land, nearly level.
Soil, sandy, granite formation, 2nd rate.
Timber, palo verde, ironwood and mesquite.
Undergrowth, cactus, catclaw, greasewood, yucca.

N.89°56' E., on a random line, bet. secs. 28 and 33.
40.00 Set temp. ¼ sec. cor.
79.72 Intersect N. and S. line, 2 lks. S. of the cor. of secs. 27, 28, 33 and 34.
Thence,
S.89°55' W., on a true line, bet. secs. 28 and 33.
Over nearly level land, sloping slightly to the SW., thru. heavy timber and dense undergrowth.
33.70 Wash, course SW.
36.90 Wash, 80 lks. wide, course SW.
39.86 Set an iron post, 3 ft. long, 1 in. in diam., 26 ins. in the ground, for ¼ sec. cor., marked on brass cap,

¼ S 28
S 33
1921

from which,
A mesquite, 14 ins. in diam., brs. N.13°E., 34 lks. dist., marked ¼ S 28 BT.
A mesquite, 18 ins. in diam., brs. S.7°W., 188 lks. dist., marked ¼ S 33 BT.
41.70 Wash, 60 lks. wide, course S.
62.80 Old road, brs. NE. and SW.
79.72 The cor. of secs. 28, 29, 32 and 33.
Land, nearly level.
Soil, sandy, 2nd rate.
Timber, palo verde, mesquite and ironwood.
Undergrowth, cactus, catclaw, black brush, greasewood and ocotillo.

N.0° 2' W., bet. secs. 28 and 29.
Over nearly level land, sloping slightly to the SW., thru. heavy timber and dense undergrowth.
15.00 Wash, 10 lks. wide, course SW.
20.00 Wash, 10 lks. wide, course S.10°W.
35.50 Road, brs. NE. and SW.
40.00 Set an iron post, 3 ft. long, 1 in. in diam., 26 ins. in the ground, for ¼ sec. cor., marked on brass cap,

¼
S29 | S28
1921

from which,
A palo verde, 5 ins. in diam., brs. S.32°E., 51 lks. dist., marked ¼ S 28 BT.
A palo verde, 5 ins. in diam., brs. S.62°W., 130 lks. dist., marked ¼ S29 BT.
52.60 Wash, 10 lks. wide, course SW.
61.00 Wash, 50 lks. wide, course W.
Ascend slightly over S. slope, to

Chains.

72.50 Leave nearly level, and enter rolling land.
Ascend 30 ft., over S. slope.
78.50 Low spur, slopes SW.
Descend 10 ft., over NW. slope, to
80.00 Set an iron post, 3 ft. long, 2 ins. in diam., 26 ins. in the ground, for cor. of secs. 20, 21, 28 and 29, marked on brass cap,

T11S | R13E
S20 | S21
S29 | S28
1921

No bearing trees available. Raise a mound of stone, 2½ ft. base, 2 ft. high, W. of cor.
Land, nearly level and rolling.
Soil, sandy and gravelly, 2nd rate.
Timber, palo verde, mesquite and ironwood.
Undergrowth, cactus, ocotillo, scrub oak, yucca and greasewood.

N.89°55' E., on a random line, bet. secs. 21 and 28.
40.00 Set temp. ¼ sec. cor.
79.76 Intersect N. and S. line, 5 lks. W. of the cor. of secs. 21, 22, 27 and 28.
Thence,
S.89°57' W., on a true line, bet. secs. 21 and 28.
Over nearly level land, sloping slightly to the S., thru. scattering timber and undergrowth.
12.75 Wash, 50 lks. wide, 4 ft. deep, course S.
21.05 Road, brs. N. and S.
29.75 Center of wash, 2 chs. wide, course S.
38.75 Road, brs. N.20°E. and S.20°W.
39.88 Set an iron post, 3 ft. long, 1 in. in diam., 26 ins. in the ground, for ¼ sec. cor., marked on brass cap,

¼ S 21
S 28
1921

from which,
A mesquite, 6 ins. in diam., brs. N.24°E., 68 lks. dist., marked ¼ S 21 BT.
A mesquite, 5 ins. in diam., brs. S.23°20' E., 102 lks. dist., marked ¼ S 28 BT.
Continue over nearly level land, thru. scattering timber and undergrowth.
Ascend slightly over SE. slope, to
53.00 Leave nearly level, and enter rolling land.
Ascend 25 ft., over SE. slope.
58.00 Descend 8 ft., over W. slope.
59.75 Wash, 20 lks. wide, course S.
Ascend 30 ft., over SE. slope, to
73.26 Descend 14 ft., over S. slope, to
77.10 Low spur, slopes SW.
Descend 21 ft., over NW. slope, to
79.76 The cor. of secs. 20, 21, 28 and 29.
Land, nearly level and rolling.
Soil, gravelly and rocky, 3rd and 4th rate.
Timber, palo verde, mesquite, and ironwood.
Undergrowth, catclaw, ocotillo, yucca and cactus.

N.0°2' W., bet. secs. 20 and 21.
Over rolling land, thru. scattering timber and undergrowth.
Descend 23 ft., over NW. slope.
4.70 Wash, 50 lks. wide, course SW. Leave rolling and enter mountainous land (Tortillita mountains.)

Chains.

2½ ft.base, 2 ft.high, W.of cor.
Descend 30 ft., over NE.slope.
48.00 Head of draw, course E. Leave mountainous, and enter rolling land.
Ascend 95 ft., over SE.slope.
60.00 Spur, slopes NE.
Descend 165 ft., over NW. slope, to
82.60 Intersect N. bdy.of Tp., (2nd Std.Par.S.) at a point 19.55 chs. East from the std.cor. of secs.32 and 33, T.10 S., R.13 E., reestablished by J.B.Wright, U.S.S., in 1913, which is an iron post 3 ins.in diam., projecting 12 ins. above ground, firmly set, properly marked on brass cap, and witnessed by two bearing trees as follows:

A mesquite, 9 ins.in diam., N.19¼°E., 182 lks. dist., marked ¼S 3 BT.
A mesquite, 15 ins.in diam., N.24°W., 164 lks. dist., marked ¼ S 4 BT.

Make retracement of the W. ½ of S. bdy. of sec.33, T.10 S., R.13 E. for alinement only, and find the bearing of the Parallel to be West, as per record.
At the point of intersection,
Set an iron post, 3 ft.long. 2 ins. in diam., 26 ins. in the ground, for closing cor. of secs.3 and 4, marked on brass cap,

T10S R13E
S33
S 4 | S 3
C | C
T11S
1921

No bearing trees available.
Raise a mound of stone, 3 ft.base, 2½ ft.high, S.of cor.
Land, mountainous and rolling.
Soil, rocky, granite formation, 4th rate.
Timber, mesquite.
Undergrowth, catclaw, scrub oak, ocotillo and cactus.

From the cor. of secs. 32 and 33 on S. bdy.of the Tp., hereinbefore described,
N.0°2'W., bet. secs. 32 and 33.
Over nearly level land, sloping slightly to the SW., thru. heavy timber and dense undergrowth.
2.40 Wash, 30 lks.wide, course SW.
15.00 Center of wash, 100 lks.wide, course SW.
37.00 Old road, brs.NE. and SW.
40.00 Set an iron post, 3 ft.long, 1 in.in diam., 26 ins.in the ground, for ¼ sec.cor., marked on brass cap,

¼
S32 | S33
1921

from which,
A mesquite, 4 ins.in diam., brs.N.65°E., 100 lks.dist., marked BT.
A palo verde, 5 ins.in diam., brs.S.65°W., 109 lks.dist., marked ¼S32 BT.
62.00 Wash, 20 lks.wide, course SW.
80.00 Set an iron post, 3 ft.long, 2 ins.in diam., 26 ins. in the ground, for cor.of secs. 28, 29, 32 and 33, marked on brass cap,

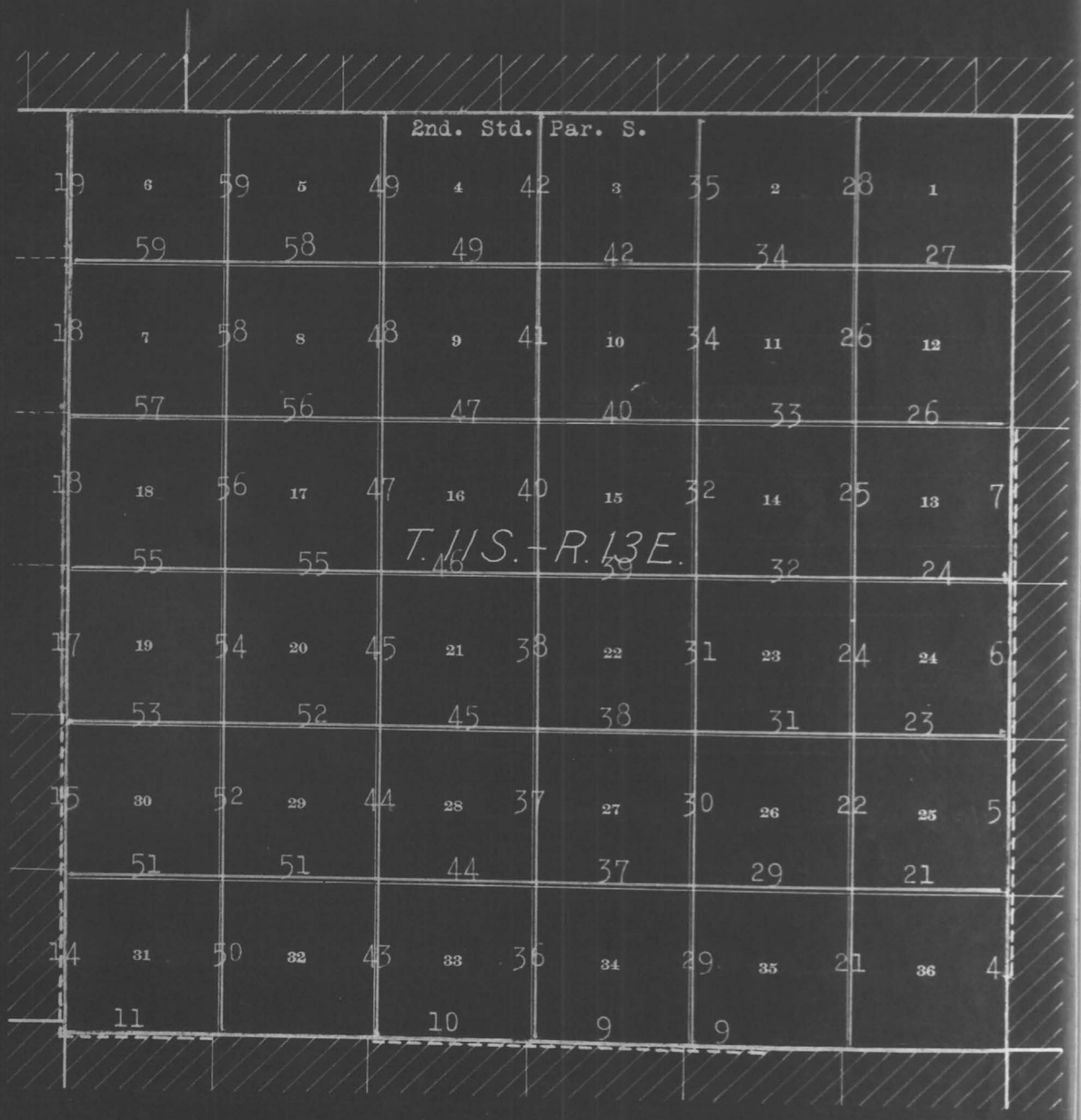
T11S | R13E
S29 | S28
S32 | S33
1921

3600

Book "C"

Group 117-Arizona.

INDEX DIAGRAM.



Lines surveyed under this group.

Lines resurveyed under this group.

Accepted surveys.

Areas surveyed as per plats on file.

FULLER MANUFACTURING CO. TRANSMISSION DIVISION
SUBSIDIARY OF EATON MANUFACTURING COMPANY
WESTERN DISTRICT BRANCH
641 EAST 10TH STREET
OAKLAND 6, CALIFORNIA

SOUTHWEST DISTRICT OFFICE
204 SOUTH CHEYENNE STREET
TULSA 3, OKLAHOMA

Heavy Duty Transmissions
Quality Forgings
UNIT DROP FORGE DIVISION, MILWAUKEE 1, WISCONSIN
Heavy Duty Axles
SHULER AXLE CO., SUBSIDIARY, LOUISVILLE 8, KENTUCKY

KALAMAZOO, MICHIGAN

May 27, 1960

RECEIVED MAY 31 1960

Mr. Walter E. Heinrichs, Jr.
Heinrichs Geoexploration Company
P. O. Box 5671
Tucson, Arizona

Dear Mr. Heinrichs:

Thank you very much for yours of May 17 regarding the test of the water for my new well. My check in the amount of $85.60 is enclosed. As I said before, we will do nothing further in this connection until I arrive in Tucson.

Sincerely,

Harold E. Brey

Harold E. Brey

HEB:ms
Encl. ck.

COOPERATIVE EXTENSION WORK
IN
AGRICULTURE AND HOME ECONOMICS
STATE OF ARIZONA
112 WEST PENNINGTON STREET
TUCSON

THE UNIVERSITY OF ARIZONA
COLLEGE OF AGRICULTURE
U. S. DEPARTMENT OF AGRICULTURE
AND PIMA COUNTY COOPERATING

AGRICULTURAL EXTENSION SERVICE
HOME ECONOMICS
AGRICULTURE
4-H CLUB

May 19, 1960

RECEIVED JUN 1960

Heinrichs Geoexploration Co.
P. O. Box 5671
Tucson, Arizona

Attn: Mr. Brey

Gentlemen:

The report on the analysis of the water sample from the well in the Tortolita Mountains does not give any indication that would account for the water tasting bad.

Since the water has 10.7 grains per gallon of hardness, I would consider it a moderately hard water, and for domestic purposes such as laundry, a water softener would be desirable. The 0.4 parts per million of fluoride is safe. The soluble salts content is excessive.

I am wondering if it be possible that the well from which the sample was taken has been idle for sometime prior to the taking of the sample. If there hasn't been much water pumped from it, that would account for the bad taste. If this water is to be used for drinking purposes, a bacteriological test should be made by the State Health Department. They have a laboratory on Vine Street, beneath the University of Arizona stadium.

Very truly yours,

G. E. Blackledge
Agricultural Agent in Charge

GEB:fc
Encl.

C.C. to Brey
gircell
McDaniel

COOPERATIVE EXTENSION WORK
IN
AGRICULTURE AND HOME ECONOMICS
STATE OF ARIZONA
112 WEST PENNINGTON STREET
TUCSON

THE UNIVERSITY OF ARIZONA
COLLEGE OF AGRICULTURE
U. S. DEPARTMENT OF AGRICULTURE
AND PIMA COUNTY COOPERATING

AGRICULTURAL EXTENSION SERVICE
HOME ECONOMICS
AGRICULTURE
4-H CLUB

May 19, 1960

RECEIVED MAY 20 1960

Heinrichs Geoexploration Co.
P. O. Box 5671
Tucson, Arizona

Attn: Mr. Brey

Gentlemen:

The report on the analysis of the water sample from the well in the Tortolita Mountains does not give any indication that would account for the water tasting bad.

Since the water has 10.3 grains per gallon of hardness, I would consider it a moderately hard water, and for domestic purposes such as laundry, a water softener would be desirable. The 0.4 parts per million of fluoride is safe. The soluble salts content is excessive.

I am wondering if it is possible that the well from which the sample was taken has been idle for sometime prior to the taking of the sample. If there hasn't been much water pumped from it, that would account for the bad taste. If this water is to be used for drinking purposes, a bacteriological test should be made by the State Health Department. They have a laboratory on Vine Street, beneath the University of Arizona stadium.

Very truly yours,

G E Blackledge

G. E. Blackledge
Agricultural Agent in Charge

GEB:fc
Encl.

Machine Copies to
Brey
& Gerold
5/20/60
JG.

COOPERATIVE EXTENSION WORK
in
AGRICULTURE and HOME ECONOMICS
State of Arizona

University of Arizona
College of Agriculture
U. S. Department of Agriculture
and Pima County Cooperating

Extension Service
County Agent Work
112 West Pennington
Tucson, Arizona

RECEIVED MAY 17 1960

I am enclosing material as requested.

Very truly yours,

G E Blackledge

G. E. Blackledge
Agricultural Agent in Charge

Laboratory Number 76152 Book 39 Page 3 Date Answered 5/6/60 AC-1

THE UNIVERSITY OF ARIZONA
AGRICULTURAL EXPERIMENT STATION
DEPARTMENT OF AGRICULTURAL CHEMISTRY AND SOILS
TUCSON, ARIZONA

RECEIVED MAY 17 1960

WATER SAMPLE

1. Name of Owner Brey Address Tortolita Mts. Town Tucson County Pima
2. Name of Collector Heinrichs Geoexploration Co. Address P. O. Box 5671 Town Tucson County Pima
3. Source: Well, spring or surface water Well
4. IMPORTANT: Location of sampling South slope of Tortolita Mts. SEC. 28 TWP 11 S R 13 E
5. Geographic location
6. Depth of well About 450 ft. Depth to Water Level 350 ft.
7. Use: Domestic, stock or irrigation Domestic
8. Reason for requesting a chemical analysis To be used for drinking purpose and it tastes bad. It is also desired to know if the water is hard.

IMPORTANT

N. W.	N. E.
S. W.	S. E.

Mark Sampling Location

9. Analyses:

FIELD No.	LAB. No.	SOLUBLE SALTS ppm.	SOLUBLE SALTS EC x 10³	CALCIUM ppm.	MAGNESIUM ppm.	SODIUM ppm.	CHLORIDE ppm.	SULFATE ppm.	CARBONATE ppm.	BICARBONATE ppm.	FLUORIDE ppm.	NITRATE NO_3 ppm.	NITROGEN (N) #/A.ft.	SODIUM TO CALCIUM Ratio	HARDNESS gr./gal.	% Sodium
1	76152	427	.55	49	13	49	28	29	0	259	0.4	-	-	1.0	10.3	37.5

10. Comments & Recommendations

H. E. Brey
Copies to F. Gerald
A. A. McDaniel
5/17/60

Analyst Draper - Corrie

FULLER MANUFACTURING CO. TRANSMISSION DIVISION
SUBSIDIARY OF EATON MANUFACTURING COMPANY
WESTERN DISTRICT BRANCH
641 EAST 10TH STREET
OAKLAND 6, CALIFORNIA

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Heavy Duty Transmissions
Quality Forgings
UNIT DROP FORGE DIVISION, MILWAUKEE 1, WISCONSIN
Heavy Duty Axles
SHULER AXLE CO., SUBSIDIARY, LOUISVILLE 8, KENTUCKY

KALAMAZOO, MICHIGAN

May 10, 1960

Mr. Walter E. Heinrichs, Jr.
Heinrichs Geoexploration Company
P.O. Box 5671
Tucson, Arizona

RECEIVED MAY 16 1960

Dear Mr. Heinrichs:

Thank you very much for yours of May 5, 1960 indicating the results obtained from the bailing test of my well made under your supervision. It appears to me the well will be more than adequate to take care of my individual needs as I have no high-flung ideas regarding expansion of need, irrigation, etc.

When you have the laboratory report on the test of a sample of water from the well I will very much appreciate receiving it promptly and request that you forward your invoice along with the report. This is needed for my records and I assure you a check will be forwarded by return mail after receipt of the above.

I will do nothing more with the well at all at the present time and have requested that it merely be capped until my arrival in Tucson about January of next year.

Very truly yours,

Harold E. Brey

Harold E. Brey

HEB:ms

cc: Fred P. Gerold

OFF. MA. 3-8004 — HOME MA. 2-[illegible]82 M[illegible] ADDRESS: 1208 EAST ROGER ROAD

A. A. McDANIEL
Well Drilling & Machine Shop
Well Drilling • Machine Shop • Welding
2840 RUTHRAUF ROAD
TUCSON, ARIZONA

RECEIVED MAY 24 1960

April 29, 1960

LOG OF WELL drilled for

Mr. Brey c/o

Fred F. Gerold

4841 East Eastland

Tucson, Arizona

FROM	0'	To	265'	De-composed granite fill.
	265'	"	325'	" " " , some volcanic.
	325'	"	366'	Soft broken granite, loose fill
	366'	"	390'	Same as above w/ water
	390'	"	440'	Incressingly hard granite

Casing: 6" ID linepipe. Welded. Set 426' on very hard Granite.

Perforations: 3 rows of 1/4" X 6" torch cuts on 18" spacing, from 350' to 423'.

Static water level: 351'

Bailer test: 15 GPM w/ drawdown to 360'

A.A. McDaniel

A.A. McDaniel

Township..... Range..... N. M. P. M.

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

May 5, 1960

Mr. Harold E. Brey
2029 Bronson Blvd.
Kalamazoo, Michigan

Dear Mr. Brey:

We have delayed informing you about the results of the bailing test of 23 April 1960 on your water well in Section 28, T11S, R13E, Pima County, Arizona while we awaited the laboratory results of the testing on a sample of water from the well. However, as of this date we still do not have this laboratory report, even though we have telephoned the people there and notified them repeatedly that reasonable promptness would be appreciated. In slow due process of time we shall have a report from them and will at once pass along the information to you.

On 23 April 1960 a bailing test was made of your well on Lot 7, Sec. 28. Measurements by one of our men were made at appropriate time intervals. The static water level before bailing was at 351 ft., 47 bails of water were taken out in 46 minutes, the bailing lowered the water level fairly quickly, 10 ft. to 361 ft. where it seemed to remain constant for the rest of the bailing. Immediately following bailing, the well recovered to 351 (static level) in 25 minutes as shown on the attached graph. Although the longer you bail the better the test, but since the level seemed to be staying constant and had previously risen with some artesian pressure from 366 ft. where first encountered, the drillers felt a fairly strong well was indicated and further bailing not necessary. Furthermore, this gives us a minimum nominal indication which may be suitable for the time being. A 15 gallon bailer was used, so a possible 705 gallons of water were removed, but as a bailer is never quite full and there is some sloppage and spillage, probably about 650 gallons removed is a more realistic figure. In an 8 inch diameter hole, as this one is, approximately 40 gallons of water will fill 10 ft. of it, so considerable water entered the well during bailing. Recovery indicates about 26 gal. per min. for one hour.

The well thusly would probably seem to be capable of producing about 10 to 12 gallons a minute or it would be justified in considering a pump of about this size if desired. Assumptions like this in the past, however, based on equivalent short term bail tests, have sometimes proven to be false as the well may actually have a far greater potential and also may not be quite this good either. The only positive test when a well cannot be bailed dry is to pump test it. If you should ever feel the need of this Mr. McDaniel is equipped to make such a test and we could completely measure drawdown and recovery.

Enclosed is a log of bailing and recovery and a graph of the recovery. Drawdown during a pump test can be measured constantly, but during a bail test it cannot be done while the bailer is being run in and out of the hole so drawdown is plotted very schematically.

Very truly yours,

Walter E. Heinrichs, Jr.

Encl: 2

cc: Mr. Gerold

Brey Water Well
Lot 7, Sec. 28, T11S, R13E, Pima County, Arizona

Measurements taken from neck of casing, one foot above ground. Hole diameter is 8 inches, casing diameter 6 inches, bailer capacity about 15 gallons. Bailing started at 11:07 a.m. April 23, 1960 and ended 46 minutes later at 11:53. 47 bailers of water were removed. Drillers reported they were not able to draw the level down any farther due to recharge inflow. Static level at 11:00 a.m. before bailing was 351 ft. Water level lowered only 10 ft. to 361 ft. Static level recovered in 25 minutes after bailing stopped.

RECOVERY RATE

TIME	WATER LEVEL
11:58	361 ft.
11:58:30	360 "
11:59	360 "
11:59:30	359 "
12:00	359 "
12:00:30	358 "
12:01	358 "
12:01:30	358 "
12:02	357 "
12:02:30	357 "
12:03	357 "
12:03:30	357 "
12:04	356 "
12:04:30	356 "
12:05	356 "
12:05:30	356"
12:06	356 "
12:06:30	355 "
12:07	355 "
12:07:30	355 "
12:08	355 "
12:08:30	355 "
12:09:	354 "
12:09:30	354 "
12:10	354 "
12:10:30	354 "
12:11	354 "
12:11:30	353 "

(more)

Brey Water Well

RECOVERY RATE (Cont'd)

TIME	WATER LEVEL
12;12	353 ft.
12:12:30	353 "
12:13	353 "
12:13:30	353 "
12:14	353 "
12:14:30	353 "
12:15	353 "
12:15:30	352 "
12:16	352 "
12:16:30	352 "
12:17	352 "
12:17:30	352 "
12:18	352 "
12:18:30	352 "
12:19	352 "
12:19:30	352 "
12:20	352 "
12:20:30	352 "
12:21	352 "
12:21:30	352 "
12:22	352 "
12:22:30	352 "
12:23	351 "
12:25	351 "

Test made: April 23, 1960

April 21, 1960

Mr. Harold E. Brey
2029 Bronson Blvd.
Kalamazoo, Michigan

Dear Mr. Brey:

Fred Greold Was in yesterday and I understand you have been informed as to status of the well. McDaniel was also in and together, we went over things in general, although I did not get from him all of the various details since Fred is handling this.'

Several of the latter could be important sooner or later and we have suggested that Fred take them up with McDaniel right away, which he said he would do. These involve such things as perforating--what size, how frequent, and from where to where in the hole--whether to gravel pack to hold out silt and sand, or not--whether to dry ice and/or detergent to open up the formation more etc. McDaniel is cooperating very well and I believe between all of us we can give you the best over all economic advice.

In any event, before McDaniel moves off I would strongly advise an accurate engineering water level measurement--draw down and recovery test. McDaniel can do this very roughly or together we can give you an accurate estimate of the well capacity, etc. up to a maximum of 15-25 gal. per minute. Above this rate would require an actual pump test at a cost of $400.00-$700.00. The importance of doing this now is that the smaller test can be made by bailing with the rig before they move off and this will give you necessary information of size pump and system to eventually install--which economically should not be too large or too small. Without this data it would be a guess.

Such work requires only one man and the water level measuring gear for which we charge $10.00 per hour plus any direct expenses and mileage. One day more or less would be required at about $150.00 maximum total.

The driller seems to think it will be a fair well. They state water was first encountered at 366' and has come up to 350' where it seems to be static. This is certainly encouraging for at least 1 or 2 gallons per minute and I hope you get 10 gpm or more. Today they are casing to protect from caving so they can drill to at least 450' so you will have 100' of submergence. This is about a minimum safe amount and 200' would be even better, but not absolutely necessary. Drilling is harder now so they are probably in or very near bed rock. Odds for additional water in the bedrock are rather slim.

Best wishes,

Sincerely yours,

Walter E. Heinrichs, Jr.

WEH:jh

cc: Mr. F. Gerold.

April 21, 1960

Mr. Harold E. Brey
2029 Bronson Blvd.
Kalamazoo, Michigan

Dear Mr. Brey:

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Best wishes,

Sincerely yours,

Walter E. Heinrichs, Jr.

WEH:jh

cc: Mr. F. Gerold.

Fuller Mfg Co.
Kalamazoo Mich
(Transmission Div)

Harold E
Bey. V.P.

P Reside 3-2531

Brey Ranch — 4/19/60

Advance to Geoey $750.00

3/15/60 Added checking, etc. not Billed $300

less chgs by Wadewco. (-207.00)

Balance 843.00

less $300.00

To Geoey $543.00

for Field exam + Money, resistivity study & planning

[illegible] / No Report.

4/14/60

Brey Well

Info. from W.E.H. on way to Flagstaff
Some water @ 366' water up 5' in hole.
Drilling is good
predicted depth 330'
Driller's name Anderson
Total depth 4/14/60 380'

4/14/60
Brey #1-60
Well site
Anderson, Driller
Lewis - helper
Depth 380' ±
Water 366' ±
Came up 5' in hole
easy to drill with
Started drilling
2 weeks go twice
Same formation all the way

Rec'd check on acct

$750.00

3/15/60

MHH.

Recommended:

Drill NW corner. (cheaper)

450'-500' hole

VS - 600' " in SE

Hso - 330'+ in NW

BR - 400'-450' G.P. Best

Hso - 450'-550' in SE

BR - 500-550' Geol Best.

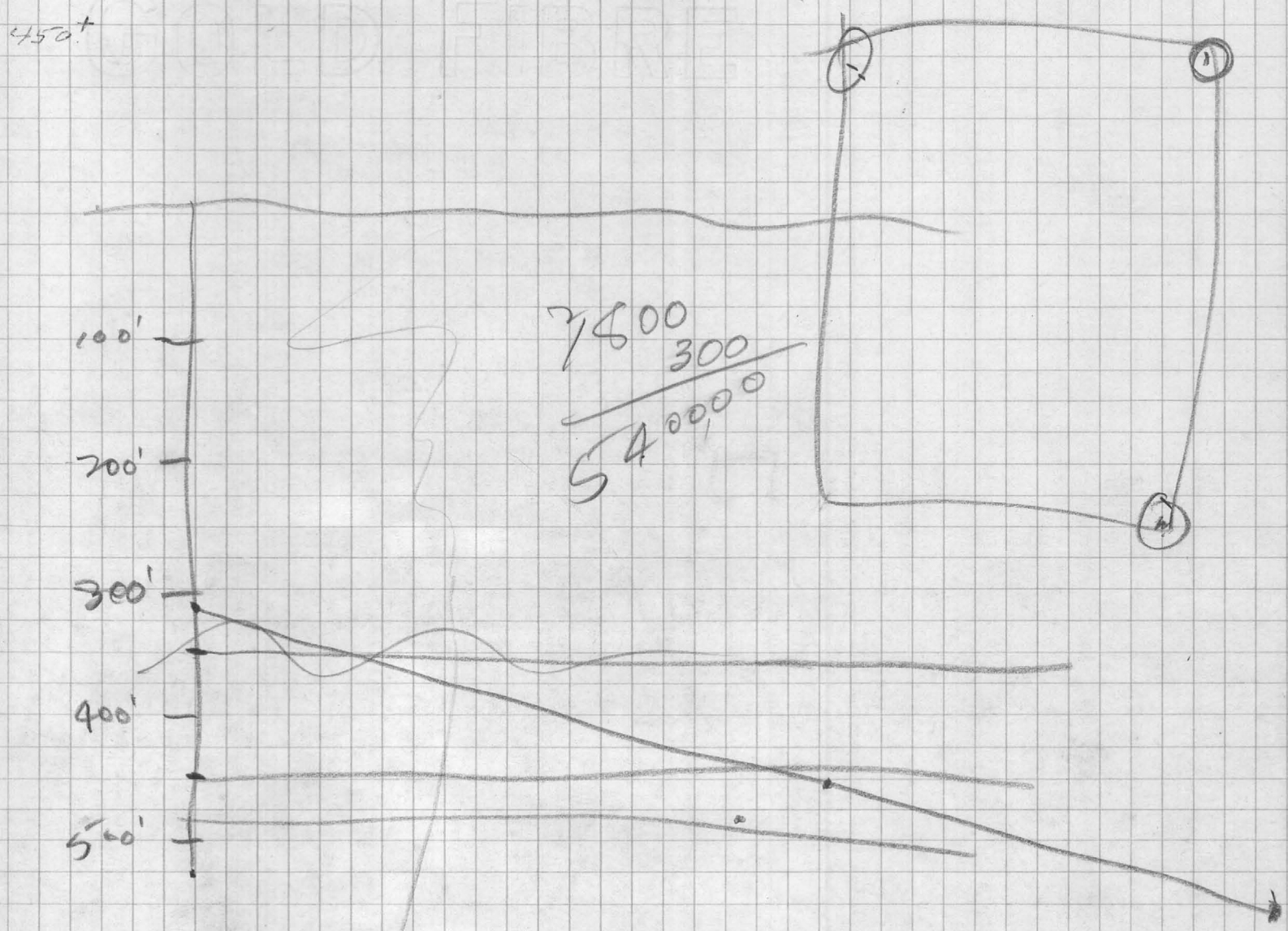
MWA.

Av Surface = 2850'

Elev. H_2O = 2400'-2500'

Depth to " = 450'-350'

" " BR = 308' at Stan Williamson's well.



250

6.00/ft w 6" casing

Brey Harold
049-60-16

(4200)

3/15/60

1. Test depth 600' ± (min B.R. 308' max 690')

2 Holes

2. Churn 8" @ $5.50 ± w/o casing = $3300.00 7000.00

~~3. Rotary? 4½" @ 3.50 ± " = 2100.00~~

4. Cost to date $150.00
added checking 150.00
$300.00 — 300.00

5. Geophysics?
Mag - ½ day field, ½ day office } $150.00 — 150.00

Resistivity 2 days field 400.00
2 day office 200
600 — 600.00
750.00 — 750.00
8050.00

6. Well in development supervision?
$100.00 - 500.00 (contingent)

7. Casing Pump etc. 2500.00 - 3000.00 $3500.00
$11,550.00

3/14/60

Fred Gerold stopped by:

Surveying 1' inside property for fence etc.

Cost etc. Markers right on corners. of 40 acres.

estimate.

Prelim on Water $300±

G.P. $700.00±

Well supervision? development & appraisal.

Sec 33: Cholla Blvd

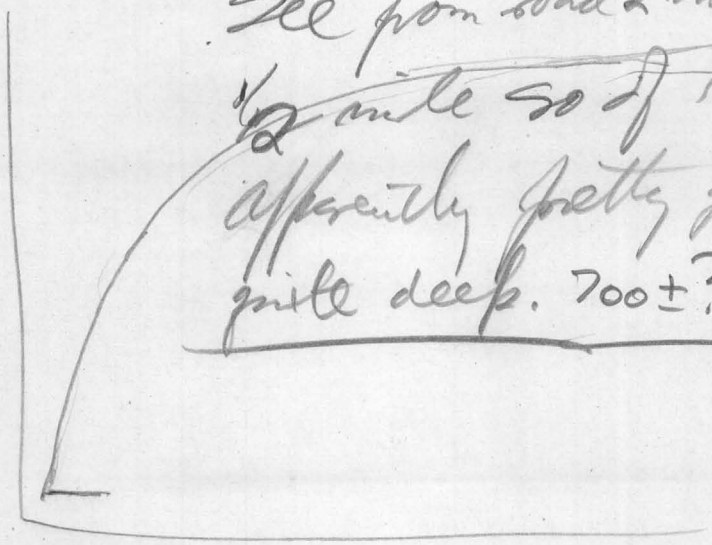
See from road 2 water works

1/2 mile so of Moore Road.

apparently pretty good well (maybe 2?)

quite deep. 700±?

Use



Cost →

3/11/60

3:30 or 4:00 PM to 6:00 to 6:30 PM

2-3 hrs

Jim DeCook, Don Green & Walt.

Field exam of area. Halpenny's cars. —:

Granite sediment to at least about middle of N½ of Sec 28, Strikes W.W.-SW? Some jointing? striking S.E. Regional drainage mostly SW & few S. May or may not be steep scarp at this point, may be gradual thickening of alluvium. Quick scan of drill logs suggests valley or ravine in granite at old? Seyfort place. Only found one well here (with Jack), but small pipe goes at least to main wash SE - 400' ± but didn't find out what was at end of pipe.

Looks like tough problem, but resistivity might help. Dug wells oft to be small.

Reported dry wells should be checked for water level if time & conditions permit

W.

BREY, Harold

4841 East East Lond.

EAST 74495

c/o Mr. Fred Gerold MA-36971 X219 3/9/60

Mr. Harold Brey 40 Acres N side of Moore Road

1/2 Mile West Cholla Blvd. Sec 28 adobe house

Seyfert Well (old) 360'-370'

guest ranch plenty water (?)

also 90' well near wash fair well.

V.P. Fuller Mfg. Co. Kalamazoo, Mich

~~Milwaukee?~~

~~Cleveland?~~

~~Chicago?~~

Stan Williams 80 acres West, dry hole 300'+

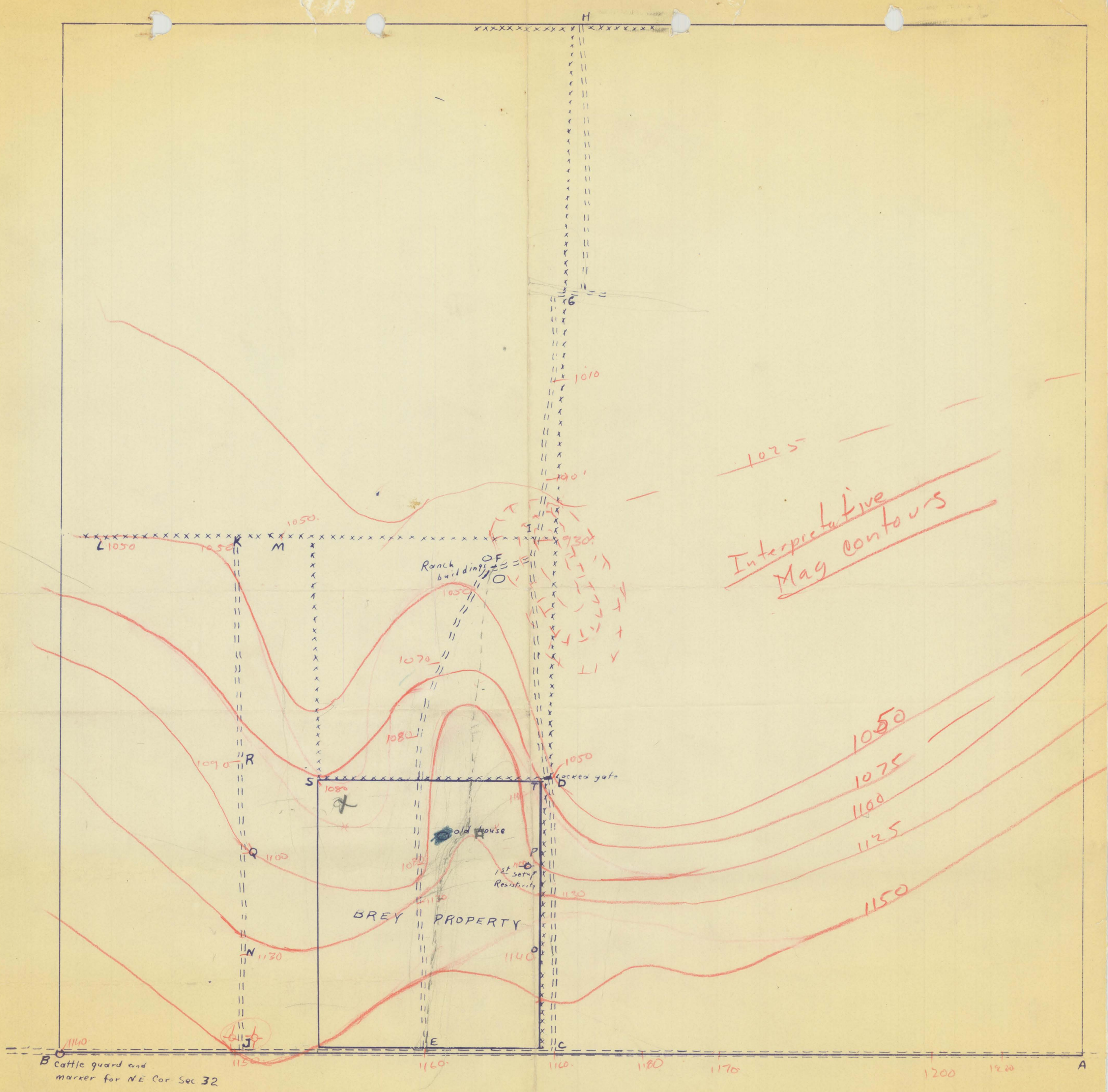
40A-SE 1/4, SW 1/4, Sec 28., T 11 S, R 13 E,

1 Mi ± NE well drilled

Quoted $150-$300.00 prelim appraisal ? ±

Rochester Claims, Silica-gold flux ore

So Co


H
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J
Ranch buildings
locked gate
old house
1st set of Resistivity
BREY PROPERTY
cattle guard and marker for NE Cor Sec 32
1010
1050
1070
1080
1090
1100
1120
1130
1140
1150
1160
1170
1180
1200
1075
1125
Interpretative Mag contours
Scale: 1" = 400'
Roads
Fences
N

Water Development Corporation

CONSULTANTS IN GROUND-WATER HYDROLOGY

3938 SANTA BARBARA AVE.
TUCSON, ARIZONA

PHONE: EAST 6-1133
CABLE: WADEVCO, TUCSON

April 6, 1960

RECEIVED APR 6 1960

Heinrichs GeoExploration Company
P. O. Box 5671
Tucson, Arizona

INVOICE 560

BRAY RANCH INVESTIGATION

Professional Services	
K. J. DeCook--1 1/8 days at $100.00 per day	$112.50
D. K. Greene--1 day at $75.00 per day	75.00
Automobile Expense	12.00
Office Costs	7.50
TOTAL -	$207.00
	~~223.75~~
	438.75

Paid 4/19/60
1158

EXPLANATION OF COSTS ON INVOICE 560--dated April 6, 1960

PROFESSIONAL SERVICES

			Hours
K. J. DeCook			
March 10	Collection of ground-water data		2
11	Field reconnaissance		No charge
14	Collection and tabulation of basic data		1
15	Analysis of data		2
18	Field work, checking water levels and geologic reconnaissance		4
Total	1 1/8 days		9
D. K. Greene			
March 11	Collection of data from USGS files and field reconnaissance		2
14	Analysis of data		2
18	Field work, measuring water levels and geologic reconnaissance		4
Total	1 day		8

AUTOMOBILE EXPENSE

March 11	D. K. Greene--52 miles @12¢	$6.24
March 18	Greene and DeCook--48 miles @ 12¢	5.76
	Total Automobile Expense	$12.00

OFFICE COSTS

Typing tables of all data and memorandum report----------3 hours

MEMORANDUM FOR THE FILE

Proj. 560 3/18/60

Notes on general geology and ground-water conditions in the vicinity of the Brey Ranch, SE1/4 SW1/4 sec. 28, T. 11 S., R. 13 E:

1 In the area described, the surface formation is alluvial fill; it is underlain by bedrock which is believed to be either granitic or gneissic in composition. Details of the subsurface geologic structure are unknown.

2 The bedrock is exposed at the ground surface along the front of the Tortolita Mountains north of the property; exposures extend along the northern one-quarter of sec. 28, or within about 1/2 mile of the property. Lineation within the outcrops, as well as their trend, is about N. 40° W. Joint sets intersect this trend at about right angles.

3 Southward from the outcrops, according to drillers' logs of wells, the bedrock is encountered at depths ranging from about 300 feet near the southwest corner of sec. 28 to almost 700 feet in the south part of sec. 33, or a mile farther south. The greater depths may be due to down-faulting, or to erosional channels on the bedrock surface, or both.

4 In the immediate vicinity of the Brey property, the shallowest bedrock was found near the southwest corner, reported at 308 feet, and the deepest was near the northeast corner, reported at 515 feet.

5 Depth to water at the old Siefert place, just north of the Brey property, was reported as 302 feet at last measurement; depths to water in secs. 33 and 34, or within a mile south and east, range from about 530 to 600 feet. Those to the south are in general equivalent to an extension of the water table from the Canada del Oro area, and the ground-water gradient is westward. Water levels north of the property indicate a steep southward gradient away from the Tortolita Mountains. These differences may be due to a perched water table north of the property, on shallower bedrock, or to some kind of subsurface barrier trending roughly east-west and going through or very near the Brey property.

6 The yields of producing wells in the area are known to be relatively small, sufficient for domestic use only. Several wells have been reported "dry" upon completion of drilling. The well just west of the property has been checked and is completely dry. The well 1/2 mile west is known to be dry as far as 500 feet below ground. An old well near the northeast corner of the property was reported dry at 515 feet; this well apparently has been destroyed, and it is not known whether it was actually dry or whether it contained some water but not enough for needs. The old Siefert well to the north is reported to produce about 1000 gallons per day.

7 The chemical quality of ground water in the area appears to be satisfactory for domestic use. Total soluble salts in the samples analysed were less than 500 parts per million. The constituents of greatest concentration is generally bicarbonate, and the waters may be hard.

PROJ. #560
3-14-60
KJB

Records of wells in T. 11 S., R. 13 E., G. and S. R. B. and M.
Continued.

Sources: Files of Ground Water Branch, U. S. G. S., Tucson, and Agricultural Engineering Department, University of Arizona

Well Location	Owner	Driller and date drilled	Depth and diam. (ft;in)	Water level (ft) and date	Remarks
(D-11-13) 28 ccd	Stan Williamson	McDaniel; '53	332; --	--	Log attached.
(D-11-13) 32	Nicolai	--	500; 8	415, 10/31	Log: Clay, sand, gravel, and boulders, 0-500 ft.
(D-11-13)32 baa	Nicolai #3	Pistor; --	550; --	--	Rep't. dry, 10/55. Log attached.
(D-11-13)33 da	Strickland	--	608; 8	566.75, 4/59	Water levels attached. Elev. 2814.07. Analysis available, U.A. TSS = 316 ppm, HCO_3 = 198.
(D-11-13)33 dcd	Buena Vista Coop.	McDaniel; --	690; 8-6	529.58, 4/59	Log attached. Water levels attached. Perf. 590-690. 8-in. casing 0-640, 6-in. liner 635-690. Elev. 2772.46.
(D-11-13)34 bbb	J. W. Smith	--	650; 8	605, 1957	Log: 0-20, sandy soil; 20-605, granite conglomerate; water at 605, increasing in flow to 650 ft.
(D-11-13)34 bbd	do.	--; 1957	650; 6	597, 1957	Log: 0-15, soil; 15-640, granite caliche conglomerate; 640-650, sandy formation. Water at 605.
(D-11-13)34 db	Du Puy	--	578; --	532.62, 8/48 528.30, 4/59	Other water levels, not recorded: highest was 517.29 ft in Feb. 1950. Elev. 2816.50. Rep't. all Catalina outwash.
(D-11-13)34 ca	do.	--	628; --	543.95, 5/54 548.05, 4/59	Elev. 2814.47. Rep't. granite at 625 ft.
(D-11-13)36 bb	Rancho Vistoso	--	502(?);--	448.06, 6/57	Water levels attached. Elev. 2903.05.

WADEVCO
PROJ. #560
3-14-66
KJD

Records of wells in T. 11 S., R. 13 E., G. and S. R. B. and M.

Sources: Files of Ground Water Branch, U. S. G. S., Tucson, and Agricultural Engineering Department, University of Arizona

Well Location	Owner	Driller and date drilled	Depth and diam. (ft;in)	Water level (ft) and date	Remarks
(D-11-13)17 bb	--	--	30; --	--	Analysis available, U. A. TSS = 546, HCO_3 = 293 ppm.
(D-11-13)18 bcd	E. N. Cayton	--	23; --	--	Dug in gray granitic gneiss. Structure N. 25° W., dip 30° NE. Elev. 3180. Rept. 800 gpd., never dry in 20 yrs.
(D-11-13)19 cdc	J. C. Shields	--	90; 36	--	Dug in hard blue granite, Normally dry. Elev. 2900.
(D-11-13)21 ac	Siefert	--	--; --	30.82, 10/56	--
(D-11-13)21 acd	Soto Ranch	--	40; --	8.0, --	Windmill.
(D-11-13)21 acd	Siefert	--; 1956	205; --	24.50, 10/56	Analysis available, U. A. TSS = 474 ppm, high in HCO_3.
(D-11-13)24 dc	Vistosa Ranch	--	--	114.44, 4/59	Elev. 2892.21. Water levels attached.
(D-11-13)28 ca	Mrs. Siefert	--; 1946	365; --	302.2, 9/48	Log attached. 84 ft, 5 in perforated. 2 1/2 HP elec. motor. Analysis available, U. A. TSS = 210 ppm.
(D-11-13)28 ca	Hedgpeth	McDaniel; '46	345; --	304, 9/46	Log: 0-20, Soil and gravel; 20-345, no log; rock at 345.
(D-11-13)28 ca	Siefert	--; '46	367(?); 6	307, 3/47	20 ft north of Hedgpeth well. May be same well as Mrs. Siefert's 365-ft well above. Rep't. 1000 gpd. Driller called entire formation conglomerate.
(D-11-13) 28 cad	Siefert	Pistor; 11/40	571; 6	--	Rep't. dry. Log attached.

Water Development Corporation
CONSULTANTS IN GROUND-WATER HYDROLOGY

3938 SANTA BARBARA AVENUE
TUCSON, ARIZONA

Proj. 560

March 16, 1960

PHONE: EAST 6-1133
CABLE: WADEVCO, TUCSON

Drillers' logs of wells in T. 11 S., R. 13 E.
Source: Ag. Engr. Dept., Univ. of Arizona

	Depth(ft)	Rock description
Well (D-11-13)28 ca	0-40	Conglomerate
Owner: Mrs. Siefert	40-45	Sand
	45-157	Soft sandstone
	157-165	Sand and gravel
	165-300	Rock
	300-310	Broken rock
	310-312	Sand and water
	312-365	Soft sand rock
Well (D-11-13)28 cad	0-4	Soil
Owner: Siefert	4-21	Boulders and clay
	21-29	Gravel and clay
	29-74	Loose gravel
	74-98	Large boulders and clay
	98-111	Loose gravel
	111-136	Large boulders and clay
	136-260	Loose gravel
	260-310	Boulders and clay
	310-340	Gravel, little clay
	340-375	Boulders and clay
	375-400	Gravel
	400-515	Boulders
	515-571	Gray granite
Well (D-11-13) 28 ccd	0-8	Rocky soil
Owner: Stan	8-100	Conglomerate with caliche
Williamson	100-300	Cemented gravel
	300-308	Soft brown conglomerate
	308-332	Hard gray granite

Well (D-11-13)32 baa	0-22	Brown clay and coarse sand
Owner: Nicolai	22-30	Gravel, sand, clay
	30-50	Boulders, gravel, clay
	50-60	Sand, clay, and little gravel
	60-80	Gravel, clay, boulders
	80-100	Brown clay, sand, and little gravel
	100-110	Coarse sand and little clay (cavy)
	110-180	Brown clay, sand and little gravel
	180-234	Gravel, sand, and clay
	234-246	Boulders, gravel and clay
	246-332	Gravel, clay, and sand
	332-345	Gravel, boulders, clay (cavy)
	345-360	Gravel, sand, brown clay
	360-367	Boulders and little clay
	367-395	Gray granite
	395-426	Gray granite
	426-435	Conglomerate
	435-448	Granite
	448-454	Red quartz-granite
	454-468	Gray granite-hard
	468-477	Red porphyry granite
	477-481	Conglomerate
	481-486	Gray granite
	486-490	Conglomerate
	490-495	Blue granite
	495-550	Granite
Well (D-11-13)33 dcd	0-8	Soil
Owner:	8-200	Cemented gravel
Buena Vista Coop.	200-535	Conglomerate
	535-578	Fine sand. (dry running)
	578-580	Broken conglomerate, water
	580-585	Fine sand (dry running)
	585-637	Broken conglomerate and water
	637-665	Hard conglomerate
	665-685	Broken conglomerate and water
	685-690	Very hard granite. Possibly boulder

Water Development Corporation
CONSULTANTS IN GROUND-WATER HYDROLOGY

3938 SANTA BARBARA AVENUE
TUCSON, ARIZONA
Proj. 560

March 16, 1960

PHONE: EAST 6-1133
CABLE: WADEVCO, TUCSON

Records of water-level measurements in wells in T. 11 S., R. 13 E.

Source: Ag. Engr. Dept., Univ. of Arizona

Well location	Owner	Depth to water (ft)	Date
(D-11-13)24 dc	Vistosa Ranch	125.17	5/53
		96.15	5/55
		79.99	5/56
		109.90	6/57
		114.44	4/59
(D-11-13)33 da	Strickland	564.62	8/48
		566.75	4/59
(D-11-13)33 dc	Buena Vista Coop.	525.50	6/57
		528.38	5/58
		529.58	4/59
(D-11-13)36 bb	Rancho Vistoso	439.39	2/49
		447.17	5/56
		448.06	6/57

This may be petty as hell but I think it might be important in the future and I don't seem to have been able to convince you that the geophysics only supported an ~~th~~ interpretation that seemed to contrast markedly with every one elses — Even without ~~the~~ geophysics I would have held out for the NW cor (or at least that's easy to say now)

Memo

TO WEH

From FAS

Subject: Brey Well

One final note on the subject of the site selection for the Brey Well — (then I'll shut up)

1. The "discovery" was geological aided by geophysics. Obviously there can be no contradiction of geological data by geophysical data — The only contradiction can be in erroneous interpretation

2. The original consensus of opinion (oversimplified) was the existence of a steeply dipping but planar (?) water table dipping generally southerly at a rate of from 400 ft/mile to a rate of ~~from~~ 300 ft/mile ± southeast of the property. The existence of a northeasterly trending fault with the south block downthrown was suspected.

3. It was my opinion at the time (and still is) that:

(a) No correlation could be made between the observed water depths of 2250 ft ± in the area to the southeast and the Brey property without definite fault information

(b) ~~That~~ Planar water tables dipping this steeply are very rare and fluctuate so rapidly with variable climatic conditions as to be useless as water reservoirs.

(c) Flow ~~of~~ ground water would be channeled along ancient erosional channels on the x'line surface or even if the steeply tilted water table were due to block faulting and a tilted ~~x'l~~ but planar x'line surface, that over a period of geological time paths of weakness would produce channelization of the ground water.

(D) The best bet geologically in my opinion for determining the course of channelization if such existed was from the general — not the immediate — trend of the modern erosional pattern in the x'lines and alluvium.
(i.e. The immediate course of the modern stream bed along the east side of the Brey property is north-south but the general course of erosion is S45°W ±)

(E) The location of depth probe # 5 was selected by projecting the course of the erosional pattern ~~from~~ through the known producer ~~NE~~ north of the Brey property SW ~~from~~ the NE cor of said Brey property. This probe produced the lowest (Moore) comulative resistivity ~~on~~ known at that time on the property. — Profiles substantiated a low in this area —

Summary:

In my opinion there is no conflict between the geological and geophysical data and interpretation. And the only conflict rests in the contrasting theories of interpretation of the groundwater geological data.

so there to