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DATA FROM CONTROLLED
DRILLING PROGRAM IN
KANE, KENDALL, AND
DEKALB COUNTIES, ILLINOIS

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KANE, KENDALL, AND DE KALB COUNTIES, ILLINOIS

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Descriptions of character and sequence of materials and data on relative consistency, natural water content, and grain-size distribution are given for glacial deposits tested and sampled, as a part of a controlled drilling program, at nine sites in Kane County and one each in Kendall and DeKalb Counties in northeastern Illinois.

INTRODUCTION

Data gathered from field and laboratory analyses of samples collected from nine holes drilled in Kane County and one each in Kendall and DeKalb Counties (fig. 1) are presented here. These holes were drilled as part of a study of water resources management in the six-county metropolitan area of northeastern Illinois. A total of 52 holes was drilled in the area to obtain data and samples of the subsurface unconsolidated materials, which are mainly glacial drift deposits. The program was coordinated by the Northeastern Illinois Metropolitan Area Planning Commission and financed by a planning grant provided by the Federal Home and Housing Finance Agency. The work was supervised by the Illinois State Geological Survey, and drilling was performed under contract by the Layne-Western Company of Aurora, Illinois.

The first number of this series (Environmental Geology Notes 1, April 1965) gave the specific objectives of the drilling and sampling program, a description of the drilling methods and equipment used to obtain the samples, and an explanation of the methods used to perform the various tests made on the samples by both the contractor and the Illinois Geological Survey. Environmental Geology Notes 2, May 1965, presented the data collected for the nine borings drilled in DuPage County. Data from borings in other metropolitan area counties will appear in future issues of this series.

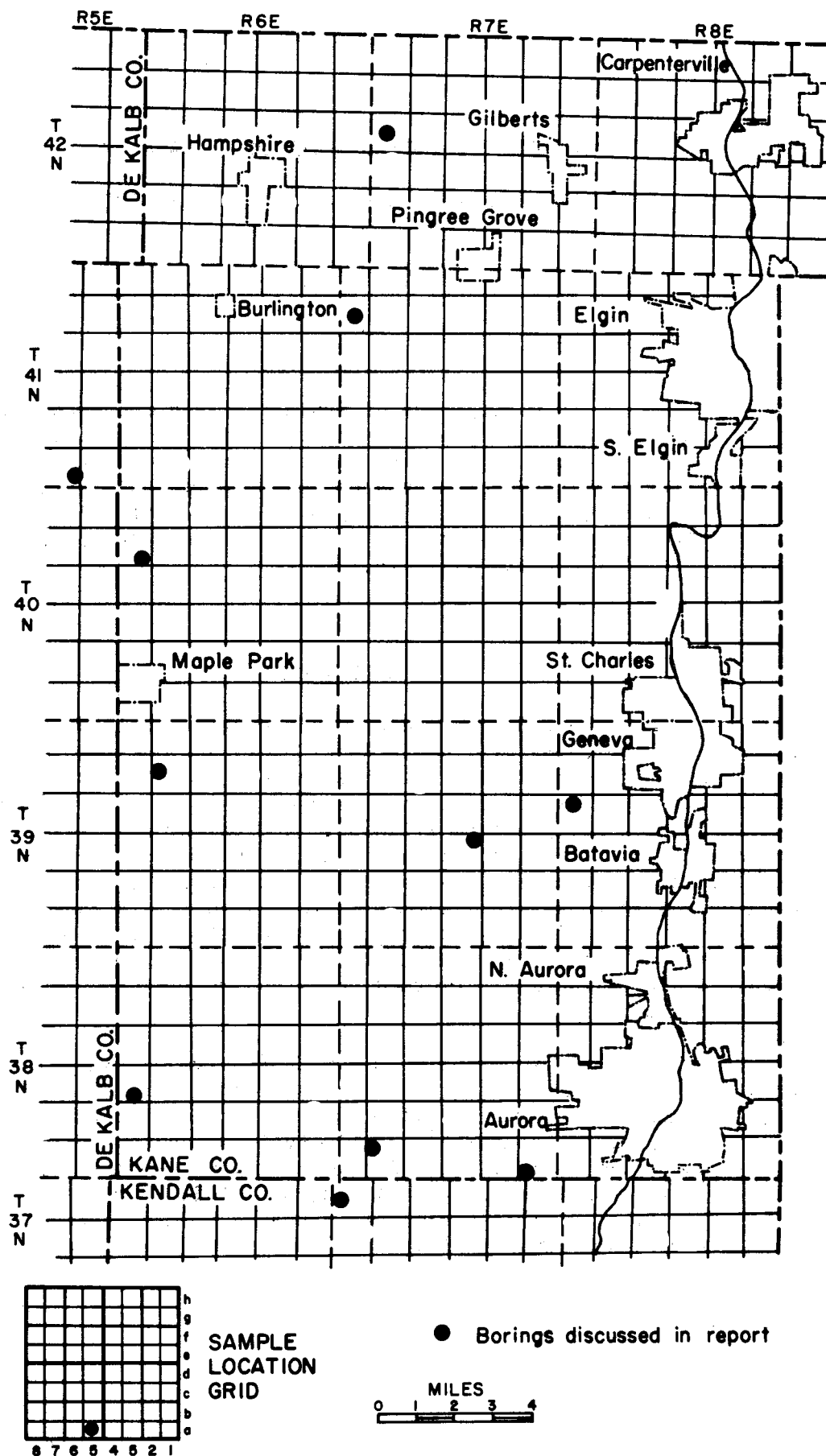


Fig. 1 - Location of borings in Kane, Kendall, and DeKalb Counties

IDENTIFICATION SYSTEM

The numbering system used to identify the borings is based on the location of the boring. The number of each hole consists of the county abbreviation, township, range, section, and coordinates within the section. Sections are divided into rows of one-eighth-mile squares. Each square contains 10 acres and corresponds to a quarter of a quarter section. A normal section of one square mile contains eight rows of one-eighth-mile squares; an odd-sized section contains more or fewer rows. Rows are numbered from east to west and lettered from south to north as shown in the grid on figure 1. For example, a well located in square 5a of section 19, township 38 north, range 6 east, would be numbered KNE 38N6E-19.5a. Where there is more than one boring in a 10-acre square they are identified by arabic numbers after the lower case letter in the boring number, for example, KNE 38N6E-19.5a2.

A location map is presented for each of the 11 borings, drawn on the scale of one inch equals 2000 feet, or 1:24,000, the scale of the United States Geological Survey 7½-minute quadrangle topographic maps. The borings have been located within the 10-acre coordinate squares, with as much accuracy as this scale permits, according to detailed footage locations from easily recognizable landmarks supplied by the contractor.

The quadrangle topographic map on which the boring is located is identified on the location map. Quadrangle maps may be obtained from the Illinois State Geological Survey, Urbana, or from the United States Geological Survey, Washington, D. C.

EXPLANATION OF NOTES ON DRILLING RECORDS

The abbreviations and symbols used by the contractor on the drilling records included in this report are listed below.

Blows/18" - number of blows required to drive the split-barrel sampler 18 inches of penetration (see Environmental Geology Notes 1, p. 2, for detailed description). Weight of hammer and length of drop for various depth intervals are indicated on the log heading.

81/2" - number of blows (81) required to drive a split-barrel sampler a certain number of inches (2").

Recovery (in.) - length of the sample retained in the sampler.

Q_u - unconfined compressive strength expressed in tons per square foot (TSF).

p - measurement made with pocket penetrometer.

MC - natural moisture content.

SS - split-barrel sampler 1 3/8 inches inside diameter (ID).

2S - split-barrel sampler 2 inches ID.

3S - split-barrel sampler 3 inches ID.

PD - poor drive.

W - wash sample.

The relations between descriptive terms for relative density and relative consistency and the quantitative expressions for these aspects of the materials follow.

Relative Density		Relative Consistency	
Description	Blows/ft	Description	Qu in TSF
Very loose.....	0 - 5	Very soft.....	0.0 - 0.25
Loose.....	5 - 10	Soft.....	0.25 - 0.5
Medium dense.....	10 - 30	Medium.....	0.5 - 1.0
Dense.....	30 - 50	Stiff.....	1.0 - 2.0
Very dense.....	50+	Very stiff.....	2.0 - 4.0
		Hard.....	4.0+

Descriptions of materials given in the drilling records were made in the field by the sampler and are not necessarily consistent with the laboratory data. Stratigraphic interpretation of the borings is under study and is beyond the scope of this report.

SIZE-DISTRIBUTION ANALYSIS

Analysis of the density and grain-size distribution of the cohesive and noncohesive materials was carried out in the laboratories of the Illinois State Geological Survey, Urbana, Illinois. The Tyler sieves and their U. S. Standard equivalents used in the grain-size analyses, the diameter of the mesh openings in inches and millimeters, and the Wentworth grain-size classification are shown in the table on page 5.

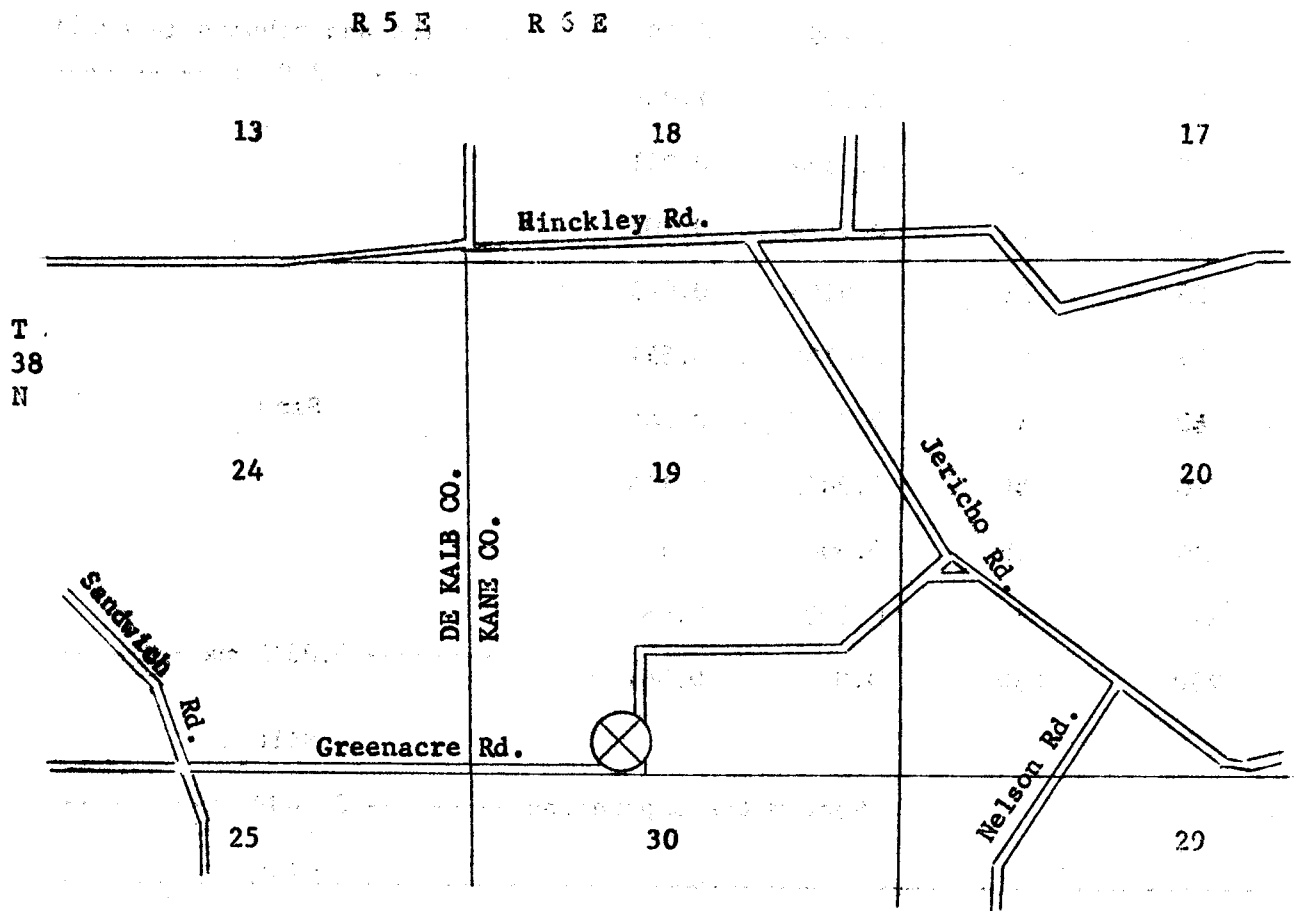
Sieve number		Mesh diameter		Grain-size classification (Wentworth)
U. S. Standard	Tyler	in.	mm	
4	4	0.185	4.699	Granules and pebbles (gravel)
10	9	0.078	1.981	-----2.0 mm-----
18	16	0.0390	0.991	
25	24	0.0276	0.701	
35	32	0.0195	0.495	
45	42	0.0138	0.351	
60	60	0.0097	0.246	Sand
80	80	0.0069	0.175	
120	115	0.0049	0.124	
170	170	0.0035	0.088	
230	250	0.0024	0.061	-----0.0625 mm-----
				Silt
				Hydrometer separation -----0.0039 mm-----
				Clay

The data presented in the size-distribution analysis for each boring are classified as follows:

gravel - > 2.0 mm
 sand - < 2.0 mm and ≥ 0.062 mm
 silt - < 0.062 mm and > 0.004 mm
 clay - < 0.004 mm

Some of the sample numbers in the tables giving grain-size data on the cohesive and noncohesive materials have letter symbols added that indicate the following:

- A - Top bag of sample where two bags were used for a sampled interval.
- B - Bottom bag of sample where two bags were used for a sampled interval.



Location Detail

200' N of corner in center of
W ditch of Greenacre Road
1750' E, 200' N of SW_c, sec. 19
Sandwich Quadrangle

Fig. 2 - Location of boring KNE 38N6E-19.5a

DRILLING RECORD FOR KNE 38N6E-19.5a

Surface elevation: 720.0 feet Boring method: Hollow auger Rotary
 Date started: 10-5-62 (0.0-95.0 ft) (95.0-163.0 ft)
 Date completed: 11-21-62 Hammer weight: 140 pounds 475 pounds
 Hammer drop: 30 inches 36 inches

Depth (1"±10')	Description of material	Samples						
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer	Q _u	MC
6.5	Clay, silty, gray mottled with yellow; local wash	1	2S	4.5- 6.0	12	10	2.0	19.3
		2	2S	9.5- 11.0	18	15	2.9	11.0
15.5	Till - silt, sandy, brown; trace gravel	3	2S	14.5- 16.0	17	22	1.5	11.7
		4	2S	19.5- 21.0	4	23		
		5	2S	24.5- 26.0	2	20		
30.5	Till - silt, clayey to sandy; trace gravel; few cobbles	6	2S	29.5- 31.0	17	14	1.0	10.2
		7	2S	34.5- 36.0	18	50	4.5+	7.7
		8	2S	39.5- 41.0	18	70		
		9	2S	44.5- 46.0	10	101		
33.5	Till - silt, sandy, brown-gray; trace clay; gravel and cobbles	10	2S	49.5- 51.0	10	90		
39.5	Till - silt, sandy to sand-silt-clay, reddish brown; trace gravel; very compact	11	2S	54.5- 56.0	14	51	2.9	18.8
		12	2S	59.5- 61.0	18	61	2.4	20.5
54.0	Sand, fine to coarse, brown to gray, dirty	13	2S	64.5- 66.0	18	21	2.2	19.2
		14	2S	69.5- 71.0	18	21	2.5	18.7
		15	2S	74.5- 76.0	12	48		8.7
		16	2S	79.5- 81.0	1	134		
63.0	Sand, very fine, gray, stratified with silt and clay	17	2S	84.5- 86.0	12	119		
		18	2S	89.5- 91.0	12	56	5.2+	17.6
		19	2S	94.5- 96.0	18	36	2.2	19.7
	Clay to silty clay, gray, stratified with silt	20	2S	100.0-101.5	18			13.9
		21	2S	105.0-106.5	12	31		11.5

(Continued)

DRILLING RECORD FOR KNE 38N6E-19.5a - Continued

Depth (1"=10')	Description of material	Samples						
		No.	Type	Depth (ft)	Recovery (in.)	Blows/18" drop hammer	Q _u	MC
74.0	(Description on preceding page)	22	2S	110.0-111.5	12	34	5.2+	10.3
		23	2S	115.0-116.5	16	47	5.2+	13.2
	Till - sand, silty, gray; sand layers; little gravel	24	2S	120.0-121.5	16	70	5.2+	10.3
		25	2S	125.0-126.5	17		5.2+	9.7
		26	2S	130.0-131.5	18	37	5.2+	13.2
89.0		27	2S	135.0-136.5	12	75	5.2+	14.3
	Clay, gray; thin stringers of fine sand, stratified; thin interbeds of gray-brown till (sandy silt)	28	2S	137.0-138.5	18	100		
		29	2S	145.0-146.5	12			
		30	2S	150.0-151.5	5	201		
		31	2S	155.0-156.5	10	131		
		32	2S	158.0-159.0	10	102		
109.5		33	2S	162.0-163.0	3	105		
	Till - silt, clayey, gray; trace sand and gravel							
137.0	Gravel, gray; little medium to coarse sand and traces of silt and cobbles							

(Continued)

DRILLING RECORD FOR KNE 38N6E-19.5a - Continued

Depth (1"=10')	Description of material	Samples				
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer Q _u MC
152.0	(Description on preceding page)					
157.5	Sand, very fine, gray; trace of silt					
163.0	Bedrock - shale, green, soft; few dolomite inclusions; upper 3' soft and weathered					
	Bottom of hole @ 163.0'					

SIZE DISTRIBUTION DATA FOR KNE 38N6E-19.5a

Cohesive Materials

Sample	% > 2.0 mm	% < 2.0 mm	Size distribution of portion < 2.0 mm		
			% > .062 mm	% > .004 mm	% < .004 mm
1	0.0	100.0	1	63	36
2	10.0	90.0	41	46	13
3	11.2	88.8	40	40	20
4	6.0	94.0	42	42	16
5	2.9	97.1	22	56	22
6A	24.0	76.0	47	41	12
6B	13.0	87.0	46	41	13
7	9.0	91.0	34	44	22
11B	0.0	100.0	1	51	48
12B	0.0	100.0	0	54	46
13	0.0	100.0	0	78	22
14	0.0	100.0	0	25	75
15	10.0	90.0	32	40	28
16	32.1	67.9	71	22	7
17	28.4	71.6	80	13	7

(Continued)

SIZE DISTRIBUTION DATA FOR KNE 38N6E-19.5a - Continued

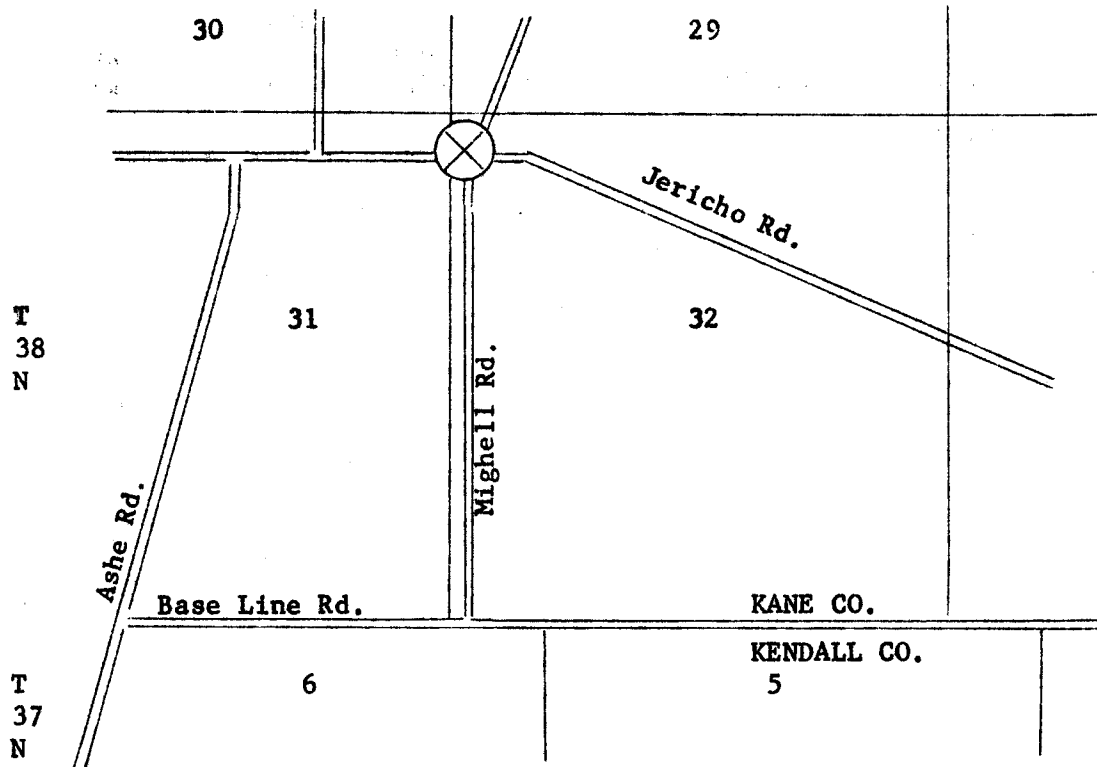
Cohesive Materials - Continued

Sample	% > 2.0 mm	% < 2.0 mm	Size distribution of portion < 2.0 mm		
			% > .062 mm	% > .004 mm	% < .004 mm
18	0.0	100.0	0	42	58
19	0.0	100.0	0	24	76
20	2.1	97.9	36	44	20
21	7.2	92.8	41	36	23
22	11.1	88.9	32	42	26
23	7.8	92.2	21	39	40
24	12.6	87.4	31	39	30
25	4.8	95.2	27	42	31
26A	10.0	90.0	29	42	29
27	0.0	100.0	2	50	48
31	5.0	95.0	77	15	8
32	0.5	99.5	9	36	55

Noncohesive Materials

Sample	Percentage retained on sieve										
	4	9	16	24	32	42	60	80	115	170	Pan
8	5.2	8.8	10.5	5.5	11.3	16.3	16.8	9.5	4.7	2.3	9.1
9	16.1	16.9	17.0	8.3	12.0	13.5	9.7	2.8	1.2	0.6	1.9
10	0.0	0.2	0.3	0.1	0.5	2.9	17.3	36.3	26.5	7.2	8.7
11A	0.0	0.2	0.1	0.0	0.0	0.1	0.8	5.5	34.2	30.7	28.4
12A	0.0	0.2	0.1	0.0	0.1	0.1	0.2	1.1	20.8	34.7	42.7
17	21.8	15.0	13.5	6.3	8.8	7.7	7.7	4.5	3.5	2.2	9.0
19	50.3	8.3	6.6	2.7	3.2	3.7	6.8	5.1	3.5	2.3	7.5
28	32.7	25.6	8.1	2.3	3.7	5.3	6.8	3.7	2.5	1.8	7.5
29	51.3	12.4	9.5	3.8	4.9	3.9	2.9	1.7	1.6	1.5	6.5
30	54.3	14.6	7.3	2.6	5.2	5.1	3.0	1.2	1.2	1.0	4.5

R 7 E



Location Detail

20' N of Jericho Road
85' W of Mighell Road
250' E, 450' S of NW_C, sec. 32
Yorkville 15' Quadrangle

Fig. 3 - Location of boring KNE 38N7E-32.8h

DRILLING RECORD FOR KNE 38N7E-32.8h

Surface elevation: 694.0 feet

Date started: 10-18-62

Date completed: 10-19-62

Boring method: Hollow auger (0.0-109.5 ft)

Hammer weight: 140 pounds

Hammer drop: 30 inches

Depth (1"=10')	Description of material	Samples						
		No.	Type	Depth (ft)	Recovery (in.)	Blows/18" drop hammer	Q _u	MC
3.5	Clay, silty, brown	1	2S	4.5- 6.0	18	14	0.9	14.5
11.5	Till - sand-silt-clay, brown; few pebbles	2	2S	9.5- 11.0	18	36	1.8	14.9
		3	2S	14.5- 16.0	12	45		
		4	2S	19.5- 21.0	14	26		23.2
20.0	Gravel, sandy, brown, fine to medium	5	2S	24.5- 26.0	10	34		
		6	2S	29.5- 31.0	18	49	5.2	10.4
27.0	Sand, gravelly, gray, fine to coarse; few cobbles	7	2S	34.5- 36.0	18	60	5.2	9.9
		8	2S	39.5- 41.0	15	30	3.3	10.3
		9	2S	44.5- 46.0	18	69	5.2	9.7
64.0	Till - sand-silt-clay, reddish brown-gray, very compact; few pebbles	10	2S	49.5- 51.0	18	62	5.2	11.4
		11	2S	54.5- 56.0	18	72	5.2	10.7
		12	2S	59.5- 61.0	18	83	5.2	10.7
		13	2S	64.5- 66.0	18	81		
		14	2S	69.5- 71.0	18	84	3.3	11.3
		15	2S	74.5- 76.0	1.2	65	4.2	11.4
		16	2S	79.5- 81.0	1.2	50	2.1	9.2
		17	2S	84.5- 86.0	8	300		
		18	2S	89.5- 91.0	18	72	3.8	18.4
		19	2S	94.5- 96.0	17	96		
67.0	Sand, gray, fine	20	2S	99.5-101.0	18	83		
	(Sample described on next page)	21	2S	104.5-106.0	18	62	3.5	21.4

(Continued)

DRILLING RECORD FOR KNE 38N7E-32.8h - Continued

Depth (1"=10')	Description of material	Samples					
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer	Qu MC
82.5	Till - sand-silt-clay, gray-brown; sand layers; few pebbles	22	SS	108.0-108.5	2	132	
		23	SS	108.5-109.5	7	182	
89.5	Gravel, sandy, gray, trace silt						
108.0	Clay, gray, stratified with silt						
109.5	Silt, clayey, gray; rock fragments						
	Bottom of hole @ 109.5'						

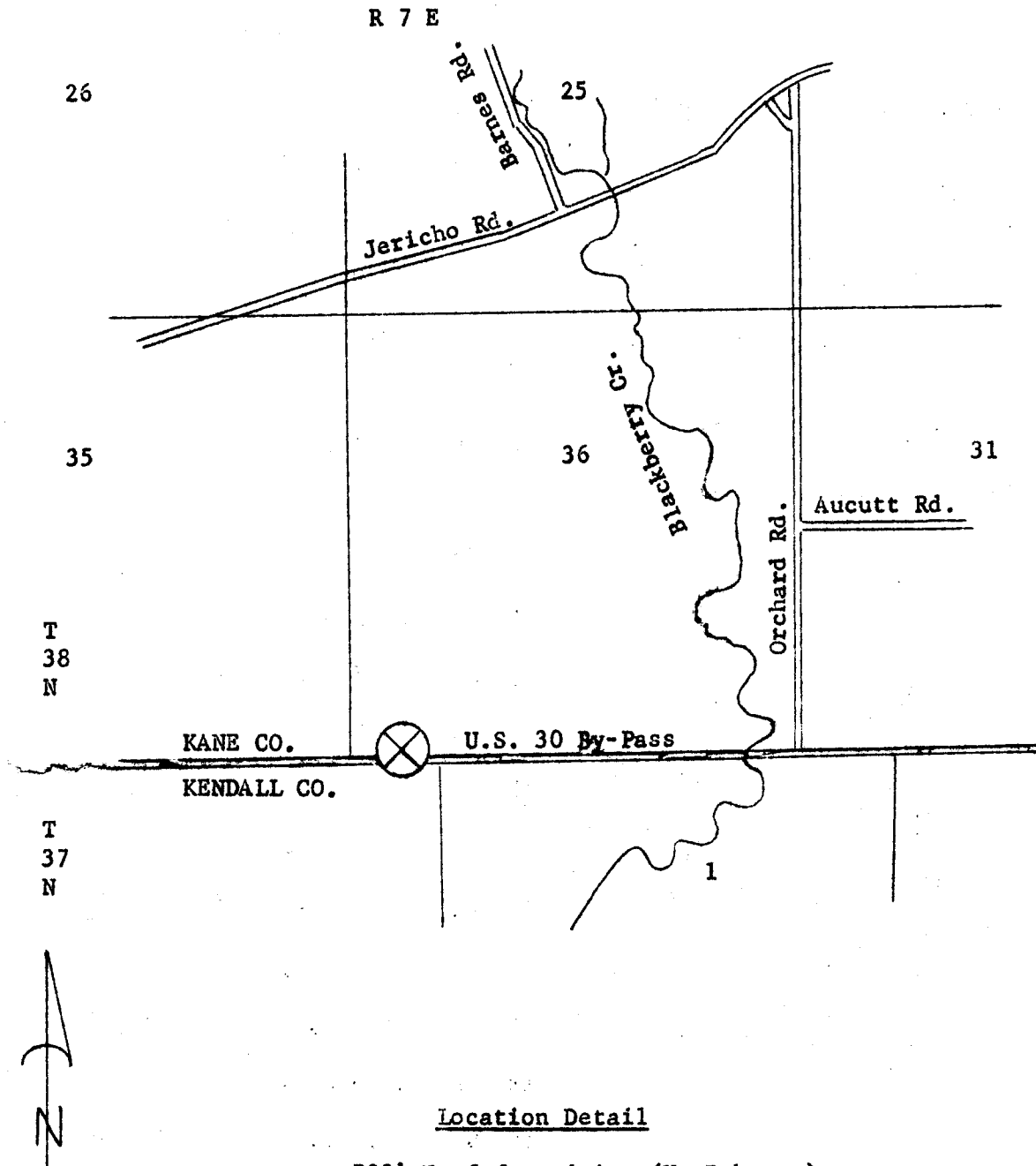
SIZE DISTRIBUTION DATA FOR KNE 38N7E-32.8h

Cohesive Materials

Sample	% > 2.0 mm	% < 2.0 mm	Size distribution of portion < 2.0 mm			Density
			% > .062 mm	% > .004 mm	% < .004 mm	
1	12.0	88.0	37	41	22	2.25
2	13.0	87.0	36	43	21	
4	0.0	100.0	2	86	12	
6	3.0	97.0	35	41	24	
7	3.0	97.0	35	43	22	2.44
8	12.0	88.0	37	40	23	
9	3.0	97.0	30	43	27	2.37
10	5.0	95.0	31	43	26	
11	4.0	96.0	29	43	28	2.33
12	38.0	62.0	55	30	15	
14	6.0	94.0	34	44	22	
15	8.0	92.0	34	43	23	2.34
16	6.0	94.0	33	41	26	
18	0.1	99.9	9	73	18	
19	2.0	98.0	10	41.5	48.5	2.17
20	5.0	95.0	14	64	22	

Noncohesive Materials

Sample	Percentage retained on sieve										Pan
	4	9	16	24	32	42	60	80	115	170	
3	35.6	19.6	15.1	6.7	7.1	5.2	3.8	1.8	1.2	0.7	3.2
5	18.2	4.6	4.5	1.8	3.7	4.9	8.8	9.2	10.0	7.9	26.4



Location Detail

700' E of farm drive (H. Behrens)
 32' N of N pavement edge (U.S. 30 By-Pass)
 32' N, 720' E of SW_C, sec. 36
 Yorkville 7½' Quadrangle

Fig. 4 - Location of boring KNE 38N7E-36.7a

DRILLING RECORD FOR KNE 38N7E-36.7a

Surface elevation: 665.0 feet
Date started: 1-16-63
Date completed: 1-17-63

Boring method: Hollow auger (0.0-55.5 ft)
Hammer weight: 140 pounds
Hammer drop: 30 inches

Depth (1"=10')	Description of material	Samples						
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer	Qu	MC
1.5	Topsoil, black	1	2S	1.5- 3.0	12	10	2.5	23.1
4.0	*							
6.5	**	2	2S	4.5- 6.0	6	6	0.7	26.7
11.5	Gravel, sandy, gray, fine to coarse	3	2S	7.0- 8.5	10	25		
14.0	Till - clay, sandy, gray	4	2S	9.5-11.0	10	40		
		5	2S	12.0-13.5	12	27		12.6
22.0	Gravel, sandy, gray, fine to coarse	6	SS	14.5-16.0	8	31		
		7	SS	19.5-21.0	6	31		
	Silt, sandy, gray	8	SS	24.5-26.0	4	12		
		9	SS	29.5-31.0	0	30		
32.0		11	SS	32.5-34.0	10	40		
34.5	Sand, gravelly, gray							
38.0	***	12	W	32.0-32.5				
	Gravel, sandy, gray to light gray, medium to coarse; large amount limestone fragments; large amount sandy silt binder at 42'; cobbly; few water-bearing sand layers	13	SS	34.5-36.0	18	73	4.5+	10.4
47.5		14	W	32.5-34.5				
		15	SS	39.5-41.0	6	125/11"		
52.5	Limestone, broken, light gray, with sand- and silt-filled crevices	16	W	38.0-39.5				
55.5	Limestone, light gray	17	SS	42.5-43.0	5	115/8"		
		18	W	41.0-42.5				
		19	SS	44.5-45.2	5	300/8"		
	Bottom of hole @ 55.5'	20	W	47.5-49.5				
		21	W	49.5-52.5				
		22	W	52.5-55.5				

* Clay, silty, brown and gray, mottled

** Silt, clayey, gray; root traces; sandy pockets; slight organic odor

*** Till - silt, sandy; trace clay, brown-gray; cobbly; very compact

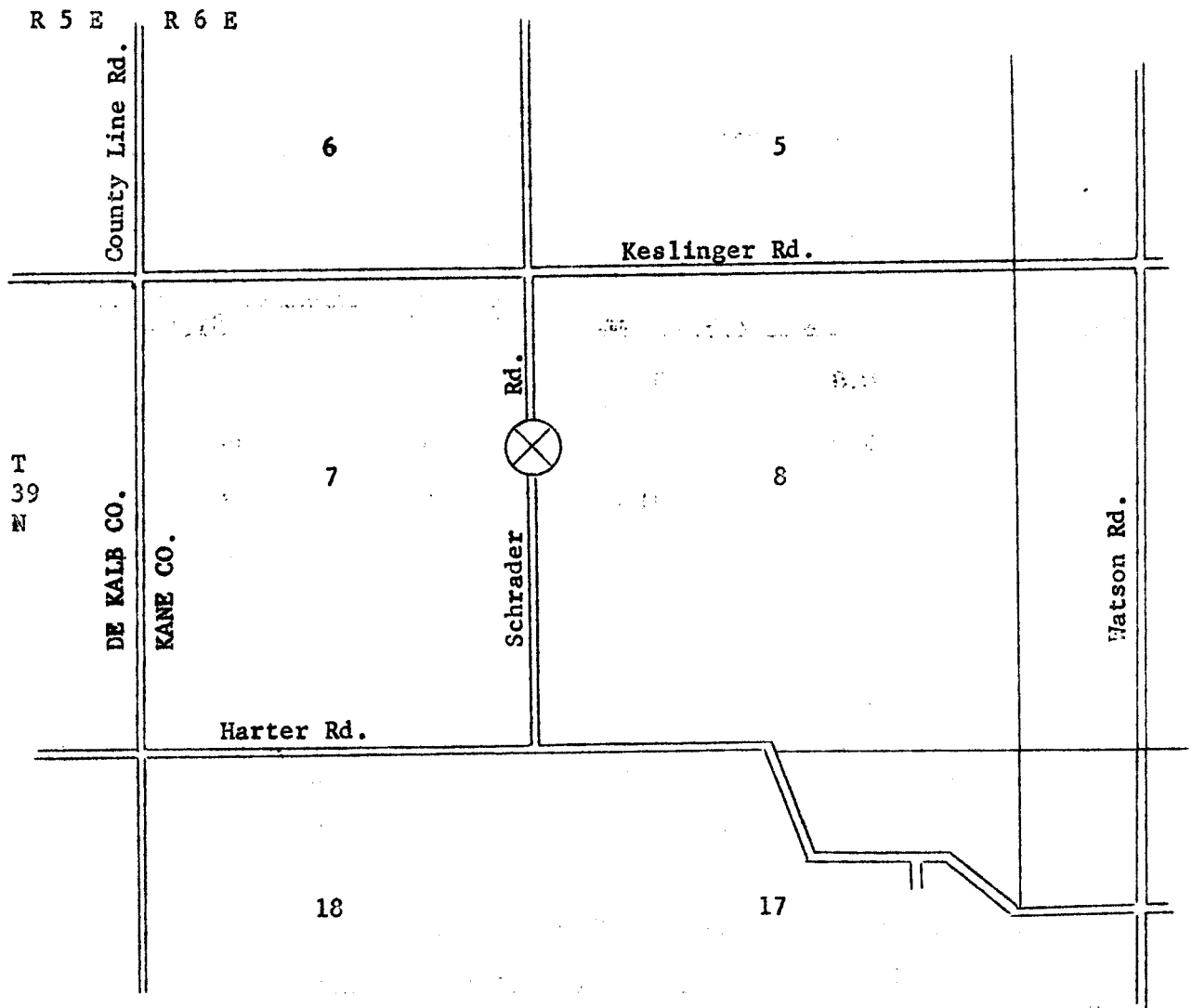
SIZE DISTRIBUTION DATA FOR KNE 38N7E-36.7a

Cohesive Materials

Sample	% > 2.0 mm	% < 2.0 mm	Size distribution of portion < 2.0 mm		
			% > .062 mm	% > .004 mm	% < .004 mm
1B	0.0	100.0	2	63	35
2	3.0	97.0	26	56	18
5	9.0	91.0	35	43	22
13	14.0	86.0	36	49	15

Noncohesive Materials

Sample	Percentage retained on sieve										
	4	9	16	24	32	42	60	80	115	170	Pan
3	50.7	10.9	9.6	8.7	9.6	3.1	2.2	1.0	0.7	0.4	3.1
4	28.6	19.3	16.0	6.9	8.5	6.8	6.1	3.0	2.0	0.9	1.9
6	41.2	10.4	5.8	3.5	7.5	10.2	11.8	4.7	1.9	0.7	2.3
7	37.7	14.7	14.0	7.8	8.1	7.0	5.8	2.1	0.9	0.5	1.4
11	16.9	20.9	13.0	5.0	6.5	8.7	11.6	5.9	3.4	1.9	6.2
12	0.6	19.9	19.4	10.2	13.2	13.2	12.7	5.5	2.6	0.9	1.8
14	0.0	11.7	15.0	8.2	13.1	14.2	17.3	9.3	5.7	2.6	2.9
18	1.5	49.7	24.4	6.1	5.6	4.1	3.3	3.3	0.9	0.4	0.7
19	67.6	13.4	7.1	2.0	1.7	1.3	1.1	0.7	0.6	0.5	4.0



Location Detail

13' E of Schrader Road
35' S of 7th power pole S of
Keslinger Road
13' E, 2000' S of NW_C, sec. 8
Sycamore Quadrangle

Fig. 5 - Location of boring KNE 39N6E-8.8e

DRILLING RECORD FOR KNE 39N6E-8.8e

Surface elevation: 855.0 feet
Date started: 10-4-62
Date completed: 10-5-62

Boring method: Hollow auger Rotary
(0.0-95.0 ft) (95.0-175.5 ft)
Hammer weight: 140 pounds 475 pounds
Hammer drop: 30 inches 36 inches

Depth (1"=10')	Description of material	Samples						
		No.	Type	Depth (ft)	Recovery (in.)	Blows/18" drop hammer	Q _u	MC
5.0	Clay, silty, gray, mottled with tan and black; local wash	1	2S	4.0- 5.5	18	8	1.0	24.1
		2	2S	9.0- 10.5	12	14		
10.0	Sand, silty, (till?); trace large gravel	3	2S	14.0- 15.5	8	18		
		4	2S	19.0- 20.5	18	20		
17.5	Silt, gray; trace clay	5	2S	24.0- 25.5	18	19		
		6	2S	29.0- 30.5	18	18		
38.0	Sand, gray, fine to coarse; trace silt and fine gravel and clay	7	2S	34.0- 35.5	10	13		
		8	2S	39.0- 40.5	18	14	1.5	12.7
		9	2S	44.0- 45.5	6	12		11.0
		10	2S	49.0- 50.5	12	15	1.2	8.8
		11	2S	54.0- 55.5	18	18	1.7	11.7
		12	2S	59.0- 60.5	12	9	0.6	12.7
		13	2S	64.0- 65.5	18	24	1.4	11.5
		14	2S	69.0- 70.5	18	27		9.8
		15	2S	74.0- 75.5	10	25		
		16	SS	79.0- 80.5	12	35		
72.5	Till - sand-silt-clay to silty clay, brown-gray; few pebbles; pinkish gray-brown at 45'	17	SS	84.0- 85.5	10	40		
		18	SS	89.0- 90.5	4	1		
		19	SS	93.0- 94.5	0	18		
		19A	2S	95.0- 96.5	10	23		9.6
		20	2S	100.0-101.5	8	30	3.7	11.0

(Continued)

DRILLING RECORD FOR KNE 39N6E-8.8e - Continued

Depth (1"=10')	Description of material	Samples					
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer	Q _u MC
84.0	Sand, gray, fine to coarse	21	2S	105.0-106.5	4	100	
		22	2S	110.0-111.5	3		
		23	2S	115.0-116.5	1		
		24	2S	117.0-118.5	12		
89.0	Silt, gray, stratified with gray-brown clay	25	2S	120.0-121.5	18	69	5.2 8.9
94.0	Sand, fine to coarse, dirty yellow-brown	26	2S	125.0-126.5	10(?)	24	13.3
		27	2S	130.0-131.5	18	22	2.9 12.7
102.0	Till - silt, clayey, brown; trace sand and gravel	28	2S	135.0-136.5	12	23	2.9 14.1
		29	2S	140.0-141.5	18	30	4.9 14.7
		30	2S	145.0-146.5	20	24	1.0 18.2
119.0	Till - gravel, sandy, silty, gray; calcareous with boulders and cobbles, becoming fine to medium brown sand; stratified near base	31	2S	150.0-151.5	20	49	5.2 6.2
		32	2S	155.0-156.5	12	62	
		33	2S	160.0-161.5	12	80	5.2 9.1
		34	2S	163.0-164.5	14	58	5.2 15.5
		35	2S	170.0-171.5	4	152	
		36	2S	175.0-175.5			
	Till - silt, sandy, brown; occasional sand lenses; traces of clay and gravel, clay content increasing with depth to 148'; basal unit is softer with thin beds of gravel and brown till at base						

(Continued)

DRILLING RECORD FOR KNE 39N6E-8.8e - Continued

Depth (1"=10')	Description of material	Samples					
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer	Q _u MC
	(Description on preceding page)						
158.0							
162.0	Till-silt, sandy, dark gray, dry; traces of sand and gravel, largely carbonaceous						
169.0	Silt and clay, blue; with thin interbeds of fine sand; 2' boulder bed at 100'. stratified						
175.5	Bedrock, siltstone, clayey, dolomitic, dark red to violet- yellow, mottled						
	Bottom of hole @ 175.5'						

SIZE DISTRIBUTION DATA FOR KNE 39N6E-8.8e

Cohesive Materials

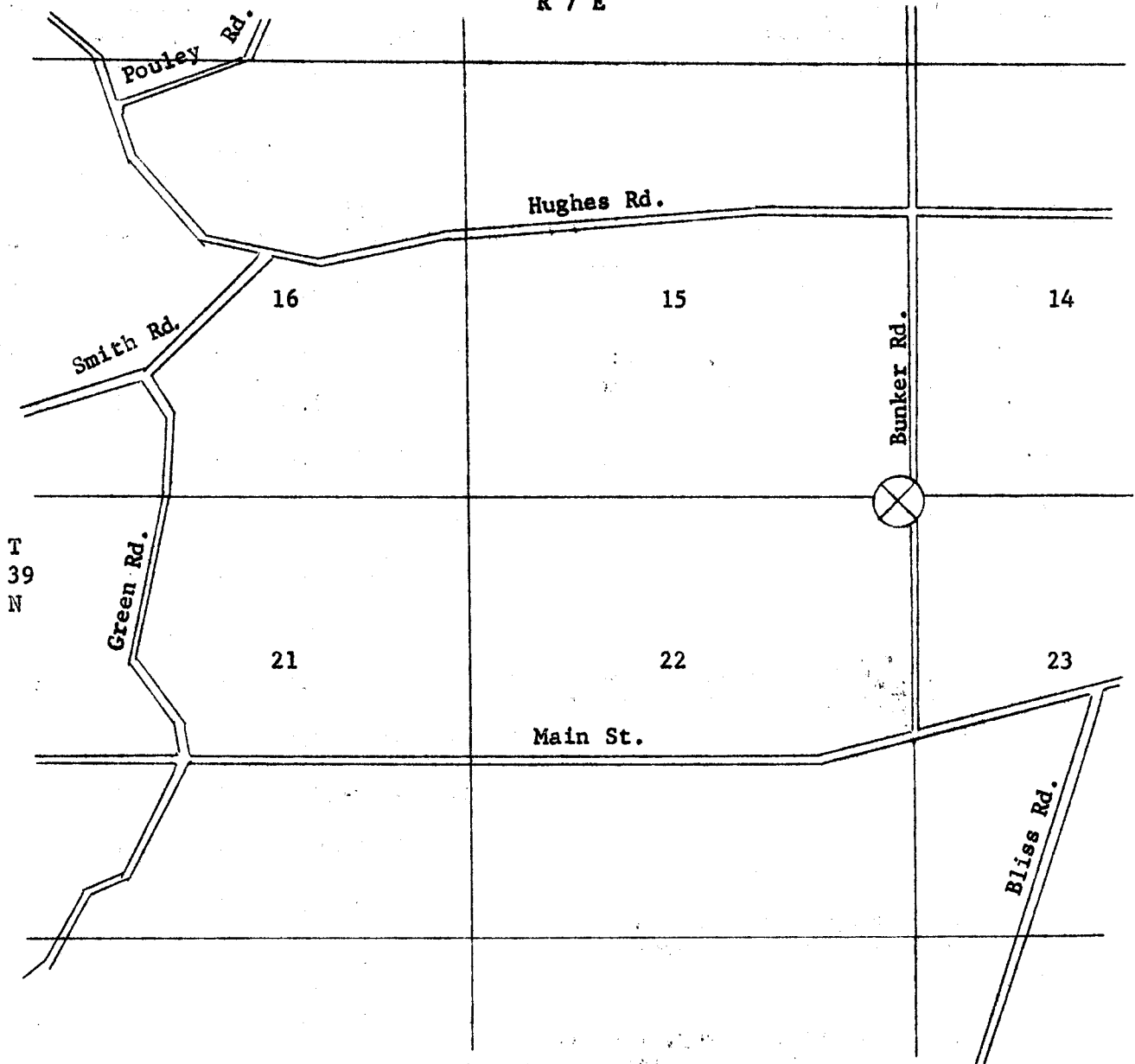
Sample	% > 2.0 mm	% < 2.0 mm	Size distribution of portion < 2.0 mm		
			% > .062 mm	% > .004 mm	% < .004 mm
1	1.0	99.0	29	36	35
2	6.0	94.0	33	45	22
3	1.0	99.0	16	74	10
8	5.8	94.2	31	42	27
9	7.3	92.7	40	38	22
10	6.3	93.7	41	38	21
11	3.8	96.2	36	40	24
12	5.3	94.7	33	44	23
13	10.3	89.7	34	42	24
14	12.6	87.4	46	38	16
17	1.0	99.0	5	43	52
19B	17.9	82.1	49	40	11
20	16.4	83.6	47	41	12
25	10.0	90.0	53	30	17
26	7.0	93.0	39	37	24
27B	2.2	97.8	31	40	29
28	3.6	96.4	28	38	34
29B	9.4	90.6	18	39	43
30	3.0	97.0	21	35	44
31B	7.7	92.3	49	35	16
32	3.0	97.0	35	42	23
32B	6.2	93.8	34	43	23
34	7.0	93.0	24	49	27

Noncohesive Materials

Sample	Percentage retained on sieve									
	4	9	16	24	32	42	60	80	115	170 Pan
5	3.5	1.7	2.1	1.3	2.5	4.6	11.3	14.4	17.6	11.2 29.8
7	1.9	1.3	2.1	1.3	2.5	4.5	10.3	12.7	16.2	9.7 37.5
16	7.6	9.5	11.3	5.9	9.4	12.7	19.5	9.3	4.9	2.4 7.5
18	4.5	44.5	8.8	3.2	4.4	5.3	7.9	5.7	5.0	2.6 8.1
24	17.5	10.0	9.2	3.5	5.5	7.2	9.9	7.2	6.7	4.6 18.7

KANE CO.

R 7 E



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39
N



Location Detail

100' S of section line
12' W of Bunker Road
22' W, 100' S of NE_c, sec. 22
Geneva Quadrangle

Fig. 6 - Location of boring KNE 39N7E-22.1h

DRILLING RECORD FOR KNE 39N7E-22.1h

Surface elevation: 760.0 feet Date started: 6-20-63 Date completed: 6-25-63		Boring method: Rotary (0.0-119.0 ft) Hammer weight: 475 pounds Hammer drop: 36 inches					
Depth (1"=10')	Description of material	Samples					
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer	MC
1.0	Topsoil, black	1	2S	5.0- 6.5	15	4	0.5p 15.6
12.5	Till - silt, sandy, brown; trace coarse gravel; little clay	2	2S	7.5- 9.0	12	9	0.8p 12.9
		3	2S	10.0-11.5	16	8	1.0p 14.4
		4	2S	12.5-14.0	12	11	11.1
15.5	*	5	2S	16.5-18.0	4	21	4.5+p 13.1
37.5	Till - clay, silty, pinkish gray; trace to little sand and gravel	6	2S	22.0-23.5	7	30	5.2+ 11.5
		7	2S	27.0-28.5	12	50	5.2+ 11.3
		8	2S	32.0-33.5	14	48	5.2+ 10.0
		9	2S	37.5-38.5	14	80	9.1
		10	2S	42.0-43.5	4	62	
		11	3S	47.0-48.5	12	78	
44.0	Sand, gray, fine; few layers of fine to medium gravel	12	3S	52.0-53.5	6	140	
		13	3S	57.0-58.5	2	90	
54.0	Till - gravel, clayey, fine to medium gravel with clay binder	14	2S	62.0-63.5	13	47	5.2+ 9.4
		15	2S	67.0-68.5	12	49	5.2+ 9.6
		16	2S	72.0-73.5	6	49	5.2+ 9.1
	(Samples described on next page)	17	2S	77.0-78.5	9	39	5.2+ 10.8
		18	2S	82.0-83.5	15	39	3.6 11.5
		19	2S	87.0-88.5	5	40	3.5p 11.1
		20	2S	92.0-93.5	6	30	

* Till - sandy silt to silty sand, gray; trace gravel; little clay

(Continued)

DRILLING RECORD FOR KNE 39N7E-22.1h

Surface elevation: 760.0 feet Date started: 6-20-63 Date completed: 6-25-63			Boring method: Rotary (0.0-119.0 ft) Hammer weight: 475 pounds Hammer drop: 36 inches					
Depth (1"=10')	Description of material	Samples						
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer	Q _u	MC
1.0	Topsoil, black	1	2S	5.0- 6.5	15	4	0.5p	15.6
12.5	Till - silt, sandy, brown; trace coarse gravel; little clay	2	2S	7.5- 9.0	12	9	0.8p	12.9
		3	2S	10.0-11.5	16	8	1.0p	14.4
		4	2S	12.5-14.0	12	11		11.1
15.5	*	5	2S	16.5-18.0	4	21	4.5+p	13.1
37.5	Till - clay, silty, pinkish gray; trace to little sand and gravel	6	2S	22.0-23.5	7	30	5.2+	11.5
		7	2S	27.0-28.5	12	50	5.2+	11.3
		8	2S	32.0-33.5	14	48	5.2+	10.0
		9	2S	37.5-38.5	14	80		9.1
		10	2S	42.0-43.5	4	62		
		11	3S	47.0-48.5	12	78		
44.0	Sand, gray, fine; few layers of fine to medium gravel	12	3S	52.0-53.5	6	140		
		13	3S	57.0-58.5	2	90		
54.0	Till - gravel, clayey, fine to medium gravel with clay binder	14	2S	62.0-63.5	13	47	5.2+	9.4
		15	2S	67.0-68.5	12	49	5.2+	9.6
		16	2S	72.0-73.5	6	49	5.2+	9.1
	(Samples described on next page)	17	2S	77.0-78.5	9	39	5.2+	10.8
		18	2S	82.0-83.5	15	39	3.6	11.5
		19	2S	87.0-88.5	5	40	3.5p	11.1
		20	2S	92.0-93.5	6	30		

* Till - sandy silt to silty sand, gray; trace gravel; little clay

(Continued)

DRILLING RECORD FOR KNE 39N7E-22.1h - Continued

Depth (1"=10')	Description of material	Samples					
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer	Q _u MC
	Till - silt, sandy, pinkish gray; trace gravel; little clay; very compact; varies to clayey silt and silty clay	21	2S	97.0- 98.5	16	43	2.5p 12.2
		22	2S	102.0-103.5	18	57	3.6 11.7
		23	2S	107.0-108.5	12	125	101.3
		24	2S	112.0-113.5	14	109	
		25	W	114.0-119.0			
105.5							
110.0	Peat, dark brown, woody						
112.0	*						
114.0	**						
119.0	Bedrock, limestone, light gray						
	Bottom of hole @ 119.0'						

* Clay and silt, dark gray, probably interbedded (no sample)

** Sand, light gray, fine to coarse; some medium to coarse gravel

SIZE DISTRIBUTION DATA FOR KNE 39N7E-22.1h

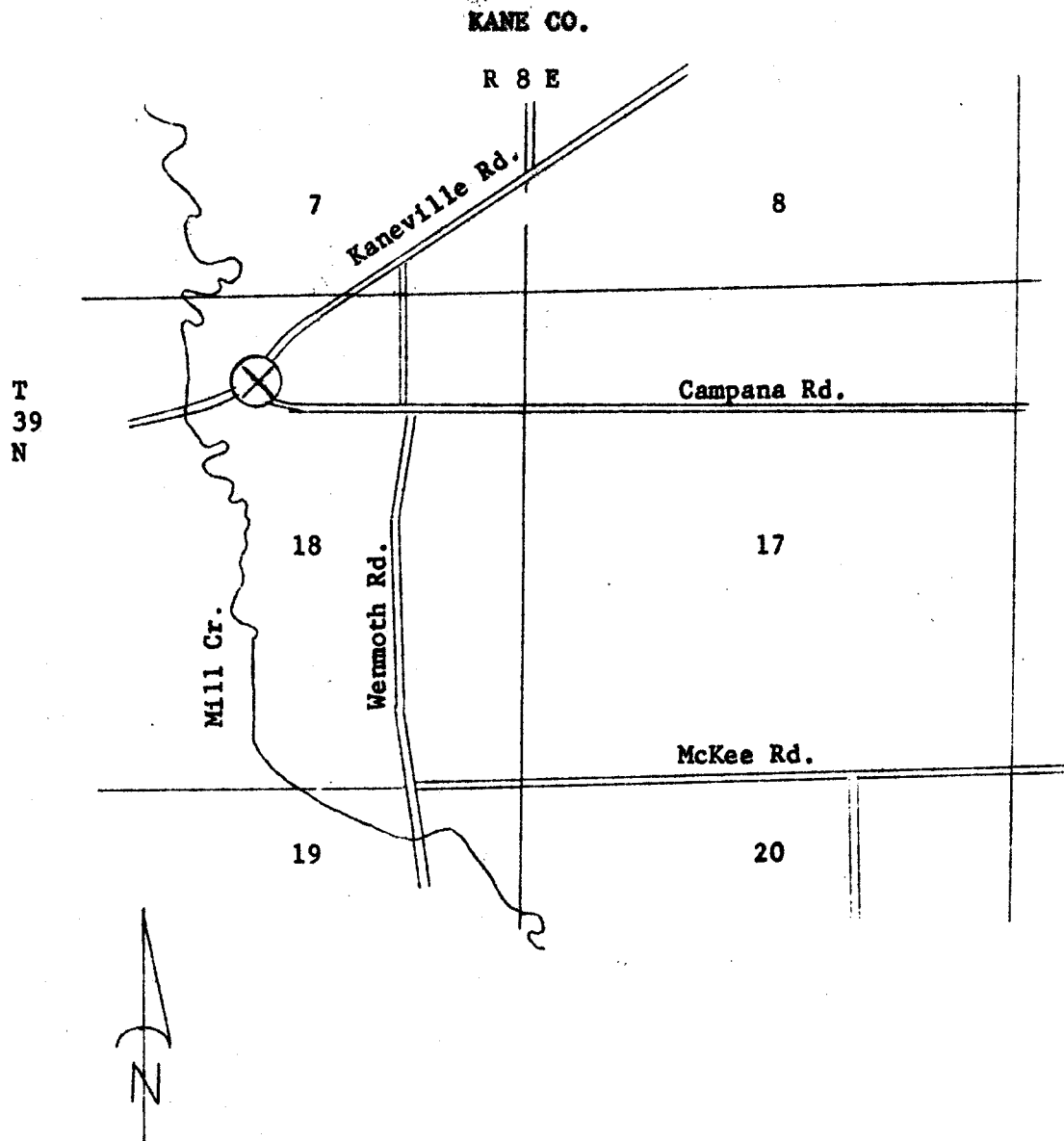
Cohesive Materials

Sample	% > 2.0 mm	% < 2.0 mm	Size distribution of portion < 2.0 mm		
			% > .062 mm	% > .004 mm	% < .004 mm
1B	11.5	88.5	45	38	17
2	14.4	85.6	46	34	20
3	8.5	91.5	43	39	18
4	12.2	87.8	48	29	23
6	4.2	95.8	33	38	29
7	4.0	96.0	32	38	30
8	4.4	95.6	34	39	27
9	3.0	97.0	30	41	29
10	10.0	90.0	30	40	30
11	69.5	30.5	47	35	18
14	4.8	95.2	35	39	26
15	3.2	96.8	35	38	27
16	21.2	78.8	40	35	25
17	5.1	94.9	32	40	28
18B	6.8	93.2	32	41	27
19	16.0	84.0	33	39	28
21A	3.2	96.8	30	40	30
22A	6.0	94.0	33	32	35
22B	4.3	95.7	31	43	26
24	37.9	62.1	59	30	11

Noncohesive Materials

Sample	Percentage retained on sieve									
	4	9	16	24	32	42	60	80	115	170
12	24.0	26.8	17.3	5.5	5.5	3.9	2.8	1.9	2.1	2.0
24	1.3	9.7	10.2	6.1	9.3	10.6	9.8	6.8	7.1	4.5

24.6



Location Detail

15' N, 18' W of stop sign
at Campana and Kaneville Roads
1500' E, 1200' S of NW_C, sec. 18
Aurora North Quadrangle

Fig. 7 - Location of boring KNE 39N8E-18.5g

DRILLING RECORD FOR KNE 39N8E-18.5g

Surface elevation: 713.0 feet
Date started: 3-14-63
Date completed: 3-22-63

Boring method: Rotary (0.0-148.0 ft)
Hammer weight: 475 pounds
Hammer drop: 36 inches

Depth (1"=10')	Description of material	Samples						
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer	Q _u	MC
1.5	Topsoil, black	1	2S	2.0- 3.5	12	3	1.0	
2.5	*							
5.5	Gravel, silty, yellow-brown; little sand	2	2S	4.5- 6.0	8	21		
11.5	Gravel, sandy, gray, medium to coarse	3	2S	7.0- 8.5	8	44		
19.0	Till - gravel, medium to coarse; clay binder; cobbly and bouldery	4	2S	9.5- 11.0	6	40		
		5	2S	14.5- 16.0	6	50/12"		
		6	2S	19.5- 21.0	2	47		
		7	2S	24.5- 26.0	8	113		
		8	SS	34.5- 36.0	12	21	0.3p	
		9	SS	39.5- 41.0	8	31	2.5	
		10	SS	44.5- 46.0	3	33		
		11	2S	49.5- 51.0	18		4.5+p	
		12	2S	54.5- 56.0	6	200/9"		
		13	2S	59.5- 61.0	8	200/10"	5.2+	
50.0		14	2S	64.5- 66.0	0	0		
		15	2S	69.5- 71.0	14	200/14"		
54.0	Gravel, sandy, gray, fine to coarse	16	2S	74.5- 76.0	18	150	5.2+	
		17	2S	79.5- 81.0	18	121	5.2+	
		18	2S	84.5- 86.0	18	100		
		19	2S	89.5- 91.0	9	200/15"	4.5+p	
		20	2S	94.5- 96.0	9	75	5.2-	
		21	2S	99.5-101.0	8	105		
	Till - clay, silty, sandy, brown; trace gravel							

* Silt, clayey, brown mottled with gray; local wash

(Continued)

DRILLING RECORD FOR KNE 39N8E-18.5g - Continued

Depth (1"=10')	Description of material	Samples					
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer	Q _u MC
83.5	(Description on preceding page)	22	2S	104.5-106.0	14	43	
		23	2S	109.5-111.0	4	120	
88.0	Alluvium - gravel, sandy, gray	24	2S	114.5-116.0	15	133	
		25	2S	119.5-121.0	4	36	
98.0	Till - sand-silt-clay, brown; trace gravel	26	2S	124.5-126.0	11	77	
		27	2S	129.5-131.0	11	72	
		28	2S	134.5-136.0	10	150/12"	
113.0	Alluvium - gravel, sandy, gray; little silt	29	2S	139.5-141.0	10	80	
		30	W	145.0-148.0			
118.0	Alluvium - sand, gray, fine to medium; trace gravel						
122.0	Silt, gray, laminated						
129.0	Alluvium - gravel, sandy, gray; trace silt						
137.0	Alluvium - sand, gray, medium to coarse; some gravel						
145.0	Alluvium - gravel, sandy, gray						
148.0	*						
	Bottom of hole @ 148.0'						

* Bedrock - limestone, dolomitic

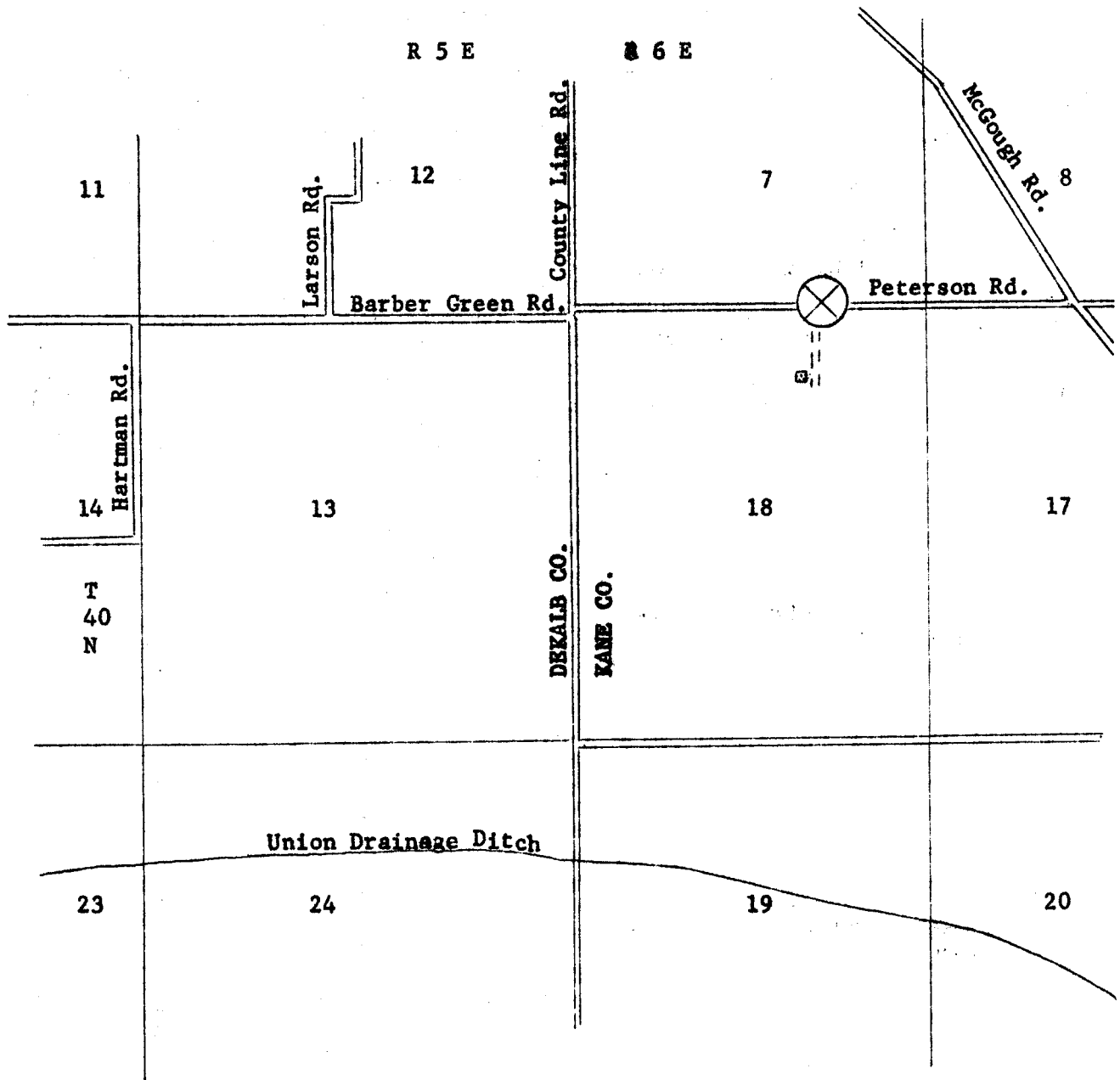
SIZE DISTRIBUTION DATA FOR KNE 39N8E-18.5g

Cohesive Materials

Sample	% > 2.0 mm	% < 2.0 mm	Size distribution of portion < 2.0 mm		
			% > .062 mm	% > .004 mm	% < .004 mm
1	9.8	90.2	40	31	29
2	30.2	69.8	35	50	15
3	44.9	55.1	58	33	9
5	49.0	51.0	44	30	26
8	8.0	92.0	46	39	15
9	3.9	96.1	30	39	31
10	5.4	94.6	32	42	26
11A	2.4	97.6	37	36	27
12	45.9	54.1	51	26	23
13	13.0	87.0	38	31	31
15	0.0	100.0	63	33	4
16B	7.1	92.9	28	34	38
17B	4.0	96.0	24	44	32
18	54.1	45.9	59	16	25
19	6.0	94.0	26	44	30
20	3.7	96.3	36	32	32
25	6.0	94.0	3	89	8

Noncohesive Materials

Sample	Percentage retained on sieve										Pan
	4	9	16	24	32	42	60	80	115	170	
4	67.9	11.1	6.5	2.0	2.0	1.5	1.8	0.9	1.0	0.8	4.5
7	43.5	25.5	11.4	2.9	3.3	3.8	3.1	1.2	1.0	0.7	3.6
11B	43.1	15.2	12.0	4.1	5.8	6.3	5.8	2.2	1.4	0.9	3.2
18	37.4	16.8	12.4	3.8	4.2	4.0	4.5	3.8	3.5	2.2	7.8
22	44.2	18.8	13.6	4.1	5.3	5.9	4.5	1.5	0.8	0.4	0.9
24	11.5	6.4	7.1	3.3	10.4	21.9	21.0	7.6	3.6	1.9	5.3
26	44.2	16.3	14.5	6.1	5.2	3.6	2.9	1.4	1.3	0.9	3.6
29	51.7	18.1	13.1	3.4	2.9	2.7	2.4	1.2	0.9	0.6	3.0
30	35.7	27.0	29.8	5.2	1.5	0.4	0.1	0.1	0.0	0.0	0.2



Location Detail

17' E of lane in center
of N ditch
25' N, 1350' W of SE_C, sec. 7
Sycamore Quadrangle

Fig. 8 - Location of boring KNE 40N6E-7.3a

DRILLING RECORD FOR KNE 40N6E-7.3a

Surface elevation: 870.0 feet Boring method: Hollow auger Rotary
 Date started: 10-2-62 (0.0-95.0 ft) (95.0-202.0 ft)
 Date completed: 11-12-62 Hammer weight: 140 pounds 475 pounds
 Hammer drop: 30 inches 36 inches

Depth (1"=10')	Description of material	Samples						
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer	Q _u	MC
6.0	Clay, silty, black to gray mottled with tan; local wash	1	2S	1.5- 3.0	12	15	2.2	18.6
		2	2S	4.0- 5.5	19	7	1.0	25.8
12.0	Till - sand-silt-clay, yellow- brown; pebbles	3	2S	6.5- 8.0	16	9	0.6	12.5
		4	2S	9.0-10.5	13	17	2.0	12.0
42.0	Till - silt, clayey, gray- brown, slightly pink, sandy; few pebbles	5	2S	11.5-13.0	18	14	2.0	12.8
		6	2S	14.0-15.5	18	9	1.4	12.9
		7	2S	16.5-18.0	5	8		
		8	2S	19.0-20.5	12	9	1.6	11.8
		9	2S	21.5-23.0	15	17		
		10	2S	24.0-25.5	18	14		
		11	2S	26.5-28.0	5	24		
		12	2S	29.0-30.5	13	19		11.7
		13	2S	31.5-33.0	20	17	2.5	11.7
		14	2S	34.0-35.5	20	17	2.3	11.1
47.0	Till - sand-silt-clay, gray- brown; layered with wet sand seams 6" thick	15	2S	36.5-38.0	18	17	2.3	11.3
		16	2S	39.0-40.5	18	17	2.8	11.5
		17	2S	41.5-43.0	16	29		
		18	2S	44.0-45.5	12	19		
		19	2S	46.5-48.0	18	13	1.0	12.8
		20	2S	49.0-50.5	20	17	2.1	11.9

(Continued)

DRILLING RECORD FOR KNE 40N6E-7.3a - Continued

Depth (1"=10')	Description of material	Samples						
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer	Q _u	MC
83.5	(Description on preceding page)	21	2S	51.5- 53.0	19	16	1.8	11.3
		22	2S	54.0- 55.5	20	18	2.0	12.1
		23	2S	56.5- 58.0	20	21	2.1	12.0
		24	2S	59.0- 60.5	18	16	2.3	10.9
		25	2S	61.5- 63.0	20	23	2.3	9.4
114.0	Gravel, sandy, gray; layer of compact silty sand-till from 83.5' to 85.0'	26	2S	64.0- 65.5	18	21	1.8	10.7
		27	2S	66.5- 68.0	20	18	1.8	12.5
		28	2S	69.0- 70.5	19	18	1.5	11.1
		29	2S	71.5- 73.0	20	16	1.3	10.4
		30	2S	74.0- 75.5	19	14	0.8	9.9
		31	2S	76.5- 78.0	14	16	0.7	10.2
		32	2S	79.0- 80.5	18	14	0.8	10.9
		33	2S	81.5- 83.0	18	21	1.5	8.8
		34	2S	84.0- 85.5	5	65	4.5+	10.1
		35	2S	86.5- 88.0	0	79		
130.5	Till - silt, clayey, gray-brown; little sand and trace of gravel; local sand lenses	36	2S	89.0- 90.5	6	83		
		37	2S	94.0- 95.5	4	82		
		38	2S	100.0-101.5	3	58		
		39	2S	105.0-106.5	10	91		
137.0	Sand, silt, and clay, stratified; intermittent lenses of above till; black streaks top of clay beds	40	2S	110.0-111.5	8	121		
		41	2S	115.0-116.5	9	34	0.8	11.7
144.0	Till - silt, sandy, gray; traces of clay and gravel	42	2S	120.0-121.5	14	32	3.4	11.4
		43	2S	125.0-126.5	3	52		14.5
	(Samples described on next page)							

(Continued)

DRILLING RECORD FOR KNE 40N6E-7.3a - Continued

Depth (1"=10')	Description of material	Samples					
		No.	Type	Depth (ft)	Recovery (in.)	Blows/18" drop hammer	Qu MC
		44	2S	130.0-131.5	12	101	
		45	2S	135.0-136.5	12	130	
		46	2S	140.0-141.5	18	80	5.2+ 9.7
		47	2S	145.0-146.5	20	68	5.2+ 7.1
	Till - sand, silty, brown; little medium to coarse sand; traces of gravel; clay increasing downward	48	2S	150.0-151.5	20	48	4.2 8.8
		49	2S	155.0-156.5	14	68	3.1 6.2
		50	2S	160.0-161.5	18	40	3.7 10.4
		51	2S	165.0-166.5	8	47	
		52	2S	170.0-171.5	18	30	2.4 8.5
178.0		53	2S	175.0-176.5	14	37	3.4 9.3
182.0	*	54	2S	180.0-181.5	16	92	
184.0	Till - sand, clayey, gray						
186.0	Sand, gray, fine to coarse	55	2S	185.0-186.5	6	107	
189.0	Till - sand, clayey, gray	56	2S	190.0-191.5	5	62	
		57	2S	195.0-196.5	5	162	
	Sand, gray, fine to coarse	58	W	199.0-202.0			
199.0							
202.0	Bedrock - dolomite, dark gray						
	Bottom of hole @ 202.0'						

* Sand, gray, coarse to fine; traces of gravel, silt, and cobbles; grains angular to subangular; lenses fine sand

SIZE DISTRIBUTION DATA FOR KNE 40W6E-7.3a

Cohesive Materials						
Sample	% > 2.0 mm	% < 2.0 mm	Size distribution of portion < 2.0 mm			Density
			% > .062 mm	% > .004 mm	% < .004 mm	
1	1.0	99.0	21	46	33	2.03
2	0.4	99.6	5	65	30	
3	25.0	75.0	50	12	38	2.36
4	5.0	95.0	36	43	21	
5	3.0	97.0	38	40	22	2.30
6	7.0	93.0	38	38	24	
7	5.0	95.0	38	39	23	2.33
8	7.0	93.0	38	37	25	
9	5.0	95.0	38	36	26	
10	5.0	95.0	35	38	27	
11	3.0	97.0	35	36	29	
12	2.0	98.0	34	41	25	
13	6.0	94.0	36	37	27	
14	5.0	95.0	35	41	24	
15	4.0	96.0	34	37	29	
16	4.0	96.0	34	42	24	
19	15.0	85.0	36	37	27	
20	4.0	96.0	33	39	28	
22	3.0	97.0	35	40	25	
23	7.0	93.0	36	38	26	
24	7.0	93.0	37	41	22	
25	5.0	95.0	36	40	24	
26	13.0	87.0	39	40	21	
27	5.0	95.0	38	39	23	
28	9.0	91.0	40	40	20	
29	5.0	95.0	41	39	20	
30	7.0	93.0	43	40	17	
31	7.0	93.0	37	42	21	
32	12.0	88.0	42	40	18	
33	8.0	92.0	45	39	16	
34	9.0	91.0	46	39	15	
41	4.0	96.0	37	41	22	
42	7.0	93.0	35	44	21	
43	3.0	97.0	30	46	24	
44	5.0	95.0	26	51	23	

(Continued)

SIZE DISTRIBUTION DATA FOR KNE 40N6E-7.3a - Continued

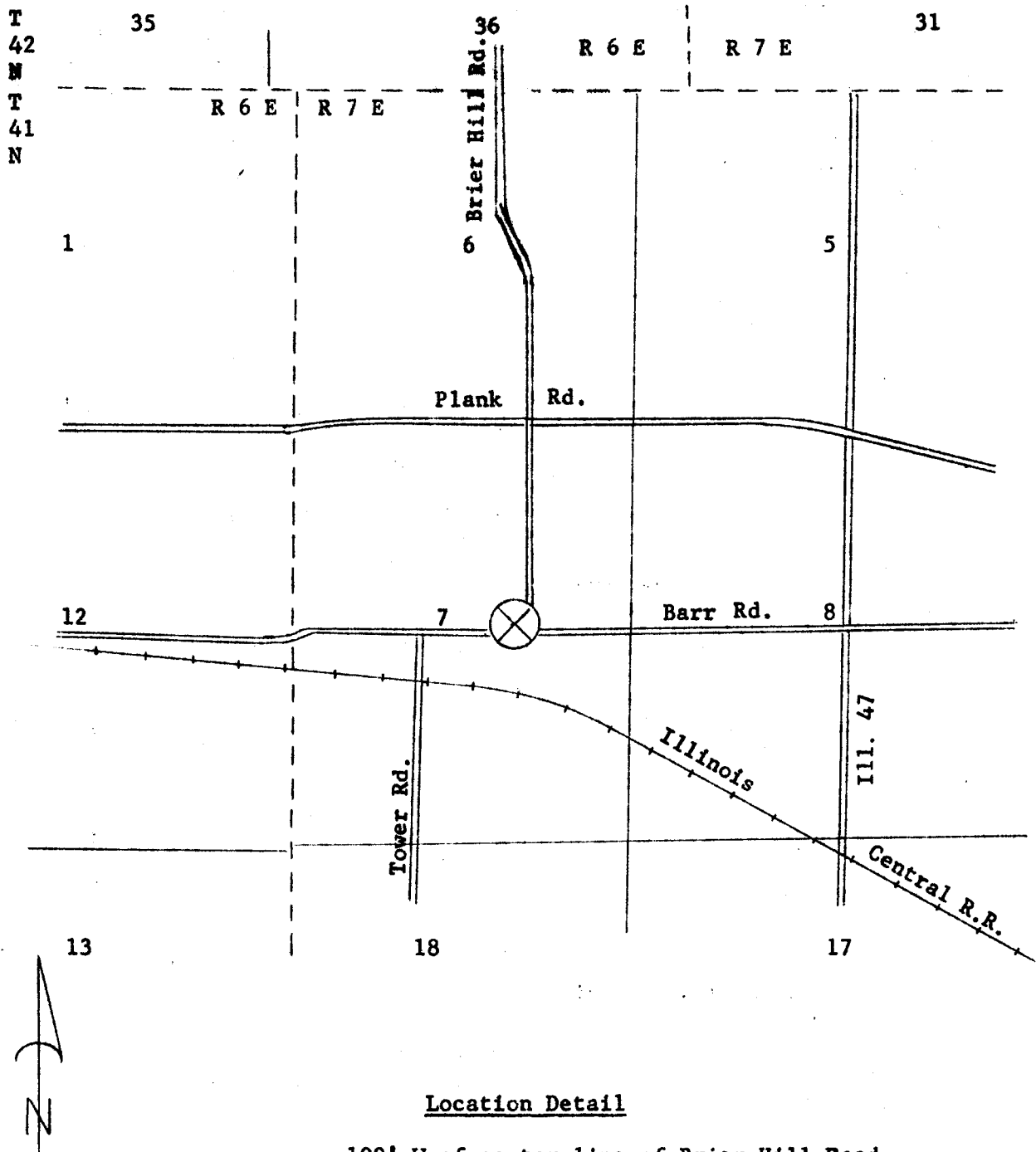
Cohesive Materials - Continued

Sample	% > 2.0 mm	% < 2.0 mm	Size distribution of portion < 2.0 mm			Density
			% > .062 mm	% > .004 mm	% < .004 mm	
46	4.3	95.7	41	38	21	
47	7.0	93.0	61	24	15	
48	8.4	91.6	66	19	15	
49	3.0	97.0	45	29	26	
50	13.0	87.0	42	35	23	
51	11.0	89.0	55	27	18	
52	11.0	89.0	49	36	15	
53	10.0	90.0	50	36	14	
55	0.1	99.9	10	68	22	
56	2.0	98.0	57	28	15	
57	3.0	97.0	25	38	37	

Noncohesive Materials

Sample	Percentage retained on sieve										Pan
	4	9	16	24	32	42	60	80	115	170	
36	17.8	6.4	5.3	2.4	4.2	7.2	14.0	11.2	10.0	6.2	15.3
40	34.5	13.0	9.7	4.5	7.7	7.8	5.8	2.9	2.5	1.9	9.7
54	20.0	14.2	10.9	4.1	5.6	7.4	12.1	7.3	4.4	3.0	11.0
56	32.8	14.3	12.0	4.6	7.4	7.9	8.8	5.1	4.3	2.8	0.0

KANE CO.



Location Detail

100' W of center line of Brier Hill Road
 in center of N ditch of Barr Road
 2600' S, 1400' W of NE_c, sec. 7
 Pingree Grove Quadrangle

Fig. 9 - Location of boring KNE 41N7E-7.3e

DRILLING RECORD FOR KNE 41N7E-7.3e

Surface elevation: 992.0 feet Boring method: Hollow auger Rotary
 Date started: 9-28-62 (0.0-100.0 ft) (100.0-204.0 ft)
 Date completed: 11-7-62 Hammer weight: 140 pounds 475 pounds
 Hammer drop: 30 inches 36 inches

Depth (1"=10')	Description of material	Samples						
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer	Q _u	MC
9.5	Clay, silty, gray mottled with brown and tan; local wash	1	2S	4.0- 5.5	11	10	1.4	22.6
		2	2S	9.0- 10.5	16	32		
		3	2S	14.0- 15.5	16	34		
23.0	Sand, gravelly, brown	4	2S	19.0- 20.5	3	31		
		5	2S	24.0- 25.5	18	34	2.4	11.7
		6	2S	29.0- 30.5	18	20	4.1	11.2
		7	2S	34.0- 35.5	18	22	3.0	11.8
39.5	Till - sand-silt-clay, red- brown; few pebbles	8	2S	39.0- 40.5	18	96		
		9	2S	44.0- 45.5	18	24	2.1	12.7
		10	2S	49.0- 50.5	18	40	5.2	10.9
		11	2S	54.0- 55.5	18	49	4.2	10.3
		12	2S	59.0- 60.5	18	38	3.0	10.2
42.5	Sand, gravelly, red-brown	13	2S	64.0- 65.5	0	29		
	Till - sand-silt-clay, red- brown; few pebbles; occasional sand layer	14	2S	69.0- 70.5	18	28	2.5	10.3
		15	2S	74.0- 75.5	18	48	2.6	9.7
		16	2S	79.0- 80.5	18	100	4.9	9.6
		17	2S	84.0- 85.5	18	42	3.4	10.1
		18	2S	89.0- 90.5	18	30	1.5	10.2
		19	2S	94.0- 95.5	18	30	1.8	10.7
		20	2S	99.0-100.5	14	48	1.5	11.2

(Continued)

DRILLING RECORD FOR KNE 41N7E-7.3e - Continued

Depth (1"=10')	Description of material	Samples					
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer	Q _u MC
		21	2S	105.0-106.5	12	32	3.0 10.0
		22	2S	110.0-111.5	4	22	11.5
		23	2S	115.0-116.5	18	33	0.7 13.3
		24	2S	120.0-121.5	18	63	2.3 10.0
		25	2S	125.0-126.5	18	37	2.7 11.5
		26	2S	130.0-131.5	18	42	4.4 10.6
		27	2S	135.0-136.5	18	28	1.0 12.5
		28	2S	140.0-141.5	18	40	2.1 11.2
		29	2S	145.0-146.5	19	23	2.5 10.5
		30	2S	150.0-151.5	20	34	2.9 11.1
		31	2S	155.0-156.5	19	19	1.7 11.8
	(Description on preceding page)	32	2S	160.0-160.2	4	60	
		33	2S	165.0-166.5	10		
		34	2S	168.0-169.5	4	234	
		35	2S	175.0-176.5	18		2.3 9.9
		36	2S	180.0-181.5	14	42	5.2- 13.1
		37	2S	185.0-186.5	16	101	84.2
		38	2S	190.0-191.5	20	42	17.1
		39	2S	195.0-196.5	10	72	13.1
		40	2S	200.0-204.0			

(Continued)

DRILLING RECORD FOR KNE 41N7E-7.3e - Continued

Depth (1"=10')	Description of material	Samples				
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer Qu MC
158.5	(Description on page 38)					
172.0	Gravel, sandy, gray, poorly sorted; cobbles and boulders; thin beds of brown till					
179.0	Till - silt, clayey, brown; little sand and traces of gravel and cobbles					
183.0	*					
198.5	Peat, brown to black, fibrous					
201.0	**					
204.0	Bedrock - dolomite, white; some pyrite					
	Bottom of hole @ 204.0'					

* Till - silt, gray; traces of sand, gravel, and occasional cobble
 ** Silt, blue; sand fraction increasing with depth; near base boulders were encountered

SIZE DISTRIBUTION DATA FOR KNE 41N7E-7.3e

Cohesive Materials

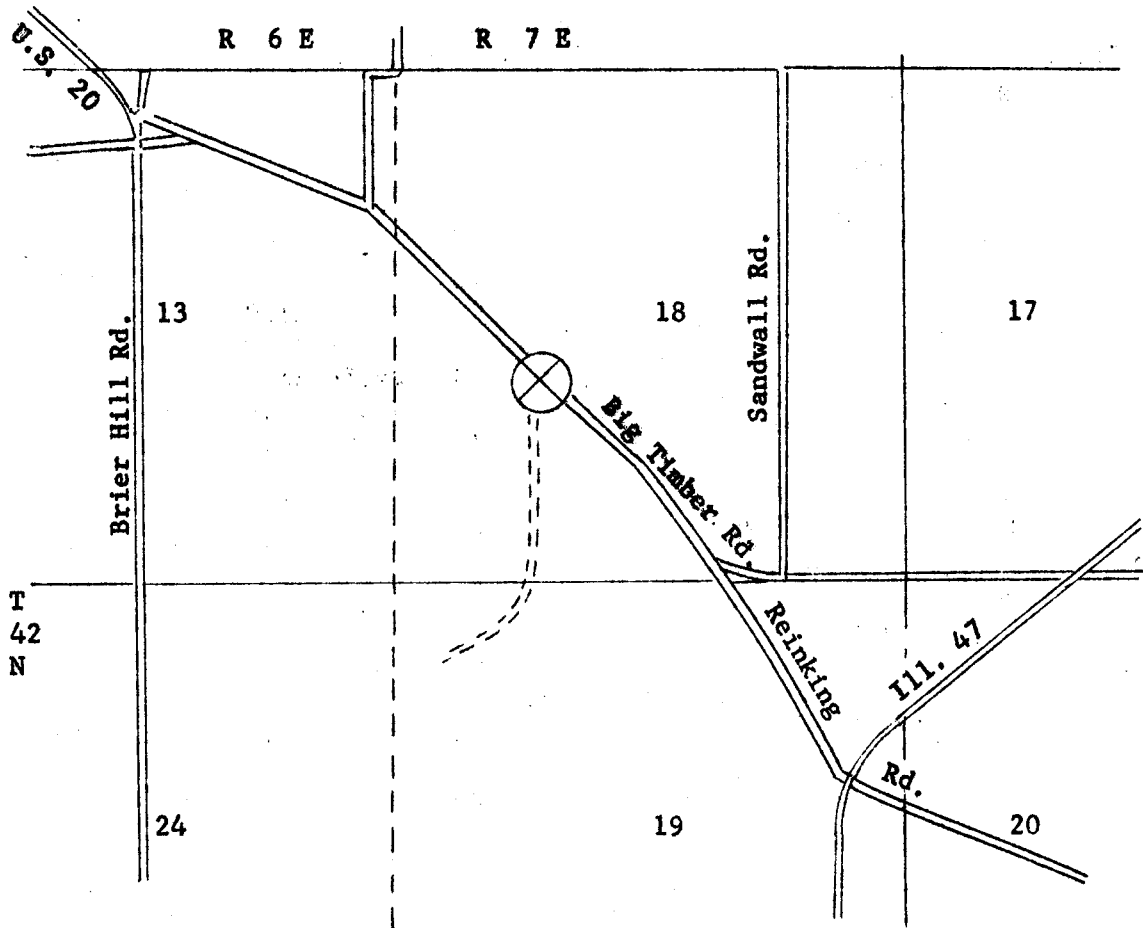
Sample	% > 2.0 mm	% < 2.0 mm	Size distribution of portion < 2.0 mm		
			% > .062 mm	% > .004 mm	% < .004 mm
1	1.0	99.0	5	66	29
2A	4.0	96.0	7	67	26
3B	8.0	92.0	33	42	25
5	4.0	96.0	33	39	28
6	3.0	97.0	32	39	29
7	5.0	95.0	33	41	26
9	3.0	97.0	34	37	29
10	3.0	97.0	34	39	27
11	2.0	98.0	35	38	27
12	4.0	96.0	35	39	26
14	7.0	93.0	37	39	24
15	9.0	91.0	38	40	22
16	2.0	98.0	28	47	25
17	6.0	94.0	37	43	20
18	5.0	95.0	37	39	24
19	4.0	96.0	38	40	22
20	6.0	94.0	38	39	23
21	2.4	97.6	38	37	25
22	6.3	93.7	37	40	23
23	5.8	94.2	36	36	28
24	4.8	95.2	35	40	25
25	6.2	93.8	29	39	32
26	3.0	97.0	31	42	27
27	3.0	97.0	32	39	29
28	3.0	97.0	33	45	22
29	4.0	96.0	34	37	29
30	4.0	96.0	31	42	27
31	3.0	97.0	34	37	29
32	34.7	65.3	77	18	5
33	16.9	83.1	36	37	27
34	48.0	52.0	65	27	8
35	6.0	94.0	51	32	17
36	3.0	97.0	31	49	20
38	0.0	100.0	21	58	21
39	14.0	86.0	45	42	13

(Continued)

SIZE DISTRIBUTION DATA FOR KNE 41N7E-7.3e - Continued

Noncohesive Materials											
Sample	Percentage retained on sieve										
	4	9	16	24	32	42	60	80	115	170	Pan
2B	35.5	14.3	8.8	3.3	5.3	7.1	11.8	6.3	2.8	1.1	3.7
3A	21.4	16.4	10.0	3.8	6.3	8.2	12.3	7.7	5.2	2.5	6.2
8	7.1	7.1	7.1	3.1	5.0	6.7	10.6	9.0	9.9	7.7	26.7
13	45.7	14.2	12.0	4.4	5.8	4.2	3.2	1.7	1.5	1.2	6.1

KANE CO.



Location Detail

2200' E, 1600' N of SW_c, sec. 18
Pingree Grove Quadrangle

Fig. 10 - Location of boring KNE 42N7E-18.5c

DRILLING RECORD FOR KNE 42N7E-18.5c

Surface elevation: 922.0 feet
Date started: 9-17-62
Date completed: 10-30-62

Boring method: Hollow auger
(0.0-95.0 ft) (95.0-238.0 ft)
Hammer weight: 140 pounds 475 pounds
Hammer drop: 30 inches 36 inches

Depth (1"=10')	Description of material	Samples						
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer	Q _u	MC
2.0	Road fill	1	2S	4.5- 6.0	12	9	0.7	
15.5	Sand, brown, medium; pocketed in gray and brown mottled silty clay to clayey silt; horizon is more stratified at base; local wash	2	2S	9.5- 11.0	18	6	0.7	22.5
		3	2S	14.5- 16.0	18	17	0.5	23.3
		4	2S	19.5- 21.0	10	40		
		5	2S	24.5- 26.0	10	25	1.8	12.3
23.0	Sand, gravelly, brown, fine to coarse	6	2S	29.5- 31.0	10	46		11.0
		7	2S	34.5- 36.0				
28.0	Till - sand, silty, brown; trace clay and gravel	8	2S	39.5- 41.0	18	46	3.2	10.9
32.5	Till - sand, silt, clay, gray, slightly pinkish brown; pebbly	9	2S	44.5- 46.0	18	50	3.3	11.0
		10	2S	49.5- 51.0	18	75	5.2-	10.5
37.5	Gravel, sandy, coarse; boulders	11	2S	54.5- 56.0	13	150/13"	5.2+	8.5
		12	2S	59.5- 61.0	18	175	5.2+	8.8
	Till - sand, silt, clay, pinkish gray-brown; pebbles; sand and gravel pockets	13	2S	64.5- 66.0	14	114	5.2+	8.8
		14	2S	69.5- 71.0	18	125	5.2+	8.1
		15	2S	74.5- 76.0	14	130	5.2+	8.7
		16	2S	79.5- 81.0	18	85	5.2+	9.3
		17	2S	84.5- 86.0	18	90	5.2+	9.2
		18	2S	89.5- 91.0	18	90	5.2+	9.6
		19	2S	94.5- 96.0	18	70	5.2+	8.8
		20	2S	100.0-101.5	3	50		

(Continued)

DRILLING RECORD FOR KNE 42N7E-18.5c - Continued

Depth (1"-10")	Description of material	Samples						
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer	Q _u	MC
96.0	(Description on preceding page)	21	2S	105.0-106.5	18	28	1.9	12.7
		22	2S	110.0-111.5	10	55	1.7	11.9
		23	2S	115.0-116.5	18	26	0.7	22.9
		24	W	116.5-120.0				
		25	2S	120.0-121.5	18	16	1.3	19.0
		26	2S	124.0-125.5	18	16		15.3
		27	2S	130.0-131.5	12	81		
		28	2S	134.0-135.5	18	91	5.2	13.5
114.5	Till - sand, silt, clay, brown-gray; trace gravel; few cobbles	29	2S	140.0-141.5	14	90		
		30	2S	144.0-145.5	10	80		
		31	2S	148.0-149.5	12	89	5.2-	10.4
		32	2S	155.0-156.5	10	100		
		33	2S	160.0-161.5	8			
120.0	Silt, organic, black; grading to silt and clay, organic, slightly greenish gray-black	34	2S	165.0-166.5	16	68	5.2-	9.0
		35	2S	170.0-171.5	17		1.5	10.4
130.0	Peat, sandy, brown to greenish brown	36	2S	175.0-176.5	19	42	2.3	9.8
		37	2S	180.0-181.5	19	35	2.3	11.3
		38	2S	185.0-186.5	13	80		
133.0	Silt, sand, lt. gray to white; layers of clean fine sand	39	2S	190.0-191.5	14	82		
139.0	Silt, gray with some brown mottling, very compact	40	2S	195.0-196.5	14	80	2.0	14.1
		41	2S	200.0-201.5	20	68	5.2-	9.9
148.0	Sand, gray to slightly green- ish gray, fine; silt near base	42	2S	205.0-206.5	17	42	3.8	11.2
		43	2S	209.0-210.5	20	32	2.6	8.7

(Continued)

DRILLING RECORD FOR KNE 42N7E-18.5c - Continued

Depth (1"=10')	Description of material	Samples					
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer	Qu MC
185.0	Till - silt, clayey, brown-gray; traces of sand and cobbles; occasionally interbedded	44	2S	215.0-216.5	4		
		45	2S	220.0-221.5	0		
		46A	2S	225.0-226.5	0		
		46	2S	230.0-231.5	20		
		47	2S	237.0-238.0			
189.0	Silt, gray; traces of sand						
198.0	Sand, brown, medium to coarse; traces of gravel and cobbles						
208.0	Till - silt, clayey, gray; traces of sand, gravel, cobbles and boulders						
227.0	Till - silt, sandy, brown; traces of clay and gravel						
232.0	Silt, gray; traces of sand; interbedded very fine sand						
238.0	Bedrock - dolomite, white to gray-white						
	Bottom of hole @ 238.0'						

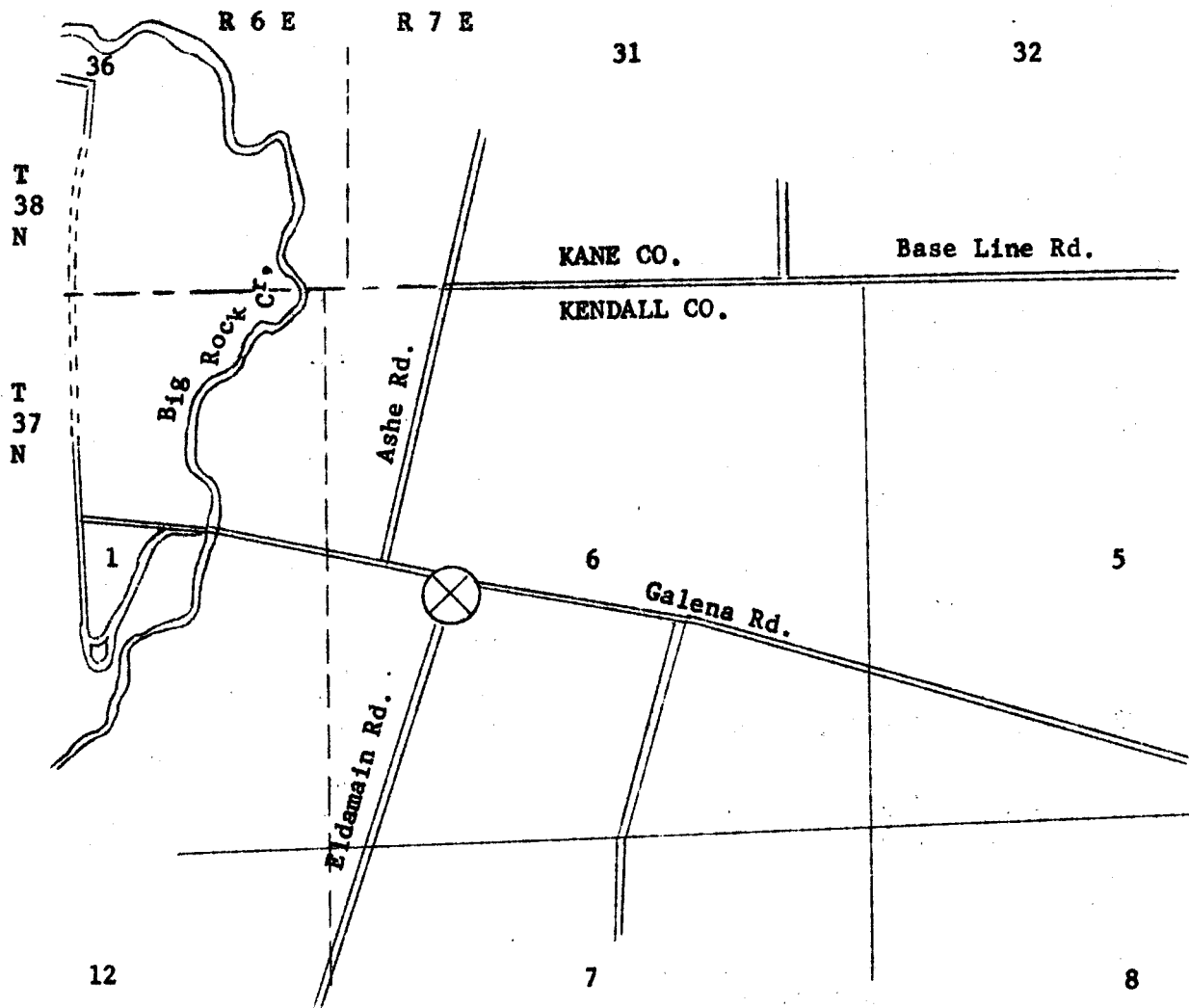
SIZE DISTRIBUTION DATA FOR KNE 42N7E-18.5c

Cohesive Materials					
Sample	% > 2.0 mm	% < 2.0 mm	Size distribution of portion < 2.0 mm		
			% > .062 mm	% > .004 mm	% < .004 mm
1	0.0	100.0	10	63	27
2	0.1	99.9	10	64	26
5	9.0	91.0	44	41	15
6	9.5	90.5	33	43	24
8	5.0	95.0	34	42	24
9	4.0	96.0	34	40	26
10	4.0	96.0	34	42	24
11	3.0	97.0	40	39	21
12	5.0	95.0	40	46	14
13	4.0	96.0	40	39	21
14	2.0	98.0	36	41	23
15	4.0	96.0	37	39	24
16	3.0	97.0	37	41	22
17	4.0	96.0	36	39	25
18	3.0	97.0	34	41	25
19	25.0	75.0	36	39	25
21	3.0	97.0	27	43	30
22	2.0	98.0	29	42	29
25A	0.4	99.6	50	29	21
27	0.1	99.9	43	55	2
28	0.0	100.0	2	75	23
29	16.0	84.0	91	8	1
30	0.2	99.8	91	8	1
31	5.0	95.0	43	38	19
32	0.1	99.9	76	23	1
33	0.1	99.9	21	69	10
34	4.0	96.0	46	38	16
35	6.0	94.0	51	38	11
36	8.0	92.0	50	37	13
37	4.0	96.0	48	40	12
38	0.1	99.9	1	91	8
40	5.0	95.0	23	38	39
41	4.0	96.0	41	35	24
42	6.0	94.0	36	41.5	22.5
43	5.0	95.0	48	35	17
44	16.0	84.0	46	39	15
46	7.0	93.0	54	36	10

(Continued)

SIZE DISTRIBUTION DATA FOR KNE 42N7E-18.5c - Continued

Noncohesive Materials											
Sample	Percentage retained on sieve										
	4	9	16	24	32	42	60	80	115	170	Pan
4	0.9	1.4	1.7	1.1	2.5	5.5	14.3	18.1	23.6	13.7	17.2
26	22.8	10.4	19.2	10.0	13.0	8.5	5.4	2.6	2.2	1.5	4.4
29	10.1	6.4	8.1	4.1	7.2	9.2	17.3	14.1	8.9	4.3	10.3
39	8.7	15.6	13.6	5.1	6.6	8.1	11.8	8.8	7.9	4.4	9.4



Location Detail

250' S of Galena Road
16' E of Eldamain Road
1200' E, 2600' N of SW_C, sec. 8
Yorkville 7½' Quadrangle



Fig. 11 - Location of boring KEN 37N7E-6.7d

DRILLING RECORD FOR KEN 37N7E-6.7d

Surface elevation: 685.0 feet
Date started: 1-18-62
Date completed: 1-25-62

Boring method: Hollow auger (0.0-90.5 ft)
Hammer weight: 140 pounds
Hammer drop: 30 inches

Depth (1"=10')	Description of material	Samples						
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer	Q _u	MC
1.0	Topsoil, black	1	2S	1.0- 2.5	12	21	4.5+	17.8
3.5	Silt, clayey, brown	2	2S	4.5- 6.0	12	21	4.5+	12.7
16.5	Till - clay, sandy, brown; little gravel and silt	3	2S	7.0- 8.5	18	29	4.5+	11.8
		4	2S	9.5-11.0	18	21	4.5+	14.5
		5	2S	12.0-13.5	18	26	1.8	17.6
		6	2S	14.5-16.0	18	32	2.5	14.0
33.0	Gravel, sandy, brown, fine to coarse; sand layer between 16.5-17.5'	7	2S	17.0-18.5	12	88		
		8	W	19.5-		Refusal		
		9	2S	22.0-23.5	18	57		
		10	2S	24.5-26.0	12	43		
43.0	Sand, brown, fine to coarse; trace gravel	11	2S	29.5-31.0	18	40		
		12	2S	34.5-36.0	18	37		
		13	2S	39.5-41.0	18	34		
52.0	Gravel, sandy, brown, fine to coarse	14	2S	44.5-46.0	18	43		
		15	2S	49.5-51.0	18	41		
		16	2S	54.5-56.0	18	100		
63.0	Sand, gravelly, brown, fine to coarse	17	2S	59.5-61.0	18	100		
		18	SS	64.5-66.0	12	100		
		19	SS	69.5-71.0	10	100		
	(Samples described on next page)	20	SS	74.5-76.0	10	110		

(Continued)

DRILLING RECORD FOR KEN 37N7E-6.7d - Continued

Depth (1"=10')	Description of material	Samples					
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer	Q _u MC
76.0	Sand, gravelly, gray, fine to coarse	21	SS	79.5-81.0	12	64	
		22	W	84.5-		Refusal	
		23	W	84.5-90.5			
85.5	Gravel, sandy, gray, fine to coarse						
87.0	Limestone, broken						
90.5	Limestone, hard, light gray						
	Bottom of hole @ 90.5'						

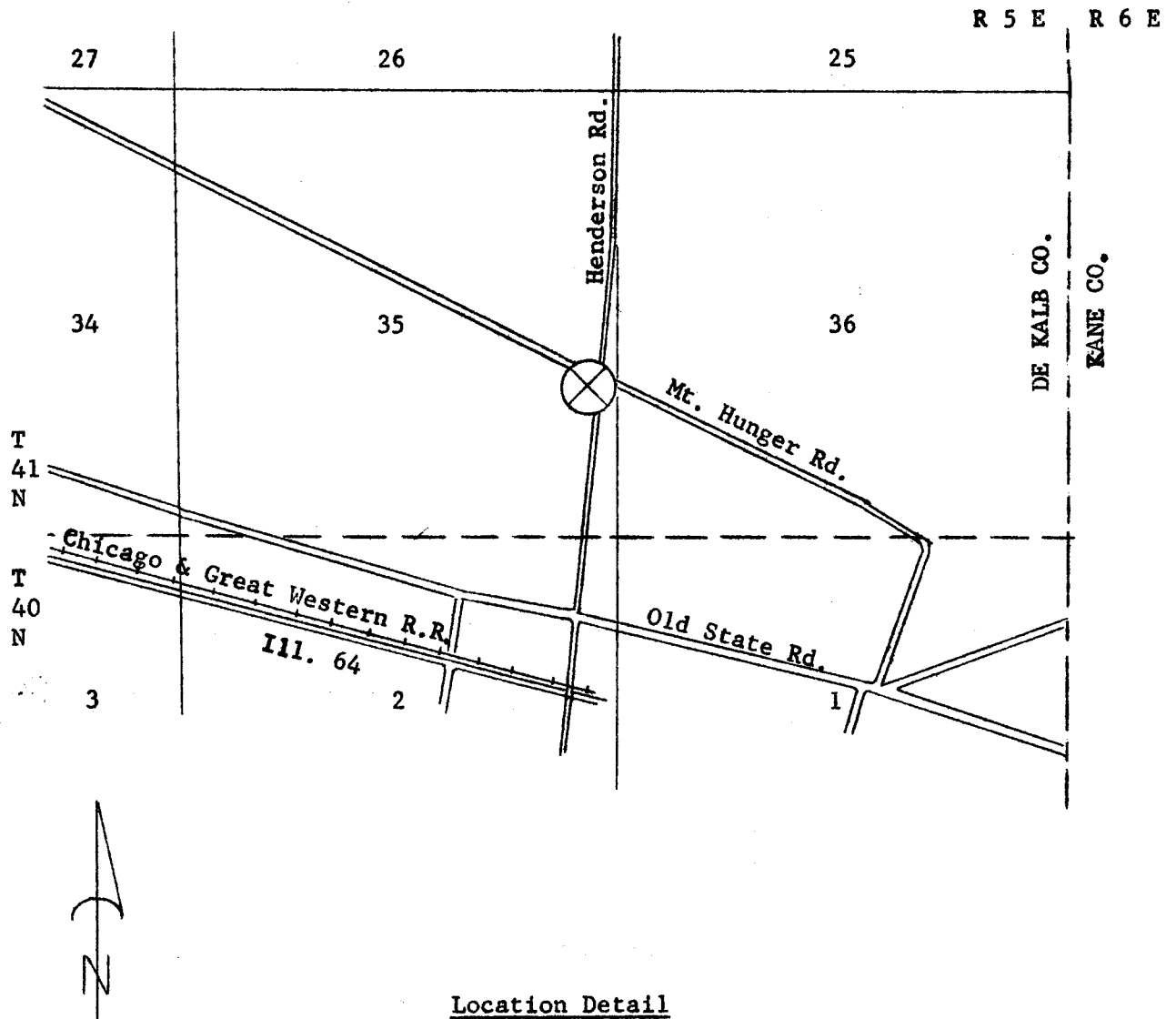
SIZE DISTRIBUTION DATA FOR KEN 37N7E-6.7d

Cohesive Materials

Sample	% > 2.0 mm	% < 2.0 mm	Size distribution of portion < 2.0 mm		
			% > .062 mm	% > .004 mm	% < .004 mm
2	2.0	98.0	32	37	31
3B	6.0	94.0	32	37	31
5B	8.0	92.0	34	46	20
6B	18.0	82.0	36	47	17

Noncohesive Materials

Sample	Percentage retained on sieve										
	4	9	16	24	32	42	60	80	115	170	Pan
9	33.8	12.7	8.4	3.3	5.8	9.3	11.8	5.2	2.9	1.6	5.2
10	33.5	20.8	14.0	6.9	8.2	6.3	4.5	1.7	1.1	0.7	2.3
12	9.0	8.8	12.2	6.7	11.5	15.5	17.4	8.1	4.4	2.0	4.4
14	1.9	7.6	17.0	11.7	20.4	19.6	12.2	3.1	1.6	0.9	4.0
16	0.0	1.1	10.7	15.2	30.8	22.5	11.8	3.0	1.7	1.0	2.2
19	29.9	6.8	11.7	9.9	14.6	11.6	9.5	2.7	1.2	0.6	1.5
21	70.7	6.9	5.6	7.2	6.6	2.2	1.1	0.3	0.2	0.1	0.3
22	0.0	0.0	1.8	9.2	22.2	21.6	19.4	10.1	7.2	3.6	4.9



Location Detail

200' S. of center line of Mt. Hunger Road
in center of W ditch of Henderson Road
300' W, 1850' N of SE_c, sec. 35
Sycamore Quadrangle

Fig. 12 - Location of boring DKB 41N5E-35.1c

DRILLING RECORD FOR DKB 41N5E-35.1c

Surface elevation: 900.0 feet Boring method: Hollow auger Rotary
 Date started: 9-25-62 (0.0-90.0 ft) (90.0-167.0 ft)
 Date completed: 9-27-62 Hammer weight: 140 pounds 475 pounds
 Hammer drop: 30 inches —36 inches

Depth (1"=10')	Description of material	Samples						
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer	Q _u	MC
9.5	Till - sand, silty, brown, slightly red; trace clay; sand layers	1	2S	2.0- 3.5	12	18	2.4	11.2
		2	2S	4.5- 6.0	8	16		
		3	2S	7.0- 8.5	12	15	2.0	13.8
65.0	Till - sand, silt, clay, gray, slightly pink to grayish brown; pebbles	4	2S	9.5-11.0	12	15	1.0	10.1
		5	2S	12.0-13.5	2	25		
		6	2S	14.5-16.0	12	14	1.4	11.4
		7	2S	17.0-18.5	10	16	1.4	11.9
		8	2S	19.5-21.0	6	15	1.0	10.7
		9	2S	22.0-23.5	18	16	1.5	12.8
		10	2S	24.5-26.0	2	11		
		11	2S	27.0-28.5	18	23	0.9	12.4
		12	2S	29.5-31.0	18	12	1.6	11.5
		13	2S	32.0-33.5	12	16	1.4	16.5
		14	2S	34.5-36.0	16	17	1.9	12.4
		15	2S	37.0-38.5	18	19	1.9	12.5
		16	2S	39.5-41.0	2	14	1.0	12.9
		17	2S	42.0-43.5	18	14	1.7	13.2
		18	2S	44.5-46.0	18	18	1.7	12.9
		19	2S	47.0-48.5	18	21	1.5	11.9
	(Samples described on next page)	20	2S	49.5-51.0	12	19	1.5	12.9

(Continued)

DRILLING RECORD FOR DKB 41N5E-35.1c - Continued

Depth (1"=10')	Description of material	Samples						
		No.	Type	Depth (ft)	Recovery (in.)	Blows/18" drop hammer	Q _u	MC
85.0	Till - sand, silty, gray-brown; 1" - 4" layers of fine to medium sand	21	SS	52.0- 53.5	18	15	0.7	12.3
		22	SS	54.5- 56.0	4	20		
		23	SS	57.0- 58.5	18	19	0.9	12.6
		24	SS	59.5- 61.0	18	16	0.9	12.4
		25	SS	62.0- 63.5	18	18	1.1	11.8
94.0	Till - sand, silt, clay, red-brown; trace of gravel	26	SS	64.5- 66.0	18	19	0.9	12.4
		27	SS	67.0- 68.5	6	18	0.6	
102.0	Till - tan-gray, medium; becomes coarser with depth; cobbles and boulders at base	28	SS	69.5- 71.0	18	14	0.8	
		29	SS	72.0- 73.5	18	30	1.0	
		30	SS	74.5- 76.0	18	18	0.9	
140.0	Till - gray-buff, clay, silt, fine sand, mottled yellow; fine to medium gravel	31	SS	79.5- 81.0	12	20	0.9	
		32	SS	84.5- 86.0	8	20	2.2	
		36	2S	90.0- 91.5	16		2.2	10.9
		37	2S	95.0- 96.5	14	42		
		38	2S	100.0-101.5	6	44		
		39	2S	105.0-106.5	8	59	3.1	12.2
		40	2S	110.0-111.5	8	PD		
		41	2S	115.0-116.5	10	PD		
		42	2S	120.0-121.5	16	32	3.4	14.9
		43	2S	125.0-126.5	18	32	4.5	11.4
		44	2S	130.0-131.5	18	PD	4.5	19.7

(Continued)

DRILLING RECORD FOR DKB 41N5E-35.1c - Continued

Depth (1"=10')	Description of material	Samples						
		No.	Type	Depth (ft)	Recov- ery (in.)	Blows/18" drop hammer	Q _u	MC
148.0	Till - sand, silt, clay, blue-gray; clay content increasing downward, with fine gravel	45	2S	135.0-136.5	18	43	5.2+	9.9
		46	2S	140.0-141.5	18	PD		
		47	2S	145.0-146.5	18	100		
158.0	Till - sand, silty, green-brown, mottled yellow; low clay content; trace of fine gravel	48	2S	150.0-151.5	18	57	2.9	9.8
		49	2S	155.0-156.5	18	31	1.6	9.9
		50	2S	160.0-161.5	10	64		
161.0	*							
164.0	Till - silt, sandy, gray; trace clay	51	2S	164.0-167.0	cuttings			
167.0	**							
	Bottom of hole @ 167.0'							

* Sand, gray, fine grained; stratified, thin lenses of gray clay
 ** Bedrock - dolomite, white, fossiliferous, vugular; some pyrite

SIZE DISTRIBUTION DATA FOR DKB 41N5E-35.1c

Cohesive Materials					
Sample	% > 2.0 mm	% < 2.0 mm	Size distribution of portion < 2.0 mm		
			% > .062 mm	% > .004 mm	% < .004 mm
1	3.0	97.0	37	40	23
2	6.7	93.3	49	19	32
3	7.0	93.0	35	40	25
4	3.0	97.0	35	41	24
6	6.0	94.0	36	39	25
7	4.0	96.0	37	40	23
8	5.0	95.0	36	39	25
9	7.0	93.0	36	40	24
10	5.0	95.0	36	39	25
12	4.0	96.0	35	40	25

(Continued)

SIZE DISTRIBUTION DATA FOR DKB 41N5E-35.1c - Continued

Cohesive Materials - Continued

Sample	% > 2.0 mm	% < 2.0 mm	Size distribution of portion < 2.0 mm		
			% > .062 mm	% > .004 mm	% < .004 mm
13	6.0	94.0	36	39	25
14	4.0	96.0	37	36	27
15	3.0	97.0	35	40	25
16	4.0	96.0	35	39	26
17	4.0	96.0	34	40	26
18	4.0	96.0	34	39	27
19	4.0	96.0	37	41	22
20	5.0	95.0	33	39	28
21	7.0	93.0	34	41	25
23	5.0	95.0	36	38	26
24	5.0	95.0	35	43	22
25	7.0	93.0	35	41	24
26	6.0	94.0	32	42	26
27	6.0	94.0	40	40	20
28	7.7	92.3	45	39	16
29	8.0	92.0	40	40	20
30	6.0	94.0	43	41	16
31	5.6	94.4	38	38	24
32	8.0	92.0	42	39	19
36	14.0	86.0	41	40	19
39	3.0	97.0	36	40	24
40	3.0	97.0	39	37	24
41	2.0	98.0	33	42	25
42	2.8	97.2	16	41	43
43	5.0	95.0	39	36	25
44	0.5	99.5	8	38	54
45	2.0	98.0	35	35	30
46	9.0	91.0	29	35	36
47	7.0	93.0	49	34	17
48	11.0	89.0	45	43	12
49	0.0	100.0	12	73	15

Noncohesive Materials

Sample	Percentage retained on sieve										
	4	9	16	24	32	42	60	80	115	170	Pan
37	20.6	11.4	9.8	3.7	5.4	6.8	9.9	7.5	7.7	5.5	11.7
38	20.3	13.3	11.0	4.7	6.4	5.8	5.4	3.4	4.1	4.1	21.5
50A	24.0	10.2	7.4	3.0	6.5	10.7	15.3	8.6	5.6	2.7	6.0

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