DENR USE ONLY: ☐ Paper Report ☐ Electronic Data - Email CD (data loaded: Yes / No) Doc/Event #:

NC DENR
Division of Waste Management - Solid Waste

Environmental Monitoring Reporting Form

Notice: This form and any information attached to it are "Public Records" as defined in NC General Statute 132-1. As such, these documents are available for inspection and examination by any person upon request (NC General Statute 132-6).

Instructions:

- **Prepare one form for each individually monitored unit.**
- **Please type or print legibly.**
- Attach a notification table with values that attain or exceed NC 2L groundwater standards or NC 2B surface water standards. The notification must include a preliminary analysis of the cause and significance of each value. (e.g. naturally occurring, off-site source, pre-existing condition, etc.).
- Attach a notification table of any groundwater or surface water values that equal or exceed the reporting limits.
- Attach a notification table of any methane gas values that attain or exceed explosive gas levels. This includes any structures on or nearby the facility (NCAC 13B .1629 (4)(a)(i).
- Send the original signed and sealed form, any tables, and Electronic Data Deliverable to: Compliance Unit, NCDENR-DWM, Solid Waste Section, 1646 Mail Service Center, Raleigh, NC 27699-1646.

Solid Waste Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

Smith Gardner, Inc.

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Madeline German Phone: 919-828-0577 x 222

E-mail: madeline@smithgardnerinc.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Davidson County Holly Grove Landfill	1242 Old Highway 29 Thomasville, NC 27360	29-02	0.0500	September 24-25, 2014

Environmental Status: (Check all that apply)

☐ Initial/Background Monitoring ☒ Detection Monitoring ☐ Assessment Monitoring ☐ Corrective Action

Type of data submitted: (Check all that apply)

☒ Groundwater monitoring data from monitoring wells
☐ Groundwater monitoring data from private water supply wells
☐ Leachate monitoring data
☒ Surface water monitoring data
☐ Methane gas monitoring data
☐ Corrective action data (specify) _____
☐ Other(specify) _____

Notification attached?

☐ No. No groundwater or surface water standards were exceeded.
☒ Yes, a notification of values exceeding a groundwater or surface water standard is attached. It includes a list of groundwater and surface water monitoring points, dates, analytical values, NC 2L groundwater standard, NC 2B surface water standard or NC Solid Waste GWPS and preliminary analysis of the cause and significance of any concentration.
☐ Yes, a notification of values exceeding an explosive methane gas limit is attached. It includes the methane monitoring points, dates, sample values and explosive methane gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of a fine and imprisonment.

Madeline German — Geologist — 919-828-0577 x 222

Facility Representative Name (Print) — Title — (Area Code) Telephone Number

Signature — Date: 12/3/14

Affix NC Licensed/ Professional Geologist Seal

NORTH CAROLINA LICENSED SEAL 2275 GEOLOGIST MADELINE GERMAN 12/3/14

14 N. Boylan Ave. Raleigh, NC 27603

Facility Representative Address

C-0828

NC PE Firm License Number (if applicable effective May 1, 2009)

This page intentionally left blank.

September 2014 Semi-Annual Groundwater Monitoring Report

Davidson County Closed Holly Grove Landfill
NC Solid Waste Permit No. 29-02

Prepared for:

Davidson County Integrated Solid Waste
1242 Old Highway 29
Thomasville, North Carolina 27360-0024

December 2014

Prepared by:

NC LIC. NO. C-0828 (ENGINEERING)

SMITH+GARDNER

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

PRINTED ON 100% RECYCLED PAPER

© 2014 Smith Gardner, Inc.
This document is intended for the sole use of the client for which it was prepared and for the purpose agreed upon by the client and Smith Gardner, Inc.

This page intentionally left blank.

September 2014 Semi-Annual Groundwater Monitoring Report

Davidson County Closed Holly Grove Landfill
NC Solid Waste Permit No. 29-02

Prepared For:

Davidson County Integrated Solid Waste
Thomasville, North Carolina 27360-0024

S+G Project No. DAVDCO 14-9

NORTH CAROLINA LICENSED SEAL 2275 GEOLOGIST MADELINE GERMAN

12/3/14

Madeline German P.G.
Project Geologist

NORTH CAROLINA LICENSED SEAL 1369 GEOLOGIST JOAN A. SMYTH

Joan Smyth, P.G.
Senior Hydrogeologist

December 2014

NC LIC. NO. C-0828 (ENGINEERING)

SMITH+GARDNER

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

This page intentionally left blank.

Davidson County Holly Grove Landfill
NC Solid Waste Permit No. 29-02

September 2014 Groundwater Monitoring Report

Table of Contents

Page

1.0 INTRODUCTION 1
2.0 SITE GEOLOGY 1
3.0 SAMPLING LOCATIONS 1
4.0 SAMPLING PROCEDURES 2
5.0 FIELD & LABORATORY RESULTS 2
5.1 Field Results 2
5.2 Laboratory Analysis 2
5.2.1 Inorganic Constituents 2
5.2.2 Organic Constituents 3
5.2.3 Surface Water Results 3
6.0 GROUNDWATER CHARACTERIZATION 3
7.0 CONCLUSIONS 4

FIGURE

Figure 1 Groundwater Potentiometric Map

TABLES

Table 1 Groundwater Elevations
Table 2 Field Parameters
Table 3 Detected Inorganic Parameters
Table 4 Detected Organic Parameters
Table 5 Groundwater Velocity Calculations

APPENDICES

Appendix A Well Logs
Appendix B Laboratory Analytical Report

This page intentionally left blank.

1.0 INTRODUCTION

Smith Gardner, Inc. (S+G) was contracted by Davidson County to perform their semi-annual groundwater monitoring at the Davidson County Closed Holly Grove Landfill, permit number 29-02, as required by 15A NCAC 13B .0600. Sampling was conducted September 24-25, 2014. This report summarizes the event sampling procedures, field and laboratory results and groundwater characterization as required by NC Solid Waste Regulations. Summary tables, a potentiometric map and the laboratory analytical report are also included.

Three landfills are currently monitored under permit 29-02, as the Holly Grove Landfill, due to their waste margins close proximity to one another. Areas 1 and 2, located in the Holly Grove Landfill, were unlined municipal solid waste facilities owned and operated by Davidson County Integrated Solid Waste. The third area, the Scarlett Landfill located west of Areas 1 and 2, is a private landfill originally owned and operated by Mr. Scarlett, then owned by Ms. Virginia White who sold the Scarlett property to Hale Artificier Inc in 2001; it is currently used to house storage containers.

2.0 SITE GEOLOGY

The Davidson County Landfill facility is located in the Piedmont Physiographic Province of North Carolina approximately three and a half miles northeast of the City of Lexington, NC. The Geologic Map of North Carolina (*USGS*, 1985) indicates that the site lies at the western margin of the Carolina Slate Belt; an area of predominantly volcanic and sedimentary rocks of Late Proterozoic to Cambrian age that have been metamorphosed and intruded by numerous igneous plutons. The boundary zone between the Carolina Slate Belt and the adjacent Charlotte Belt is known as the Gold Hill/Silver Hill shear zone. The site vicinity is underlain by volcanic rocks from the Flat Swamp Member of the Cid Formation and metavolcanic rocks of the Battleground Formation.

3.0 SAMPLING LOCATIONS

The Holly Grove groundwater monitoring network includes sixteen monitoring wells (MW-1A, MW-2, MW-3A, MW-4, MW-5, MW-6, MW-8, MW-9, MW-10, MW-11, MW-12, MW-13, MW-14, MW-15, MW-16 and MW-17) and three surface water locations (SW-1, SW-2 and SW-3). SW-3 was not sampled this event because it was dry. A trip blank (TB) was submitted for quality control purposes. Available well records are provided in **Appendix A**.

The background well for the Holly Grove site is also the background well for the Phase 1 lined Davidson County Landfill (Permit 29-06). Since that well is located in the Phase 1 area, it was sampled and reported with the Phase 1 wells (Environment 1 Report 10/17/14, Client ID# 6038). The background well was recorded in the Phase 1 report as MW-1S, and that data is included herein under its original name MW-4.

A map illustrating the sampling locations is provided as **Figure 1.**

4.0 SAMPLING PROCEDURES

Sampling procedures followed the protocols set forth in North Carolina Water Quality Monitoring Guidance Document for Solid Waste Facilities (North Carolina Department of Environment and Natural Resources, Division of Waste Management). S+G personnel gauged each well to determine groundwater depth and purged three to five well volumes or until dry. Groundwater elevations are provided in **Table 1**.

Environment 1, Inc. (NC Laboratory Certification # 10) provided laboratory prepared sample containers for the specified analytical procedures. Groundwater samples were properly preserved, placed on ice and transported to the laboratory facility within the specified hold times for each analysis.

Sampling wells and locations were inspected and found to be in good condition and free of obstructions.

5.0 FIELD & LABORATORY RESULTS

5.1 Field Results

Temperature, pH, specific conductance and turbidity were measured in the field at the time of sampling via direct read instruments. The field parameter results are summarized in **Table 2** and have remained consistent with previously reported sampling events.

5.2 Laboratory Analysis

Samples were transported to Environment 1, Inc., in Greenville, NC, a North Carolina certified laboratory (NC Wastewater ID #10). Laboratory analysis included metals via EPA Test Method 200.8 and Appendix I Volatile Organic Compounds (VOCs) via EPA Test Method 8260B. Analytical results were compared to the NC DWM Solid Waste Section Quantitation Limits (SWSLs), 15A NCAC 2L.0200 (2LStandard), Groundwater Protection (GWP) Standards and Federal Maximum Contaminant Limits (MCL). Surface water results were compared with the NCAC 2B Standard for Class C waters (2B Standard).

The laboratory reports constituent concentrations between the MDL and SWS as estimated values and are denoted with a "J" qualifier. Most constituents were reported either below the method detection limit (MDL) or were reported as "J-values" indicating a non-quantifiable value. The laboratory analysis is presented in **Appendix B**.

5.2.1 Inorganic Constituents

Three inorganic constituents were detected above their respective 2L or GWP Standards:

- cobalt (MW-1A, MW-10 & MW-13);
- chromium (MW-6); and
- selenium (MW-10 & MW-13).

Inorganic detections are provided on **Table 3**.

5.2.2 Organic Constituents

The following seven constituents were reported at concentrations above their respective 2L Standards:

- 1,1-Dichloroethane (MW-1A, MW-12 and MW-17);
- 1,2-Dichloroethane (MW-1A)
- 1,2-Dichloropropane (MW-1A);
- 1,4-Dichlorobenzene (MW-12 and MW-13)
- Benzene (MW-1A, MW-8, MW-9 and MW-13)
- Trichloroethene (MW-8) and
- Vinyl Chloride (MW-1A, MW-8 and MW-12).

Organic detections are provided on **Table 4.**

5.2.3 Surface Water Results

No inorganic or organic constituents were detected in surface water samples above the 2B Standards.

6.0 GROUNDWATER CHARACTERIZATION

A potentiometric surface map was prepared from groundwater data from this sampling event. Groundwater flow velocities for this sampling event were calculated for monitoring wells using the equation:

$$V = Ki/n$$

where: K = hydraulic conductivity
i = groundwater gradient
n = porosity

Groundwater velocities in the uppermost aquifer at the Holly Grove Landfill ranged from 0.019 feet/day (MW-3a) to 0.946 feet/day (MW-15) and averaging 0.35 feet/day. Calculations are included in **Table 5**. Groundwater elevations indicate the flow direction is generally south and southwest across the site; which is consistent with historically reported groundwater flow patterns. The potentiometric surface map for this monitoring event is included as **Figure 1**.

7.0 CONCLUSIONS

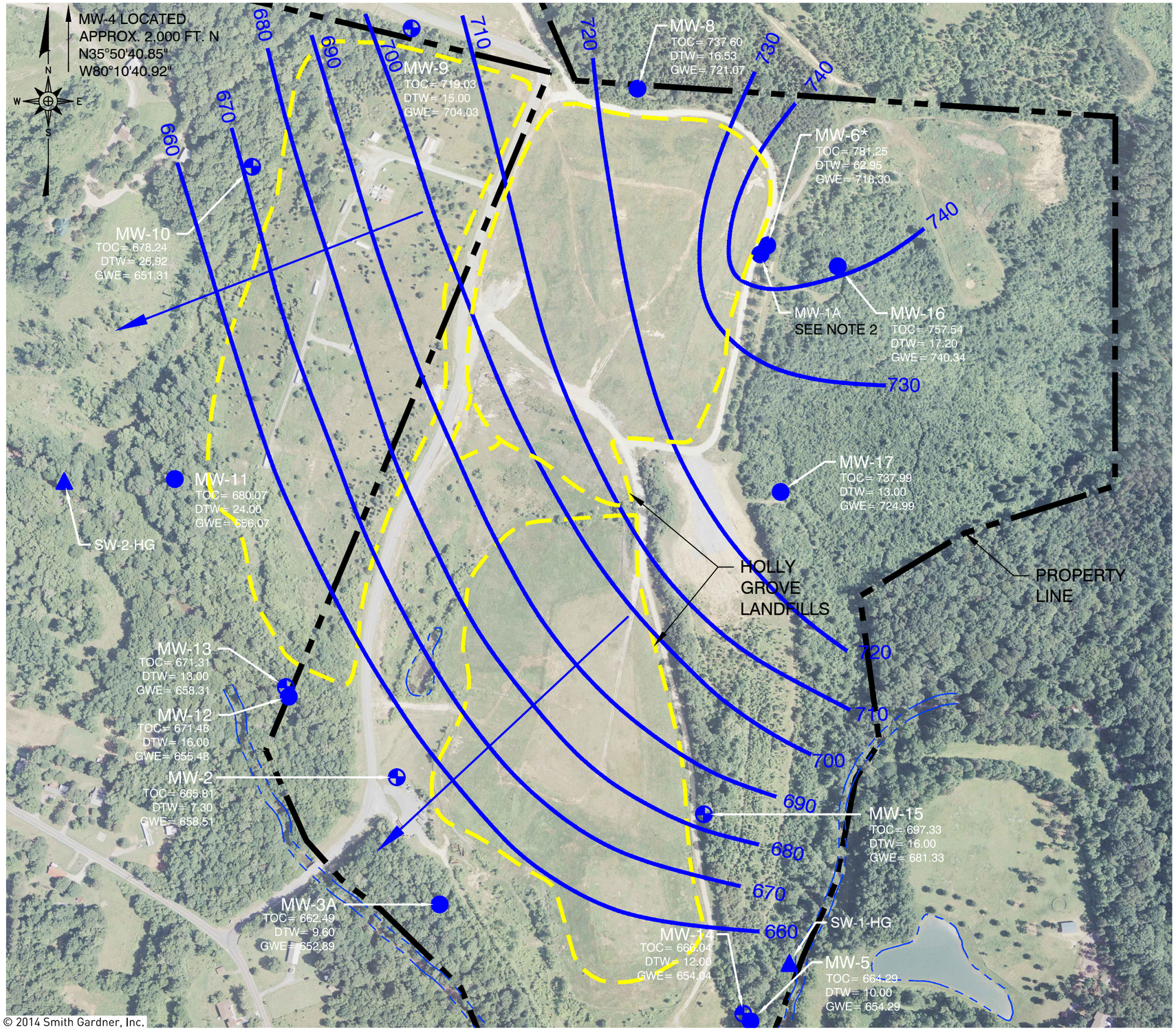
Overall reported detections remain consistent with historically reported results. Monitoring event results indicate detections of both inorganic and organic constituents above the 2L Groundwater Standard. Inorganic detections (cobalt, chromium and selenium) can be attributed to natural occurrence in the soils in this area of North Carolina and are not due to landfill impact. Both chlorinated and volatile organic compounds were detected across the site. These results are consistent with historical results. Surface water samples indicated no 2B exceedances for this event indicating surface waters remain un-impacted.

The next groundwater monitoring event is tentatively scheduled for April 2015. Sampling results will be reported to NCDENR with laboratory analysis.

FIGURES

September 2014 Groundwater Monitoring Report
Davidson County Holly Grove Landfill
NC Solid Waste Permit No. 29-02

This page intentionally left blank.



© 2014 Smith Gardner, Inc.

LEGEND:

MW-1A	EXISTING MONITORING WELL
MW-5	BEDROCK MONITORING WELL
SW-2	EXISTING SURFACE WATER MONITORING STATION
710	GROUNDWATER SURFACE CONTOUR
	PROPERTY LINE
	WASTE BOUNDARY
	STREAM/DRAINAGE
	DIRECTION OF GROUNDWATER FLOW
TOC	TOP OF CASING ELEVATION
DTW	DEPTH TO WATER MEASUREMENT
GWE	GROUNDWATER ELEVATION (*INDICATES NOT USED FOR CONTOURING)

NOTE

1. GROUNDWATER DATA RECORDED IN SEPT 2014 BY SMITH GARDNER, INC. PERSONNEL.
2. MW-1A & MW-10 DID NOT HAVE DEPTH TO GROUNDWATER RECORDED THIS EVENT.

0 300' 600'

PREPARED BY:

NC LIC. NO. C-0928 [ENGINEERING]
SMITH+GARDNER
14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

DRAWN: T.R.S.	APPROVED: M.M.G.	SCALE: AS SHOWN	FIGURE NO. 1
DATE: Nov 2014	PROJECT NO: DAVDCO-1		FILENAME: DAVDCO-B0789

PREPARED FOR:

POTENTIOMETRIC SURFACE MAP
SEPTEMBER 2014
CLOSED HOLLY GROVE LANDFILL
DAVIDSON COUNTY, NC

This page intentionally left blank.

TABLES

September 2014 Groundwater Monitoring Report
Davidson County Holly Grove Landfill
Solid Waste Permit No. 29-02

This page intentionally left blank.

SMITH+GARDNER

By: SH
Date: 10/31/2014

Table 1
Groundwater Elevations
Davidson County Holly Grove Landfill
September 24-25, 2014

Well	Well Installation Date	Latitude	Longitude	Well Diameter (inches)	Total Well Depth (ft bgs)	Ground Surface Elevation (ft amsl)	TOC Elevation (TOC)	Depth to Water (ft bgs)	Groundwater Elevation (ft amsl)	Screen Interval (ft bgs)	Screen Geology
MW-1a	1/23/1990	35.83753	80.17098	2.0	37.5	778.68	781.39	NA	-	27.5-37.5	metavolcanic bedrock
MW-2	9/22/1987	35.84139	80.18294	2.0	16.8	704.59	665.81	7.30	658.51	11.8-16.8	diorite
MW-3a	1/23/1990	35.83236	80.17402	2.0	32.0	659.80	662.49	9.60	652.89	22-32	metavolcanic bedrock
MW-4*	6/19/1991	35.84160	80.17795	2.0	62.5	731.10	736.20	53.00	683.20	47.5-62.5	schist
MW-5	10/27/1992	35.84468	80.17803	2.0	25.0	682.10	664.29	10.00	654.29	10-25	metavolcanic bedrock
MW-6	7/30/1997	35.84490	80.17870	2.0	65.0	676.29	781.25	62.95	718.30	55-65	diorite
MW-8	7/29/1997	35.84438	80.18226	2.0	57.0	661.31	737.60	16.53	721.07	47-57	diorite
MW-9	7/25/1997	35.83928	80.17440	2.0	21.0	717.65	719.03	15.00	704.03	11-21	clayey silty sand and diorite
MW-10	7/30/1997	35.84356	80.18383	2.0	13.0	667.00	678.24	NA	-	5.5-13	clayey silt and diorite
MW-11	7/29/1997	35.84274	80.18392	2.0	38.0	689.22	680.07	24.00	656.07	28-38	diorite
MW-12	7/30/1997	35.84194	80.18391	2.0	65.0	709.29	671.48	16.00	655.48	55-65	diorite
MW-13	7/29/1997	35.83406	80.17554	2.0	22.5	668.59	671.31	13.00	658.31	12.5-22.5	sandy silt and granite
MW-14	7/24/1997	35.83152	80.17106	2.0	42.0	664.78	666.04	12.00	654.04	32-42	diorite
MW-15	7/25/1997	35.83310	80.17147	2.0	23.5	696.01	697.33	16.00	681.33	8.5-23.5	silty clay and granite
MW-16	12/7/2000	35.83744	80.17023	2.0	50.0	755.4699	757.54	17.20	740.34	30-50	diorite
MW-17	12/7/2000	35.83565	80.17076	2.0	39.5	734.7394	737.99	13.00	724.99	29.5-39.5	diorite

* MW-4 is the same well as MW-1 associated with Davidson County Phase 1 Lined Landfill.
amsl = above mean sea level
bgs = below ground surface
Well construction information from well logs (provided in Appendix A)
NA = Not Available

SMITH+GARDNER

By: SH
Date: 10/31/2014

Table 2
Field Parameters
Davidson County Holly Grove Landfill
September 24-25, 2014

Well	pH (std units)	Sp. Conductivity (uMhos)	Temperature (degrees C)	Turbidity (NTU)
MW-1a	7.97	190	16.5	23.9
MW-2	7.31	108	18.8	3.6
MW-3A	8.11	98	15.5	2.14
MW-4*	7.43	93	16.7	2.53
MW-5	7.58	46	16.7	10.3
MW-6	7.01	101	16.5	462
MW-8	8.02	130	15.9	55.4
MW-9	7.53	167	16.2	156
MW-10	7.4	319	16.7	35.8
MW-11	7.34	191	15.3	7.65
MW-12	7.67	282	16.1	1.89
MW-13	7.29	334	17.2	22.1
MW-14	7.93	57	15.4	6.23
MW-15	7.1	29	15.8	40.1
MW-16	8.38	88	15.5	8.86
MW-17	7.63	82	15.7	6.64
SW-1	8.77	55	17	1.45
SW-2	8.55	61	17	1.95

Note: * MW-4 is the same well as MW-1 associated with Davidson County Phase 1 Lined Landfill.
Data Collected S+G Engineers Inc. personel Madeline German and John Fearrington.

SMITH+GARDNER

By: SH
Date: 10/29/2014

Table 3
Detected Inorganic Parameters
Davidson County Holly Grove Landfill
September 24 - 25, 2014

Constituent	MDL	SWSL	2L or GWP	MCL	2B	MW-1A	MW-2	MW-3A	MW-5	MW-6	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	MW-17	SW-1	SW-2
Antimony	0.12	6	1 §	6	640	<0.12	<0.12	0.73 J	0.13 J	0.18 J	<0.12	<0.12	0.55 J	<0.12	<0.12	0.19 J	<0.12	0.66 J	0.36 J	0.17 J	0.26 J	0.23 J
Arsenic	0.10	10	10	10	10	1.1 J	1.3 J	0.68 J	0.69 J	1.2 J	1.3 J	2.2 J	5.6 J	1.1 J	4.6 J	8 J	0.58 J	0.61 J	1.2 J	1.4 J	0.74 J	0.7 J
Barium	0.12	100	700	2000	2000000	304	150	22.4 J	47.3 J	179	31.3 J	271	401	82.8 J	67.3 J	205	28.5 J	54.6 J	34.0 J	290	15.4 J	17.4 J
Beryllium	0.04	1	4 §	4	6.5	0.12 J	0.19 J	0.1 J	0.11 J	0.17 J	0.06 J	0.17 J	0.17 J	0.06 J	0.07 J	0.05 J	<0.04	0.23 J	0.13 J	0.18 J	0.14 J	0.19 J
Cadmium	0.04	1	2	5	2	0.28 J	0.12 J	0.26 J	0.07 J	0.31 J	0.08 J	0.11 J	0.33 J	0.82 J	0.35 J	0.11 J	<0.04	0.09 J	0.07 J	0.17 J	0.05 J	0.06 J
Cobalt	0.12	10	1 §	NE	270	**98**	6.4 J	0.24 J	1.8 J	3.2 J	0.82 J	9.8 J	**19**	2.0 J	0.75 J	**13**	0.28 J	15	0.4 J	5 J	0.63 J	0.67 J
Copper	0.10	10	1000	1300	7	2.2 J	0.85 J	0.76 J	2.3 J	9.9 J	1.5 J	8.9 J	8.1 J	14	1.3 J	3.1 J	1.1 J	6.4 J	0.38 J	3.4 J	1.6 J	1.6 J
Total Chromium	0.14	10	10	100	50	1.2 J	<0.14	<0.14	1.3 J	**23**	3.7 J	7.8 J	1.3 J	0.75 J	0.76 J	1.5 J	0.69 J	10	0.29 J	<0.14	0.32 J	0.31 J
Lead	0.13	10	15	15	25	0.6 J	<0.13	<0.13	0.25 J	4.5 J	0.44 J	1.1 J	1.0 J	<0.13	0.54 J	0.24 J	<0.13	0.46 J	13	<0.13	0.19 J	0.22 J
Nickel	0.12	50	100	NE	88	6.1 J	3.6 J	2.3 J	2.1 J	5.1 J	4.2 J	8.8 J	34.4 J	10.0 J	9.9 J	27.9 J	1.4 J	8.1 J	2.5 J	2.4 J	7 J	6.4 J
Selenium	0.16	10	20	50	5	1.4 J	4.9 J	3.4 J	2.2 J	1.9 J	2.9 J	2.4 J	**21**	5.5 J	18	**25**	1.6 J	1.6 J	3.7 J	3.2 J	1.4 J	1.5 J
Vanadium	0.06	25	0.3 §	NE	NE	9.6 J	0.13 J	2.9 J	3.3 J	15.2 J	5.4 J	7.9 J	12.5 J	1.6 J	1.6 J	7.0 J	2.9 J	9.7 J	1.5 J	11 J	1.1 J	1.4 J
Zinc	0.53	10	1000	5000	50	11	2 J	1.1 J	4.0 J	36	4.9 J	22	4.0 J	4.2 J	0.7 J	2.7 J	1.5 J	13	1.6 J	6.6 J	14	13

NOTE:

MDL	-	Method Detection Limit
SWSL	-	Solid Waste Section Quantitation Limits
2L	-	Groundwater Standards (15A NCAC 2L 0200)
GWP	-	SWS Groundwater Protection Standards (noted by §)
MCL	-	Federal Maximum Contaminant Limit
2B	-	NCAC 2B Standard for Class C waters
BOLD	-	Detection above 2L Standard
J	-	Laboratory defined detection between MDL and SWSL limit
< MDL	-	Constituent not detected above the MDL value

*MW-4 is also known as MW-1S for the Phase 1 lined landfill.
Table units are presented in ug/l.
Lab data analysis by Environment 1, Inc. report dated 10/17/2014, Client ID#6037A.

This page intentionally left blank.

SMITH+GARDNER

By: SH
Date: 10/29/2014

Table 4
Detected Organic Parameters
Davidson County Holly Grove Landfill
September 24-25, 2014

Parameter	MDL	SWSL	2L	MCL	MW-1A	MW-2	MW-3A	MW-5	MW-6	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-17
1,1-dichloroethane	0.20	5	6	NE	**19.2**	0.50 J	5.00 J	0.50 J	8.7	31.6	0.40 J	<0.20	1.90 J	**7.4**	0.40 J	0.6 J	1.1 J	**10.6**
1,1-dichloroethene	0.17	5	7	7	<0.17	<0.17	0.20 J	<0.17	<0.17	0.60 J	<0.17	<0.17	<0.17	0.9 J	<0.17	<0.17	<0.17	<0.17
1,2-dichlorobenzene	0.32	5	20	600	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	0.4 J	<0.32	0.5 J	0.5 J	1.1 J	<0.32	<0.32	<0.32
1,2-dichloroethane	0.27	1	0.4	5	**1.4**	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	0.5 J	<0.27	<0.27	<0.27	<0.27
1,2-dichloropropane	0.21	1	0.6	5	**3.3**	<0.21	<0.21	<0.21	0.60 J	0.40 J	0.30 J	<0.21	0.3 J	0.5 J	<0.21	<0.21	<0.21	0.8 J
1,4-dichlorobenzene	0.39	1	6	75	3.80	0.60 J	0.70 J	<0.39	<0.39	0.6 J	5.30	0.90 J	1.6	**5.90**	**9.1**	<0.39	<0.39	<0.39
acetone	9.06	100	6000	NE	<9.06	<9.06	<9.06	<9.06	<9.06	<9.06	<9.06	<9.06	<9.06	<9.06	11.70 J	<9.06	<9.06	<9.06
benzene	0.24	1	1	5	**2.40**	<0.24	0.30 J	<0.24	<0.24	**3**	**2.1**	0.4 J	<0.24	0.90 J	**2.8**	<0.24	<0.24	<0.24
chlorobenzene	0.30	3	50	100	0.50 J	1.50 J	0.40 J	<0.30	<0.30	<0.30	5.90	3.30	3.50	4.80	18.6	<0.30	<0.30	<0.30
chloroethane	0.48	10	3000	NE	4.10 J	0.80 J	1.00 J	<0.48	<0.48	3.00 J	0.80 J	0.6 J	<0.48	11.3	22.2	<0.48	<0.48	<0.48
cis-1,2-dichloroethene	0.25	5	70	70	37.3	<0.25	0.70 J	<0.25	1.30 J	1.60 J	<0.25	<0.25	0.40 J	0.30 J	<0.25	<0.25	<0.25	2.4 J
trichlorofluoromethane	0.24	1	2000	NE	<0.24	<0.24	<0.24	0.30 J	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	1	<0.24	<0.24
trans-1,2-dichloroethene	0.23	5	100	100	0.40 J	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23
tetrachloroethene	0.17	1	0.7	5	<0.17	<0.17	<0.17	<0.17	0.50 J	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	0.3 J
trichloroethene	0.23	1	3	5	0.70 J	<0.23	0.30 J	<0.23	0.30 J	**4.4**	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	0.5 J
toluene	0.23	1	600	1000	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	0.3 J	<0.23	<0.23	<0.23
vinyl chloride	0.63	1	0.03	2	**2.30**	<0.63	0.70 J	<0.63	<0.63	**1.2**	<0.63	<0.63	0.80 J	**2.40**	<0.63	<0.63	<0.63	<0.63

NOTE:

MDL	-	Method Detection Limit
SWSL	-	Solid Waste Section Quantitation Limits
2L	-	Groundwater Standards (15A NCAC 2L 0200)
MCL	-	Federal Maximum Contaminant Limit
BOLD	-	Detection above 2L standard
J	-	Laboratory defined detection between MDL and SWSL limit
<MDL	-	Constituent not detected above MDL

Table units are presented in ug/l.
Lab data analysis by Environment 1, Inc. report dated 10/17/2014, Client ID#6037A.

SMITH+GARDNER

By: MG
Date: 12/01/2014

Table 5
Groundwater Velocity Calculations
Holly Grove Landfill - Davidson County
September 24-25, 2014

Well Number	Aquifer	Conductivity (ft/day)	Conductivity (ft/min)	Assumed Porosity (n)	Gradient (I)	Velocity (ft/day)
MW-2	Unconsolidated	1.440	1.00E-03	0.20	0.014	0.098
MW-3a	Bedrock	0.105	7.27E-05	0.15	0.027	0.019
MW-5	Bedrock	1.814	1.26E-03	0.20	0.022	0.199
MW-9	Unconsolidated	3.787	2.63E-03	0.20	0.037	0.694
MW-11	Bedrock	1.440	1.00E-03	0.15	0.015	0.140
MW-13	Unconsolidated	5.890	4.09E-03	0.20	0.007	0.207
MW-15	Unconsolidated	5.688	3.95E-03	0.20	0.033	0.946

Notes: Velocity calculated from V=Ki/n:

V = Velocity
K = Hydraulc Conductivity
i = Gradient
n = Porosity

Hydraulic conductivity data from slug testing
Porosity estimated from soil types

Appendix A

Well Logs

September 2014 Groundwater Monitoring Report
Davidson County Holly Grove Landfill
NC Solid Waste Permit No. 29-02

This page intentionally left blank

APR 06 '92 10:13 ENG. TECTONICS, P.A. 919 7670696 Resources
Division of Health Services

WELL COMPLETION RECORD

)MPLETE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N.C.
RTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH,
O. BOX 2091, RALEIGH, N.C. 27602

PERMIT NO.:

AME OF SITE: Davidson County Landfill

OWNER (print): Davidson County Solid Waste Dept

DDRESS: P.O. Box 1067, Lexington, NC 27292

REGISTRATION NO.: 835

RILLING CONTRACTOR: Engineering Tectonics, P.A. /Stewart Well

sing Type: Schedule 40 PVC dia. 2 in.
sing Depth: from +2.5 to 26.5 ft. - dia. 2 in.
reen Type: .010" Slotted PVC dia. 2 in.
reen Depth: from 27.5 to 37.5 ft. - dia. 2 in.
Outer Protective Casing dia. 6 in.

Grout Depth: from 0 to 24.5 ft. - dia. 6
Bentonite Seal: from 24.5 to 25.5 ft. - dia. 6
Sand/Gravel PK: from 25.5 to 37.5 ft. - dia. 6
Total Well Depth: from +2.5 to 37.5 ft. - dia. 2
Borehole Depth: from 0 to 37.5 ft. - dia. 6
Date Measured ___/___/___

atic Water Level: NA feet from top of casing

Casing is 2.5 feet above land su

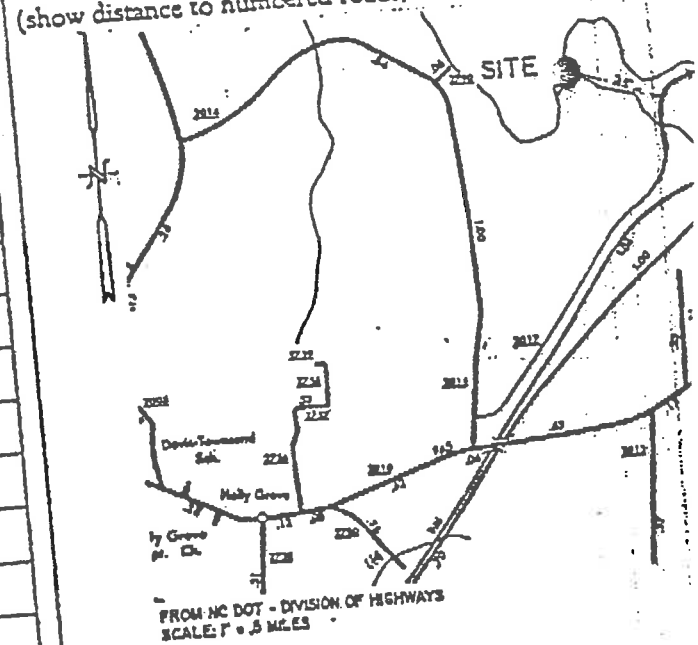
ield (gpm): NA Method of Testing:

DRILLING LOG

DEPTH FROM	TO	FORMATION DESCRIPTION
See attached boring log.		

LOCATION SKETCH

(show distance to numbered roads, or other map reference p



REMARKS: MW-1A

DATE: 5-15-90 SIGNATURE: John Baenigs

Sheet 1 of 2

OWNER: Davidson County Solid Waste Dept.	BORING NUMBER: MW-1A
PROJECT NAME: Davidson County Landfill	ARCHITECT-ENGINEER
SITE LOCATION: Holly Grove, NC	JOB. NO. 89-468-E

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5)

PLASTIC LIMIT % X — WATER CONTENTS % ⊕ — LIQUID LIMIT % Δ (10, 20, 30, 40, 50)

● STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50)

DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH FROM-TO	DESCRIPTION OF MATERIAL / SURFACE ELEVATION
				SANDY SILT, tan, white, hard, (ML). NOTE: (Field description).
	1	ss	2.5 3.0	
5	2	ss	5.0 5.5	
	3	ss	7.5 8.0	
10	4	ss	10.0 10.5	
				SILT, tan, hard, (ML). NOTE: Contains weathered rock fragments. (Field description).
15	5	ss	15.0 15.5	
				Auger Refusal at 18.0 ft.
20				Metavolcanic Bedrock (Rock type based on Geologic Map of North Carolina).
25				
30				

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES: IN-STU, THE TRANSITION MAY BE GRADUAL.

WATER TABLE DATA — DEPTH BELOW SURFACE: NA @ 0 HRS. ___ @ ___ HRS.	BORING STARTED 1-23-90	BORING COMPLETED 1-23-90	
	RIG Air Rotary	FOREMAN	APP'D BY ABN	AUGER NA

ENGINEERING TECTONICS, P. A.

Sheet 2 of 2

OWNER: Davidson County Solid Waste Dept.	BORING NUMBER: MW-1A
PROJECT NAME: Davidson County Landfill	ARCHITECT-ENGINEER
SITE LOCATION: Holly Grove, NC	JOB. NO.: 89-468-E

UNCONFINED COMPRESSIVE STRENGTH TON/FT.^{2} 1 2 3 4 5

PLASTIC LIMIT % X — WATER CONTENTS % ⊕ — LIQUID LIMIT % Δ 10 20 30 40 50

● STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50

DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH FROM-TO	DESCRIPTION OF MATERIAL / SURFACE ELEVATION
35				
				Boring Terminated at 37.5 ft.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES: IN-STU. THE TRANSITION MAY BE GRADUAL.

WATER TABLE DATA — DEPTH BELOW SURFACE	BORING STARTED		BORING COMPLETED
_____ @ 0 HRS.	RIG	FOREMAN	APP'D BY	AUGER
_____ @ _____ HRS.				

N. C. Department of Human Resources
Division of Health Services

WELL COMPLETION RECORD

COMPLETE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N.C DEPARTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH P. O. BOX 2091, RALEIGH, N.C. 27602

NAME OF SITE:	PERMIT NO.:
Davidson County Sanitary Landfill	29-02
ADDRESS: State Rd. 2014, P.O. Box 2065, Lexington, NC 27292	OWNER (print): Davidson County
DRILLING CONTRACTOR: Environmental Technology Engineering, Inc., Lexington, SC	REGISTRATION NO.: NC # 821

Casing Type: Sch. 40 PVC dia. 2 in. Grout Depth: from 0 to 8.5 ft. - dia. 4 in
Casing Depth: from 0 to 11.8 ft. - dia. 2 in. Bentonite Seal: from 8.5 to 9.5 ft. - dia. 4 in
Screen Type: Continuously slotted PVC dia. 2 in. Sand/Gravel PK: from 9.5 to 16.8 ft. - dia. 3 in
Screen Depth: from 11.8 to 16.8 ft. - dia. 2 in. Total Well Depth: from 0 to 16.8 ft. - dia. 3 in

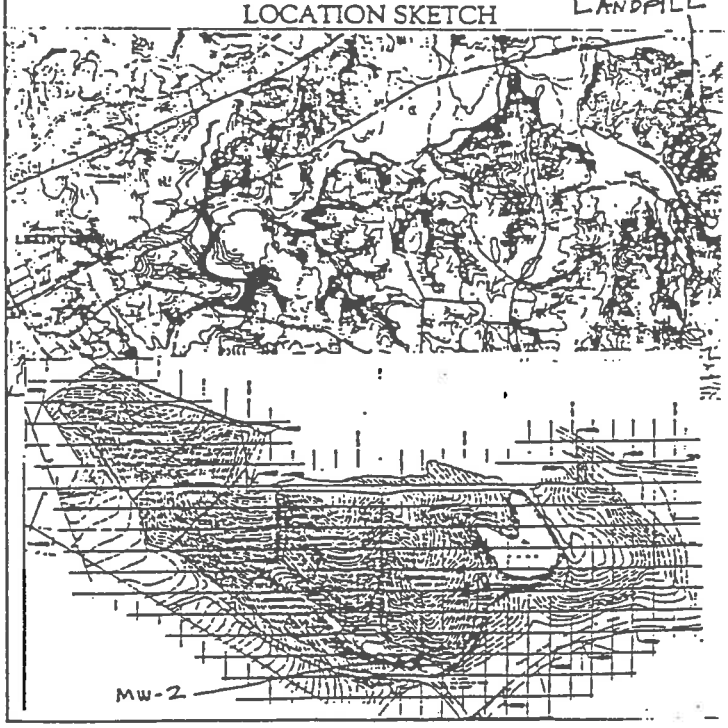
Static Water Level: 6.75 feet from top of casing Date Measured 9 / 22 / 8

Yield (gpm): 2-3 Method of Testing: Centrifugal Pump Casing is 3.48 feet above land surfac

DRILLING LOG

DEPTH FROM	TO	FORMATION DESCRIPTION
0	3.5	Light brown clay with 30% silt.
3.5	5.5	Orange brown silty clay with gravel-sized diorite fragments
5.5	9.0	Light brown clayey silt.
9.0	11.0	Light tan silt with 30% clay and diorite fragments.
11.0	13.0	Highly fractured, unweathered diorite.
13.0	15.0	"
15.0	16.8	"

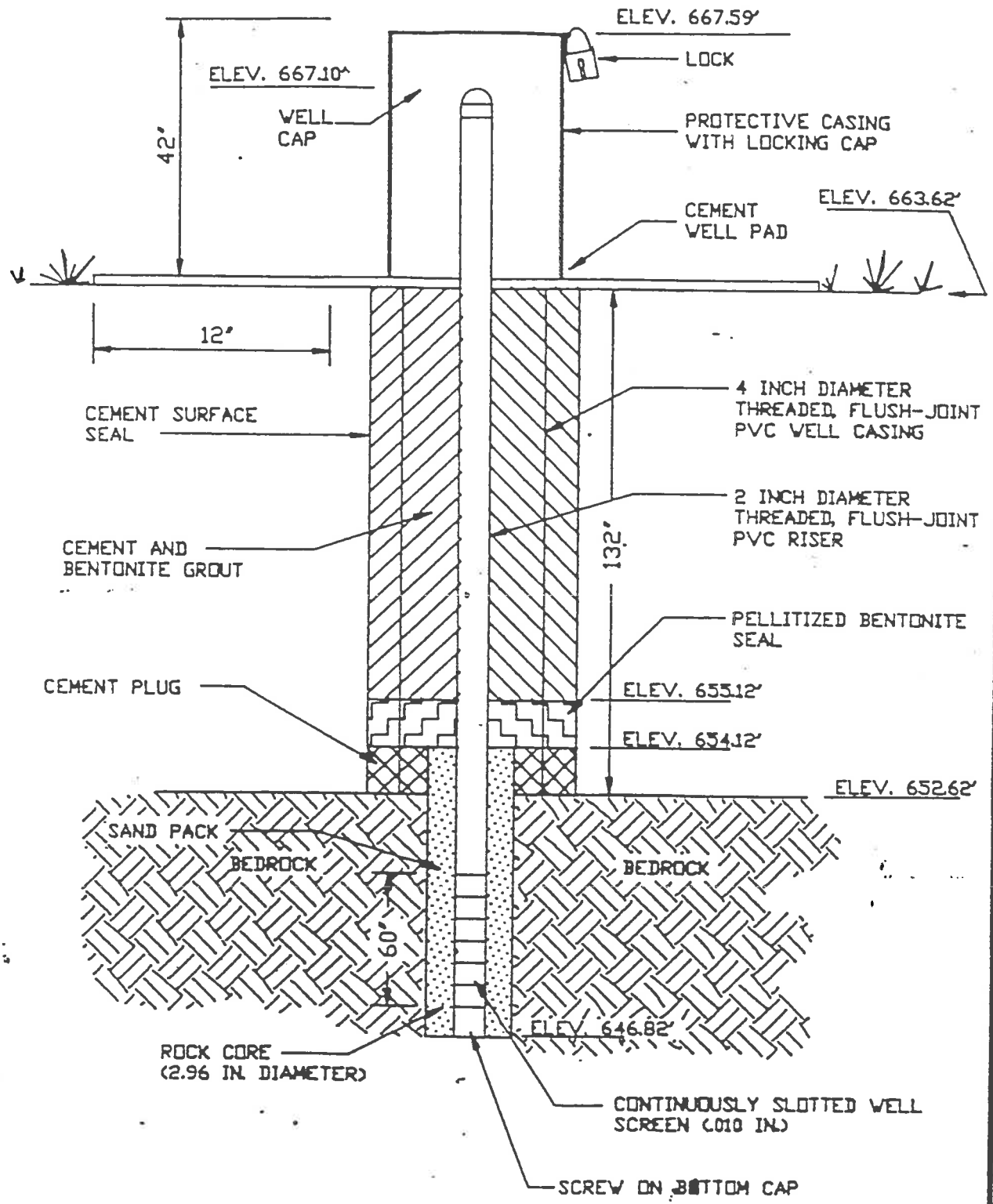
LOCATION SKETCH



REMARKS: Monitoring Well MW-2.

DATE: 11/25/87 SIGNATURE: Laura L. Liggett / for the operator

DHS 3342 (6/85)
Solid & Hazardous Waste Management Branch



GROUNDWATER MONITORING WELL SCHEMATIC

MW - 2

Resources
Division of Health Services

WELL COMPLETION RECORD

MPLETE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N.C. RTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH, . OX 2091, RALEIGH, N.C. 27602

ME OF SITE: Davidson County Landfill

PERMIT NO.:

DRESS: P.O. Box 1067, Lexington, NC 27292

OWNER (print): Davidson County Solid Waste Dept

LLING CONTRACTOR: Engineering Tectonics, P.A./Stewart Well

REGISTRATION NO.: 835

ing Type: Schedule 40 PVC dia. 2 in.
ning Depth: from +2.5 to 22 ft. - dia. 2 in.
een Type: .010" Slotted PVC dia. 2 in.
een Depth: from 22 to 32 ft. - dia. 2 in.
Outer Protective Casing dia. 6 in.

Grout Depth: from 0 to 19 ft. - dia. 6 i
Bentonite Seal: from 19 to 20 ft. - dia. 6 i
Sand/Gravel PK: from 20 to 32 ft. - dia. 6
Total Well Depth: from +2.5 to 32 ft. - dia. 2
Borehole Depth: from 0 to 32 ft-dia. 6
Date Measured ___/___/___

ic Water Level: NA feet from top of casing

Casing is 2.5-3 feet above land surf

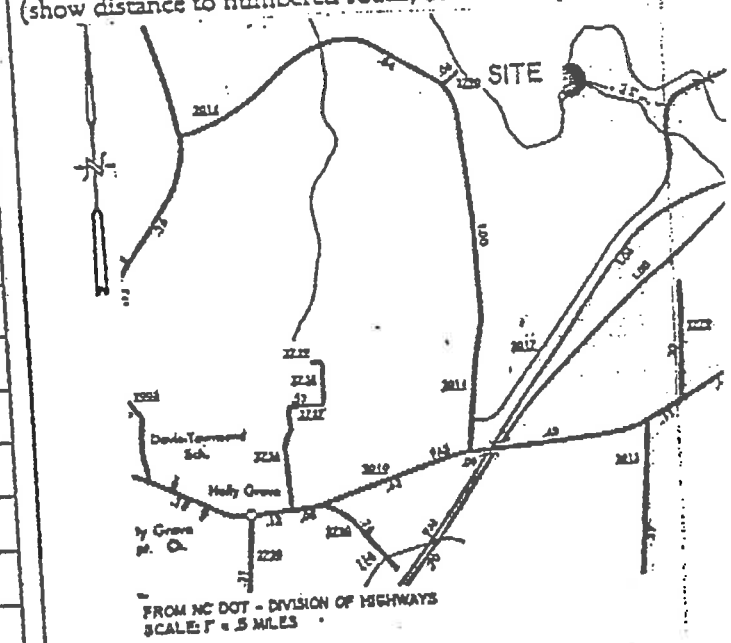
ld (gpm): NA Method of Testing:

DRILLING LOG

DEPTH FROM	TO	FORMATION DESCRIPTION
		See attached boring log.

LOCATION SKETCH

(show distance to numbered roads, or other map reference poi



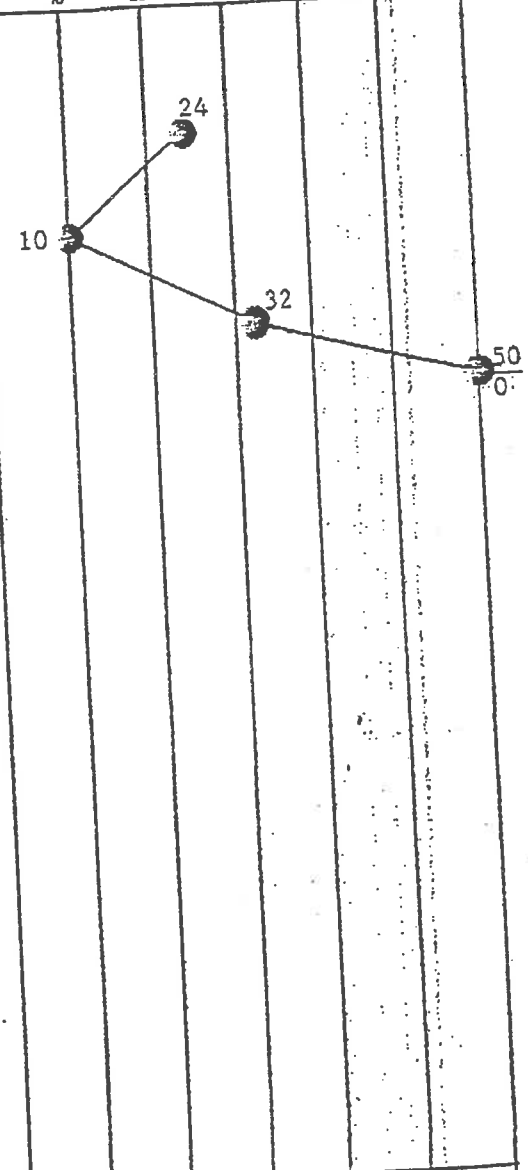
REMARKS: MW-3A

DATE: 5-15-90 SIGNATURE: John Beaugh

OWNER: Davidson County Solid Waste Dept.	BORING NUMBER: MW-3A
PROJECT NAME: Davidson County Landfill	ARCHITECT-ENGINEER:
SITE LOCATION: Holly Grove, NC	JOB NO.: 89-468-E

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} (1, 2, 3, 4, 5) — PLASTIC LIMIT % (X) — WATER CONTENTS % (⊕) — LIQUID LIMIT % (Δ) — STANDARD PENETRATION BLOWS/FT. (●) (10, 20, 30, 40, 50)

DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH FROM-TO	DESCRIPTION OF MATERIAL (SURFACE ELEVATION)
	1	ss	2.5 4.0	SANDY SILT, brown, tan, white, firm, (ML). NOTE: (Field description).
5	2	ss	5.0 6.5	
	3	ss	7.5 9.0	CLAYEY SILT, gray, stiff, (ML). NOTE: (Field description).
10				Auger Refusal at 13.5 ft.
15				Metavolcanic Bedrock (Rock type based on Geologic Map of North Carolina).
20				
25				
30				Boring Terminated at 32.0 ft.

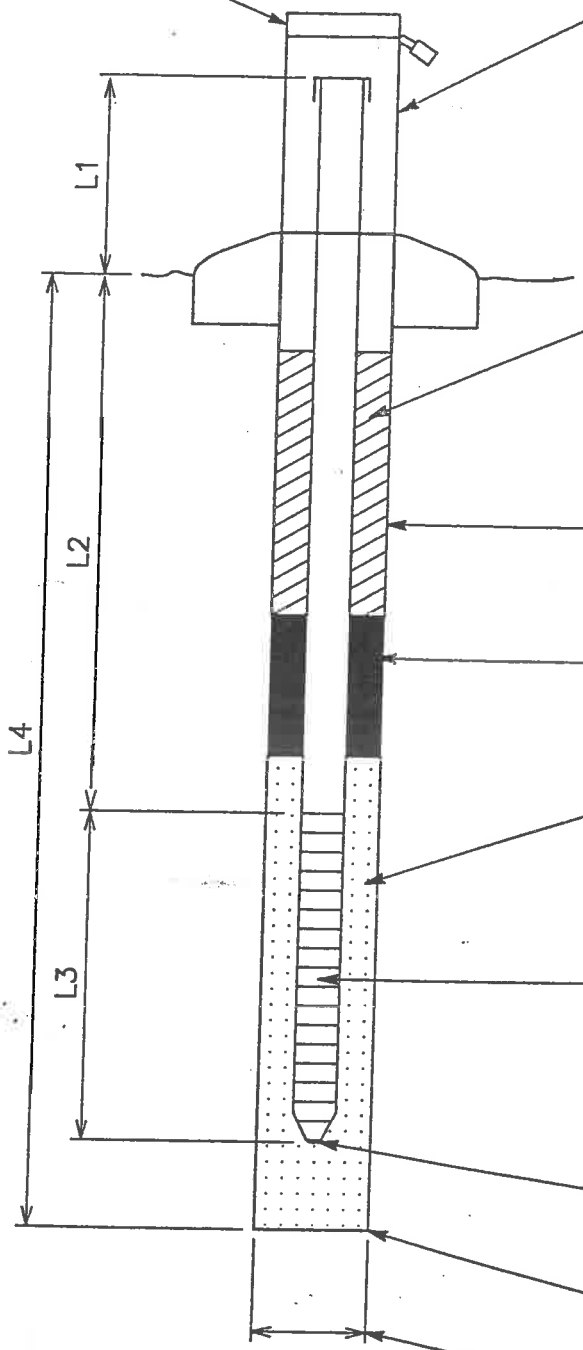


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES: IN-STU. THE TRANSITION MAY BE GRADUAL.

WATER TABLE DATA — DEPTH BELOW SURFACE: NA @ 0 HRS. ___ @ ___ HRS.	BORING STARTED 1-23-90	BORING COMPLETED 1-23-90	
	RIG Air Rotary	FOREMAN	APP'D BY ABN	AUGER NA

ENGINEERING TECTONICS, P. A.

LANDFILL MONITORING WELL No. MW- 1
TYPE II WELL INSTALLATION



PROTECTIVE CASING AND CONCRETE PAD

P. CASING MATERIAL	Steel
P. CASING DIAMETER	6 X 6 inches
P. CASING LENGTH	5 feet
PAD DIMENSIONS	3 ft. dia.
HEIGHT ABOVE GROUND	1.20 feet
PAD ELEVATION	735.00
TOP OF CASING ELEVATION	736.20

WELL RISER CASING

MATERIAL	Schedule 40 PVC
DIAMETER	2 inch
JOINT TYPE	Flush-thread
LENGTH	47.5 feet

BACKFILL AROUND CASING

MATERIAL	Cement grout
THICKNESS	46.5 feet

ANNULAR SEAL

TYPE OF SEAL	Bentonite
THICKNESS	1.0 feet

FILTER PACK

TYPE OF FILTER	Sand
DISTANCE ABOVE SCREEN	0.0 feet
LENGTH	15.0 feet

WELL SCREEN

SCREEN MATERIAL	Schedule 40 PVC
DIAMETER	2 inch
LENGTH	15.0 feet
SLOT SIZE	0.010 inch

DEPTH TO BOTTOM OF MONITORING WELL	62.5 feet
DEPTH TO BOTTOM OF FILTER SAND	62.5 feet
DIAMETER OF BOREHOLE	6 inch

L1 =1.20 FT.
L2 =47.5 FT.
L3 =15.0 FT.
L4 =62.5 FT.

CROSS-SECTIONAL VIEW

Note: Well was installed ± 6/19/1991 by Engineering Tectonics (REG. #835) and denoted as well MW-4 under former landfill permit # 29-02.

TITLE

MONITORING WELL CONSTRUCTION DETAIL
NEW DAVIDSON COUNTY LANDFILL
LEXINGTON, NORTH CAROLINA

G · N · Richardson & Associates
CONSULTING ENGINEERING

CAD FILE	PREP. BY	REV. BY	DATE	PROJECT NO.
94012-2.DWG	GHS		06-07-94	GRA94012

N. C. Department of Human Resources
Division of Health Services

WELL COMPLETION RECORD

COMPLETE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N. DEPARTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANC P. O. BOX 2091, RALEIGH, N.C. 27602

NAME OF SITE: Davidson County Sanitary Landfill (29-02)	PERMIT NO.: 28-0323-WM-0101
ADDRESS: Route 1, Box 678 Lexington, NC 27292	OWNER (print): Davidson County
DRILLING CONTRACTOR: McCall Brothers, Inc.	REGISTRATION NO.: NO. 003

Casing Type: SCH. 40 PVC dia. 2 in.
Casing Depth: from 0 to 10 ft. - dia. 2 in.
Screen Type: .010Slotted PVC dia. 2 in.
Screen Depth: from 10 to 25 ft. - dia. 2 in.

Grout Depth: from 0 to 5.5 ft. - dia. ____
Bentonite Seal: from 5.5 to 7.7 ft. - dia. ____
Sand/Gravel PK: from 7.7 to 25 ft. - dia. ____
Total Well Depth: from 0 to 25 ft. - dia. ____

Static Water Level: 11.05 feet from top of casing — Date Measured 10 / 28 / 9

Yield (gpm): N/A Method of Testing: ____ Casing is 2.5 feet above land surfa

DRILLING LOG

DEPTH FROM	DEPTH TO	FORMATION DESCRIPTION
0'	3½'	Dk. Br. Fine Grained Silty sand
3½'	8.0'	Lt. Br. Fine grained ~~sandy, clayey, silt~~
8.5'	10.2'	Lt. Grn. Clayey Silty Fine to medium grained sand
10.2	25	Bedrock

LOCATION SKETCH

(show distance to numbered roads, or other map reference points

SEE ATTCHED FIGURE

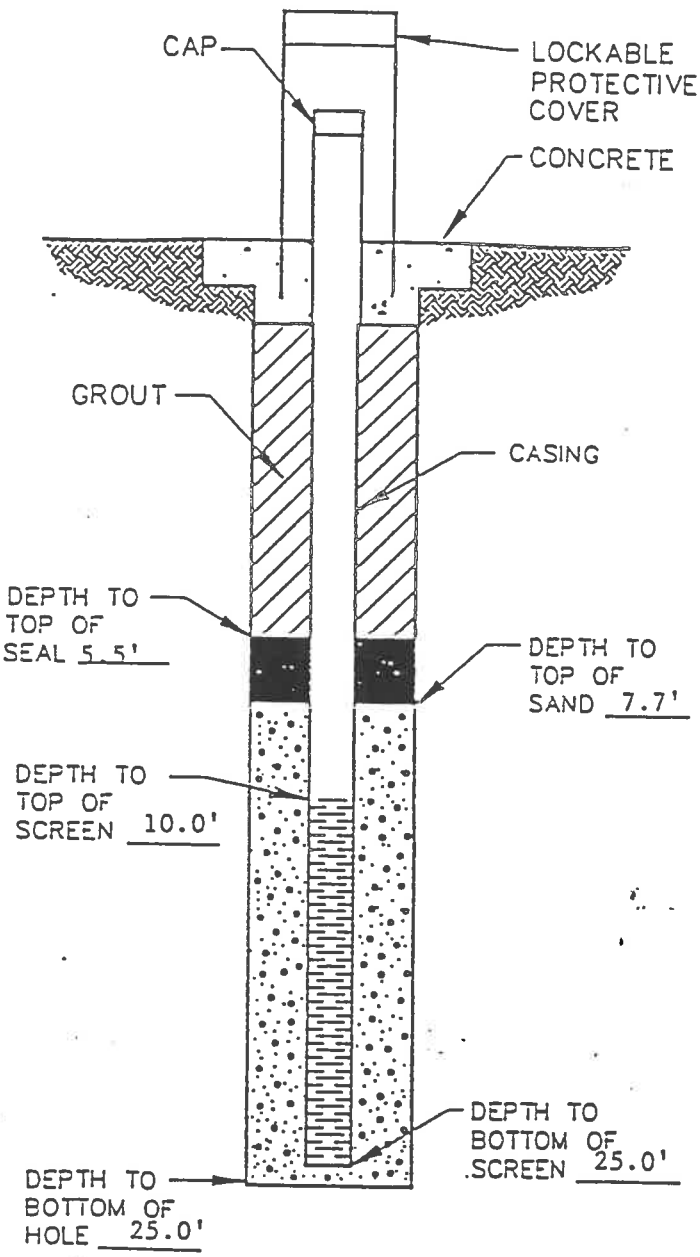
REMARKS: Monitor Well MW-5
Water-Bearing Fracture Encountered @ 18.51

DATE: 11-22-92 SIGNATURE: Timothy Grant - CDM

DHS 3342 (6/85)
Solid & Hazardous Waste Management Branch

PROJECT NAME: Davidson Co. Landfill
LOCATION: Lexington, NC
WELL NUMBER: MW-5
DATE DRILLED: 10/27/92
LAND SURFACE: N/A
TOTAL DEPTH: 25.0 ft.
DRILLING METHOD: HSA/Air Rotary
HOLE DIAMETER: 8"(0-10'):6½ (10-25)
PVC CASING DIA. 2" in
SCREEN LENGTH: 15 ft.
SLOT SIZE: 0.010 in.
BACKFILL: Portland Grout
SEAL: Bentonite

WELL CONSTRUCTION



CDM

FIELD GEOLOGIC LOG

PROJECT *DAVIDSON COUNTY LANDFILL*		DATE *10/27/92*	SHEET *1* OF *1*
		DRILLING CONTRACTOR *McCall Brothers Inc.*	
WELL No. *MW-5*	SAMPLING METHOD *Split Spoon (24")*	DRILLER	
LOGGED BY *M. Sanford*	OFFICE *CDM/Ral*	DRILLING METHOD *8" O.D. HSA and Air Rotary*	

SAMP. No.	DEPTH, feet	LITHOLOGY	BLOW COUNT	SAMPLE DESCRIPTION	DRILLING COMMENTS
				0-3 1/2" - dark brown silty, fine-grained SAND	
	1			*3 1/2" - 9 1/2' - light brown, fine-grained, sandy, clayey SILT*	
	2				
	3				
	4		*4*		
			11		
			12		
	5		*12*		
	6				
	7				
	8				
	9		*6*		
			10	*9.5' - 10.2' - light green, silty, clayey, fine-to-medium grained SAND with rock fragments, moist*	
			17		
	10		*50/3"*		*Auger refusal @ 10'*
	1				*Perched water on top of bedrock*
	2				
	3				
	4				
	15				
	6				*Water-bearing fracture zone encountered @ 18.67'*
	7			*10.2'- 25' - Air Rotary drilling Metavolcanics*	
	8				*Boring terminated @ 25'*
	9				
	20				

NORTH CAROLINA DEPARTMENT OF HEALTH, ENVIRONMENT, AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, NC 27611, PHONE (919) 783-50S3

FOR OFFICE USE ONLY
Quad No. _____ Serial No. _____
Lat _____ Long. _____ P _____
MinorBasin

WELL CONSTRUCTION RECORD

Davidson County - Holly Grove Assesment
MW-6

DRILLING CONTRACTOR **Engineering Tectonics**

DRILLER REGISTRATION NUMBER **835**

STATE WELL CONSTRUCTION PERMIT NUMBER: _____

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: **Lexington, North Carolina**
220 Landfill Road, Lexington, North Carolina
(Road, Community, or Subdivision and Lot No.)

County: **Davidson County**

2. OWNER **Davidson County**
ADDRESS **220 Landfill Road**
Lexington **NC** **27292**
City or Town State Zip Code

3. DATE DRILLED **7/30/97** USE OF WELL **Monitoring**
4. TOTAL DEPTH **65 feet** Cuttings Collected? ___ Yes ___ No
5. DOES WELL REPLACE EXISTING WELL? ___ Yes **X** No
6. STATIC WATER LEVEL: **60.81** ft ___ above **X** below top of casing.
Top of casing is **2.21** ft above land surface.
7. YIELD (gpm): _____ METHOD OF TEST _____
Water Zones (depth): _____

9. CHLORINATION: Type _____ Amount _____

10. CASING:

	Depth From	Depth To		Diameter	Wall Thicknes or Weight/Ft.	Material
	0 ft.	14	Ft	6-inch	Sch. 40	PVC
	0 ft.	55	Ft	2-inch	Sch. 40	PVC
			Ft			

11. GROUT:

Depth From	Depth To		Material	Method
0 ft.	51.5	Ft.	Cement	
51.5	53.5	Ft.	Bentonite	

12. SCREEN:

Depth From	Depth To		Diameter		Slot Size		Material
55	65	Ft	2	in.	10	in.	PVC
		Ft		in.		in.	
		Ft		in.		in.	

13. GRAVEL PACK

Depth From	Depth To		Size	Material
53.5 ft.	65	Ft	Fine Filter	Sand
		Ft		

REMARKS: _____

Depth From	Depth To	Drilling Log: Formation Description
see attached boring logs		

If additional space is needed, use back of form.

LOCATION SKETCH

(Show directions and distance from at least two State Roads. or other map reference points.)

see attached map

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 14 NCAC 2C, WELL CONSTRUCTION RECORDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Signature of Contractor or Agent Date

Submit original to Division of Environmental Management & copy to well owner.

FIELD BOREHOLE LOG

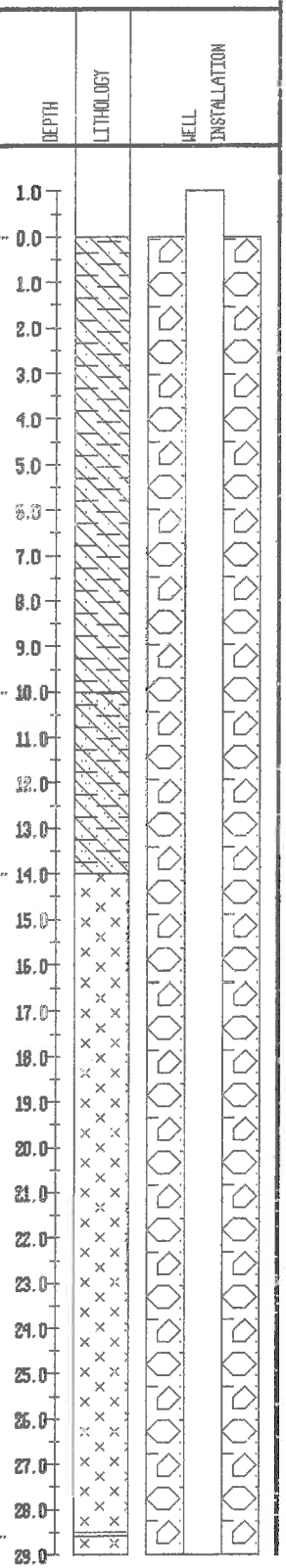
BOREHOLE NUMBER: MW-6

PROJECT NUMBER: DAVDCD-1
PROJECT NAME: Holly Grove Landfill
LOCATION: Lexington, North Carolina
DRILLING COMPANY: Engineering Tectonics
RIG TYPE & NUMBER: MOBILE B-80
DRILLING METHOD: Hollow Stem Auger
WEATHER: Sunny, 80 DEGREES
FIELD PARTY: D. Barron
GEOLOGIST: P. May
DATE BEGUN: 7/29/97 DATE COMPLETED: 7/30/97

TOP OF CASING ELEVATION: 781.25
TOTAL DEPTH: 65.0 FT
GROUND SURFACE ELEVATION: 779.04
SHEET: 1 OF: 2

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	58.6 bg	63.30 bg
Time	-	7:00 pm
Date:	7/31/97	8/1/97

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
1.0								
0.0								CLAYEY SILT: Light brown with trace fine sand.
1.0								
2.0								
3.0								
4.0								
5.0		G	S1					
6.0								
7.0								
8.0								
9.0								
10.0		G	S2					SANDY CLAYEY SILT: Light brown with some gravel sized partially weathered rock. Roller bit refusal at 12.0'. Setting outer casing in competent rock at 14'.
11.0		G						
12.0								
13.0								
14.0								DIORITE: Competent rock.
15.0								
16.0								
17.0								
18.0								
19.0								
20.0								
21.0								
22.0								
23.0								
24.0								
25.0								
26.0								
27.0								
28.0								
29.0								



FIELD BOREHOLE LOG

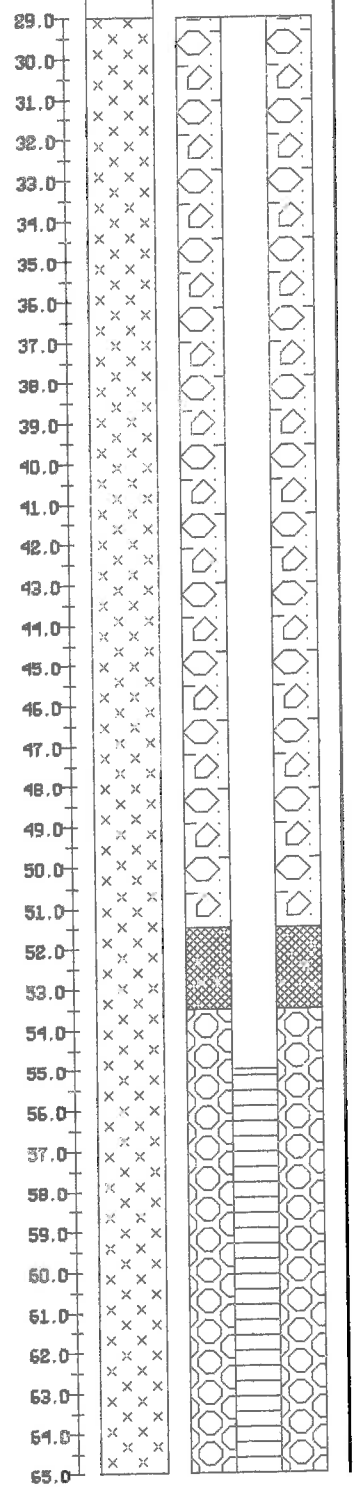
BOREHOLE NUMBER: MW-6

PROJECT NUMBER: DAVDCO-1
PROJECT NAME: Holly Grove Landfill
LOCATION: Lexington, North Carolina
DRILLING COMPANY: Engineering Tectonics
RIG TYPE & NUMBER: MOBILE B-80
DRILLING METHOD: Hollow Stem Auger
WEATHER: Sunny, 80 DEGREES
FIELD PARTY: D. Barron
GEOLOGIST: P. May
DATE BEGUN: 7/29/97 DATE COMPLETED: 7/30/97

TOP OF CASING ELEVATION: 781.25
TOTAL DEPTH: 65.0 FT
GROUND SURFACE ELEVATION: 779.04
SHEET: 2 OF: 2

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	58.5 bg	63.30 bg
Time	-	7:00 pm
Date:	7/31/97	8/1/97

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
29.0								DIORITE: No significant water bearing fractures. Boring Terminated at 65 feet.
30.0								
31.0								
32.0								
33.0								
34.0								
35.0								
36.0								
37.0								
38.0								
39.0								
40.0								
41.0								
42.0								
43.0								
44.0								
45.0								
46.0								
47.0								
48.0								
49.0								
50.0								
51.0								
52.0								
53.0								
54.0								
55.0								
56.0								
57.0								
58.0								
59.0								
60.0								
61.0								
62.0								
63.0								
64.0								
65.0								



NORTH CAROLINA DEPARTMENT OF HEALTH, ENVIRONMENT, AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, NC 27611, PHONE (919) 783-50S3

FOR OFFICE USE ONLY
Quad No. _____ Serial No. _____
Lat _____ Long. _____ P _____
MinorBasin

WELL CONSTRUCTION RECORD

Davidson County - Holly Grove Assesment
MW-8

DRILLING CONTRACTOR **Engineering Tectonics**

DRILLER REGISTRATION NUMBER **835**

STATE WELL CONSTRUCTION PERMIT NUMBER: _____

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: **Lexington, North Carolina**
220 Landfill Road, Lexington, North Carolina
(Road, Community, or Subdivision and Lot No.)

County: **Davidson County**

2. OWNER **Davidson County**
ADDRESS **220 Landfill Road**
Lexington **NC** **27292**
City or Town State Zip Code

3. DATE DRILLED **7/29/97** USE OF WELL **Monitoring**
4. TOTAL DEPTH **57.0** Cuttings Collected? ___ Yes ___ No
5. DOES WELL REPLACE EXISTING WELL? ___ Yes **X** No
6. STATIC WATER LEVEL: **40.69** ft ___ above **X** below top of casing.
Top of casing is **2.06** ft above land surface.
7. YIELD (gpm): _____ METHOD OF TEST _____
Water Zones (depth): _____
9. CHLORINATION: Type _____ Amount _____

Depth From	Depth To	Drilling Log: Formation Description
see attached boring logs		

If additional space is needed, use back of form.

10. CASING:

From (Depth)	To (Depth)	Ft	Diameter	Wall Thicknes or Weight/Ft.	Material
0 ft.	**47**		**2-inch**	**Sch. 40**	**PVC**

11. GROUT:

From (Depth)	To (Depth)	Ft.	Material	Method
0 ft.	**44**		**Cement**	
44	**46**		**Bentonite**	

12. SCREEN:

From (Depth)	To (Depth)	Ft	Diameter	Slot Size	Material
47	**57**		**2** in.	**10** in.	**PVC**
			in.	in.	
			in.	in.	

13. GRAVEL PACK

From (Depth)	To (Depth)	Ft	Size	Material
46	**57**		**Fine Filter**	**Sand**

LOCATION SKETCH
(Show directions and distance from at least two State Roads. or other map reference points.)

see attached map

REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 14 NCAC 2C, WELL CONSTRUCTION RECORDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Signature of Contractor or Agent Date

Submit original to Division of Environmental Management & copy to well owner.

FIELD BOREHOLE LOG

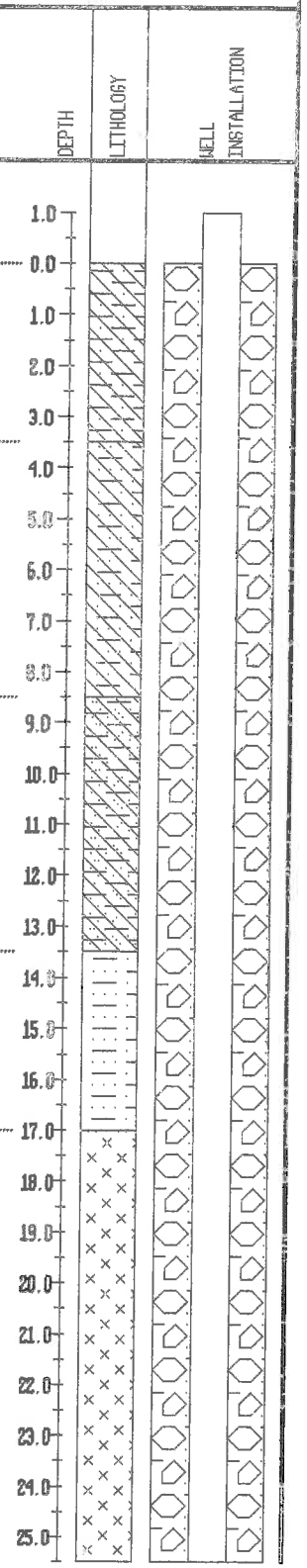
BOREHOLE NUMBER: MW-8

PROJECT NUMBER: DAVDCO-1
PROJECT NAME: Holly Grove Landfill
LOCATION: Lexington, North Carolina
DRILLING COMPANY: Engineering Tectonics
RIG TYPE & NUMBER: MOBILE B-80
DRILLING METHOD: Hollow Stem Auger
WEATHER: Sunny, 80 DEGREES
FIELD PARTY: D. Barron
GEOLOGIST: P. May
DATE BEGUN: 7/28/97 DATE COMPLETED: 7/29/97

TOP OF CASING ELEVATION: 737.60
TOTAL DEPTH: 57.0 FT
GROUND SURFACE ELEVATION: 735.54
SHEET: 1 OF: 2

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	38.63	31.47
Time	11:00	7:00
Date:	7/29/97	7/30/97

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
0.0–1.0	4, 6, 8	Ss	S1			12"		CLAYEY SILT: brown silt to clayey silt. slight cast, no ribbon. ML.
3.0–4.0	10, 12, 15	Ss	S2			14"		CLAYEY SANDY SILT: Brown, dry, clayey silt to clayey sandy silt. Slight cast, no ribbon. trace gravel. manganese stained at 4.5'. SM-SC.
8.0–9.0	17, 23, 21	Ss	S3			10"		CLAYEY SILTY SAND: sandy clayey silt to clayey silty sand, trace course sand. dry. slight cast. SM.
13.0–14.0	50/3	Ss	S4			3"		SANDY SILT: Brown, dry, sandy silt. trace gravel. SM. Auger refusal at 17'.
17.0–25.0		G	S5, S6					DIORITE: competent rock.



FIELD BOREHOLE LOG

BOREHOLE NUMBER: MW-8

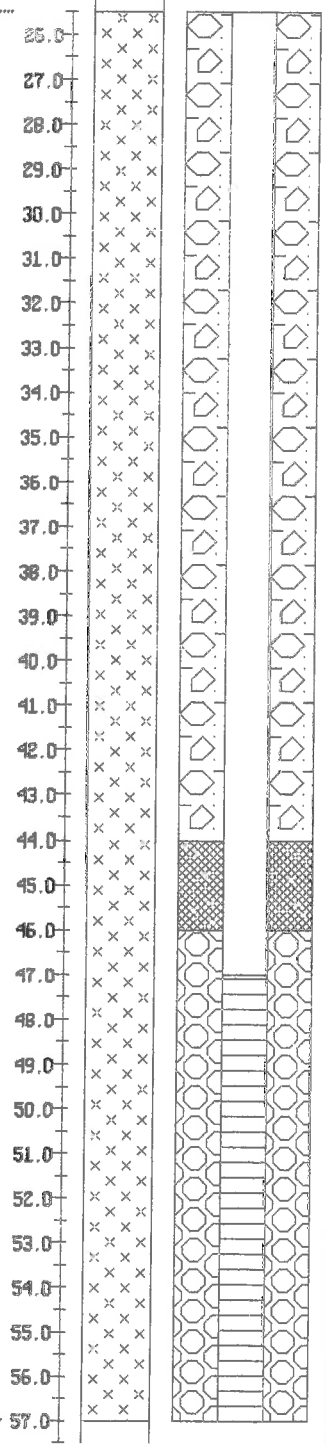
PROJECT NUMBER: DAVDCO-1
PROJECT NAME: Holly Grove Landfill
LOCATION: Lexington, North Carolina
DRILLING COMPANY: Engineering Tectonics
RIG TYPE & NUMBER: MOBILE B-80
DRILLING METHOD: Hollow Stem Auger
WEATHER: Sunny, 90 DEGREES
FIELD PARTY: D. Barron
GEOLOGIST: P. May
DATE BEGUN: 7/29/97 DATE COMPLETED: 7/29/97

TOP OF CASING ELEVATION: 737.60
TOTAL DEPTH: 57.0 FT
GROUND SURFACE ELEVATION: 735.54
SHEET: 2 OF: 2

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	38.59	31.47
Time	11:00	7:00
Date:	7/29/97	7/30/97

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
26.0								DIORITE: competent rock. No water bearing fractures noted.
27.0								
28.0								
29.0								
30.0		G	S7					
31.0								
32.0								
33.0								
34.0								
35.0		G	S8					
36.0								
37.0								
38.0								
39.0								
40.0		G	S9					
41.0								
42.0								
43.0								
44.0								
45.0		G	S10					
46.0								
47.0								
48.0								
49.0								
50.0		G	S11					
51.0								
52.0								
53.0								
54.0								
55.0		G	S12					
56.0								
57.0								Boring terminated at 57.0'.

DEPTH | LITHOLOGY | WELL INSTALLATION



NORTH CAROLINA DEPARTMENT OF HEALTH, ENVIRONMENT, AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, NC 27611, PHONE (919) 783-50S3

FOR OFFICE USE ONLY
Quad No. _____ Serial No. _____
Lat _____ Long. _____ P _____
MinorBasin

WELL CONSTRUCTION RECORD

Davidson County - Holly Grove Assesment
MW-9

DRILLING CONTRACTOR **Engineering Tectonics**

DRILLER REGISTRATION NUMBER **835**

STATE WELL CONSTRUCTION PERMIT NUMBER: _____

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: **Lexington, North Carolina**
220 Landfill Road, Lexington, North Carolina
(Road, Community, or Subdivision and Lot No.)

County: **Davidson County**

2. OWNER **Davidson County**
ADDRESS **220 Landfill Road**
Lexington **NC** **27292**
City or Town State Zip Code

3. DATE DRILLED **7/25/97** USE OF WELL **Monitoring**
4. TOTAL DEPTH **21** Cuttings Collected? ___ Yes ___ No
5. DOES WELL REPLACE EXISTING WELL? ___ Yes **X** No
6. STATIC WATER LEVEL: **16.09** ft ___ above **X** below top of casing.
Top of casing is **2.08** ft above land surface.
7. YIELD (gpm): _____ METHOD OF TEST _____
Water Zones (depth): _____

Depth From	Depth To	Drilling Log: Formation Description
see attached boring logs		

If additional space is needed, use back of form.

9. CHLORINATION: Type _____ Amount _____

10. CASING:

From (Depth)	To (Depth)	Ft	Diameter	Wall Thicknes or Weight/Ft.	Material
0 ft.	11		2-inch	Sch. 40	PVC

11. GROUT:

From (Depth)	To (Depth)	Ft.	Material	Method
0 ft.	7.5		Cement	
7.5	10		Bentonite	

12. SCREEN:

From (Depth)	To (Depth)	Ft	Diameter	Slot Size	Material
11	21		2 in.	10 in.	PVC
			in.	in.	
			in.	in.	

13. GRAVEL PACK

From (Depth)	To (Depth)	Ft	Size	Material
10	21		Fine Filter	Sand

LOCATION SKETCH

(Show directions and distance from at least two State Roads. or other map reference points.)

see attached map

REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 14 NCAC 2C, WELL CONSTRUCTION RECORDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Signature of Contractor or Agent Date

Submit original to Division of Environmental Management & copy to well owner.

FIELD BOREHOLE LOG

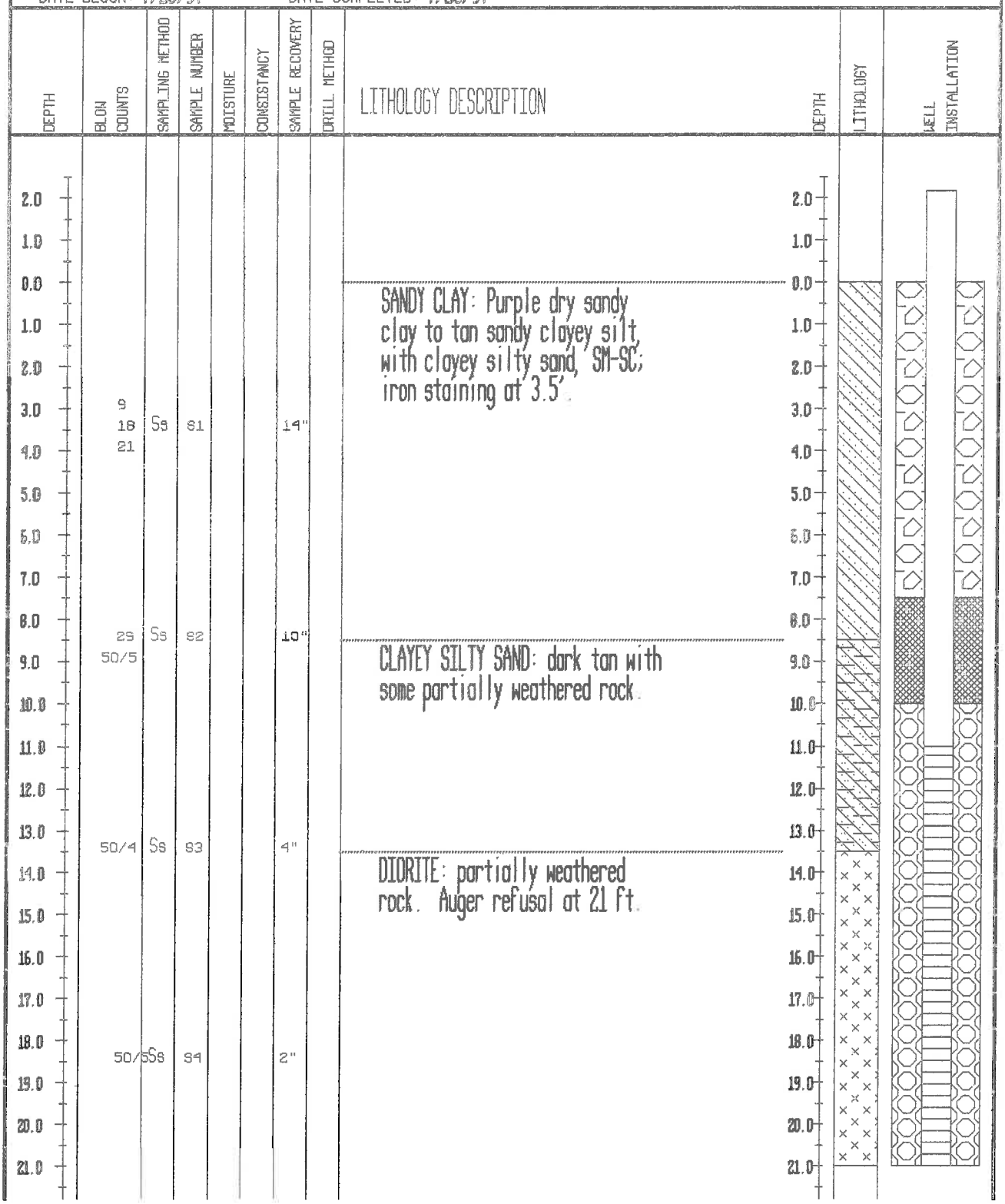
BOREHOLE NUMBER: MW-9

PROJECT NUMBER: DAVDCO-1
PROJECT NAME: Holly Grove Landfill
LOCATION: Lexington, North Carolina
DRILLING COMPANY: Engineering Tectonics
RIG TYPE & NUMBER: MOBILE B-80
DRILLING METHOD: Hollow Stem Auger
WEATHER: Sunny, 80 DEGREES
FIELD PARTY: D. Barron
GEOLOGIST: P. May
DATE BEGUN: 7/25/97 DATE COMPLETED: 7/25/97

TOP OF CASING ELEVATION: 719.03
TOTAL DEPTH: 21.0 FT
GROUND SURFACE ELEVATION: 716.95
SHEET: 1 OF: 1

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	14.01 bg	15.78 bg
Time	-	-
Date:	7/25/97	7/28/97

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
3.0	9 18 21	Ss	S1			14"		SANDY CLAY: Purple dry sandy clay to tan sandy clayey silt, with clayey silty sand, SM-SC; iron staining at 3.5'.
8.0	29 50/5	Ss	S2			10"		CLAYEY SILTY SAND: dark tan with some partially weathered rock.
13.0	50/4	Ss	S3			4"		DIORITE: partially weathered rock. Auger refusal at 21 ft.
18.0	50/5	Ss	S4			2"		



NORTH CAROLINA DEPARTMENT OF HEALTH, ENVIRONMENT, AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, NC 27611, PHONE (919) 783-50S3

FOR OFFICE USE ONLY
Quad No. _____ Serial No. _____
Lat _____ Long. _____ P _____
MinorBasin

WELL CONSTRUCTION RECORD

Davidson County - Holly Grove Assesment
MW-10

DRILLING CONTRACTOR **Engineering Tectonics**

DRILLER REGISTRATION NUMBER **835**

STATE WELL CONSTRUCTION PERMIT NUMBER: _____

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: **Lexington, North Carolina**
220 Landfill Road, Lexington, North Carolina
(Road, Community, or Subdivision and Lot No.)

County: **Davidson County**

2. OWNER **Davidson County**
ADDRESS **220 Landfill Road**
Lexington **NC** **27292**
City or Town State Zip Code

3. DATE DRILLED **7/30/97** USE OF WELL **Monitoring**

4. TOTAL DEPTH **13** Cuttings Collected? ___ Yes ___ No

5. DOES WELL REPLACE EXISTING WELL? ___ Yes **X** No

6. STATIC WATER LEVEL: **5.04** ft ___ above **X** below top of casing.
Top of casing is **2.56** ft above land surface.

7. YIELD (gpm): _____ METHOD OF TEST _____

Water Zones (depth): _____

9. CHLORINATION: Type _____ Amount _____

10. CASING:

From	To	Ft	Diameter	Wall Thicknes or Weight/Ft.	Material
0 ft.	**5.5**		**2-inch**	**Sch. 40**	**PVC**

11. GROUT:

From	To	Ft.	Material	Method
0 ft.	**2.5**		**Cement**	
2.5	**4.5**		**Bentonite**	

12. SCREEN:

From	To	Ft	Diameter	Slot Size	Material
5.5	**13**		**2** in.	**10** in.	**PVC**
			in.	in.	
			in.	in.	

13. GRAVEL PACK

From	To	Ft	Size	Material
4.5	**13**		**Fine Filter**	**Sand**

Depth From	Depth To	Drilling Log: Formation Description
see attached boring logs		

If additional space is needed, use back of form.

LOCATION SKETCH

(Show directions and distance from at least two State Roads. or other map reference points.)

see attached map

REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 14 NCAC 2C, WELL CONSTRUCTION RECORDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Signature of Contractor or Agent Date

Submit original to Division of Environmental Management & copy to well owner.

FIELD BOREHOLE LOG

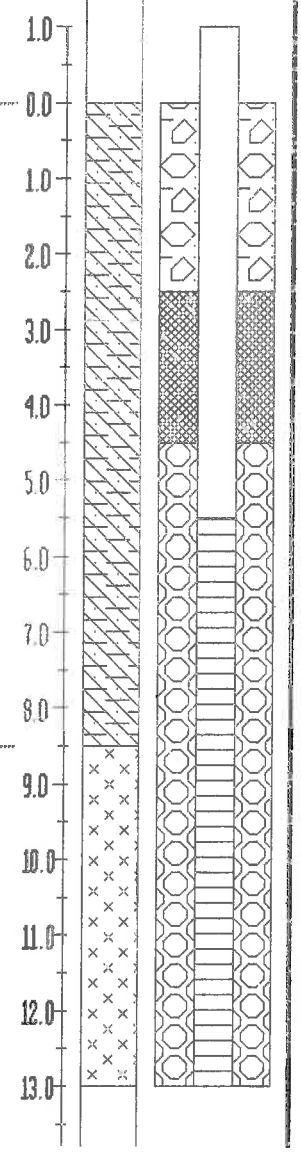
BOREHOLE NUMBER: MW-10

PROJECT NUMBER: DAVDCO-1
PROJECT NAME: Holly Grove Landfill
LOCATION: Lexington, North Carolina
DRILLING COMPANY: Engineering Tectonics
RIG TYPE & NUMBER: MOBILE B-80
DRILLING METHOD: Hollow Stem Auger
WEATHER: Sunny, 80 DEGREES
FIELD PARTY: D. Barron
GEOLOGIST: P. May
DATE BEGUN: 7/30/97 DATE COMPLETED: 7/30/97

TOP OF CASING ELEVATION: 678.24
TOTAL DEPTH: 13.0 FT
GROUND SURFACE ELEVATION: 675.68
SHEET: 1 OF: 1

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	9.0 bg	2.48 bg
Time	11:00 am	-
Date:	7/30/97	7/31/97

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
1.0								
0.0								CLAYEY SILT: Dark brown, dry, clayey silt with some gravel. Some brown silty sandy clay.
1.0								
2.0								
3.0	5	Ss	S1			18"		
4.0	8							
	8							
5.0								
6.0								
7.0								
8.0	50/6	Ss	S2			8"		
9.0								DIORITE: partially weathered rock. Auger refusal at 13'.
10.0								
11.0								
12.0								
13.0								



NORTH CAROLINA DEPARTMENT OF HEALTH, ENVIRONMENT, AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, NC 27611, PHONE (919) 783-50S3

FOR OFFICE USE ONLY
Quad No. _____ Serial No. _____
Lat _____ Long. _____ P _____
MinorBasin

WELL CONSTRUCTION RECORD

Davidson County - Holly Grove Assesment
MW-11

DRILLING CONTRACTOR **Engineering Tectonics**

DRILLER REGISTRATION NUMBER **835**

STATE WELL CONSTRUCTION PERMIT NUMBER: _____

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: **Lexington, North Carolina**
220 Landfill Road, Lexington, North Carolina
(Road, Community, or Subdivision and Lot No.)

County: **Davidson County**

2. OWNER **Davidson County**
ADDRESS **220 Landfill Road**
Lexington **NC** **27292**
City or Town State Zip Code

3. DATE DRILLED **7/29/97** USE OF WELL **Monitoring**
4. TOTAL DEPTH **38.0** Cuttings Collected? ___ Yes ___ No
5. DOES WELL REPLACE EXISTING WELL? ___ Yes **X** No
6. STATIC WATER LEVEL: **25.60** ft ___ above **X** below top of casing.
Top of casing is **2.35** ft above land surface.
7. YIELD (gpm): _____ METHOD OF TEST _____
Water Zones (depth): _____

Depth From	Depth To	Drilling Log: Formation Description
see attached boring logs		

If additional space is needed, use back of form.

9. CHLORINATION: Type _____ Amount _____
10. CASING:

From (Depth)	To (Depth)	Ft	Diameter	Wall Thicknes or Weight/Ft.	Material
0 ft.	**28**		**2-inch**	**Sch. 40**	**PVC**

11. GROUT:

From (Depth)	To (Depth)	Ft.	Material	Method
0 ft.	**25**		**Cement**	
25	**27**		**Bentonite**	

12. SCREEN:

From (Depth)	To (Depth)	Ft	Diameter	Slot Size	Material
28	**38**		**2** in.	**10** in.	**PVC**
			in.	in.	
			in.	in.	

13. GRAVEL PACK

From (Depth)	To (Depth)	Ft	Size	Material
27	**38**		**Fine Filter**	**Sand**

LOCATION SKETCH
(Show directions and distance from at least two State Roads. or other map reference points.)

see attached map

REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 14 NCAC 2C, WELL CONSTRUCTION RECORDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Signature of Contractor or Agent Date

Submit original to Division of Environmental Management & copy to well owner.

FIELD BOREHOLE LOG

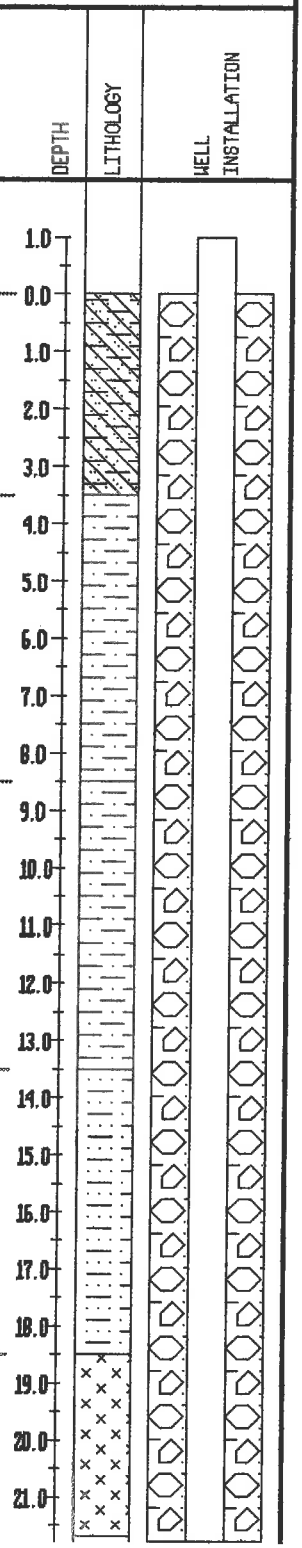
BOREHOLE NUMBER: MW-11

PROJECT NUMBER: DAVDCO-1
PROJECT NAME: Holly Grove Landfill
LOCATION: Lexington, North Carolina
DRILLING COMPANY: Engineering Tectonics
RIG TYPE & NUMBER: MOBILE B-80
DRILLING METHOD: Hollow Stem Auger
WEATHER: Sunny, 80 DEGREES
FIELD PARTY: D. Barron
GEOLOGIST: P. May
DATE BEGUN: 7/29/97 DATE COMPLETED: 7/29/97

TOP OF CASING ELEVATION: 680.07
TOTAL DEPTH: 30.0 FT
GROUND SURFACE ELEVATION: 677.72
SHEET: 1 OF: 2

STATIC WATER LEVEL (BLS)		
WD-While Drilling AB-After Boring		
Depth(ft)	23.25 bg	23.28 bg
Time	-	-
Date:	7/31/97	8/4/97

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
0.0–1.0	3 4 8	Ss	S1			12"		SANDY CLAYEY SILT: brown to tan sandy clayey silt, dry.
3.0–4.0	18 26 34	Ss	S2			10"		SILT: Brown silt with trace clay and sand, dry.
8.0–9.0	18 50/5	Ss	S3			10"		SILT: Brown silt with trace clay and sand, dry, damp at 10'.
13.0–14.0	50/6	Ss	S4			6"		SANDY SILT: Dry, gravelly sandy silt. with manganese and iron staining. Partially weathered rock.
18.0–19.0	50/3	Ss				0"		DIORITE: competent rock.
20.0			S5					



FIELD BOREHOLE LOG

BOREHOLE NUMBER: MW-11

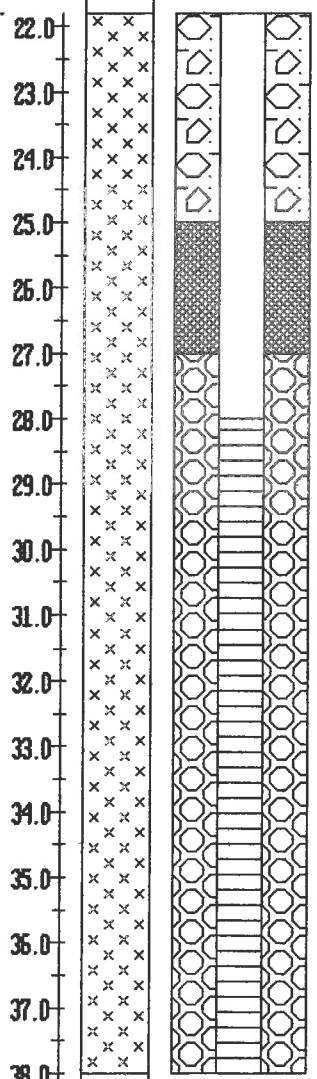
ROJECT NUMBER: **DAVDCD-1**
PROJECT NAME: **Holly Grove Landfill**
LOCATION: **Lexington, North Carolina**
DRILLING COMPANY: **Engineering Tectonics**
RIG TYPE & NUMBER: **MOBILE B-80**
DRILLING METHOD: **Hollow Stem Auger**
WEATHER: **Sunny, 80 DEGREES**
FIELD PARTY: **D. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **7/29/97** DATE COMPLETED: **7/29/97**

TOP OF CASING ELEVATION: **680.07**
TOTAL DEPTH: **38.0 FT**
GROUND SURFACE ELEVATION: **677.72**
SHEET: **2** OF: **2**

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	23.25 bg	23.28 bg
Time	-	-
Date:	7/31/97	8/4/97

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
22.0								DIORITE: competent rock. water bearing fracture at 34 ft. Boring terminated at 38'.
23.0								
24.0								
25.0		G	S6					
26.0								
27.0								
28.0								
29.0								
30.0		G	S7					
31.0								
32.0								
33.0								
34.0								
35.0		G	S8					
36.0								
37.0								
38.0								
39.0								
40.0								

DEPTH | LITHOLOGY | WELL INSTALLATION



NORTH CAROLINA DEPARTMENT OF HEALTH, ENVIRONMENT, AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, NC 27611, PHONE (919) 783-50S3

FOR OFFICE USE ONLY

Quad No. _____ Serial No. _____
Lat _____ Long. _____ P _____
MinorBasin

WELL CONSTRUCTION RECORD

Davidson County - Holly Grove Assesment
MW-12

DRILLING CONTRACTOR **Engineering Tectonics**

DRILLER REGISTRATION NUMBER **835**

STATE WELL CONSTRUCTION PERMIT NUMBER: _____

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: **Lexington, North Carolina**
220 Landfill Road, Lexington, North Carolina
(Road, Community, or Subdivision and Lot No.)

County: **Davidson County**

2. OWNER **Davidson County**
ADDRESS **220 Landfill Road**
Lexington **NC** **27292**
City or Town State Zip Code

3. DATE DRILLED **7/30/97** USE OF WELL **Monitoring**

4. TOTAL DEPTH **65** Cuttings Collected? ____ Yes ____ No

5. DOES WELL REPLACE EXISTING WELL? ____ Yes **X** No

6. STATIC WATER LEVEL: **64.45** ft ____ above **X** below top of casing.
Top of casing is **2.40** ft above land surface.

7. YIELD (gpm): _____ METHOD OF TEST _____

Water Zones (depth): _____

9. CHLORINATION: Type _____ Amount _____

10. CASING:

	Depth			Diameter	Wall Thicknes or Weight/Ft.	Material
From	0 ft.	To	28.5 Ft	6-inch	Sch. 40	PVC
From	0	To	55 Ft	2-inch	Sch. 40	PVC
From		To	Ft			

11. GROUT:

	Depth			Material	Method
From	0 ft.	To	51.5 Ft.	Cement	
From	51.5	To	53.5 Ft.	Bentonite	

12. SCREEN:

	Depth			Diameter	Slot Size	Material
From	55	To	65 Ft	2 in.	10 in.	PVC
From		To	Ft	in.	in.	
From		To	Ft	in.	in.	

13. GRAVEL PACK

	Depth			Size	Material
From	53.5	To	65 Ft	Fine Filter	Sand
From		To	Ft		

Depth From	Depth To	Drilling Log: Formation Description
see attached boring logs		

If additional space is needed, use back of form.

LOCATION SKETCH

(Show directions and distance from at least two State Roads. or other map reference points.)

see attached map

REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 14 NCAC 2C, WELL CONSTRUCTION RECORDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Signature of Contractor or Agent Date

Submit original to Division of Environmental Management & copy to well owner.

FIELD BOREHOLE LOG

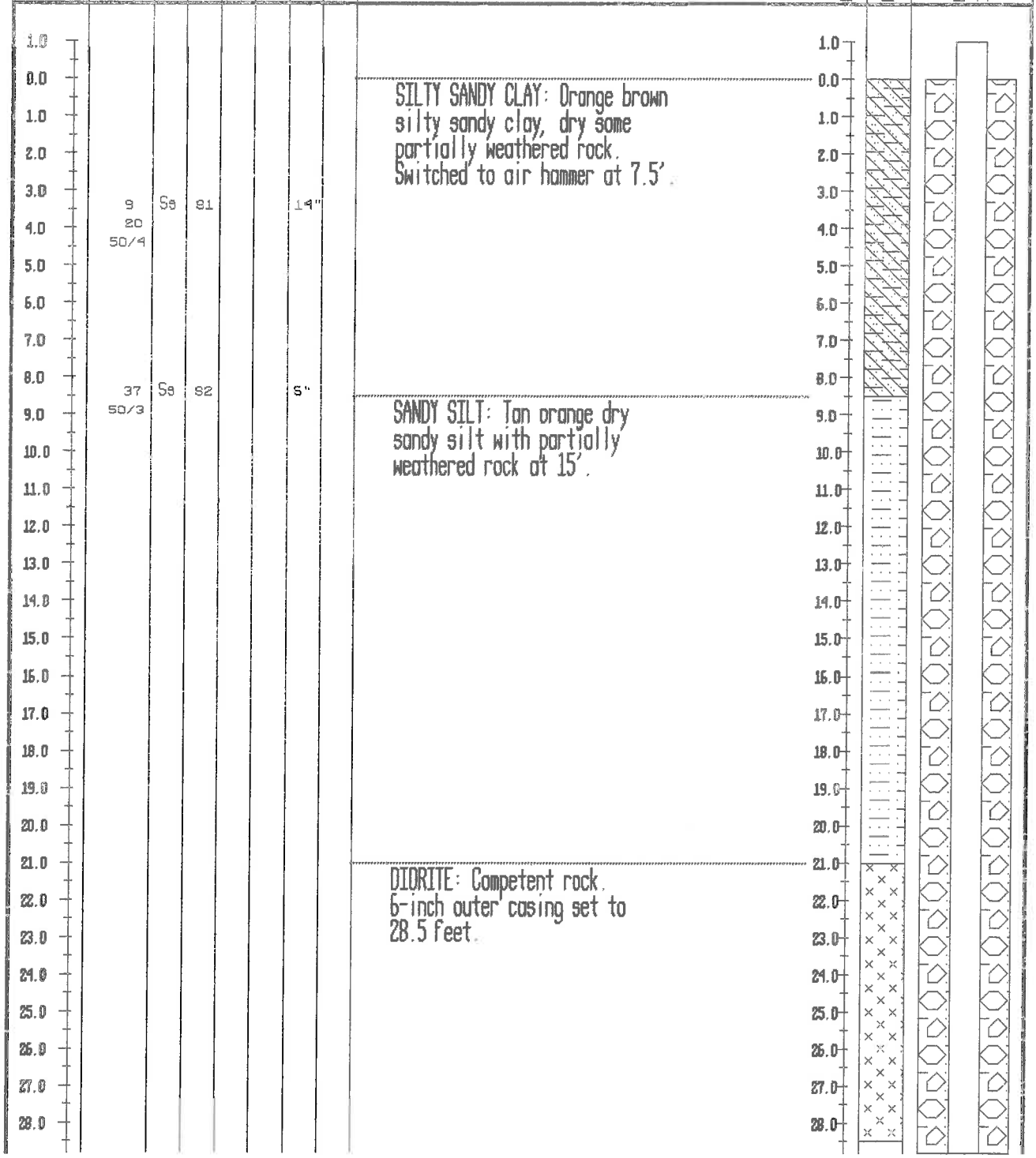
BOREHOLE NUMBER: MW-12

PROJECT NUMBER: DAVDCO-1
PROJECT NAME: Holly Grove Landfill
LOCATION: Lexington, North Carolina
DRILLING COMPANY: Engineering Tectonics
RIG TYPE & NUMBER: MOBILE B-80
DRILLING METHOD: Hollow Stem Auger
WEATHER: Sunny, 80 DEGREES
FIELD PARTY: D. Barron
GEOLOGIST: F. May
DATE BEGUN: 7/29/97 DATE COMPLETED: 7/30/97

TOP OF CASING ELEVATION: 671.48
TOTAL DEPTH: 65.0 FT
GROUND SURFACE ELEVATION: 669.08
SHEET: 1 OF: 2

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	63.7 bg	62.05 bg
Time	-	7:00 pm
Date:	7/31/97	8/1/97

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
3.0–4.0	9, 20, 50/4	Ss	S1			14"		SILTY SANDY CLAY: Orange brown silty sandy clay, dry some partially weathered rock. Switched to air hammer at 7.5'.
8.0–9.0	37, 50/3	Ss	S2			5"		SANDY SILT: Tan orange dry sandy silt with partially weathered rock at 15'.
21.0–28.0								DIORITE: Competent rock. 6-inch outer casing set to 28.5 feet.



FIELD BOREHOLE LOG

BOREHOLE NUMBER: MW-12

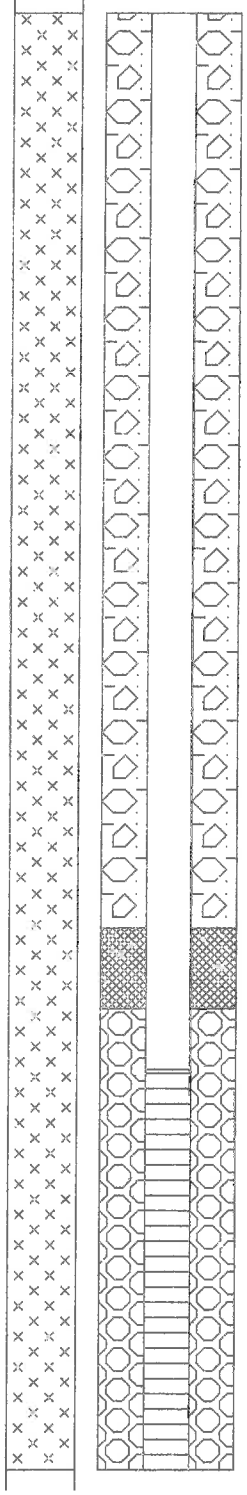
PROJECT NUMBER: DAVDCO-1
PROJECT NAME: Holly Grove Landfill
LOCATION: Lexington, North Carolina
DRILLING COMPANY: Engineering Tectonics
RIG TYPE & NUMBER: MOBILE B-80
DRILLING METHOD: Hollow Stem Auger
WEATHER: Sunny, 80 DEGREES
FIELD PARTY: D. Barron
GEOLOGIST: P. May
DATE BEGUN: 7/29/97 DATE COMPLETED: 7/30/97

TOP OF CASING ELEVATION: 671.48
TOTAL DEPTH: 65.0 FT
GROUND SURFACE ELEVATION: 669.08
SHEET: 2 OF: 2

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(Ft)	63.7 bg	62.05 bg
Time	-	7:00 pm
Date:	7/31/97	8/1/97

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
29.0								DIORITE: No water bearing fractures. Boring Terminated at 65 feet.
30.0								
31.0								
32.0								
33.0								
34.0								
35.0								
36.0								
37.0								
38.0								
39.0								
40.0								
41.0								
42.0								
43.0								
44.0								
45.0								
46.0								
47.0								
48.0								
49.0								
50.0								
51.0								
52.0								
53.0								
54.0								
55.0								
56.0								
57.0								
58.0								
59.0								
60.0								
61.0								
62.0								
63.0								
64.0								
65.0								

LITHOLOGY



WELL INSTALLATION

NORTH CAROLINA DEPARTMENT OF HEALTH, ENVIRONMENT, AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, NC 27611, PHONE (919) 783-50S3

FOR OFFICE USE ONLY

Quad No. _____ Serial No. _____
Lat _____ Long. _____ P _____
MinorBasin

WELL CONSTRUCTION RECORD

Davidson County - Holly Grove Assesment
MW-13

DRILLING CONTRACTOR **Engineering Tectonics**

DRILLER REGISTRATION NUMBER **835**

STATE WELL CONSTRUCTION PERMIT NUMBER: _____

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: **Lexington, North Carolina**
220 Landfill Road, Lexington, North Carolina
(Road, Community, or Subdivision and Lot No.)

County: **Davidson County**

2. OWNER **Davidson County**
ADDRESS **220 Landfill Road**
Lexington **NC** **27292**
City or Town State Zip Code

3. DATE DRILLED **7/29/97** USE OF WELL **Monitoring**

4. TOTAL DEPTH **22.5** Cuttings Collected? ___ Yes ___ No

5. DOES WELL REPLACE EXISTING WELL? ___ Yes **X** No

6. STATIC WATER LEVEL: **16.45** ft ___ above **X** below top of casing.
Top of casing is **2.42** ft above land surface.

7. YIELD (gpm): _____ METHOD OF TEST _____
Water Zones (depth): _____

9. CHLORINATION: Type _____ Amount _____

10. CASING:

	Depth From	Depth To		Diameter	Wall Thicknes or Weight/Ft.	Material
	0 ft.	**12.5**	Ft	**2-inch**	**Sch. 40**	**PVC**
			Ft			
			Ft			

11. GROUT:

	Depth From	Depth To		Material	Method
	0 ft.	**8.5**	Ft.	**Cement**	
	8.5	**10.5**	Ft.	**Bentonite**	

12. SCREEN:

	Depth From	Depth To		Diameter		Slot Size		Material
	12.5	**22.5**	Ft	**2**	in.	**10**	in.	**PVC**
			Ft		in.		in.	
			Ft		in.		in.	

13. GRAVEL PACK

	Depth From	Depth To		Size	Material
	10.5	**22.5**	Ft	**Fine Filter**	**Sand**
			Ft		

Depth From	Depth To	Drilling Log: Formation Description
see attached boring logs		

If additional space is needed, use back of form.

LOCATION SKETCH

(Show directions and distance from at least two State Roads. or other map reference points.)

see attached map

REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 14 NCAC 2C, WELL CONSTRUCTION RECORDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Signature of Contractor or Agent Date

Submit original to Division of Environmental Management & copy to well owner.

FIELD BOREHOLE LOG

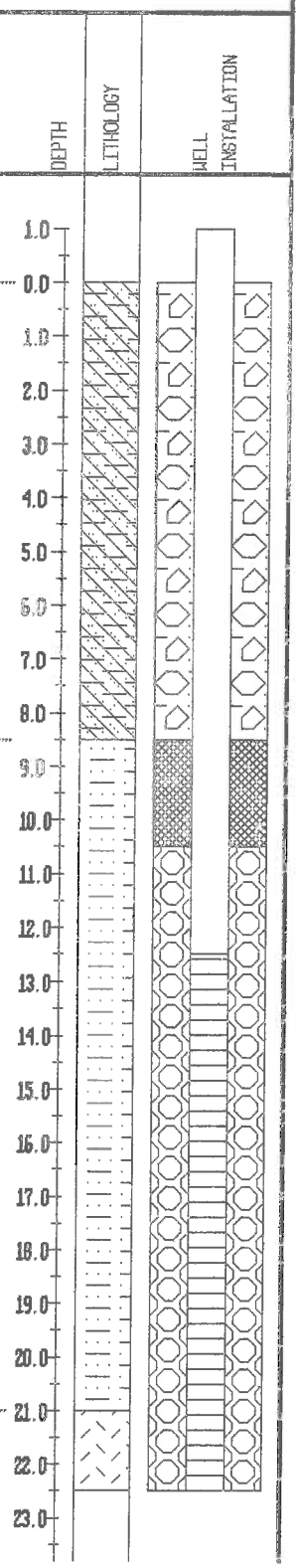
BOREHOLE NUMBER: MW-13

PROJECT NUMBER: DAVDCO-1
PROJECT NAME: Holly Grove Landfill
LOCATION: Lexington, North Carolina
DRILLING COMPANY: Engineering Tectonics
RIG TYPE & NUMBER: MOBILE B-80
DRILLING METHOD: Hollow Stem Auger
WEATHER: Sunny, 80 DEGREES
FIELD PARTY: D. Barron
GEOLOGIST: P. May
DATE BEGUN: 7/29/97 DATE COMPLETED: 7/29/97

TOP OF CASING ELEVATION: 671.31
TOTAL DEPTH: 22.5 FT
GROUND SURFACE ELEVATION: 668.89
SHEET: 1 OF: 1

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	14.50 bg	14.03 bg
Time	-	-
Date:	7/29/97	7/31/97

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
3.0–4.0	9 20 50/4	SS	S1			14"		SILTY SANDY CLAY: Orange brown silty sandy clay, dry some partially weathered rock. Switched to air hammer at 7.5'.
8.0–9.0	37 50/3	SS	S2			6"		SANDY SILT: Tan orange dry sandy silt with partially weathered rock at 15'.
21.0–23.0								GRANITE: Fairly competent rock. Some partially weathered rock. Boring Terminated at 22.5'.



NORTH CAROLINA DEPARTMENT OF HEALTH, ENVIRONMENT, AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, NC 27611, PHONE (919) 783-50S3

FOR OFFICE USE ONLY

Quad No. _____ Serial No. _____
Lat _____ Long. _____ P _____
MinorBasin

WELL CONSTRUCTION RECORD

Davidson County - Holly Grove Assesment
MW-14

DRILLING CONTRACTOR **Engineering Tectonics**

DRILLER REGISTRATION NUMBER **835**

STATE WELL CONSTRUCTION PERMIT NUMBER: _____

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: **Lexington, North Carolina**
220 Landfill Road, Lexington, North Carolina
(Road, Community, or Subdivision and Lot No.)

County: **Davidson County**

2. OWNER **Davidson County**
ADDRESS **220 Landfill Road**
Lexington (City or Town) **NC** (State) **27292** (Zip Code)

3. DATE DRILLED **7/24/97** USE OF WELL **Monitoring**
4. TOTAL DEPTH **42** Cuttings Collected? ___ Yes ___ No
5. DOES WELL REPLACE EXISTING WELL? ___ Yes **X** No
6. STATIC WATER LEVEL: **15.45** ft ___ above **X** below top of casing.
Top of casing is **2.61** ft above land surface.
7. YIELD (gpm): _____ METHOD OF TEST _____
Water Zones (depth): _____
9. CHLORINATION: Type _____ Amount _____

Depth From	Depth To	Drilling Log: Formation Description
see attached boring logs		

If additional space is needed, use back of form.

10. CASING:

From (Depth)	To (Depth)	Ft	Diameter	Wall Thicknes or Weight/Ft.	Material
0 ft.	**19**		**6-inch**	**Sch. 40**	**PVC**
0	**42**		**2-inch**	**Sch. 40**	**PVC**

11. GROUT:

From (Depth)	To (Depth)	Ft.	Material	Method
0 ft.	**29**		**Cement**	
29	**31**		**Bentonite**	

12. SCREEN:

From (Depth)	To (Depth)	Ft	Diameter	Slot Size	Material
32	**42**		**2** in.	**10** in.	**PVC**
			in.	in.	
			in.	in.	

13. GRAVEL PACK

From (Depth)	To (Depth)	Ft	Size	Material
31	**42**		**Fine Filter**	**Sand**

LOCATION SKETCH

(Show directions and distance from at least two State Roads. or other map reference points.)

see attached map

REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 14 NCAC 2C, WELL CONSTRUCTION RECORDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Signature of Contractor or Agent Date

Submit original to Division of Environmental Management & copy to well owner.

FIELD BOREHOLE LOG

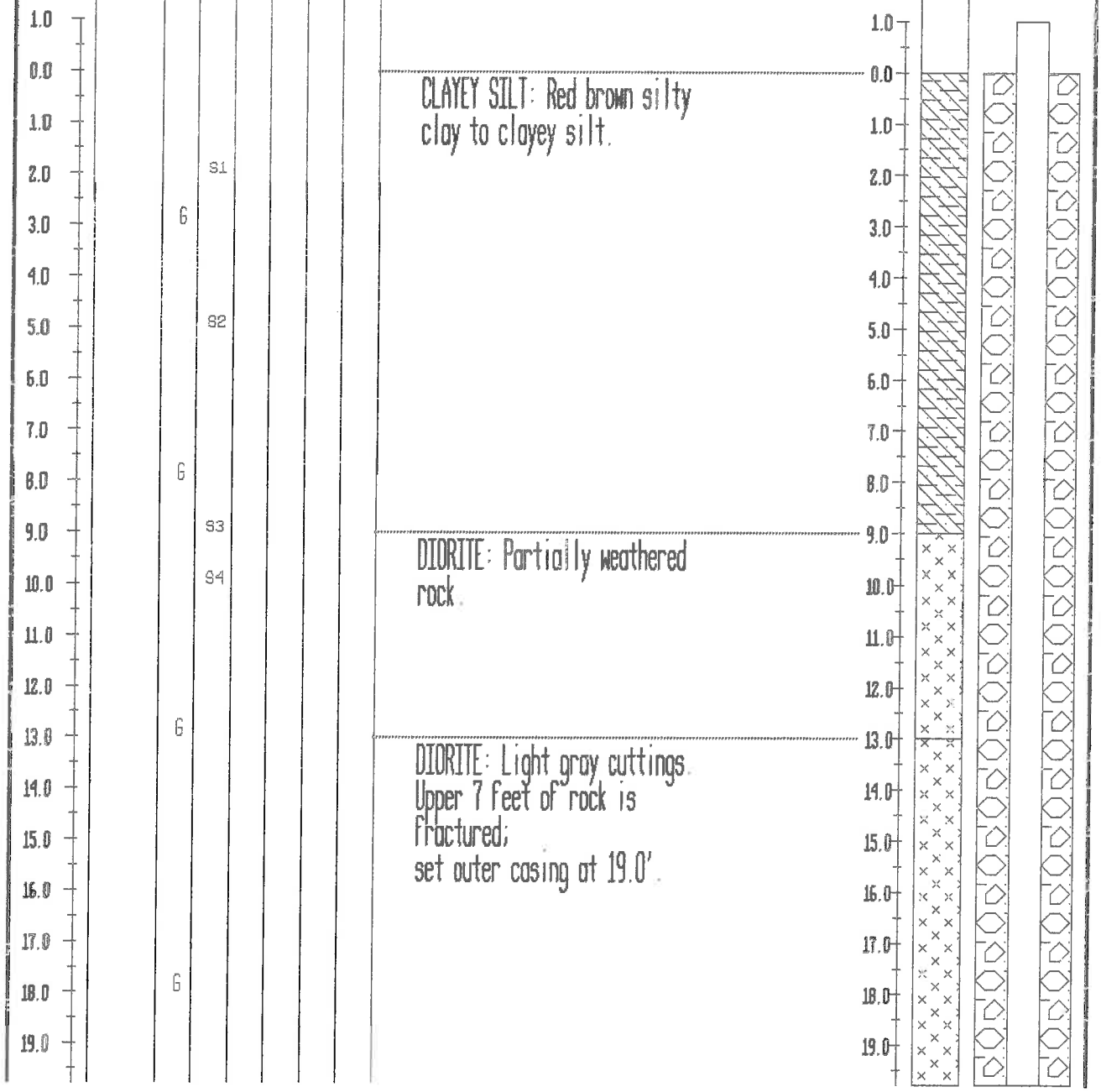
BOREHOLE NUMBER: MW-14

PROJECT NUMBER: DAVDCO-1
PROJECT NAME: Holly Grove Landfill
LOCATION: Lexington, North Carolina
DRILLING COMPANY: Engineering Tectonics
RIG TYPE & NUMBER: MOBILE B-80
DRILLING METHOD: Roller Bit/Air Hammer
WEATHER: Sunny, 80 DEGREES
FIELD PARTY: D. Barron
GEOLOGIST: J. Finkbeiner
DATE BEGUN: 7/22/97 DATE COMPLETED: 7/24/97

TOP OF CASING ELEVATION: 666.04
TOTAL DEPTH: 42.0 FT
GROUND SURFACE ELEVATION: 663.43
SHEET: 1 OF: 2

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	12.77 bg	12.84 bg
Time	-	-
Date:	7/28/97	7/31/97

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
0.0–9.0			S1, S2, S3, S4					CLAYEY SILT: Red brown silty clay to clayey silt.
9.0–19.0								DIORITE: Partially weathered rock.
13.0–19.0								DIORITE: Light gray cuttings. Upper 7 feet of rock is fractured; set outer casing at 19.0'.



FIELD BOREHOLE LOG

BOREHOLE NUMBER: MW-14

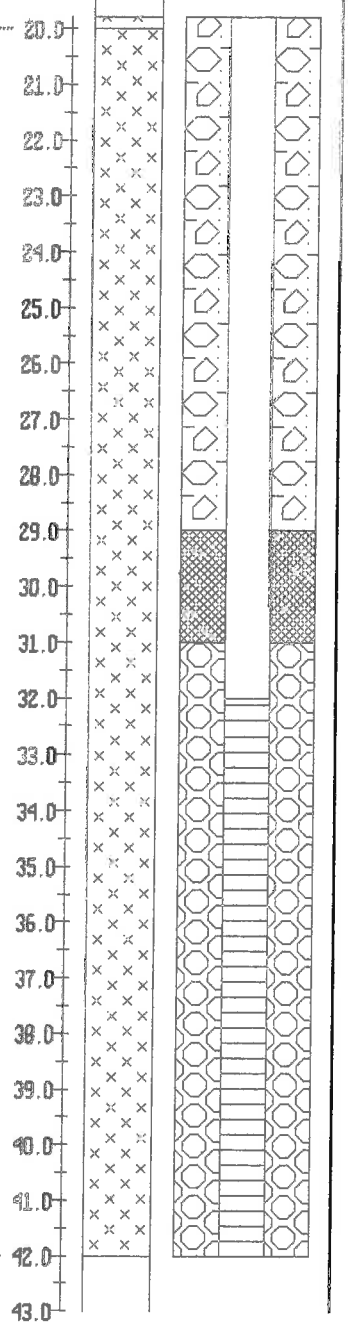
PROJECT NUMBER: DAVDCO-1
PROJECT NAME: Holly Grove Landfill
LOCATION: Lexington, North Carolina
DRILLING COMPANY: Engineering Tectonics
RIG TYPE & NUMBER: MOBILE B-80
DRILLING METHOD: Roller Bit/Air Hammer
WEATHER: Sunny, 80 DEGREES
FIELD PARTY: D. Barron
GEOLOGIST: J. Finkbeiner
DATE BEGUN: 7/22/97 DATE COMPLETED: 7/24/97

TOP OF CASING ELEVATION: 666.04
TOTAL DEPTH: 42.0 FT
GROUND SURFACE ELEVATION: 663.43
SHEET: 2 OF: 2

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	12.77 bg	12.84 bg
Time	-	-
Date:	7/28/97	7/31/97

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
20.0								DIORITE: Light gray cuttings. water seam at 38.5 feet.
21.0								
22.0								
23.0		G						
24.0								
25.0			S5					
26.0								
27.0								
28.0		G						
29.0			S6					
30.0								
31.0								
32.0								
33.0		G						
34.0								
35.0								
36.0								
37.0								
38.0		G	S7					
39.0								
40.0								
41.0								
42.0								Boring terminated at 42.0'.
43.0		G						

DEPTH | LITHOLOGY | WELL INSTALLATION



NORTH CAROLINA DEPARTMENT OF HEALTH, ENVIRONMENT, AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, NC 27611, PHONE (919) 783-50S3

FOR OFFICE USE ONLY
Quad No. _____ Serial No. _____
Lat _____ Long. _____ P _____
MinorBasin

WELL CONSTRUCTION RECORD

Davidson County - Holly Grove Assesment
MW-15

DRILLING CONTRACTOR **Engineering Tectonics**

DRILLER REGISTRATION NUMBER **835**

STATE WELL CONSTRUCTION PERMIT NUMBER: _____

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: **Lexington, North Carolina**
220 Landfill Road, Lexington, North Carolina
(Road, Community, or Subdivision and Lot No.)

County: **Davidson County**

2. OWNER **Davidson County**
ADDRESS **220 Landfill Road**
Lexington **NC** **27292**
City or Town State Zip Code

3. DATE DRILLED **7/25/97** USE OF WELL **Monitoring**

4. TOTAL DEPTH **23.5** Cuttings Collected? ___ Yes ___ No

5. DOES WELL REPLACE EXISTING WELL? ___ Yes **X** No

6. STATIC WATER LEVEL: **16.79** ft ___ above **X** below top of casing.
Top of casing is **2.04** ft above land surface.

7. YIELD (gpm): _____ METHOD OF TEST _____

Water Zones (depth): _____

9. CHLORINATION: Type _____ Amount _____

10. CASING:

From	To	Ft	Diameter	Wall Thicknes or Weight/Ft.	Material
0 ft.	23.5		2-inch	Sch. 40	PVC

11. GROUT:

From	To	Ft.	Material	Method
0 ft.	5.5		Cement	
5.5	7.5		Bentonite	

12. SCREEN:

From	To	Ft	Diameter	Slot Size	Material
8.5	23.5		2 in.	10 in.	PVC
			in.	in.	
			in.	in.	

13. GRAVEL PACK

From	To	Ft	Size	Material
7.5	23.5		Fine Filter	Sand

Depth From	Depth To	Drilling Log: Formation Description
see attached boring logs		

If additional space is needed, use back of form.

LOCATION SKETCH

(Show directions and distance from at least two State Roads. or other map reference points.)

see attached map

REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 14 NCAC 2C, WELL CONSTRUCTION RECORDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Signature of Contractor or Agent Date

Submit original to Division of Environmental Management & copy to well owner.

FIELD BOREHOLE LOG

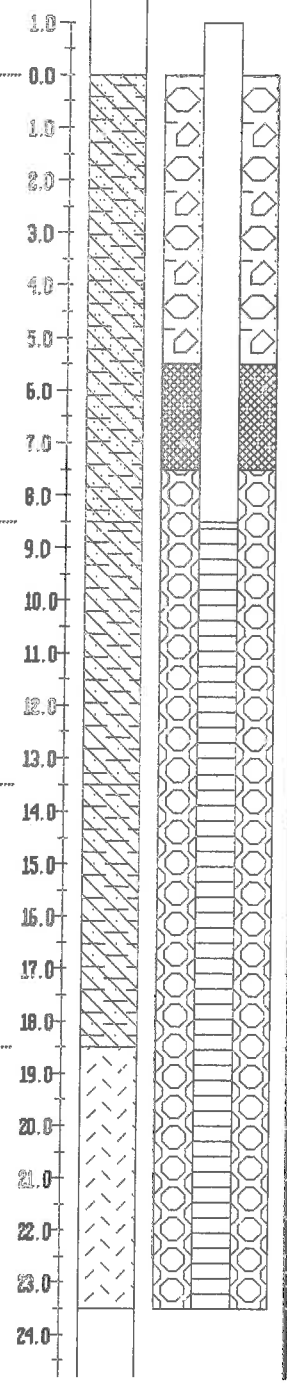
BOREHOLE NUMBER: MW-15

PROJECT NUMBER: DAVDCO-1
PROJECT NAME: Holly Grove Landfill
LOCATION: Lexington, North Carolina
DRILLING COMPANY: Engineering Tectonics
RIG TYPE & NUMBER: MOBILE B-80
DRILLING METHOD: Hollow Stem Auger
WEATHER: Sunny, 80 DEGREES
FIELD PARTY: D. Barron
GEOLOGIST: P. May
DATE BEGUN: 7/25/97 DATE COMPLETED: 7/25/97

TOP OF CASING ELEVATION: 697.33
TOTAL DEPTH: 23.5 FT
GROUND SURFACE ELEVATION: 695.29
SHEET: 1 OF: 1

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	13.30 bg	14.75
Time	-	-
Date:	7/25/97	7/31/97

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
3.0–4.0	1 2 2	Ss	S1			18"		SANDY CLAYEY SILT: Dark brown. Has ribbon and cast. ML-CL.
8.0–9.0	8 12 21	Ss	S2			14"		CLAYEY SILT: Brown gray clayey silt with trace sand. Some ribbon and cast with relict banding. ML.
13.0–14.0	29 50/5	Ss	S3			10"		SILTY CLAY: Brown silty clay with ribbon and cast, dry, with 6" partially weathered rock.
18.0–19.0	50/4	Ss	S4			6"		GRANITE: Tan partially weathered rock. CL. Auger refusal at 23.5 ft.



Smith Gardner, Inc.

14 North Boylan Avenue, Raleigh NC 27603

(919) 828-0577

FIELD BOREHOLE LOG

BOREHOLE NUMBER **MW-16** Page 1 of 1

PROJECT NAME: **Davidson County - Holly Grove Landfills**

LOCATION: **Lexington, NC**

DRILLING CO: **Engineering Tectonics, P.A.**

DRILLING METHOD: **HSA/AH**

FIELD PARTY: **R. Barron**

GEOLOGIST: **P. May**

DATE BEGUN: **12/7/00** COMPLETED: **1/11/00**

TOTAL DEPTH: **50**

TOP OF CASING ELEV.: GROUND ELEV.: **NA**

NORTHING: **0** EASTING: **0**

STATIC WATER LEVEL (from TOC)		
Depth (ft)	38.0	41.69
Time	16:00	10:00
Date	1/11/00	1/24/01

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				HSA	PWR: Dry tan-orange partially weathered rock w/ white mottles throughout.		0.0	
5.0	26,50/5"	SS	6"				5.0	
10.0	50/0"	SS	0"	AH	DIORITE: Competent diorite.		10.0	
15.0							15.0	
20.0							20.0	
25.0							25.0	
30.0							30.0	
35.0					DIORITE: Competent diorite. Boring terminated at 50'.		35.0	
40.0							40.0	
45.0							45.0	
50.0							50.0	

Smith Gardner, Inc.

14 North Boylan Avenue, Raleigh NC 27603
(919) 828-0577

FIELD BOREHOLE LOG

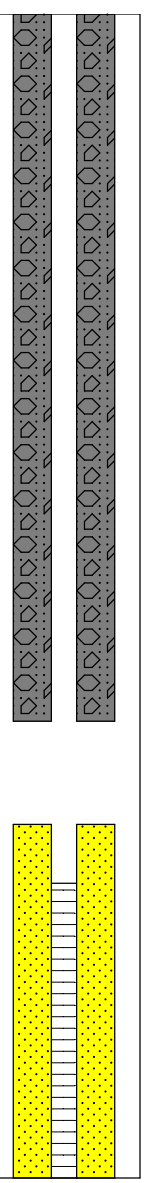
BOREHOLE NUMBER **MW-17**

PROJECT NAME: **Davidson County - Holly Grove Landfills**
LOCATION: **Lexington, NC**
DRILLING CO: **Engineering Tectonics, P.A.**
DRILLING METHOD: **HSA/AH**
FIELD PARTY: **R. Barron**
GEOLOGIST: **P. May**
DATE BEGUN: **12/7/00** COMPLETED: **12/8/00**

TOTAL DEPTH: **39.5**
TOP OF CASING ELEV.: GROUND ELEV.: **NA**
NORTHING: **0** EASTING: **0**

STATIC WATER LEVEL (from TOC)		
Depth (ft)	38.5	22.5
Time	16:00	8:00
Date	12/7/00	12/8/00

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
0.0				HSA	SILTY SAND: Dry tan-orange fine silty sand w/ iron & manganese mottles		0.0	
5.0	17,34,37	SS	12"				5.0	
10.0	11,13,17	SS	10"		CLAYEY SILTY SAND: Slightly moist brown clayey fine silty sand with iron & manganese mottles and some light gray clay seams.		10.0	
15.0	50/0"	SS	0"	AH	DIORITE: Competent diorite.		15.0	
20.0							20.0	
25.0							25.0	
30.0							30.0	
35.0					DIORITE: Competent diorite. Boring terminated at 39.5'.		35.0	



Appendix B

Laboratory Analytical Report

September 2014 Groundwater Monitoring Report
Davidson County Holly Grove Landfill
NC Solid Waste Permit No. 29-02

This page intentionally left blank

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

ID#: 6037

DAVIDSON COUNTY (HOLLY GROVE)
MS. JOAN SMYTH
SMITH GARDNER, INC.
14 NORTH BOYLAN AVE.
RALEIGH ,NC 27603

DATE COLLECTED: 09/24/14
DATE REPORTED : 10/17/14

REVIEWED BY:

PARAMETERS	MDL	SWSL	MW-10	Analysis Date	Analyst	Method Code
Antimony, ug/l	0.12	6.0	0.55 J	10/03/14	LFJ	EPA200.8
Arsenic, ug/l	0.10	10.0	5.6 J	10/03/14	LFJ	EPA200.8
Barium, ug/l	0.12	100.0	401	10/03/14	LFJ	EPA200.8
Beryllium, ug/l	0.04	1.0	0.17 J	10/03/14	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	0.33 J	10/03/14	LFJ	EPA200.8
Cobalt, ug/l	0.12	10.0	19	10/03/14	LFJ	EPA200.8
Copper, ug/l	0.10	10.0	8.1 J	10/03/14	LFJ	EPA200.8
Total Chromium, ug/l	0.14	10.0	1.3 J	10/03/14	LFJ	EPA200.8
Lead, ug/l	0.13	10.0	1.0 J	10/03/14	LFJ	EPA200.8
Nickel, ug/l	0.12	50.0	34.4 J	10/03/14	LFJ	EPA200.8
Selenium, ug/l	0.16	10.0	21	10/03/14	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	--- U	10/07/14	LFJ	EPA200.8
Thallium, ug/l	0.13	5.5	--- U	10/03/14	LFJ	EPA200.8
Vanadium, ug/l	0.06	25.0	12.5 J	10/03/14	LFJ	EPA200.8
Zinc, ug/l	0.53	10.0	4.0 J	10/03/14	LFJ	EPA200.8

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

CLIENT: DAVIDSON COUNTY (HOLLY GROVE)
MS. JOAN SMYTH
SMITH GARDNER, INC.
14 NORTH BOYLAN AVE.
RALEIGH, NC 27603

CLIENT ID: 6037

ANALYST: MAO
DATE COLLECTED: 09/24/14
DATE ANALYZED: 09/30/14
DATE REPORTED: 10/17/14

REVIEWED BY: _____

VOLATILE ORGANICS
EPA METHOD 8260B R1(96)

PARAMETERS, ug/l	MDL	SWSL	MW-10
1. Chloromethane	0.77	1.0	--- U
2. Vinyl Chloride	0.63	1.0	--- U
3. Bromomethane	0.67	10.0	--- U
4. Chloroethane	0.48	10.0	0.60 J
5. Trichlorofluoromethane	0.24	1.0	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U
7. Acetone	9.06	100.0	--- U
8. Iodomethane	0.26	10.0	--- U
9. Carbon Disulfide	0.23	100.0	--- U
10. Methylene Chloride	0.64	1.0	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U
12. 1,1-Dichloroethane	0.20	5.0	--- U
13. Vinyl Acetate	0.20	50.0	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U
15. 2-Butanone	2.21	100.0	--- U
16. Bromochloromethane	0.27	3.0	--- U
17. Chloroform	0.25	5.0	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U
20. Benzene	0.24	1.0	0.40 J
21. 1,2-Dichloroethane	0.27	1.0	--- U
22. Trichloroethene	0.23	1.0	--- U
23. 1,2-Dichloropropane	0.21	1.0	--- U
24. Bromodichloromethane	0.21	1.0	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U
27. Toluene	0.23	1.0	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U
30. Tetrachloroethene	0.17	1.0	--- U
31. 2-Hexanone	1.57	50.0	--- U
32. Dibromochloromethane	0.24	3.0	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U
34. Chlorobenzene	0.30	3.0	3.30
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U
36. Ethylbenzene	0.21	1.0	--- U
37. Xylenes	0.68	5.0	--- U
38. Dibromomethane	0.28	10.0	--- U
39. Styrene	0.19	1.0	--- U
40. Bromoform	0.20	3.0	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	0.90 J
44. 1,2-Dichlorobenzene	0.32	5.0	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U
46. Acrylonitrile	2.72	200.0	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

ID#: 6037

DAVIDSON COUNTY (HOLLY GROVE)
MS. JOAN SMYTH
SMITH GARDNER, INC.
14 NORTH BOYLAN AVE.
RALEIGH ,NC 27603

DATE COLLECTED: 09/25/14
DATE REPORTED : 10/17/14

REVIEWED BY:

PARAMETERS	MDL	SWSL	MW-1A	MW-2	MW-3A	MW-5	MW-6	Analysis Date	Analyst	Method Code
Antimony, ug/l	0.12	6.0	--- U	--- U	0.73 J	0.13 J	0.18 J	10/07/14	LFJ	EPA200.8
Arsenic, ug/l	0.10	10.0	1.1 J	1.3 J	0.68 J	0.69 J	1.2 J	10/03/14	LFJ	EPA200.8
Barium, ug/l	0.12	100.0	304	150	22.4 J	47.3 J	179	10/03/14	LFJ	EPA200.8
Beryllium, ug/l	0.04	1.0	0.12 J	0.19 J	0.10 J	0.11 J	0.17 J	10/03/14	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	0.28 J	0.12 J	0.26 J	0.07 J	0.31 J	10/03/14	LFJ	EPA200.8
Cobalt, ug/l	0.12	10.0	98	6.4 J	0.24 J	1.8 J	3.2 J	10/03/14	LFJ	EPA200.8
Copper, ug/l	0.10	10.0	2.2 J	0.85 J	0.76 J	2.3 J	9.9 J	10/03/14	LFJ	EPA200.8
Total Chromium, ug/l	0.14	10.0	1.2 J	--- U	--- U			10/03/14	LFJ	EPA200.8
Total Chromium, ug/l	0.14	10.0				1.3 J	23	10/07/14	LFJ	EPA200.8
Lead, ug/l	0.13	10.0	0.6 J	--- U	--- U	0.25 J	4.5 J	10/03/14	LFJ	EPA200.8
Nickel, ug/l	0.12	50.0	6.1 J	3.6 J	2.3 J	2.1 J	5.1 J	10/03/14	LFJ	EPA200.8
Selenium, ug/l	0.16	10.0	1.4 J	4.9 J	3.4 J	2.2 J	1.9 J	10/03/14	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	--- U					10/07/14	LFJ	EPA200.8
Silver, ug/l	0.04	10.0		--- U	--- U	--- U	--- U	10/03/14	LFJ	EPA200.8
Thallium, ug/l	0.13	5.5	--- U	--- U	--- U	--- U	--- U	10/03/14	LFJ	EPA200.8
Vanadium, ug/l	0.06	25.0	9.6 J	0.13 J	2.9 J	3.3 J	15.2 J	10/03/14	LFJ	EPA200.8
Zinc, ug/l	0.53	10.0	11	2.0 J	1.1 J	4.0 J	36	10/03/14	LFJ	EPA200.8

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

ID#: 6037

DAVIDSON COUNTY (HOLLY GROVE)
MS. JOAN SMYTH
SMITH GARDNER, INC.
14 NORTH BOYLAN AVE.
RALEIGH ,NC 27603

DATE COLLECTED: 09/25/14
DATE REPORTED : 10/17/14

REVIEWED BY:

PARAMETERS	MDL	SWSL	MW-8	MW-9	MW-11	MW-12	MW-13	Analysis Date	Analyst	Method Code
Antimony, ug/l	0.12	6.0	--- U	--- U	--- U	--- U	0.19 J	10/07/14	LFJ	EPA200.8
Arsenic, ug/l	0.10	10.0	1.3 J	2.2 J	1.1 J	4.6 J	8 J	10/03/14	LFJ	EPA200.8
Barium, ug/l	0.12	100.0	31.3 J	271	82.8 J	67.3 J	205	10/03/14	LFJ	EPA200.8
Beryllium, ug/l	0.04	1.0	0.06 J	0.17 J	0.06 J	0.07 J	0.05 J	10/03/14	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	0.08 J	0.11 J	0.82 J	0.35 J	0.11 J	10/03/14	LFJ	EPA200.8
Cobalt, ug/l	0.12	10.0	0.82 J	9.8 J	2.0 J	0.75 J	13	10/03/14	LFJ	EPA200.8
Copper, ug/l	0.10	10.0	1.5 J	8.9 J	14	1.3 J	3.1 J	10/03/14	LFJ	EPA200.8
Total Chromium, ug/l	0.14	10.0	3.7 J	7.8 J	0.75 J	0.76 J	1.5 J	10/07/14	LFJ	EPA200.8
Lead, ug/l	0.13	10.0	0.44 J	1.1 J	--- U	0.54 J	0.24 J	10/03/14	LFJ	EPA200.8
Nickel, ug/l	0.12	50.0	4.2 J	8.8 J	10.0 J	9.9 J	27.9 J	10/03/14	LFJ	EPA200.8
Selenium, ug/l	0.16	10.0	2.9 J	2.4 J	5.5 J	18	25	10/03/14	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	--- U	--- U	--- U	--- U	--- U	10/03/14	LFJ	EPA200.8
Thallium, ug/l	0.13	5.5	--- U	--- U	--- U	--- U	--- U	10/03/14	LFJ	EPA200.8
Vanadium, ug/l	0.06	25.0	5.4 J	7.9 J	1.6 J	1.6 J	7.0 J	10/03/14	LFJ	EPA200.8
Zinc, ug/l	0.53	10.0	4.9 J	22	4.2 J	0.70 J	2.7 J	10/03/14	LFJ	EPA200.8

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

ID#: 6037

DAVIDSON COUNTY (HOLLY GROVE)
MS. JOAN SMYTH
SMITH GARDNER, INC.
14 NORTH BOYLAN AVE.
RALEIGH ,NC 27603

DATE COLLECTED: 09/25/14
DATE REPORTED : 10/17/14

REVIEWED BY:

PARAMETERS	MDL	SWSL	MW-14	Analysis Date	Analyst	Method Code
Antimony, ug/l	0.12	6.0	--- U	10/07/14	LFJ	EPA200.8
Arsenic, ug/l	0.10	10.0	0.58 J	10/03/14	LFJ	EPA200.8
Barium, ug/l	0.12	100.0	28.5 J	10/03/14	LFJ	EPA200.8
Beryllium, ug/l	0.04	1.0	--- U	10/03/14	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	--- U	10/03/14	LFJ	EPA200.8
Cobalt, ug/l	0.12	10.0	0.28 J	10/03/14	LFJ	EPA200.8
Copper, ug/l	0.10	10.0	1.1 J	10/03/14	LFJ	EPA200.8
Total Chromium, ug/l	0.14	10.0	0.69 J	10/07/14	LFJ	EPA200.8
Lead, ug/l	0.13	10.0	--- U	10/03/14	LFJ	EPA200.8
Nickel, ug/l	0.12	50.0	1.4 J	10/03/14	LFJ	EPA200.8
Selenium, ug/l	0.16	10.0	1.6 J	10/03/14	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	--- U	10/03/14	LFJ	EPA200.8
Thallium, ug/l	0.13	5.5	--- U	10/03/14	LFJ	EPA200.8
Vanadium, ug/l	0.06	25.0	2.9 J	10/03/14	LFJ	EPA200.8
Zinc, ug/l	0.53	10.0	1.5 J	10/03/14	LFJ	EPA200.8

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

CLIENT: DAVIDSON COUNTY (HOLLY GROVE)
MS. JOAN SMYTH
SMITH GARDNER, INC.
14 NORTH BOYLAN AVE.
RALEIGH, NC 27603

CLIENT ID: 6037

ANALYST: MAO
DATE COLLECTED: 09/25/14
DATE ANALYZED: 09/30/14
DATE REPORTED: 10/17/14

REVIEWED BY:

VOLATILE ORGANICS
EPA METHOD 8260B R1(96)

PARAMETERS, ug/l	MDL	SWSL	MW-1A	MW-2	MW-3A	MW-5	MW-6
1. Chloromethane	0.77	1.0	--- U	--- U	--- U	--- U	--- U
2. Vinyl Chloride	0.63	1.0	2.30	--- U	0.70 J	--- U	--- U
3. Bromomethane	0.67	10.0	--- U	--- U	--- U	--- U	--- U
4. Chloroethane	0.48	10.0	4.10 J	0.80 J	1.00 J	--- U	--- U
5. Trichlorofluoromethane	0.24	1.0	--- U	--- U	--- U	0.30 J	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U	--- U	0.20 J	--- U	--- U
7. Acetone	9.06	100.0	--- U	--- U	--- U	--- U	--- U
8. Iodomethane	0.26	10.0	--- U	--- U	--- U	--- U	--- U
9. Carbon Disulfide	0.23	100.0	--- U	--- U	--- U	--- U	--- U
10. Methylene Chloride	0.64	1.0	--- U	--- U	--- U	--- U	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	0.40 J	--- U	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.20	5.0	19.20	0.50 J	5.00	0.50 J	8.70
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	37.30	--- U	0.70 J	--- U	1.30 J
15. 2-Butanone	2.21	100.0	--- U	--- U	--- U	--- U	--- U
16. Bromochloromethane	0.27	3.0	--- U	--- U	--- U	--- U	--- U
17. Chloroform	0.25	5.0	--- U	--- U	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U	--- U	--- U	--- U	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U	--- U	--- U	--- U	--- U
20. Benzene	0.24	1.0	2.40	--- U	0.30 J	--- U	--- U
21. 1,2-Dichloroethane	0.27	1.0	1.40	--- U	--- U	--- U	--- U
22. Trichloroethene	0.23	1.0	0.70 J	--- U	0.30 J	--- U	0.30 J
23. 1,2-Dichloropropane	0.21	1.0	3.30	--- U	--- U	--- U	0.60 J
24. Bromodichloromethane	0.21	1.0	--- U	--- U	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U	--- U	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U	--- U	--- U	--- U	--- U
27. Toluene	0.23	1.0	--- U	--- U	--- U	--- U	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U	--- U	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U	--- U	--- U	--- U	--- U
30. Tetrachloroethene	0.17	1.0	--- U	--- U	--- U	--- U	0.50 J
31. 2-Hexanone	1.57	50.0	--- U	--- U	--- U	--- U	--- U
32. Dibromochloromethane	0.24	3.0	--- U	--- U	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U	--- U	--- U	--- U	--- U
34. Chlorobenzene	0.30	3.0	0.50 J	1.50 J	0.40 J	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U	--- U	--- U	--- U	--- U
36. Ethylbenzene	0.21	1.0	--- U	--- U	--- U	--- U	--- U
37. Xylenes	0.68	5.0	--- U	--- U	--- U	--- U	--- U
38. Dibromomethane	0.28	10.0	--- U	--- U	--- U	--- U	--- U
39. Styrene	0.19	1.0	--- U	--- U	--- U	--- U	--- U
40. Bromoform	0.20	3.0	--- U	--- U	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U	--- U	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U	--- U	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	3.80	0.60 J	0.70 J	--- U	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	--- U	--- U	--- U	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U	--- U	--- U	--- U	--- U
46. Acrylonitrile	2.72	200.0	--- U	--- U	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U	--- U	--- U	--- U	--- U

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

CLIENT: DAVIDSON COUNTY (HOLLY GROVE)
MS. JOAN SMYTH
SMITH GARDNER, INC.
14 NORTH BOYLAN AVE.
RALEIGH, NC 27603

CLIENT ID: 6037

ANALYST: MAO
DATE COLLECTED: 09/25/14
DATE ANALYZED: 09/30/14
DATE REPORTED: 10/17/14

REVIEWED BY: _____

VOLATILE ORGANICS
EPA METHOD 8260B R1(96)

PARAMETERS, ug/l	MDL	SWSL	MW-8	MW-9	MW-11	MW-12	MW-13
1. Chloromethane	0.77	1.0	--- U	--- U	--- U	--- U	--- U
2. Vinyl Chloride	0.63	1.0	1.20	--- U	0.80 J	2.40	--- U
3. Bromomethane	0.67	10.0	--- U	--- U	--- U	--- U	--- U
4. Chloroethane	0.48	10.0	3.00 J	0.80 J	--- U	11.30	22.20
5. Trichlorofluoromethane	0.24	1.0	--- U	--- U	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.17	5.0	0.60 J	--- U	--- U	0.90 J	--- U
7. Acetone	9.06	100.0	--- U	--- U	--- U	--- U	11.70 J
8. Iodomethane	0.26	10.0	--- U	--- U	--- U	--- U	--- U
9. Carbon Disulfide	0.23	100.0	--- U	--- U	--- U	--- U	--- U
10. Methylene Chloride	0.64	1.0	--- U	--- U	--- U	--- U	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U	--- U	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.20	5.0	31.60	0.40 J	1.90 J	7.40	0.40 J
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	1.60 J	--- U	0.40 J	0.30 J	--- U
15. 2-Butanone	2.21	100.0	--- U	--- U	--- U	--- U	--- U
16. Bromochloromethane	0.27	3.0	--- U	--- U	--- U	--- U	--- U
17. Chloroform	0.25	5.0	--- U	--- U	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U	--- U	--- U	--- U	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U	--- U	--- U	--- U	--- U
20. Benzene	0.24	1.0	3.00	2.10	--- U	0.90 J	2.80
21. 1,2-Dichloroethane	0.27	1.0	--- U	--- U	--- U	0.50 J	--- U
22. Trichloroethene	0.23	1.0	4.40	--- U	--- U	--- U	--- U
23. 1,2-Dichloropropane	0.21	1.0	0.40 J	0.30 J	0.30 J	0.50 J	--- U
24. Bromodichloromethane	0.21	1.0	--- U	--- U	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U	--- U	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U	--- U	--- U	--- U	--- U
27. Toluene	0.23	1.0	--- U	--- U	--- U	--- U	0.30 J
28. trans-1,3-Dichloropropene	0.28	1.0	--- U	--- U	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U	--- U	--- U	--- U	--- U
30. Tetrachloroethene	0.17	1.0	--- U	--- U	--- U	--- U	--- U
31. 2-Hexanone	1.57	50.0	--- U	--- U	--- U	--- U	--- U
32. Dibromochloromethane	0.24	3.0	--- U	--- U	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U	--- U	--- U	--- U	--- U
34. Chlorobenzene	0.30	3.0	--- U	5.90	3.50	4.80	18.60
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U	--- U	--- U	--- U	--- U
36. Ethylbenzene	0.21	1.0	--- U	--- U	--- U	--- U	--- U
37. Xylenes	0.68	5.0	--- U	--- U	--- U	--- U	--- U
38. Dibromomethane	0.28	10.0	--- U	--- U	--- U	--- U	--- U
39. Styrene	0.19	1.0	--- U	--- U	--- U	--- U	--- U
40. Bromoform	0.20	3.0	--- U	--- U	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U	--- U	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U	--- U	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	0.60 J	5.30	1.60	5.90	9.10
44. 1,2-Dichlorobenzene	0.32	5.0	--- U	0.40 J	0.50 J	0.50 J	1.10 J
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U	--- U	--- U	--- U	--- U
46. Acrylonitrile	2.72	200.0	--- U	--- U	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U	--- U	--- U	--- U	--- U

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

CLIENT: DAVIDSON COUNTY (HOLLY GROVE)
MS. JOAN SMYTH
SMITH GARDNER, INC.
14 NORTH BOYLAN AVE.
RALEIGH, NC 27603

CLIENT ID: 6037

ANALYST: MAO
DATE COLLECTED: 09/25/14
DATE ANALYZED: 09/30/14
DATE REPORTED: 10/17/14

REVIEWED BY: _____

VOLATILE ORGANICS
EPA METHOD 8260B R1(96)

PARAMETERS, ug/l	MDL	SWSL	MW-14
1. Chloromethane	0.77	1.0	--- U
2. Vinyl Chloride	0.63	1.0	--- U
3. Bromomethane	0.67	10.0	--- U
4. Chloroethane	0.48	10.0	--- U
5. Trichlorofluoromethane	0.24	1.0	1.00
6. 1,1-Dichloroethene	0.17	5.0	--- U
7. Acetone	9.06	100.0	--- U
8. Iodomethane	0.26	10.0	--- U
9. Carbon Disulfide	0.23	100.0	--- U
10. Methylene Chloride	0.64	1.0	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U
12. 1,1-Dichloroethane	0.20	5.0	0.60 J
13. Vinyl Acetate	0.20	50.0	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U
15. 2-Butanone	2.21	100.0	--- U
16. Bromochloromethane	0.27	3.0	--- U
17. Chloroform	0.25	5.0	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U
20. Benzene	0.24	1.0	--- U
21. 1,2-Dichloroethane	0.27	1.0	--- U
22. Trichloroethene	0.23	1.0	--- U
23. 1,2-Dichloropropane	0.21	1.0	--- U
24. Bromodichloromethane	0.21	1.0	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U
27. Toluene	0.23	1.0	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U
30. Tetrachloroethene	0.17	1.0	--- U
31. 2-Hexanone	1.57	50.0	--- U
32. Dibromochloromethane	0.24	3.0	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U
34. Chlorobenzene	0.30	3.0	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U
36. Ethylbenzene	0.21	1.0	--- U
37. Xylenes	0.68	5.0	--- U
38. Dibromomethane	0.28	10.0	--- U
39. Styrene	0.19	1.0	--- U
40. Bromoform	0.20	3.0	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U
46. Acrylonitrile	2.72	200.0	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Inc.
P.O. Box 7085, 114 Oakmont Dr.
Greenville, NC 27858
environment1inc.com
Phone (252) 756-6208 • Fax (252) 756-0633

CHAIN OF CUSTODY RECORD

CLIENT: 6037 **Week:** 39

DAVIDSON COUNTY (HOLLY GROVE)
MS. JOAN SMYTH
SMITH GARDNER, INC.
14 NORTH BOYLAN AVE.
RALEIGH NC 27603

(919) 828-0577

DISINFECTION: ☐ CHLORINE ☐ UV ☐ NONE ☐ _____

CHLORINE NEUTRALIZED AT COLLECTION

pH CHECK (LAB): 22 22 22 22

CONTAINER TYPE, P/G: P G G G

CHEMICAL PRESERVATION: A E E E

PARAMETERS/TESTS: A - NONE, B - HNO_3, C - H_2SO_4, D - NAOH, E - HCL, F - ZINC ACETATE/NAOH, G - NA THIOSULFATE

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	Metals	EPA 8260B	8260 Dup. 1	8260 Dup. 2
MW-1A	9/25/14	10:14		16.5	4				
MW-2	"	8:42		18.8	3				
MW-3A	"	8:50		15.5	3				
MW-5	"	9:13		16.7	3				
MW-6	"	10:09		16.5	3				
MW-8	"	10:22		15.9	3				
MW-9	"	10:30		16.2	3				
MW-10	9/24/14	7:56		16.7	3				
MW-11	9/25/14	8:10		15.3	3				
MW-12	"	8:27		16.1	3				
MW-13	"	8:32		17.2	3				

CLASSIFICATION:
☐ WASTEWATER (NPDES)
☐ DRINKING WATER
☐ DWQ/GW
☒ SOLID WASTE SECTION

CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY: (Y) N

SAMPLES COLLECTED BY: (Please Print) JORGE MONTEZUMA, CARTER SHORE

SAMPLES RECEIVED IN LAB AT 1.0 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
[signature]	9/25/14 14:40	[signature]	9/26/14 355
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS:

PLEASE READ Instructions for completing this form on the reverse side.

Sampler must place a "C" for composite sample or a "G" for Grab sample in the blocks above for each parameter requested.

FORM #5

No. 282039

Environment 1, Inc.
P.O. Box 7085, 114 Oakmont Dr.
Greenville, NC 27858
environment1inc.com
Phone (252) 756-6208 • Fax (252) 756-0633

CHAIN OF CUSTODY RECORD

CLIENT: 6037 **Week:** 39

DAVIDSON COUNTY (HOLLY GROVE)
MS. JOAN SMYTH
SMITH GARDNER, INC.
14 NORTH BOYLAN AVE.
RALEIGH NC 27603

(919) 828-0577

DISINFECTION: ☐ CHLORINE ☐ UV ☐ NONE ☐ _____

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	Metals	EPA 8260B	8260 Dup. 1	8260 Dup. 2
CHLORINE NEUTRALIZED AT COLLECTION									
pH CHECK (LAB)						12	12	12	12
CONTAINER TYPE, P/G						P	G	G	G
CHEMICAL PRESERVATION						A	E	E	E
MW-14	9/25/14	9:19	/	15.4	3				

PARAMETERS/TESTS

A - NONE D - NAOH
B - HNO_3 E - HCL
C - H_2SO_4 F - ZINC ACETATE/NAOH
G - NA THIOSULFATE

CLASSIFICATION:
☐ WASTEWATER (NPDES)
☐ DRINKING WATER
☐ DWQ/GW
☒ SOLID WASTE SECTION

CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY: (Y) N

SAMPLES COLLECTED BY: (Please Print) JORGE MONTEZUMA
CARTER SHORE

SAMPLES RECEIVED IN LAB AT 1.0 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
[signature]	9/25/14 14:40	[signature]	9/26/14 355
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS:

PLEASE READ Instructions for completing this form on the reverse side.

Sampler must place a "C" for composite sample or a "G" for Grab sample in the blocks above for each parameter requested.

FORM #5

№ 282038

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

ID#: 6037 A

DAVIDSON COUNTY (HOLLY GROVE)
MS. JOAN SMYTH
SMITH GARDNER, INC.
14 NORTH BOYLAN AVE.
RALEIGH ,NC 27603

DATE COLLECTED: 09/25/14
DATE REPORTED : 10/17/14

REVIEWED BY:

PARAMETERS	MDL	SWSL	MW-15	MW-16	MW-17	SW-1	SW-2	Analysis Date	Analyst	Method Code
Antimony, ug/l	0.12	6.0	0.66 J	0.36 J	0.17 J	0.26 J	0.23 J	10/07/14	LFJ	EPA200.8
Arsenic, ug/l	0.10	10.0	0.61 J	1.2 J	1.4 J	0.74 J	0.70 J	10/03/14	LFJ	EPA200.8
Barium, ug/l	0.12	100.0	54.6 J	34.0 J	290	15.4 J	17.4 J	10/03/14	LFJ	EPA200.8
Beryllium, ug/l	0.04	1.0	0.23 J	0.13 J	0.18 J	0.14 J	0.19 J	10/03/14	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	0.09 J	0.07 J	0.17 J	0.05 J	0.06 J	10/03/14	LFJ	EPA200.8
Cobalt, ug/l	0.12	10.0	15	0.40 J	5.0 J	0.63 J	0.67 J	10/03/14	LFJ	EPA200.8
Copper, ug/l	0.10	10.0	6.4 J	0.38 J	3.4 J	1.6 J	1.6 J	10/03/14	LFJ	EPA200.8
Total Chromium, ug/l	0.14	10.0	10					10/07/14	LFJ	EPA200.8
Total Chromium, ug/l	0.14	10.0		0.29 J	--- U	0.32 J	0.31 J	10/03/14	LFJ	EPA200.8
Lead, ug/l	0.13	10.0	0.46 J	13	--- U	0.19 J	0.22 J	10/03/14	LFJ	EPA200.8
Nickel, ug/l	0.12	50.0	8.1 J	2.5 J	2.4 J	7.0 J	6.4 J	10/03/14	LFJ	EPA200.8
Selenium, ug/l	0.16	10.0	1.6 J	3.7 J	3.2 J	1.4 J	1.5 J	10/03/14	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	--- U	--- U	--- U	--- U	--- U	10/03/14	LFJ	EPA200.8
Thallium, ug/l	0.13	5.5	--- U	--- U	--- U	--- U	--- U	10/03/14	LFJ	EPA200.8
Vanadium, ug/l	0.06	25.0	9.7 J	1.5 J	11.0 J	1.1 J	1.4 J	10/03/14	LFJ	EPA200.8
Zinc, ug/l	0.53	10.0	13	1.6 J	6.6 J	14	13	10/03/14	LFJ	EPA200.8

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

ID#: 6037 A

DAVIDSON COUNTY (HOLLY GROVE)
MS. JOAN SMYTH
SMITH GARDNER, INC.
14 NORTH BOYLAN AVE.
RALEIGH ,NC 27603

DATE COLLECTED: 09/25/14
DATE REPORTED : 10/17/14

REVIEWED BY:

PARAMETERS	MDL	SW-3 SWSL	Trip Blank	Analysis Date	Analyst	Method Code
Antimony, ug/l	0.53	10.0 Missing				
Arsenic, ug/l	0.53	10.0 Missing				
Barium, ug/l	0.53	10.0 Missing				
Beryllium, ug/l	0.53	10.0 Missing				
Cadmium, ug/l	0.53	10.0 Missing				
Cobalt, ug/l	0.53	10.0 Missing				
Copper, ug/l	0.53	10.0 Missing				
Total Chromium, ug/l	0.53	10.0 Missing				
Lead, ug/l	0.53	10.0 Missing				
Nickel, ug/l	0.53	10.0 Missing				
Selenium, ug/l	0.53	10.0 Missing				
Silver, ug/l	0.53	10.0 Missing				
Thallium, ug/l	0.53	10.0 Missing				
Vanadium, ug/l	0.53	10.0 Missing				
Zinc, ug/l	0.53	10.0 Missing				

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

CLIENT: DAVIDSON COUNTY (HOLLY GROVE)
MS. JOAN SMYTH
SMITH GARDNER, INC.
14 NORTH BOYLAN AVE.
RALEIGH, NC 27603

CLIENT ID: 6037 A

ANALYST: MAO
DATE COLLECTED: 09/25/14
DATE ANALYZED: 09/30/14
DATE REPORTED: 10/17/14

REVIEWED BY: _____

VOLATILE ORGANICS
EPA METHOD 8260B R1(96)

PARAMETERS, ug/l	MDL	SWSL	MW-15	MW-16	MW-17	SW-1	SW-2
1. Chloromethane	0.77	1.0	--- U	--- U	--- U	--- U	--- U
2. Vinyl Chloride	0.63	1.0	--- U	--- U	--- U	--- U	--- U
3. Bromomethane	0.67	10.0	--- U	--- U	--- U	--- U	--- U
4. Chloroethane	0.48	10.0	--- U	--- U	--- U	--- U	--- U
5. Trichlorofluoromethane	0.24	1.0	--- U	--- U	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U	--- U	--- U	--- U	--- U
7. Acetone	9.06	100.0	--- U	--- U	--- U	--- U	--- U
8. Iodomethane	0.26	10.0	--- U	--- U	--- U	--- U	--- U
9. Carbon Disulfide	0.23	100.0	--- U	--- U	--- U	--- U	--- U
10. Methylene Chloride	0.64	1.0	--- U	--- U	--- U	--- U	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U	--- U	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.20	5.0	1.10 J	--- U	10.60	--- U	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U	--- U	2.40 J	--- U	--- U
15. 2-Butanone	2.21	100.0	--- U	--- U	--- U	--- U	--- U
16. Bromochloromethane	0.27	3.0	--- U	--- U	--- U	--- U	--- U
17. Chloroform	0.25	5.0	--- U	--- U	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U	--- U	--- U	--- U	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U	--- U	--- U	--- U	--- U
20. Benzene	0.24	1.0	--- U	--- U	--- U	--- U	--- U
21. 1,2-Dichloroethane	0.27	1.0	--- U	--- U	--- U	--- U	--- U
22. Trichloroethene	0.23	1.0	--- U	--- U	0.50 J	--- U	--- U
23. 1,2-Dichloropropane	0.21	1.0	--- U	--- U	0.80 J	--- U	--- U
24. Bromodichloromethane	0.21	1.0	--- U	--- U	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U	--- U	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U	--- U	--- U	--- U	--- U
27. Toluene	0.23	1.0	--- U	--- U	--- U	--- U	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U	--- U	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U	--- U	--- U	--- U	--- U
30. Tetrachloroethene	0.17	1.0	--- U	--- U	0.30 J	--- U	--- U
31. 2-Hexanone	1.57	50.0	--- U	--- U	--- U	--- U	--- U
32. Dibromochloromethane	0.24	3.0	--- U	--- U	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U	--- U	--- U	--- U	--- U
34. Chlorobenzene	0.30	3.0	--- U	--- U	--- U	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U	--- U	--- U	--- U	--- U
36. Ethylbenzene	0.21	1.0	--- U	--- U	--- U	--- U	--- U
37. Xylenes	0.68	5.0	--- U	--- U	--- U	--- U	--- U
38. Dibromomethane	0.28	10.0	--- U	--- U	--- U	--- U	--- U
39. Styrene	0.19	1.0	--- U	--- U	--- U	--- U	--- U
40. Bromoform	0.20	3.0	--- U	--- U	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U	--- U	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U	--- U	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	--- U	--- U	--- U	--- U	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	--- U	--- U	--- U	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U	--- U	--- U	--- U	--- U
46. Acrylonitrile	2.72	200.0	--- U	--- U	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U	--- U	--- U	--- U	--- U

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Inc.
P.O. Box 7085, 114 Oakmont Dr.
Greenville, NC 27858
environment1inc.com
Phone (252) 756-6208 • Fax (252) 756-0633

CHAIN OF CUSTODY RECORD

CLIENT: 6037 A **Week:** 39

DAVIDSON COUNTY (HOLLY GROVE)
MS. JOAN SMYTH
SMITH GARDNER, INC.
14 NORTH BOYLAN AVE.
RALEIGH NC 27603

(919) 828-0577

DISINFECTION: ☐ CHLORINE ☐ UV ☐ NONE ☐ _____

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	Metals	EPA 8260B	8260 Dup. 1	8260 Dup. 2
CHLORINE NEUTRALIZED AT COLLECTION									
pH CHECK (LAB)						22	22	22	22
CONTAINER TYPE, P/G						P	G	G	G
CHEMICAL PRESERVATION						A	E	E	E
MW-15	9/25/14	9:37	✓	15.8	3	▒	▒	▒	
MW-16	"	9:59	✓	15.5	3	▒	▒	▒	
MW-17	"	9:47	✓	15.7	4	▒	▒	▒	▒
SW-1	"	9:27	✓	17.0	3	▒	▒	▒	
SW-2	"	8:16	✓	17.0	3	▒	▒	▒	
SW-3	DRY-	NO	SAMPLE			▒	▒	▒	
Trip Blank					2		▒	▒	

PARAMETERS/TESTS

CHEMICAL PRESERVATION:
A - NONE, B - HNO_3, C - H_2SO_4, D - NAOH, E - HCL, F - ZINC ACETATE/NAOH, G - NA THIOSULFATE

CLASSIFICATION:
☐ WASTEWATER (NPDES)
☐ DRINKING WATER
☐ DWQ/GW
☒ SOLID WASTE SECTION

CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY: (Y) N

SAMPLES COLLECTED BY: (Please Print) JORGE MONTEZUMA CARTER SHORE

SAMPLES RECEIVED IN LAB AT 1.0 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
[signature]	9/25/14 14:40	[signature]	9/26/14 355
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS:
• SW-3 WAS NOT COLLECTED (DRY CONDITIONS)
No Trip Blank returned w/ this Set.

PLEASE READ Instructions for completing this form on the reverse side.

FORM #5

Sampler must place a "C" for composite sample or a "G" for Grab sample in the blocks above for each parameter requested.

№ 282037