MAP NO.: 105 D 06

PLACER X
ASSESSMENT REPORT
PROSPECTUS
CONFIDENTIAL X
OPEN FILE

DOCUMENT NO: 120001
MINING DISTRICT: Whitehorse
TYPE OF WORK: Magnetometer Survey

REPORT FILED UNDER: Kelly Hougen

DATE PERFORMED: March 1982
DATE FILED: August 18, 1982

LOCATION: **LAT.:** 60° 25'N
LONG.: 135° 10'W
AREA: Two Horse Creek
VALUE $: 2425.00

CLAIM NAME & NO.: PL5313

WORK DONE BY: G.C. Lee

WORK DONE FOR: Kelly Hougen

DATE TO GOOD STANDING:	

REMARKS: TWO HORSE CREEK

Placer Lease No. 5313 Map 105-D-6

REPRESENTATION WORK - MAGNETOMETER SURVEY

TWO HORSE CREEK

Field Work

				$ Amount
March 16 - March 18, 1982				
Engineer	Gary Lee	3 days	$200/day	600.00
Field Assistant	Kelly Hougen		$125/day	375.00
March 23 - March 24, 1982				
Engineer	Gary Lee	2 days	$200/day	400.00
Field Assistant	Kelly Hougen		$125/day	250.00

Geophysical Report

Engineer	Gary Lee	4 days(200.00/day)		800.00
			Total	2425.00

Note: Above is equivalent dollar value as per acceptable contract rates. However, no monies changed hands as per verbal agreement regarding prospecting partnership.

Yours Sincerely

Gary Lee

Gary Lee P. Eng.

KELLY HOUGEN
TWO HORSE CREEK
1982

Placer Gold
105 D 6
60 25'N, 135 10'W
Whitehorse M.D.

Reference:

Claims: Placer Lease PL5313

Source: Summary by T. Bremner of assessment report 12001 by G.C. Lee.

Description:

The property is located 22 miles south of Whitehorse, north of the Annie Lake road. Flat terraces several metres to 100 metres in width border the stream on both sides with rock bluffs in places. The stream bed lies one to three metres below the level of the terraces.

Current Work and Results:

A two-metre test pit was excavated in sand and silt on the terrace northeast of the stream. Bedrock was not reached but fine gold was encountered in a boulder layer at a depth of 1.3 metres. In order to identify magnetite concentrations which may indicate buried stream channels, a magnetometer survey was conducted over a 1200 x 30-120 metre grid on the northeast bank, along lines perpendicular to the creek spaced 30 metres apart. A strong anomaly near the base of the hill slope to the northeast was indicated on four adjacent cross lines and may represent a buried placer deposit in an old stream channel.

Regional Manager Mines
AUG 18 1982

TWO HORSE CREEK

MAGNETOMETER SURVEY

Whitehorse Mining District, Yukon Territory
Placer Lease No.5313
Map N.T.S. 105-D-6

by
Gary C. Lee P.Eng.

Field work conducted in March 1982

TABLE OF CONTENTS

INTRODUCTION

General

On March 16 to March 18, 1982 and March 23 to March 24, 1982 a two-man(myself and Kelly Hougen, both of Whitehorse) survey team snowmobiled via the old Alligator Lake road into Two Horse Creek. Surveying, line preparation and a magnetometer survey were conducted during this period.

The purpose of the survey was to locate magnetic anomalies which might be related to above background concentrations of magnetically susceptible minerals synonymous with placer gold deposition possibly in ancient buried channels.

The particular area of this survey was choosen because of the occurrence of steeply dipping bedrock outcrops adjacent to low level creek benches. Thus, it was hoped that the chances of encountering shallow overburden depths would be better here as apposed to other areas on the creek.

Lease

Placer Lease 5313(Yukon Territory) was assigned to Kelly Hougen on February 13, 1981 and subsequently registered with the whitehorse Mining Recorder on February 19, 1981. Myself and Mr. Hougen have a verbal exploration agreement on this lease.

Location

Placer Lease 5313 has its No. 1 post located on the left limit of Two Horse Creek approximately one kilometer upstream from its confluence with the Watson River and thence, a distance of one mile to the No. 2 post(see location map,pg. 8).

Two Horse Creek is located approximately 22 air miles south of Whitehorse, Y.T. It is reached by road via the Carcross Highway and the Annie Lake road to the Alligator Lake road and thence, by snowmobile or four wheel drive pick-up the last five miles to the lease.

The lines were established on the left limit low-level benches adjacent to Two Horse Creek commencing approx-400 meters upstream from the No. 1 post.

ECONOMIC GEOLOGY AND TOPOGRAPHY

Map 1093A "Geology, WHITEHORSE, Yukon Territory" (G.S.C. Memoir 312 by Wheeler) shows the geology of this area. On examination of this map it can be seen that the valley of Two Horse Creek contains volcanics, andesites, basalt flows,

limestone and granitic type rocks. It is the volcanic types which are considered a possible geological source for gold in the area.

The general direction of drainage of Two Horse Creek in the area of this report is to the south-east. The left limit(looking downstream) consists of relatively flat lying spruce and popular creek benches with anywhere from one to three meter high banks adjacent to the creek. These benches range from a few meters in width near rock bluffs to over 100 meters in width, usually nearer the centre before encountering the valley wall. The occurrence of bedrock outcrops interspaced with these relatively flat lying low level creek benches is the type of terrain covered by this magnetometer survey. The northeast side of the valley consists of steeply dipping(20-40%) side hills while the southwest side of the valley has much more gentle sloping side walls. Below the prospect lease, the creek exits the valley in a relatively flat lying terrain before entering the Watson River.

RECENT PROSPECTING AND TESTING

A pit approximately two meters deep was dug by myself roughly 250 meters upstream from the No. 1 post on the right limit in an area where an old prospect shaft was located. Although, the pit flooded at the two meter depth before bedrock was reached, fine gold(2-4 colours/pan) was found at the 1.3 meter level in a well rounded boulder gravel with a sandy silt matrix. There was also a significant amount of black sand(magnetite) present. The material above the boulder layer consisted of sand, silt and the usual organic layer typical to many spruce and poplar creek benches in the Yukon. In any event, although the amount of gold found to date has been totally uneconomic, the occurrence of "colour" in the boulder layer(not on bedrock) does give the valley some potential from an exploration point of view.

Some testing was done with a bulldozer in 1981, however no technical information was provided to me, except that this lease had only a couple of pits excavated near the lower end.

FIELD PROCEDURE

Two distinct base lines(approx. N.W.) were established commencing approximately 400 meters upstream from the No. 1 post and thence running a distance of roughly 1200 meters. These were run in at 10 meter spacings, marked with felt pens on flagging and written on blazed spruce trees at reasonable intervals, so as to give some permanency to the grid. The lines were run in at 30 meter spacing with station 0+00 being on the left limit creek bank. These

were also marked and flagged at 10 meter spacing. Between lines 14+20N and 17+20N, the base line runs approx. N.W. straight down the centre of the left limit bench while the remainder of the base line runs in smaller straight line segments roughly paralleling and adjacent to the left limit creek bank.

A Sharpe's M.F.-1 fluxgate magnetometer was used and readings were taken to the nearest 10 gammas occassionally, 5 gammas. The instrument reads the vertical component of the earth's magnetic field.

Readings were taken at 5 meter intervals, with a few sections at 2½ meter intervals. Visual estimates were made of topographical changes along the lines and the significant changes are noted on the accompanying profile sheets(pages 9 to 21).

Magnetometer readings were taken along the base line in short loops and corrected for diurnal. Similarily each set of two lines was surveyed in a loop checking into the base line readings for each loop and subsequently corrected.

APPLICATION OF MAGNETIC THEORY

When applying magnetic theory to placer prospecting, it is important to realize that there are many causes of magnetic anomalies and only a few of these will be useful in placer prospecting. Hence, in recommending test locations based solely on magnetics, one must by process of elimination come up with priority targets which stand the best chance of being successful. In doing this, one must couple the results of a magnetometer survey with known geology, estimates of order of magnitude of overburden thickness (i.e. 3 meters or 30 meters), its nature, when possible, and changes in topography.

The first (and most obvious) reason for doing a mag. survey is to try and locate ancient, buried stream channels by detecting the often present higher-than-background concentrations of black sands (high in magnetite content), which could show up as anomalies. Figure 1 shows the magnetic profile (ΔZ - vertical component) over an inclined prism-shaped body of magnetic material in granite. This can be said to be analagous to an inclined prism-shaped body of placer material rich in magnetite lying on bedrock and completely covered by an increasing depth of overburden.

Figure 1 demonstrates the ideal case of a very strong (over 1000 gammas) magnetic anomaly. With the rare exception, one would expect anomalies to range from 20 to 500 gammas in placer prospecting. Also, Figure 2(d) shows the shape of a magnetic profile over a buried horizontally-lying feature of magnetic material shaped like a plate. These examples

(or combinations thereof) are the anomaly shapes (profiles) that one hopes to delineate in the field as being caused by an ancient buried stream bed.

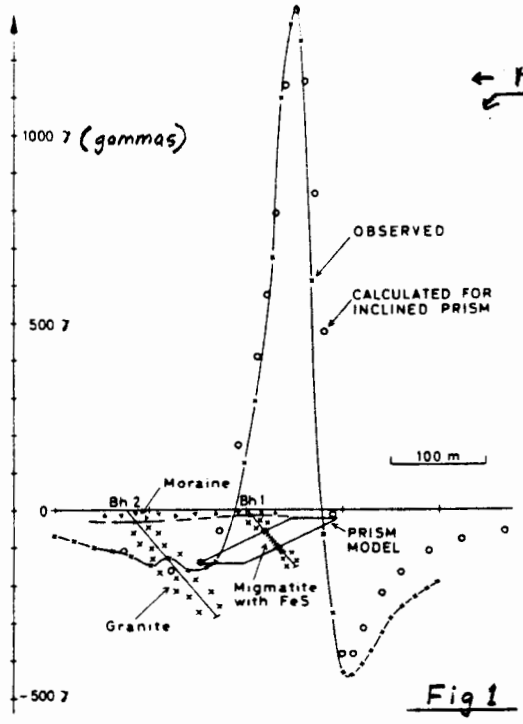
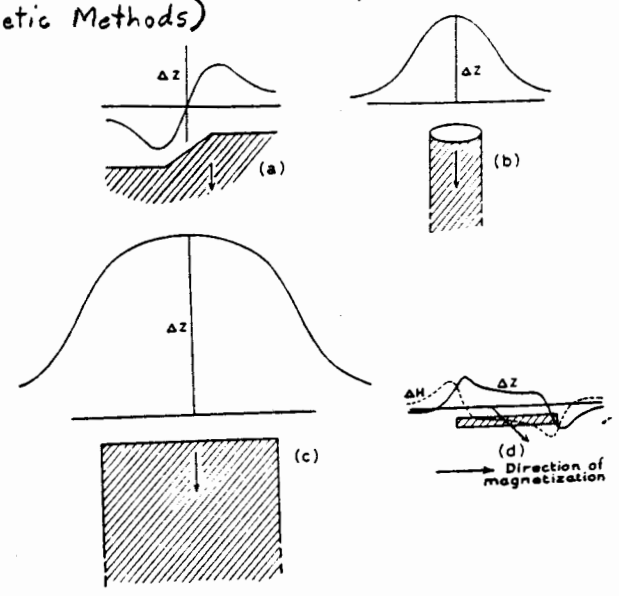


Fig 1

~~Fig. 7d~~ *Observed and calculated ΔZ across an inclined prism-like body (k = −1.564)*

← Reference → *Principles of Applied Geophysics* by D.S. PARASNIS, 1972 (Magnetic Methods)



~~Fig. 6.~~ *Miscellaneous features*

Fig. 2

Another, more indirect, approach is often well-washed granitic type boulders which may have high magnetic susceptibilities are encountered in valley bottoms where the basement rock is known to be non-granitic. Hence, shallow buried boulder fields which could indicate the presence of an ancient drainage pattern could show up as an erratic, closely spaced "up and down" profile and should be watched for. Also, this may be partly responsible for the overburden (till, etc.) having local above background concentrations of magnetic minerals, resulting in magnetic anomalies unrelated to economic placer deposition. Unfortunately, the only way to eliminate these is to test pit, shaft sink or drill!

An even more indirect approach can be seen in Figure 2(a) when a sudden change in overburden depth occurs, undulations of the bedrock under an overburden, or a flexure of rock beds. In this case, a negative to positive (deeper to shallower overburden) anomaly occurs. Of course, this is an ideal case and the anomaly size and shape are dictated by such things as the magnetic susceptibility of the bedrock, slope, depth changes, etc. This is to be expected in any valley and most of the causes are too numerous to mention. However, there is always a chance that consistent parallelling

profile anomalies of this nature could be caused by an old channel which has cut deep into bedrock and has subsequently been buried. This should be kept in mind when studying magnetic profiles.

Another phenomenon occurs when one is both approaching the toe of a hill and taking readings up the side. Here, magnetic readings will often increase - their magnitude being dependent on slope, magnetic susceptibilities, size of hill and overburden depths. The converse is often true when approaching a steep drop-off. This is simply a topographical effect and should be borne in mind.

One of the most difficult tasks in the interpretation of a survey of this type is to eliminate anomalies which are caused by bedrock itself. These could be caused by dykes, contacts, faults, or simply local changes in bedrock magnetic susceptibilities. Sometimes the only way to differentiate is to test pit, shaft sink or drill in the hopes that some of the anomalies are caused by a placer deposition rather than composition changes in bedrock. Indeed, most of the recommended test sites originating as a result of a mag. survey, both the overburden and bedrock should be tested for magnetic minerals. The overburden by drying the pannings or concentrate and the bedrock by pulverizing it with a hammer and thence checking for magnetic grains with a small pocket or hand magnet.

Anyway, when one is faced with valleys which are far too large to adequately test, especially with limited time and resources, one is far better off having, say, a dozen magnetic anomalies which coincide with a reasonable topographical approach (i.e. regarding placer deposition) as opposed to simply testing at random. Before undertaking a mag. survey, the active creek in the area should be panned for placer magnetite(black sand). If found in detectable quantities, then one may reasonably assume that the geological environment within the drainage system was suitable for concentrating similar heavy minerals in an ancient channel.

INTERPRETATION AND CONCLUSIONS

The resulting profiles for Two Horse Creek are included as pages 9 - 21. On examination of these profiles, several magnetic anomalies are evident.

Firstly, on roughly ten lines there is a tendency for higher magnetics near the creek. This is assumed to be the active or recent movement of heavy materials such as magnetite within or near the creek and has been found to contain only the occassional colour when panned. Hence, these are not recommended as test sites. Examples can be seen on lines 1390N, 1420N, 1720N, 1980N, 2250N and 2570N usually between 0+00 and 0+05E. Also, on the base line(Pg 13) between 1350N and 1425N.

The background on the creek benches is generally higher than that on the hillsides. The best example of this can be seen on line 1360N between 0+00 and 0+50. The background of the creek bench is in the order of 400 gammas while the hillside is around 300 gammas. This is particularily true on the large bench between station 13+50N and 17+00N meters. Since, this is within the flood plain it is not considered significant due to the probable higher than background recent accumulations of "heavies" such as black sand. The aim is to locate something which stands out from this "anomalous" background. With this is mind, there is a minor abrupt rise(30-50 gammas) at station 0+30E on Lines 1450N and 1480N. In a broader sense, this occurs on Line 1510 between 0+55 and 0+75E, L1480N between 0+55 and 0+65E, L1600N between 0+55 and 0+80E and on L1570N between 0+45E and 0+55E. Also, there is a 80 gamma high on L1510N between 0+05E and 0+30E. These should be investigated, however they are not considered to have high priority because of the chances of relatively recent deposition of "flood plain" placer magnetite.

However, a very significant anomaly occurs between Lines 1950N and 2040N (see profiles Pg14and15). The anomaly shows up best on L2010N, 0+65E to 0+81E. It has approximately 150 gamma high and occurs at the toe of the hill, thence turning and following along L1950N where it crosses the creek. Also, on lines 1980N and 2040N it is suspected of running under the slide material as indicated by the mag. highs at the ends of these lines. Some lines to the N.E. show a tendancy for highs under slide material(toe of hill), however data is insufficient for drawing any conclusions. The location of this anomaly(L1950N-L2040N) is shown in Fig. 3.

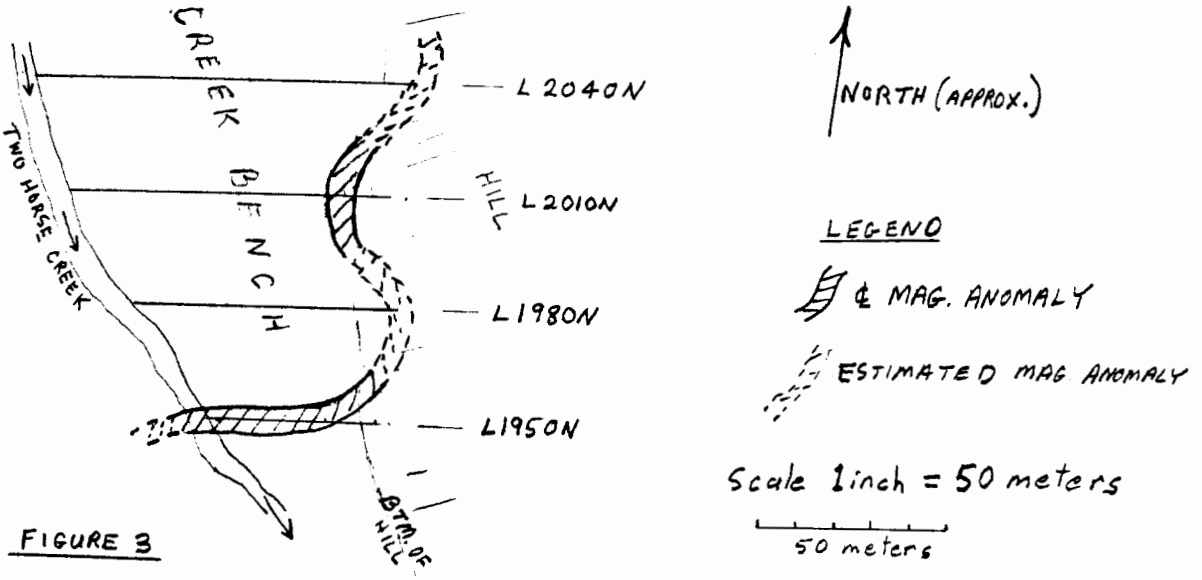


FIGURE 3

On examination of this anomaly pattern, one can see that it could possibly be an old channel. However,it could also be a bedrock phenomenom such as a contact or dyke within a

fold structure. The only way to ascertain this is to test pit either by hand or with machinery. The anomaly width on Line 2010N(Pgl5) is 16 meters wide. If one assumes it crosses the source at right angles, then by a point source theory the depth to the source would be 8 meters. However, one should assume the source has some width to it, hence the depth at which the source would be intersected should be less than 5 meters.

Of further note, there is some second bench development on the north end of the property. Line 2510N, 0+40E to 0+45E and especially Line 2540N, 0+32E to 0+42E show an associated mag. high. This is probably above background black sand within the bench gravels and is not given a high priority. However, it should be examined at some future date.

RECOMMENDATIONS

1) The anomaly located between lines 1950N and 2040N should be investigated in one or both of the following:

   A) Excavating a test pit on L2010N at 0+73E

   B) Continuing the Mag. work on the other side of the creek; the purpose being to trace out the extension of the anomaly in order to locate more suitable test sites.

The following are of lower priority:

2) Pan the bench on L2540N at 0+37E

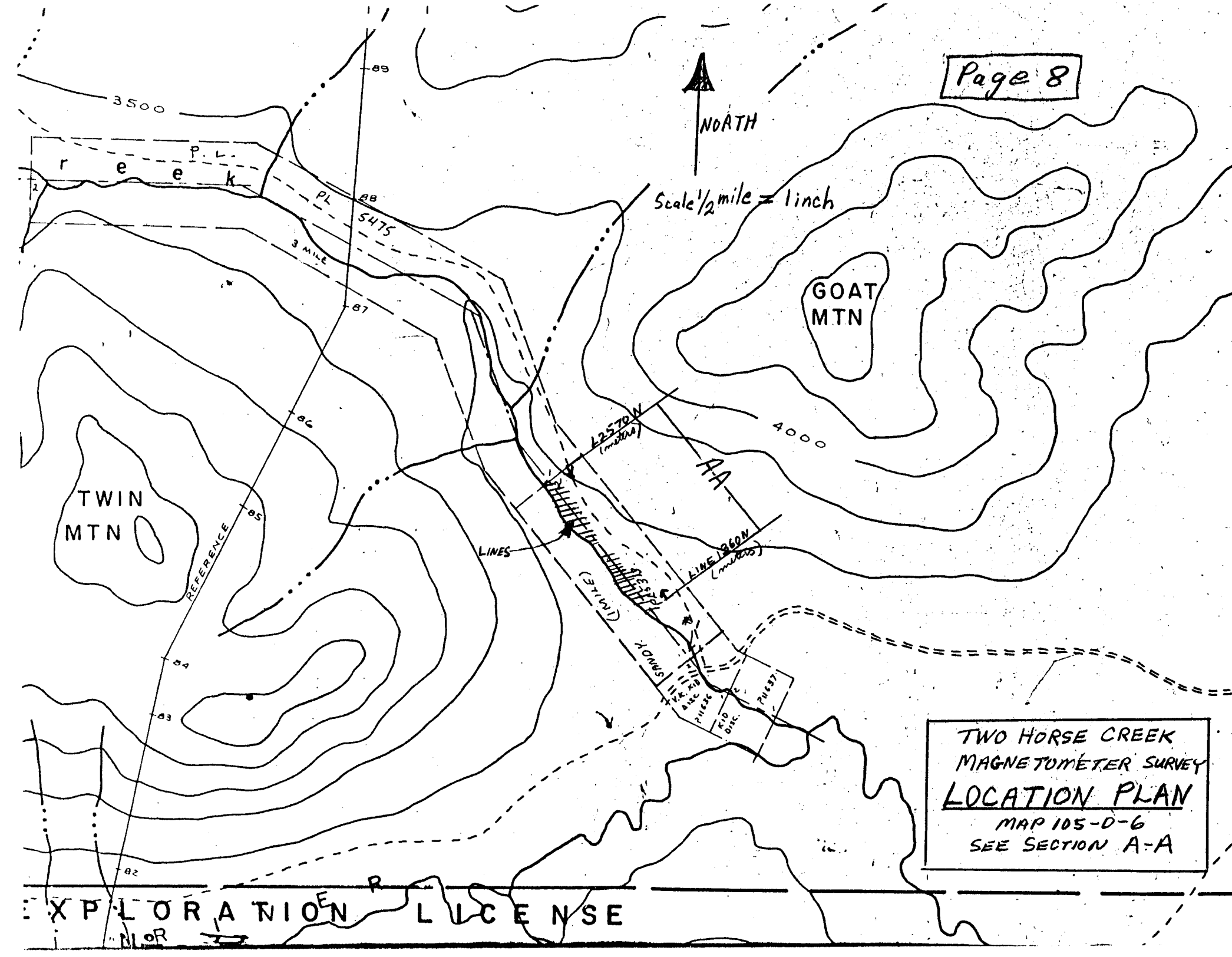
3) Examine L1480N at 0+30E and 0+62E

4) Examine L1510N at 0+20E

Respectfully submitted:

Gary Lee

Gary C. Lee, P.Eng.

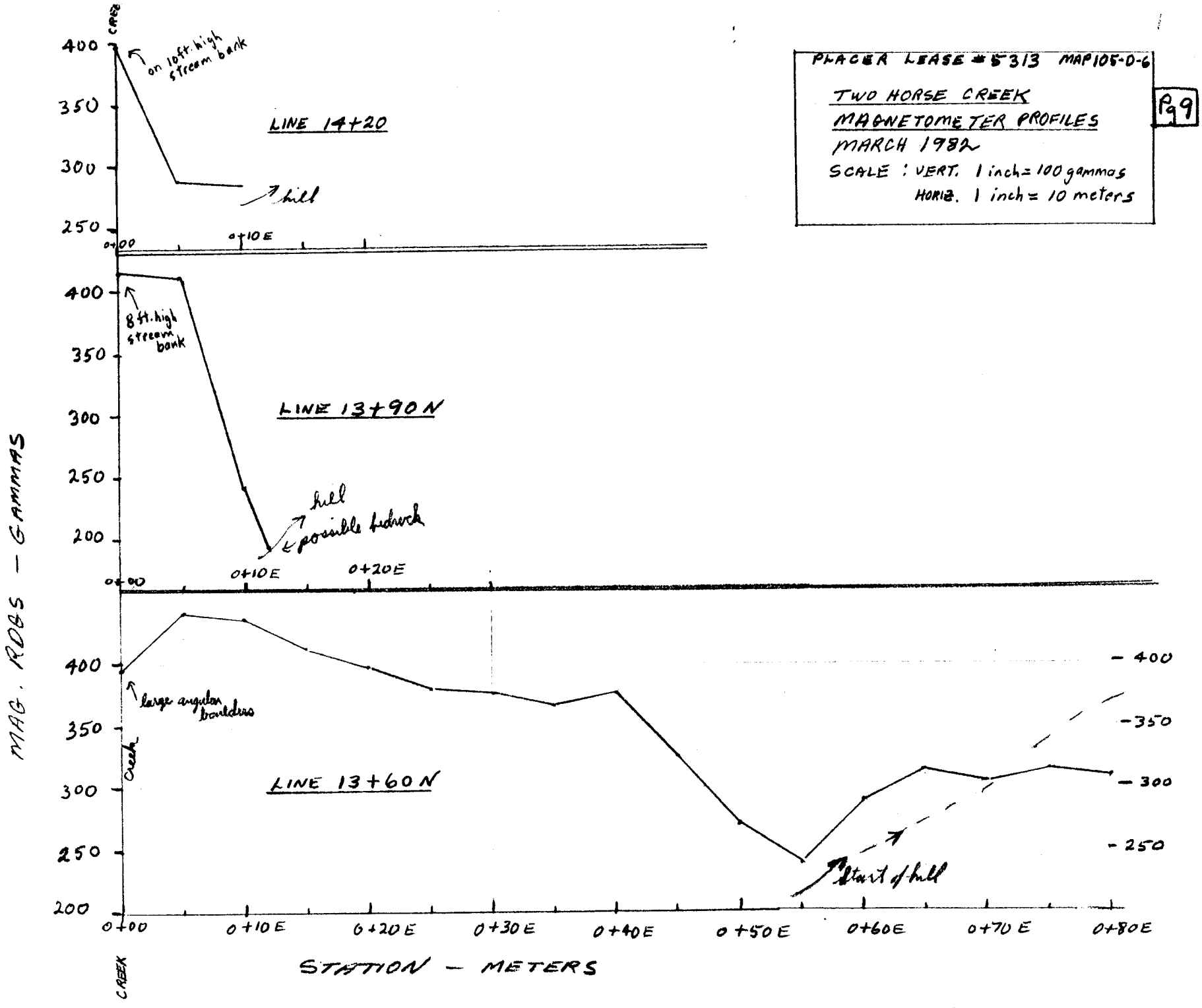


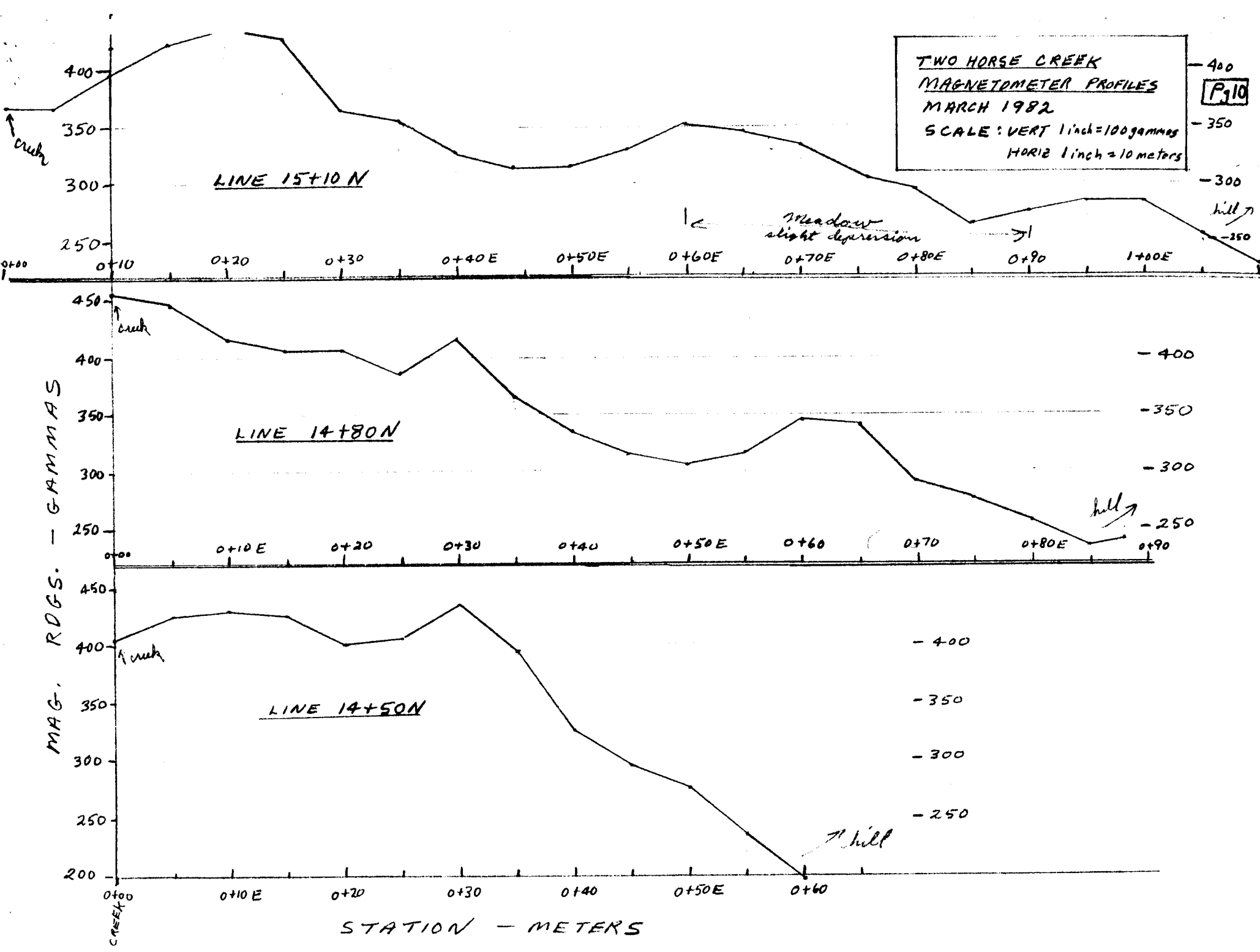
TWO HORSE CREEK
MAGNETOMETER SURVEY

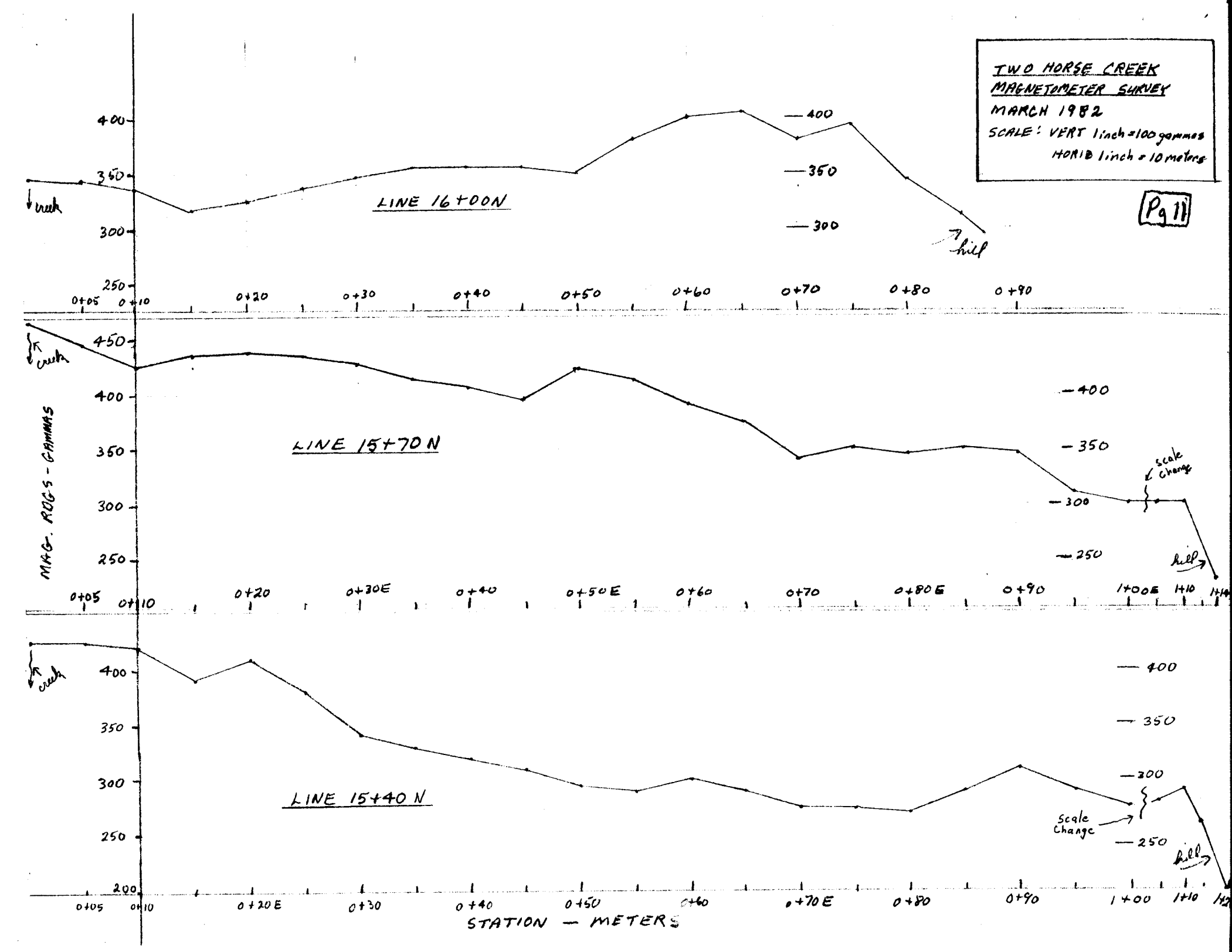
LOCATION PLAN

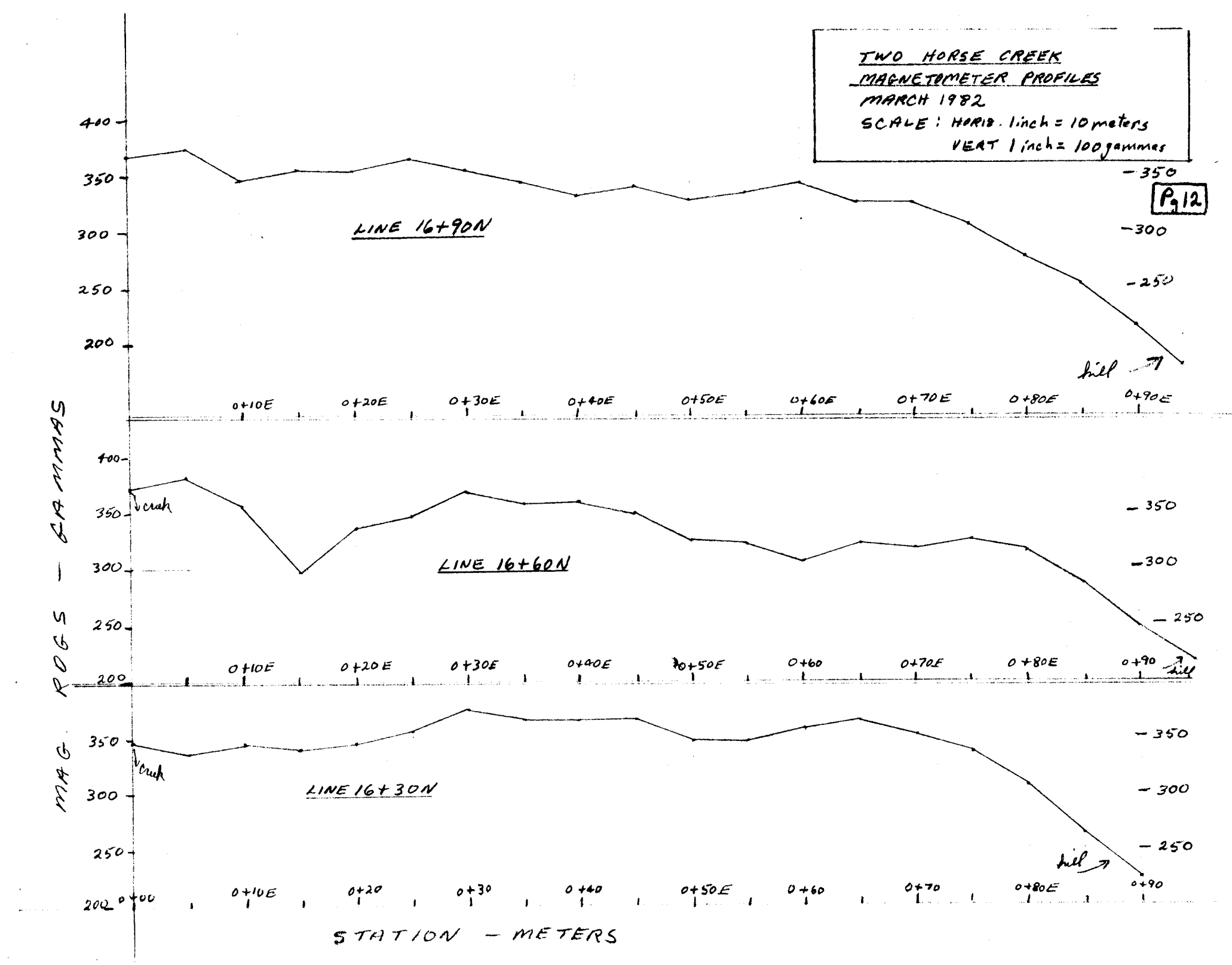
MAP 105-O-6
SEE SECTION A-A

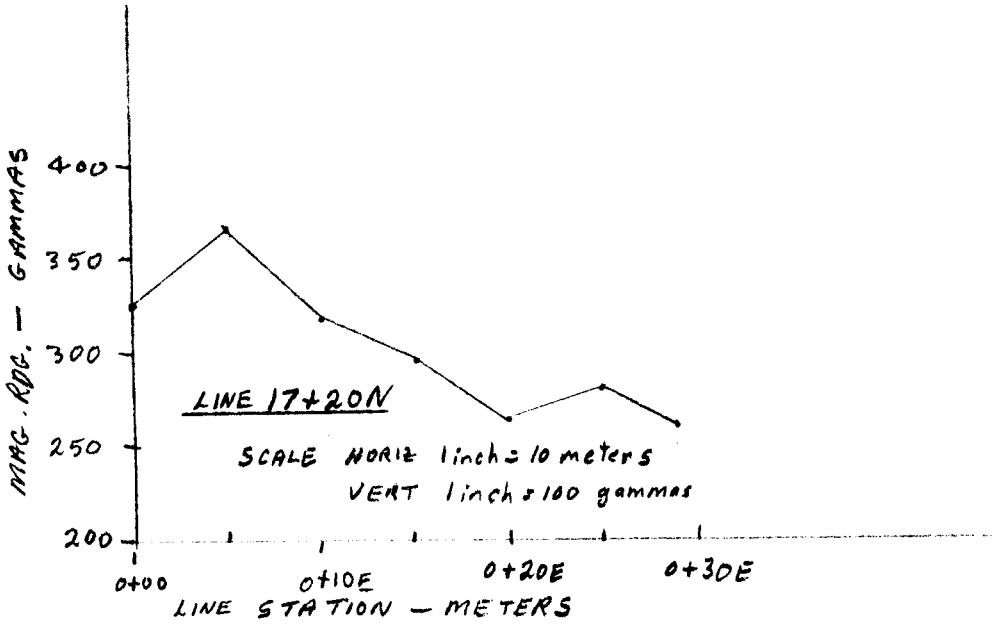
EXPLORATION LICENSE


PLACER LEASE # 5313 MAP 105-D-6
TWO HORSE CREEK
MAGNETOMETER PROFILES
MARCH 1982
SCALE : VERT. 1 inch = 100 gammas
HORIZ. 1 inch = 10 meters
P99
LINE 14+20
on 10ft. high stream bank
hill
LINE 13+90 N
8 ft. high stream bank
hill
possible bedrock
LINE 13+60 N
large angular boulders
Start of hill
MAG. RDGS - GAMMAS
STATION - METERS
CREEK
400
350
300
250
200
0+00
0+10E
0+20E
0+30E
0+40E
0+50E
0+60E
0+70E
0+80E

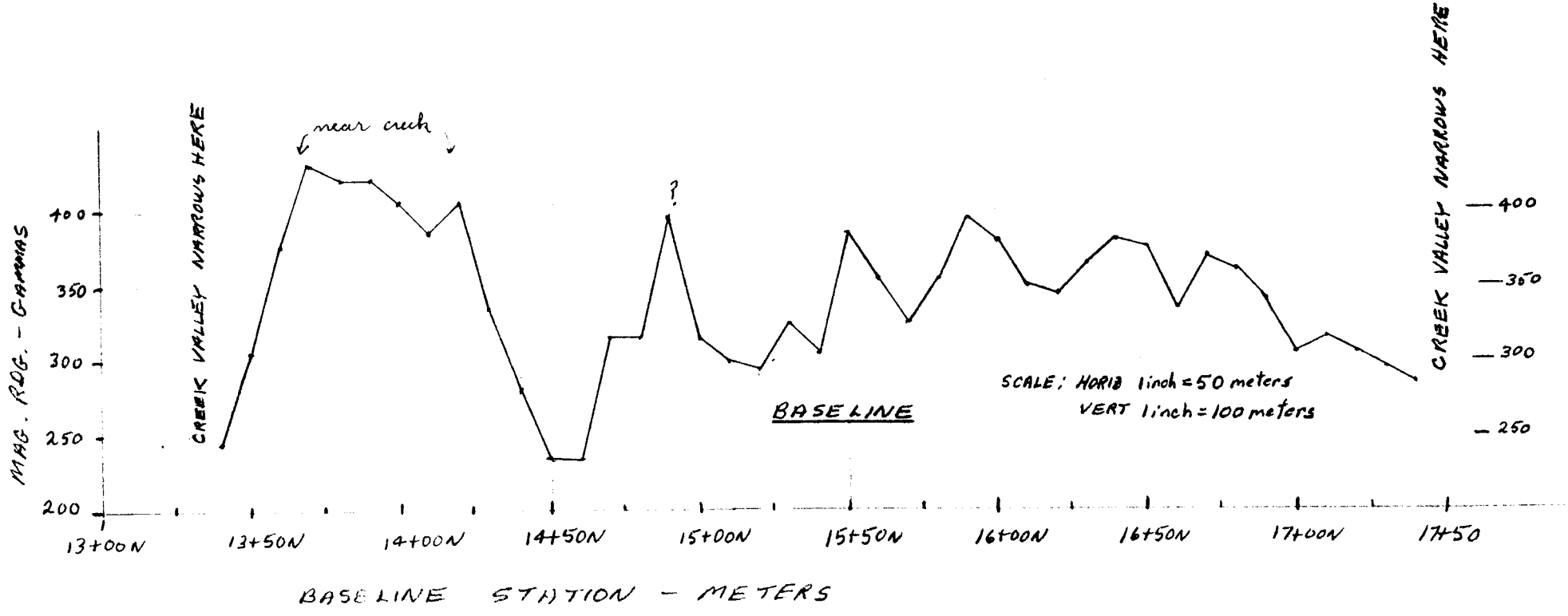

TWO HORSE CREEK
MAGNETOMETER PROFILES
MARCH 1982
SCALE: VERT 1 inch = 100 gammas
HORIZ 1 inch = 10 meters
P 10
LINE 15+10 N
creek
Meadow
slight depression
hill
0+00
0+10
0+20
0+30
0+40 E
0+50E
0+60E
0+70E
0+80E
0+90
1+00E
LINE 14+80N
0+10 E
0+40
0+50 E
0+60
0+70
0+80E
LINE 14+50N
0+60
MAG. RDGS. - GAMMAS
STATION - METERS
CREEK


TWO HORSE CREEK
MAGNETOMETER SURVEY
MARCH 1982
SCALE: VERT 1 inch = 100 gammas
HORIZ 1 inch = 10 meters
Pg 11
LINE 16+00N
creek
hill
400
350
300
250
0+05
0+10
0+20
0+30
0+40
0+50
0+60
0+70
0+80
0+90
LINE 15+70N
MAG. RDGS - GAMMAS
scale change
0+30E
0+50E
0+80E
1+00E
1+10
LINE 15+40N
0+20E
0+70E
1+00
STATION — METERS


TWO HORSE CREEK
MAGNETOMETER PROFILES
MARCH 1982
SCALE : HORIZ. 1 inch = 10 meters
VERT 1 inch = 100 gammas
P. 12
LINE 16+90N
LINE 16+60N
LINE 16+30N
MAG ROGS - GAMMAS
STATION - METERS
400
350
300
250
200
0+10E
0+20E
0+30E
0+40E
0+50E
0+60E
0+70E
0+80E
0+90E
0+60
0+70
0+80
0+90
0+00
crest
hill

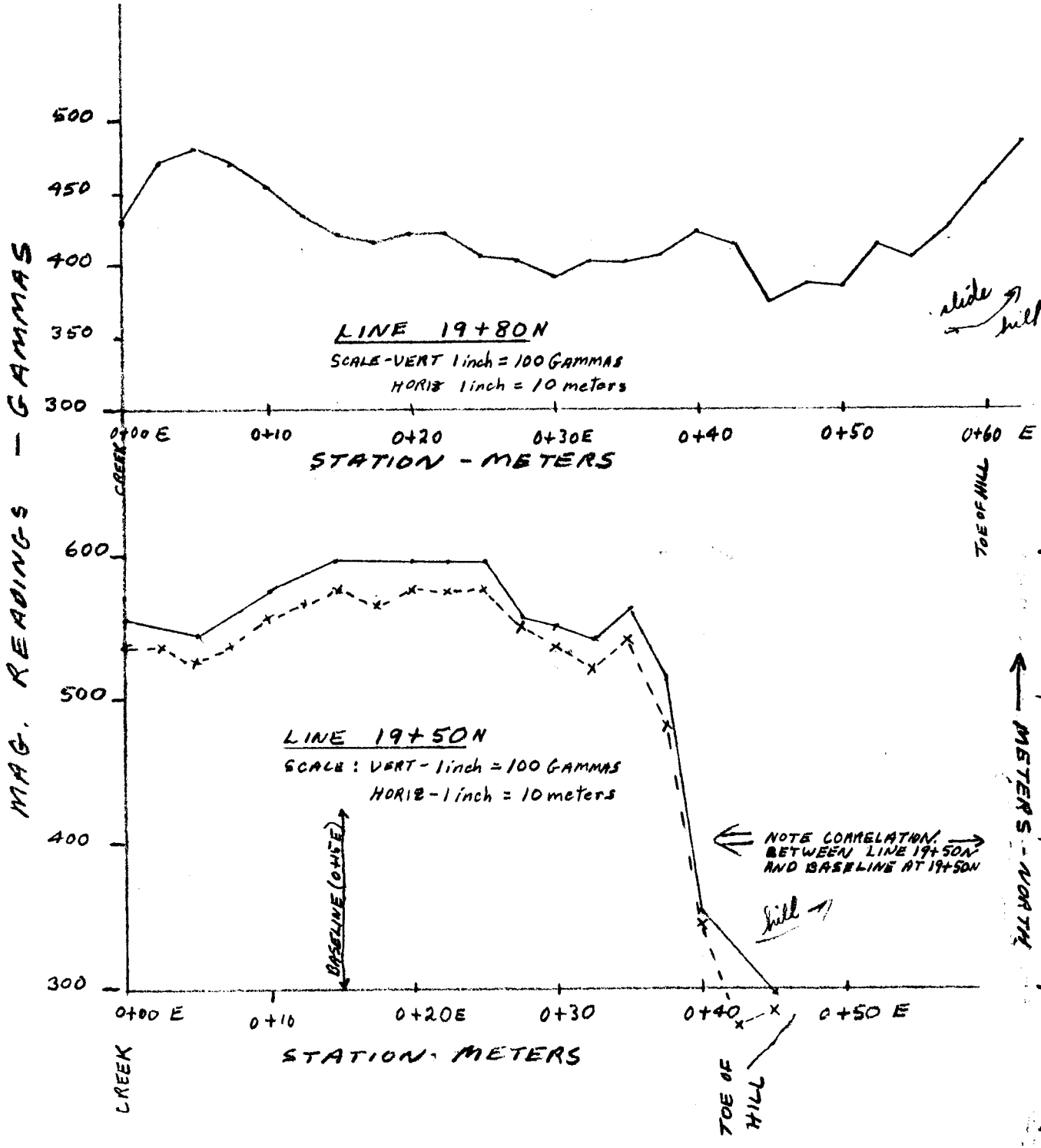


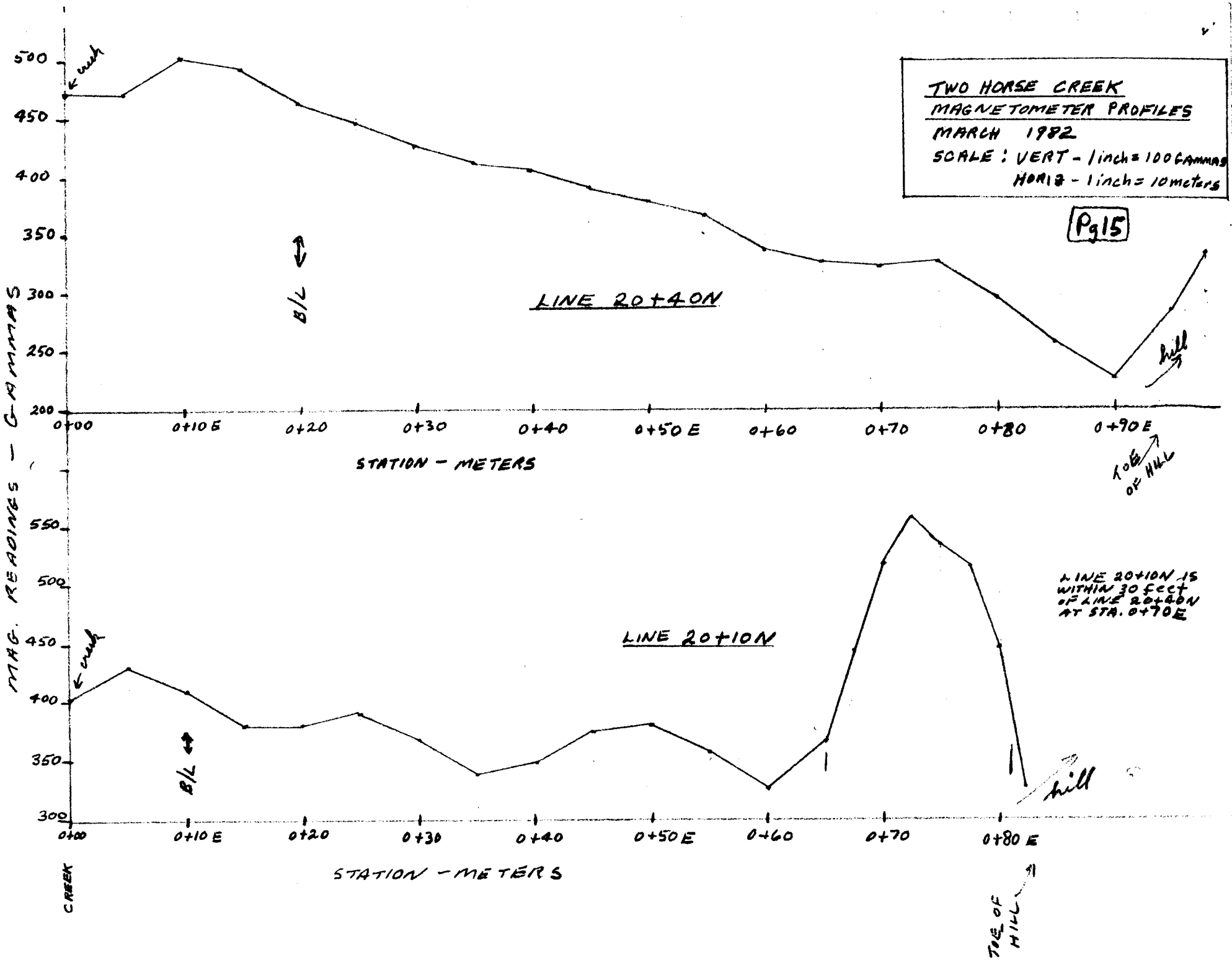
TWO HORSE CREEK
MAGNETOMETER PROFILES
PLACER LEASE #5313
MAP N.T.S. 105-D-6
MARCH 1982

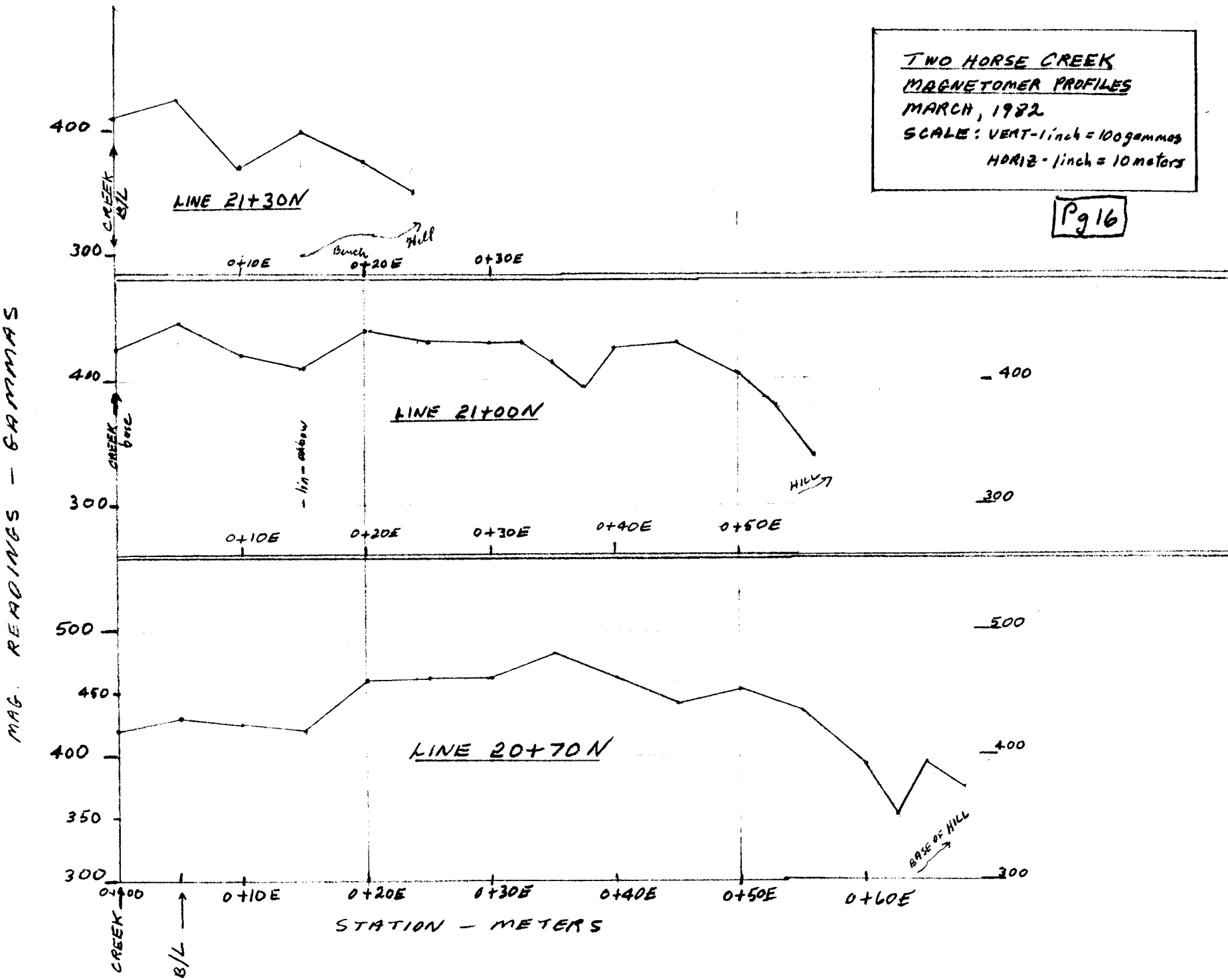


TWO HORSE CREEK
MAGNETOMETER SURVEY
PROFILES
MARCH 1982

Pg 14




TWO HORSE CREEK
MAGNETOMETER PROFILES
MARCH 1982
SCALE: VERT - 1 inch = 100 GAMMAS
HORIZ - 1 inch = 10 meters
Pg15
LINE 20+40N
MAG. READINGS - GAMMAS
500
450
400
350
300
250
200
B/L
creek
0+00
0+10 E
0+20
0+30
0+40
0+50 E
0+60
0+70
0+80
0+90 E
STATION - METERS
TOE OF HILL
hill
LINE 20+10N
LINE 20+10N IS WITHIN 30 feet OF LINE 20+40N AT STA. 0+70E
550
500
450
400
350
300
B/L
creek
0+00
0+10 E
0+20
0+30
0+40
0+50 E
0+60
0+70
0+80 E
STATION - METERS
CREEK
TOE OF HILL
hill

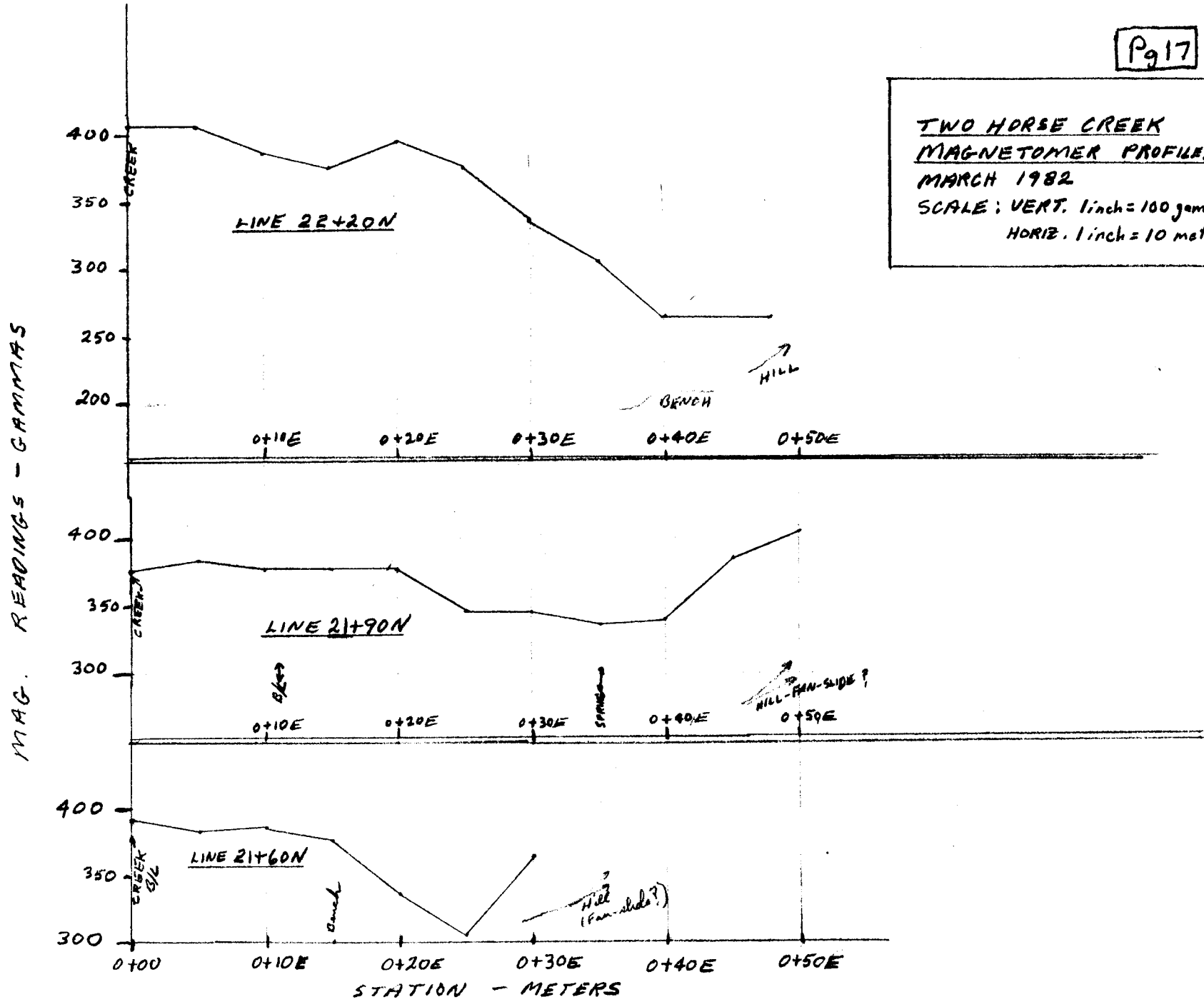

TWO HORSE CREEK
MAGNETOMER PROFILES
MARCH, 1982
SCALE: VERT - 1 inch = 100 gammas
HORIZ - 1 inch = 10 meters
Pg 16
MAG. READINGS - GAMMAS
LINE 21+30N
CREEK B/L
400
300
0+10E
Bench
Hill
0+20E
0+30E
LINE 21+00N
CREEK bank
- lin - ation
HILL
400
300
0+10E
0+20E
0+30E
0+40E
0+50E
LINE 20+70N
500
450
400
350
300
500
400
300
BASE OF HILL
0+00
0+10E
0+20E
0+30E
0+40E
0+50E
0+60E
CREEK
B/L
STATION - METERS

TWO HORSE CREEK MAGNETOMER PROFILES

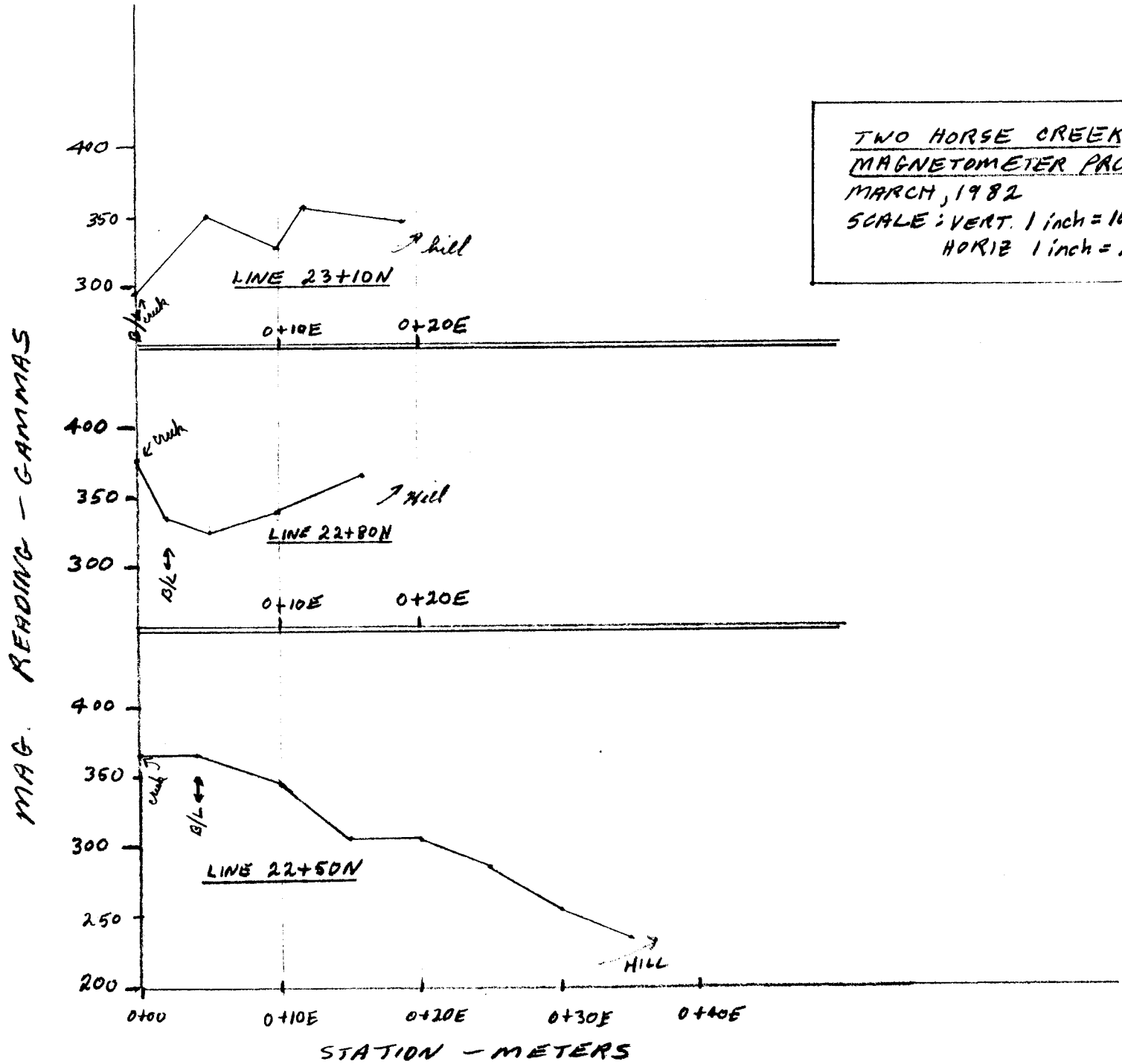
MARCH 1982

SCALE: VERT. 1 inch = 100 gammas

HORIZ. 1 inch = 10 meters

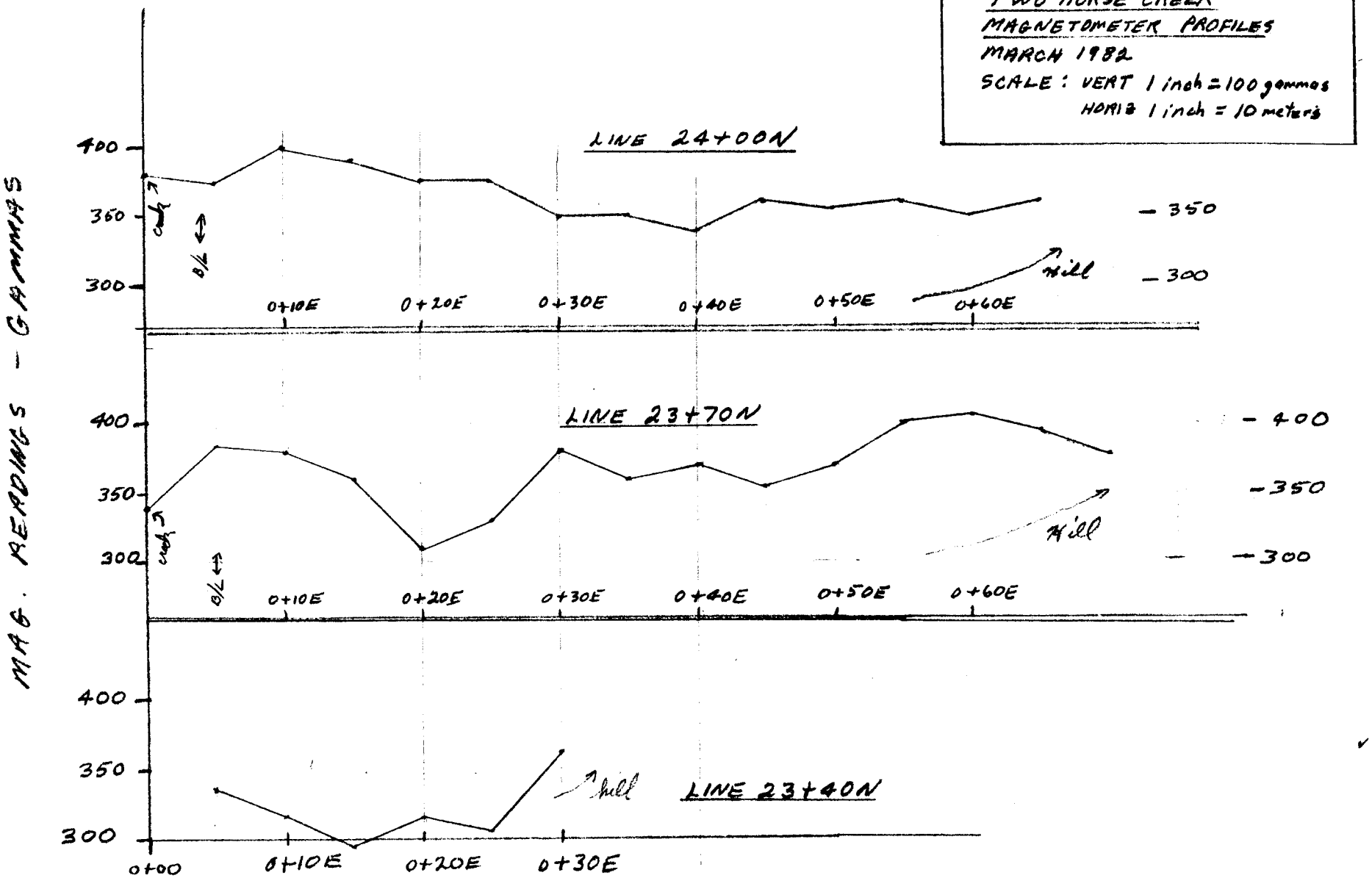


TWO HORSE CREEK
MAGNETOMETER PROFILES
MARCH, 1982
SCALE: VERT. 1 inch = 100 gammas
HORIZ 1 inch = 10 meters

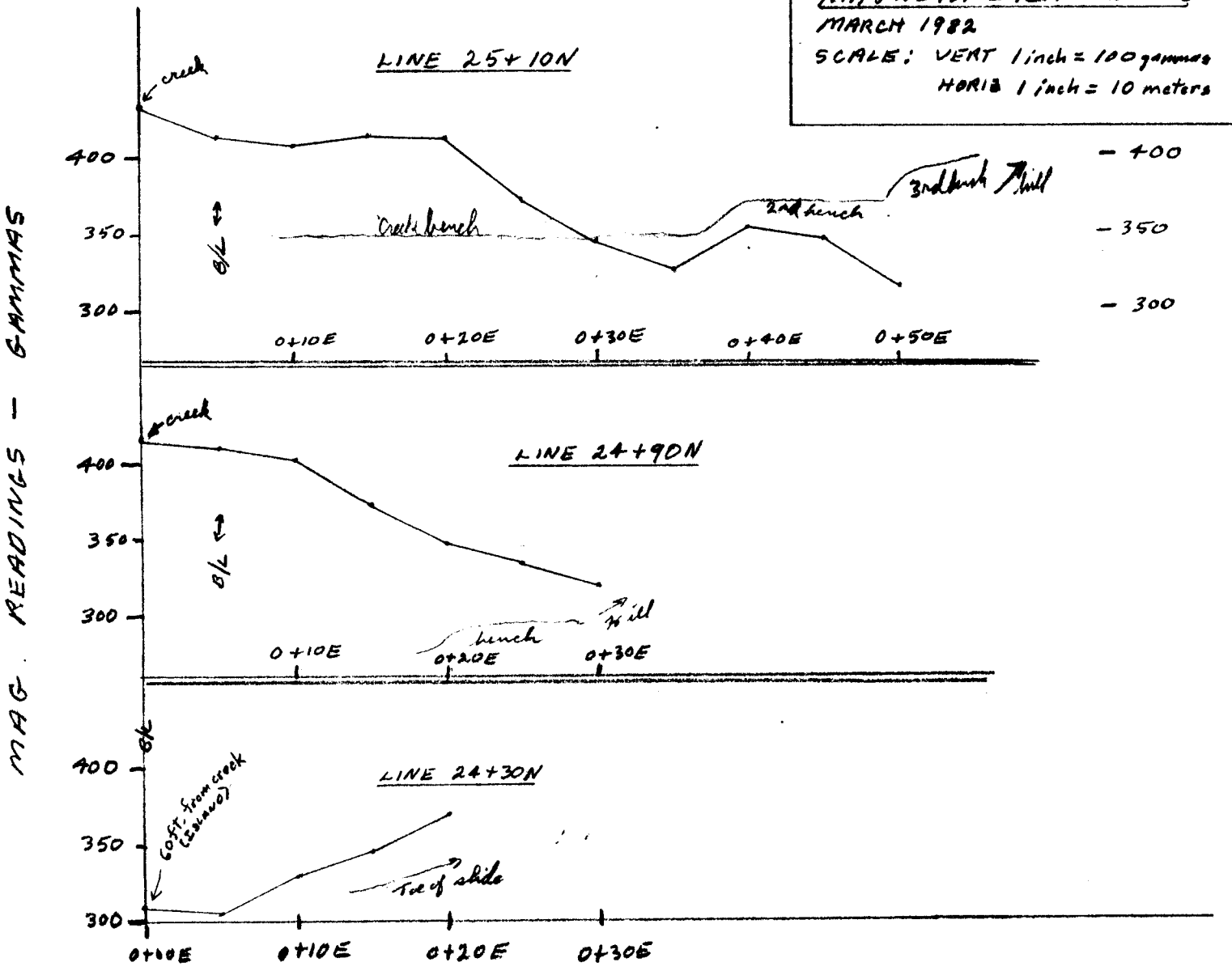


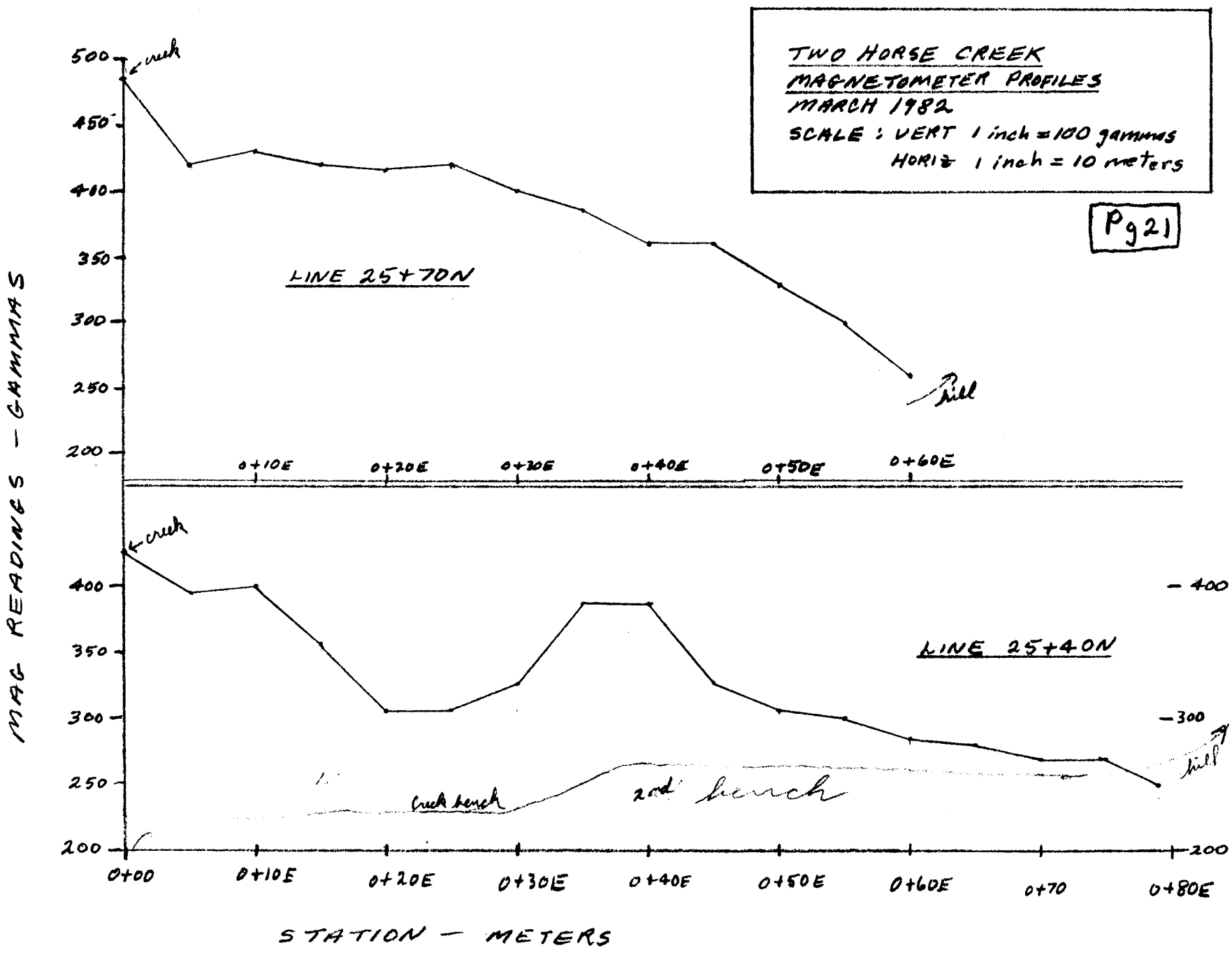
TWO HORSE CREEK
MAGNETOMETER PROFILES
MARCH 1982

SCALE: VERT 1 inch = 100 gammas
HORIZ 1 inch = 10 meters



TWO HORSE CREEK
MAGNETOMETER PROFILES
MARCH 1982
SCALE: VERT 1 inch = 100 gammas
HORIZ 1 inch = 10 meters




TWO HORSE CREEK
MAGNETOMETER PROFILES
MARCH 1982
SCALE : VERT 1 inch = 100 gammas
HORIZ 1 inch = 10 meters
Pg 21
LINE 25+70N
creek
hill
0+10E
0+20E
0+30E
0+40E
0+50E
0+60E
LINE 25+40N
creek
creek bench
2nd bench
hill
0+00
0+10E
0+20E
0+30E
0+40E
0+50E
0+60E
0+70
0+80E
500
450
400
350
300
250
200
MAG READINGS - GAMMAS
STATION - METERS