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SUBSURFACE URANIUM
ON THE GROUNDS OF
NL BEARINGS, ALBANY

by

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1.0 INTRODUCTION

The uranium content of surface soil surrounding the NL Bearings plant in Albany has been reported by Jeter and Eagleson (1980). That study measured soil samples from a radial grid centered at the plant. Two successive soil plug samples were analyzed at each location, one at 0-0.5 inch depth and another at 0.5-2.0 inch depth.

This report documents a survey of uranium on the plant grounds to a depth of 28 feet. It is intended to find whether uranium materials are buried on the site and to measure their geographical patterns and activity levels. A rectangular sampling grid was chosen for this study, having sites more closely spaced in areas where subsurface activity was suspected. Samples were collected by a standard boring method and were analyzed at the Teledyne Isotopes laboratory.

2.0 METHODS

There are two general ways in which subsurface radioactivity survey could be conducted. Holes could be bored at the desired locations and an in situ (down-hole) device could be lowered to measure a continuous radioactivity profile. This method has the disadvantage that field measurement systems lack the resolution and reliability of laboratory measurement systems. The alternative is to collect soil samples with a boring device and then subject them to laboratory analysis. This method, which was chosen for the present study, has the additional advantage that samples can be stored for further analyses if the initial results warrant it.

2.1 Soil Sampling

Boring locations are indicated by open circles on Figure 1. They are spaced in an approximately square pattern measuring 10 meters on a side in the area of suspected subsurface activity. A spacing of 20 meters is shown in other parts of the plant grounds. The sites are somewhat irregular because of interferences such as power lines. Figure 1 shows the actual locations of the completed holes based on tape measurements from reference points such as the building and fences.

Numbering of boring sites is generally indicated by a row number followed by a decimal point and then a column number. Rows are numbered sequentially eastward beginning at the west fence (1 through 13). Column numbers increase northward but have irregular beginning locations because of obstacles. In row 1 the first column number is 3 because the first two proposed sites were blocked by obstacles. Rows 10 and 12 north of the plant have two boring locations each, and row 11 has only one site. Row 13 has two sites south of the plant. There is no row numbered 9.

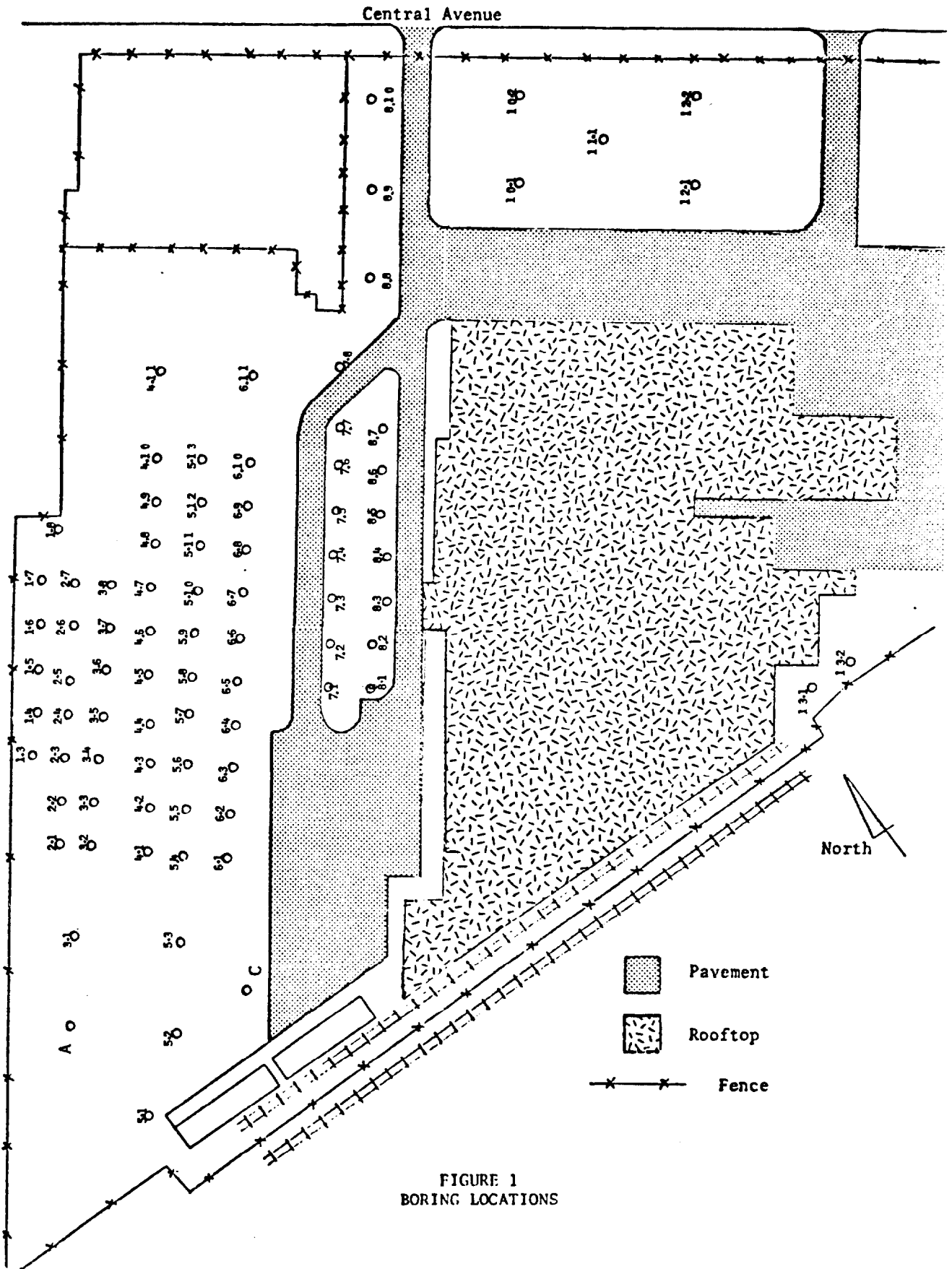


FIGURE 1 BORING LOCATIONS

Two boring locations west of the plant are designated "A" and "C". These sites were added after the numbering system was constructed and require special identification.

Soil sampling was performed by Empire Soils Investigations, Inc. of Latham, New York. An associate scientist of Teledyne Isotopes was on site continuously to provide quality control. The operation was conducted in March and April, 1981. Three conventional, truck-mounted rotary drill rigs were in operation during most of the project. Each rig had an operating crew of two persons.

Samples were obtained by the standard test boring method ASTM D-1586. This involves driving a "split-spoon" sampling tube into the soil by the fall of a 140 pound hammer tended from the rig. The sampling tube is two feet long with an inside diameter of 1 3/8 inch. After each two foot advance of the sampling tube it is withdrawn and opened along its axis to remove the sample. The advance of the sampling tube is followed by a drive pipe (casing) to retain the hole intact and to prevent the walls from collapsing. All borings were completed to a depth of 30 feet.

Each two foot soil sample was placed in a quart glass bottle provided with a screw top. No attempt was made to keep the core vertically intact during this process. The sampling was continuous in that each successive two foot sample was bottled, leaving no part of the soil column unsampled. Each 30 foot boring resulted in 15 samples although several were lost through spillage..

The drilling crew completed a subsurface log at each boring site (Appendix II). These show observations of soil type, ground water levels, and the number of hammer blows required to advance the sampling tube.

A key to the interpretation of these logs is included at the beginning of Appendix II. The indicated hole numbers begin with "B" (boring), followed by the row and column numbers explained previously. Samples from each hole are numbered sequentially from the surface (1-15).

2.2 Sample Preparation

This study is intended to show the depth-dependence of U-238 activity as well as to map its horizontal extent. Because samples were collected over two foot depth increments, it would be possible to analyze 15 levels per boring. This degree of spatial resolution was judged to be unnecessary for an exploratory survey of this sort. It was decided to composite (mix) adjacent samples two-by-two, providing one analysis for a four foot depth increment. An exception was made for the shallowest two samples because fallout contamination of the plant grounds had been established from the previous study. Samples 1 and 2 (0-2 feet and 2-4 feet) were analyzed separately in order to avoid interpreting surface activity as buried activity by mixing to a four foot depth.

All samples were dried before compositing and analysis. This was performed to reduce all results to a consistent dry weight basis. A large fraction of soil samples were taken below the water table such that standing water was observed in the glass containers. Drying was accomplished by removing the screw top and placing the sample bottles in a hot air oven at 105⁰C for about 48 hours.

Dried samples were removed from their glass containers and then pulverized with a hammer in a galvanized steel pan. This process was continued until no soil particles greater than ¼ inch remained. Large rocks and chunks of wood were removed. The pulverized soil was then mixed by stirring.

The pulverizing and stirring operations described above serve to homogenize the soil sample over the depth interval of collection (two feet for samples 1 and 2 from each boring; four feet for all other samples). This process would dilute any radioactivity localized within the core. For example, a thin layer of fallout at the surface of the uppermost sample would be mixed over the two foot depth interval, thereby reducing its activity on a bulk basis (pCi/gram). Similarly, a thin buried layer would be reduced in concentration by the mixing process. The possible distortion of results mentioned above is preferable to the alternative, which is the risk of missing some activity altogether. If the sample were not mixed and a small portion were taken at random for analysis, a thin layer of activity could remain undetected. In this study, a large fraction of the mixed sample is analyzed in order to avoid the problem.

2.3 Analysis of Samples

The U-238 content of soil was determined by gamma spectral analysis of the daughter product Th-234 ($T_{1/2} = 24$ days), assuming secular equilibrium. Thorium-234 emits gamma rays at energies of 63 and 93 keV. The 93 keV peak, having a branching intensity of 4.7%, was chosen for analysis in this study.

The measurement system employs a Teledyne Isotopes sodium iodide NaI (Tl) detector 5 inches in diameter by 0.5 inch thick. The crystal is surrounded by a 3/16 inch thick cylinder of stainless steel to provide shielding against low energy radiation from the sides. The detector face is recessed 1 cm from the cylinder rim. In operation, the sample and detector were placed in a cave made of 1/4 inch thick steel to provide further shielding of low-energy ambient radiation.

The sodium iodide detector was coupled to a Canberra Series 30

multichannel analyzer. Gain was adjusted to 0.25 keV per channel, allowing a viewing range of 5 to 250 keV for the 1024 channels. Spectral information was written on a data form as 3 regions: the peak region (93 keV) having a constant width of 101 channels and two adjacent shoulder regions including approximately 20 channels each. Data reduction was performed on a programmed calculator. Integrated counts in the two shoulder regions were expressed on a per-channel basis and averaged to give the background in the peak region. Subtracting this background from the integrated counts in the peak yields a net count rate for purposes of calculating activity.

Soil samples were analyzed in either of two counting geometries. Both were plexiglass cylinders open on one end, having an inside diameter of five inches (the same as the detector diameter). One cylinder is one inch deep, holding approximately 500 grams of dry soil; the other is $\frac{1}{2}$ inch deep. The shallower geometry was only used in a few cases where the sample quantity was limited.

To make a measurement, the plastic cylinder was filled to the rim with mixed soil sample and then weighed. The container was placed in the cave and the detector was positioned on top (rim-to-rim). The cave was closed and data acquisition was begun. A counting interval of 500 seconds was used for the one inch geometry and 1000 seconds for the $\frac{1}{2}$ inch geometry, resulting in a detection limit near 10 pCi/gm.

Calibration of the system was performed by counting a uranium oxide standard mixed with soil in both geometries. The standard soil, containing 649 pCi/gm U-238, was prepared as described in the previous study (Jeter and Eagleson, 1980). The calibration resulted in a counting efficiency of 0.131 for the one inch geometry and 0.170 for the $\frac{1}{2}$ inch geometry.

Quality control of the measurement system was established by reading a check source and a blank twice per day. The check source consists of one gram of uranium oxide standard spread uniformly over a five inch diameter circle in a flat pan. A thin layer of epoxy covers the uranium in order to keep it in place. The purpose of the check source is not to establish counting efficiency (described above), but to determine whether the measurement system has drifted. The system is judged to be "in control" if the check source reading lies within the two sigma statistical range of its value when calibration was performed. If the measurement system fails this test, it must be adjusted until the test is passed. Similarly, blank readings must result in a detection limit calculation (4.66 sigma level) in order to be acceptable. In other words, analysis of a blank must result in no detectable activity.

3.0 RESULTS

Measurements of U-238 are listed in Appendix I according to boring number and depth increment. Symbols and abbreviations are explained on the appendix flyleaf. Blank spaces in the data tables indicate analyses which were purposely omitted. In these cases, the lack of uranium in the upper part of the soil column indicates that only spot checks are necessary at deeper levels.

Figures 2 through 9 display the data in plan view at successive depth increments. U-238 activities (pCi/gm dry) are shown near each boring location. A red contour encloses values greater than 100 pCi/gm in order to make patterns of concentration more evident. As in Appendix I, the abbreviation "NR" signifies "no recovery" and the symbol "<" designates a value below detection limits. Boring locations showing no figures or symbols indicate that the sample at that level was not analyzed.

The contours in Figures 2 through 9 indicate concentrations of subsurface uranium west of the plant. The broadest areas of buried radioactivity lie above the 12-foot level: the 100 pCi/gm contours enclose 4 or more boring locations. At depths greater than 12 feet the contours enclose only one or two boring locations at each level. Concentrations exceeding 100 pCi/gm extend to 24 feet at location 1.6 (Figure 8).

Locations 3.8 and 4.4 on Figure 3, and location 4.4 on Figure 4, are additionally marked with "Th". Samples from these areas exhibited an unusual gamma spectrum and were consequently subjected to high resolution Ge(Li) analysis. This revealed concentrations of Ac-228 as well as U-238 (see Appendix I footnotes). The Ac-228 nuclide ($T_{1/2} = 6$ hours) is a daughter product of Ra-228 ($T_{1/2} = 6.7$ years), which is in turn the daughter product of

long-lived natural thorium-232. Consequently, the Ac-228 found at these locations indicates the presence of Ra-228 and probably an equivalent activity of buried Th-232 (assuming secular equilibrium).

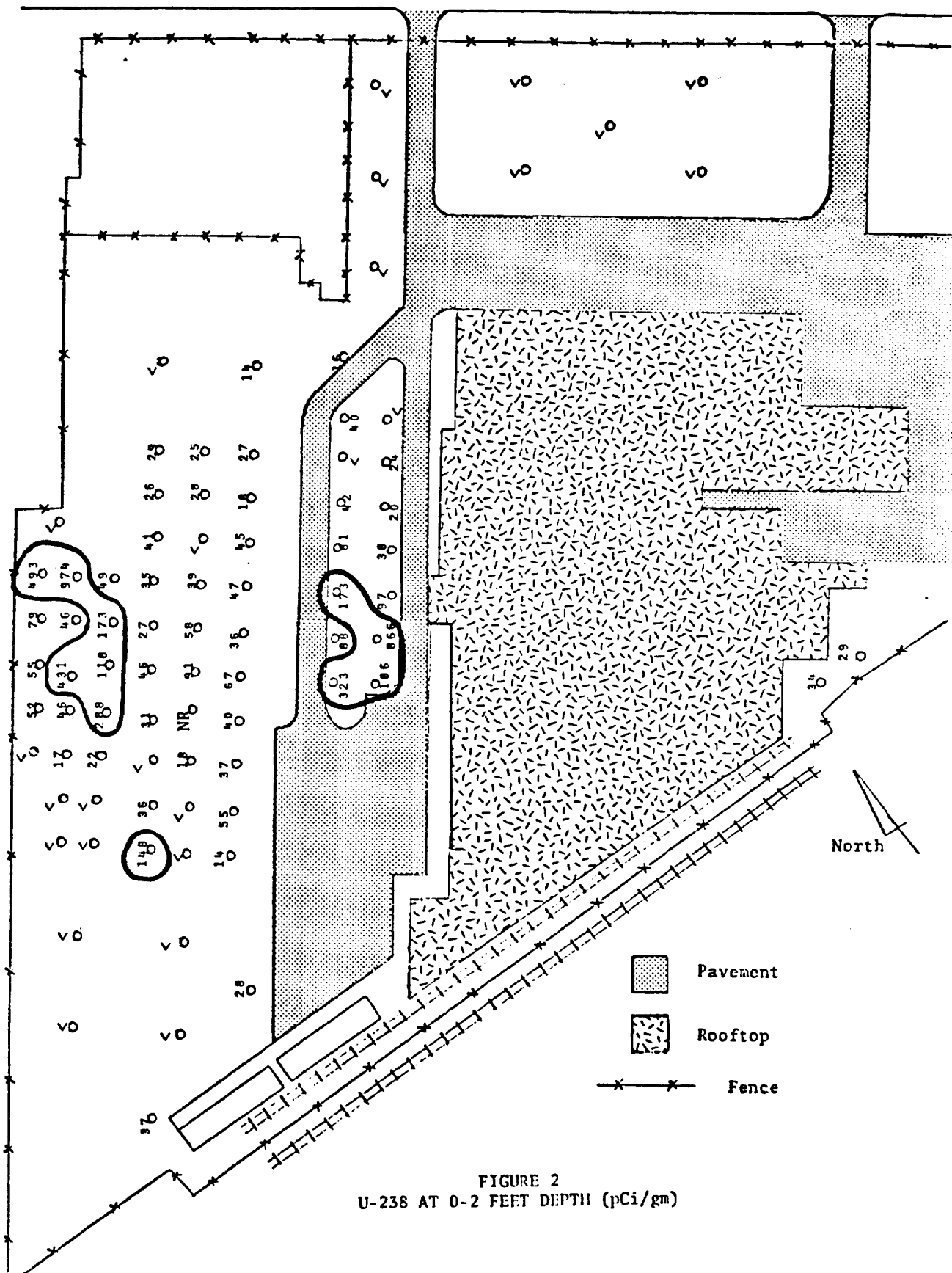


FIGURE 2
U-238 AT 0-2 FEET DEPTH (pCi/gm)

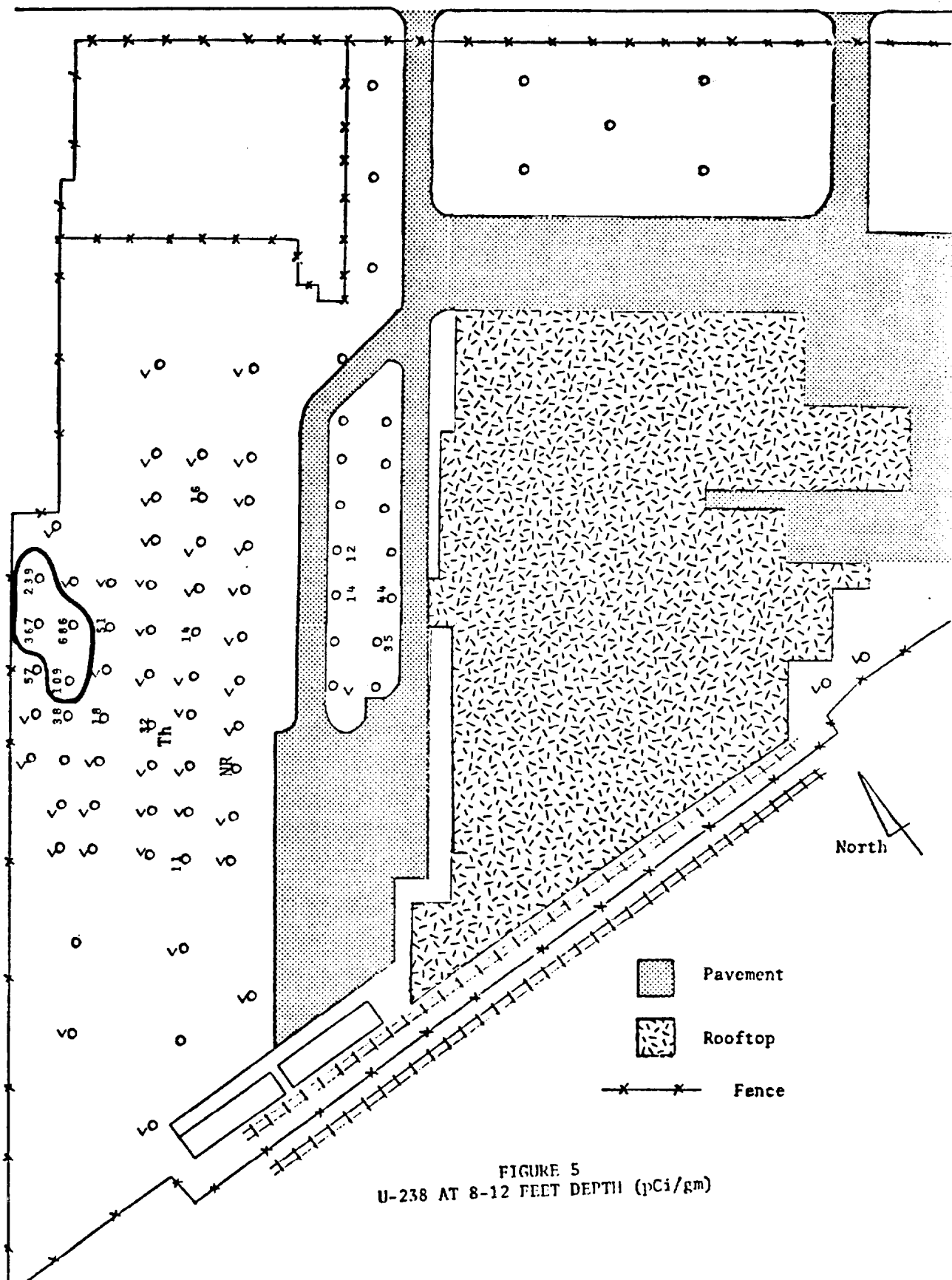


FIGURE 5
U-238 AT 8-12 FEET DEPTH (pCi/gm)

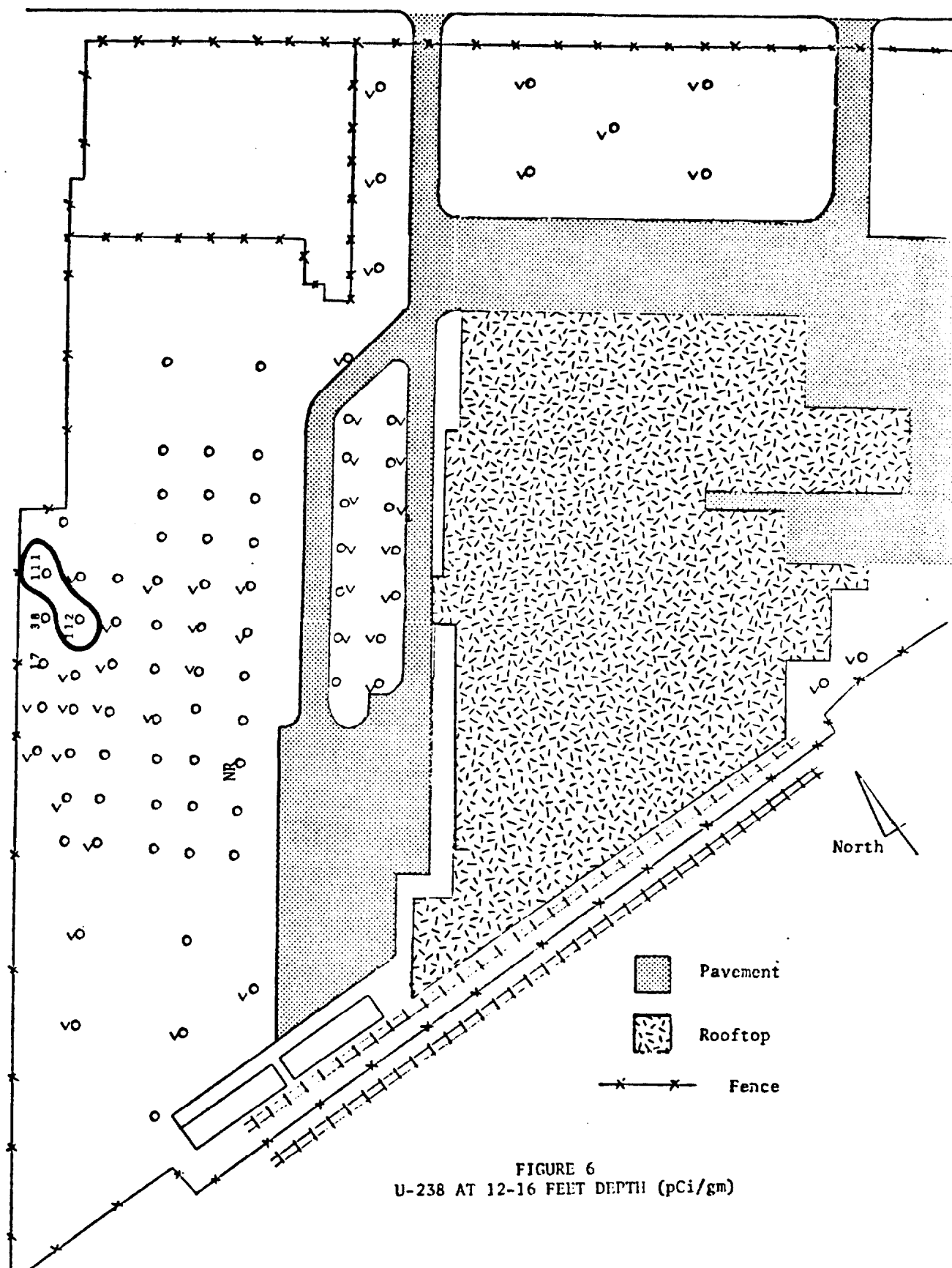


FIGURE 6
U-238 AT 12-16 FEET DEPTH (pCi/gm)

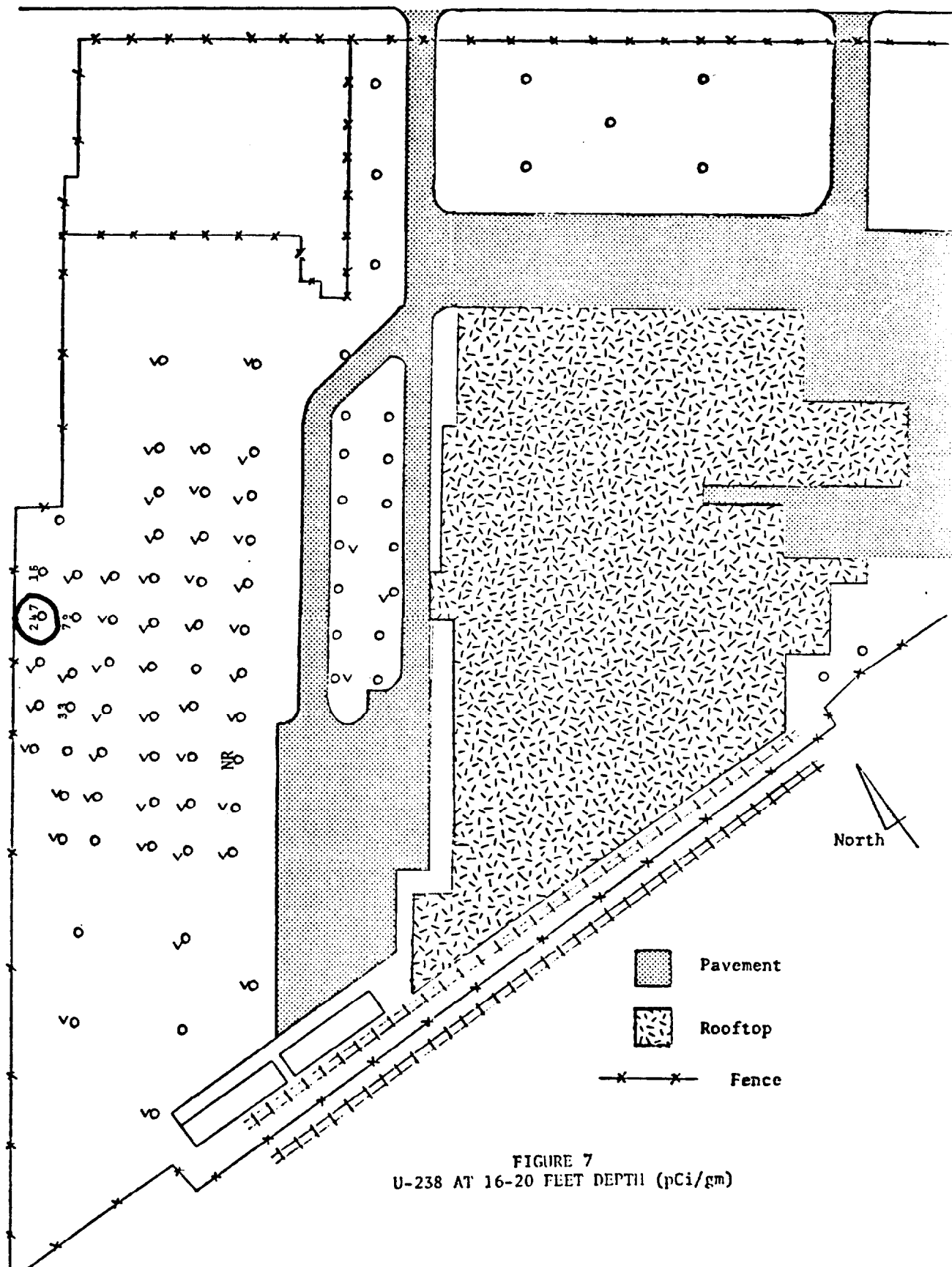


FIGURE 7
U-238 AT 16-20 FEET DEPTH (pCi/gm)

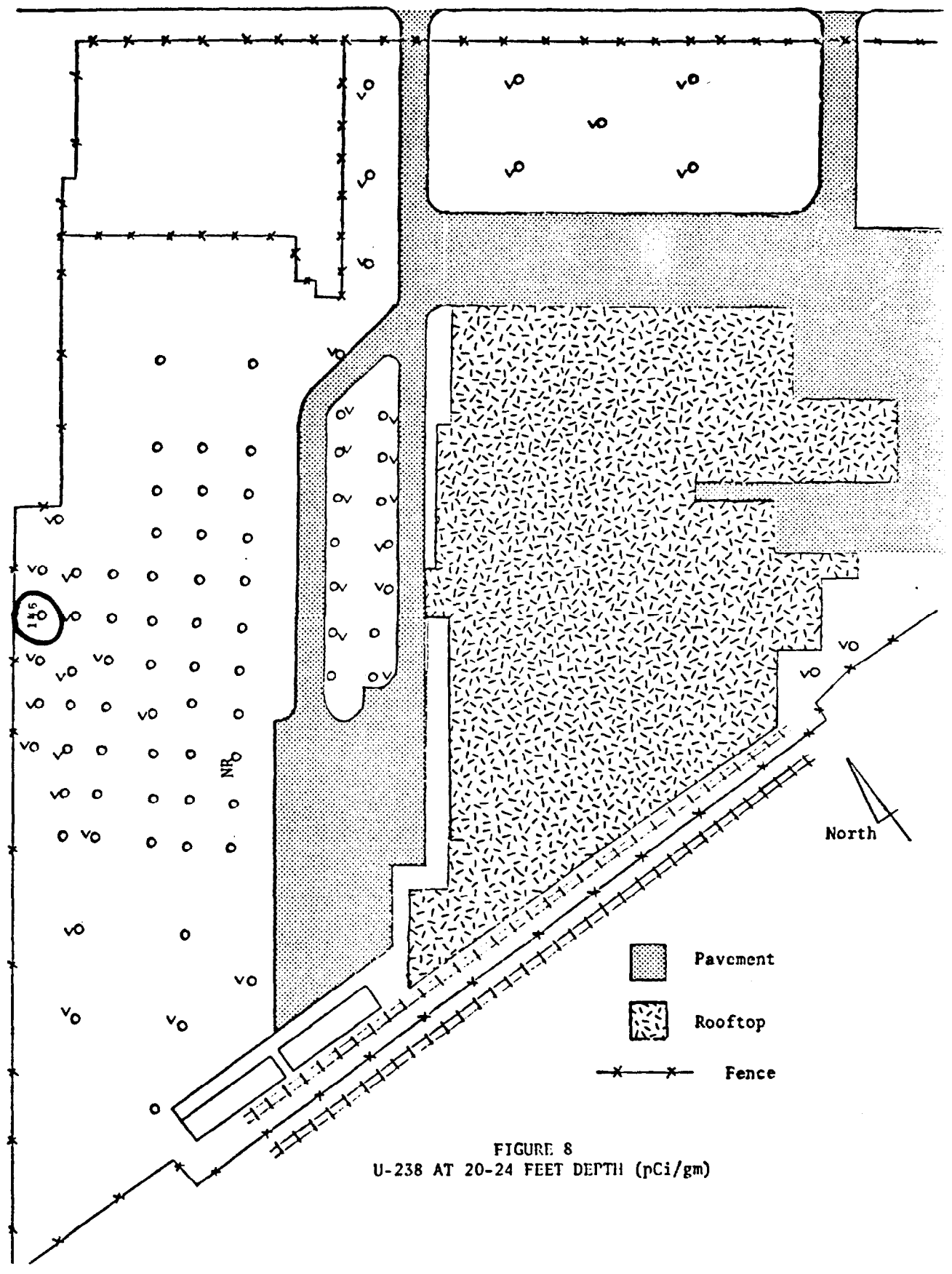


FIGURE 8
U-238 AT 20-24 FEET DEPTH (pCi/gm)

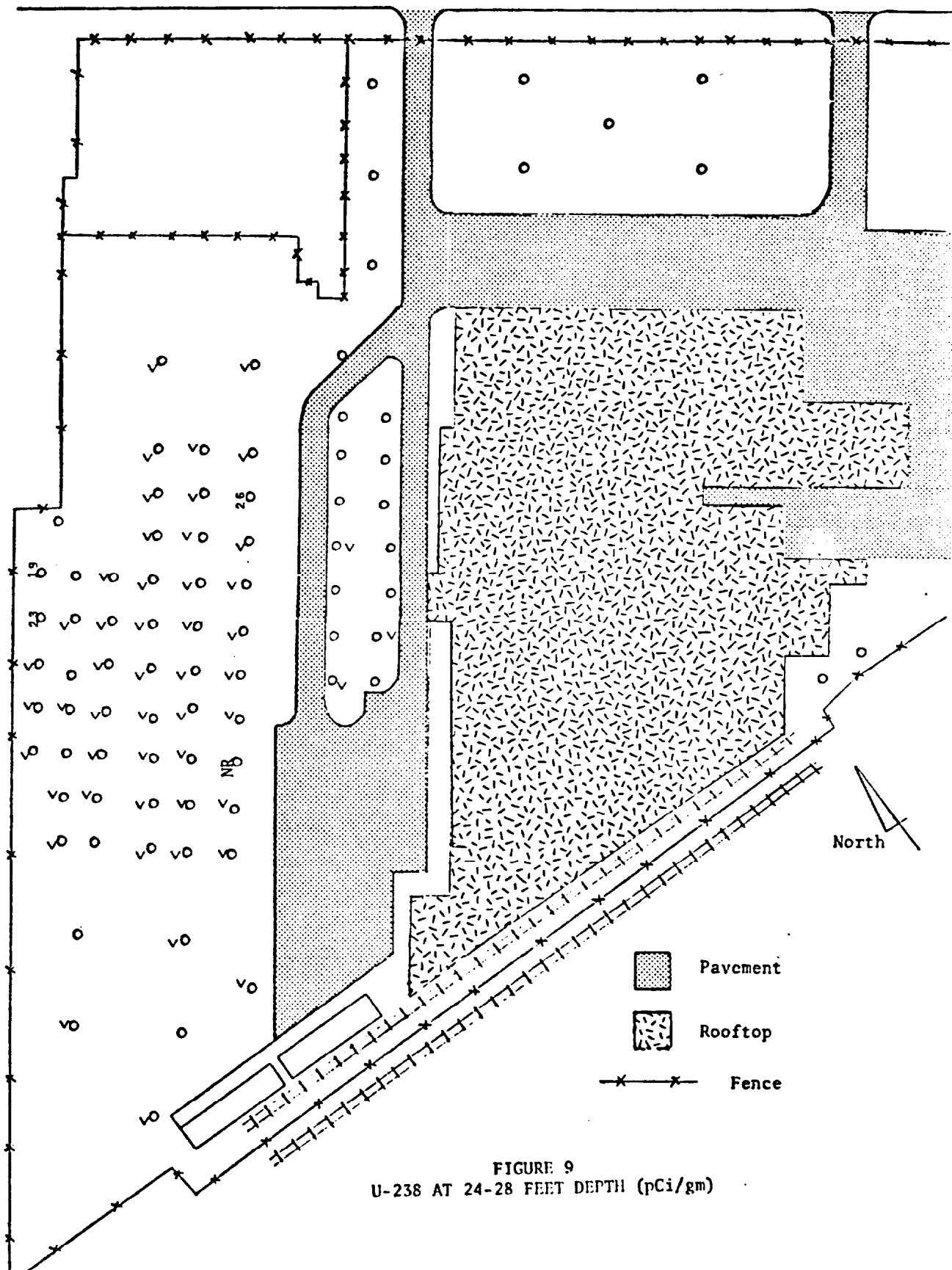


FIGURE 9
U-238 AT 24-28 FEET DEPTH (pCi/gm)

4.0 SUMMARY

The purpose of this study is to determine the concentration and geographical extent of subsurface U-238 on the grounds of the NL Bearings plant in Albany. Eighty-one test borings were performed to a depth of 30 feet according to standard ASTM procedure D-1586. The boring locations were chosen on a rectangular grid measuring 10 m (33 feet) on a side in the area where underground activity was suspected. A 20 m grid was employed in other parts of the plant grounds.

Soil samples were taken from the test borings at two foot increments. These were packaged in glass bottles and shipped to Teledyne Isotopes. The samples were dried, pulverized, and analyzed for U-238 by spectral analysis of the 93 keV emission of its daughter product Th-234. Samples taken below the four foot level were composited (mixed) two-by-two, such that the analysis represents a 4-foot depth increment. If little uranium was found in the upper half of a boring, alternate samples at deeper levels were omitted to provide a spot check.

Results are presented in tables and in plan-view diagrams for each successive sampling level. At 0-2 feet depth, 11 borings show U-238 activity greater than 100 pCi/gram. At 2-4 feet, 6 borings exceed this activity. Five borings at 4-8 feet, 4 at 8-12 feet, and 2 at 12-16 feet meet this criterion. Below 16 feet, 1 boring at each level exceeds 100 pCi/gm to a depth of 24 feet.

It is important to consider the method of analysis when interpreting results. Soil samples above the 4-foot level were mixed over a 2-foot depth increment. Deeper samples were mixed over a 4-foot increment. This method has the advantage that any thin layers of activity are included because the sampling is continuous. It has the disadvantage that a thin layer of

activity would be diluted by mixing with surrounding soil, making its measured activity (pCi/gm) lower than the true activity in the concentrated layer.

REFERENCES

Jeter, Hewitt W., and Douglas M. Eagleson. 1980. A Survey of Uranium in Soils Surrounding the NL Bearings Plant. Teledyne Isotopes report IWL-9488-461.

APPENDIX I

U-238 (Th-234) MEASUREMENTS IN SOIL

Activities are expressed in pCi/gm dry.
Tolerances refer to 2 sigma counting statistics.
Values preceded by the symbol "<" signify the
4.66 sigma detection limit when no activity
is detected. The abbreviation "NR" means "no
recovery" or insufficient sample for analysis.
Blank spaces indicate analyses which were pur-
posely omitted.

SAMPLE NUMBER/DEPTH INCREMENT

BORING #	#1	#2	#3,4	#5,6	#7,8	#9,10	#11,12	#13,14	
	0-2 FT	2-4 FT	4-8 FT	8-12 FT	12-16 FT	16-20 FT	20-24 FT	24-28 FT	
1.3	<12	NR	<8	<8	<7	<8	<7	<8	
1.4	52±8	39±7	<8	<14	<8	<9	<8	<8	
1.5	55±7	94±20	87±7	57±9	17±7	<11	<9	<8	
1.6	79±9	NR	100±27	367±10	38±7	247±10	146±8	23±7	(1)
1.7	493±16	NR	206±16	239±15	111±8	16±6	<8	19±6	(2)
1.8	<8	<8	<8	<8	<11		<8		
2.1	<9	<8	<7	<8		<9		<9	
2.2	<9	<13	<8	<8	<8	<8	<8	<8	
2.3	17±9	<9	<8		<8		<8		
2.4	46±7	20±9	112±8	38±6	<8	33±4		<8	

(1) Sample #15 (28-30 FT DEPTH): <8
 (2) Sample #15 (28-30 FT DEPTH): <10

SAMPLE NUMBER/DEPTH INCREMENT

BORING #	#1	#2	#3,4	#5,6	#7,8	#9,10	#11,12	#13,14
	0-2 FT	2-4 FT	4-8 FT	8-12 FT	12-16 FT	16-20 FT	20-24 FT	24-28 FT
2.5	431±13	1441±25	62±7	109±8	<9	<9	<8	
2.6	46±6	NR	435±12	686±14	112±8	79±7	<8	<9
2.7	974±27	359±12	<9	<8 (1)	<8	<9	<9	
3.1	<13	NR	<8		<9		<9	
3.2	<11	NR	<8	<9	<9		<9	
3.3	<10	NR	<8	<8		<9		<9
3.4	22±6	16±6	<8	<9		<8		<9
3.5	288±12	63±6	43±6	18±5	<9	<10		<8
3.6	118±9	148±9	28±7	<10	<9	<10	<9	<9
3.7	173±10	(2) 1822±28	73±6	51±7	<9	<8		<8

(1) #5 only; #6 insufficient sample

(2) also Ac-228:740±11

SAMPLE NUMBER/DEPTH INCREMENT

BORING #	#1	#2	#3,4	#5,6	#7,8	#9,10	#11,12	#13,14
	0-2 FT	2-4 FT	4-8 FT	8-12 FT	12-16 FT	16-20 FT	20-24 FT	24-28 FT
3.8	49±7	<9	16±6	<10		<9		<9
4.1	148±10	230±9	<8	<9 (1)		<8		<8
4.2	36±6	<14	<8	<9		<9		<9
4.3	<9	<9	<8	<9		<8		<9
4.4	31±7	144±3 (2)	176±3 (3)	32±2 (4)	<9	<9	<8	<8
4.5	46±7	<9	<8	<9		<9		<8
4.6	27±6	<10	11±6	<8		<8		<8
4.7	35±8	NR	10±5	<8	<8	<9		<8
4.8	41±7	<7	17±5	<8		<8		<8
4.9	26±6	<8	<8	<7		<7		<10

(1) #6 only; insufficient sample #5
 (2) Also Ac-228:46±1

(3) Also Ac-228:38±1
 (4) Also Ac-228:13±1

SAMPLE NUMBER/DEPTH INCREMENT

BORING #	#1	#2	#3,4	#5,6	#7,8	#9,10	#11,12	#13,14
	0-2 FT	2-4 FT	4-8 FT	8-12 FT	12-16 FT	16-20 FT	20-24 FT	24-28 FT
4.10	29±7	<9	<8	<8		<8		<10
4.11	<11	<8	<9	<9		<8		<8
5.1	37±6	<8	<8	<8		<9		<8
5.2	<9	<11	<9		<8		<8	
5.3	<9	<9	<8	<9		<8		<9
5.4	<8	<11	<8	11±5		<8		<9
5.5	<14	NR	<8	<10		<8		<8
5.6	18±5	<8	<9	<10		<9		<9
5.7	NR	<9	<8	<9		<9		<9
5.8	91±7	<10	21±6	<8	<11			<9

SAMPLE NUMBER/DEPTH INCREMENT

BORING #	#1	#2	#3,4	#5,6	#7,8	#9,10	#11,12	#13,14
	0-2 FT	2-4 FT	4-8 FT	8-12 FT	12-16 FT	16-20 FT	20-24 FT	24-28 FT
5.9	58±8	NR	24±6	14±7	<8	<8		<9
5.10	39±6	<10	14±6	<10	<8	<8		<9
5.11	<9	<8	18±5	<8		<8		<9
5.12	28±5	<11	11±5	16±5		<8		<9
5.13	25±6	<8	<8	<8		<8		<10
6.1	14±6	<9	<8	<10		<8		<8
6.2	55±6	13±7	<9	<11		<9		<9
6.3	37±7	NR	NR	NR	NR	NR	NR	NR
6.4	40±6	<8	<9	<10		<10		<8
6.5	67±7	41±7	<8	<7		<8		<10

SAMPLE NUMBER/DEPTH INCREMENT

BORING #	#1	#2	#3,4	#5,6	#7,8	#9,10	#11,12	#13,14
	0-2 FT	2-4 FT	4-8 FT	8-12 FT	12-16 FT	16-20 FT	20-24 FT	24-28 FT
6.6	36±9	13±5	<8	<9	<8	<8		<9
6.7	47±6	20±6	<9	<9	<12	<7		<8
6.8	45±6	<8	<8	<8		<8		<9
6.9	18±7	<8	<8	<9		<9		26±6
6.10	27±7	<7	<8	<8		<8		<10
6.11	14±6	NR	<12	<8		<8		<9
7.1	323±10	13±5	23±5	<8		<8		<8
7.2	88±7	<9	58±7		<8		<9	
7.3	173±9	17±6	42±6	14±5	<8		<8	
7.4	81±6	30±6	33±5	12±5		<8		<8

SAMPLE NUMBER/DEPTH INCREMENT

BORING #	#1	#2	#3,4	#5,6	#7,8	#9,10	#11,12	#13,14
	0-2 FT	2-4 FT	4-8 FT	8-12 FT	12-16 FT	16-20 FT	20-24 FT	24-28 FT
7.5	42±7	<8	10±5		<8		<8	
7.6	<9	<10	15±5		<9		<8	
7.7	40±7	<11	<8		<8		<8	
7.8	16±7	<8	<9		<8		<8	
8.1	186±8	<1	<9		<8		<8	
8.2	866±15	50±6	36±6	35±6	<8	<7		<8
8.3	97±7	NR	39±6	44±6	<7		<8	
8.4	38±6	22±6	10±5		<7		<8	
8.5	20±5	<8	<8		<7		<8	
8.6	24±5	<8	<7		<8		<8	

SAMPLE NUMBER/DEPTH INCREMENT

BORING #	#1	#2	#3,4	#5,6	#7,8	#9,10	#11,12	#13,14
	0-2 FT	2-4 FT	4-8 FT	8-12 FT	12-16 FT	16-20 FT	20-24 FT	24-28 FT
8.7	<8	<8	<7		<8		<8	
8.8	<9	<8	<8		<8		<9	
8.9	<10	<10	<8		<8		<7	
8.10	<9	<11	<9		<8		<8	
10.1	<11	NR	<10		<8		<8	
10.2	<8	<9	<9		<8		<8	
11.1	<8	NR	<8		<8		<8	
12.1	<8	<8	<8		<8		<7	
12.2	<10	<9	<8		<9		<8	
13.1	34±6	9±5	<8		<8		<8	

SAMPLE NUMBER/DEPTH INCREMENT

	#1	#2	#3,4	#5,6	#7,8	#9,10	#11,12	#13,14
<u>BORING #</u>	0-2 FT	2-4 FT	4-8 FT	8-12 FT	12-16 FT	16-20 FT	20-24 FT	24-28 FT
13.2	29±6	<10	<8		<8		<8	
A	<7	<9	<8	<9	<8	<8	<8	<8
C	28±6	<9	<9	<9	<9	<9	<8	<9

APPENDIX II
SUBSURFACE INVESTIGATION LOGS

Each boring location is presented on a separate page. Classification of soils and observations of groundwater levels were performed by the driller. An explanation of entries is shown first.

GENERAL INFORMATION & KEY TO SUBSURFACE LOGS

The Subsurface Logs attached to this report present the observations and mechanical data collected by the driller while at the site, supplemented by classification of the materials removed from the borings as determined through visual identification by technicians in the laboratory. It is cautioned that the materials removed from the borings represent only a fraction of the total volume of the deposits at the site and may not necessarily be representative of the subsurface conditions between adjacent borings or between the sampled intervals. The data presented on the Subsurface Logs together with the recovered samples will provide a basis for evaluating the character of the subsurface conditions relative to the proposed construction. The evaluation must consider all the recorded details and their significance relative to each other. Often analyses of standard boring data indicate the need for additional testing and sampling procedures to more accurately evaluate the subsurface conditions. Any evaluations of the contents of this report and the recovered samples must be performed by Professionals having experience in Soil Mechanics and Foundation Engineering. The information presented in the following defines some of the procedures and terms used on the Subsurface Logs to describe the conditions encountered.

- The figures in the Depth column defines the scale of the Subsurface Log.
- The Sample column shows, graphically, the exact depth range from which a sample was recovered. See Table I for a description of the symbols used to signify the various types of samples.
- The Sample No. is used for identification on sample containers and/or Laboratory Test Reports.
- Blows on Sampler - shows the results of the "Penetration Test", recording the number of blows required to drive a split spoon sampler into the soil beneath the casing. The number of blows required for each six inches penetration is recorded. The total number of blows required for the total 12 inches of penetration are summarized in the "N" column. The outside diameter of the sampler, the hammer weight and the length of drop are noted at the bottom of the Subsurface Log.
- Blows on Casing - shows the number of blows required to advance the casing a distance of 12 inches. The casing size, the hammer weight and the length of drop are noted at the bottom of the Subsurface Log. If the casing is advanced by means other than driving, the method of advancement will be indicated in the Notes column or under Method of Investigation at the bottom of the Subsurface Log.
- All recovered soil samples are reviewed in the laboratory by technicians. The visual descriptions are made on a basis of the sample as recovered and in accordance with the Unified Classification System. Guide Lines for the terms used in descriptions are presented in Tables II and III. The description of the relative soil compactness or consistency is based upon the penetration records as defined in Table IV. The description of the soil moisture is based upon the condition of the sample as recovered. The moisture condition is described as dry, damp, moist or wet. Water used to advance the boring may have affected the in-situ moisture content of the sample. Special terms are used to describe materials in greater detail, several such terms are listed in Table V. When sampling gravelly soils with a standard two-inch diameter split spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter. The presence of boulders and large gravel's sometimes, but not necessarily, detected by an evaluation of the casing and sampler blows or through the action of the drill rig as reported by the driller.
- The description of rock shown is based upon the recovered rock core. Terms frequently used in the description are included in Table VI.
- Miscellaneous observation and procedures noted by the driller are shown in this column, including water level observations. It is important to realize that the reliability of the water level observations depend upon the soil type (water does not readily stabilize in a hole through fine grained soils), and that drill water used to advance the borings may have influenced the observations. The ground water level typically will fluctuate seasonally. One or more perched or trapped water levels may exist in the ground seasonally. All the available readings should be evaluated if definite conclusions cannot be made, it is often prudent to examine the conditions more thoroughly through test pit excavations or water observation installations.
- The length of core run is defined as length of penetration between retrievals of the core barrel from the bore hole, expressed in feet and tenths of feet. The core recovery expresses the length of core recovered from the core barrel per core run, adjacent. The size core barrel used is also noted. The more commonly used sizes of core barrels are denoted "AX" and "NX". The "NX" core, being larger in diameter than "AX" core, often produces better recovery, and is frequently utilized where accurate information regarding the geologic conditions and engineering properties is needed. The "NX" core barrel requires the use of four inch diameter casing.

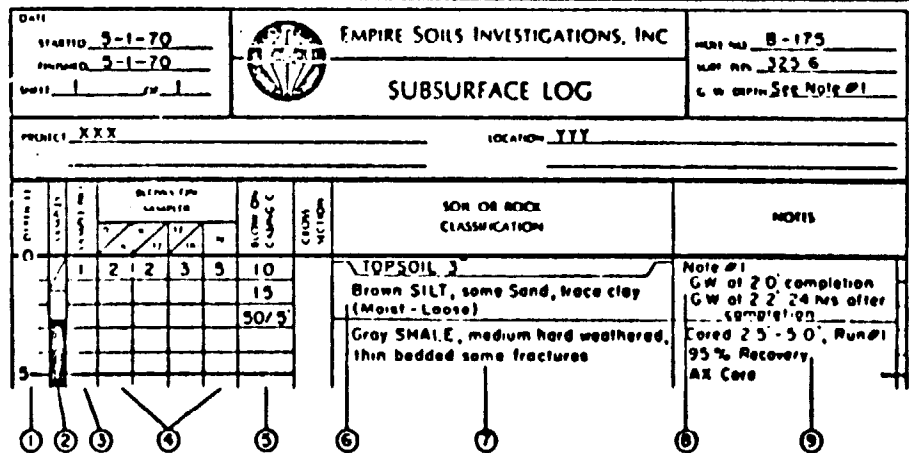


TABLE I

	Split Spoon Sample
	Shells Tube Sample
	Auger or Pit Sample
	Rock Core

TABLE II

Identification of soil type is made on basis of an estimate of particle sizes, and in the case of fine grained soils also on basis of plasticity.

Soil Type	Soil Particle Size	
Boulder	>12"	Coarse Grained (Granular)
Cobble	3" - 12"	
Gravel - Coarse	3/4" - 3/4"	
- Fine	3/4" - #4	
Sand - Coarse	#4 - #10	Fine Grained
- Medium	#10 - #40	
- Fine	#40 - #200	
Silt - Non Plastic (Granular)	<#200	
Clay - Plastic (Cohesive)	<#200	

TABLE III

The following terms are used in classifying soils consisting of mixtures of two or more soil types. The estimate is based on weight of total sample.

Term	Percent of Total Sample
"sand"	35 - 50
"silt"	20 - 35
"clay"	10 - 20
"trace"	less than 10

(When sampling gravelly soils with a standard split spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter.)

TABLE IV

The relative compactness or consistency is described in accord with the following terms:

Term	Granular Soils Blows per Foot, N	Cohesive Soils Blows per Foot, N
Loose	< 10	Very Soft < 2
Firm	11 - 30	Soft 3 - 5
Compact	31 - 50	Medium 6 - 15
Very Compact	> 51	Stiff 16 - 25
		Hard > 26

(Large particles in the soils will often significantly influence the blows per foot recorded during the Penetration Test.)

TABLE V

Varied - Alternating layers, seams, and patches of soils.
Layer - Soil deposit more than 6" thick.
Seam - Soil deposit less than 6" thick.
Parting - Soil deposit less than 1/8" thick.
Uniform - All grains are of about the same diameter.

TABLE VI

Rock Classification Terms	Manner	
	Hardness	Weathering
Hardness	Soft Medium Hard Hard Very Hard	Scratched by fingernail Scratched easily by penknife Scratched with difficulty by penknife Cannot be scratched by penknife
Weathering	Very Weathered Weathered Sound	Judged from the relative amounts of disintegrating iron staining, core recovery, clay seams, etc.
Bedding	Laminated Thin bedded Bedded Thick bedded Massive	Natural breaks in Rock Layers

(Fracturing refers to natural breaks in the rock oriented at some angle to the rock layers.)

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 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-1-3
 SURF ELEV. _____
 G. W. DEPTH. See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24			
0		1	2	15		20		Dk. Brown fine SAND & GRAVEL, Some Silt	Note #1: Ground water level @ 7.3', w/casing at 15.0'
			5	5					
		2	5	5		10		-grades brown fine SAND, Some Silt	
			5	5					
		3	4	2		4		-trace organics noted	
			2	5					
		4	8	7		15			
			8	9					
		5	6	6		12			
			6	7				-grades "AND" SILT	
10		6	10	9		17			
			8	8					
		7	8	7		13			
			6	6					
		8	9	10		20			
15			10	10				(Moist to Wet-Loose to Firm)	
		9	12	8		16		Gray SILT w/seam of brown fine SAND noted	
			8	5					
		10	18	20		38			
			18	17					
20		11	11	12		24		-grades grey fine SAND & SILT	
			12	12					
		12	12	11		22			
			11	7					
		13	12	9		17			
25			8	8				(Wet-Compact to Firm)	
		14	6	4		10		Grey SILT	
			6	6					
		15	12	11		22			
30			11	10				(Wet-Loose to Firm)	
								END OF BORING @ 30.0'	

N = No blows to drive 2 "spoon 12" with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____" with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/17/81
 FINISHED 3/17/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

SOLE NO. B-1-4
 SURF ELEV. _____
 C. W. DEPTH. See note #1

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER					BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24	N			
0	/	1	3	4			31	Brown Fine SAND & GRAVEL, little silt -grades brown fine SAND, little silt (Moist-Compact to Firm)	Note #1: Groundwater level @ 9.4', with casing at 10.0' Note #2: WOR - indicates split spoon advanced six inches under weight of drill rods alone	
			27	12						
5	/	2	9	9			17	Brown SILT and fine SAND -seam of organic material noted		
			8	8						
10	/	3	5	3			4	-trace wood frags noted		
			1	1						
15	/	4	1	WOR			1	(Moist to Wet-Loose to Firm)		
			WOR	5						
20	/	5	3	1			3	Grey fine SAND & SILT, w/seams of grey CLAY noted		
			2	3						
25	/	6	3	10			11	Grey SILT, trace fine gravel		
			1	8						
30	/	7	8	9			13	(Wet-Firm to Loose)		
			4	4						
35	/	8	3	3			8	Grey SILT, trace fine gravel		
			5	5						
40	/	9	5	5			6	(Wet-Loose to Firm)		
			1	6						
45	/	10	5	6			15	End of Boring @ 30.0'		
			9	6						
50	/	11	5	5			9			
			4	4						
55	/	12	5	4			7			
			3	2						
60	/	13	8	7			14			
			7	8						
65	/	14	3	2			6			
			4	6						
70	/	15	7	9			18			
			9	11						

N = No blows to drive 2 "spoon. 12" with 140 lb. pin wt. falling 30 ft. per blow
 C = No blows to drive _____ "casing" with _____ lb. weight falling _____ ft. per blow.
 METHOD OF INVESTIGATION 2 1/2" L.D. HSAC

CLASSIFICATION Visual by
Driller

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DATE
 STARTED 3/16/81
 FINISHED 3/16/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-1-5
 SURF. ELEV. _____
 G. W. DEPTH. See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW UN CASING	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0		1	6	6		14	Brown SILT & fine SAND, Some fine Gravel (FILL)	Note #1: Groundwater level @ 7.3', with casing at 10.0'	
		8	7						
		2	6	6		13			
		7	6						
5		3	11	3		10	-trace wood frags noted		
		7	7						
		4	62	2		7	-seams of organic material noted (Moist-Firm to Loose)		
		5	3						
		5	4	1		3	Brown fine SAND, Some Silt, Grades grey		
		2	3						
10		6	1	3		6			
		3	2						
		7	4	2		6			
		4	4						
15		8	6	5		9			
		4	10						
		9	5	4		7			
		3	5						
		10	8	6		12			
		6	5						
20		11	7	8		19			
		11	10						
		12	6	6		11			
		5	6						
25		13	10	8		18			
		10	9						
		14	12	11		22			
		11	15						
		15	11	12		25			
		13	13						
30							(Wet-Loose to Firm)		
							End of Boring @ 30.0'		

N = No blows to drive 2 "spoon" 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing" _____ "with _____ lb. weight falling _____ "per L. W.
 METHOD OF INVESTIGATION 2 1/4" HSAC

CLASSIFICATION Visual by
Driller

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DATE
 STARTED 3-16-81
 FINISHED 3-16-81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

MOLE NO. B-1-6
 SURF. ELEV. _____
 C. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0		1	2	3		8	Brown fine SAND, little silt	Note #1: Groundwater level @ 16.2', with casing at 28.0' Note #2: Driller notes void 6-8' WOR-indicates split spoon advanced six inches under weight of drill rods alone	
			5	6					
		2	6	6		10			
			4	4					
5		3	1	1		2			
			1	1					
		4	1	WOR		1	no recovery		
			WOR	WOR					
		5	5	5		9			
			4	6					
10		6	11	11		13	-grades Some Silt, little fine gravel		
			2	4					
		7	3	3		5	-trace organics noted (Moist to Wet-Loose)		
			2	3					
15		8	2	1		2	Brown SILT & fine SAND, trace wood frags		
			1	2					
		9	9	3		7	-trace organic material noted (Wet-Loose)		
			4	8					
		10	10	9		15	Grey SILT and fine SAND		
			6	10					
20		11	24	11		21			
			10	11					
		12	8	8		16			
			8	8					
		13	14	11		20			
25			9	9					
		14	9	9		18			
			9	10					
		15	13	10		14			
			4	8			(Wet-Firm)		
30							End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12" with 140 lb pin wt. falling 30" per blow
 C = No blows to drive _____ "casing _____" with _____ lb. weight falling _____" per blow.
 METHOD OF INVESTIGATION 2 1/4" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DATE
 STARTED 3/16/81
 FINISHED 3/16/81
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EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-1-7
 SURF. ELEV. _____
 G. W. DEPTH See Note #1

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
		0-6	6-12	12-18	N			
0	1	3	2		7	Brown fine SAND, Some Silt	Note #1: Ground water level @ 11.1' with casing at 15.0'	
		5	12					
	2	9	8		12	- no recovery		
		4	3					
5	3	3	2		4			
		2	2					
	4	4	4		8			
		4	4					
	5	5	7		14			
		7	7					
10	6	5	5		9			
		4	4					
	7	4	4		6	- trace organic material noted		
		2	1					
15	8	4	6		11			
		5	3			(Moist to Wet- Loose to Firm)		
	9	3	3		7	Brown SILT and fine SAND (Wet-Loose)		
		4	3					
	10	4	4		9	Grey-brown SILT & CLAY (Wet-Medium)		
		5	6					
20	11	5	5		11	Grey SILT and fine SAND		
		6	5					
	12	5	5		10	- grade grey SILT		
		5	6					
25	13	5	5		10			
		5	5					
	14	6	7		14			
		7	8					
	15	6	7		15			
		8	8			(Wet-Loose to Firm)		
30						END OF BORING @ 30.0'		

N = No blows to drive 2 "spoon. 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/4" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

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DATE
 STARTED 3/25/81
 FINISHED 3/26/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-1-8
 SURF ELEV. _____
 C W DEPTH See Note #1

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0		1	1	1		2	Brown fine SAND, little silt	Note #1: Ground water level @ 7.0' w/casing to 20.0'	
		1	1	1					
		2	1	1		3	-grades reddish-brown (wet)		
		2	3						
5		3	2	3		5	(Wet-Loose)		
		2	4						
		4	3	4		9			
		5	5	3			Brown SILT		
		5	2	1		2			
		1	1	1			Mottled grey-brown SILT		
10		6	1	1		2			
		1	1	1					
		7	4	6		15	(Wet-Loose to Firm)		
		9	9	7					
15		8	5	5		12	Grey SILT		
		7	7	6					
		9	5	5		12			
		7	7	7			(Wet-Firm)		
		10	7	7		18			
		11	11	11			End of Boring @ 30.0'		
20		11	11	9		17			
		8	8	7					
		12	4	4		10	(Wet-Loose to Firm)		
		6	6	5					
25		13	3	4		9	End of Boring @ 30.0'		
		5	5	4					
		14	5	6		13			
		7	7	8			(Wet-Loose to Firm)		
		15	15	10		19			
30		9	9	11			End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by
Driller

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DATE
 STARTED 3/19/81
 FINISHED 3/20/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-2-1
 SURF ELEV. _____
 C W DEPTH See Note #1

SUBSURFACE LOG

PROJECT N.L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER					BLOW ON CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24	N			
0		1	1	4			8	Brown fine SAND, little silt	Note #1: At completion of boring, ground satur. level @ 16.0'	
			4	4						
		2	5	4			8	- little fine gravel noted		
			4	4						
5		3	5	5			10	- grades "Some" Silt		
			5	7						
		4	4	7			14			
			7	8						
		5	5	4			12			
			8	7						
10		6	4	6			12	- grades "and" SILT		
			6	6						
		7	6	2			4			
			2	2						
		8	5	5			12			
15			7	7				(Moist to Wet-Loose to Firm)		
		9	6	4			9	Grey SILT		
			5	5						
		10	5	4			11			
			7	7						
20		11	7	5			10			
			5	5						
		12	7	3			8			
			5	5						
		13	2	4			12			
25			8	8						
		14	4	4			8			
			4	4						
		15	3	3			7			
			4	5				(Wet-Firm to Loose)		
30								End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 21.1 I.D. U.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/19/81
 FINISHED 3/19/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-2-2
 SURF ELEV. _____
 C W DEPTH. See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLE NO	BLOWS ON SAMPLER				BLOW UP CASING	SOIL OR ROCK CLASSIFICATION	NOTES
		0-6	6-12	12-18	18-24			
0	1	2	2		5	Brown fine SAND and GRAVEL, little silt	Note #1: At completion of boring, groundwater @ 10.8	
		3	4					
	2	7	6		11	-grades fine SAND, little silt, trace wood frags		
		5	4					
5	3	5	8		16			
		8	15					
	4	14	12		22			
		10	10					
	5	5	5		11			
		6	6					
10	6	7	7		14			
		7	7					
	7	6	7		14			
		7	8					
15	8	3	4		6			
		2	1					
	9	14	16		34			
		18	10					
	10	8	8		16	(Moist to Wet-Loose to Compact)		
		8	7			Grey SILT		
20	11	5	5		10			
		5	8					
	12	6	5		10			
		5	6					
25	13	6	7		17	(Wet - Loose to Firm)		
		10	11					
	14	6	7		15	Grey SILT & CLAY		
		8	8					
	15	4	4		10			
		6	6			(Wet-Medium)		
30						End of Boring @ 30.0'		

N = No blows to drive 2 "spoon, 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ " weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" L.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/19/81
 FINISHED 3/19/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

MOLE NO. B-2-4
 SURF ELEV. _____
 C. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N.L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW LN CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24			
0		1	6	9		19	Brown fine SAND and GRAVEL, little silt	Note #1: At completion of boring ground, water @ 8.0' Note #2: WOR-Indicates split spoon advanced six inches under weight of drill rods alone.	
		10	9						
		2	4	4		9	- grades fine SAND, little silt		
		5	6						
5		3	8	15		36			
		21	12						
		4	3	4		8			
		4	5						
		5	1	WOR		1			
10		1	1				(Moist to Wet-Compact to Loose)		
		6	4	2		5	Grey SILT, Some fine Sand		
		3	3						
		7	9	16		28			
		12	20						
15		8	6	6		18			
		12	11						
		9	9	7		14			
		7	7						
		10	7	8		17			
		9	9				(Wet-Loose to Firm)		
20		11	7	4		6	Grey SILT		
		2	3						
		12	4	4		8			
		4	4						
25		13	6	3		7	(Wet-Loose)		
		4	5						
		14	9	4		7	Grey SILT & CLAY		
		3	3						
		15	4	4		8			
		4	4				(Wet-Medium)		
30							End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/4" ID. HISC.

CLASSIFICATION Visual by Driller

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DATE STARTED 3/19/81
 FINISHED 3/19/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-2-5
 SURF ELEV. _____
 C. W. DEPTH See Note #1

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLE NO	BLOWS ON SAMPLER				BLOW UP CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
		0-6	6-12	12-18	N			
0	1	2	6		15	Brown fine SAND & GRAVEL, little silt	Note #1: At completion of boring, groundwater level @ 8.3'	
	2	4	3		5	-grades Fine SAND, little silt (Moist-Firm to Loose)		
	3	4	3		5	Brown SILT, Some Fine Sand		
5	4	5	3		4	-Seams of organic material noted		
	5	3	3		6			
10	6	1	1		2			
	7	4	3		7			
	8	4	3		6			
15	9	2	4		11	(Moist to Wet-Loose to Firm)		
	10	2	3		7	Fine SAND, Some Silt (Wet-Loose)		
20	11	5	9		18	Grey SILT		
	12	6	4		9			
25	13	2	2		5	(Wet-Firm to Loose)		
	14	5	4		7	Grey SILT & CLAY		
	15	2	2		5	(Wet-Medium to Soft)		
30						End of Boring @ 30.0'		

N = No. blows to drive 2 "spoon" 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No. blows to drive _____ "casing" _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/18/81
 FINISHED 3/19/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-2-6
 SURF ELEV. _____
 C. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N.L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0	/	1	5	7		15	Brown fine SAND, little silt - grades "Some" Silt	Note #1: Groundwater level @ 7.0' w/casing to 10.0'	
		8	11						
2	/	17	14		25	(*Moist - Firm to Loose)			
		11	10						
3	/	7	3		5	Brown SILT & fine SAND, trace glass frags (Fill) (Wet-Loose)			
		2	1						
4	/	4	2		5	Fine SAND, Some Silt, w/seams of organic material noted.			
		3	1						
5	/	6	4		6	(Wet-Loose)			
		2	2						
6	/	8	4		6	Grey SILT			
		2	2						
7	/	3	3		6	(Wet-Firm to Loose)			
		3	3						
8	/	2	2		4	End of Boring @ 30.0'			
		2	2						
9	/	5	4		7				
		3	2						
10	/	5	5		10				
		5	5						
11	/	4	5		10				
		5	6						
12	/	5	5		10				
		5	5						
13	/	5	5		13				
		8	9						
14	/	11	4		7				
		3	3						
15	/	3	3		6				
		3	3						

N = No blows to drive 2 "spoon 12" "with 140 lb pin wt. falling 30" per blow
 C = No blows to drive _____ "casing" "with _____ lb. weight falling _____" per blow.
 METHOD OF INVESTIGATION 2 1/2" T.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3-18-81
 FINISHED 3-18-81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

MOLE NO. B-2-7
 SURF. ELEV. _____
 G. W. DEPTH. See Note #1

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW UN CASING	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24			
0		1	3	3		10	Lt. to dk. brown fine SAND, Some Silt	Note #1: Groundwater level @ 7.8' with casing to 10.0'	
		7		3					
		2	5	9		12	(Moist-Firm to Loose)		
		3	3	7					
5		3	5	3		7	Brown SILT, Some fine Sand (Moist-Loose)		
		4	4	4		8			
		4	4	4			Brown fine SAND, Some Silt		
		5	3	3		6			
			3	2			-grades "AND" SILT		
10		6	6	8		14			
			6	9			-grades Some Silt		
		7	8	7		10			
			3	3			(Wet-Firm to Loose)		
15		8	1	2		4			
			2	4			Grey SILT		
		9	4	4		8			
			4	5			(Wet-Loose to Firm)		
		10	4	4		10			
			6	6			End of Boring @ 30.0'		
20		11	3	4		10			
			6	6					
		12	4	4		8			
			4	4					
25		13	5	5		14			
			9	7					
		14	5	7		14			
			7	5					
		15	12	11		21			
			10	10					
30									

N = No blows to drive 2 "spoon 12" with 110 lb pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____" with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/4" I.D. H.S. S.C.

CLASSIFICATION Visual by
Driller

DS-4

DATE
 STARTED 3/20/81
 FINISHED 3/20/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-3-1
 SURF ELEV. _____
 C. W. DEPTH. See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW UN CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24			
0		1	2	2		5	Brown fine SAND, little silt	Note #1: At completion of boring, no free water in hole	
		3	2						
		2	3	3		5			
		2	2						
5		3	4	3		4			
		1	1						
		4	4	3		7			
		4	4						
		5	7	7		14			
		7	7						
10		6	6	4		10	Brown SILT and fine SAND		
		6	6	5					
		7	5	3		7	-trace fine gravel noted		
		4	4						
15		8	6	8		22	-grades brown SILT (Moist-Firm)		
		14	14						
		9	7	7		14	Grey SILT		
		7	7	6					
20		11	8	7		15	(Wet-Firm)		
		8	8	7					
		12	8	7		15	Grey SILT & CLAY		
		8	8	8					
25		13	4	4		10	-no recovery (Wet-Medium to Very Soft)		
		6	4						
		14	4	3		5	End of Boring @ 30.0'		
		2	2						
		15	2	1		2			
30		1	1						

N = No blows to drive 2 "spoon" 12 "with 140 lb pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing" _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/4" I.D. R.S.A.C.

CLASSIFICATION Visual by
Driller

DS-4

DATE 3/23/81
 STARTED 3/23/81
 FINISHED 3/23/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-3-2
 SURF ELEV. _____
 G. W. DEPTH. See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLE NO	BLOWS ON SAMPLER				BLOW UN CASING	SOIL OR ROCK CLASSIFICATION	NOTES
		0-6	6-12	12-18	N			
0	1	2	4		8		Note #1: At completion of boring, no free water in hole	
		4	6					
	2	5	3		6	-no recovery		
		3	3					
	3	4	4		8			
		4	4					
	4	5	3		8			
		5	7					
	5	5	3		7	-grades "and" SILT		
		4	4					
10	6	4	5		11			
		6	6					
	7	5	2		4			
		2	2					
15	8	6	5		11			
		6	6					
	9	5	6		12	-seam of grey SILT noted		
		6	11					
	10	4	4		12			
		8	9					
20	11	8	7		14	-grades grey (Moist to Wet-Loose to Firm)		
		7	7					
	12	4	5		11	Grey SILT		
		6	4					
	13	5	4		8			
		4	4					
25	14	2	3		10			
		7	7					
	15	9	8		14			
		6	6			(Wet-Loose to Firm)		
30						End of Boring @ 30.0'		

N = No blows to drive 2 "spoon" 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing" with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. U.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/24/81
 FINISHED 3/24/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

MOLE NO. B-3-4
 SURF. ELEV. _____
 G. W. DEPTH. See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0		1	6	9		19	Brown fine SAND and GRAVEL, little silt	Note #1: At completion of boring, groundwater level @ 8.8'	
		10	10						
		2	9	8		18	-grades "and" SILT, Some fine Gravel (Moist-Firm)		
		10	11						
5		3	7	7		12	Brown fine SAND and SILT		
		5	18						
		4	7	3		7	-(wet)		
		4	7						
		5	2	2		5			
		3	7						
10		6	5	5		10			
		5	5						
		7	5	7		15			
		8	8						
15		8	3	3		8			
		5	7						
		9	12	16		28	(Moist to Wet-Loose to Firm)		
		12	13						
		10	16	17		33			
		16	16						
20		11	14	13		21			
		8	7						
		12	7	7		11			
		4	5						
25		13	7	9		17		Grey SILT	
		8	8						
		14	5	7		11	(Wet-Firm)		
		4	3						
		15	5	5		12			
		7	9						
30							End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by
Driller

DATE STARTED 3/24/81
 FINISHED 3/24/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-3-5
 SURF. ELEV. _____
 C. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0		1	2	5		13	Brown fine SAND and GRAVEL, little silt	Note #1: At completion of boring groundwater level @ 6.0' Note #2: WOR - indicates split spoon advanced six inches under weight of drill rods alone	
			8	15					
		2	3	4		8			
			4	4					
		3	3	2		3	-grades "Some" Silt, little fine gravel (Moist-Firm to Loose)		
5			1	WOR					
		4	1	1		3	Brown fine SAND and SILT, trace organics		
			2	3					
		5	1	5		8			
			3	3			(Wet-Loose)		
10		6	4	8		15	Brown fine SAND and SILT		
			7	7					
		7	4	9		12			
			3	2					
		8	5	10		14	-grades Some fine Gravel		
15			4	2					
		9	5	5		12			
			7	7					
		10	6	8		16			
			8	6					
20		11	3	3		7	(Wet-Firm to Loose)		
			4	7			Grey SILT		
		12	5	6		13			
			7	5					
		13	5	6		13			
25			7	8					
		14	3	5		10			
			5	7					
		15	3	6		14			
			8	9			(Wet-Loose to Firm)		
30							End of Boring @ 30.0'		

N = No blows to drive 2 "spoon. 12 "with 140lb. pen wt. falling 30 "per blow
 C = No blows to drive _____ "rasing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. U.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/24/81
 FINISHED 3/24/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-3-6
 SURF ELEV. _____
 C W DEPTH. See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER					BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24	N			
0		1	5	9			20	Brown fine SAND, Some Silt, Some fine Gravel	Note #1: At completion of boring, ground water level @ 9.0' Note #2: WOR-indicates split spoon advanced six inches under weight of drill rods alone	
			11	14						
		2	15	21			38	(Moist-Firm to Compact)		
			17	19						
		3	33	16			24	Brown fine SAND, Some Silt		
5			8	5				-seam of organic material noted		
		4	5	8			14			
			6	6						
		5	5	3			4			
10			1	WOR						
		6	2	2			4			
			2	1						
		7	5	8			16			
			8	8						
		8	3	2			3	-grades "AND" SILT		
15			1	1						
		9	1	WOR			1	(Moist to Wet-Firm to Loose)		
			1	WOR						
		10	6	4			14	Grey SILT		
			10	11						
20		11	6	8			15			
			7	5						
		12	5	5			10			
			5	4						
		13	3	3			6			
			3	3						
		14	3	3			7			
			4	5				(Wet-Firm to Loose)		
		15	3	4			8	Grey SILT & CLAY		
			4	7				(Wet-Medium)		
30								End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. U.S.A.C.

CLASSIFICATION Visual by
Driller

DS-4

DATE
 STARTED 3/24/81
 FINISHED 5/24/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-3-7
 SURF. ELEV. _____
 G.W. DEPTH See Note #1

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24			
0		1	3	7		15	Brown fine SAND and GRAVEL, little silt, trace brick frags noted (Fill)	Note #1: At completion of boring, no free water in hole	
			8	14					
		2	1	8		14	(Moist-Firm)		
			6	5					
5		3	6	7		12	Brown fine SAND, little silt		
			5	5					
		4	6	7		10	-grades "Some" Silt		
			3	2					
		5	3	3		6	(Moist to Wet-Firm to Loose)		
			3	2					
10		6	9	6		12	Grey SILT		
			6	8					
		7	4	3		5	(Wet-Loose to Firm)		
			2	2					
		8	2	2		5	Grey SILT & CLAY		
			3	2					
15		9	2	1		3	(WET-STIFF)		
			2	2					
		10	4	3		7	End of Boring @ 30.0'		
			4	4					
		11	4	4		8			
			4	4					
20		12	7	8		14			
			6	8					
25		13	8	8		17			
			9	9					
		14	8	8		16			
			8	9					
30									

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. U.S.A.C.

CLASSIFICATION Visual by
Driller

DS-4

DATE
 STARTED 3/26/81
 FINISHED 3/26/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-3-8
 SURF. ELEV. _____
 C. W. DEPTH. See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0		1	4	3		6	Brown fine SAND and GRAVEL, little silt	Note #1: At completion of boring, no free water in hole	
		3	3						
		2	3	2		3	-grades brown fine SAND, Some Silt, trace organic material		
		1	1						
		3	1	1		4	-trace brick frags noted (FILL)		
		3	3						
		4	1	3		5	-seams of organic material noted (WET)		
		2	3						
		5	4	4		8	(Moist to Wet-Loose)		
		4	4						
		6	2	3		6	Grey SILT and fine SAND		
		3	2						
		7	2	3		7	-grades grey SILT		
		4	5						
		8	2	3		6	-trace organic material noted		
		3	3						
		9	3	4		8	(Wet-Loose)		
		4	4						
		10	3	4		9	Grey SILT and CLAY		
		5	4						
		11	4	4		8	(Wet-Medium)		
		4	4						
		12	4	4		8	End of Boring @ 30.0'		
		4	4						
		13	3	3		7			
		4	5						
		14	4	5		10			
		5	6						
		15	6	1		7			
		6	4						

N = No blows to drive 2 "spoon 12" with 140 lb. pin wt. falling 30" per blow
 C = No blows to drive _____ "casing _____" with _____ lb. weight falling _____" per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/25/81
 FINISHED 3/25/81
 SHEET 1 of 1



EMPIRE SOILS INVESTIGATIONS, INC.

MOLE NO. B-4-1
 SURF ELEV. _____
 C W DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24			
0		1	1	3		6	Brown fine SAND, little silt, trace concrete and brick frags	Note #1: Groundwater level @ 8.5' w/casing to 15.0'	
		3	6						
		2	6	5		8			
		3	5						
5		3	4	6		14	-seam of brown SILT noted		
			8	7					
		4	4	4		9	-grades "Some" Silt		
			5	5					
		5	5	5		11			
			6	8			(Moist to Wet-Loose to Firm)		
10		6	6	5		13	Brown SILT		
			8	8					
		7	8	4		6			
			2	1					
15		8	7	6		15			
			9	11					
		9	8	3		9	-grades grey		
			6	1					
		10	7	9		20			
			11	11					
20		11	7	3		7			
			4	10					
		12	5	4		9			
			5	5					
25		13	5	6		16			
			10	9					
		14	4	5		10			
			5	3					
		15	9	8		17			
			9	12			(Wet-Loose to Firm)		
30							END OF BORING @ 30.0'		

N = No blows to drive 2 "spoon 12" with 140 lb. pin wt. falling 30" per blow
 C = No blows to drive _____ "casing _____" th _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/4" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DATE
 STARTED 5/25/81
 FINISHED 5/25/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-4-2
 SURF ELEV. _____
 C. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24			
0		1	2	9		16	Brown fine SAND, little silt	Note #1: Groundwater level @ 9.0' w/casing to 10.0'	
			7	8					
		2	14	11		20			
			9	13					
5		3	4	9		21			
			12	11					
		4	7	8		14			
			6	6					
		5	11	6		14			
			8	9					
10		6	5	4		6			-trace organic material noted
			2	2					
		7	5	4		12			
			8	8					
15		8	9	5		13			
			8	10					
		9	4	5		14	-grades grey		
			9	6					
		10	7	6		14	-trace organic material noted (Moist to Wet-Loose to Firm)		
			8	6					
20		11	4	5		11	Grey SILT		
			6	5					
		12	6	7		14			
			7	8					
25		13	4	7		14			
			7	10					
		14	7	6		12			
			6	6					
		15	11	11		21			
			10	7					
30							(Wet-Firm)		
							END OF BORING @ 30.0'		

N = No blows to drive 2 "spoon 12" with 110 lb pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____" with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/24/81
 FINISHED 3/24/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-4-3
 SURF. ELEV. _____
 G. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER					BLOW LN CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24	N			
0		1	3	5		12		Brown fine SAND, little silt	Note #1: Groundwater level @ 10.0' (w/casing to 20.0')	
			7	13						
		2	16	15		27		-trace wood frags noted		
			12	12						
5		3	9	7		18		-grade trace organic material		
			11	11						
		4	7	7		15		(Moist to Wet-Firm to Loose)		
			8	5						
		5	2	3		11		Grey fine SAND, Some Silt		
			8	9						
10		6	8	8		10		-grades little silt		
			2	2						
		7	2	1		2		-grades trace organic material'		
			1	2						
		8	2	3		7		(Wet-Loose to Firm)		
			4	6						
15		9	4	3		6		Grey SILT		
			3	6						
		10	20	8		16		(Wet-Loose to Firm)		
			8	12						
20		11	8	8		17				
			9	11						
		12	6	11		17				
			6	5						
25		13	10	10		19		(Wet-Loose to Firm)		
			9	13						
		14	7	4		8		End of Boring @ 30.0'		
			4	6						
		15	11	11		19				
30			8	9						

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No. bl. to drive "casing" with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/24/81
 FINISHED 3/24/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-4-4
 SURF ELEV. _____
 C W DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER					BLOW ON CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			D	6	12	18-	N			
0	/	1	3	8			18	Brown fine SAND, little silt, trace wood frags	Note #1: Ground water level @ 7.4' w/casing to 10.0'	
			10	7						
5	/	2	8	10			15			
			5	4						
5	/	3	2	4			7			
			3	4						
5	/	4	4	5			14	(Moist to Wet-Loose to Firm)		
			9	6						
5	/	5	4	2			4	Dk. Brown SILT (Wet-Loose)		
			2	1						
10	/	6	1	1			4	Grey SILT		
			3	1						
10	/	7	1	1			3	(Wet-Loose)		
			2	2						
10	/	8	1	1			4	Grey fine SAND, Some Silt		
			3	3						
10	/	9	3	2			5	- seams of organic material noted		
			3	3						
20	/	10	1	4			12			
			8	7						
20	/	11	4	4			9	(Wet-Loose to Firm)		
			5	10						
20	/	12	4	6			10	Grey SILT		
			4	4						
25	/	13	7	7			14	- Trace organic material noted		
			7	6						
25	/	14	3	3			8			
			5	6						
30	/	15	10	8			15	(Wet-Loose to Firm)		
			7	6						
30							End of Boring @ 30.0'			

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/4" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/24/81
 FINISHED 3/24/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-4-5
 SURF ELEV. _____
 C. W. DEPTH. See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW UP CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24			
0		1	3	7		18	Fill: Brown fine SAND, little silt	Note #1: At completion of boring no free water in hole Note #2: WOR-indicates split spoon advanced six inches under weight of drill rods alone	
			11	22					
		2	18	18		39			
			21	18					
5		3	5	3		22	- grades Dk. Brown (Moist- Compact to Firm)		
			19	17					
		4	4	14		28			
			14	17					
		5	8	1		2	Dark Brown fine SAND & GRAVEL, little silt		
			1	1					
10		6	WOR	1		2	- grades Dk. Brown fine SAND, little silt		
			1	1					
		7	3	5		11			
			6	4					
15		8	5	5		9	- trace organic noted (Moist to Wet-Loose to Firm)		
			4	3					
		9	3	4		9	Grey SILT		
			5	7					
		10	3	6		13	- seam of grey fine SAND noted		
			7	6					
20		11	2	4		13			
			9	7					
		12	3	6		13			
			7	6					
25		13	9	6		13			
			7	6					
		14	6	4		9	(Wet - Firm to Loose)		
			5	6					
30							End of Boring @ 28.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by _____
 Driller _____

DS-4

DATE
 STARTED 3/23/81
 FINISHED 3/24/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

MOLE NO. B-4-6
 SURF ELEV. _____
 C. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW LN CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24			
0		1	4	5		10	Brown fine SAND, little silt	Note #1: At completion of boring, no free water in hole	
			5	5					
		2	2	1		4	- trace organic material noted (Moist-Loose)		
			3	1					
5		3	3	36		50	Dk Brown fine SAND and GRAVEL, little silt		
			14	6					
		4	3	2		6	- grades "Some" Silt		
			4	2					
		5	4	2		3	- no recovery (Moist-Compact to Loose)		
			1	2					
10		6	1	1		2	Brown fine SAND, Some Silt		
			1	3					
		7	2	2		7			
			5	8					
15		8	5	4		10			
			6	4					
		9	4	6		9	(Wet-Loose)		
			3	2			Grey SILT		
		10	3	3		7			
			4	3					
20		11	2	2		5			
			3	4					
		12	4	6		11			
			5	4					
25		13	5	6		12			
			6	5					
		14	5	6		13			
			7	10					
		15	13	13		22			
			9	4			(Wet-Loose to Firm)		
30							End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/4" I.D. H.S.A.C.

CLASSIFICATION Visual by
Driller

DS-4

DATE
 STARTED 3/27/81
 FINISHED 3/27/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-4-7
 SURF. ELEV. _____
 G. W. DEPTH. See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW UP CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24			
0		1	2	4		8	Brown fine SAND, little silt, trace organic material	Note #1: At completion of boring, no free water in hole	
			4	6					
		2	10	5		11			
			6	4					
		3	1	1		3			
5			2	3					
		4	5	6		13			
			7	10					
		5	3	4		8			
			4	3					
10		6	1	3		7			
			4	3					
		7	1	1		2			
			1	4					
15		8	12	9		18			
			9	7					
		9	3	5		8			
			3	6					
		10	7	5		14			
			9	12					
20		11	5	5		11			
			6	5					
		12	5	5		11			
			6	5					
25		13	5	8		15			
			7	6					
		14	4	6		12			
			6	7					
		15	8	10		19			
			9	10					
30							(Moist-Loose to Firm)		
							Grey SILT		
							(Moist-Loose to Firm)		
							End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. H.S.A.C

CLASSIFICATION Visual by
Driller

DATE
 STARTED 3/20/81
 FINISHED 3/23/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-4-8
 SURF. ELEV. _____
 G. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW LN CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0		1	2	7		12	Brown fine SAND, little silt	Note #1: At completion of boring, ground water level is 1.5' (inside casing) Note #2: WOR-indicates split spoon advanced six inches under weight of drill rods alone	
		5	6						
		2	6	6		12	-trace organic material noted		
		6	6						
5		3	4	3		6	-grades Some Silt w/seam of organic material noted		
		3	3						
		4	2	4		10			
		6	1						
		5	2	2		5	-trace organic material noted		
		3	2				(Moist to Wet-Firm to Loose)		
10		6	WORWOR			1	Brown fine SAND and SILT		
		1	1						
		7	1	2		5			
		3	1						
15		8	4	6		14			
		8	10						
		9	6	5		9	-grades grey		
		4	6						
		10	6	8		13			
		5	5						
20		11	10	10		16			
		6	8						
		12	4	5		9			
		4	7				(Wet-Loose to Firm)		
25		13	5	5		11	Gray SILT		
		6	8						
		14	4	5		10			
		5	3						
		15	8	6		13			
		7	8				(Wet-Loose to Firm)		
30							End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. U.S.A.C.

CLASSIFICATION Visual by
Driller

DS-4

DATE
 STARTED 3/19/81
 FINISHED 3/20/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-4-9
 SURF. ELEV. _____
 C. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0		1	2	2		5	Brown fine SAND, little silt, trace organic material -grades grey (Moist to Wet-Loose to Compact) Grey fine SAND & SILT (Wet-Firm) End of Boring @ 30.0'	Note #1: At completion of boring, ground water level @ 4.8'	
			3	3					
		2	4	4		9			
			5	8					
		3	10	9		17			
5			8	7					
		4	2	5		10			
			5	5					
		5	10	6		13			
			7	9					
10		6	7	7		15			
			8	6					
		7	10	7		13			
			6	9					
		8	7	16		47			
15			31	19					
		9	9	8		16			
			8	6					
		10	5	5		11			
			6	6					
20		11	5	8		16			
			8	8					
		12	5	6		12			
			6	5					
		13	10	10		24			
25			14	11					
		14	6	6		14			
			8	10					
		15	10	14		29			
			15	15					
30									

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow.
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by
Driller

DS-4

DATE
 STARTED 3/19/81
 FINISHED 3/19/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-4-11
 SURF ELEV. _____
 C. W. DEPTH. See Note #1

SUBSURFACE LOG

PROJECT N.I. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0		1	5	4		7	Brown fine SAND, little silt, trace organics	Note #1: At completion of boring, groundwater level @ 7.2'	
		3		5					
		2	7	8		17			
			9	9					
5		3	9	8		15	-grades Some Silt (Moist-Firm to Loose)		
			7	9					
		4	4	2		9			
			7	5					
		5	8	6		11	Grey fine SAND, little silt -grades some to "AND" SILT		
			5	4					
10		6	3	2		7			
			5	6					
		7	10	7		20			
			13	12					
15		8	12	13		27			
			14	15					
		9	7	7		14			
			7	6					
		10	9	8		17			
			9	10					
20		11	13	11		20			
			9	9					
		12	2	2		7			
			5	6					
25		13	4	3		8			
			5	4					
		14	6	8		19			
			11	13					
		15	7	6		15			
			9	10					
30							(Wet-Loose to Firm)		
							END OF BORING @ 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb pin wt. falling 30 "per blow

C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.

METHOD OF INVESTIGATION 2 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DATE _____
 STARTED 4/1/81
 FINISHED 4/1/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-13-1
 SURF ELEV. _____
 G. W. DEPTH. See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0	1	1	5	5		9	Brown fine SAND, little silt - grades "Some" Silt - seam of grey fine SAND noted (Moist-Loose) Grey fine SAND, Some Silt - seam of brown fine SAND noted (Wet-Loose to Firm) End of Boring at 30.0'	Note #1: At completion of boring, no free water in hole	
		2	4	5					
	2	3	5	3		8			
		4	5	6					
	3	5	5	3		8			
		6	5	8					
	4	7	6	5		10			
		8	5	3					
	5	9	2	2		4			
		10	2	3					
10	6	11	3	1		6			
		12	5	4					
	7	13	6	4		9			
		14	5	5					
	8	15	2	2		6			
		16	4	5					
	9	17	3	4		12			
		18	8	6					
	10	19	13	9		18			
		20	9	8					
20	11	21	5	4		7			
		22	3	4					
	12	23	5	4		12			
		24	8	9					
	13	25	6	6		16			
		26	10	10					
	14	27	2	3		8			
		28	5	6					
	15	29	5	6		12			
		30	6	6					

N = No blows to drive 2 "spoon 12" with 140 lb. pin wt. falling 30" per blow.
 C = No blows to drive _____ "casing" with _____ lb. weight falling _____" per blow.
 METHOD OF INVESTIGATION 2 1/4" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 4/1/81
 FINISHED 4/1/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-13-2
 SURF. ELEV. _____
 C. W. DEPTH. See Note #1

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER					BLOW UP CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24	2			
0		1	4	5			10	Brown fine SAND and GRAVEL, little silt - grades Brown fine SAND, little silt	Note #1: At completion of boring, no free water in hole	
			5	4						
		2	3	4			7			
			3	7						
5		3	7	3			9			
			6	8						
		4	5	6			13			
			7	6						
		5	21	6			9	- seam of grey fine SAND noted		
			3	4						
10		6	2	2			4	(MOIST-Firm to Loose)		
			2	2				Grey fine SAND, some Silt		
		7	1	2			5			
			3	6						
15		8	5	5			13			
			8	6						
		9	5	4			10			
			6	7						
		10	6	5			12			
			7	7						
20		11	4	7			13			
			6	5						
		12	4	7			13			
			6	8						
25		13	8	8			15			
			7	12						
		14	10	5			11			
			6	6						
		15	7	7			16			
30			9	8				(Moist to Wet-Loose to Firm)		
								End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12" with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "rasing. _____" with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/4" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/31/81
 FINISHED 4/1/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-A
 SURF ELEV. _____
 C. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER					BLOW ON CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24	N			
0		1	3	4			10	Brown fine SAND, little silt	Note #1: Groundwater level @ 14.0' w/casing to 20.0'	
			6	8						
		2	5	1			2			
			1	1						
5		3	5	5			12			
			7	9						
		4	7	5			12			
			7	8						
		5	8	6			13			
			7	4						
10		6	5	3			8			- grades "some" Silt (Moist to Wet - Loose to Firm)
			5	4						
		7	1	2			4			
			2	3						
		8	4	8			20			
			12	12						
		9	4	5			9	Grey fine SAND, Some Silt		
			4	4						
		10	9	9			24			
			15	14						
20		11	8	9			16			
			7	10						
		12	4	9			19	(Wet-Loose to Firm)		
			10	11						
25		13	8	9			17			
			8	10						
		14	6	8			27			
			19	11						
		15	6	5			12			
30			7	6				End of Boring @ 30.0'		

N = No blows to drive 2 "spoon" 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing" _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DATE 5/31/81
 STARTED 5/31/81
 FINISHED 5/31/81
 SHEET 1 of 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-C
 SURF. ELEV. _____
 C. W. DEPTH. See Note #1

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLE NO	BLOWS ON SAMPLER				BLOW LN CASI-C	SOIL OR ROCK CLASSIFICATION	NOTES
		0-6	6-12	12-18	18-24			
0	1	4	9		26	Brown fine SAND, little Silt	Note #1: At completion of boring, ground water level @ 14.0'	
		17	15					
	2	15	20		29	-seam of brown CLAY noted		
		9	12					
5	3	4	4		9	-seam of red fine sand noted		
		5	6					
	4	5	5		15			
		8	7					
	5	3	3		6			
		3	1					
10	6	2	2		5	(Wet)		
		1	1					
	7	2	6		13	(Moist to Wet-Firm to Loose to Firm)		
		7	7					
	8	2	4		8	Grey fine SAND & SILT		
15		4	5					
	9	4	5		9			
		4	5					
	10	4	6		11			
		5	10					
20	11	4	7		15			
		8	9					
	12	5	4		10			
		6	5					
25	13	6	10		21			
		11	12					
	14	4	7		14			
		7	7					
	15	10	7		15			
		6	10					
50						(Wet-Loose to Firm)		
						End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12" with 140 lb. pin wt. falling 30" per blow
 C = No blows to drive _____ "casing" with _____ lb. weight falling _____" per blow.
 METHOD OF INVESTIGATION 2 1/4" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DATE
 STARTED 3/19/81
 FINISHED 3/19/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

MOLE NO. B-5-1
 SURF. ELEV. _____
 G. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0	/	1	2	7		14	Brown and black fine SAND, little silt (Moist-Firm)	Note #1: At completion of boring, no free water in hole. Note #2: WOR-indicates split spoon advanced six inches under weight of drill rods alone WOH-indicates split spoon advanced six inches under weight of drill rods and 140 lb. hammer	
	/		7	6					
	/	2	3	5		9	Brown fine SAND, little silt		
	/		4	6					
5	/	3	5	4		9	-grades Some Silt		
	/		5	5					
	/	4	WOR	2		5	- (wet)		
	/		3	2					
	/	5	2	3		7			
	/		4	3					
10	/	6	4	7		15			
	/		8	7					
	/	7	8	6		11			
	/		5	4			-grades grey		
15	/	8	2	6		11			
	/		5	4			(Moist to Wet-Loose to Firm)		
	/	9	5	7		15	Grey fine SAND & SILT, w/seams of grey CLAY noted		
	/		8	7					
	/	10	WOH	2		4			
	/		2	2					
20	/	11	4	4		13			
	/		9	6					
	/	12	5	5		13			
	/		8	6					
25	/	13	5	6		14			
	/		8	8					
	/	14	7	5		12			
	/		7	8					
	/	15	4	6		12			
	/		6	4			(Wet-Loose to Firm)		
30	/						END OF BORING @ 30.0'		

N = No blows to drive 2 "spoon 12" with 140 lb. pin wt. falling 30" per blow
 C = No blows to drive _____ "casing _____" with _____ lb. weight falling _____" per blow.
 METHOD OF INVESTIGATION 3 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/19/81
 FINISHED 3/19/81
 SHEET 1 of 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-5-2
 SURF. ELEV. _____
 C. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER					BLOW UN CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24	2			
0	/	1	5	4		7		Brown fine SAND, little silt	Note #1: At completion of boring, no free water in hole.	
	/		3	3						
	/	2	3	2		5		-trace brick noted (FILL)		
	/		3	7						
5	/	3	17	9		18				
	/		9	6				(Moist-Loose to Firm)		
	/	4	3	3		10		Brown fine SAND, Some Silt		
	/		7	5						
	/	5	6	5		11		- (wet)		
10	/		6	5						
	/	6	3	4		8				
	/		4	3						
	/	7	2	1		4				
	/		3	3				-grades grey		
15	/	8	6	6		12				
	/		6	7				(Moist to Wet-Loose to Firm)		
	/	9	8	5		10		Grey fine SAND & SILT w/seams of grey CLAY noted		
	/		5	5						
	/	10	4	9		14				
20	/		5	8						
	/	11	8	5		10				
	/		5	8						
	/	12	5	7		13				
	/		6	6						
25	/	13	4	7		14				
	/		7	7						
	/	14	10	9		19				
	/		10	7						
	/	15	5	4		12				
30	/		8	7				(Wet-Loose to Firm)		
	/							END OF BORING @ 30.0'		

N = No blows to drive 2 "spoon 12" with 140 lb. pin wt. falling 30" per blow
 C = No blows to drive _____ "casing" with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 3 1/2" I.D. U.S.A.C.

CLASSIFICATION Visual by Geologist

DATE 5/19/81
 STARTED 3/19/81
 FINISHED 1 OF 1
 SHEET _____ OF _____



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

MOLE NO. B-5-3
 SURF ELEV. _____
 G. W. DEPTH See Note #1

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES SAMPLE NO	BLOWS ON SAMPLER				BLOW UN CASH-G.C	SOIL OR ROCK CLASSIFICATION	NOTES
		0-6	6-12	12-18	18-24			
0	1	1	4		8	Dk. brown fine SAND, little silt, trace glass frags (FILL)	Note #1: At completion of boring, no free water in hole	
		4	3					
	2	2	3		4			
		1	2					
	3	5	9		20			
5		11	5			(Moist-Loose to Firm)		
	4	9	13		17	Brown fine SAND, little silt		
		4	4					
	5	6	5		12	-grades Some Silt (wet)		
		7	7					
10	6	3	4		7			
		3	4					
	7	3	4		9			
		5	3					
15	8	5	6		12	-grades grey		
		6	6			(Moist to Wet-Loose to Firm)		
	9	10	7		13	Grey fine SAND & SILT, w/seams of grey CLAY noted		
		6	7					
	10	4	5		12			
		7	9					
20	11	4	5		12			
		7	8					
	12	5	6		11			
		5	5					
25	13	6	5		11			
		6	7					
	14	11	11		21			
		10	7					
	15	8	6		13			
		7	6			(Wet-Firm)		
30						END OF BORING @ 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blc w.
 METHOD OF INVESTIGATION 3 1/2" L.D. H.S.A.C.

CLASSIFICATION Visual by
Driller

DS-4

DATE
 STARTED 3/23/81
 FINISHED 3/23/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-5-4
 SURF. ELEV. _____
 C. W. DEPTH See Note #1

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
		0-6	6-12	12-18	18-24			
0	1	3	6		12	Brown fine SAND, little silt	Note #1: At completion of boring, no free water in hole	
		6	4					
	2	6	4		10			
		6	11					
5	3	15	12		21	-grades Some Silt, trace concrete frags (FILL)		
		9						
	4	5	6		13			
		7	6					
	5	8	6		10			
		4	6			(Moist-Firm to Loose)		
10	6	5	5		8	Brown fine SAND & SILT		
		3	2					
	7	1	1		2			
		1	4					
	8	5	5		12			
15		7	2					
	9	5	7		14	(Wet-Loose to Firm)		
		7	7			Grey SILT		
	10	6	4		10			
		6	8					
20	11	4	4		8			
		4	4					
	12	5	4		10			
		6	6			(Wet-Loose)		
25	13	5	4		11	Grey SILT & CLAY		
		7	6					
	14	5	6		12			
		6	8					
	15	2	2		6			
		4	6			(Wet-Medium)		
30						End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. wt. falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. U.S.A.C.

CLASSIFICATION Visual by
Driller

DS-4

DATE
 STARTED 3/20/81
 FINISHED 3/20/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-5-5
 SURF ELEV. _____
 G. W. DEPTH. See Note #1

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0	1	2	4		16		Dk. brown fine SAND, little silt, trace concrete frags (Fill)	Note #1: At completion of boring, no free water in hole	
		12	4						
2	10	12			20		-grades "and" fine GRAVEL, trace brick frags (Fill)		
		8	8						
5	3	17	13		23		-seam of black fine SAND noted (Moist-Firm)		
		10	9						
4	4	4	3		8		Brown fine SAND, Some Silt		
		5	6						
5	5	10	9		16		-no recovery		
		7	6						
10	6	3	4		7		-no recovery		
		3	5						
7	7	5	7		12		(Wet-Loose to Firm)		
		5	4						
8	8	3	4		10		Grey fine SAND & SILT, w/seams of grey CLAY noted		
		6	4						
9	9	10	10		22				
		12	13						
10	10	6	6		12				
		6	6						
20	11	5	6		12		-no recovery		
		6	6						
12	12	7	12		24				
		12	10						
13	13	7	5		11		(Wet-Loose to Firm)		
		6	5						
14	14	7	6		14				
		8	7						
15	15	7	7		13		Grey fine SAND, Some Silt (Wet-Firm)		
		6	7						
30							End of Boring @ 30.0'		

N = No blows to drive 2 "spoon" 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing" _____ "with _____ lb weight falling _____ "per blow.
 METHOD OF INVESTIGATION 3 1/2" I.D. ILS.A.C.

CLASSIFICATION Visual by Driller

DATE
 STARTED 3/20/81
 FINISHED 3/20/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-5-6
 SURF. ELEV. _____
 G. W. DEPTH See Note #1

PROJECT N.L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0		1	2	3		6	Brown fine SAND, little silt	Note #1: At completion of boring, no free water in hole	
			3	6					
		2	8	5		9			
			4	4					
5		3	5	8		18			
			10	5					
		4	7	5		7	- (wet)		
			2	2			(Moist to Wet- Firm to Loose)		
		5	6	6		9	Grey fine SAND, some Silt, trace organic material (Wet-Loose)		
			3	3					
10		6	2	3		5	Dk brown fine SAND, little silt, trace organic material (Wet-Loose)		
			2	2					
		7	3	5		8	ORGANIC material		
			3	3					
15		8	2	2		3			
			1	2			(Wet-Loose)		
		9	10	7		11	Grey fine SAND, Some Silt, trace organic material		
			4	5					
		10	6	4		10			
			6	6					
20		11	4	4		12			
			8	7					
		12	8	6		12	- thin seams of grey CLAY noted		
			6	6					
25		13	7	8		17	- no recovery		
			9	8					
		14	9	5		10			
			5	7					
		15	6	6		11			
			5	3			(Wet-Loose to Firm)		
30							End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 3 1/4" ID HSAC

CLASSIFICATION Visual by
Driller

DS-4

DATE
 STARTED 3/23/81
 FINISHED 3/23/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-5-7
 SURF ELEV. _____
 C. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0	✓	1	3	4		8	Brown fine SAND, little silt, trace roots	Note #1: At completion of boring no free water in hole	
			4	6					
2	✓	2	6	4		7			
			3	2					
5	✓	3	2	4		5	-seam of Black fine SAND noted at 5.9'		
			1	1					
4	✓	4	2	8		16	-grades "Some" Silt		
			8	3					
5	✓	5	3	2		4	-grades reddish-brown (Moist to Wet- Firm to Loose)		
			2	1					
10	✓	6	1	1		2	Grey fine SAND, Some Silt, trace organic material		
			1	1					
7	✓	7	2	4		11			
			7	10					
15	✓	8	10	7		11			
			4	5					
9	✓	9	6	7		15	(Wet-Loose to Firm)		
			8	9					
10	✓	10	2	5		10	Grey fine SAND & SILT, w/seams of grey CLAY noted		
			5	4					
20	✓	11	3	5		19			
			14	9					
12	✓	12	7	5		10			
			5	5					
13	✓	13	7	5		12			
			7	5					
14	✓	14	5	7		13			
			6	6					
15	✓	15	3	4		8	(Wet-Firm to Loose)		
			4	7					
30							End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12" with 140 lb. pin wt. falling 30" per blow
 C = 1: blows to drive "casing" with lb. weight falling "per blow."
 METHOD OF INVESTIGATION 3 1/4" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/23/81
 FINISHED 3/23/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-5-8
 SURF ELEV. _____
 C. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW UP CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0		1	1	7		14	Fill: Brown fine SAND, little silt trace brick & glass frags, trace roots (moist-firm)	Note #1: At completion of boring, no free water in hole	
		7	13						
		2	15	8		13	Brown fine SAND & GRAVEL, little silt (Wet)		
		5	6						
5		3	6	8		17	(Moist to Wet-Firm)		
		9	21						
		4	16	8		11	Red-brown fine SAND, Some Silt, trace organic material		
		3	5						
		5	16	6		13			
		7	7				- Thin seam of organic material noted		
10		6	2	2		4			
		2	2				- grades Black (Wet-Firm to Loose)		
		7	3	2		9			
		7	7				Brown PEAT		
15		8	1	1		2			
		1	2						
		9	3	2		5	- no recovery		
		3	2				- no recovery (Wet-Loose to Firm)		
		10	6	9		13			
		4	4				Grey fine SAND, Some Silt, trace wood frags noted		
20		11	6	11		20			
		9	5				- no recovery		
		12	11	11		17			
		6	6				- no recovery (Wet-Firm to Loose)		
25		13	5	6		10			
		4	5						
		14	6	6		11	- no recovery		
		5	4						
		15	4	5		10	(Wet-Firm to Loose)		
		5	4						
30							End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 3 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by
Driller

DATE
 STARTED 3/23/81
 FINISHED 3/23/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-5-9
 SURF ELEV. _____
 C. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW UN CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0		1	3	3		7	Brown fine SAND, little silt (Fill)	Note #1: Sixteen hours after completion, ground water level @ 4.3'	
			4	3					
		2	6	5		11	- grades "and" fine GRAVEL, trace wood frags (Moist-Firm to Loose)		
			6	4					
5		3	5	3		5	Red-brown fine SAND, little silt		
			2	1					
		4	2	5		7	- no recovery		
			2	1					
		5	1	2		4	- grades Brown		
			2	2					
-10		6	2	2		4	(Wet-Loose)		
			2	2					
		7	2	7		20	Grey fine SAND, Some Silt, trace organic material		
			13	18					
		8	18	11		23	(Wet-Firm)		
15			12	13					
		9	11	11		21	Grey fine SAND & SILT, w/seams of CLAY noted		
			10	10					
		10	7	3		6	- no recovery		
			3	3					
20		11	5	6		13	(Wet-Medium)		
			7	11					
		12	8	7		12	End of Boring @ 30.0'		
			5	4					
		13	3	5		11			
25			6	5					
		14	7	7		12			
			5	6					
		15	7	6		12			
30			6	4					

N = No blows to drive 2 "spoon 12" with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive "rasing" with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 3 1/2" I.D. U.S.A.C.

CLASSIFICATION Visual by
Driller

DATE

STARTED 5/24/81

FINISHED 5/24/81

SHEET 1 of 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-5-10

SURF ELEV. _____

G. W. DEPTH. See Note #1

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0	/	1	2	5		13	Brown fine SAND and GRAVEL, little silt, trace brick frags (FILL)	Note #1: Ground water level @ 6.5' (w/casing to 10.0')	
	/		8	8					
	/	2	8	9		22			
	/		13	7					
5	/	3	12	5		10	(Moist-Firm to Loose)		
	/		5	3					
	/	4	3	7		17	Brown fine SAND, little silt		
	/		10	9					
	/	5	8	7		13	-trace wood frags noted		
	/		6	5					
10	/	6	12	12		22	-no recovery		
	/		10	10					
	/	7	14	12		23	-no recovery (Wet-Firm)		
	/		11	12					
	/	8	WOR	5		10	Grey fine SAND, Some Silt (Wet-Loose)		
	/		5	9					
	/	9	7	8		18	Grey fine SAND & SILT, w/seams of grey CLAY noted		
	/		10	7					
	/	10	13	10		26			
	/		16	20					
20	/	11	7	9		17			
	/		8	9					
	/	12	9	9		17			
	/		8	12					
25	/	13	9	11		25			
	/		14	9					
	/	14	13	13		23			
	/		10	12					
	/	15	13	6		11	(Wet-Firm)		
	/		5	6					
30	/						End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12" with 140 lb. pin wt. falling 30" per blow

C = No blows to drive _____ "casing _____" with _____ lb. weight falling _____" per blow.

METHOD OF INVESTIGATION 3 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/24/81
 FINISHED 3/24/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-5-11
 SURF. ELEV. _____
 G. W. DEPTH. See Note #1

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24			
0		1	2	3		6	Brown fine SAND, little silt	Note #1: At completion of boring, no free water in hole	
		3	4						
		2	4	4		9			
		5	6						
5		3	4	6		12			
		6	6						
		4	8	3		6			
		3	2						
		5	3	1		3			
		2	2						
10		6	4	2		6			
		4	4						
		7	5	4		8			
		4	4						
15		8	WOR	4		7			
		3	5						
		9	WOR	6		9			
		3	4						
		10	3	4		8			
		4	5						
20		11	3	4		8			
		4	7						
		12	3	5		9			
		4	5						
25		13	4	4		8			
		4	8						
		14	9	6		12			
		6	4						
		15	5	6		13			
		7	6						
30							(Wet-Loose to Firm)		
							End of Boring @ 30.0'		

N = No blows to drive 2 "spoon. 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 3 1/4" I.D. H.S.A.C.

CLASSIFICATION Visual by
Driller

DS-4

DATE
 STARTED 3/24/81
 FINISHED 3/24/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-5-12
 SURF ELEV. _____
 C. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER					BLOW ON CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0	6	12	18	N			
			6	12	18	N				
0		1	1	2			4	Brown fine SAND, little silt	Note #1: Groundwater level @ 5.9' w/casing to 10.0'	
			2	3						
		2	4	4			7			
			3	4						
5		3	5	5			11			
			6	6						
		4	6	6			12			
			6	5						
		5	2	2			5			
			3	2						
10		6	2	4			9			(Moist to Wet-Firm to Loose)
			5	10						Grey fine SAND, Some Silt
		7	13	14			31			
			17	20						
15		8	10	18			36			
			18	18						
		9	24	24			51	(Wet-Compact to Very Compact)		
			27	18						
		10	7	6			12	Grey fine SAND & SILT, w/seams of grey CLAY noted		
20			6	5						
		11	4	3			7			
			4	5						
		12	5	6			18			
			12	6						
25		13	4	4			10			
			6	5						
		14	5	6			10			
			11	11						
		15	6	6			12			
30			6	5				(Wet-Loose to Firm)		
								END OF BORING @ 30.0'		

N = No blows to drive 2 "spoon 12" with 140 lb. pin wt. falling 50 "per blow
 C = No blows to drive _____ "casing _____" with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 3 1/2" I.D. H.S. A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
STARTED 3/24/81
FINISHED 3/24/81
SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-5-13
SURF ELEV. _____
G. W. DEPTH See Note #1

SUBSURFACE LOG


PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLE NO	BLOWS ON SAMPLER					BLOW UN CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
		0-6	6-12	12-18	N				
0	1	1	2		4		Brown fine SAND, little silt -(wet)	Note #1: At completion of boring no free water in hole	
	2	3	3		6				
	3	6	8		18				
	4	6	6		12				
	5	3	5		9				
5							(Moist to Wet-Loose to Firm)		
	6	11	10		18		Grey fine SAND, Some Silt		
	7	6	7		15				
	8	4	3		7				
	9	5	6		13				
	10	4	5		10		Grey fine SAND & SILT, w/seams of grey CLAY noted		
	11	3	4		9				
	12	4	6		15				
	13	WORWOL			4		(Wet-Loose to Firm)		
	14	5	6		12				
	15	4	5		11				
30		6	7				(Wet - Loose to Firm)		
							End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
C = No blows to drive... "rasing... "wth... lb. weight falling... "per blow.
METHOD OF INVESTIGATION 3 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by
Driller

DS-4

DATE STARTED <u>3/19/81</u> FINISHED <u>3/19/81</u> SHEET <u>1</u> OF <u>1</u>	 EMPIRE SOILS INVESTIGATIONS, INC. SUBSURFACE LOG	HOLE NO. <u>B-6-1</u> SURF ELEV. _____ C. W. DEPTH <u>See Note #1</u>
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PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0		1	2	6		20	Dk. brown fine SAND, little silt	Note #1: At completion of boring, no free water in hole. Note #2: WOR-indicates split spoon advanced six inches under weight of drill rods alone	
			14	7					
		2	20	57		68	-grades "AND" fine GRAVEL (Moist-Firm to Very Compact)		
			11	6					
		3	9	6		11	Brown fine SAND, Some Silt		
5			5	4					
		4	3	3		7			
			4	4					
		5	16	6		10	-no recovery		
			4	2					
10		6	2	3		7	-grades grey		
			4	5					
		7	5	5		10	(Wet-Firm to Loose)		
			5	3					
15		8	6	5		9	Grey fine SAND & SILT w/seams of grey CLAY noted		
			4	6					
		9	WOR	4		8			
			4	4					
		10	11	10		21			
			11	11					
20		11	3	4		8			
			4	7					
		12	5	5		11			
			6	7					
25		13	2	3		6			
			3	3					
		14	3	5		10			
			5	5					
		15	6	5		10	(Wet-Firm to Loose)		
			5	5					
30							END OF BORING @ 30.0'		

N = No blows to drive 2 "spoon. 12" with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing. _____" with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 3 1/2" I.D. U.S.A.C.

CLASSIFICATION Visual by _____
 Driller _____

DS-4

DATE
 STARTED 3/18/81
 FINISHED 3/18/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-6-2
 SURF. ELEV. _____
 C. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24			
0							3" Topsoil		
1	1	2	4		11		Dk. Brown fine SAND, little silt	Note #1: At completion of boring, no free water in hole.	
		7	9						
2	2	7	10		22		-trace wood and brick frags noted (FILL)		
		12	20						
3	3	18	27		43		-trace concrete and wood noted (Moist to Wet-Firm to Compact)		
		16	14						
4	4	19	9		17		Black fine SAND, little silt		
		8	7						
5	5	6	8		19		-no recovery		
		11	8				(Wet-Firm)		
6	6	9	6		10		Brown fine SAND, Some Silt (Wet-Loose)		
		4	5						
7	7	5	5		10		Grey fine SAND & SILT, w/seams of grey CLAY noted		
		5	4						
8	8	12	5		9				
		4	4						
9	9	6	5		14				
		9	6						
10	10	6	4		8				
		4	5						
11	11	12	7		13				
		6	5						
12	12	5	6		16				
		10	8						
13	13	6	4		8				
		4	7						
14	14	7	8		16				
		8	8						
15	15	11	7		15				
		8	9				(Wet-Loose to Firm)		
30							END OF BORING @ 30.0'		

N = No blows to drive 2 "spoon, 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 3 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/18/81
 FINISHED 3/18/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-6-3
 SURF. ELEV. _____
 C. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, New York

DEPTH - FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER					BLOW UN CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24	N			
0	/	1	4	4			13	Brown fine SAND & GRAVEL, little silt -trace brick noted (FILL)	Note #1 No groundwater reading available.	
	/		9	13						
	/	2	8	6			12	-no recovery	Note #2 Boring terminated on possible precast pipe.	
	/		6	7						
5	/	3	15	9			22	-grades black organic material		
	/		13	7						
	/	4	15	11			21	(Moist-Firm to Very Compact)		
	/		10	9						
	/	5	3	100			103			
10								END OF BORING @ 9.0'		

N = No blows to drive 2 "spoon. 12" with 140 lb. pin wt. falling 30 "per blow
 C = No. blows to drive _____ "casing" with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 3 1/4" I.D. Hollow Stem Auger Casing

CLASSIFICATION Visual by
Driller

DS-4

DATE
 STARTED 3/18/81
 FINISHED 3/18/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-6-4
 SURF ELEV. _____
 C. W. DEPTH. See Note #1

PROJECT N. L. Industries LOCATION Albany, New York

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER					BLOW UN CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24	N			
0	/	1	2	4			11	Brown fine to medium SAND, little silt	Note #1 Groundwater noted at 7.2', with casing at 20.0'.	
			7	6						
5	/	2	6	10			18	(Moist to Wet-Firm to Loose)		
			8	6						
10	/	3	6	5			10	Grey fine SAND, little silt, trace wood. Grades Some Silt, trace organics @ 6.0'		
			5	3						
15	/	4	6	12			19	-no recovery (Wet-Firm to Loose)		
			7	10						
20	/	5	4	3			9	Grey fine SAND, Some Silt, with seam of organic material noted 11.8 to 12.0'		
			6	3						
25	/	6	2	2			3	-no recovery		
			1	1						
30	/	7	2	4			6	-no recovery		
			2	2						
35	/	8	3	2			4	(Wet-Loose)		
			2	3						
40	/	9	4	4			9	Grey fine SAND & SILT, with seams of grey CLAY noted		
			5	4						
45	/	10	2	4			7	(Wet-Loose to Firm)		
			3	7						
50	/	11	3	4			9	Grey fine SAND & SILT		
			5	3						
55	/	12	9	10			16	(Wet-Firm to Loose)		
			6	6						
60	/	13	5	7			14	END OF BORING @ 30.0'		
			7	7						
65	/	14	6	6			12			
			6	5						
70	/	15	WOR	5			10			
			5	5						

N = No blows to drive 2 "spoon 12" with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing 3 1/4" with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 3 1/4" I.D. Hollow Stem Auger Casing

CLASSIFICATION Visual by
Driller

DATE
 STARTED 3/17/81
 FINISHED 3/17/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-6-5
 SURF ELEV. _____
 G. W. DEPTH. See Note #1

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
		0-6	6-12	12-18	N			
0	1	3	5		9		Note #1: Groundwater level @ 4.8' with casing at 10.0'	
		4	7			Fill: Brown fine SAND & GRAVEL, Some Silt		
	2	11	8		18	-trace brick noted (Moist-Loose to Firm)		
		10	12					
5	3	5	7		17	Reddish-brown fine SAND, Some Silt		
		10	10					
	4	10	9		19			
		10	8					
	5	7	3		8			
		5	5					
10	6	2	1		2	-no recovery (Wet-Firm to Loose)		
		1	1					
	7	2	3		5	Grey fine SAND & SILT		
		2	6					
15	8	4	1		4	-trace organics noted		
		3	3					
	9	3	4		10	-trace organics noted		
		6	6					
	10	6	10		18			
		8	5					
20	11	3	4		8	(Wet-Loose)		
		4	4					
	12	7	9		17	Grey fine SAND & SILT w/seams of grey CLAY noted		
		8	5					
25	13	6	6		13	-layer of grey CLAY, trace fine gravel noted		
		7	6					
	14	6	8		15			
		7	7					
	15	6	6		12	(Wet-Firm)		
		6	7					
30						END OF BORING 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 3 1/4" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DATE
 STARTED 3/17/81
 FINISHED 3/17/81
 SHEET 1 of 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-6-6
 SURF. ELEV. _____
 C. W. DEPTH. See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER					BLOW UP CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24	N			
0		1	1	5			14	Dk. Brown fine SAND and fine GRAVEL	Note #1: Ground water level @ 4.8' with casing at 10.0'	
			9	11						
		2	8	8			18			
			10	15						
		3	4	6			13			
5			7	8				-seam of organic material noted 5.5-6.0'		
		4	2	1			4	(Moist to Wet-Firm)		
			3	1				Dk. grey fine SAND, trace organics		
		5	3	4			10	(Wet-Loose)		
			6	4				Grey SILT & CLAY		
10		6	1	1			2	(Wet-Medium)		
			1	1				Grey fine SAND, Some Silt		
		7	3	5			14	-grades brown & grey		
			9	9						
		8	7	7			24			
15			17	16				(Wet-Loose to Firm)		
		9	8	10			27	Grey fine SAND & SILT w/seams of grey		
			17	17				CLAY noted		
		10	3	5			13			
			8	8						
20		11	5	7			13			
			6	4						
		12	3	3			8			
			5	6						
		13	7	5			11			
			6	5						
		14	5	6			12			
			6	6						
		15	3	3			8			
30			5	6				(Wet-Firm to Loose)		
								END OF BORING @ 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 3 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/17/81
 FINISHED 3/17/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

MOLE NO. B-6-7
 SURF ELEV. _____
 C. W. DEPTH See Note #1

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0		1	1	3		8	Dk. brown fine SAND, Some Silt	Note #1: Ground water level @ 5.0' with casing at 10.0'	
		5	10						
		2	13	10		15			
		5	5						
5		3	2	1		3			
		2	2						
		4	1	2		6	-SAND grades fine to medium		
		4	4						
		5	4	4		9			
		5	5						
10		6	3	5		10			
		5	5						
		7	6	6		11			
		5	5						
		8	6	6		11			
15		5	4				(Moist to Wet-Loose to Firm)		
		9	10	12		17	Grey fine SAND, Some Silt (Wet-Firm)		
		5	5						
		10	2	2		5	Grey fine SAND & SILT w/seams of grey CLAY noted		
		3	4						
20		11	3	4		10			
		6	6						
		12	4	5		11			
		6	7						
25		13	4	5		9			
		4	8						
		14	8	5		10			
		5	5						
		15	4	5		10			
		5	5				(Wet-Firm to Loose)		
30							END OF BORING @ 30.0'		

N = No blows to drive 2 "spoon 12" with 140 lb. pin wt. falling 30" per blow
 C = No blows to drive _____ "casing" with _____ lb. weight falling _____ "per blow.

CLASSIFICATION Visual by
Driller

METHOD OF INVESTIGATION 3 1/2" I.D. U.S.A.C.

DS-4

DATE
 STARTED 3/16/81
 FINISHED 3/16/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-6-8
 SURF. ELEV. _____
 G. W. DEPTH. See Note #1

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0		1	1	2		7	6" Topsoil		
		5	5				Brown fine SAND, Some Silt	Note #1: Groundwater level @ 5.9' with casing at 10.0'	
		2	7	6		12	-grades medium SAND		
		6	6						
5		3	14	7		14	-no recovery		
		7	7	8					
		4	9	6		12			
		6	6	5					
		5	9	6		10			
10		4	4	5			-grades fine SAND		
		6	WOR	3		6			
		3	3	2					
		7	3	5		10			
		5	5	6					
15		8	WOR	8		18	-no recovery		
		10	10				(Moist to Wet-Loose to Firm)		
		9	6	7		11	Grey fine SAND and SILT w/thin seam of grey CLAY noted		
		4	4						
		10	4	3		8			
		5	5	4					
20		11	12	8		17	-no recovery		
		9	9	10					
		12	11	6		10			
		4	4				(Wet-Loose to Firm)		
25		13	4	7		13	Grey varved SILT & CLAY		
		6	6				(Wet-Medium)		
		14	5	7		17	Grey fine SAND and SILT		
		10	10						
		15	5	4		10	-thin seams of grey CLAY noted		
		6	6				(Wet-Firm to Loose)		
30							END OF BORING @ 30.0'		

N = No blows to drive 2 "spoon" 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing" _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 3 1/4" I.D. H.S.A.C.

CLASSIFICATION Visual by
Driller

DS-4

DATE
 STARTED 3/16/81
 FINISHED 3/16/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-6-9
 SURF ELEV. _____
 G. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING	SOIL OR ROCK CLASSIFICATION	NOTES
		0-6	6-12	12-18	N			
0	1	2	2		5	3" Topsoil	Note #1: Groundwater level @ 6.3' with casing at 10.0'	
		3	3					
	2	3	2		5			
		3	4					
5	3	4	7		16			
		9	9					
	4	8	11		19			
		8	8					
	5	4	7		14	(Moist to Wet-Loose to Firm)		
		7	8					
10	6	8	10		23	Grey fine SAND, Some Silt		
		13	12					
	7	16	18		40			
		22	18					
15	8	12	7		12			
		5	3					
	9	5	10		22	(Wet-Compact to Firm)		
		12	11					
	10	6	5		10	Grey fine SAND and SILT w/thin seams of grey CLAY noted		
		5	8					
20	11	3	2		4			
		2	2					
	12	4	4		13			
		9	7					
25	13	5	7		16			
		9	7					
	14	6	7		17			
		10	12					
	15	3	4		6			
		2	4			(Wet-Firm to Loose)		
30						END OF BORING @ 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 3 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by
Driller

DS-4

DATE 3/16/81
 STARTED 3/16/81
 FINISHED 3/16/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-6-10
 SURF ELEV. _____
 G. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW UN CASING C	SOIL OR ROCK CLASSIFICATION 4" Topsoil	NOTES
			0-6	6-12	12-18	N			
0		1	2	2		4	Brown fine to medium SAND, Some Silt	Note #1: Groundwater level @ 7.4' with casing at 10.0'	
		2	4						
		2	3	4		8			
		4	4						
5		3	4	4		13			
		4	8	8		15			
		4	7				(Moist to Wet-Loose to Firm)		
		7	6				Grey fine SAND, Some Silt		
		5	4	4		10			
		6	6						
10		6	4	6		12			
		6	6	10					
		7	6	6		13			
		7	7	8					
		8	5	5		9			
15		4	5						
		9	5	5		12			
		7	7						
		10	5	7		14			
		7	3				(Wet-Loose to Firm)		
20		11	3	3		7	Grey SILT w/seams of grey CLAY		
		4	4						
		12	6	5		9			
		4	5						
25		13	3	7		11			
		4	5						
		14	5	6		13			
		7	7						
		15	4	5		12	(Wet-Loose to Firm)		
		7	8						
30							END OF BORING @ 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 3 1/4" I.D. H.S.A.C.

CLASSIFICATION Visual by
Driller

DS-4

DATE
 STARTED 3/16/81
 FINISHED 3/16/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-6-11
 SURF ELEV. _____
 G. W. DEPTH. See Note #1

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER					BLOW ON CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24	N			
0		1	2	3			10	FILL: Brown fine SAND, Some Silt, trace brick (Moist-Loose)	Note #1: At completion of boring, groundwater @ 14.0'	
			7	4						
		2	6	7			15	Brown fine to medium SAND, Some Silt		
			8	8						
		3	5	4			7			
5			3	3				(Moist to Wet-Firm to Loose)		
		4	7	5			9	Grey fine SAND, Some Silt		
			4	5				(Wet-Loose)		
		5	3	4			8	Grey SILT		
			4	3						
10		6	2	2			5			
			3	3				(Wet-Loose)		
		7	5	8			17	Grey fine SAND, Some Silt		
			9	10				(Wet-Firm)		
		8	5	4			10	Grey SILT		
15			6	6				(Wet-Loose)		
		9	8	6			12	Grey Fine SAND & SILT		
			6	6						
		10	5	5			9			
			4	7						
20		11	3	5			11			
			6	6				(Wet-Loose to Firm)		
		12	3	5			10	Grey fine SAND & SILT, w/seams of grey CLAY noted		
			5	6						
		13	3	3			7			
25			4	3						
		14	6	9			25			
			16	11						
		15	6	5			12			
30			7	10				(Wet-Loose to Firm)		
								END OF BORING @ 30.0'		

N = No blows to drive 2 "spoon, 12" with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing, _____" with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 3 1/4" I.D. H.S.A.C.

CLASSIFICATION visual by
Driller

DATE
 STARTED 3/26/81
 FINISHED 3/26/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-7-1
 SURF ELEV. _____
 G. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
		0-6	6-12	12-18	18-24			
0	1	6	6		12		Note #1: At completion of boring, ground water level at 7.0'	
		6	8					
	2	7	8		14			
		6	6					
	3	8	9		16			
5		7	3			(Moist-Firm)		
	4	4	3		4	Brown fine SAND, Some Silt		
		1	1					
	5	1	1		3			
		2	1					
10	6	3	5		7			
		2	2					
	7	2	3		5			
		2	2					
15	8	3	4		7	-grades "and" SILT		
		3	2					
	9	3	3		14			
		11	9					
	10	3	4		9			
		5	5			(Wet-Loose to Firm)		
20	11	6	3		4	Grey fine SAND & SILT		
		1	1			(Wet-Loose)		
	12	6	7		15	Grey SILT		
		8	7					
25	13	2	3		11			
		8	8					
	14	4	3		5			
		2	2					
	15	4	4		8			
		4	5			(Wet-Firm to Loose)		
30						End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12" with 140lb. pan wt. falling 30" per blow
 C = No blows to drive _____ "casing" with _____ lb. weight falling _____" per blow.
 METHOD OF INVESTIGATION 2 1/4" I.D. Hollow Stem Auger Casing

CLASSIFICATION Visual by Driller

DATE
 STARTED 3/26/81
 FINISHED 3/26/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-7-2
 SURF ELEV. _____
 G. W. DEPTH See Note #1

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER					BLOW ON CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24	N			
0		1	3	5			11	Brown fine SAND, little silt	Note #1: At completion of boring, groundwater level @ 6.6' Note #2: WOR-indicates split spoon advanced six inches under weight of drill rods alone.	
			6	8						
		2	5	6			12			
			6	3						
5		3	2	3			8	-Trace brick frags 4.0-8.0' (Fill)		
			5	5						
		4	5	4			7			
			3	3						
		5	1	1			1			
			WOR	WOR						
10		6	1	1			1	-grades Some Silt, trace organics (Moist to Wet-Firm to Loose)		
			WOR	3						
		7	8	9			17	Brown fine SAND & SILT		
			8	8						
15		8	3	5			11			
			6	17				(Wet-Firm)		
		9	28	21			54	Brown SILT and fine SAND		
			33	31						
		10	8	9			19			
			10	10						
20		11	9	10			36			
			26	13				(Wet-Very Compact to Firm)		
		12	8	8			16	Grey SILT and fine SAND		
			8	8						
25		13	5	4			8			
			4	4						
		14	4	3			7	-grades Grey SILT		
			4	4						
		15	4	4			8			
			4	4				(Wet-Firm to Loose)		
30								End of Boring @ 30.0'		

N = No. blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No. blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by
Driller

DATE
 STARTED 3/26/81
 FINISHED 3/26/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-7-3
 SURF ELEV. _____
 C. W. DEPTH See Note #1

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0		1	4	3		9	Brown fine SAND and GRAVEL, little silt (Moist-Loose)	Note #1: At completion of boring, ground water level @ 7.7'	
		6	6						
		2	8	10		18	Brown fine SAND, little silt		
		8	8						
5		3	8	6		10	-grades "and" SILT		
		4	4	6					
		4	8	3		7			
		4	4	4					
		5	5	5		9			
		4	4	4					
10		6	5	5		11	-grades "Some" Silt (Moist to Wet-Loose to Firm) Grey fine SAND and SILT (Wet-Firm) Grey SILT		
		6	6	6					
		7	6	7		15			
		8	8	10					
		8	8	10		18			
		8	8	8					
15		9	8	9		18			
		9	9	4					
		10	8	12		23			
		11	11	18					
20		11	11	15		27			
		12	12	10					
		12	9	9		17			
		8	8	8					
25		13	3	3		7			
		4	4	5					
		14	3	3		6			
		3	3	3					
		15	4	4		10			
		6	6	7					
30							(Wet-Firm to Loose)		
							End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/4" I.D. H.S.A.C.

CLASSIFICATION Visual by
Driller

DS-4

DATE
 STARTED 3/31/81
 FINISHED 3/31/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-7-4
 SURF. ELEV. _____
 C. W. DEPTH See Note #1

PROJECT N.L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
		0-6	6-12	12-18	N			
0	1	3	5		9	Brown fine SAND, little silt	Note #1: Ground water level @ 6.0' with casing at 10.0'	
		4	9					
5	2	7	7		12			
		5	7					
5	3	8	4		10			
		6	7					
5	4	5	5		10			
		5	7					
5	5	5	5		11			
		6	6					
10	6	5	7		13			
		6	5					
10	7	12	15		33			-grades grey
		18	18					
15	8	18	18		40			
		22	20					
15	9	29	30		54			
		24	27					
20	10	13	7		15	(Moist to Wet-Loose to Very Compact)		
		8	11					
20	11	8	9		19	Grey SILT (Wet-Firm)		
		10	7					
25	12	6	11		22	Brown fine SAND, little silt (Wet-Firm)		
		11	12					
25	13	4	6		11	Grey fine SAND and SILT		
		5	6					
25	14	6	9		18	(Wet-Firm)		
		9	8					
30	15	6	7		18	Grey SILT		
		11	13					
30						End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb. pan wt. falling 30 "per blow

C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.

METHOD OF INVESTIGATION 2 1/2" I.D. U.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/31/81
 FINISHED 3/31/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-7-5
 SURF ELEV. _____
 C. W. DEPTH. See Note #1

PROJECT N.L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0		1	3	4		9	Brown fine SAND, little silt	Note #1: Ground water level @ 6.0' with casing at 15.0'	
		5	5						
		2	5	4		8			
		4	6						
5		3	8	5		10			
		5	5	6					
		4	6	6		13	(Wet)		
		7	7						
		5	5	5		10			
10		5	5	7					
		6	4	2		7			
		5	5	7					
		7	5	7		16			
		9	10						
15		8	12	22		35	(Moist to Wet-Loose to Firm)		
		13	16						
		9	7	7		13	Grey fine SAND, little silt		
		6	6						
		10	9	7		15	-seam of brown fine sand noted		
		8	8	5					
20		11	4	1		3	-grades "and" SILT		
		2	2	4					
		12	2	5		11			
		6	6						
25		13	6	5		13			
		8	8	7					
		14	7	7		12			
		5	5	8					
		15	6	7		16			
		9	9	10			(Wet-Loose to Firm)		
30							End of Boring @ 30.0'		

N = No. blows to drive 2 "spoon" 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No. blows to drive _____ "casing" _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by
Driller

DATE
 STARTED 3/27/81
 FINISHED 3/31/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-7-6
 SURF. ELEV. _____
 C. W. DEPTH. See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW UN CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24			
0		1	1	3		7	Brown fine SAND, little silt	Note #1: At completion of boring, ground water level @ 15.0' inside casing	
			4	4					
		2	4	4		9			
			5	5					
		3	5	6		14	- (Wet)		
5			8	8					
		4	9	9		18			
			9	8					
		5	4	3		6	(Moist to Wet-Firm to Loose)		
			3	5					
10		6	3	8		16	-Grey fine SAND and SILT		
			8	7					
		7	5	6		9			
			3	5					
15		8	11	15		37	(Wet-Loose to Compact)		
			22	13					
		9	4	6		12	Grey SILT and fine SAND		
			6	8					
		10	13	11		23			
			12	13					
20		11	7	8		15	(Wet-Firm)		
			7	5					
		12	4	4		10	Grey SILT		
			6	6					
		13	7	10		27			
25			17	11					
		14	5	4		12			
			8	8					
		15	4	6		16			
			10	10			(Wet-Loose to Firm)		
30							End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12" with 110 lb pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing" with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" L.P. H.S.A.C.

CLASSIFICATION Visual by
Driller

DS-4

DATE
 STARTED 3/27/81
 FINISHED 3/27/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-7-7
 SURF. ELEV. _____
 C. W. DEPTH See Note #1

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0		1	2	2		5	Brown fine SAND, little silt	Note #1: At completion of boring, no free water in hole	
			3	6					
		2	6	6		12			
			6	6					
		3	3	6		12			
5			6	7			- (Wet) (Moist to Wet-Firm to Loose)		
		4	11	12		22			
			10	10					
		5	4	4		5			
			1	2					
10		6	2	3		7	Grey fine SAND, Some Silt, trace clay	Note #2: WOR-indicates split spoon advanced six inches under weight of drill rods alone	
			4	5					
		7	6	8		16			
			8	4					
		8	3	6		10			
15			4	6			(Wet-Firm to Loose)		
		9	7	8		14			
			6	5					
		10	WOR	4		9			
			5	6					
20		11	WOR	WOR		5	Grey fine SAND & SILT, w/seams of grey CLAY noted		
			5	5					
		12	4	4		9			
			5	5					
		13	2	3		12			
25			9	8			(Wet-Loose to Firm)		
		14	4	6		17			
			11	7					
		15	6	5		10			
			5	7					
30							End of Boring @ 30.0'		

N = No. blows to drive 2 "spoon. 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No. blows to drive _____ "casing. _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by _____
 Driller _____

DS-4

DATE
 STARTED 3/26/81
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 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-7-8
 SURF. ELEV. _____
 G. W. DEPTH See Note #1

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0		1	1	2		4	Brown fine SAND, little silt - (Wet)	Note #1: Sixteen hours after completion, ground water level @ 4.5'	
		2	2	3		5			
		3	3	4		8			
5		4	4				(Moist to Wet-Loose to Firm)		
		4	6	6		11	Grey fine SAND & SILT, w/seams of grey CLAY noted		
		5	5	4		6			
		6	4	3					
10		6	2	2		4	(Wet-Loose)		
		7	2	2		5			
		8	3	8					
		8	4	5		15	Grey fine SAND, some Silt		
15		9	8	8		16			
		10	8	7					
		10	5	4		8	(Wet-Firm to Loose)		
20		11	WOR	3		7			
			4	4					
		12	5	5		9	Grey fine SAND & SILT, w/seams of grey CLAY noted		
			4	4					
25		13	2	4		9			
			5	6					
		14	10	10		16	(Wet-Firm to Loose)		
			6	7					
		15	2	2		6			
30			4	4			End of Boring @ 30.0'		

N = No. blows to drive 2 "spoon 12" with 140 lb. pin wt. falling 30" per blow
 C = No. blows to drive _____ "casing" with _____ lb. weight falling _____" per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. U.S.A.C. CLASSIFICATION Visual by
Driller

DS-4

DATE
 STARTED 3/30/81
 FINISHED 3/30/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-8-1
 SURF ELEV. _____
 C. W. DEPTH See Note #1

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW LN CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0	/	1	4	5		9	Brown fine SAND, little silt	Note #1 Ground water level @ 7.0' with/casing to 10.0'	
			4	6					
5	/	2	5	19		29	- seam of green sand noted		
			10	10					
5	/	3	3	2		4	- grades Black		
			2	3					
10	/	4	1	1		2	- grades Grey-brown		
			1	1					
10	/	5	4	1		4	- (wet)		
			3	4					
15	/	6	3	3		5	- trace organic material noted (moist to wet - firm to loose)		
			2	2					
15	/	7	1	1		2	Grey fine SAND, little silt, trace organic material		
			1	7					
20	/	8	2	1		3	- seams of organic material noted (wet-loose to firm)		
			2	2					
20	/	9	4	2		9	Brown SILT (Wet-Loose)		
			7	10					
25	/	10	4	5		16	Grey SILT		
			11	5					
25	/	11	2	3		10	(Wet-Loose to Firm)		
			7	9					
25	/	12	3	4		9	End of Boring @ 30.0'		
			5	5					
30	/	13	2	3		12			
			9	11					
30	/	14	4	4		9			
			5	5					
30	/	15	8	6		14			
			8	10					

N = No blows to drive 2 "spoon 12" with 140 lb. pin wt. falling 30" per blow
 C = No blow to dr. _____ "casing" with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" L.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/30/81
 FINISHED 3/30/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-8-2
 SURF. ELEV. _____
 G. W. DEPTH See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER					BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24	N			
0		1	5	4			8	Brown fine SAND, little silt -grades Some fine Gravel, trace organic material noted	Note #1: Ground water level @ 7.5' w/casing to 15.0'	
		2	3	1			3			
		3	7	6			9			
5		4	1	1			7			
		5	6	6		13		-seam of organic material noted		
		6	5	2		8				
10		7	7	7		15				
		8	5	7		9		- (Wet)		
15		9	10	9		19				
		10	9	15		35		(Moist to Wet-Loose to Firm)		
20		11	6	11		19		Grey fine SAND, Some Silt		
		12	6	8		21				
25		13	7	6		18		-grades "and" SILT (Wet-Firm)		
		14	5	3		6		Grey SILT		
		15	4	4		11		(Wet-Loose to Firm)		
30								End of Boring @ 30.0'		

N = No. blows to drive 2 "spoon 12" with 140 lb. pin wt. falling 30" per blow
 C = No. blows to drive _____ "casing" with _____ lb. weight falling _____" per blow.
 METHOD OF INVESTIGATION: 2 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by
Driller

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 STARTED 3/30/81
 FINISHED 3/30/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

MOLE NO. B-8-3
 SURF ELEV. _____
 G. W. DEPTH. See Note #1

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24			
0		1	4	5		11	Brown fine SAND and GRAVEL, little silt (Moist-Firm)	Note #1: Ground water level @ 6.0' w/casing to 10.0'	
		2	7	7		11	Brown fine SAND, little silt		
		3	4	3		8			
5		4	4	5		11			
		5	3	4		11	-trace organic material noted		
		6	4	2		9			
-10		7	7	6		12	-traces of oil noted 12.0'-17.0'		
		8	8	2		5			
15		9	10	11		25	(Moist to Wet-Firm to Loose)		
		10	10	22		51	Grey fine SAND, Some Silt		
-20		11	15	15		38	(Wet-Very Compact to Compact),		
		12	24	31		52	Grey SILT		
25		13	4	4		9			
		14	8	8		17			
		15	8	6		15	(Wet-Very Compact to Firm)		
-30			9	9			End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 2 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

3/27/81

3/30/81

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SUBSURFACE LOG

LOCATION Albany, NY

N. L. Industries

SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
	0-6	6-12	12-18	18-N			
1	2	2			5	Brown fine SAND, little silt - (Wet)	Note #1: Ground water level at 6.0' w/casing to 10.0'
	3	3			8		
2	3	4			9		
	4	7			12		
3	3	4			16		
	5	8			9		
4	7	4			19		
	8	8			34	Grey fine SAND, Some Silt (Moist to Wet-Loose to Firm)	
5	15	8			63		
	8	10			16		
6	3	3			17	-seam of brown fine sand noted (Wet-Very Compact to Firm)	
	6	6			22		
7	11	9			12	Grey SILT	
	10	11			12		
8	9	14			12	(Wet-Firm)	
	20	17			17		
9	20	24			17	End of Boring @ 30.0'	
	39	28			12		
10	14	8			12		
	8	14			12		
11	11	7			12		
	10	22			12		
12	10	8			12		
	14	19			12		
13	9	6			12		
	6	6			12		
14	3	4			12		
	8	10			17		
15	6	8			17		
	9	9			17		

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive "casing "with _____ lb. weight falling _____ "per blow.
 2 1/2" I.S. U.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/26/81
 FINISHED 3/26/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-8-10
 SURF. ELEV. _____
 G. W. DEPTH. See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW LN CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	N			
0		1	1	2		4	Brown fine SAND, little silt	Note #1: Ground water level @ 8.0' w/casing to 15.0' Note #2: WOR-indicates split spoon advanced six inches under weight of drill rods alone	
		2	3	2		3			
		3	1	1		3	(Wet)		
5		4	8	10		19			
		5	7	8		15	layer of dark brown fine SAND, Some Silt, trace organics noted		
		6	2	5		9	(Moist to Wet-Loose to Firm)		
10		7	5	4		8	Gray fine SAND, Some Silt		
		8	3	4		7	(Wet-Loose)		
15		9	4	5		10	Grey fine SAND and SILT w/seams of grey CLAY noted		
		10	3	4		8			
20		11	6	6		11	(Wet-Loose to Firm)		
		12	7	8		16	Grey fine SAND and SILT		
		13	WOR	4		9			
		14	8	5		10			
		15	6	7		15	(Wet-Loose to Firm)		
30							End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "w" _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 3 1/4" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/25/81
 FINISHED 3/25/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-10-1
 SURF ELEV. _____
 C. W. DEPTH. See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER					BLOW LN CASI-G-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-N	N			
0		1	2	1			3	Brown fine SAND, little silt (Moist-Loose)	Note #1: At completion of boring, no free water in hole	
		2	3							
		2	1	2			3	Grey fine SAND, little silt, trace organic material (Wet-Firm)		
		1	1							
5		3	1	3			12	Brown fine SAND, little silt (Wet - Loose)		
		9	7							
		4	6	6			14	Grey fine SAND, Some Silt (Wet-Loose)		
		8	6							
		5	3	3			4	Grey fine SAND and SILT w/seams of grey CLAY noted.		
		1	1							
10		6	WOR	3			7	Grey fine SAND and SILT w/seams of grey CLAY noted.		
		4	3							
		7	4	5			10	Grey fine SAND and SILT w/seams of grey CLAY noted.		
		5	4							
		8	3	2			7	Grey fine SAND and SILT w/seams of grey CLAY noted.		
		5	4							
		9	4	4			17	Grey fine SAND and SILT w/seams of grey CLAY noted.		
		13	8							
		10	WOR	9			17	Grey fine SAND and SILT w/seams of grey CLAY noted.		
		8	14							
20		11	WOR	WOR			5	Grey fine SAND and SILT w/seams of grey CLAY noted.		
		5	3							
		12	5	5			12	Grey fine SAND and SILT w/seams of grey CLAY noted.		
		7	6							
		13	WOR	4			8	Grey fine SAND and SILT w/seams of grey CLAY noted.		
		4	5							
25		14	5	5			11	Grey fine SAND and SILT w/seams of grey CLAY noted.		
		6	5							
		15	2	3			9	Grey fine SAND and SILT w/seams of grey CLAY noted.		
		6	10							
30								(Wet-Firm to Loose) End of Boring @ 30.0'		

N = No blows to drive 2 "spoon 12" with 140 lb. pin wt. falling 30" per blow
 C = No blows to drive _____ "cas-g" with _____ lb. weight falling _____" per blow.
 METHOD OF INVESTIGATION 3 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/25/81
 FINISHED 3/25/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO B-10-2
 SURF ELEV. _____
 G. W. DEPTH See Note #1

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24			
0		1	1	3		8	Brown fine SAND, little silt	Note #1: Sixteen hours after completion of boring, groundwater level @ 6.0' Note #2: WOR-indicates split spoon advanced six inches under weight of drill rods alone	
		5	6						
		2	2	2		4			
		2	1						
5		3	2	3		5	-seam of black fine SAND noted (Moist to Wet-Loose)		
		2	2						
		4	4	8		15	Greenish-Brown fine SAND, little silt (Wet-Firm)		
		7	5						
		5	4	5		10	Grey fine SAND, Some Silt		
10		5	5						
		6	4	5		10			
		5	5						
		7	3	3		7			
		4	5				(Wet-Loose)		
15		8	WOR	3		5	Grey fine SAND and SILT w/seams of grey CLAY noted		
		2	2						
		9	4	4		7			
		3	3						
		10	WOR	3		7			
		4	4						
20		11	WOR	WOR		6			
		6	6						
		12	4	7		14			
		7	6						
25		13	WOR	3		8			
		5	4						
		14	8	9		17			
		8	8						
		15	4	4		8			
		4	4				(Wet-Firm to Loose)		
30							End of Boring @ 30.0'		

N = No blows to drive 2 "spoon, 12 "with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 3 1/4" I.D. H.S.A.C.

CLASSIFICATION Visual by _____
 _____ Driller _____

DATE
 STARTED 5/25/81
 FINISHED 3/25/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-11-1
 SURF ELEV. _____
 C. W. DEPTH. See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries

LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER					BLOW ON CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24	24			
0	/	1	1	2			5	Brown fine SAND, little silt	Note #1: At completion of boring, no free water in hole Note #2: WOR-indicates split spoon advanced six inches under weight of drill rods alone	
			3	2						
2	/	2	WOR	1			2	-no recovery		
			1	1						
5	/	3	1	1			4	-Trace organic material noted (Moist-Loose)		
			3	2						
4	/	4	10	13			23	Greenish-brown fine SAND, little silt (Wet-Firm)		
			10	10						
5	/	5	3	4			8	Grey fine SAND, Some Silt		
			4	5						
10	/	6	4	3			6			
			3	3						
7	/	7	6	5			10	(Wet-Loose)		
			5	3						
8	/	8	3	3			5	Grey fine SAND and SILT w/seams of grey CLAY noted		
			2	3						
9	/	9	3	3			7			
			4	3						
10	/	10	6	8			14			
			6	5						
20	/	11	2	5			11			
			6	6						
12	/	12	7	8			16			
			8	6						
25	/	13	3	4			10			
			6	5						
14	/	14	7	8			15			
			7	7						
15	/	15	4	6			11	(Wet-Loose to Firm)		
			5	5						
30	/						End of Boring @ 30.0'			

N = No blows to drive 2 "spoon, 12" with 140 lb. pin wt. falling 30 "per blow
 C = No blows to drive _____ "casing" with _____ lb. weight falling _____ "per blow.
 METHOD OF INVESTIGATION 3 1/2" I.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DS-4

DATE
 STARTED 3/25/81
 FINISHED 3/25/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-12-1
 SURF ELEV. _____
 C. W. DEPTH. See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING	SOIL OR ROCK CLASSIFICATION	NOTES
			0-6	6-12	12-18	18-24			
0		1	1	2		19	Brown to black fine SAND, little silt	Note #1: At completion of boring, no free water in hole	
		17	26						
		2	21	9		13	- (Wet)		
		4	4						
5		3	4	4		8	-grades brown		
		4	5						
		4	6	5		10	-grades Some Silt, trace organic material (Moist to Wet-Firm to Loose)		
		5	5						
		5	3	1		2	Grey fine SAND, Some Silt (Wet-Loose)		
		1	1						
10		6	1	1		3	Grey fine SAND and SILT w/seams of grey CLAY noted	Note #2: WOR-indicates split spoon advanced six inches under weight of drill rods alone	
		2	2						
		7	3	3		7	(Wet-Loose)		
		4	5						
		8	WOR	2		5	Grey fine SAND and SILT w/seams of grey CLAY noted		
		3	2						
		9	4	3		5	(Wet-Loose to Firm)		
		2	3						
		10	3	6		14	End of Boring @ 30.0'		
		8	6						
20		11	4	8		14	End of Boring @ 30.0'		
		6	4						
		12	7	6		11	End of Boring @ 30.0'		
		5	5						
		13	WOR	6		12	End of Boring @ 30.0'		
		6	5						
		14	7	8		15	End of Boring @ 30.0'		
		7	5						
		15	3	5		11	End of Boring @ 30.0'		
		6	5						
30							End of Boring @ 30.0'		

...blows to drive 2 "spoon 12 "with 140 lb. pin wt. falling 30 "per blow
 ...blows to drive _____ "casing _____ "with _____ lb. weight falling _____ "per blow.
 INVESTIGATION 3-11 L.D. H.S.A.C.

CLASSIFICATION Visual by Driller

DATE
 STARTED 3/25/81
 FINISHED 3/25/81
 SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. B-12-2
 SURF. ELEV. _____
 C. W. DEPTH. See Note #1

SUBSURFACE LOG

PROJECT N. L. Industries LOCATION Albany, NY

DEPTH-FT	SAMPLES SAMPLE NO	BLOWS ON SAMPLER				BLOW ON CASING-C	SOIL OR ROCK CLASSIFICATION	NOTES
		0-6	6-12	12-18	N			
0	1	1	3		6		Note #1: Groundwater level @ 7.0' w/casing to 10.0' Note #2: WOR-indicates split spoon advanced six inches under weight of drill rods alone	
		3	3					
	2	2	1		4			
		3	4					
5	3	5	4		8			
		4	4					
	4	8	7		16	(Wet)		
		9	7					
	5	4	3		5	Grades "Some" silt, trace organic material		
		2	1			(Moist to Wet-Firm to Loose)		
10	6	1	1		4			
		3	3					
	7	5	3		7	Grey fine SAND, Some Silt		
		4	4					
15	8	WOR	3		7			
		4	3			(Wet-Loose)		
	9	4	5		9	Grey fine SAND & SILT, w/seams of grey CLAY noted		
		4	2					
	10	WOR	3		6			
		3	4					
20	11	WOR	4		11			
		7	8			(Wet-Loose to Firm)		
	12	9	13		27	Grey fine SAND, Some Silt		
		14	13					
25	13	4	5		10			
		5	4					
	14	7	7		17			
		10	5			(Wet-Loose to Firm)		
	15	WOR	4		8	Grey fine SAND & SILT, w/seams of grey CLAY noted		
30		4	4			(Wet-Loose)		
						End of Boring @30.0'		

No blows to drive 2 "spoon 12" with 140 lb. pin wt. falling 30" per blow
 C = No blows to drive "casing" with _____ lb. weight falling _____" per blow.
 METHOD OF INVESTIGATION 3/4" I.D. H.S.A.C.

CLASSIFICATION Visual by Drilling

SUBSURFACE LOG

SURF ELEV. _____
 G. W. DEPTH See Note #1

LOCATION Albany, NY

SOIL OR ROCK
 CLASSIFICATION

NOTES

Brown fine SAND, little silt

Note #1:
 Groundwater level @ 7.0' w/casing to 10.0'

- (Wet)

- Grades "Some" silt, trace organic material
 (Moist to Wet-Firm to Loose)

Grey fine SAND, Some Silt

Note #2:
 WOR-indicates split spoon advanced six inches under weight of drill rods alone

(Wet-Loose)

Grey fine SAND & SILT, w/seams of grey CLAY noted

(Wet-Loose to Firm)

Grey fine SAND, Some Silt

(Wet-Loose to Firm)

Grey fine SAND & SILT, w/seams of grey CLAY noted
 (Wet-Loose)

End of Boring @30.0'

CLASSIFICATION Visual by
 Drilling

2" spoon 12" with 140 lb. pin wt. falling 30" per blow
 "casing" with _____ lb. weight falling _____" per blow.
 3/4" I.D. H.S.A.C.

