PROGRESS REPORT

January, 1960

Docket No. DMEA-4947

Contract No. Idm-E 1224

Roland F. Beers, Inc. Troy, New York

Loose M-1
B-1

TABLE OF CONTENTS

STAGE II
- Areas 1 and 3
  - General Information
  - Geological Survey
  - Magnetometer Survey
  - Horizontal Coil EM Survey
  - AFMAG Survey
  - Vertical Coil EM Survey
  - Self-Potential Survey
  - Potential Drop Ratio Survey

LEASING ACTIVITY
- Area 3 - Harry A. and Kathryn V. Perpall

STAGE III DRILLING
- Area 4
  - L. M. Miller No. 1 (M-1)
  - A. H. and E. E. Brown No. 1 (B-1)

DRILL LOGS
- Area 4
  - L. M. Miller No. 1 (M-1)
  - A. H. and E. E. Brown No. 1 (B-1)

MAP SECTION
- Area 1
  - Geological Survey
  - Magnetometer Survey
  - Horizontal Coil EM Survey
  - AFMAG Survey
  - Vertical Coil EM Survey
  - Self-Potential Survey
  - Potential Drop Ratio Survey
  - Topographical Survey - North End
- Area 3
  - Geological Survey
  - Magnetometer Survey
  - Horizontal Coil EM Survey
  - Self-Potential Survey
  - Potential Drop Ratio Survey
  - Topographical Survey
- Areas 1 and 3 - Composite showing grid locations
- Area 4 - Composite showing grid locations and D. H. locations on Burns Grid
- Property map - Lease No. 9.0-1-8 (Perpall)

GENERAL INFORMATION

Areas 1 and 3

The last detailed progress report pertaining to the DMEA Exploration Project Contract was for the month of August, 1959. Beginning with the month of September, 1959 a serious effort began to complete a program outlined for the purpose of increasing the known limits of the nickel ore body on the Harriman Grid. The outline for the geophysical and geological work was designed to provide additional information with respect to the width, length and depth of the ore trend. Eight different types of geophysical methods were employed in this program, including AFMAG, Vertical coil EM, Horizontal coil EM, Self-Potential, Applied-Potential, Resistivity, Potential Drop Ratio, and Magnetometer. The electromagnetic and Applied-Potential methods were generally found to be more useful in detailed surveys, while the Vertical-intensity magnetometer and Self-Potential methods gave valuable results in both reconnaissance and detailed surveys.

The traverse lines on the Harriman Grid from 8N to 36S were extended to 15E and effort was made to obtain a more detailed picture of the area. In cases where the results of additional survey work indicated a revision of interpretation, the original surveys were rechecked. The Harriman Grid was next extended northward to Highway #17 within the limits of 5W to 15E. The original "A" Grid, located on the northeast corner of the Harriman Grid was abandoned in favor of east-west traverses to eliminate distortion caused by contouring a grid which is not aligned parallel to the trend.

Next, the Perpall Grid was extended to the south to connect with the Harriman Grid at Highway #17. The width of the Perpall grid was increased to include anomalous trends and the length was extended through 18N to the northern limit of the Perpall property. Permission was granted by landowners to extend the Perpall Grid northward to an intersection with Alford Lake. It was necessary to complete the Potential Drop Ratio and Self-Potential surveys to the northern extent of the grid before the ground froze. This was done by deferring other survey work and as a result the picture is not yet completed from traverses 18N to 54N. At the completion of the geophysics through to Alford Lake it is anticipated that there will be a connection between the anomalous trend of the Harriman Grid and at least one of those on Alford Lake.

With the formation of ice on Crawford Pond work is now planned to extend the anomalous trend from the Harriman Grid to the vicinity of Spruce Island - an additional 6000 feet to the south.

GEOLOGICAL SURVEY

For the purpose of compiling an adequate geology and culture map, reconnaissance was conducted over the entire area covered by the Harriman and Perpall Grids. Guided by the data accumulated on previous reconnaissance, a more detailed survey was possible. In many instances "hands and knees" tactics produced new basic outcrops. This is especially true in the vicinity of the Harriman Grid baseline and between the traverses 4S and 12N.

Quartz-biotite schist is the dominant rock type for the entire area. It is the schistosity of this rock that provides the majority of the information relative to the attitude of the metamorphic rocks of the area. The general strike appears to be approximately parallel to the Harriman Grid baseline, and the dominant dip is steeply to the east. The numerous small drag folds apparently produced or modified by the injection of igneous rock increases the difficulty of obtaining reliable measurements at any specific location. By taking numerous measurements on each outcrop the problem is resolved to that of an average attitude and therefore is more reliable.

There are at least two narrow bands of dolomitic marble on the Harriman Grid. The evidence for one begins at 27S plus 1W and the outcrops at 20S plus BL, 15S plus BL, and 12S plus 0.5W provide support for a projected trend. A wider band of carbonate rock begins at 12S plus 3E and furnishes discontinuous outcrops toward the north to 2S plus 5E. East of the baseline and between the traverses 0 and 4N, for the most part the carbonate rock has been altered and replaced.

It is possible that the carbonate rocks of the entire region are composed of relatively thin lenses which have a maximum linear dimension of one-quarter to one-half mile. In a regional picture the location of many such thin marble beds in a belt might well have provided the lubrication at depth for the formation of large drag folds and created in this way favorable structure for the injection of basics. There appears to be some connection between the existence of the carbonates and the ultrabasics. The basic rocks may be stratigraphically controlled only in the respect that they are located in such marble belts--this may be true locally as well as regionally.

North of Miller Road and west of the baseline between traverses 2S and 6N there is an accumulation of basic outcrop in an area which is more intensely folded. For a more complete interpretation

it is necessary to look to the east where the strike of the rocks is swinging to the northeast. Above 8N the basic rock outcrop exists mostly east of the baseline. It is suggested that local drag folding has offset the basic body several hundred feet to the east. Line 12N is the approximately northern limit of the basic outcrop on the Harriman Grid, and significant basics do not appear on the surface north of this point until the Perpall Grid is reached (Harriman 24N).

West of the Harriman Grid baseline and between the traverses 22S and 38S there is a trend of pegmatized schist. There is an abundance of quartz veins, each approximately one-half to one inch in thickness, which are injected in lit-par-lit manner parallel to the schistosity of the schist. Here the pegmatization suggests the crest of a drag fold with a north-south axis. Mapping of the pegmatization is limited on the west by the eastern margin of Crawford Pond and on the east by a north-south line drawn approximately through 2W of the Harriman Grid. The abundance of quartz increases the hardness of the rock relative to that of the usual quartz-biotite schist of the area and accounts for the sudden increase of elevation south to traverse 22S. The increased overburden might well be sufficient to mask the geophysical picture toward the south. This factor may have contributed to the difficulty encountered in tracing the nickel orebody southward. The last drill hole located on traverse 20S may have overshot or undershot its target. Resistivity work on traverse 20S shows the top of the conductor to be 40 feet below the surface at 20S plus 1.5W.

South of 32S the general attitude of the rocks is somewhat distorted by the abundance of local drag folds. It is believed that the trend swings gently to the southeast creating another offset. The ore in the pit at 34S plus 1.5E is approximately 350 feet west of the basic outcrop in the vicinity of 40S plus 5E. Attempt will be made to project the main conductor from the land grid to the ice grid and it is anticipated that the axis will pass near 36S plus 3E.

With basic rock appearing on the grid area as far as 8E, there is a strong possibility that a more extensive basic mass occurs at depth which provided feeders or dike-like projections of basic rock toward the surface. For this reason the abundant evidence of geophysical anomalies east of the known nickel orebody are given additional significance.

MAGNETOMETER SURVEY

A "Sharpe" Model A-2 vertical force magnetometer was used throughout the survey. This instrument is a precision magnetic field balance measuring the vertical component of the earth's magnetic field within an intensity range of 0 to 15,000 gammas with the strength of the auxiliary magnets at hand. Calibration by use of the Helmholtz coil allowed accurate determination of the vertical intensity compensated for by the compensating magnet and by the latitude weight.

Data reduction and analysis showed the plotted readings between -400 and -800 gammas to be the background limits of the entire grid area. The positive and negative anomalous areas shown on the map are contained within the -400 and -800 gamma contour lines respectively. The magnetic relief of the grid area is approximately 10,800 gammas, which represents the limits of the small and medium magnets used during the survey. Specific values of plus 5900 gammas and minus 4950 gammas plotted in the center of anomalous areas represent the limits of the medium magnet. Since accurate determination of isolated individual readings in the center of anomalous areas would not change the contour lines, the extra work of calibrating and using the large magnet was omitted. The magnetic anomalies are attributable to the susceptibility possessed by pyrrhotite, olivine-rich basics, and disseminated magnetite. The relatively low susceptibility possessed by other minerals allowed them to be ignored.

The survey was run on the entire grid area including the eastern extensions. Readings were taken at 25 foot stations on both the baseline and on the traverse lines which are 200 feet apart. The general trend of the magnetic anomalies between the traverse lines 8N and 32S is approximately parallel to the baseline with few variations. South and north of this area the trend curves gently eastward. An anomalous magnetic trend is apparent east of the Harriman Grid baseline. The mass of magnetic anomalies between the 14S and 22S traverses and east of the baseline may represent a separate trend or are connected in some manner by structural control to the main magnetic trend. It is impossible to determine by analysis of the magnetic survey alone whether or not this is true. This trend swings norhteast then north and crosses Miller Road at approximately 9E. It becomes partially discontinuous from traverse 2N to traverse 12N and then continues northward as the dominant magnetic trend past Highway #17 onto the east side of the Perpall Grid. The northern and central portions of the Perpall Grid will have to be extended to the east to outline a continuation of this trend. Another anomalous

area located at 34S plus 12E on the Harriman Grid seems far removed from the area of interest, being approximately 1000 feet east of the ore pit at 34S plus 1.5E. This anomaly may extend southward to the vicinity of Salmon Point where the magnetometer work on the Crawford Pond Ice Grid defined an anomaly at approximately 76S plus 7E. It is interesting to note that basic rock outcrops exist in the above location at Salmon Point. The wide anomalous area from 4S to 12N on the west side of the Harriman Grid is abruptly moderated and offset to the east above 12N. The geological survey suggests that the offset is due to local drag folds, and it is possible that in the more intensely folded areas there is an increase in the amount of disseminated magnetite.

HORIZONTAL COIL EM SURVEY

The Horizontal Coil EM equipment is designed to measure the in-phase and out-of-phase components of the vertical projection of a secondary field. In this process primary field response is cancelled by equal and opposite compensating signal directed from the transmitter through a 200 foot shielded cable to the receiver coil. The 200 foot separation of the transmitter and receiver coils is maintained during all readings to insure uniformity of measurement. The horizontal attitude of both coils is maintained with strict discipline. With this equipment the effective depth of penetration appears generally to be less than 200 feet. It is probable that the width and attitude of the conductor may notably decrease this depth range. In at least one instance where the conductor was checked with resistivity equipment the Horizontal Coil EM gear was still effective at a depth of 150 feet. Near power lines and telephone lines 60 cycle noise in the earphones becomes a serious source of trouble by successfully masking the null of the EM equipment. Where the power lines are normal to the direction of the traverses this hazard has been partly overcome by reversing the transmitter and receiver and taking a duplicate set of readings.

The Harriman Grid has been surveyed by this equipment throughout its extent from 5W to 5E from traverses 36S to 4N inclusive; and from 5W to 15E from 6N to Highway #17. A Horizontal Coil EM survey of the extended Perpall Grid has also been completed. On the Harriman Grid the results of the survey were satisfactorily positive from 26S to 6N inclusive. The low and relatively inadequate response south of traverse 26S may well be due to an increase in depth of the conductor. Certainly the sudden topographic rise beginning at 23S has a noticeable effect on the horizontal loop response.

The absence of adequate response at the traverse line 6N brought an abrupt end to the main conductor at this point. This was questioned for three reasons. 1) There existed more basic rock outcrops between 6N and 12N than on the rest of the Harriman Grid combined. 2) Horizontal coil response on the west side of line 4N of the "A" Grid suggested a continuation of the conductor. 3) The results of the Vertical Coil EM survey indicated a poorly defined connection between the anomalous area at 6N plus 1E to 2E on the Harriman Grid with 4N plus 3W on the "A" Grid. By extending the Harriman Grid northward the conductor again appeared on line 14N immediately east of the baseline. The response again diminishes toward the north progressively through lines 16N, 18N and 20N until it disappears again. Resistivity work strongly indicates that increasing overburden is the reason. North of traverse 20N there is no clearly defined Horizontal Coil EM anomaly which possesses the quality of continuity.

Other anomalies are provided by the Horizontal Coil EM survey work. Although these anomalies do not permit connection on 200 foot traverses, they are still suggestive of a continuation of the general anomalous trend. For the most part they appear on individual traverses and it is often difficult to imaginatively superimpose a conductor axis across them. On the Harriman Grid individual examples of such anomalies are those on the traverses 12N, 14N and 16N from 5E to 15E. Also on traverse 22N at 4E and 8E. For an example as to how these individual anomalies may suggest a conductor at depth consider these on the east side of the Perpall Grid: 10S plus 1.5E; 6S plus 2E; 2S plus 3.5E and 2N plus 6.5E. A line curving northeast will connect them. Adequate analysis of such poorly defined anomalies depends on the use of data provided by other geophysical equipment; preferably those which have a greater depth range.

AFMAG SURVEY

In this survey a GROUND AFMAG MARK III instrument was used. This relatively new system of electromagnetic prospecting dispenses with a transmitter and utilizes a natural field source of energy. The field used is primarily due to worldwide thunderstorm activity. In this standard ground AFMAG equipment the two frequencies 150 and 510 cps were employed simultaneously and were chosen since they provide good responses over massive sulphides, consistent with minimum responses over extraneous features.

Although the lightness of the equipment allows a greater flexibility in survey work, readings were made on 50 foot stations on the Harriman

Grid from 40S to 4S within the limits of the 5W to 15E Grid. Duplication of anomalies produced by other geophysical surveys was apparent, and new anomalies discovered were concluded to result from conductors at a depth beyond the range of less effective types of equipment.

VERTICAL COIL EM SURVEY

In this survey a Sharpe SE-100 transmitter unit (1000 cps) and an RE-5 directional receiver were utilized. To insure uniformity of results a baseline spacing (transmitter to receiver) of 400 feet was maintained throughout the survey. Transmitter stations located east of the baseline were progressively 200 feet apart along the traverses from 2E to 12E. Dip-angle readings were taken on traverse lines 400 feet to the north or south extending 300 feet on either side of the customary zero station. It was believed that this procedure would allow for conductors with an axial trend departing 45° from the trend of the main conductor.

In several instances the main conductor was excited by transmitter stations located 200 to 400 feet from the axis. In the area between 16S and 22S and 200 to 400 feet east of the baseline the pattern of conductor axes suggests a connection of this anomalous area with that of the main trend west of the baseline. The low response on the several conductors on the east side of the Harriman Grid suggest the possibility of a depth factor. A continuation of the main conductor of the Harriman Grid was possible toward the north, beginning above 12N and slightly east of the baseline. This strong conductor axis curves northeast through the Perpall property to the powerline on Highway #17. Difficulty has always been encountered near 60 cycle lines in the form of noise in the receiver and sometimes false anomalous readings are produced when crossing beneath powerlines. Although the situation has been somewhat relieved by locating the transmitter in the vicinity of the powerlines and moving the transmitter station progressively east or west as the lines are run, the problem is not yet wholly solved.

SELF-POTENTIAL SURVEY

The Self-Potential survey was run with standard porous pot equipment. Readings were taken each 50 feet with the exploration pot extended on a 500 foot reel. During the survey the exploration pot was consistently east of the ground pot to further insure uniformity throughout the survey.

Copper electrodes were used, immersed in a saturated solution of copper sulphate. All readings on the grid are directly related, and all are reduced to a negative datum. The 100 millivolt contour interval outlines anomalous trends that correlate closely with those of the other geophysical surveys and the trends are essentially parallel to the Harriman Grid baseline. The relief of the entire area including the Harriman Grid and the Perpall Grid is approximately 800 millivolts.

As in the magnetic survey, attention is called to the anomalous area between Miller Road and Traverse 12N. Here it is particularly wide and above 12N there is an offset to the east. At the south end of the Harriman Grid the anomalous trend swings southeast beginning at traverse 32S. The anomaly east of the baseline in the vicinity of 22S plus 4E projects southward and apparently joins the main trend between 28S and 30S. The anomaly at 7S plus 9E supports the magnetic anomaly previously discussed. The discontinuous eastern trend appears again at approximately 12N plus 12E and continues northward through the southeastern part of the Perpall Grid.

POTENTIAL DROP RATIO SURVEY

The same porous pot equipment used in the Self-Potential survey was used in the Potential Drop Ratio survey. The distance between the ground pot and the exploration pot was accurately maintained at 50 feet. The Harriman Grid was surveyed on traverses 36S through 8N from the baseline to 15E. Above 8N the traverse survey was increased approximately 500 feet in width. The electrodes were placed at least 100 feet beyond the ends of the traverse lines, and constant voltage and current were maintained by a direct current generator. Most of the potential drop occurred within 100 feet of the electrodes and the current was held constant throughout the extent of the traverse lines. The electrodes at either end of each traverse consisted of 18 copper rods arranged in a circle approximately 5 feet in diameter. These rods were connected to a center rod by leader wires and the rods were driven in the consistently moist ground to a depth of 1 to 2 feet. Insulated wire was used throughout the survey. Every effort was made to be consistent on the traverses in method of taking readings, spacing of the porous pots, location and arrangement of the electrodes, and maintenance of voltage and current to insure more accurate and rapid interpretation of the data.

The known nickel-ore body on the Harriman Grid is outlined by the 0 millivolt contour line from 16S through 6N. Above 12N the trend

is again offset to the east and continues northward through traverse 24N. On the southern end of the grid the Potential Drop Ratio survey extended the main conductor through 22S where another eastern offset is apparent and the trend then continues through 30S. By this survey both the northern and southern limits of the known conductor were extended. It was not possible during the latter part of the season to complete the survey on the area west of the baseline between traverses 2S and 14S because of the presence of water. During a dry season of the coming summer this work will be completed.

The numerous anomalous areas throughout the extent of the Harriman Grid east of the baseline provide an abundance of information that will be valuable in the analysis of the total geophysical picture. Excellent correlation between the Potential Drop Ratio survey and the other geophysical surveys is noted. This is especially true of the main conductor. The 10 millivolt contour line encloses the majority of the anomalies produced by all the different surveys.

LEASING ACTIVITY

The following lease has been taken since the date of the last report. A copy of the lease has been sent to Mr. Robert A. Laurence in Knoxville.

Lease No.	Lessor	Acres
9.0-1-8	Harry A. and Kathryn V. Perpall (renewal)	100

This lease has been revised and is now a regular five (5) year lease and is recorded as such.

Negotiations are currently underway to lease property north and east of the Perpall Grid.

STAGE III DRILLING (Area 4)

On December 30, 1959 the Sprague and Henwood Drilling Company unloaded drilling equipment on the Burns Prospect to begin the contract drilling program. Setting up on DHM-1 consumed the time through January 2 and actual drilling began on January 4.

Permission was granted by the OME Field Team by a letter dated December 17, 1959 for the two holes with which this report is concerned:

Area	Hole	Coordinates	Bearing	Inclination	Feet depth	Hole desig.
Burns	1	0.75N & 0.75W	S41°W	-45°	400	M-1
Burns	2	7.00N & 2.00W	due W	-45°	400	B-1

These holes were designed to test a Self-Potential, Magnetometer, Horizontal Coil EM and Vertical Coil EM anomaly discovered on the Burns Grid. This conductor anomaly trends generally north-south through the Burns Grid from the 0 traverse to 20N. The conductor could better be outlined by the Vertical Coil EM axis defined by cross-overs at:

2N & 1E; 4N & 0.2W; 6N & 2.5W; 8N & 4.4W; 10N & 4.2W; 12N & 5.3W; 14N & 6W; 16N & 5.3W; 18N & 2.3W; and 20N & 2W.

The several Vertical Coil EM cross-overs on line 2N located at 0.3W, 1.7W, 3.4W, 4.2W and 6.3W are attributed by a post-drilling analysis to result from the wide band of graphitic schist encountered in the drilling.

Drill Hole No. 1 (M-1)

This drill hole was completed January 19, 1960 at a total depth of 395 feet. The majority of the core contains from 1% to 3% graphite with local 1 inch to 2 inch concentrations of graphite approximating 25%. The graphite is localized in the biotite-rich sections of the core suggesting that the graphite is an alteration product. The presence of graphite indicated that lime rock would be cut in the drill hole; this belief was strengthened when calcite stringers were encountered. The lime rock was cut at 195'11" where the section is altered almost beyond recognition by pegmatization. There was 53 feet of diorite and quartz-diorite in the core, giving a total of 14%. The only gabbro cut was the 6 inches beginning at 342'10". Only rare and isolated sulfide mineralization occurred in the core.

Drill Hole No. 2 (B-1)

This second drill hole began January 22 and drilling operations were stopped on January 27 at a total depth of 240 feet by agreement between Company personnel and the OME Field Team. The hole was continued until the Vertical Coil EM cross-over was intercepted. Gabbro was cut at 19'8", 34'2", and 52'0" and peridotite was cut at 55'8". No basic rock was encountered in the hole below 60'8". Only minor mineralization occurred in the gabbro and no sulfide mineralization was evident in the peridotite. Below 61 feet the core was composed of a graphitic schist identical with that in the first drill hole.

The Burns Prospect is essentially eliminated as far as the current drilling program is concerned; or at least until evidence is presented favoring the trend of basic rock lying on the eastern side of the anomaly. The paucity of outcrops in the area made it impossible to predict the exact locations of the basics under the surface. The basics cut probably represent dike-like projections from a large basic mass at a depth beyond the range of the geophysical methods used.

DRILL LOG

Hole No. :	M-1	Bearing:	S 41° W
Location:	0.75N + 0.75W	Depth:	395'
	Brown Grid	Angle:	- 45°
	L. M. Miller prop.	Logged by:	D. E. Wyke
	9.0-4-7		1/4/60 to 1/19/60

Core size:	0' 0" - 12' 0"	Soil (BX casing)
	12' 0" - 26' 0"	AX
	23' 0" - 395' 0"	AX core

Depth			Lithology
0'0"	-	23'0"	Soil and boulders
23'0"	-	27'6"	Schist: biotite-quartz-feldspar; 4" - 6" bands include garnet; section generally graphitic, graphite occurs in biotitic zones, top 5% and bottom 5% - 10%.
27'6"	-	38'6"	Diorite: biotite-hornblende-basic feldspar; 37'4" - 37'8" band of Schist: biotite-quartz-garent and graphite -1%.
38'6"	-	48'10"	Schist: biotite-feldspar-quartz; minor garnet; graphite generally 1%, 47'6" - 48'10" graphite 25%; minor pegmatite consisting of 2" veins.
48'10"	-	54'0"	Pegmatite: quartz-biotite-minor feldspar.
54'0"	-	83'0"	Schist: biotite-quartz-feldspar; minor garnet; generally 2% graphite, 65'2" - 65'10" graphite 25%; some 4"-6" bands quartz-biotite pegmatite.
83'0"	-	87'6"	Diorite: hornblende-biotite-basic feldspar; some 2" bands pegmatite: quartz-biotite.
87'6"	-	91'8"	Pegmatite: quartz-biotite; several 4" bands of Schist: biotite-quartz.
91'8"	-	95'1"	Schist: biotite-quartz-feldspar; pegmatite in 2"-4" bands: quartz-biotite; minor graphite approximately 5%, present in biotite-rich zones.

95'1"	-	104'2"	Granitic zone: no graphite; no schistosity; several 4"-6" bands quartz; minor chlorite in lower 3'.
104'2"	-	110'5"	Schist: biotite-quartz; some 2"-3" bands pegmatite: quartz-biotite; minor chlorite lower 1.5'.
110'5"	-	111'11"	Pegmatite: quartz-biotite; biotite-rich lower 4".
111'11"	-	113'0"	Quartz-Diorite: hornblende-biotite-quartz.
113'0"	-	114'1"	Pegmatite: quartz-biotite.
114'1"	-	143'0"	Quartz-Diorite: biotite-hornblende-minor pyroxene-minor quartz; minor pyrrhotite occurs as occasional isolated crystals approximately 1/16" - 1/8" in diameter.
143'0"	-	146'5"	Pegmatite: quartz-biotite-minor feldspar.
146'5"	-	153'2"	Schist: biotite-quartz; minor graphite 1%-5%; minor pyrite -1% as coating on fractures, associated with calcite.
153'2"	-	159'3"	Pegmatite: quartz-biotite.
159'3"	-	160'5"	Quartz-Diorite: hornblende-biotite-basic feldspar-minor quartz; occasional pyrrhotite crystal.
160'5"	-	167'1"	Pegmatite: quartz-biotite.
167'1"	-	171'4"	Schist: biotite-quartz-feldspar; graphite generally 1%-5%, 167'10" - 169'10" graphite-biotite with graphite 40% in 4" zone.
171'4"	-	175'8"	Pegmatite: quartz-biotite.
175'8"	-	182'4"	Quartz-Diorite: hornblende-biotite-basic feldspar; calcite coating on fractures.

182'4"	- 183'7"	Pegmatite: quartz-biotite.
183'7"	- 187'11"	Schist: biotite-quartz; graphite 1%-5%.
187'11"	- 188'2"	Pegmatite: quartz-biotite; minor garnet.
188'2"	- 195'11"	Quartz: with 1/8"-1/4" veinlets of calcite; some narrow zones biotite-rich bands with 1%-5% graphite; calcite coating on fractures; occasional pyrite in graphitic zones.
195'11"	- 198'6"	Silicified Dolomite: quartz-dolomite; numerous calcite veinlets; calcite on fractures.
198'6"	- 224'4"	Granitic section: quartz-biotite-feldspar; veinlets of calcite; occasional pyrite crystals; 207'8" - 208'3" Schist: quartz-biotite.
224'4"	- 234'11"	Quartz-Diorite: hornblende-biotite-basic feldspar; minor quartz; calcite veinlets.
234'11"	- 238'1"	Quartz: minor biotite; numerous calcite veinlets, possible a pegmatized carbonate zone.
238'1"	- 239'7"	Pegmatite: quartz-biotite; coarse-grained; minor calcite on fractures.
239'7"	- 248'4"	Pegmatite: quartz-biotite; fine-grained; 244'10" - 246'1" biotite-rich zone.
248'4"	- 252'10"	Schist: biotite-quartz; minor feldspar; minor garnet.
252'10"	- 255'1"	Schist: biotite-quartz; graphite generally 5%, top 6" and lower 3" 10%-15% graphite.
255'1"	- 258'1"	Pegmatite: quartz-biotite; minor calcite on fractures.
258'1"	- 290'4"	Schist: biotite-quartz; graphite 1%-5%; 265' - 277' very schistose; 260'9" - 266'0" has 2"-4" bands pegmatite; 273'2"-275'3" has some 2" bands pegmatite.

290'4" - 294'10"		Schist: biotite-chlorite-quartz; has high percentage of white mica; graphite generally 1%.
294'10" - 341'1"		Schist: biotite-quartz; graphite generally 1%, 304' - 309' graphite 5% in some 2"-3" zones; some 6"-8" bands quartz-biotite pegmatite with occasional 1/8" veinlets of pyrite on edge of pegmatites.
341'1" - 344'6"		Pegmatite: quartz-biotite; biotite-rich lower 7"; 342'10" - 343'4" GABBRO: biotite-basic feldspar-pyroxene, minor pyrrhotite consisting of several 1/8" isolated crystals.
344'6" - 346'2"		Schist: biotite-quartz-minor garnet; graphite 5% in few 2" bands.
346'2" - 349'1"		Pegmatite: quartz-biotite.
349'1" - 366'8"		Schist: biotite-quartz-minor garnet; graphite generally 1%; 355'3" - 356'5" quartz-biotite pegmatite.
366'8" - 386'11"		Schist: biotite-quartz; garnetiferous top 4"; generally poor schistosity; quartz-biotite pegmatite lower 8".
386'11" - 395'0"		Schist: biotite-chlorite-quartz; fine-grained.

* * * *

Total Depth - 395'0"

* * * *

DRILL LOG

Hole No.:	B-1	Bearing:	Due West
Location:	7.0N + 2.0W Burns (Brown) Grid A. H. Brown and E. E. Brown prop. 9.0-4-24	Angle:	-45°
		Depth:	240'
		Logged by:	D. E. Wyke
		Elevation:	177.6' a.s.l.
			1/22/60 to 1/27/60

Core size:	0'0" - 3'0"	Soil
	0'0" - 10'0"	AX casing
	3'0" - 240'0"	AX core

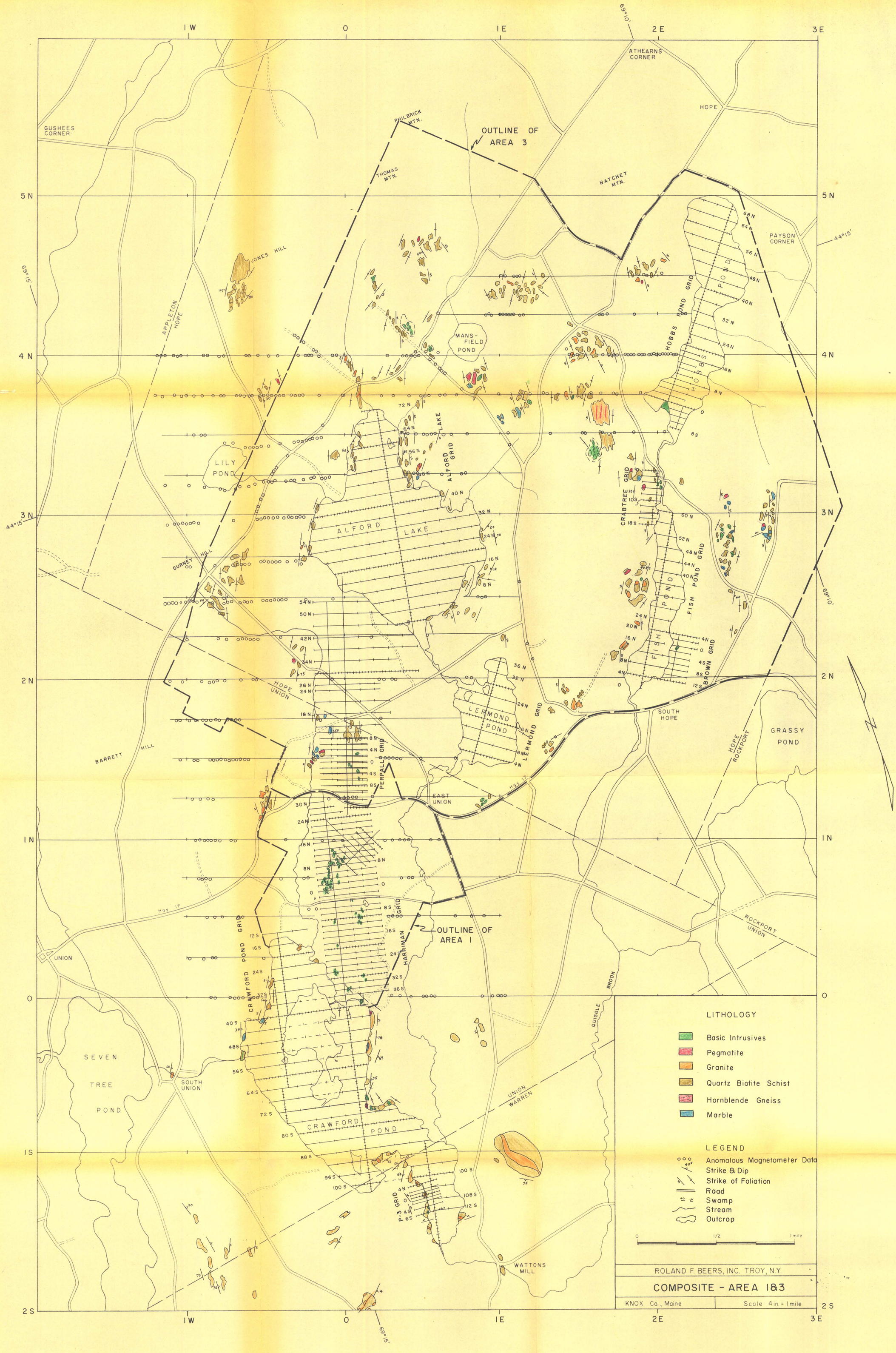
Depth			Lithology
0'0"	-	3'0"	Soil
3'0"	-	19'8"	Schist: biotite-quartz-feldspar; minor garnet; graphite -1%.
19'8"	-	21'7"	Gabbro: biotite-rich pyroxene; abundant feldspar; minor quartz associated with veinlets.
21'7"	-	34'2"	Pegmatite: quartz-biotite, coarse-grained; biotite-rich from 32'0" to 34'2".
34'2"	-	36'6"	Gabbro: biotite-rich pyroxene; abundant feldspar; minor pyrrhotite and very minor chalcopyrite associated with 1/4" quartz veinlets.
36'6"	-	38'2"	Schist: quartz-biotite, fine-grained.
38'2"	-	40'8"	Pegmatite: quartz-biotite.
40'8"	-	52'0"	Schist: quartz-biotite, fine-grained; 46'4" to 47'3" quartz-biotite pegmatite; some 2" to 4" quartz-biotite pegmatite veins with quartz dominant.
52'0"	-	54'9"	Gabbro: biotite-rich coarse-grained pyroxene, minor sulfides (pyrrhotite and chalcopyrite -1%).
54'9"	-	55'8"	Pegmatite: quartz-biotite, coarse-grained.

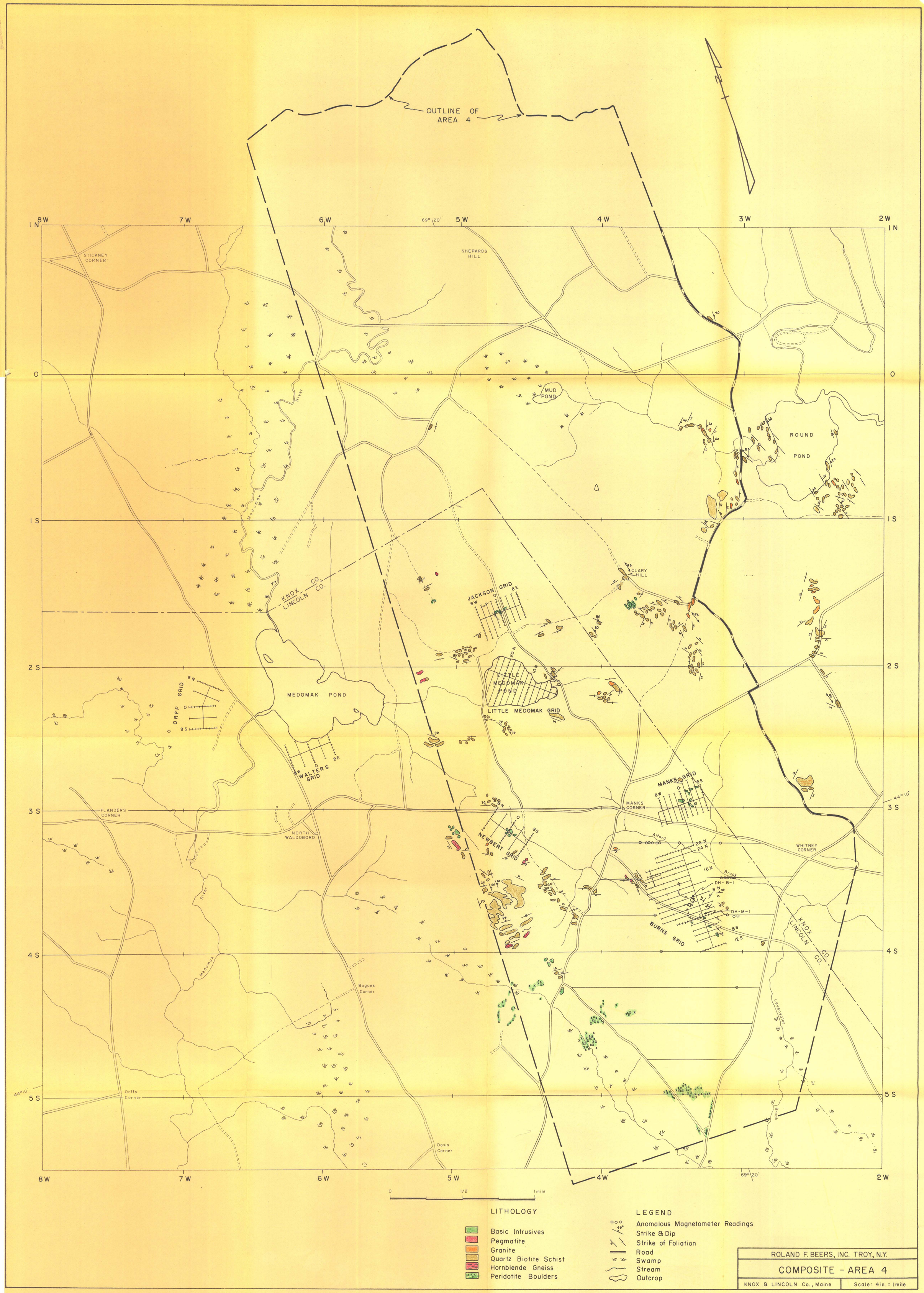
55'8"	-	60'7"	Peridotite: biotite-rich chlorite peridotite, coarse-grained.
60'7"	-	63'8"	Pegmatite: quartz-biotite.
63'8"	-	65'2"	Schist: quartz-biotite, fine-grained, poor schistosity.
65'2"	-	100'2"	Schist: quartz-biotite; minor graphite 1% to 3% associated with biotite-rich areas, probably an alteration product; schistosity angle generally 60° to 70° from core axis.
100'2"	-	106'3"	Pegmatite: quartz-biotite; an 8" zone quartz-biotite schist in center of section.
106'3"	-	126'10"	Schist: quartz-biotite; minor graphite 1% to 3%, graphite 5% to 10% in few 1" to 2" zones; quartz-biotite pegmatite from 112'0" to 112'11".
126'10"	-	130'6"	Pegmatite: quartz-biotite; graphite 1% to 2% in few 2" to 4" bands of quartz-biotite schist.
130'6"	-	146'1"	Schist: quartz-biotite; minor graphite 1%; minor garnet.
146'1"	-	148'2"	Pegmatite: quartz-biotite.
148'2"	-	185'0"	Schist: quartz-biotite; 1% to 3% graphite in biotite bands, 5% to 10% graphite in few 1" to 2" biotite-rich zones; schistosity angle generally 60° to 70° from axis of core.
185'0"	-	222'10"	Schist: ditto plus minor garnet.
222'10"	-	235'9"	Granitic zone: quartz-biotite-feldspar; minor garnet; increase in white mica in lower 2'; no schistosity.
235'9"	-	240'0"	Schist and Pegmatite: alternating 4" to 8" bands of quartz-biotite pegmatite and quartz-biotite schist; graphite 1% to 5% in schist; minor garnet.

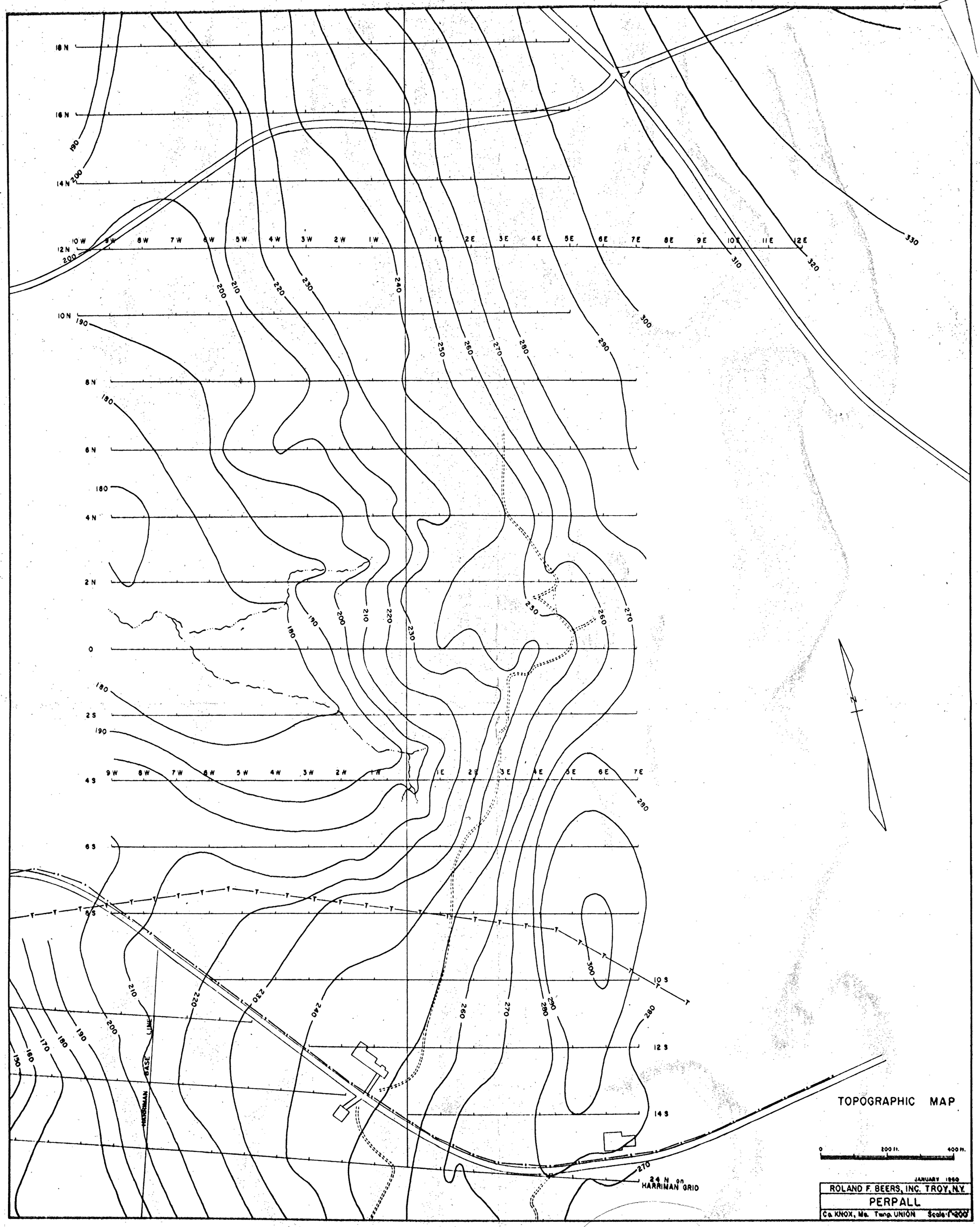
* * * * *

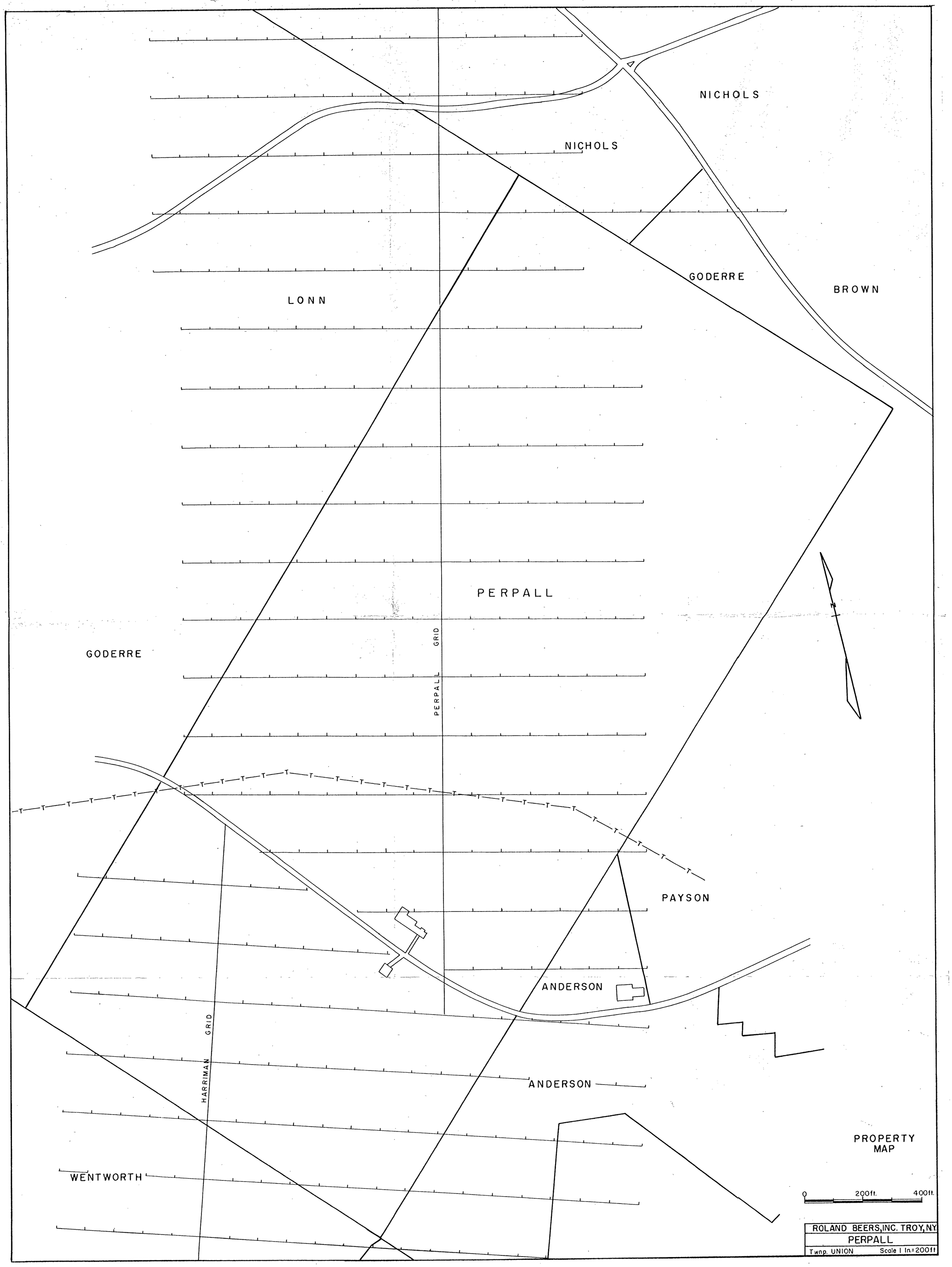
Total Depth - 240'0"

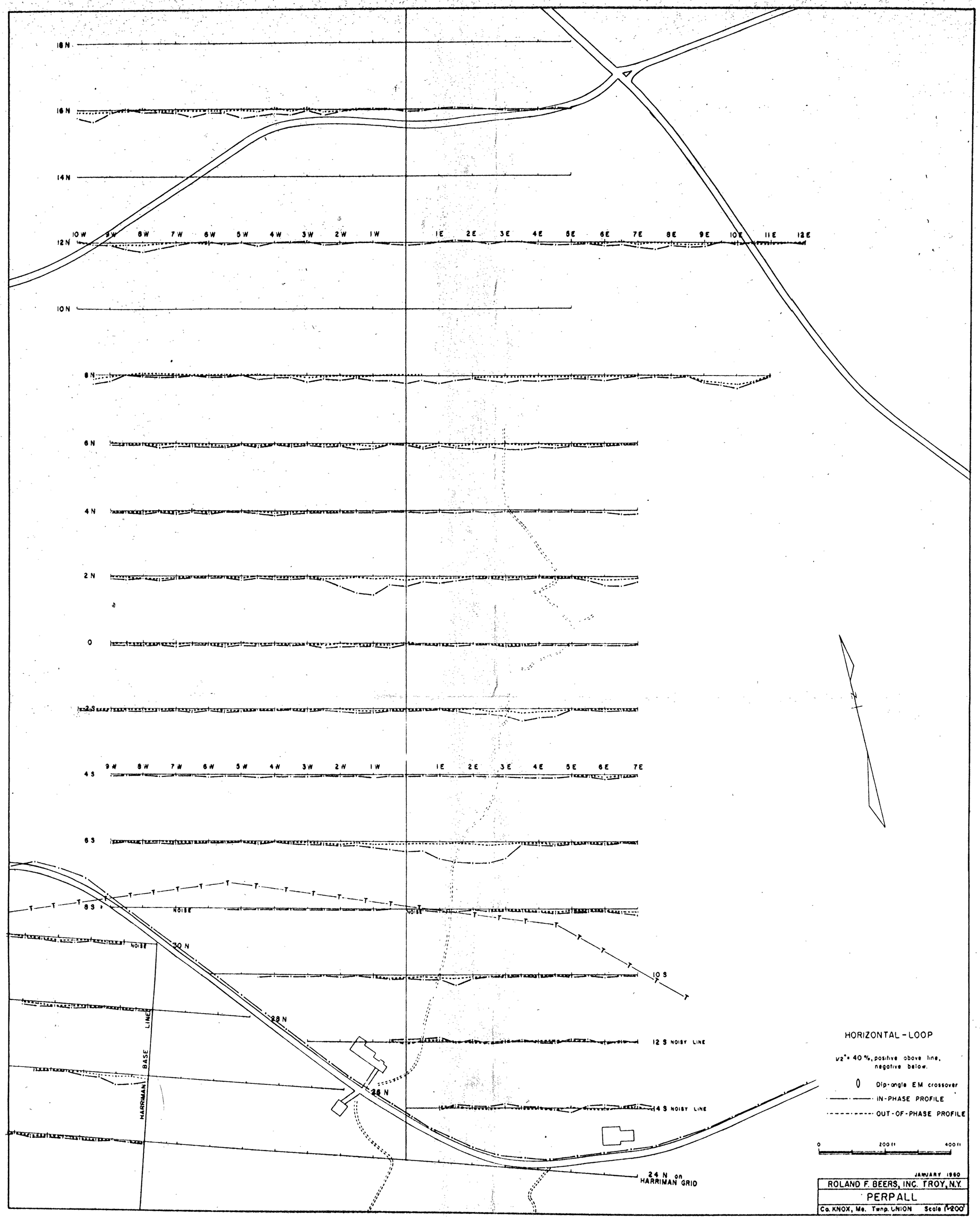
* * * * *


GUSHEES CORNER
ATHEARNS CORNER
HOPE
PHILBRICK MTN.
OUTLINE OF AREA 3
THOMAS MTN.
HATCHET MTN.
PAYSON CORNER
JONES HILL
APPLETON
HOPE
MANS-FIELD POND
HOBBS POND GRID
HOBBS POND
LILY POND
ALFORD LAKE
ALFORD GRID
CRABTREE GRID
FISH POND
FISH POND GRID
BROWN GRID
GURNEY HILL
HOPE UNION
LERMOND POND
LERMOND GRID
SOUTH HOPE
GRASSY POND
HOPE ROCKPORT
BARRETT HILL
PERPALL GRID
EAST UNION
Hgy 17
OUTLINE OF AREA 1
HARRIMAN GRID
CRAWFORD POND GRID
ROCKPORT UNION
UNION
QUIGGLE BROOK
SEVEN TREE POND
SOUTH UNION
UNION WARREN
CRAWFORD POND
P-3 GRID
WATTONS MILL
LITHOLOGY
Basic Intrusives
Pegmatite
Granite
Quartz Biotite Schist
Hornblende Gneiss
Marble
LEGEND
Anomalous Magnetometer Data
Strike & Dip
Strike of Foliation
Road
Swamp
Stream
Outcrop
0 1/2 1 mile
ROLAND F. BEERS, INC. TROY, N.Y.
COMPOSITE - AREA 1&3
KNOX Co., Maine
Scale 4 in. = 1 mile

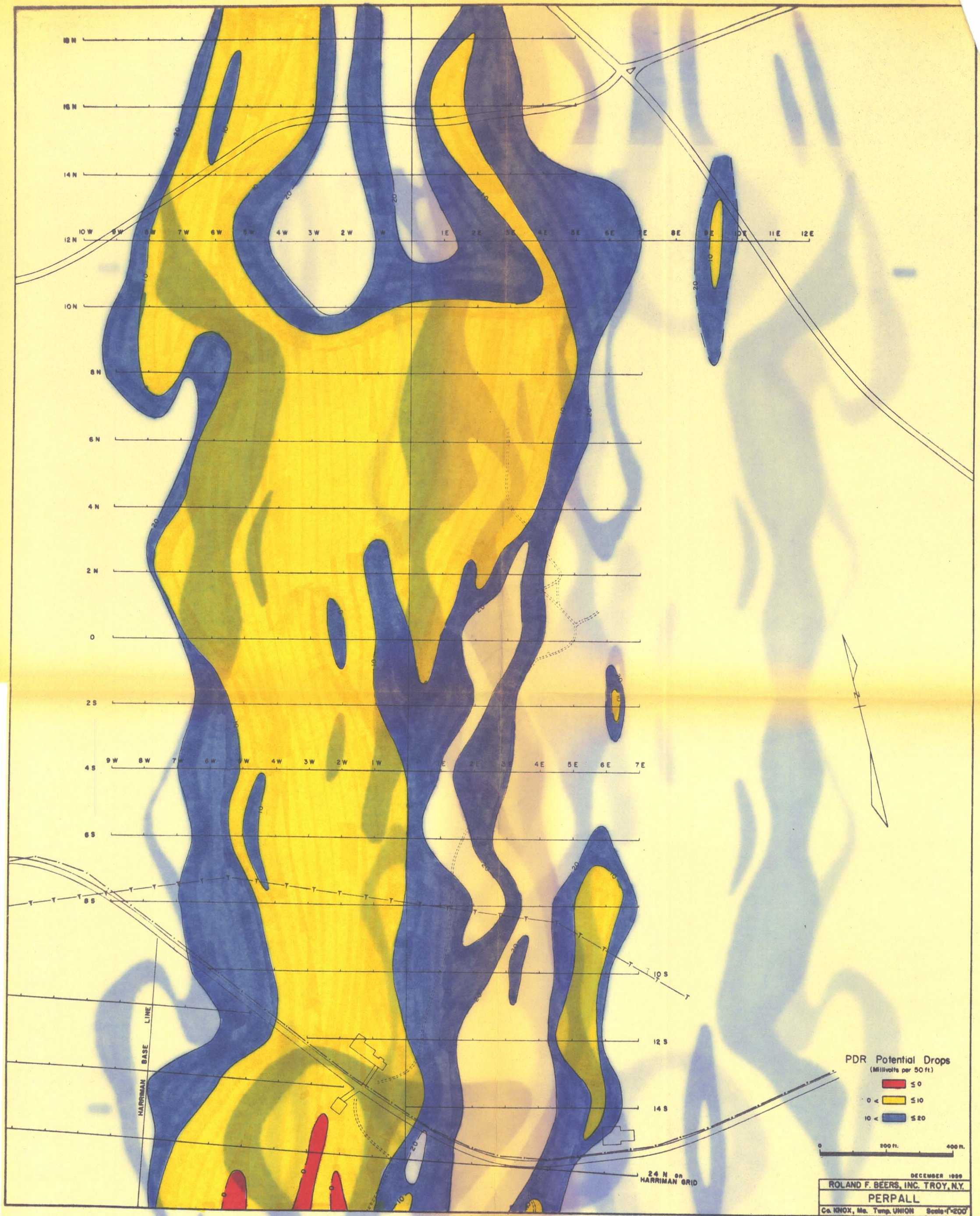

OUTLINE OF AREA 4
N
STICKNEY CORNER
SHEPARDS HILL
MUD POND
ROUND POND
Medomak River
KNOX CO.
LINCOLN CO.
JACKSON GRID
CLARY HILL
LITTLE MEDOMAK POND
LITTLE MEDOMAK GRID
MEDOMAK POND
ORFF GRID
WALTERS GRID
MANKS GRID
MANKS CORNER
FLANDERS CORNER
NORTH WALDOBORO
NEWBERT GRID
WHITNEY CORNER
Alford Brook
DH-B-1
DH-M-1
BURNS GRID
Medomak River
Bogues Corner
Orffs Corner
Davis Corner
Levensaler Brook
69° 20'
44° 10'
0
1/2
1 mile
LITHOLOGY
Basic Intrusives
Pegmatite
Granite
Quartz Biotite Schist
Hornblende Gneiss
Peridotite Boulders
LEGEND
Anomalous Magnetometer Readings
Strike & Dip
Strike of Foliation
Road
Swamp
Stream
Outcrop
ROLAND F. BEERS, INC. TROY, N.Y.
COMPOSITE - AREA 4
KNOX & LINCOLN Co., Maine
Scale: 4 in. = 1 mile

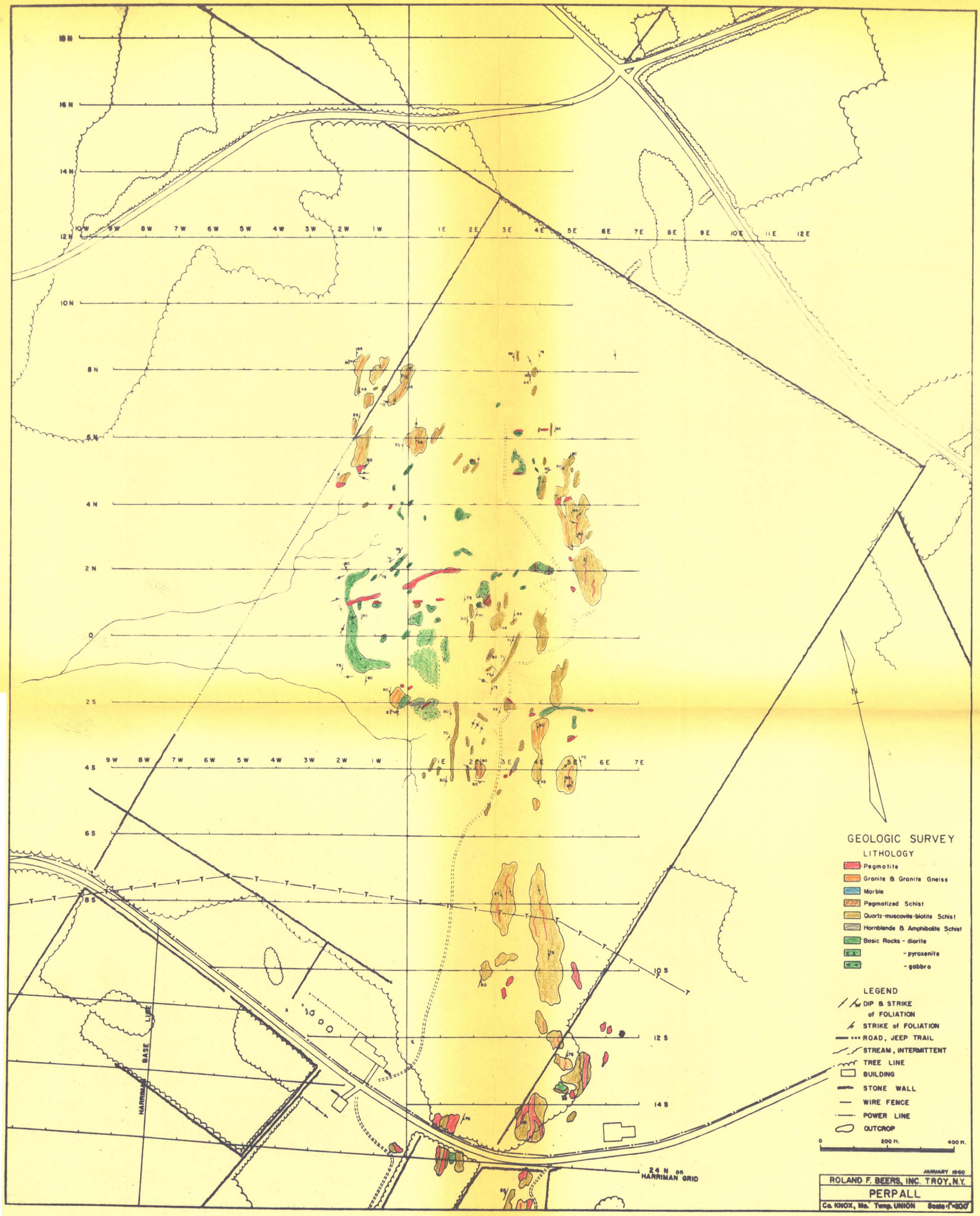

TOPOGRAPHIC MAP
JANUARY 1960
ROLAND F. BEERS, INC. TROY, N.Y.
PERPALL
Co. KNOX, Me. Twnp. UNION Scale 1"=200'
0 200 ft. 400 ft.
24 N on HARRIMAN GRID
HARRIMAN BASE LINE
N

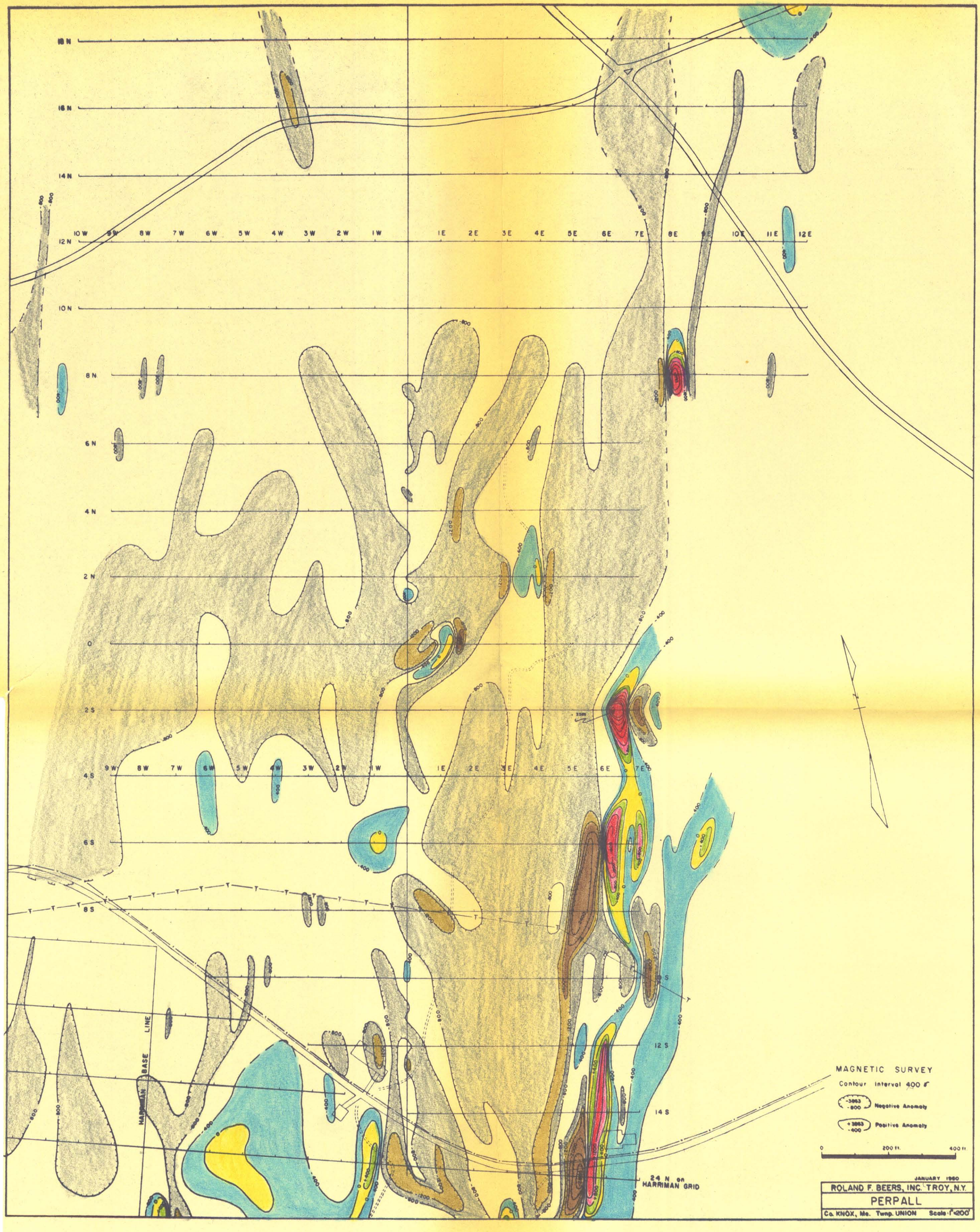

NICHOLS
NICHOLS
GODERRE
BROWN
LONN
PERPALL
GRID
PERPALL
GODERRE
PAYSON
ANDERSON
HARRIMAN GRID
ANDERSON
WENTWORTH
PROPERTY MAP
0
200ft.
400ft.
ROLAND BEERS, INC. TROY, N.Y.
PERPALL
Twnp. UNION
Scale 1 In.=200ft

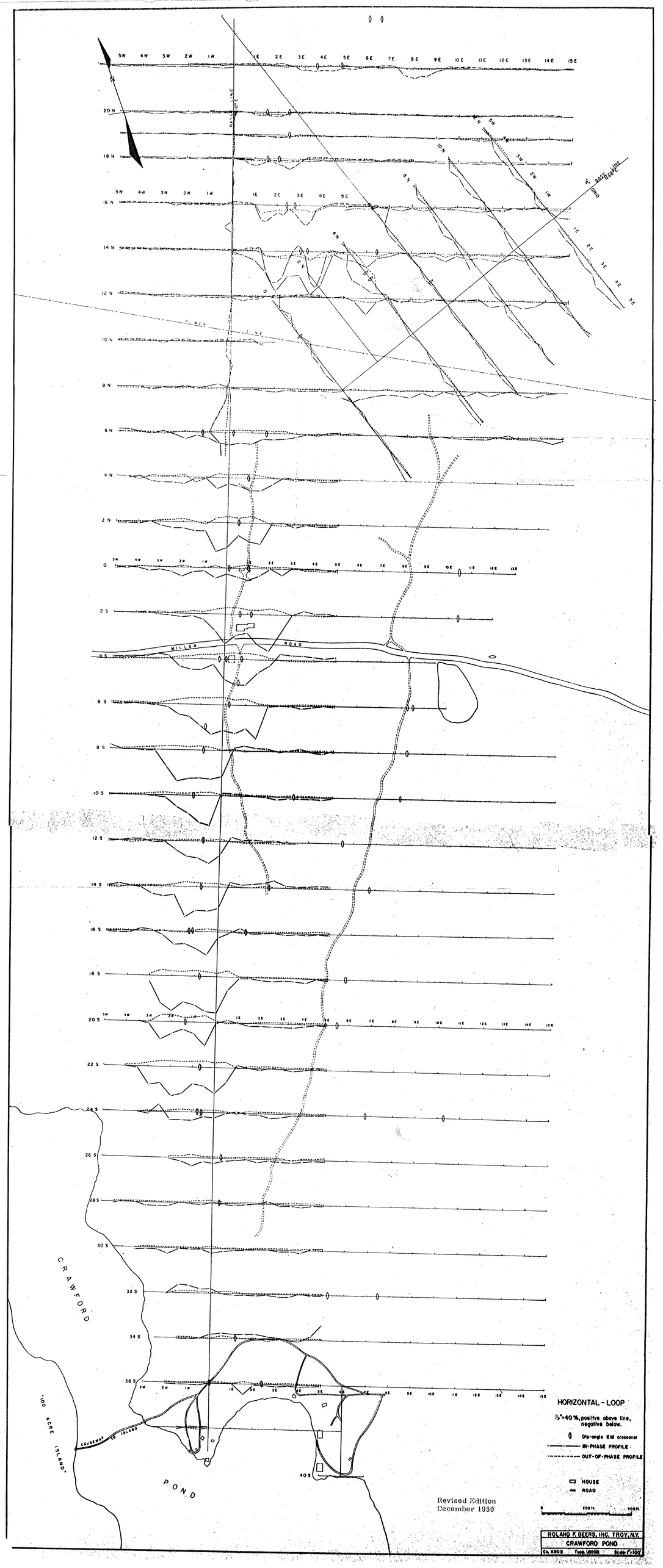

18 N
16 N
14 N
12 N
10 N
8 N
6 N
4 N
2 N
0
2 S
4 S
6 S
8 S
10 S
12 S NOISY LINE
14 S NOISY LINE
10 W 9 W 8 W 7 W 6 W 5 W 4 W 3 W 2 W 1 W 1 E 2 E 3 E 4 E 5 E 6 E 7 E 8 E 9 E 10 E 11 E 12 E
9 W 8 W 7 W 6 W 5 W 4 W 3 W 2 W 1 W 1 E 2 E 3 E 4 E 5 E 6 E 7 E
NOISE
30 N
28 N
26 N
24 N on HARRIMAN GRID
HARRIMAN BASE LINE
HORIZONTAL - LOOP
1/2" = 40 %, positive above line, negative below.
Dip-angle EM crossover
IN-PHASE PROFILE
OUT-OF-PHASE PROFILE
0
200 ft
400 ft
JANUARY 1960
ROLAND F. BEERS, INC. TROY, N.Y.
PERPALL
Co. KNOX, Me. Twnp. UNION Scale 1"=200'

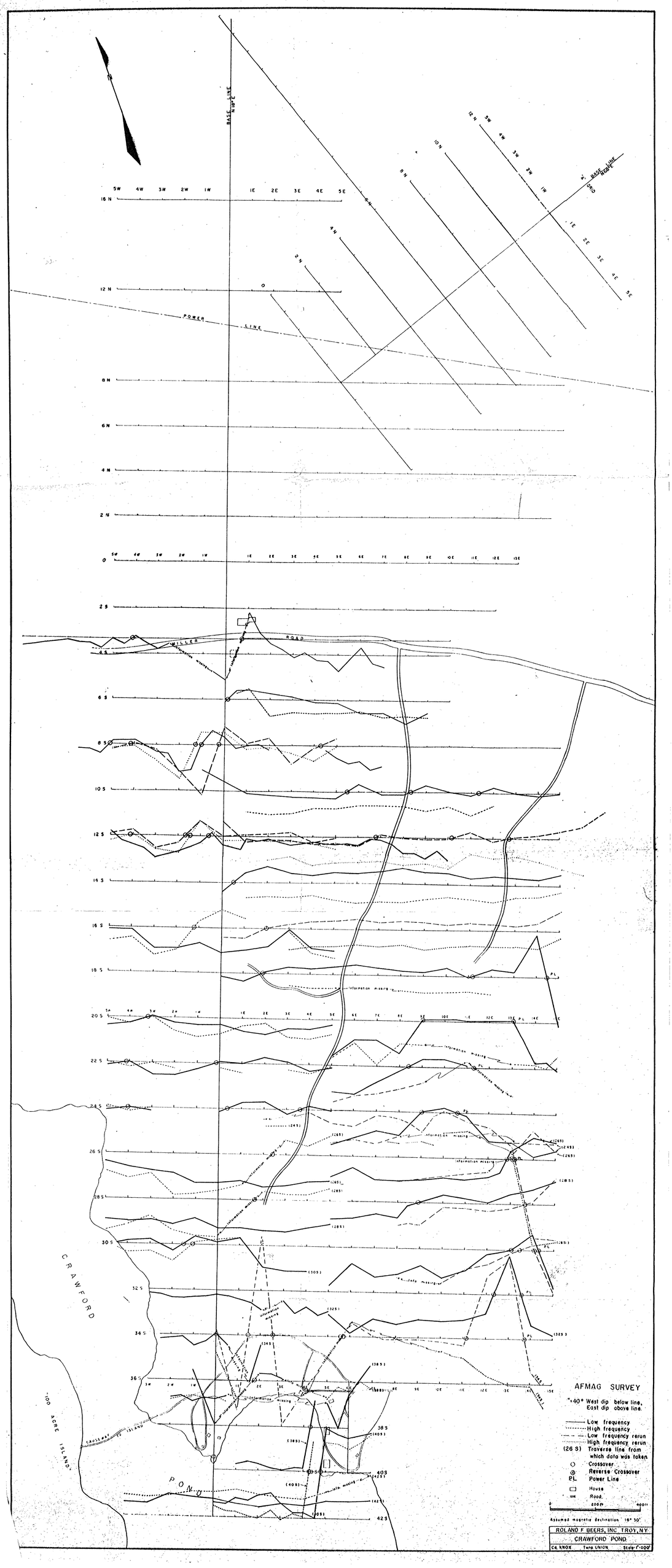
SELF - POTENTIAL SURVEY
CONTOUR INTERVAL as SHOWN
VALUES in MILLIVOLTS &
PLOTTED NEGATIVE
0
200 ft.
400 ft.
Jan., 1960
ROLAND F. BEERS, INC. TROY, N.Y.
PERPALL
Co. KNOX, Me. Twsp. UNION
Scale-1"=200'
HARRIMAN BASE LINE
2.4 N on HARRIMAN GRID
N

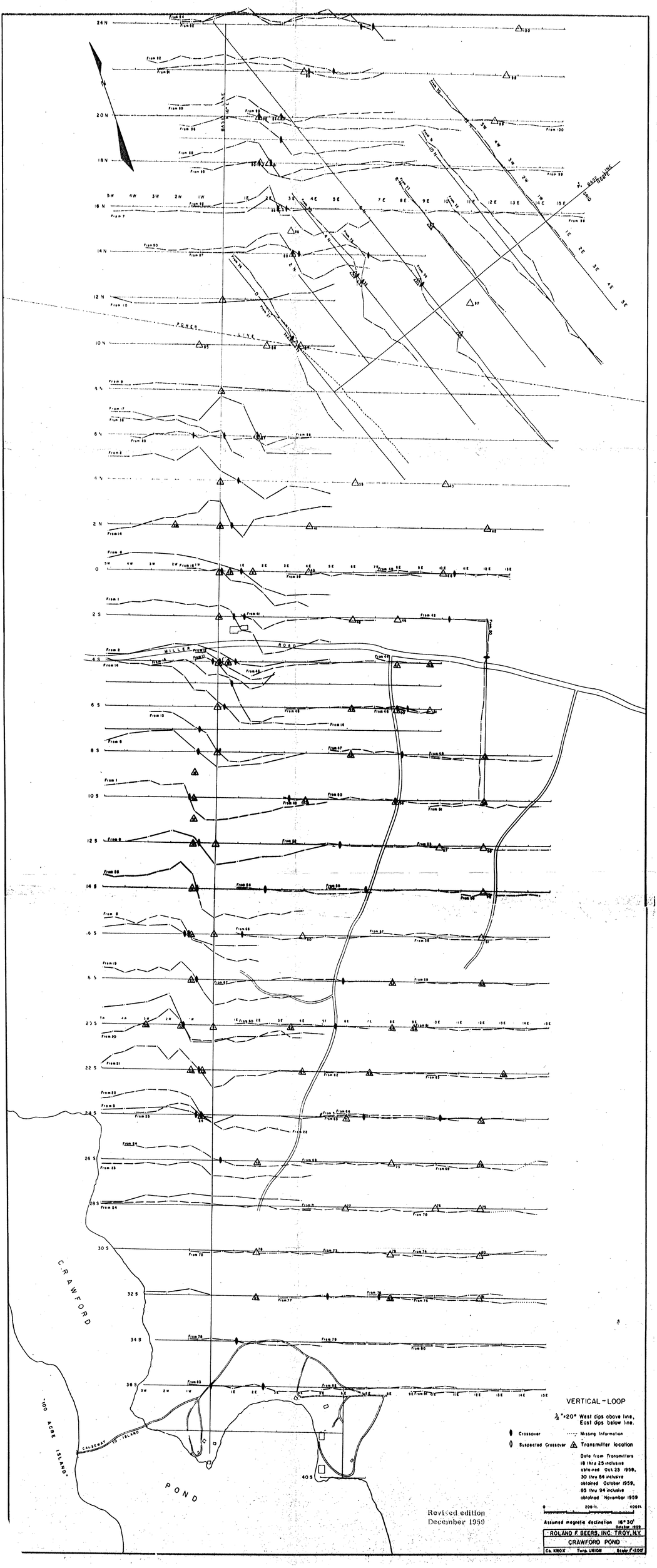

PDR Potential Drops
(Millivolts per 50 ft.)
≤ 0
0 < ≤ 10
10 < ≤ 20
0
200 ft.
400 ft.
DECEMBER 1959
ROLAND F. BEERS, INC. TROY, N.Y.
PERPALL
Co. KNOX, Me. Twp. UNION Scale 1"=200'
HARRIMAN BASE LINE
24 N on HARRIMAN GRID
N


GEOLOGIC SURVEY
LITHOLOGY
Pegmatite
Granite & Granite Gneiss
Marble
Pegmatized Schist
Quartz-muscovite-biotite Schist
Hornblende & Amphibolite Schist
Basic Rocks - diorite
- pyroxenite
- gabbro
LEGEND
DIP & STRIKE of FOLIATION
STRIKE of FOLIATION
ROAD, JEEP TRAIL
STREAM, INTERMITTENT
TREE LINE
BUILDING
STONE WALL
WIRE FENCE
POWER LINE
OUTCROP
0 200 ft. 400 ft.
JANUARY 1960
ROLAND F. BEERS, INC. TROY, N.Y.
PERPALL
Co. KNOX, Me. Twp. UNION Scale: 1"=200'
HARRIMAN BASE LINE
24 N on HARRIMAN GRID
N

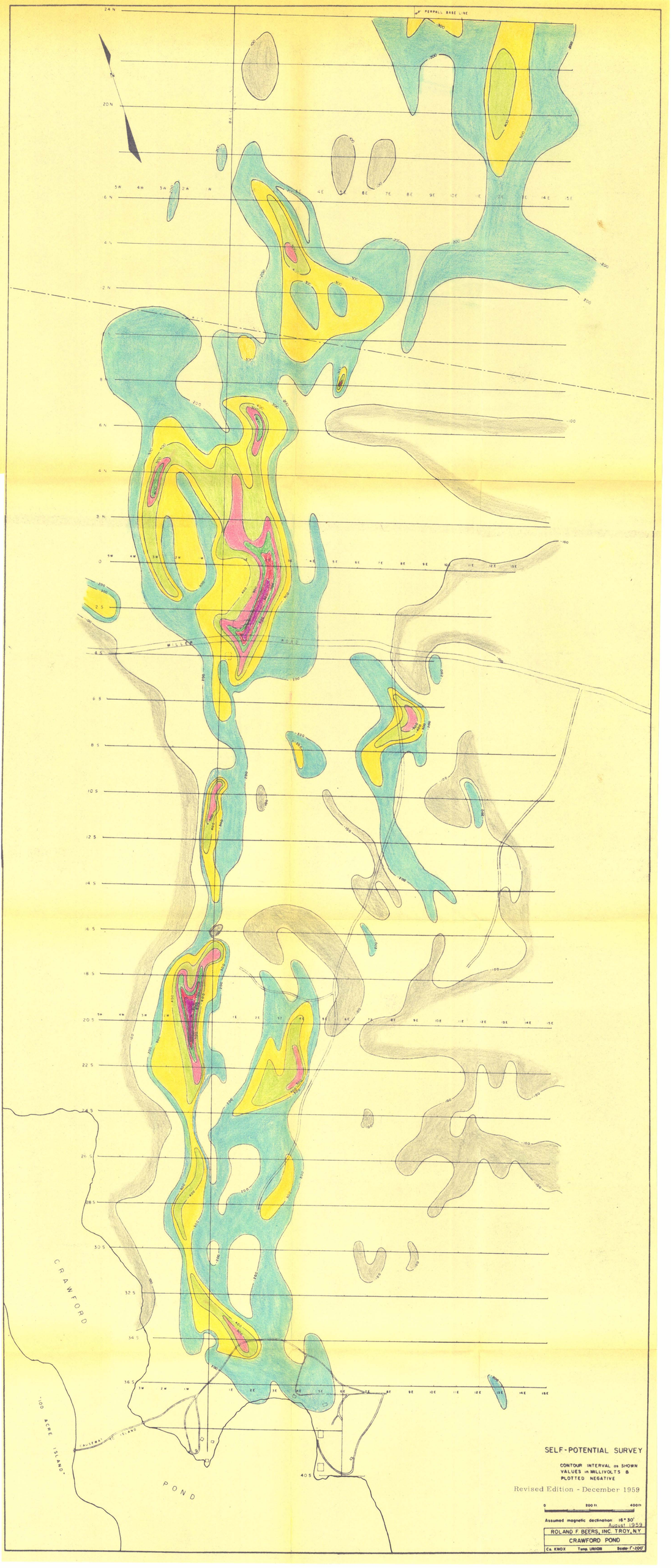

MAGNETIC SURVEY
Contour interval 400 γ
Negative Anomaly
Positive Anomaly
0
200 ft.
400 ft.
JANUARY 1960
ROLAND F. BEERS, INC. TROY, N.Y.
PERPALL
Co. KNOX, Me. Twnp. UNION Scale 1"=200'
HARRIMAN BASE LINE
24 N on HARRIMAN GRID
18 N
16 N
14 N
12 N
10 N
8 N
6 N
4 N
2 N
0
2 S
4 S
6 S
8 S
10 S
12 S
14 S
10 W
9 W
8 W
7 W
6 W
5 W
4 W
3 W
2 W
1 W
1 E
2 E
3 E
4 E
5 E
6 E
7 E
8 E
9 E
10 E
11 E
12 E


BASE LINE
MILLER ROAD
CRAWFORD POND
"100 ACRE ISLAND"
CAUSEWAY TO ISLAND
HORIZONTAL - LOOP
1/3"=40%, positive above line, negative below.
Dip-angle EM crossover
IN-PHASE PROFILE
OUT-OF-PHASE PROFILE
HOUSE
ROAD
Revised Edition
December 1959
ROLAND F. BEERS, INC. TROY, N.Y.
CRAWFORD POND
Co. KING Twp. UNION State N.H.

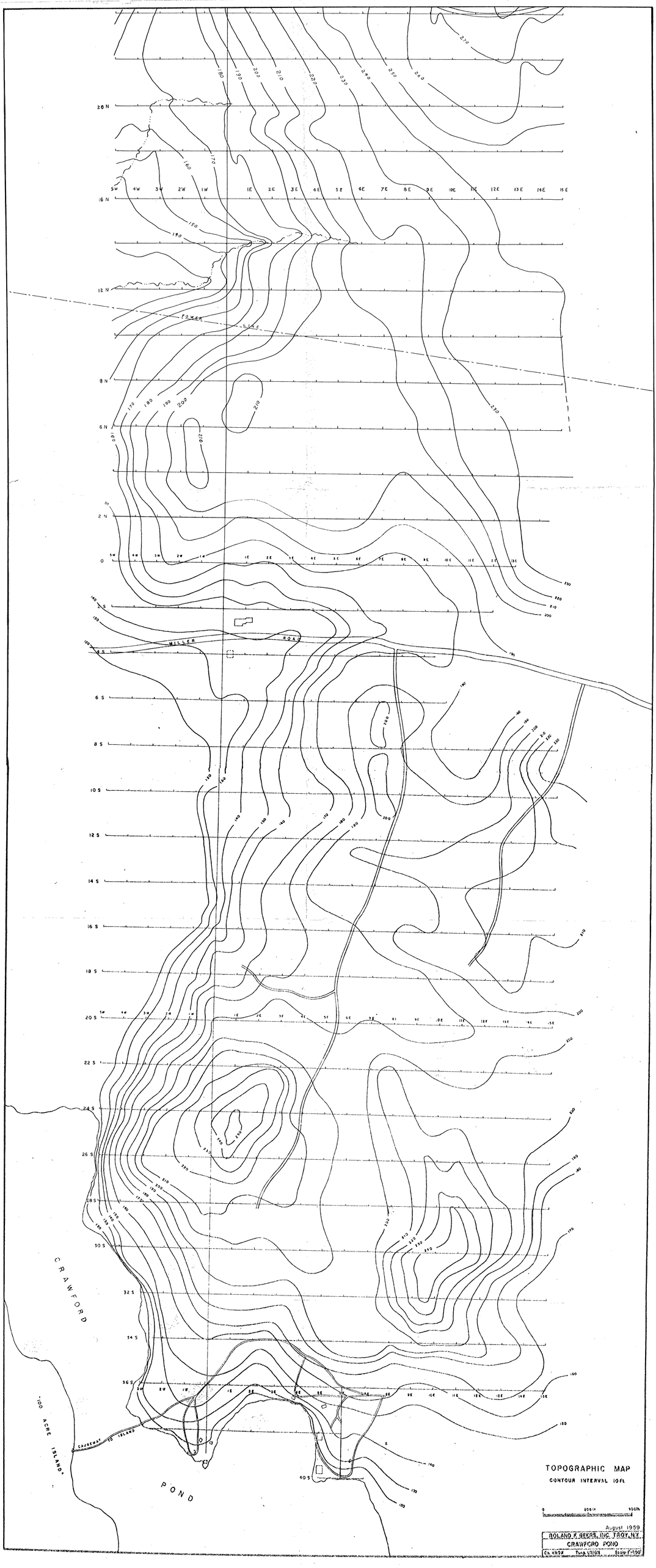

BASE LINE
N 18° E
POWER LINE
WILLER ROAD
CRAWFORD
POND
100 ACRE ISLAND
CAUSEWAY TO ISLAND
Information missing
Data missing
AFMAG SURVEY
±40° West dip below line, East dip above line.
Low frequency
High frequency
Low frequency rerun
High frequency rerun
(26 S) Traverse line from which data was taken
Crossover
Reverse Crossover
PL Power Line
House
Road.
Assumed magnetic declination 16° 30'
ROLAND F BEERS, INC TROY, N.Y.
CRAWFORD POND
CO. KNOX
Twp UNION
Scale 1"=200'

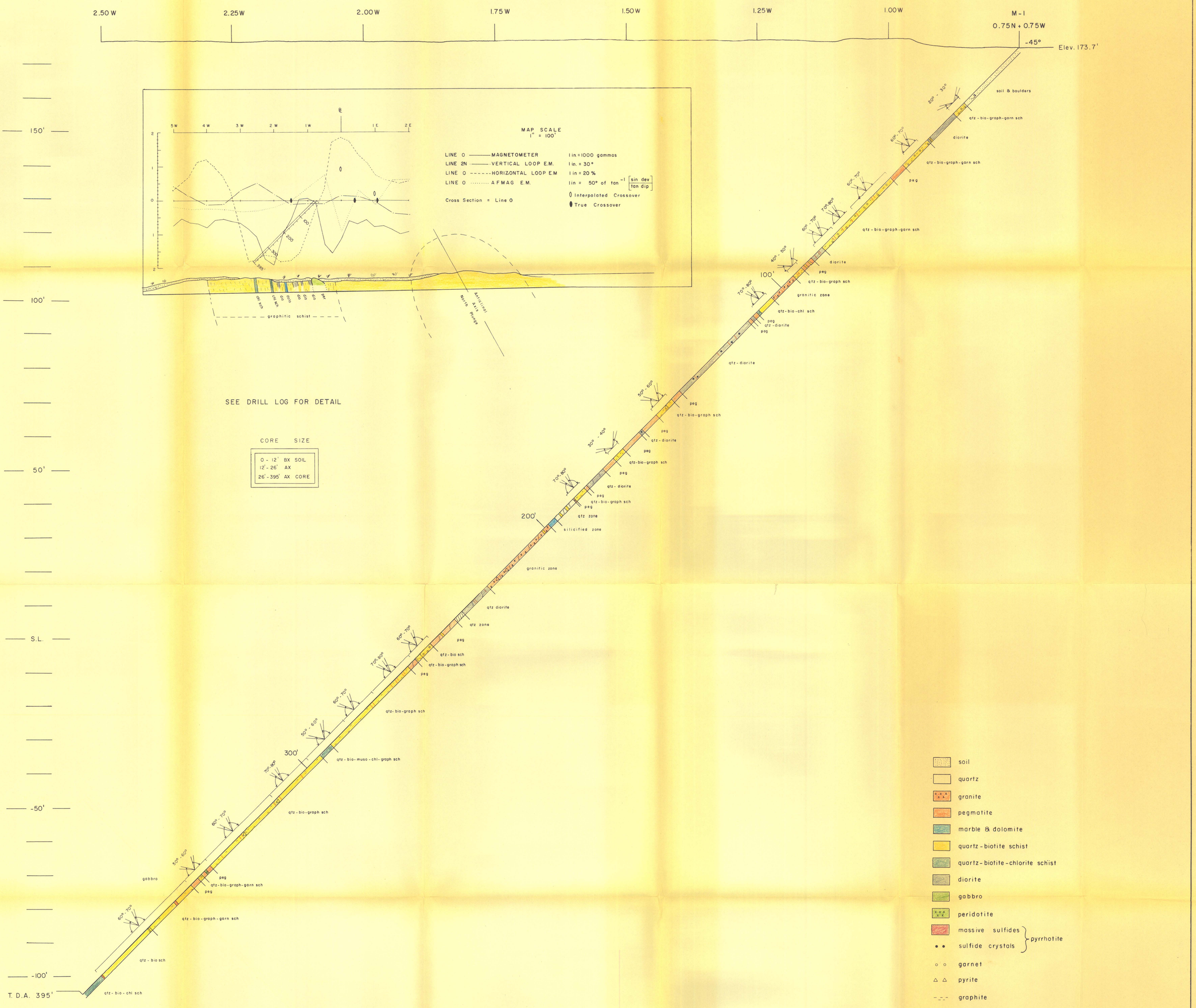


Revised edition
December 1959

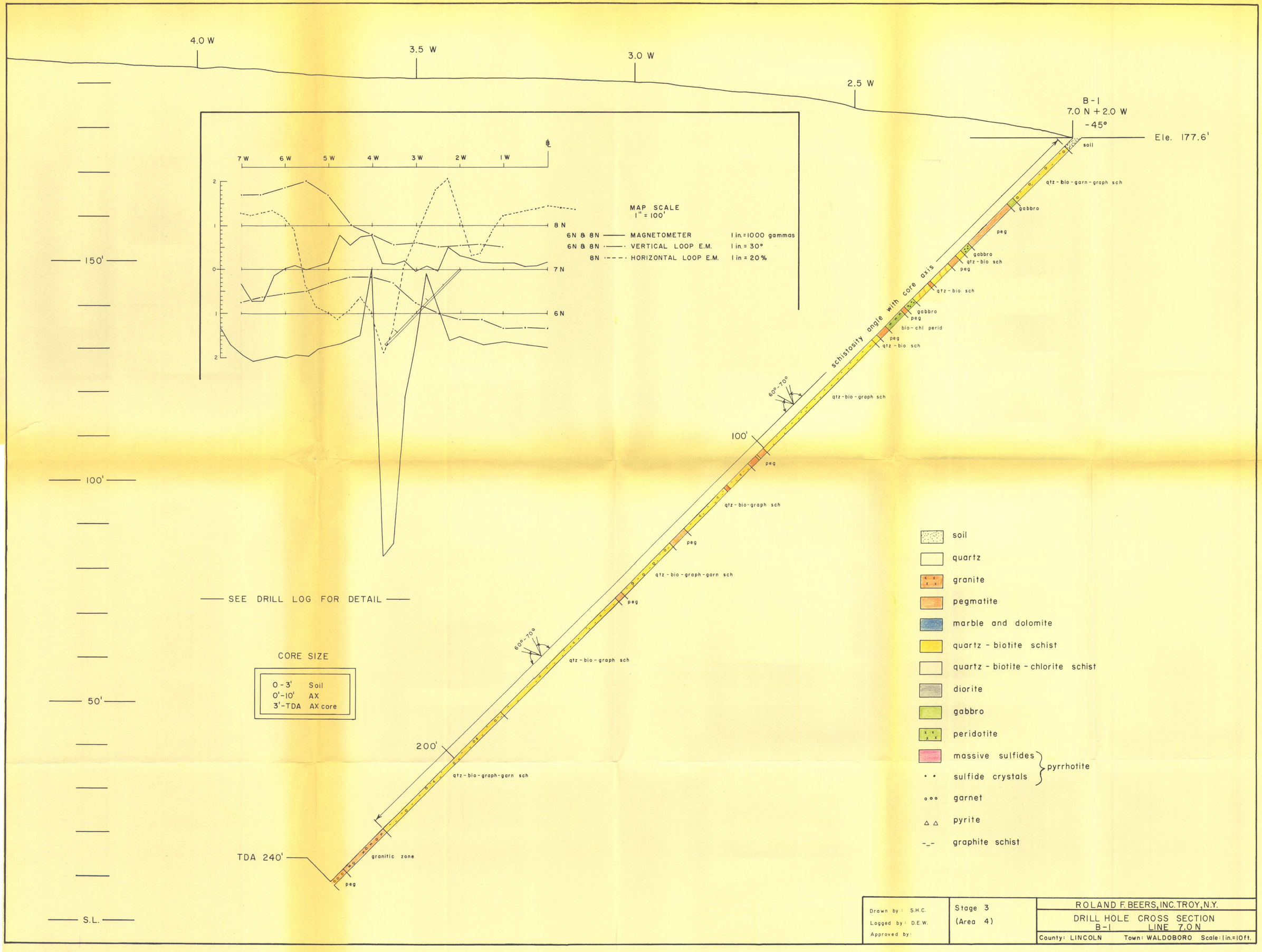

PERPELL BASE LINE
CRAWFORD
POND
"100 ACRE ISLAND"
SELF-POTENTIAL SURVEY
CONTOUR INTERVAL as SHOWN
VALUES in MILLIVOLTS &
PLOTTED NEGATIVE
Revised Edition - December 1959
0 200 ft 400 ft
Assumed magnetic declination: 16° 30'
August 1959
ROLAND F BEERS, INC. TROY, N.Y.
CRAWFORD POND
Co. KNOX Twp. UNION Scale 1"=200'

RTE 17
POWER LINE
MILLER
CRAWFORD
POND
100 ACRE ISLAND
CAUSEWAY TO ISLAND
PDR Potential Drops
(Millivolts per 50 ft)
≤ 0
0 < < 10
10 < < 20
0
200 ft
400 ft
ROLAND F. BEERS, INC. TROY, N.Y.
CRAWFORD POND
Ca. 1980X
Temp. Ult. Ok
Scale 1"=200'


TOPOGRAPHIC MAP
CONTOUR INTERVAL 10 FT.
August 1959
ROLAND F. BEERS, INC. TROY, N.Y.
CRAWFORD POND
CRAWFORD
POND
"100 ACRE ISLAND"
CAUSEWAY TO ISLAND
MILLER ROAD
POWER LINE

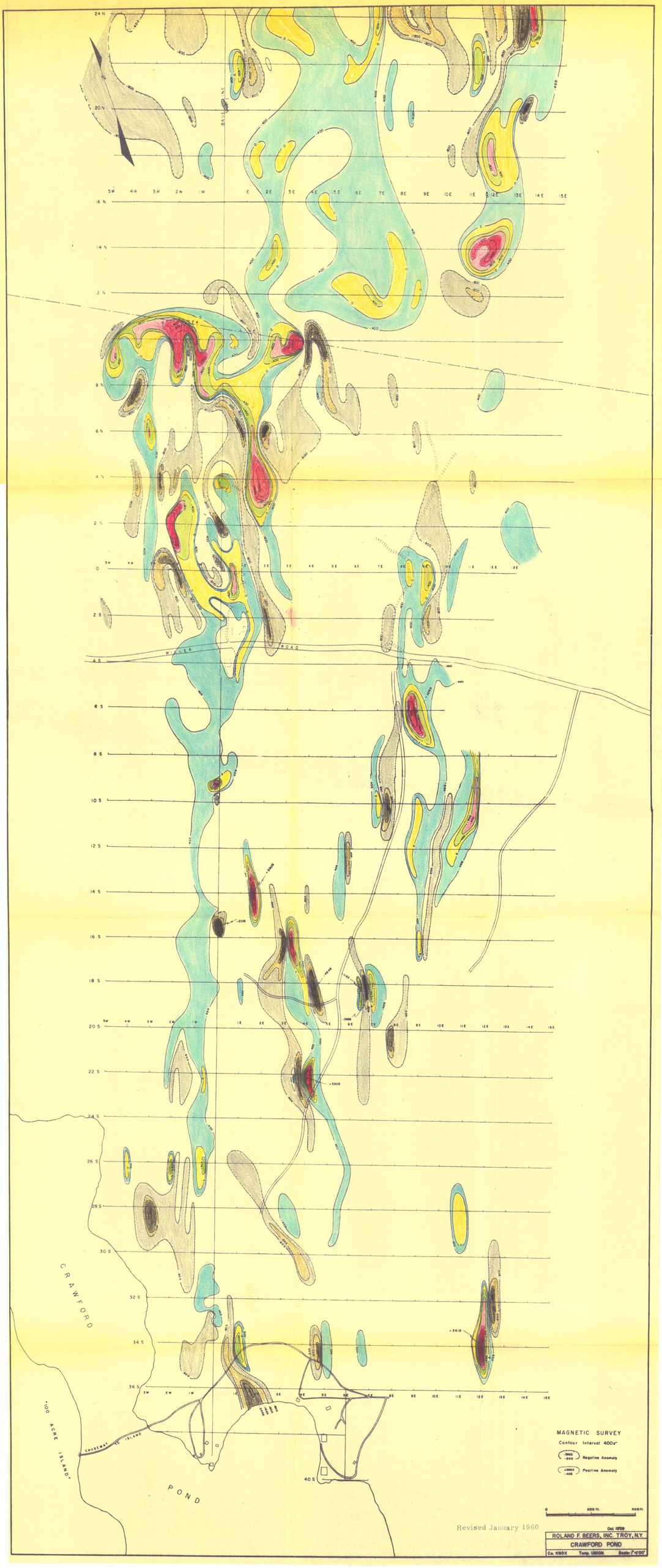


Drawn by : R. P. Logged by : D. E. W. Approved by :	Stage 3 (Area 4)	ROLAND F. BEERS, INC. TROY, N.Y. DRILL HOLE CROSS SECTION M-1 LINE 0.75N Co. LINCOLN Twnp. WALDOBORO Scale 1" = 100 ft.



Drawn by: S.H.C. Logged by: D.E.W. Approved by:	Stage 3 (Area 4)	ROLAND F. BEERS, INC. TROY, N.Y. DRILL HOLE CROSS SECTION B-1 LINE 7.0 N County: LINCOLN Town: WALDOBORO Scale: 1 in.=10 ft.

BASE LINE
BASE LINE GRID
POWER CO. LINE
MILLER ROAD
CRAWFORD POND
"100 ACRE ISLAND"
CAUSEWAY TO ISLAND
GEOLOGIC SURVEY
LITHOLOGY
Pegmatite
Granite & Granite Gneiss
Marble
Pegmatized Schist
Quartz-muscovite-biotite Schist
Hornblende & Amphibolite Schist
Basic Rocks - diorite
- pyroxenite
- gabbro
LEGEND
DIP & STRIKE of FOLIATION
STRIKE of FOLIATION
CONTORTED FOLIATION
ROAD, JEEP TRAIL
STREAM, INTERMITTENT
TREE LINE
SWAMP
BUILDING, FOUNDATION
STONE WALL
WIRE FENCE
POWER LINE
PIT
OUTCROP
0 200 ft. 400 ft.
Revised December 1959
October 1959
ROLAND F. BEERS, INC. TROY, N.Y.
CRAWFORD POND
Co. KNOX
Twp. UNION
Scale: 1"=200'


MAGNETIC SURVEY
Contour Interval 400γ
Negative Anomaly
Positive Anomaly
0 200 ft. 400 ft.
Oct 1959
ROLAND F. BEERS, INC. TROY, N.Y.
CRAWFORD POND
Co. KNOX
Twp. UNION
Scale: 1"=200'
Revised January 1960
MILLER ROAD
CRAWFORD
POND
"100 ACRE ISLAND"
CAUSEWAY TO ISLAND