

June 18, 2021

Mayberry Communities
5155 North Academy Boulevard
Colorado Springs, Colorado 80918

Attention: Jason Kvols

Subject: Geologic Hazard Evaluation
Mayberry Development
aka Ellicott Town Center, Filings 1 through 4
Highway 94 and Log Road
Ellicott, Colorado
CTL|T Project No. CS18969-105

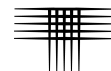
please provide the
design-level criteria

This letter presents the results of our Geologic Hazard Evaluation for the Mayberry Development aka Ellicott Town Center Community, Filings No. 1 through 4. The site is located west of Ellicott, Colorado. We have previously conducted Preliminary Geotechnical Investigations on this parcel (CTL|T Project Nos. CS16091-115, dated July 13, 2006 and CS18969 dated August 9, 2018).

The purpose of our investigation was to evaluate potential geologic hazards that may impact development of the site. This letter contains general descriptions of subsurface and groundwater conditions found in our previous exploratory borings, our opinion of the potential influence of the geologic conditions on planned structures and other site improvements, and preliminary discussions of residential construction concepts as influenced by geologic and geotechnical considerations. The report was prepared based on conditions found in our borings, results of laboratory tests, engineering analysis of field and laboratory data, and our experience. Plans developed by JPS Engineering (dated March 2021) were reviewed for this evaluation. Additional investigations will be required to develop design-level criteria for building construction and pavement design. The scope was described in our contract modification dated June 18, 2021 (CTL|T Proposal No. CS-18-0107 CM2).

SUBSURFACE INVESTIGATION

Subsurface conditions in the area of the subject lots were previously investigated by our firm by drilling exploratory borings spread across the site, to depths between 20 and 30 feet. Data from our previous investigations is included in Appendix A of this letter. The following sections describe the existing soil and bedrock materials found at the site.



Fill

Our recent preliminary geotechnical investigation identified suspect quality fill present at various areas within the previously developed 15-acre parcel. Samples of the fill were judged to be loose to medium dense based on field penetration testing. The fill materials contained 5 to 9 percent clay and silt-sized particles and did not exhibit plastic properties. Based on our experience with similar soils, we do not believe the granular fill soils encountered will exhibit expansive properties.

Natural Sand Soils

Natural, slightly silty to silty or clayey sand was encountered in all of our borings extending to the maximum depths explored. The sands were medium dense to very dense according to field penetration resistance testing. Samples of the sand testing generally exhibited compression or low measured swell when wetted under an applied pressure. Samples of the sand tested contained 7 to 35 percent silt and clay-size particles.

Natural Clay Soils

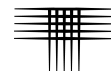
Natural, sandy clay was encountered in two borings at the site. The clay was very sandy, containing 43 percent sand. The clay was stiff according to field penetration resistance testing. The clay was found in thin lenses interbedded in the sand soils.

Groundwater

At the time of drilling, groundwater was measured in two of our borings at depths of 27 and 28 feet below the existing ground surface. The groundwater elevation should be expected to rise during the traditionally wetter months of late spring and early summer, and as a result of landscaping irrigation that is associated with residential development.

GEOLOGIC HAZARDS AND ENGINEERING CONSTRAINTS

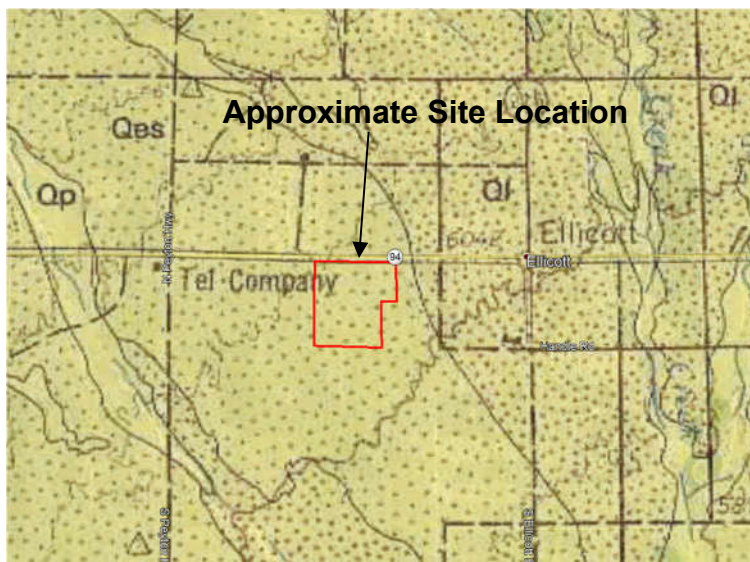
We did not identify geologic hazards that we believe preclude development of the project. Conditions we identified that may pose hazards or constraints to development include expansive soil lenses, potentially collapse prone soils, and existing undocumented fill. Regional geologic conditions that impact the site include and seismicity and radioactivity. We believe these conditions can be mitigated with engineering design and construction methods commonly employed in this area. These conditions are discussed in greater detail in the sections that follow.



Site Geology

The surficial geology at the site was evaluated by reviewing published geologic maps and our site visits. The Geologic Map of the Pueblo 1 degree x 2 degrees Quadrangle, published by the US Geological Survey in Miscellaneous Field Studies Map MF-775, 1976 covers the project site.

The site is mapped as Holocene and Pinedale Glaciation of the Pleistocene age eolian sand (wind-deposited sediment), overlying the Dawson Formation. The Dawson Formation typically consists of sandstone interbedded with claystone in this area. Our subsurface investigation and observations generally confirm the mapping, although no bedrock was encountered to depths of up to 30-feet. Some areas in the northeast portion of the site have been disturbed by previous development activities.

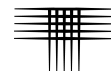


Geologic Map

Expansive Soils and Bedrock

One of the more significant geologic hazards in Colorado is the presence of swelling clays or bedrock. Moisture changes to bedrock or surficial deposits containing swelling clays can result in volumetric expansion and collapse of those units. Changes in soil moisture content can result from precipitation, irrigation, pipeline leakage, surface drainage, perched groundwater, drought, or other factors. Swelling of expansive soil and bedrock may cause excessive cracking and heaving of structures with shallow foundations, concrete slabs-on-grade, or pavements supported on these materials.

The Dawson Sandstone bedrock is interbedded with claystone that is considered expansive. We did not encounter bedrock in our borings which extended to depths of up to 30-feet below the existing ground surface. Clay lenses at the site were found to be thin. Additional geotechnical investigation should be conducted for design level reports. The additional investigation borings may encounter more clay or may find claystone at depths which may impact foundation performance. We believe expansive soils and claystone bedrock, if encountered, can be mitigated with engineering design and construction methods commonly employed in the area.



Collapsible Soils

Eolian soils are occasionally susceptible to collapse. Soil collapse (or hydro-collapse) is a phenomenon where soils undergo a significant decrease in volume upon an increase in moisture content, with or without an increase in external loads. Buildings, structures, and other improvements may be subject to excessive settlement-related distress when collapsible soils are present. The results of the subsurface evaluation and laboratory testing indicate the collapse potential of the eolian deposits is low to moderate, based on the dry densities and moisture contents of the near surface samples. Significant depths of collapse prone soils are not expected, based on the current test hole data.

Undocumented Fill

The areas of disturbance on the site are associated with development of Highway 94, the existing structures on the northeastern corner of the site, and the rough grading of unpaved access roads and waterline installation. We identified suspect quality fill near the structures in our most recent investigation (CTL|T Project No. CS18969.001-115, dated February 6, 2019). Design-level geotechnical studies should be undertaken to confirm the extents of fills and depths of fills and to provide recommendations for reworking. If documentation of the fill, such as density test records are found, we should review them to determine if they are adequate for the proposed construction. We did not identify fills in our borings located in the areas of the site that are generally undisturbed. Fill within existing streets may have been tested and can be observed for potential issues during construction.

Shallow Bedrock

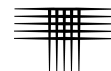
Based on our investigation shallow bedrock is generally not a concern at the site. Bedrock was not encountered in our borings, which extended to depths of up to 30-feet below existing grades.

Shallow Groundwater

Groundwater was measured in two of our borings at depths of 27 and 28 feet below the existing ground surface. Based on the depths, we do not anticipate groundwater will be encountered within excavations for construction. Changes in surface drainage and irrigation of landscaping associated with this development and any adjacent developments can result in changes to groundwater levels. Seasonal fluctuations from runoff and precipitation may also result in changes in groundwater levels.

Debris Flow and Debris Fans

The geologic mapping and our observations do not indicate the presence of debris flows, or debris fans on this property.



Rockfall

The project is not located in a geographic area containing features associated with rockfall, such as cliffs and steep slopes, and the site does not appear susceptible to rockfall per our observations.

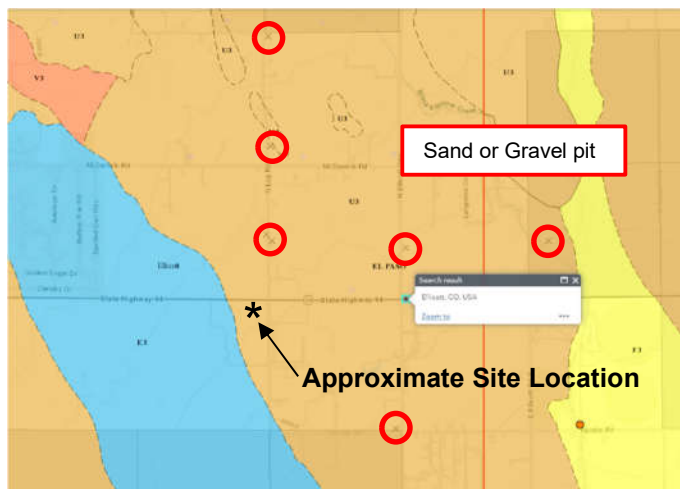
Subsidence and Abandoned Mining Activity

No documented underground mining activity was found for the site (USGS Mineral Resources Data System

<https://mrdata.usgs.gov/mrds/map-commodity.html#home>). We observed no evidence of surface or subsurface mining at the site.

The Colorado Geological Survey maps the site as U3 (upland deposits) in the Aggregate Resources of Colorado mapping and a few sand and/or gravel pits are indicated nearby

(<https://cologeosurvey.maps.arcgis.com/apps/webappviewer/index.html?id=003cf86ff0e6440989b1496e368c115e>).



Flooding

Information presented on “Flood Insurance Rate Map” (FIRM), Map Number 08041C0595G, with an effective date of March 17, 1997, indicates the project site is in Zone X, an area of minimal flood hazard. The project Civil Engineer should address localized flood potential.

Faults

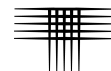
The geologic mapping does not indicate the presence of faulting on the project site. The nearest fault interpreted to be active is the Ute Pass fault approximately 24 miles west of the site.

Steeply Dipping Bedrock

Steeply Dipping Bedrock is present at the base of the intrusion that created the mountains, far to the west of the site.

Elevated Radioactivity and Radon

We believe no unusual hazard exists from naturally occurring sources of radioactivity on the site. However, the materials found in this area are often associated



with the production of radon gas and concentrations in excess of those currently accepted by the EPA can occur. Passive and active mitigation procedures are commonly employed in this region to effectively reduce the buildup of radon gas.

Measures that can be taken after a structure is enclosed during construction include installing a blower connected to the foundation drain and sealing the joints and cracks in concrete floors and foundation walls. If the occurrence of radon is a concern, we recommend structures be tested after they are enclosed. Commonly utilized mitigation techniques may minimize risk.

GEOTECHNICAL RISK

The concept of risk is an important aspect with any geotechnical evaluation primarily because the methods used to develop geotechnical recommendations do not comprise an exact science. We never have complete knowledge of subsurface conditions. Our analysis must be tempered with engineering judgment and experience. Therefore, the recommendations presented in any geotechnical evaluation should not be considered risk-free. Our recommendations represent our judgment of those measures that are necessary to increase the chances that the structures will perform satisfactorily. It is critical that all recommendations in this report are followed during construction. The owner must assume responsibility for maintaining the structure and use appropriate practices regarding drainage.

LIMITATIONS

This report has been prepared for the exclusive use of Mayberry Communities for the purpose of providing a Geologic Hazard Evaluation for the proposed project. The information, conclusions, and recommendations presented herein are based upon consideration of many factors including, but not limited to, the geologic setting, and the subsurface conditions expected. Additionally, our report is based on the proposed development as planned. The conclusions and recommendations contained in the report are not valid for use by others. Standards of practice continuously evolve in the area of geotechnical engineering. The recommendations provided are appropriate for about three years. If the project is not constructed within about three years, we should be contacted to determine if we should update this report.

We believe this investigation was conducted in a manner consistent with that level of care and skill ordinarily used by geotechnical engineers practicing under similar conditions. No warranty, express or implied, is made.

please add as note to
PUDSP



If we can be of further service in discussing either the contents of this letter or the analysis of the influence of subsurface conditions on the design of the proposed residences, please call.

Sincerely,

CTL | THOMPSON, INC.

Gwendolyn E. Eberhart, P.E.
Project Engineer

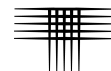


GE:TAM:ge

Via Email: jasonkvols@mayberrycoloradosprings.com

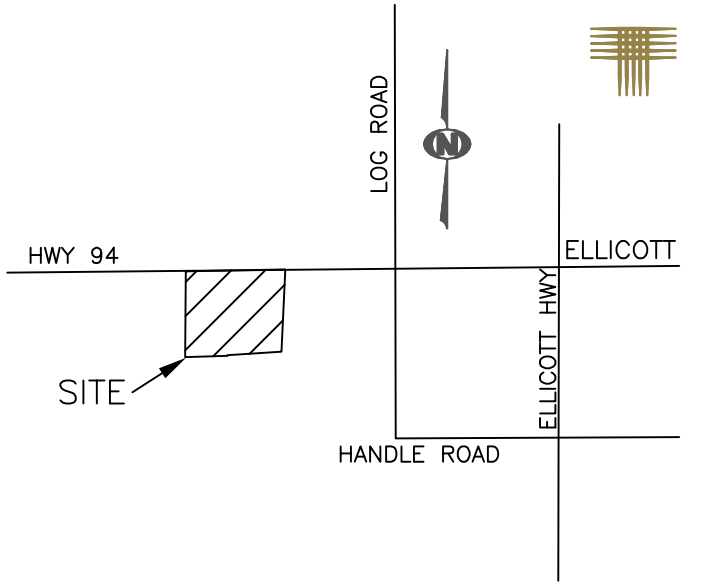
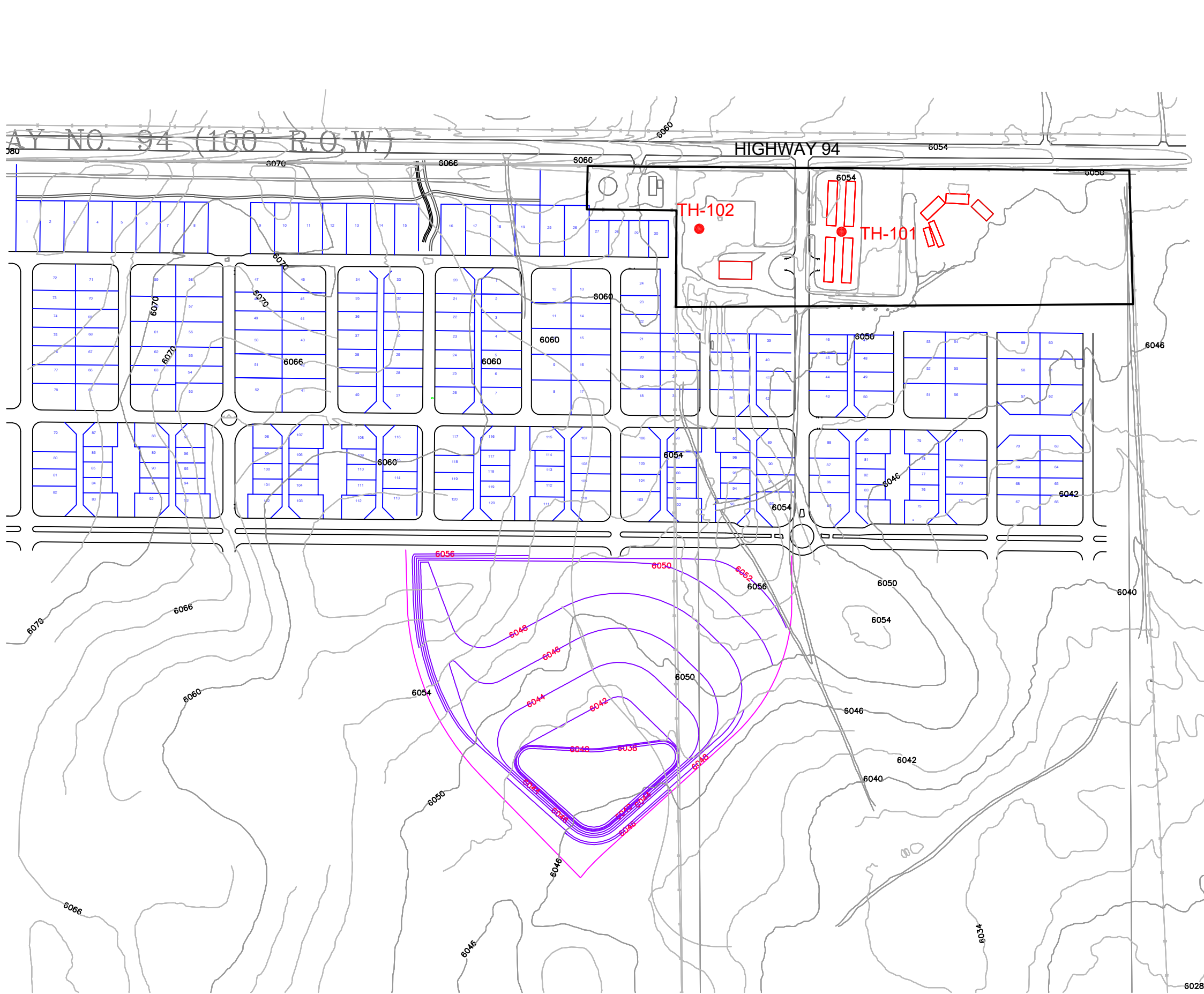
Reviewed by:

Timothy A. Mitchell, P.E.
Division Manager



APPENDIX A

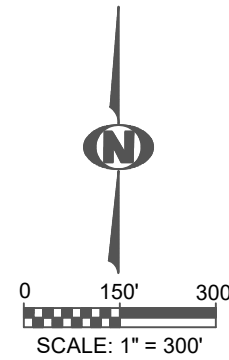
DATA FROM PREVIOUS GEOTECHNICAL INVESTIGATIONS (CS18969.001 AND CS16091)



VICINITY MAP

(NOT TO SCALE)

- LEGEND:
- TH-101 APPROXIMATE LOCATION OF EXPLORATORY BORING.
 - UPDATED PROJECT BOUNDARY INCLUDED IN THIS INVESTIGATION.
 - LOCATION OF EXISTING STRUCTURES AND FOUNDATIONS.
 - LOCATION OF PROPOSED LOTS.
 - EXISTING TOPOGRAPHY



NOTE:
BASE DRAWING WAS PROVIDED BY ROCKY MOUNTAIN DRAFTING.

Location of
Exploratory
Borings

**LEGEND:**

FILL, SAND, SLIGHTLY SILTY, SLIGHTLY GRAVELLY, LOOSE TO MEDIUM DENSE, SLIGHTLY MOIST, BROWN.



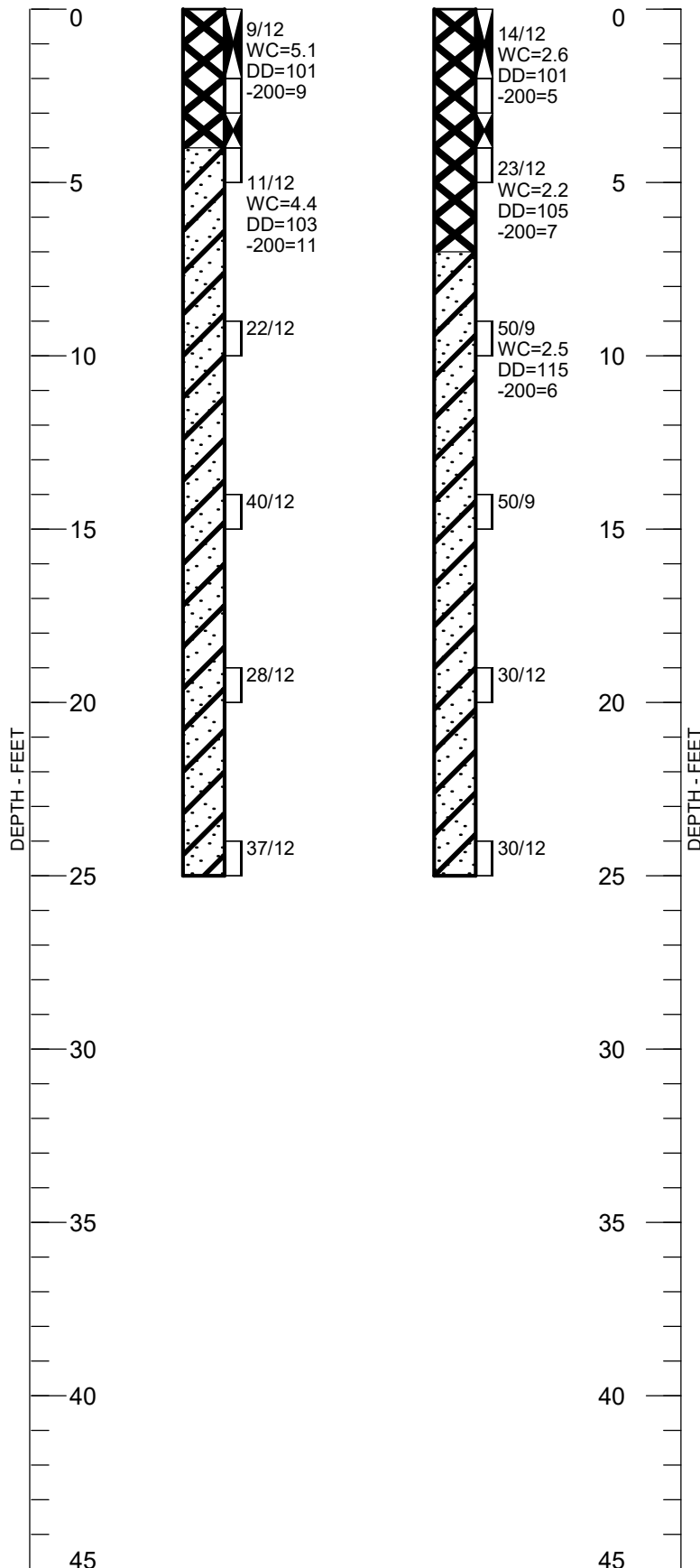
SAND, SLIGHTLY SILTY, MEDIUM DENSE TO VERY DENSE, SLIGHTLY MOIST, LIGHT BROWN TO BROWN. (SP-SM)



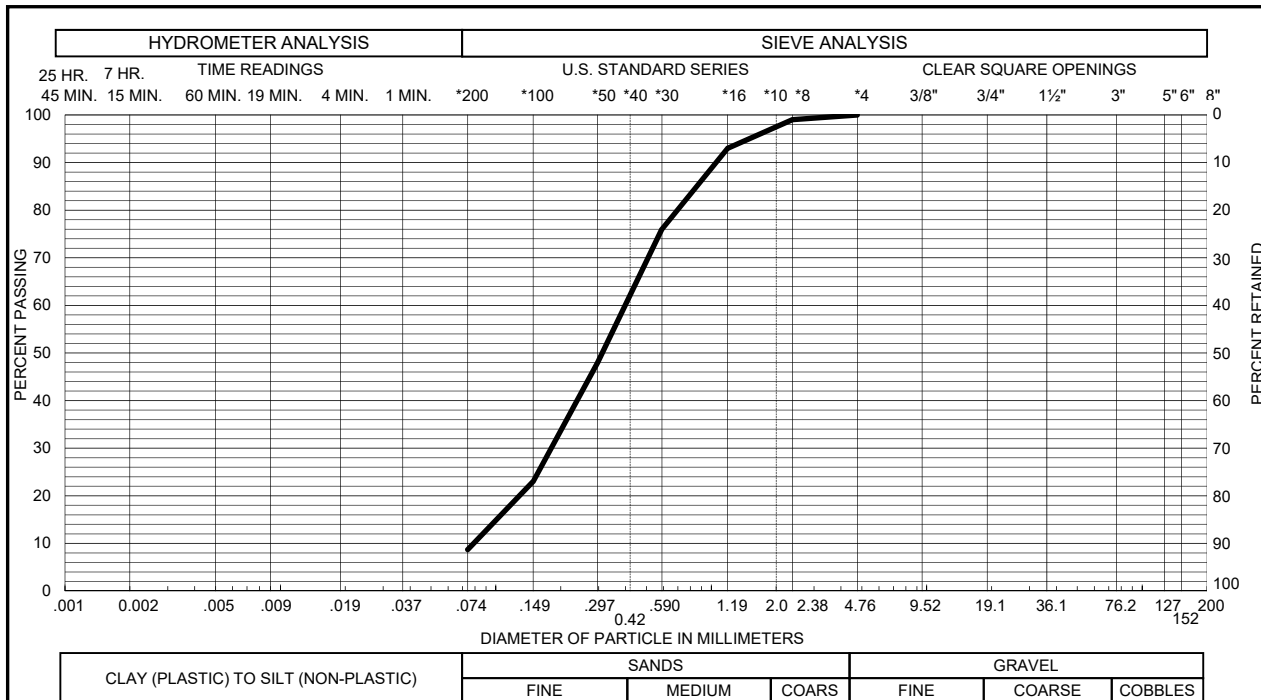
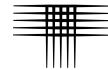
DRIVE SAMPLE. THE SYMBOL 9/12 INDICATES 9 BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES WERE REQUIRED TO DRIVE A 2.5-INCH O.D. SAMPLER 12 INCHES.



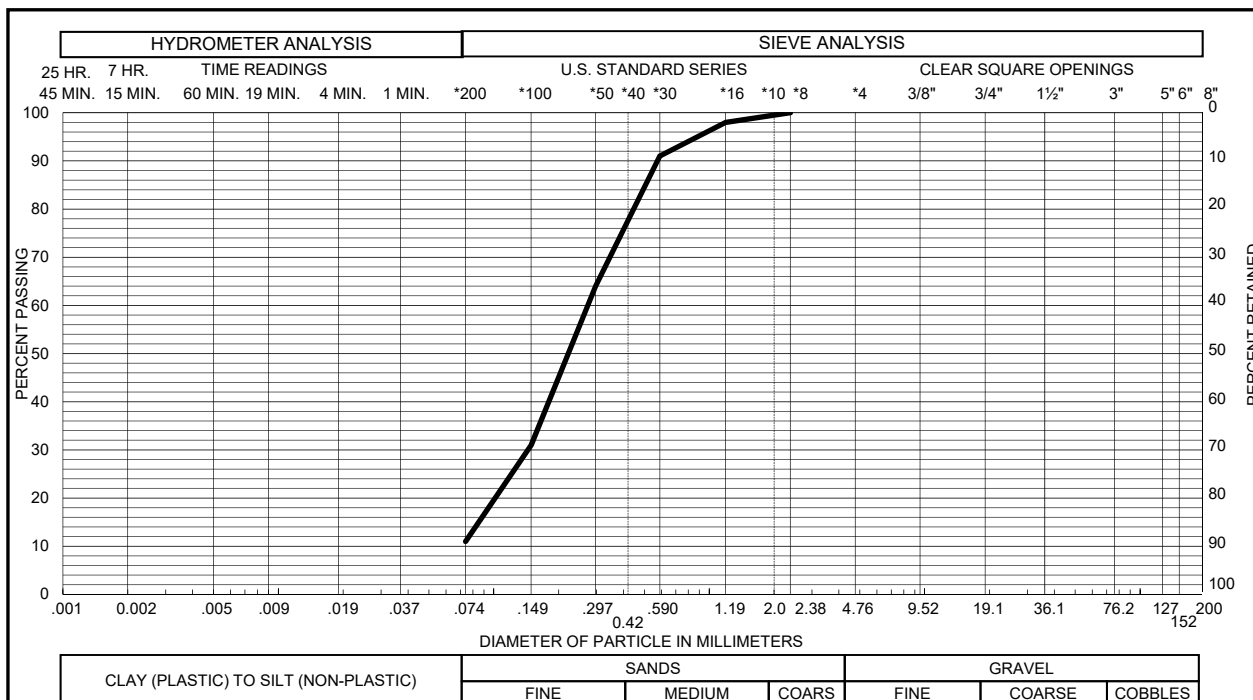
INDICATES BULK SAMPLE OBTAINED FROM AUGER CUTTINGS.

**NOTES:**

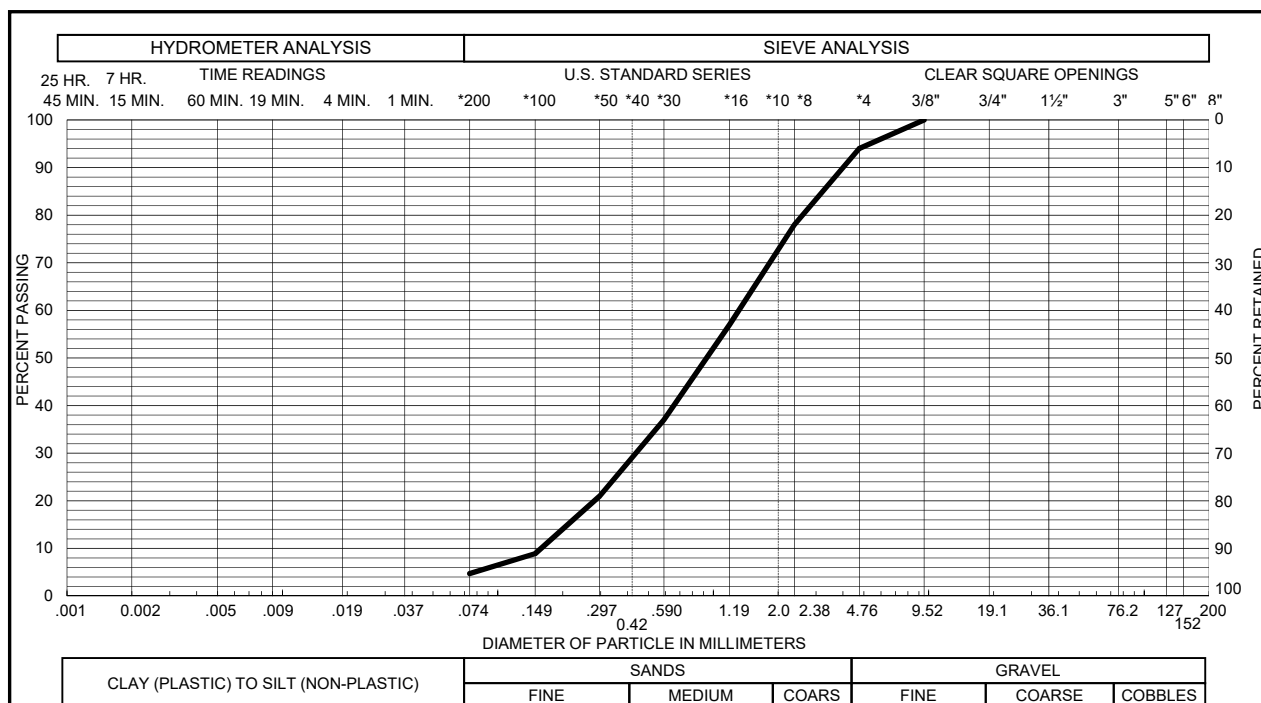
1. THE BORINGS WERE DRILLED JANUARY 9, 2019 USING A 4-INCH DIAMETER, CONTINUOUS-FLIGHT AUGER AND A CME-55, TRUCK-MOUNTED DRILL RIG.
2. THESE LOGS ARE SUBJECT TO THE EXPLANATIONS, LIMITATIONS, AND CONCLUSIONS AS CONTAINED IN THIS REPORT.
3. GROUNDWATER WAS NOT ENCOUNTERED IN THE EXPLORATORY BORINGS DURING THIS INVESTIGATION.
4. WC - INDICATES MOISTURE CONTENT. (%)
DD - INDICATES DRY DENSITY. (PCF)
LL - INDICATES LIQUID LIMIT. (%)
(NV : NO VALUE)
PI - INDICATES PLASTICITY INDEX. (%)
(NP : NON-PLASTIC)
-200 - INDICATES PASSING NO. 200 SIEVE. (%)



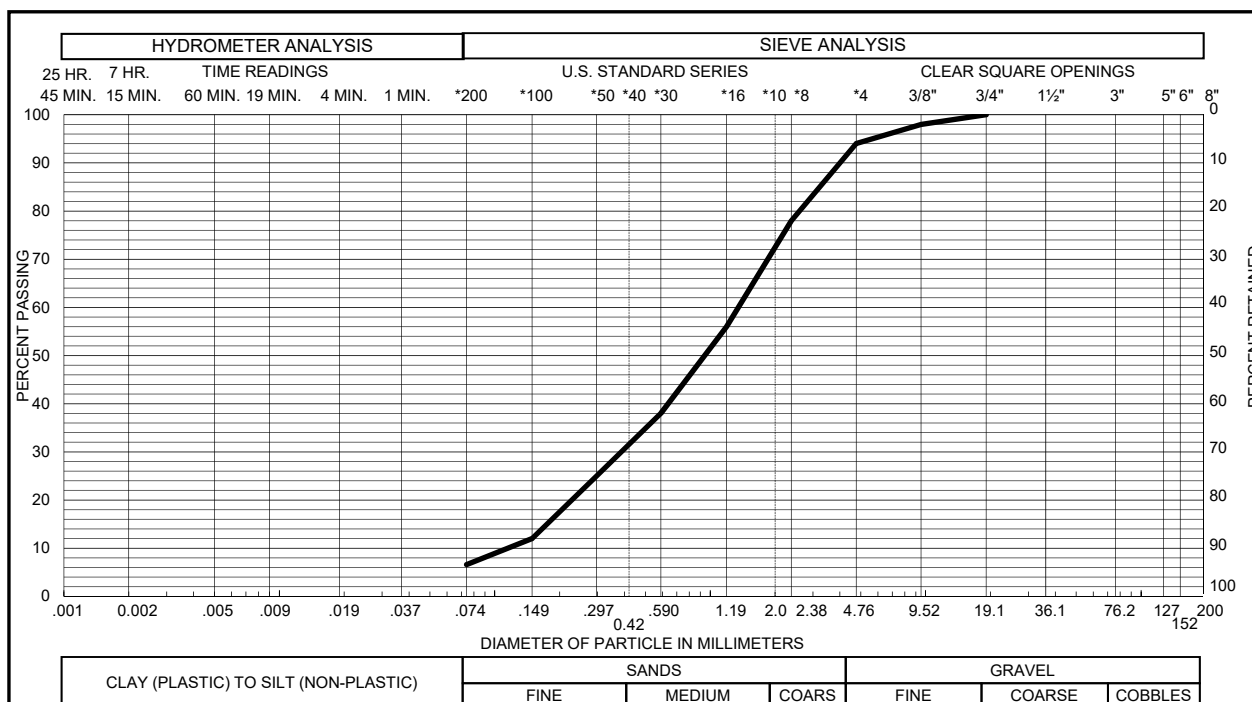
Sample of FILL, SAND, SLIGHTLY SILTY GRAVEL 0 % SAND 91 %
From TH - 101 AT 2 FEET SILT & CLAY 9 % LIQUID LIMIT %
PLASTICITY INDEX %



Sample of SAND, SLIGHTLY SILTY (SP-SM) GRAVEL 0 % SAND 89 %
From TH - 101 AT 4 FEET SILT & CLAY 11 % LIQUID LIMIT %
PLASTICITY INDEX %



Sample of FILL, SAND, SLT. SILTY, SLT. GRAVELLY GRAVEL 6 % SAND 89 %
From TH - 102 AT 2 FEET SILT & CLAY 5 % LIQUID LIMIT %
PLASTICITY INDEX %



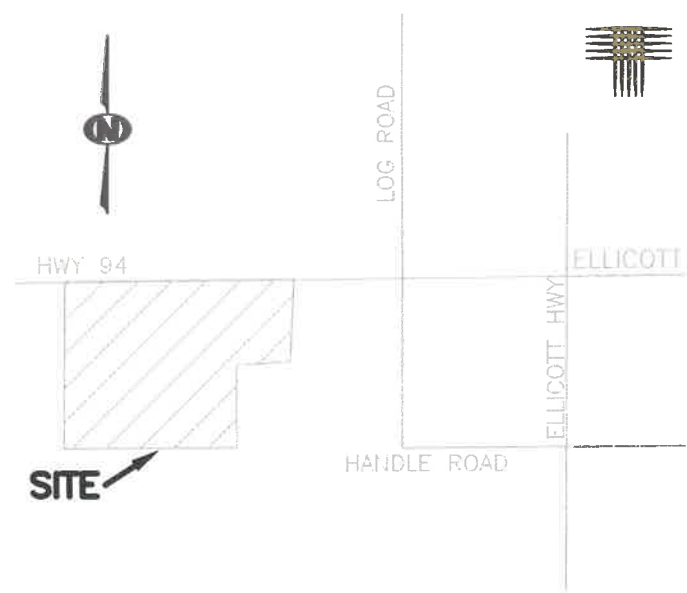
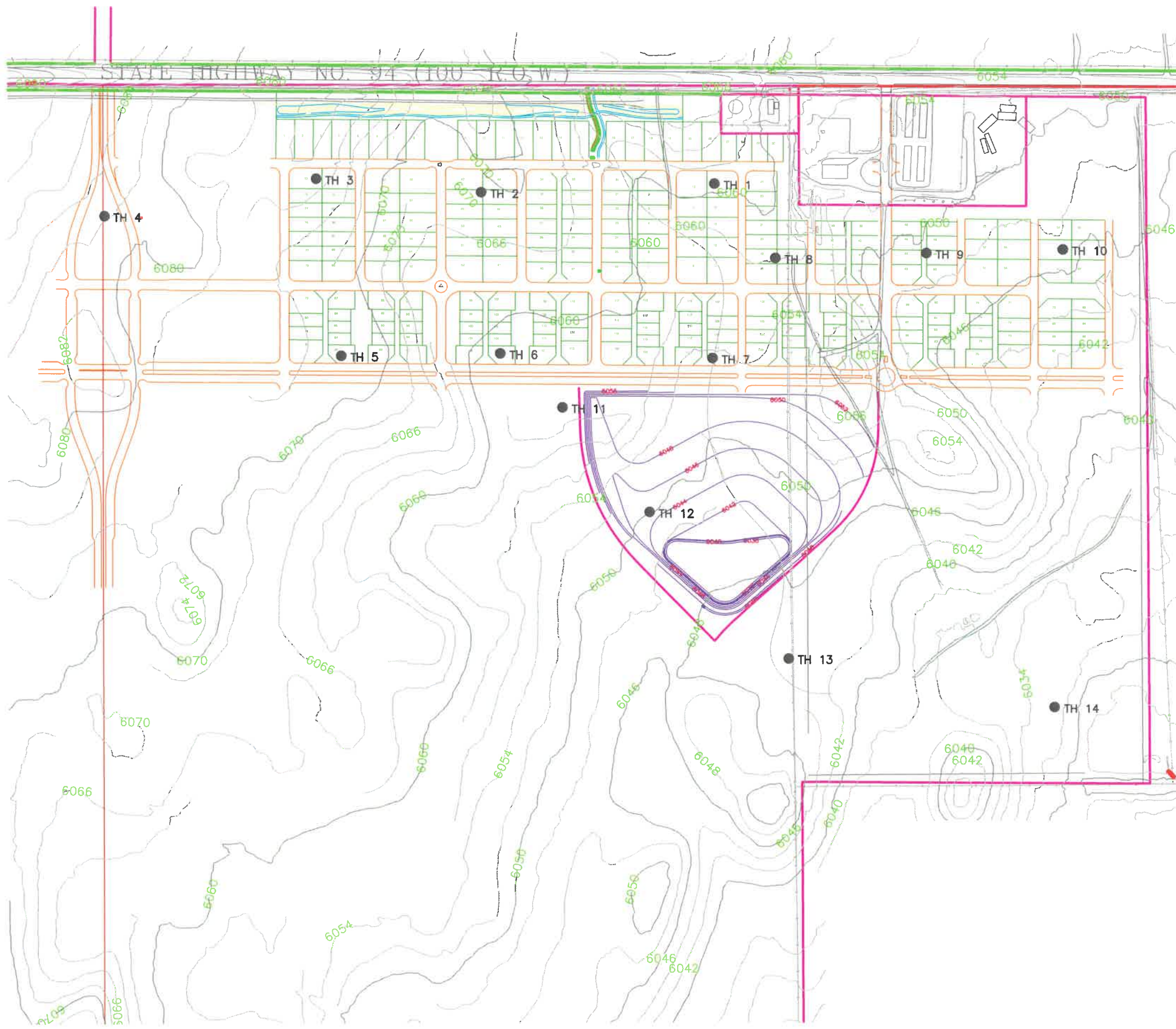
Sample of FILL, SAND, SLT. SILTY, SLT. GRAVELLY GRAVEL 6 % SAND 87 %
From TH - 102 AT 4 FEET SILT & CLAY 7 % LIQUID LIMIT %
PLASTICITY INDEX %

SUMMARY OF LABORATORY TESTING
CTL/T PROJECT NO. CS18969.001-115

[illegible]

* SWELL MEASURED WITH ESTIMATED IN-SITU OVERBURDEN PRESSURE.
NEGATIVE VALUE INDICATES COMPRESSION.

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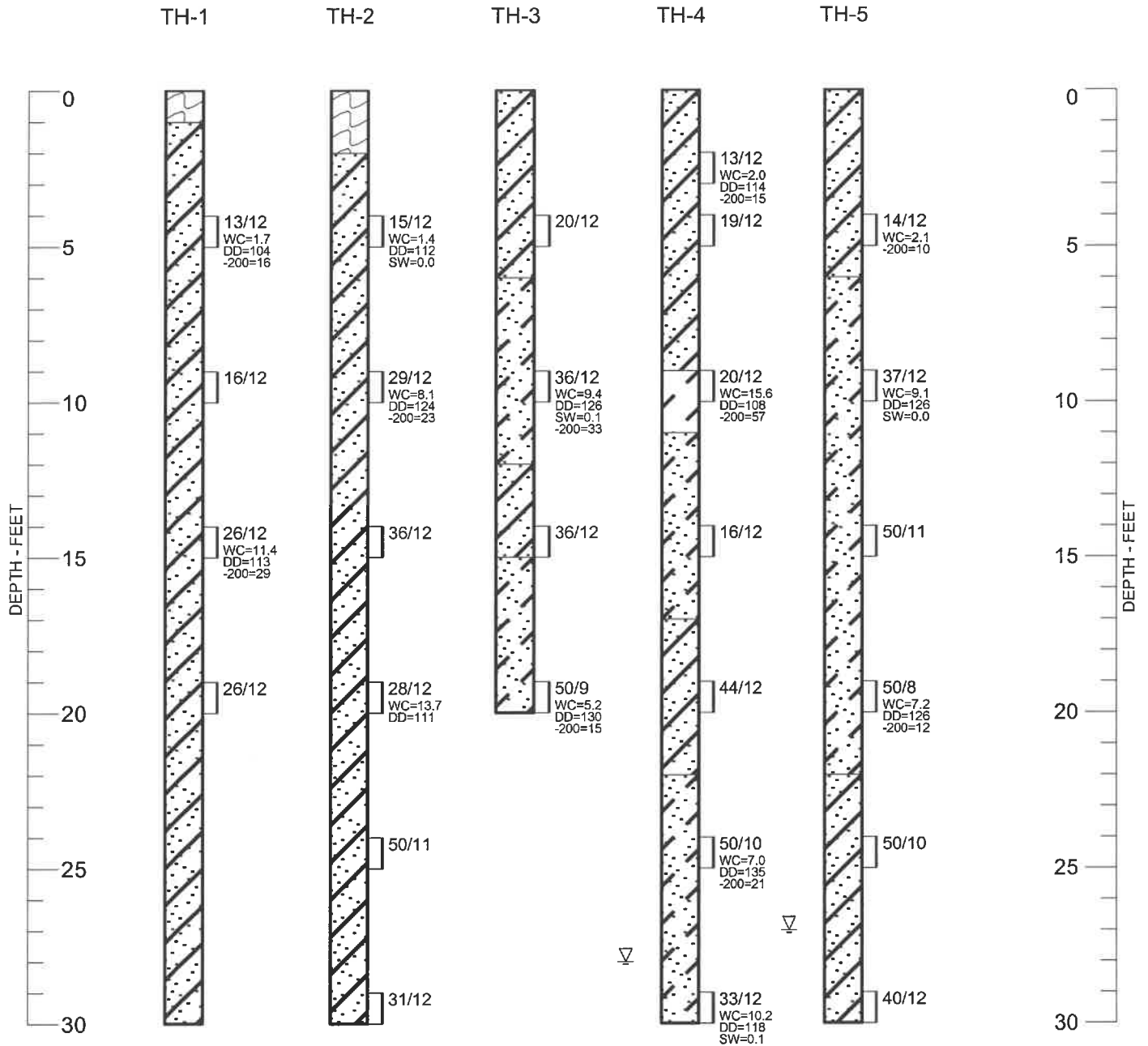
VICINITY MAP
(NO SCALE)

- LEGEND:
- TH 1 INDICATES APPROXIMATE LOCATION OF TEST HOLES INCLUDED IN THIS INVESTIGATION.
 - INDICATES EXISTING ELEVATION CONTOURS.
 - INDICATES PROPOSED GRADING CONTOURS.

NOTE:
BASE DRAWING PROVIDED BY ROCKY MOUNTAIN DRAFTING.



Location of
Exploratory Borings



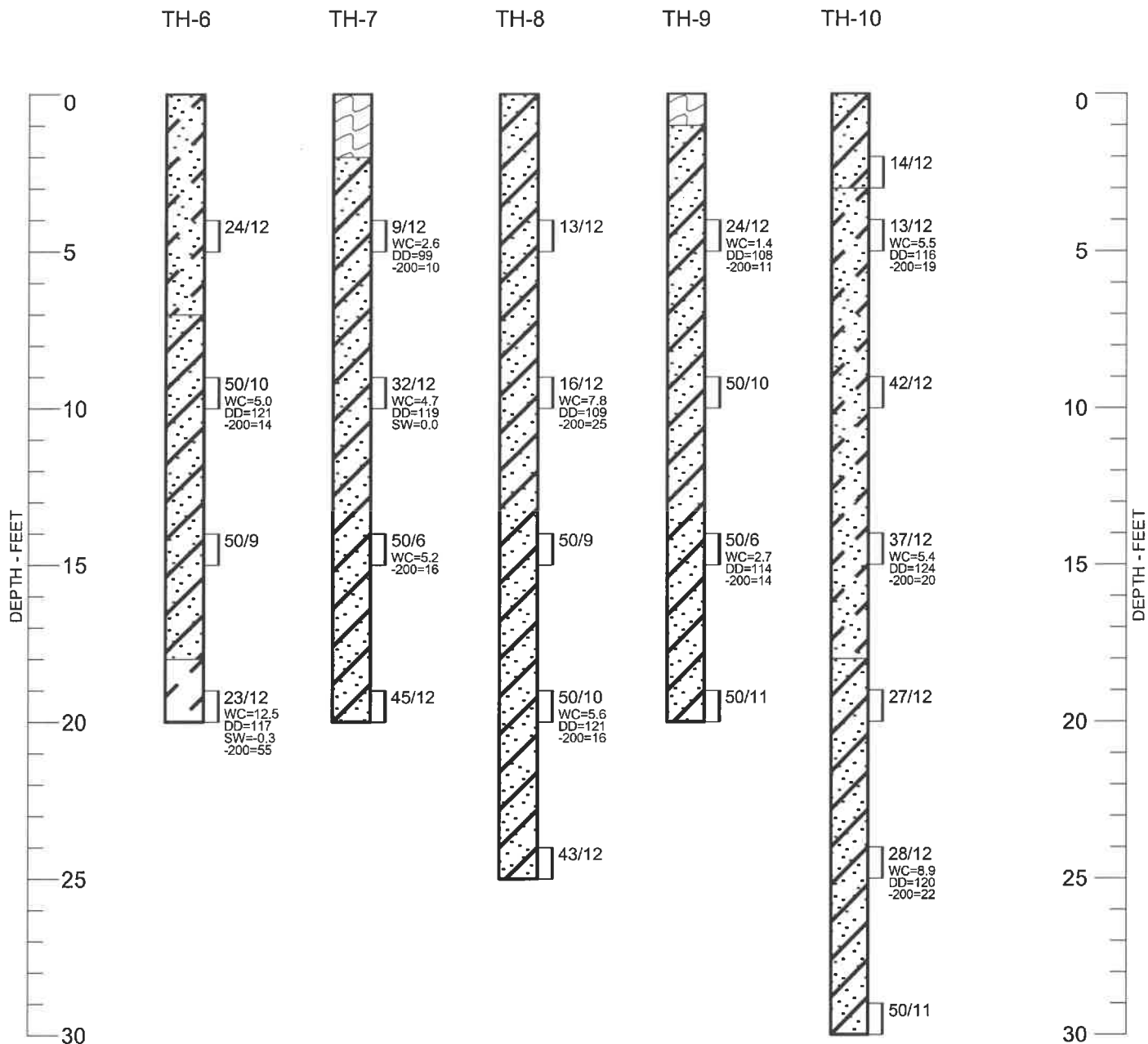
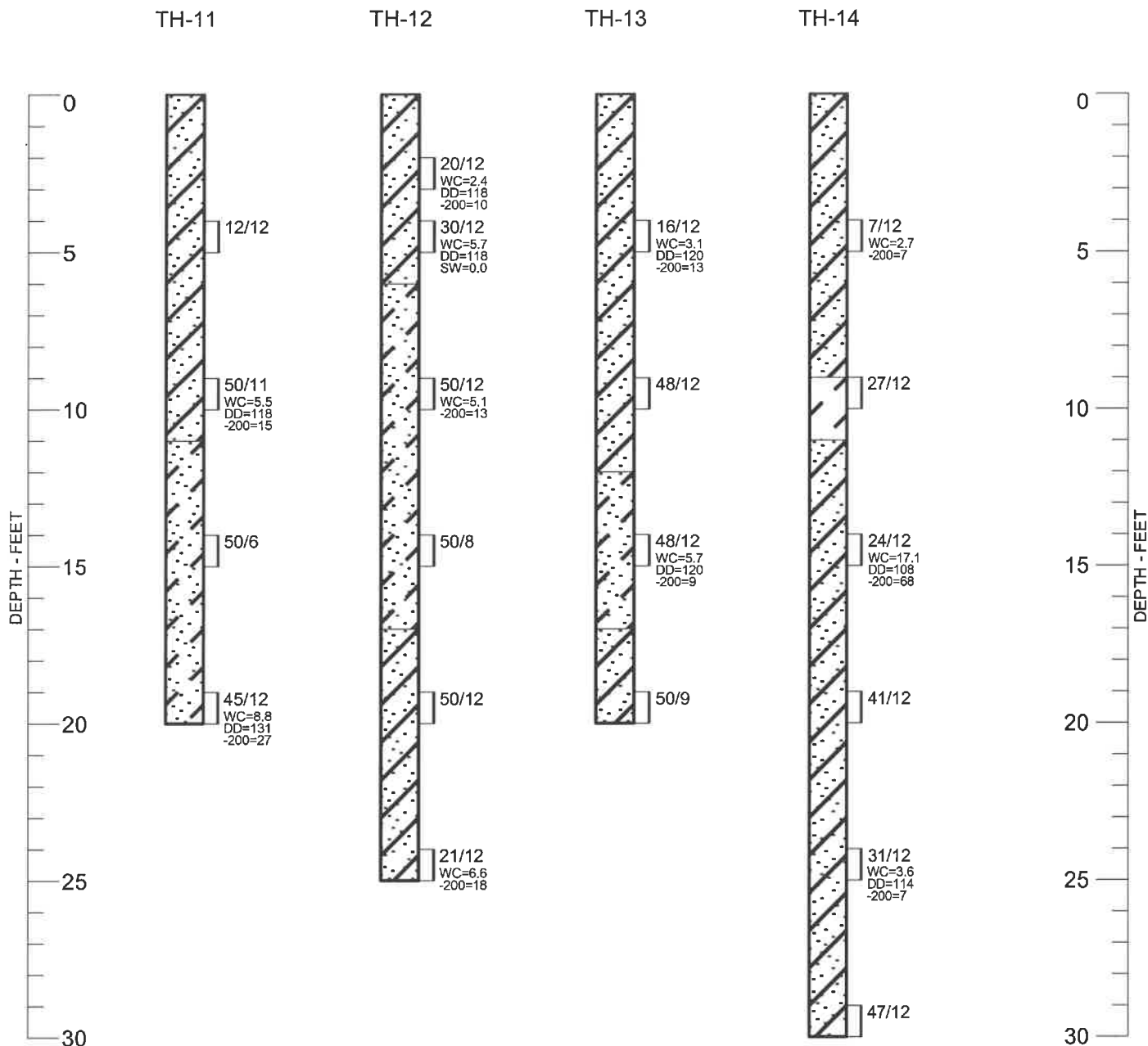


FIG. A-2



LEGEND:

TOPSOIL.



SAND, SLIGHTLY SILTY TO SILTY, MEDIUM DENSE TO VERY DENSE, DRY TO MOIST, LIGHT BROWN TO MEDIUM BROWN(SP-SM, SM).



SAND, SLIGHTLY CLAYEY TO CLAYEY, MEDIUM DENSE TO DENSE, MOIST, MEDIUM BROWN(SP-SC, SC).



CLAY, SANDY, STIFF, MOIST, MEDIUM BROWN(CL).



DRIVE SAMPLE. THE SYMBOL 13/12 INDICATES 13 BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES WERE REQUIRED TO DRIVE A 2.5-INCH O.D. SAMPLER 12 INCHES.

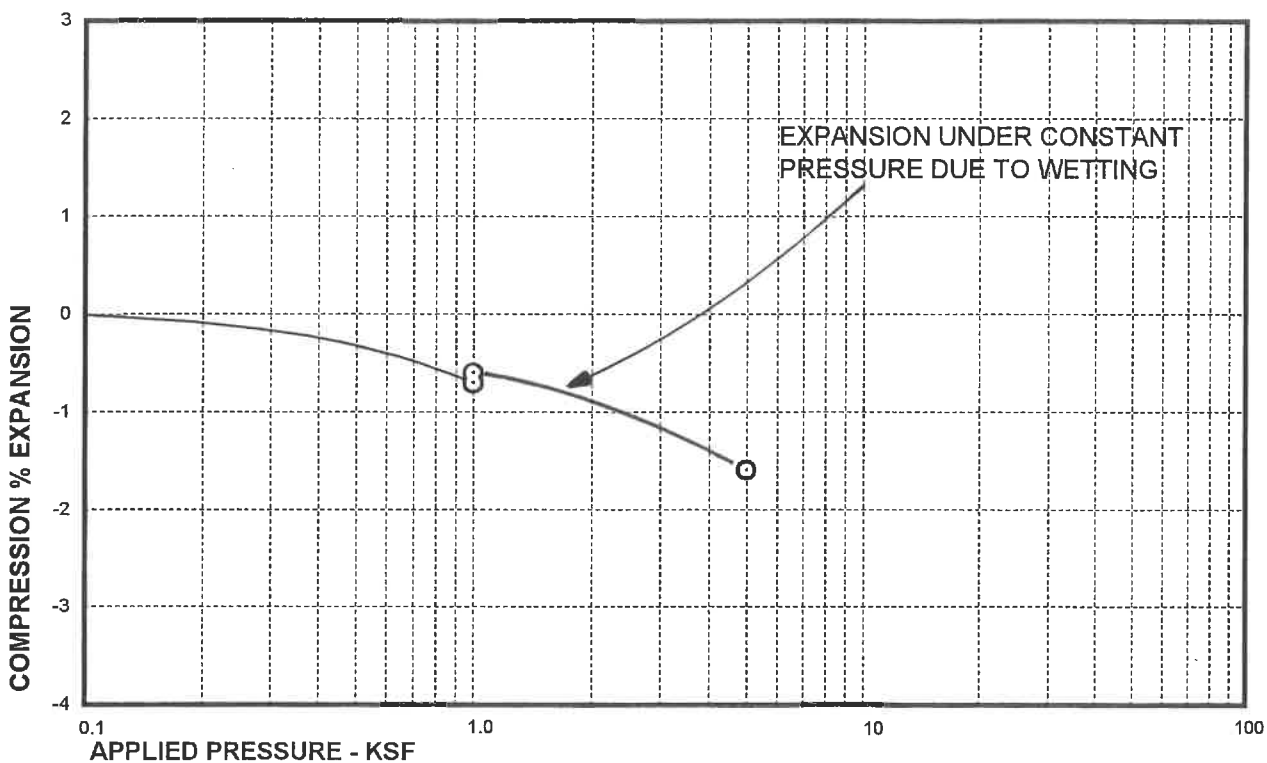


WATER LEVEL MEASURED AT TIME OF DRILLING.

NOTES:

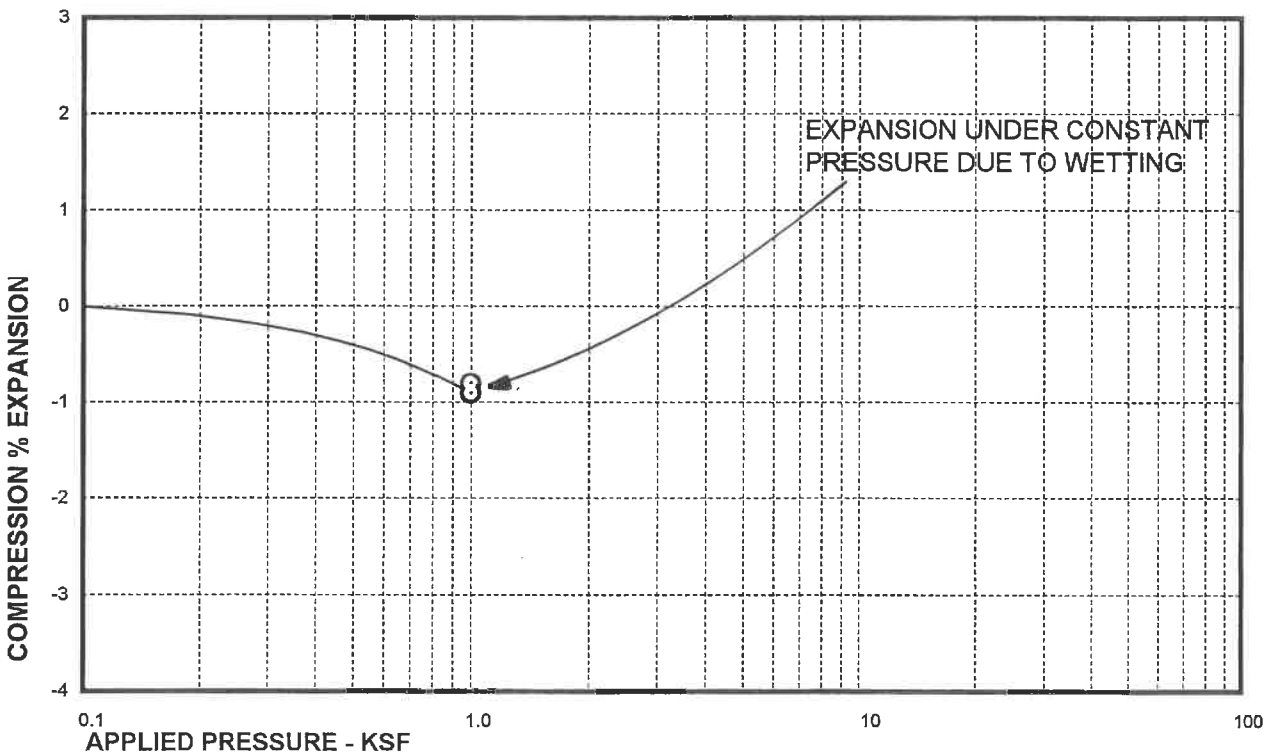
1. THE BORINGS WERE DRILLED MAY 25 AND 26, 2006 USING A 4-INCH DIAMETER CONTINUOUS FLIGHT AUGER AND A TRUCK MOUNTED DRILL RIG.
2. THESE LOGS ARE SUBJECT TO THE EXPLANATIONS, LIMITATIONS AND CONCLUSIONS CONTAINED IN THIS REPORT.
3. WC - INDICATES MOISTURE CONTENT (%).
DD - INDICATES DRY DENSITY (PCF).
SW - INDICATES SWELL WHEN WETTED UNDER 1 KSF LOAD (%).
-200 - INDICATES PASSING NO. 200 SIEVE (%).
SS - INDICATES SOLUBLE SULFATE CONTENT (%).

**Summary Logs of
Exploratory
Borings**



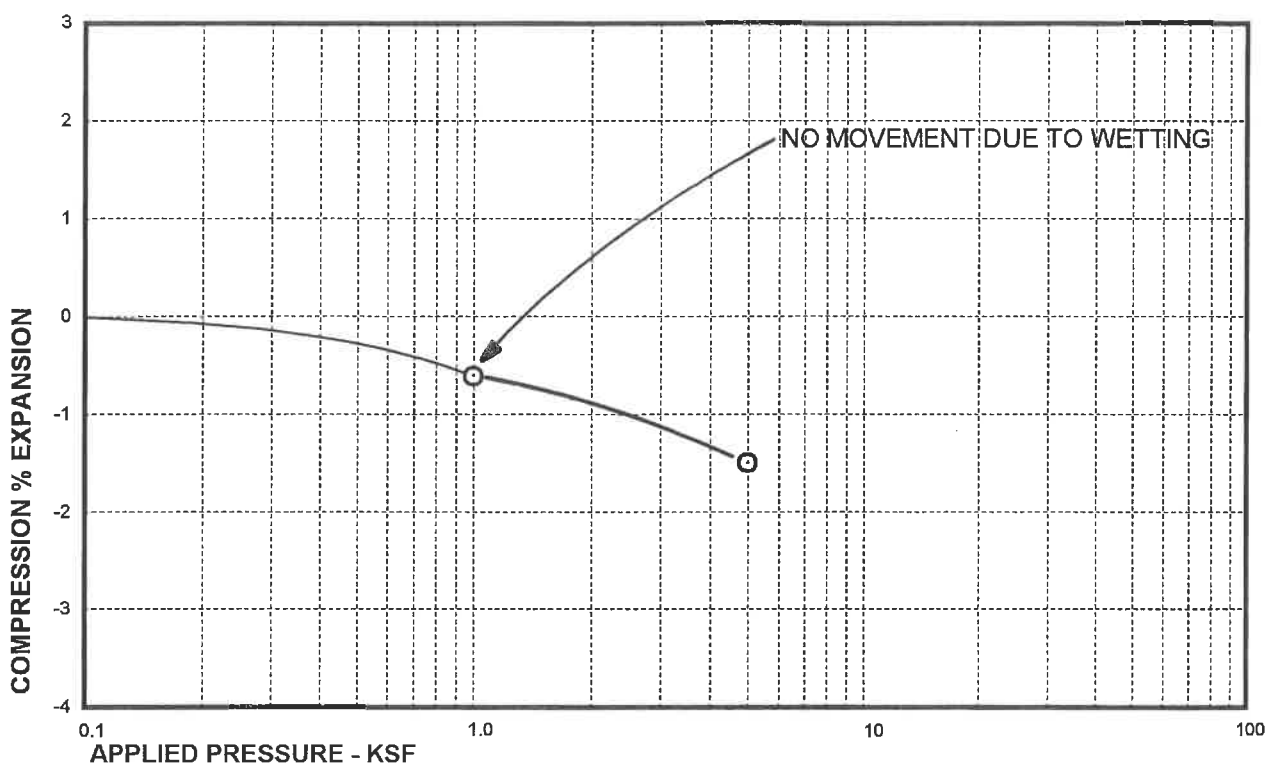
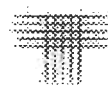
Sample of SAND, CLAYEY (SC)
From TH-3 AT 9 FEET

DRY UNIT WEIGHT= 126 PCF
MOISTURE CONTENT= 9.4 %



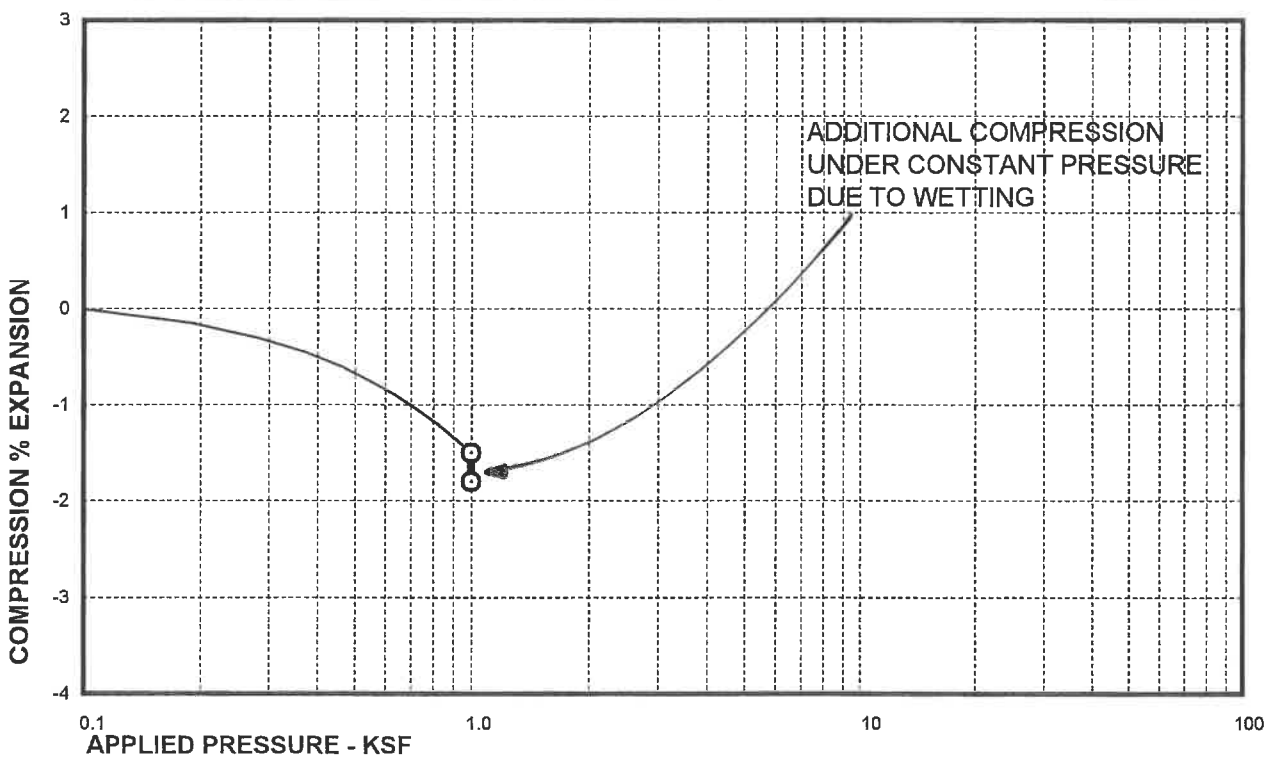
Sample of SAND, CLAYEY (SC)
From TH-4 AT 29 FEET

DRY UNIT WEIGHT= 118 PCF
MOISTURE CONTENT= 10.2 %



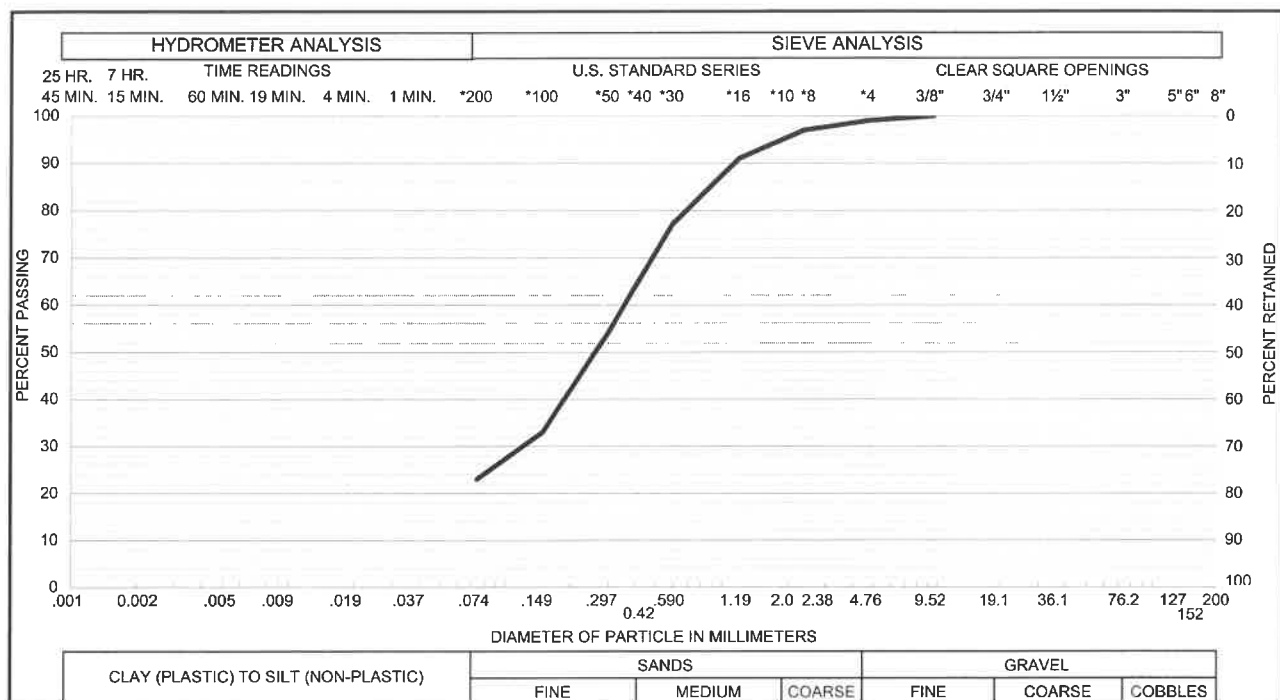
Sample of SAND, CLAYEY (SC)
From TH-5 AT 9 FEET

DRY UNIT WEIGHT= 126 PCF
MOISTURE CONTENT= 9.1 %



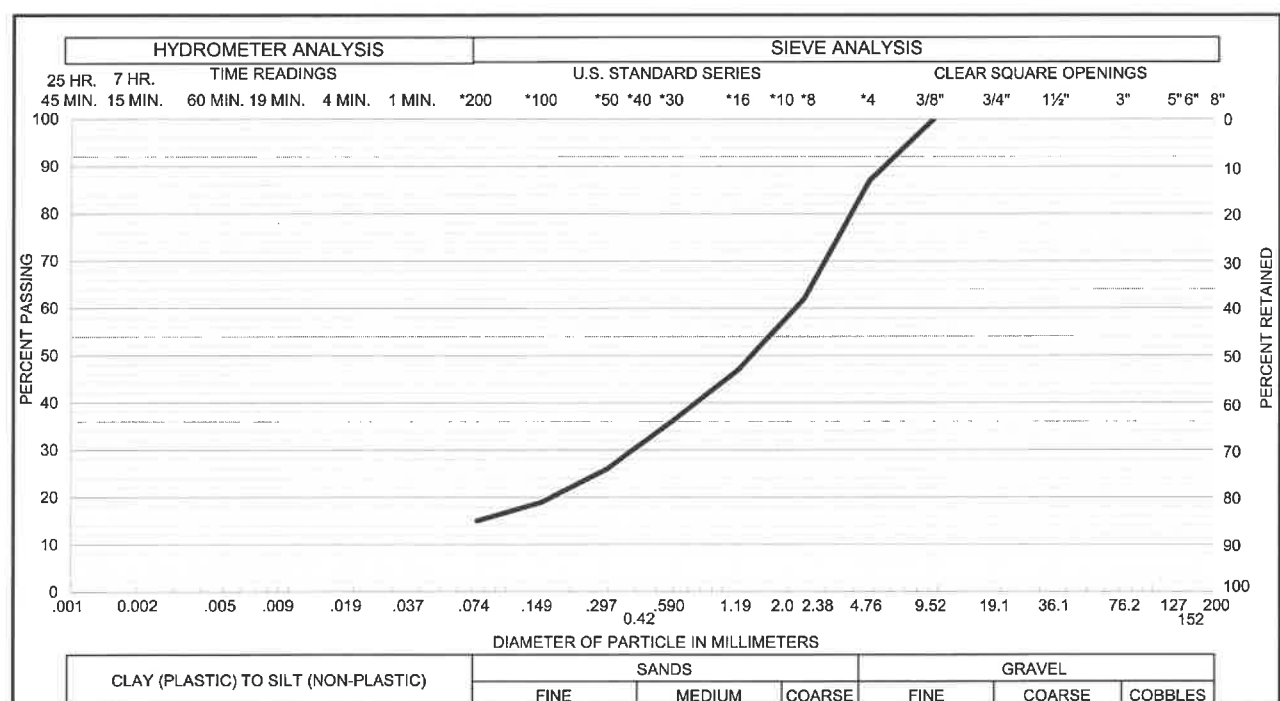
Sample of CLAY, SANDY (CL)
From TH-6 AT 19 FEET

DRY UNIT WEIGHT= 117 PCF
MOISTURE CONTENT= 12.5 %



Sample of SAND, SILTY (SM)
From TH - 2 AT 9 FEET

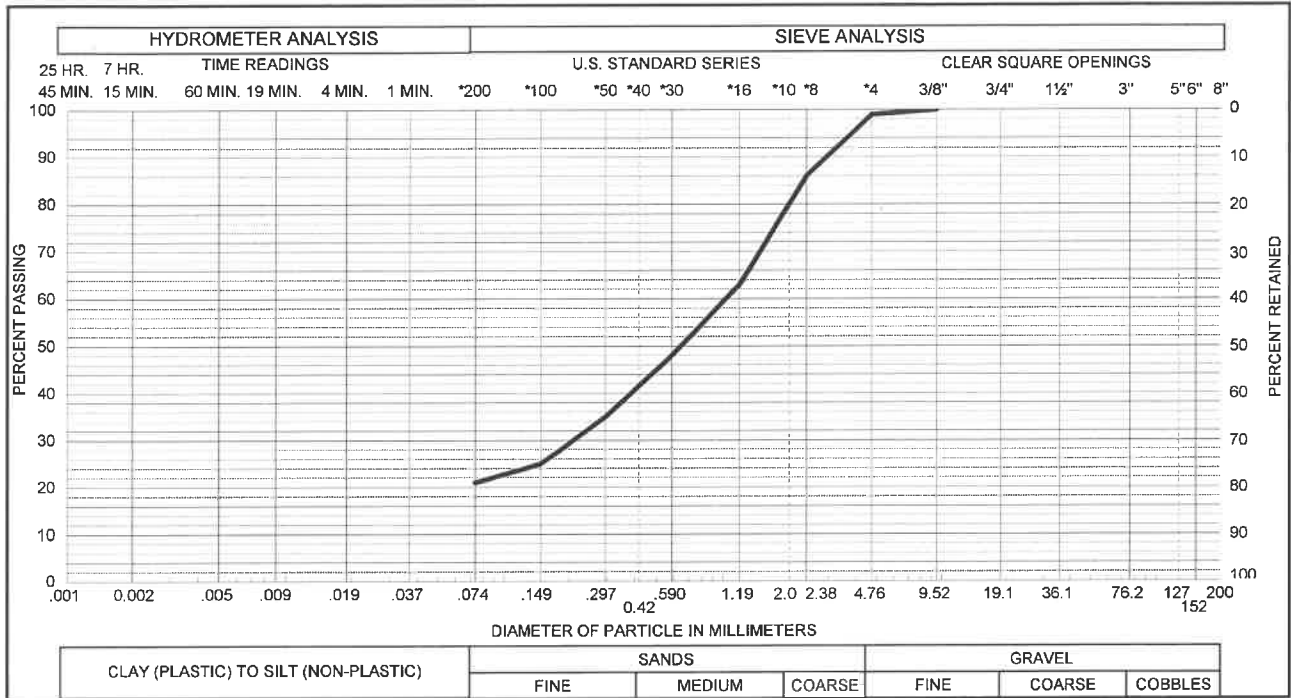
GRAVEL	1 %	SAND	76 %
SILT & CLAY	23 %	LIQUID LIMIT	- %
PLASTICITY INDEX			- %



Sample of SAND, CLAYEY (SC)
From TH - 3 AT 19 FEET

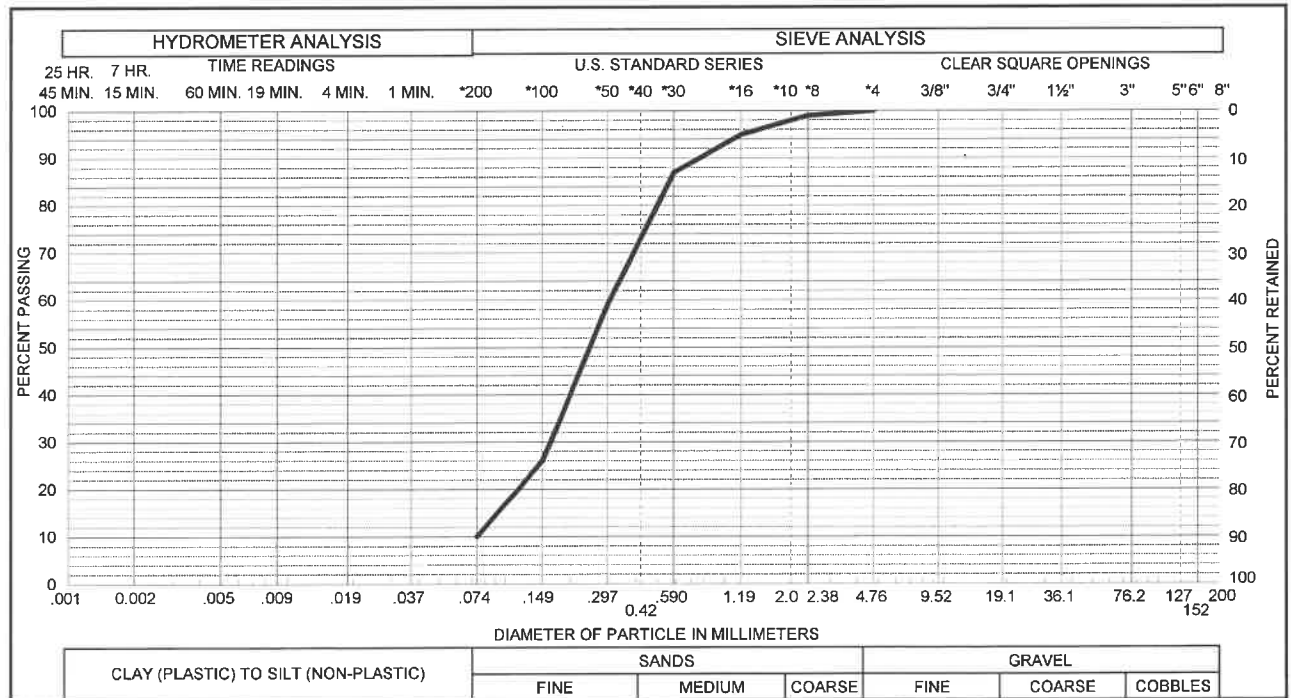
GRAVEL	13 %	SAND	72 %
SILT & CLAY	15 %	LIQUID LIMIT	- %
PLASTICITY INDEX			- %

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Sample of SAND, CLAYEY (SC)
From TH - 4 AT 24 FEET

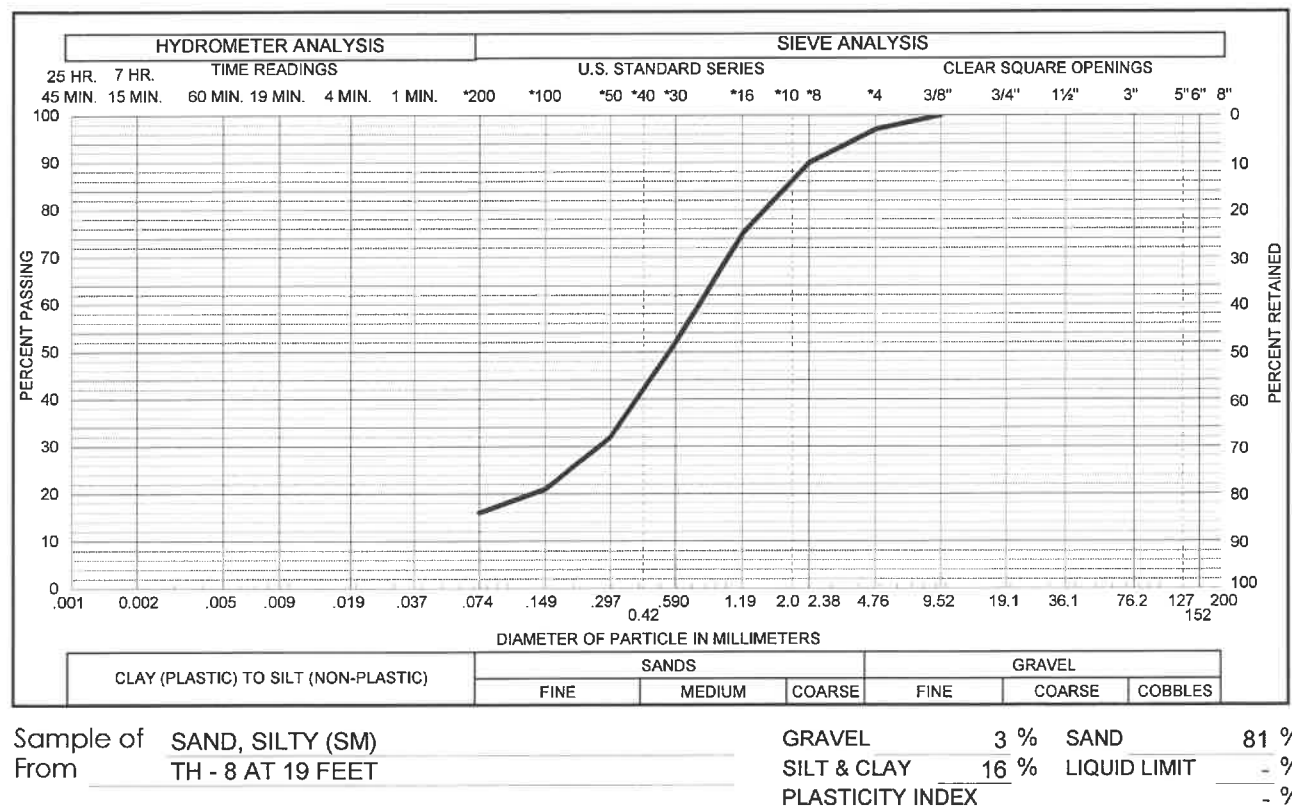
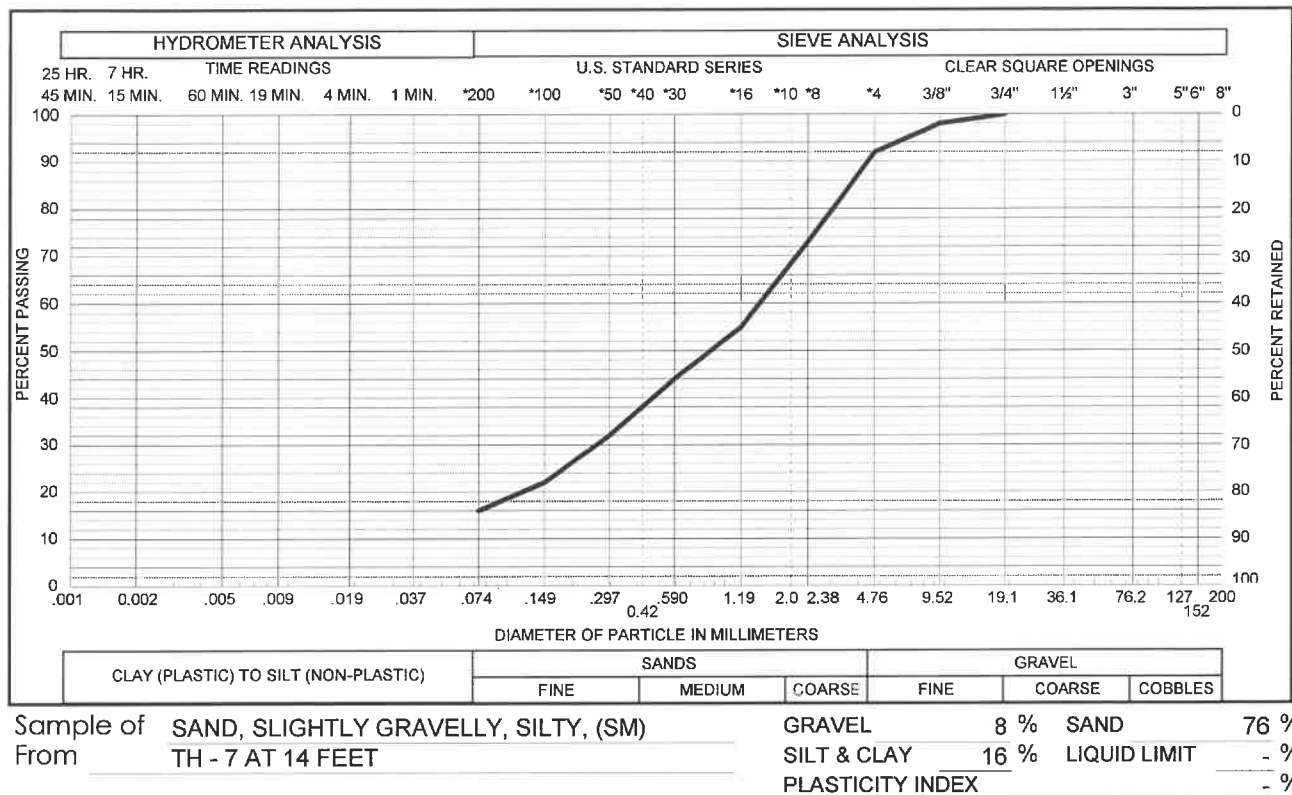
GRAVEL 1 % SAND 78 %
SILT & CLAY 21 % LIQUID LIMIT - %
PLASTICITY INDEX - %



Sample of SAND, SLIGHTLY SILTY(SP-SM)
From TH - 5 AT 4 FEET

GRAVEL 0 % SAND 90 %
SILT & CLAY 10 % LIQUID LIMIT - %
PLASTICITY INDEX - %

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ACCRETIVE INVESTMENTS
ELLCOT TOWN CENTER, FILING NO. 1
PROJECT NO. CS16091-115

Gratation Test Results

FIG. B-5

TABLE B-I

**SUMMARY OF LABORATORY TESTING
PROJECT NO. CS16091-115**

BORING	DEPTH (FEET)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	ATTERBERG LIMITS		SWELL TEST RESULTS*		PASSING NO. 200 SIEVE (%)	SOLUBLE SULFATES (%)	DESCRIPTION
				LIQUID LIMIT (%)	PLASTICITY INDEX (%)	SWELL (%)	SWELL PRESSURE (PSF)			
TH-1	4	1.7	104					16		SAND, SILTY (SM)
	14	11.4	113					29		SAND, SILTY (SM)
TH-2	4	1.4	112						0.006	SAND, SILTY (SM)
	9	8.1	124					23		SAND, SILTY (SM)
	19	13.7	111							SAND, SILTY (SM)
TH-3	9	9.4	126			0.1		33		SAND, CLAYEY (SC)
	19	5.2	130					15		SAND, CLAYEY (SC)
TH-4	2	2.0	114					15		SAND, SILTY (SM)
	9	15.6	108					57		CLAY, SANDY (CL)
	24	7.0	135					21		SAND, CLAYEY (SC)
	29	10.2	118			0.1				SAND, CLAYEY (SC)
TH-5	4	2.1						10		SAND, SLIGHTLY SILTY (SP-SM)
	9	9.1	126			0.0				SAND, CLAYEY (SC)
	19	7.2	126					12		SAND, SLIGHTLY CLAYEY (SP-SC)
TH-6	9	5.0	121					14		SAND, SILTY (SM)
	19	12.5	117			-0.3		55		CLAY, SANDY (CL)
TH-7	4	2.6	99					10		SAND, SLIGHTLY SILTY (SP-SM)
	9	4.7	119						0.002	SAND, SILTY (SM)
	14	5.2						16		SAND, SILTY (SM)
TH-8	9	7.8	109					25		SAND, SILTY (SM)
	19	5.6	121					16		SAND, SILTY (SM)
TH-9	4	1.4	108					11		SAND, SLIGHTLY SILTY (SP-SM)
	14	2.7	114					14		SAND, SILTY (SM)
TH-10	4	5.5	116					19		SAND, SILTY (SM)
	14	5.4	124					20		SAND, CLAYEY (SC)
	24	8.9	120					22		SAND, SILTY (SM)
TH-11	9	5.5	118					15		SAND, SILTY (SM)
	19	8.8	131					27		SAND, CLAYEY (SC)
TH-12	2	2.4	118					10		SAND, SLIGHTLY SILTY (SP-SM)
	4	5.7	118						0.002	SAND, SILTY (SM)
	9	5.1						13		SAND, CLAYEY (SC)
	24	6.6						18		SAND, SILTY (SM)
TH-13	4	3.1	120					13		SAND, SILTY (SM)

* SWELL MEASURED WITH 1000 PSF APPLIED PRESSURE. NEGATIVE VALUE INDICATES COMPRESSION.

TABLE B-1

SUMMARY OF LABORATORY TESTING
PROJECT NO. CS16091-115

[illegible]

* SWELL MEASURED WITH 1000 PSF APPLIED PRESSURE. NEGATIVE VALUE INDICATES COMPRESSION.