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& ASSOCIATES
ENGINEERING & GEOLOGICAL
SERVICES
NC LIC. NO. C-0828 (ENGINEERING)

RECEIVED SOLID WASTE SECTION SEP 13 2011

August 26, 2011

Mr. Brain Wootton
NCDENR – Division of Waste Management
Solid Waste Section
1646 Mail Service Center
Raleigh, North Carolina 27699-1646

APPROVED
DIVISION OF WASTE MANAGEMENT
SOLID WASTE SECTION
DATE Nov 7, 2011 BY Brian Wootton
ID# 15577 Hydrogeologist
Permit No. 29-06

RE: Supplemental Geologic Report for Site Suitability
Davidson County Phase 2 Landfill
Thomasville, North Carolina

Dear Mr. Wootton:

In May 2006, Richardson Smith Gardner & Associates, Inc. (RSG) submitted a Site Suitability Application for Phase 2 of the Davidson County MSW Landfill. This application was approved on March 5th 2007 for the majority of the site. Two areas were conditionally excluded from approval due to the presence of groundwater within the bedrock at the site, pending further geologic investigation in these areas. RSG has recently completed an additional geologic investigation into these two areas in accordance with the work plan we discussed prior to implementation. Our Supplemental Geologic Report is attached for your review. This report should be considered as supplemental information to the previously submitted Site Suitability Application to allow approval of Site Suitability for the remaining two portions of the property.

If you have any questions, or require additional information, please contact us at your earliest convenience.

Sincerely,
Richardson Smith Gardner & Associates, Inc.

Joan A. Smyth

Pieter K. Scheer

Joan A. Smyth, P.G.
Senior Hydrogeologist

Pieter K. Scheer, P.E.
Senior Engineer

Cc: Charlie Brushwood – Davidson County
Hugh Jernigan – NCDENR WSRO – Cover Letter Only

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Site Suitability
Supplemental Geologic Report

Davidson County Phase 2 MSW Landfill

Thomasville, North Carolina

NC Solid Waste Permit No. 29-06

Prepared For:

Davidson County Integrated Solid Waste
1242 Old Hwy 29
Thomasville, North Carolina 27360

Prepared By:

RICHARDSON SMITH GARDNER
& ASSOCIATES
ENGINEERING & GEOLOGICAL
SERVICES

August 2011

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Site Suitability
Supplemental Geologic Report

Davidson County Phase 2 MSW Landfill
Thomasville, North Carolina

Prepared for:

Davidson County Integrated Solid Waste Management Department
Thomasville, North Carolina

RSG Project No. DAVDCO-10-4

Joan A. Smyth, P.G.
Principal, Senior Hydrogeologist

NORTH CAROLINA LICENSED SEAL 1369 GEOLOGIST JOAN A. SMYTH

August 2011

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DAVIDSON COUNTY
PHASE 2 MSW LANDFILL SITE SUITABILITY
SUPPLEMENTAL HYDROGEOLOGIC STUDY

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1.0 Introduction

In May 2006, Richardson Smith Gardner and Associates, Inc (formerly G. N. Richardson and Associates, Inc.) submitted a revised Site Suitability report for the Phase 2 area of the Davidson County Municipal Solid Waste (MSW) Landfill. The Phase 2 area is located on a 230 acre tract north of the NC Railroad Company easement and the existing Phase 1 MSW landfill. During the course of the Site Suitability application process, groundwater was detected within the bedrock in two areas in the northeast and southwest portions of the Phase 2 area. Due to this condition, additional geologic/hydrogeologic investigation was requested by the North Carolina Dept. of Environment and Natural Resources (NCDENR) in order to prove suitability of these two remaining areas for landfill development.

In the May 2006 Site Suitability Application[1], these areas were shown as "Options" for future development. On March 5, 2007, the NCDENR approved Site Suitability for Phase 2, excluding these two areas pending further geologic evaluation. A map depicting Phase 2 and the areas that required additional geologic evaluation is included as **Figure 1**. It should be noted that the central portion of Phase 2 was deemed suitable for landfill development and currently Phase 2 Area 1 is in operation.

In November 2010, a study to further evaluate geologic and hydrogeologic conditions in these two areas was conducted. Additionally, a geologic investigation of the future Area 2 unit was also conducted. The Permit to Construct Application for Area 2 will be submitted under separate cover; however, the geologic information gathered for that area is included in this report to further supplement our understanding of the geology at the site.

The activities undertaken to better characterize the hydrogeology of the site, including both the results of this study and previous investigations, are summarized in this report.

2.0 Regional Geology

The Davidson County Landfill is located in the Piedmont Physiographic Province of North Carolina. The Geologic Map of North Carolina (1985) indicates the site lies within the Carolina Slate Belt, near its western margin. This belt includes predominantly volcanic and sedimentary rocks of Late Proterozoic to Cambrian Age that have been metamorphosed and intruded by numerous igneous plutons.

[1] Richardson Smith Gardner and Associates, Site Suitability Application Davidson County Phase 2 Landfill, Revised May 2006.

The boundary zone between the Carolina Slate Belt and the adjacent Charlotte Belt is known as the Gold Hill/Silver Hill Shear Zone.

The most detailed mapping of the area was published by the U.S. Geologic Survey in the Geologic Map of Charlotte by Goldsmith, Milton, and Horton (1988). This mapping indicates this site is underlain by two stratigraphic units: metavolcanic rock (mv) and metamorphosed granodiorite (mgd).

The metavolcanic rocks include mafic, intermediate and felsic volcanic rocks from the Flat Swamp member of the Cid Formation, and metavolcanic rocks of the Battleground Formation. The Battleground Formation is characterized as a quartz-sericite schist and phyllite. It has subordinate beds of quartz pebble conglomerate, quartzite, kyanite or sillimanite, and manganiferous schist.

3.0 Site Geology

3.1 Previous Investigations

There have been several investigations of the site between 2000 and 2011. These investigations have resulted in a total of 65 piezometers and borings being installed in and around the Phase 2 area as well as the completion of a fracture trace analysis, and geophysical study (down-hole and surface) for fracture and diabase dike locations. Details of the investigations prior to 2010 can be found in the Site Suitability Application submitted in 2006. The results of these investigations indicate that bedrock at the site consists of granite, granite aplite, granodiorite, diorite, diabase, and biotite gneiss. Rock Quality Data (RQD) of the 17 rock cores advanced prior to 2010 indicates that the upper 10 feet of bedrock is highly fractured. In some instances, auger refusal bedrock was underlain by unconsolidated sediments.

The geophysical studies revealed nine (9) fractures across the site that trend northwest/southeast and five (5) diabase dikes that trend northeast/southwest. Details of this study can be found in the 2006 Site Suitability Application Report.

3.2 Investigation Methodology

In November 2010, RSG performed an additional hydrogeologic investigation of the two areas excluded from Site Suitability in 2006. For the remainder of this report, these two areas will be referred to as Geologic Investigation Area A (in the northeast portion of the site) and Geologic Investigation Area B (in the southwestern portion of the site). Additionally, several piezometers were installed in the future Area 2 landfill unit. Data from these piezometers will be used as supplementary information where it assists in a better understanding of the geology of the site.

Current Phase 2 site conditions including all piezometers and borings are shown on **Figure 1**.

3.2.1 Geologic Investigation Area A

Geologic Investigation Area A is located in the northeastern section of the Phase 2 landfill, near the leachate storage facility for the site. During the 2010 investigation, eight (8) additional piezometers/borings were advanced in and around this area (PZ-46, PZ-47, PZ-48, PZ-49, PZ-50, PZ-51, PZ-52 and PZ-63). Previously 27 borings, piezometers and monitoring wells have been installed in and around this area yielding a total of 34 piezometers available for use in evaluating the geologic and hydrogeologic setting in this portion of the site. Additionally, PZ-58, PZ-59, and PZ-62 are located west and downgradient of Geologic Investigation Area A and provide additional geologic insight for this area.

Construction information for the newly installed piezometers is summarized in **Table 1**. Boring logs for the piezometers are included in **Appendix A**. Piezometer locations are shown on **Figure 1**.

3.2.2 Geologic Investigation Area B

For this investigation, RSG installed six (6) additional piezometers (PZ-53, PZ-55, PZ-56s, PZ-56d, PZ-60 and PZ-61) and one boring (SB-54). During previous investigations, 12 piezometers were installed in this area.

3.3 Unconsolidated Sediments

3.3.1 Geologic Investigation Area A

Soil types in this area of the site consist of a mixture of sands, silts, and clays. According to the soil survey map (websoilsurvey.nrcs.usda.gov), soils of the following types have been mapped in this area: Enon Fine Sandy Loam and Poindexter-Wynott Complex. These are both well-drained soil types with bedrock deeper than 80 inches below grade. Based upon the drilling investigations, the unconsolidated sediments range in depth from 10 feet to over 75 feet below grade in Geologic Investigation Area A.

Soil samples were collected from each borehole and many of these were analyzed for geotechnical parameters (grain size, hydrometer, Atterberg limits, natural moisture). **Table 2** summarizes the geotechnical laboratory data. Geotechnical laboratory reports are included in **Appendix B**.

3.3.2 Geologic Investigation Area B

Soil types in this area of the site consist of a mixture of sands, silts, and clays. According to the soil survey map (websoilsurvey.nrcs.usda.gov), soils of the Poindexter-Wynott Complex have been mapped in this portion of the site. These soils are classified as loams that are well-drained. Based upon prior drilling investigations, the unconsolidated sediments range in depth from 20 feet to 48.5 feet below grade in Geologic Investigation Area B.

Soil samples were collected from each borehole and many of these were analyzed for geotechnical parameters (grain size, hydrometer, atterberg limits, natural moisture). **Table 2** summarizes the geotechnical laboratory data. Geotechnical laboratory reports are included in **Appendix B**.

3.4 Bedrock

3.4.1 Geologic Investigation Area A

During previous investigations bedrock was encountered in several boreholes within and around Geologic Investigation Area A. Bedrock in this area consists primarily of granite and diorite, with some diabase dikes previously detected through geophysical investigations conducted at the site. Bedrock has been defined as the point of auger refusal. Bedrock was previously encountered between 10 and over 75 feet below grade in this portion of the site. It should be noted that the 75 foot deep boring did not actually encounter bedrock. A map depicting the bedrock surface is included as **Figure 2**.

During this investigation, one piezometer, PZ-49, encountered bedrock at a depth of 43 feet below grade and rock coring was completed for the uppermost 10 feet of bedrock. Bedrock in this instance consisted of diabase and exhibited a RQD of 99.3% with a recovery of 99%.

A rock core was attempted in the boring for PZ-50 from 25 to 35 feet below grade. This attempt yielded no recovery of rock core.

In several instances across the site, bedrock was believed to be encountered (during this most recent investigation by Geoprobe™ refusal). However, attempts to core bedrock below this point yielded no recovery of rock core. This occurred in borings PZ-50 and PZ-56d.

Additionally, in some borings drilled using an air hammer, unconsolidated sediments occurred below Geoprobe™ refusal. This indicates that this

area is underlain by several large boulders, or harder layers within the partially weathered rock.

3.4.2 Geologic Investigation Area B

During previous investigations bedrock was encountered in several boreholes within and around Geologic Investigation Area B. Bedrock in this area consists primarily of granite and diorite, with some diabase dikes previously detected through geophysical investigations conducted at the site. Bedrock has been defined as the point of auger refusal. Bedrock was previously encountered between 20 feet to 48.5 feet below grade in this portion of the site.

Rock coring was attempted in the borehole for PZ-56d at a depth from 21 to 31 feet below grade. This attempt yielded no recovery of rock core indicating that competent bedrock had not been encountered in this borehole.

Additionally, in some borings drilled using an air hammer, unconsolidated sediments were encountered below geoprobe refusal. This indicates that this area is underlain by several large boulders, or harder layers within the partially weathered rock. Bedrock data for the newly installed and older piezometers is included in **Table 3**.

4.0 Hydrogeology

Davidson County personnel have been monitoring the water levels in piezometers across the Phase 2 expansion area as a part of this investigation. Water levels will continue to be collected until 12 months of data is gathered. Additionally, RSG has performed aquifer slug testing on the newly installed piezometers. Analysis of the slug test data indicates the hydraulic conductivities in the newly installed piezometers range from 0.13 ft/day to 3.6 ft/day. Aquifer slug test data and analysis are included in **Appendix C**. These data were used to evaluate groundwater velocity in the uppermost aquifer at the site using the following equation:

$$V = KI/n$$

Where: V = velocity
K = hydraulic conductivity
I = groundwater gradient
n = effective porosity

Based upon this evaluation, groundwater velocities in geologic investigation area A range from 0.02 to 3.43 ft/day, while in Area B they range from 0.02 to 0.08 ft/day. It should be noted that the effective porosities were calculated using the Textural Classification Triangle based upon the grain size analyses performed as recommended in Applied Hydrogeology[2]. As a part of this evaluation, the grain size analyses were re-evaluated using the Textural Classification Triangle particle size guidelines for sand, silt, and clay. These guidelines are listed on the triangles included with the effective porosity evaluation located in **Appendix D**.

A summary of the hydrogeologic properties for the old and newly installed piezometers is included as **Table 4** while groundwater gradients, aquifer conductivities, and velocities are summarized in **Table 5**.

4.1 Potentiometric Surface

Groundwater elevations have been collected monthly since January 2011. Seasonal high groundwater elevations were detected in the April 2011 monthly water level monitoring event. This event did not contain the highest elevations in all piezometers, but the majority of the piezometers experienced their highest elevations during this event. The seasonal high potentiometric surface is shown on **Figure 3**.

Additionally, seasonal low groundwater elevations were evaluated. Seasonal low elevations were detected in January 2011. These measurements were used to create the seasonal low potentiometric surface shown on **Figure 4**.

Finally, historical groundwater elevation data from the site dating from 2001 to 2011 were used to evaluate the long-term seasonal high groundwater data. The long-term seasonal high elevations are from April 2005 and are shown on **Figure 5**. Long term water level data are summarized in **Table 6**.

4.1.1 Geologic Investigation Area A

In each of these potentiometric maps, the potentiometric surface in Geologic Investigation Area A flows to the northwest toward Rich Fork Creek, and to the southwest toward the beaver dam/wetland area which is located north of the railroad tracks adjacent to Hamby Creek. Hydrogeologic cross-sections depicting this area are included as **Figures 6 and 7**.

[2] Fetter, C.W., Applied Hydrogeology Fourth Edition 2001 Prentice Hall, Page 80.

4.1.2 Geologic Investigation Area B

In each of these potentiometric maps, the potentiometric surface in Geologic Investigation Area B flows to the north and west toward Rich Fork Creek, and to the south. Hydrogeologic cross-sections of this area are included as **Figure 8**.

4.2 Seasonal Groundwater Trends

In general, the groundwater flow directions remain the same between seasonal high, long term seasonal high, and seasonal low potentiometric surfaces. Groundwater flows to the north and west toward Rich Fork Creek and to the south toward Hamby Creek. Long term water level data are summarized in **Table 6**.

4.3 Groundwater Recharge/Discharge

The Phase 2 landfill area is surrounded to the north, west, south and south east with surface water bodies that serve as groundwater discharge features. In general, groundwater from the uppermost aquifer discharges to these surface water bodies. A summary of vertical gradients across the site is included as **Table 7**.

4.3.1 Geologic Investigation Area A

In general, the groundwater recharge area is located in the eastern portion of Geologic Investigation Area A. Groundwater discharge from this area occurs to the northwest in Rich Fork Creek, and to the southwest in the wetland/beaver dam area located north of the railroad tracks adjacent to Hamby Creek.

4.3.2 Geologic Investigation Area B

In general, the groundwater recharge area is located in the eastern portion of Geologic Investigation Area B with groundwater flow from the east of this investigation area. Groundwater discharge from this area occurs to the north and west in Rich Fork Creek and to the southeast in the wetland/beaver dam area located north of the railroad tracks adjacent to Hamby Creek.

4.4 Potential Natural or Man-made Influences on Hydrogeology

The wetland/beaver dam area has an influence on site hydrogeology as it creates a larger discharge area in this location. Historically, beaver have been very active in this area and continually dam the culverts which carry water under the railroad tracks toward Hamby Creek.

4.5 Site Suitability and Monitoring

Based upon this geologic investigation, it is clear that there are boulders in both geologic investigation areas as well as hard layers of partially weathered rock that are underlain by unconsolidated sediments that would not produce recovered rock during rock coring activities. RSG has installed several piezometers during this investigation which are completed above bedrock and which could serve as future groundwater monitoring wells. Based upon the information gathered during the investigation, both Geologic Investigation Areas A and B are suitable for development as a municipal solid waste landfill and groundwater around these areas is monitorable.

5.0 Conclusions and Recommendations

RSG has performed a thorough investigation of the geology at this site. Based upon the numerous borings and piezometers at the site, sufficient data has been gathered to evaluate the groundwater flow regime and monitorability at the site.

Although there appear to areas of bedrock above the potentiometric surface in both geologic investigation areas as evidenced by prior investigations, this condition is limited to relatively small areas that are surrounded by conditions where the aquifer flows in unconsolidated sediments. Furthermore, in several areas where bedrock was thought to exist, either no recovery was made from attempted rock cores due to the weathered (non-competent) nature of the material or what had been thought to be bedrock was actually a boulder that was underlain by unconsolidated sediments.

Based upon this most recent study and prior studies, the two geologic investigation areas that this study addresses are suitable for development as a landfill and groundwater monitoring can be performed around these areas.

Further investigation of these areas will be completed during the Permit to Construct application phase for each of these areas. At that time, groundwater monitoring well location and monitoring network modifications will be recommended to include areas as they are permitted.

Figures

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POTENTIAL BORROW SITE

LEACHATE STORAGE FACILITY

ACCESS ROAD

SCALEHOUSE/SCALES

PERIMETER ACCESS ROAD

PHASE 2
AREA 1 ACTIVE MSW LANDFILL

GEOLOGIC INVESTIGATION AREA A

GEOLOGIC INVESTIGATION AREA B

PROPERTY LINE

300' PROPERTY BUFFER

200' EXISTING RAILROAD RIGHT OF WAY

LEGEND

660	EXISTING CONTOURS
	PROPERTY LINE (APPROXIMATE)
	300' BUFFER
	GEOLOGIC INVESTIGATION AREA
E	OVERHEAD POWER LINE
	PIEZOMETER
PZ-31	PIEZOMETER (ABANDONED)

REFERENCES

1. TOPOGRAPHY INSIDE PROPERTY LINE FROM SPATIAL DATA, AERIAL DATED 6/2/11. TOPOGRAPHY OUTSIDE OF PROPERTY LINE PER NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, CONTOUR AND ELEVATION DATA GENERATED FROM LIGHT DETECTION AND RANGING (LIDAR) DATA OBTAINED FROM THE NORTH CAROLINA FLOOD MAPPING PROGRAM AND DATED SEPTEMBER 2004.
2. WETLAND SURVEY BY LEXINGTON LAND SURVEYING, DATED DATED 3/28/01.

0 200' 400' 600'

NO.	DATE	REVISION

RICHARDSON SMITH GARDNER & ASSOCIATES
NC LIC. NO. C-0205 Engineering
14 N. Boylan Ave.
Raleigh, N.C. 27603
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SEAL

SEAL

PROJECT TITLE:
DAVIDSON COUNTY
PHASE 2
SUPPLEMENTAL GEOLOGIC INVESTIGATION

DRAWING TITLE:
EXISTING CONDITIONS

DESIGNED BY:	DRAWN BY:
J.A.S.	J.A.L.
CHECKED BY:	PROJECT NO.: DAVDCO 10-4
SCALE: AS SHOWN	DATE: AUG. 2011
FILE NAME DAVDCO-D0606	
SHEET NO.	DRAWING NO. FIG. 1

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POTENTIAL BORROW SITE

LEACHATE STORAGE FACILITY

GEOLOGIC INVESTIGATION AREA A

ACCESS ROAD

SCALEHOUSE/SCALES

PERIMETER ACCESS ROAD

PHASE 2 AREA 1 ACTIVE MSW LANDFILL

PROPERTY LINE

300' PROPERTY BUFFER

GEOLOGIC INVESTIGATION AREA B

200' EXISTING RAILROAD RIGHT OF WAY

LEGEND

660	EXISTING CONTOURS
660	BEDROCK CONTOURS (10' INTERVAL)
660	PROPOSED CONTOURS
	PROPERTY LINE (APPROXIMATE)
	300' BUFFER
	GEOLOGIC INVESTIGATION AREA
E	OVERHEAD POWER LINE
	PIEZOMETER
PZ-31	PIEZOMETER (ABANDONED)
RE	BEDROCK ELEVATION
N/A	BEDROCK NOT ENCOUNTERED

REFERENCES

1. TOPOGRAPHY INSIDE PROPERTY LINE FROM SPATIAL DATA, AERIAL DATED 6/2/11. TOPOGRAPHY OUTSIDE OF PROPERTY LINE PER NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, CONTOUR AND ELEVATION DATA GENERATED FROM LIGHT DETECTION AND RANGING (LIDAR) DATA OBTAINED FROM THE NORTH CAROLINA FLOOD MAPPING PROGRAM AND DATED SEPTEMBER 2004.
2. WETLAND SURVEY BY LEXINGTON LAND SURVEYING, DATED DATED 3/28/01.

0 200' 400' 600'

NO.	DATE	REVISION

RICHARDSON SMITH GARDNER & ASSOCIATES
MUNICIPAL ENGINEERS
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SEAL

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PROJECT TITLE: DAVIDSON COUNTY PHASE 2 SUPPLEMENTAL GEOLOGIC INVESTIGATION

DRAWING TITLE: BEDROCK SURFACE MAP

DESIGNED BY: J.A.S.	DRAWN BY: J.A.L.
CHECKED BY:	PROJECT NO.: DAVDCO 10-4
SCALE: AS SHOWN	DATE: AUG. 2011
FILE NAME: DAVDCO-D0607	
SHEET NO.	DRAWING NO. FIG. 2

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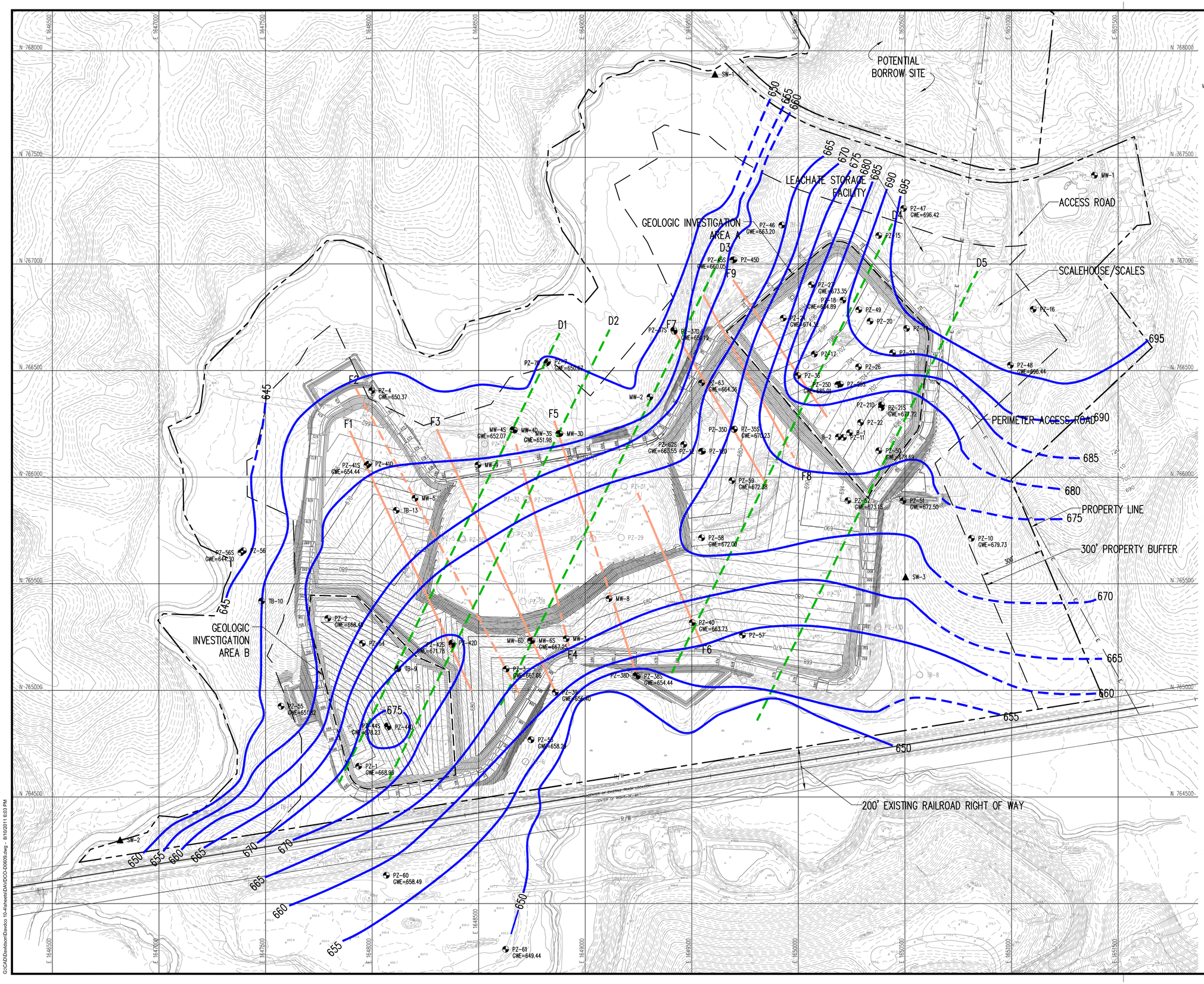

LEGEND

- EXISTING CONTOURS
- PROPERTY LINE (APPROXIMATE)
- 300' BUFFER
- GEOLOGIC INVESTIGATION AREA
- OVERHEAD POWER LINE
- PIEZOMETER
- PIEZOMETER (ABANDONED)
- GROUND WATER CONTOUR (5' INTERVAL) (SEE NOTE 1)
- FRACTURE LOCATION
- DIABASE DIKE LOCATION
- GROUND WATER FLOW

NOTES

1. SEASONAL HIGH GROUND WATER DATA FROM APRIL 2011.

REFERENCES

1. TOPOGRAPHY INSIDE PROPERTY LINE FROM SPATIAL DATA, AERIAL DATED 6/2/11. TOPOGRAPHY OUTSIDE OF PROPERTY LINE PER NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, CONTOUR AND ELEVATION DATA GENERATED FROM LIGHT DETECTION AND RANGING (LIDAR) DATA OBTAINED FROM THE NORTH CAROLINA FLOOD MAPPING PROGRAM AND DATED SEPTEMBER 2004.
2. WETLAND SURVEY BY LEXINGTON LAND SURVEYING, DATED DATED 3/28/01.
3. GROUNDWATER DATA COLLECTED ON APRIL 26, 2011.

NO.	DATE	REVISION

RICHARDSON SMITH GARDNER & ASSOCIATES
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SEAL

PROJECT TITLE: DAVIDSON COUNTY PHASE 2 SUPPLEMENTAL GEOLOGIC INVESTIGATION

DRAWING TITLE: SEASONAL HIGH POTENTIOMETRIC SURFACE MAP APRIL 2011

DESIGNED BY: J.A.S.	DRAWN BY: J.A.L.
CHECKED BY:	PROJECT NO.: DAVDCO 10-4
SCALE: AS SHOWN	DATE: AUG. 2011
FILE NAME: DAVDCO-D0609	
SHEET NO.	DRAWING NO. FIG. 3

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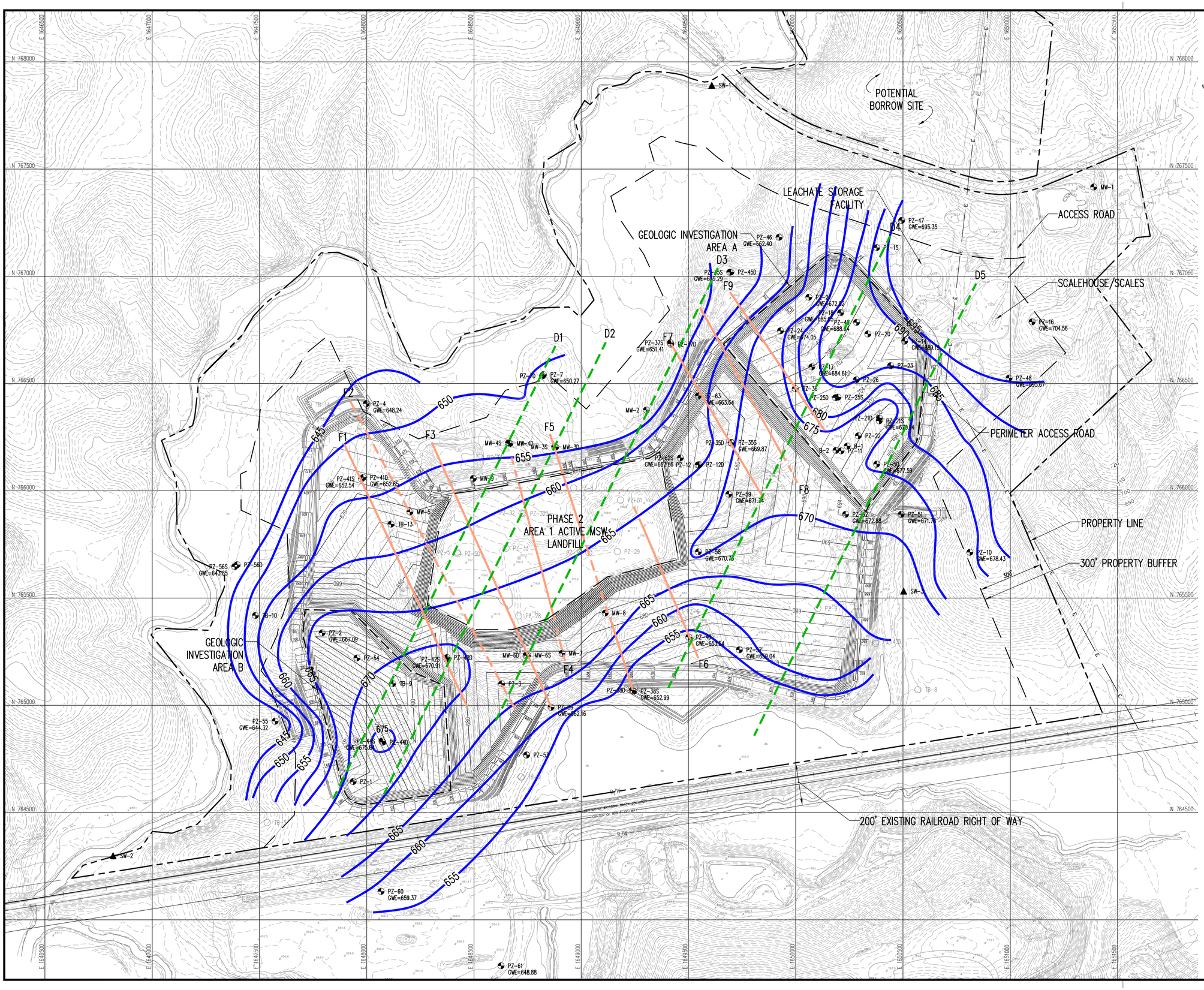

LEGEND

- EXISTING CONTOURS
- PROPOSED CONTOURS
- PROPERTY LINE (APPROXIMATE)
- 300' BUFFER
- GEOLOGIC INVESTIGATION AREA
- OVERHEAD POWER LINE
- PIEZOMETER
- PIEZOMETER (ABANDONED)
- GROUND WATER CONTOUR (5' INTERVAL)
- FRACTURE LOCATION
- DIABASE DIKE LOCATION
- GROUND WATER FLOW

REFERENCES

1. TOPOGRAPHY INSIDE PROPERTY FROM SPATIAL DATA, AERIAL DATED 6/2/11. TOPOGRAPHY OUTSIDE OF PROPERTY LINE PER NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, CONTOUR AND ELEVATION DATA GENERATED FROM LIGHT DETECTION AND RANGING (LIDAR) DATA OBTAINED FROM THE NORTH CAROLINA FLOOD MAPPING PROGRAM AND DATED SEPTEMBER 2004.
2. WETLAND SURVEY BY LEXINGTON LAND SURVEYING, DATED DATED 3/28/01.
3. GROUNDWATER ELEVATION DATA COLLECTED ON JANUARY 31, 2011.

NO.	DATE	REVISION

RICHARDSON SMITH GARDNER & ASSOCIATES
NC LIC. NO. C-0205 Engineering
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SEAL

SEAL

PROJECT TITLE:
DAVIDSON COUNTY
PHASE 2
SUPPLEMENTAL GEOLOGIC INVESTIGATION

DRAWING TITLE:
SEASONAL LOW
POTENTIOMETRIC SURFACE MAP
JANUARY 2011

DESIGNED BY: J.A.S.	DRAWN BY: J.A.L.
CHECKED BY:	PROJECT NO.: DAVDCO 10-4
SCALE: AS SHOWN	DATE: AUG. 2011
FILE NAME: DAVDCO-D0608	
SHEET NO.	DRAWING NO. FIG. 4

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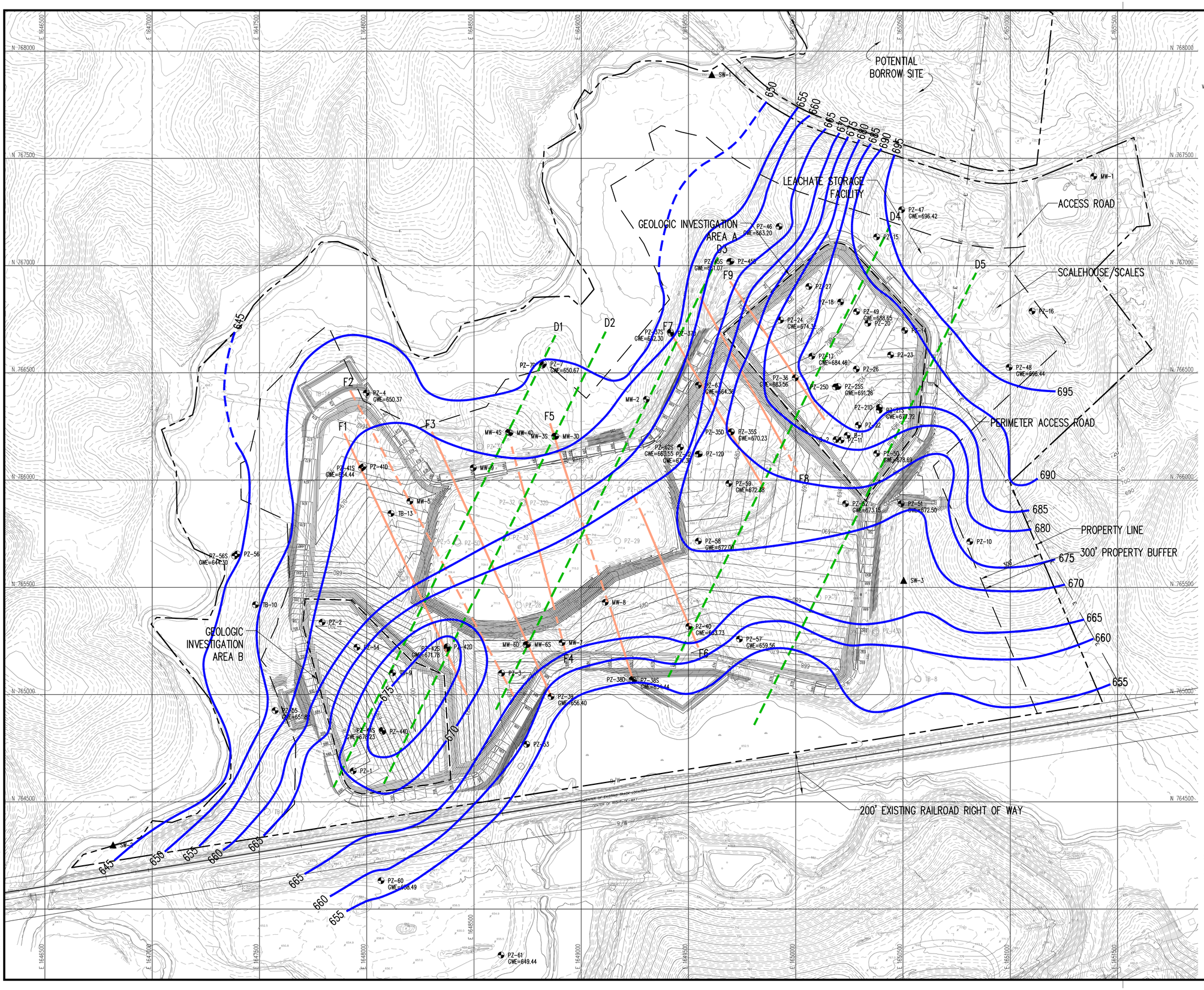

LEGEND

660	EXISTING CONTOURS
	PROPERTY LINE (APPROXIMATE)
	300' BUFFER
	GEOLOGIC INVESTIGATION AREA
E	OVERHEAD POWER LINE
	PIEZOMETER
PZ-31	PIEZOMETER (ABANDONED)
670	GROUND WATER CONTOUR (5' INTERVAL) (SEE NOTE X)
	FRACTURE LOCATION
	DIABASE DIKE LOCATION
	GROUND WATER FLOW
GWE	GROUND WATER ELEVATION

0 200' 400' 600'

NOTES

1. GROUND WATER ELEVATION DATA FROM MAY 2005, EXCEPT FOR PIEZOMETERS PZ-46 THROUGH PZ-63 FOR WHICH THE DATA IS FROM APRIL 2011.

REFERENCES

1. TOPOGRAPHY INSIDE PROPERTY FROM SPATIAL DATA, AERIAL DATED 6/2/11. TOPOGRAPHY OUTSIDE OF PROPERTY LINE PER NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, CONTOUR AND ELEVATION DATA GENERATED FROM LIGHT DETECTION AND RANGING (LIDAR) DATA OBTAINED FROM THE NORTH CAROLINA FLOOD MAPPING PROGRAM AND DATED SEPTEMBER 2004.
2. WETLAND SURVEY BY LEXINGTON LAND SURVEYING, DATED DATED 3/28/01.
3. GROUNDWATER ELEVATION DATA IS A COMPOSITE OF HIGHEST ELEVATIONS COLLECTED IN EACH WELL.

NO.	DATE	REVISION

RICHARDSON SMITH GARDNER & ASSOCIATES
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fax: 919-828-3899
www.rsgengineers.com

SEAL

SEAL

PROJECT TITLE: DAVIDSON COUNTY PHASE 2 SUPPLEMENTAL GEOLOGIC INVESTIGATION

DRAWING TITLE: COMPOSITE LONG TERM SEASONAL HIGH POTENTIOMETRIC SURFACE MAP

DESIGNED BY: J.A.S.	DRAWN BY: J.A.L.
CHECKED BY:	PROJECT NO.: DAVDCO 10-4
SCALE: AS SHOWN	DATE: AUG. 2011
FILE NAME: DAVDCO-D0631	
SHEET NO.	DRAWING NO. FIG. 5

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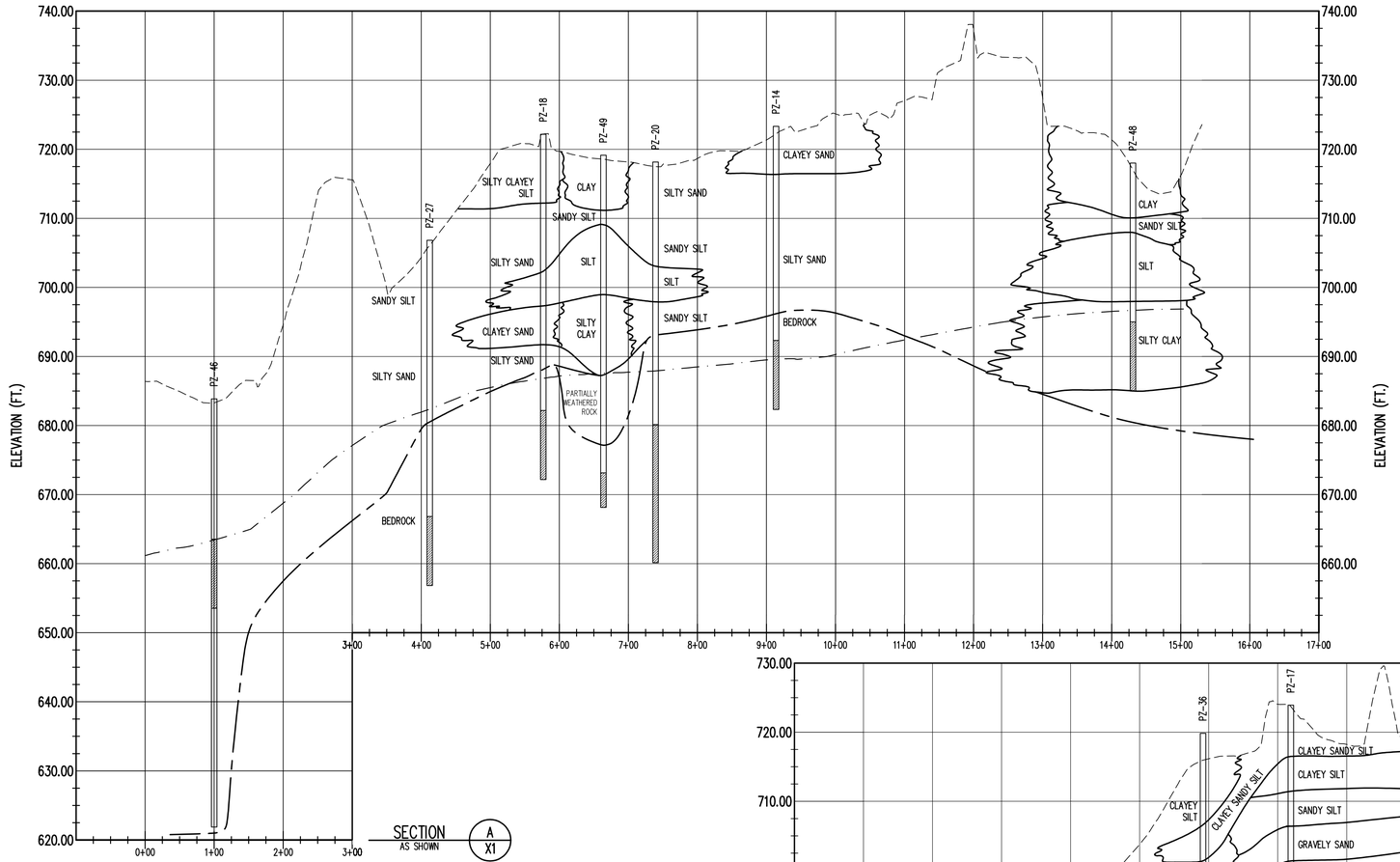
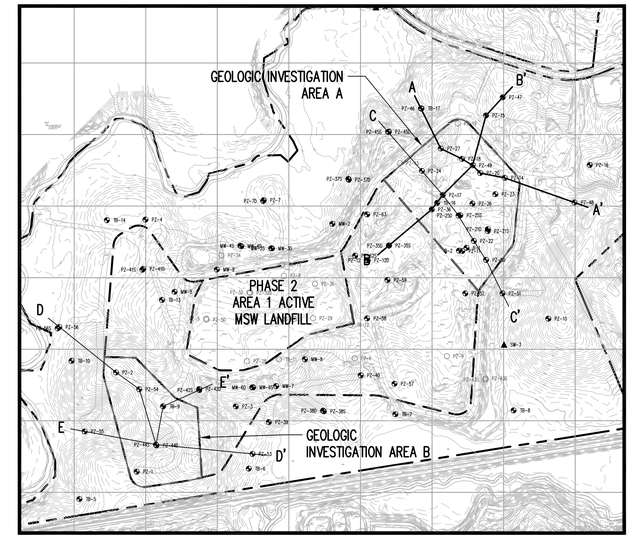
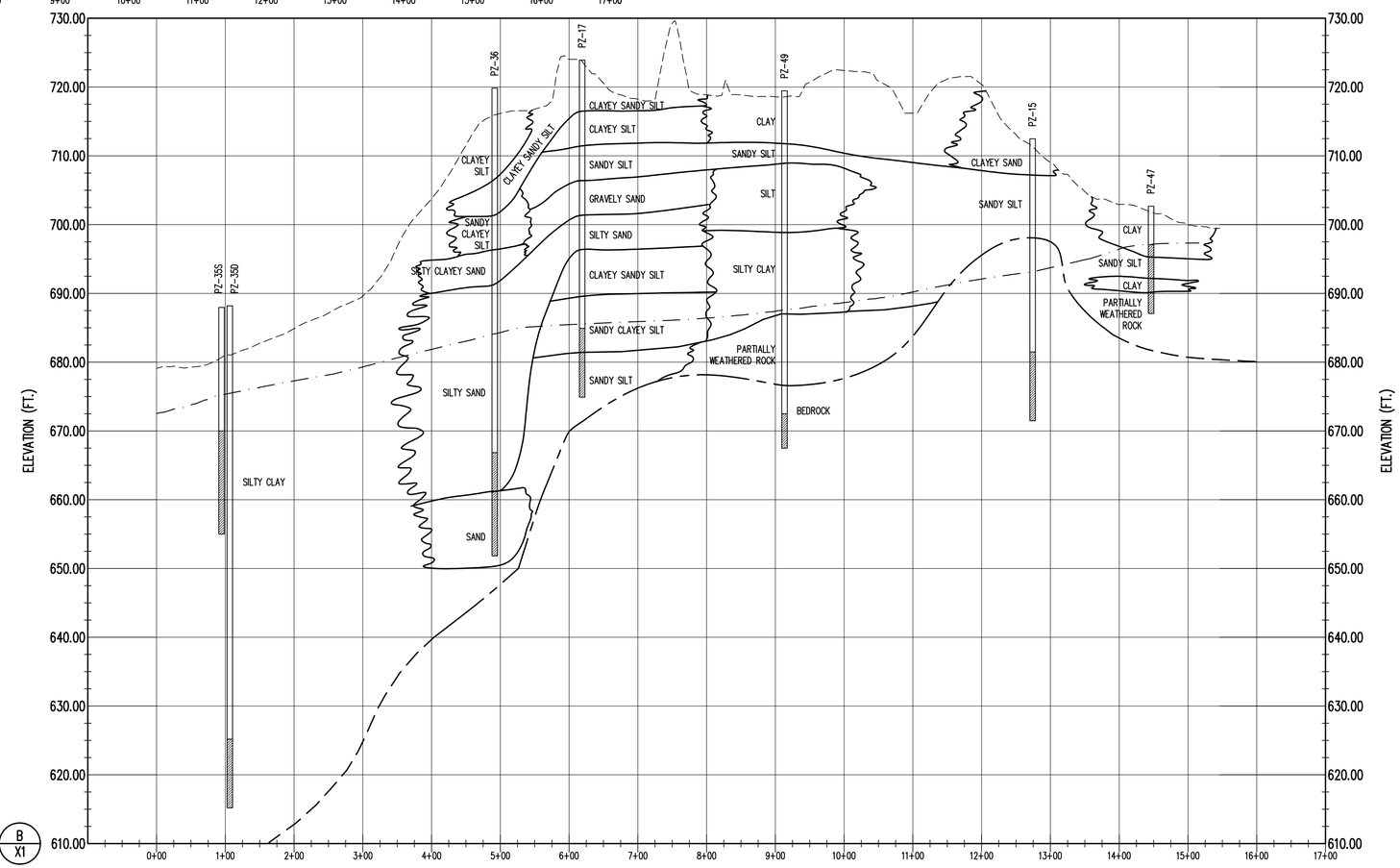


SECTION A X1
AS SHOWN



SECTION LOCATION MAP
NOT TO SCALE



SECTION B X1
AS SHOWN

LEGEND

- 660 — EXISTING CONTOURS
- PROPERTY LINE (APPROXIMATE)
- GEOLOGIC INVESTIGATION AREA
- EXISTING GROUND SURFACE
- BEDROCK SURFACE
- GEOLOGIC LAYERS
- LONG TERM COMPOSITE HIGH GROUND WATER

REFERENCES

1. OVERALL TOPOGRAPHY FROM SPATIAL DATA, AERIAL DATED 6/2/11.
2. GROUNDWATER SURFACE FROM LONG TERM COMPOSITE HIGH POTENTIOMETRIC SURFACE MAP.

0 100' 200' 300'

30' 20' 10' 0

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NO.	DATE	REVISION

RICHARDSON SMITH GARDNER & ASSOCIATES
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SEAL

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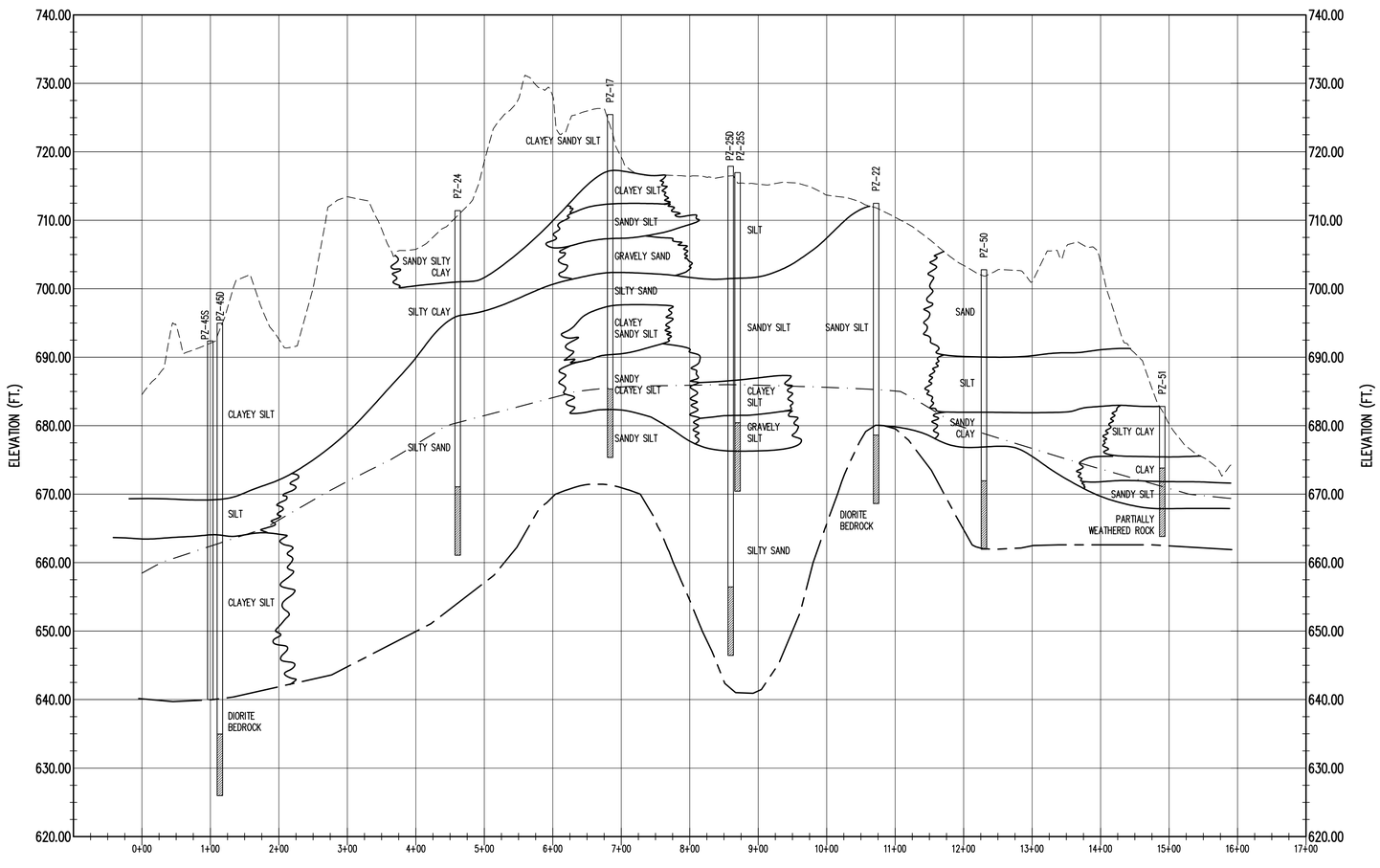
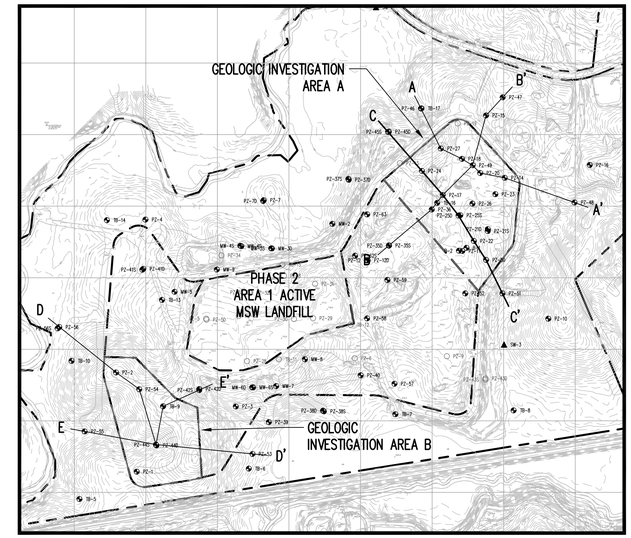
PROJECT TITLE:
DAVIDSON COUNTY
PHASE 2
SUPPLEMENTAL GEOLOGIC INVESTIGATION

DRAWING TITLE:
GEOLOGIC CROSS SECTIONS
(SHEET 1 OF 3)

DESIGNED BY: J.A.S.	DRAWN BY: J.A.L.
CHECKED BY:	PROJECT NO.: DAVDCO 10-4
SCALE: AS SHOWN	DATE: AUG. 2011
FILE NAME: DAVDCO-D0623	
SHEET NO.	DRAWING NO. FIG. 6



SECTION C
AS SHOWN X1



SECTION LOCATION MAP
NOT TO SCALE

LEGEND

- 660 — EXISTING CONTOURS
- PROPERTY LINE (APPROXIMATE)
- GEOLOGIC INVESTIGATION AREA
- EXISTING GROUND SURFACE
- BEDROCK SURFACE
- GEOLOGIC LAYERS
- LONG TERM COMPOSITE HIGH GROUND WATER

REFERENCES

1. OVERALL TOPOGRAPHY FROM SPATIAL DATA, AERIAL DATED 6/2/11.
2. GROUNDWATER SURFACE FROM LONG TERM COMPOSITE HIGH POTENTIOMETRIC SURFACE MAP.

30' 20' 10' 0

0 100' 200' 300'

REVISION | NO. | DATE

RICHARDSON SMITH GARDNER & ASSOCIATES
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SEAL

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PROJECT TITLE:
DAVIDSON COUNTY
PHASE 2
SUPPLEMENTAL GEOLOGIC
INVESTIGATION

DRAWING TITLE:
GEOLOGIC CROSS SECTIONS
(SHEET 2 OF 3)

DESIGNED BY: J.A.S.	DRAWN BY: J.A.L.
CHECKED BY:	PROJECT NO.: DAVDCO 10-4
SCALE: AS SHOWN	DATE: AUG. 2011
FILE NAME DAVDCO-D0624	
SHEET NO.	DRAWING NO. FIG. 7

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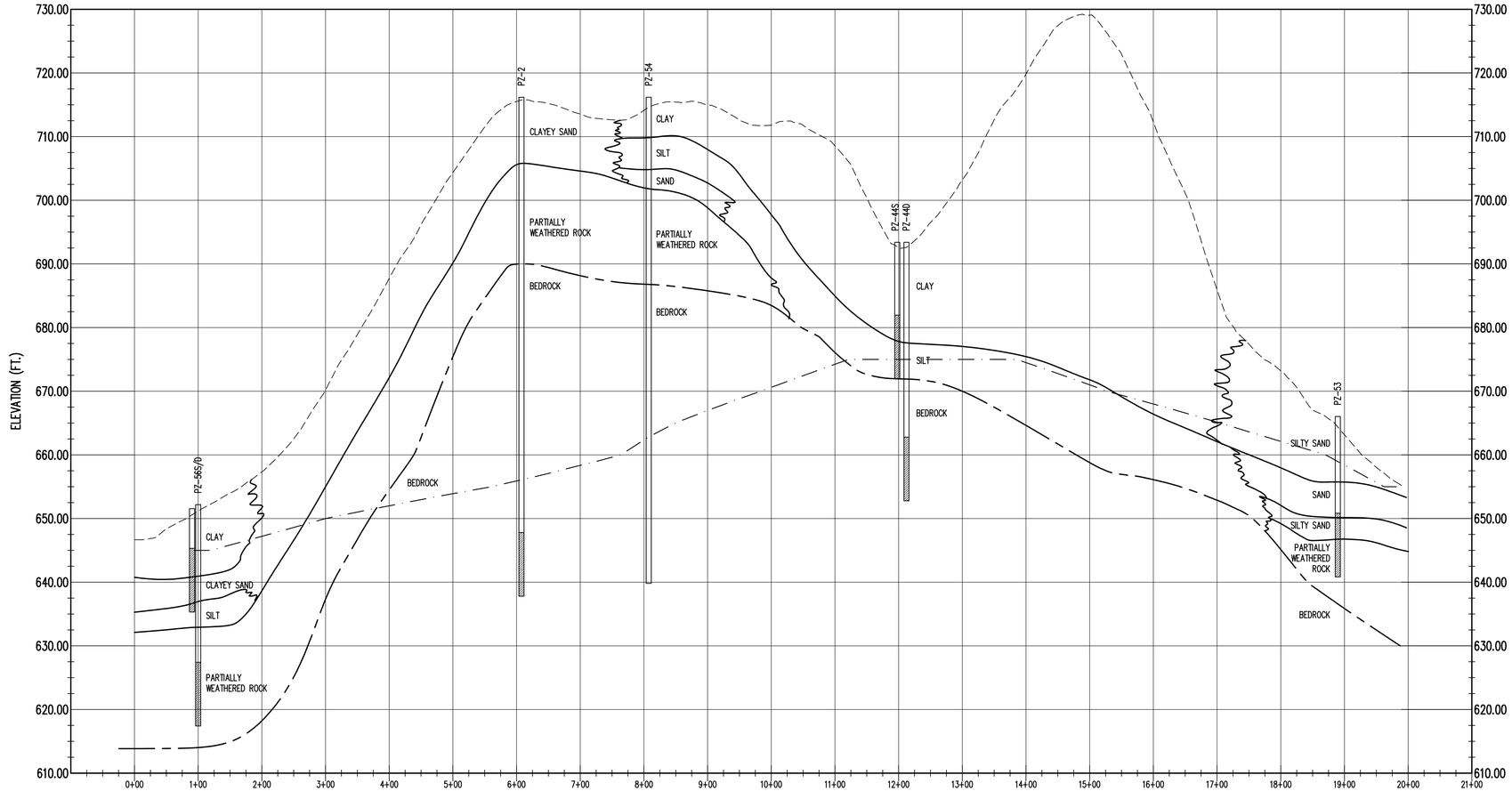


SECTION D
AS SHOWN
X3

LEGEND

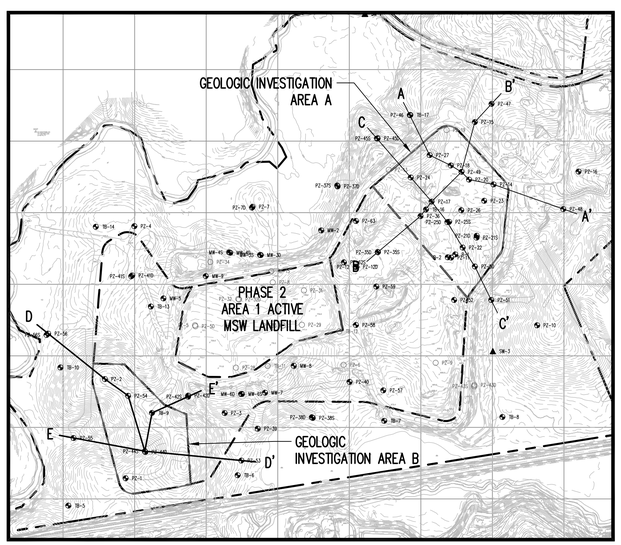
- EXISTING CONTOURS (660)
- PROPERTY LINE (APPROXIMATE)
- GEOLOGIC INVESTIGATION AREA
- EXISTING GROUND SURFACE
- BEDROCK SURFACE
- GEOLOGIC LAYERS
- LONG TERM COMPOSITE HIGH GROUND WATER

30' 20' 10' 0

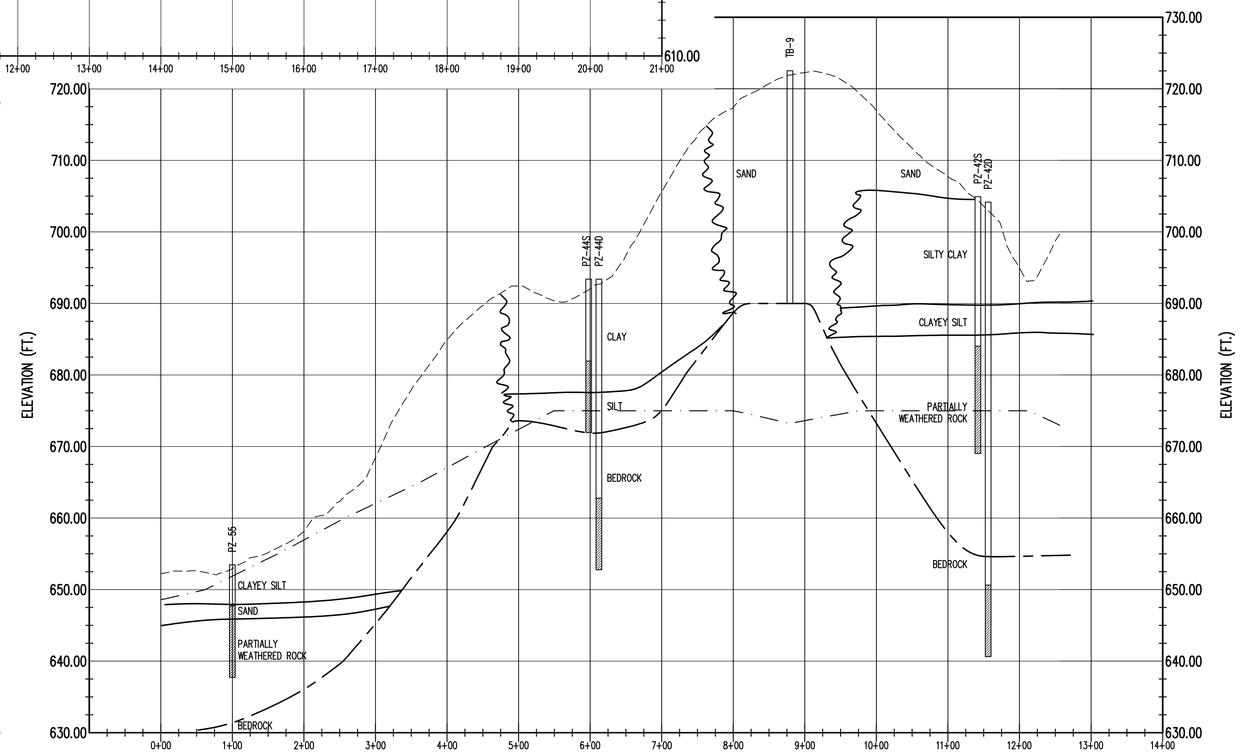
REFERENCES

1. OVERALL TOPOGRAPHY FROM SPATIAL DATA, AERIAL DATED 6/2/11.
2. GROUNDWATER SURFACE FROM LONG TERM COMPOSITE HIGH POTENTIOMETRIC SURFACE MAP.

0 100' 200' 300'



SECTION LOCATION MAP
NOT TO SCALE



SECTION E
AS SHOWN
X3

RICHARDSON SMITH GARDNER & ASSOCIATES
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NO.	DATE	REVISION

SEAL

SEAL

PROJECT TITLE:
DAVIDSON COUNTY
PHASE 2
SUPPLEMENTAL GEOLOGIC INVESTIGATION

DRAWING TITLE:
GEOLOGIC CROSS SECTIONS
(SHEET 3 OF 3)

DESIGNED BY: J.A.S.	DRAWN BY: J.A.L.
CHECKED BY:	PROJECT NO.: DAVDCO 10-4
SCALE: AS SHOWN	DATE: AUG. 2011
FILE NAME: DAVDCO-D0625	
SHEET NO.	DRAWING NO. FIG. 8

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Tables

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RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

By: JAS
Date: 8/17/2011

Table 1
Piezometer Construction and Initial Water Levels
Davidson County Landfill Phase 2

Piez. #	Total Depth	TOC Elev.	Ground Elev.	Top of Screen	Top of Screen Elevation	Screen Bottom	Bottom Elevation	Bedrock Depth	Bedrock Elev.	Depth to PWR	PWR Elev.	Drilling Water Level	24 Hour Water Level	24 Hour Water Elev.
PZ-1	40	704.29	701.41	32	669.41	40	661.41	29	672.41	N/A	N/A	N/A	37	N/A
PZ-2	78	717.59	715.74	68	647.74	78	637.74	25	690.74	10	705.74	N/A	75	N/A
PZ-3	30	688.04	685.79	20	665.79	30	655.79	N/A	N/A	N/A	N/A	22	N/A	N/A
PZ-4	38	670.51	668.51	28	640.51	38	630.51	26.5	642.01	25	658.51	N/A	35	N/A
PZ-5	45	702.23	700.53	35	665.53	45	655.53	N/A	N/A	N/A	N/A	39	34.55	121
PZ-5d	75	703.07	700.78	65	635.78	75	625.78	64	636.78	40.5	690.78	N/A	N/A	N/A
PZ-6	31	684.99	682.49	21	661.49	31	651.49	N/A	N/A	N/A	N/A	22.8	21.7	N/A
PZ-7	16	659.15	657.21	6	651.21	16	641.21	16	641.21	10.5	647.21	10	11.75	N/A
PZ-7d	35	659.41	657.01	30	627.01	35	622.01	17	641.21	10.5	647.01	5	N/A	N/A
PZ-8	26	672.25	670.4	16	654.4	26	644.4	26	644.4	25.5	644.9	21	N/A	N/A
PZ-9	35	699.68	697.23	25	672.23	35	662.23	24	673.23	13	687.23	N/A	29	N/A
PZ-10	57	719.13	716.44	47	669.44	57	659.44	10	706.44	N/A	N/A	51	38.55	N/A
PZ-11	54	720.48	719.13	44	675.13	54	665.13	10	709.13	N/A	N/A	49	38.41	N/A
PZ-12	25.0	682.71	679.52	14.0	665.52	24.0	655.52	N/A	N/A	N/A	N/A	15.9	15.9	169.48
PZ-12d	45.0	682.56	679.81	40.0	639.81	45.0	634.81	N/A	N/A	N/A	N/A	16	16.1	125.58
PZ-13	60.0	712.69	710.59	50.0	660.59	60.0	650.59	35.0	675.59	30.5	680.09	58	N/A	130.98
PZ-14	41.0	724.69	722.44	31.0	691.44	41.0	681.44	27.0	695.44	N/A	N/A	40	29.55	164.08
PZ-15	41.0	712.77	711.37	31.0	680.37	41.0	670.37	14.0	697.37	N/A	N/A	38	21.85	690.92
PZ-16	55.0	750.84	748.61	45.0	703.61	55.0	693.61	40.0	708.61	10.5	738.11	50	45.39	705.45
PZ-17	49.0	731.16	727.56	39.0	688.56	49.0	678.56	N/A	N/A	N/A	N/A	43	43.35	687.81
PZ-18	50.0	727.01	724.09	40.0	684.09	50.0	674.09	35.0	689.09	30.0	694.09	47	45.29	681.72
PZ-19	60.0	722.22	719.32	50.0	669.32	60.0	659.32	50.0	669.32	45.0	674.32	N/A	N/A	N/A
PZ-20	58.0	719.74	717.57	38.0	679.57	58.0	659.57	25.0	692.57	25.0	692.57	N/A	N/A	N/A
PZ-21s	34.0	695.64	692.94	24.0	668.94	34.0	658.94	34.0	658.94	25.0	667.94	DRY	16.37	679.27
PZ-21d	53.5	698.59	693.00	43.5	649.5	53.5	639.50	36.0	657.00	25.0	668.00	N/A	N/A	N/A
PZ-22	43.0	714.47	712.04	33.0	679.04	43.0	669.04	33.0	679.04	20.0	692.04	41	36.2	678.27
PZ-23	49.0	720.61	717.58	39.0	678.58	49.0	668.58	16.0	701.58	N/A	N/A	45	N/A	N/A
PZ-24	50.0	714.55	711.55	40.0	671.55	50.0	661.55	50.0	661.55	N/A	N/A	DRY	45.35	669.20
PZ-25s	50.0	717.46	714.82	35.0	679.82	45.0	664.82	N/A	N/A	N/A	N/A	35	39.85	677.61
PZ-25d	70.0	717.91	715.21	60.0	655.21	70.0	645.21	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PZ-26	37.5	716.04	713.58	27.5	686.08	37.5	676.08	26.0	687.58	26.0	687.58	35	34.2	681.84
PZ-27	50.0	709.50	706.15	40.0	666.15	50.0	656.15	26.0	680.15	25.0	681.15	43	40.6	668.90
PZ-28	55.0	711.14	708.14	40.0	668.14	55.0	653.14	40.0	668.14	26.0	682.14	50	40	671.14
PZ-29	56.0	712.53	709.63	51.0	658.63	56.0	653.63	45.0	664.63	15.0	694.63	55.3	48	664.53
PZ-30	40.0	711.94	709.04	25.0	684.04	40.0	669.04	40.0	669.04	15.0	694.04	36.84	36.84	675.10
PZ-31	42.0	697.04	693.94	36.5	657.44	41.5	652.44	27.0	666.94	25.0	668.94	34.5	N/A	N/A
PZ-32	44.0	705.39	702.69	29.0	673.69	44.0	658.69	44.0	658.69	6.0	696.69	37	38.83	666.56
PZ-32d	59.0	706.08	702.98	54.0	648.98	59.0	643.98	42.0	660.98	6.0	696.98	55	N/A	N/A
PZ-33	35.0	693.11	690.11	20.0	670.11	35.0	655.11	N/A	N/A	N/A	N/A	25	25.32	667.79
PZ-34	33.0	674.68	671.88	27.0	644.88	33.0	638.88	17.0	654.88	5.5	666.38	19.67	N/A	N/A

RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

By: JAS
Date: 8/17/2011

Table 1
Piezometer Construction and Initial Water Levels
Davidson County Landfill Phase 2

Piez. #	Total Depth	TOC Elev.	Ground Elev.	Top of Screen	Top of Screen Elevation	Screen Bottom	Bottom Elevation	Bedrock Depth	Bedrock Elev.	Depth to PWR	PWR Elev.	Drilling Water Level	24 Hour Water Level	24 Hour Water Elev.
PZ-35s	23.0	689.12	687.47	8.0	679.47	23.0	664.47	N/A	N/A	N/A	N/A	18	N/A	N/A
PZ-35d	73.0	689.17	687.52	63.0	624.52	73.0	614.52	N/A	N/A	N/A	N/A	18	N/A	N/A
PZ-36	68.0	723.14	720.78	53.0	667.78	68.0	652.78	N/A	N/A	N/A	N/A	43	N/A	N/A
PZ-37s	27.0	668.58	665.17	12.0	653.17	27.0	638.17	N/A	N/A	N/A	N/A	19	N/A	N/A
PZ-37d	44.0	668.76	666.02	36.0	630.02	44.0	622.02	30	636.02	19.5	646.52	N/A	N/A	N/A
PZ-38s	34.0	662.14	659.46	19.0	640.46	34.0	625.46	N/A	N/A	13.5	645.96	19	N/A	N/A
PZ-38d	50.0	663.25	660.93	42.0	618.93	50.0	610.93	33	627.93	13.5	647.43	N/A	8.37	N/A
PZ-39	37.0	678.27	675.27	27.0	648.27	37.0	638.27	13	662.27	N/A	N/A	21	N/A	N/A
PZ-40	64.0	676.93	675.81	49.0	626.81	64.0	611.81	N/A	N/A	N/A	N/A	64	N/A	N/A
PZ-41s	23.5	675.89	674.29	8.5	665.79	23.5	650.79	N/A	N/A	N/A	N/A	22	N/A	N/A
PZ-41d	54.0	677.08	674.40	44.0	630.40	54.0	620.40	28.5	645.90	28.5	645.90	N/A	18.44	N/A
PZ-42s	35.0	706.06	702.97	20.0	682.97	35.0	667.97	16.5	686.47	N/A	N/A	N/A	N/A	N/A
PZ-42d	62.0	706.11	703.32	52.0	651.32	62.0	641.32	48.5	654.82	16.5	686.82	28.19	N/A	N/A
PZ-43s	18.0	679.14	677.24	8.0	669.24	18.0	659.24	18.0	659.24	N/A	N/A	N/A	N/A	N/A
PZ-43d	31.0	679.24	676.51	22.0	654.51	31.0	645.51	18.0	658.51	N/A	N/A	N/A	N/A	N/A
PZ-44s	21.0	696.13	693.01	6.0	687.01	21.0	672.01	20.0	673.01	18.0	675.01	20.66	N/A	N/A
PZ-44d	40.0	696.05	693.50	30.0	663.50	40.0	653.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PZ -45s	52.0	695.19	692.38	37.0	655.38	52.0	640.38	52.0	640.38	43.5	648.88	38	N/A	N/A
PZ -45d	69.0	694.97	692.36	60.0	632.36	69.0	623.36	52.0	640.36	43.5	648.86	N/A	N/A	N/A
B-1	28.0	N/A	720.0	N/A	N/A	N/A	692.00	28.0	692	5.0	715.00	N/A	N/A	N/A
B-2	26.0	N/A	720.0	N/A	N/A	N/A	694.00	26.0	694	20.0	700.00	N/A	N/A	N/A
TB-5	23.5	N/A	668.0	N/A	N/A	N/A	644.50	23.5	644.5	18.5	649.50	23.5	9	N/A
TB-6	15.0	N/A	664.0	N/A	N/A	N/A	649.00	N/A	N/A	13.5	650.50	11	6.5	N/A
TB-7	15.0	N/A	657.0	N/A	N/A	N/A	642.00	N/A	N/A	N/A	N/A	10	5	N/A
TB-8	15.0	N/A	660.0	N/A	N/A	N/A	645.00	15.0	645	14.5	645.50	13	9	N/A
TB-9	31.5	N/A	723.0	N/A	N/A	N/A	691.50	31.5	691.5	4.0	719.00	N/A	N/A	N/A
TB-10	32.5	N/A	666.0	N/A	N/A	N/A	633.50	32.5	633.5	8.5	657.50	N/A	N/A	N/A
TB-11	40.0	N/A	711.0	N/A	N/A	N/A	671.00	40.0	671	19.0	692.00	N/A	N/A	N/A
TB-12	35.0	N/A	690.0	N/A	N/A	N/A	655.00	N/A	N/A	28.5	661.50	32	16	N/A
TB-13	43.5	N/A	685.0	N/A	N/A	N/A	641.50	43.5	641.5	34.5	650.50	42	36	N/A
TB-14	15.0	N/A	663	N/A	N/A	N/A	648.00	N/A	N/A	N/A	N/A	6.5	6	N/A
TB-15	10.0	N/A	663	N/A	N/A	N/A	653.00	N/A	N/A	N/A	N/A	6	2	N/A
TB-16	59.0	N/A	725	N/A	N/A	N/A	666.00	N/A	N/A	34.0	691.00	48	46	N/A
TB-17	30	N/A	684	N/A	N/A	N/A	654.00	N/A	N/A	N/A	N/A	28	25	N/A

By: JAS
Date: 8/17/2011

Table 1
Piezometer Construction and Initial Water Levels
Davidson County Landfill Phase 2

Piez. #	Total Depth	TOC Elev.	Ground Elev.	Top of Screen	Top of Screen Elevation	Screen Bottom	Bottom Elevation	Bedrock Depth	Bedrock Elev.	Depth to PWR	PWR Elev.	Drilling Water Level	11/15/2010 Water Level	11/15/2010 Water Elev.
PZ-46	30.0	686.8	684.11	20.0	664.11	30.0	654.11	NA	NA	NA	NA	27.0	27.00	659.80
PZ-47	15.0	703.3	700.81	5.0	695.81	15.0	685.81	NA	NA	12.0	688.81	10.0	8.43	694.87
PZ-48	33.0	722.73	720.29	23.0	697.29	33.0	687.29	NA	NA	NA	NA	32.0	24.00	698.73
PZ-49	51.0	721.46	718.49	46.0	672.49	56.0	662.49	42.0	676.49	32.0	686.49	50.0	NA	NA
PZ-50	40.0	704.36	701.46	35.0	666.46	40.0	661.46	NA	NA	NA	NA	NA	NA	NA
PZ-51	18.0	683.35	681.34	8.0	673.34	18.0	663.34	NA	NA	NA	NA	8.0	11.52	671.83
PZ-52	55.0	707.52	704.71	50.0	654.71	55.0	649.71	NA	NA	26.0	678.71	52.0	NA	NA
PZ-53	24.0	674.54	672.21	14.0	658.21	24.0	648.21	NA	NA	18.0	654.21	20.0	16.00	658.54
PZ-54	75.0	NA	714.68	NA	NA	NA	NA	28.0	686.68	13.0	701.68	NA	NA	NA
PZ-55	15.0	655.82	653.62	5.0	648.62	15.0	638.62	NA	NA	7.0	646.62	12.0	6.40	649.42
PZ-56s	15.0	653.7	651.08	5.0	646.08	15.0	636.08	NA	NA	NA	NA	NA	6.60	647.10
PZ-56d	34.0	653.52	650.42	29.0	621.42	34.0	616.42	NA	NA	18.0	632.42	32.0	NA	NA
PZ-57	23.0	676.54	674.24	13.0	661.24	23.0	651.24	NA	NA	NA	NA	14.0	17.27	659.27
PZ-58	36.0	697.4	695.16	26.0	669.16	36.0	659.16	NA	NA	32.0	663.16	33.0	25.85	671.55
PZ-59	25.0	691.34	688.88	15.0	673.88	25.0	663.88	NA	NA	20.0	668.88	23.0	19.32	672.02
PZ-60	19.0	664.59	661.93	9.0	652.93	19.0	642.93	NA	NA	7.0	654.93	16.0	NA	NA
PZ-61	18.0	658.56	655.76	8.0	647.76	18.0	637.76	NA	NA	NA	NA	18.0	NA	NA
PZ-62	25.0	679.56	676.76	15.0	661.76	25.0	651.76	NA	NA	NA	NA	20.0	18.00	661.56
PZ-63	40.0	700.05	697.20	30.0	667.20	40.0	657.20	NA	NA	23.0	674.20	36.0	NA	NA

Notes:
N/A = PWR/bedrock not encountered, or information not available.
PWR = Partially weathered rock defined as material exhibiting standard penetration test results of greater than 100 blows per foot.
All measurements are in Feet
TB- borings advanced by Westinghouse, 1989. Water table information from Westinghouse boring logs.
Elev. = Elevation
The borehole for PZ-54 was dry at 75 feet and abandoned. No piezometer installed in this location.

By: JAS
Date: 8/17/2011

Table 2
Geotechnical Test Results
Davidson County Landfill Phase 2

	Atterberg Limits			% Passing		Natural	Depth
Piezometer	LL	PL	PI	#4	#200	Moisture %	(ft)
PZ-1	34	28	6	99.0	65.3	17.3	20 - 21.5
PZ-2	34	31	3	99.7	60.3	9.2	20 - 21.5
PZ-3	33	22	11	100.0	35.8	16.7	0 - 10
PZ-4	37	27	10	100.0	71.4	26.3	5 - 6.5
PZ-5	36	29	7	100.0	20.7	13.9	40 - 41.5
PZ-5d	30	NP	NP	N/A	N/A	N/A	N/A
PZ-6	36	27	9	100.0	51.1	28.2	10 - 11.5
PZ-7	21	NP	NP	71.3	22.9	10.6	15 - 16.5
PZ-7d	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PZ-8	N/A	N/A	N/A	100.0	51.3	N/A	N/A
PZ-9	28	19	9	94.5	16.4	4.1	15
PZ-10	N/A	N/A	N/A	N/A	N/A	18.8	N/A
PZ-11	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PZ-12	29	NP	NP	100.0	43.1	25	25 - 26.5
PZ-12d	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PZ-13	21	NP	NP	100	46.6	16.3	15 - 16.5
PZ-14	34	27	7	100	43.9	14.9	25 - 26.5
PZ-15	12	NP	NP	94.7	31.3	7.8	5 - 6.5
PZ-16	23	NP	NP	99.8	34.5	8.6	15 - 16.5
PZ-17	34	31	3	100	74.9	23.2	15 - 16.5
PZ-18	33	NP	NP	100	51	16.4	25 - 26.5
PZ-19	42	42	0	100	94.4	29	25 - 26.5
PZ-20	12	NP	NP	98.2	33.4	6.7	20 - 21.5
PZ-21s	36	32	4	100	63.9	18.2	10 - 11.5
PZ-21d	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PZ-22	12	NP	NP	100	36	8.1	10 - 11.5
PZ-23	10	NP	NP	100	36	7.7	10 - 11.5
PZ-23 (UD)	12	NP	NP	100	21.2	10.5	15 - 16.5
PZ-24	41	33	8	100	63.7	7.9	10 - 11.5
PZ-25s	13	NP	NP	100	35	11.5	20 - 21.5
PZ-25d	11	NP	NP	100	31.4	16.1	70 - 71.5
PZ-26	31	NP	NP	100	53.7	18.9	20 - 21.5
PZ-27	8	NP	NP	99.4	22	6.1	15 - 16.5
PZ-28	12	NP	NP	99	49	11.8	45 - 46.5
PZ-29	10	NP	NP	100	35	8.8	41 - 42.5
PZ-30	26	20	6	100	49	13.5	35 - 36.5
PZ-31	15	NP	NP	100	49	15.8	20 - 21.5
PZ-32	12	NP	NP	100	41	24.3	35 - 36.5
PZ-32d	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PZ-33	18	NP	NP	100	35	18.7	35 - 36.5
PZ-34	N/A	N/A	N/A	100	31	10.5	15 - 16.5
PZ-46	30	28	2	99.1	54.7	28	27.5 - 30
PZ-47	24	20	4	94.9	13.1	6.5	15 - 18
PZ-48	38	29	9	87.4	43	22.8	25 - 30
PZ-49	NA	NA	NA	NA	NA	NA	NA
PZ-50	NA	NA	NA	NA	NA	NA	MA
PZ-51	25	24	1	99.9	29.7	20.2	10 - 14
PZ-52	28	20	8	99.5	29.3	5.5	20 - 22
PZ-53	37	28	9	98.7	44.6	19.6	15 - 18
PZ-54	27	24	3	100	37.4	7.6	10 - 13
PZ-55	25	21	4	85.1	19.4	10	5 - 6
PZ-56s	NP	NP	NP	99.4	35.7	9.8	7.5 - 9
PZ-56d	NA	NA	NA	NA	NA	NA	NA
PZ-57	31	26	5	98.8	25.3	19.1	15 - 18
PZ-58	32	25	7	99	53.8	16.4	30 - 32
PZ-59	41	35	6	100	36.1	25	15 - 20
PZ-60	26	22	4	100	31.5	8.2	5 - 7
PZ-61	30	26	4	99.5	26.3	23.5	15 - 20
PZ-62	42	33	9	99.8	40.1	29.4	20 - 25
PZ-63	31	26	5	100	59.2	26.1	20 - 23

N/A - soils not analyzed for these parameters.
NP - Soils are not plastic.

By: JAS
Date: 8/17/2011

Table 3
Bedrock data
Davidson County Landfill Phase 2

Piezometer Number	Core Depth	Run Length (feet)	Recovery (percent)	RQD (percent)
PZ-1	30 - 40	10	85.0%	12.5%
PZ-5d	65 - 75'	10	100.0%	60.8%
PZ-9	24 - 34'	10	87.0%	49.7%
PZ-12d	40 - 50'	10	56.6%	79.4%
PZ-13	40 - 50'	10	56.6%	79.4%
PZ-19	50 - 60'	10	100.0%	32.9%
PZ-21d	36 - 46'	10	100.0%	62.5%
PZ-29*	27 - 37'	10	30%	100.0%
PZ-31	27 - 37'	10	40%	30.5%
PZ-32d	43 - 53'	10	85%	58.4%
PZ-34	17 - 27'	10	85%	69.6%
PZ-37d	34 - 44'	10	95%	39.0%
PZ-38d	40 - 50'	10	100%	61.0%
PZ-39	21 - 36'	15	90%	24.0%
PZ-41d	29 - 39'	10	40%	**0.0%**
PZ-41d**	44 - 54'	10	75%	0.1%
PZ-42s	18 - 29'	11	23%	**0.0%**
PZ-42d	50 - 60'	10	85%	77.0%
PZ-43d	21 - 31'	10	62%	20.0%
PZ-44d	23 - 33'	10	100%	40.0%
PZ-45d	58 - 68'	10	15%	22.0%
PZ-46	NA	NA	NA	NA
PZ-47	NA	NA	NA	NA
PZ-48	NA	NA	NA	NA
PZ-49	43 - 53'	10	99.0%	99.0%
PZ-50	NA	NA	NA	NA
PZ-51	NA	NA	NA	NA
PZ-52	26' - 36'	10	0.0%	**0.0%**
PZ-53	NA	NA	NA	NA
PZ-54	NA	NA	NA	NA
PZ-55	NA	NA	NA	NA
PZ-56s	NA	NA	NA	NA
PZ-56d	21' - 31'	10	0.0%	**0.0%**
PZ-57	NA	NA	NA	NA
PZ-58	NA	NA	NA	NA
PZ-59	NA	NA	NA	NA
PZ-60	NA	NA	NA	NA
PZ-61	NA	NA	NA	NA
PZ-62	NA	NA	NA	NA
PZ-63	NA	NA	NA	NA

PZ-29 - rock that was cored was an isolated boulder. Unconsolidated Sediments were encountered below the rock.
PZ-41d - A 2nd rock core was performed after the first yielded no recovery.
Rock cores attempted in PZ-52 and PZ-56d yielded no recovery.
Below coring depth in these piezometers, unconsolidated sediments and partially weathered rock were encountered.

By: JAS
Date: 8/17/2011

Table 4
Summary of Hydrogeologic Properties
Davidson County Landfill Phase 2

Piezometer	Hydrologic Unit	Rock Type	Effective Porosity	Conductivity K (ft/day)	Grain Size Distribution			
					% Gravel	% Sand	% Silt	% Clay
PZ-1	2	Granite	0.10	N/A	1	33.7	65.3	
PZ-2	2	Diorite	0.10	0.20	0.3	39.4	60.3	
PZ-3	1a	N/A	0.23	1.53	0	64.2	27.4	8.4
PZ-4	2	Diorite	0.09	1.56	0	28.6	71.4	
PZ-5	1b	N/A	0.25	0.43	0	79.3	12.3	8.4
PZ-5d	2	Diorite	0.20	0.62	N/A	N/A	N/A	N/A
PZ-6	1a	N/A	0.12	0.81	0	48.9	29.9	21.2
PZ-7	1b	N/A	0.40	0.85	27.7	49.4	22.9	
PZ-7d	2	Diorite	N/A	0.05	N/A	N/A	N/A	N/A
PZ-8*	1a	N/A	0.12	0.91	0	48.7	31.2	20.1
PZ-9*	2	Granite/Diorite	0.30	N/A	5.5	78.1	16.4	
PZ-10	2	Metagabbro	0.20	0.46	N/A	N/A	N/A	N/A
PZ-11	2	Diorite	0.20	0.69	N/A	N/A	N/A	N/A
PZ-12*	1a	N/A	0.12	2.17	0	56.9	43.1	
PZ-12d	1a	N/A	0.20	1.64	N/A	N/A	N/A	N/A
PZ-13	2	Diorite	0.11	1.06	0	53.4	46.6	
PZ-14*	2	Diorite	0.20	0.79	0	56.1	43.9	
PZ-15	2	Diorite	0.21	0.03	5.3	63.4	31.3	
PZ-16	2	Granite/Diorite	0.18	1.17	0.2	65.3	34.5	
PZ-17	1a	N/A	0.04	1.70	0	25.1	74.9	
PZ-18	2	Granite	0.14	0.55	0	49.1	33.9	17
PZ-19	1b	N/A	0.02	1.66	0	5.6	52.2	42.2
PZ-20	2	Diorite	0.20	0.19	1.8	64.8	20.6	12.8
PZ-21s	1b	N/A	0.14	1.86	0	36.1	45.7	18.2
PZ-21d	2	Diorite	N/A	1.33	N/A	N/A	N/A	N/A
PZ-22	2	Diorite	0.17	1.58	0	64	20.6	15.4
PZ-23	2	Diorite	0.15	0.62	0	64	18.7	17.3
PZ-24	1a	N/A	0.04	2.74	0	36.3	31.2	32.5
PZ-25s	1a	N/A	0.17	1.10	0	65	21.1	13.9
PZ-25d	1b	N/A	0.20	0.46	0	68	18.6	13.4
PZ-26	2	Diorite	0.15	1.36	0	46.3	37.5	16.2
PZ-27	2	Diorite	0.25	1.99	0.6	77.4	11.6	10.4
PZ-28*	1b	N/A	0.27	0.60	0	69.7	30.3	
PZ-29	2	Diorite	0.15	0.40	0	65	35	
PZ-30*	1b	N/A	0.21	N/A	0	51.1	48.9	
PZ-31	2	Diorite	0.15	N/A	0	50.5	34.6	14.9
PZ-32	1b	N/A	0.25	0.20	0	58	42	
PZ-32d	2	Diorite	0.20	0.77	N/A	N/A	N/A	N/A
PZ-33	1b	N/A	0.27	0.72	0	64.3	21.6	14.1
PZ-34	2	Diorite	0.12	0.04	0.3	67.8	31.9	
PZ-46	1	N/A	0.170	0.16	2.24	52.11	40.5	5.15
PZ-47	1b	N/A	0.270	0.13	38.84	51.08	9.18	0.91
PZ-48	1	N/A	0.210	1.9	19.26	45.98	31.28	3.49
PZ-49	2	Diabase	0.100	0.715	NA	NA	NA	NA
PZ-50	1b	N/A	0.170	1.890	NA	NA	NA	NA
PZ-51	1b	N/A	0.250	0.207	3.23	73.92	18.35	4.49
PZ-52	1b	N/A	0.170	0.224	0	71	29	
PZ-53	1b	N/A	0.200	0.203	4.63	57.65	35.76	1.96
PZ-54	2	Granite	N/A	N/A	4.74	66.32	24.52	4.42
PZ-55	1b	N/A	0.150	0.391	14	66	20	
PZ-56s	1	N/A	0.200	0.146	13.37	59.26	21.66	5.7
PZ-56d	1b	N/A	0.150	3.610	NA	NA	NA	NA
PZ-57	1	N/A	0.220	0.224	2	72	26	
PZ-58	1b	N/A	0.140	0.741	4.99	48.14	39.54	7.34
PZ-59	1b	N/A	0.120	0.358	0	64	36	
PZ-60	1b	N/A	0.240	0.263	0	69	31	
PZ-61	1	N/A	0.200	0.636	0.2	73.8	26	
PZ-62	1	N/A	0.220	0.675	3.49	62.3	30.01	4.2
PZ-63	1b	N/A	0.160	0.159	0.75	50.68	41.19	7.38

Unit 1 = unconsolidated sediments
Unit 1b = partially weathered rock
Unit 2 = bedrock formation
Effective Porosity from Textural Classification Triangle and grain size analysis or estimated from rock core RQD.
Conductivity Values from aquifer slug testing.
Where one number is given under %silt and %clay a hydrometer test was not performed.

By: JAS
Date: 8/17/2011

Table 5
Summary of Water Table Elevations
Davidson County Landfill Phase 2 Landfill

Piezometer	TOC Elev.	GW Elev. 12/22/2010	GW Elev. 1/31/2011	GW Elev. 2/8/2011	GW Elev. 3/14/2011	GW Elev. 4/26/2011	GW Elev. 5/31/2011	GW Elev. 6/15/2011	GW Elev. 7/25/2011
PZ-1	704.29	667.74	667.41	667.57	667.97	668.95	668.8	668.34	666.99
PZ-2	717.59	667.59	667.09	667.34	667.59	668.49	668.19	668.04	667.3
PZ-3	688.04	666.57	666.49	666.74	667.24	667.66	667.09	666.54	645.8
PZ-4	670.51	648.46	648.24	648.42	649.16	650.37	649.98	649.51	648.51
PZ-7	659.15	649.8	650.27	650.72	650.99	650.67	649.36	648.24	648.15
PZ-10	719.13	678.73	678.43	678.52	678.61	679.73	679.48	679.39	678.88
PZ-11	720.48	681.78	681.28	691.28	681.3	682.05	682.21	682.18	681.85
PZ-12	682.71	665.14	665.01	665.09	665.11	665.29	665.46	665.14	664.74
PZ-14	724.69	689.94	689.19	689.47	689.39	689.76	689.84	689.89	689.74
PZ-16	750.84	704.9	704.56	704.5	704.49	705.18	705.28	705.19	704.62
PZ-17	731.16	685.16	684.61	684.61	684.36	684.46	684.56	684.59	684.42
PZ-18	727.01	685.61	685.05	685.01	684.73	684.89	685.01	685.08	684.96
PZ-19	722.22	672.48	672.02	672.05	671.97	672.27	672.17	672.13	671.84
PZ-21s	695.64	673.59	670.14	673.19	673.59	677.72	674.69	674.55	677.04
PZ-21d	698.59	679.59	679.1	679.15	679.57	677.61	680.71	680.59	676.93
PZ-22	714.47	682.62	682.13	682.08	682.18	683.03	683.2	683.22	682.82
PZ-23	720.61	691.08	690.71	690.73	690.75	691.32	691.41	691.38	691.11
PZ-24	714.55	674.55	674.05	673.99	673.95	674.32	674.39	674.33	674
PZ-25d	717.91	684.86	684.26	684.21	684.2	685.01	685.23	685.25	684.91
PZ-26	716.04	680.34	685.79	685.73	685.6	686.25	686.47	686.49	686.25
PZ-27	709.01	709.01	672.82	672.86	672.81	673.35	673.33	673.25	672.83
PZ-35s	689.12	669.97	669.87	670.2	670.02	670.23	670.22	669.97	669.59
PZ-35d	689.17	670.02	669.92	670.17	670.12	670.33	670.24	669.95	669.63
PZ-37s	668.58	651.28	651.41	651.67	652.03	651.9	651.26	650.53	650.29
PZ-37d	668.76	650.84	650.96	651.2	651.36	651.19	650.62	649.81	649.71
PZ-38s	662.14	652.79	652.99	654.14	NA	654.44	653.34	652.79	652.56
PZ-38d	663.25	652.83	652.99	653.93	655.3	654.54	653.5	652.95	652.66
PZ-39	678.27	654.92	662.16	662.61	663.8	656.4	664.02	663.31	662.1
PZ-40	676.93	660.94	653.54	653.88	654.68	663.73	654.45	653.93	653.31
PZ-41s	675.89	652.89	652.54	652.69	653.24	654.44	654.3	653.95	653.1
PZ-41d	677.08	653.03	652.65	652.75	653.39	654.66	654.4	654.08	653.19
PZ-42s	706.06	671.28	670.91	671.12	671.3	671.78	671.17	670.96	670.52
PZ-42d	706.11	671.17	670.83	671.01	671.18	671.6	671.03	670.81	670.39
PZ-44s	696.13	674.19	675.64	677.92	678.73	678.23	676.53	675.73	674.33
PZ-44d	696.05	674.08	674.32	675.3	676.71	677.62	676.23	671.03	674.32
PZ -45s	695.19	659.44	659.29	659.45	659.67	660.05	659.84	659.6	659.19
PZ -45d	694.97	658.64	658.48	658.62	658.82	659.33	659.03	658.79	658.4
PZ-46	686.8	662.33	662.4	662.62	663.01	663.2	662.75	662	661.14
PZ-47	703.3	694.32	695.35	695.72	697.56	696.42	695.5	694.25	693.7
PZ-48	722.73	696.18	695.67	695.68	695.68	696.44	696.43	696.44	696.06
PZ-49	721.46	689.09	688.64	688.56	688.45	688.65	688.79	688.85	688.76
PZ-50	704.36	677.91	677.59	677.71	677.92	678.69	678.74	678.67	678.3
PZ-51	683.35	671.69	671.76	672.03	672.27	672.5	672.35	672.03	671.85
PZ-52	707.52	673.17	672.88	672.94	672.9	673.15	673.02	672.98	672.89
PZ-53	674.54	656.21	656.47	656.92	657.89	658.29	656.94	655.94	655.15
PZ-55	655.82	649.67	644.32	652.62	652.73	651.82	650.62	649.33	649.21
PZ-56s	653.7	643.9	643.85	644.7	644.95	644.3	643.62	642.85	642.72
PZ-56d	653.52	643.03	643.3	644.02	644.37	644.02	643.42	643.43	642.78
PZ-57	676.54	659.14	659.04	659.25	659.41	659.56	659.29	659.04	658.89
PZ-58	697.4	671.08	670.75	670.93	671.38	672	671.6	671.31	670.76
PZ-59	691.34	671.58	671.34	671.54	671.94	672.38	671.97	671.63	671.19
PZ-60	664.59	658.59	659.37	659.79	659.45	658.49	657.87	654.15	652.64
PZ-61	658.56	648.3	648.88	649.5	650.05	649.44	648.6	647.32	646.97
PZ-62	679.56	663.19	662.86	663.01	663.04	663.55	663.4	663.25	512.89
PZ-63	700.05	664	663.64	663.7	663.72	664.36	664.37	664.3	663.86

PZ-54 is not included in this table as water was never encountered in this boring and no piezometer was set.

By: JAS
Date: 8/17/2011

Table 6
Gradients and Ground Water Velocities
Davidson County Landfill Phase 2

Piezometer	K (ft/day)	I	n	Velocity (ft/day)
PZ-1	N/A	N/A	0.100	N/A
PZ-2	0.20	N/A	0.100	N/A
PZ-3	1.53	0.03	0.230	0.20
PZ-4	1.56	N/A	0.090	N/A
PZ-5	0.43	0.02	0.250	0.04
PZ-5d	0.62	N/A	0.200	N/A
PZ-6	0.81	0.01	0.120	0.07
PZ-7	0.85	0.03	0.400	0.06
PZ-7d	0.11	N/A	0.010	N/A
PZ-8	0.91	0.08	0.120	0.61
PZ-9	N/A	N/A	0.300	N/A
PZ-10	0.46	N/A	0.200	N/A
PZ-11	0.69	N/A	0.200	N/A
PZ-12	2.17	0.09	0.120	1.63
PZ-12d	1.64	N/A	0.010	N/A
PZ-13	1.06	N/A	0.110	N/A
PZ-14	0.79	N/A	0.010	N/A
PZ-15	0.03	N/A	0.010	N/A
PZ-16	1.17	N/A	0.010	N/A
PZ-17	1.70	0.02	0.040	0.85
PZ-18	0.55	N/A	0.010	N/A
PZ-19	1.66	N/A	0.010	N/A
PZ-20	0.19	N/A	0.010	N/A
PZ-21S	1.86	0.05	0.140	0.66
PZ-21D	1.33	N/A	N/A	N/A
PZ-22	1.58	N/A	0.170	N/A
PZ-23	0.62	N/A	0.150	N/A
PZ-24	2.74	0.05	0.040	3.43
PZ-25S	1.10	0.02	0.170	0.13
PZ-25D	0.46	N/A	0.200	N/A
PZ-26	1.36	N/A	0.150	N/A
PZ-27	1.99	N/A	0.250	N/A
PZ-28	0.20	0.01	0.150	0.01
PZ-29	0.35	N/A	0.010	N/A
PZ-30	NST	0.03	0.150	N/A
PZ-31	NST	N/A	0.010	N/A
PZ-32	0.14	0.02	0.200	0.02
PZ-32d	0.66	N/A	0.015	N/A
PZ-33	0.63	0.07	0.200	0.22
PZ-34	0.02	N/A	0.010	N/A
PZ-46	0.16	0.07	0.170	0.06
PZ-47	0.13	0.06	0.270	0.03
PZ-48	1.9	0.04	0.210	0.36
PZ-49	0.715	N/A	0.100	N/A
PZ-50	1.890	0.02	0.170	0.22
PZ-51	0.207	0.02	0.250	0.02
PZ-52	0.224	0.02	0.170	0.03
PZ-53	0.203	0.03	0.200	0.03
PZ-54	N/A	N/A	N/A	N/A
PZ-55	0.391	0.04	0.150	0.10
PZ-56s	0.146	0.03	0.200	0.02
PZ-56d	3.610	N/A	0.150	N/A
PZ-57	0.224	0.02	0.220	0.02
PZ-58	0.741	0.03	0.140	0.16
PZ-59	0.358	0.02	0.120	0.06
PZ-60	0.263	0.03	0.240	0.03
PZ-61	0.636	0.02	0.200	0.06
PZ-62	0.675	0.04	0.220	0.12
PZ-63	0.159	0.05	0.160	0.05

N/A - no potentiometric data available as these wells are constructed in bedrock.
NST = No slug test performed due to low water in well.
Calculated using V = KI/n
Where: V = Velocity
K = Hydraulic Conductivity
I = Hydraulic Gradient - data from composite high water level map.
n- = Effective Porosity from Textural Classification Triangle
Evaluations using Textural Classification Triangle is in Appendix D.

By: JAS
Date: 8/17/2011

Table 7
Vertical Hydraulic Gradient
Nested Piezometer Pair
Davidson County Landfill Phase 2 Geologic Investigation Area B

Nested Pair	TOC Elevation	Ground Elev.	Top of Screen	Bottom Of Screen	Water Elev.	Midpoint of Screen	Vertical Gradient	Direction
Jan. 2011								
PZ-56s	653.7	651.08	646.08	636.08	643.85	641.08	0.02	Down
PZ-56d	653.52	650.42	621.42	616.42	643.3	618.92		
April-11								
PZ-56s	653.7	651.08	646.08	636.08	644.3	641.08	0.01	Down
PZ-56d	653.52	650.42	621.42	616.42	644.02	618.92		

Vertical Gradient calculated using the following equation:

$$\frac{\text{(WTE Shallow - WTE Deep)}}{\text{(Shallow midpoint - Deep midpoint)}}$$

Where:
WTE= Water Table Elevation
BOS = Bottom of Screen
TOS= Top of Screen

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Appendix A
Boring Logs and Field Notes

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G. N. Richardson & Associates, Inc.
14 North Boylan Avenue, Raleigh NC 27603
(919) 828-0577

FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-1**

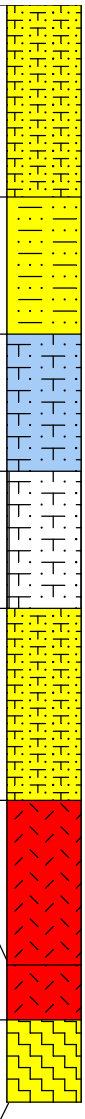
PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **11/8/00** COMPLETED: **11/30/00**

TOTAL DEPTH: **40**
GROUND SURFACE ELEVATION: **701.41**
TOP OF CASING ELEVATION: **704.29**

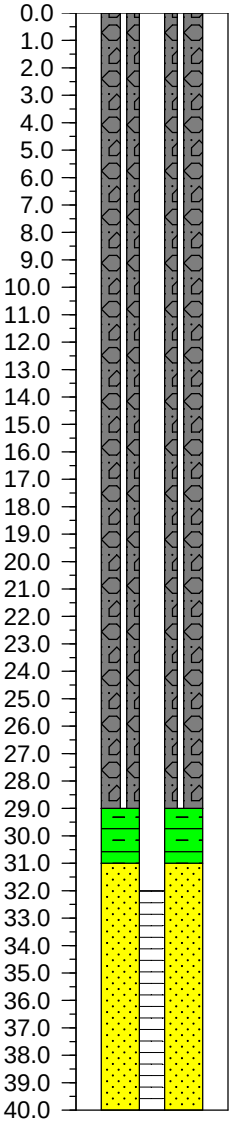
STATIC WATER LEVEL (BLS)		
Depth (ft)	37	37.9
Time	16:00	8:00
Date	11/30/00	12/8/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION
0.0–5.0				HSA	SILTY SAND: Dry tan fine to medium slightly silty sand, rust & gray mottles, some quartz.
5.0–6.0	11,11,11	SS	NA		
6.0–10.0					SANDY SILT: Dry tan-gray fine sandy silt, manganese streaks w/ iron stained perimeter.
10.0–11.0	5,6,8	SS	NA		
11.0–15.0					SANDY SILTY CLAY: Dry tan-orange fine sandy silty clay, manganese streaks, some mica & quartz.
15.0–16.0	9,12,17	SS	NA		
16.0–20.0					CLAYEY SILTY SAND: Dry dark brown fine clayey sity sand w/ tan-orange moist clay bands.
20.0–21.0	19,17,20	SS	NA		
21.0–25.0					SILTY SAND: Coarse brown & tan-gray slightly silty sand grading into partially weathered rock with rock fragments throughout; some quartz & mica. Auger refusal at 29.0'. Outer casing set at 29.0'.
25.0–26.0	40,38,43	SS	NA		
26.0–29.0					
29.0–30.0	50/0"	SS	NA	AH	GRANITE: Weathered granitic bedrock. Cored from 30 ft. to 40 ft. Recovery 85%; RQD 12.5%.
30.0–35.0					
35.0–36.0					GRANITE: Weathered granitic bedrock. Cored from 30 feet to 40 feet. Recovery 85%; RQD 12.5%.
36.0–40.0					DIORITE: Weathered diorite bedrock; Cored from 30' to 40'; Recovery 85%; RQD 12.5%; Boring terminated at 40'.

LITHOLOGY



DEPTH



WELL INSTALLATION

G. N. Richardson & Associates, Inc.
14 North Boylan Avenue, Raleigh NC 27603
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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-2**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **11/7/00** COMPLETED: **11/8/00**

TOTAL DEPTH: **78**
GROUND SURFACE ELEVATION: **715.74**
TOP OF CASING ELEVATION: **717.59**

STATIC WATER LEVEL (BLS)		
Depth (ft)	75	57.57
Time	16:00	8:00
Date	11/8/00	11/15/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	CLAYEY SAND: Dry tan & rust mottled medium clayey sand w/ manganese streaks.		0.0	
5.0	17-17-28	SS	NA				5.0	
10.0	23-33-50/6"	SS	NA		PWR: Dry gray, rust, & tan mottled partially weathered diorite, manganese & iron throughout. Auger refusal at 25.0'.		10.0	
15.0	40-50/6"	SS	NA				15.0	
20.0	50/6"	SS	NA				20.0	
25.0	50/0.5"	SS	NA	AH	DIORITE: Competent diorite.		25.0	
35.0					DIORITE: Competent diorite.		35.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-2**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **11/7/00** COMPLETED: **11/8/00**

TOTAL DEPTH: **78**
GROUND SURFACE ELEVATION: **715.74**
TOP OF CASING ELEVATION: **717.59**

STATIC WATER LEVEL (BLS)		
Depth (ft)	75	57.57
Time	16:00	8:00
Date	11/8/00	11/15/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
42.0							42.0	
43.0							43.0	
44.0							44.0	
45.0							45.0	
46.0							46.0	
47.0							47.0	
48.0							48.0	
49.0							49.0	
50.0							50.0	
51.0							51.0	
52.0							52.0	
53.0							53.0	
54.0							54.0	
55.0							55.0	
56.0							56.0	
57.0							57.0	
58.0							58.0	
59.0							59.0	
60.0							60.0	
61.0							61.0	
62.0							62.0	
63.0							63.0	
64.0							64.0	
65.0							65.0	
66.0							66.0	
67.0							67.0	
68.0							68.0	
69.0					DIORITE: Competent diorite; water bearing fracture at 75'; boring terminated at 78'.		69.0	
70.0							70.0	
71.0							71.0	
72.0							72.0	
73.0							73.0	
74.0							74.0	
75.0							75.0	
76.0							76.0	
77.0							77.0	
78.0							78.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-3**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **11/2/00** COMPLETED: **11/2/00**

TOTAL DEPTH: **30**
GROUND SURFACE ELEVATION: **685.79**
TOP OF CASING ELEVATION: **688.04**

STATIC WATER LEVEL (BLS)		
Depth (ft)	22	20.03
Time	12:00	8:00
Date	11/2/00	11/2/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY SILT: Slightly moist gray, tan & rust salt & peppered fine sandy silt, some mica.		0.0	
5.0	8-7-8	SS	12"				5.0	
10.0	9-10-15	SS	10"		SILTY SAND: Slightly moist rust, gray, & black salt & peppered fine to medium silty sand, some coarse quartz grains & mica.		10.0	
15.0	12-15-31	SS	10"		SANDY SILT: Slightly moist gray & white salt & peppered fine sandy silt, iron mottles and iron & manganese streaks.		15.0	
20.0	12-13-27	SS	10"		SANDY SILT: same as above, moist, strong iron stained layers.		20.0	
25.0	16-18-27	SS	12"		SANDY SILT: same as above, with more iron staining and gray & white coarse silty micaceous sand at 30.5', wet. Boring terminated at 30'.		25.0	
30.0	18-27-30	SS	12"				30.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-4**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **11/6/00** COMPLETED: **11/14/00**

TOTAL DEPTH: **38**
GROUND SURFACE ELEVATION: **668.51**
TOP OF CASING ELEVATION: **670.51**

STATIC WATER LEVEL (BLS)		
Depth (ft)	35	22.63
Time	12:00	8:00
Date	11/14/00	11/20/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY CLAY: Dry rust & gray mottled fine sandy clay, slightly plastic.		0.0	
5.0	8-11-13	SS	NA				5.0	
10.0	10-18-27	SS	NA		SILTY SAND: Dry tan & gray fine silty sand w/ manganese streaks.		10.0	
15.0	17-26-28	SS	NA		SILTY SAND: Dry gray & rust fine slightly micaceous silty sand.		15.0	
20.0	18-34-48	SS	NA		SILTY SAND: Dry dark gray & rust slightly micaceous silty sand.		20.0	
23.0					SAND: Slightly moist rust & tan & gray & black mottled fine sand & partially weatehred rock. Auger refusal at 26.0'.		23.0	
25.0	50/6"	SS	NA	AH	DIORITE: Competent diorite. Boring terminated at 38'.		25.0	
38.0							38.0	

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FIELD BOREHOLE LOG

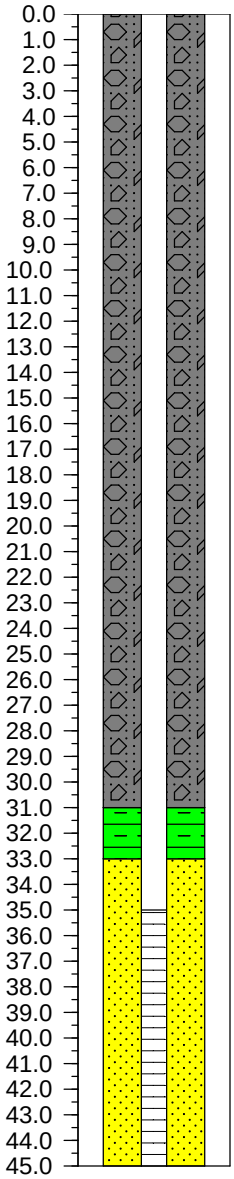
BOREHOLE NUMBER **PZ-5**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **11/6/00** COMPLETED: **11/6/00**

TOTAL DEPTH: **45**
GROUND SURFACE ELEVATION: **700.53**
TOP OF CASING ELEVATION: **702.23**

STATIC WATER LEVEL (BLS)		
Depth (ft)	39	34.55
Time	12:00	8:00
Date	11/6/00	11/7/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY SILTY CLAY: Dry tan-brown fine sandy silty clay (some clayey silt), some roots, iron & gray mottles, manganese streaks.		0.0	
5.0	5-8-11	SS	12"				5.0	
10.0	5-8-9	SS	10"		SILTY SAND: Dry tan-gray fine sandy silt (some silty sand), manganese streaks, small iron & gray mottles.		10.0	
15.0	6-8-11	SS	12"		SILTY SAND: Slightly moist white, tan-gray, rust, & black salt & peppered fine to medium silty sand with iron & manganese.		15.0	
20.0	7-10-14	SS	14"		SILTY SAND: Same as above, moist, mostly white & gray.		20.0	
25.0	11-21-26	SS	12"				25.0	
30.0	21-34-40	SS	8"				30.0	
35.0	23-37-50/6	SS	8"		SILTY SAND: Same as above, more iron & manganese, some partially weathered rock with 45 degree angled fractures throughout. Boring terminated at 45'.		35.0	
40.0	45-50/4	SS	8"				40.0	
45.0							45.0	



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-6**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **11/1/00** COMPLETED: **11/1/00**

TOTAL DEPTH: **31**
GROUND SURFACE ELEVATION: **682.49**
TOP OF CASING ELEVATION: **684.99**

STATIC WATER LEVEL (BLS)		
Depth (ft)	22.8	21.70
Time	12:00	8:00
Date	11/1/00	11/2/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY CLAY: Dry brown & black fine sandy clay.		0.0	
5.0	9-11-13	SS	NA				5.0	
10.0	4-4-6	SS	NA		CLAYEY SAND: Moist tan fine clayey sand with iron & manganese small mottles, quartz grains to 1mm.		10.0	
15.0	4-5-7	SS	NA		SILTY SAND: Very moist white, rust, & gray mottled medium to coarse silty sand with manganese & quartz.		15.0	
20.0	6-6-9	SS	NA		SANDY SILT: Wet white & rust & tan-gray fine to coarse sandy silt with quartz & mica. Boring terminated at 31'.		20.0	
31.0							31.0	

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FIELD BOREHOLE LOG

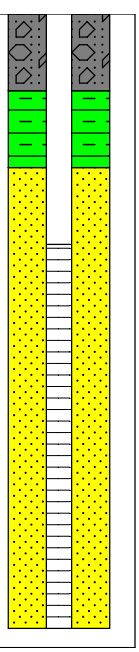
BOREHOLE NUMBER **PZ-7**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **11/1/00** COMPLETED: **11/2/00**

TOTAL DEPTH: **16**
GROUND SURFACE ELEVATION: **657.21**
TOP OF CASING ELEVATION: **659.15**

STATIC WATER LEVEL (BLS)		
Depth (ft)	10	11.75
Time	8:00	8:00
Date	11/2/00	11/3/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SILTY SAND: Moist gray, brown, tan, & black salt & peppered hard fine silty sand, some quartz.		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0							4.0	
5.0	16-21-30	SS	10"				5.0	
6.0							6.0	
7.0							7.0	
8.0							8.0	
9.0							9.0	
10.0	45-50/4"	SS	6"		SILTY SAND: Moist gray, black, & brown fine to coarse slightly silty sand with quartz, partially weathered rock, & rock fragments up to 0.5mm.		10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0							14.0	
15.0	24-41-50/3	SS	4"		SILTY SAND: Same as above, mostly partially weathered rock, auger refusal at 16.0'.		15.0	
16.0							16.0	



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FIELD BOREHOLE LOG

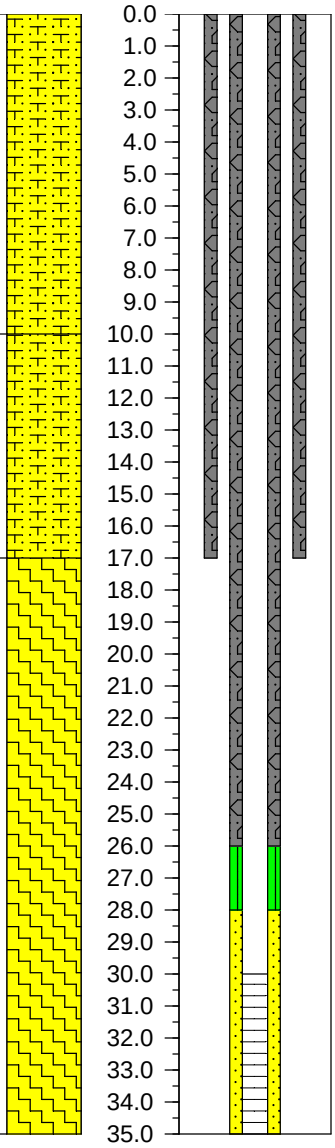
BOREHOLE NUMBER **PZ-7d**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **4/14/03** COMPLETED: **4/16/03**

TOTAL DEPTH: **35**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (BLS)		
Depth (ft)	32	NA
Time	11:00	NA
Date	4/16/03	NA

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SILTY SAND: Moist gray, brown, tan and black mottled hard fine silty sand with some quartz.		0.0	
10.0					SILTY SAND: Moist gray black and brown fine to coarse slightly silty sand with quartz, partially weathered rock and rock fragments up to 0.5 mm.		10.0	
17.0				AH	DIORITE: Competent Diorite. Drilled with Air Hammer to 35 feet. Water encountered between 30 and 35 feet below grade.		17.0	
20.0		Grab					20.0	
25.0		Grab					25.0	
30.0		Grab					30.0	
35.0							35.0	



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FIELD BOREHOLE LOG

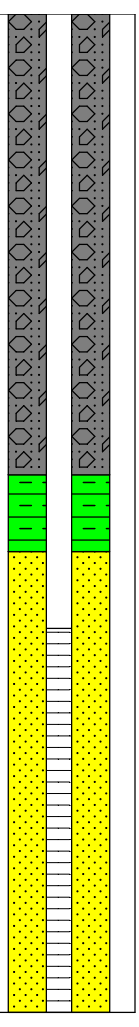
BOREHOLE NUMBER **PZ-8**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **11/20/00** COMPLETED: **11/20/00**

TOTAL DEPTH: **26**
GROUND SURFACE ELEVATION: **670.4**
TOP OF CASING ELEVATION: **672.25**

STATIC WATER LEVEL (BLS)		
Depth (ft)	21	20.0
Time	12:00	10:30
Date	11/20/00	11/28/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	CLAYEY SAND: Dry orange-brown clayey fine sand with manganese & iron mottles, some quartz.		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0							4.0	
5.0	12-21-26	SS	16"				5.0	
6.0							6.0	
7.0							7.0	
8.0							8.0	
9.0							9.0	
10.0	12-17-25	SS	14"		CLAYEY SAND: Dry brown & orange-tan & gray clayey fine sand, iron & manganese mottling, some quartz and mica.		10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0							14.0	
15.0	9-12-16	SS	14"		CLAYEY SAND: Dry brown fine clayey sand/sandy clay with trace silt; manganese, quartz, feldspar, & iron throughout.		15.0	
16.0							16.0	
17.0							17.0	
18.0							18.0	
19.0							19.0	
20.0	10-8-11	SS	16"		SANDY CLAY: Moist orange-brown & gray mottled fine sandy clay, slightly plastic; wet and highly plastic at bottom of sample.		20.0	
21.0							21.0	
22.0							22.0	
23.0					CLAYEY SAND: Wet tan coarse clayey sand with layers of gray & white salt & peppered partially weathered rock and orange-brown fine sandy clay. Auger refusal at 26.0'.		23.0	
24.0							24.0	
25.0	33-50/2"	SS	9"				25.0	
26.0							26.0	



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-9**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **11/2/00** COMPLETED: **11/29/00**

TOTAL DEPTH: **35**
GROUND SURFACE ELEVATION: **697.23**
TOP OF CASING ELEVATION: **699.68**

STATIC WATER LEVEL (BLS)		
Depth (ft)	29	33.48
Time	14:00	10:30
Date	11/29/00	12/6/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	CLAYEY SAND: Slightly moist tan-orange, white, & brown salt & peppered medium to coarse clayey micaceous sand, manganese, quartz, iron.		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0							4.0	
5.0	16-20-24	SS	12"				5.0	
6.0							6.0	
7.0							7.0	
8.0							8.0	
9.0							9.0	
10.0	33-50/5"	SS	6"		SILTY SAND: Slightly moist tan-orange & brown slightly silty medium to coarse micaceous sand, quartz grains to 1mm.		10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0					PWR: Partially weathered diorite. Not able to split spoon sample. Auger refusal at 24'.		14.0	
15.0							15.0	
16.0							16.0	
17.0							17.0	
18.0							18.0	
19.0							19.0	
20.0							20.0	
21.0							21.0	
22.0							22.0	
23.0							23.0	
24.0		CORE		CORE	GRANITE: Weathered granitic bedrock. Cored from 24' to 34'. Recovery 87%. RQD 49.7 %.		24.0	
25.0							25.0	
26.0							26.0	
27.0							27.0	
28.0							28.0	
29.0					DIORITE: Competent diorite. Boring terminated at 35.0'.		29.0	
30.0							30.0	
31.0							31.0	
32.0							32.0	
33.0							33.0	
34.0							34.0	
35.0							35.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-10**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **11/20/00** COMPLETED: **11/27/00**

TOTAL DEPTH: **57**
GROUND SURFACE ELEVATION: **716.44**
TOP OF CASING ELEVATION: **719.13**

STATIC WATER LEVEL (BLS)		
Depth (ft)	51.0	38.55
Time	14:00	10:30
Date	11/20/00	11/28/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	CLAYEY SAND: Dry light tan fine to medium sand grading into slightly clayey sand with manganese and iron. Auger refusal at 9.0'.		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0							4.0	
5.0	39-36-42	SS	10"				5.0	
6.0							6.0	
7.0							7.0	
8.0							8.0	
9.0							9.0	
10.0				AH	DIORITE: Competent diorite.		10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0							14.0	
15.0							15.0	
16.0							16.0	
17.0							17.0	
18.0							18.0	
19.0							19.0	
20.0							20.0	
21.0							21.0	
22.0							22.0	
23.0							23.0	
24.0							24.0	
25.0							25.0	
26.0							26.0	
27.0							27.0	
28.0							28.0	
29.0							29.0	
30.0							30.0	
31.0							31.0	
32.0							32.0	
33.0							33.0	
34.0							34.0	
35.0					DIORITE: Competent diorite.		35.0	
36.0							36.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-10**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **11/20/00** COMPLETED: **11/27/00**

TOTAL DEPTH: **57**
GROUND SURFACE ELEVATION: **716.44**
TOP OF CASING ELEVATION: **719.13**

STATIC WATER LEVEL (BLS)		
Depth (ft)	51.0	38.55
Time	14:00	10:30
Date	11/20/00	11/28/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
36.0							36.0	
37.0							37.0	
38.0							38.0	
39.0							39.0	
40.0					METAGABBRO: Competent metagabbro. Boring terminated at 57'.		40.0	
41.0							41.0	
42.0							42.0	
43.0							43.0	
44.0							44.0	
45.0							45.0	
46.0							46.0	
47.0							47.0	
48.0							48.0	
49.0							49.0	
50.0							50.0	
51.0							51.0	
52.0							52.0	
53.0							53.0	
54.0							54.0	
55.0							55.0	
56.0							56.0	
57.0							57.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-11**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **11/8/00** COMPLETED: **11/20/00**

TOTAL DEPTH: **54**
GROUND SURFACE ELEVATION: **719.13**
TOP OF CASING ELEVATION: **720.48**

STATIC WATER LEVEL (BLS)		
Depth (ft)	49	38.41
Time	10:00	10:30
Date	11/20/00	11/21/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	GRAVEL AND SAND: Dry, gray & white medium to coarse sand & gravel with some small tan-orange clay bands.		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0							4.0	
5.0	34-32-26	SS	10"				5.0	
6.0							6.0	
7.0							7.0	
8.0							8.0	
9.0							9.0	
10.0	50/0"	SS	0"	AH	DIORITE: Competent diorite.		10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0							14.0	
15.0							15.0	
16.0							16.0	
17.0							17.0	
18.0							18.0	
19.0							19.0	
20.0							20.0	
21.0							21.0	
22.0							22.0	
23.0							23.0	
24.0							24.0	
25.0							25.0	
26.0							26.0	
27.0							27.0	
28.0							28.0	
29.0							29.0	
30.0							30.0	
31.0							31.0	
32.0							32.0	
33.0							33.0	
34.0							34.0	
35.0					DIORITE: Competent diorite. Boring terminated at 54'.		35.0	
36.0							36.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-11**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **11/8/00** COMPLETED: **11/20/00**

TOTAL DEPTH: **54**
GROUND SURFACE ELEVATION: **719.13**
TOP OF CASING ELEVATION: **720.48**

STATIC WATER LEVEL (BLS)		
Depth (ft)	49	38.41
Time	10:00	10:30
Date	11/20/00	11/21/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION

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FIELD BOREHOLE LOG

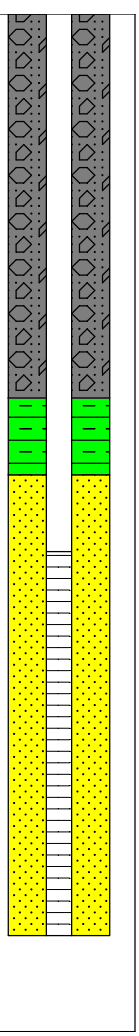
BOREHOLE NUMBER **PZ-12**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **11/1/00** COMPLETED: **11/1/00**

TOTAL DEPTH: **25**
GROUND SURFACE ELEVATION: **680.48**
TOP OF CASING ELEVATION: **682.71**

STATIC WATER LEVEL (BLS)		
Depth (ft)	15.9	15.9
Time	10:00	10:30
Date	11/1/00	11/2/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SILTY SAND: Slightly moist gray, white, & tan mottled silty fine sand with iron.		0.0	
5.0	8-10-11	SS	12"				5.0	
10.0	8-7-7	SS	12"		CLAYEY SANDY SILT: Moist gray-white & rust mottled slightly clayey fine sandy silt, large quartz fragments.		10.0	
15.0	9-12-15	SS	14"		CLAYEY SAND: Wet tan & white & gray medium to coarse micaceous clayey sand (trace silt), quartz fragments, water at 15.0'.		15.0	
20.0	11-19-24	SS	12"		SAND: Wet white, brown, & gray mottled medium to coarse sand with quartz fragments.		20.0	
25.0	5-9-43	SS	12"		SILTY SAND: Wet gray & white silty fine sand with brown mottles. Boring terminated at 25'. Bottom of well set at 24'.		25.0	



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-12d** Page 1 of 1

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **11/17/00** COMPLETED: **11/20/00**

TOTAL DEPTH: **45**
GROUND SURFACE ELEVATION: **679.81**
TOP OF CASING ELEVATION: **682.56**

STATIC WATER LEVEL (BLS)		
Depth (ft)	16	16.1
Time	10:00	10:30
Date	11/20/00	11/21/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SILTY SAND: Slightly moist gray, white, & tan mottled silty fine sand with iron.		0.0	
6.0	8-10-11	SS	12"				6.0	
11.0	8-7-7	SS	12"		CLAYEY SANDY SILT: Moist gray-white & rust mottled slightly clayey fine sandy silt, large quartz fragments.		11.0	
16.0	9-12-15	SS	14"		CLAYEY SAND: Wet tan & white & gray medium to coarse micaceous clayey sand (trace silt), quartz fragments, water at 15.0'.		16.0	
21.0	11-19-24	SS	12"		SAND: Wet white, brown, & gray mottled medium to coarse sand with quartz fragments.		21.0	
26.0	5-9-43	SS	12"		SILTY SAND: Wet gray & white silty fine sand with brown mottles.		26.0	
31.0	26-50/6"	SS	10"		CLAYEY SILTY SAND: Wet dark gray & white salt & peppered clayey silty fine sand with iron streaks, some manganese, large (1mm) quartz grains at 31.5'.		31.0	
36.0	18-22-26	SS	14"		CLAYEY SAND: Wet brown medium to coarse clayey sand followed by gray & white salt & peppered fine silty sand/sandy silt with iron streaks and some quartz & manganese.		36.0	
41.0	23-36-45	SS	10"		SILTY SAND: Wet gray & white salt & peppered fine silty sand & partially weathered rock; large quartz grains; coarse sand. Boring terminated at 45'.		41.0	
45.0							45.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-13**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **10/31/00** COMPLETED: **11/28/00**

TOTAL DEPTH: **60**
GROUND SURFACE ELEVATION: **710.59**
TOP OF CASING ELEVATION: **712.69**

STATIC WATER LEVEL (BLS)		
Depth (ft)	58	49.23
Time	10:00	10:30
Date	11/28/00	12/5/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	CLAYEY SAND: Dry tan clayey fine to coarse sand with quartz.		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0							4.0	
5.0	NA	SS	NA				5.0	
6.0							6.0	
7.0							7.0	
8.0							8.0	
9.0							9.0	
10.0	17-25-38	SS	NA				10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0							14.0	
15.0	9-17-24	SS	NA		CLAYEY SAND: Slightly moist gray, white, & tan salt & peppered fine clayey micaceous sand.		15.0	
16.0							16.0	
17.0							17.0	
18.0							18.0	
19.0							19.0	
20.0	11-19-27	SS	NA		CLAYEY SANDY SILT: Slightly moist gray, white, & tan salt & peppered clayey fine sandy silt.		20.0	
21.0							21.0	
22.0							22.0	
23.0							23.0	
24.0							24.0	
25.0	13-21-30	SS	NA				25.0	
26.0							26.0	
27.0							27.0	
28.0							28.0	
29.0							29.0	
30.0	17-50/6"	SS	NA				30.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-13**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **10/31/00** COMPLETED: **11/28/00**

TOTAL DEPTH: **60**
GROUND SURFACE ELEVATION: **710.59**
TOP OF CASING ELEVATION: **712.69**

STATIC WATER LEVEL (BLS)		
Depth (ft)	58	49.23
Time	10:00	10:30
Date	11/28/00	12/5/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
30.0							30.0	
31.0					SILTY SAND: Slightly moist gray, white, & tan salt & peppered slightly silty sand/partially weathered rock. Auger refusal at 35.0'.		31.0	
32.0							32.0	
33.0							33.0	
34.0							34.0	
35.0				AH	DIORITE: Competent diorite. Cored from 36.5' to 40' - no recovery. Cored from 40' to 50'; Recovery 56.6%. RQD 79.4%. Boring terminated at 60'.		35.0	
36.0							36.0	
37.0							37.0	
38.0							38.0	
39.0							39.0	
40.0							40.0	
41.0							41.0	
42.0							42.0	
43.0							43.0	
44.0							44.0	
45.0							45.0	
46.0							46.0	
47.0							47.0	
48.0							48.0	
49.0							49.0	
50.0							50.0	
51.0							51.0	
52.0							52.0	
53.0							53.0	
54.0							54.0	
55.0							55.0	
56.0							56.0	
57.0							57.0	
58.0							58.0	
59.0							59.0	
60.0							60.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-14**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **11/8/00** COMPLETED: **11/14/00**

TOTAL DEPTH: **41**
GROUND SURFACE ELEVATION: **722.49**
TOP OF CASING ELEVATION: **724.69**

STATIC WATER LEVEL (BLS)		
Depth (ft)	40	29.55
Time	10:00	10:30
Date	11/8/00	11/9/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	CLAYEY SAND: Slightly moist gray & tan clayey sand with manganese, iron, and some mica.		0.0	
5.0	3-4-7	SS	NA				5.0	
7.0					SILTY SAND: Slightly moist gray & white fine silty sand, with iron mottles below 15 feet; moist at 25 feet; auger refusal at 27 feet.		7.0	
10.0	7-6-9	SS	NA				10.0	
15.0	9-10-11	SS	NA				15.0	
20.0	14-22-22	SS	NA				20.0	
25.0	12-13-10	SS	NA				25.0	
27.0				AH	DIORITE: Competent diorite.		27.0	
34.0					DIORITE: Competent diorite. Boring terminated at 41'.		34.0	
41.0							41.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-15**

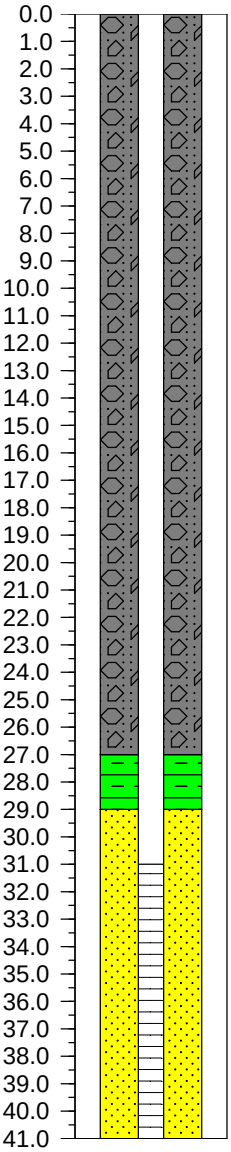
PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **10/31/00** COMPLETED: **11/13/00**

TOTAL DEPTH: **41**
GROUND SURFACE ELEVATION: **711.37**
TOP OF CASING ELEVATION: **712.77**

STATIC WATER LEVEL (BLS)		
Depth (ft)	38	21.85
Time	10:00	10:30
Date	11/13/00	11/14/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION
0.0	3-3-3	SS	12"	HSA	CLAYEY SAND: 0.5' brown topsoil, then brown, gray & rust fine to medium clayey sand with quartz.
5.0	20-21-17	SS	10"		SANDY SILT: Dry black/gray & white salt & peppered fine sandy silt (some silty sand), rust colored streaking throughout, large quartz fragments at 5'.
10.0	9-11-15	SS	14"		SANDY SILT: Slightly moist gray, black, & light tan fine sandy silt with manganese streaks & tan-brown streaks throughout. Auger refusal at 14.0'.
14.0	50/0.5"	SS	0"	AH	DIORITE: Competent diorite.
34.0					DIORITE: Competent diorite. Boring terminated at 41'.

LITHOLOGY



WELL INSTALLATION

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-16**

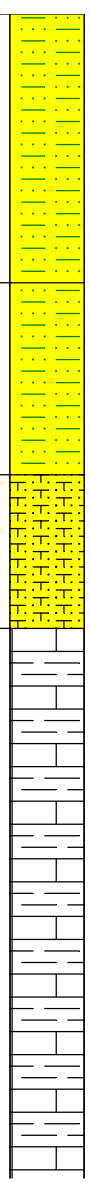
PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **11/8/00** COMPLETED: **11/13/00**

TOTAL DEPTH: **55**
GROUND SURFACE ELEVATION: **748.61**
TOP OF CASING ELEVATION: **750.84**

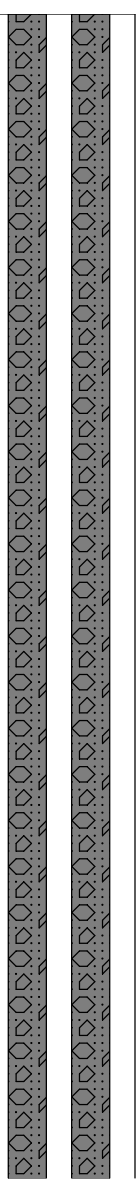
STATIC WATER LEVEL (BLS)		
Depth (ft)	50	45.39
Time	10:00	10:30
Date	11/13/00	11/14/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION
0.0				HSA	CLAYEY SAND: Slightly moist tan & white coarse clayey sand with mica & quartz.
5.0	16-14-34	SS	12"		
7.0					CLAYEY SAND: Same as above, with iron & manganese mottles.
10.0	50/5.75"	SS	10"		
12.0					SILTY SAND: Slightly moist tan & white coarse silty sand with iron & manganese mottles.
15.0	50/4"	SS	14"		
16.0					PWR: Partially weathered granite.
20.0	NA	SS	0"		
25.0	NA	SS	0"		
30.0	NA	SS	0"		

LITHOLOGY



DEPTH



WELL INSTALLATION

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-16**

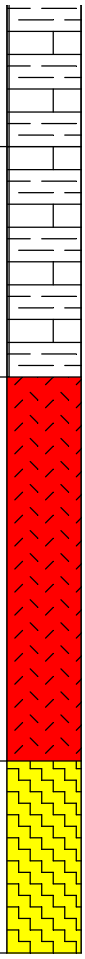
PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **11/8/00** COMPLETED: **11/13/00**

TOTAL DEPTH: **55**
GROUND SURFACE ELEVATION: **748.61**
TOP OF CASING ELEVATION: **750.84**

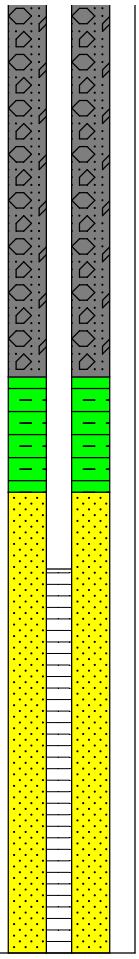
STATIC WATER LEVEL (BLS)		
Depth (ft)	50	45.39
Time	10:00	10:30
Date	11/13/00	11/14/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION
35.0	NA	SS	0"		PWR: Partially weathered granite.
40.0	NA	SS	0"	AH	GRANITE: Competent granitic bedrock.
50.0					DIORITE: Competent diorite. Boring terminated at 55'.

LITHOLOGY



WELL INSTALLATION



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-17**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **10/31/00** COMPLETED: **11/1/00**

TOTAL DEPTH: **49**
GROUND SURFACE ELEVATION: **727.56**
TOP OF CASING ELEVATION: **731.16**

STATIC WATER LEVEL (BLS)		
Depth (ft)	43	43.35
Time	10:00	10:30
Date	11/1/00	11/2/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	CLAYEY SANDY SILT: Dry to slightly moist white & rust slightly clayey slightly fine sandy silt.		0.0	
5.0	14-7-10	SS	6"				5.0	
7.0					CLAYEY SILT: Dry orange-pink & white clayey silt, changing to white with some orange-pink striations and no clay.		7.0	
10.0	10-9-11	SS	20"				10.0	
12.0					SANDY SILT: Slightly moist white with tan-brown fine to medium (some coarse) sandy silt, manganese striations.		12.0	
15.0	11-12-15	SS	18"				15.0	
17.0					GRAVEL AND SAND: Tan-gray fine to coarse sand & gravel; quartz & granite.		17.0	
20.0	30-40-38	SS	10"				20.0	
22.0					SILTY SAND: Dry tan & rust fine to coarse silty sand, with rock fragments.		22.0	
25.0	40-29-20	SS	6"				25.0	
27.0					CLAYEY SANDY SILT: Moist tan-orange & white slightly clayey medium to coarse sandy silt with manganese & quartz.		27.0	
30.0	44-28-24	SS	8"				30.0	
34.0					SANDY CLAYEY SILT: Moist white medium to coarse sandy clayey silt with tan small mottles, manganese streaks, quartz.		34.0	
35.0	25-24-20	SS	14"				35.0	
37.0					SANDY CLAYEY SILT: Moist tan-gray medium sandy clayey silt, some iron & manganese mottles.		37.0	
40.0	23-20-18	SS	10"				40.0	
42.0					SANDY SILT: Moist gray slightly fine sandy silt with a few tan mottles; some quartz & mica; manganese streaks. Boring terminated at 49.0'.		42.0	
45.0	23-33-41	SS	12"				45.0	
49.0							49.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-18**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **2/18/02** COMPLETED: **2/18/02**

TOTAL DEPTH: **50**
GROUND SURFACE ELEVATION: **724.09**
TOP OF CASING ELEVATION: **727.01**

STATIC WATER LEVEL (BLS)		
Depth (ft)	45.29	45.4
Time	16:00	16:00
Date	2/19/02	2/21/02

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY CLAYEY SILT: Red sandy clayey silt.		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0							4.0	
5.0	6,10,11	SS	NA				5.0	
6.0							6.0	
7.0							7.0	
8.0							8.0	
9.0							9.0	
10.0	4,6,10	SS	NA		SILTY SAND: Tan red silty sand.		10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0							14.0	
15.0	9,15,16	SS	NA		SILTY SAND: White tan and brown silty sand.		15.0	
16.0							16.0	
17.0							17.0	
18.0							18.0	
19.0							19.0	
20.0	9,15,18	SS	12		CLAYEY SAND: White, tan clayey sand with some Mn staining and quartz.		20.0	
21.0							21.0	
22.0							22.0	
23.0							23.0	
24.0							24.0	
25.0	10,15,25	SS	12		SILTY SAND: White silty sand PWR. Auger refusal @ 34'		25.0	
26.0							26.0	
27.0							27.0	
28.0							28.0	
29.0							29.0	
30.0	50/3"	SS	3				30.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-18**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **2/18/02** COMPLETED: **2/18/02**

TOTAL DEPTH: **50**
GROUND SURFACE ELEVATION: **724.09**
TOP OF CASING ELEVATION: **727.01**

STATIC WATER LEVEL (BLS)		
Depth (ft)	45.29	45.4
Time	16:00	16:00
Date	2/19/02	2/21/02

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
30.0							30.0	
31.0							31.0	
32.0							32.0	
33.0							33.0	
34.0				AH			34.0	
35.0					GRANITE: Weathered granitic bedrock.		35.0	
36.0							36.0	
37.0							37.0	
38.0							38.0	
39.0							39.0	
40.0							40.0	
41.0							41.0	
42.0							42.0	
43.0							43.0	
44.0							44.0	
45.0							45.0	
46.0							46.0	
47.0							47.0	
48.0							48.0	
49.0							49.0	
50.0							50.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-19**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/RC/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **2/19/02** COMPLETED: **2/20/02**

TOTAL DEPTH: **60**
GROUND SURFACE ELEVATION: **719.32**
TOP OF CASING ELEVATION: **722.22**

STATIC WATER LEVEL (BLS)		
Depth (ft)	54	NA
Time	16:00	NA
Date	2/21/02	NA

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY SILT: Orange sandy silt with trace clay, dry.		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0							4.0	
5.0	7,10,12	SS	8"				5.0	
6.0							6.0	
7.0							7.0	
8.0							8.0	
9.0							9.0	
10.0	7,9,12	SS	9"				10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0							14.0	
15.0	7,9,14	SS	9"		SANDY SILT: White sandy silt, dry.		15.0	
16.0							16.0	
17.0							17.0	
18.0							18.0	
19.0							19.0	
20.0	4,8,10	SS	12"		SANDY SILT: Black and white mottled sandy silt with minor iron staining.		20.0	
21.0							21.0	
22.0							22.0	
23.0							23.0	
24.0							24.0	
25.0	8,11,13	SS	8"				25.0	
26.0							26.0	
27.0							27.0	
28.0							28.0	
29.0							29.0	
30.0	5,8,13	SS	9"				30.0	

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FIELD BOREHOLE LOG

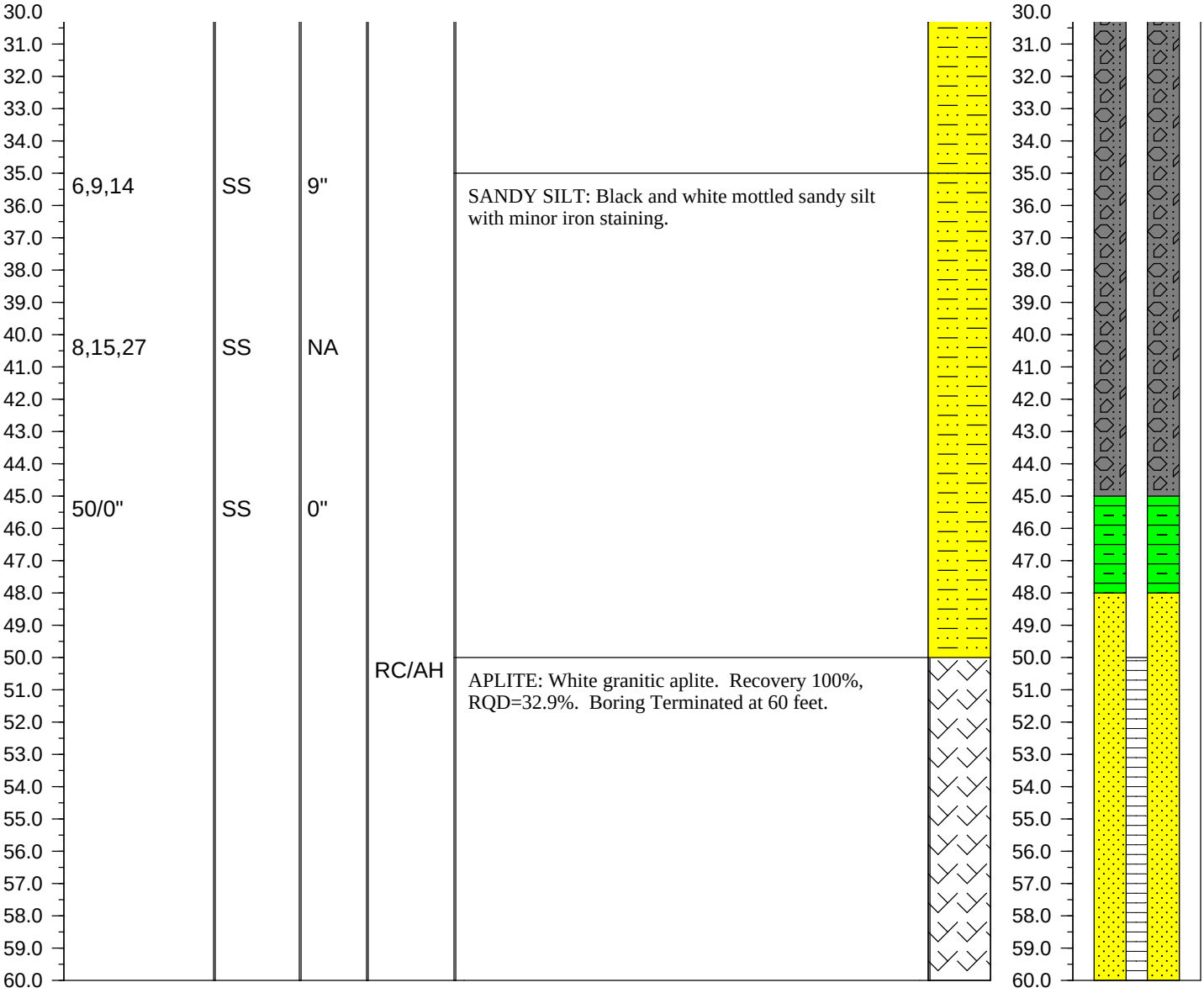
BOREHOLE NUMBER **PZ-19**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/RC/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **2/19/02** COMPLETED: **2/20/02**

TOTAL DEPTH: **60**
GROUND SURFACE ELEVATION: **719.32**
TOP OF CASING ELEVATION: **722.22**

STATIC WATER LEVEL (BLS)		
Depth (ft)	54	NA
Time	16:00	NA
Date	2/21/02	NA

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
35.0	6,9,14	SS	9"		SANDY SILT: Black and white mottled sandy silt with minor iron staining.			
40.0	8,15,27	SS	NA					
45.0	50/0"	SS	0"					
50.0				RC/AH	APLITE: White granitic aplite. Recovery 100%, RQD=32.9%. Boring Terminated at 60 feet.			



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-20**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **2/21/02** COMPLETED: **2/22/02**

TOTAL DEPTH: **58**
GROUND SURFACE ELEVATION: **717.57**
TOP OF CASING ELEVATION: **719.74**

STATIC WATER LEVEL (BLS)		
Depth (ft)	54	NA
Time	NA	NA
Date	2/22/02	NA

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SILTY SAND: Tan black silty sand with some mica.		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0							4.0	
5.0	6,10,12	SS					5.0	
6.0							6.0	
7.0							7.0	
8.0							8.0	
9.0							9.0	
10.0	5,7,8	SS			SANDY SILT: Tan brown gray sandy silt. dry.		10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0							14.0	
15.0	6,8,12	SS			SILT: White, tan and brown micaceous silt with rock fragments, dry.		15.0	
16.0							16.0	
17.0							17.0	
18.0							18.0	
19.0							19.0	
20.0	21,22,35	SS			SANDY SILT: White tan sandy silt with quartz. Auger refusal at 25 feet.		20.0	
21.0							21.0	
22.0							22.0	
23.0							23.0	
24.0							24.0	
25.0	50/1"	SS			DIORITE: Competent diorite bedrock.		25.0	
26.0							26.0	
27.0							27.0	
28.0				AH			28.0	
29.0							29.0	
30.0							30.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-20**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **2/21/02** COMPLETED: **2/22/02**

TOTAL DEPTH: **58**
GROUND SURFACE ELEVATION: **717.57**
TOP OF CASING ELEVATION: **719.74**

STATIC WATER LEVEL (BLS)		
Depth (ft)	54	NA
Time	NA	NA
Date	2/22/02	NA

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
30.0							30.0	
31.0							31.0	
32.0							32.0	
33.0							33.0	
34.0							34.0	
35.0							35.0	
36.0					DIORITE: Competent diorite bedrock. Drilled with air hammer to 58 feet.		36.0	
37.0							37.0	
38.0							38.0	
39.0							39.0	
40.0							40.0	
41.0							41.0	
42.0							42.0	
43.0							43.0	
44.0							44.0	
45.0							45.0	
46.0							46.0	
47.0							47.0	
48.0							48.0	
49.0							49.0	
50.0							50.0	
51.0							51.0	
52.0							52.0	
53.0							53.0	
54.0							54.0	
55.0							55.0	
56.0							56.0	
57.0							57.0	
58.0							58.0	

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FIELD BOREHOLE LOG

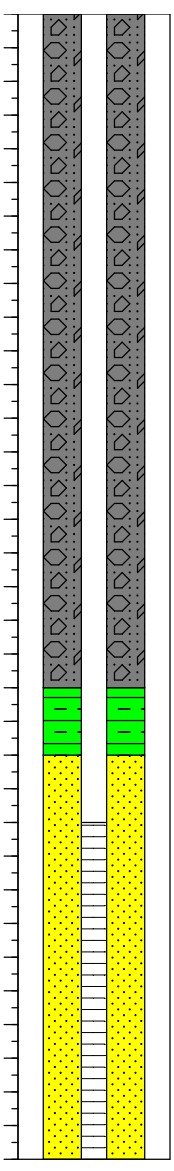
BOREHOLE NUMBER **PZ-21**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **D. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **2/18/02** COMPLETED: **2/18/02**

TOTAL DEPTH: **34**
GROUND SURFACE ELEVATION: **692.94**
TOP OF CASING ELEVATION: **695.64**

STATIC WATER LEVEL (BLS)		
Depth (ft)	16.37	16.7
Time	16:30	16:00
Date	2/19/02	2/21/02

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY CLAY: Wet brown sandy clay with quartz pebbles and Mn staining.		0.0	
5.0	5,7,15	SS	12"				5.0	
10.0	8,15,15	SS	8"		CLAYEY SILT: Moist, brown clayey silt with some Mn staining.		10.0	
15.0	9,20,28	SS	8"		SANDY SILT: Black and white mottled sandy silt with iron staining and relict rock texture. Auger refusal at 34'		15.0	
20.0	16,23,44	SS	8"				20.0	
25.0	50/4"	SS	4"				25.0	
30.0	50/2"	SS	2"				30.0	
34.0							34.0	



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-21d**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/RC/AH**
FIELD PARTY: **D. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **2/20/02** COMPLETED: **2/21/02**

TOTAL DEPTH: **53.5**
GROUND SURFACE ELEVATION: **695**
TOP OF CASING ELEVATION: **698.59**

STATIC WATER LEVEL (BLS)		
Depth (ft)	25.6	NA
Time	16:30	NA
Date	2/21/02	NA

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY CLAY: Wet brown sandy clay with quartz pebbles and Mn staining.		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0							4.0	
5.0	5,7,15	SS	12"				5.0	
6.0							6.0	
7.0							7.0	
8.0							8.0	
9.0							9.0	
10.0	8,15,15	SS	8"		CLAYEY SILT: Moist, brown clayey silt with some Mn staining.		10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0							14.0	
15.0	9,20,28	SS	8"		SANDY SILT: Black and white mottled sandy silt with iron staining and relict rock texture. Auger refusal at 36'. Set 4" outer casing.		15.0	
16.0							16.0	
17.0							17.0	
18.0							18.0	
19.0							19.0	
20.0	16,23,44	SS	8"				20.0	
21.0							21.0	
22.0							22.0	
23.0							23.0	
24.0							24.0	
25.0	50/4"	SS	4"				25.0	
26.0							26.0	
27.0							27.0	
28.0							28.0	
29.0							29.0	
30.0	50/2"	SS	2"				30.0	

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FIELD BOREHOLE LOG

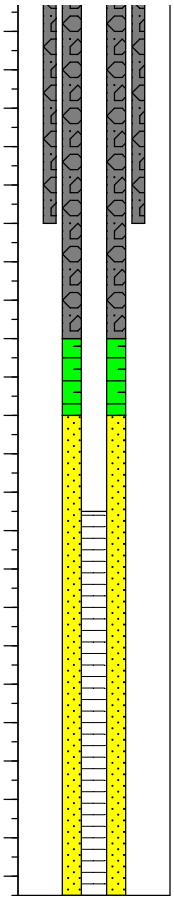
BOREHOLE NUMBER **PZ-21d**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/RC/AH**
FIELD PARTY: **D. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **2/20/02** COMPLETED: **2/21/02**

TOTAL DEPTH: **53.5**
GROUND SURFACE ELEVATION: **695**
TOP OF CASING ELEVATION: **698.59**

STATIC WATER LEVEL (BLS)		
Depth (ft)	25.6	NA
Time	16:30	NA
Date	2/21/02	NA

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
30.0							30.0	
31.0							31.0	
32.0							32.0	
33.0							33.0	
34.0							34.0	
35.0	50/0.5"	SS	0"				35.0	
36.0				RC/AH	DIORITE: Competent Diorite. Rock Core to 46' then drilled with air hammer to 53.5 feet where water bearing fractures were encountered. Recovery=100%, RQD= 62.5%.		36.0	
37.0							37.0	
38.0							38.0	
39.0							39.0	
40.0							40.0	
41.0							41.0	
42.0							42.0	
43.0							43.0	
44.0							44.0	
45.0							45.0	
46.0							46.0	
47.0							47.0	
48.0							48.0	
49.0							49.0	
50.0							50.0	
51.0							51.0	
52.0							52.0	
53.0							53.0	



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-22**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **D. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **2/18/02** COMPLETED: **2/19/02**

TOTAL DEPTH: **43**
GROUND SURFACE ELEVATION: **712.04**
TOP OF CASING ELEVATION: **714.47**

STATIC WATER LEVEL (BLS)		
Depth (ft)	36.2	36.2
Time	16:30	16:00
Date	2/20/02	2/21/02

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY SILT: Tan and black and white mottled sandy silt. Dry.		0.0	
5.0	14,16,20	SS	NA				5.0	
10.0	31,33,43	SS	7"				10.0	
15.0	41,50/3"	SS	5"				15.0	
20.0	50/6"	SS	6"				20.0	
25.0	50/2"	SS	2"		SANDY SILT: Moist black and white mottled sandy silt with quartz.		25.0	
30.0	50/1"	SS	1"				30.0	
33.0				AH	DIORITE: Diorite bedrock.		33.0	
					DIORITE: Dioite bedrock.			
43.0							43.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-23**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **D. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **2/21/02** COMPLETED: **2/21/02**

TOTAL DEPTH: **49**
GROUND SURFACE ELEVATION: **717.58**
TOP OF CASING ELEVATION: **720.61**

STATIC WATER LEVEL (BLS)		
Depth (ft)	NA	NA
Time	NA	NA
Date	NA	NA

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SILTY SAND: Red, tan and white mottled silty sand with some gravel, dry. Auger refusal at 16 feet.		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0							4.0	
5.0	10,13,21	SS	9"				5.0	
6.0							6.0	
7.0							7.0	
8.0							8.0	
9.0							9.0	
10.0	16,21,20	SS	NA				10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0							14.0	
15.0							15.0	
16.0				AH	DIORITE: Diorite bedrock.		16.0	
17.0							17.0	
18.0							18.0	
19.0							19.0	
20.0							20.0	
21.0							21.0	
22.0							22.0	
23.0							23.0	
24.0							24.0	
25.0							25.0	
26.0							26.0	
27.0							27.0	
28.0							28.0	
29.0							29.0	
30.0							30.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-23**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **D. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **2/21/02** COMPLETED: **2/21/02**

TOTAL DEPTH: **49**
GROUND SURFACE ELEVATION: **717.58**
TOP OF CASING ELEVATION: **720.61**

STATIC WATER LEVEL (BLS)		
Depth (ft)	NA	NA
Time	NA	NA
Date	NA	NA

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
30.0							30.0	
31.0							31.0	
32.0							32.0	
33.0							33.0	
34.0							34.0	
35.0							35.0	
36.0					DIORITE: Diorite bedrock.		36.0	
37.0							37.0	
38.0							38.0	
39.0							39.0	
40.0							40.0	
41.0							41.0	
42.0							42.0	
43.0							43.0	
44.0							44.0	
45.0							45.0	
46.0							46.0	
47.0							47.0	
48.0							48.0	
49.0							49.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-24**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **D. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **2/20/02** COMPLETED: **2/20/02**

TOTAL DEPTH: **50**
GROUND SURFACE ELEVATION: **711.55**
TOP OF CASING ELEVATION: **714.55**

STATIC WATER LEVEL (BLS)		
Depth (ft)	45.35	NA
Time	16:30	NA
Date	2/21/02	NA

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY SILTY CLAY: Tan, brown reddish sandy silty clay. Dry.		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0							4.0	
5.0	6,14,22	SS	8"				5.0	
6.0							6.0	
7.0							7.0	
8.0							8.0	
9.0							9.0	
10.0	9,15,18	SS	8"		SILTY CLAY: Tan and red mottled silty clay. Moist.		10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0							14.0	
15.0	9,13,19	SS	9"		SILTY SAND: White and black mottled silty sand. Dry.		15.0	
16.0							16.0	
17.0							17.0	
18.0							18.0	
19.0							19.0	
20.0	11,16,21	SS	9"				20.0	
21.0							21.0	
22.0							22.0	
23.0							23.0	
24.0							24.0	
25.0	14,25,34	SS	9"				25.0	
26.0							26.0	
27.0							27.0	
28.0							28.0	
29.0							29.0	
30.0	15,25,40	SS	8"				30.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-24**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **D. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **2/20/02** COMPLETED: **2/20/02**

TOTAL DEPTH: **50**
GROUND SURFACE ELEVATION: **711.55**
TOP OF CASING ELEVATION: **714.55**

STATIC WATER LEVEL (BLS)		
Depth (ft)	45.35	NA
Time	16:30	NA
Date	2/21/02	NA

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
30.0							30.0	
31.0							31.0	
32.0							32.0	
33.0							33.0	
34.0							34.0	
35.0	21,37,44	SS	8"		SILTY SAND: White and black mottled silty sand. Dry. Auger refusal @ 50'		35.0	
36.0							36.0	
37.0							37.0	
38.0							38.0	
39.0							39.0	
40.0	26,40,38	SS	5"				40.0	
41.0							41.0	
42.0							42.0	
43.0							43.0	
44.0							44.0	
45.0	23,39,42	SS	6"				45.0	
46.0							46.0	
47.0							47.0	
48.0							48.0	
49.0							49.0	
50.0							50.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-25d**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **D. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **2/20/02** COMPLETED: **2/20/02**

TOTAL DEPTH: **70**
GROUND SURFACE ELEVATION: **715.21**
TOP OF CASING ELEVATION: **717.91**

STATIC WATER LEVEL (BLS)		
Depth (ft)	37.15	NA
Time	16:30	NA
Date	2/21/02	NA

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SILT: Tan black and white mottled silt with trace clay. Dry.		0.0	
5.0	7,10,16	SS	NA				5.0	
10.0	8,9,14	SS	NA				10.0	
15.0	11,16,20	SS	NA		SANDY SILT: Tan black and white mottled silt with trace clay and some sand. Dry.		15.0	
20.0	13,20,20	SS	NA				20.0	
25.0	12,18,21	SS	NA		SANDY SILT: Black and white mottled silt with trace clay and some sand. Some iron staining. Dry.		25.0	
30.0	23,25,21	SS	9"		CLAYEY SILT: Black and white mottled clayey silt with more iron staining in various directions. Dry.		30.0	
35.0	12,21,24	SS	9"		GRAVELLY SILT: Black and white mottled gravelly silt with iron and Mn staining. Moist.		35.0	

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FIELD BOREHOLE LOG

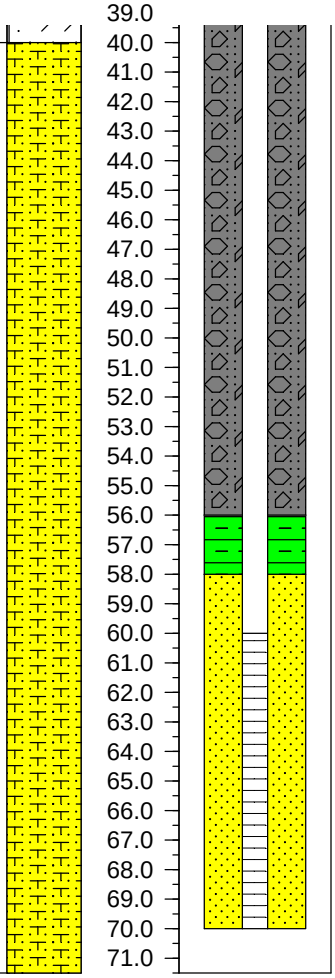
BOREHOLE NUMBER **PZ-25d**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **D. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **2/20/02** COMPLETED: **2/20/02**

TOTAL DEPTH: **70**
GROUND SURFACE ELEVATION: **715.21**
TOP OF CASING ELEVATION: **717.91**

STATIC WATER LEVEL (BLS)		
Depth (ft)	37.15	NA
Time	16:30	NA
Date	2/21/02	NA

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
39.0							39.0	
40.0	14,26,31	SS	9"		SILTY SAND: Gray and white mottled silty sand. Wet below 40 feet. Boring terminated at 70 feet.		40.0	
41.0							41.0	
42.0							42.0	
43.0							43.0	
44.0							44.0	
45.0	22,43,50/5	SS	10"				45.0	
46.0							46.0	
47.0							47.0	
48.0							48.0	
49.0							49.0	
50.0	27,35,50/5	SS	9"				50.0	
51.0							51.0	
52.0							52.0	
53.0							53.0	
54.0							54.0	
55.0							55.0	
56.0							56.0	
57.0							57.0	
58.0							58.0	
59.0							59.0	
60.0							60.0	
61.0							61.0	
62.0							62.0	
63.0							63.0	
64.0							64.0	
65.0							65.0	
66.0							66.0	
67.0							67.0	
68.0							68.0	
69.0							69.0	
70.0	50/6	SS					70.0	
71.0							71.0	



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-25s**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **D. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **2/19/02** COMPLETED: **2/19/02**

TOTAL DEPTH: **50**
GROUND SURFACE ELEVATION: **714.82**
TOP OF CASING ELEVATION: **717.46**

STATIC WATER LEVEL (BLS)		
Depth (ft)	39.85	40
Time	16:30	16:00
Date	2/20/02	2/21/02

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SILT: Tan black and white mottled silt with trace clay. Dry.		0.0	
5.0	7,10,16	SS	NA				5.0	
10.0	8,9,14	SS	NA				10.0	
15.0	11,16,20	SS	NA		SANDY SILT: Tan black and white mottled silt with trace clay and some sand. Dry.		15.0	
20.0	13,20,20	SS	NA				20.0	
25.0	12,18,21	SS	NA		SANDY SILT: Black and white mottled silt with trace clay and some sand. Some iron staining. Dry.		25.0	
30.0	23,25,21	SS	9"		CLAYEY SILT: Black and white mottled clayey silt with more iron staining in various directions. Dry.		30.0	
35.0							35.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-25s**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **D. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **2/19/02** COMPLETED: **2/19/02**

TOTAL DEPTH: **50**
GROUND SURFACE ELEVATION: **714.82**
TOP OF CASING ELEVATION: **717.46**

STATIC WATER LEVEL (BLS)		
Depth (ft)	39.85	40
Time	16:30	16:00
Date	2/20/02	2/21/02

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
35.0	12,21,24	SS	9"		GRAVELLY SILT: Black and white mottled gravelly silt with iron and Mn staining. Moist.		35.0	
36.0							36.0	
37.0							37.0	
38.0							38.0	
39.0							39.0	
40.0	14,26,31	SS	9"		SILTY SAND: Black and white mottled silty sand with quartz and iron staining. Moist. Water at 35' 7" after 1 hour. Boring Terminated. Hole caved to 45 feet when well was set.		40.0	
41.0							41.0	
42.0							42.0	
43.0							43.0	
44.0							44.0	
45.0	22,43,50/5	SS	10"				45.0	
46.0							46.0	
47.0							47.0	
48.0							48.0	
49.0							49.0	
50.0							50.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-26**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **D. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **2/18/02** COMPLETED: **2/18/02**

TOTAL DEPTH: **37.5**
GROUND SURFACE ELEVATION: **713.58**
TOP OF CASING ELEVATION: **716.04**

STATIC WATER LEVEL (BLS)		
Depth (ft)	34.2	34.3
Time	16:30	16:00
Date	2/20/02	2/21/02

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY SILT: Black and white and brown and tan sandy silt with trace clay. Dry.		0.0	
5.0	8,13,14	SS	7"				5.0	
10.0	6,11,12	SS	8"				10.0	
15.0	10,18,29	SS	NA				15.0	
20.0	10,13,22	SS	NA		SILT: Gray white silt with tan and black sandy silt. Dry.		20.0	
23.0					SANDY SILT: Black gray and white silt with fine sand. PWR. Dry. Auger refusal at 26 feet.		23.0	
25.0	20,33,50/5	SS	NA				25.0	
26.0				AH	DIORITE: Diorite bedrock.		26.0	
37.0							37.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-27**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **D. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **2/19/02** COMPLETED: **2/19/02**

TOTAL DEPTH: **50**
GROUND SURFACE ELEVATION: **706.15**
TOP OF CASING ELEVATION: **709.50**

STATIC WATER LEVEL (BLS)		
Depth (ft)	40.6	NA
Time	16:30	NA
Date	2/21/02	NA

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY SILT: Red tan sandy silt. Dry.		0.0	
5.0	6,8,15	SS					5.0	
10.0	18,23,25	SS			SILTY SAND: Tan red silty sand. Dry.		10.0	
15.0	45,50/5	SS			SILTY SAND: Tan silty sand. Dry.		15.0	
20.0	50/3	SS					20.0	
25.0	50/2	SS			SAND: White sand with gravel. PWR.		25.0	
26.0				AH	DIORITE: Diorite bedrock.		26.0	
33.0							33.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-27**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **D. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **2/19/02** COMPLETED: **2/19/02**

TOTAL DEPTH: **50**
GROUND SURFACE ELEVATION: **706.15**
TOP OF CASING ELEVATION: **709.50**

STATIC WATER LEVEL (BLS)		
Depth (ft)	40.6	NA
Time	16:30	NA
Date	2/21/02	NA

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
33.0							33.0	
34.0							34.0	
35.0					DIORITE: Diorite bedrock.		35.0	
36.0							36.0	
37.0							37.0	
38.0							38.0	
39.0							39.0	
40.0							40.0	
41.0							41.0	
42.0							42.0	
43.0							43.0	
44.0							44.0	
45.0							45.0	
46.0							46.0	
47.0							47.0	
48.0							48.0	
49.0							49.0	
50.0							50.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-28**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **D. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **4/14/03** COMPLETED: **4/15/03**

TOTAL DEPTH: **55**
GROUND SURFACE ELEVATION: **708.14**
TOP OF CASING ELEVATION: **711.14**

STATIC WATER LEVEL (BLS)		
Depth (ft)	50	39.74
Time	9:30 am	8:00 am
Date	4/15/03	4/17/03

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SILTY SANDY CLAY: Moist, red brown silty sandy clay with large quartz coarse sand and mica. Shelby tube sample collected at 10 feet.		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0							4.0	
5.0	6,7,9	SS	10"				5.0	
6.0							6.0	
7.0							7.0	
8.0							8.0	
9.0							9.0	
10.0	8,12,15	SS	10"				10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0							14.0	
15.0	10,13,18	SS	12"		CLAYEY SILTY SAND: Dry, light tan clayey silty medium to coarse sand with mica.		15.0	
16.0							16.0	
17.0							17.0	
18.0							18.0	
19.0							19.0	
20.0	19,30,33	SS	9"		SILTY SAND: Dry light tan silty medium coarse sand with mica		20.0	
21.0							21.0	
22.0							22.0	
23.0							23.0	
24.0							24.0	
25.0	22,35,50/5	SS	9"				25.0	
26.0							26.0	
27.0							27.0	
28.0							28.0	
29.0							29.0	
30.0	50/6	SS	6"		SANDY SILT: Dry, sandy silty granitic very weathered rock.		30.0	
31.0							31.0	
32.0							32.0	
33.0							33.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-28**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **D. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **4/14/03** COMPLETED: **4/15/03**

TOTAL DEPTH: **55**
GROUND SURFACE ELEVATION: **708.14**
TOP OF CASING ELEVATION: **711.14**

STATIC WATER LEVEL (BLS)		
Depth (ft)	50	39.74
Time	9:30 am	8:00 am
Date	4/15/03	4/17/03

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
33.0							33.0	
34.0							34.0	
35.0	50/5	SS	5"		SANDY SILT: Dry, sandy silty granitic very weathered rock.		35.0	
36.0							36.0	
37.0							37.0	
38.0							38.0	
39.0							39.0	
40.0	50/4	SS	4"		SANDY SILT: Moist, granitic partially weathered rock with medium to large quartz crystals, mica and feldspar with iron staining.		40.0	
41.0							41.0	
42.0							42.0	
43.0							43.0	
44.0							44.0	
45.0	50/6	SS	6"				45.0	
46.0							46.0	
47.0							47.0	
48.0							48.0	
49.0							49.0	
50.0	50/4	SS	4"				50.0	
51.0							51.0	
52.0							52.0	
53.0							53.0	
54.0					SANDY SILT: Wet, granitic partially weathered rock. Boring terminated at 55 feet below grade. Sampled to 56.5'		54.0	
55.0	50/3	SS	3"				55.0	
56.0							56.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-29**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/RC/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **4/16/03** COMPLETED: **4/23/03**

TOTAL DEPTH: **56**
GROUND SURFACE ELEVATION: **709.63**
TOP OF CASING ELEVATION: **712.53**

STATIC WATER LEVEL (BLS)		
Depth (ft)	55.3	48.00
Time	3:00 PM	8:00 am
Date	4/23/03	4/24/03

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY SILT: Dry dark green to gray and white mottled sandy silt.		0.0	
5.0	6,7,10	SS	10"				5.0	
10.0	10,20,35	SS	10"		CLAYEY SILT: Dry, dark green to gray and white mottled clayey silt with trace mica around 15 feet.		10.0	
15.0	50/6	SS	6"				15.0	
20.0	50/2	SS	1"				20.0	
25.0	50/2	SS	0.5"				25.0	
27.0				RC/AH	DIORITE: Cored from 27 to 37 feet below grade, and recovered one solid 3 ft long piece of diorite.		27.0	
30.0					SANDY CLAY: No recovery from core to 37 feet. Split spoon sample taken at 37 feet had gray sandy clay with trace iron staining.		30.0	
33.0							33.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-29**

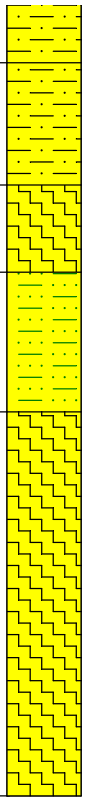
PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/RC/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **4/16/03** COMPLETED: **4/23/03**

TOTAL DEPTH: **56**
GROUND SURFACE ELEVATION: **709.63**
TOP OF CASING ELEVATION: **712.53**

STATIC WATER LEVEL (BLS)		
Depth (ft)	55.3	48.00
Time	3:00 PM	8:00 am
Date	4/23/03	4/24/03

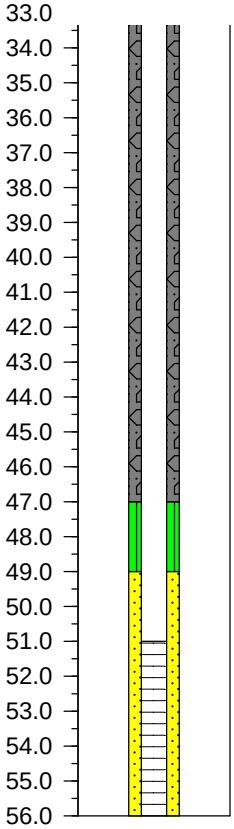
DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION
33.0					
34.0					
35.0					SANDY CLAY: No recovery from core to 37 feet. Split spoon sample taken at 37 feet had gray sandy clay with trace iron staining.
36.0					
37.0	50/6	SS	6"	AH	
38.0					
39.0					DIORITE: Drilled with air hammer.
40.0					
41.0	50/5	SS	5"		CLAYEY SAND: Split spoon sample taken when air hammer indicated no rock. Gray clayey sand.
42.0					
43.0					
44.0					
45.0					DIORITE: Drilled with air hammer. Seams indicated at 49-50 ft, (no water indicated) and 55-56 feet. The second seam had water. Boring terminated at 56 feet.
46.0					
47.0					
48.0					
49.0					
50.0					
51.0					
52.0					
53.0					
54.0					
55.0					
56.0					

LITHOLOGY



DEPTH

WELL INSTALLATION



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FIELD BOREHOLE LOG

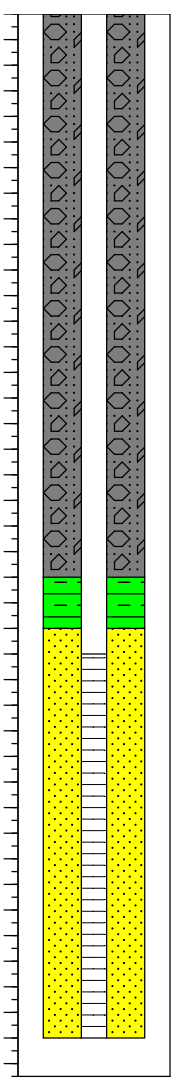
BOREHOLE NUMBER **PZ-30**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **D. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **4/17/03** COMPLETED: **4/17/03**

TOTAL DEPTH: **40**
GROUND SURFACE ELEVATION: **709.04**
TOP OF CASING ELEVATION: **711.94**

STATIC WATER LEVEL (BLS)		
Depth (ft)	36.84	36.53
Time	4:00 pm	8:00 am
Date	4/17/03	4/21/03

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY CLAYEY SILT: Dry, black and white mottled (with some brown) sandy clayey silt.		0.0	
5.0	4,7,13	SS	10"				5.0	
10.0	27, 50/5	SS	9"				10.0	
15.0	50/6	SS	6"		SANDY CLAYEY SILT: Dry dioritic partially weathered rock with small rock chunks.		15.0	
20.0	24, 50/6	SS	8"		CLAYEY SANDY SILT: Dry black and white mottled clayey fine sandy silt with some iron staining.		20.0	
25.0	50/6	SS	6"		SANDY CLAYEY SILT: Dry black and white mottled sandy clayey silt with mica.		25.0	
30.0	50/3	SS	3"		CLAYEY SAND: Dry white and brown clayey sand. A very weathered granitic rock type.		30.0	
					CLAYEY SAND: Dry white and brown clayey sand. A very weathered granitic rock type.			
35.0	50/3	SS	3"		SANDY CLAYEY SILT: Dry brown and green very weathered medium to fine sandy clayey silt with iron and manganese staining. 1" of sample indicates granitic parent rock.		35.0	
40.0	50/2	SS	2"		CLAYEY SAND: Moist white clayey sand, granitic PWR with large quartz grains. Boring Terminated at 40 feet below grade.		40.0	



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-31**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/RC/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **4/16/03** COMPLETED: **4/24/03**

TOTAL DEPTH: **42**
GROUND SURFACE ELEVATION: **693.94**
TOP OF CASING ELEVATION: **697.04**

STATIC WATER LEVEL (BLS)		
Depth (ft)	34.5	
Time	1:00 pm	
Date	4/24/03	

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SILTY CLAY: Moist black and tan mottled silty clay.		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0							4.0	
5.0	4,7,8	SS	10"		CLAYEY SILT: Moist to dry black and tan mottled clayey silt. Shelby tube sample collected at 10 feet.		5.0	
6.0							6.0	
7.0							7.0	
8.0							8.0	
9.0							9.0	
10.0	12,17,24	SS	12"				10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0							14.0	
15.0	9,10,12	SS	8"				15.0	
16.0							16.0	
17.0							17.0	
18.0							18.0	
19.0							19.0	
20.0	7,11,15	SS	10"		CLAYEY SILT: Moist black and white mottled fine sandy clayey silt.		20.0	
21.0							21.0	
22.0							22.0	
23.0							23.0	
24.0							24.0	
25.0	50/1	SS	1"		SANDY SILT: Dry black and white mottled sandy silt. Auger refusal at 27 feet below grade.		25.0	
26.0							26.0	
27.0				RC/AH	DIORITE: Rock cored from 27 to 37 feet. First two feet were very weathered and yielded no recovery. Second 2 feet of coring yielded 2 feet of recovered core. The final 6 feet of coring yielded 2 feet of recovered core. Total RQD = 30.5%, Total REC = 40%.		27.0	
28.0							28.0	
29.0							29.0	
30.0							30.0	
31.0							31.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-31**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/RC/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **4/16/03** COMPLETED: **4/24/03**

TOTAL DEPTH: **42**
GROUND SURFACE ELEVATION: **693.94**
TOP OF CASING ELEVATION: **697.04**

STATIC WATER LEVEL (BLS)		
Depth (ft)	34.5	
Time	1:00 pm	
Date	4/24/03	

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
32.0							32.0	
33.0							33.0	
34.0							34.0	
35.0							35.0	
36.0							36.0	
37.0				AH	DIORITE: Rock cored from 27 to 37 feet. First two feet were very weathered and yielded no recovery. Second 2 feet of coring yielded 2 feet of recovered core. The final 6 feet of coring yielded 2 feet of recovered core. Total RQD = 30.5%, Total REC = 40%.		37.0	
38.0					DIORITE: Drilled with air hammer to 42 feet. Waited 30 minutes and borehole had filled with water to a depth of 34.5 ft. below grade. Boring terminated at 42 feet.		38.0	
39.0							39.0	
40.0							40.0	
41.0							41.0	
42.0							42.0	

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FIELD BOREHOLE LOG

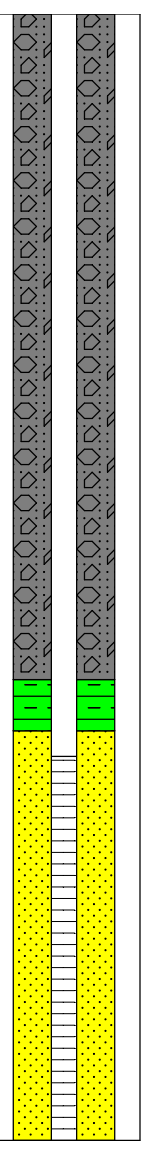
BOREHOLE NUMBER **PZ-32**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **D. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **4/16/03** COMPLETED: **4/16/03**

TOTAL DEPTH: **44**
GROUND SURFACE ELEVATION: **702.69**
TOP OF CASING ELEVATION: **705.39**

STATIC WATER LEVEL (BLS)		
Depth (ft)	37	38.83
Time	5:00 pm	8:00 am
Date	4/16/03	4/17/03

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY SILT: Dry, black and white mottled sandy silt with some iron and Mn staining.		0.0	
5.0	14,33,50/5	SS	8"				5.0	
10.0	50/6	SS	6"				10.0	
15.0	30,50/4	SS	6"				15.0	
20.0	50/2	SS	2"				20.0	
25.0	50/3	SS	6"				25.0	
30.0	50/3	SS	4"				30.0	
35.0	50/6	SS	4"		SANDY SILT: Moist orange and black mottled sandy silt with wide bands of iron staining. Auger refusal at 44 feet.		35.0	
40.0	50/0	SS	0"				40.0	
44.0							44.0	



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-32d**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/RC/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **4/17/03** COMPLETED: **4/24/03**

TOTAL DEPTH: **59**
GROUND SURFACE ELEVATION: **702.98**
TOP OF CASING ELEVATION: **706.08**

STATIC WATER LEVEL (BLS)		
Depth (ft)	55	
Time	3:50 pm	
Date	4/24/03	

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY SILT: Dry, black and white mottled sandy silt with some iron and Mn staining.		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0							4.0	
5.0							5.0	
6.0							6.0	
7.0							7.0	
8.0							8.0	
9.0							9.0	
10.0							10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0							14.0	
15.0							15.0	
16.0							16.0	
17.0							17.0	
18.0							18.0	
19.0							19.0	
20.0							20.0	
21.0							21.0	
22.0							22.0	
23.0							23.0	
24.0							24.0	
25.0							25.0	
26.0							26.0	
27.0							27.0	
28.0							28.0	
29.0							29.0	
30.0							30.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-32d**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/RC/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **4/17/03** COMPLETED: **4/24/03**

TOTAL DEPTH: **59**
GROUND SURFACE ELEVATION: **702.98**
TOP OF CASING ELEVATION: **706.08**

STATIC WATER LEVEL (BLS)		
Depth (ft)	55	
Time	3:50 pm	
Date	4/24/03	

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
30.0							30.0	
31.0							31.0	
32.0							32.0	
33.0							33.0	
34.0							34.0	
35.0					SANDY SILT: Moist orange and black mottled sandy silt with wide bands of iron staining. Auger refusal at 42 feet. Set casing at 42'.		35.0	
36.0							36.0	
37.0							37.0	
38.0							38.0	
39.0							39.0	
40.0							40.0	
41.0							41.0	
42.0					DIORITE: Rock core from 43 ft to 45 ft yielded 2 ft of recovery. Coring from 45 ft to 53 ft yielded only 6.5 ft of recovery. RQD = 58.4%. REC = 85%.		42.0	
43.0							43.0	
44.0				RC/AH			44.0	
45.0							45.0	
46.0							46.0	
47.0							47.0	
48.0							48.0	
49.0							49.0	
50.0							50.0	
51.0							51.0	
52.0							52.0	
53.0					DIORITE: Diorite drilled with air hammer. Cuttings were wet. Boring terminated at 59 feet.		53.0	
54.0				AH			54.0	
55.0							55.0	
56.0							56.0	
57.0							57.0	
58.0							58.0	
59.0							59.0	

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FIELD BOREHOLE LOG

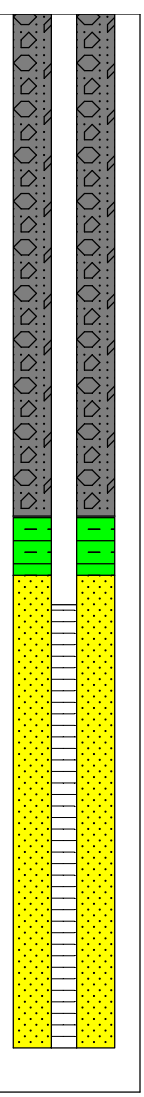
BOREHOLE NUMBER **PZ-33**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **D. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **4/16/03** COMPLETED: **4/16/03**

TOTAL DEPTH: **35**
GROUND SURFACE ELEVATION: **690.11**
TOP OF CASING ELEVATION: **693.11**

STATIC WATER LEVEL (BLS)		
Depth (ft)	25	25.32
Time	3:30 pm	8:00 am
Date	4/16/03	4/17/03

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY CLAYEY SILT: Red brown to black and white mottled sandy clayey silt. Moist. Some iron and Mn staining with trace mica.		0.0	
5.0	7,5,13	SS	12"				5.0	
10.0	3,5,7	SS	14"				10.0	
15.0	3,4,7	SS	11"				15.0	
20.0	7,5,7	SS	9"		SANDY CLAYEY SILT: Moist black and white mottled fine sandy clayey silt. Iron staining at 45 degree angles through sample.		20.0	
25.0	6,10,12	SS	10"		SANDY CLAYEY SILT: Very moist black and white mottled slightly fine sandy clayey silt with some mica. Iron and Mn staining present.		25.0	
30.0	5,9,10	SS	10"		SANDY CLAYEY SILT: Wet black and white mottled medium to fine sandy clayey silt with iron and Mn staining at 45 degree angles. Boring terminated at 35 feet. Water level at approximately 25 feet within 1/2 hour of drilling.		30.0	
35.0	12,22,31	SS	12"				35.0	



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FIELD BOREHOLE LOG

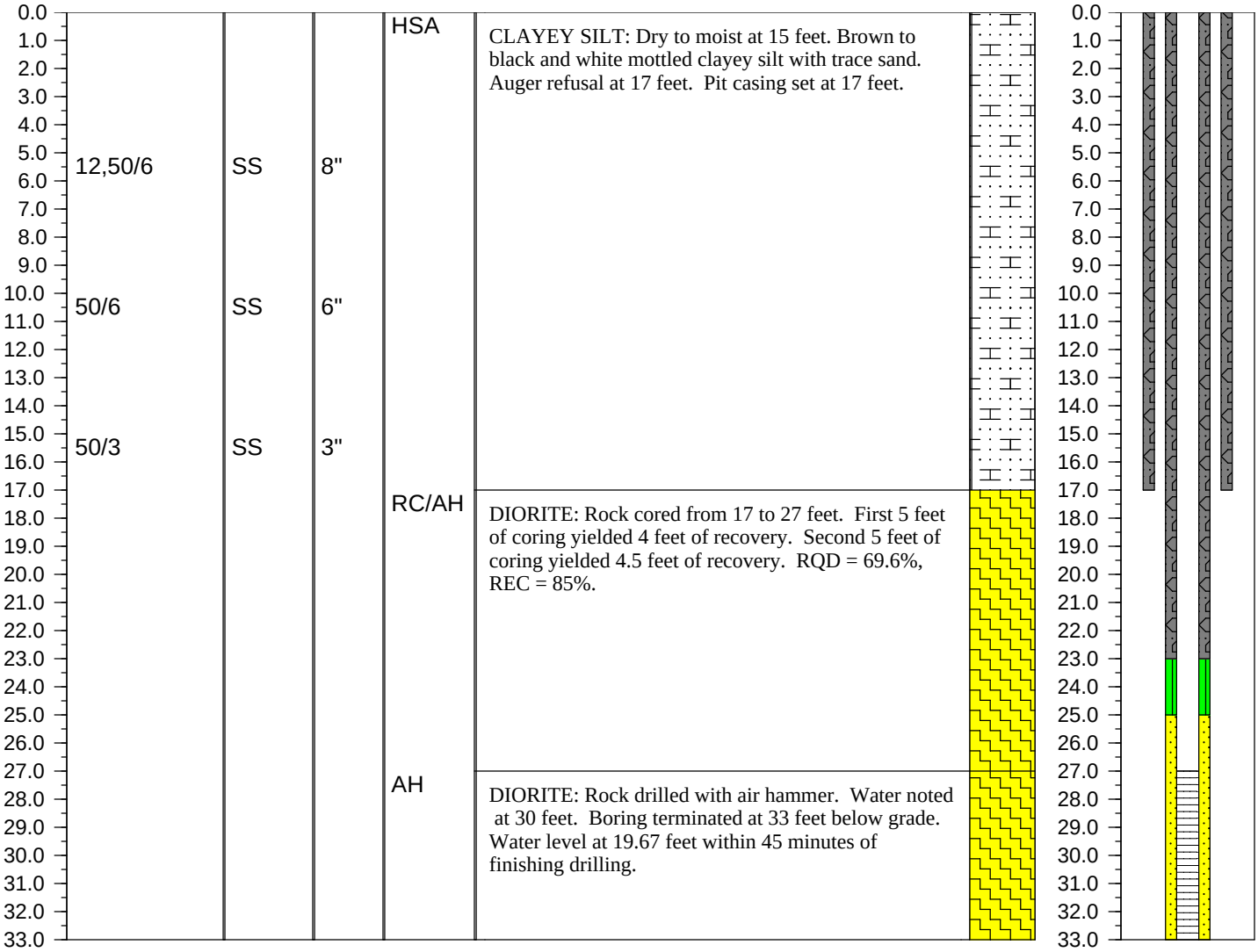
BOREHOLE NUMBER **PZ-34**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/RC/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **4/16/03** COMPLETED: **4/24/03**

TOTAL DEPTH: **33**
GROUND SURFACE ELEVATION: **671.88**
TOP OF CASING ELEVATION: **674.68**

STATIC WATER LEVEL (BLS)		
Depth (ft)	19.67	
Time	3:45 pm	
Date	4/24/03	

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0–17.0	12,50/6 (5.0–6.0); 50/6 (10.0–11.0); 50/3 (15.0–16.0)	SS	8"; 6"; 3"	HSA	CLAYEY SILT: Dry to moist at 15 feet. Brown to black and white mottled clayey silt with trace sand. Auger refusal at 17 feet. Pit casing set at 17 feet.			
17.0–27.0				RC/AH	DIORITE: Rock cored from 17 to 27 feet. First 5 feet of coring yielded 4 feet of recovery. Second 5 feet of coring yielded 4.5 feet of recovery. RQD = 69.6%, REC = 85%.			
27.0–33.0				AH	DIORITE: Rock drilled with air hammer. Water noted at 30 feet. Boring terminated at 33 feet below grade. Water level at 19.67 feet within 45 minutes of finishing drilling.			



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-35d**

PROJECT NAME: **Davidson County - Phase 2**
LOCATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **9/15/04** COMPLETED: **9/16/04**

TOTAL DEPTH: **73**
TOP OF CASING ELEV.: GROUND ELEV.:
NORTHING: **0** EASTING: **0**

STATIC WATER LEVEL (BLS)		
Depth (ft)		14.02
Time		4:10
Date		10/12/04

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				HSA	SILTY CLAY: Slightly moist granitic saprolitic silty clay. Sample has cast but no ribbon. Iron stained.		0.0	
5.0	5,6,9	SS					5.0	
10.0	3,3,4	SS					10.0	
15.0	2,3,4	SS					15.0	
20.0	3,6,9	SS			SILTY CLAY: Wet granitici saprolitic silty clay with iron staining at a 60 degree angle.		20.0	
25.0	7,7,10	SS			SILTY CLAY: Wet granitic saprolitic silty clay.		25.0	
30.0	6,9,15	SS					30.0	
35.0	11,16,22	SS					35.0	
40.0	15,21,29	SS					40.0	

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FIELD BOREHOLE LOG

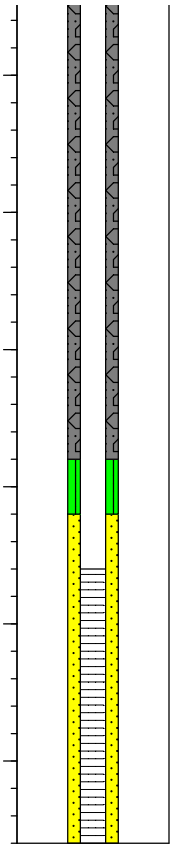
BOREHOLE NUMBER **PZ-35d**

PROJECT NAME: **Davidson County - Phase 2**
LOCATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **9/15/04** COMPLETED: **9/16/04**

TOTAL DEPTH: **73**
TOP OF CASING ELEV.: GROUND ELEV.:
NORTHING: **0** EASTING: **0**

STATIC WATER LEVEL (BLS)		
Depth (ft)		14.02
Time		4:10
Date		10/12/04

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
45.0							45.0	
	9,14,29	SS			SILTY CLAY: Wet granitic saprolitic silty clay to clayey silt. Iron and manganese staining. Could not take split spoons past 48' due to excessive water. BT @ 73 feet.			
50.0							50.0	
55.0							55.0	
60.0							60.0	
65.0							65.0	
70.0							70.0	



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FIELD BOREHOLE LOG

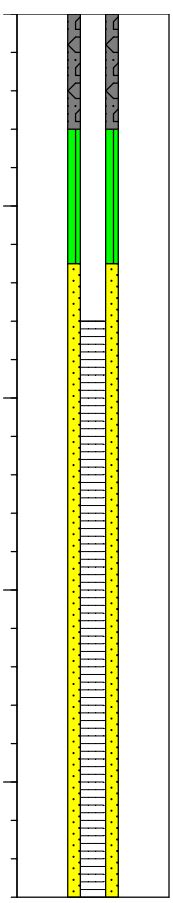
BOREHOLE NUMBER **PZ-35s** Page 1 of 1

PROJECT NAME: **Davidson County - Phase 2**
LOCATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **9/20/04** COMPLETED: **9/20/04**

TOTAL DEPTH: **23**
TOP OF CASING ELEV.: GROUND ELEV.:
NORTHING: **0** EASTING: **0**

STATIC WATER LEVEL (BLS)		
Depth (ft)	18	14.21
Time	3 pm	4:07
Date	9/20/04	10/12/04

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				HSA	SILTY CLAY: Slightly moist granitic saprolitic silty clay. Sample has cast but no ribbon. Iron stained.		0.0	
	5,6,9	SS	18"					
5.0							5.0	
	3,3,4	SS	15"					
10.0							10.0	
	2,3,4	SS	16"					
15.0							15.0	
	3,6,9	SS	14"		SILTY CLAY: Wet granitici saprolitic silty clay with iron staining at a 60 degree angle. Boring terminated at 23 feet.			
20.0							20.0	



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-36**

PROJECT NAME: **Davidson County - Phase 2**
LOCATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **9/20/04** COMPLETED: **9/20/04**

TOTAL DEPTH: **68**
TOP OF CASING ELEV.: GROUND ELEV.:
NORTHING: **0** EASTING: **0**

STATIC WATER LEVEL (BLS)		
Depth (ft)	43.	40.12
Time	5 pm	4:03
Date	9/20/04	10/12/04

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				HSA	CLAYEY SILT: Dry to moist , red, clayey silt white clay bands.		0.0	
	16,33,50	SS						
5.0							5.0	
	13,13,30	SS						
10.0							10.0	
	30,30,41	SS			CLAYEY SANDY SILT: Dry red clayey sandy silt to silty sand.			
15.0							15.0	
	30,50/3	SS			SANDY CLAYEY SILT: Dry red sandy clayey silt.			
20.0							20.0	
	27,30,32	SS			CLAYEY SILTY SAND: Moist, red, clayey silty sand to sandy silt with some Mn staining.			
25.0							25.0	
	12,15,21	SS			SANDY SILT: Moist, red, pink and white granitic saprolite that is sandy silt with Mn staining.			
30.0							30.0	
	27,35,40	SS						
35.0							35.0	
	31,39,42	SS						
40.0							40.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-36**

PROJECT NAME: **Davidson County - Phase 2**
LOCATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **9/20/04** COMPLETED: **9/20/04**

TOTAL DEPTH: **68**
TOP OF CASING ELEV.: GROUND ELEV.:
NORTHING: **0** EASTING: **0**

STATIC WATER LEVEL (BLS)		
Depth (ft)	43.	40.12
Time	5 pm	4:03
Date	9/20/04	10/12/04

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
45.0	36,50/6	SS			SILTY SAND: Moist to wet coarse grained red, and white granitic saprolite with Mn staining.		45.0	
50.0	50/6	SS					50.0	
55.0	50/3	SS					55.0	
60.0	50/1	SS			SAND: Wet sand. Split spoon empty upon removal so cuttings sampled. Boring terminated at 68 feet.		60.0	
65.0		SS					65.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-37**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **9/21/04** COMPLETED: **9/21/04**

TOTAL DEPTH: **27**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (BLS)		
Depth (ft)	19	16.98
Time	2 pm	4:15
Date	9/21/04	10/12/04

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SILTY SAND: Dry to moist, tan and black, silty sand granitic sarprolite with Mn staining.		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0	11,21,37	SS	18"				4.0	
5.0							5.0	
6.0							6.0	
7.0							7.0	
8.0							8.0	
9.0	6,9,15	SS	10"				9.0	
10.0							10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0	4,8,28	SS	8"		CLAYEY SANDY GRAVEL: Moist red brown clayey sandy gravel sarprolite.		14.0	
15.0							15.0	
16.0							16.0	
17.0							17.0	
18.0							18.0	
19.0	50/3	SS	3"		CLAYEY GRAVEL: Wet clayey gravel saprolite with large quartz grains. Boring terminated at 27 feet below grade.		19.0	
20.0							20.0	
21.0							21.0	
22.0							22.0	
23.0							23.0	
24.0	50/2	SS	2"				24.0	
25.0							25.0	
26.0							26.0	
27.0							27.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-37d**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **9/21/04** COMPLETED: **10/14/06**

TOTAL DEPTH: **44**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (BLS)		
Depth (ft)		
Time		
Date		

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SILTY SAND: Dry to moist, tan and black, silty sand granitic sarprolite with Mn staining.		0.0	
5.0	11,21,37	SS	18"				5.0	
10.0	6,9,15	SS	10"				10.0	
14.0							14.0	
15.0	4,8,28	SS	8"		CLAYEY SANDY GRAVEL: Moist red brown clayey sandy gravel sarprolite.		15.0	
19.0							19.0	
20.0	50/3	SS	3"		CLAYEY GRAVEL: Wet clayey gravel saprolite with large quartz grains. AR at 30'. Air hammer to 34' to set outer casing in rock.		20.0	
25.0	50/2	SS	2"				25.0	
30.0				AH/RC	DIABASE: Rock cored from 34' to 44' REC=95%, RQD=39%. Weathered diabase. Boring terminated at 44 feet.		30.0	
44.0							44.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-38**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **9/22/04** COMPLETED: **9/22/04**

TOTAL DEPTH: **34**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (BLS)		
Depth (ft)	19	7.74
Time	10:30 pm	3:15 pm
Date	9/22/04	10/12/04

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SILTY SAND: Dry, tan to pink granitic saprolite of silty sand with quartz crystals.		0.0	
3.0	11,17,29	SS	15"					
8.0	30,50/4	SS	6"		SILTY SAND: Wet tan granitic silty sand saprolite with quartz and mica.		8.0	
13.0	50/4	SS	4"				13.0	
18.0	50/1	Grab	0"		SAND: Wet granitic gravelly sandy saprolite with some quartz gravel. Boring Terminated at 34 feet.		18.0	
23.0		Grab					23.0	
28.0		Grab					28.0	
33.0		Grab					33.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-38d**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **9/21/04** COMPLETED: **10/13/04**

TOTAL DEPTH: **50.3**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (BLS)		
Depth (ft)		8.37
Time		7:57
Date		10/14/04

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SILTY SAND: Dry, tan to pink granitic saprolite of silty sand with quartz crystals.		0.0	
1.0							1.0	
2.0							2.0	
3.0	11,17,29	SS	15"				3.0	
4.0							4.0	
5.0							5.0	
6.0							6.0	
7.0							7.0	
8.0	30,50/4	SS	6"		SILTY SAND: Wet tan granitic silty sand saprolite with quartz and mica.		8.0	
9.0							9.0	
10.0							10.0	
11.0							11.0	
12.0							12.0	
13.0	50/4	SS	4"				13.0	
14.0							14.0	
15.0							15.0	
16.0							16.0	
17.0							17.0	
18.0	50/1	Grab	0"		SAND: Wet granitic gravelly sandy saprolite with some quartz gravel. AR @ 33'.		18.0	
19.0							19.0	
20.0							20.0	
21.0							21.0	
22.0							22.0	
23.0		Grab					23.0	
24.0							24.0	
25.0							25.0	
26.0							26.0	
27.0							27.0	
28.0		Grab					28.0	
29.0							29.0	
30.0							30.0	

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FIELD BOREHOLE LOG

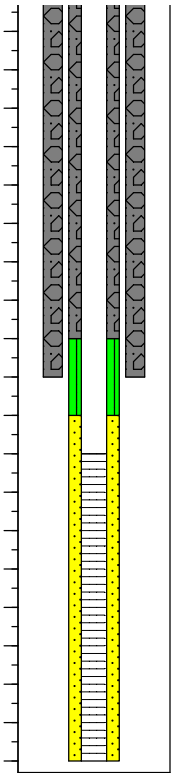
BOREHOLE NUMBER **PZ-38d**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **9/21/04** COMPLETED: **10/13/04**

TOTAL DEPTH: **50.3**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (BLS)		
Depth (ft)		8.37
Time		7:57
Date		10/14/04

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
30.0							30.0	
31.0							31.0	
32.0							32.0	
33.0		Grab		AH	BIOTITE GNEISS: Drilled by Air Hammer from 33' to 40.3' and set casing. Rock Cored from 40.4' to 50.4' REC=97.5%, RQD=61.25%. Rock type is a white biotite gneiss with most fracturing on a 45 degree angle. BT @ 50.3'.		33.0	
34.0							34.0	
35.0							35.0	
36.0							36.0	
37.0							37.0	
38.0							38.0	
39.0							39.0	
40.0							40.0	
41.0				RC			41.0	
42.0							42.0	
43.0							43.0	
44.0							44.0	
45.0							45.0	
46.0							46.0	
47.0							47.0	
48.0							48.0	
49.0							49.0	
50.0							50.0	



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-39**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **9/22/04** COMPLETED: **10/12/04**

TOTAL DEPTH: **36.3**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (BLS)		
Depth (ft)	21	20.45
Time	1:10 pm	7:45 am
Date	9/22/04	10/14/04

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SILTY CLAY: Dry, brown, tan and pink silty clay. Black and white mottled with iron staining.		0.0	
1.0							1.0	
2.0							2.0	
3.0	7,10,20	SS	10"				3.0	
4.0							4.0	
5.0							5.0	
6.0							6.0	
7.0							7.0	
8.0	14,20,29	SS	8"				8.0	
9.0							9.0	
10.0							10.0	
11.0							11.0	
12.0							12.0	
13.0				AH	DIORITE: Auger refusal at 13 feet switch to air hammer to 21 feet to get competent bedr (rock is extremely weathered but not augerable). Coring from 21.3' to 36.3' REC=54% RQD=22%. Soft seams at 21.75 to 22 feet and at 30 feet. BT at 36.3'.		13.0	
14.0							14.0	
15.0							15.0	
16.0							16.0	
17.0							17.0	
18.0							18.0	
19.0							19.0	
20.0							20.0	
21.0							21.0	
22.0				RC/AH			22.0	
23.0							23.0	
24.0							24.0	
25.0							25.0	
26.0							26.0	
27.0							27.0	
28.0							28.0	
29.0							29.0	
30.0							30.0	
31.0							31.0	
32.0							32.0	
33.0							33.0	
34.0							34.0	
35.0							35.0	
36.0							36.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-40**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **9/22/04** COMPLETED: **9/23/04**

TOTAL DEPTH: **64**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (BLS)		
Depth (ft)	--	9.61
Time	--	3:20 pm
Date	--	10/12/04

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SILTY CLAY: Moist red, tan and gray silty clay with iron staining and trace of granitic saprolite.		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0	4,6,7	SS	8"				4.0	
5.0							5.0	
6.0							6.0	
7.0							7.0	
8.0							8.0	
9.0	3,4,5	SS	10"				9.0	
10.0							10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0	5,7,9	SS	10"		SILT: Moist to wet, black and white mottled silt with iron staining.		14.0	
15.0							15.0	
16.0							16.0	
17.0							17.0	
18.0							18.0	
19.0	7,10,18	SS	9"		CLAYEY SILT: Moist to wet, black and white clayey silt with iron staining with some coarse grained sand.		19.0	
20.0							20.0	
21.0							21.0	
22.0							22.0	
23.0							23.0	
24.0	10,12,16	SS	10"		SANDY SILT: Moist to wet, black and white sandy silt with iron staining. Dry from 28.5 to 33.5 feet.		24.0	
25.0							25.0	
26.0							26.0	
27.0							27.0	
28.0							28.0	
29.0	50/3	SS	3"				29.0	
30.0							30.0	
31.0							31.0	
32.0							32.0	
33.0							33.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-40**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **9/22/04** COMPLETED: **9/23/04**

TOTAL DEPTH: **64**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (BLS)		
Depth (ft)	--	9.61
Time	--	3:20 pm
Date	--	10/12/04

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
33.0							33.0	
34.0	50/3	SS	3"		SANDY SILT: Alternating dry and wet layers of black and white mottled sandy silt with granitic saprolite.		34.0	
35.0							35.0	
36.0							36.0	
37.0							37.0	
38.0							38.0	
39.0	35,50/6	SS	6"				39.0	
40.0							40.0	
41.0							41.0	
42.0							42.0	
43.0							43.0	
44.0	50/3	SS	3"				44.0	
45.0							45.0	
46.0							46.0	
47.0							47.0	
48.0		Grab			GRAVEL: Split spoon refulsal, however augers still cut. Cuttings are quartz gravel ranging from dry to moist and finally wet at 64'. Some silt noted at 60 feet also. Boring terminated at 64 feet.		48.0	
49.0							49.0	
50.0							50.0	
51.0							51.0	
52.0		Grab					52.0	
53.0							53.0	
54.0							54.0	
55.0							55.0	
56.0		Grab					56.0	
57.0							57.0	
58.0							58.0	
59.0							59.0	
60.0		Grab					60.0	
61.0							61.0	
62.0							62.0	
63.0							63.0	
64.0							64.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-41d**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/RC/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **9/29/04** COMPLETED: **10/11/04**

TOTAL DEPTH: **54.17**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (BLS)		
Depth (ft)	18.44	18.87
Time	3:35	
Date	10/12/04	10/18/04

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SILTY CLAY: Dry to moist, red brown silty clay with some ribbon and cast.		0.0	
3.0	6,8,13	SS					3.0	
8.0	6,10,12	SS			CLAYEY SILT: Dry red brown clayay silt		8.0	
13.0	8,11,13	SS					13.0	
18.0	10,10,12	SS			SANDY SILT: Moist tan fine sandy silt. Outer casing set at 28.5'. Casing broke near bottom, had to advance steel casing within to seal it off.		18.0	
23.0	9,10,11	SS					23.0	
28.0	50/1	SS		RC	GRANITE: Highly weathered granite. Rock cored from 28.92' to 38.92'. REC=40%, RQD=0%. Steel casing advanced to 43 feet to find more competent bedrock. Very feldspar rich granite to 38', then granodiorite.		28.0	
33.0							33.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-41d**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/RC/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **9/29/04** COMPLETED: **10/11/04**

TOTAL DEPTH: **54.17**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (BLS)		
Depth (ft)	18.44	18.87
Time	3:35	
Date	10/12/04	10/18/04

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
33.0							33.0	
34.0							34.0	
35.0							35.0	
36.0							36.0	
37.0							37.0	
38.0							38.0	
39.0	50/0	SS					39.0	
40.0							40.0	
41.0							41.0	
42.0							42.0	
43.0	50/0						43.0	
44.0					GRANITE APLITE: Rock cored from 44.17' to 49.17'. REC=55%, RQD=0%. Granite aplite		44.0	
45.0							45.0	
46.0							46.0	
47.0							47.0	
48.0							48.0	
49.0							49.0	
50.0					GRANITE APLITE: Rock cored from 49.17' to 54.17'. REC=83%, RQD=17%. Granite aplite to 53' then diorite. BT at 54.17 feet.		50.0	
51.0							51.0	
52.0							52.0	
53.0							53.0	
54.0							54.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-41S**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **9/29/04** COMPLETED: **9/29/04**

TOTAL DEPTH: **23**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (BLS)		
Depth (ft)	22	
Time	9 am	
Date	9/29/04	

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SILTY CLAY: Dry to moist, red brown silty clay with some ribbon and cast.		0.0	
1.0							1.0	
2.0							2.0	
3.0	6,8,13	SS					3.0	
4.0							4.0	
5.0							5.0	
6.0							6.0	
7.0							7.0	
8.0	6,10,12	SS			CLAYEY SILT: Dry red brown clayay silt		8.0	
9.0							9.0	
10.0							10.0	
11.0							11.0	
12.0							12.0	
13.0	8,11,13	SS					13.0	
14.0							14.0	
15.0							15.0	
16.0							16.0	
17.0							17.0	
18.0	10,10,12	SS			SANDY SILT: Moist tan fine sandy silt. Boring Terminated at 23 feet.		18.0	
19.0							19.0	
20.0							20.0	
21.0							21.0	
22.0							22.0	
23.0							23.0	

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FIELD BOREHOLE LOG

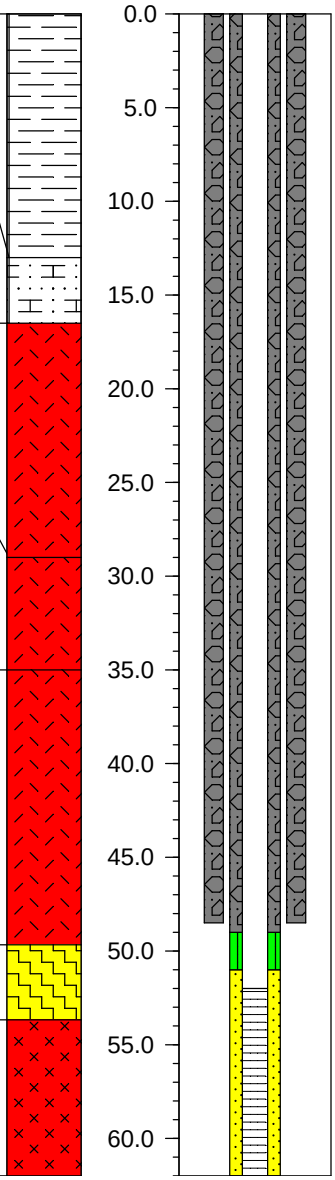
BOREHOLE NUMBER **PZ-42d** Page 1 of 1

PROJECT NAME: **Davidson County - Phase 2**
LOCATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **10/7/04** COMPLETED: **10/12/04**

TOTAL DEPTH: **62**
TOP OF CASING ELEV.**0** GROUND ELEV.:
NORTHING: **0** EASTING: **0**

STATIC WATER LEVEL (BLS)		
Depth (ft)	28.19	
Time	3:49	
Date	10/12/04	

DEPTH Feet	HEADSPACE (ppm)	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				HSA	SILTY CLAY: Dry green, black and white mottled silty clay/saprolite.		0.0	
5.0	5,7,10	SS					5.0	
10.0		SS					10.0	
15.0		SS			CLAYEY SILT: Dry iron stained red brown and whitish clayey silt/saprolite. Auger Refusal at 16.5 feet		15.0	
20.0					GRANITE: Cored from 18 to 29 feet with 22% recovery. Very weathered granite.		20.0	
25.0							25.0	
30.0				AH	GRANITE: Attempted to core from 29 to 34 feet. No compression on core-bit and NO RECOVERY. Took split spoon sample at 35 feet with 50/1 SPT and NO Recovery.		30.0	
35.0		SS			GRANITE: Alternating hard and soft layers of granite with no layers being particularly hard, just relatively harder than others. Casing set at 48.5 feet.		35.0	
40.0							40.0	
45.0							45.0	
50.0				RC	DIORITE: Upper 4 foot of core has RQD=27%.		50.0	
55.0					GRANODIORITE: Total RQD=77% for core from 49.67 to 59.67. REC=85%. Boring over-reamed with Air Hammer and drilled to 62 feet for well installation.		55.0	
60.0							60.0	



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-42s** Page 1 of 1

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **9/30/04** COMPLETED: **10/7/04**

TOTAL DEPTH: **35**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (BLS)		
Depth (ft)		29.93
Time		3:48 pm
Date		10/12/04

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SILTY CLAY: Dry green, black and white mottled silty clay/saprolite.		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0	5,7,10	SS					4.0	
5.0							5.0	
6.0							6.0	
7.0							7.0	
8.0		SS					8.0	
9.0							9.0	
10.0							10.0	
11.0							11.0	
12.0							12.0	
13.0		SS					13.0	
14.0					CLAYEY SILT: Dry iron stained red brown and whitish clayey silt/saprolite. Auger Refusal at 16.5 feet		14.0	
15.0							15.0	
16.0							16.0	
17.0					GRANITE: Cored from 18 to 29 feet with 22% recovery. Very weathered granite.		17.0	
18.0				RC			18.0	
19.0							19.0	
20.0							20.0	
21.0							21.0	
22.0							22.0	
23.0							23.0	
24.0							24.0	
25.0							25.0	
26.0							26.0	
27.0							27.0	
28.0							28.0	
29.0					PWR: Highly weathered, not competent granitic PWR. Layers of rock are interbedded with layers of soil. Attempted to core from 29 to 34 feet. No compression on core-bit and NO RECOVERY. Took split spoon sample at 35 feet with 50/1 SPT and NO Recovery. BT @ 35 feet.		29.0	
30.0							30.0	
31.0							31.0	
32.0							32.0	
33.0							33.0	
34.0							34.0	
35.0		SS					35.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-43d** Page 1 of 1

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **10/1/04** COMPLETED: **10/13/04**

TOTAL DEPTH: **31**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (BLS)		
Depth (ft)		
Time		
Date		

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY SILT: Dry light tan sandy silt.		0.0	
3.0	5,8,11	SS						
8.0	4,6,12	SS			SILTY SAND: Moist light reddish tan silty sand. AR at 18 feet.			
13.0	12,15,20	SS						
18.0				AH	BIOTITE GNEISS: White biotite gneiss. Rock cored from 21 to 31 feet. REC=62%, RQD=12.5%. BT @ 31'.			
21.0				RC/AH				

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-43s**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **10/1/04** COMPLETED: **10/1/04**

TOTAL DEPTH: **18**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (BLS)		
Depth (ft)		
Time		
Date		

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY SILT: Dry light tan sandy silt.		0.0	
1.0							1.0	
2.0							2.0	
3.0	5,8,11	SS					3.0	
4.0							4.0	
5.0							5.0	
6.0							6.0	
7.0							7.0	
8.0	4,6,12	SS			SILTY SAND: Moist light reddish tan silty sand. AR at 18 feet.		8.0	
9.0							9.0	
10.0							10.0	
11.0							11.0	
12.0							12.0	
13.0	12,15,20	SS					13.0	
14.0							14.0	
15.0							15.0	
16.0							16.0	
17.0							17.0	
18.0							18.0	

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FIELD BOREHOLE LOG

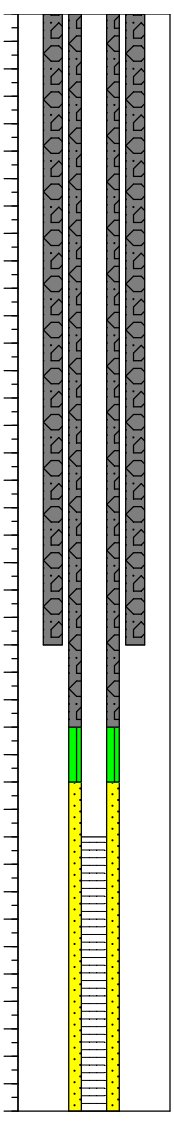
BOREHOLE NUMBER **PZ-44d** Page 1 of 1

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **10/5/04** COMPLETED: **10/5/04**

TOTAL DEPTH: **40**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (BLS)		
Depth (ft)	17.54	
Time	3:43	
Date	10/12/04	

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	CLAY: Moist, brown and black saprolitic clay.		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0	5,9,12	SS					4.0	
5.0							5.0	
6.0							6.0	
7.0							7.0	
8.0							8.0	
9.0	5,9,20	SS					9.0	
10.0							10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0							14.0	
15.0							15.0	
16.0					SILT: Dry black and white mottled silt saprolite with some iron staining. AR at 20 feet, Outer casing set at 23'.		16.0	
17.0							17.0	
18.0	25,50.3	SS					18.0	
19.0							19.0	
20.0				AH	GABBRO: Cored from 23 to 33 feet. REC=100%, RQD=40%. Core hole reamed out with Air Hammer to a depth of 40 feet. BT @ 40'.		20.0	
21.0							21.0	
22.0							22.0	
23.0							23.0	
24.0							24.0	
25.0							25.0	
26.0							26.0	
27.0							27.0	
28.0							28.0	
29.0							29.0	
30.0							30.0	
31.0							31.0	
32.0							32.0	
33.0							33.0	
34.0							34.0	
35.0							35.0	
36.0							36.0	
37.0							37.0	
38.0							38.0	
39.0							39.0	
40.0							40.0	



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-44s** Page 1 of 1

PROJECT NAME: **Davidson County - Phase 2**
LOCATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **10/5/04** COMPLETED: **10/5/04**

TOTAL DEPTH: **21**
TOP OF CASING ELEV.**0** GROUND ELEV.:
NORTHING: **0** EASTING: **0**

STATIC WATER LEVEL (BLS)		
Depth (ft)	20.66	17.60
Time		3:40 pm
Date	10/5/04	10/12/04

DEPTH Feet	HEADSPACE (ppm)	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				HSA	CLAY: Moist, brown and black saprolitic clay.		0.0	
	5,9,12	SS						
5.0							5.0	
	5,9,20	SS						
10.0							10.0	
15.0					SILT: Dry black and white mottled silt saprolite with some iron staining. AR at 20 feet, BT at 21 feet.		15.0	
	25,50.3	SS						
20.0				AH			20.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-45d**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **10/14/04** COMPLETED: **10/18/04**

TOTAL DEPTH: **69**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (BLS)		
Depth (ft)		
Time		
Date		

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	CLAYEY SILT: Moist, green, black and tan clayey silt saprolite		0.0	
3.0	12,20,33	SS					3.0	
8.0	15,27,40	SS					8.0	
13.0	17,34,42	SS					13.0	
18.0	37,50/5	SS					18.0	
23.0	15,25,40	SS			SILT: Dry green, black and tan silt saprolite		23.0	
28.0	17,27,41	SS			CLAYEY SILT: Moist to wet green black and tan clayey silt saprolite.		28.0	
33.0	14,27,31	SS					33.0	
38.0	17,25,34	SS					38.0	
40.0					CLAYEY SILT: Moist to wet green black and tan clayey silt saprolite. AR at 52 feet. Air hammer used to set outer casing to 58 feet.		40.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-45d**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **10/14/04** COMPLETED: **10/18/04**

TOTAL DEPTH: **69**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (BLS)		
Depth (ft)		
Time		
Date		

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
42.0							42.0	
43.0	21,32,50/5	SS					43.0	
44.0							44.0	
45.0							45.0	
46.0							46.0	
47.0							47.0	
48.0	50/6	SS					48.0	
49.0							49.0	
50.0							50.0	
51.0							51.0	
52.0				AH/RC	DIORITE: Highly weathered diorite. Cored from 58.6' to 68.6 feet. REC=15%, RQD=3% Boring over-reamed by Air Hammer to 69'.		52.0	
53.0							53.0	
54.0							54.0	
55.0							55.0	
56.0							56.0	
57.0							57.0	
58.0							58.0	
59.0							59.0	
60.0							60.0	
61.0							61.0	
62.0							62.0	
63.0							63.0	
64.0							64.0	
65.0							65.0	
66.0							66.0	
67.0							67.0	
68.0							68.0	
69.0							69.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-45s**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **10/14/04** COMPLETED: **10/18/04**

TOTAL DEPTH: **52**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (BLS)		
Depth (ft)		
Time		
Date		

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	CLAYEY SILT: Moist, green, black and tan clayey silt saprolite		0.0	
1.0							1.0	
2.0							2.0	
3.0	12,20,33	SS					3.0	
4.0							4.0	
5.0							5.0	
6.0							6.0	
7.0							7.0	
8.0	15,27,40	SS					8.0	
9.0							9.0	
10.0							10.0	
11.0							11.0	
12.0							12.0	
13.0	17,34,42	SS					13.0	
14.0							14.0	
15.0							15.0	
16.0							16.0	
17.0							17.0	
18.0	37,50/5	SS					18.0	
19.0							19.0	
20.0							20.0	
21.0							21.0	
22.0							22.0	
23.0	15,25,40	SS			SILT: Dry green, black and tan silt saprolite		23.0	
24.0							24.0	
25.0							25.0	
26.0							26.0	
27.0							27.0	
28.0	17,27,41	SS			CLAYEY SILT: Moist to wet green black and tan clayey silt saprolite.		28.0	
29.0							29.0	
30.0							30.0	
31.0							31.0	
32.0							32.0	
33.0	14,27,31	SS					33.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-45s**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **10/14/04** COMPLETED: **10/18/04**

TOTAL DEPTH: **52**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (BLS)		
Depth (ft)		
Time		
Date		

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
33.0							33.0	
34.0							34.0	
35.0							35.0	
36.0							36.0	
37.0							37.0	
38.0	17,25,34	SS					38.0	
39.0							39.0	
40.0					CLAYEY SILT: Moist to wet, green to black and tan clayey silt saprolite. AR @ 52 feet.		40.0	
41.0							41.0	
42.0							42.0	
43.0	21,32,50/5	SS					43.0	
44.0							44.0	
45.0							45.0	
46.0							46.0	
47.0							47.0	
48.0	50/6	SS					48.0	
49.0							49.0	
50.0							50.0	
51.0							51.0	
52.0							52.0	

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FIELD BOREHOLE LOG

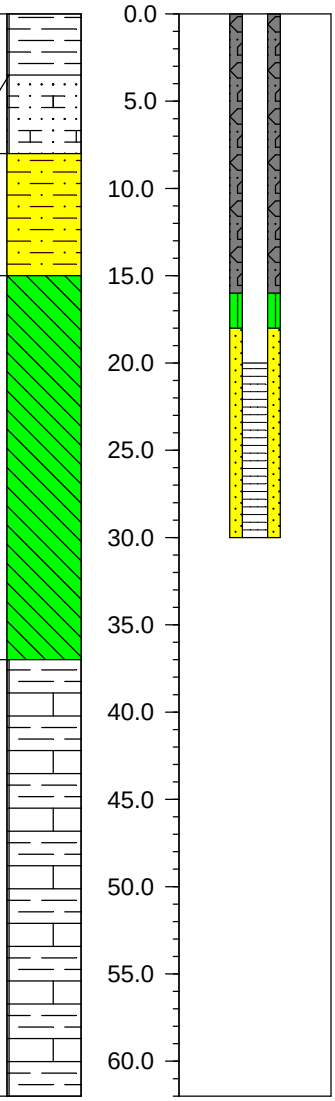
BOREHOLE NUMBER **PZ-46** Page 1 of 1

PROJECT NAME: **Davidson County - Phase 2**
LOCATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **GP/AH**
FIELD PARTY: **John Burr**
GEOLOGIST: **G. Mills**
DATE BEGUN: **11/5/10** COMPLETED: **11/16/10**

TOTAL DEPTH: **62**
TOP OF CASING ELEV.**686.8** GROUND ELEV.:
NORTHING: **767182.539** EASTING: **1649922.196**

STATIC WATER LEVEL (BLS)		
Depth (ft)		
Time		
Date		

DEPTH Feet	HEADSPACE (ppm)	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0		GP		GP	SILTY CLAY: Upper 6 inches is topsoil underlain by moist red-brown silty clay.		0.0	
5.0					CLAYEY SILT: Moist tan-yellow clayey silt.		5.0	
10.0		GP			SILT: Tan silt with relict rock structure.		10.0	
15.0					CLAY: Moist grayish white, tan and brown clay. Iron staining visible. Some trace sand from 21 - 30 feet below grade.		15.0	
20.0		GP					20.0	
25.0							25.0	
30.0		GP					30.0	
35.0							35.0	
40.0		GRAB		AH	PWR: Dry partially weathered rock. Boring drilled to 62 feet. Significant water encountered at 62. Borehole collapsed after drilling. No bedrock encountered. New boring drilled to 30 feet adjacent to first borehole. Piezometer set at 30 feet.		40.0	
45.0							45.0	
50.0		GRAB					50.0	
55.0							55.0	
60.0		GRAB					60.0	



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ENGINEERING & GEOLOGICAL SERVICES

FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-47** Page 1 of 1

PROJECT NAME: **Davidson Co Phase 2 Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Geologic Explorations**
DRILLING METHOD: **GP**
FIELD PARTY: **Johnny Burr**
GEOLOGIST: **Lindsay Quant**
DATE BEGUN: **11/11/10** COMPLETED: **11/12/10**

TOTAL DEPTH: **15**
TOP OF CASING ELEV.**703.3** GROUND ELEV.: **700.81**
NORTHING: **767260.956** EASTING: **1650493.443**

STATIC WATER LEVEL (BLS)		
Depth (ft)	8.43	
Time	4:00	
Date	11/15/10	

DEPTH Feet	HEADSPACE (ppm)	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				GP	CLAY: Moist to wet darkbrown clay.		0.0	
5.0		MC			CLAY: Moist red to gray clay with partically weathered rock (PWR) and iron staining.		5.0	
					SANDY SILT: Dry red brown sandy silt with PWR.			
10.0		MC			CLAY: Very wet brown clay		10.0	
					PWR: Dry gray white and red PWR with crushed rock. Geoprobe refusal at 15 feet.			
15.0							15.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-48**

PROJECT NAME: **Davidson Co Phase 2 Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Geologic Explorations**
DRILLING METHOD: **GP**
FIELD PARTY: **Johnny Burr**
GEOLOGIST: **Lindsay Quant**
DATE BEGUN: **11/11/10** COMPLETED: **11/12/10**

TOTAL DEPTH: **33**
TOP OF CASING ELEV.**722.73** GROUND ELEV.: **720.29**
NORTHING: **66525.827** EASTING: **1650994.643**

STATIC WATER LEVEL (BLS)		
Depth (ft)	26.11	
Time	4:10	
Date	11/15/10	

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				GP	CLAY: Moist brown and black clay.		0.0	
5.0		MC			CLAY: Moist brown red and black clay with partically weathered rock (PWR).		5.0	
					SANDY SILT: Moist gray white and red sandy silt with PWR.			
10.0		MC			SILT: Moist gray red and white silt and PWR		10.0	
15.0		MC					15.0	
20.0		MC			SILTY CLAY: Moist dark gray silty clay.		20.0	
25.0		MC			SILTY CLAY: Moist dark gray silty clay with layers of silt and sand. Water encountered and geoprobe refusal at 32 feet.		25.0	
30.0		MC					30.0	

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FIELD BOREHOLE LOG

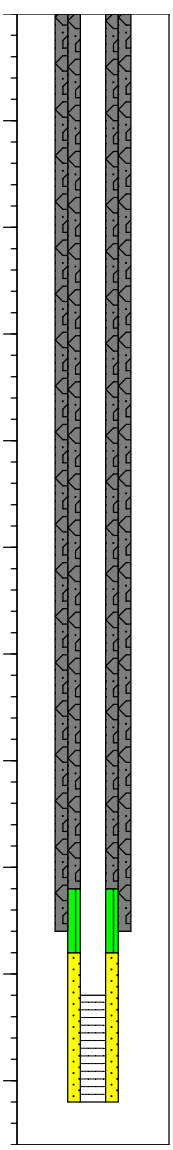
BOREHOLE NUMBER **PZ-49**

PROJECT NAME: **Davidson Co Phase 2 Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Geologic Explorations**
DRILLING METHOD: **GP/AH**
FIELD PARTY: **Johnny Burr**
GEOLOGIST: **Lindsay Quant**
DATE BEGUN: **11/9/10** COMPLETED: **11/23/10**

TOTAL DEPTH: **53**
TOP OF CASING ELEV.**721.46** GROUND ELEV.: **718.49**
NORTHING: **766785.737** EASTING: **1650283.347**

STATIC WATER LEVEL (BLS)		
Depth (ft)	32.37	
Time	11:00 am	
Date	12/22/10	

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				GP/RC	CLAY: Moist brown and black clay.		0.0	
5.0		MC			CLAY: Moist brown red and black clay with partically weathered rock (PWR).		5.0	
10.0		MC			SANDY SILT: Moist gray white and red sandy silt with PWR.		10.0	
15.0		MC			SILT: Moist gray red and white silt and PWR		15.0	
20.0		MC			SILTY CLAY: Moist dark gray silty clay.		20.0	
25.0		<C			SILTY CLAY: Moist dark gray silty clay with layers of silt and sand. Geoprobe refusal at 32 feet.		25.0	
30.0		MC					30.0	
35.0					PWR: Dry partially weathered rock (PWR). Drilled by air hammer to competent rock at 43 feet and set 6-inch outer casing at 43'. Water encountered at 42 feet.		35.0	
40.0							40.0	
45.0					DIABASE: Dry competent bedrock. Rock cored from 43' to 53'. RQD = 99.3%. Recovery = 99%. Boring reamed out by air hammer. Air hammer drilled to 51 feet. Water encountered at ~50 feet.		45.0	
50.0							50.0	



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-50**

PROJECT NAME: **Davidson County - Phase 2**
LOCATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **Geoprobe/AH**
FIELD PARTY: **John Burr**
GEOLOGIST: **L. Quant**
DATE BEGUN: **11/8/10** COMPLETED: **11/8/10**

TOTAL DEPTH: **40**
TOP OF CASING ELEV.**704.36** GROUND ELEV.: **701.46**
NORTHING: **766525.827** EASTING: **1650994.643**

STATIC WATER LEVEL (BLS)		
Depth (ft)	26.45	
Time	11:15 am	
Date	12/22/10	

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				GP	SAND: Dry, brown, gray medium sand partially weathered rock.		0.0	
5.0		MC					5.0	
10.0		MC					10.0	
					SILT: Dry, brown, tan gray silt - partially weathered rock.			
15.0		MC					15.0	
20.0		MC		RC/AH	SANDY CLAY: Dry, brown sandy clay. Geoprobe refusal at 21 feet. Outer casing (for coring) set to 25'.		20.0	
25.0					PWR: Highly weathered granite. Rock core from 25' to 35' yielded no recovery. Boring air hammered from 25' - 40'. Water encountered at approximately 40 feet. BT @ 40'.		25.0	
30.0							30.0	
35.0							35.0	
40.0							40.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-51**

PROJECT NAME: **Davidson Co Phase 2 Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Geologic Explorations**
DRILLING METHOD: **GP/AH**
FIELD PARTY: **Johnny Burr**
GEOLOGIST: **Lindsay Quant**
DATE BEGUN: **11/11/10** COMPLETED: **11/11/10**

TOTAL DEPTH: **18**
TOP OF CASING ELEV. **683.35** GROUND ELEV.: **681.34**
NORTHING: **765890.517** EASTING: **1650491.315**

STATIC WATER LEVEL (BLS)		
Depth (ft)	11.52	
Time	4:15	
Date	11/15/10	

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				GP/AH	SILTY CLAY: Dry gray red silty clay.		0.0	
5.0		MC					5.0	
					CLAY: Very wet brown clay with ribbon and cast.			
10.0		MC			SANDY SILT: Dry to moist gray red sandy silt. Geoprobe refusal at 14 feet.		10.0	
15.0					PWR: Moist to wet partially weathered granitic rock (PWR). Air hammer drilled to 18 feet, then boring terminated.		15.0	

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FIELD BOREHOLE LOG

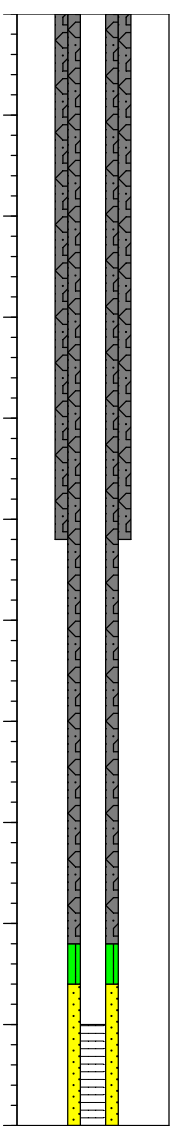
BOREHOLE NUMBER **PZ-52**

PROJECT NAME: **Davidson Co Phase 2 Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Geologic Explorations**
DRILLING METHOD: **GP/AH**
FIELD PARTY: **Johnny Burr**
GEOLOGIST: **Lindsay Quant**
DATE BEGUN: **11/10/10** COMPLETED: **11/30/10**

TOTAL DEPTH: **55**
TOP OF CASING ELEV. **707.52** GROUND ELEV.: **704.71**
NORTHING: **765890.578** EASTING: **1650232.025**

STATIC WATER LEVEL (BLS)		
Depth (ft)	34.35	
Time	11:30 am	
Date	12/22/10	

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				GP/AH	SAND: Dry red gray medium sand.		0.0	
5.0		MC					5.0	
10.0		MC			SANDY CLAY: Dry gray sandy clay.		10.0	
15.0		MC			SAND: Dry gray white sand and partially weathered rock (PWR),		15.0	
20.0		MC			SAND: Dry red gray and tan sand and PWR. Geoprobe refusal at 22 feet. 6-inch casing set at 26'.		20.0	
25.0					PWR: Rock core from 26' to 36' below grade. No core recovery.		25.0	
30.0							30.0	
35.0					PWR: Dry to wet partially weathered granitic rock. Drilled by air hammer with no competent bedrock encountered. Water encountered at ~52 feet. Boring terminated at 55 feet.		35.0	
40.0							40.0	
45.0							45.0	
50.0							50.0	
55.0							55.0	



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FIELD BOREHOLE LOG

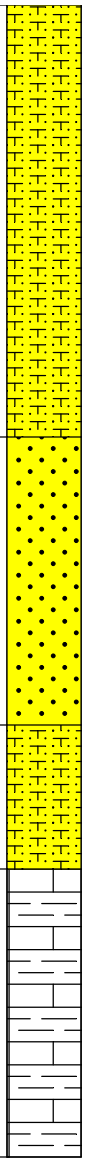
BOREHOLE NUMBER **PZ-53**

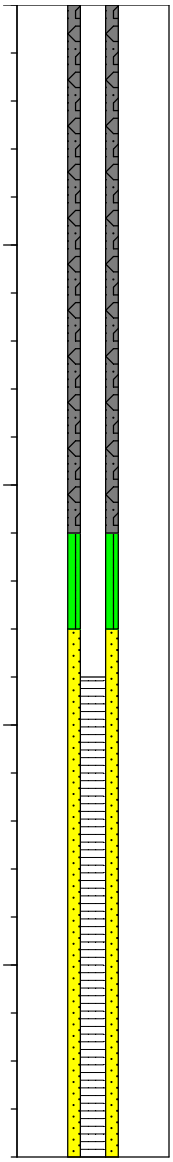
PROJECT NAME: **Davidson Co Phase 2 Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Geologic Explorations**
DRILLING METHOD: **GP/AH**
FIELD PARTY: **John Burr**
GEOLOGIST: **Lindsay Quant**
DATE BEGUN: **11/12/10** COMPLETED: **11/13/10**

TOTAL DEPTH: **24**
TOP OF CASING ELEV. **674.54** GROUND ELEV.: **672.21**
NORTHING: **764768.5184** EASTING: **1648745.1607**

STATIC WATER LEVEL (BLS)		
Depth (ft)	16.00	
Time	5:20	
Date	11/15/10	

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				GP/AH	SILTY SAND: Dry red gray medium sand.		0.0	
5.0		MC					5.0	
10.0		MC			SAND: Dry gray sandy clay.		10.0	
15.0		MC			SILTY SAND: Dry brown silty fine sand. Geoprobe refusal at 18 feet.		15.0	
20.0					PWR: Dry granitic partially weathered rock (PWR). Water encountered at ~20 ft. Boring terminated at 24 feet.		20.0	





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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-54**

PROJECT NAME: **Davidson Co Phase 2 Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Geologic Explorations**
DRILLING METHOD: **GP/AH**
FIELD PARTY: **John Burr**
GEOLOGIST: **Lindsay Quant**
DATE BEGUN: **11/10/10** COMPLETED: **11/30/10**

TOTAL DEPTH: **75**
TOP OF CASING ELEV.**0**
GROUND ELEV.: **714.68**
NORTHING: **765220.872**
EASTING: **1647953.916**

STATIC WATER LEVEL (BLS)		
Depth (ft)		
Time		
Date		

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				GP/AH	CLAY: Dry red brown clay and partially weathered rock (PWR). Sand and gravel from 3.5 to 4 feet below grade.		0.0	
5.0		MC			SILT: Dry gray brown white and red silt with a trace of clay and PWR.		5.0	
10.0		MC			SAND: Dry gray brown white and red sand and PWR. Geoprobe refusal at 13 feet below grade.		10.0	
15.0		MC			PWR: Dry granitic partially weathered rock. More competent rock at 18 feet. Set 6-inch outere casing at 18 feet below grade.		15.0	
20.0					PWR: Drilled from 18 feet to 28 feet below grade by rock coring. No rock core was recovered during drilling.		20.0	
25.0					GRANITE: Drilled from 28 feet to 75 feet below grade by air hammer. No water encountered. Borehole abandoned.		25.0	
30.0							30.0	
35.0							35.0	
40.0							40.0	
45.0							45.0	
50.0							50.0	
55.0							55.0	
60.0							60.0	
65.0							65.0	
70.0							70.0	
75.0							75.0	

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FIELD BOREHOLE LOG

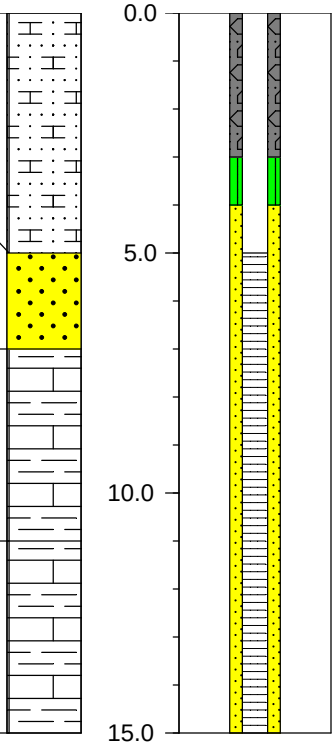
BOREHOLE NUMBER **PZ-55**

PROJECT NAME: **Davidson Co Phase 2 Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Geologic Explorations**
DRILLING METHOD: **GP/AH**
FIELD PARTY: **John Burr**
GEOLOGIST: **Lindsay Quant**
DATE BEGUN: **11/11/10** COMPLETED: **11/12/10**

TOTAL DEPTH: **15**
TOP OF CASING ELEV. **655.82** GROUND ELEV.: **653.62**
NORTHING: **764925.893** EASTING: **1647572.703**

STATIC WATER LEVEL (BLS)		
Depth (ft)	6.40	
Time	5:10	
Date	11/15/10	

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				GP/AH	CLAYEY SILT: Dry to moist brown gray clayey silt.		0.0	
5.0		MC			SAND: Dry red and white sand and partially weathered rock (PWR). Geoprobe refusal on an isolated boulder at 6 feet.		5.0	
					PWR: Drilled remaining 8 feet by air hammer. Boulder from 7 to 9 feet with PWR underneath.			
10.0		MC			PWR: Dry to wet gray granitic PWR. No competent bedrock encountered. Boring terminated at 15 feet due to presence of water.		10.0	
15.0							15.0	



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-56d**

PROJECT NAME: **Davidson Co Phase 2 Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Geologic Explorations**
DRILLING METHOD: **GP/AH**
FIELD PARTY: **John Burr**
GEOLOGIST: **Lindsay Quant**
DATE BEGUN: **11/15/10** COMPLETED: **11/29/10**

TOTAL DEPTH: **34**
TOP OF CASING ELEV. **653.52** GROUND ELEV.: **650.42**
NORTHING: **765655.361** EASTING: **1647395.7047**

STATIC WATER LEVEL (BLS)		
Depth (ft)	10.49	
Time	11:45 am	
Date	12/22/10	

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				GP/AH	CLAY: Dry to moist brown clay with manganese staining.		0.0	
5.0		MC			CLAY: Dry gray, red and brown clay with some gravel and partially weathered rock (PWR).		5.0	
10.0		MC			CLAYEY SAND: Dry, brown red and gray sand with some clay and some PWR. Geoprobe refusal at 14 feet.		10.0	
15.0		MC			SILT: Dry brown silt.		15.0	
20.0					PWR: Dry granitic partially weathered rock (PWR). 6-inch casing set at 20 feet below grade.		20.0	
25.0					PWR: Partially weathered rock. Rock cored from 21 feet to 31 feet. No rock core recovery. Drilled from 20' to 34 feet by air hammer and set well at 34 feet due to presence of water.		25.0	
30.0							30.0	

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FIELD BOREHOLE LOG

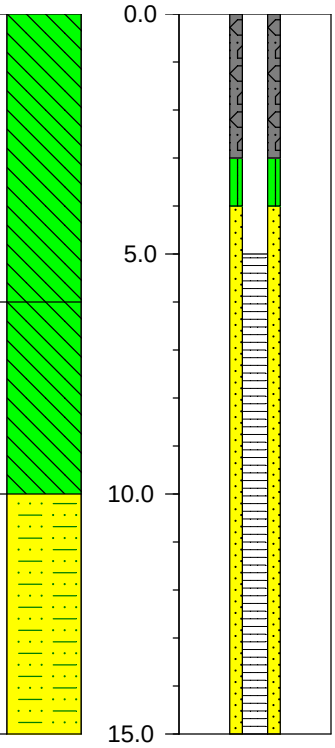
BOREHOLE NUMBER **PZ-56s**

PROJECT NAME: **Davidson Co Phase 2 Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Geologic Explorations**
DRILLING METHOD: **GP/AH**
FIELD PARTY: **John Burr**
GEOLOGIST: **Lindsay Quant**
DATE BEGUN: **11/11/10** COMPLETED: **11/12/10**

TOTAL DEPTH: **15**
TOP OF CASING ELEV. **653.7** GROUND ELEV.: **651.08**
NORTHING: **765646.4411** EASTING: **1647384.4289**

STATIC WATER LEVEL (BLS)		
Depth (ft)	6.60	
Time	5:00	
Date	11/15/10	

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				GP/AH	CLAY: Dry to moist brown clay with manganese staining.		0.0	
5.0		MC			CLAY: Dry gray, red and brown clay with some gravel and partially weathered rock (PWR).		5.0	
10.0		MC			CLAYEY SAND: Dry, brown red and gray sand with some clay and some PWR. Geoprobe refusal at 14 feet. Borehole reamed by air hammer to 15'.		10.0	
15.0							15.0	



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FIELD BOREHOLE LOG

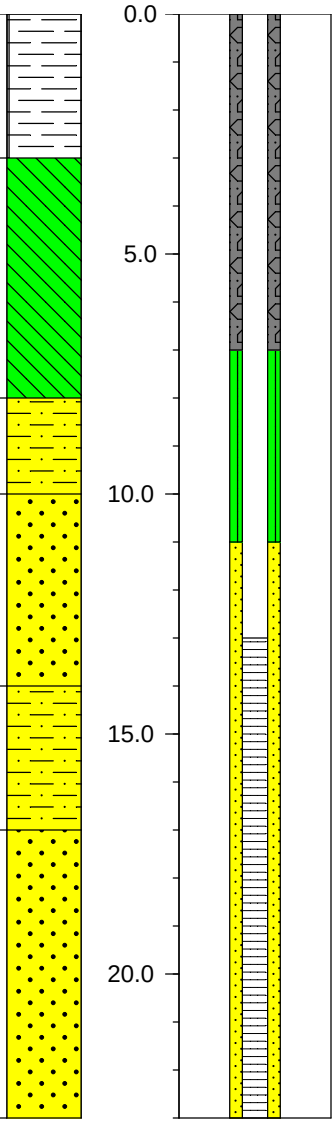
BOREHOLE NUMBER **PZ-57**

PROJECT NAME: **Davidson Co Phase 2 Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Geologic Explorations**
DRILLING METHOD: **GP/AH**
FIELD PARTY: **John Burr**
GEOLOGIST: **Lindsay Quant**
DATE BEGUN: **11/11/10** COMPLETED: **11/11/10**

TOTAL DEPTH: **23**
TOP OF CASING ELEV. **676.54** GROUND ELEV.: **674.24**
NORTHING: **765259.132** EASTING: **1649737.255**

STATIC WATER LEVEL (BLS)		
Depth (ft)	17.27	
Time	4:25	
Date	11/15/10	

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				GP/AH	SILTY CLAY: Dry gray brown silty clay.		0.0	
5.0		MC			CLAY: Dry red clay and partially weathered rock (PWR).		5.0	
					SANDY CLAY: Dry brown sandy clay and PWR.			
10.0		MC			SAND: Dry white to brown/red sand and PWR.		10.0	
15.0		MC			SANDY CLAY: Moist, sandy clay and PWR.		15.0	
20.0		MC			SAND: Dry white sand. Geoprobe refusal at 18 feet. Drilled with air hamme to 23 feet, only PWR encountered, no competent bedrock. Boring terminated at 23 feet.		20.0	



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-58**

PROJECT NAME: **Davidson Co Phase 2 Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Geologic Explorations**
DRILLING METHOD: **GP/AH**
FIELD PARTY: **John Burr**
GEOLOGIST: **Lindsay Quant**
DATE BEGUN: **11/11/10** COMPLETED: **11/11/10**

TOTAL DEPTH: **36**
TOP OF CASING ELEV. **697.4** GROUND ELEV.: **695.16**
NORTHING: **765715.824** EASTING: **1649546.003**

STATIC WATER LEVEL (BLS)		
Depth (ft)	25.85	
Time	4:35	
Date	11/15/10	

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				GP/AH	SANDY SILT: Dry, red sandy silt.		0.0	
					CLAY: Dry red and orange clay.			
5.0		MC					5.0	
					SANDY CLAY: Dry red sandy clay and partially weathered rock (PWR). Trace silt and quartz rock fragments with the sandy clay between 10- 15 feet.			
10.0		MC					10.0	
15.0		MC			SAND: Dry white, red, brown coarse sand and gravel with trace clay. Sample contained manganese staining and partially weathered rock (PWR).		15.0	
20.0		MC			SANDY SILT: Dry white tan sandy silt with quartz fragments.		20.0	
					CLAY: Dry red brown clay.			
25.0		MC			SAND: Dry white and red coarse sand with quartz fragments and silty patches. Geoprobe refusal at 32 feet.		25.0	
30.0		MC					30.0	
35.0		MC			PWR: Dry to wet white to tan sandy partially weathered rock (PWR). No competent bedrock encountered. Boring terminated at 36 feet.		35.0	

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FIELD BOREHOLE LOG

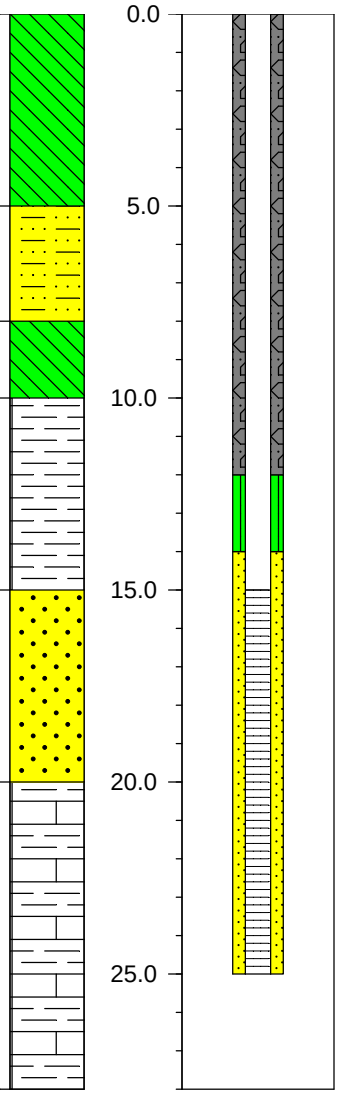
BOREHOLE NUMBER **PZ-59**

PROJECT NAME: **Davidson Co Phase 2 Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Geologic Explorations**
DRILLING METHOD: **GP/AH**
FIELD PARTY: **John Burr**
GEOLOGIST: **Lindsay Quant**
DATE BEGUN: **11/11/10** COMPLETED: **11/11/10**

TOTAL DEPTH: **25**
TOP OF CASING ELEV. **691.34** GROUND ELEV.: **688.88**
NORTHING: **765984.48** EASTING: **1649687.842**

STATIC WATER LEVEL (BLS)		
Depth (ft)	19.32	
Time	4:45	
Date	11/15/10	

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				GP/AH	CLAY: Dry red clay.		0.0	
5.0		MC			SANDY SILT: Dry red brown sandy silty with partially weathered rock (PWR).		5.0	
					CLAY: Moist to wet dark brown clay.			
10.0		MC			SILTY CLAY: Moist brown to red silty clay with PWR.		10.0	
15.0		MC			SAND: Moist white tan to gray sand with PWR.		15.0	
20.0		MC			PWR: Moist to wet sand with PWR. Very small sample recovered from 20 - 23 feet due to quartz fragement stuck in the sampler. Augers were very wet near bottom of the hole. Geoprobe refusal at 28 feet.		20.0	
25.0		MC					25.0	



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-5d**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **11/6/00** COMPLETED: **11/28/00**

TOTAL DEPTH: **75**
GROUND SURFACE ELEVATION: **700.78**
TOP OF CASING ELEVATION: **703.07**

STATIC WATER LEVEL (BLS)		
Depth (ft)	39	34.55
Time	12:00	8:00
Date	11/6/00	11/7/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY SILTY CLAY: Dry tan-brown fine sandy silty clay (some clayey silt), some roots, iron & gray mottles, manganese streaks.		0.0	
5.0	5-8-11	SS	12"				5.0	
10.0	5-8-9	SS	10"		SILTY SAND: Dry tan-gray fine sandy silt (some silty sand), manganese streaks, small iron & gray mottles.		10.0	
15.0	6-8-11	SS	12"		SILTY SAND: Slightly moist white, tan-gray, rust, & black salt & peppered fine to medium silty sand with iron & manganese.		15.0	
20.0	7-10-14	SS	14"				20.0	
25.0	11-21-26	SS	12"				25.0	
30.0	21-34-40	SS	8"				30.0	
35.0	23-37-50/6	SS	8"		SILTY SAND: Same as above, more iron & manganese, some partially weathered rock with 45 degree angled fractures throughout. Hollow stem auger refusal at 45.0'.		35.0	
40.0	45-50/4	SS	8"				40.0	

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FIELD BOREHOLE LOG

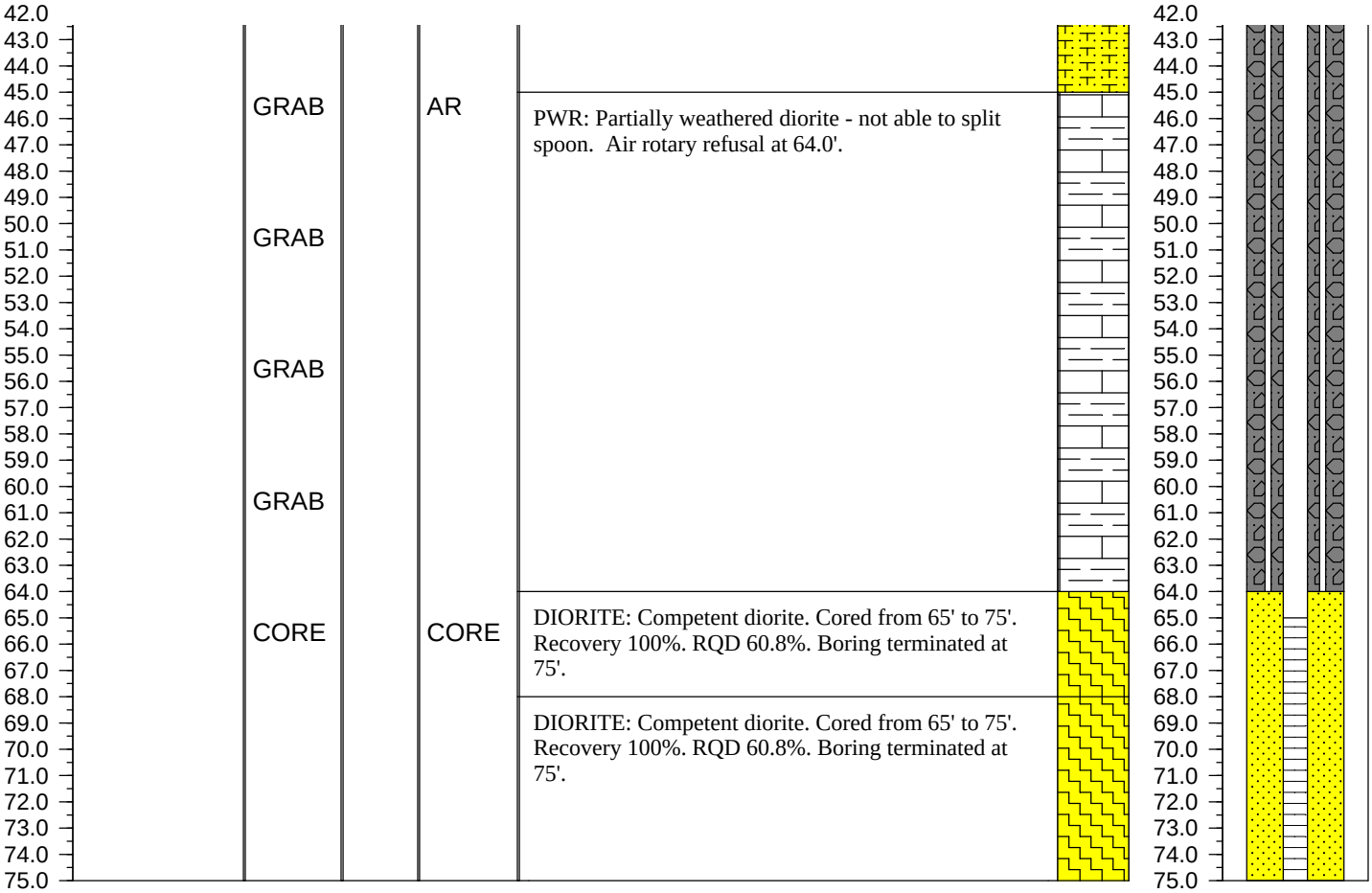
BOREHOLE NUMBER **PZ-5d**

PROJECT NAME: **Davidson County - Phase 2**
LOACATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **11/6/00** COMPLETED: **11/28/00**

TOTAL DEPTH: **75**
GROUND SURFACE ELEVATION: **700.78**
TOP OF CASING ELEVATION: **703.07**

STATIC WATER LEVEL (BLS)		
Depth (ft)	39	34.55
Time	12:00	8:00
Date	11/6/00	11/7/00

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
42.0–45.0								
45.0–64.0		GRAB GRAB GRAB GRAB		AR	PWR: Partially weathered diorite - not able to split spoon. Air rotary refusal at 64.0'.			
64.0–68.0		CORE		CORE	DIORITE: Competent diorite. Cored from 65' to 75'. Recovery 100%. RQD 60.8%. Boring terminated at 75'.			
68.0–75.0					DIORITE: Competent diorite. Cored from 65' to 75'. Recovery 100%. RQD 60.8%. Boring terminated at 75'.			



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FIELD BOREHOLE LOG

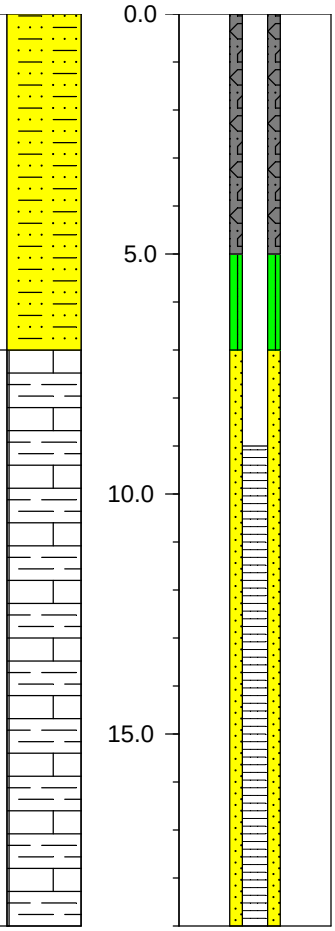
BOREHOLE NUMBER **PZ-60** Page 1 of 1

PROJECT NAME: **Davidson Co Phase 2 Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Geologic Explorations**
DRILLING METHOD: **GP/AH**
FIELD PARTY: **John Burr**
GEOLOGIST: **Lindsay Quant**
DATE BEGUN: **11/22/10** COMPLETED: **11/22/10**

TOTAL DEPTH: **19**
TOP OF CASING ELEV. **664.59** GROUND ELEV.: **661.93**
NORTHING: **764132.655** EASTING: **1648066.49**

STATIC WATER LEVEL (BLS)		
Depth (ft)	6	
Time	12:00	
Date	12/22/10	

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				GP/AH	SANDY SILT: Dry gray fine to medium sandy silt with some relict rock texture. Geoprobe refusal at 7 feet.		0.0	
5.0		MC					5.0	
					PWR: Dry to wet gray partially weathered rock (PWR). No competent bedrock encountered. Boring terminated at 19 feet.			
10.0		MC					10.0	
15.0		MC					15.0	



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FIELD BOREHOLE LOG

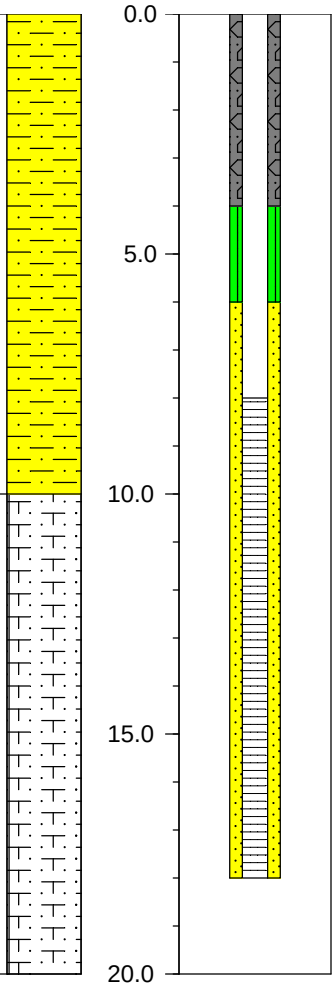
BOREHOLE NUMBER **PZ-61**

PROJECT NAME: **Davidson Co Phase 2 Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Geologic Explorations**
DRILLING METHOD: **GP/AH**
FIELD PARTY: **John Burr**
GEOLOGIST: **Lindsay Quant**
DATE BEGUN: **11/22/10** COMPLETED: **11/23/10**

TOTAL DEPTH: **18**
TOP OF CASING ELEV. **658.56** GROUND ELEV.: **655.76**
NORTHING: **763785.769** EASTING: **1648625.962**

STATIC WATER LEVEL (BLS)		
Depth (ft)	10.26	
Time	1:25 pm	
Date	12/22/10	

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				GP/AH	SANDY CLAY: Moist red to tan fine sandy clay.		0.0	
5.0		MC					5.0	
10.0		MC			CLAYEY SILTY SAND: Moist to wet tan clayey silty sand with relict rock texture. Boring terminated at 20 feet. Borehole reamed out by air hammer to set well. Borehole caved in to 18 feet as well was set.		10.0	
15.0		MC					15.0	
20.0							20.0	



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-62**

PROJECT NAME: **Davidson Co Phase 2 Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Geologic Explorations**
DRILLING METHOD: **GP/AH**
FIELD PARTY: **John Burr**
GEOLOGIST: **Lindsay Quant**
DATE BEGUN: **11/15/10** COMPLETED: **11/15/10**

TOTAL DEPTH: **25**
TOP OF CASING ELEV. **679.56** GROUND ELEV.: **676.76**
NORTHING: **766153.985** EASTING: **1649462.167**

STATIC WATER LEVEL (BLS)		
Depth (ft)	16.37	
Time	1:40 pm	
Date	12/22/10	

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				GP/AH	SANDY SILT: Dry tan to gray sandy silt.		0.0	
					SILTY CLAY: Dry, brown red and gray silty clay with relict rock texture.			
5.0		MC			SILTY SAND: Moist brown, gray, and tan silty sand. Sand fraction coarsening iwith depth.		5.0	
10.0		MC					10.0	
15.0		MC					15.0	
20.0		MC			CLAYEY SILTY SAND: Wet gray clayey silty fine to medium sand.		20.0	
					SILTY SAND: Moist to wet silty fine to coarse sand and partially weathered rock (PWR). Boring terminated at 25 feet.			
25.0							25.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **PZ-63**

PROJECT NAME: **Davidson Co Phase 2 Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Geologic Explorations**
DRILLING METHOD: **GP/AH**
FIELD PARTY: **John Burr**
GEOLOGIST: **Lindsay Quant**
DATE BEGUN: **11/11/10** COMPLETED: **11/23/10**

TOTAL DEPTH: **40**
TOP OF CASING ELEV.: **700.05** GROUND ELEV.: **697.20**
NORTHING: **766442.808** EASTING: **1649546.08**

STATIC WATER LEVEL (BLS)		
Depth (ft)	36.05	
Time	2:00	
Date	12/22/10	

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				GP/AH	CLAYEY SILT: Moist brown red clayey silt and partially weathered rock (PWR).		0.0	
5.0		MC			CLAYEY SAND: Moist gray tan claeye fine sand with manganese sstaining.		5.0	
10.0		MC			SILT: Moist to wet silt with trace clay. 6-inch clay lens from 10 to 10.5 feet. Sample also contains partially weathered rock (PWR) with relict rock texture.		10.0	
15.0		MC			SILTY CLAY: Moist tan gray and black silty clay with partially weathered rock (PWR). Geoprobe refusal at 23 feet. Well initially set at 25 feet below grade.		15.0	
20.0		MC					20.0	
25.0					PWR: Moist to wet partially weatherred rock (PWR). Monitoring of well set at 25 indicated it was dry. Drillers removed well casing and advanced the borehole through a hard layer and then through layers of PWR. Boring terminated at 40 feet.		25.0	
30.0							30.0	
35.0							35.0	
40.0							40.0	

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FIELD BOREHOLE LOG

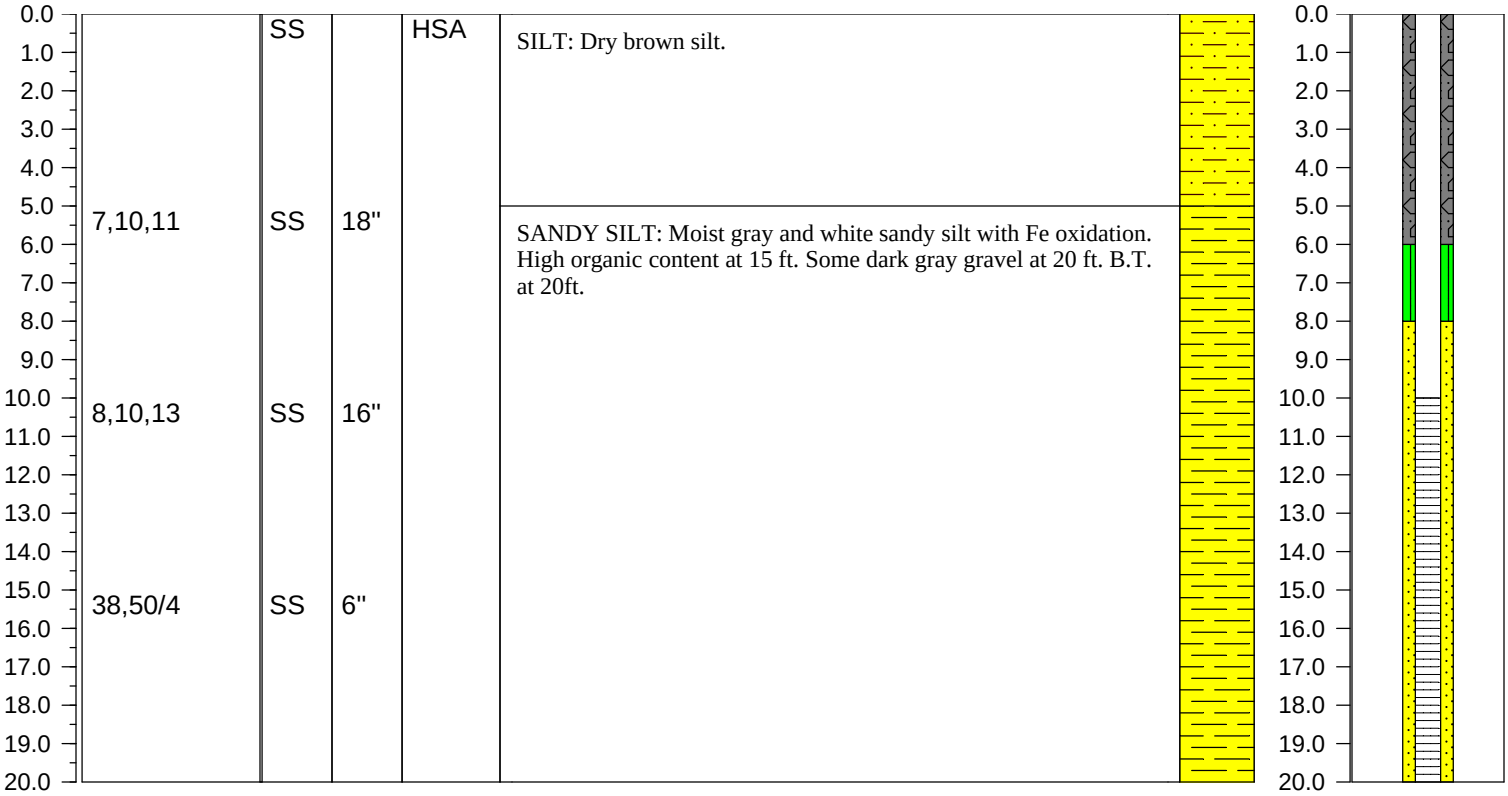
BOREHOLE NUMBER **MW-1**

PROJECT NAME: **Davidson County Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **David Barron**
GEOLOGIST: **Clark Wipfield**
DATE BEGUN: **3/25/08** DATE COMPLETED: **3/25/08**

TOTAL DEPTH: **20 ft.**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (TOC)		
Depth (ft)		
Time		
Date		

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY
0.0		SS		HSA	SILT: Dry brown silt.	
5.0	7,10,11	SS	18"		SANDY SILT: Moist gray and white sandy silt with Fe oxidation. High organic content at 15 ft. Some dark gray gravel at 20 ft. B.T. at 20ft.	
10.0	8,10,13	SS	16"			
15.0	38,50/4	SS	6"			



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FIELD BOREHOLE LOG

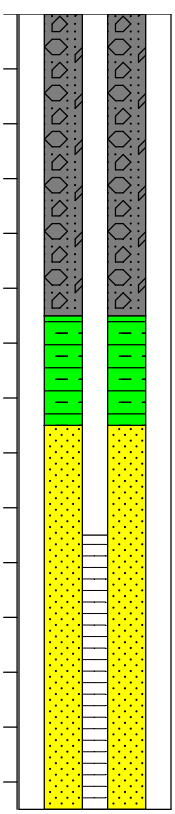
BOREHOLE NUMBER **MW-2**

PROJECT NAME: **Davidson County - Phase 2**
LOCATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **David Barron**
GEOLOGIST: **Clark Wipfield**
DATE BEGUN: **8/12/08** DATE COMPLETED: **8/12/08**

TOTAL DEPTH: **14.5**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (TOC)		
Depth (ft)	13.06	
Time	11:00 am	
Date	8/12/08	

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY
0.0				HSA	SILT: Dry dark brown silt with samll quarz fragments and black mottles.	
1.0						
2.0						
3.0						
4.0						
5.0	10,12,15	SS	18"		SANDY SILT: Moist sandy silt with partially weathered andesite and Fe spotting.	
6.0						
7.0						
8.0						
9.0						
10.0	8,17,23	SS	18"			
11.0						
12.0						
13.0		Grab			GRANITE: Dry, partially weathered granite. B.T. @ 14.5 feet.	
14.0						



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FIELD BOREHOLE LOG

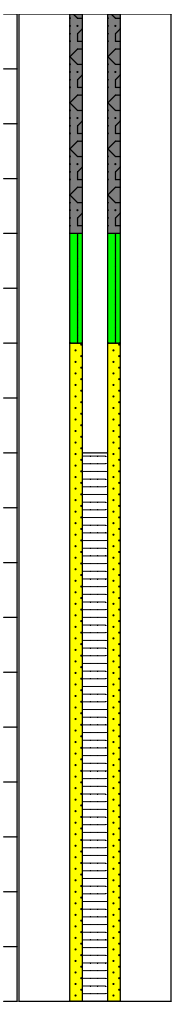
BOREHOLE NUMBER **MW-3s**

PROJECT NAME: **Davidson County**
LOCATION: **Davidson County Landfill**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **David Barron**
GEOLOGIST: **Clark Wipfield**
DATE BEGUN: **3/24/08** DATE COMPLETED: **3/24/08**

TOTAL DEPTH: **18 ft.**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (TOC)		
Depth (ft)	6.21	
Time	1:10pm	
Date	3/27/08	

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY
0.0		SS		HSA	CLAYEY SILT: Upper 9" is grAy to red brown wet clayey silt with organics. Bottom 3" is dry, compacted clay; and fine grained sandy silty clay with Fe spots.	
5.0	3,3,5	SS	18"			
10.0	11,13,17	SS	10"		CLAY AND SAND: Gray clay and fine grained sand conglomerate with large organic material. Some Fe oxidation, with bottom 5" wet.	
15.0	3,7,5	SS	8"		SAND: Course grained wet gray sand with quartz gravel. B.T. 18 ft.	
18.0						



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **MW-3D**

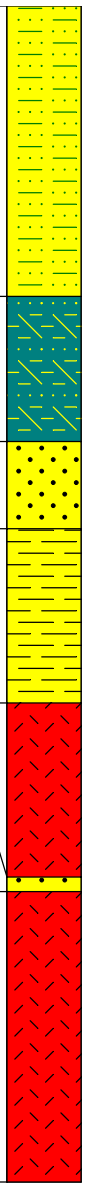
PROJECT NAME: **Davidson County Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **Daivd Barron**
GEOLOGIST: **Clark Wipfield**
DATE BEGUN: **3/26/08** DATE COMPLETED: **3/26/08**

TOTAL DEPTH: **40.5 ft.**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

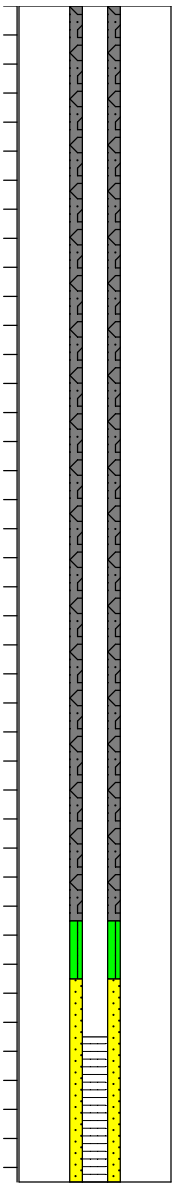
STATIC WATER LEVEL (TOC)		
Depth (ft)		
Time		
Date		

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION
0.0–10.0	3,3,5	SS	18"	HSA	CLAYEY SAND: Upper 9" is gray to red brown wet clayey silt with organics. Bottom 3" is dry compacted clay with fine grained sandy silty clay with Fe spots.
10.0–15.0	11,13,17	SS	10"		CLAY AND SAND: Gray clay and fine grained sand conglomerate, with large organic material. Some Fe oxidation with bottom 5" wet.
15.0–18.0	3,7,5	SS	8"		SAND: Course grained wet gray sand with quartz gravel.
18.0–24.0	50/3	SS	4"		SANDY SILT: Wet course grained sticky gray sandy silt. A.R. 24 ft.
24.0–30.0		SS		AH	GRANITE: Weathered boulder.
29.0–30.0					SAND: 6" thick fine to coarse sand layer.
30.0–40.5		Grab / Grab / Grab			GRANITE: Weathered granite, wet. B.T. 40.5 ft.

LITHOLOGY



WELL INSTALLATION



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(919) 828-0577

FIELD BOREHOLE LOG

BOREHOLE NUMBER **MW-4s**

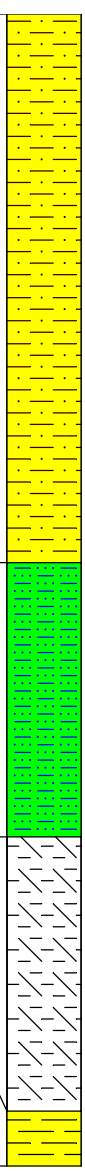
PROJECT NAME: **Davidson County**
LOCATION: **Davidson County Landfill**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **David Barron**
GEOLOGIST: **Clark Wipfield**
DATE BEGUN: **3/24/08** DATE COMPLETED: **3/24/08**

TOTAL DEPTH: **21**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

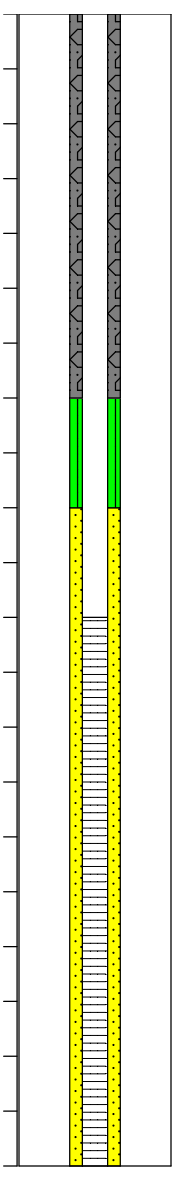
STATIC WATER LEVEL (TOC)		
Depth (ft)	18.97	
Time	1:30pm	
Date	3/27/08	

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION
0.0		SS		HSA	SILT: Dry reddish brown silt with Mn mottles.
5.0	6,9,11	SS	18"		
10.0	8,10,15	SS	18"		CLAYEY SILT: dry brownish yellow clayey silt, with slight red tint and Mn mottles.
15.0	46,33,45	SS	9"		SILTY CLAY: Upper 4" is dry gray and dark reddish brown, lower 5" is gray/white fine grained silt.
20.0	50/2	SS	2"		SANDY SILT: Dry white/gray with small amounts of granite from partially weathered rock. A.R. at 21ft.

LITHOLOGY



DEPTH



WELL INSTALLATION

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **MW-4D**

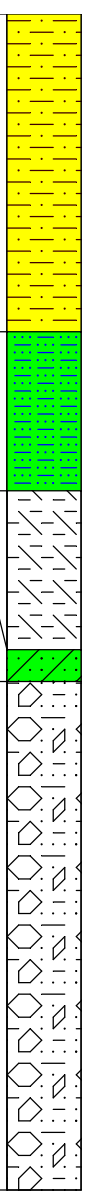
PROJECT NAME: **Davidson County**
LOCATION: **Davidson County Landfill**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA and AH**
FIELD PARTY: **David Barron**
GEOLOGIST: **Clark Wipfield**
DATE BEGUN: **3/26/08** DATE COMPLETED: **3/26/08**

TOTAL DEPTH: **37 ft.**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

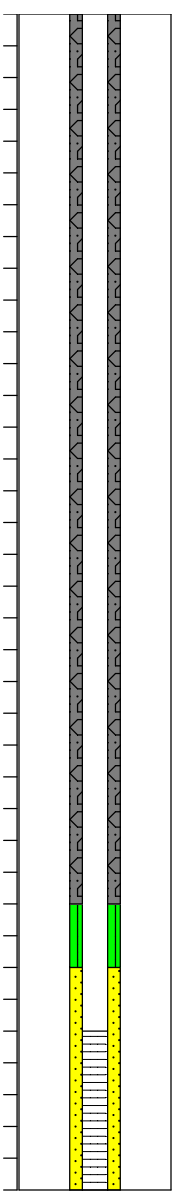
STATIC WATER LEVEL (TOC)		
Depth (ft)		
Time		
Date		

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION
0.0		SS		HSA	SILT: Dry reddish brown silt with Mn mottling.
5.0	6,9,11	SS	18"		
10.0	8,10,15	SS	18"		CLAYEY SILT: Dry brownish yellow clayey silt, with slight red tint and Mn mottling.
15.0	46,33,45	SS	9"		SILTY CLAY: Upper 4" is dry gray and dark reddish brown, lower 5" is Gray/white fine grained silt.
19.0					SANDY CLAY: Small amounts of dry white/gray granite from partially weathered rock. A.R. at 21 ft.
20.0	50/2	SS	2"		
21.0				AH	DIORITE: Dry diorite fracture at 36 ft.
25.0		Grab			
30.0		Grab			
35.0		Grab			

LITHOLOGY



DEPTH



WELL INSTALLATION

Richardson Smith Gardner and Assoc
14 North Boylan Avenue, Raleigh NC 27603
(919) 828-0577

FIELD BOREHOLE LOG

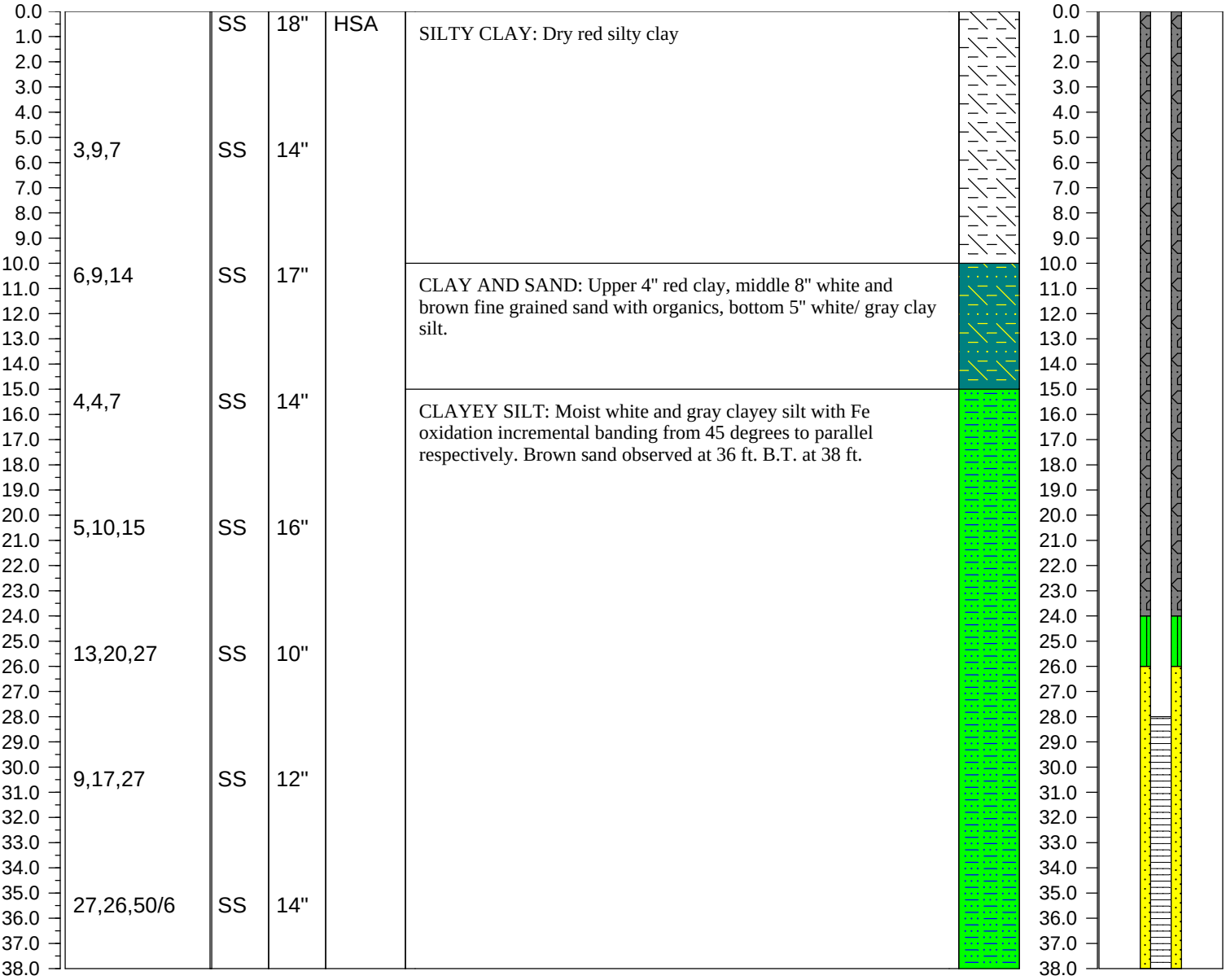
BOREHOLE NUMBER **MW-5**

PROJECT NAME: **Davidson County**
LOCATION: **Davidson County Landfill**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **David Barron**
GEOLOGIST: **Clark Wipfield**
DATE BEGUN: **3/24/08** DATE COMPLETED: **3/24/08**

TOTAL DEPTH: **38 ft.**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (TOC)		
Depth (ft)	27.77	
Time	1:40pm	
Date	3/27/08	

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY
0.0		SS	18"	HSA	SILTY CLAY: Dry red silty clay	
5.0	3,9,7	SS	14"			
10.0	6,9,14	SS	17"		CLAY AND SAND: Upper 4" red clay, middle 8" white and brown fine grained sand with organics, bottom 5" white/ gray clay silt.	
15.0	4,4,7	SS	14"		CLAYEY SILT: Moist white and gray clayey silt with Fe oxidation incremental banding from 45 degrees to parallel respectively. Brown sand observed at 36 ft. B.T. at 38 ft.	
20.0	5,10,15	SS	16"			
25.0	13,20,27	SS	10"			
30.0	9,17,27	SS	12"			
35.0	27,26,50/6	SS	14"			
38.0						



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FIELD BOREHOLE LOG

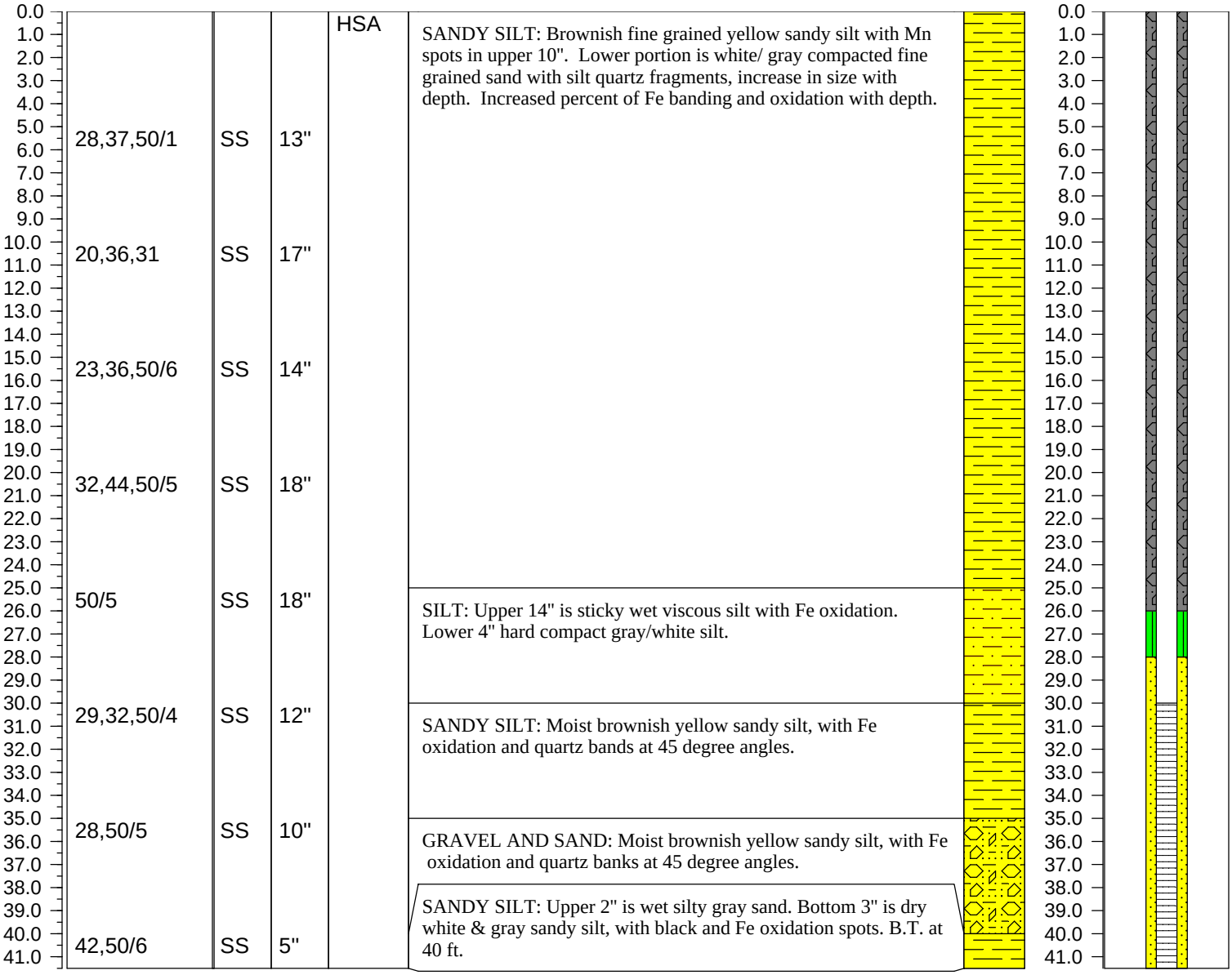
BOREHOLE NUMBER **MW-6s**

PROJECT NAME: **Davidson County**
LOCATION: **Davidson County Landfill**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA**
FIELD PARTY: **David Barron**
GEOLOGIST: **Clark Wipfield**
DATE BEGUN: **3/25/08** DATE COMPLETED: **3/25/08**

TOTAL DEPTH: **40 ft.**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (TOC)		
Depth (ft)	33.60	
Time	2:00pm	
Date	3/27/08	

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY
0.0–41.0	28,37,50/1	SS	13"	HSA	SANDY SILT: Brownish fine grained yellow sandy silt with Mn spots in upper 10". Lower portion is white/ gray compacted fine grained sand with silt quartz fragments, increase in size with depth. Increased percent of Fe banding and oxidation with depth.	
	20,36,31	SS	17"			
	23,36,50/6	SS	14"			
	32,44,50/5	SS	18"			
25.0–26.0	50/5	SS	18"		SILT: Upper 14" is sticky wet viscous silt with Fe oxidation. Lower 4" hard compact gray/white silt.	
30.0–31.0	29,32,50/4	SS	12"		SANDY SILT: Moist brownish yellow sandy silt, with Fe oxidation and quartz bands at 45 degree angles.	
35.0–36.0	28,50/5	SS	10"		GRAVEL AND SAND: Moist brownish yellow sandy silt, with Fe oxidation and quartz banks at 45 degree angles.	
40.0–41.0	42,50/6	SS	5"		SANDY SILT: Upper 2" is wet silty gray sand. Bottom 3" is dry white & gray sandy silt, with black and Fe oxidation spots. B.T. at 40 ft.	



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **MW-6D**

PROJECT NAME: **Davidson County Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Engineering Tectoncis, P.A.**
DRILLING METHOD: **HSA and AH**
FIELD PARTY: **David Barron**
GEOLOGIST: **Clark Wipfield**
DATE BEGUN: **3/27/08** DATE COMPLETED: **3/27/08**

TOTAL DEPTH: **70.5 ft.**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (TOC)		
Depth (ft)		
Time		
Date		

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY SILT: Brownish fine grained yellow sandy silt with Mn spots in upper 10". Lower portion is white/ gray compacted fine grained sandy silt quartz fragments increase in size with depth. Increased percent of Fe banding and oxidation with depth.		0.0	
5.0	28,37,50/1	SS	13"				5.0	
10.0	20,36,31	SS	17"				10.0	
15.0	23,36,50/6	SS	14"				15.0	
20.0	32,44,50/5	SS	18"				20.0	
25.0	50/5	SS	18"		SILT: Upper 14" is sticky wet viscous silt with Fe oxidation. Lower 4" hard compact gray/white silt.		25.0	
30.0	29,32,50/4	SS	12"		SANDY SILT: Brownish yellow sandy silt with Fe oxidation and quartz bands at 45 degree angles.		30.0	
35.0	28,50/5	SS	10"		GRAVEL AND SAND: Upper 4" wet gravel with large rock with medium grained sand. Lower 6" poorly sorted, mostly white silty sand, with quartz fragments.		35.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **MW-6D**

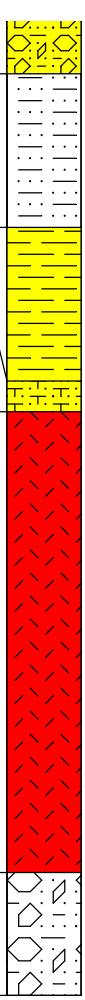
PROJECT NAME: **Davidson County Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Engineering Tectoncis, P.A.**
DRILLING METHOD: **HSA and AH**
FIELD PARTY: **David Barron**
GEOLOGIST: **Clark Wipfield**
DATE BEGUN: **3/27/08** DATE COMPLETED: **3/27/08**

TOTAL DEPTH: **70.5 ft.**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

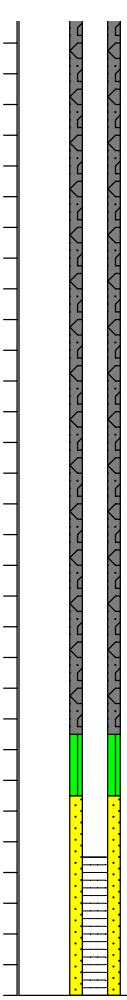
STATIC WATER LEVEL (TOC)		
Depth (ft)		
Time		
Date		

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION
38.0–39.0					
39.0–45.0	41,42,50/6	SS	5"		SILT AND SAND: Upper 2" wet silty gray sand. Bottom 3" dry white and gray sandy silt with black and Fe spots.
45.0–50.0	19,27,50	SS	14"		SANDY SILT: Gray and light red sandy silt with Fe oxidation bands.
50.0–51.0	50/2	SS	50/2"	AH	SILTY SAND: Wet white and gray silty sand with dark brown coarse sand. A.R. at 51 ft.
51.0–66.0		Grab Grab Grab			GRANITE: Weathered granite
66.0–70.0					DIORITE: Large fracture at 68' produced a lot of water. B.T. at 70.5 ft.

LITHOLOGY



WELL INSTALLATION



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FIELD BOREHOLE LOG

BOREHOLE NUMBER **MW-7**

PROJECT NAME: **Davidson County Landfill**
LOCATION: **Holy Springs, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA and AH**
FIELD PARTY: **David Barron**
GEOLOGIST: **Clark Wipfield**
DATE BEGUN: **3/24/08** DATE COMPLETED: **3/25/08**

TOTAL DEPTH: **37.4**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (TOC)		
Depth (ft)		
Time		
Date		

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY SILT: Dry white and gray compacted sandy silt with Fe oxidation. Minor gravel fragments with depth. A.R. at 18 ft.		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0							4.0	
5.0	13,23,31	SS	18"				5.0	
6.0							6.0	
7.0							7.0	
8.0							8.0	
9.0							9.0	
10.0	23,50/6	SS	12"				10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0							14.0	
15.0	16,23,34	SS	18"				15.0	
16.0							16.0	
17.0							17.0	
18.0		Grab		AH	DIORITE: Very competent diorite		18.0	
19.0							19.0	
20.0							20.0	
21.0							21.0	
22.0		Grab					22.0	
23.0							23.0	
24.0							24.0	
25.0							25.0	
26.0							26.0	
27.0		Grab					27.0	
28.0							28.0	
29.0							29.0	
30.0							30.0	
31.0							31.0	
32.0		Grab					32.0	
33.0							33.0	
34.0							34.0	
35.0							35.0	
36.0							36.0	
37.0		Grab					37.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **MW-8**

PROJECT NAME: **Davidson County Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA and AH**
FIELD PARTY: **David Barron**
GEOLOGIST: **Clark Wipfield**
DATE BEGUN: **3/24/08** DATE COMPLETED: **3/25/08**

TOTAL DEPTH: **58.6**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (TOC)		
Depth (ft)	46.58	
Time	10:45am	
Date	4/3/08	

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SANDY SILTY CLAY: Dry light brown sandy silty clay with 1" bands at 45 degrees in white/gray sandy silt. Minor amounts of Fe oxidation		0.0	
5.0	13,5,6	SS	16"		SILTY CLAY: Dry light brown silty clay bands (horizontal) in white/gray fined grained sandy silt		5.0	
10.0	8,9,13	SS	17"				10.0	
15.0	11,14,17	SS	18"				15.0	
20.0	14,18,28	SS	17"		SILTY CLAY: Yellow silt in silty sand that is white/gray with Mn mottles. A.R. at 31ft.		20.0	
25.0	15,18,22	SS	18"				25.0	
30.0	50/1	SS	2"				30.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER **MW-8**

PROJECT NAME: **Davidson County Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA and AH**
FIELD PARTY: **David Barron**
GEOLOGIST: **Clark Wipfield**
DATE BEGUN: **3/24/08** DATE COMPLETED: **3/25/08**

TOTAL DEPTH: **58.6**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (TOC)		
Depth (ft)	46.58	
Time	10:45am	
Date	4/3/08	

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
31.0				AH	DIORITE: Competent diorite. B.T. at 58.6 ft.		31.0	
32.0							32.0	
33.0							33.0	
34.0							34.0	
35.0		Grab					35.0	
36.0							36.0	
37.0							37.0	
38.0							38.0	
39.0							39.0	
40.0		Grab					40.0	
41.0							41.0	
42.0							42.0	
43.0							43.0	
44.0							44.0	
45.0		Grab					45.0	
46.0							46.0	
47.0							47.0	
48.0							48.0	
49.0							49.0	
50.0		Grab					50.0	
51.0							51.0	
52.0							52.0	
53.0							53.0	
54.0							54.0	
55.0		Grab					55.0	
56.0							56.0	
57.0							57.0	
58.0							58.0	

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FIELD BOREHOLE LOG

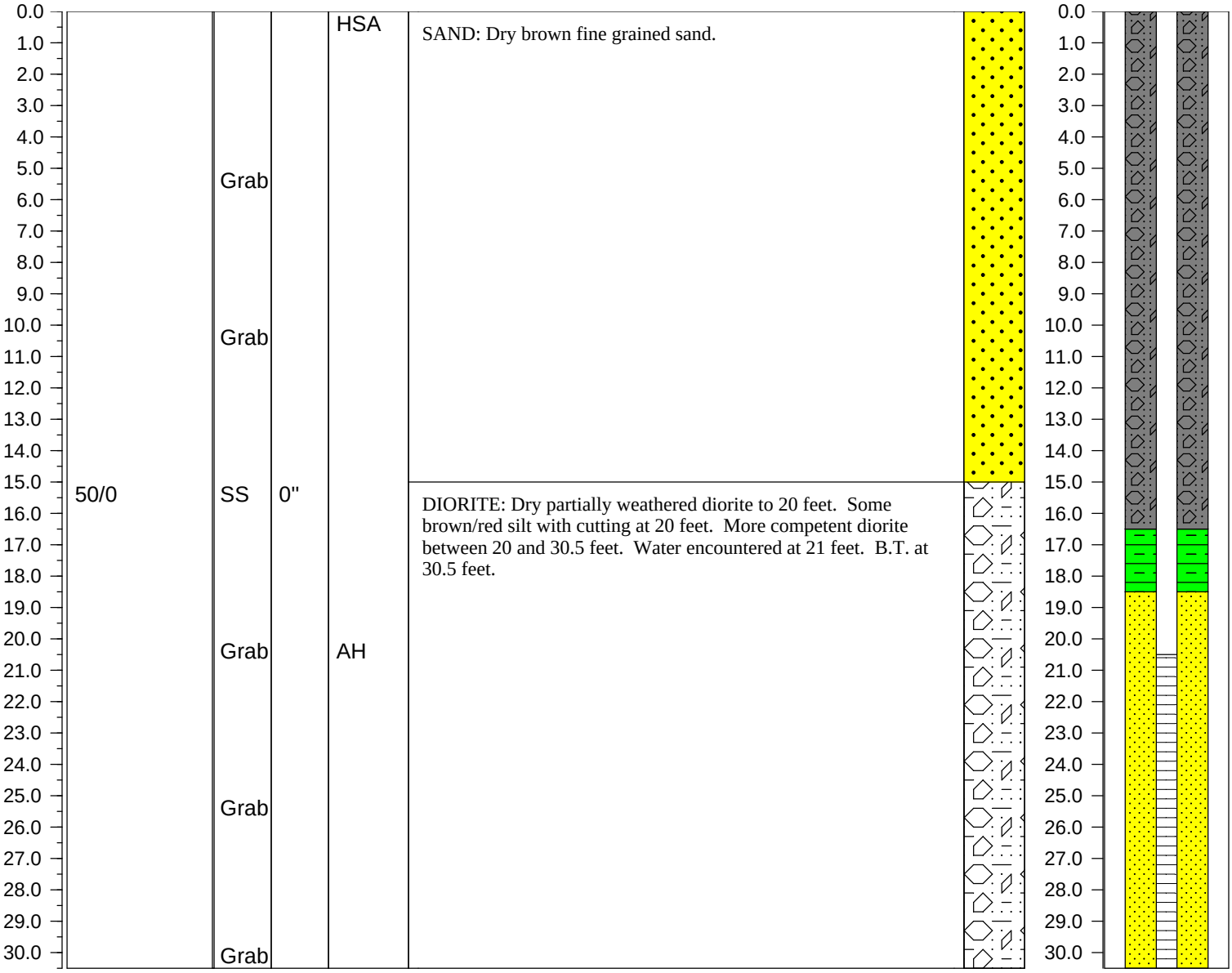
BOREHOLE NUMBER **MW-9**

PROJECT NAME: **Davidson County - Phase 2**
LOCATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **David Barron**
GEOLOGIST: **Clark Wipfield**
DATE BEGUN: **8/12/08** DATE COMPLETED: **8/14/08**

TOTAL DEPTH: **30.5**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (TOC)		
Depth (ft)	19.35	
Time	2:30 pm	
Date	8/14/08	

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0–14.5		Grab, Grab		HSA	SAND: Dry brown fine grained sand.			
14.5–30.5	50/0	SS, Grab, Grab, Grab	0"	AH	DIORITE: Dry partially weathered diorite to 20 feet. Some brown/red silt with cutting at 20 feet. More competent diorite between 20 and 30.5 feet. Water encountered at 21 feet. B.T. at 30.5 feet.			



Davidson Co. Contact
Steven Sink
336-240-0666

John Burr
704-902-8501

4775 Rex Road
Winston Salem

Wallberg House

109
Left on Rex Road

Davidson Co.

11/8/10

PZ-49 (Greg has note)

Set Casing @ 42'
Geoprobe Refusal @ 35'

Davidson County 11/8/10
Monday

Drilling: Geologic Exploration
Statesville, NC
Driller: John Burr
Mounted Geoprobe 7822DT

Depth	Recovery	Description
0'-5	5'	
	5'	PZ-50 ~~DTR~~-21' Geoprobe Refusal
5'-10	Brown, Gray PWR Dry sandy (Med)	
10'-12'	same material	
12'-15'	Silt, PWR Dry Brown, tan, Grey	
15'-17.5'		
17.5'-20'		
20'-21'	sandy Material/Clay	

PZ-52 Davidson County

22' ~~DTR~~ → Geoprobe Refusal

11/10/10

0'-5' Red, Gray, Tan
Dry
Sandy (Med)
PWR

5'-10' 5-9' Same ↑
9'-10' sandy Clay

10'-15' Sandy Clay
(Clay Patching)
PWR
Dry

15'-18' Clay Sand
Dry
PWR

18'-20' - Grey White
PWR
No clay
Sand

20'-22' - Sandy, PWR
Dry
Red, Grey, Tan

58 Davidson County most easy

~~Clayey~~

11/10/10

0'-1' Sandy Silt
Red

1'-5' Red Clay Dry

5'-7' Red Clay
orange

7'-10' Sandy Clay
PWR
Red

10'-15' Red PWR
? White Crystal pieces
Black striations
Sandy Silty ?

15'-20' White/Red/Brown,
Trace Clay
Coarse Sand
Gravel
Black striations
PWR
Dry

Davidson County

11/10/10

20'-23' Coarse White/tan Sandy Silt Crystal Dry

23'-25' Red/Brown Clay

25'-30' White/Red Coarse Sand Dry Crystal PWR

30'-32' Silty Patches - Same as

Geoprobe Refusal ~~TOR~~ = 32'

Casing Needed

PZ-57 Davidson County / 11/10/10

~~TOR~~ 7'8"

Geoprobe Refusal

0'-3' Silty Clay Gray Brown Dry

3'-5' Clay Red PWR Dry

5'-8' Clay - Brown/Red Black Strations Dry PWR

8'-10' ~~Silty~~ Sandy Clay Brown PWR Red Dry

10'-14' Sand Brown/Red PWR Dry White

14'-15' - Moist PWR Sandy Clay

15'-17' Moist Clay Sand

17'-18' Dry White Sand

★ located by road w/ runoff standing water

Davidson County

Air Hammer Guys

Final Depth
Any abnormalities
Hit hard / soft spots?

→ Pz-56d (Supposed to be s/d)
TOR → 14'
Air hammer to 20' then call Joan
Give drillers Joan's #

56-d Davidson ~~TOR~~ 14' 11/10/10
→ Geoprobe Refusal

0'-5' Brown Clay
Dry / Moist
Black striations running thru

5'-6' Clay PWR Dry
Brown / Red

6'-10' Gravel / Clay
Grey, Red, Brown
Dry
PWR

10'-14' Sand w/ Rock
Spotty Clay
PWR
Brown, Red, Grey
Dry

Davidson County

PZ-54 11/10 2pm

0'-5' Recovery 4.5' Dry Red/Brown Clay PWR

3.5'-4' Sandy/gravel Dry Red/Brown/White

5'-10' Silt w/ trace clay PWR Grey/Brown/White Red Dry

10'-13' Sand, PWR Gray, Brown, white Red, Dry

~~TOR~~ = 13'
Geoprobe Refusal

Davidson County

PZ-48 11/10 2:45pm

0'-5' Moist Clay Brown & Black ~~Debris~~

5'-8' Clay Moist Brown/Red w/ Black thruout PWR

8'-10' Sandy Silt PWR Gray, White Red Last few inches Dark Gray Moist Clay

10'-15' Darker Gray w/ Red & White Silt/PWR

15'-20' Silt PWR Gray White Brown/Iron Staining

Davidson County 11/10/10

20'-25' Silty Clay
Recovery → 1' PWR
Dark Gray

25'-30' 6" Silty Clay
Recovery Dark Gray
3'1/2' 1" Red/White
~~TOR~~ → 32' Coarse Sand
Water Maybe! Red
Silty Clay
Geoprobe 6" Dark Gray
Refusal PWR
Silt

1" Red/White
Coarse Sand

Steven
33.0-24.0-0.0

Davidson County 11/10/10

PZ-47 0'-1' Nothing

0'-5' Recovery 2'-3' Topsoil
4'

3'-4' Wet
Dark Brown

4'-5' PWR
Clay
Moist
Red/Brown

5'-7' Clay
PWR
Red/Gray
Black & Iron Striations
Moist
(1st 3' Wet)

7'-10' Sandy Silt
Red/Brown
Dry PWR

Davidson County

11/10/10

10'-15'

10'-12' Very wet
Brown Clay

12'-15' Gray
White
Red
PWR
Dry
Crushed Rock

15-16' Gray
Black
White
PWR
Crushed Rock
coarse San)

Geoprobe
~~FOR~~ Refusal → 18'

Davidson County

Notes @ PZ

Screen Depth
Top Sand 1' above screen
Top Bentonite 2' Thick

(Nov. 11) → Drillers finishing 56 & 54 then 58

Casing PZ-58 Drill 32' then call Joan

John PZ @ 48 & 47 then drill 51 then 59? ← Thurs Plan

Air hammer Rig
PZ-58 Drilled to 36' hit water
Set PZ

PZ-57 23'

MW-9 40'-45' deep

Davidson County

Wednesday summary:

Nov. 10 (7:30am - 4:20pm)

PZ-50 Drilled & Sampled (~~TOR~~ -21')
PZ-52 Drilled & Sampled (~~TOR~~ -22')
PZ-58 Drilled & Sampled (~~TOR~~ -32')
PZ-57 Drilled & Sampled (~~TOR~~ -18')
PZ-56d Drilled & Sampled (~~TOR~~ -14')
PZ-54 Drilled & Sampled (~~TOR~~ -13')
PZ-48 Drilled & Sampled (~~TOR~~ -32')
PZ-47 Drilled & Sampled (~~TOR~~ -14')
↳ Geoprobe Refusal

Thursday Summary (Rewritten on another page)

Nov. 11 (7:30am -

PZ-47 Depth ~~15'~~ DTB 15' 8am
" to sand 4'
10' screen " to Bentonite ~~12'~~

PZ-48 DTB 33'
water sand 2'
@24' Bent. 2'
10' screen 9:15am

*Ask Joan to bring a water sampler

Davidson county

PZ-51 @11am 11/11/10

0'-5' Recovery 3.5' Dark Brown Very wet
PWR Red & Gray Cast Ribbon

5'-10'
5'-8' ⇒ PWR Silty Clay Gray/Red
8'-10' ⇒ Very wet Brown Red Clay Cast & Ribbon
(11'-14')
10'-14' ⇒ PWR Gray/Red Sandy Silt

10'-11' ⇒ Clay Brown PWR Moist

Geoprobe Refusal @14'

PZ @ 18'
Better water

Davidson County

PZ - 59 @ 2pm Nov. 11 (Thurs)

0'-5' Red Clay Dry

5'-10' 5'-8' Sandy Silt
Red Brown
PWR
Dry

set 1 @ 25' moist @ 15'

8-10' Clay
Dark Brown
9.5'-10' wet

10'-15' 10'-12' Silty Clay
Brown Red
PWR Moist
12'-15' Sand
Gray
~~Dry~~ Moist

15'-20' White Tan Gray
Moist
Sand PWR

Note: Very Wet Sample pulled up on Auger

Geoprobe Refusal
~~TOR~~ = 28'

20'-30' small amount of water in tube

Davidson County

Thursday summary 11/11/10

(7:30 am - 4:15 p.m)

PZ-47 DTB 15' 8am
Depth to Sand 4'
Depth to Bentonite 2'

PZ-48 DTB 33' 9:15 am
Depth to Sand 1'
Depth to Bent. 1'
Water @ 24'
(Pulled up to 33')

PZ-51 Soil Boring & well 11am
Geoprobe Refusal ~~TOR~~ - 14'
DTB - 18'
D.T. Sand - 7'
D.T. Bent. - 5'

PZ-59 Soil Boring & well 2pm
Geoprobe Refusal ~~TOR~~ - 28'
DTB - 25'
D.T. Sand - 14'
D.T. Bent. - 12'

Davidson Co.

PZ-55 Nov. 12 8:45am

0'-5' Clayey silt
Brown/Gray
White stuff
Recovery 4
Moist clay 0'-2'
2'-5' Dry

5'-6' Red/white
Sandy
Dry
Pink

Geoprobe
Refusal @ 6'

Continued to Air Hammer
to find water

well @ 15'

Davidson County Nov. 12
@12:45pm

PZ-56S

→ Tried 1st hole @ about 10'
from 56d (w/Geoprobe)
Depth: 15'
No water

→ Moved another 60' from
previous hole (w/Geoprobe)
Depth = 12'
No water
Moist clay from 2'-6'

→ Moved from 120' from PZ-56d
(30' away from creek)
(see details on back
of page)

Davidson County

PZ-56S 11/12/10

0'-5' Re[illegible]

Moist, Red Brown Clayey
0'-3' Silty Fine Sand
3'-5' [illegible], Silty Fine Sand

5'-9'
5'-7½ Clayey, Silty
Red Fine Sand
Ribbon

7½-9' PWR
Gray, Brown, Red
Black & White Modeled

Setting well @ 10' w/ 5' screen
Depth to Sand 6'
" Bentonite 1'

Went deeper
to 15'
to set well

Geoprobe Refusal @ 9'

PZ-53 Davidson Co. 11/12/10
@ 3:25 pm

0'-5' 3½' Recovery
Silty Sand
Tan Red Brown
Red [illegible]
[illegible] Presence
Dry

5'-10' Recovery
4½'

5'-6' Silty Fine Sand
Gray
Dry

6'-9' Brown
Silty Sand
Dry

9'-10' PWR Dry
Sand

Davidson County

11/12/10

10'-15' 4'1/2' Recovery
Moist
Grey PWR
Sand

15'-18' Brown silty Fine
Dry Sand
PWR

Geoprobe
Refusal @18'

Last few inches
PWR
Gray/White

Hole left to sit over weekend
Well installed Mon. (11/15) Morning
@8:30am

Set @24'
(8' of water)
10' Screen
Depth to Sand 13'
Depth to Bentonite 11'

Davidson Co[illegible]

Friday Summary 11/12/10

PZ-55 8:45am
Geoprobe Refusal @6'
Well set @15' w/10' screen
Depth to Sand 4'
Depth to Bentonite 3

PZ-56S 12:45p.m.
Drilled in 3 spots to find water
3rd Spot Geoprobe Refusal @ 9'
Set well @15' w/10' screen
Depth to Sand 4'
Depth to Bentonite 3'

PZ-53 3:25pm
Geoprobe Refusal @18'
All [illegible] left
[illegible] to collect
water
→ On Mon. well set @24'
(w/ [illegible] of water)

Davidson County
Week 2 (Nov. 15-19)

Mon	11/15	6:30am - 6:30pm ~230mi
Tues	11/16	6am-
Wed	11/17	
Thurs	11/18	
Fri	11/19	

Notes:
Wed Rock coring starts
Greg [illegible]
Mon - Joan comes @ lunchtime
PZ46 → 25 ft
Call Steven to unlock gate
336-240-0666 (C&D)

Davidson County

SB-1 @9:30am 11/15

0'-4' Red PWR
Dry
Clayey Coarse Sand

4'-5' PWR
Sand
Red White Tan

5'-10' Recovery 4½'
Coarse Grain Sand
PWR
White [illegible] Tan
Dry

10'-13' Recovery 4½'

12'-12½' Brown
Silty Fine Sand

[illegible] PWR
Coarse Grain Sand
Red White Tan
↓ Dry
slightly more moist than previous sample
small rock [illegible] insert

Incomplete Refusal @13'

Davidson County

PZ-62 11/15/10 @1:45pm

0'-2½' Sand, Silt Dry
Tan/Gray

2½'-5' Brown (red, gray)
Silty Clay
Dry
PWR appearance
Black [illegible]

5'-10' Brown
PWR
Silty Sand w/trace
Moist (more clay
than last sample)

10'-15' PWR
Silty Fine-Coarse Sand
Moist
Gray, Tan, Brown

15'-20' Silty Fine-Coarse Sand
PWR
Gray, Red, Tan
Moist

[Continued] →

Davidson County

PZ-62 11/15/10

20'-23' Wet
Gray
Clayey Silty Fine-Med Sand

23'-25' PWR
Moist, not wet
Silty Fine-Coarse Sand

Geoprobe Refusal
@ 25'

Set well @ 25'

Davidson Co[illegible]

PZ-63 3:10pm 11/15/10

0'-5' Moist
Pink
Clayey Silt
Brown-Red

5'-10' Moist [illegible] Gray, Tan
Pl[illegible] [illegible]ining
Clay | Fin [illegible] Grain Sand

10'-10'12' W[illegible] Brown Clay
10'[illegible]15' Silt w/ trace clay
Gray, Pink
White
Moist

15'-20' Recovery 4"
Silty Clay (trace clay)
Gray, Pink, Black, White,
Tan
Moist
20'-23' Silty Clay (trace clay)
Gray Pink
White Black [illegible]
Moist

Geoprobe Refusal @ 23'

Set Well @ 25'

Lower depth reset well @ 45' (11/22/10)

Davidson County 11/16/10

Water Level Readings

PZ #	Depth to Water (ft)	(ft) DTB	(ft) Water Depth
47	8.43	15	6.57
48	26.11	33	6.89
51	11.52	18	6.48
57	17.27	23	5.73
58	25.85	36	10.15
59	19.32	25	5.68
~~63~~			
62			
56s	6.60	15	[illegible]
55	6.40	15	8.6
~~54~~			
53	16.00	24	8.0

11/16/10

63	Dry	25	
62	18	25	7
4[illegible]	27	30	3

Davidson County

Monday 11/15/10

Summary

SB-1 Sampled (Geoprobe Refusal @ 13')

PZ-46 Drilled well to depth of 30'

PZ-62 Sampled & Drilled well
Geoprobe Refusal & Well Depth=25'

PZ-63 Sampled & Drilled Well
Geoprobe Refusal @ 23'
Well Depth = 25'

Davidson County

Tuesday (11/16/10) C&D Landfill

Total: 2 wells w/ Soil sampling
2 Soil borings
2 wells w/ Soil sampling
in Pennsylvania
(PZ-60 & 61)

Give Reports to Angelo
@ office

Davidson County

CDMW-6 (@C&D LF) 11/16/10

0'-4' Fine-Med Sandy Silt
Red
Dry
Prb
4'1/2' Recovery

4'-5' PWR
White/Tan
Dry
Fine-Med Sandy Silt

5'-7' PWR
White/Tan
Dry
Fine-Med Sandy Silt

Geoprobe Refusal @ 7'

Set well @ 23'

Davidson County

CDMW-7 (@C&D LF) 11/16/10
↳ (located near silt fence)

0'-5' Recovery = 4'
Red/Tan
PWR
Dry
Fine-Med Sandy Silt

5'-7' White/Tan
PWR
Med-Coarse Sand
Dry

Geoprobe Refusal @ 7'

Set well @ 45'

Davidson County

CDSB-1 11/22/10 10 15am
(Monday

0'-4' Light tan dry Silty
Fine to coarse Sand.

Geoprobe refusal @ 4.1'

CDSB-2

0'-3' Fine sandy silty Clay
Mottled staining
Brown-Red, Dry

3'-5' Silty Clay
Brown
Dry

5'-10' Silt w/ Trace Clay
~~Gray~~/Tan/Red
Dry

Geoprobe
Refusal @ 12'

10'-12' Gray, Dry
Silt

Davidson County

PZ-61* 11:40 am 11/22/10

0'-5' Fine sandy Silt
Gray, Rock structure visible
Dry
Recovery: 4½'

5'-8' Fine sandy Clayey Silt
Gray/Red/Tan
Rock structure visible
Dry

Geoprobe Refusal @ 8'

Hit Rock w/ Air hammer
@ 16'

* Abandoned hole

11/22/10 Davidson Co. Ph. 2

PZ-61A

0-5' moist red to tan
Fine sandy clay

5'-10' moist red to tan
Fine to med. sandy clay
with some mica

10'-15' moist tan clayey silty
Sand with relict rock
texture.

15'-20 very wet clayey silty fine sand
white & brown with
relict rock texture.

Drilled well by air hammer
to 20' to set well.

Davidson County 11/22/10

PZ-60 2:15pm

0'-5' Fine-Med sandy silt
Gray
Rock structure visible
Dry

5'-7' Fine-Med sandy silt
Gray w/ Relict rock
texture.
slightly more moist
than previous

~~10'-15'~~ Geoprobe Refusal
@ 7'

Drilled well by air hammer
to 12' to set well.

Davidson County 11/22/10

PZ-63 → Drilled originally
11/13/10 but drilled @25'
Drilled & set well @40'

11/23/10 Rock Coring

PZ-50
Casing set @ 26'
Rock cored to 34'
Rock soft [illegible]
Unable to core

PZ-52
Casing set @ 26'
Rock cored to [illegible]
Med-coarse sand
Unable to core
Sample Taken

Davidson County 11/23/10

PZ-49 Rock Coring Info

All Pieces >4" in length:

(inches)
5.75
7.4
5.5
19.8
5.0
6.6
7.0
5.7
5.1
4.9
7.2
8.6
6.0
19.4
5.0
119.15"

Recovery:
9' 11" = 119"
~100%
~120"

RQD = $\frac{119.15}{120}$

RQD = 99.3%

Drilled from 43' to 53'

Drilled w/ Air hammer
& set [illegible] @ 51'

Davidson County 11/29/10

Monday

PZ-56 & 54
↳ Need to be Rock Cored

PZ-50 & 52
↳ Need to be air hammered down to water, then piezometers set.

PZ-56 Casing @ 30'
Rock cored to 41'
No Recovery

PZ-52
set @ 55'
Hit water first @ 52'

PZ-54 Casing @ 18'
Rock cored to 28'
No Recovery
Hard seams @ 26'

Davidson County 11/29/10

PZ-50
Set @ 40'

PZ-56
Set @ 34'

PZ-54
Air hammered to 53'
& hit solid granite

(PZ-2 DTB 73'
DTW 60')

↳ Equipment broke @ 56'

Projects (continued)

PAGE 1A

Track mounted Geoprobe 7822DT

TRAIK

PZ-46D

S-1	0-5	4FT RECOVER	SILT
S-2	5-10	5 FT	SILT
S-3	10-15	5 FT	SILT
S-4	15-20	5 FT	CLAY
S-5	20-25	5 FT	CLAY
S-6	25-30	5 FT	CLAY
S-7	30-35	5 FT	CLAY
S-8	35-37	2 FT	RWR

PAGE 1B

DAVIDSON
11-8-2010
MONDAY

Drilling Geologic Exploration
Statesville NC
Driller: John Burr
MOUNTED GEOPROBE 7822DT
PZ-46D
Deep well of nested pair

DEPTH	RECOVERY	DESCRIPTION
0-0.3	4FT	TOPSOIL
0.3-3.5	3	Red brown moist silty Clay
3.5-8	1	Tan-yellow moist clayey silt
S-2	5FT	
8-15	2	Tan SILT, relict Rock structure visible
S3-5 FT		
15-21		Gray with Tan & White & Brown CLAY moist, Relict Rock struct visible

Iron staining @ 17'

STIFFER

PAGE 1C

This description from 19-21 feet is not correct. The clay described was material that fell into the boring.

WATER ON ROD AT ~28'

PAGE 1D

11-8-10

1

P2-46D CONT

~~19-21~~ NO ~~Brown CLAY moist Relict Rock structure visible but blades of CLAY ~ 1" thick~~

S-5 - 20-25

21-28' moist Gray CLAY with trace SAND RELICT Rock structure visible

S-6 - 25-30' rocky lost

28'-30' moist Gray Clay w/ trace Sand, more sand than in upper sample some iron staining at ~29 ft Generally white + Dark Gray.

30-35 WET CLAY, same as 28 to 30 But wet

(2)

"S-8 hammered in, 35-37 ft, 1 ft recovery" .
The description is of "hammering" with the Geoprope; i.e., resistance when the probe was pushed into the soil.

NOTE

S-8 - hammered in
35-37 FT 1 FT Recovery

Geoprobe stopped at
37 feet, ROCK/HARD

boring was left overnight. No core. the borign filled with mud up to about 35 feet deep. We will come back to the location later and set a shallow piezometer, screened at 25-35 feet.

11-8-10

(3)

PZ-46-D Continue

S-7 5FT CLAY, wet
30-35 wet Grey Clay w/ Brown stain + black Flecks, Relict Rock structure. wet,
S-8 35-37 HARD, DRY Weathered ROCK
PWR

will install 6" ø CASING in PZ-46D, will AUGER DOWN

Augered with 8¼ ID Augers to 25 ft

Air hammer

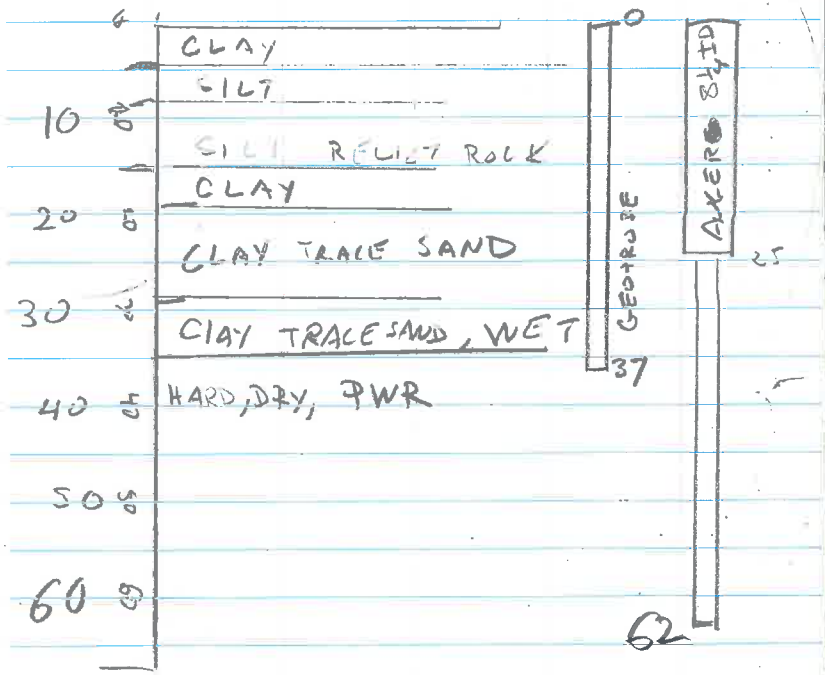
57

Hammered to 62 FEET
STOPPED for ~ 5 minutes
John Burr said he would go additional 5 FT free if no rock.
WATER IN BORING AT 62 Feet when we started back.

57

P2 46 D

(4)



NO CORE

WILL GROUT BORING LATER

(1)

P2-49 10-5-10 11AM

~350' South West of TANK

GRND EL ESTIMATED AT 216

John Burr

Geoprobe 7822 DT

0-33 - GEOPROBE

0-4 AIR HAMMER

4 ROCK CORE

	DEPTH	REC	DESC
S-1	0-5	5'	SILT
S-2	5-10	4'	SILT
S-3	10-15	5	SILT
S-4	15-20	4'	SILT
S-5	20-25	4.5'	SILT
S-6	25-30	4'	SILT
S-7	30-~~32~~ 33	3	SILT

0-2 GROUND - Orange Red SILTY CLAY
NO TOPSOIL / AREA STRIPPED
Orange Red DENSE SILTY CLAY

2-15 TAN - ~~[illegible]~~ SILT
TAN/Yellow Brown Dr. SILT,
STRUCTURE Relict Rock

(11-9-10 CONT)[2]

11:11. START PZ-49

11:45 Hit Geoprobe REFUSAL AT 33'

11:47AM

NOTE PZ-49 LOOKS LIKE it will STAY OPEN WITHOUT GOING INSIDE THE 8¼" ID AUGER.

WILL AIR HAMMER TO TOP OF ROCK AND SET CASING

Hit WATER 41'

12:15 hit ROCK AT 42'

ADVANCING AIR HAMMER TO 43 FT, TO SET 6" Ø PVC CASING

12:45 ROD STUCK. WRENCH BROKE GOING TO WELL

11-9-10 CONT.

(3)

PZ-49 CONT.

15-24 ~~TO~~ GRAY, STAND Dry SILT BECOMES MORE GRAY WITH DEPTH. ROCK STRUCTURE EVIDENT.

24-30 GRAY ~~BR~~ SILT, SLO DAMP AT 24' RELICT ROCK STRUCTURE w/ more iron staining THAN EVIDENT ABOVE

NOTE SILTY SAND AT END OF SAMPLE AT 30' NO SAND IN RECOVERED SAMPLE

30-30.5 MED LT. GRAY ~~BRN~~ SAND DRY, THIN SAND LAYER / RELICT ROCK

30.5-33 DARK GRAY SILT ~~BRN~~ Relict ROCK

GEOPROBE STOPPED AT 33.5 feet

switch TO AIR HAMMER

WATER AT 41'

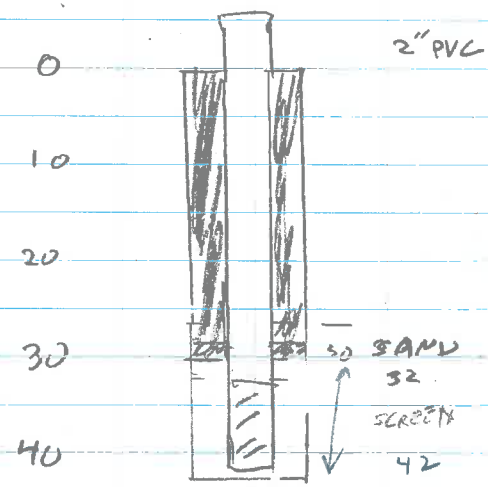
ROCK AT 42'

ADVANCE AIR HAMMER TO 43, set 6" Ø

11-9-10

(4)

PZ-49 - CONTINUED



Well 2"Ø PVC
GROUT SURFACE to 30'
SAND 30' - 42'
SCREEN 32' - 42'

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Appendix B
Geotechnical Laboratory Reports

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Geotechnics
INTEGRITY IN TESTING

December 8, 2010

Project No. 2010-774-01

Ms. Joan Smyth
Richardson Smith Gardner & Associates
14 N. Boylan Avenue
Raleigh, NC 27603

jsmythr@rsgengineers.com

Transmittal
Laboratory Test Results
Davidson County Landfill

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was faxed to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens which were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectively submitted,
Geotechnics, Inc.

Michael P. Smith
Regional Manager

We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.

2200 Westinghouse Boulevard • Suite 103 • Raleigh, NC 27604 • Phone (919) 876-0405 • Fax (919) 876-0460

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INTEGRITY IN TESTING

MOISTURE CONTENT

ASTM D 2216-05 (SOP-S1)

Client	R.S.G. & ASSOCIATES
Client Reference	DAVIDSON CO. LF.
Project No.	2010-774-01

Lab ID	1	2	3	4	5
Boring No.	PZ-46	PZ-47	PZ-48	PZ-51	PZ-52
Depth (ft)	27.5-30.0	15.0-18.0	25.0-30.0	10.0-14.0	20.0-22.0
Sample No.	NA	NA	NA	NA	NA
Tare Number	818	820	816	824	842
Wt. of Tare & WS (gm)	223.96	171.65	171.09	151.85	962.37
Wt. of Tare & DS (gm)	204.60	169.47	164.58	149.06	925.51
Wt. of Tare (gm)	137.32	136.07	135.98	135.28	255.85
Wt. of Water (gm)	19.36	2.18	6.51	2.79	36.86
Wt. of DS (gm)	67.28	33.4	28.6	13.78	669.66
Water Content (%)	**28.8**	**6.5**	**22.8**	**20.2**	**5.5**

Lab ID	6	7	8	9	10
Boring No.	PZ-53	PZ-54	PZ-55	PZ-56	PZ-57
Depth (ft)	15.0-18.0	10.0-13.0	5.0-6.0	7.5-9.0	15.0-18.0
Sample No.	NA	NA	NA	NA	NA
Tare Number	827	826	215	819	8010
Wt. of Tare & WS (gm)	160.55	169.67	454.56	156.92	199.95
Wt. of Tare & DS (gm)	156.58	167.51	428.88	155.02	189.70
Wt. of Tare (gm)	136.29	139.19	172.30	135.56	135.92
Wt. of Water (gm)	3.97	2.16	25.68	1.9	10.25
Wt. of DS (gm)	20.29	28.32	256.58	19.46	53.78
Water Content (%)	**19.6**	**7.6**	**10.0**	**9.8**	**19.1**

Notes : *NA*

Tested By *TMS* *Date* *12/1/2010* *Checked By* JBD *Date* 12.6.10

DCN: CT-S1 DATE 6-30-98 REVISION: 2

\\SERVER\Data Drive\Data Sheets\[Limit-(NP).xls]Sheet1

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INTEGRITY IN TESTING

MOISTURE CONTENT

ASTM D 2216-05 (SOP-S1)

Client	R.S.G. & ASSOCIATES
Client Reference	DAVIDSON CO. LF.
Project No.	2010-774-01

Lab ID	11	12	13	14	15
Boring No.	PZ-58	PZ-59	PZ-60	PZ-61a	PZ-62
Depth (ft)	30.0-32.0	15.0-20.0	5.0-7.0	15.0-20.0	20.0-25.0
Sample No.	NA	NA	NA	NA	NA
Tare Number	822	216	200	209	815
Wt. of Tare & WS (gm)	251.66	725.49	887.03	663.72	178.52
Wt. of Tare & DS (gm)	235.50	614.41	832.67	570.17	168.88
Wt. of Tare (gm)	136.98	170.76	171.76	171.63	136.08
Wt. of Water (gm)	16.16	111.08	54.36	93.55	9.64
Wt. of DS (gm)	98.52	443.65	660.91	398.54	32.8
Water Content (%)	**16.4**	**25.0**	**8.2**	**23.5**	**29.4**

Lab ID	16	17	18	19	20
Boring No.	PZ-63	CDSB-1	CDSB-2	SB-1	CDMW-6
Depth (ft)	20.0-23.0	0.0-4.0	10.0-12.0	10.0-13.0	5.0-7.0
Sample No.	NA	NA	NA	NA	NA
Tare Number	817	213	823	843	838
Wt. of Tare & WS (gm)	221.83	997.86	154.37	821.08	827.48
Wt. of Tare & DS (gm)	203.96	964.34	152.56	776.85	798.94
Wt. of Tare (gm)	135.62	173.30	136.95	262.05	261.61
Wt. of Water (gm)	17.87	33.52	1.81	44.23	28.54
Wt. of DS (gm)	68.34	791.04	15.61	514.8	537.33
Water Content (%)	**26.1**	**4.2**	**11.6**	**8.6**	**5.3**

Notes : *NA*

Tested By *TMS* *Date* *12/1/2010* *Checked By* JBO *Date* 12-6-10

DCN: CT-S1 DATE 6-30-98 REVISION: 2

\\SERVER\Data Drive\Data Sheets\[Limit-(NP).xls]Sheet1

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MOISTURE CONTENT

ASTM D 2216-05 (SOP-S1)

Client	R.S.G. & ASSOCIATES
Client Reference	DAVIDSON CO. LF.
Project No.	2010-774-01

Lab ID	21
Boring No.	CDMW-7
Depth (ft)	5.0-7.0
Sample No.	NA
Tare Number	834
Wt. of Tare & WS (gm)	847.65
Wt. of Tare & DS (gm)	824.58
Wt. of Tare (gm)	259.44
Wt. of Water (gm)	23.07
Wt. of DS (gm)	565.14
Water Content (%)	**4.1**

Notes : *NA*

Tested By *TMS* *Date* *12/1/2010* *Checked By* TBD *Date* 12-6-10

DCN: CT-S1 DATE 6-30-98 REVISION: 2

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ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

Client	R.S.G & ASSOCIATES	Boring No.	PZ-46
Client Reference	DAVIDSON CO. LF.	Depth (ft)	27.5-30.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-01	Soil Description	**GRAY SILT**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

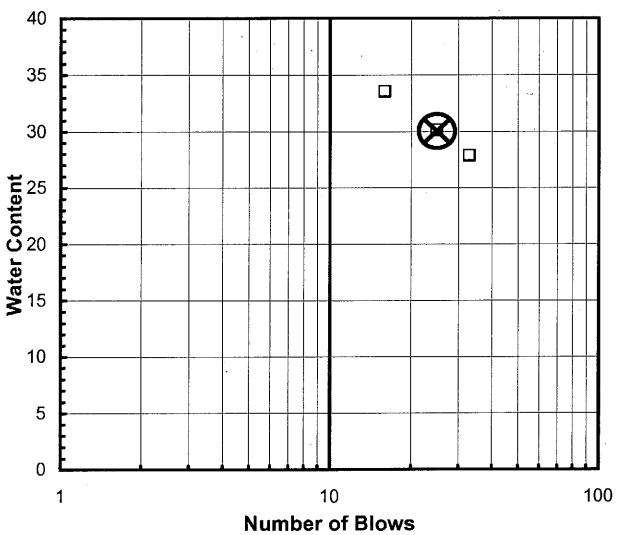
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	K	L	A	MULTIPOINT
Wt. of Tare & WS (gm)	26.42	25.02	25.26	
Wt. of Tare & DS (gm)	23.98	22.75	22.74	
Wt. of Tare (gm)	15.21	15.21	15.22	
Wt. of Water (gm)	2.4	2.3	2.5	
Wt. of DS (gm)	8.8	7.5	7.5	
Moisture Content (%)	**27.8**	**30.1**	**33.5**	
Number of Blows	**33**	**25**	**16**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	N	U	
Wt. of Tare & WS (gm)	22.23	21.64	
Wt. of Tare & DS (gm)	20.71	20.21	
Wt. of Tare (gm)	15.25	15.14	
Wt. of Water (gm)	1.5	1.4	
Wt. of DS (gm)	5.5	5.1	
Moisture Content (%)	**27.8**	**28.2**	**-0.4**

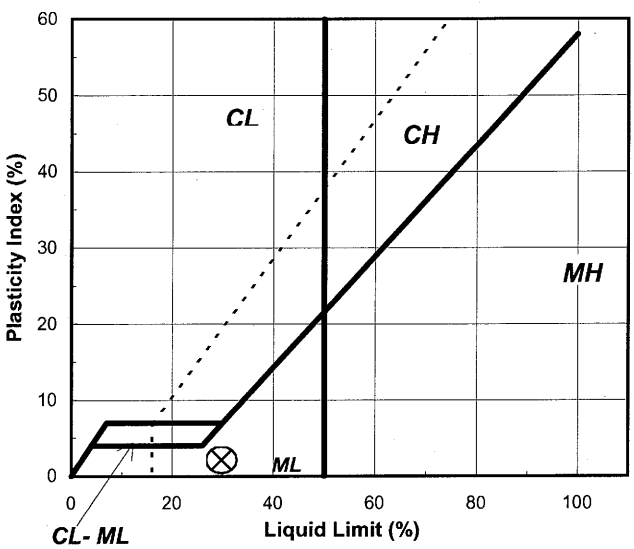
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**30**
Plastic Limit (%)	**28**
Plasticity Index (%)	**2**
USCS Symbol	**ML**

Flow Curve



Plasticity Chart



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ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-47
Client Reference	DAVIDSON CO. LF	Depth (ft)	15.0-18.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-02	Soil Description	**GRAY SILTY CLAY**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

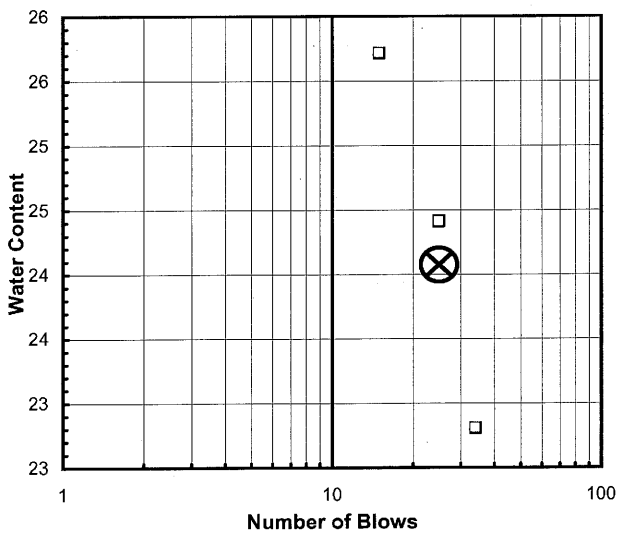
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	K-A	A-B	A-C	MULTIPOINT
Wt. of Tare & WS (gm)	24.12	24.55	25.27	
Wt. of Tare & DS (gm)	22.51	22.79	23.29	
Wt. of Tare (gm)	15.45	15.58	15.59	
Wt. of Water (gm)	1.6	1.8	2.0	
Wt. of DS (gm)	7.1	7.2	7.7	
Moisture Content (%)	**22.8**	**24.4**	**25.7**	
Number of Blows	**34**	**25**	**15**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	V	A-D	
Wt. of Tare & WS (gm)	21.93	22.48	
Wt. of Tare & DS (gm)	20.82	21.27	
Wt. of Tare (gm)	15.26	15.36	
Wt. of Water (gm)	1.1	1.2	
Wt. of DS (gm)	5.6	5.9	
Moisture Content (%)	**20.0**	**20.5**	**-0.5**

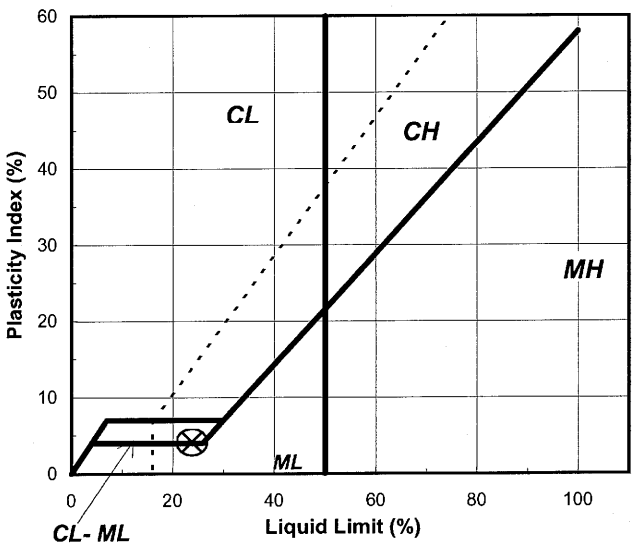
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**24**
Plastic Limit (%)	**20**
Plasticity Index (%)	**4**
USCS Symbol	**CL-ML**

Flow Curve



Plasticity Chart



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ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

Client	R.S.G & ASSOCIATES	Boring No.	PZ-48
Client Reference	DAVIDSON CO. LF.	Depth (ft)	25.0-30.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-03	Soil Description	**BROWN SILT**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

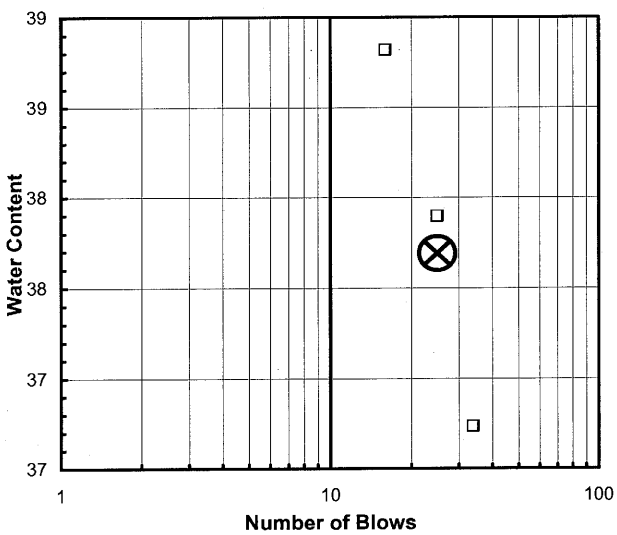
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	C	R	A-N	MULTIPOINT
Wt. of Tare & WS (gm)	27.30	23.02	25.01	
Wt. of Tare & DS (gm)	24.06	20.86	22.32	
Wt. of Tare (gm)	15.24	15.16	15.39	
Wt. of Water (gm)	3.2	2.2	2.7	
Wt. of DS (gm)	8.8	5.7	6.9	
Moisture Content (%)	**36.7**	**37.9**	**38.8**	
Number of Blows	**34**	**25**	**16**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	A-K	A-F	
Wt. of Tare & WS (gm)	21.98	21.91	
Wt. of Tare & DS (gm)	20.54	20.47	
Wt. of Tare (gm)	15.50	15.42	
Wt. of Water (gm)	1.4	1.4	
Wt. of DS (gm)	5.0	5.1	
Moisture Content (%)	**28.6**	**28.5**	**0.1**

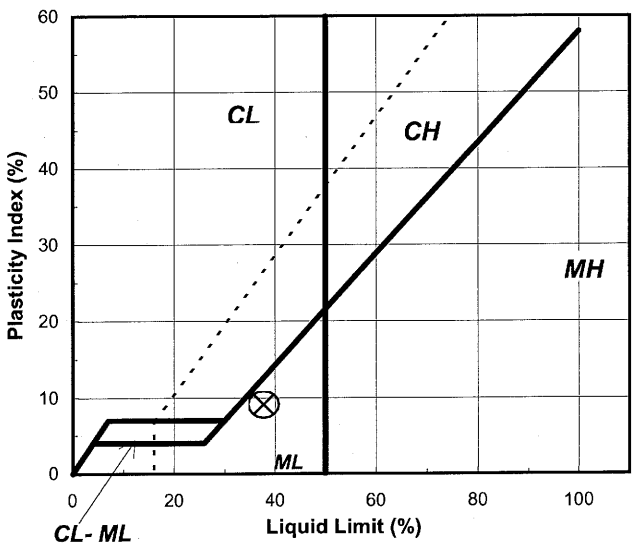
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**38**
Plastic Limit (%)	**29**
Plasticity Index (%)	**9**
USCS Symbol	**ML**

Flow Curve



Plasticity Chart



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ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-51
Client Reference	DAVIDSON CO. LF	Depth (ft)	10.0-14.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-04	Soil Description	**GRAY BROWN SILT**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

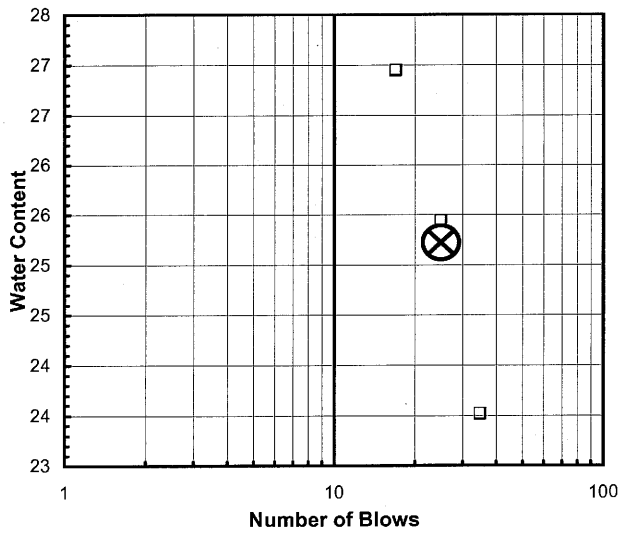
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	D-2	B-B	A-H	MULTIPOINT
Wt. of Tare & WS (gm)	24.77	25.52	23.34	
Wt. of Tare & DS (gm)	22.95	23.49	21.68	
Wt. of Tare (gm)	15.21	15.51	15.52	
Wt. of Water (gm)	1.8	2.0	1.7	
Wt. of DS (gm)	7.7	8.0	6.2	
Moisture Content (%)	**23.5**	**25.4**	**26.9**	
Number of Blows	**35**	**25**	**17**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	A-I	A-P	
Wt. of Tare & WS (gm)	21.68	22.94	
Wt. of Tare & DS (gm)	20.49	21.49	
Wt. of Tare (gm)	15.42	15.55	
Wt. of Water (gm)	1.2	1.5	
Wt. of DS (gm)	5.1	5.9	
Moisture Content (%)	**23.5**	**24.4**	**-0.9**

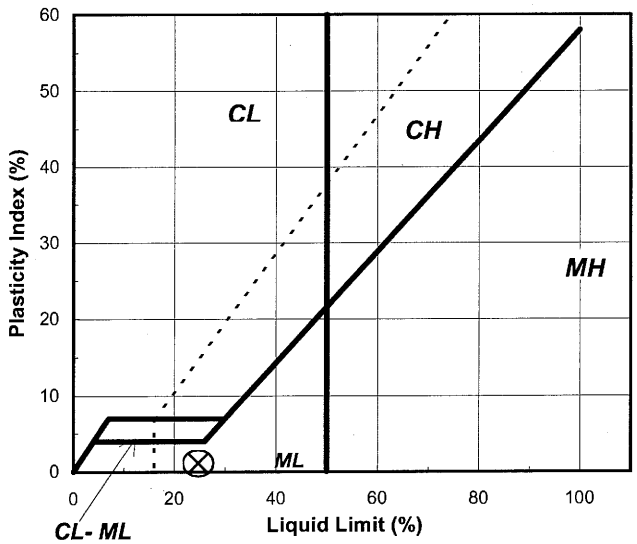
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**25**
Plastic Limit (%)	**24**
Plasticity Index (%)	**1**
USCS Symbol	**ML**

Flow Curve



Plasticity Chart



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ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-52
Client Reference	DAVIDSON CO. LF	Depth (ft)	20.0-22.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-05	Soil Description	**BROWN TAN LEAN CLAY**

Note: The* USCS *symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

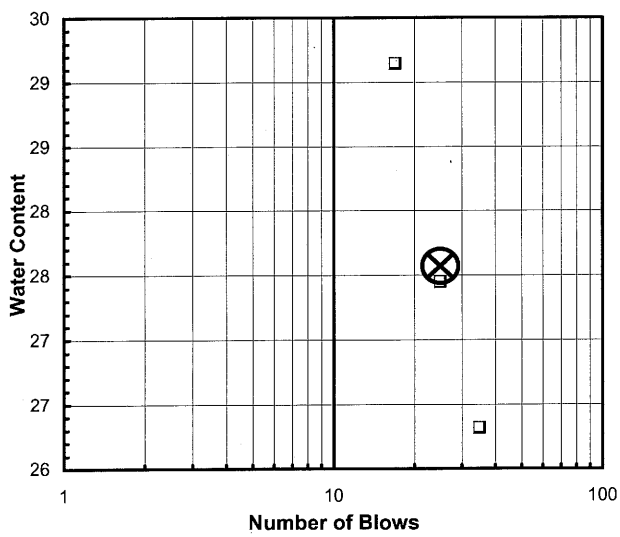
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	Y	F	M	MULTIPOINT
Wt. of Tare & WS (gm)	23.25	25.11	24.45	
Wt. of Tare & DS (gm)	21.65	22.95	22.34	
Wt. of Tare (gm)	15.57	15.08	15.10	
Wt. of Water (gm)	1.6	2.2	2.1	
Wt. of DS (gm)	6.1	7.9	7.2	
Moisture Content (%)	**26.3**	**27.4**	**29.1**	
Number of Blows	**35**	**25**	**17**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	Q	R	
Wt. of Tare & WS (gm)	22.45	21.62	
Wt. of Tare & DS (gm)	21.25	20.57	
Wt. of Tare (gm)	15.15	15.16	
Wt. of Water (gm)	1.2	1.1	
Wt. of DS (gm)	6.1	5.4	
Moisture Content (%)	**19.7**	**19.4**	**0.3**

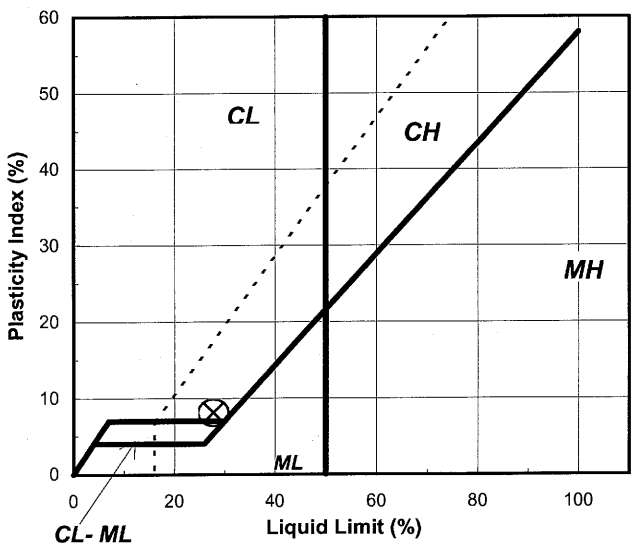
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**28**
Plastic Limit (%)	**20**
Plasticity Index (%)	**8**
USCS Symbol	**CL**

Flow Curve



Plasticity Chart



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ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-53
Client Reference	DAVIDSON CO. LF	Depth (ft)	15.0-18.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-06	Soil Description	**BROWN SILT**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.

(Minus No. 40 sieve material, Airdried)

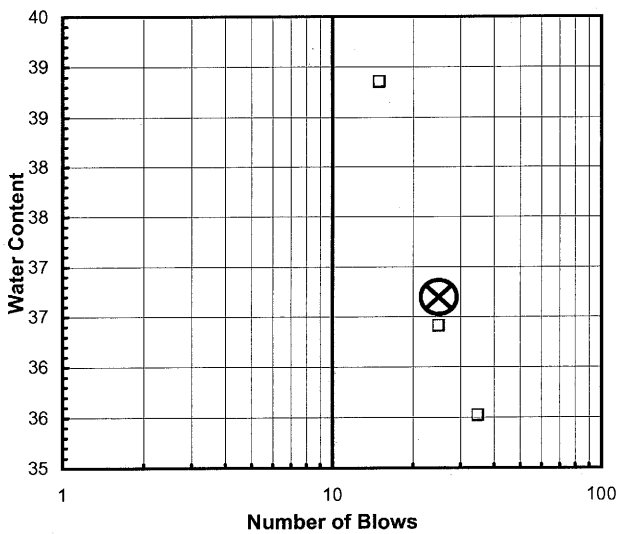
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	A	U	L	**MULTIPOINT**
Wt. of Tare & WS (gm)	24.71	23.27	23.43	
Wt. of Tare & DS (gm)	22.22	21.10	21.13	
Wt. of Tare (gm)	15.21	15.14	15.21	
Wt. of Water (gm)	2.5	2.2	2.3	
Wt. of DS (gm)	7.0	6.0	5.9	
Moisture Content (%)	**35.5**	**36.4**	**38.9**	
Number of Blows	**35**	**25**	**15**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	K	N	
Wt. of Tare & WS (gm)	21.26	21.84	
Wt. of Tare & DS (gm)	19.93	20.38	
Wt. of Tare (gm)	15.20	15.24	
Wt. of Water (gm)	1.3	1.5	
Wt. of DS (gm)	4.7	5.1	
Moisture Content (%)	**28.1**	**28.4**	**-0.3**

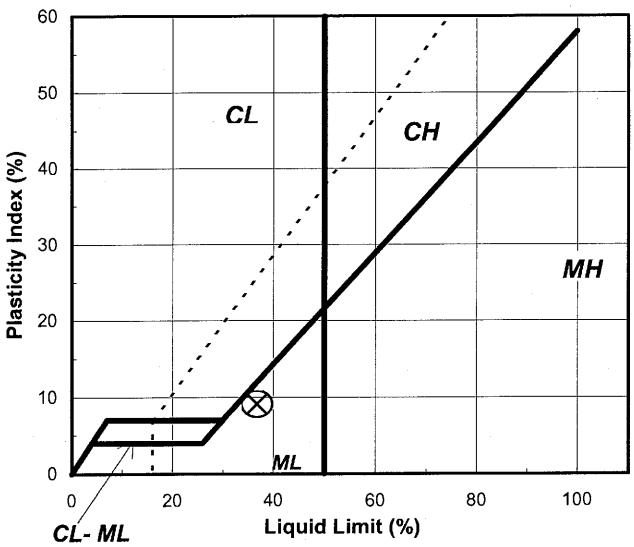
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**37**
Plastic Limit (%)	**28**
Plasticity Index (%)	**9**
USCS Symbol	**ML**

Flow Curve



Plasticity Chart



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ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-54
Client Reference	DAVIDSON CO. LF.	Depth (ft)	10.0-13.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-07	Soil Description	**GRAY/BROWN SILT**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

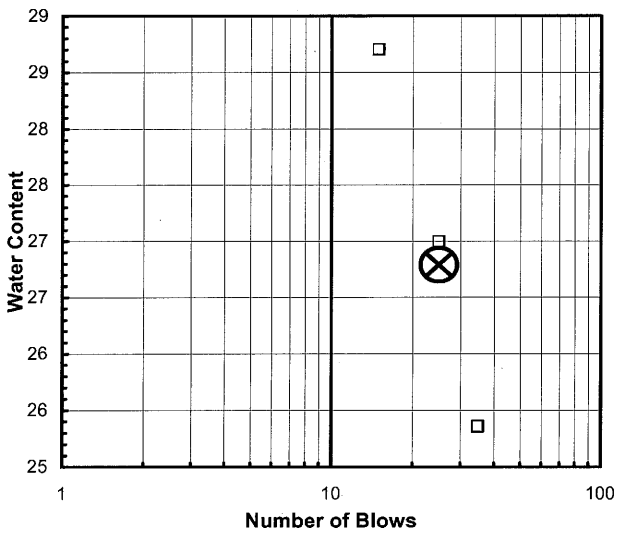
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	H	S	E	**MULTIPOINT**
Wt. of Tare & WS (gm)	31.07	31.12	30.32	
Wt. of Tare & DS (gm)	27.52	27.73	27.27	
Wt. of Tare (gm)	15.15	15.17	15.24	
Wt. of Water (gm)	3.6	3.4	3.1	
Wt. of DS (gm)	12.4	12.6	12.0	
Moisture Content (%)	**28.7**	**27.0**	**25.4**	
Number of Blows	**15**	**25**	**35**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	W	O	
Wt. of Tare & WS (gm)	24.84	26.25	
Wt. of Tare & DS (gm)	22.95	24.13	
Wt. of Tare (gm)	15.14	15.20	
Wt. of Water (gm)	1.9	2.1	
Wt. of DS (gm)	7.8	8.9	
Moisture Content (%)	**24.2**	**23.7**	**0.5**

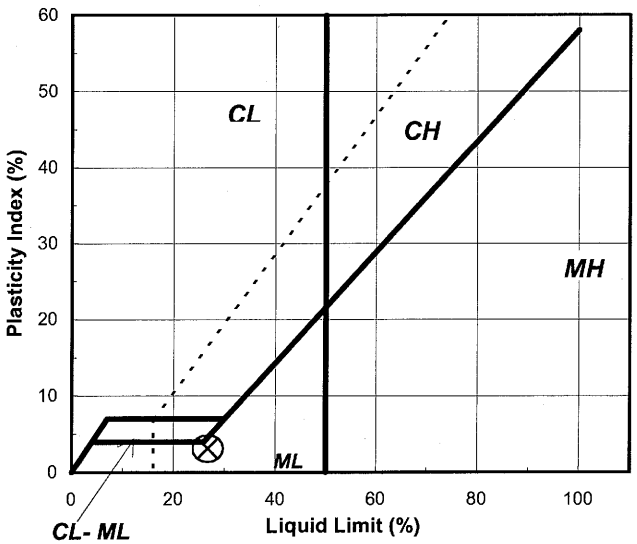
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**27**
Plastic Limit (%)	**24**
Plasticity Index (%)	**3**
USCS Symbol	**ML**

Flow Curve



Plasticity Chart



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ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-55
Client Reference	DAVIDSON CO. LF.	Depth (ft)	5.0-6.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-08	Soil Description	**BROWN SILTY CLAY**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

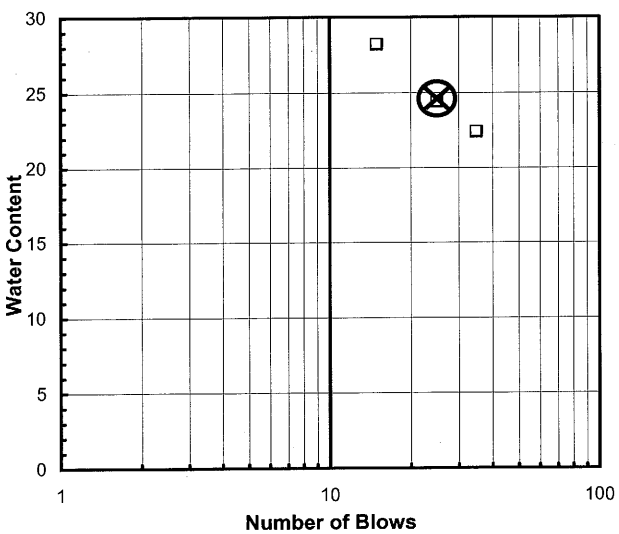
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	I	B	T	MULTIPOINT
Wt. of Tare & WS (gm)	25.65	27.04	25.05	
Wt. of Tare & DS (gm)	23.35	24.71	23.24	
Wt. of Tare (gm)	15.19	15.16	15.16	
Wt. of Water (gm)	2.3	2.3	1.8	
Wt. of DS (gm)	8.2	9.6	8.1	
Moisture Content (%)	**28.2**	**24.4**	**22.4**	
Number of Blows	**15**	**25**	**35**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	J	G	
Wt. of Tare & WS (gm)	21.80	21.02	
Wt. of Tare & DS (gm)	20.63	19.98	
Wt. of Tare (gm)	15.11	15.00	
Wt. of Water (gm)	1.2	1.0	
Wt. of DS (gm)	5.5	5.0	
Moisture Content (%)	**21.2**	**20.9**	**0.3**

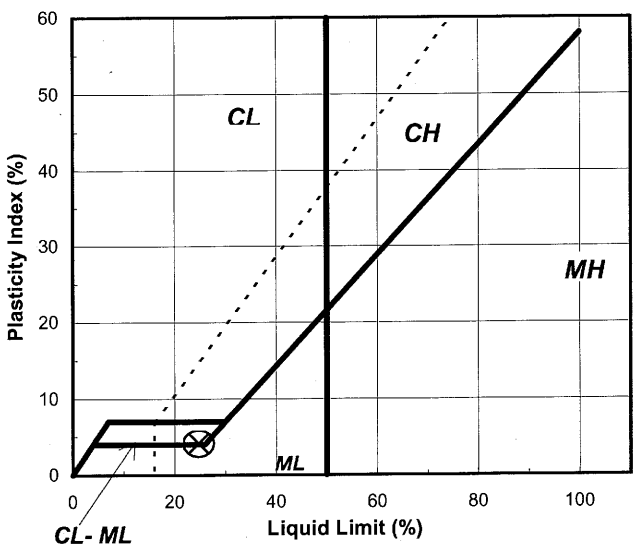
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**25**
Plastic Limit (%)	**21**
Plasticity Index (%)	**4**
USCS Symbol	**CL-ML**

Flow Curve



Plasticity Chart



Tested By JBD *Date* 12/3/2010 *Checked By* TMS *Date* 12-6-10

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ATTERBERG LIMIT

ASTM D 4318-05 (SOP - S4)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-56
Client Reference	DAVIDSON CO. LF.	Depth (ft)	7.5-9.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-09	Visual Description	**GRAY**

(MInus No. 40 sieve material, Wet Method)

NON - PLASTIC MATERIAL

Tested By *JBD* *Date* *12/6/2010* *Checked By* GEM *Date* 12-8-10

DCN: CT-S4C DATE: 7-11-97 REVISION : 2

\\Server\data drive\2010 PROJECTS\2010-774 R.S.G\[2010-774-01-09 Limit-(NP).xls]Sheet1

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ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

Client	R.S.G & ASSOCIATES	Boring No.	PZ-57
Client Reference	DAVIDSON CO. LF.	Depth (ft)	15.0-18.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-10	Soil Description	**BROWN SILT**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

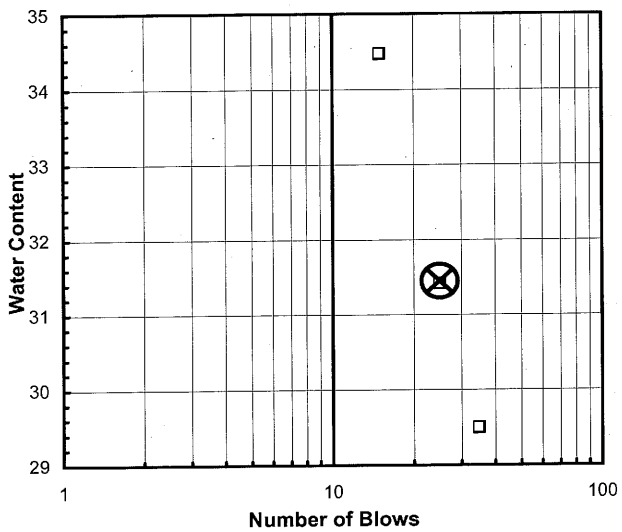
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	H	S	E	MULTIPOINT
Wt. of Tare & WS (gm)	29.34	33.01	33.33	
Wt. of Tare & DS (gm)	25.70	28.75	29.21	
Wt. of Tare (gm)	15.14	15.19	15.24	
Wt. of Water (gm)	3.6	4.3	4.1	
Wt. of DS (gm)	10.6	13.6	14.0	
Moisture Content (%)	**34.5**	**31.4**	**29.5**	
Number of Blows	**15**	**25**	**35**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	W	O	
Wt. of Tare & WS (gm)	23.54	24.27	
Wt. of Tare & DS (gm)	21.78	22.43	
Wt. of Tare (gm)	15.14	15.20	
Wt. of Water (gm)	1.8	1.8	
Wt. of DS (gm)	6.6	7.2	
Moisture Content (%)	**26.5**	**25.4**	**1.1**

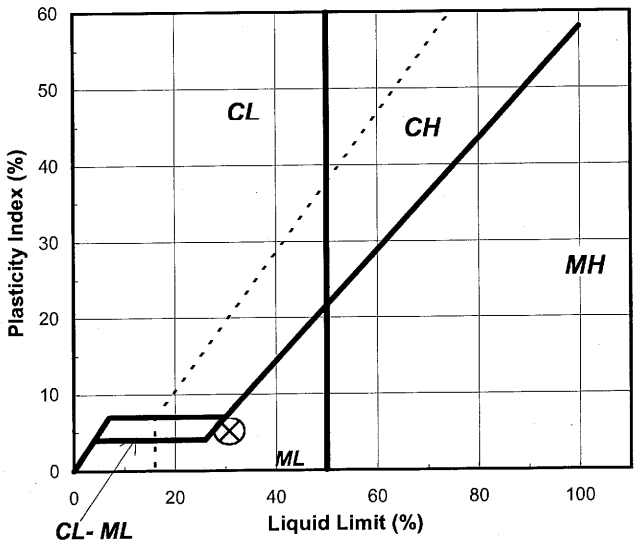
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**31**
Plastic Limit (%)	**26**
Plasticity Index (%)	**5**
USCS Symbol	**ML**

Flow Curve



Plasticity Chart



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ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-58
Client Reference	DAVIDSON CO. LF	Depth (ft)	30-32
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-11	Soil Description	**TAN SILT**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

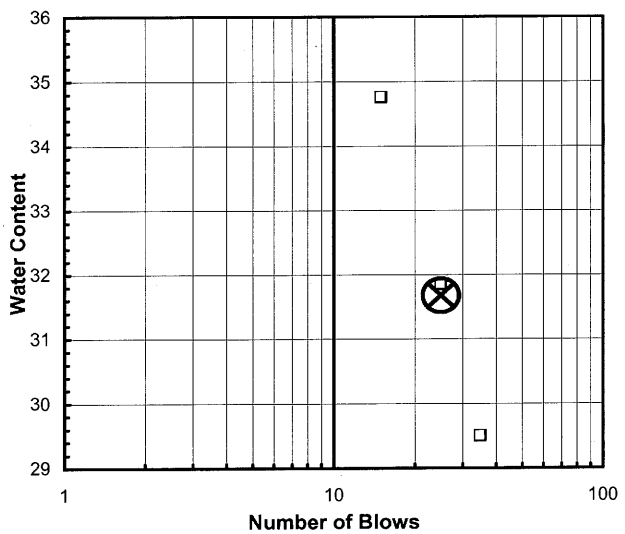
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	S	B	H	MULTIPOINT
Wt. of Tare & WS (gm)	31.82	30.86	30.64	
Wt. of Tare & DS (gm)	28.03	27.08	26.64	
Wt. of Tare (gm)	15.18	15.21	15.13	
Wt. of Water (gm)	3.8	3.8	4.0	
Wt. of DS (gm)	12.9	11.9	11.5	
Moisture Content (%)	**29.5**	**31.8**	**34.8**	
Number of Blows	**35**	**25**	**15**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	E	W	
Wt. of Tare & WS (gm)	23.19	22.33	
Wt. of Tare & DS (gm)	21.58	20.92	
Wt. of Tare (gm)	15.27	15.14	
Wt. of Water (gm)	1.6	1.4	
Wt. of DS (gm)	6.3	5.8	
Moisture Content (%)	**25.5**	**24.4**	**1.1**

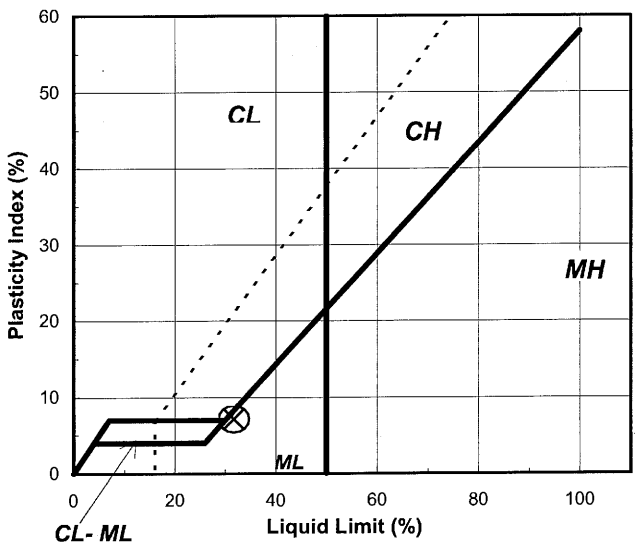
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**32**
Plastic Limit (%)	**25**
Plasticity Index (%)	**7**
USCS Symbol	**ML**

Flow Curve



Plasticity Chart



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ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-59
Client Reference	DAVIDSON CO. LF.	Depth (ft)	15.0-20.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-12	Soil Description	**BROWN SILT**

Note: The* USCS *symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.

(Minus No. 40 sieve material, Airdried)

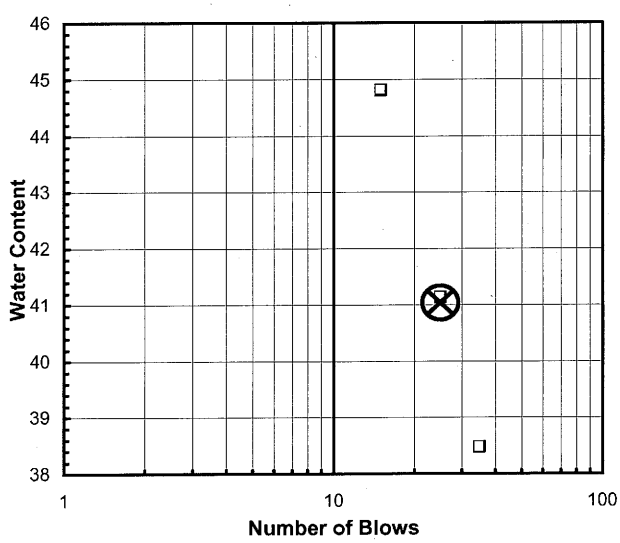
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	A-U	B-B	A-H	MULTIPOINT
Wt. of Tare & WS (gm)	30.68	30.78	29.45	
Wt. of Tare & DS (gm)	25.89	26.33	25.58	
Wt. of Tare (gm)	15.20	15.51	15.52	
Wt. of Water (gm)	4.8	4.5	3.9	
Wt. of DS (gm)	10.7	10.8	10.1	
Moisture Content (%)	**44.8**	**41.1**	**38.5**	
Number of Blows	**15**	**25**	**35**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	A-I	A-P	
Wt. of Tare & WS (gm)	23.06	22.60	
Wt. of Tare & DS (gm)	21.11	20.76	
Wt. of Tare (gm)	15.42	15.54	
Wt. of Water (gm)	2.0	1.8	
Wt. of DS (gm)	5.7	5.2	
Moisture Content (%)	**34.3**	**35.2**	**-1.0**

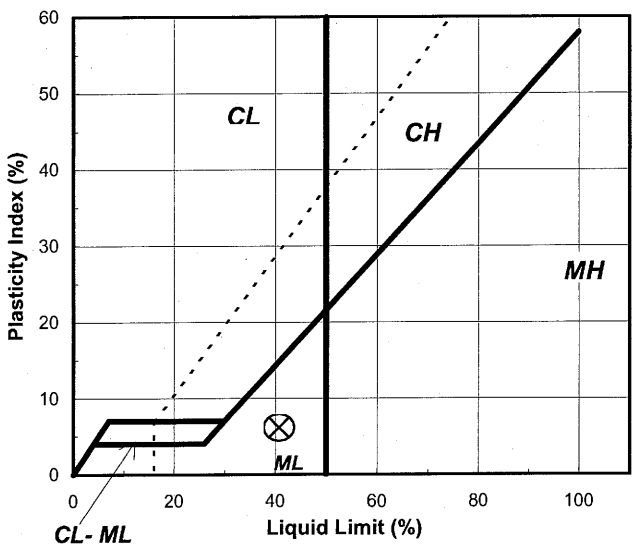
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**41**
Plastic Limit (%)	**35**
Plasticity Index (%)	**6**
USCS Symbol	**ML**

Flow Curve



Plasticity Chart



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ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-60
Client Reference	DAVIDSON CO. LF.	Depth (ft)	5.0-7.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-13	Soil Description	**GRAY SILT**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

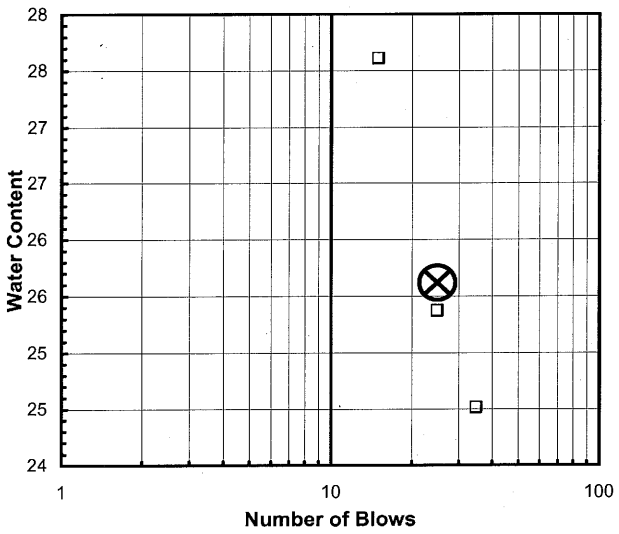
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	A-B	A-C	A-D	MULTIPOINT
Wt. of Tare & WS (gm)	33.94	30.80	37.71	
Wt. of Tare & DS (gm)	29.97	27.72	33.31	
Wt. of Tare (gm)	15.59	15.58	15.36	
Wt. of Water (gm)	4.0	3.1	4.4	
Wt. of DS (gm)	14.4	12.1	18.0	
Moisture Content (%)	**27.6**	**25.4**	**24.5**	
Number of Blows	**15**	**25**	**35**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	V	X	
Wt. of Tare & WS (gm)	24.33	22.85	
Wt. of Tare & DS (gm)	22.68	21.52	
Wt. of Tare (gm)	15.25	15.47	
Wt. of Water (gm)	1.7	1.3	
Wt. of DS (gm)	7.4	6.1	
Moisture Content (%)	**22.2**	**22.0**	**0.2**

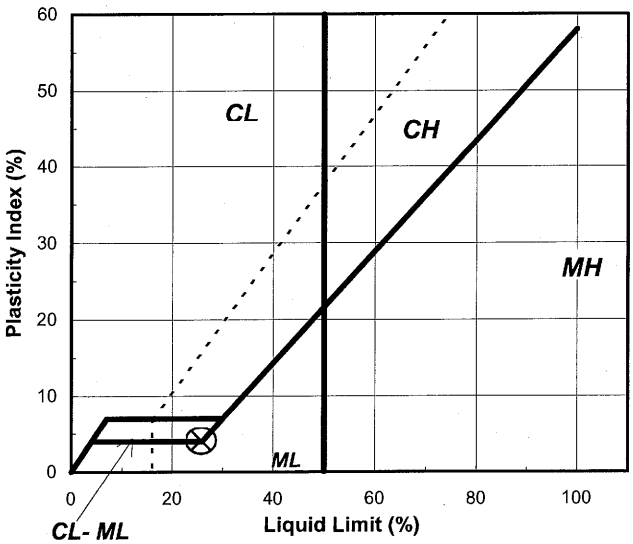
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**26**
Plastic Limit (%)	**22**
Plasticity Index (%)	**4**
USCS Symbol	**ML**

Flow Curve



Plasticity Chart



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ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

Client	R.S.G & ASSOCIATES	Boring No.	PZ-61a
Client Reference	DAVIDSON CO. LF.	Depth (ft)	15.0-20.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-14	Soil Description	**BROWN SILT**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

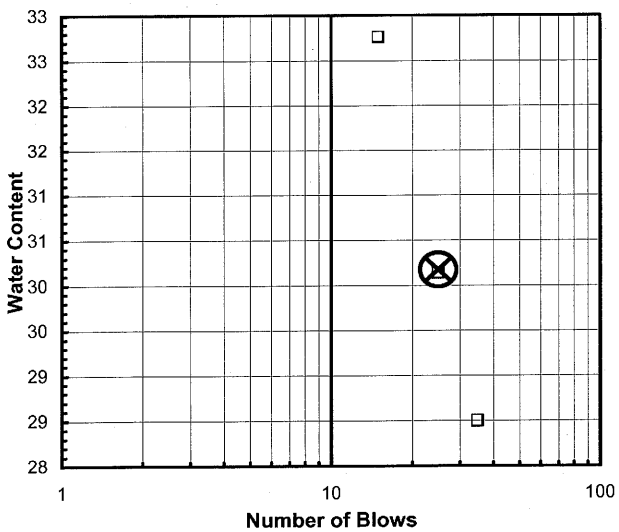
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	Q	Y	F	MULTIPOINT
Wt. of Tare & WS (gm)	31.29	33.62	30.14	
Wt. of Tare & DS (gm)	27.31	29.44	26.80	
Wt. of Tare (gm)	15.16	15.57	15.08	
Wt. of Water (gm)	4.0	4.2	3.3	
Wt. of DS (gm)	12.2	13.9	11.7	
Moisture Content (%)	**32.8**	**30.1**	**28.5**	
Number of Blows	**15**	**25**	**35**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	P	M	
Wt. of Tare & WS (gm)	23.01	22.53	
Wt. of Tare & DS (gm)	21.38	20.99	
Wt. of Tare (gm)	15.16	15.10	
Wt. of Water (gm)	1.6	1.5	
Wt. of DS (gm)	6.2	5.9	
Moisture Content (%)	**26.2**	**26.1**	**0.1**

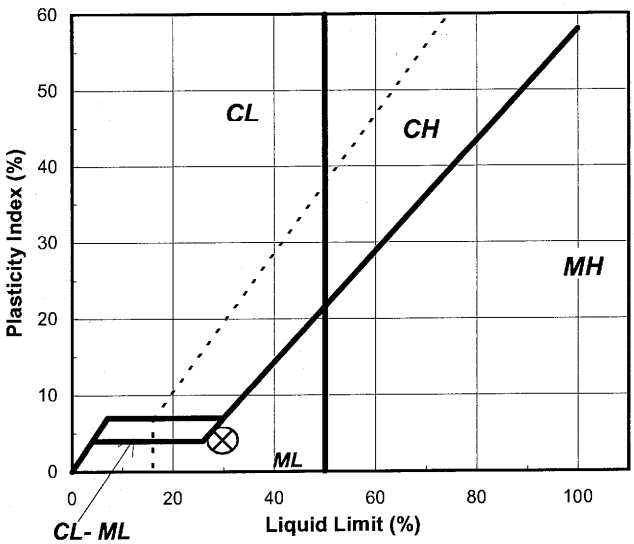
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**30**
Plastic Limit (%)	**26**
Plasticity Index (%)	**4**
USCS Symbol	**ML**

Flow Curve



Plasticity Chart



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ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-62
Client Reference	DAVIDSON CO. LF	Depth (ft)	20.0-25.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-15	Soil Description	**BROWN GRAY SILT**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

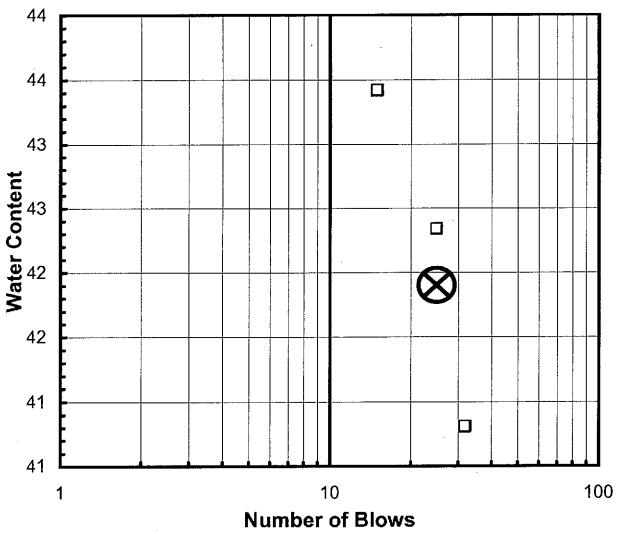
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	K-A	A-D	A-C	MULTIPOINT
Wt. of Tare & WS (gm)	24.19	23.15	23.64	
Wt. of Tare & DS (gm)	21.66	20.83	21.20	
Wt. of Tare (gm)	15.46	15.35	15.58	
Wt. of Water (gm)	2.5	2.3	2.4	
Wt. of DS (gm)	6.2	5.5	5.6	
Moisture Content (%)	**40.8**	**42.3**	**43.4**	
Number of Blows	**32**	**25**	**15**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	V	A-B	
Wt. of Tare & WS (gm)	21.68	21.65	
Wt. of Tare & DS (gm)	20.08	20.17	
Wt. of Tare (gm)	15.23	15.58	
Wt. of Water (gm)	1.6	1.5	
Wt. of DS (gm)	4.9	4.6	
Moisture Content (%)	**33.0**	**32.2**	**0.7**

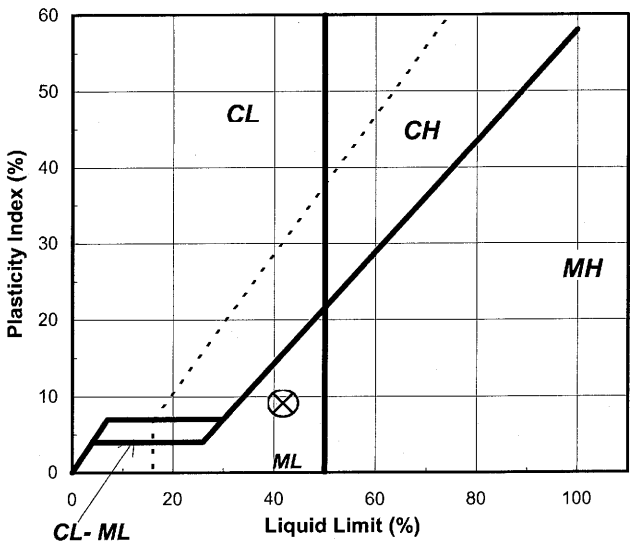
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**42**
Plastic Limit (%)	**33**
Plasticity Index (%)	**9**
USCS Symbol	**ML**

Flow Curve



Plasticity Chart



Tested By *SD* *Date* *12/8/2010* *Checked By* GEM *Date* 12-9-10

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ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-63
Client Reference	DAVIDSON CO. LF	Depth (ft)	20.0-23.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-16	Soil Description	**GRAY SILT**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

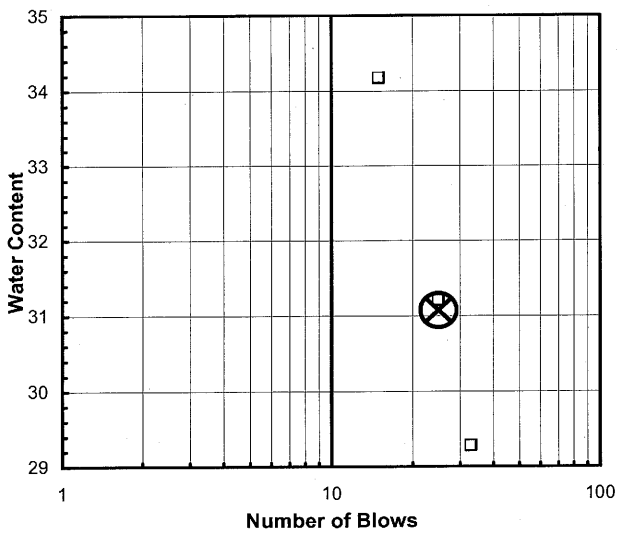
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	D-1	B-B	A-H	MULTIPOINT
Wt. of Tare & WS (gm)	25.18	25.17	24.64	
Wt. of Tare & DS (gm)	22.92	22.87	22.32	
Wt. of Tare (gm)	15.20	15.50	15.53	
Wt. of Water (gm)	2.3	2.3	2.3	
Wt. of DS (gm)	7.7	7.4	6.8	
Moisture Content (%)	**29.3**	**31.2**	**34.2**	
Number of Blows	**33**	**25**	**15**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	A-I	A-P	
Wt. of Tare & WS (gm)	22.13	21.86	
Wt. of Tare & DS (gm)	20.73	20.57	
Wt. of Tare (gm)	15.42	15.56	
Wt. of Water (gm)	1.4	1.3	
Wt. of DS (gm)	5.3	5.0	
Moisture Content (%)	**26.4**	**25.7**	**0.6**

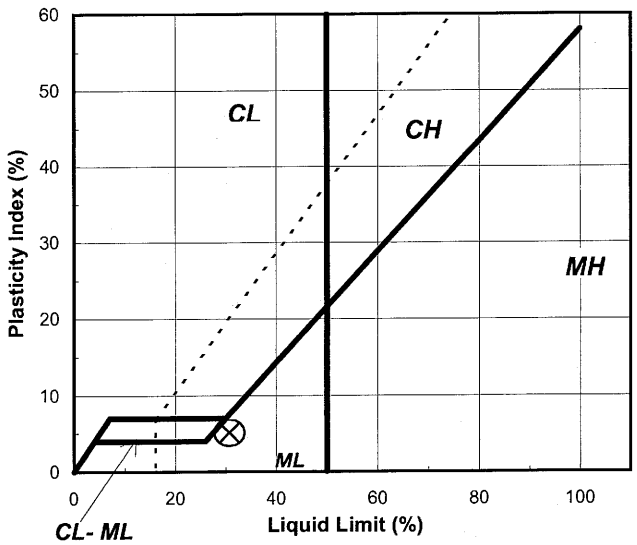
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**31**
Plastic Limit (%)	**26**
Plasticity Index (%)	**5**
USCS Symbol	**ML**

Flow Curve



Plasticity Chart



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ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

Client	R.S.G. & ASSOCIATES	Boring No.	CDSB-1
Client Reference	DAVIDSON CO. LF	Depth (ft)	0.0-4.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-17	Soil Description	**BROWN TAN SILT**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

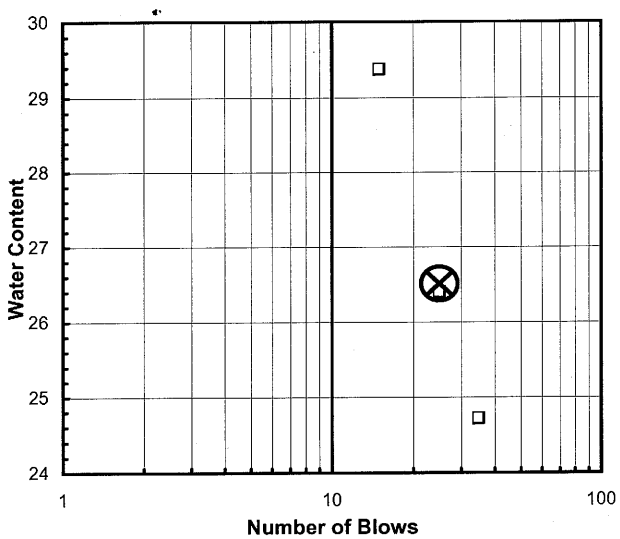
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	T	I	B	MULTIPOINT
Wt. of Tare & WS (gm)	29.41	36.90	30.85	
Wt. of Tare & DS (gm)	26.59	32.37	27.29	
Wt. of Tare (gm)	15.18	15.21	15.17	
Wt. of Water (gm)	2.8	4.5	3.6	
Wt. of DS (gm)	11.4	17.2	12.1	
Moisture Content (%)	**24.7**	**26.4**	**29.4**	
Number of Blows	**35**	**25**	**15**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	J	G	
Wt. of Tare & WS (gm)	23.04	23.61	
Wt. of Tare & DS (gm)	21.59	22.06	
Wt. of Tare (gm)	15.12	15.01	
Wt. of Water (gm)	1.5	1.6	
Wt. of DS (gm)	6.5	7.1	
Moisture Content (%)	**22.4**	**22.0**	**0.4**

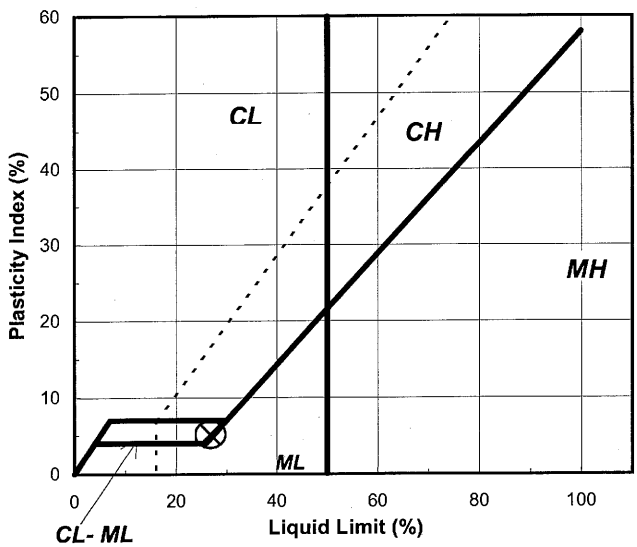
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**27**
Plastic Limit (%)	**22**
Plasticity Index (%)	**5**
USCS Symbol	**ML**

Flow Curve



Plasticity Chart



Tested By JBD *Date* 12/7/2010 *Checked By* GEM *Date* 12-8-10

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ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

Client	R.S.G. & ASSOCIATES	Boring No.	CDSB-2
Client Reference	DAVIDSON CO. LF	Depth (ft)	10.0-12.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-18	Soil Description	**GRAY TAN SILT**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

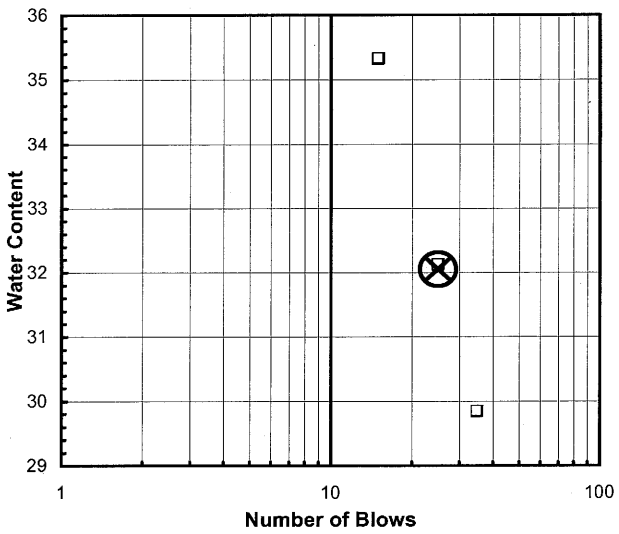
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	Q	P	Y	M U L T I P O I N T
Wt. of Tare & WS (gm)	29.06	33.62	30.96	
Wt. of Tare & DS (gm)	25.87	29.13	26.94	
Wt. of Tare (gm)	15.18	15.15	15.56	
Wt. of Water (gm)	3.2	4.5	4.0	
Wt. of DS (gm)	10.7	14.0	11.4	
Moisture Content (%)	**29.8**	**32.1**	**35.3**	
Number of Blows	**35**	**25**	**15**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	F	M	
Wt. of Tare & WS (gm)	22.53	23.17	
Wt. of Tare & DS (gm)	20.87	21.35	
Wt. of Tare (gm)	15.06	15.13	
Wt. of Water (gm)	1.7	1.8	
Wt. of DS (gm)	5.8	6.2	
Moisture Content (%)	**28.6**	**29.3**	**-0.7**

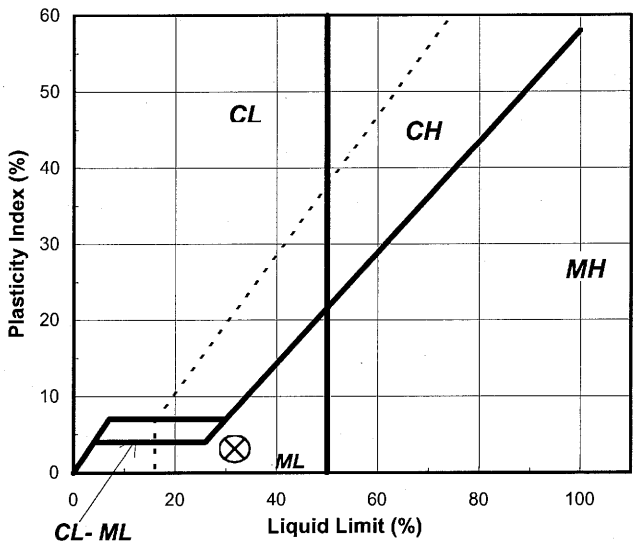
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**32**
Plastic Limit (%)	**29**
Plasticity Index (%)	**3**
USCS Symbol	**ML**

Flow Curve



Plasticity Chart



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ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

Client	R.S.G. & ASSOCIATES	Boring No.	SB-1
Client Reference	DAVIDSON CO. LF	Depth (ft)	10.0-13.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-19	Soil Description	**ORANGE BROWN SILT**

***Note: The* USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.** (Minus No. 40 sieve material, Airdried)

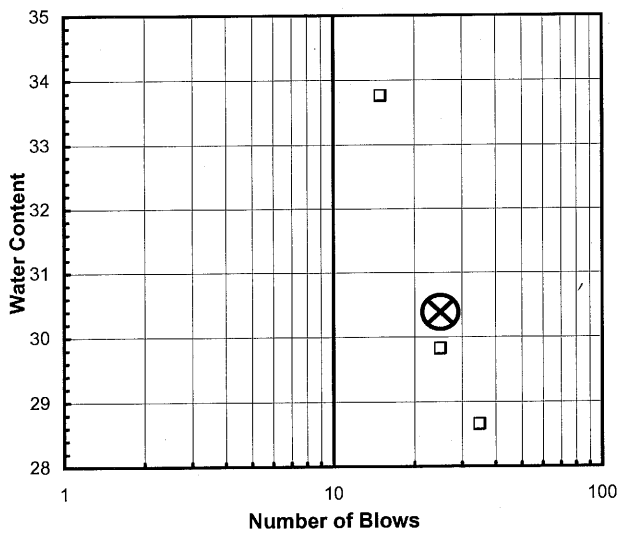
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	A	N	L	MULTIPOINT
Wt. of Tare & WS (gm)	26.39	26.09	24.76	
Wt. of Tare & DS (gm)	23.90	23.60	22.35	
Wt. of Tare (gm)	15.21	15.25	15.21	
Wt. of Water (gm)	2.5	2.5	2.4	
Wt. of DS (gm)	8.7	8.4	7.1	
Moisture Content (%)	**28.7**	**29.8**	**33.8**	
Number of Blows	**35**	**25**	**15**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	K	U	
Wt. of Tare & WS (gm)	21.93	22.24	
Wt. of Tare & DS (gm)	20.64	20.87	
Wt. of Tare (gm)	15.20	15.14	
Wt. of Water (gm)	1.3	1.4	
Wt. of DS (gm)	5.4	5.7	
Moisture Content (%)	**23.7**	**23.9**	**-0.2**

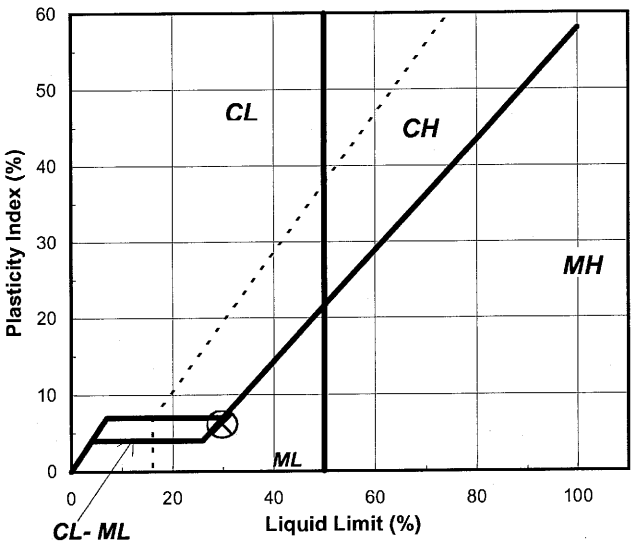
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**30**
Plastic Limit (%)	**24**
Plasticity Index (%)	**6**
USCS Symbol	**ML**

Flow Curve



Plasticity Chart



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ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

Client	R.S.G. & ASSOCIATES	Boring No.	CDMW-6
Client Reference	DAVIDSON CO. LF	Depth (ft)	5.0-7.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-20	Soil Description	**LIGHT BROWN TAN SILT**

***Note: The* USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.**

(Minus No. 40 sieve material, Airdried)

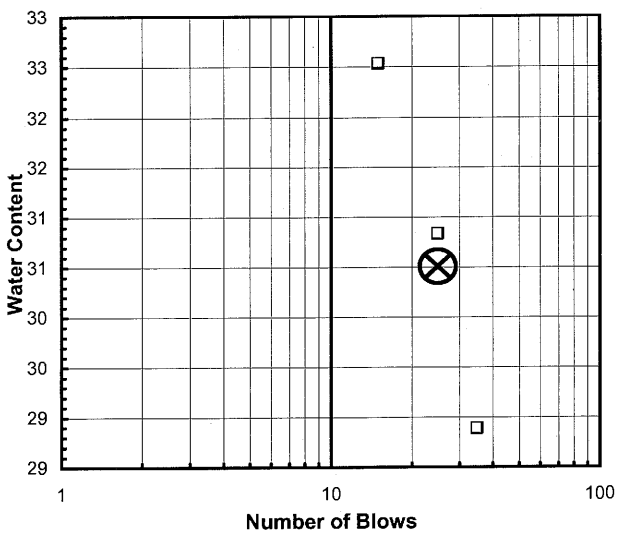
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	A-N	A-P	A-K	MULTIPOINT
Wt. of Tare & WS (gm)	30.47	28.15	31.43	
Wt. of Tare & DS (gm)	27.09	25.15	27.52	
Wt. of Tare (gm)	15.39	15.42	15.50	
Wt. of Water (gm)	3.4	3.0	3.9	
Wt. of DS (gm)	11.7	9.7	12.0	
Moisture Content (%)	**28.9**	**30.8**	**32.5**	
Number of Blows	**35**	**25**	**15**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	C	R	
Wt. of Tare & WS (gm)	23.66	23.76	
Wt. of Tare & DS (gm)	21.96	22.05	
Wt. of Tare (gm)	15.25	15.16	
Wt. of Water (gm)	1.7	1.7	
Wt. of DS (gm)	6.7	6.9	
Moisture Content (%)	**25.3**	**24.8**	**0.5**

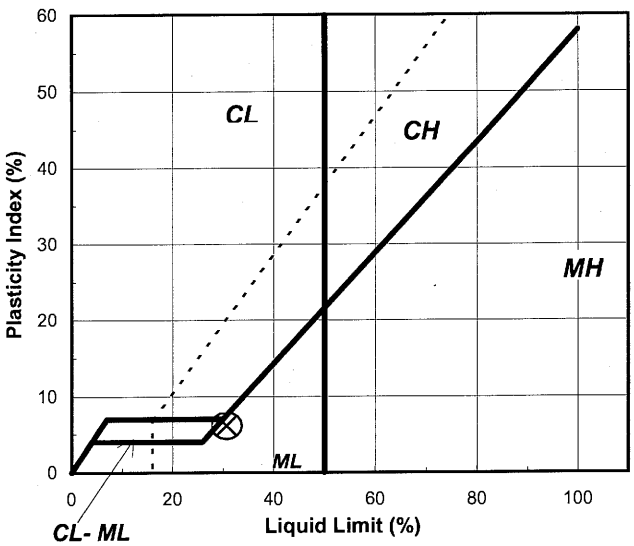
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**31**
Plastic Limit (%)	**25**
Plasticity Index (%)	**6**
USCS Symbol	**ML**

Flow Curve



Plasticity Chart



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ATTERBERG LIMITS

ASTM D 4318-05 / AASHTO T89 (SOP - S4A)

Client	R.S.G. & ASSOCIATES	Boring No.	CDMW-7
Client Reference	DAVIDSON CO. LF	Depth (ft)	5.0-7.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-21	Soil Description	**TAN SILT**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

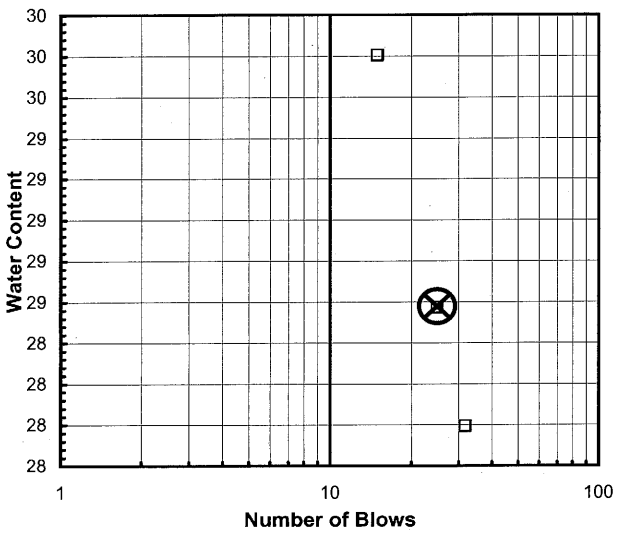
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	T	I	G	MULTIPOINT
Wt. of Tare & WS (gm)	26.83	24.58	23.57	
Wt. of Tare & DS (gm)	24.28	22.50	21.60	
Wt. of Tare (gm)	15.17	15.22	14.99	
Wt. of Water (gm)	2.6	2.1	2.0	
Wt. of DS (gm)	9.1	7.3	6.6	
Moisture Content (%)	**28.0**	**28.6**	**29.8**	
Number of Blows	**32**	**25**	**15**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	B	J	
Wt. of Tare & WS (gm)	22.15	22.04	
Wt. of Tare & DS (gm)	20.74	20.83	
Wt. of Tare (gm)	15.17	15.11	
Wt. of Water (gm)	1.4	1.2	
Wt. of DS (gm)	5.6	5.7	
Moisture Content (%)	**25.3**	**21.2**	**4.2**

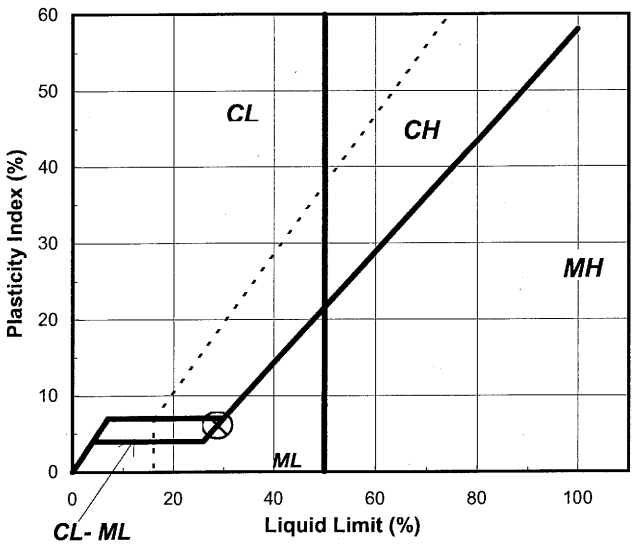
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**29**
Plastic Limit (%)	**23**
Plasticity Index (%)	**6**
USCS Symbol	**ML**

Flow Curve



Plasticity Chart



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SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-46
Client Reference	DAVIDSON CO. LF	Depth (ft)	27.5-30.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-01	Soil Color	**GRAY**

	SIEVE ANALYSIS			HYDROMETER	
USCS	**cobbles**	**gravel**	**sand**	**silt and clay fraction**	
USDA	**cobbles**	**gravel**	**sand**	**silt**	**clay**

USCS Summary

Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	0.94
#4 To #200	*Sand*	44.35
Finer Than #200	*Silt & Clay*	54.71

USCS Symbol ***ML, TESTED***

USCS Classification ***SANDY SILT***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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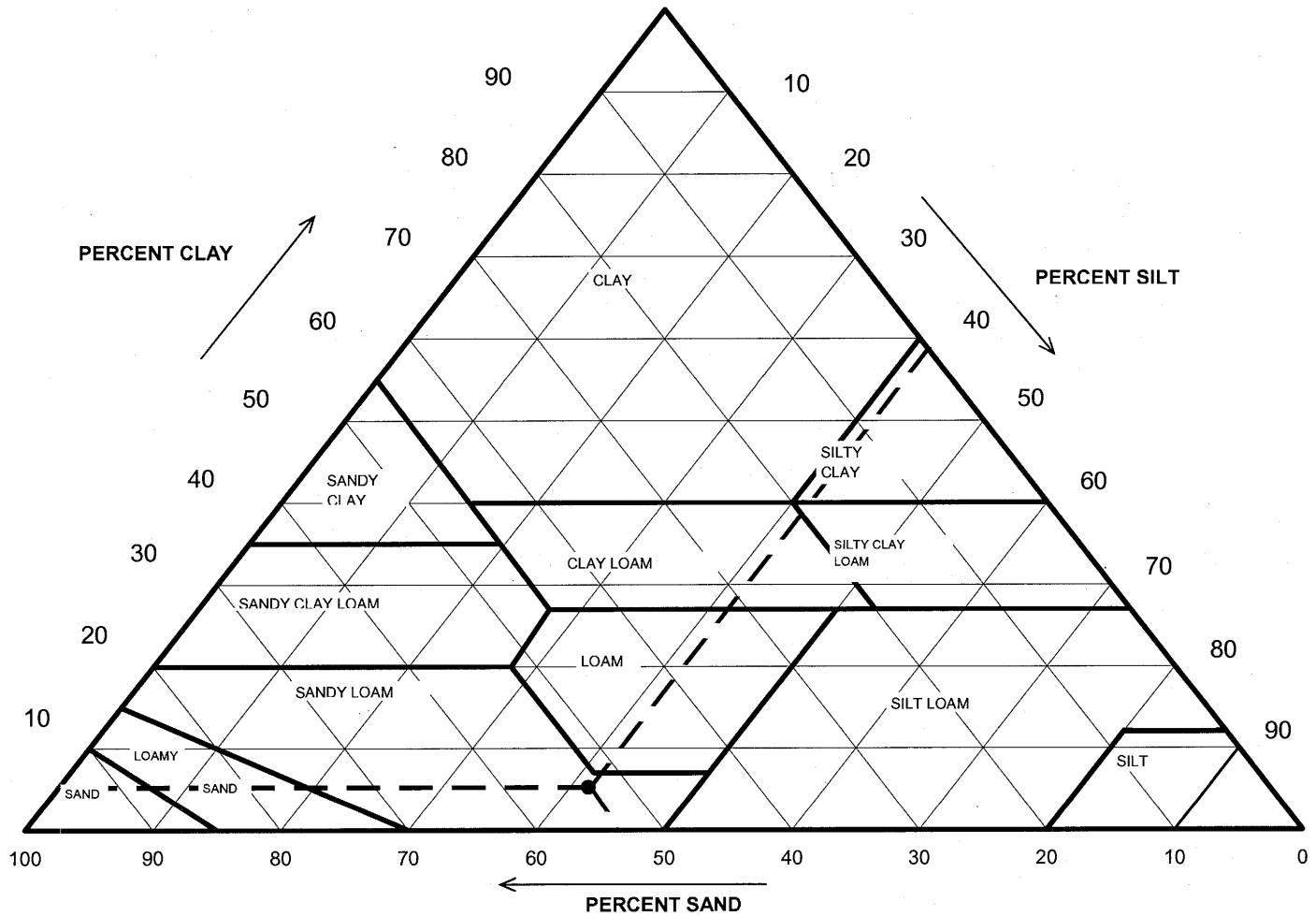
USDA CLASSIFICATION CHART

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-46
Client Reference	DAVIDSON CO. LF	Depth (ft)	27.5-30.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-01	Soil Color	GRAY



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	2.24	**0.00**
2	97.76	*Sand*	52.11	**53.31**
0.05	45.65	*Silt*	40.50	**41.43**
0.002	5.15	*Clay*	5.15	**5.27**

USDA Classification: ***SANDY LOAM***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-46
Client Reference	DAVIDSON CO. LF	Depth (ft)	27.5-30.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-01	Soil Color	**GRAY**

Minus #10 for Hygroscopic Moisture Content		**Hydrometer Specimen Data**	
Tare No.	E-2	Air Dried - #10 Hydrometer Material (gm)	100.02
Wgt.Tare + Wet Soil (gm)	32.71	Corrected Dry Wt. of - #10 Material (gm)	84.85
Wgt.Tare + Dry Soil (gm)	30.12		
Weight of Tare (gm)	15.63	Weight of - #200 Material (gm)	47.48
Weight of Water (gm)	2.59	Weight of - #10 ; + #200 Material (gm)	37.37
Weight of Dry Soil (gm)	14.49		
Moisture Content (%)	**17.9**	**J-FACTOR (%FINER THAN #10)**	**0.9776**
	Soil Specimen Data		
Tare No.	833		
Wgt.Tare + Air Dry Soil (gm)	444.06		
Weight of Tare (gm)	259.35		
Air Dried Wgt. Total Sample (gm)	184.71	Dry Weight of Material Retained on #10 (gm)	3.52
Total Dry Sample Weight (gm)	157.23	Corrected Dry Sample Wt - #10 (gm)	153.71

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.0	0.0	100.0	**100.0**
6"	150	0.00	0.0	0.0	100.0	**100.0**
3"	75	0.00	0.0	0.0	100.0	**100.0**
2"	50	0.00	0.0	0.0	100.0	**100.0**
1 1/2"	37.5	0.00	0.0	0.0	100.0	**100.0**
1"	25.0	0.00	0.0	0.0	100.0	**100.0**
3/4"	19.0	0.00	0.0	0.0	100.0	**100.0**
1/2"	12.5	0.00	0.0	0.0	100.0	**100.0**
3/8"	9.50	0.00	0.0	0.0	100.0	**100.0**
#4	4.75	1.48	0.9	0.9	99.1	**99.1**
#10	2.00	2.04	1.3	2.2	97.8	**97.8**
#20	0.85	0.67	0.8	0.8	99.2	**97.0**
#40	0.425	3.31	3.9	4.7	95.3	**93.2**
#60	0.250	7.92	9.3	14.0	86.0	**84.1**
#140	0.106	17.85	21.0	35.1	64.9	**63.5**
#200	0.075	7.62	9.0	44.0	56.0	**54.7**
Pan	-	47.48	56.0	100.0	-	**-**

Notes :

Tested By SD Date 12/8/2010 Checked By GEM Date 12-8-10

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-46
Client Reference	DAVIDSON CO. LF	Depth (ft)	27.5-30.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-01	Soil Color	**GRAY**

Elapsed Time (min)	R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA
2	35.0	23.6	5.25	29.8	34.7	0.01288	0.0296	**33.9**
5	29.0	23.6	5.25	23.8	27.7	0.01288	0.0196	**27.1**
15	22.0	23.6	5.25	16.8	19.5	0.01288	0.0118	**19.1**
30	18.0	23.7	5.20	12.8	14.9	0.01287	0.0086	**14.6**
60	16.0	23.7	5.20	10.8	12.6	0.01287	0.0061	**12.3**
250	11.0	23.5	5.29	5.7	6.7	0.01290	0.0031	**6.5**
1440	9.0	22.8	5.61	3.4	4.0	0.01300	0.0013	**3.9**

Soil Specimen Data		Other Corrections	
Wgt. of Dry Material (gm)	84.85	Hygroscopic Moisture Factor	0.848
Weight of Deflocculant (gm)	5.0	a - Factor	0.99
		Percent Finer than # 10	97.76
		Specific Gravity	2.70 Assumed

Notes:

Tested By TMS Date 12/6/2010 Checked By GEM Date 12-8-10

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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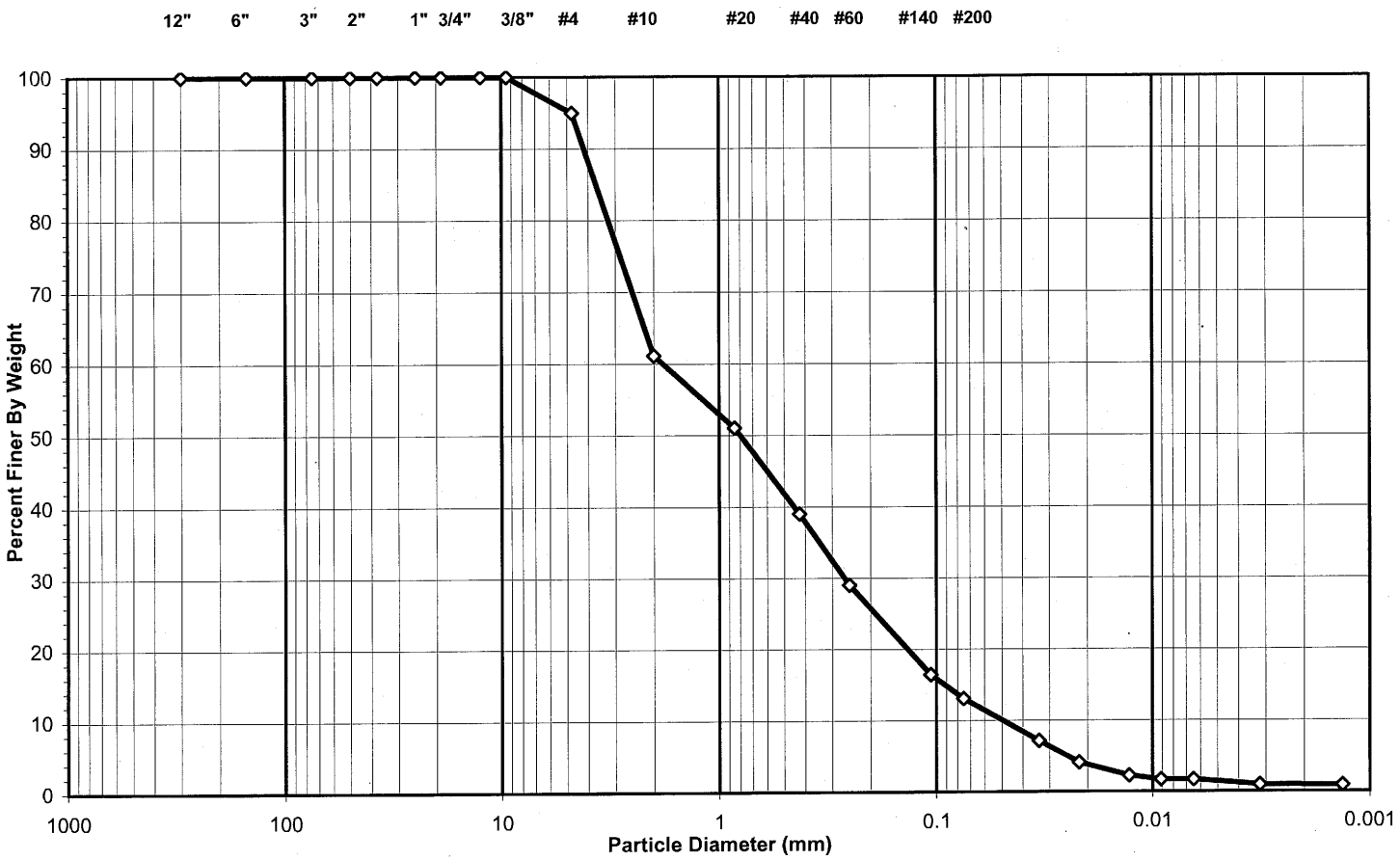
SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-47
Client Reference	DAVIDSON CO. LF	Depth (ft)	15.0-18.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-02	Soil Color	**GRAY**

	SIEVE ANALYSIS			HYDROMETER	
USCS	**cobbles**	**gravel**	**sand**	**silt and clay fraction**	
USDA	**cobbles**	**gravel**	**sand**	**silt**	**clay**



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	5.05
#4 To #200	*Sand*	81.89
Finer Than #200	*Silt & Clay*	13.05

USCS Symbol ***SC-SM, TESTED***

USCS Classification ***SILTY, CLAYEY SAND***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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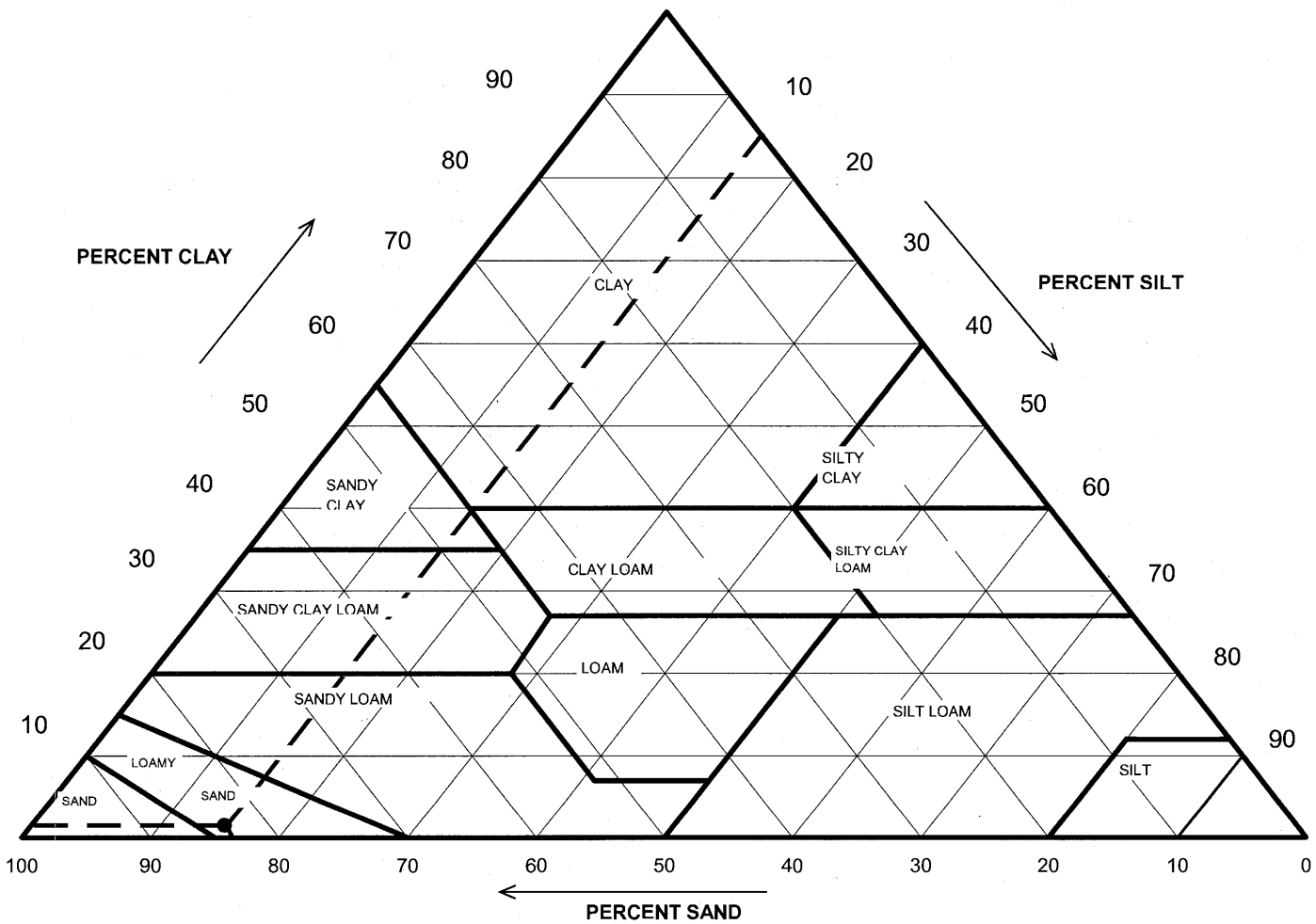
USDA CLASSIFICATION CHART

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-47
Client Reference	DAVIDSON CO. LF	Depth (ft)	15.0-18.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-02	Soil Color	GRAY



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	38.84	**0.00**
2	61.16	*Sand*	51.08	**83.51**
0.05	10.08	*Silt*	9.18	**15.00**
0.002	0.91	*Clay*	0.91	**1.48**

USDA Classification: ***LOAMY SAND***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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INTEGRITY IN TESTING

WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-47
Client Reference	DAVIDSON CO. LF	Depth (ft)	15.0-18.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-02	Soil Color	**GRAY**

Minus #10 for Hygroscopic Moisture Content		**Hydrometer Specimen Data**	
Tare No.	R-1	Air Dried - #10 Hydrometer Material (gm)	100.00
Wgt.Tare + Wet Soil (gm)	45.93	Corrected Dry Wt. of - #10 Material (gm)	98.57
Wgt.Tare + Dry Soil (gm)	45.59		
Weight of Tare (gm)	22.08	Weight of - #200 Material (gm)	21.03
Weight of Water (gm)	0.34	Weight of - #10 ; + #200 Material (gm)	77.54
Weight of Dry Soil (gm)	23.51		
Moisture Content (%)	**1.4**	**J-FACTOR (%FINER THAN #10)**	**0.6116**
	Soil Specimen Data		
Tare No.	841		
Wgt.Tare + Air Dry Soil (gm)	369.12		
Weight of Tare (gm)	259.15		
Air Dried Wgt. Total Sample (gm)	109.97	Dry Weight of Material Retained on #10 (gm)	42.34
Total Dry Sample Weight (gm)	109.01	Corrected Dry Sample Wt - #10 (gm)	66.67

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.0	0.0	100.0	**100.0**
6"	150	0.00	0.0	0.0	100.0	**100.0**
3"	75	0.00	0.0	0.0	100.0	**100.0**
2"	50	0.00	0.0	0.0	100.0	**100.0**
1 1/2"	37.5	0.00	0.0	0.0	100.0	**100.0**
1"	25.0	0.00	0.0	0.0	100.0	**100.0**
3/4"	19.0	0.00	0.0	0.0	100.0	**100.0**
1/2"	12.5	0.00	0.0	0.0	100.0	**100.0**
3/8"	9.50	0.00	0.0	0.0	100.0	**100.0**
#4	4.75	5.51	5.1	5.1	94.9	**94.9**
#10	2.00	36.83	33.8	38.8	61.2	**61.2**
#20	0.85	16.28	16.5	16.5	83.5	**51.1**
#40	0.425	19.46	19.7	36.3	63.7	**39.0**
#60	0.250	16.08	16.3	52.6	47.4	**29.0**
#140	0.106	20.27	20.6	73.1	26.9	**16.4**
#200	0.075	5.45	5.5	78.7	21.3	**13.1**
Pan	-	21.03	21.3	100.0	-	-

Notes :

Tested By SD Date 12/9/2010 Checked By GBM Date 12-9-10

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-47
Client Reference	DAVIDSON CO. LF	Depth (ft)	15.0-18.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-02	Soil Color	**GRAY**

Elapsed Time (min)	R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA
2	17.0	23.4	5.34	11.7	11.7	0.01291	0.0336	**7.2**
5	12.0	23.4	5.34	6.7	6.7	0.01291	0.0219	**4.1**
15	9.0	23.4	5.34	3.7	3.7	0.01291	0.0128	**2.3**
30	8.0	23.5	5.29	2.7	2.7	0.01290	0.0091	**1.7**
60	8.0	23.5	5.29	2.7	2.7	0.01290	0.0064	**1.7**
250	7.0	23.1	5.47	1.5	1.5	0.01296	0.0032	**0.9**
1440	7.0	22.9	5.57	1.4	1.4	0.01299	0.0013	**0.9**

Soil Specimen Data		**Other Corrections**	
Wgt. of Dry Material (gm)	98.57	Hygroscopic Moisture Factor	0.986
Weight of Deflocculant (gm)	5.0	a - Factor	0.99
		Percent Finer than # 10	61.16
		Specific Gravity	2.70 Assumed

Notes:

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SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

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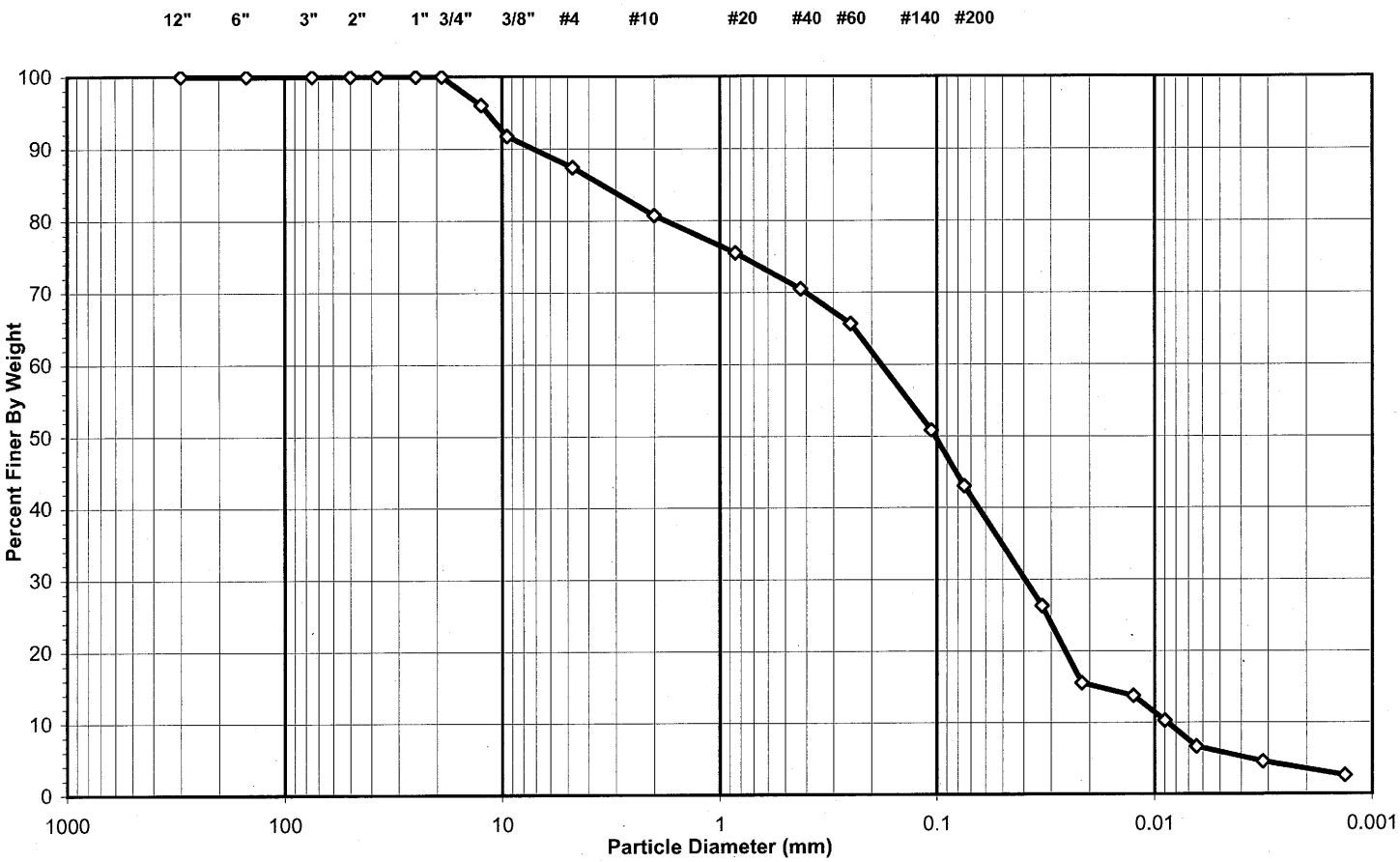
Client	R.S.G. & ASSOCIATES	Boring No.	PZ-48
Client Reference	DAVIDSON CO. LF	Depth (ft)	25.0-30.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-03	Soil Color	**BROWN**

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary		
Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	12.57
#4 To #200	*Sand*	44.42
Finer Than #200	*Silt & Clay*	43.01

USCS Symbol ***SM, TESTED***

USCS Classification ***SILTY SAND***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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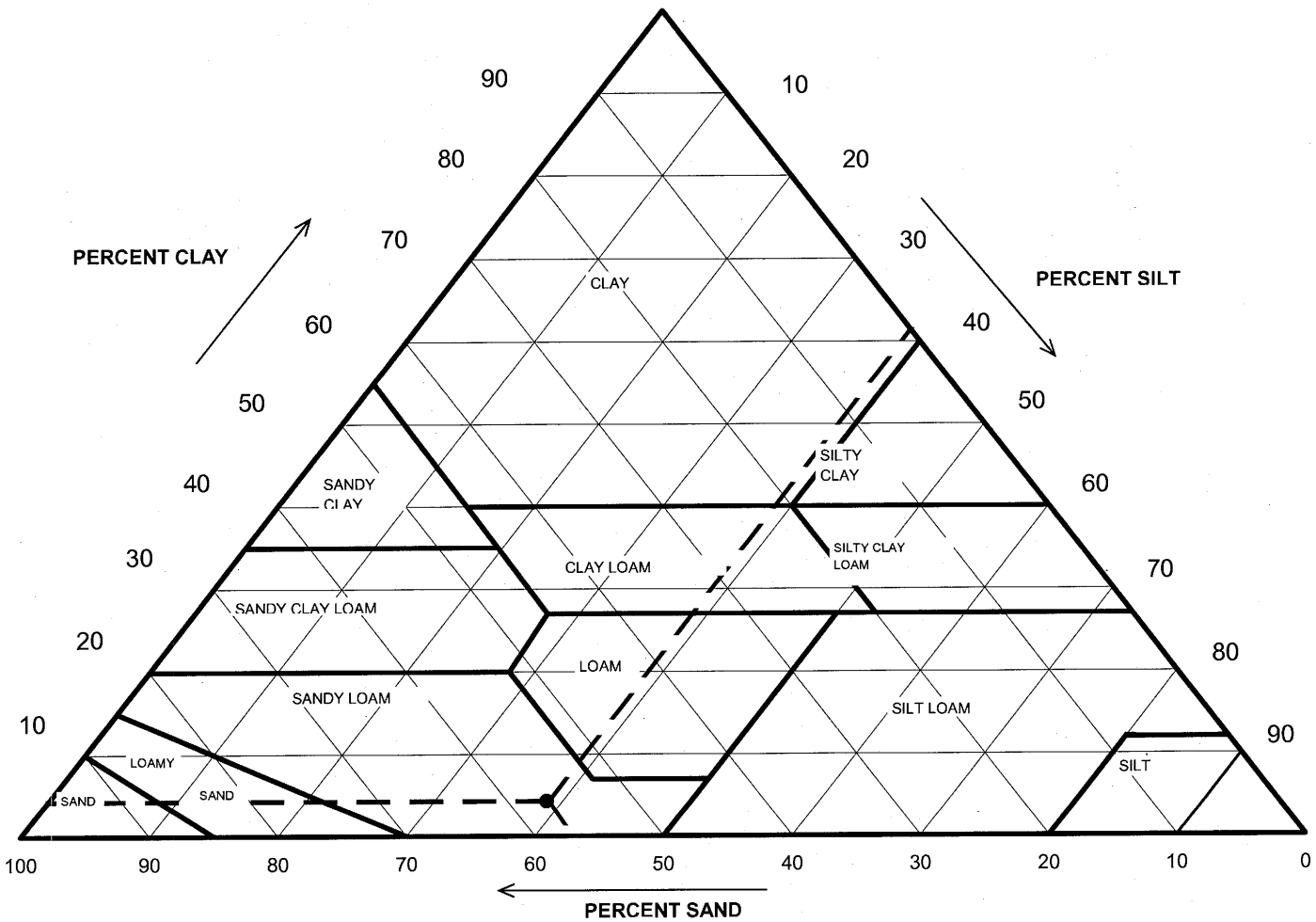
USDA CLASSIFICATION CHART

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-48
Client Reference	DAVIDSON CO. LF	Depth (ft)	25.0-30.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-03	Soil Color	BROWN



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	19.26	**0.00**
2	80.74	*Sand*	45.98	**56.94**
0.05	34.77	*Silt*	31.28	**38.74**
0.002	3.49	*Clay*	3.49	**4.32**

USDA Classification: ***SANDY LOAM***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-48
Client Reference	DAVIDSON CO. LF	Depth (ft)	25.0-30.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-03	Soil Color	**BROWN**

Minus #10 for Hygroscopic Moisture Content		**Hydrometer Specimen Data**	
Tare No.	M-1	Air Dried - #10 Hydrometer Material (gm)	50.00
Wgt.Tare + Wet Soil (gm)	43.12	Corrected Dry Wt. of - #10 Material (gm)	44.59
Wgt.Tare + Dry Soil (gm)	40.18		
Weight of Tare (gm)	15.93	Weight of - #200 Material (gm)	23.75
Weight of Water (gm)	2.94	Weight of - #10 ; + #200 Material (gm)	20.84
Weight of Dry Soil (gm)	24.25		
Moisture Content (%)	**12.1**	**J-FACTOR (%FINER THAN #10)**	**0.8074**
Soil Specimen Data			
Tare No.	202		
Wgt.Tare + Air Dry Soil (gm)	669.50		
Weight of Tare (gm)	197.39		
Air Dried Wgt. Total Sample (gm)	472.11	Dry Weight of Material Retained on #10 (gm)	82.81
Total Dry Sample Weight (gm)	430.02	Corrected Dry Sample Wt - #10 (gm)	347.21

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.0	0.0	100.0	**100.0**
6"	150	0.00	0.0	0.0	100.0	**100.0**
3"	75	0.00	0.0	0.0	100.0	**100.0**
2"	50	0.00	0.0	0.0	100.0	**100.0**
1 1/2"	37.5	0.00	0.0	0.0	100.0	**100.0**
1"	25.0	0.00	0.0	0.0	100.0	**100.0**
3/4"	19.0	0.00	0.0	0.0	100.0	**100.0**
1/2"	12.5	16.98	3.9	3.9	96.1	**96.1**
3/8"	9.50	18.48	4.3	8.2	91.8	**91.8**
#4	4.75	18.61	4.3	12.6	87.4	**87.4**
#10	2.00	28.74	6.7	19.3	80.7	**80.7**
#20	0.85	2.89	6.5	6.5	93.5	**75.5**
#40	0.425	2.77	6.2	12.7	87.3	**70.5**
#60	0.250	2.66	6.0	18.7	81.3	**65.7**
#140	0.106	8.20	18.4	37.0	63.0	**50.8**
#200	0.075	4.32	9.7	46.7	53.3	**43.0**
Pan	-	23.75	53.3	100.0	-	**-**

Notes :

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-48
Client Reference	DAVIDSON CO. LF	Depth (ft)	25.0-30.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-03	Soil Color	**BROWN**

Elapsed Time (min)	R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA
2	20.0	23.4	5.34	14.7	32.6	0.01291	0.0329	**26.3**
5	14.0	23.4	5.34	8.7	19.2	0.01291	0.0216	**15.5**
15	13.0	23.4	5.34	7.7	17.0	0.01291	0.0125	**13.7**
30	11.0	23.5	5.29	5.7	12.7	0.01290	0.0090	**10.2**
60	9.0	23.5	5.29	3.7	8.2	0.01290	0.0064	**6.6**
250	8.0	23.1	5.47	2.5	5.6	0.01296	0.0032	**4.5**
1440	7.0	22.9	5.57	1.4	3.2	0.01299	0.0013	**2.6**

Soil Specimen Data		**Other Corrections**	
Wgt. of Dry Material (gm)	44.59	Hygroscopic Moisture Factor	0.892
Weight of Deflocculant (gm)	5.0	a - Factor	0.99
		Percent Finer than # 10	80.74
		Specific Gravity	2.70 Assumed

Notes:

Tested By JBD Date 12/7/2010 Checked By GEM Date 12-9-10

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

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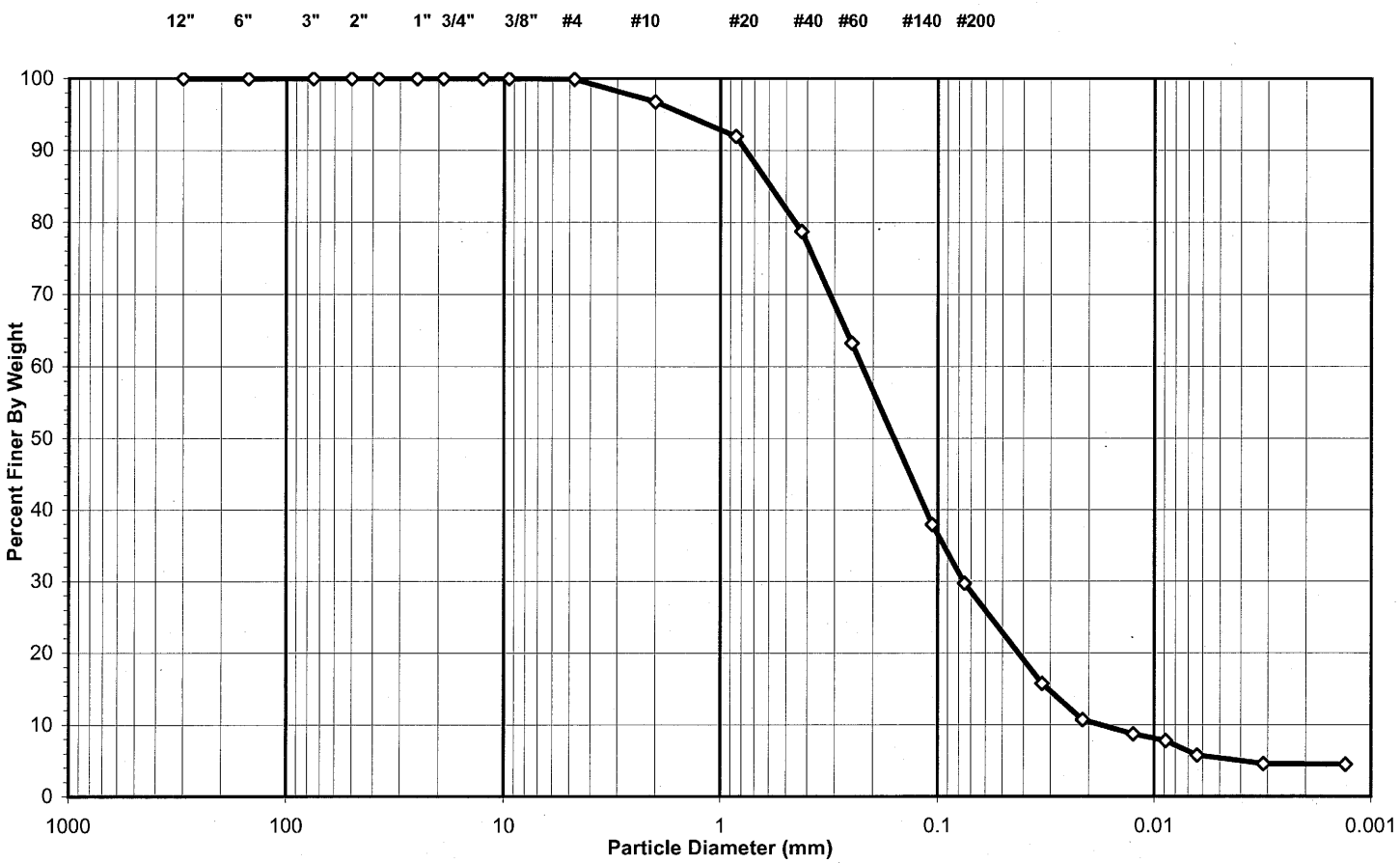
Client	R.S.G. & ASSOCIATES	Boring No.	PZ-51
Client Reference	DAVIDSON CO. LF	Depth (ft)	10.0-14.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-04	Soil Color	**GRAY BROWN**

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary		
Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	0.09
#4 To #200	*Sand*	70.24
Finer Than #200	*Silt & Clay*	29.68

USCS Symbol ***SM, TESTED***

USCS Classification ***SILTY SAND***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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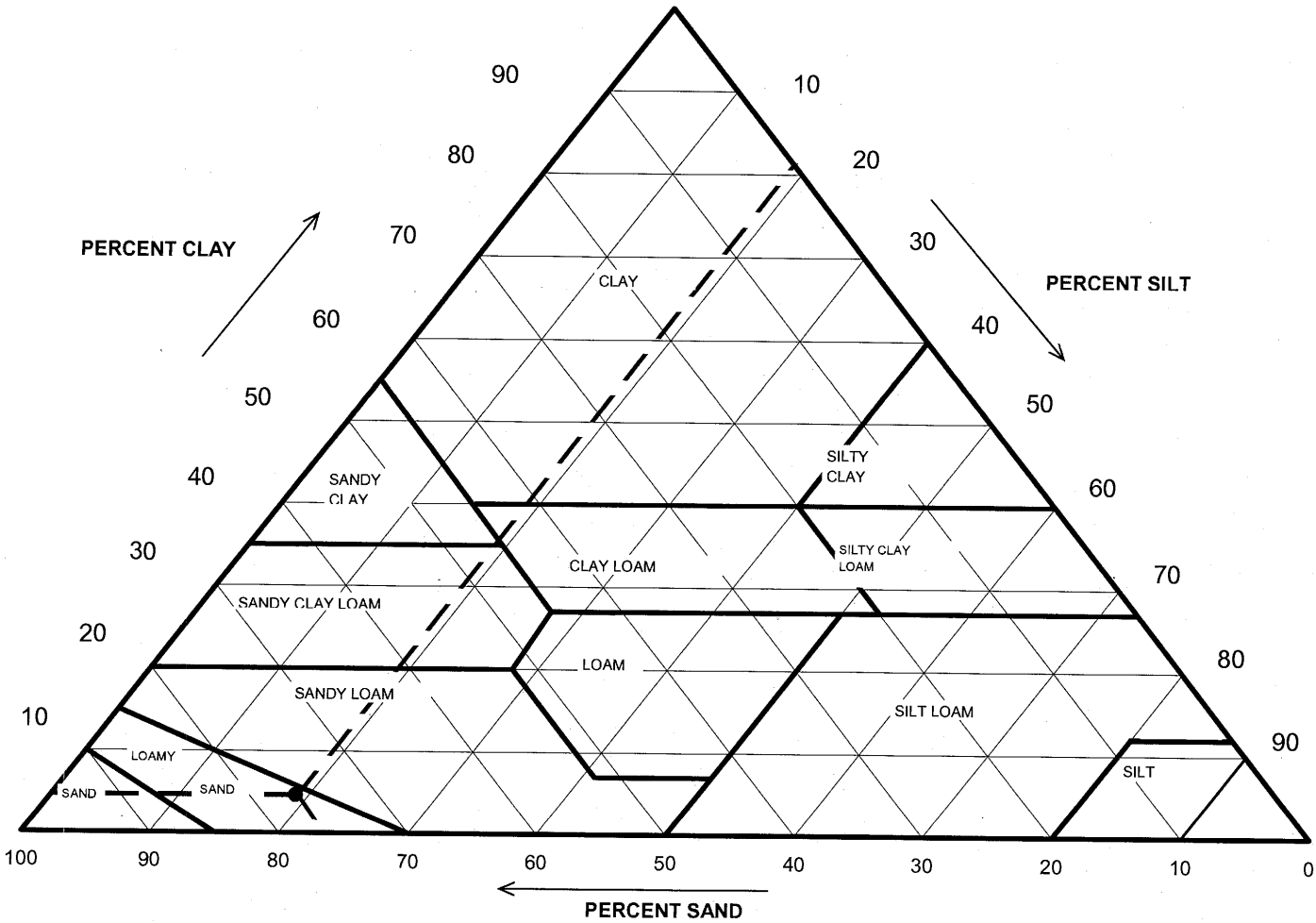
USDA CLASSIFICATION CHART

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-51
Client Reference	DAVIDSON CO. LF	Depth (ft)	10.0-14.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-04	Soil Color	GRAY BROWN



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	3.23	**0.00**
2	96.77	*Sand*	73.92	**76.39**
0.05	22.85	*Silt*	18.35	**18.97**
0.002	4.49	*Clay*	4.49	**4.64**

USDA Classification: ***LOAMY SAND***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-51
Client Reference	DAVIDSON CO. LF	Depth (ft)	10.0-14.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-04	Soil Color	**GRAY BROWN**

Minus #10 for Hygroscopic Moisture Content		**Hydrometer Specimen Data**	
Tare No.	S-1	Air Dried - #10 Hydrometer Material (gm)	100.03
Wgt.Tare + Wet Soil (gm)	37.72	Corrected Dry Wt. of - #10 Material (gm)	95.47
Wgt.Tare + Dry Soil (gm)	36.71		
Weight of Tare (gm)	15.58	Weight of - #200 Material (gm)	29.28
Weight of Water (gm)	1.01	Weight of - #10 ; + #200 Material (gm)	66.19
Weight of Dry Soil (gm)	21.13		
Moisture Content (%)	**4.8**	**J-FACTOR (%FINER THAN #10)**	**0.9677**
	Soil Specimen Data		
Tare No.	832		
Wgt.Tare + Air Dry Soil (gm)	536.64		
Weight of Tare (gm)	259.10		
Air Dried Wgt. Total Sample (gm)	277.54	Dry Weight of Material Retained on #10 (gm)	8.58
Total Dry Sample Weight (gm)	265.27	Corrected Dry Sample Wt - #10 (gm)	256.69

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.0	0.0	100.0	**100.0**
6"	150	0.00	0.0	0.0	100.0	**100.0**
3"	75	0.00	0.0	0.0	100.0	**100.0**
2"	50	0.00	0.0	0.0	100.0	**100.0**
1 1/2"	37.5	0.00	0.0	0.0	100.0	**100.0**
1"	25.0	0.00	0.0	0.0	100.0	**100.0**
3/4"	19.0	0.00	0.0	0.0	100.0	**100.0**
1/2"	12.5	0.00	0.0	0.0	100.0	**100.0**
3/8"	9.50	0.00	0.0	0.0	100.0	**100.0**
#4	4.75	0.23	0.1	0.1	99.9	**99.9**
#10	2.00	8.35	3.1	3.2	96.8	**96.8**
#20	0.85	4.77	5.0	5.0	95.0	**91.9**
#40	0.425	12.98	13.6	18.6	81.4	**78.8**
#60	0.250	15.31	16.0	34.6	65.4	**63.3**
#140	0.106	24.99	26.2	60.8	39.2	**37.9**
#200	0.075	8.14	8.5	69.3	30.7	**29.7**
Pan	-	29.28	30.7	100.0	-	-

Notes :

Tested By SD Date 12/9/2010 Checked By GEM Date 12-9-10

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-51
Client Reference	DAVIDSON CO. LF	Depth (ft)	10.0-14.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-04	Soil Color	**GRAY BROWN**

Elapsed Time (min)	R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA
2	21.0	23.4	5.34	15.7	16.2	0.01291	0.0327	**15.7**
5	16.0	23.4	5.34	10.7	11.1	0.01291	0.0214	**10.7**
15	14.0	23.4	5.34	8.7	9.0	0.01291	0.0125	**8.7**
30	13.0	23.5	5.29	7.7	8.0	0.01290	0.0089	**7.7**
60	11.0	23.5	5.29	5.7	5.9	0.01290	0.0063	**5.7**
250	10.0	23.1	5.47	4.5	4.7	0.01296	0.0031	**4.5**
1440	10.0	22.9	5.57	4.4	4.6	0.01299	0.0013	**4.5**

Soil Specimen Data		**Other Corrections**	
Wgt. of Dry Material (gm)	95.47	Hygroscopic Moisture Factor	0.954
Weight of Deflocculant (gm)	5.0		
		a - Factor	0.99
		Percent Finer than # 10	96.77
		Specific Gravity	2.70 Assumed

Notes:

Tested By JBD Date 12/7/2010 Checked By GEM Date 12-9-10

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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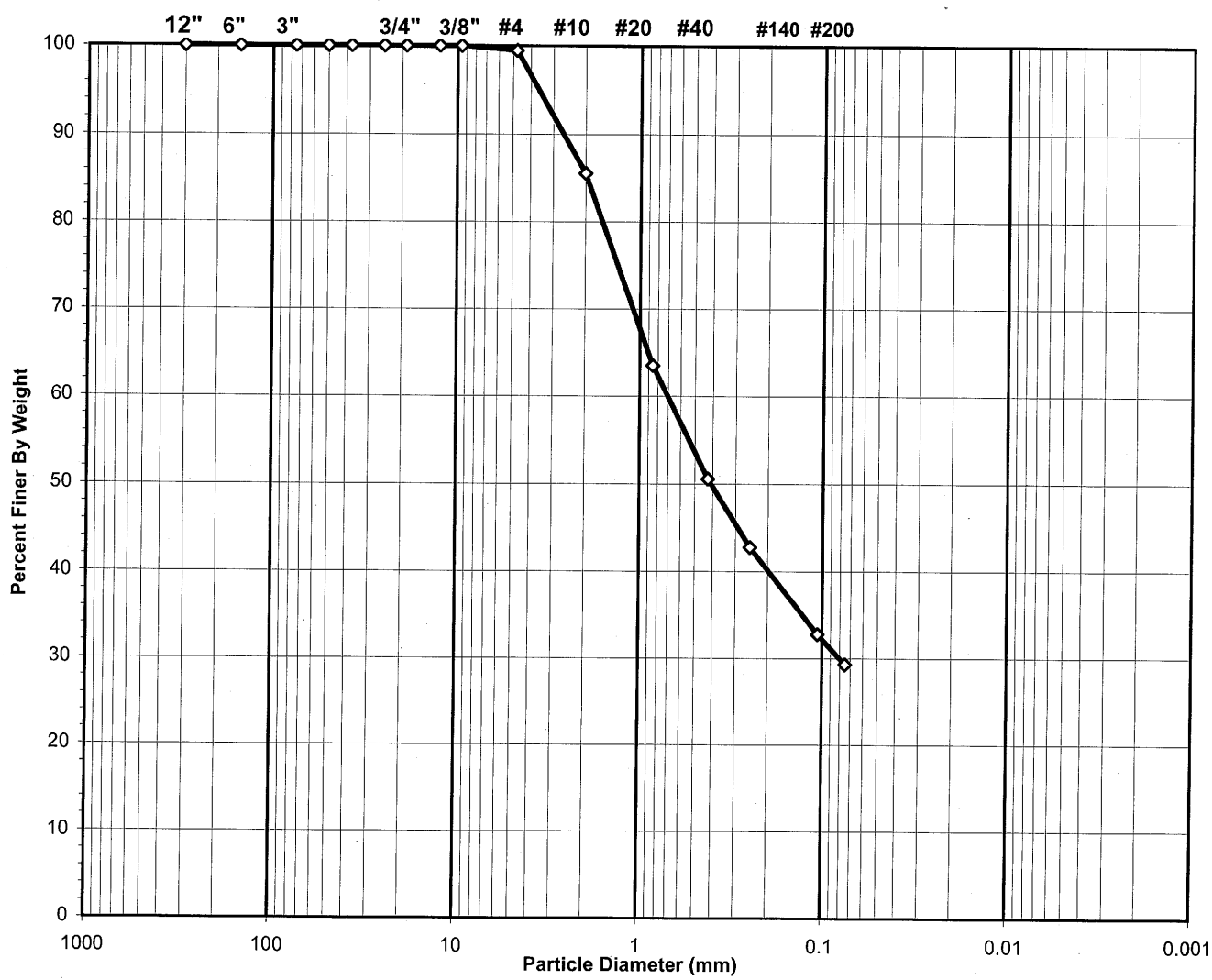
SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-52
Client Reference	DAVIDSON CO. LF.	Depth (ft)	20.0-22.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-05	Soil Color	**BROWN/TAN**

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol ***SC, TESTED***

USCS Classification ***CLAYEY SAND***

Tested By TMS Date 12/3/2010 Checked By GEM Date 12-8-10

 DCN: CT-S3C DATE 6-25-98 REVISION: 2 *\\Server\data drive\2010 PROJECTS\2010-774 R.S.G\[2010-774-01-05 SIEVON REV 4.XLS]Sheet1*

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-52
Client Reference	DAVIDSON CO. LF.	Depth (ft)	20.0-22.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-05	Soil Color	**BROWN/TAN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	842	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	962.37	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	925.51	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	255.85	Weight of Tare (gm)	NA
Weight of Water (gm)	36.86	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	669.66	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**5.5**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	669.66
Dry Weight - 3/4" Sample (gm)	473.5	Weight of minus #200 material (gm)	196.13
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	473.53
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.0	0.0	100.0	**100.0**
6"	150	0.00	0.0	0.0	100.0	**100.0**
3"	75	0.00	0.0	0.0	100.0	**100.0**
2"	50	0.00	0.0	0.0	100.0	**100.0**
1 1/2"	37.5	0.00	0.0	0.0	100.0	**100.0**
1"	25.0	0.00	0.0	0.0	100.0	**100.0**
3/4"	19.0	0.00	0.0	0.0	100.0	**100.0**
1/2"	12.50	0.00	0.0	0.0	100.0	**100.0**
3/8"	9.50	0.00	0.0	0.0	100.0	**100.0**
#4	4.75	3.62	0.5	0.5	99.5	**99.5**
#10	2.00	93.28	13.9	14.5	85.5	**85.5**
#20	0.850	147.53	22.0	36.5	63.5	**63.5**
#40	0.425	86.58	12.9	49.4	50.6	**50.6**
#60	0.250	52.41	7.8	57.3	42.7	**42.7**
#140	0.106	67.06	10.0	67.3	32.7	**32.7**
#200	0.075	23.05	3.4	70.7	29.3	**29.3**
Pan	-	196.13	29.3	100.0	-	**-**

Tested By TMS Date 12/3/2010 Checked By GEM Date 12-8-10

DCN: CT-S3C DATE 6-25-98 REVISION: 2 *\\Server\data drive\2010 PROJECTS\2010-774 R.S.G\[2010-774-01-05 SIEVON REV 4.XLS]Sheet1*

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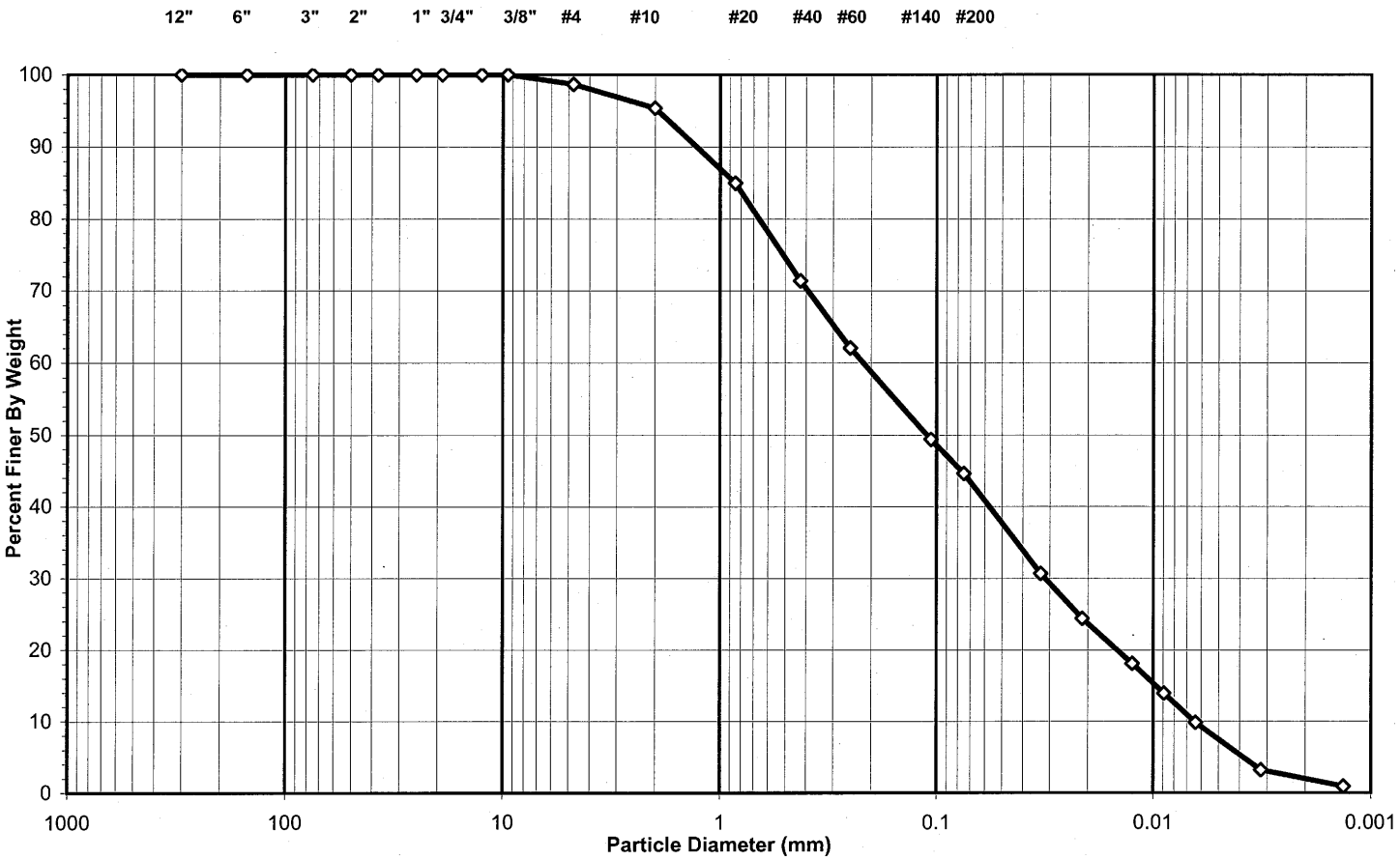
SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-53
Client Reference	DAVIDSON CO. LF	Depth (ft)	15.0-18.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-06	Soil Color	**BROWN**

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



Sieve Sizes (mm)	USCS Summary	Percentage
Greater Than #4	*Gravel*	1.34
#4 To #200	*Sand*	54.07
Finer Than #200	*Silt & Clay*	44.59

USCS Symbol ***SM, TESTED***

USCS Classification ***SILTY SAND***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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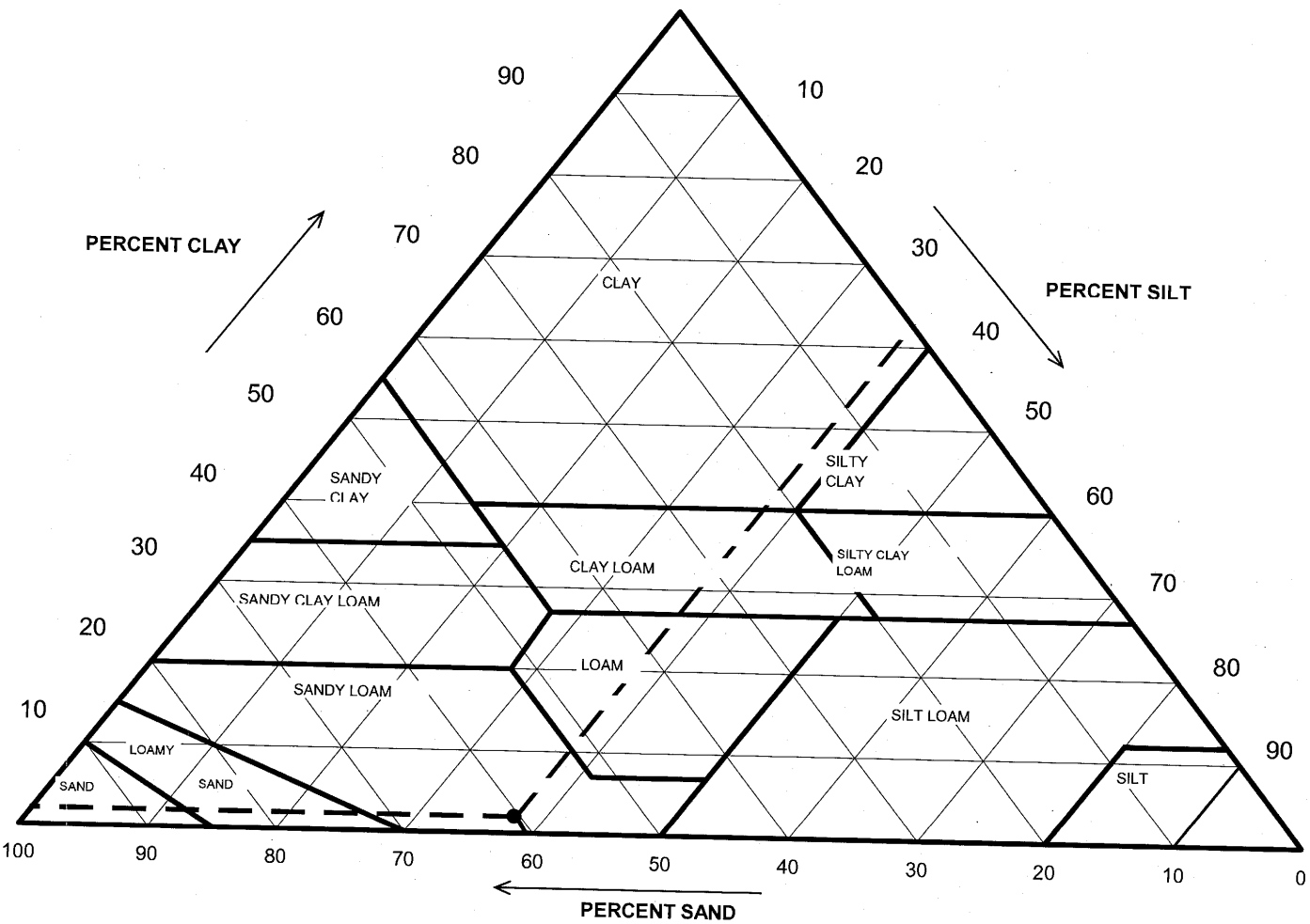
USDA CLASSIFICATION CHART

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-53
Client Reference	DAVIDSON CO. LF	Depth (ft)	15.0-18.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-06	Soil Color	BROWN



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	4.63	**0.00**
2	95.37	*Sand*	57.65	**60.45**
0.05	37.72	*Silt*	35.76	**37.49**
0.002	1.96	*Clay*	1.96	**2.06**

USDA Classification: ***SANDY LOAM***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-53
Client Reference	DAVIDSON CO. LF	Depth (ft)	15.0-18.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-06	Soil Color	**BROWN**

Minus #10 for Hygroscopic Moisture Content		**Hydrometer Specimen Data**	
Tare No.	C-2	Air Dried - #10 Hydrometer Material (gm)	50.02
Wgt.Tare + Wet Soil (gm)	35.05	Corrected Dry Wt. of - #10 Material (gm)	45.17
Wgt.Tare + Dry Soil (gm)	33.17		
Weight of Tare (gm)	15.67	Weight of - #200 Material (gm)	21.12
Weight of Water (gm)	1.88	Weight of - #10 ; + #200 Material (gm)	24.05
Weight of Dry Soil (gm)	17.50		
Moisture Content (%)	**10.7**	**J-FACTOR (%FINER THAN #10)**	**0.9537**
	Soil Specimen Data		
Tare No.	836		
Wgt.Tare + Air Dry Soil (gm)	706.94		
Weight of Tare (gm)	260.35		
Air Dried Wgt. Total Sample (gm)	446.59	Dry Weight of Material Retained on #10 (gm)	18.77
Total Dry Sample Weight (gm)	405.09	Corrected Dry Sample Wt - #10 (gm)	386.32

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.0	0.0	100.0	**100.0**
6"	150	0.00	0.0	0.0	100.0	**100.0**
3"	75	0.00	0.0	0.0	100.0	**100.0**
2"	50	0.00	0.0	0.0	100.0	**100.0**
1 1/2"	37.5	0.00	0.0	0.0	100.0	**100.0**
1"	25.0	0.00	0.0	0.0	100.0	**100.0**
3/4"	19.0	0.00	0.0	0.0	100.0	**100.0**
1/2"	12.5	0.00	0.0	0.0	100.0	**100.0**
3/8"	9.50	0.00	0.0	0.0	100.0	**100.0**
#4	4.75	5.43	1.3	1.3	98.7	**98.7**
#10	2.00	13.34	3.3	4.6	95.4	**95.4**
#20	0.85	4.92	10.9	10.9	89.1	**85.0**
#40	0.425	6.44	14.3	25.2	74.8	**71.4**
#60	0.250	4.42	9.8	34.9	65.1	**62.0**
#140	0.106	6.00	13.3	48.2	51.8	**49.4**
#200	0.075	2.27	5.0	53.2	46.8	**44.6**
Pan	-	21.12	46.8	100.0	-	**-**

Notes :

Tested By SD Date 12/9/2010 Checked By GEM Date 12-9-10

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-53
Client Reference	DAVIDSON CO. LF	Depth (ft)	15.0-18.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-06	Soil Color	**BROWN**

Elapsed Time (min)	R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA
2	20.0	23.4	5.34	14.7	32.1	0.01291	0.0329	**30.7**
5	17.0	23.4	5.34	11.7	25.6	0.01291	0.0212	**24.4**
15	14.0	23.4	5.34	8.7	19.0	0.01291	0.0125	**18.1**
30	12.0	23.4	5.34	6.7	14.6	0.01291	0.0089	**13.9**
60	10.0	23.5	5.29	4.7	10.3	0.01290	0.0064	**9.8**
250	7.0	23.1	5.47	1.5	3.3	0.01296	0.0032	**3.2**
1440	6.0	22.9	5.57	0.4	1.0	0.01299	0.0013	**0.9**

Soil Specimen Data		**Other Corrections**	
Wgt. of Dry Material (gm)	45.17	Hygroscopic Moisture Factor	0.903
Weight of Deflocculant (gm)	5.0	a - Factor	0.99
		Percent Finer than # 10	95.37
		Specific Gravity	2.70 Assumed

Notes:

Tested By JBD Date 12/7/2010 Checked By GEM Date 12-9-10

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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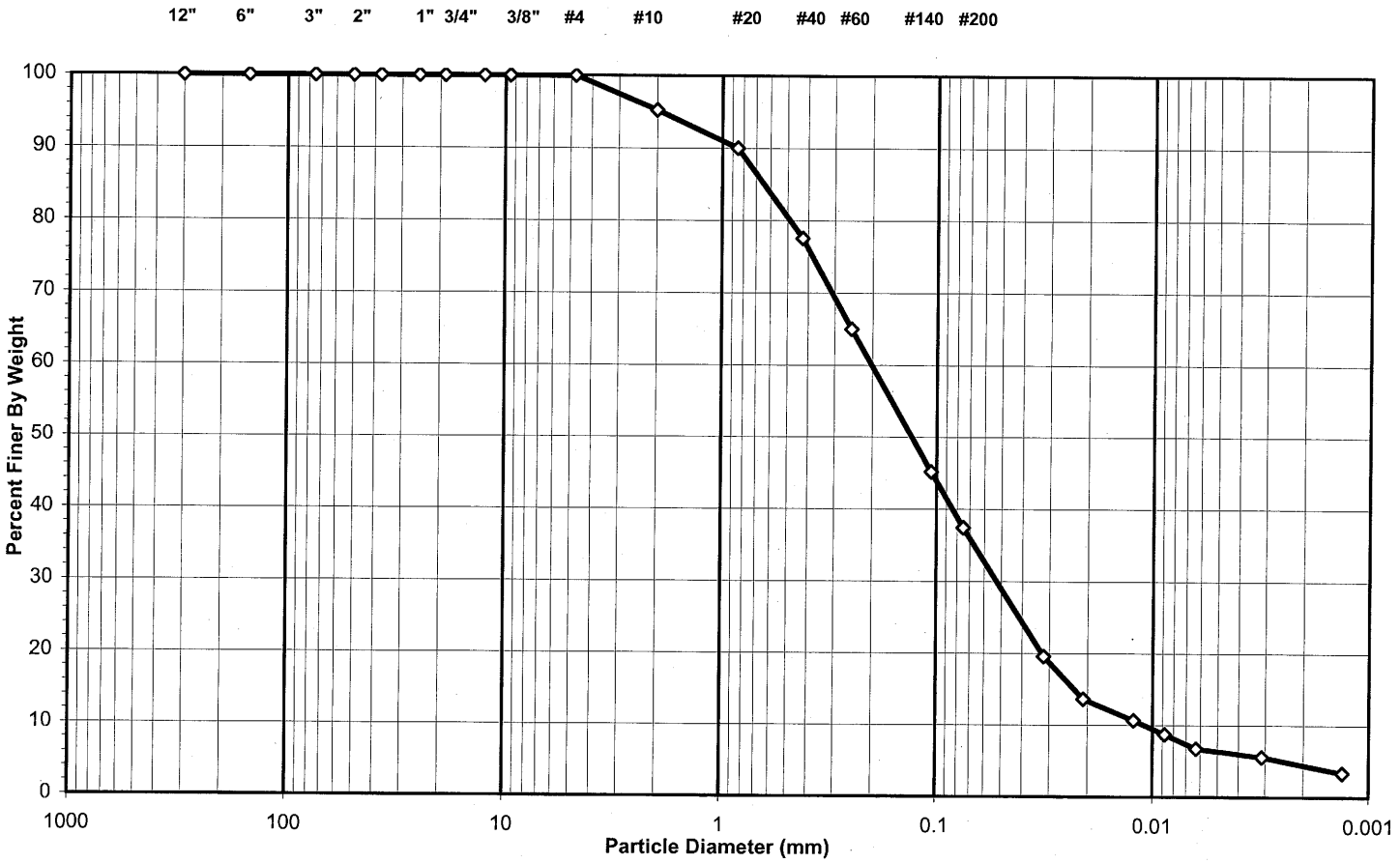
SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-54
Client Reference	DAVIDSON CO. LF	Depth (ft)	10.0-13.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-07	Soil Color	**BROWN TAN**

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	62.62
Finer Than #200	*Silt & Clay*	37.38

USCS Symbol ***SM, TESTED***

USCS Classification ***SILTY SAND***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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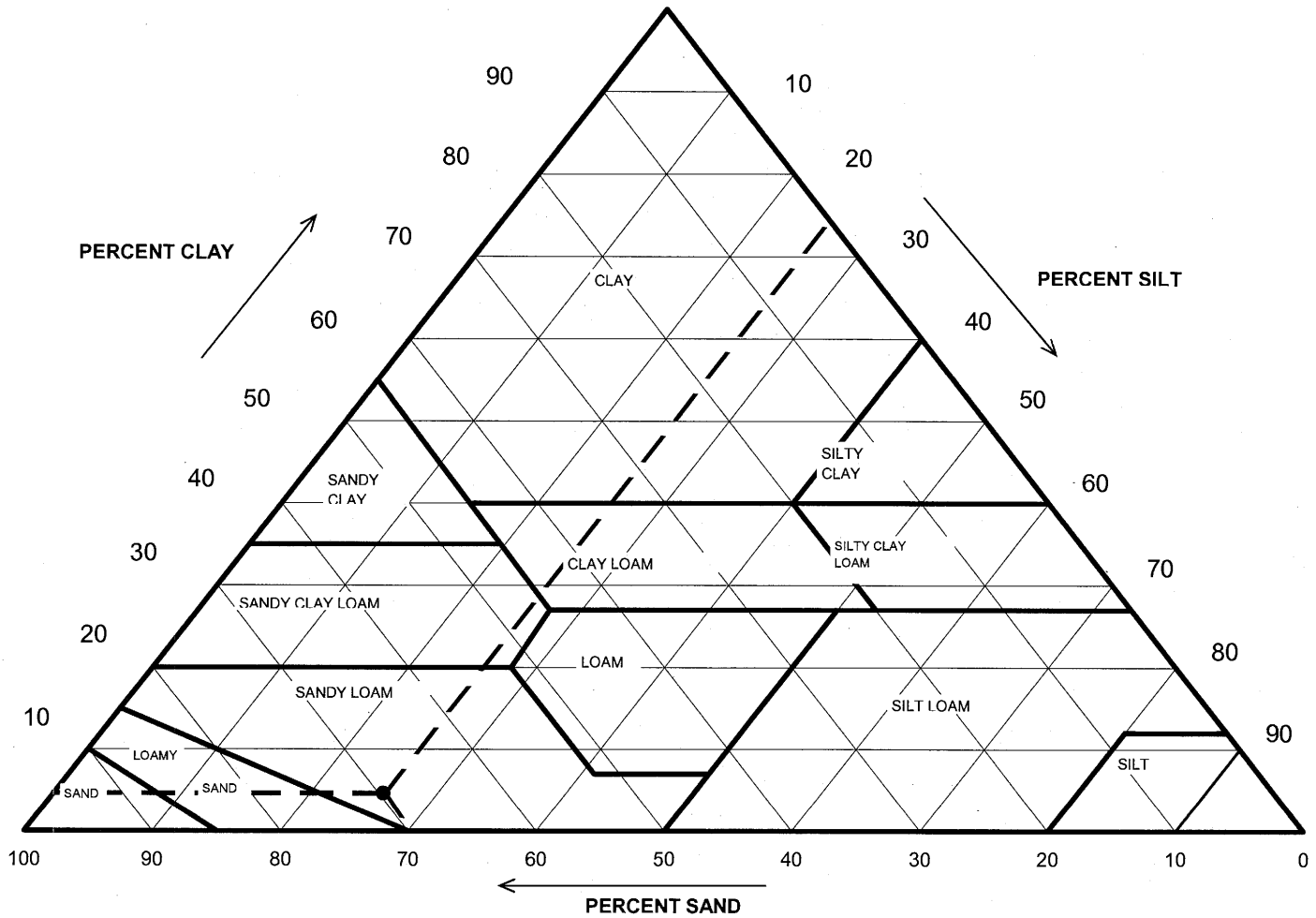
USDA CLASSIFICATION CHART

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-54
Client Reference	DAVIDSON CO. LF	Depth (ft)	10.0-13.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-07	Soil Color	BROWN TAN



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	4.74	**0.00**
2	95.26	*Sand*	66.32	**69.62**
0.05	28.95	*Silt*	24.52	**25.74**
0.002	4.42	*Clay*	4.42	**4.64**

USDA Classification: ***SANDY LOAM***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-54
Client Reference	DAVIDSON CO. LF	Depth (ft)	10.0-13.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-07	Soil Color	**BROWN TAN**

Minus #10 for Hygroscopic Moisture Content		**Hydrometer Specimen Data**	
Tare No.	P-1	Air Dried - #10 Hydrometer Material (gm)	100.00
Wgt.Tare + Wet Soil (gm)	50.29	Corrected Dry Wt. of - #10 Material (gm)	95.34
Wgt.Tare + Dry Soil (gm)	48.68		
Weight of Tare (gm)	15.77	Weight of - #200 Material (gm)	37.41
Weight of Water (gm)	1.61	Weight of - #10 ; + #200 Material (gm)	57.93
Weight of Dry Soil (gm)	32.91		
Moisture Content (%)	**4.9**	**J-FACTOR (%FINER THAN #10)**	**0.9526**
		Soil Specimen Data	
Tare No.	829		
Wgt.Tare + Air Dry Soil (gm)	404.55		
Weight of Tare (gm)	261.58		
Air Dried Wgt. Total Sample (gm)	142.97	Dry Weight of Material Retained on #10 (gm)	6.47
Total Dry Sample Weight (gm)	136.60	Corrected Dry Sample Wt - #10 (gm)	130.13

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.0	0.0	100.0	**100.0**
6"	150	0.00	0.0	0.0	100.0	**100.0**
3"	75	0.00	0.0	0.0	100.0	**100.0**
2"	50	0.00	0.0	0.0	100.0	**100.0**
1 1/2"	37.5	0.00	0.0	0.0	100.0	**100.0**
1"	25.0	0.00	0.0	0.0	100.0	**100.0**
3/4"	19.0	0.00	0.0	0.0	100.0	**100.0**
1/2"	12.5	0.00	0.0	0.0	100.0	**100.0**
3/8"	9.50	0.00	0.0	0.0	100.0	**100.0**
#4	4.75	0.00	0.0	0.0	100.0	**100.0**
#10	2.00	6.47	4.7	4.7	95.3	**95.3**
#20	0.85	5.25	5.5	5.5	94.5	**90.0**
#40	0.425	12.48	13.1	18.6	81.4	**77.5**
#60	0.250	12.56	13.2	31.8	68.2	**65.0**
#140	0.106	19.88	20.9	52.6	47.4	**45.1**
#200	0.075	7.76	8.1	60.8	39.2	**37.4**
Pan	-	37.41	39.2	100.0	-	**-**

Notes :

Tested By SD Date 12/8/2010 Checked By GEM Date 12-8-10

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-54
Client Reference	DAVIDSON CO. LF	Depth (ft)	10.0-13.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-07	Soil Color	**BROWN TAN**

Elapsed Time (min)	R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA
2	25.0	23.6	5.25	19.8	20.5	0.01288	0.0318	**19.5**
5	19.0	23.6	5.25	13.8	14.3	0.01288	0.0209	**13.6**
15	16.0	23.6	5.25	10.8	11.2	0.01288	0.0123	**10.6**
30	14.0	23.7	5.20	8.8	9.1	0.01287	0.0088	**8.7**
60	12.0	23.7	5.20	6.8	7.1	0.01287	0.0063	**6.7**
250	11.0	23.3	5.38	5.6	5.8	0.01293	0.0031	**5.6**
1440	9.0	22.8	5.61	3.4	3.5	0.01300	0.0013	**3.4**

Soil Specimen Data		**Other Corrections**	
Wgt. of Dry Material (gm)	95.34	Hygroscopic Moisture Factor	0.953
Weight of Deflocculant (gm)	5.0	a - Factor	0.99
		Percent Finer than # 10	95.26
		Specific Gravity	2.70 Assumed

Notes:

Tested By TMS Date 12/6/2010 Checked By GDM Date 12-8-10

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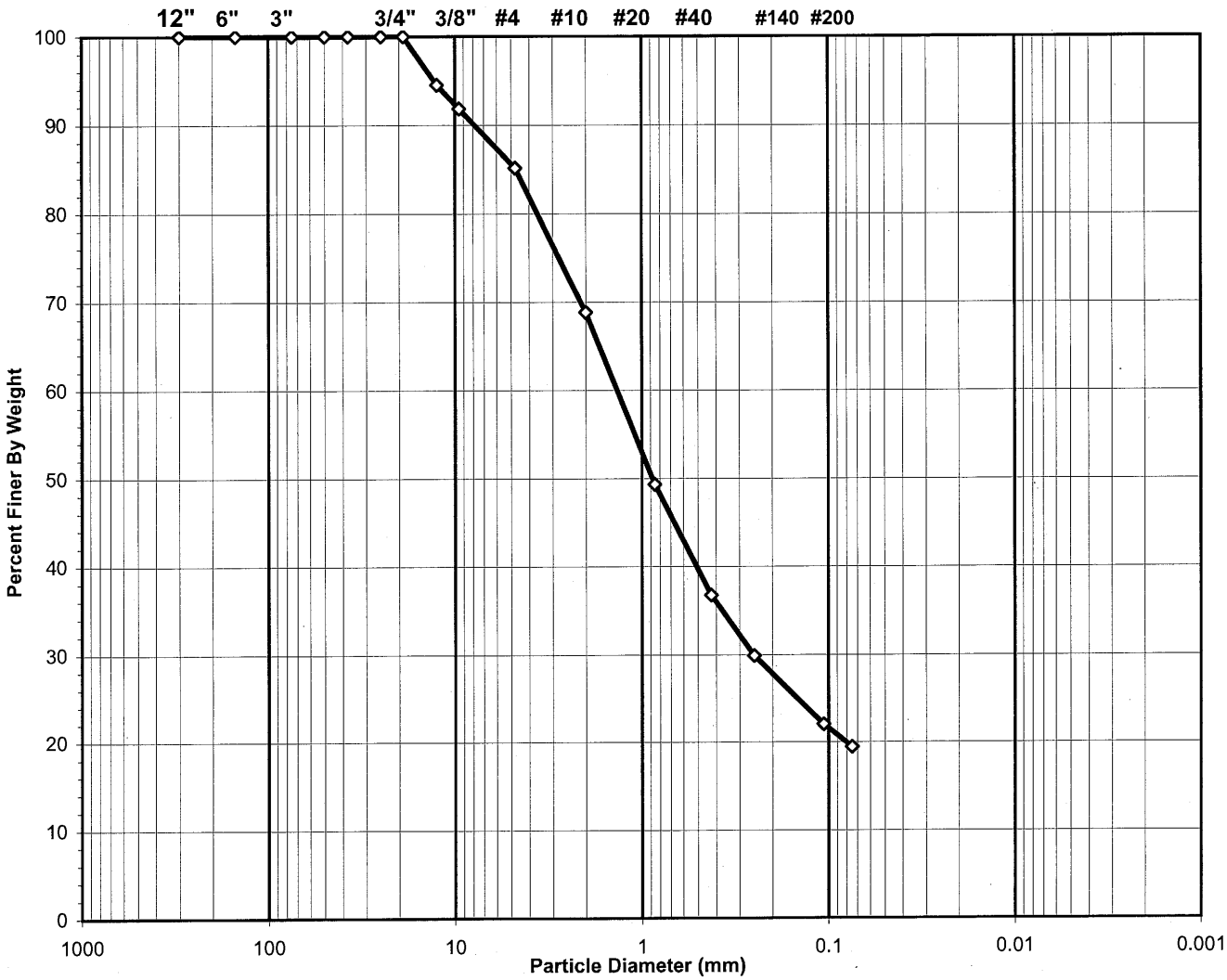
SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-55
Client Reference	DAVIDSON CO. LF.	Depth (ft)	5.0-6.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-08	Soil Color	**BROWN**

	SIEVE ANALYSIS		HYDROMETER
USCS	gravel	sand	silt and clay



USCS Symbol ***SC-SM, TESTED***

USCS Classification ***SILTY, CLAYEY SAND***

Tested By TMS Date 12/3/2010 Checked By TBD Date 12-6-10

 DCN: CT-S3C DATE 6-25-98 REVISION: 2 *\\SERVER\Data Drive\2010 PROJECTS\2010-774 R.S.G\[2010-774-01-08 SIEVON REV 4.XLS]Sheet1*

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-55
Client Reference	DAVIDSON CO. LF.	Depth (ft)	5.0-6.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-08	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	215	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	454.56	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	428.88	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	172.30	Weight of Tare (gm)	NA
Weight of Water (gm)	25.68	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	256.58	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**10.0**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	256.58
Dry Weight - 3/4" Sample (gm)	206.8	Weight of minus #200 material (gm)	49.81
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	206.77
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.0	0.0	100.0	**100.0**
6"	150	0.00	0.0	0.0	100.0	**100.0**
3"	75	0.00	0.0	0.0	100.0	**100.0**
2"	50	0.00	0.0	0.0	100.0	**100.0**
1 1/2"	37.5	0.00	0.0	0.0	100.0	**100.0**
1"	25.0	0.00	0.0	0.0	100.0	**100.0**
3/4"	19.0	0.00	0.0	0.0	100.0	**100.0**
1/2"	12.50	14.03	5.5	5.5	94.5	**94.5**
3/8"	9.50	6.90	2.7	8.2	91.8	**91.8**
#4	4.75	17.23	6.7	14.9	85.1	**85.1**
#10	2.00	41.90	16.3	31.2	68.8	**68.8**
#20	0.850	50.00	19.5	50.7	49.3	**49.3**
#40	0.425	32.24	12.6	63.3	36.7	**36.7**
#60	0.250	17.59	6.9	70.1	29.9	**29.9**
#140	0.106	20.22	7.9	78.0	22.0	**22.0**
#200	0.075	6.66	2.6	80.6	19.4	**19.4**
Pan	-	49.81	19.4	100.0	-	**-**

Tested By TMS Date 12/3/2010 Checked By JBO Date 12-6-10

DCN: CT-S3C DATE 6-25-98 REVISION: 2 *\\SERVER\Data Drive\2010 PROJECTS\2010-774 R.S.G\[2010-774-01-08 SIEVON REV 4.XLS]Sheet1*

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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-56
Client Reference	DAVIDSON CO. LF	Depth (ft)	7.5-9.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-09	Soil Color	**GRAY**

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay

USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.64
#4 To #200	*Sand*	63.68
Finer Than #200	*Silt & Clay*	35.69

USCS Symbol ***SM, TESTED (NON PLASTIC FINES)***

USCS Classification ***SILTY SAND***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

\\Server\data drive\2010 PROJECTS\2010-774 R.S.G\[2010-774-01-09 SIEVEHYD10.xls]Sheet1

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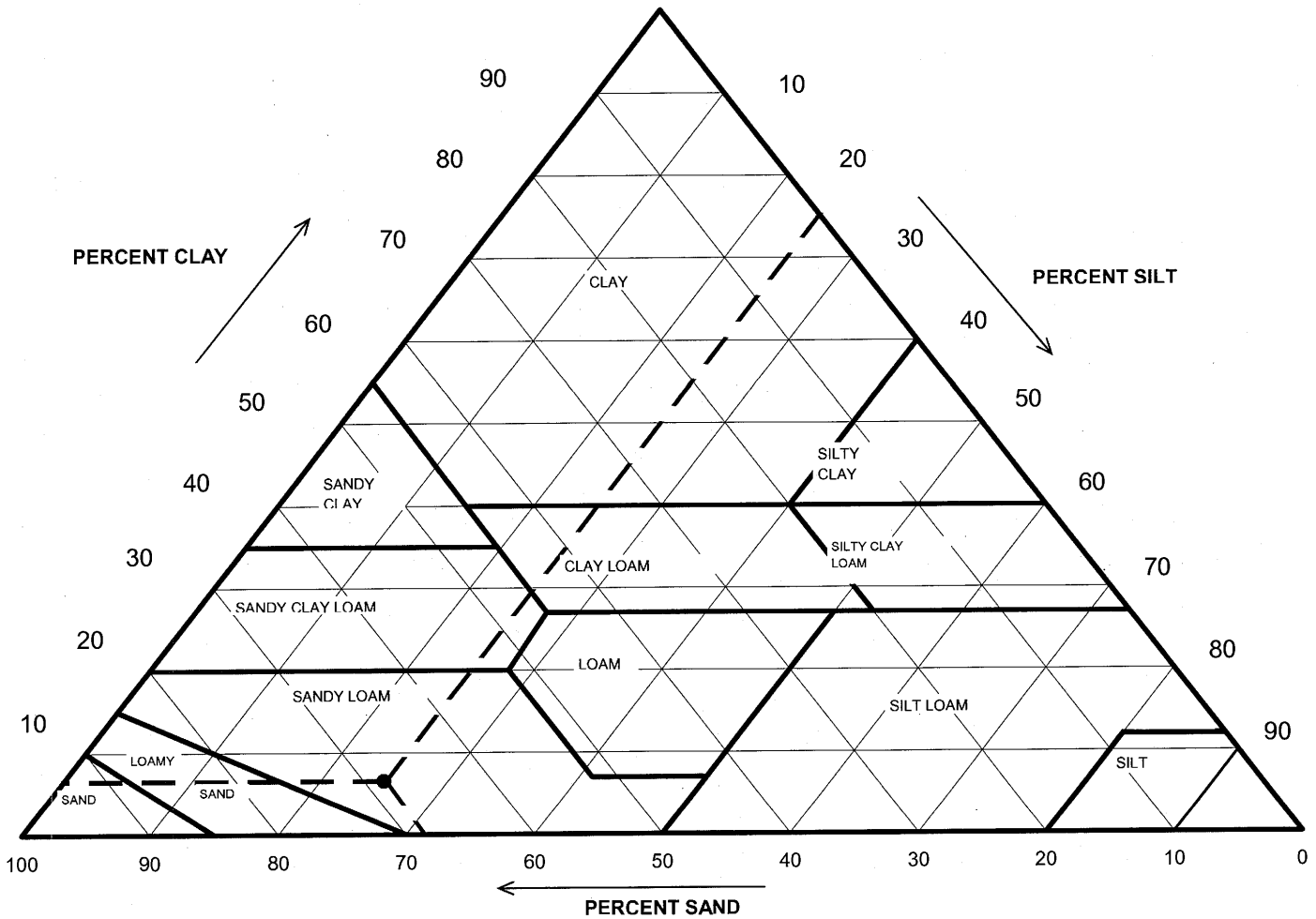
USDA CLASSIFICATION CHART

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-56
Client Reference	DAVIDSON CO. LF	Depth (ft)	7.5-9.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-09	Soil Color	GRAY



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	13.37	**0.00**
2	86.63	*Sand*	59.26	**68.41**
0.05	27.36	*Silt*	21.66	**25.01**
0.002	5.70	*Clay*	5.70	**6.58**

USDA Classification: ***SANDY LOAM***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-56
Client Reference	DAVIDSON CO. LF	Depth (ft)	7.5-9.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-09	Soil Color	**GRAY**

Minus #10 for Hygroscopic Moisture Content		**Hydrometer Specimen Data**	
Tare No.	E-1	Air Dried - #10 Hydrometer Material (gm)	100.02
Wgt.Tare + Wet Soil (gm)	45.55	Corrected Dry Wt. of - #10 Material (gm)	98.48
Wgt.Tare + Dry Soil (gm)	45.19		
Weight of Tare (gm)	22.20	Weight of - #200 Material (gm)	40.57
Weight of Water (gm)	0.36	Weight of - #10 ; + #200 Material (gm)	57.91
Weight of Dry Soil (gm)	22.99		
Moisture Content (%)	**1.6**	**J-FACTOR (%FINER THAN #10)**	**0.8663**
	Soil Specimen Data		
Tare No.	842		
Wgt.Tare + Air Dry Soil (gm)	599.43		
Weight of Tare (gm)	255.84		
Air Dried Wgt. Total Sample (gm)	343.59	Dry Weight of Material Retained on #10 (gm)	45.34
Total Dry Sample Weight (gm)	338.99	Corrected Dry Sample Wt - #10 (gm)	293.65

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.0	0.0	100.0	**100.0**
6"	150	0.00	0.0	0.0	100.0	**100.0**
3"	75	0.00	0.0	0.0	100.0	**100.0**
2"	50	0.00	0.0	0.0	100.0	**100.0**
1 1/2"	37.5	0.00	0.0	0.0	100.0	**100.0**
1"	25.0	0.00	0.0	0.0	100.0	**100.0**
3/4"	19.0	0.00	0.0	0.0	100.0	**100.0**
1/2"	12.5	0.00	0.0	0.0	100.0	**100.0**
3/8"	9.50	0.00	0.0	0.0	100.0	**100.0**
#4	4.75	2.16	0.6	0.6	99.4	**99.4**
#10	2.00	43.18	12.7	13.4	86.6	**86.6**
#20	0.85	11.61	11.8	11.8	88.2	**76.4**
#40	0.425	11.53	11.7	23.5	76.5	**66.3**
#60	0.250	8.97	9.1	32.6	67.4	**58.4**
#140	0.106	17.72	18.0	50.6	49.4	**42.8**
#200	0.075	8.08	8.2	58.8	41.2	**35.7**
Pan	-	40.57	41.2	100.0	-	**-**

Notes :

Tested By SD Date 12/8/2010 Checked By GM Date 12-8-10

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-56
Client Reference	DAVIDSON CO. LF	Depth (ft)	7.5-9.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-09	Soil Color	**GRAY**

Elapsed Time (min)	R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA
2	26.0	23.4	5.34	20.7	20.8	0.01291	0.0317	**18.0**
5	23.0	23.4	5.34	17.7	17.8	0.01291	0.0204	**15.4**
15	18.0	23.5	5.29	12.7	12.8	0.01290	0.0122	**11.1**
30	16.0	23.6	5.25	10.8	10.8	0.01288	0.0087	**9.4**
60	14.0	23.7	5.20	8.8	8.8	0.01287	0.0062	**7.7**
250	12.0	23.5	5.29	6.7	6.7	0.01290	0.0031	**5.8**
1440	12.0	22.8	5.61	6.4	6.4	0.01300	0.0013	**5.6**

Soil Specimen Data		**Other Corrections**	
Wgt. of Dry Material (gm)	98.48	Hygroscopic Moisture Factor	0.985
Weight of Deflocculant (gm)	5.0	a - Factor	0.99
		Percent Finer than # 10	86.63
		Specific Gravity	2.70 Assumed

Notes:

Tested By TMS Date 12/6/2010 Checked By GEM Date 12-8-10

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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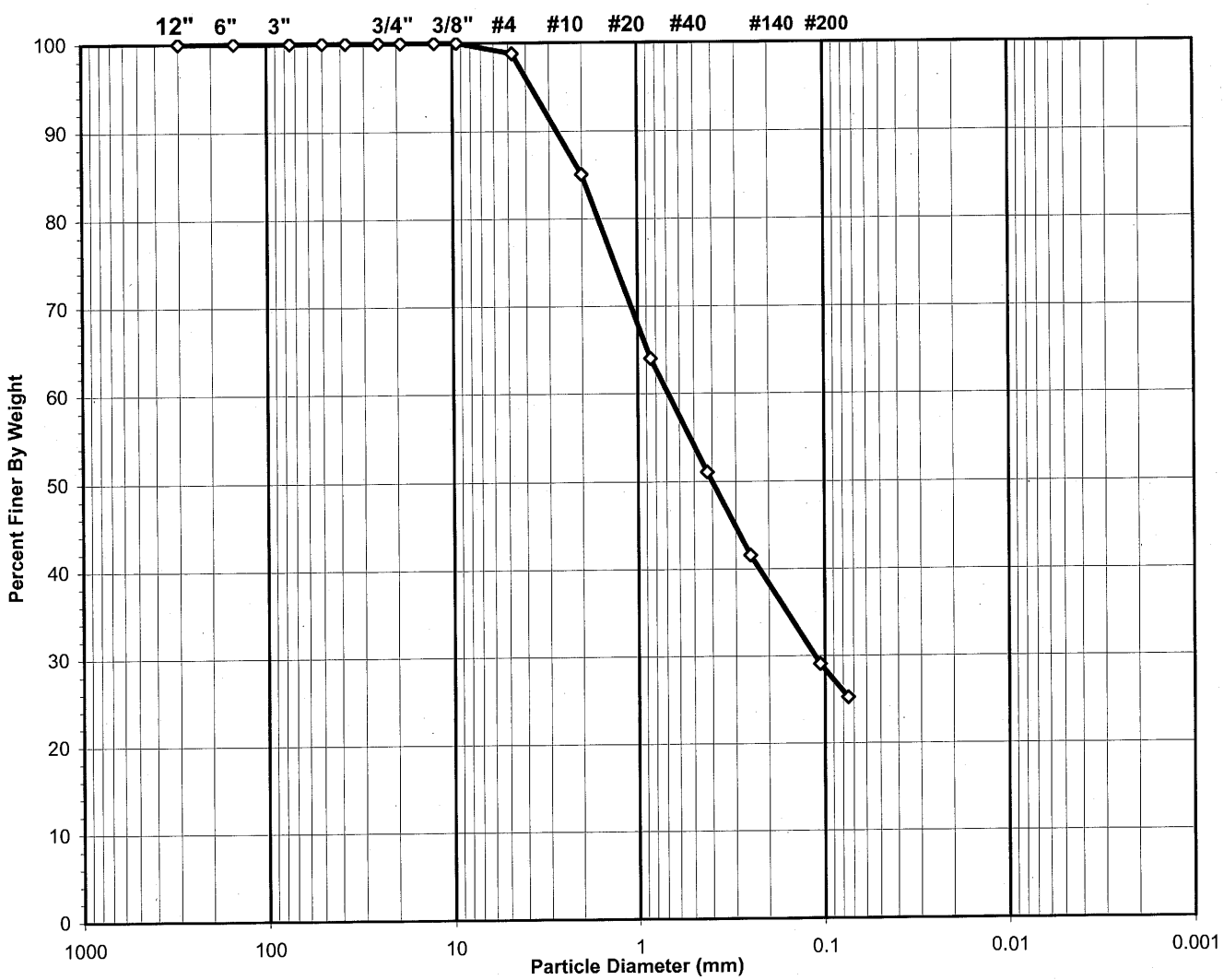
SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-57
Client Reference	DAVIDSON CO. LF.	Depth (ft)	15.0-18.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-10	Soil Color	**BROWN**

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol ***SM, TESTED***

USCS Classification ***SILTY SAND***

Tested By TMS Date 12/3/2010 Checked By JAD Date 12-7-10

 DCN: CT-S3C DATE 6-25-98 REVISION: 2 *\\SERVER\Data Drive\2010 PROJECTS\2010-774 R.S.G\[2010-774-01-10 SIEVON REV 4.XLS]Sheet1*

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-57
Client Reference	DAVIDSON CO. LF.	Depth (ft)	15.0-18.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-10	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	203	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	1021.63	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	905.87	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	171.10	Weight of Tare (gm)	NA
Weight of Water (gm)	115.76	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	734.77	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**15.8**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	734.77
Dry Weight - 3/4" Sample (gm)	549.1	Weight of minus #200 material (gm)	185.71
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	549.06
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.0	0.0	100.0	**100.0**
6"	150	0.00	0.0	0.0	100.0	**100.0**
3"	75	0.00	0.0	0.0	100.0	**100.0**
2"	50	0.00	0.0	0.0	100.0	**100.0**
1 1/2"	37.5	0.00	0.0	0.0	100.0	**100.0**
1"	25.0	0.00	0.0	0.0	100.0	**100.0**
3/4"	19.0	0.00	0.0	0.0	100.0	**100.0**
1/2"	12.50	0.00	0.0	0.0	100.0	**100.0**
3/8"	9.50	0.00	0.0	0.0	100.0	**100.0**
#4	4.75	8.99	1.2	1.2	98.8	**98.8**
#10	2.00	100.82	13.7	14.9	85.1	**85.1**
#20	0.850	154.51	21.0	36.0	64.0	**64.0**
#40	0.425	95.05	12.9	48.9	51.1	**51.1**
#60	0.250	69.96	9.5	58.4	41.6	**41.6**
#140	0.106	91.92	12.5	70.9	29.1	**29.1**
#200	0.075	27.81	3.8	74.7	25.3	**25.3**
Pan	-	185.71	25.3	100.0	-	**-**

Tested By TMS Date 12/3/2010 Checked By JBD Date 12.7.10

DCN: CT-S3C DATE 6-25-98 REVISION: 2 *\\SERVER\Data Drive\2010 PROJECTS\2010-774 R.S.G\[2010-774-01-10 SIEVON REV 4.XLS]Sheet1*

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SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

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Client	R.S.G. & ASSOCIATES	Boring No.	PZ-58
Client Reference	DAVIDSON CO. LF	Depth (ft)	30-32
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-11	Soil Color	**TAN**

	SIEVE ANALYSIS			HYDROMETER	
USCS	**cobbles**	**gravel**	**sand**	**silt and clay fraction**	
USDA	**cobbles**	**gravel**	**sand**	**silt**	**clay**

USCS Summary

Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	0.98
#4 To #200	*Sand*	45.26
Finer Than #200	*Silt & Clay*	53.76

USCS Symbol ***ML, TESTED***

USCS Classification ***SANDY SILT***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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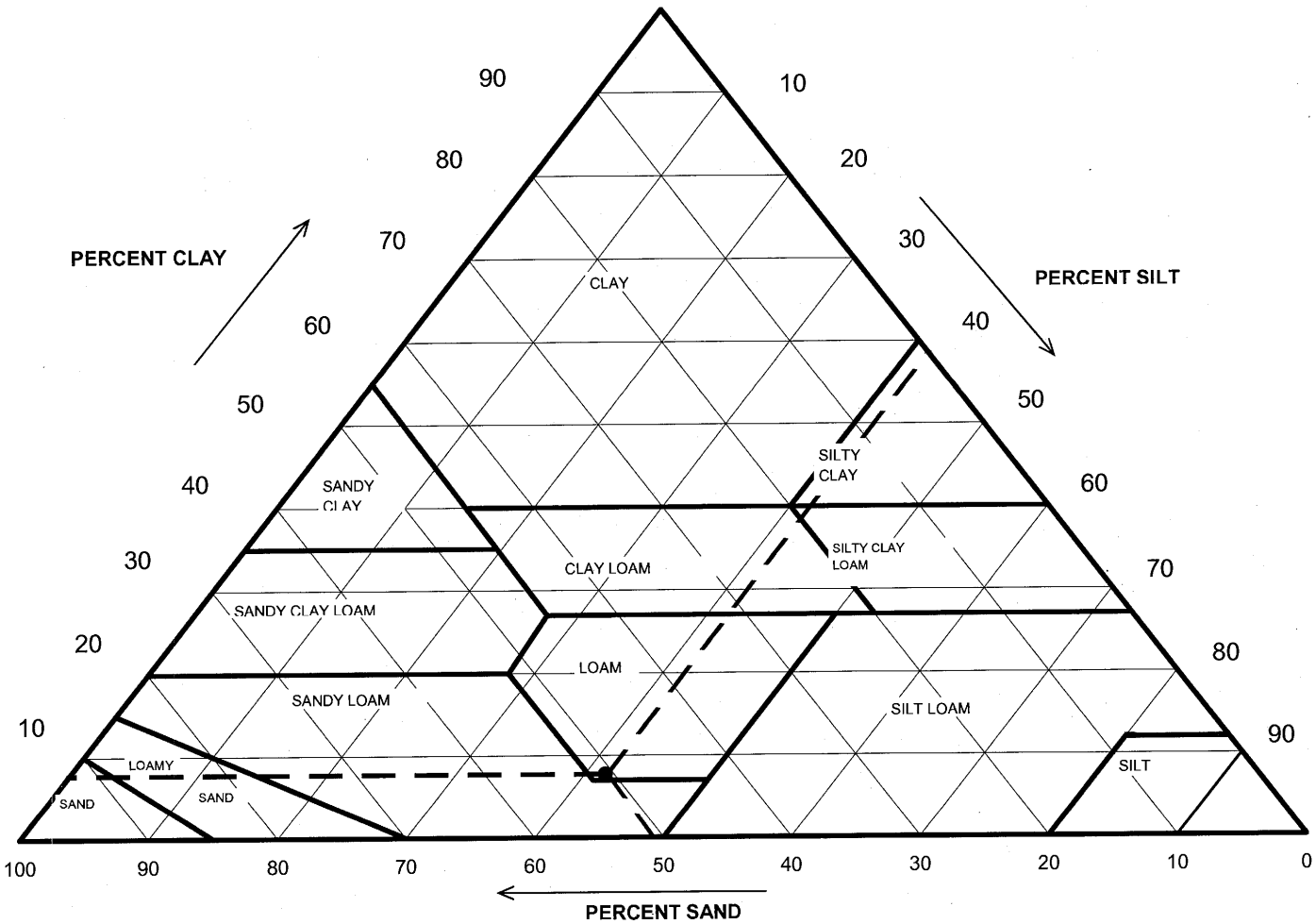
USDA CLASSIFICATION CHART

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-58
Client Reference	DAVIDSON CO. LF	Depth (ft)	30-32
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-11	Soil Color	TAN



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	4.99	**0.00**
2	95.01	*Sand*	48.14	**50.67**
0.05	46.87	*Silt*	39.54	**41.61**
0.002	7.34	*Clay*	7.34	**7.72**

USDA Classification: ***LOAM***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-58
Client Reference	DAVIDSON CO. LF	Depth (ft)	30-32
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-11	Soil Color	**TAN**

Minus #10 for Hygroscopic Moisture Content		**Hydrometer Specimen Data**	
Tare No.	N-1	Air Dried - #10 Hydrometer Material (gm)	100.00
Wgt.Tare + Wet Soil (gm)	58.00	Corrected Dry Wt. of - #10 Material (gm)	90.56
Wgt.Tare + Dry Soil (gm)	54.00		
Weight of Tare (gm)	15.63	Weight of - #200 Material (gm)	51.24
Weight of Water (gm)	4.00	Weight of - #10 ; + #200 Material (gm)	39.32
Weight of Dry Soil (gm)	38.37		
Moisture Content (%)	**10.4**	**J-FACTOR (%FINER THAN #10)**	**0.9501**
	Soil Specimen Data		
Tare No.	P-12		
Wgt.Tare + Air Dry Soil (gm)	647.64		
Weight of Tare (gm)	196.44		
Air Dried Wgt. Total Sample (gm)	451.20	Dry Weight of Material Retained on #10 (gm)	20.47
Total Dry Sample Weight (gm)	410.54	Corrected Dry Sample Wt - #10 (gm)	390.07

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.0	0.0	100.0	**100.0**
6"	150	0.00	0.0	0.0	100.0	**100.0**
3"	75	0.00	0.0	0.0	100.0	**100.0**
2"	50	0.00	0.0	0.0	100.0	**100.0**
1 1/2"	37.5	0.00	0.0	0.0	100.0	**100.0**
1"	25.0	0.00	0.0	0.0	100.0	**100.0**
3/4"	19.0	0.00	0.0	0.0	100.0	**100.0**
1/2"	12.5	0.00	0.0	0.0	100.0	**100.0**
3/8"	9.50	2.43	0.6	0.6	99.4	**99.4**
#4	4.75	1.58	0.4	1.0	99.0	**99.0**
#10	2.00	16.46	4.0	5.0	95.0	**95.0**
#20	0.85	4.68	5.2	5.2	94.8	**90.1**
#40	0.425	7.85	8.7	13.8	86.2	**81.9**
#60	0.250	7.44	8.2	22.1	77.9	**74.1**
#140	0.106	13.44	14.8	36.9	63.1	**60.0**
#200	0.075	5.91	6.5	43.4	56.6	**53.8**
Pan	-	51.24	56.6	100.0	-	-

Notes :

Tested By SD Date 12/8/2010 Checked By GEM Date 12-9-10

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-58
Client Reference	DAVIDSON CO. LF	Depth (ft)	30-32
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-11	Soil Color	**TAN**

Elapsed Time (min)	R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA
2	41.0	23.6	5.25	35.8	39.1	0.01288	0.0282	**37.1**
5	36.0	23.6	5.25	30.8	33.6	0.01288	0.0186	**31.9**
15	30.0	23.6	5.25	24.8	27.1	0.01288	0.0112	**25.7**
30	26.0	23.7	5.20	20.8	22.7	0.01287	0.0081	**21.6**
60	22.0	23.7	5.20	16.8	18.4	0.01287	0.0059	**17.5**
250	15.0	23.5	5.29	9.7	10.6	0.01290	0.0030	**10.1**
1440	10.0	22.8	5.61	4.4	4.8	0.01300	0.0013	**4.6**

Soil Specimen Data		Other Corrections	
Wgt. of Dry Material (gm)	90.56	Hygroscopic Moisture Factor	0.906
Weight of Deflocculant (gm)	5.0	a - Factor	0.99
		Percent Finer than # 10	95.01
		Specific Gravity	2.70 Assumed

Notes:

Tested By TMS Date 12/6/2010 Checked By GEM Date 12-9-10

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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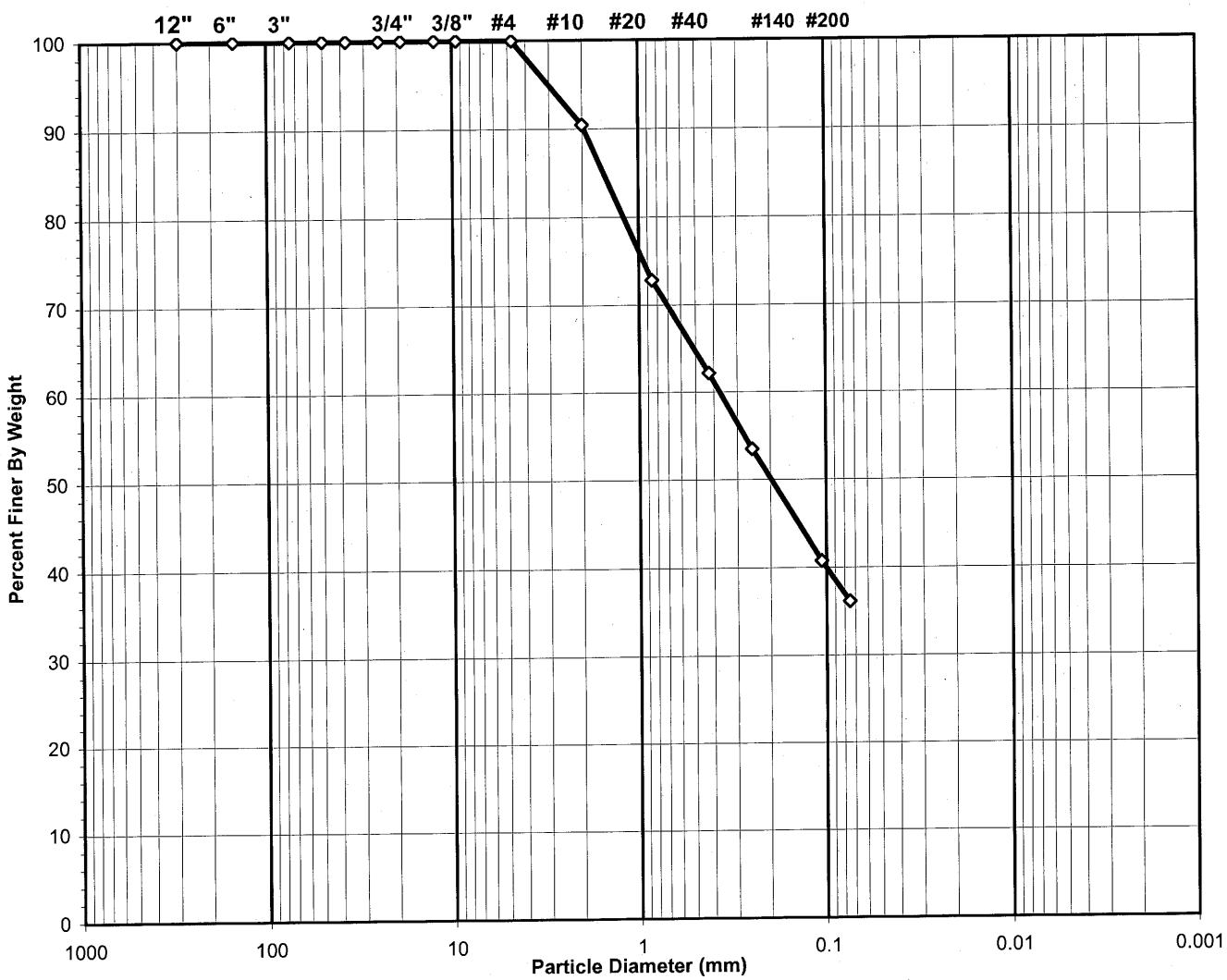
SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-59
Client Reference	DAVIDSON CO. LF.	Depth (ft)	15.0-20.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-12	Soil Color	**BROWN**

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol ***SM, TESTED***

USCS Classification ***SILTY SAND***

Tested By TMS Date 12/3/2010 Checked By JBD Date 12-7-10

 DCN: CT-S3C DATE 6-25-98 REVISION: 2 *\\SERVER\Data Drive\2010 PROJECTS\2010-774 R.S.G\[2010-774-01-12 SIEVON REV 4.XLS]Sheet1*

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-59
Client Reference	DAVIDSON CO. LF.	Depth (ft)	15.0-20.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-12	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	216	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	725.49	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	614.41	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	170.76	Weight of Tare (gm)	NA
Weight of Water (gm)	111.08	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	443.65	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**25.0**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	443.65
Dry Weight - 3/4" Sample (gm)	283.4	Weight of minus #200 material (gm)	160.28
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	283.37
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.0	0.0	100.0	**100.0**
6"	150	0.00	0.0	0.0	100.0	**100.0**
3"	75	0.00	0.0	0.0	100.0	**100.0**
2"	50	0.00	0.0	0.0	100.0	**100.0**
1 1/2"	37.5	0.00	0.0	0.0	100.0	**100.0**
1"	25.0	0.00	0.0	0.0	100.0	**100.0**
3/4"	19.0	0.00	0.0	0.0	100.0	**100.0**
1/2"	12.50	0.00	0.0	0.0	100.0	**100.0**
3/8"	9.50	0.00	0.0	0.0	100.0	**100.0**
#4	4.75	0.18	0.0	0.0	100.0	**100.0**
#10	2.00	42.38	9.6	9.6	90.4	**90.4**
#20	0.850	78.04	17.6	27.2	72.8	**72.8**
#40	0.425	47.33	10.7	37.9	62.1	**62.1**
#60	0.250	38.35	8.6	46.5	53.5	**53.5**
#140	0.106	56.67	12.8	59.3	40.7	**40.7**
#200	0.075	20.42	4.6	63.9	36.1	**36.1**
Pan	-	160.28	36.1	100.0	-	-

Tested By TMS Date 12/3/2010 Checked By JRB Date 12.7.10

DCN: CT-S3C DATE 6-25-98 REVISION: 2 *\\SERVER\Data Drive\2010 PROJECTS\2010-774 R.S.G\[2010-774-01-12 SIEVON REV 4.XLS]Sheet1*

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SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-60
Client Reference	DAVIDSON CO. LF.	Depth (ft)	5.0-7.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-13	Soil Color	**GRAY**

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay

USCS Symbol ***SM, TESTED***

USCS Classification ***SILTY SAND***

Tested By TMS Date 12/3/2010 Checked By JBD Date 12.07.10

 DCN: CT-S3C DATE 6-25-98 REVISION: 2 *\\SERVER\Data Drive\2010 PROJECTS\2010-774 R.S.G\[2010-774-01-13 SIEVON REV 4.XLS]Sheet1*

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-60
Client Reference	DAVIDSON CO. LF.	Depth (ft)	5.0-7.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-13	Soil Color	**GRAY**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	200	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	887.03	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	832.67	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	171.76	Weight of Tare (gm)	NA
Weight of Water (gm)	54.36	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	660.91	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**8.2**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	660.91
Dry Weight - 3/4" Sample (gm)	452.7	Weight of minus #200 material (gm)	208.22
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	452.69
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.0	0.0	100.0	**100.0**
6"	150	0.00	0.0	0.0	100.0	**100.0**
3"	75	0.00	0.0	0.0	100.0	**100.0**
2"	50	0.00	0.0	0.0	100.0	**100.0**
1 1/2"	37.5	0.00	0.0	0.0	100.0	**100.0**
1"	25.0	0.00	0.0	0.0	100.0	**100.0**
3/4"	19.0	0.00	0.0	0.0	100.0	**100.0**
1/2"	12.50	0.00	0.0	0.0	100.0	**100.0**
3/8"	9.50	0.00	0.0	0.0	100.0	**100.0**
#4	4.75	0.21	0.0	0.0	100.0	**100.0**
#10	2.00	7.27	1.1	1.1	98.9	**98.9**
#20	0.850	75.52	11.4	12.6	87.4	**87.4**
#40	0.425	106.85	16.2	28.7	71.3	**71.3**
#60	0.250	86.18	13.0	41.8	58.2	**58.2**
#140	0.106	130.21	19.7	61.5	38.5	**38.5**
#200	0.075	46.45	7.0	68.5	31.5	**31.5**
Pan	-	208.22	31.5	100.0	-	**-**

Tested By TMS Date 12/3/2010 Checked By JGD Date 12-7-10

DCN: CT-S3C DATE 6-25-98 REVISION: 2 *\\SERVER\Data Drive\2010 PROJECTS\2010-774 R.S.G\[2010-774-01-13 SIEVON REV 4.XLS]Sheet1*

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SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-61a
Client Reference	DAVIDSON CO. LF.	Depth (ft)	15.0-20.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-14	Soil Color	**BROWN**

	SIEVE ANALYSIS		HYDROMETER
USCS	gravel	sand	silt and clay

USCS Symbol ***SM, TESTED***

USCS Classification ***SILTY SAND***

Tested By TMS Date 12/3/2010 Checked By JBD Date 12-7-10

 DCN: CT-S3C DATE 6-25-98 REVISION: 2 *\\SERVER\Data Drive\2010 PROJECTS\2010-774 R.S.G\[2010-774-01-14 SIEVON REV 4.XLS]Sheet1*

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-61a
Client Reference	DAVIDSON CO. LF.	Depth (ft)	15.0-20.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-14	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	209	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	663.72	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	570.17	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	171.63	Weight of Tare (gm)	NA
Weight of Water (gm)	93.55	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	398.54	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**23.5**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	398.54
Dry Weight - 3/4" Sample (gm)	293.9	Weight of minus #200 material (gm)	104.62
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	293.92
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.0	0.0	100.0	**100.0**
6"	150	0.00	0.0	0.0	100.0	**100.0**
3"	75	0.00	0.0	0.0	100.0	**100.0**
2"	50	0.00	0.0	0.0	100.0	**100.0**
1 1/2"	37.5	0.00	0.0	0.0	100.0	**100.0**
1"	25.0	0.00	0.0	0.0	100.0	**100.0**
3/4"	19.0	0.00	0.0	0.0	100.0	**100.0**
1/2"	12.50	0.00	0.0	0.0	100.0	**100.0**
3/8"	9.50	0.00	0.0	0.0	100.0	**100.0**
#4	4.75	2.15	0.5	0.5	99.5	**99.5**
#10	2.00	55.98	14.0	14.6	85.4	**85.4**
#20	0.850	74.63	18.7	33.3	66.7	**66.7**
#40	0.425	53.53	13.4	46.7	53.3	**53.3**
#60	0.250	40.82	10.2	57.0	43.0	**43.0**
#140	0.106	51.23	12.9	69.8	30.2	**30.2**
#200	0.075	15.58	3.9	73.7	26.3	**26.3**
Pan	-	104.62	26.3	100.0	-	-

Tested By TMS Date 12/3/2010 Checked By JBD Date 12-7-10

DCN: CT-S3C DATE 6-25-98 REVISION: 2 *\\SERVER\Data Drive\2010 PROJECTS\2010-774 R.S.G\[2010-774-01-14 SIEVON REV 4.XLS]Sheet1*

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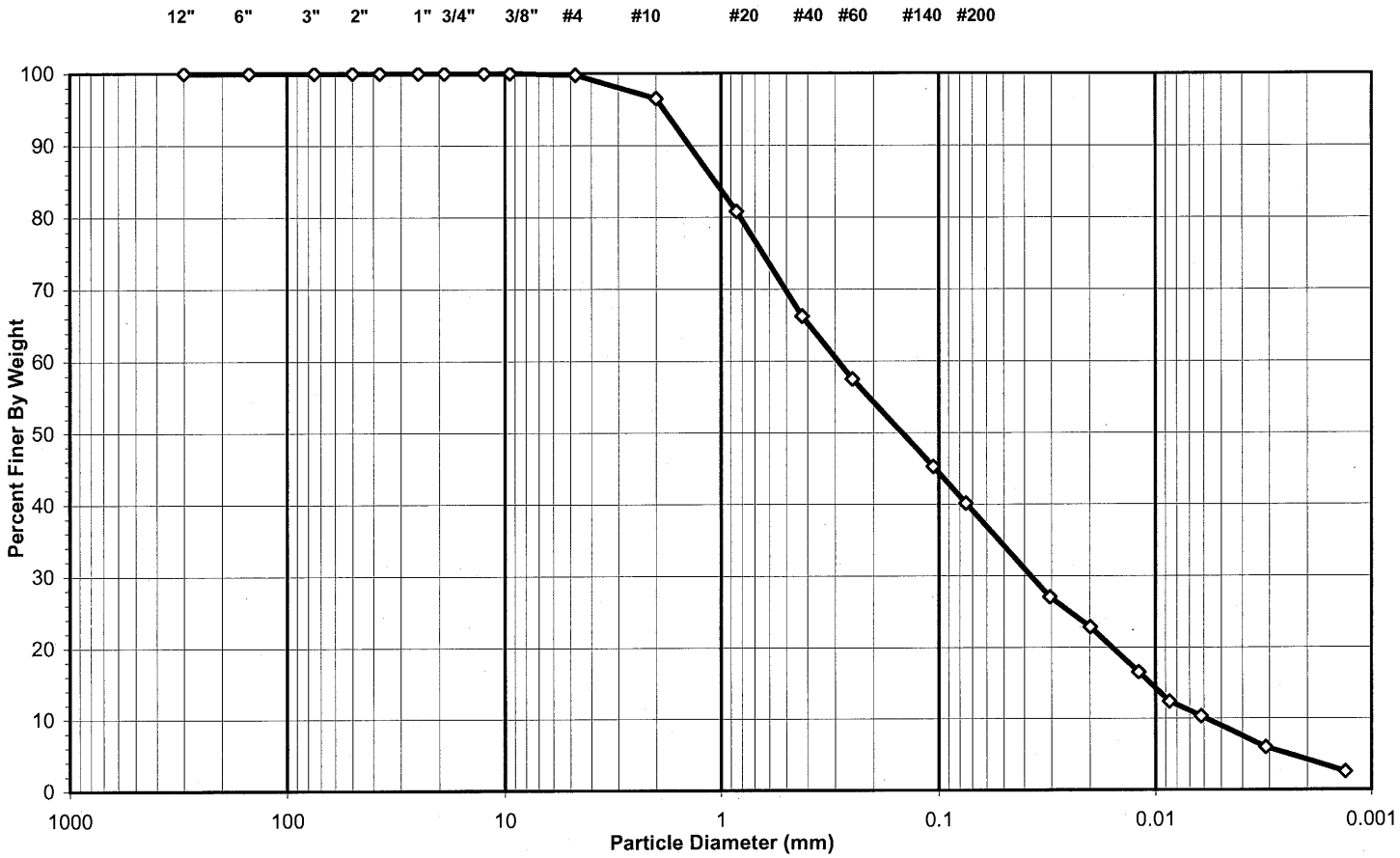
SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-62
Client Reference	DAVIDSON CO. LF	Depth (ft)	20.0-25.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-15	Soil Color	**BROWN GRAY**

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.19
#4 To #200	*Sand*	59.68
Finer Than #200	*Silt & Clay*	40.12

USCS Symbol ***SM, TESTED***

USCS Classification ***SILTY SAND***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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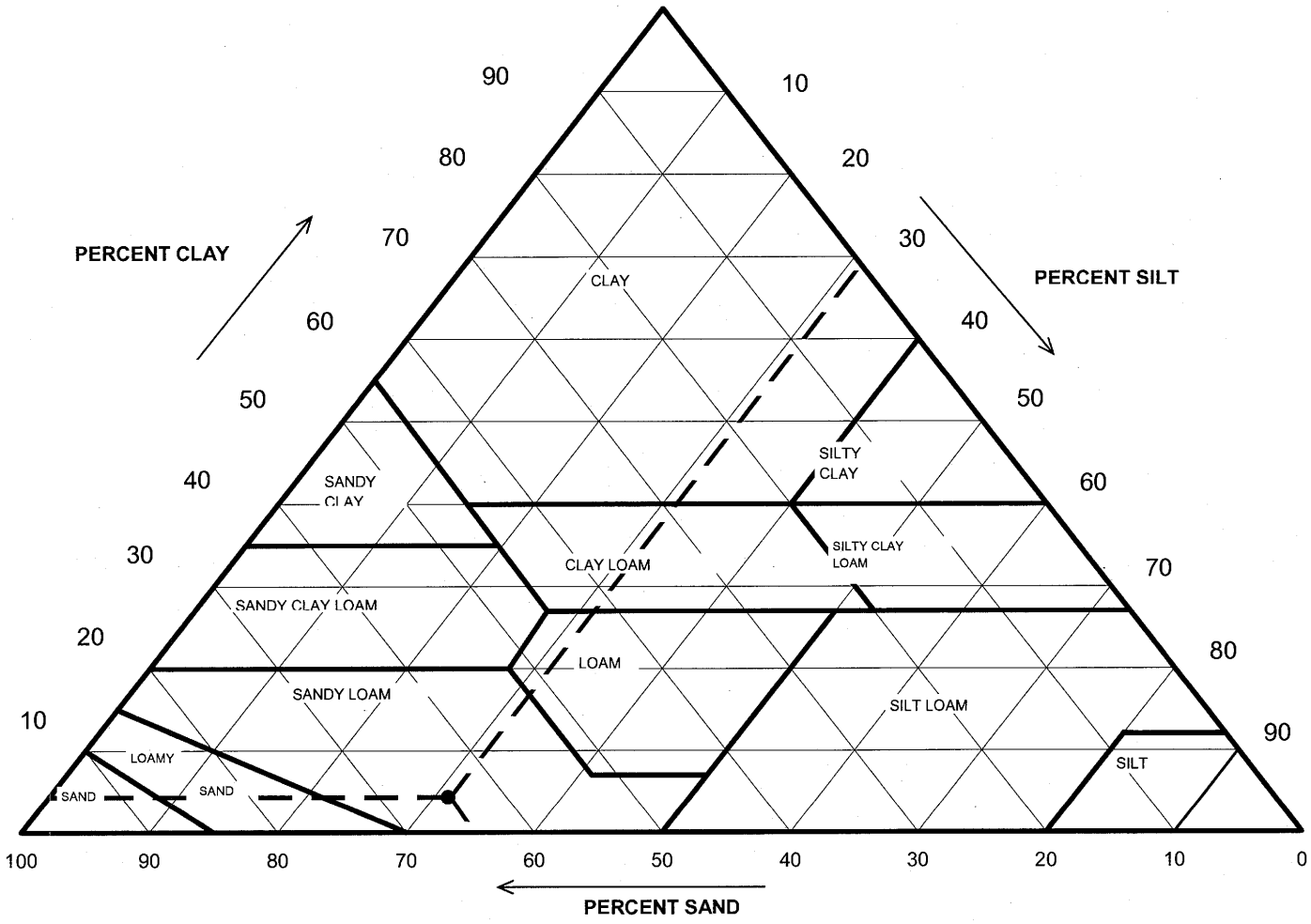
USDA CLASSIFICATION CHART

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-62
Client Reference	DAVIDSON CO. LF	Depth (ft)	20.0-25.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-15	Soil Color	BROWN GRAY



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	3.49	**0.00**
2	96.51	*Sand*	62.30	**64.55**
0.05	34.21	*Silt*	30.01	**31.10**
0.002	4.20	*Clay*	4.20	**4.35**

USDA Classification: ***SANDY LOAM***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-62
Client Reference	DAVIDSON CO. LF	Depth (ft)	20.0-25.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-15	Soil Color	**BROWN GRAY**

Minus #10 for Hygroscopic Moisture Content		**Hydrometer Specimen Data**	
Tare No.	U-1	Air Dried - #10 Hydrometer Material (gm)	100.00
Wgt.Tare + Wet Soil (gm)	48.30	Corrected Dry Wt. of - #10 Material (gm)	90.92
Wgt.Tare + Dry Soil (gm)	45.35		
Weight of Tare (gm)	15.82	Weight of - #200 Material (gm)	37.80
Weight of Water (gm)	2.95	Weight of - #10 ; + #200 Material (gm)	53.12
Weight of Dry Soil (gm)	29.53		
Moisture Content (%)	**10.0**	**J-FACTOR (%FINER THAN #10)**	**0.9651**
		Soil Specimen Data	
Tare No.	843		
Wgt.Tare + Air Dry Soil (gm)	566.12		
Weight of Tare (gm)	262.19		
Air Dried Wgt. Total Sample (gm)	303.93	Dry Weight of Material Retained on #10 (gm)	9.68
Total Dry Sample Weight (gm)	277.20	Corrected Dry Sample Wt - #10 (gm)	267.52

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.0	0.0	100.0	**100.0**
6"	150	0.00	0.0	0.0	100.0	**100.0**
3"	75	0.00	0.0	0.0	100.0	**100.0**
2"	50	0.00	0.0	0.0	100.0	**100.0**
1 1/2"	37.5	0.00	0.0	0.0	100.0	**100.0**
1"	25.0	0.00	0.0	0.0	100.0	**100.0**
3/4"	19.0	0.00	0.0	0.0	100.0	**100.0**
1/2"	12.5	0.00	0.0	0.0	100.0	**100.0**
3/8"	9.50	0.00	0.0	0.0	100.0	**100.0**
#4	4.75	0.54	0.2	0.2	99.8	**99.8**
#10	2.00	9.14	3.3	3.5	96.5	**96.5**
#20	0.85	14.78	16.3	16.3	83.7	**80.8**
#40	0.425	13.71	15.1	31.3	68.7	**66.3**
#60	0.250	8.26	9.1	40.4	59.6	**57.5**
#140	0.106	11.53	12.7	53.1	46.9	**45.3**
#200	0.075	4.84	5.3	58.4	41.6	**40.1**
Pan	-	37.80	41.6	100.0	-	-

Notes :

Tested By SD Date 12/8/2010 Checked By GEM Date 12-9-10

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-62
Client Reference	DAVIDSON CO. LF	Depth (ft)	20.0-25.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-15	Soil Color	**BROWN GRAY**

Elapsed Time (min)	R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA
2	31.0	23.5	5.29	25.7	28.0	0.01290	0.0305	**27.0**
5	27.0	23.5	5.29	21.7	23.6	0.01290	0.0199	**22.8**
15	21.0	23.5	5.29	15.7	17.1	0.01290	0.0119	**16.5**
30	17.0	23.6	5.25	11.8	12.8	0.01288	0.0086	**12.4**
60	15.0	23.7	5.20	9.8	10.7	0.01287	0.0062	**10.3**
250	11.0	23.4	5.34	5.7	6.2	0.01291	0.0031	**6.0**
1440	8.0	22.9	5.57	2.4	2.7	0.01299	0.0013	**2.6**

Soil Specimen Data		**Other Corrections**	
Wgt. of Dry Material (gm)	90.92	Hygroscopic Moisture Factor	0.909
Weight of Deflocculant (gm)	5.0	a - Factor	0.99
		Percent Finer than # 10	96.51
		Specific Gravity	2.70 Assumed

Notes:

Tested By TMS Date 12/6/2010 Checked By GZM Date 12-9-10

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

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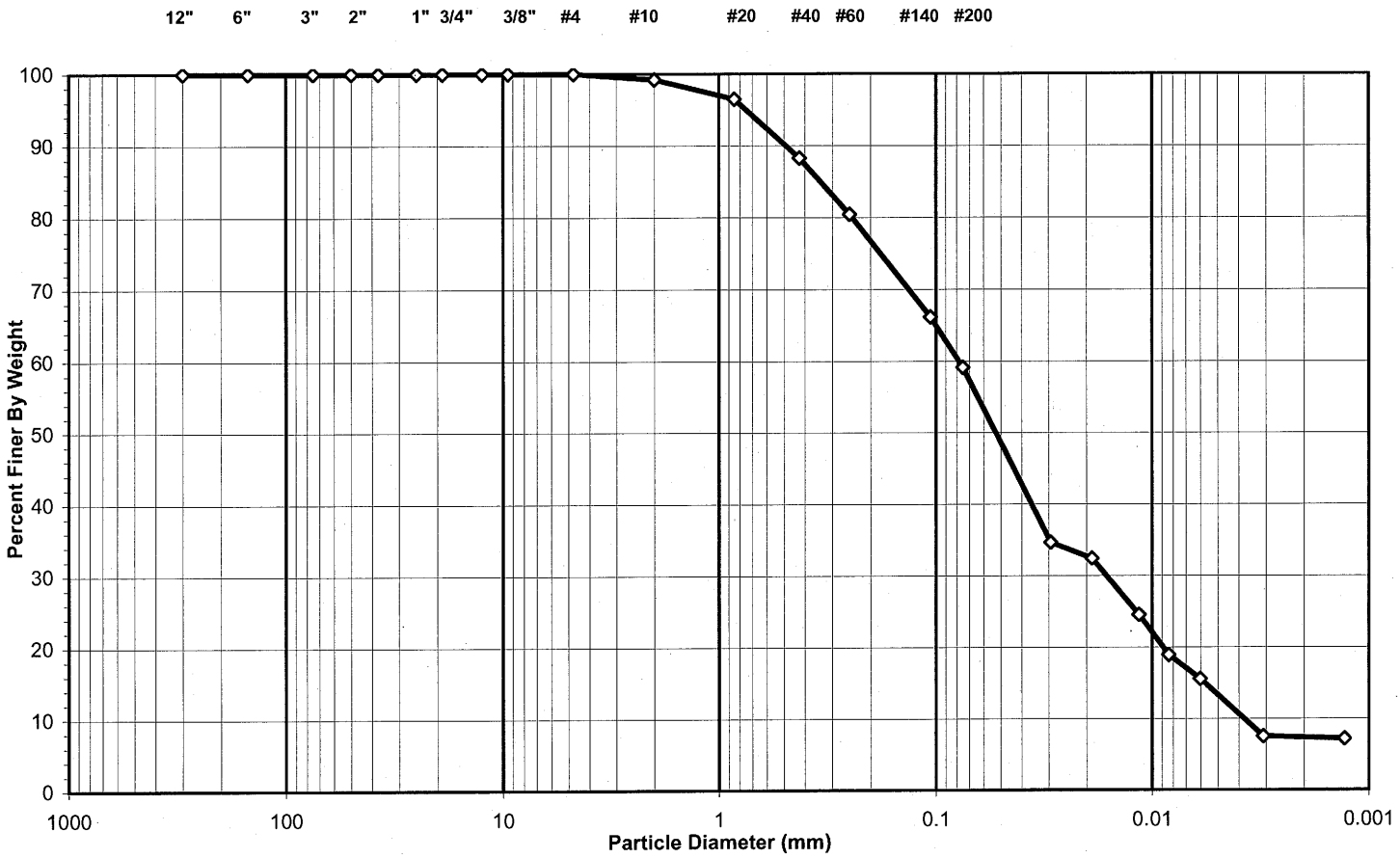
Client	R.S.G. & ASSOCIATES	Boring No.	PZ-63
Client Reference	DAVIDSON CO. LF	Depth (ft)	20.0-23.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-16	Soil Color	**GRAY**

	SIEVE ANALYSIS			HYDROMETER	
USCS	**cobbles**	**gravel**	**sand**	**silt and clay fraction**	
USDA	**cobbles**	**gravel**	**sand**	**silt**	**clay**



Sieve Sizes (mm)	**USCS Summary**	**Percentage**
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	40.83
Finer Than #200	*Silt & Clay*	59.17

USCS Symbol ***ML, TESTED***

USCS Classification ***SANDY SILT***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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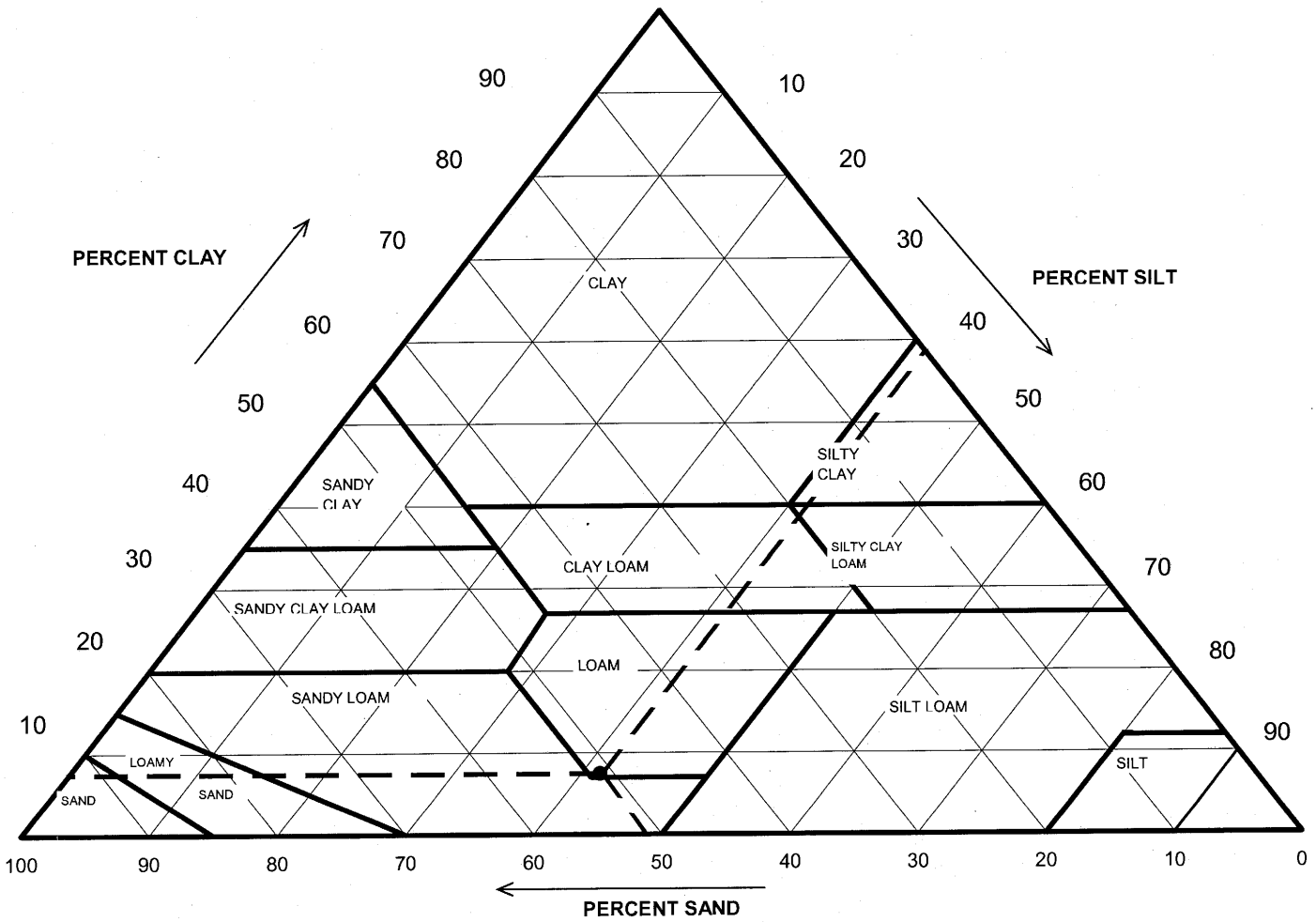
USDA CLASSIFICATION CHART

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-63
Client Reference	DAVIDSON CO. LF	Depth (ft)	20.0-23.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-16	Soil Color	GRAY



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	0.75	**0.00**
2	99.25	*Sand*	50.68	**51.07**
0.05	48.56	*Silt*	41.19	**41.50**
0.002	7.38	*Clay*	7.38	**7.43**

USDA Classification: ***LOAM***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-63
Client Reference	DAVIDSON CO. LF	Depth (ft)	20.0-23.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-16	Soil Color	**GRAY**

Minus #10 for Hygroscopic Moisture Content		**Hydrometer Specimen Data**	
Tare No.	U-1	Air Dried - #10 Hydrometer Material (gm)	99.98
Wgt.Tare + Wet Soil (gm)	67.55	Corrected Dry Wt. of - #10 Material (gm)	87.22
Wgt.Tare + Dry Soil (gm)	60.93		
Weight of Tare (gm)	15.67	Weight of - #200 Material (gm)	52.00
Weight of Water (gm)	6.62	Weight of - #10 ; + #200 Material (gm)	35.22
Weight of Dry Soil (gm)	45.26		
Moisture Content (%)	**14.6**	**J-FACTOR (%FINER THAN #10)**	**0.9925**
Soil Specimen Data			
Tare No.	201		
Wgt.Tare + Air Dry Soil (gm)	437.92		
Weight of Tare (gm)	170.73		
Air Dried Wgt. Total Sample (gm)	267.19	Dry Weight of Material Retained on #10 (gm)	1.76
Total Dry Sample Weight (gm)	233.32	Corrected Dry Sample Wt - #10 (gm)	231.56

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.0	0.0	100.0	**100.0**
6"	150	0.00	0.0	0.0	100.0	**100.0**
3"	75	0.00	0.0	0.0	100.0	**100.0**
2"	50	0.00	0.0	0.0	100.0	**100.0**
1 1/2"	37.5	0.00	0.0	0.0	100.0	**100.0**
1"	25.0	0.00	0.0	0.0	100.0	**100.0**
3/4"	19.0	0.00	0.0	0.0	100.0	**100.0**
1/2"	12.5	0.00	0.0	0.0	100.0	**100.0**
3/8"	9.50	0.00	0.0	0.0	100.0	**100.0**
#4	4.75	0.00	0.0	0.0	100.0	**100.0**
#10	2.00	1.76	0.8	0.8	99.2	**99.2**
#20	0.85	2.42	2.8	2.8	97.2	**96.5**
#40	0.425	7.20	8.3	11.0	89.0	**88.3**
#60	0.250	6.91	7.9	19.0	81.0	**80.4**
#140	0.106	12.54	14.4	33.3	66.7	**66.2**
#200	0.075	6.15	7.1	40.4	59.6	**59.2**
Pan	-	52.00	59.6	100.0	-	-

Notes :

Tested By SD Date 12/8/2010 Checked By GEM Date 12-9-10

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

\\Server\data drive\2010 PROJECTS\2010-774 R.S.G\[2010-774-01-16 SIEVEHYD10.xls]Sheet1

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INTEGRITY IN TESTING

HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-63
Client Reference	DAVIDSON CO. LF	Depth (ft)	20.0-23.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-16	Soil Color	**GRAY**

Elapsed Time (min)	R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA
2	36.0	23.6	5.25	30.8	34.9	0.01288	0.0294	**34.6**
5	34.0	23.6	5.25	28.8	32.6	0.01288	0.0189	**32.4**
15	27.0	23.6	5.25	21.8	24.7	0.01288	0.0115	**24.5**
30	22.0	23.7	5.20	16.8	19.1	0.01287	0.0084	**18.9**
60	19.0	23.7	5.20	13.8	15.7	0.01287	0.0060	**15.5**
250	12.0	23.5	5.29	6.7	7.6	0.01290	0.0031	**7.6**
1440	12.0	22.8	5.61	6.4	7.3	0.01300	0.0013	**7.2**

Soil Specimen Data		**Other Corrections**	
Wgt. of Dry Material (gm)	87.22	Hygroscopic Moisture Factor	0.872
Weight of Deflocculant (gm)	5.0	a - Factor	0.99
		Percent Finer than # 10	99.25
		Specific Gravity	2.70 Assumed

Notes:

Tested By TMS Date 12/6/2010 Checked By GEM Date 12-9-10

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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Appendix C
Aquifer Slug Test Data

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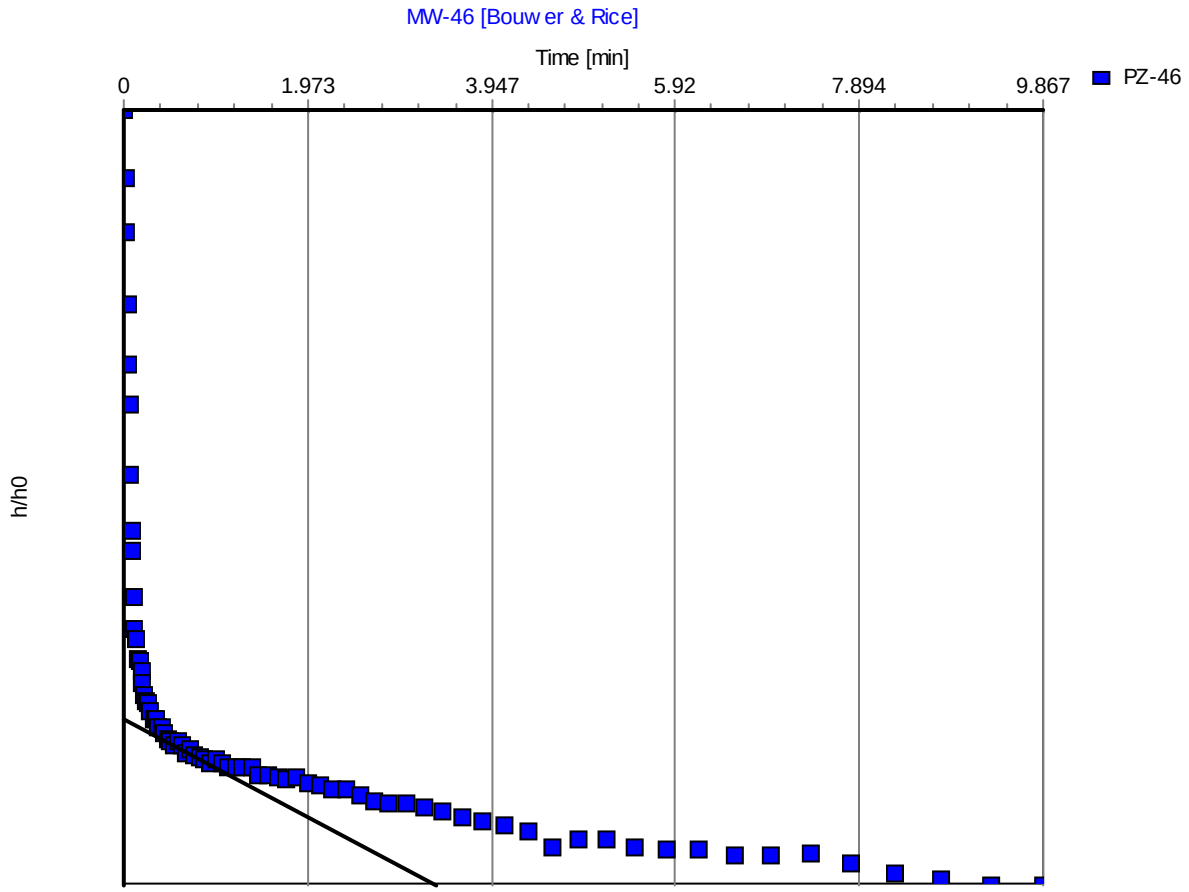
Richardson Smith Gardner
14 N. Boylan Avenue
Raleigh, North Carolina 27603
Ph. 919-828-0577

Slug Test Analysis Report

Project:	Davidson County Phase 2
Number:	Davdco-10-4
Client:	Davidson County



Slug Test: **PZ-46**

Analysis Method: **Bouwer & Rice**

Analysis Results:

Conductivity: 1.55E-1 [ft/d]

Test parameters:

Test Well:	PZ-46	Aquifer Thickness:	35 [ft]
Casing radius:	0.083 [ft]	Gravel Pack Porosity (%)	25
Screen length:	10 [ft]		
Boring radius:	0.1667 [ft]		
r(eff):	0.110 [ft]		

Comments:

Evaluated by: JAS

Evaluation Date: 5/17/2011

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 1

Test Well:	**PZ-46**	**Slug Test:**	**PZ-46**
		Test Well:	PZ-46
Depth to Static WL:	23.83 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/11/2011	Aquifer Thickness:	35 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
1	0	25.23	1.40
2	0.008	25.21	1.38
3	0.017	25.02	1.19
4	0.025	24.88	1.05
5	0.035	24.72	0.89
6	0.045	24.61	0.78
7	0.055	24.54	0.71
8	0.066	24.44	0.61
9	0.078	24.37	0.54
10	0.091	24.34	0.51
11	0.104	24.29	0.46
12	0.118	24.26	0.43
13	0.133	24.25	0.42
14	0.149	24.23	0.40
15	0.165	24.23	0.40
16	0.183	24.22	0.39
17	0.202	24.21	0.38
18	0.222	24.20	0.37
19	0.243	24.20	0.37
20	0.265	24.20	0.37
21	0.289	24.19	0.36
22	0.314	24.18	0.35
23	0.34	24.18	0.35
24	0.368	24.18	0.35
25	0.398	24.18	0.35
26	0.429	24.17	0.34
27	0.463	24.17	0.34
28	0.498	24.17	0.34
29	0.535	24.16	0.33
30	0.575	24.16	0.33
31	0.617	24.16	0.33

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 2

Test Well:	**PZ-46**	**Slug Test:**	**PZ-46**
		Test Well:	PZ-46
Depth to Static WL:	23.83 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/11/2011	Aquifer Thickness:	35 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
32	0.661	24.16	0.33
33	0.708	24.16	0.33
34	0.758	24.16	0.33
35	0.811	24.15	0.32
36	0.867	24.15	0.32
37	0.927	24.15	0.32
38	0.987	24.15	0.32
39	1.057	24.15	0.32
40	1.127	24.15	0.32
41	1.197	24.15	0.32
42	1.277	24.15	0.32
43	1.367	24.15	0.32
44	1.447	24.14	0.31
45	1.547	24.14	0.31
46	1.647	24.14	0.31
47	1.747	24.14	0.31
48	1.857	24.14	0.31
49	1.977	24.13	0.30
50	2.107	24.13	0.30
51	2.237	24.13	0.30
52	2.377	24.13	0.30
53	2.527	24.13	0.30
54	2.687	24.12	0.29
55	2.847	24.12	0.29
56	3.027	24.12	0.29
57	3.217	24.12	0.29
58	3.417	24.12	0.29
59	3.627	24.11	0.28
60	3.847	24.11	0.28
61	4.087	24.11	0.28
62	4.337	24.10	0.27

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County	Page 3

Test Well:	**PZ-46**	**Slug Test:**	**PZ-46**
		Test Well:	PZ-46
Depth to Static WL:	23.83 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/11/2011	Aquifer Thickness:	35 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
63	4.597	24.09	0.26
64	4.877	24.10	0.27
65	5.177	24.10	0.27
66	5.487	24.09	0.26
67	5.827	24.09	0.26
68	6.177	24.09	0.26
69	6.547	24.09	0.26
70	6.947	24.09	0.26
71	7.367	24.09	0.26
72	7.807	24.08	0.25
73	8.277	24.08	0.25
74	8.777	24.08	0.25
75	9.307	24.07	0.24
76	9.867	24.07	0.24

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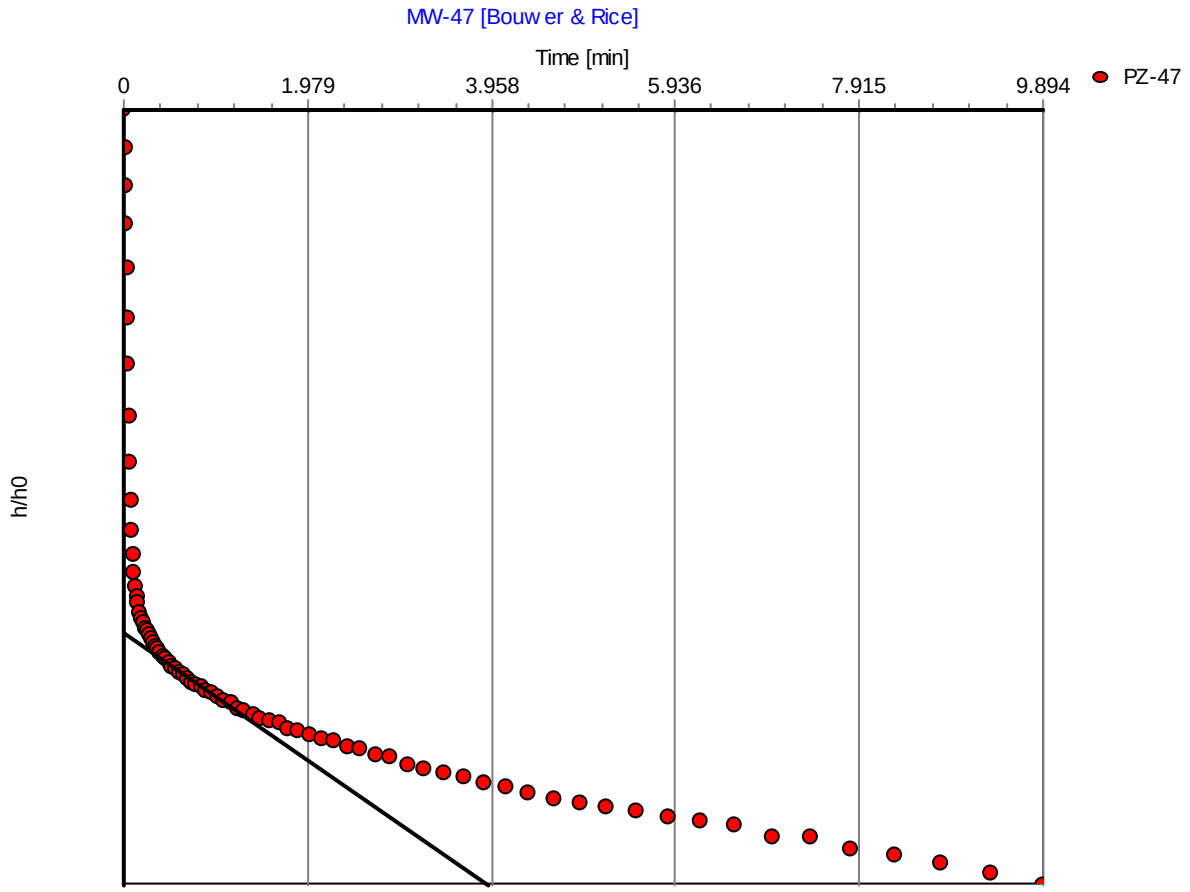
Slug Test Analysis Report

Project:	Davidson County Phase 2
Number:	Davdco-10-4
Client:	Davidson County



Slug Test: **PZ-47**

Analysis Method: **Bouwer & Rice**

Analysis Results:

Conductivity: 1.26E-1 [ft/d]

Test parameters:

Test Well:	PZ-47	Aquifer Thickness:	33 [ft]
Casing radius:	0.083 [ft]	Gravel Pack Porosity (%)	25
Screen length:	10 [ft]		
Boring radius:	0.1667 [ft]		
r(eff):	0.110 [ft]		

Comments:

Evaluated by: JAS

Evaluation Date: 5/17/2011

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 1

Test Well:	**PZ-47**	**Slug Test:**	**PZ-47**
		Test Well:	PZ-47
Depth to Static WL:	7.55 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/11/2011	Aquifer Thickness:	33 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
1	0	10.17	2.62
2	0.006	10.02	2.47
3	0.013	9.88	2.33
4	0.02	9.76	2.21
5	0.027	9.64	2.09
6	0.035	9.51	1.96
7	0.044	9.37	1.82
8	0.052	9.25	1.70
9	0.062	9.13	1.58
10	0.072	9.02	1.47
11	0.082	8.94	1.39
12	0.093	8.88	1.33
13	0.105	8.84	1.29
14	0.118	8.81	1.26
15	0.131	8.78	1.23
16	0.145	8.76	1.21
17	0.16	8.75	1.20
18	0.176	8.73	1.18
19	0.192	8.73	1.18
20	0.21	8.72	1.17
21	0.229	8.71	1.16
22	0.249	8.70	1.15
23	0.27	8.70	1.15
24	0.292	8.69	1.14
25	0.316	8.68	1.13
26	0.341	8.68	1.13
27	0.367	8.67	1.12
28	0.395	8.67	1.12
29	0.425	8.66	1.11
30	0.456	8.66	1.11
31	0.49	8.65	1.10

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County	Page 2

Test Well:	**PZ-47**	**Slug Test:**	**PZ-47**
		Test Well:	PZ-47
Depth to Static WL:	7.55 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/11/2011	Aquifer Thickness:	33 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
32	0.525	8.65	1.10
33	0.562	8.64	1.09
34	0.602	8.64	1.09
35	0.644	8.63	1.08
36	0.688	8.63	1.08
37	0.735	8.62	1.07
38	0.785	8.62	1.07
39	0.838	8.61	1.06
40	0.894	8.61	1.06
41	0.954	8.60	1.05
42	1.014	8.60	1.05
43	1.084	8.59	1.04
44	1.154	8.59	1.04
45	1.224	8.58	1.03
46	1.304	8.58	1.03
47	1.394	8.57	1.02
48	1.474	8.57	1.02
49	1.574	8.56	1.01
50	1.674	8.56	1.01
51	1.774	8.55	1.00
52	1.884	8.55	1.00
53	2.004	8.54	0.99
54	2.134	8.54	0.99
55	2.264	8.53	0.98
56	2.404	8.52	0.97
57	2.554	8.52	0.97
58	2.714	8.51	0.96
59	2.874	8.51	0.96
60	3.054	8.50	0.95
61	3.244	8.49	0.94
62	3.444	8.49	0.94

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County	Page 3

Test Well:	**PZ-47**	**Slug Test:**	**PZ-47**
		Test Well:	PZ-47
Depth to Static WL:	7.55 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/11/2011	Aquifer Thickness:	33 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
63	3.654	8.48	0.93
64	3.874	8.47	0.92
65	4.114	8.47	0.92
66	4.364	8.46	0.91
67	4.624	8.45	0.90
68	4.904	8.45	0.90
69	5.204	8.44	0.89
70	5.514	8.44	0.89
71	5.854	8.43	0.88
72	6.204	8.42	0.87
73	6.574	8.42	0.87
74	6.974	8.41	0.85
75	7.394	8.40	0.85
76	7.834	8.39	0.84
77	8.304	8.38	0.83
78	8.804	8.37	0.82
79	9.334	8.36	0.81
80	9.894	8.35	0.80

Richardson Smith Gardner
14 N. Boylan Avenue
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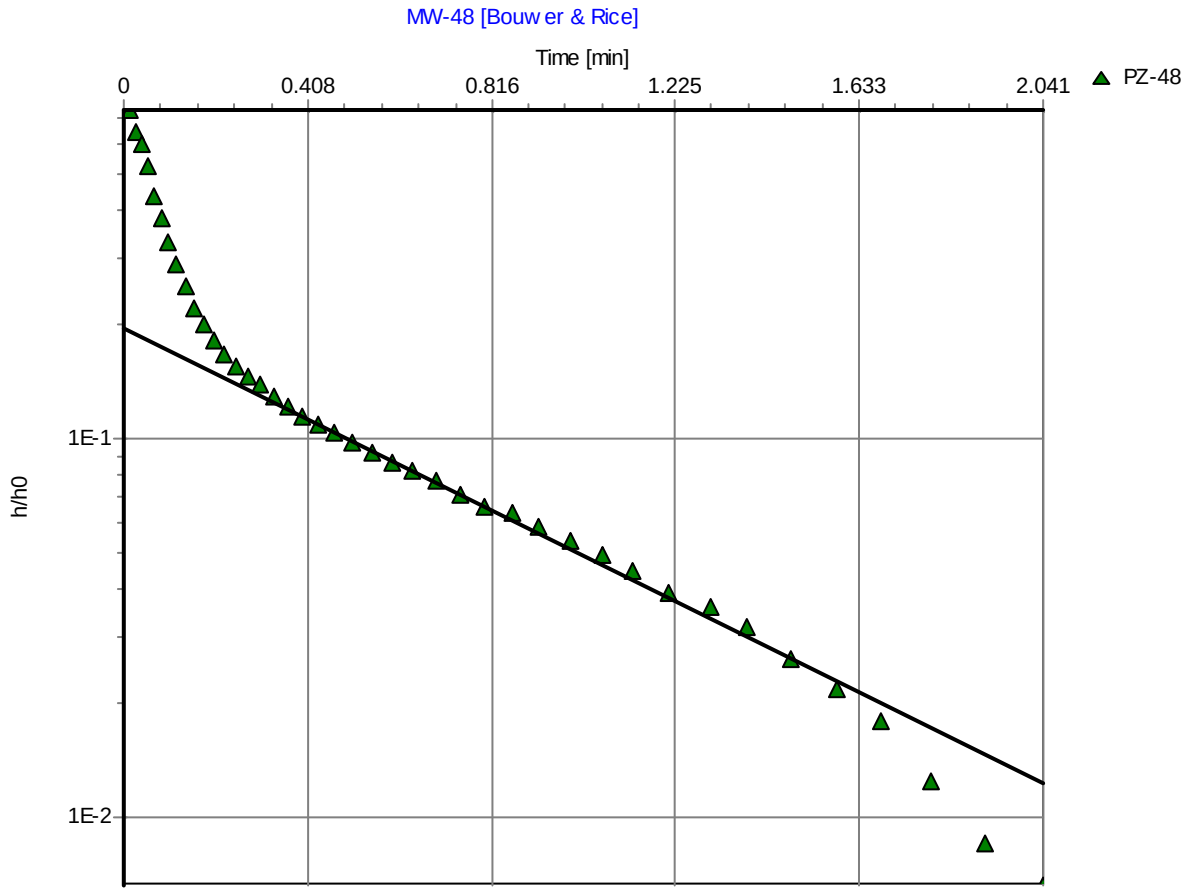
Ph. 919-828-0577

Slug Test Analysis Report

Project:	Davidson County Phase 2
Number:	Davdco-10-4
Client:	Davidson County



Slug Test: **PZ-48**

Analysis Method: **Bouwer & Rice**

Analysis Results:

Conductivity: 1.90E+0 [ft/d]

Test parameters:

Test Well:	PZ-48	Aquifer Thickness:	15 [ft]
Casing radius:	0.083 [ft]	Gravel Pack Porosity (%)	25
Screen length:	10 [ft]		
Boring radius:	0.1667 [ft]		
r(eff):	0.110 [ft]		

Comments:

Evaluated by: JAS

Evaluation Date: 5/17/2011

Richardson Smith Gardner
14 N. Boylan Avenue
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Ph. 919-828-0577

Slug Test Data Report

Project: Davidson County Phase 2
Number: Davdco-10-4
Client: Davidson County

Test Well:	**PZ-48**	**Slug Test:**	**PZ-48**
		Test Well:	PZ-48
Depth to Static WL:	26.29 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/11/2011	Aquifer Thickness:	15 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
1	0	28.85	2.56
2	0.012	28.17	1.88
3	0.025	27.95	1.66
4	0.038	27.82	1.53
5	0.052	27.63	1.34
6	0.067	27.41	1.12
7	0.083	27.27	0.98
8	0.099	27.14	0.85
9	0.117	27.03	0.74
10	0.136	26.94	0.65
11	0.156	26.86	0.57
12	0.177	26.80	0.51
13	0.199	26.76	0.47
14	0.223	26.72	0.43
15	0.248	26.69	0.40
16	0.274	26.67	0.38
17	0.302	26.64	0.35
18	0.332	26.62	0.33
19	0.363	26.60	0.31
20	0.397	26.58	0.29
21	0.432	26.57	0.28
22	0.469	26.56	0.27
23	0.509	26.54	0.25
24	0.551	26.53	0.24
25	0.595	26.51	0.22
26	0.642	26.50	0.21
27	0.692	26.49	0.20
28	0.745	26.47	0.18
29	0.801	26.46	0.17
30	0.861	26.45	0.16
31	0.921	26.44	0.15

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County	Page 2

Test Well:	**PZ-48**	**Slug Test:**	**PZ-48**
		Test Well:	PZ-48
Depth to Static WL:	26.29 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/11/2011	Aquifer Thickness:	15 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
32	0.991	26.43	0.14
33	1.061	26.42	0.13
34	1.131	26.41	0.12
35	1.211	26.39	0.10
36	1.301	26.38	0.09
37	1.381	26.37	0.08
38	1.481	26.36	0.07
39	1.581	26.35	0.06
40	1.681	26.34	0.05
41	1.791	26.32	0.03
42	1.911	26.31	0.02
43	2.041	26.31	0.02

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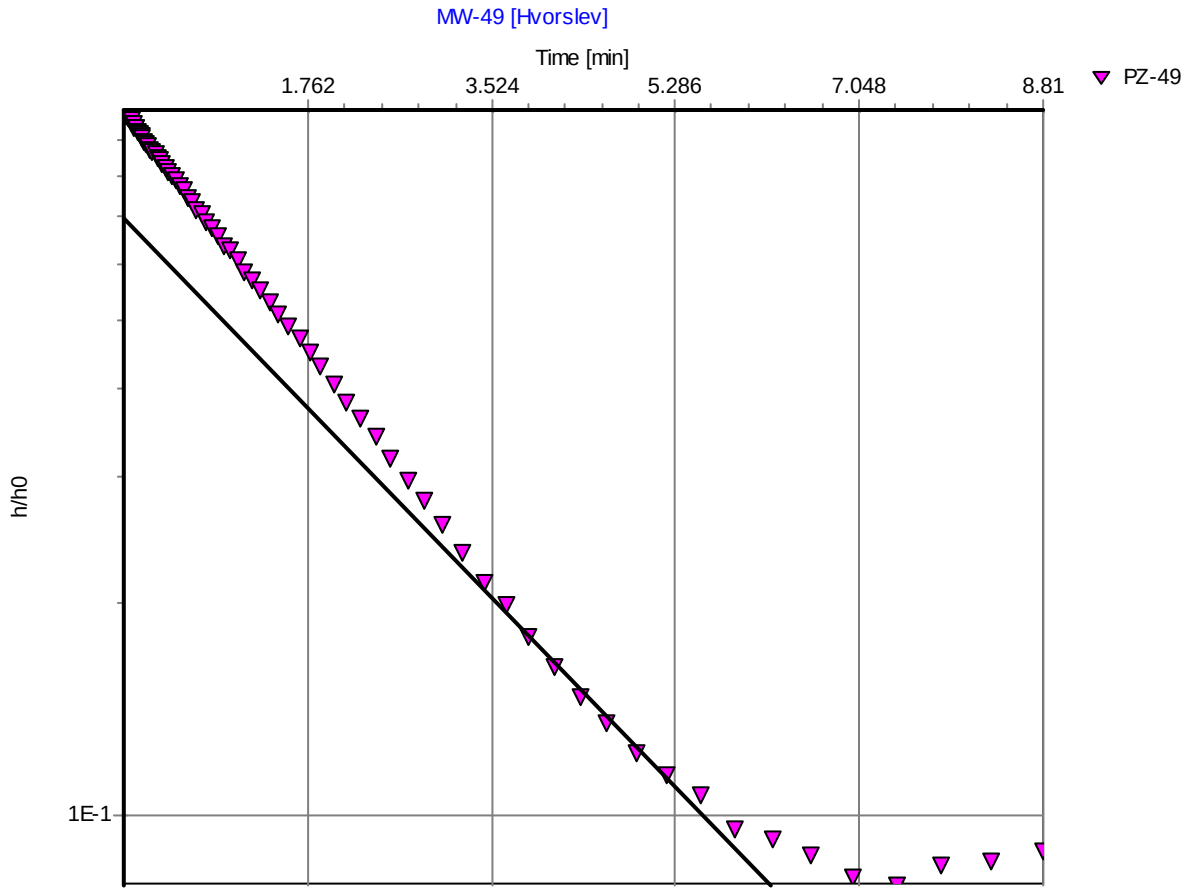
Slug Test Analysis Report

Project:	Davidson County Phase 2
Number:	Davdco-10-4
Client:	Davidson County



Slug Test: **PZ-49**

Analysis Method: **Hvorslev**

Analysis Results:

Conductivity: 7.15E-1 [ft/d]

Test parameters:

Test Well:	PZ-49	Aquifer Thickness:	50 [ft]
Casing radius:	0.083 [ft]		
Screen length:	10 [ft]		
Boring radius:	0.1667 [ft]		

Comments:

Evaluated by: JAS

Evaluation Date: 5/17/2011

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 1

Test Well:	**PZ-49**	**Slug Test:**	**PZ-49**
		Test Well:	PZ-49
Depth to Static WL:	32.74 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/17/2011	Aquifer Thickness:	50 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
1	0	34.35	1.61
2	0.006	34.34	1.60
3	0.012	34.32	1.58
4	0.019	34.33	1.59
5	0.026	34.31	1.57
6	0.033	34.31	1.57
7	0.041	34.30	1.56
8	0.05	34.30	1.56
9	0.058	34.28	1.54
10	0.068	34.28	1.54
11	0.078	34.27	1.52
12	0.088	34.27	1.53
13	0.099	34.25	1.51
14	0.111	34.25	1.51
15	0.124	34.24	1.50
16	0.137	34.22	1.48
17	0.151	34.21	1.47
18	0.166	34.21	1.47
19	0.182	34.19	1.45
20	0.198	34.18	1.44
21	0.216	34.17	1.43
22	0.235	34.16	1.42
23	0.255	34.15	1.41
24	0.276	34.14	1.40
25	0.298	34.13	1.38
26	0.322	34.11	1.37
27	0.347	34.09	1.35
28	0.373	34.08	1.34
29	0.401	34.07	1.33
30	0.431	34.05	1.31
31	0.462	34.03	1.28

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577		**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County	Page 2

Test Well:	**PZ-49**	**Slug Test:**	**PZ-49**
		Test Well:	PZ-49
Depth to Static WL:	32.74 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/17/2011	Aquifer Thickness:	50 [ft]

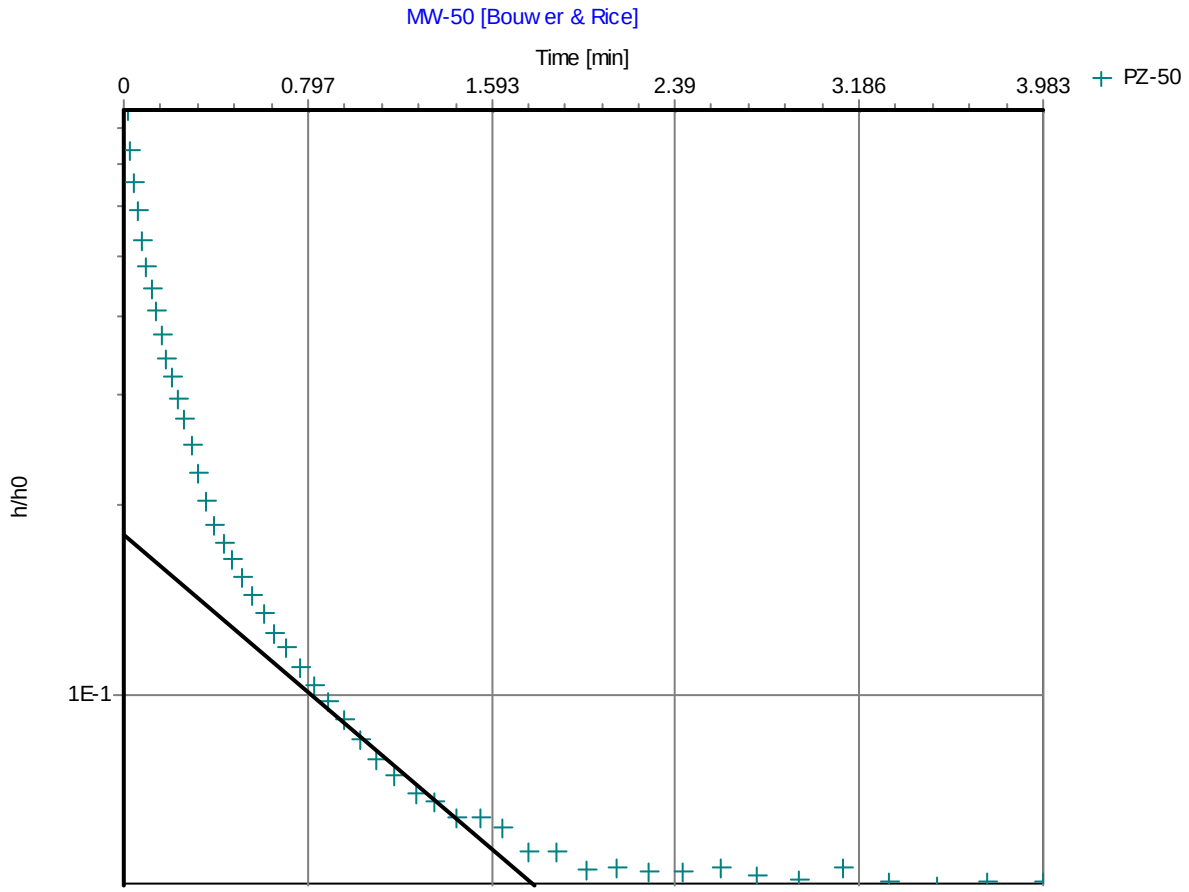
	Time [min]	Depth to WL [ft]	Drawdown [ft]
32	0.496	34.01	1.27
33	0.531	33.99	1.25
34	0.568	33.97	1.23
35	0.608	33.94	1.20
36	0.65	33.93	1.19
37	0.694	33.90	1.16
38	0.741	33.88	1.14
39	0.791	33.85	1.11
40	0.844	33.83	1.09
41	0.9	33.80	1.06
42	0.96	33.76	1.02
43	1.02	33.75	1.01
44	1.09	33.72	0.98
45	1.16	33.68	0.94
46	1.23	33.66	0.92
47	1.31	33.63	0.89
48	1.4	33.60	0.85
49	1.48	33.56	0.82
50	1.58	33.53	0.79
51	1.68	33.50	0.76
52	1.78	33.47	0.73
53	1.89	33.43	0.69
54	2.01	33.39	0.65
55	2.14	33.36	0.62
56	2.27	33.32	0.58
57	2.41	33.29	0.55
58	2.56	33.26	0.52
59	2.72	33.22	0.48
60	2.88	33.19	0.45
61	3.06	33.15	0.41
62	3.25	33.12	0.38

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County	Page 3

Test Well:	**PZ-49**	**Slug Test:**	**PZ-49**
		Test Well:	PZ-49
Depth to Static WL:	32.74 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/17/2011	Aquifer Thickness:	50 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
63	3.45	33.08	0.34
64	3.66	33.06	0.32
65	3.88	33.03	0.29
66	4.12	33.00	0.26
67	4.37	32.98	0.24
68	4.63	32.96	0.22
69	4.91	32.94	0.20
70	5.21	32.92	0.18
71	5.52	32.91	0.17
72	5.86	32.89	0.15
73	6.21	32.89	0.15
74	6.58	32.88	0.14
75	6.98	32.87	0.13
76	7.4	32.87	0.13
77	7.84	32.88	0.14
78	8.31	32.88	0.14
79	8.81	32.88	0.14

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Analysis Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County



Slug Test: **PZ-50**

Analysis Method: **Bouwer & Rice**

Analysis Results:

Conductivity: 1.89E+0 [ft/d]

Test parameters:

Test Well:	PZ-50	Aquifer Thickness:	25 [ft]
Casing radius:	0.083 [ft]	Gravel Pack Porosity (%)	25
Screen length:	5 [ft]		
Boring radius:	0.1667 [ft]		
r(eff):	0.110 [ft]		

Comments:

Evaluated by: JAS

Evaluation Date: 5/17/2011

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 1

Test Well:	**PZ-50**	**Slug Test:**	**PZ-50**
		Test Well:	PZ-50
Depth to Static WL:	25.65 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	5 [ft]
Date:	5/11/2011	Aquifer Thickness:	25 [ft]

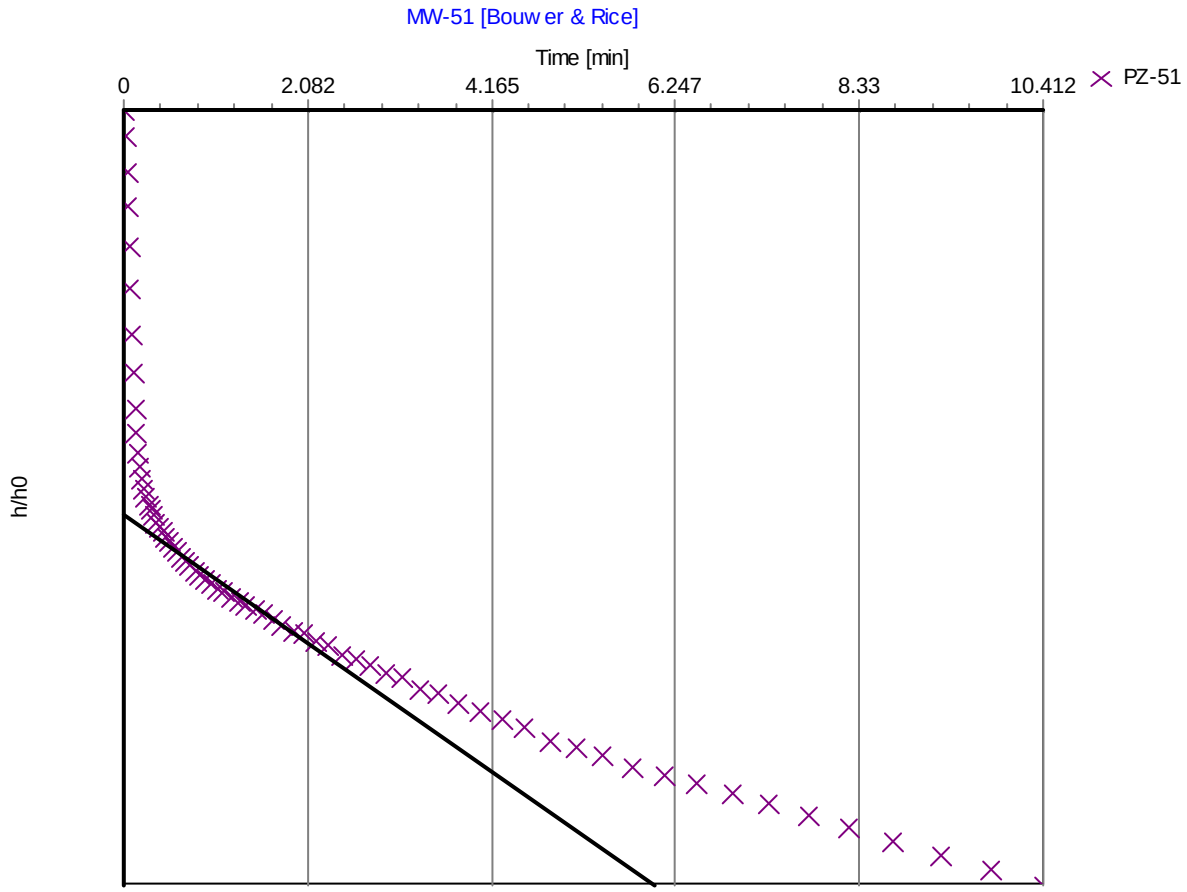
	Time [min]	Depth to WL [ft]	Drawdown [ft]
1	0	28.02	2.37
2	0.014	27.67	2.02
3	0.029	27.40	1.75
4	0.045	27.20	1.55
5	0.061	27.04	1.39
6	0.079	26.91	1.26
7	0.098	26.79	1.14
8	0.118	26.70	1.05
9	0.139	26.62	0.97
10	0.161	26.54	0.89
11	0.185	26.46	0.81
12	0.21	26.41	0.76
13	0.236	26.35	0.70
14	0.264	26.30	0.65
15	0.294	26.24	0.59
16	0.325	26.19	0.54
17	0.359	26.13	0.48
18	0.394	26.09	0.44
19	0.431	26.06	0.41
20	0.471	26.04	0.39
21	0.513	26.01	0.36
22	0.557	25.99	0.34
23	0.604	25.97	0.32
24	0.654	25.95	0.30
25	0.707	25.93	0.28
26	0.763	25.91	0.26
27	0.823	25.90	0.25
28	0.883	25.88	0.23
29	0.953	25.87	0.22
30	1.023	25.85	0.20
31	1.093	25.84	0.19

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 2

Test Well:	**PZ-50**	**Slug Test:**	**PZ-50**
		Test Well:	PZ-50
Depth to Static WL:	25.65 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	5 [ft]
Date:	5/11/2011	Aquifer Thickness:	25 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
32	1.173	25.83	0.18
33	1.263	25.82	0.17
34	1.343	25.81	0.16
35	1.443	25.80	0.15
36	1.543	25.80	0.15
37	1.643	25.80	0.15
38	1.753	25.78	0.13
39	1.873	25.78	0.13
40	2.003	25.78	0.13
41	2.133	25.78	0.13
42	2.273	25.77	0.12
43	2.423	25.77	0.12
44	2.583	25.78	0.13
45	2.743	25.77	0.12
46	2.923	25.77	0.12
47	3.113	25.78	0.13
48	3.313	25.77	0.12
49	3.523	25.77	0.12
50	3.743	25.77	0.12
51	3.983	25.77	0.12

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Analysis Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County



Slug Test: **PZ-51**

Analysis Method: **Bouwer & Rice**

Analysis Results:

Conductivity: 2.07E-1 [ft/d]

Test parameters:

Test Well:	PZ-51	Aquifer Thickness:	29 [ft]
Casing radius:	0.083 [ft]	Gravel Pack Porosity (%)	25
Screen length:	10 [ft]		
Boring radius:	0.1667 [ft]		
r(eff):	0.110 [ft]		

Comments:

Evaluated by: JAS

Evaluation Date: 5/17/2011

Richardson Smith Gardner
14 N. Boylan Avenue
Raleigh, North Carolina 27603
Ph. 919-828-0577

Slug Test Data Report

Project: Davidson County Phase 2
Number: Davdco-10-4
Client: Davidson County

Test Well:	**PZ-51**	**Slug Test:**	**PZ-51**
		Test Well:	PZ-51
Depth to Static WL:	11.05 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/17/2011	Aquifer Thickness:	29 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
1	0	13.47	2.42
2	0.011	13.28	2.23
3	0.023	13.13	2.08
4	0.036	12.95	1.90
5	0.049	12.78	1.73
6	0.063	12.61	1.56
7	0.078	12.44	1.39
8	0.094	12.28	1.23
9	0.11	12.16	1.11
10	0.128	12.06	1.01
11	0.147	12.00	0.95
12	0.167	11.95	0.90
13	0.188	11.92	0.87
14	0.21	11.89	0.84
15	0.234	11.87	0.82
16	0.259	11.85	0.80
17	0.285	11.84	0.79
18	0.313	11.82	0.77
19	0.343	11.81	0.76
20	0.374	11.80	0.75
21	0.408	11.79	0.74
22	0.443	11.78	0.73
23	0.48	11.77	0.72
24	0.52	11.76	0.71
25	0.562	11.75	0.70
26	0.606	11.74	0.69
27	0.653	11.73	0.68
28	0.703	11.73	0.68
29	0.756	11.72	0.67
30	0.812	11.71	0.66
31	0.872	11.70	0.65

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 2

Test Well:	**PZ-51**	**Slug Test:**	**PZ-51**
		Test Well:	PZ-51
Depth to Static WL:	11.05 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/17/2011	Aquifer Thickness:	29 [ft]

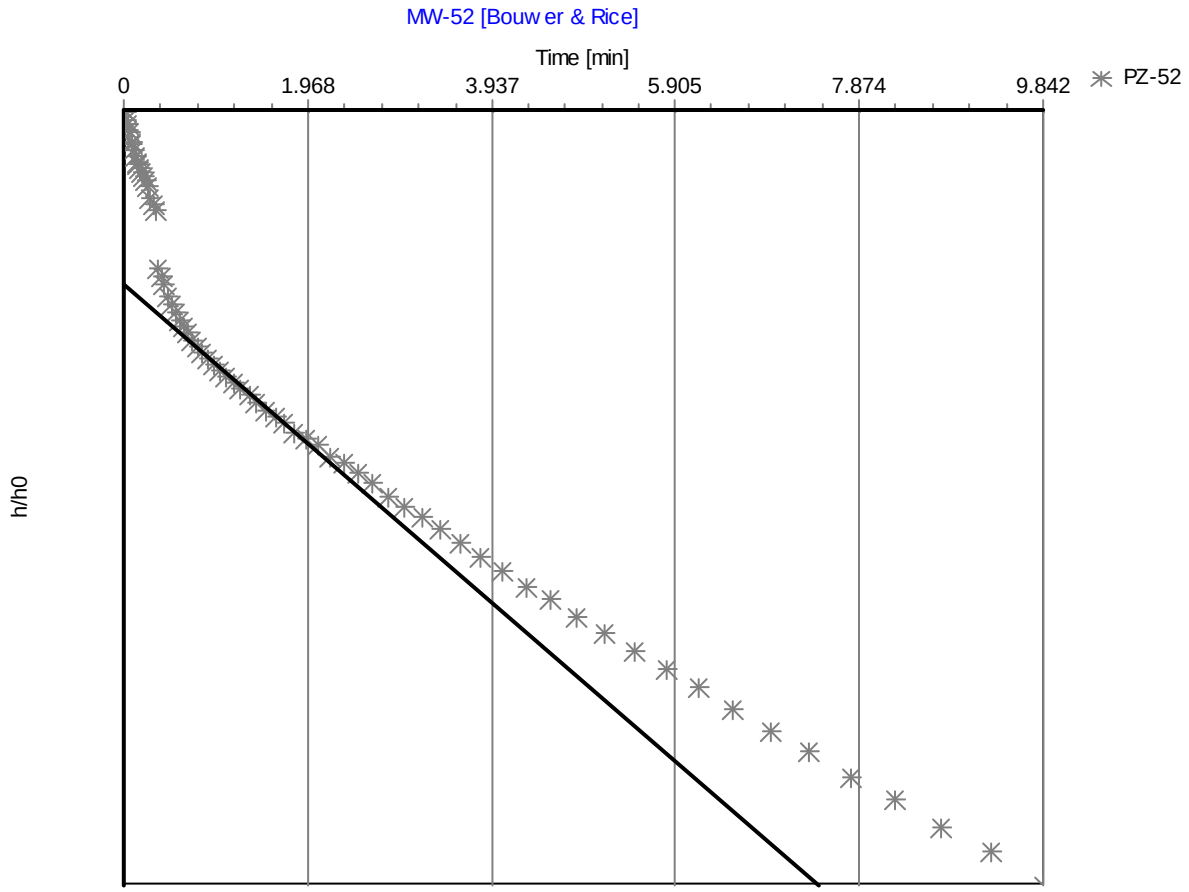
	Time [min]	Depth to WL [ft]	Drawdown [ft]
32	0.932	11.70	0.65
33	1.002	11.69	0.64
34	1.072	11.68	0.63
35	1.142	11.68	0.63
36	1.222	11.66	0.61
37	1.312	11.66	0.61
38	1.392	11.65	0.60
39	1.492	11.65	0.59
40	1.592	11.64	0.59
41	1.692	11.63	0.58
42	1.802	11.62	0.57
43	1.922	11.61	0.56
44	2.052	11.61	0.56
45	2.182	11.60	0.55
46	2.322	11.59	0.54
47	2.472	11.58	0.53
48	2.632	11.57	0.52
49	2.792	11.56	0.51
50	2.972	11.55	0.50
51	3.162	11.55	0.50
52	3.362	11.53	0.48
53	3.572	11.53	0.48
54	3.792	11.51	0.46
55	4.032	11.50	0.45
56	4.282	11.49	0.44
57	4.542	11.48	0.43
58	4.822	11.47	0.42
59	5.122	11.46	0.41
60	5.432	11.45	0.40
61	5.772	11.44	0.39
62	6.122	11.43	0.38

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County	Page 3

Test Well:	**PZ-51**	**Slug Test:**	**PZ-51**
		Test Well:	PZ-51
Depth to Static WL:	11.05 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/17/2011	Aquifer Thickness:	29 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
63	6.492	11.42	0.37
64	6.892	11.41	0.36
65	7.312	11.41	0.35
66	7.752	11.39	0.34
67	8.222	11.38	0.33
68	8.722	11.37	0.32
69	9.252	11.36	0.31
70	9.812	11.35	0.30
71	10.412	11.34	0.29

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Analysis Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County



Slug Test: **PZ-52**

Analysis Method: **Bouwer & Rice**

Analysis Results:

Conductivity: 2.24E-1 [ft/d]

Test parameters:

Test Well:	PZ-52	Aquifer Thickness:	25 [ft]
Casing radius:	0.083 [ft]	Gravel Pack Porosity (%)	25
Screen length:	5 [ft]		
Boring radius:	0.1667 [ft]		
r(eff):	0.110 [ft]		

Comments:

Evaluated by: JAS

Evaluation Date: 5/17/2011

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 1

Test Well:	**PZ-52**	**Slug Test:**	**PZ-52**
		Test Well:	PZ-52
Depth to Static WL:	34.47 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	5 [ft]
Date:	5/17/2011	Aquifer Thickness:	25 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
1	0	37.52	3.05
2	0.01	37.50	3.02
3	0.02	37.49	3.02
4	0.03	37.47	3.00
5	0.041	37.46	2.99
6	0.053	37.44	2.97
7	0.066	37.43	2.96
8	0.079	37.40	2.93
9	0.093	37.40	2.93
10	0.108	37.38	2.91
11	0.124	37.36	2.89
12	0.14	37.34	2.87
13	0.158	37.34	2.87
14	0.177	37.33	2.86
15	0.197	37.32	2.84
16	0.218	37.30	2.83
17	0.24	37.29	2.82
18	0.264	37.28	2.81
19	0.289	37.24	2.77
20	0.315	37.23	2.76
21	0.343	37.21	2.74
22	0.373	37.06	2.59
23	0.404	37.03	2.56
24	0.438	37.02	2.55
25	0.473	36.98	2.51
26	0.51	36.97	2.50
27	0.55	36.95	2.48
28	0.592	36.93	2.46
29	0.636	36.91	2.44
30	0.683	36.90	2.43
31	0.733	36.88	2.41

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County	Page 2

Test Well:	**PZ-52**	**Slug Test:**	**PZ-52**
		Test Well:	PZ-52
Depth to Static WL:	34.47 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	5 [ft]
Date:	5/17/2011	Aquifer Thickness:	25 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
32	0.786	36.86	2.39
33	0.842	36.85	2.38
34	0.902	36.84	2.37
35	0.962	36.82	2.35
36	1.032	36.81	2.34
37	1.102	36.79	2.32
38	1.172	36.78	2.31
39	1.252	36.77	2.30
40	1.342	36.75	2.28
41	1.422	36.74	2.27
42	1.522	36.72	2.25
43	1.622	36.71	2.23
44	1.722	36.69	2.22
45	1.832	36.67	2.20
46	1.952	36.66	2.19
47	2.082	36.64	2.17
48	2.212	36.62	2.15
49	2.352	36.60	2.13
50	2.502	36.58	2.11
51	2.662	36.56	2.09
52	2.822	36.53	2.06
53	3.002	36.52	2.05
54	3.192	36.50	2.02
55	3.392	36.47	2.00
56	3.602	36.44	1.97
57	3.822	36.42	1.95
58	4.062	36.39	1.92
59	4.312	36.36	1.89
60	4.572	36.34	1.87
61	4.852	36.30	1.83
62	5.152	36.28	1.80

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County	Page 3

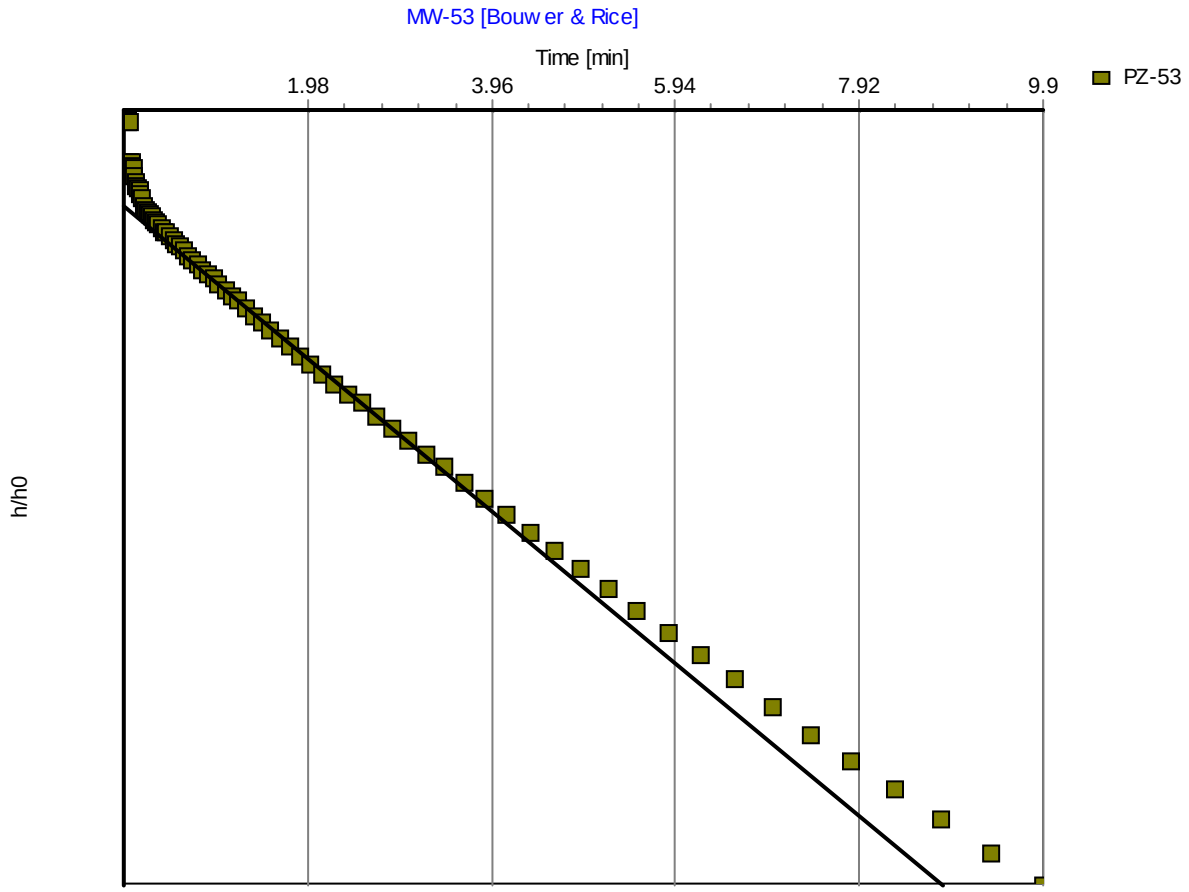
Test Well:	**PZ-52**	**Slug Test:**	**PZ-52**
		Test Well:	PZ-52
Depth to Static WL:	34.47 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	5 [ft]
Date:	5/17/2011	Aquifer Thickness:	25 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
63	5.462	36.24	1.77
64	5.802	36.21	1.74
65	6.152	36.18	1.71
66	6.522	36.14	1.67
67	6.922	36.11	1.64
68	7.342	36.07	1.60
69	7.782	36.03	1.56
70	8.252	36.00	1.53
71	8.752	35.96	1.49
72	9.282	35.92	1.45
73	9.842	35.88	1.41

Richardson Smith Gardner
14 N. Boylan Avenue
Raleigh, North Carolina 27603
Ph. 919-828-0577

Slug Test Analysis Report

Project:	Davidson County Phase 2
Number:	Davdco-10-4
Client:	Davidson County



Slug Test: **PZ-53**

Analysis Method: **Bouwer & Rice**

Analysis Results:

Conductivity: 2.03E-1 [ft/d]

Test parameters:

Test Well:	PZ-53	Aquifer Thickness:	33 [ft]
Casing radius:	0.083 [ft]	Gravel Pack Porosity (%)	25
Screen length:	10 [ft]		
Boring radius:	0.1667 [ft]		
r(eff):	0.110 [ft]		

Comments:

Evaluated by: JAS

Evaluation Date: 5/17/2011

Richardson Smith Gardner
14 N. Boylan Avenue
Raleigh, North Carolina 27603
Ph. 919-828-0577

Slug Test Data Report

Project: Davidson County Phase 2
Number: Davdco-10-4
Client: Davidson County

Test Well:	**PZ-53**	**Slug Test:**	**PZ-53**
		Test Well:	PZ-53
Depth to Static WL:	17.14 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/17/2011	Aquifer Thickness:	33 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
1	0	19.02	1.88
2	0.006	18.90	1.76
3	0.012	18.89	1.75
4	0.019	18.90	1.76
5	0.026	18.87	1.73
6	0.033	18.89	1.75
7	0.041	18.86	1.72
8	0.05	18.86	1.72
9	0.058	18.86	1.72
10	0.068	18.72	1.58
11	0.078	18.72	1.58
12	0.088	18.71	1.57
13	0.099	18.70	1.56
14	0.111	18.67	1.53
15	0.124	18.66	1.52
16	0.137	18.64	1.50
17	0.151	18.63	1.49
18	0.166	18.63	1.49
19	0.182	18.62	1.48
20	0.198	18.61	1.47
21	0.216	18.58	1.44
22	0.235	18.57	1.43
23	0.255	18.56	1.42
24	0.276	18.56	1.42
25	0.298	18.55	1.41
26	0.322	18.54	1.40
27	0.347	18.53	1.39
28	0.373	18.53	1.39
29	0.401	18.52	1.38
30	0.431	18.51	1.36
31	0.462	18.50	1.36

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 2

Test Well:	**PZ-53**	**Slug Test:**	**PZ-53**
		Test Well:	PZ-53
Depth to Static WL:	17.14 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/17/2011	Aquifer Thickness:	33 [ft]

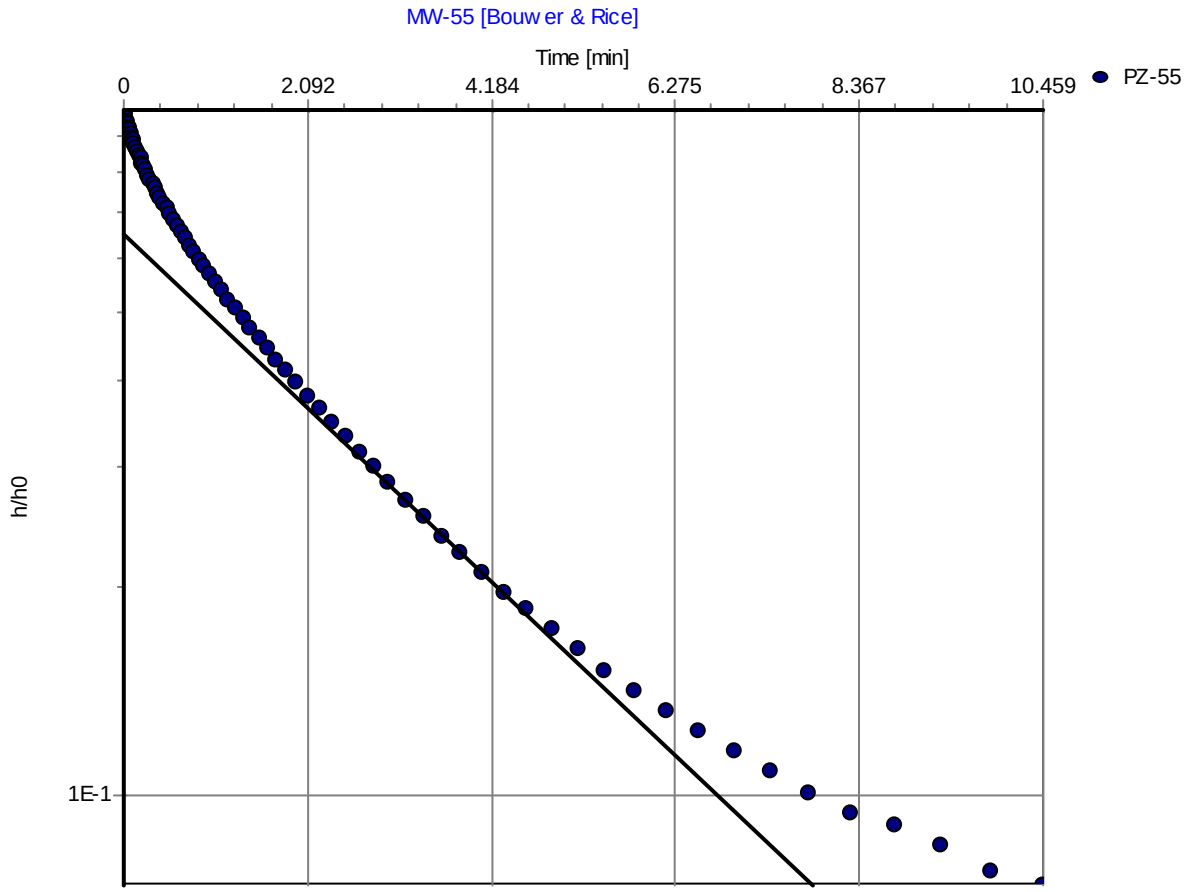
	Time [min]	Depth to WL [ft]	Drawdown [ft]
32	0.496	18.49	1.35
33	0.531	18.48	1.34
34	0.568	18.47	1.33
35	0.608	18.46	1.32
36	0.65	18.45	1.31
37	0.694	18.44	1.30
38	0.741	18.43	1.29
39	0.791	18.42	1.27
40	0.844	18.40	1.26
41	0.9	18.39	1.25
42	0.96	18.38	1.24
43	1.02	18.37	1.22
44	1.09	18.35	1.21
45	1.16	18.33	1.19
46	1.23	18.32	1.18
47	1.31	18.30	1.16
48	1.4	18.29	1.15
49	1.48	18.27	1.13
50	1.58	18.25	1.11
51	1.68	18.23	1.09
52	1.78	18.22	1.07
53	1.89	18.19	1.05
54	2.01	18.18	1.04
55	2.14	18.15	1.01
56	2.27	18.13	0.99
57	2.41	18.11	0.97
58	2.56	18.09	0.95
59	2.72	18.07	0.93
60	2.88	18.05	0.91
61	3.06	18.02	0.88
62	3.25	18.00	0.86

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County	Page 3

Test Well:	**PZ-53**	**Slug Test:**	**PZ-53**
		Test Well:	PZ-53
Depth to Static WL:	17.14 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/17/2011	Aquifer Thickness:	33 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
63	3.45	17.98	0.84
64	3.66	17.95	0.81
65	3.88	17.92	0.78
66	4.12	17.90	0.76
67	4.37	17.87	0.73
68	4.63	17.84	0.70
69	4.91	17.82	0.68
70	5.21	17.79	0.65
71	5.52	17.76	0.62
72	5.86	17.73	0.59
73	6.21	17.70	0.56
74	6.58	17.68	0.54
75	6.98	17.65	0.51
76	7.4	17.62	0.48
77	7.84	17.59	0.45
78	8.31	17.57	0.43
79	8.81	17.54	0.40
80	9.34	17.51	0.37
81	9.9	17.49	0.35

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Analysis Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County



Slug Test: **PZ-55**

Analysis Method: **Bouwer & Rice**

Analysis Results:

Conductivity: 3.91E-1 [ft/d]

Test parameters:

Test Well:	PZ-55	Aquifer Thickness:	45 [ft]
Casing radius:	0.083 [ft]	Gravel Pack Porosity (%)	25
Screen length:	10 [ft]		
Boring radius:	0.1667 [ft]		
r(eff):	0.110 [ft]		

Comments:

Evaluated by: JAS

Evaluation Date: 5/17/2011

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 1

Test Well:	**PZ-55**	**Slug Test:**	**PZ-55**
		Test Well:	PZ-55
Depth to Static WL:	4.76 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/11/2011	Aquifer Thickness:	45 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
1	0	7.02	2.26
2	0.009	6.98	2.22
3	0.017	6.96	2.20
4	0.027	6.93	2.17
5	0.037	6.90	2.14
6	0.047	6.88	2.12
7	0.058	6.86	2.10
8	0.07	6.84	2.08
9	0.083	6.81	2.05
10	0.096	6.79	2.03
11	0.11	6.77	2.01
12	0.125	6.74	1.98
13	0.141	6.72	1.96
14	0.157	6.70	1.94
15	0.175	6.67	1.91
16	0.194	6.65	1.89
17	0.214	6.62	1.86
18	0.235	6.60	1.84
19	0.257	6.58	1.82
20	0.281	6.55	1.79
21	0.306	6.52	1.76
22	0.332	6.50	1.74
23	0.36	6.47	1.71
24	0.39	6.44	1.68
25	0.421	6.42	1.66
26	0.455	6.39	1.63
27	0.49	6.36	1.60
28	0.527	6.33	1.57
29	0.567	6.30	1.54
30	0.609	6.27	1.51
31	0.653	6.24	1.48

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 2

Test Well:	**PZ-55**	**Slug Test:**	**PZ-55**
		Test Well:	PZ-55
Depth to Static WL:	4.76 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/11/2011	Aquifer Thickness:	45 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
32	0.7	6.21	1.45
33	0.75	6.18	1.42
34	0.803	6.14	1.38
35	0.859	6.11	1.35
36	0.919	6.08	1.32
37	0.979	6.05	1.29
38	1.049	6.01	1.25
39	1.119	5.98	1.22
40	1.189	5.94	1.18
41	1.269	5.91	1.15
42	1.359	5.87	1.11
43	1.439	5.83	1.07
44	1.539	5.79	1.03
45	1.639	5.76	1.00
46	1.739	5.72	0.96
47	1.849	5.69	0.93
48	1.969	5.65	0.89
49	2.099	5.61	0.85
50	2.229	5.58	0.82
51	2.369	5.54	0.78
52	2.519	5.51	0.75
53	2.679	5.47	0.71
54	2.839	5.43	0.67
55	3.019	5.40	0.64
56	3.209	5.36	0.60
57	3.409	5.33	0.57
58	3.619	5.30	0.54
59	3.839	5.27	0.51
60	4.079	5.24	0.48
61	4.329	5.20	0.44
62	4.589	5.18	0.42

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Slug Test Data Report

Project: Davidson County Phase 2
Number: Davdco-10-4
Client: Davidson County

Test Well:	**PZ-55**	**Slug Test:**	**PZ-55**
		Test Well:	PZ-55
Depth to Static WL:	4.76 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/11/2011	Aquifer Thickness:	45 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
63	4.869	5.15	0.39
64	5.169	5.13	0.37
65	5.479	5.10	0.34
66	5.819	5.08	0.32
67	6.169	5.06	0.30
68	6.539	5.04	0.28
69	6.939	5.02	0.26
70	7.359	5.01	0.25
71	7.799	4.99	0.23
72	8.269	4.97	0.21
73	8.769	4.96	0.20
74	9.299	4.95	0.19
75	9.859	4.93	0.17
76	10.459	4.93	0.17

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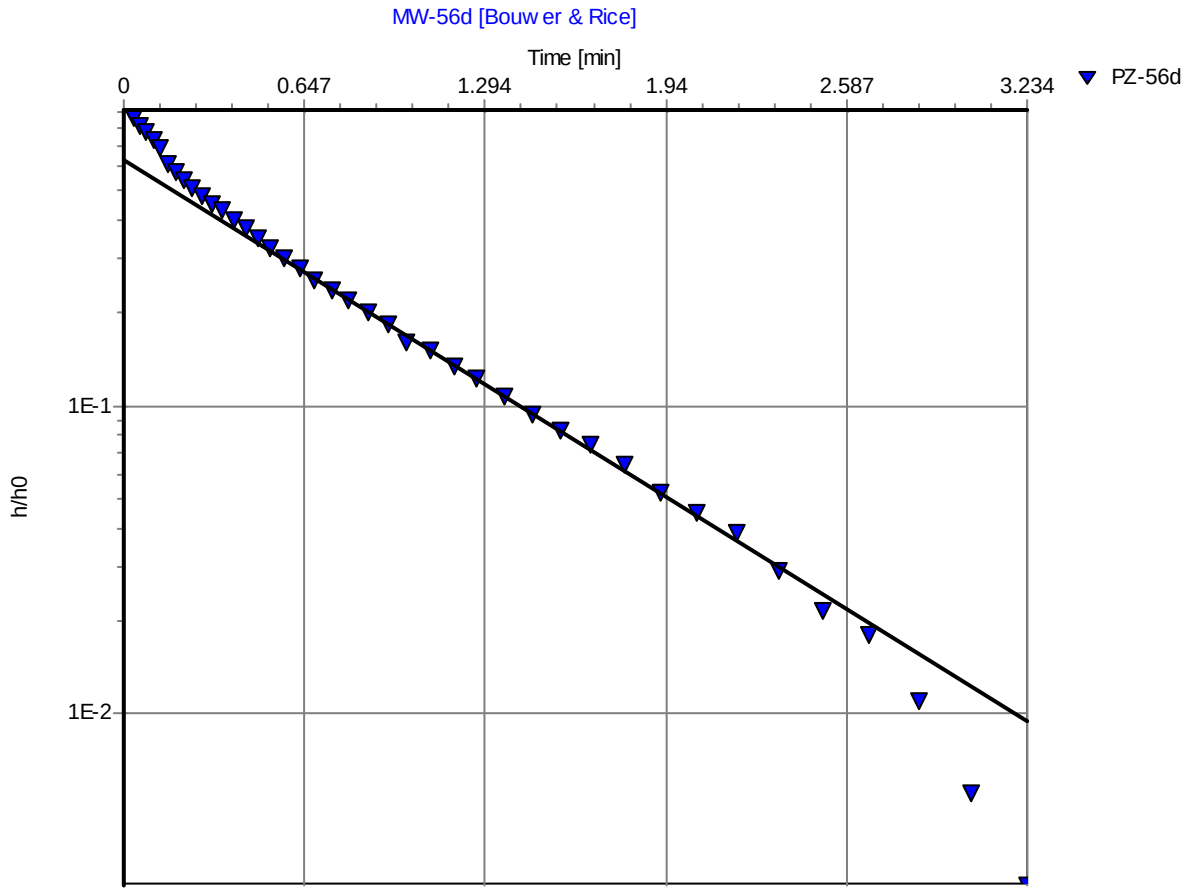
Slug Test Analysis Report

Project:	Davidson County Phase 2
Number:	Davdco-10-4
Client:	Davidson County



Slug Test: **PZ-56d**

Analysis Method: **Bouwer & Rice**

Analysis Results:

Conductivity: 3.61E+0 [ft/d]

Test parameters:

Test Well:	PZ-56d	Aquifer Thickness:	40 [ft]
Casing radius:	0.083 [ft]	Gravel Pack Porosity (%)	25
Screen length:	5 [ft]		
Boring radius:	0.1667 [ft]		
r(eff):	0.110 [ft]		

Comments:

Evaluated by: JAS

Evaluation Date: 5/17/2011

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 1

Test Well:	**PZ-56d**	**Slug Test:**	**PZ-56d**
		Test Well:	PZ-56d
Depth to Static WL:	10.09 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	5 [ft]
Date:	5/11/2011	Aquifer Thickness:	40 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
1	0	11.54	1.45
2	0.019	11.41	1.32
3	0.039	11.33	1.24
4	0.06	11.26	1.17
5	0.082	11.21	1.12
6	0.106	11.14	1.05
7	0.131	11.09	1.00
8	0.157	10.97	0.88
9	0.185	10.92	0.83
10	0.215	10.88	0.79
11	0.246	10.83	0.74
12	0.28	10.79	0.70
13	0.315	10.75	0.66
14	0.352	10.71	0.62
15	0.392	10.67	0.58
16	0.434	10.63	0.54
17	0.478	10.60	0.51
18	0.525	10.56	0.47
19	0.575	10.53	0.44
20	0.628	10.50	0.41
21	0.684	10.46	0.37
22	0.744	10.44	0.35
23	0.804	10.41	0.32
24	0.874	10.38	0.29
25	0.944	10.36	0.27
26	1.014	10.32	0.23
27	1.094	10.31	0.22
28	1.184	10.28	0.19
29	1.264	10.27	0.18
30	1.364	10.25	0.16
31	1.464	10.23	0.14

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County	Page 2

Test Well:	**PZ-56d**	**Slug Test:**	**PZ-56d**
		Test Well:	PZ-56d
Depth to Static WL:	10.09 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	5 [ft]
Date:	5/11/2011	Aquifer Thickness:	40 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
32	1.564	10.21	0.12
33	1.674	10.20	0.11
34	1.794	10.18	0.09
35	1.924	10.17	0.08
36	2.054	10.16	0.06
37	2.194	10.15	0.06
38	2.344	10.13	0.04
39	2.504	10.12	0.03
40	2.664	10.12	0.03
41	2.844	10.11	0.02
42	3.034	10.10	0.01
43	3.234	10.09	0.00

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Slug Test Analysis Report

Project:	Davidson County Phase 2
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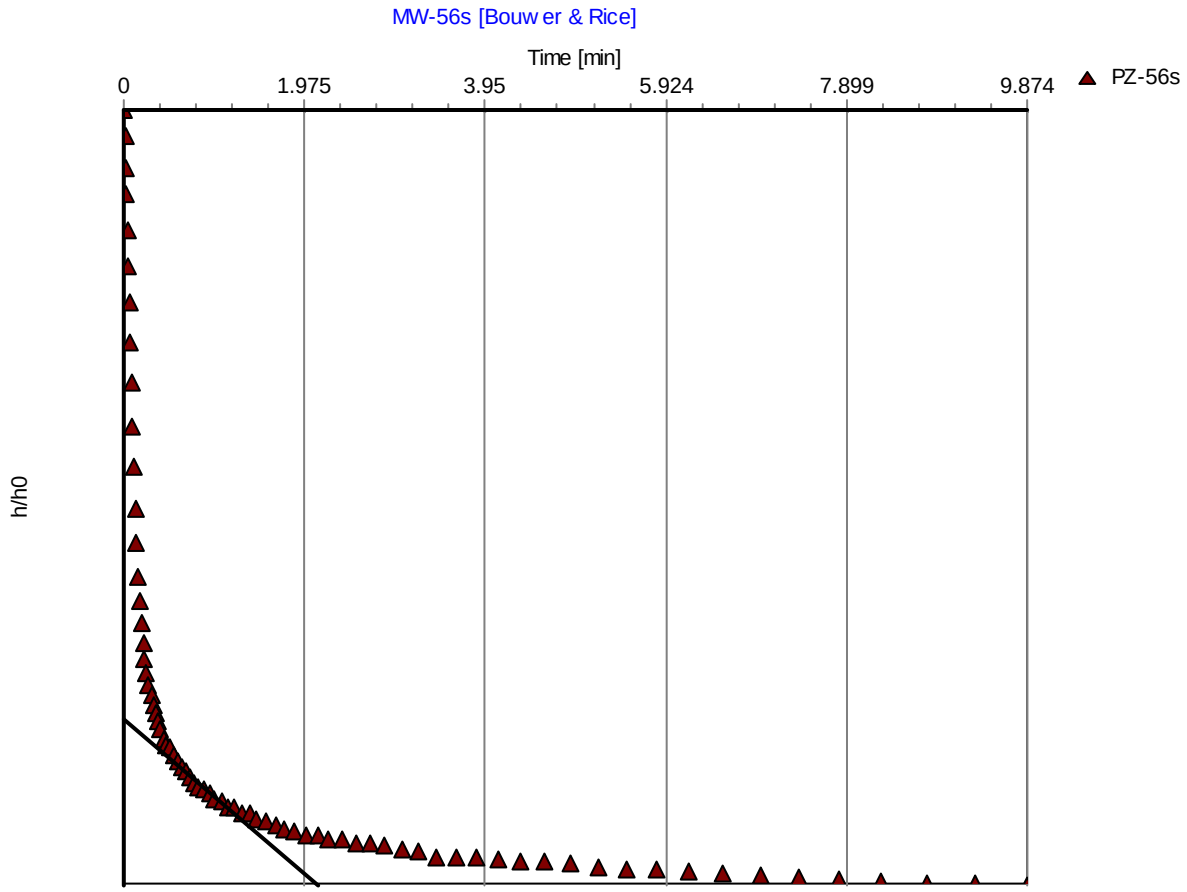
Client:	Davidson County



Slug Test: **PZ-56s**

Analysis Method: **Bouwer & Rice**

Analysis Results:

Conductivity: 1.46E-1 [ft/d]

Test parameters:

Test Well:	PZ-56s	Aquifer Thickness:	40 [ft]
Casing radius:	0.083 [ft]	Gravel Pack Porosity (%)	25
Screen length:	10 [ft]		
Boring radius:	0.1667 [ft]		
r(eff):	0.110 [ft]		

Comments:

Evaluated by: JAS

Evaluation Date: 5/17/2011

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Slug Test Data Report

Project: Davidson County Phase 2
Number: Davdco-10-4
Client: Davidson County

Test Well:	**PZ-56s**	**Slug Test:**	**PZ-56s**
		Test Well:	PZ-56s
Depth to Static WL:	10.05 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/11/2011	Aquifer Thickness:	40 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
1	0	12.70	2.65
2	0.007	12.57	2.52
3	0.015	12.47	2.42
4	0.024	12.35	2.30
5	0.032	12.25	2.20
6	0.042	12.13	2.08
7	0.052	12.02	1.97
8	0.062	11.91	1.86
9	0.073	11.80	1.75
10	0.085	11.69	1.64
11	0.098	11.58	1.53
12	0.111	11.48	1.43
13	0.125	11.39	1.34
14	0.14	11.32	1.27
15	0.156	11.25	1.20
16	0.172	11.21	1.16
17	0.19	11.17	1.12
18	0.209	11.13	1.08
19	0.229	11.11	1.05
20	0.25	11.08	1.03
21	0.272	11.06	1.01
22	0.296	11.05	1.00
23	0.321	11.03	0.98
24	0.347	11.02	0.97
25	0.375	11.01	0.96
26	0.405	10.99	0.94
27	0.436	10.98	0.93
28	0.47	10.97	0.92
29	0.505	10.97	0.92
30	0.542	10.96	0.91
31	0.582	10.95	0.90

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 2

Test Well:	**PZ-56s**	**Slug Test:**	**PZ-56s**
		Test Well:	PZ-56s
Depth to Static WL:	10.05 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/11/2011	Aquifer Thickness:	40 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
32	0.624	10.94	0.89
33	0.668	10.93	0.88
34	0.715	10.93	0.88
35	0.765	10.92	0.87
36	0.818	10.91	0.86
37	0.874	10.91	0.86
38	0.934	10.90	0.85
39	0.994	10.89	0.84
40	1.064	10.89	0.84
41	1.134	10.89	0.83
42	1.204	10.88	0.83
43	1.284	10.88	0.83
44	1.374	10.88	0.83
45	1.454	10.87	0.82
46	1.554	10.87	0.81
47	1.654	10.86	0.81
48	1.754	10.86	0.81
49	1.864	10.85	0.80
50	1.984	10.85	0.80
51	2.114	10.85	0.80
52	2.244	10.84	0.79
53	2.384	10.84	0.79
54	2.534	10.84	0.79
55	2.694	10.84	0.79
56	2.854	10.84	0.79
57	3.034	10.83	0.78
58	3.224	10.83	0.78
59	3.424	10.82	0.77
60	3.634	10.82	0.77
61	3.854	10.82	0.77
62	4.094	10.82	0.77

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County	Page 3

Test Well:	**PZ-56s**	**Slug Test:**	**PZ-56s**
		Test Well:	PZ-56s
Depth to Static WL:	10.05 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/11/2011	Aquifer Thickness:	40 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
63	4.344	10.82	0.76
64	4.604	10.82	0.76
65	4.884	10.81	0.76
66	5.184	10.81	0.76
67	5.494	10.81	0.76
68	5.834	10.81	0.75
69	6.184	10.80	0.75
70	6.554	10.80	0.75
71	6.954	10.80	0.75
72	7.374	10.80	0.75
73	7.814	10.79	0.74
74	8.284	10.79	0.74
75	8.784	10.79	0.74
76	9.314	10.79	0.74
77	9.874	10.79	0.74

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Slug Test Analysis Report

Project:	Davidson County Phase 2
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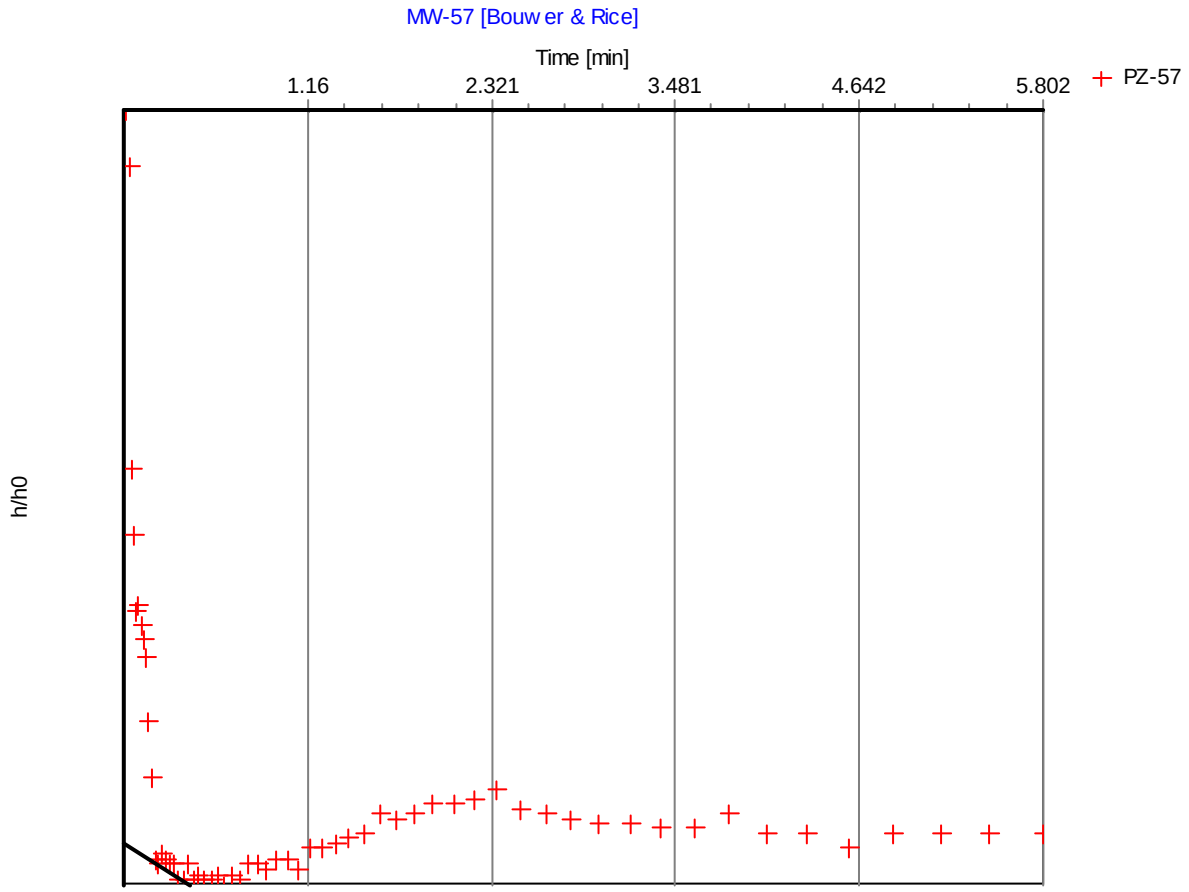
Client:	Davidson County



Slug Test: **PZ-57**

Analysis Method: **Bouwer & Rice**

Analysis Results:

Conductivity: 2.24E-1 [ft/d]

Test parameters:

Test Well:	PZ-57	Aquifer Thickness:	23 [ft]
Casing radius:	0.083 [ft]	Gravel Pack Porosity (%)	25
Screen length:	10 [ft]		
Boring radius:	0.1667 [ft]		
r(eff):	0.110 [ft]		

Comments:

Evaluated by:

Evaluation Date: 5/17/2011

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 1

Test Well:	**PZ-57**	**Slug Test:**	**PZ-57**
		Test Well:	PZ-57
Depth to Static WL:	17.13 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/11/2011	Aquifer Thickness:	23 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
1	0	17.81	0.68
2	0.01	17.54	0.41
3	0.041	17.50	0.37
4	0.053	17.34	0.21
5	0.066	17.32	0.19
6	0.079	17.29	0.16
7	0.093	17.30	0.17
8	0.108	17.29	0.16
9	0.124	17.29	0.16
10	0.14	17.28	0.15
11	0.158	17.26	0.13
12	0.177	17.25	0.12
13	0.197	17.23	0.10
14	0.218	17.23	0.10
15	0.24	17.24	0.11
16	0.264	17.23	0.10
17	0.289	17.23	0.10
18	0.315	17.23	0.10
19	0.343	17.23	0.10
20	0.373	17.23	0.10
21	0.404	17.23	0.10
22	0.438	17.23	0.10
23	0.473	17.23	0.10
24	0.51	17.23	0.10
25	0.55	17.23	0.10
26	0.592	17.23	0.10
27	0.636	17.23	0.10
28	0.683	17.23	0.10
29	0.733	17.23	0.10
30	0.786	17.23	0.10
31	0.842	17.23	0.10

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577		**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County	Page 2

Test Well:	**PZ-57**	**Slug Test:**	**PZ-57**
		Test Well:	PZ-57
Depth to Static WL:	17.13 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/11/2011	Aquifer Thickness:	23 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
32	0.902	17.23	0.10
33	0.962	17.23	0.10
34	1.032	17.23	0.10
35	1.102	17.23	0.10
36	1.172	17.24	0.11
37	1.252	17.24	0.11
38	1.342	17.24	0.11
39	1.422	17.24	0.11
40	1.522	17.24	0.11
41	1.622	17.24	0.11
42	1.722	17.24	0.11
43	1.832	17.24	0.11
44	1.952	17.25	0.12
45	2.082	17.25	0.12
46	2.212	17.25	0.12
47	2.352	17.25	0.12
48	2.502	17.24	0.11
49	2.662	17.24	0.11
50	2.822	17.24	0.11
51	3.002	17.24	0.11
52	3.192	17.24	0.11
53	3.392	17.24	0.11
54	3.602	17.24	0.11
55	3.822	17.24	0.11
56	4.062	17.24	0.11
57	4.312	17.24	0.11
58	4.572	17.24	0.11
59	4.852	17.24	0.11
60	5.152	17.24	0.11
61	5.462	17.24	0.11
62	5.802	17.24	0.11

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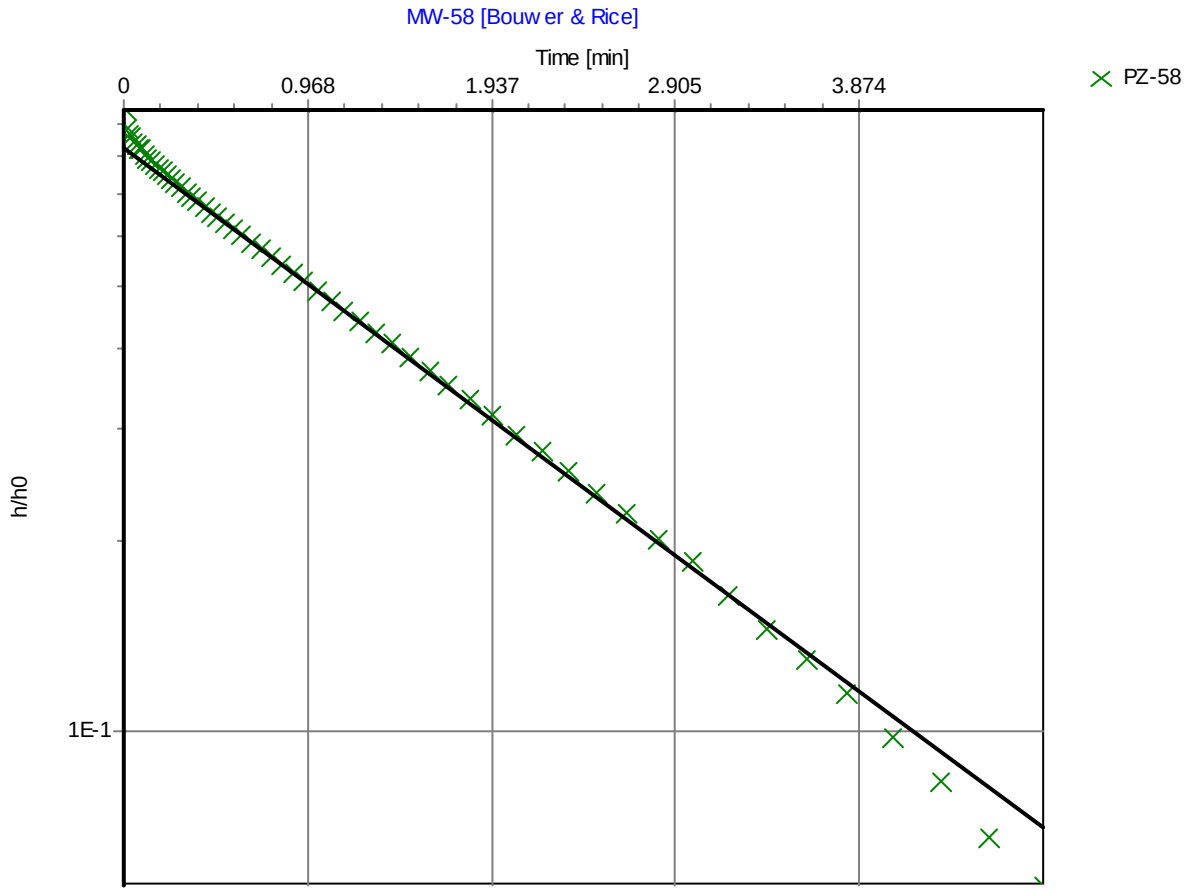
Slug Test Analysis Report

Project:	Davidson County Phase 2
Number:	Davdco-10-4
Client:	Davidson County



Slug Test: **PZ-58**

Analysis Method: **Bouwer & Rice**

Analysis Results:

Conductivity: 7.41E-1 [ft/d]

Test parameters:

Test Well:	PZ-58	Aquifer Thickness:	24.47 [ft]
Casing radius:	0.083 [ft]	Gravel Pack Porosity (%)	25
Screen length:	10 [ft]		
Boring radius:	0.1667 [ft]		
r(eff):	0.110 [ft]		

Comments:

Evaluated by: JAS

Evaluation Date: 5/17/2011

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 1

Test Well:	**PZ-58**	**Slug Test:**	**PZ-58**
		Test Well:	PZ-58
Depth to Static WL:	25.53 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/11/2011	Aquifer Thickness:	24.47 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
1	0	28.01	2.47
2	0.01	27.87	2.34
3	0.02	27.72	2.19
4	0.031	27.67	2.14
5	0.043	27.66	2.13
6	0.056	27.62	2.09
7	0.069	27.60	2.07
8	0.083	27.58	2.05
9	0.098	27.57	2.04
10	0.114	27.53	2.00
11	0.13	27.51	1.97
12	0.148	27.48	1.95
13	0.167	27.45	1.92
14	0.187	27.44	1.90
15	0.208	27.41	1.88
16	0.23	27.38	1.85
17	0.254	27.36	1.83
18	0.279	27.33	1.80
19	0.305	27.30	1.77
20	0.333	27.27	1.74
21	0.363	27.25	1.72
22	0.394	27.22	1.69
23	0.428	27.19	1.66
24	0.463	27.15	1.62
25	0.5	27.12	1.59
26	0.54	27.09	1.56
27	0.582	27.06	1.53
28	0.626	27.02	1.49
29	0.673	26.98	1.45
30	0.723	26.95	1.42
31	0.776	26.91	1.38

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577		**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County	Page 2

Test Well:	**PZ-58**	**Slug Test:**	**PZ-58**
		Test Well:	PZ-58
Depth to Static WL:	25.53 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/11/2011	Aquifer Thickness:	24.47 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
32	0.832	26.87	1.34
33	0.892	26.83	1.30
34	0.952	26.80	1.27
35	1.022	26.75	1.22
36	1.092	26.71	1.18
37	1.162	26.67	1.14
38	1.242	26.62	1.09
39	1.332	26.58	1.05
40	1.412	26.54	1.01
41	1.512	26.49	0.96
42	1.612	26.44	0.91
43	1.712	26.40	0.87
44	1.822	26.36	0.82
45	1.942	26.31	0.78
46	2.072	26.26	0.73
47	2.202	26.21	0.68
48	2.342	26.17	0.63
49	2.492	26.12	0.59
50	2.652	26.08	0.54
51	2.812	26.03	0.50
52	2.992	25.99	0.46
53	3.182	25.94	0.40
54	3.382	25.89	0.36
55	3.592	25.85	0.32
56	3.812	25.81	0.28
57	4.052	25.77	0.24
58	4.302	25.74	0.21
59	4.562	25.70	0.17
60	4.842	25.67	0.14

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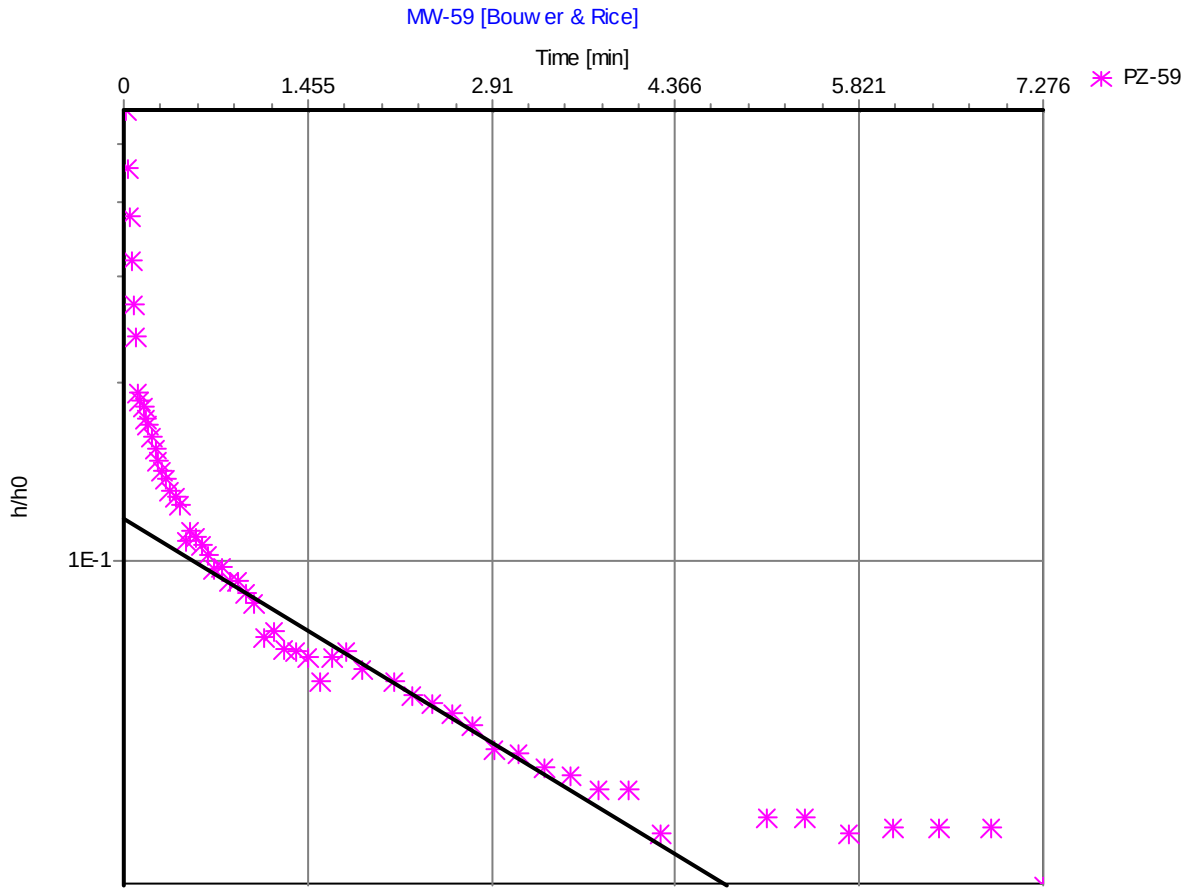
14 N. Boylan Avenue
Raleigh, North Carolina 27603
Ph. 919-828-0577

Slug Test Analysis Report

Project:	Davidson County Phase 2
Number:	Davdco-10-4
Client:	Davidson County



Slug Test: **PZ-59**

Analysis Method: **Bouwer & Rice**

Analysis Results:

Conductivity: 3.58E-1 [ft/d]

Test parameters:

Test Well:	PZ-59	Aquifer Thickness:	25 [ft]
Casing radius:	0.083 [ft]	Gravel Pack Porosity (%)	25
Screen length:	10 [ft]		
Boring radius:	0.1667 [ft]		
r(eff):	0.110 [ft]		

Comments:

Evaluated by: JAS

Evaluation Date: 5/17/2011

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 1

Test Well:	**PZ-59**	**Slug Test:**	**PZ-59**
		Test Well:	PZ-59
Depth to Static WL:	19.23 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/12/2011	Aquifer Thickness:	25 [ft]

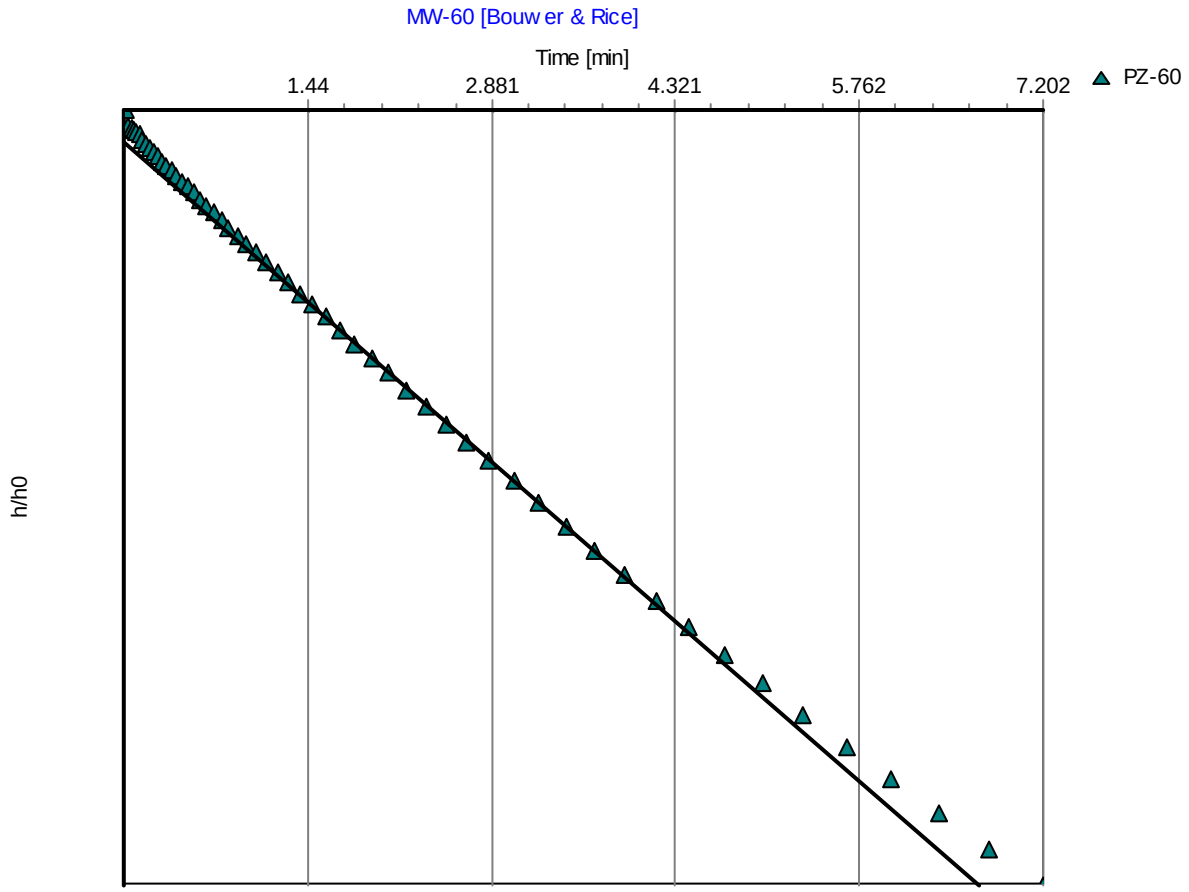
	Time [min]	Depth to WL [ft]	Drawdown [ft]
1	0	20.49	1.26
2	0.013	19.95	0.72
3	0.027	19.80	0.57
4	0.042	19.71	0.48
5	0.058	19.63	0.40
6	0.074	19.57	0.34
7	0.092	19.53	0.30
8	0.111	19.47	0.24
9	0.131	19.46	0.23
10	0.152	19.46	0.23
11	0.174	19.45	0.22
12	0.198	19.44	0.21
13	0.223	19.43	0.20
14	0.249	19.43	0.20
15	0.277	19.42	0.18
16	0.307	19.41	0.18
17	0.338	19.40	0.17
18	0.372	19.40	0.16
19	0.407	19.39	0.16
20	0.444	19.39	0.16
21	0.484	19.37	0.14
22	0.526	19.37	0.14
23	0.57	19.37	0.14
24	0.617	19.36	0.13
25	0.667	19.36	0.13
26	0.72	19.35	0.12
27	0.776	19.35	0.12
28	0.836	19.35	0.12
29	0.896	19.35	0.12
30	0.966	19.34	0.11
31	1.036	19.34	0.11

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 2

Test Well:	**PZ-59**	**Slug Test:**	**PZ-59**
		Test Well:	PZ-59
Depth to Static WL:	19.23 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	JAS	Screen length:	10 [ft]
Date:	5/12/2011	Aquifer Thickness:	25 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
32	1.106	19.32	0.09
33	1.186	19.33	0.10
34	1.276	19.32	0.09
35	1.356	19.32	0.09
36	1.456	19.32	0.09
37	1.556	19.31	0.08
38	1.656	19.32	0.09
39	1.766	19.32	0.09
40	1.886	19.31	0.08
41	2.146	19.31	0.08
42	2.286	19.31	0.07
43	2.436	19.30	0.07
44	2.596	19.30	0.07
45	2.756	19.30	0.07
46	2.936	19.29	0.06
47	3.126	19.29	0.06
48	3.326	19.29	0.06
49	3.536	19.29	0.05
50	3.756	19.28	0.05
51	3.996	19.28	0.05
52	4.246	19.27	0.04
53	5.086	19.28	0.05
54	5.396	19.28	0.05
55	5.736	19.27	0.04
56	6.086	19.28	0.04
57	6.456	19.28	0.04
58	6.856	19.28	0.04
59	7.276	19.27	0.04

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Analysis Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County



Slug Test: **PZ-60**

Analysis Method: **Bouwer & Rice**

Analysis Results:

Conductivity: 2.63E-1 [ft/d]

Test parameters:

Test Well:	PZ-60	Aquifer Thickness:	25 [ft]
Casing radius:	0.083 [ft]	Gravel Pack Porosity (%)	25
Screen length:	10 [ft]		
Boring radius:	0.1667 [ft]		
r(eff):	0.110 [ft]		

Comments:

Evaluated by: JAS

Evaluation Date: 5/17/2011

Richardson Smith Gardner
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Raleigh, North Carolina 27603
Ph. 919-828-0577

Slug Test Data Report

Project: Davidson County Phase 2
Number: Davdco-10-4
Client: Davidson County

Test Well:	**PZ-60**	**Slug Test:**	**PZ-60**
		Test Well:	PZ-60
Depth to Static WL:	7.28 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	DMM	Screen length:	10 [ft]
Date:	5/12/2011	Aquifer Thickness:	25 [ft]

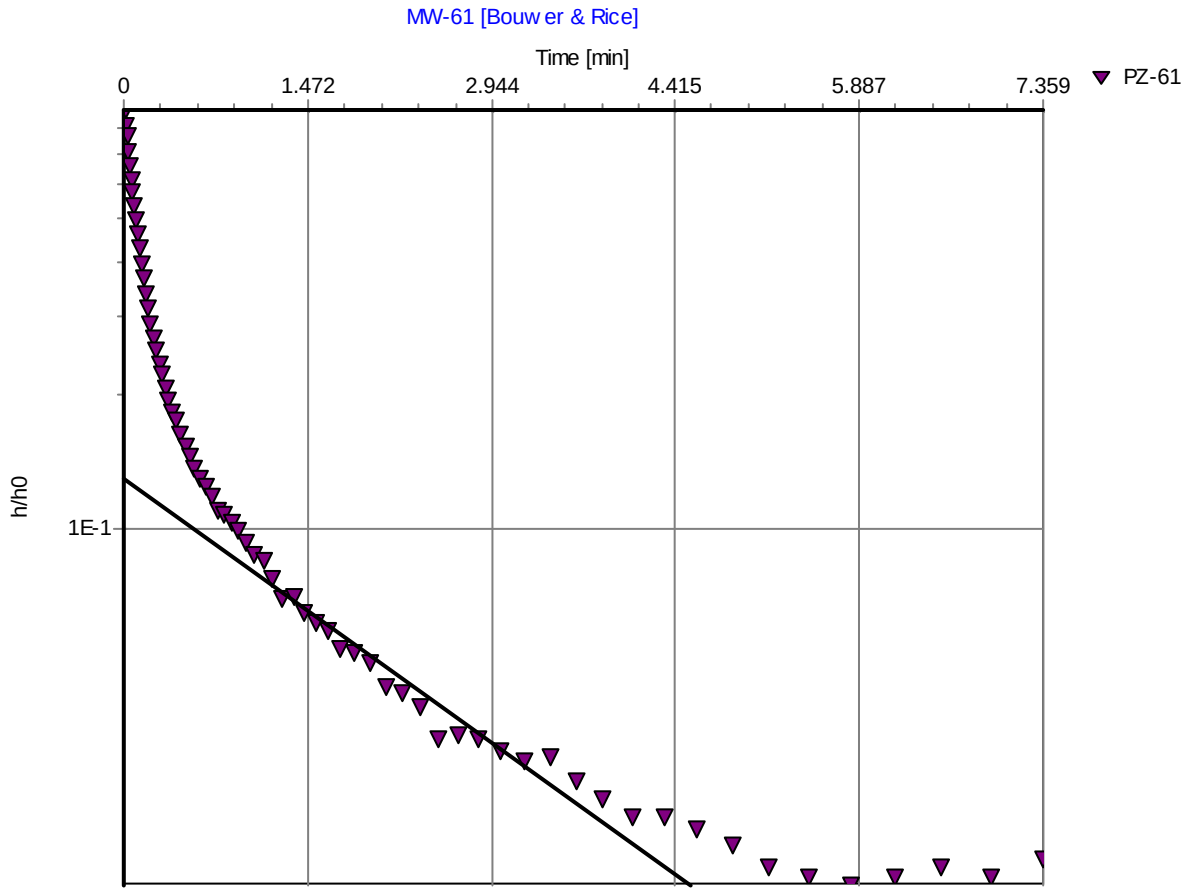
	Time [min]	Depth to WL [ft]	Drawdown [ft]
1	0	11.16	3.88
2	0.018	10.83	3.55
3	0.037	10.75	3.47
4	0.057	10.74	3.45
5	0.078	10.73	3.45
6	0.1	10.71	3.43
7	0.124	10.70	3.42
8	0.149	10.67	3.39
9	0.175	10.65	3.37
10	0.203	10.62	3.34
11	0.233	10.60	3.32
12	0.264	10.58	3.30
13	0.298	10.55	3.27
14	0.333	10.53	3.25
15	0.37	10.51	3.23
16	0.41	10.48	3.20
17	0.452	10.45	3.17
18	0.496	10.42	3.14
19	0.543	10.39	3.11
20	0.593	10.36	3.08
21	0.646	10.33	3.05
22	0.702	10.30	3.02
23	0.762	10.26	2.98
24	0.822	10.23	2.94
25	0.892	10.19	2.91
26	0.962	10.15	2.87
27	1.032	10.11	2.83
28	1.112	10.07	2.79
29	1.202	10.02	2.74
30	1.282	9.98	2.70
31	1.382	9.93	2.65

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 2

Test Well:	**PZ-60**	**Slug Test:**	**PZ-60**
		Test Well:	PZ-60
Depth to Static WL:	7.28 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	DMM	Screen length:	10 [ft]
Date:	5/12/2011	Aquifer Thickness:	25 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
32	1.482	9.88	2.60
33	1.582	9.83	2.55
34	1.692	9.78	2.50
35	1.812	9.73	2.44
36	1.942	9.66	2.38
37	2.072	9.61	2.33
38	2.212	9.55	2.27
39	2.362	9.49	2.21
40	2.522	9.43	2.15
41	2.682	9.37	2.09
42	2.862	9.30	2.02
43	3.052	9.24	1.96
44	3.252	9.17	1.89
45	3.462	9.10	1.82
46	3.682	9.04	1.76
47	3.922	8.97	1.69
48	4.172	8.90	1.62
49	4.432	8.83	1.55
50	4.712	8.76	1.48
51	5.012	8.70	1.42
52	5.322	8.63	1.35
53	5.662	8.56	1.28
54	6.012	8.49	1.21
55	6.382	8.43	1.15
56	6.782	8.37	1.09
57	7.202	8.31	1.03

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Analysis Report**	
	Project:	Davidson County Phase 2
	Number:	Davdco-10-4
	Client:	Davidson County



Slug Test: **PZ-61**

Analysis Method: **Bouwer & Rice**

Analysis Results:

Conductivity: 6.36E-1 [ft/d]

Test parameters:

Test Well:	PZ-61	Aquifer Thickness:	25 [ft]
Casing radius:	0.083 [ft]	Gravel Pack Porosity (%)	25
Screen length:	10 [ft]		
Boring radius:	0.1667 [ft]		
r(eff):	0.110 [ft]		

Comments:

Evaluated by: JAS

Evaluation Date: 5/17/2011

Richardson Smith Gardner
14 N. Boylan Avenue
Raleigh, North Carolina 27603
Ph. 919-828-0577

Slug Test Data Report

Project: Davidson County Phase 2
Number: Davdco-10-4
Client: Davidson County

Test Well:	**PZ-61**	**Slug Test:**	**PZ-61**
		Test Well:	PZ-61
Depth to Static WL:	9.9 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	DMM	Screen length:	10 [ft]
Date:	5/12/2011	Aquifer Thickness:	25 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
1	0	11.25	1.35
2	0.009	11.08	1.18
3	0.017	10.99	1.08
4	0.027	10.94	1.04
5	0.037	10.85	0.95
6	0.047	10.78	0.88
7	0.058	10.73	0.83
8	0.07	10.68	0.78
9	0.083	10.62	0.71
10	0.096	10.57	0.67
11	0.11	10.52	0.62
12	0.125	10.48	0.58
13	0.141	10.43	0.53
14	0.157	10.40	0.49
15	0.175	10.36	0.46
16	0.194	10.32	0.42
17	0.214	10.29	0.39
18	0.235	10.26	0.36
19	0.257	10.24	0.34
20	0.281	10.22	0.32
21	0.306	10.20	0.30
22	0.332	10.18	0.28
23	0.36	10.16	0.26
24	0.39	10.15	0.24
25	0.421	10.14	0.23
26	0.455	10.12	0.22
27	0.49	10.11	0.21
28	0.527	10.10	0.20
29	0.567	10.08	0.18
30	0.609	10.07	0.17
31	0.653	10.07	0.17

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 2

Test Well:	**PZ-61**	**Slug Test:**	**PZ-61**
		Test Well:	PZ-61
Depth to Static WL:	9.9 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	DMM	Screen length:	10 [ft]
Date:	5/12/2011	Aquifer Thickness:	25 [ft]

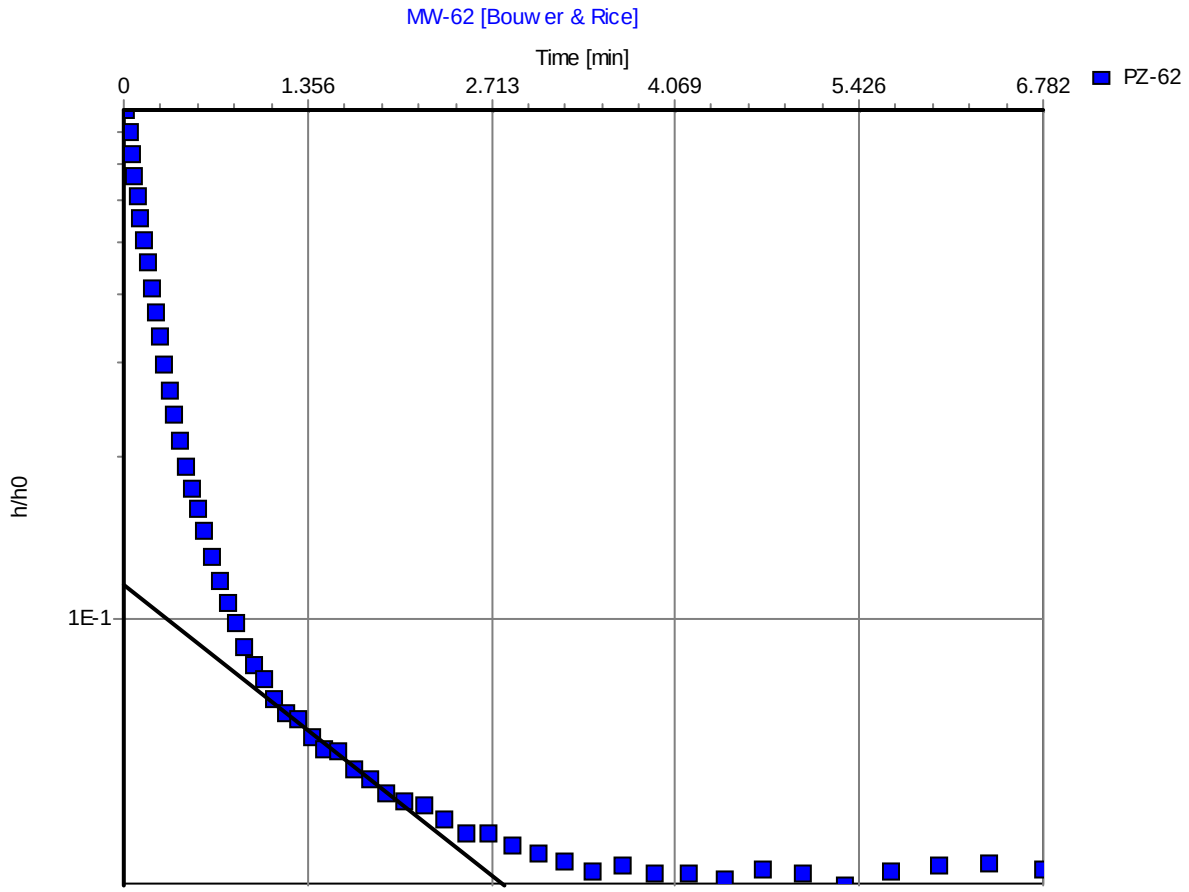
	Time [min]	Depth to WL [ft]	Drawdown [ft]
32	0.7	10.06	0.16
33	0.75	10.05	0.15
34	0.803	10.04	0.14
35	0.859	10.04	0.14
36	0.919	10.03	0.13
37	0.979	10.03	0.13
38	1.049	10.02	0.12
39	1.119	10.01	0.11
40	1.189	10.00	0.10
41	1.269	9.99	0.09
42	1.359	9.99	0.09
43	1.439	9.99	0.09
44	1.539	9.98	0.08
45	1.639	9.98	0.08
46	1.739	9.97	0.07
47	1.849	9.97	0.07
48	1.969	9.97	0.07
49	2.099	9.96	0.06
50	2.229	9.96	0.06
51	2.369	9.95	0.05
52	2.519	9.95	0.04
53	2.679	9.95	0.05
54	2.839	9.95	0.04
55	3.019	9.94	0.04
56	3.209	9.94	0.04
57	3.409	9.94	0.04
58	3.619	9.94	0.04
59	3.839	9.93	0.03
60	4.079	9.93	0.03
61	4.329	9.93	0.03
62	4.589	9.93	0.03

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 3

Test Well:	**PZ-61**	**Slug Test:**	**PZ-61**
		Test Well:	PZ-61
Depth to Static WL:	9.9 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	DMM	Screen length:	10 [ft]
Date:	5/12/2011	Aquifer Thickness:	25 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
63	4.869	9.93	0.03
64	5.169	9.92	0.02
65	5.479	9.92	0.02
66	5.819	9.92	0.02
67	6.169	9.92	0.02
68	6.539	9.92	0.02
69	6.939	9.92	0.02
70	7.359	9.92	0.02

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Analysis Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County



Slug Test: **PZ-62**

Analysis Method: **Bouwer & Rice**

Analysis Results:

Conductivity: 6.75E-1 [ft/d]

Test parameters:

Test Well:	PZ-62	Aquifer Thickness:	24 [ft]
Casing radius:	0.083 [ft]	Gravel Pack Porosity (%)	25
Screen length:	10 [ft]		
Boring radius:	0.1667 [ft]		
r(eff):	0.110 [ft]		

Comments:

Evaluated by: JAS

Evaluation Date: 5/17/2011

Richardson Smith Gardner
14 N. Boylan Avenue
Raleigh, North Carolina 27603
Ph. 919-828-0577

Slug Test Data Report

Project: Davidson County Phase 2
Number: Davdco-10-4
Client: Davidson County

Test Well:	**PZ-62**	**Slug Test:**	**PZ-62**
		Test Well:	PZ-62
Depth to Static WL:	16.19 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	DMM	Screen length:	10 [ft]
Date:	5/17/2011	Aquifer Thickness:	24 [ft]

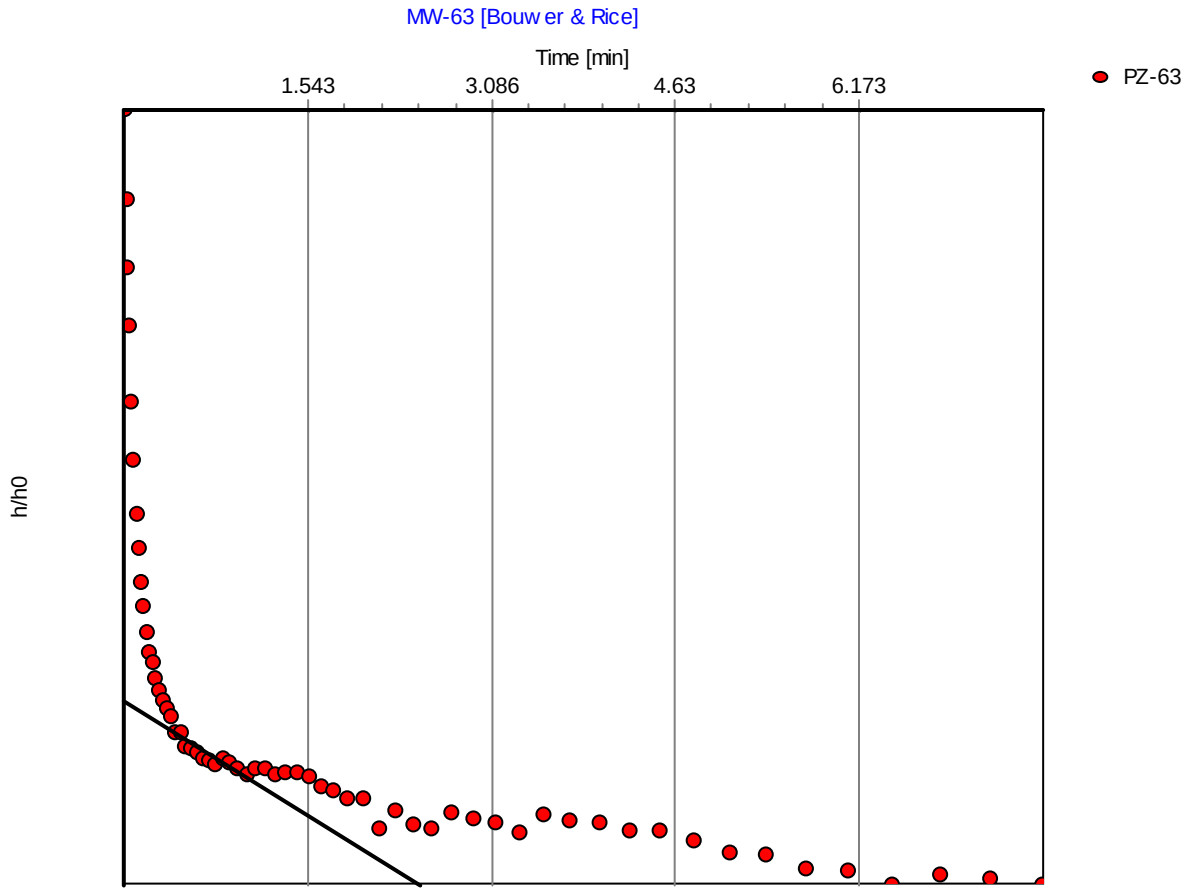
	Time [min]	Depth to WL [ft]	Drawdown [ft]
1	0	18.74	2.54
2	0.018	18.43	2.23
3	0.037	18.22	2.03
4	0.057	18.05	1.86
5	0.078	17.88	1.69
6	0.1	17.74	1.55
7	0.124	17.60	1.41
8	0.149	17.47	1.28
9	0.175	17.35	1.16
10	0.203	17.24	1.05
11	0.233	17.14	0.95
12	0.264	17.04	0.85
13	0.298	16.95	0.76
14	0.333	16.87	0.68
15	0.37	16.80	0.61
16	0.41	16.74	0.54
17	0.452	16.68	0.49
18	0.496	16.64	0.45
19	0.543	16.60	0.41
20	0.593	16.56	0.37
21	0.646	16.52	0.33
22	0.702	16.49	0.30
23	0.762	16.46	0.27
24	0.822	16.44	0.25
25	0.892	16.42	0.23
26	0.962	16.40	0.21
27	1.032	16.39	0.20
28	1.112	16.37	0.18
29	1.202	16.36	0.17
30	1.282	16.36	0.17
31	1.382	16.34	0.15

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 2

Test Well:	**PZ-62**	**Slug Test:**	**PZ-62**
		Test Well:	PZ-62
Depth to Static WL:	16.19 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	DMM	Screen length:	10 [ft]
Date:	5/17/2011	Aquifer Thickness:	24 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
32	1.482	16.34	0.15
33	1.582	16.34	0.14
34	1.692	16.32	0.13
35	1.812	16.32	0.13
36	1.942	16.31	0.12
37	2.072	16.31	0.12
38	2.212	16.31	0.11
39	2.362	16.30	0.11
40	2.522	16.29	0.10
41	2.682	16.29	0.10
42	2.862	16.29	0.10
43	3.052	16.28	0.09
44	3.252	16.28	0.09
45	3.462	16.28	0.09
46	3.682	16.28	0.09
47	3.922	16.28	0.09
48	4.172	16.28	0.09
49	4.432	16.27	0.08
50	4.712	16.28	0.09
51	5.012	16.28	0.09
52	5.322	16.27	0.08
53	5.662	16.28	0.09
54	6.012	16.28	0.09
55	6.382	16.28	0.09
56	6.782	16.28	0.09

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Analysis Report**	
	Project:	Davidson County Phase 2
	Number:	Davdco-10-4
	Client:	Davidson County



Slug Test: **PZ-63**

Analysis Method: **Bouwer & Rice**

Analysis Results:

Conductivity: 1.59E-1 [ft/d]

Test parameters:

Test Well:	PZ-63	Aquifer Thickness:	15 [ft]
Casing radius:	0.083 [ft]	Gravel Pack Porosity (%)	25
Screen length:	10 [ft]		
Boring radius:	0.1667 [ft]		
r(eff):	0.110 [ft]		

Comments:

Evaluated by: JAS

Evaluation Date: 5/17/2011

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 1

Test Well:	**PZ-63**	**Slug Test:**	**PZ-63**
		Test Well:	PZ-63
Depth to Static WL:	35.77 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	DMM	Screen length:	10 [ft]
Date:	5/12/2011	Aquifer Thickness:	15 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
1	0	36.90	1.13
2	0.013	36.75	0.98
3	0.027	36.62	0.84
4	0.042	36.52	0.75
5	0.058	36.46	0.69
6	0.074	36.38	0.60
7	0.092	36.32	0.55
8	0.111	36.27	0.50
9	0.131	36.25	0.48
10	0.152	36.22	0.45
11	0.174	36.20	0.43
12	0.198	36.18	0.41
13	0.223	36.17	0.40
14	0.249	36.16	0.39
15	0.277	36.15	0.38
16	0.307	36.15	0.38
17	0.338	36.14	0.37
18	0.372	36.14	0.36
19	0.407	36.13	0.36
20	0.444	36.12	0.35
21	0.484	36.12	0.35
22	0.526	36.11	0.34
23	0.57	36.11	0.34
24	0.617	36.11	0.34
25	0.667	36.11	0.34
26	0.72	36.11	0.33
27	0.776	36.10	0.33
28	0.836	36.11	0.34
29	0.896	36.10	0.33
30	0.966	36.10	0.33
31	1.036	36.10	0.33

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County — Page 2

Test Well:	**PZ-63**	**Slug Test:**	**PZ-63**
		Test Well:	PZ-63
Depth to Static WL:	35.77 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	DMM	Screen length:	10 [ft]
Date:	5/12/2011	Aquifer Thickness:	15 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
32	1.106	36.10	0.33
33	1.186	36.10	0.33
34	1.276	36.10	0.33
35	1.356	36.10	0.33
36	1.456	36.10	0.33
37	1.556	36.10	0.33
38	1.656	36.09	0.32
39	1.766	36.09	0.32
40	1.886	36.09	0.31
41	2.016	36.09	0.31
42	2.146	36.07	0.30
43	2.286	36.08	0.31
44	2.436	36.07	0.30
45	2.596	36.07	0.30
46	2.756	36.08	0.31
47	2.936	36.07	0.30
48	3.126	36.07	0.30
49	3.326	36.07	0.30
50	3.536	36.08	0.31
51	3.756	36.07	0.30
52	3.996	36.07	0.30
53	4.246	36.07	0.30
54	4.506	36.07	0.30
55	4.786	36.06	0.29
56	5.086	36.06	0.29
57	5.396	36.06	0.29
58	5.736	36.05	0.28
59	6.086	36.05	0.28
60	6.456	36.04	0.27
61	6.856	36.05	0.28
62	7.276	36.05	0.28

Richardson Smith Gardner 14 N. Boylan Avenue Raleigh, North Carolina 27603 Ph. 919-828-0577	**Slug Test Data Report** Project: Davidson County Phase 2 Number: Davdco-10-4 Client: Davidson County	Page 3

Test Well:	**PZ-63**	**Slug Test:**	**PZ-63**
		Test Well:	PZ-63
Depth to Static WL:	35.77 [ft]	Casing radius:	0.083 [ft]
Location:	Thomasville, NC	Boring radius:	0.1667 [ft]
Recorded by:	DMM	Screen length:	10 [ft]
Date:	5/12/2011	Aquifer Thickness:	15 [ft]

	Time [min]	Depth to WL [ft]	Drawdown [ft]
63	7.716	36.04	0.27

Appendix D
Effective Porosity Evaluation

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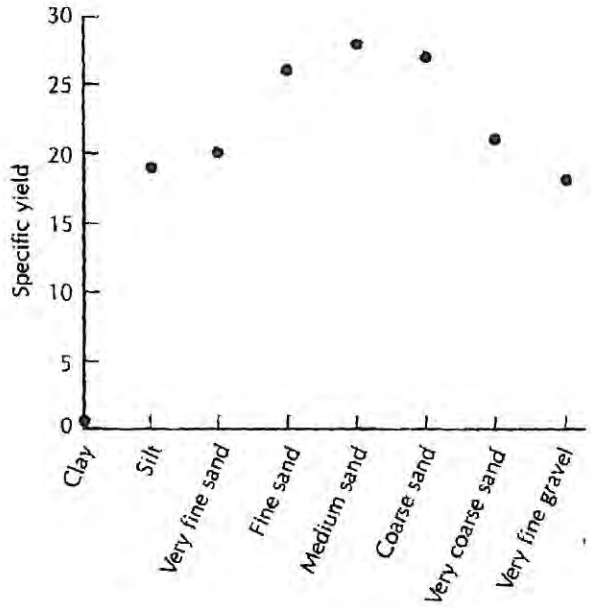
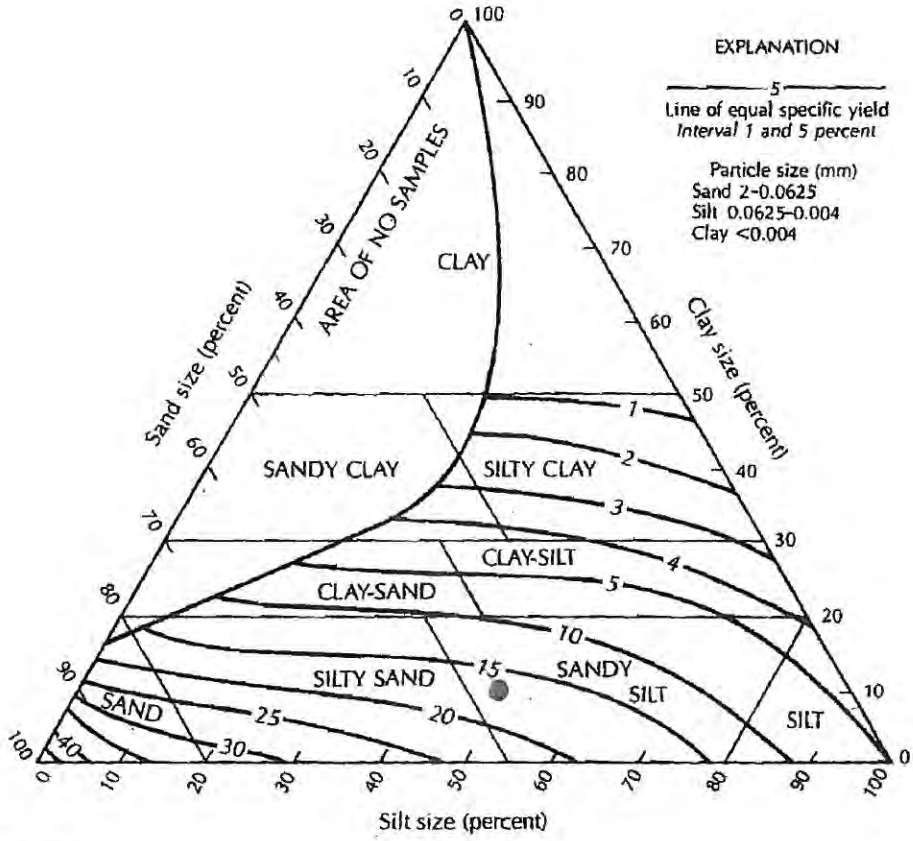
▶ FIGURE 3.10
Specific yield of sediments from the Humboldt River Valley of Nevada as a function of the median grain size. *Source: Data from P. Cohen,* U.S. Geological Survey Water-Supply Paper *1975, 1965.*



P2-46



▲ FIGURE 3.11
Textural classification triangle for unconsolidated materials showing the relation between particle size and specific yield. *Source: A. I. Johnson,* U.S. Geological Survey Water-Supply Paper *1662–D, 1967.*

SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics
INTEGRITY IN TESTING

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-46
Client Reference	DAVIDSON CO. LF	Depth (ft)	27.5-30.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-01	Soil Color	**GRAY**

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay

Sieve Sizes (mm)	USCS Summary	Percentage
Greater Than #4	*Gravel*	0.94
#4 To #200	*Sand*	44.35 44%
Finer Than #200	*Silt & Clay*	54.71

46% silt
8% clay

USCS Symbol ***ML, TESTED***

USCS Classification ***SANDY SILT***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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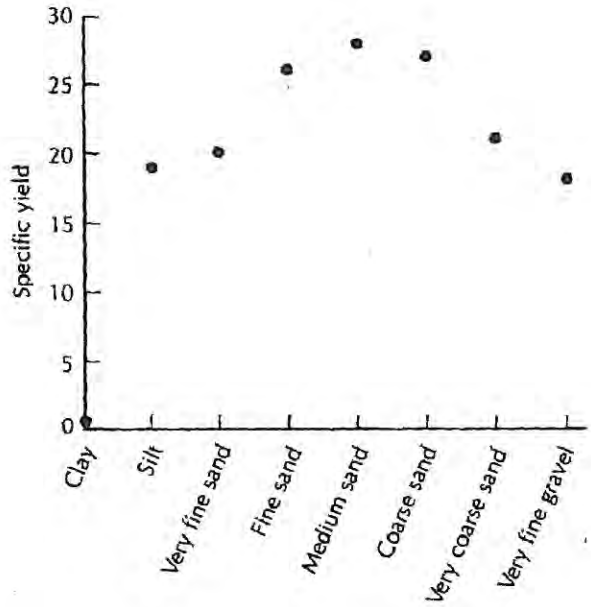
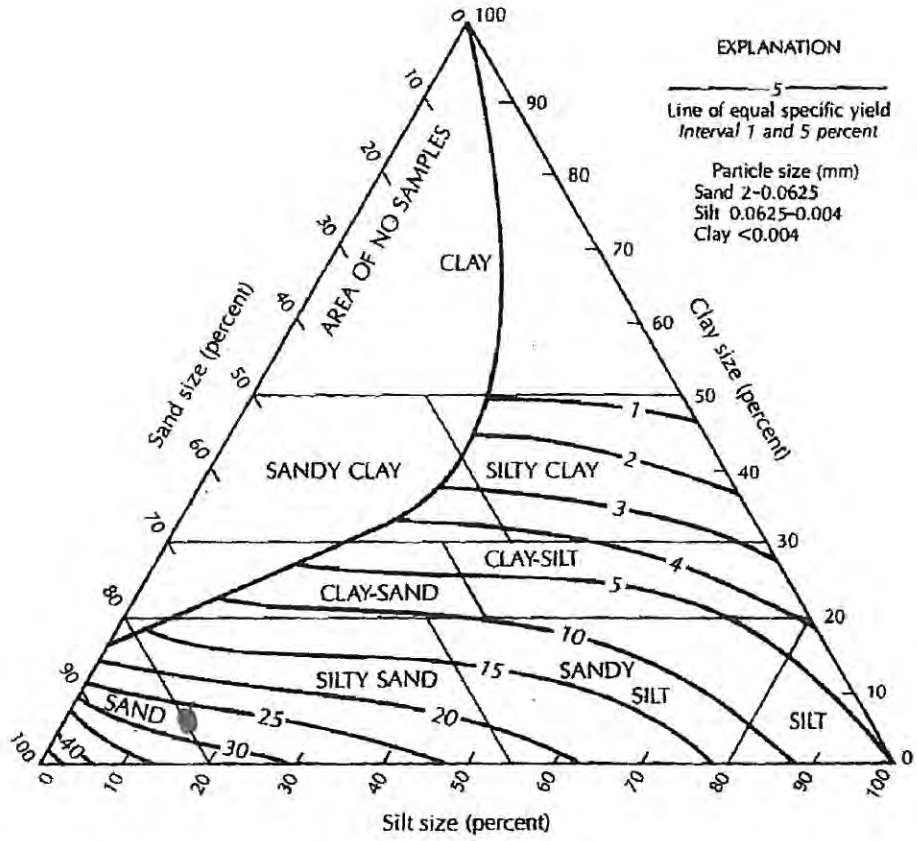
▶ FIGURE 3.10
Specific yield of sediments from the Humboldt River Valley of Nevada as a function of the median grain size. *Source: Data from P. Cohen,* U.S. Geological Survey Water-Supply Paper *1975, 1965.*



P2-47



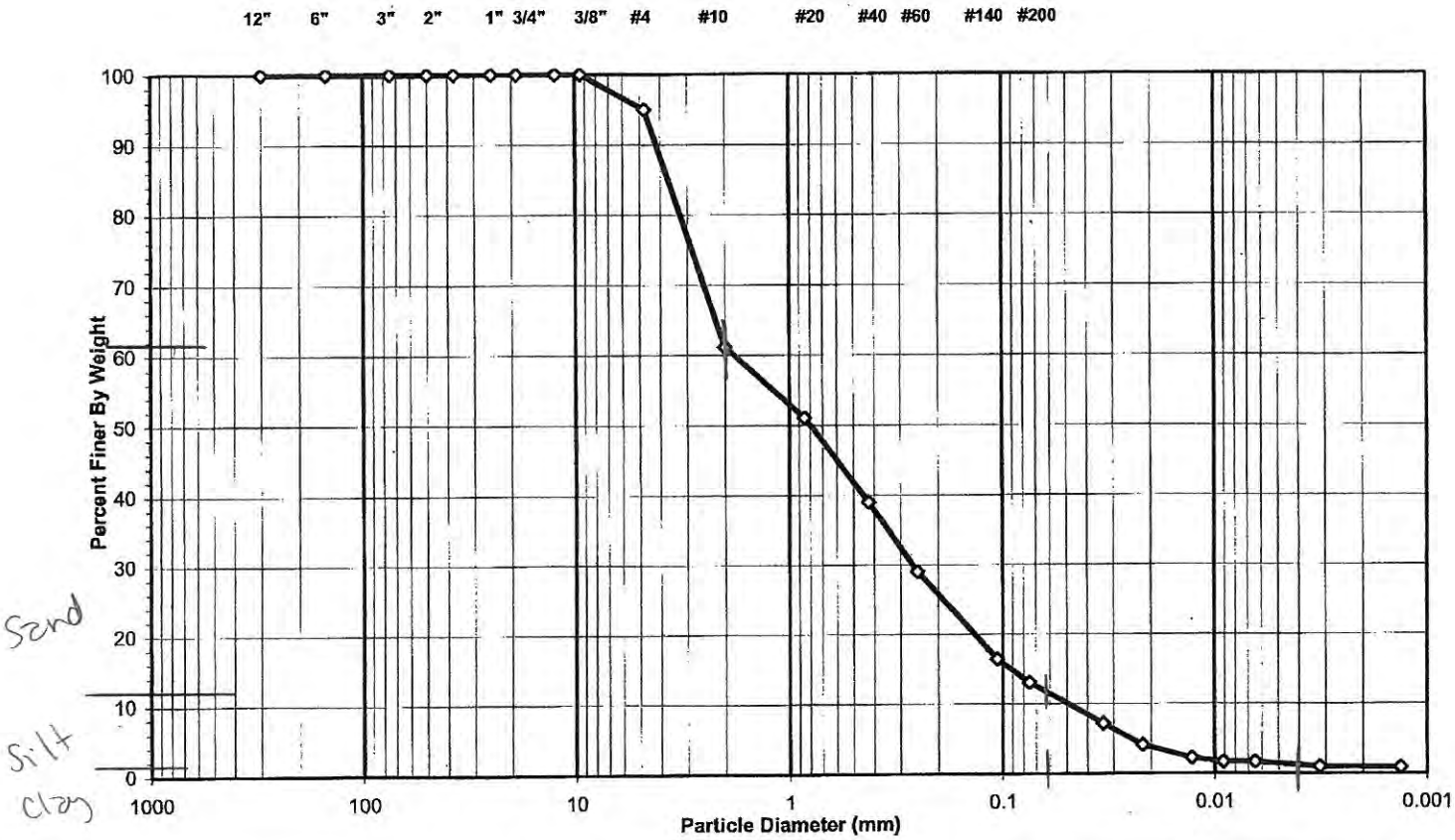
▲ FIGURE 3.11
Textural classification triangle for unconsolidated materials showing the relation between particle size and specific yield. *Source: A. I. Johnson,* U.S. Geological Survey Water-Supply Paper *1662–D, 1967.*

SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics
INTEGRITY IN TESTING

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-47
Client Reference	DAVIDSON CO. LF	Depth (ft)	15.0-18.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-02	Soil Color	**GRAY**

	SIEVE ANALYSIS			HYDROMETER	
USCS	**cobbles**	**gravel**	**sand**	**silt and clay fraction**	
USDA	**cobbles**	**gravel**	**sand**	**silt**	**clay**



USCS Summary

Sieve Sizes (mm)		Percentage		Corrected for Grave content
Greater Than #4	*Gravel*	5.05		
#4 To #200	*Sand*	81.89	50% Sand	80% Sand
Finer Than #200	*Silt & Clay*	13.05	10% Silt	16% Silt
			2% Clay	4% Clay

USCS Symbol ***SC-SM, TESTED***

USCS Classification ***SILTY, CLAYEY SAND***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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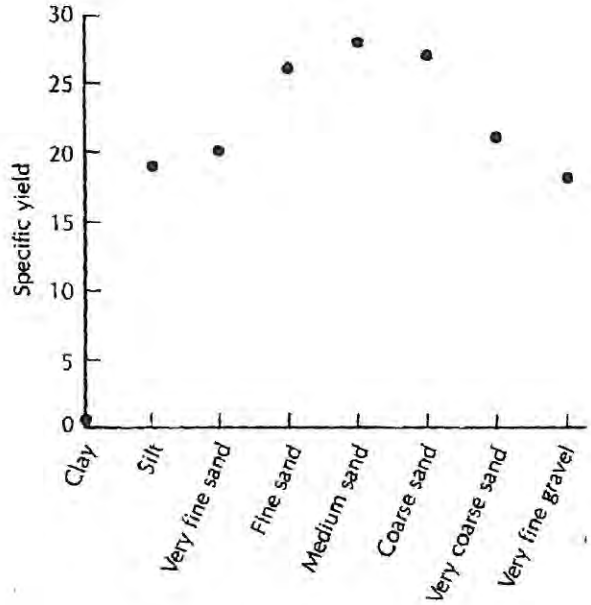
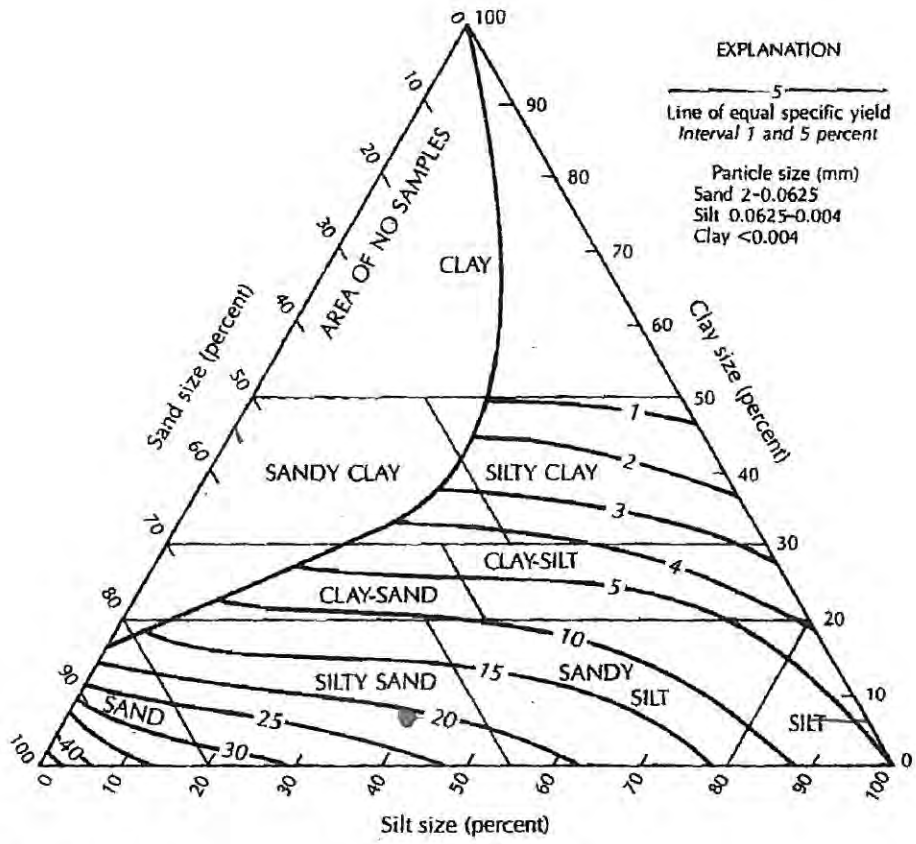
▶ FIGURE 3.10
Specific yield of sediments from the Humboldt River Valley of Nevada as a function of the median grain size. *Source: Data from P. Cohen,* U.S. Geological Survey Water-Supply Paper *1975, 1965.*



P2-48



▲ FIGURE 3.11
Textural classification triangle for unconsolidated materials showing the relation between particle size and specific yield. *Source: A. I. Johnson,* U.S. Geological Survey Water-Supply Paper *1662-D, 1967.*

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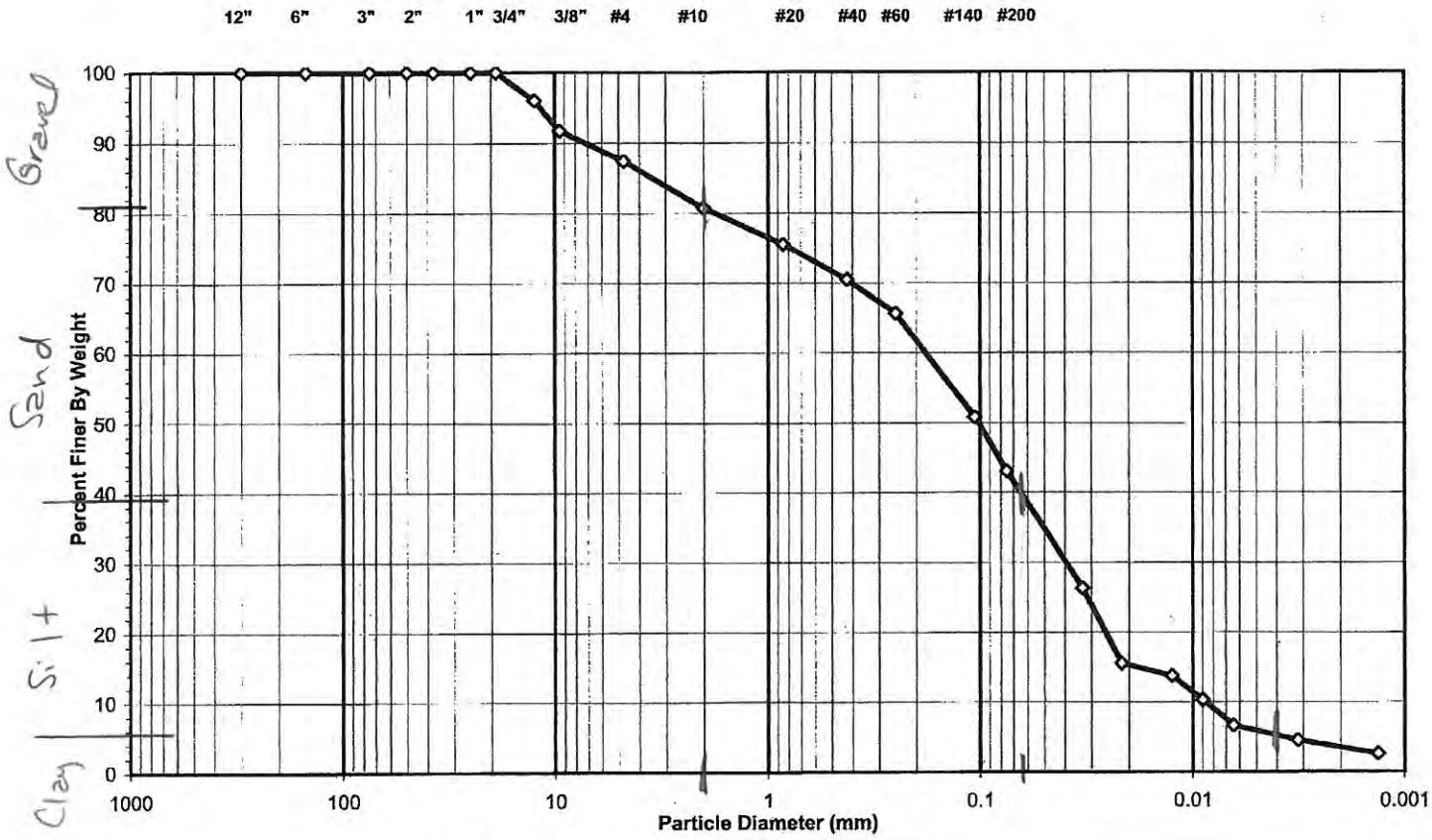
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-48
Client Reference	DAVIDSON CO. LF	Depth (ft)	25.0-30.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-03	Soil Color	**BROWN**

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	12.57
#4 To #200	*Sand*	44.42
Finer Than #200	*Silt & Clay*	43.01

Sand 43%
Silt 33%
Clay 6%

Corrected for gravel
Sand = 53%
Silt = 40%
Clay = 7%

USCS Symbol ***SM, TESTED***

USCS Classification ***SILTY SAND***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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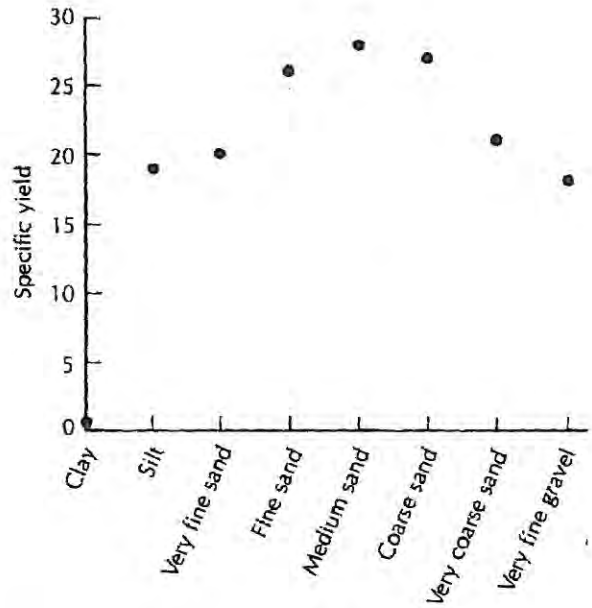
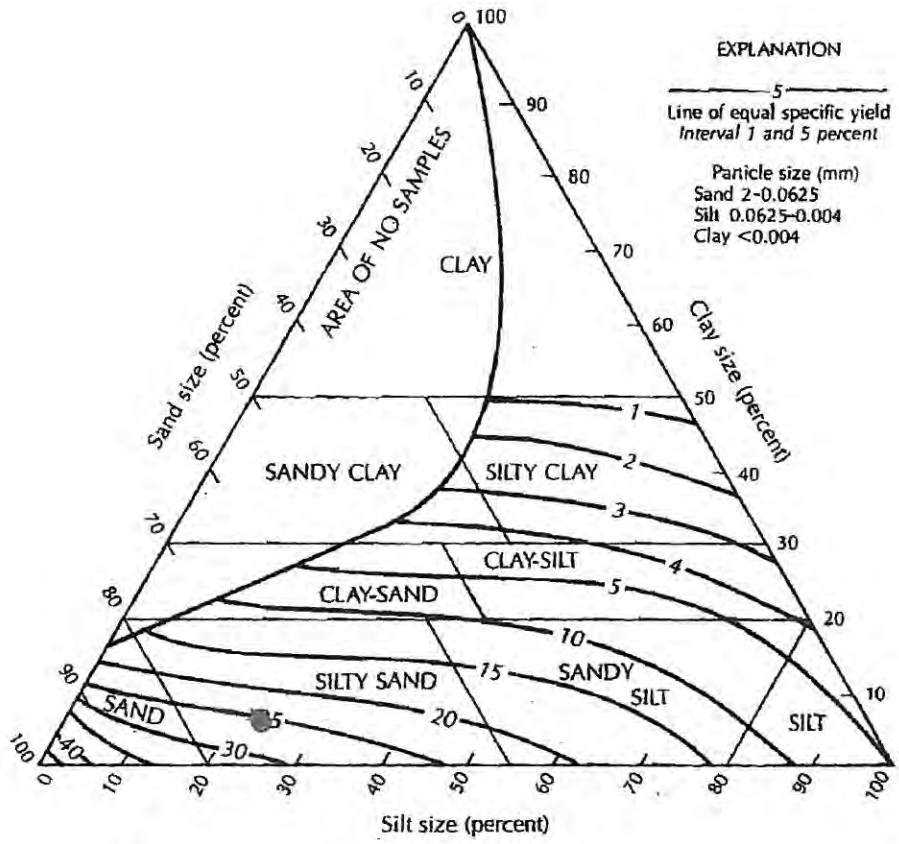


▶ FIGURE 3.10
Specific yield of sediments from the Humboldt River Valley of Nevada as a function of the median grain size. *Source: Data from P. Cohen,* U.S. Geological Survey Water-Supply Paper *1975, 1965.*

P2-51



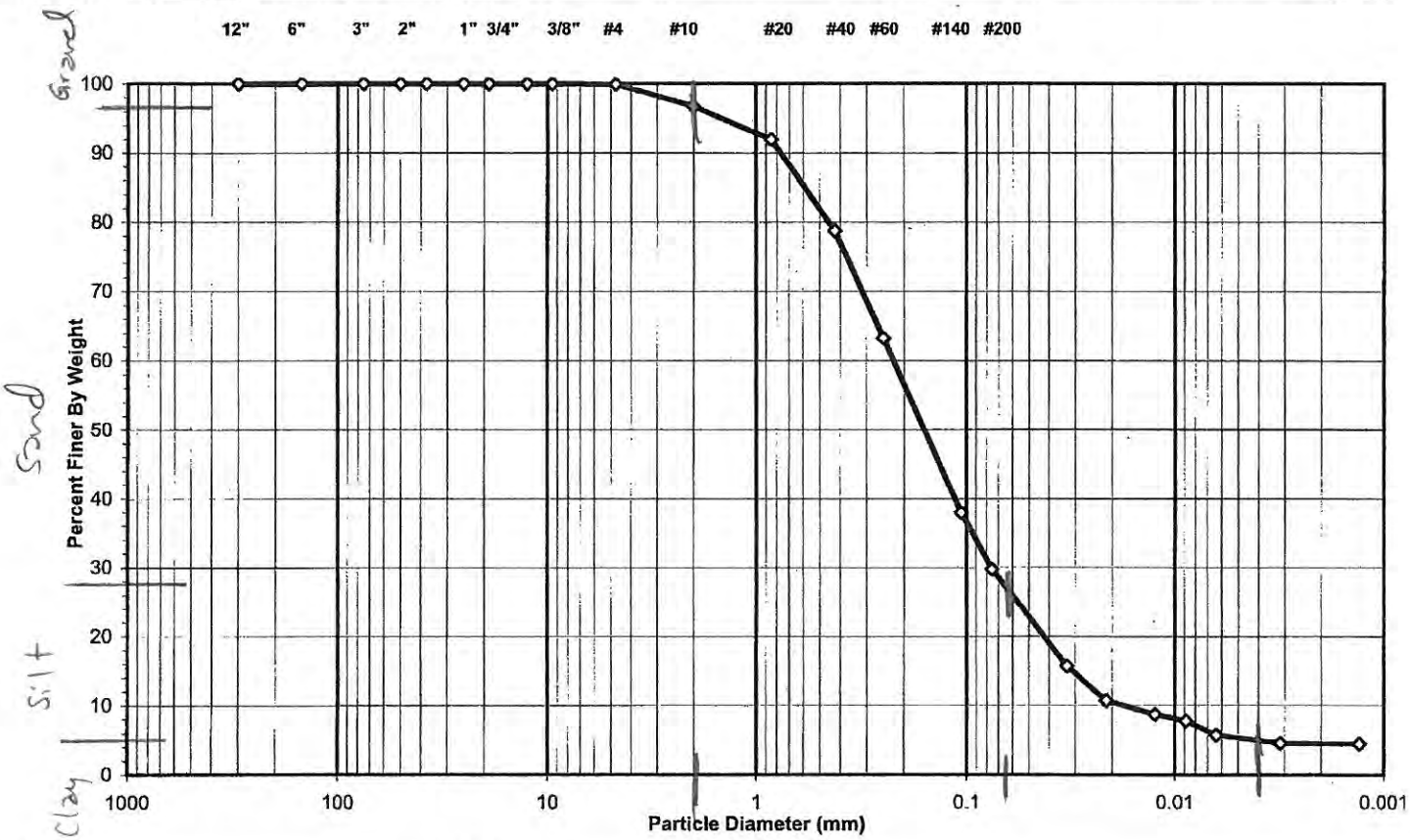
▲ FIGURE 3.11
Textural classification triangle for unconsolidated materials showing the relation between particle size and specific yield. *Source: A. I. Johnson,* U.S. Geological Survey Water-Supply Paper *1662–D, 1967.*

SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics
INTEGRITY IN TESTING

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-51
Client Reference	DAVIDSON CO. LF	Depth (ft)	10.0-14.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-04	Soil Color	**GRAY BROWN**

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.09
#4 To #200	*Sand*	70.24
Finer Than #200	*Silt & Clay*	29.68

Sand 68%
Silt 22%
Clay 6%

corrected for gravel
Sand = 70%
Silt = 23%
Clay = 6%

USCS Symbol ***SM, TESTED***

USCS Classification ***SILTY SAND***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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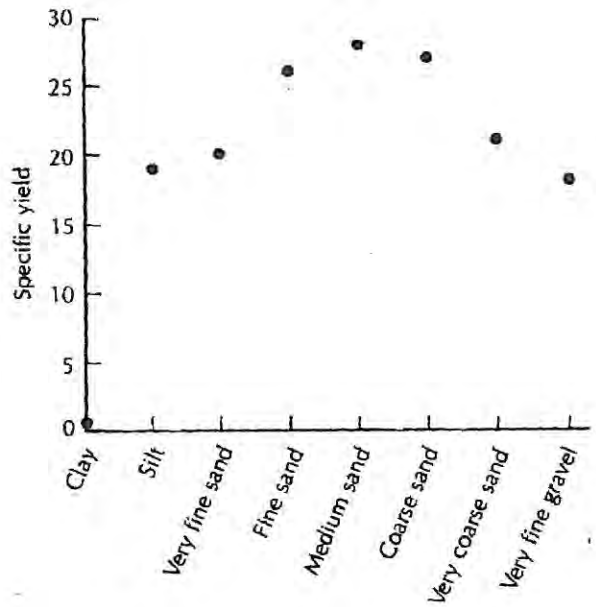
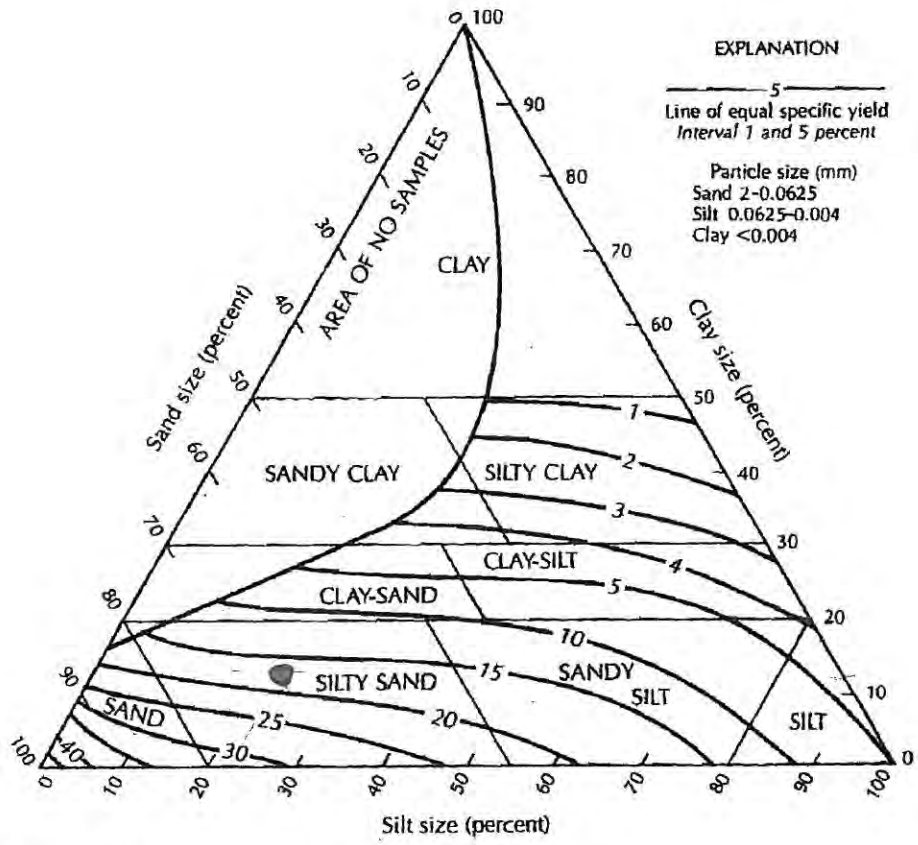


▶ FIGURE 3.10
Specific yield of sediments from the Humboldt River Valley of Nevada as a function of the median grain size. *Source: Data from P. Cohen,* U.S. Geological Survey Water-Supply Paper *1975, 1965.*

P2-52



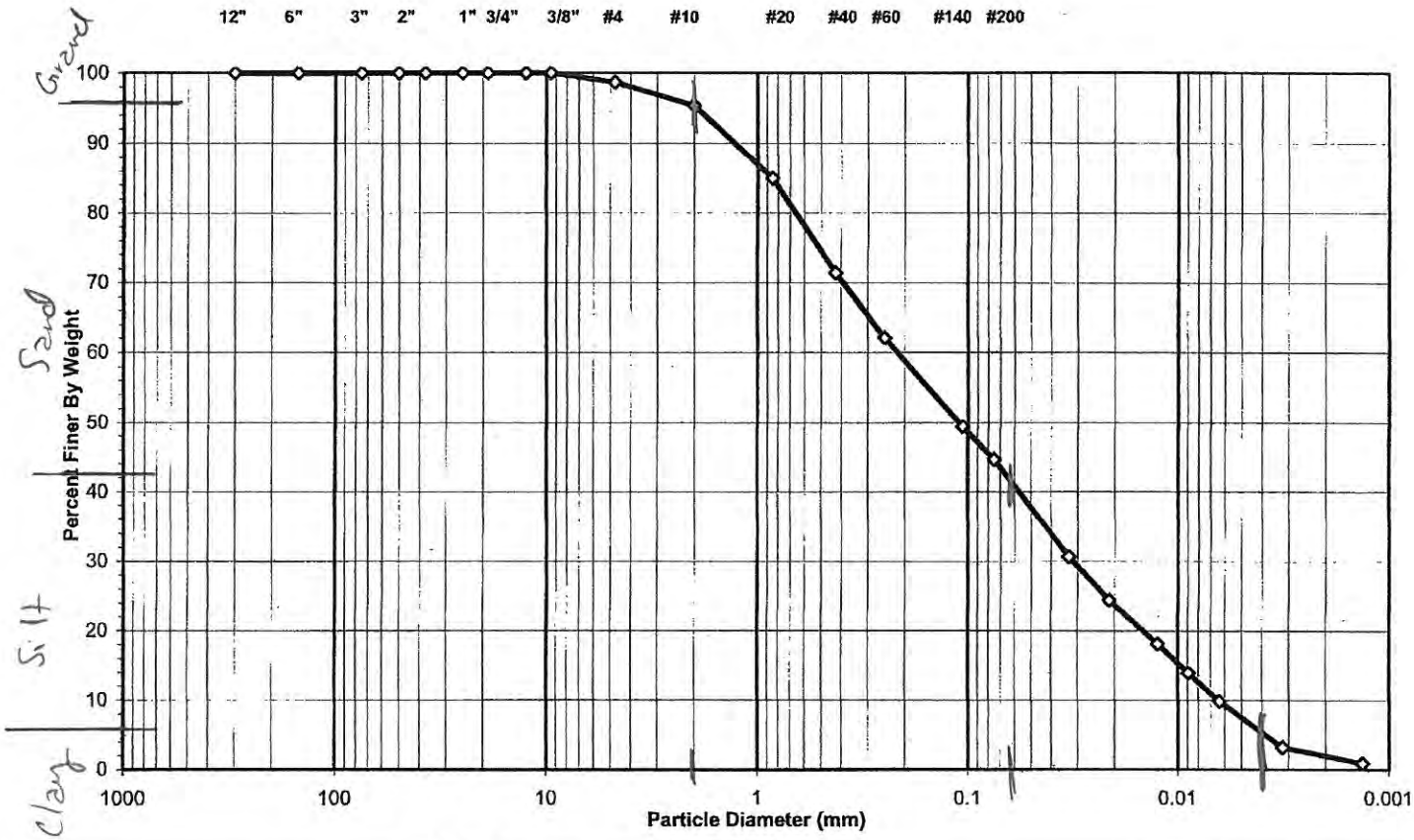
▲ FIGURE 3.11
Textural classification triangle for unconsolidated materials showing the relation between particle size and specific yield. *Source: A. I. Johnson,* U.S. Geological Survey Water-Supply Paper *1662–D, 1967.*

SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics
INTEGRITY IN TESTING

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-53
Client Reference	DAVIDSON CO. LF	Depth (ft)	15.0-18.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-06	Soil Color	**BROWN**

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage		
				Corrected for gravel
Greater Than #4	*Gravel*	1.34		
#4 To #200	*Sand*	54.07	Sand 54%	Sand = 56%
Finer Than #200	*Silt & Clay*	44.59	Silt 36%	Silt = 38%
			Clay 6%	Clay = 6%

USCS Symbol ***SM, TESTED***

USCS Classification ***SILTY SAND***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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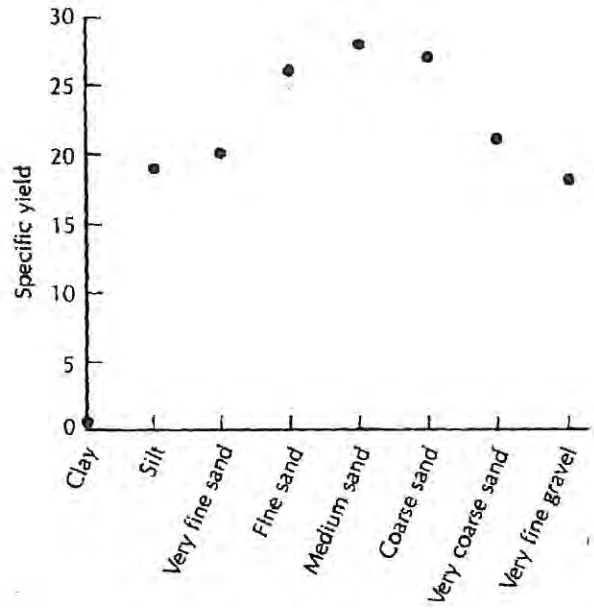
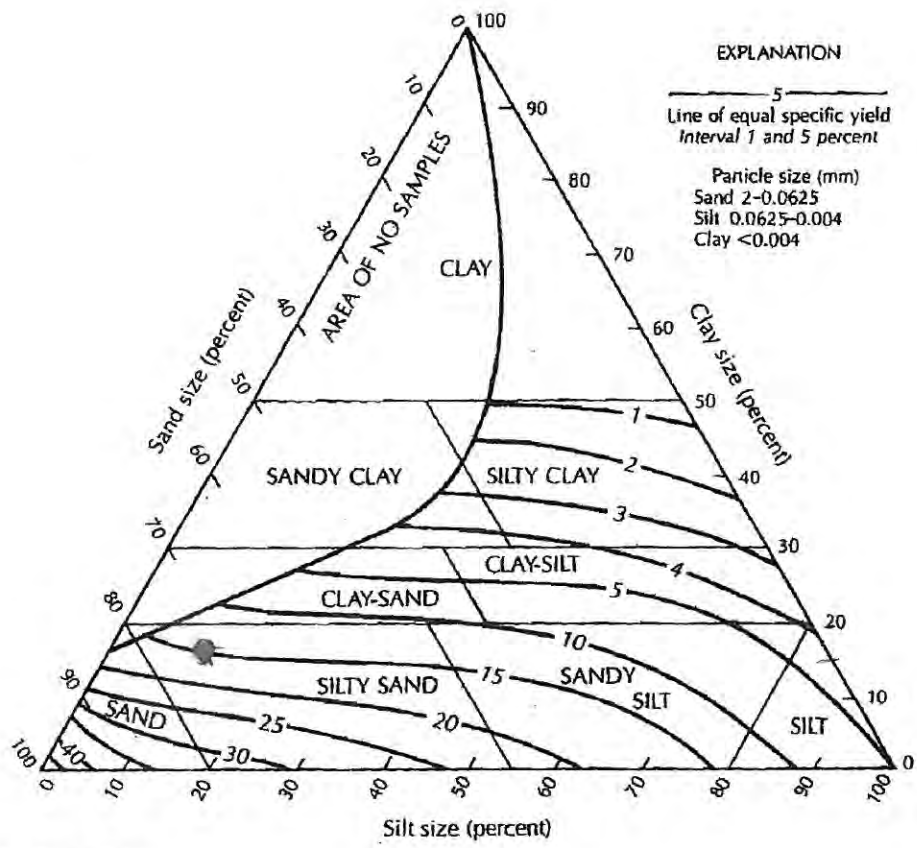
▶ FIGURE 3.10
Specific yield of sediments from the Humboldt River Valley of Nevada as a function of the median grain size. *Source: Data from P. Cohen,* U.S. Geological Survey Water-Supply Paper *1975, 1965.*



P2-55



▲ FIGURE 3.11
Textural classification triangle for unconsolidated materials showing the relation between particle size and specific yield. *Source: A. I. Johnson,* U.S. Geological Survey Water-Supply Paper *1662–D, 1967.*

geotechnics
INTEGRITY IN TESTING

SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-55
Client Reference	DAVIDSON CO. LF.	Depth (ft)	5.0-6.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-08	Soil Color	**BROWN**

	SIEVE ANALYSIS		HYDROMETER
USCS	gravel	sand	silt and clay

USCS Symbol ***SC-SM, TESTED***

USCS Classification ***SILTY, CLAYEY SAND***

Sand = 50%
Silt = 11%
Clay = 8%

Corrected for gravel
Sand = 73%
Silt = 16%
Clay = 11%

Tested By TMS Date 12/3/2010 Checked By JBD Date 12-6-10

 DCN: CT-S3C DATE 6-25-98 REVISION: 2 *\\SERVER\Data Drive\2010 PROJECTS\2010-774 R.S.G\[2010-774-01-08 SIEVON REV 4.XLS]Sheet1*

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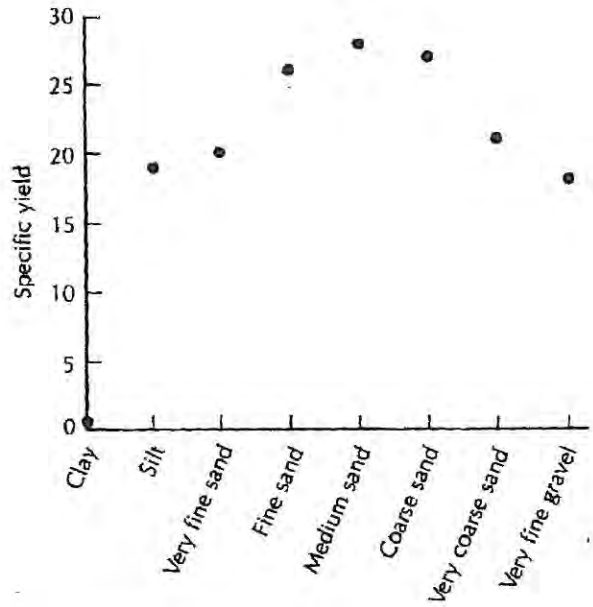
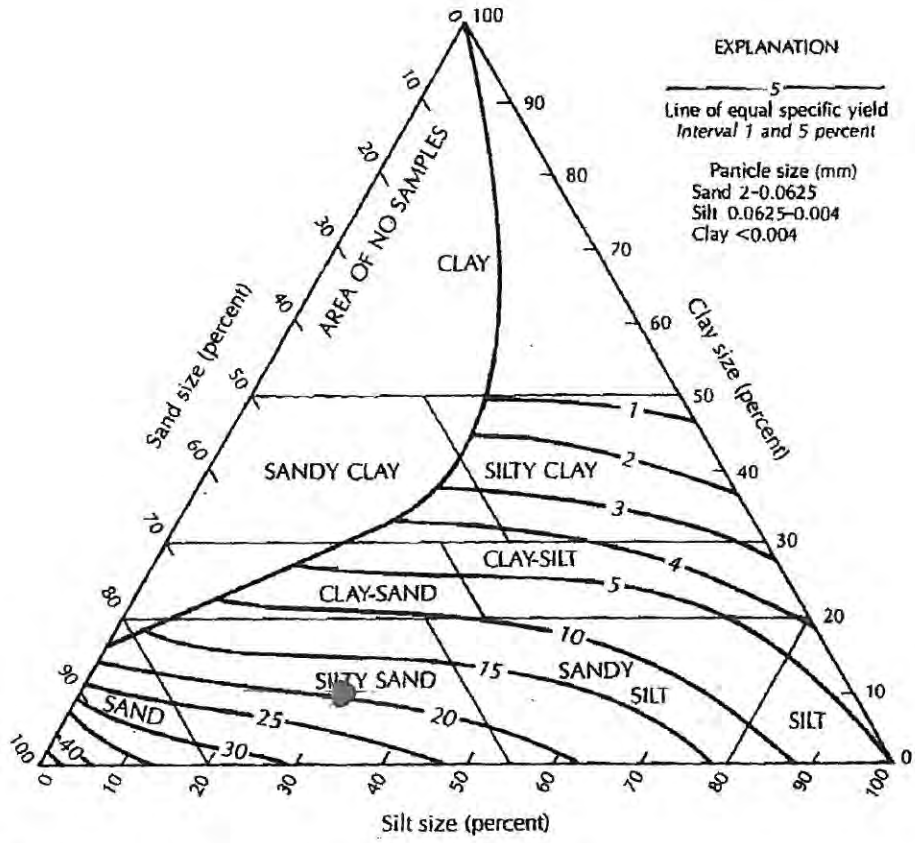
▶ FIGURE 3.10
Specific yield of sediments from the Humboldt River Valley of Nevada as a function of the median grain size. *Source: Data from P. Cohen,* U.S. Geological Survey Water-Supply Paper *1975, 1965.*



P2-56



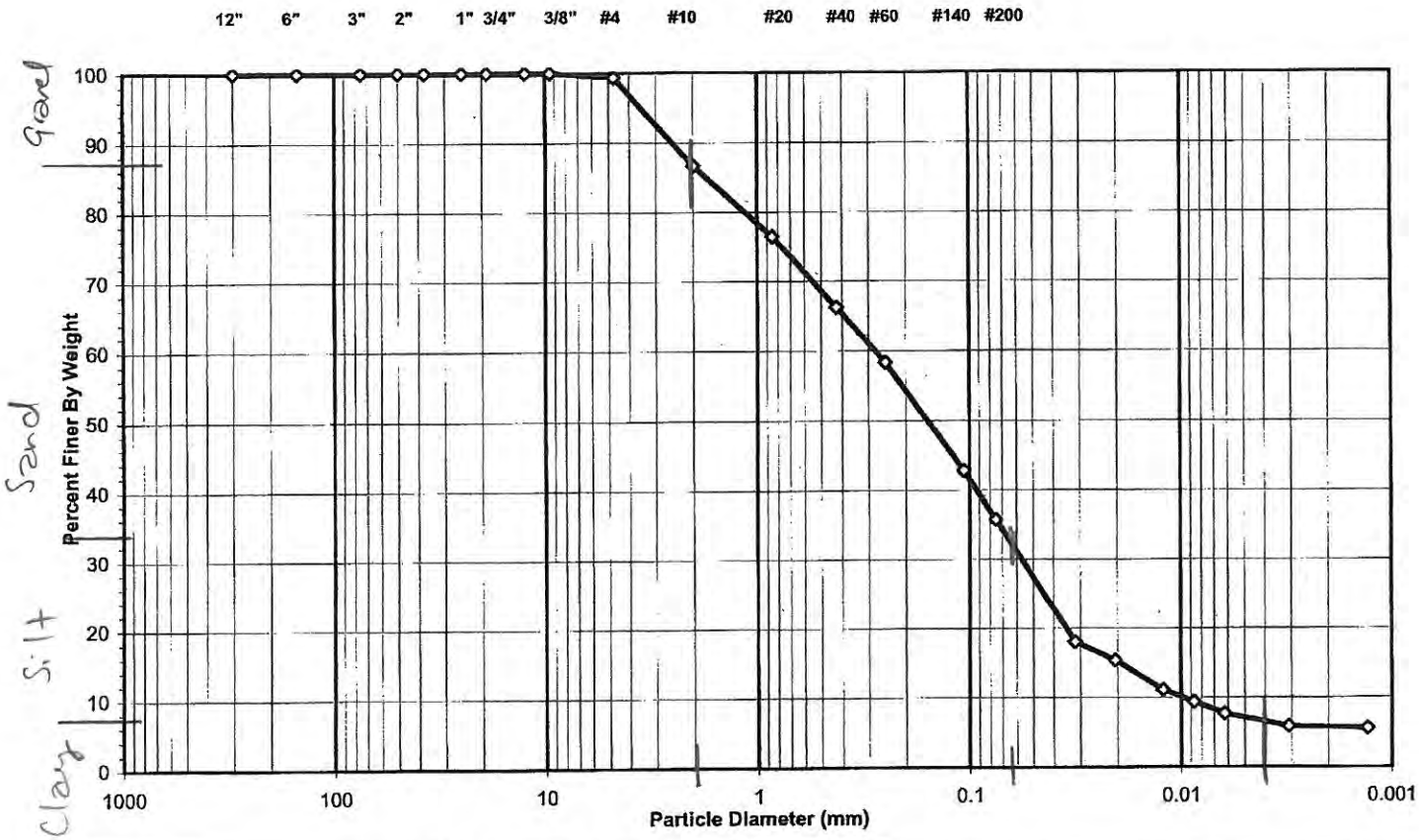
▲ FIGURE 3.11
Textural classification triangle for unconsolidated materials showing the relation between particle size and specific yield. *Source: A. I. Johnson,* U.S. Geological Survey Water-Supply Paper *1662–D, 1967.*

geotechnics
INTEGRITY IN TESTING

SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-56
Client Reference	DAVIDSON CO. LF	Depth (ft)	7.5-9.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-09	Soil Color	**GRAY**

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.64
#4 To #200	*Sand*	63.68
Finer Than #200	*Silt & Clay*	35.69

Sand 53%
Silt 26%
Clay 8%

Corrected for gravel
Sand = 61%
Silt = 30%
Clay = 9%

USCS Symbol ***SM, TESTED (NON PLASTIC FINES)***

USCS Classification ***SILTY SAND***

DCN: CT-S3OR DATE: 2/20/08 REVISION: 5

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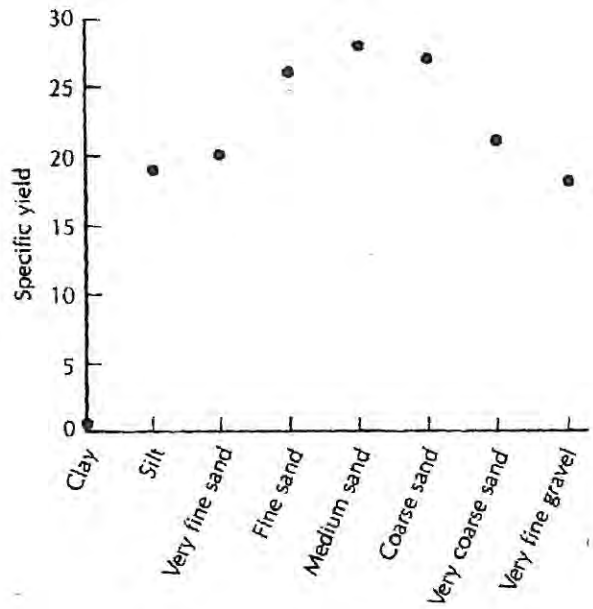
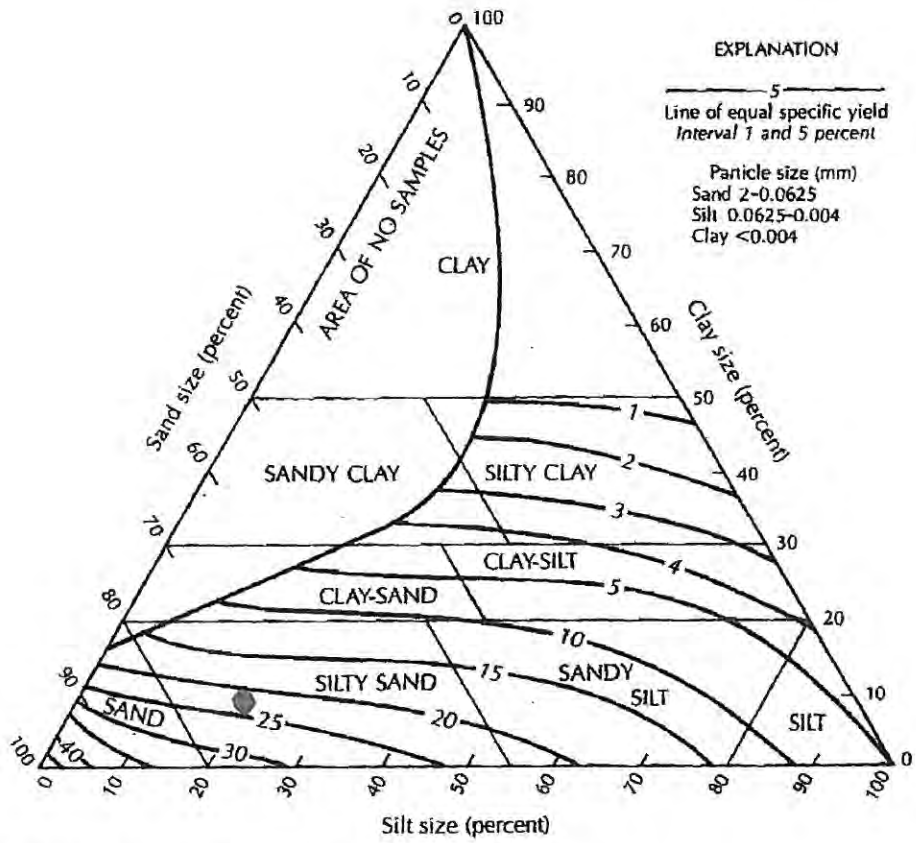
▶ FIGURE 3.10
Specific yield of sediments from the Humboldt River Valley of Nevada as a function of the median grain size. *Source: Data from P. Cohen,* U.S. Geological Survey Water-Supply Paper *1975, 1965.*



P2-57



▲ FIGURE 3.11
Textural classification triangle for unconsolidated materials showing the relation between particle size and specific yield. *Source: A. I. Johnson,* U.S. Geological Survey Water-Supply Paper *1662–D, 1967.*

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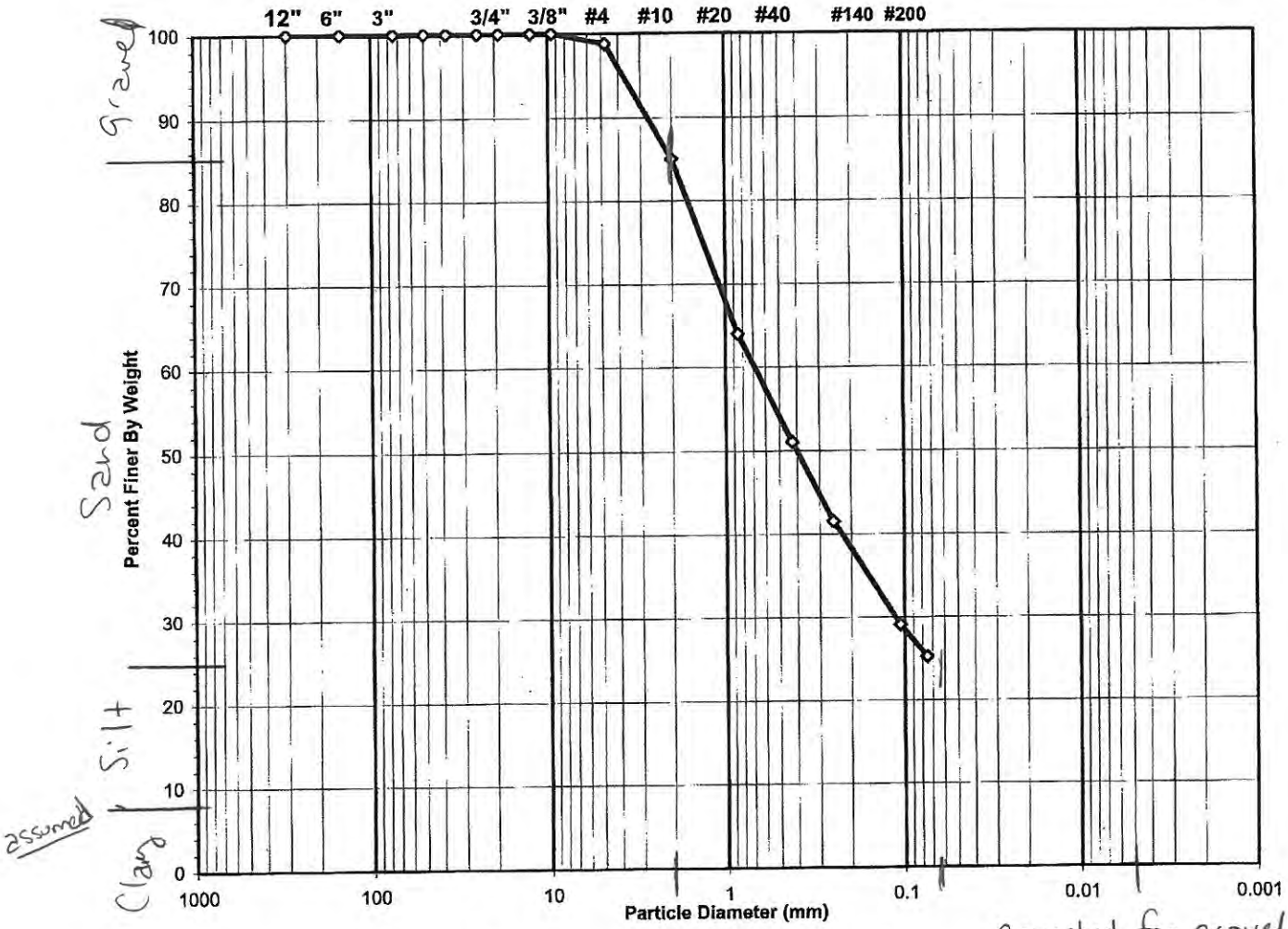
SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-57
Client Reference	DAVIDSON CO. LF.	Depth (ft)	15.0-18.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-10	Soil Color	**BROWN**

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol ***SM, TESTED***

USCS Classification ***SILTY SAND***

Sand = 60%
Assumed Silt = 17%
Assumed Clay = 8%

Corrected for gravel
Sand = 71%
Silt = 20%
Clay = 9%

Tested By TMS Date 12/3/2010 Checked By JAD Date 12-7-10

DCN: CT-S3C DATE 6-25-98 REVISION: 2 \\SERVER\Data Drive\2010 PROJECTS\2010-774 R.S.G\2010-774-01-10 SIEVON REV 4.XLS]Sheet1

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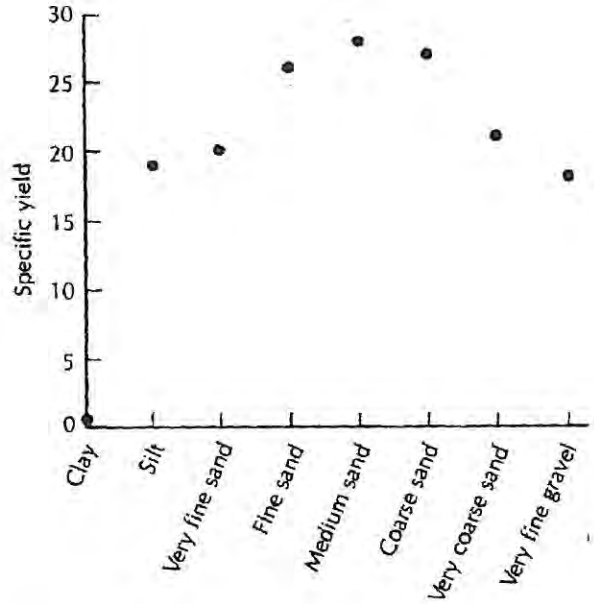
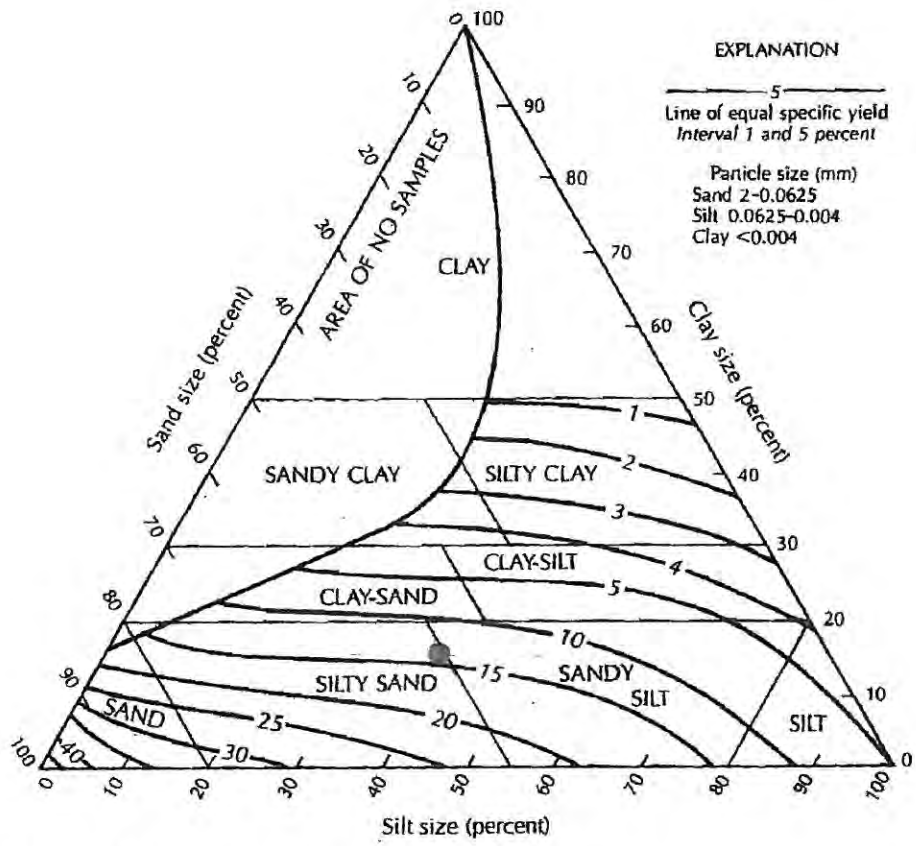


▶ FIGURE 3.10
Specific yield of sediments from the Humboldt River Valley of Nevada as a function of the median grain size. *Source: Data from P. Cohen,* U.S. Geological Survey Water-Supply Paper *1975, 1965.*

P2-58



▲ FIGURE 3.11
Textural classification triangle for unconsolidated materials showing the relation between particle size and specific yield. *Source: A. I. Johnson,* U.S. Geological Survey Water-Supply Paper *1662–D, 1967.*

SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

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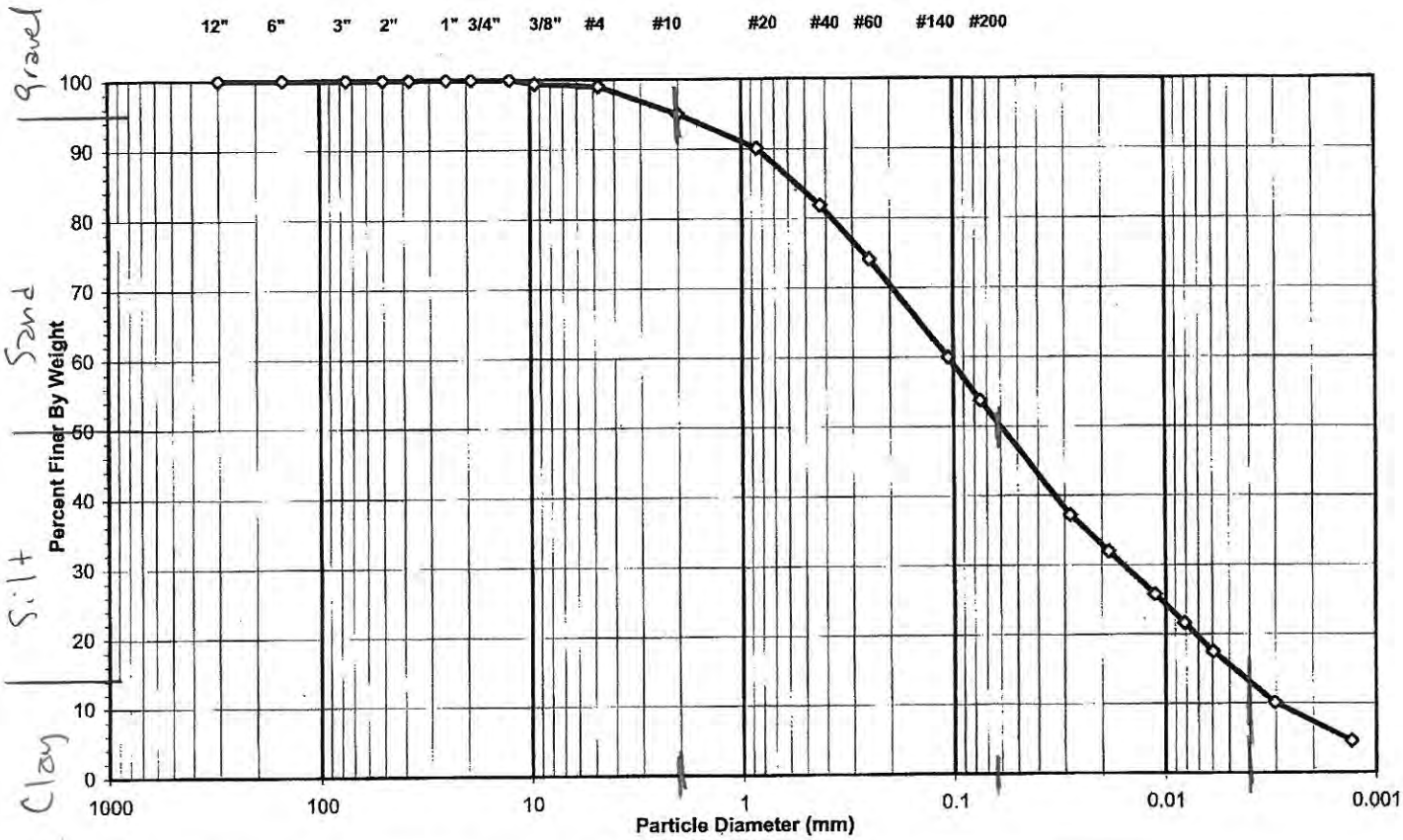
Client	R.S.G. & ASSOCIATES	Boring No.	PZ-58
Client Reference	DAVIDSON CO. LF	Depth (ft)	30-32
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-11	Soil Color	**TAN**

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



Sieve Sizes (mm)	USCS Summary	Percentage		Corrected for gravel
Greater Than #4	*Gravel*	0.98		
#4 To #200	*Sand*	45.26	Sand = 45%	Sand = 47%
Finer Than #200	*Silt & Clay*	53.76	Silt = 36%	Silt = 38%
			Clay = 14%	Clay = 15%

USCS Symbol ***ML, TESTED***

USCS Classification ***SANDY SILT***

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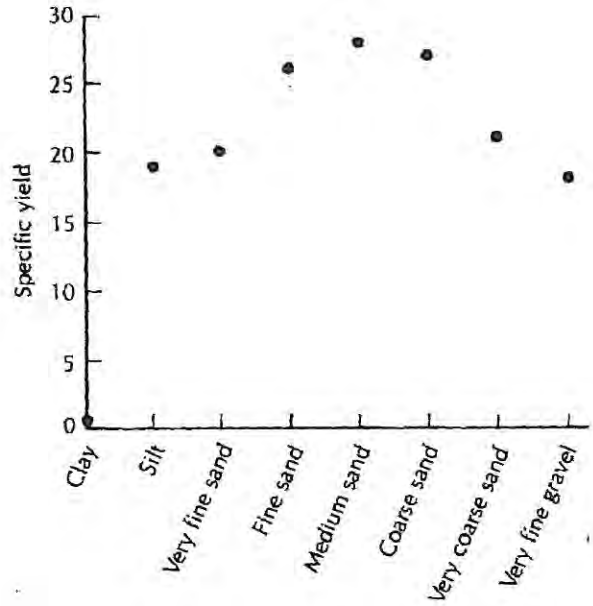
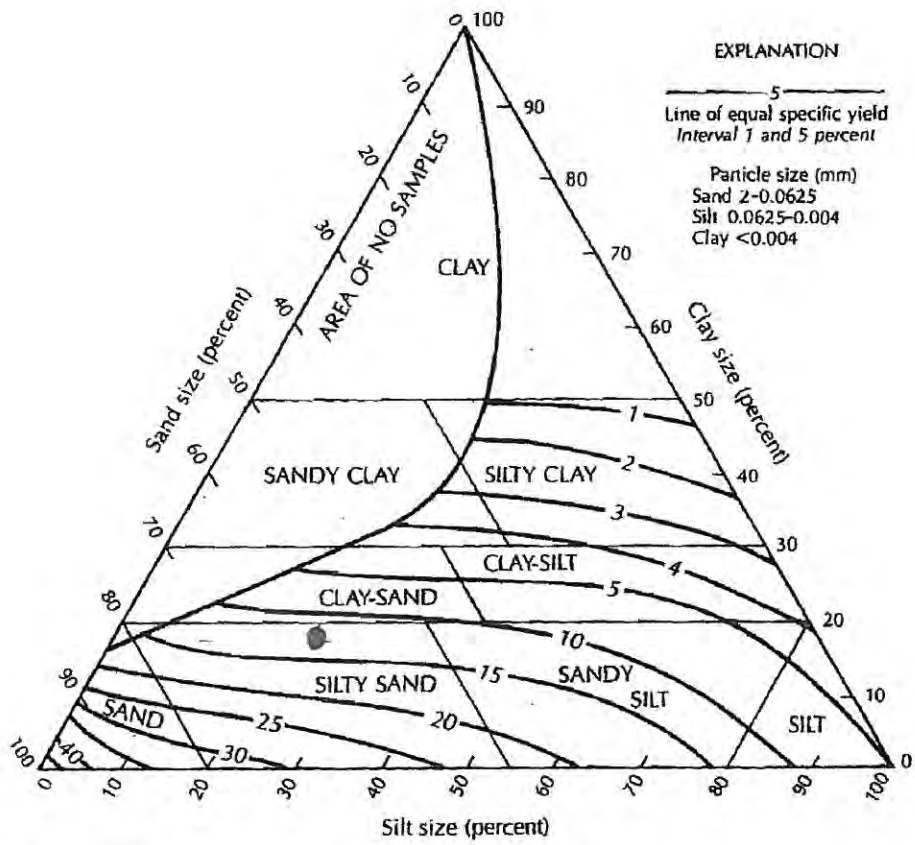
▶ FIGURE 3.10
Specific yield of sediments from the Humboldt River Valley of Nevada as a function of the median grain size. *Source: Data from P. Cohen,* U.S. Geological Survey Water-Supply Paper *1975, 1965.*



P2-59



▲ FIGURE 3.11
Textural classification triangle for unconsolidated materials showing the relation between particle size and specific yield. *Source: A. I. Johnson,* U.S. Geological Survey Water-Supply Paper *1662–D, 1967.*

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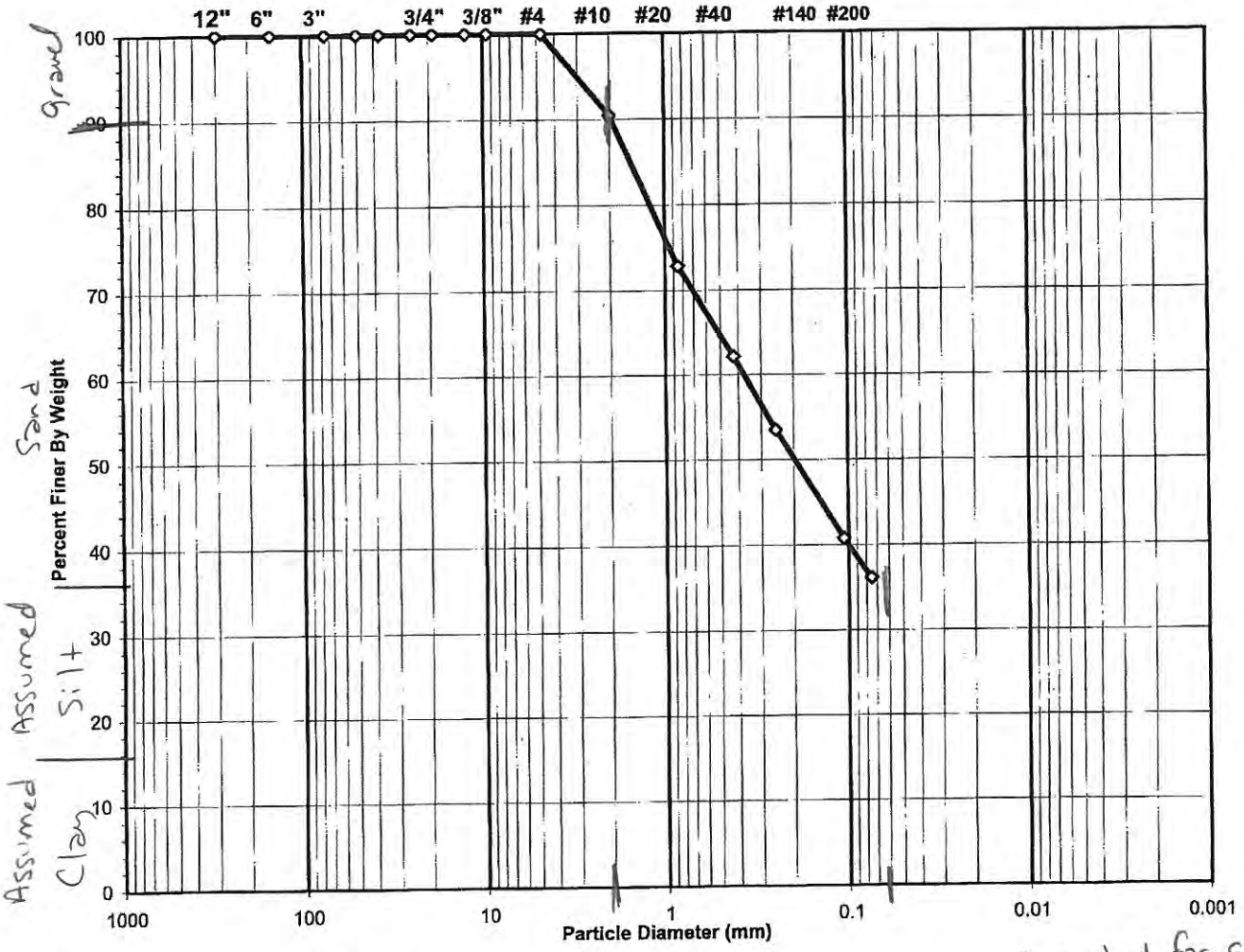
INTEGRITY IN TESTING

SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-59
Client Reference	DAVIDSON CO. LF.	Depth (ft)	15.0-20.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-12	Soil Color	**BROWN**

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol ***SM, TESTED***

USCS Classification ***SILTY SAND***

Sand = 54%
Silt = 20%
Clay = 16%

Corrected for gravel
Sand = 60%
Silt = 22%
Clay = 18%

Tested By TMS Date 12/3/2010 Checked By JBB Date 12-7-10

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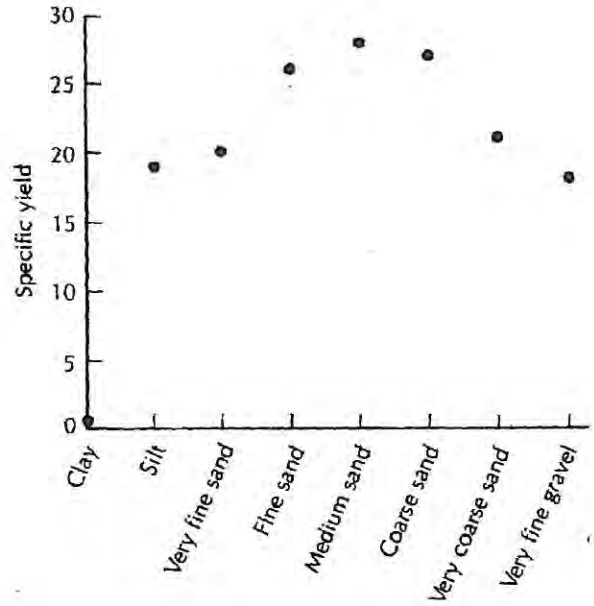
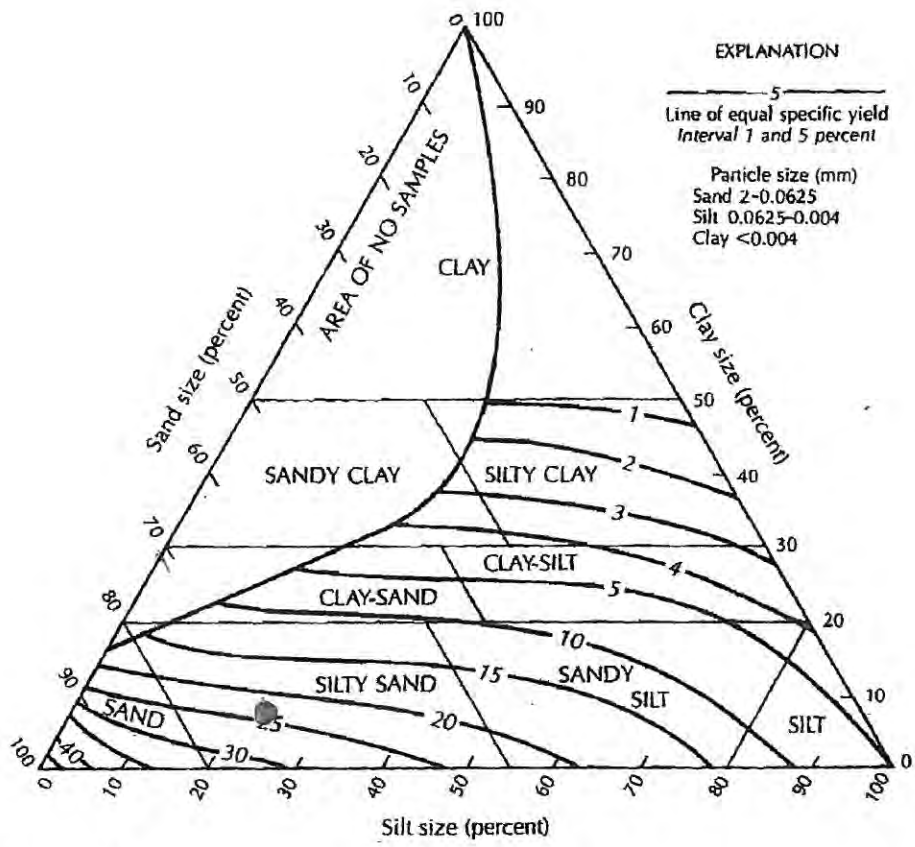
▶ FIGURE 3.10
Specific yield of sediments from the Humboldt River Valley of Nevada as a function of the median grain size. *Source: Data from P. Cohen,* U.S. Geological Survey Water-Supply Paper *1975, 1965.*



P2-60



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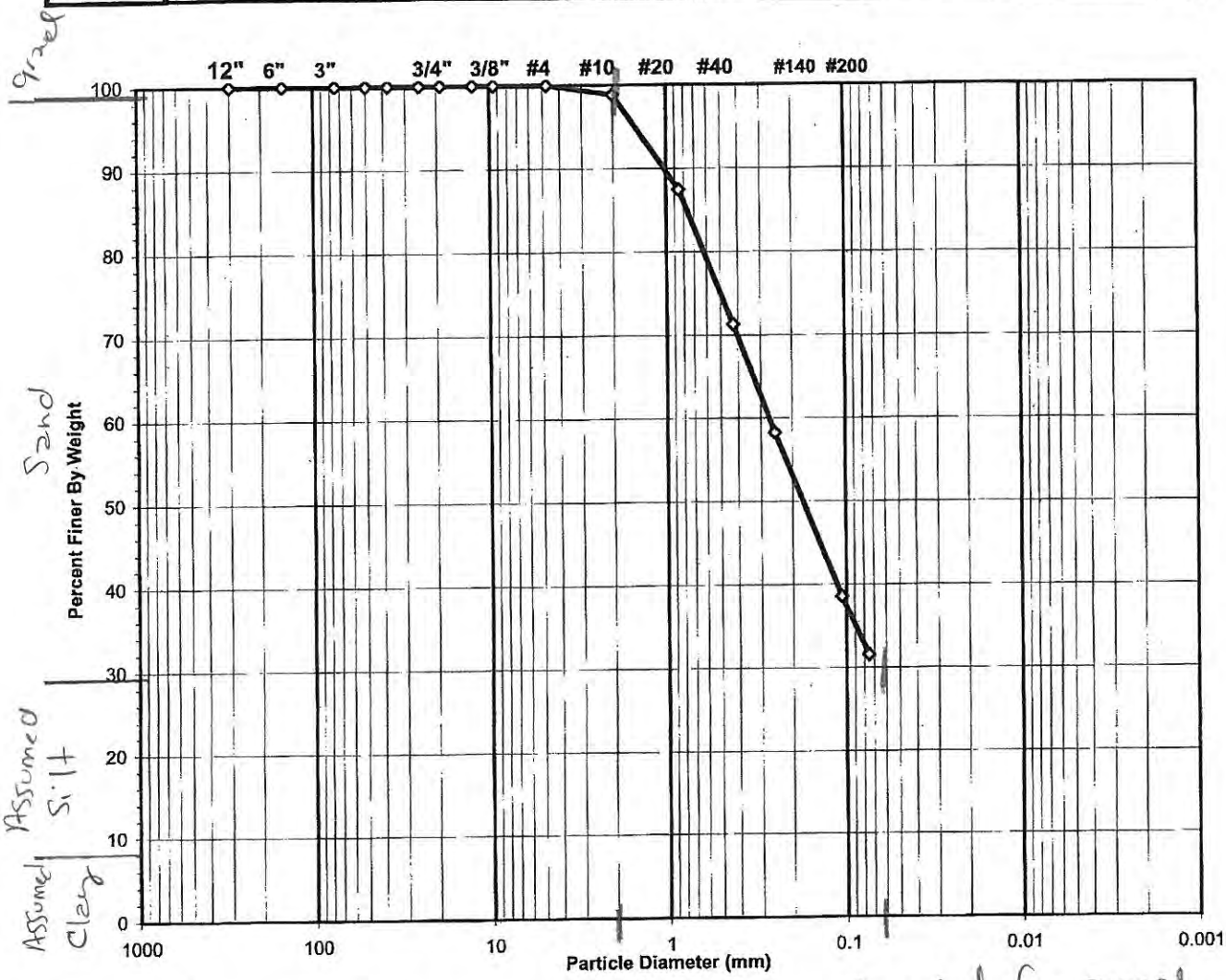
SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-60
Client Reference	DAVIDSON CO. LF.	Depth (ft)	5.0-7.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-13	Soil Color	**GRAY**

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol ***SM, TESTED***

USCS Classification ***SILTY SAND***

Sand = 70%
Silt = 21%
Clay = 8%

Corrected for gravel
Sand = 71%
Silt = 21%
Clay = 8%

Tested By TMS Date 12/3/2010 Checked By JBD Date 12.07.10

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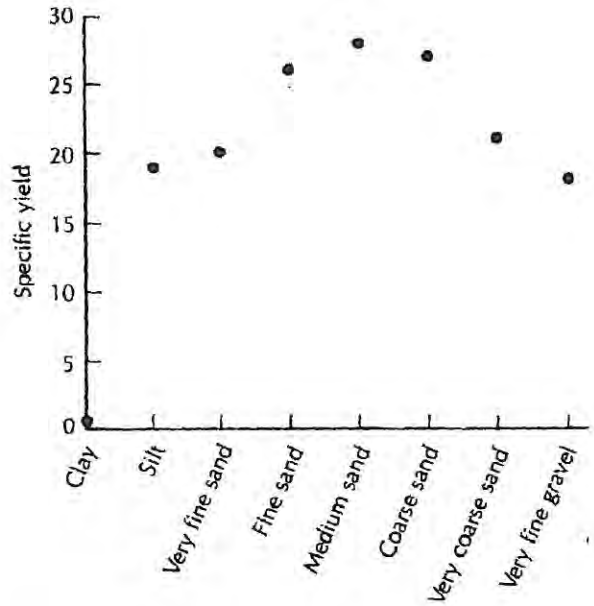
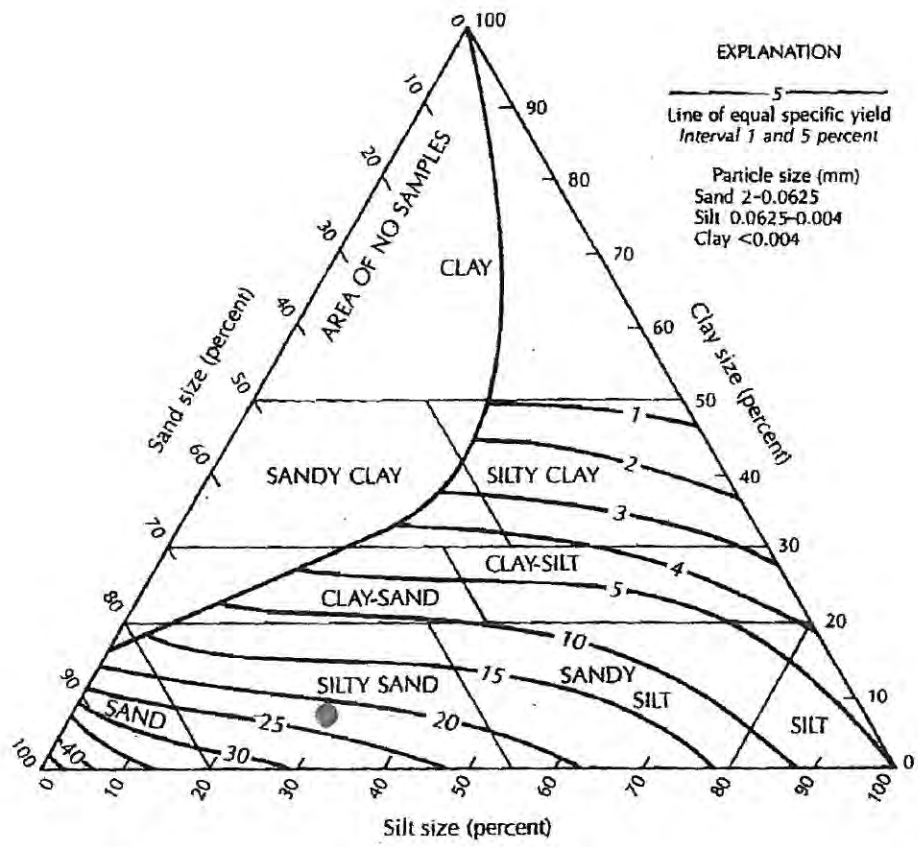
▶ FIGURE 3.10
Specific yield of sediments from the Humboldt River Valley of Nevada as a function of the median grain size. *Source: Data from P. Cohen,* U.S. Geological Survey Water-Supply Paper *1975, 1965.*



P2-62



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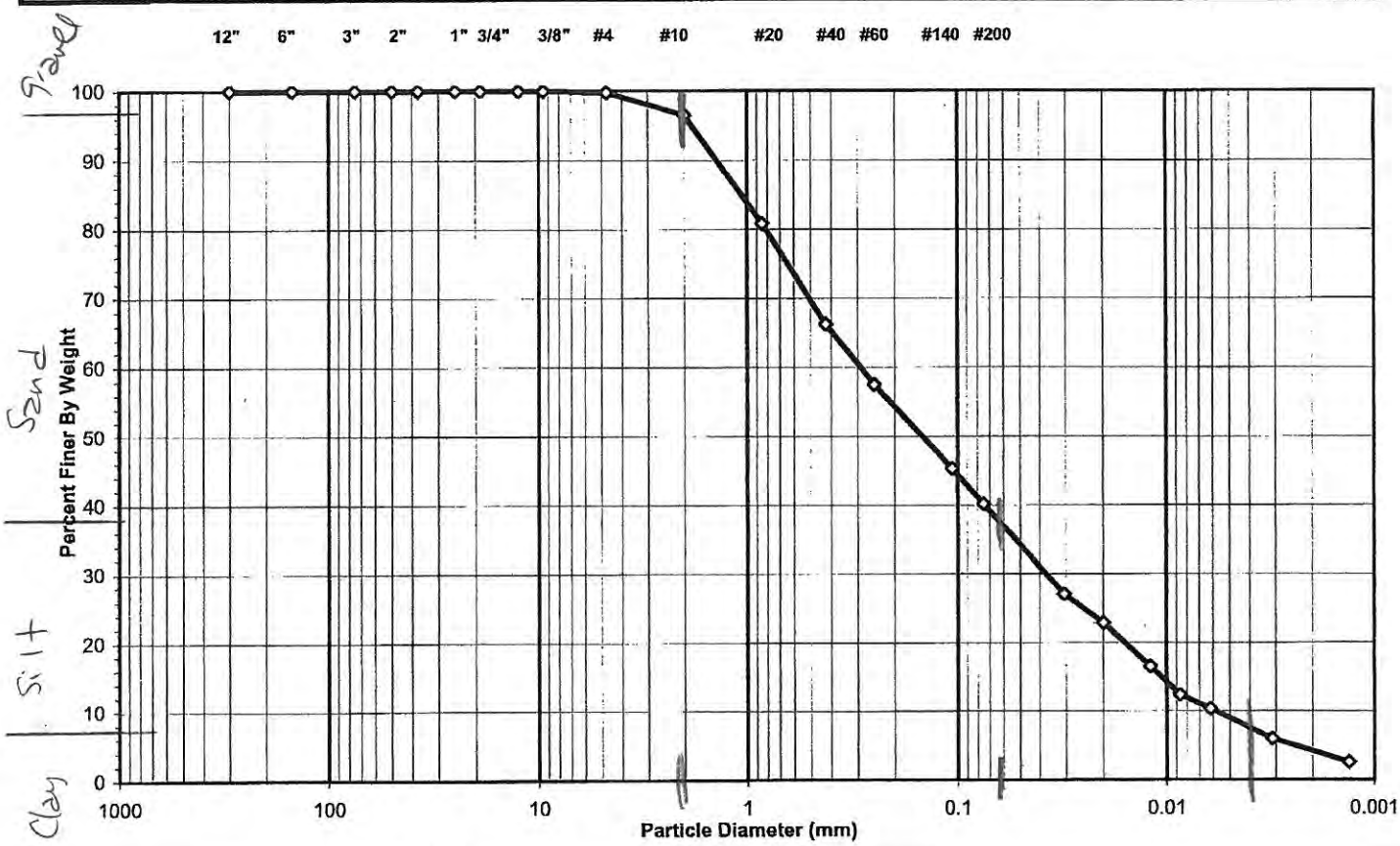
Textural classification triangle for unconsolidated materials showing the relation between particle size and specific yield. *Source: A. I. Johnson,* U.S. Geological Survey Water-Supply Paper *1662–D, 1967.*

SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics
INTEGRITY IN TESTING

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-62
Client Reference	DAVIDSON CO. LF	Depth (ft)	20.0-25.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-15	Soil Color	**BROWN GRAY**

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage		Corrected for gravel
Greater Than #4	*Gravel*	0.19	Sand 59%	Sand = 61%
#4 To #200	*Sand*	59.68	Silt = 30%	Silt = 31%
Finer Than #200	*Silt & Clay*	40.12	Clay = 8%	Clay = 8%

USCS Symbol *SM, TESTED*

USCS Classification *SILTY SAND*

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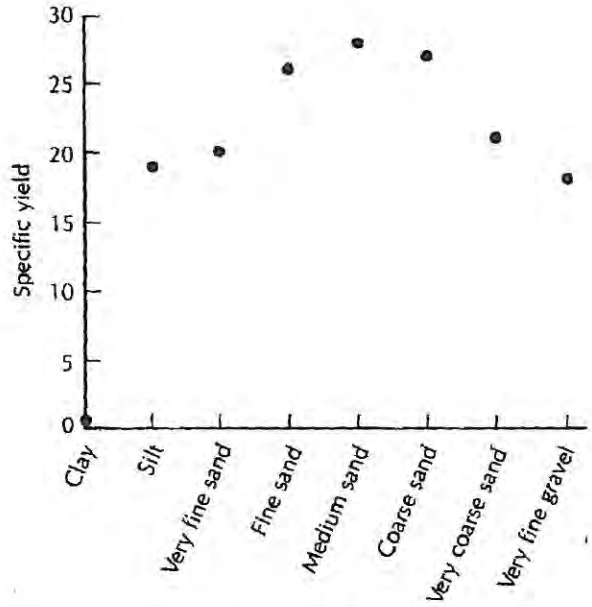
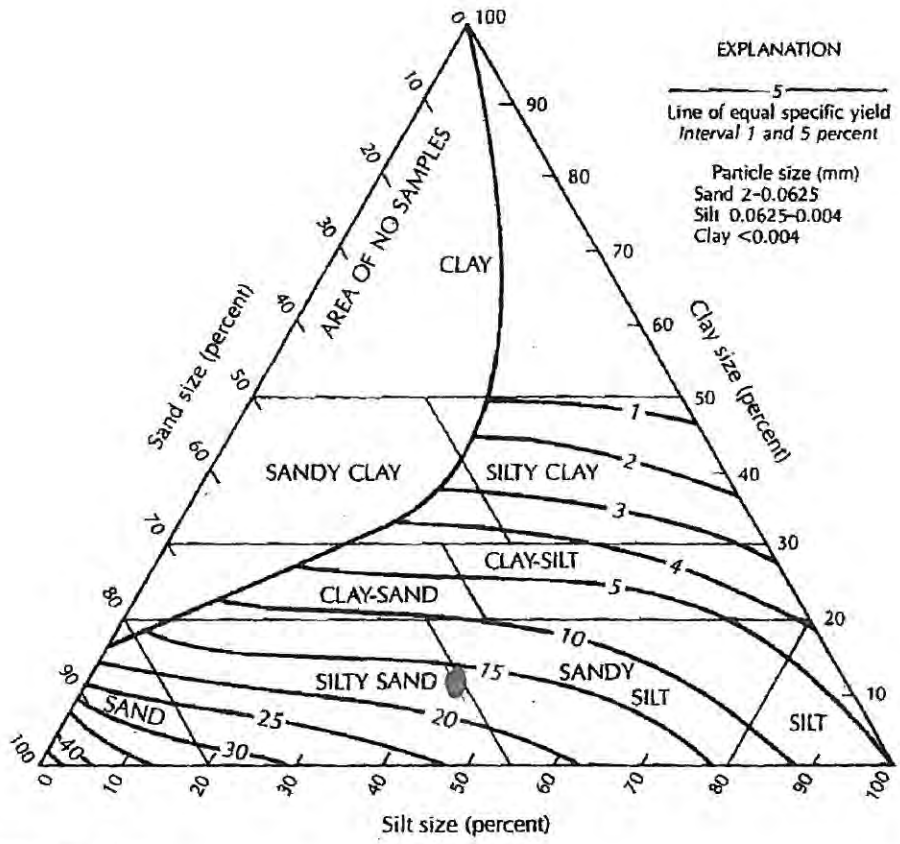


▶ FIGURE 3.10
Specific yield of sediments from the Humboldt River Valley of Nevada as a function of the median grain size. *Source: Data from P. Cohen,* U.S. Geological Survey Water-Supply Paper *1975, 1965.*

P2-63



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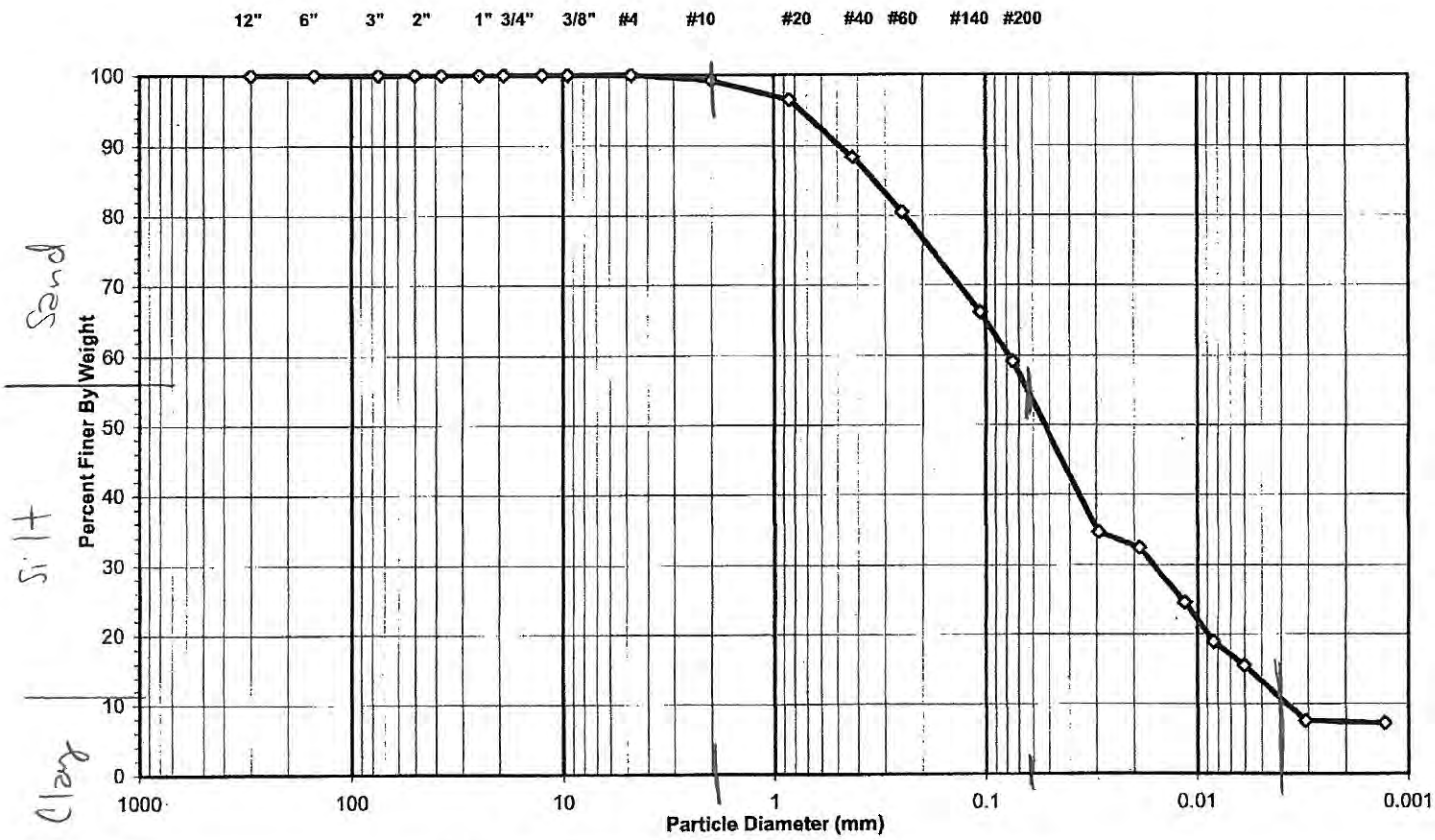
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics
INTEGRITY IN TESTING

Client	R.S.G. & ASSOCIATES	Boring No.	PZ-63
Client Reference	DAVIDSON CO. LF	Depth (ft)	20.0-23.0
Project No.	2010-774-01	Sample No.	NA
Lab ID	2010-774-01-16	Soil Color	**GRAY**

	SIEVE ANALYSIS					HYDROMETER
USCS	cobbles	gravel	sand			silt and clay fraction
USDA	cobbles	gravel	sand		silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	40.83
Finer Than #200	*Silt & Clay*	59.17

Sand = 44%
Silt = 45%
Clay = 11%

USCS Symbol ***ML, TESTED***

USCS Classification ***SANDY SILT***

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