DIN 25849

Civil & Environmental Consultants, Inc.

February 24, 2016

RECEIVED
FEB 25 2016
SOLID WASTE SECTION

Mr. Perry Sugg
Hydrogeologist
North Carolina Department of Environmental Quality
Division of Waste Management
Solid Waste Section
217 West Jones Street
Raleigh, NC 27603

Dear Mr. Sugg:

Subject: Proposed Phase 3 Expansion
Seasonal Groundwater and Bedrock Surface Data Evaluation
Greenway Waste Solutions of Apex, LLC (Permit No. 92-30)
Apex, Wake County, NC
CEC Project 111-370.0003

On behalf Greenway Waste Solutions of Apex, LLC, Civil & Environmental Consultants, Inc. (CEC) is submitting the attached data to document seasonal high groundwater levels and top-of-bedrock conditions at the subject landfill. These data are being provided to the Solid Waste Section to satisfy landfill base design parameters specified in the 15A NCAC 13B North Carolina Solid Waste Management Rules for the proposed Phase 3 Expansion Area at the subject C&D landfill.

Seasonal high groundwater elevation data (SHGW) were previously obtained from piezometers installed at the landfill in 2009, and these data approved as a design parameter for previous phases at the subject landfill. As shown on the attached Figure 1, the 2009 SHGW data were used to generate an SHGW potentiometric map across the landfill property. Using the potentiometric surface, 2009 SHGW values were interpolated at the mapped locations of existing landfill detection monitoring wells (MW-1 through MW-11) that were subsequently installed following Phase 2 permit approval. Water levels have been routinely gauged in these detection wells so that groundwater elevation data is available from October 2009 to October 2015. A summary of these data is provided in the attached Table 1. As shown in the accompanying charts, groundwater elevations for each well were plotted along with the corresponding interpolated 2009 SHGW value for the respective well location. Where an SHGW value could be reasonably interpolated from the potentiometric surface, these charts illustrate that the SHGW elevation was higher than the more recently determined groundwater elevations.

In Figure 2, a computer-generated SHGW potentiometric map is compared with a surface generated from the maximum groundwater elevations calculated for the detection wells between October 2009 and October 2015. The 2009 SHGW potentiometric surface is predominantly higher across the landfill property than the compared contoured surface, with the exception of a

localized low-lying groundwater discharge area on the western perimeter of the landfill property. This exception is within an elevation difference of 0.5 feet, and its occurrence is in a remote site location within a groundwater discharge zone and not in the proposed Phase 3 landfill footprint. Based on our interpretation of the available data, it is CEC's technical opinion that the previously approved 2009 SHGW elevations are a suitable design parameter for the proposed Phase 3 Expansion Area.

Top-of-bedrock and auger refusal data that were previously obtained in 2009 for the Site Suitability are also presented on Figure 1. A top-of-bedrock contour surface has been generated from the data points. Profile A is depicted on Figure 3 that compares the bedrock elevation with the SHGW elevation. The approximate east-west trending profile across the proposed Phase 3 Expansion Area illustrates where along the profile line the SHGW elevation or top-of-bedrock elevation is higher.

Supporting data documentation that includes soil boring logs and well monitoring field data are provided as attachments for your review. Soil boring logs indicate a consistent uniformity of weathered rock materials across the landfill property. Underlying geologic materials are known to possess low permeabilities.

We believe that our SHGW evaluation demonstrates that the hydrogeologic design data approved for previous phases are also applicable design criteria for the proposed Phase 3 permit modification.

Should you have any questions or require additional information, please do not hesitate to contact Scott Brown at sbrown@cecinc.com or Ed Stephens at estephens@ceccinc.com. Thank you for your assistance in this matter.

Sincerely,

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

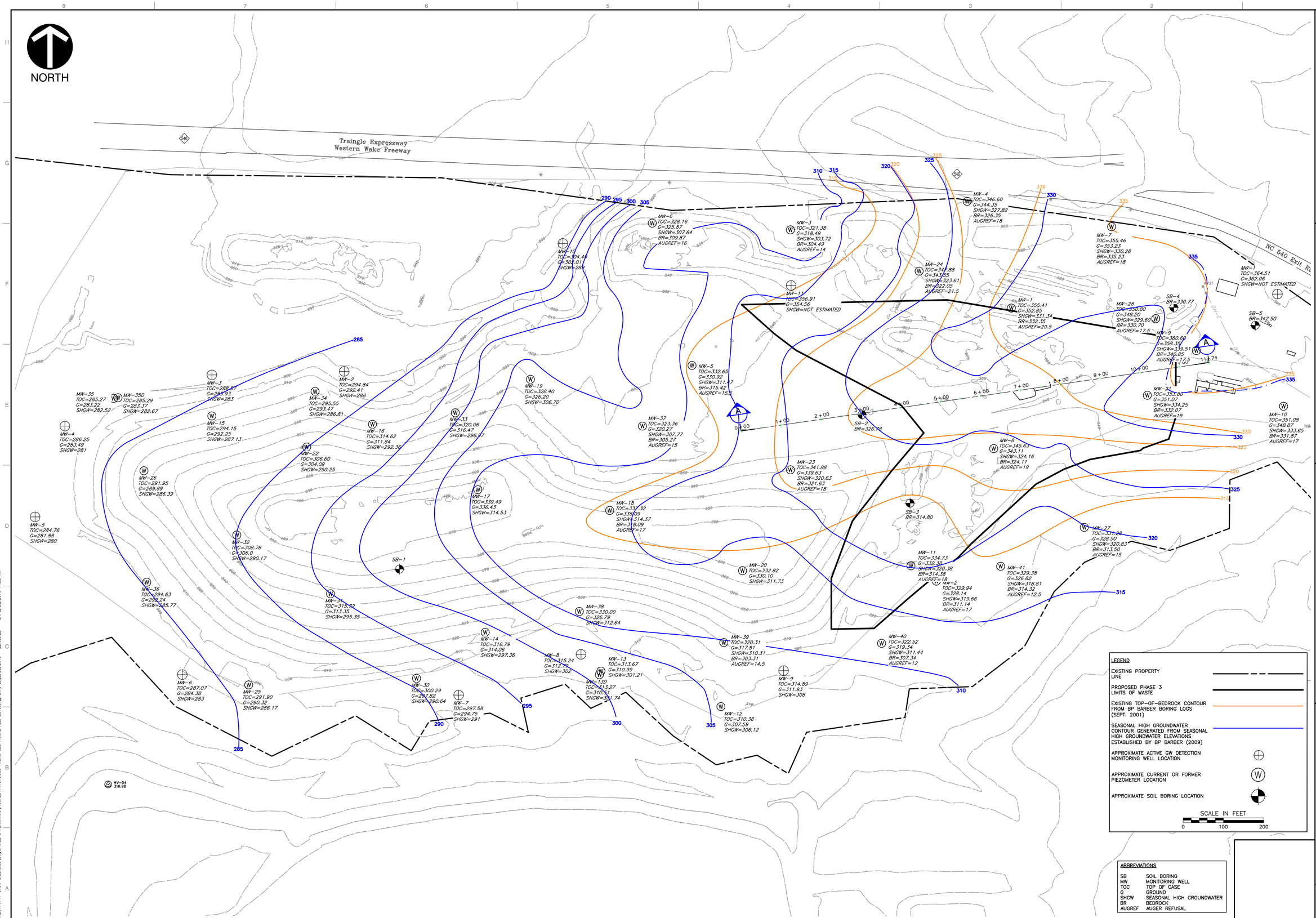
Edward H. Stephens, P.G.
Project Manager

Scott L. Brown, P.E.
Senior Principal

Attachments

cc sent via email: Mike Griffin, GWS
John Brown, GWS
J. Murray, NCDEQ SWS

FIGURES



LEGEND

EXISTING PROPERTY LINE

PROPOSED PHASE 3 LIMITS OF WASTE

EXISTING TOP-OF-BEDROCK CONTOUR FROM BP BARBER BORING LOGS (SEPT. 2001)

SEASONAL HIGH GROUNDWATER CONTOUR GENERATED FROM SEASONAL HIGH GROUNDWATER ELEVATIONS ESTABLISHED BY BP BARBER (2009)

APPROXIMATE ACTIVE GW DETECTION MONITORING WELL LOCATION

APPROXIMATE CURRENT OR FORMER PIEZOMETER LOCATION

APPROXIMATE SOIL BORING LOCATION

SCALE IN FEET
0 100 200

ABBREVIATIONS

SB	SOIL BORING
MW	MONITORING WELL
TOC	TOP OF CASE
G	GROUND
SHGW	SEASONAL HIGH GROUNDWATER
BR	BEDROCK
AUGREF	AUGER REFUSAL

REVISION RECORD

NO	DATE	DESCRIPTION

Civil & Environmental Consultants, Inc.
1900 Center Park Drive - Suite A - Charlotte, NC 28217
Ph: 980.237.0373 - Fax: 980.237.0372
www.cecinc.com

GREENWAY WASTE SOLUTIONS OF APEX, LLC
HIGHWAY 55 C&D LANDFILL
APEX, NORTH CAROLINA

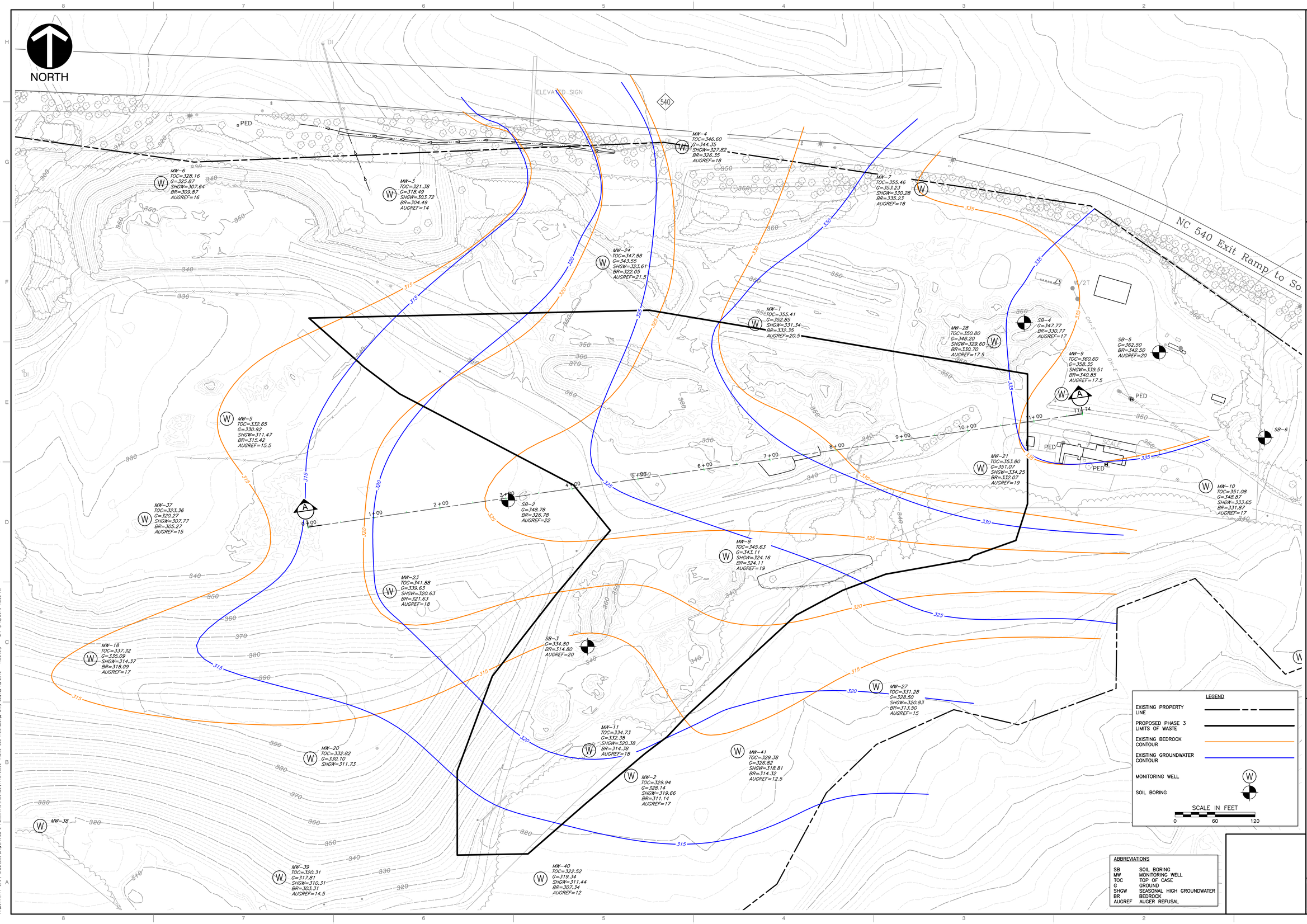
PHASE 3
HYDRO-GEO PLAN

DATE:	DEC 2015	DRAWN BY:	MTB/PNP
DWG SCALE:	1"=100'	CHECKED BY:	NTB
PROJECT NO:			111-370.003
APPROVED BY:			EHS

DRAWING NO.: 1

SHEET 1 OF 3

P:\2011\111-370\-CADD\003\Dwg\PHASE 3 PERMITTING\FIGURES\111370.003-HYDRO GEO FIGURE FEB 2016.dwg(PLAN) LS:(2/23/2016 - gerensky) - LP: 2/23/2016 1:25 AM



REVISION RECORD

NO	DATE	DESCRIPTION

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GREENWAY WASTE SOLUTIONS OF APEX, LLC
HIGHWAY 55 C&D LANDFILL
APEX, NORTH CAROLINA

PHASE 3
HYDRO-GEO PLAN

DATE:	DEC 2015	DRAWN BY:	MTB
DWG SCALE:	1"=60'	CHECKED BY:	DRAFT
PROJECT NO:		111-370.003	
APPROVED BY:			DRAFT

DRAWING NO.: 1

SHEET 1 OF 2

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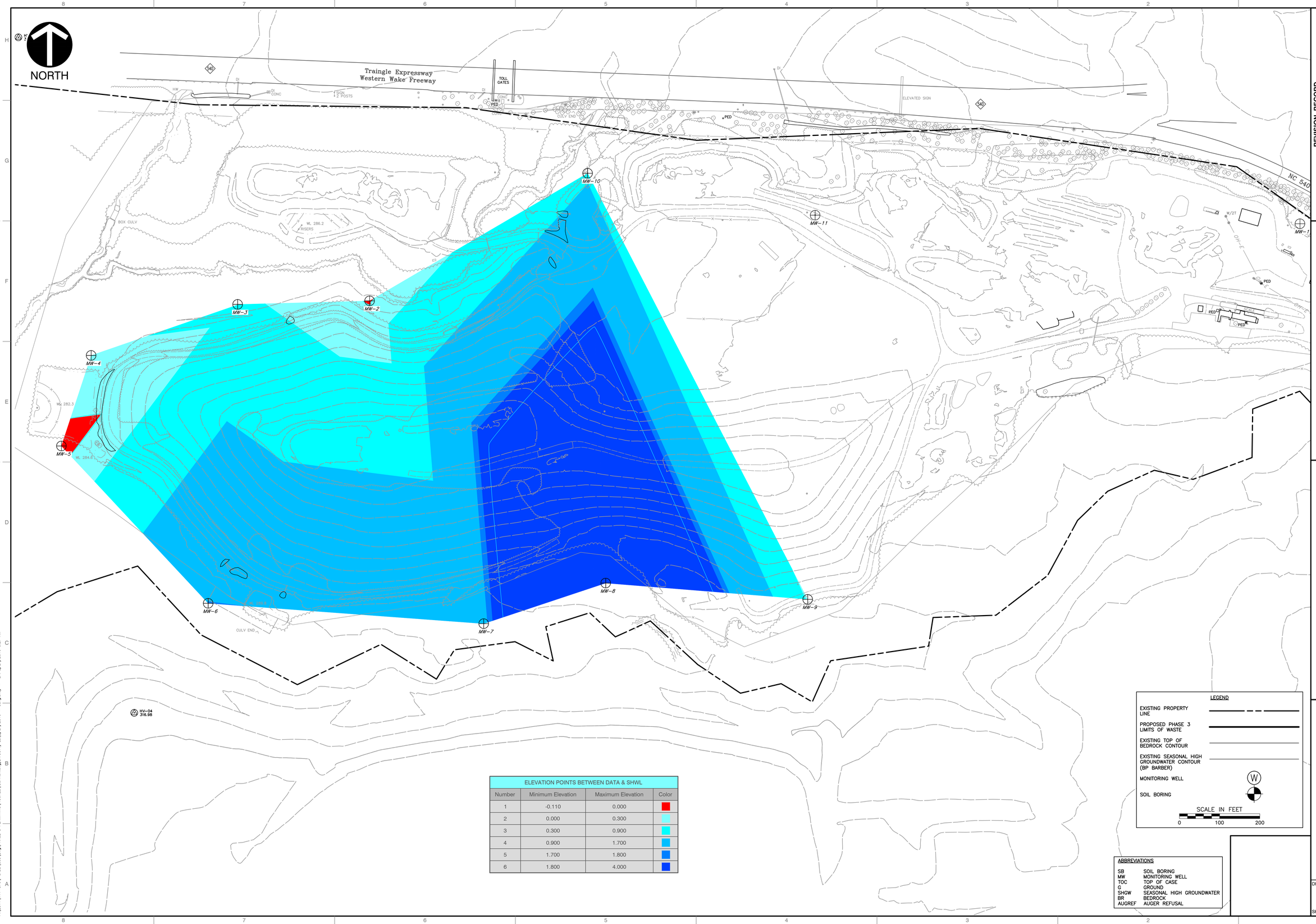

ELEVATION POINTS BETWEEN DATA & SHWL			
Number	Minimum Elevation	Maximum Elevation	Color
1	-0.110	0.000	
2	0.000	0.300	
3	0.300	0.900	
4	0.900	1.700	
5	1.700	1.800	
6	1.800	4.000	

LEGEND

EXISTING PROPERTY LINE

PROPOSED PHASE 3 LIMITS OF WASTE

EXISTING TOP OF BEDROCK CONTOUR

EXISTING SEASONAL HIGH GROUNDWATER CONTOUR (BP BARBER)

MONITORING WELL

SOIL BORING

SCALE IN FEET
0 100 200

ABBREVIATIONS

SB	SOIL BORING
MW	MONITORING WELL
TOC	TOP OF CASE
G	GROUND
SHGW	SEASONAL HIGH GROUNDWATER
BR	BEDROCK
AUGREF	AUGER REFUSAL

REVISION RECORD

NO	DATE	DESCRIPTION

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GREENWAY WASTE SOLUTIONS OF APEX, LLC
HIGHWAY 55 C&D LANDFILL
APEX, NORTH CAROLINA

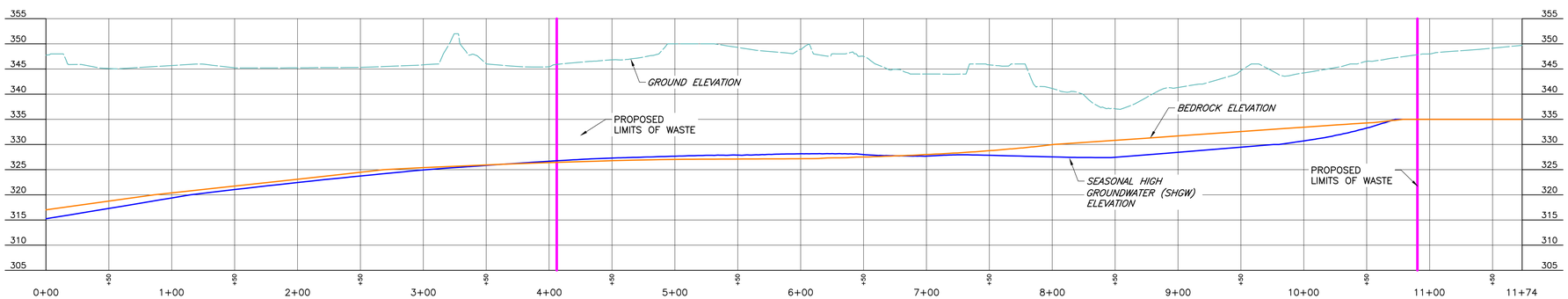
PHASE 3
HYDRO-GEO PLAN

DATE: FEB 2016 | DRAWN BY: BNE
DWG SCALE: 1"=100' | CHECKED BY: DRAFT
PROJECT NO: 111-370.003
APPROVED BY: DRAFT

DRAWING NO.: 2

SHEET 2 OF 3

P:\2011\111-370\-CADD\003\Dwg\PHASE 3 PERMITTING\FIGURES\SDPHCH.dwg(LAYOUT1) 05:02:24/2016 - bengland) - LP: 2/24/2016 9:37 AM



A PROFILE

SCALE H:1"=50'; V:1"=12'

REVISION RECORD

NO	DATE	DESCRIPTION

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GREENWAY WASTE SOLUTIONS OF APEX, LLC
HIGHWAY 55 C&D LANDFILL
APEX, NORTH CAROLINA

PHASE 3
HYDRO-GEO PROFILE

DATE:	DEC 2015
DRAWN BY:	MTB/PNP
DWG SCALE:	AS NOTED
CHECKED BY:	NTB
PROJECT NO:	111-370.003
APPROVED BY:	EHS

DRAWING NO.: 3

SHEET 3 OF 3

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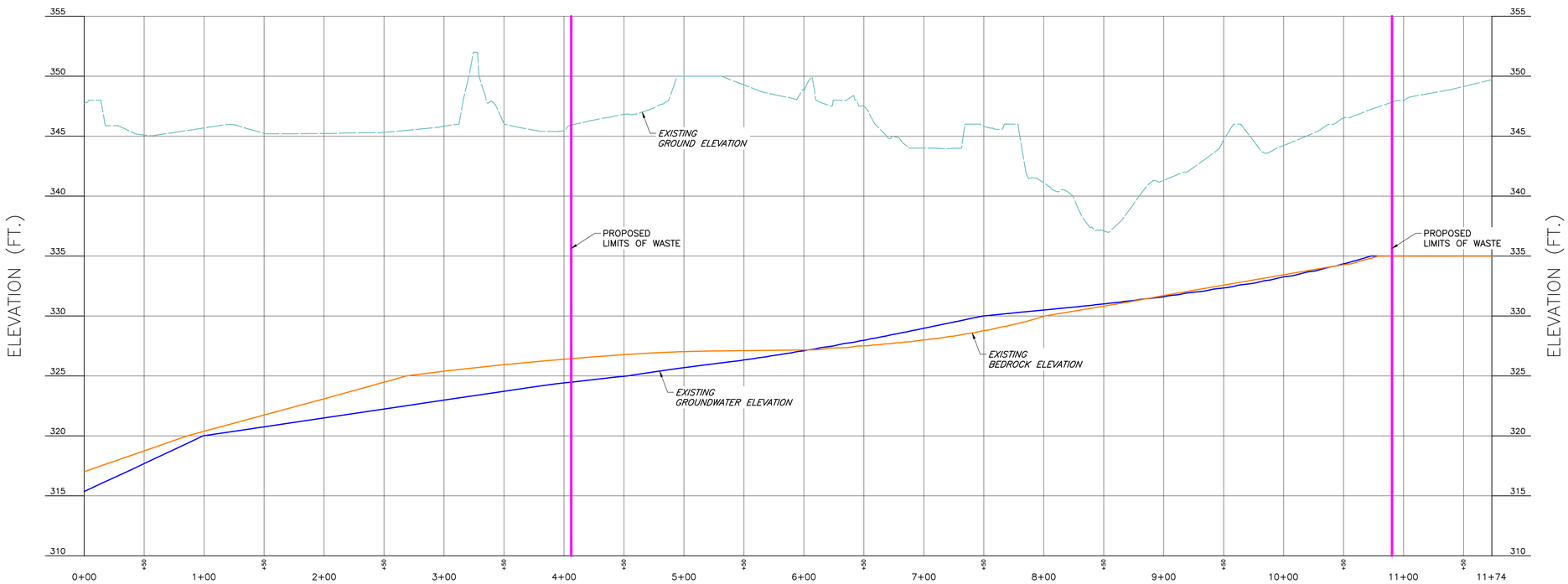

A PROFILE

SCALE H:1"=50'; V:1"=5'

REVISION RECORD

NO	DATE	DESCRIPTION

Civil & Environmental Consultants, Inc.
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GREENWAY WASTE SOLUTIONS OF APEX, LLC
HIGHWAY 55 C&D LANDFILL
APEX, NORTH CAROLINA

PHASE 3
HYDRO-GEO PROFILE

DATE:	DEC 2015
DRAWN BY:	MTB
DWG SCALE:	AS NOTED
CHECKED BY:	DRAFT
PROJECT NO:	111-370.003
APPROVED BY:	DRAFT

DRAWING NO.: 2

SHEET 2 OF 2

P:\2011\111-370\-CADD\003\Dwg\PHASE 3 PERMITTING\FIGURES\111370.003-HYDRO GEO FIGURE.dwg(PROFILE) LS(12/18/2015 - mbarton) - LP: 1/13/2016 10:53 AM

TABLES AND CHARTS

TABLE 1. HWY 55 LF Water Level Data

Well ID	Depth (ft)	Screen Interval (ft)	Ground Elevation (ft)	Top of Casing Elevation (ft)	10/19/09	10/19/09	4/13/11	4/13/11	10/10/11	10/10/11	4/25/12	4/25/12	10/25/12	10/25/12
MW-1	32	17-32	362.06	364.51	21.25	343.26	20.03	344.48	20.80	343.71	21.90	342.61	20.94	343.57
MW-2	20	5-10	292.41	294.84	11.40	283.44	7.82	287.02	11.68	283.16	9.27	285.57	9.90	284.94
MW-3	19	4-19	285.93	288.57	9.78	278.79	5.95	282.62	9.52	279.05	6.89	281.68	11.24	277.33
MW-4	19	4-19	283.49	286.25	9.30	276.95	6.38	279.87	8.71	277.54	7.14	279.11	8.78	277.47
MW-5	19	4-19	281.88	284.76	9.53	275.23	5.60	279.16	8.35	276.41	7.42	277.34	8.85	275.91
MW-6	19	4-19	284.38	287.07	10.40	276.67	7.89	279.18	9.23	277.84	8.26	278.81	10.20	276.87
MW-7	22	7-22	294.75	297.58	12.57	285.01	8.21	289.37	11.64	285.94	10.07	287.51	12.60	284.98
MW-8	30	15-30	312.79	315.24									10.73	304.51
MW-9	20	5-20	311.93	314.89									13.12	301.77
MW-10	30	15-30	302.01	304.49									20.50	283.99
MW-11	20	5-20	354.56	356.91									7.31	349.6

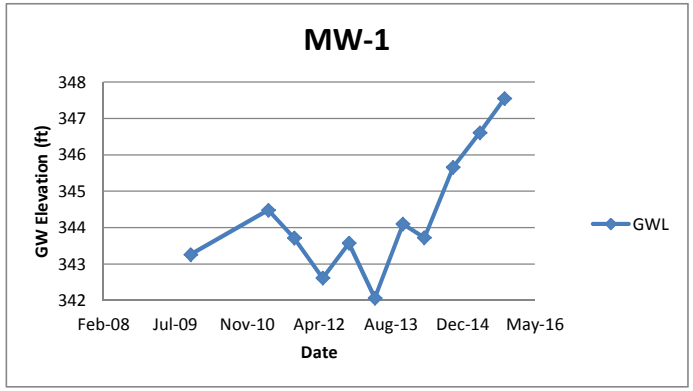
Well ID	4/23/13	4/23/13	11/4/13	11/4/13	4/2/14	4/2/14	10/20/14	10/20/14	4/23/15	4/23/15	10/12/15	10/12/15	Approx. SHGW
MW-1	22.45	342.06	20.41	344.10	20.79	343.72	18.85	345.66	17.90	346.61	16.96	347.55	NE
MW-2	8.75	286.09	11.67	283.17	11.63	283.21	11.80	283.04	8.29	286.55	10.92	283.92	288
MW-3	6.92	281.65	8.89	279.68	8.25	280.32	7.52	281.05	6.22	282.35	7.42	281.15	283
MW-4	6.56	279.69	8.65	277.60	10.61	275.64	7.64	278.61	5.50	280.75	7.80	278.45	281
MW-5	6.28	278.48	9.03	275.73	7.44	277.32	8.24	276.52	4.65	280.11	8.69	276.07	280
MW-6	7.41	279.66	9.48	277.59	5.78	281.29	7.81	279.26	6.80	280.27	8.90	278.17	283
MW-7	8.55	289.03	12.67	284.91	8.52	289.06	11.42	286.16	8.22	289.36	11.51	286.07	291
MW-8	22.85	292.39	21.95	293.29	17.21	298.03	22.35	292.89	17.83	297.41	20.72	294.52	302
MW-9	8.32	306.57	10.36	304.53	8.29	306.60	9.65	305.24	7.15	307.74	9.51	305.38	308
MW-10	20.85	283.64	17.45	287.04	16.51	287.98	19.21	285.28	16.31	288.18	21.52	282.97	289
MW-11	7.31	349.60	6.89	350.02	6.27	350.64	28.00	328.91	28.55	328.36	27.91	329.00	NE

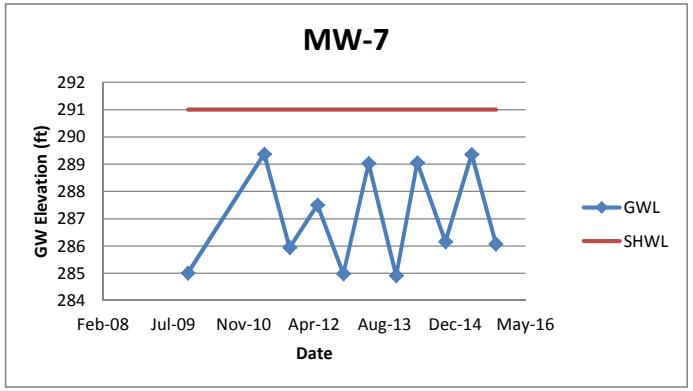
SHGW = Seasonal High Groundwater Level (Phase 2 Hydrogeologic Study)

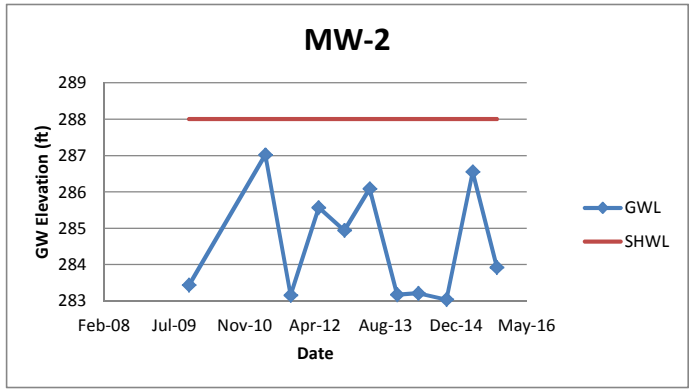
NE = Seasonal high water level could not be reasonably estimated from the available well data.

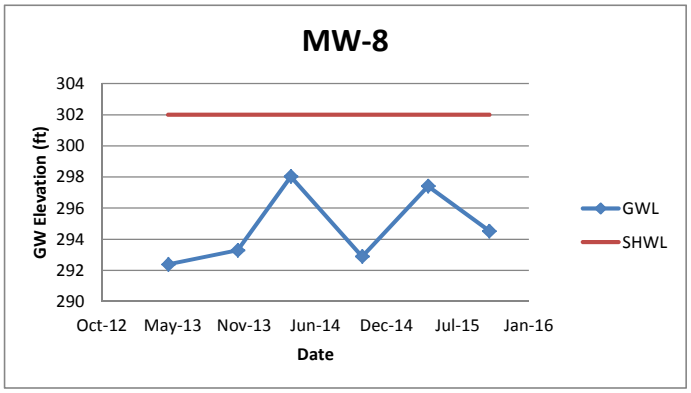
Water level measurement does not appear to represent the static water level; thus, this data point was not used in the SHGW evaluation.

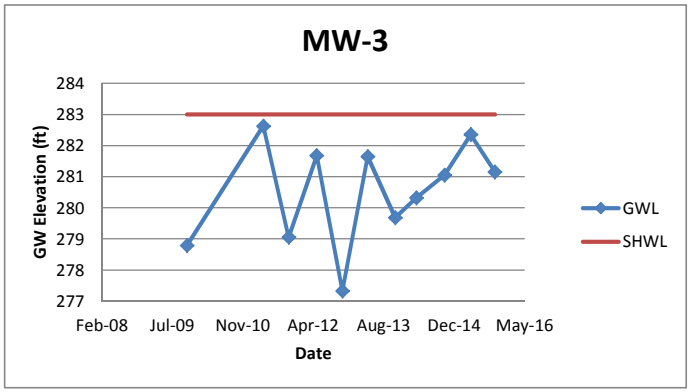
Highway 55 Landfill
Historical Water Level Data

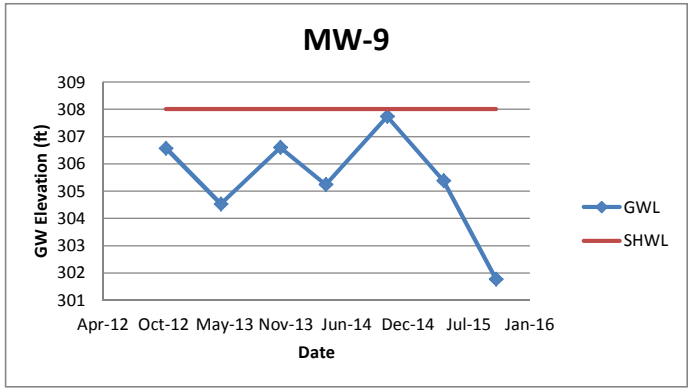




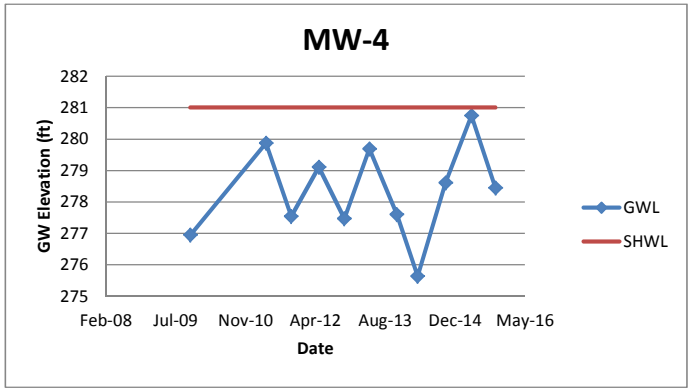


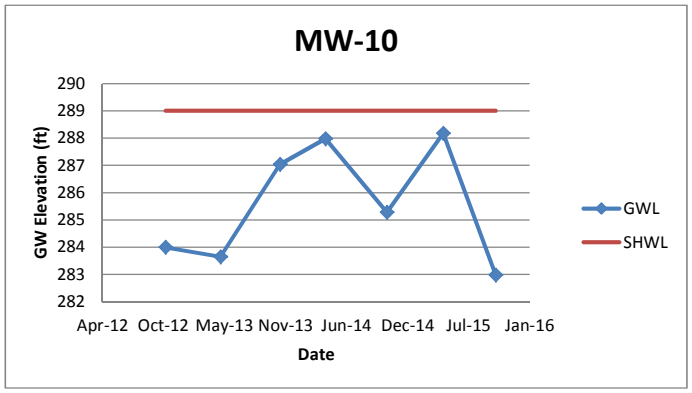


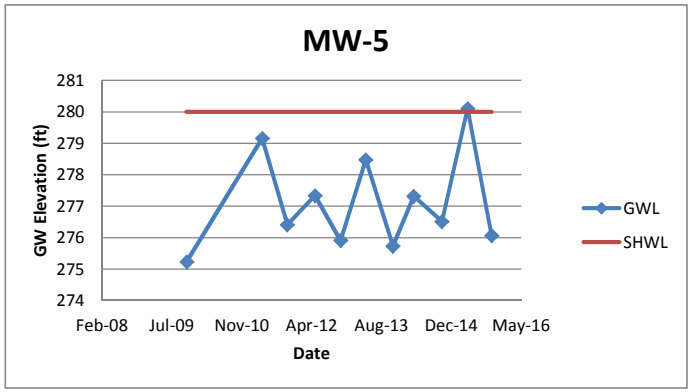


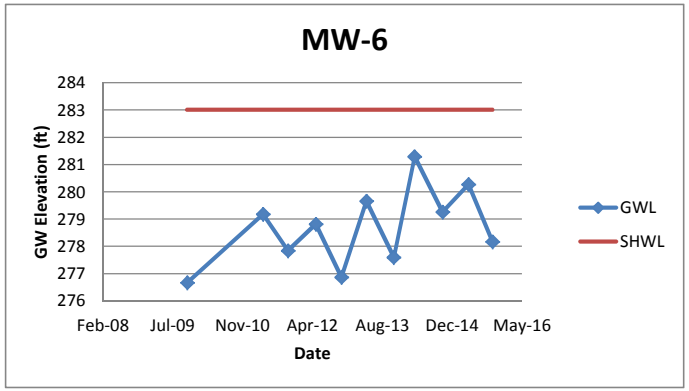


Highway 55 Landfill
Historical Water Level Data









GROUNDWATER MONITORING FIELD SHEETS

WELL DEVELOPMENT, PURGE, AND SAMPLE RECORD

CLIENT: Hwy 55 C&D Landfill, LLC
LOCATION: Apex, NC
PROJECT NAME/DESCRIPTION: Hwy 55 C&D
DATE OF WATER LEVEL MEASUREMENTS: 10-19-09

DEVELOP:
PURGING: ✓
SAMPLING: ✓

PROJECT NO.: EP-1306
PROJ. MGR.: THB
CHECKED BY:
PREPARED BY: THB

Sample ID	A Well No.	B Sample Date	C Time (hrs)	D Well Depth (ft)	E MP Elevation (ft)	F Depth to Water (ft bmp)	(E-F)=G Water Level Elevation (ft)	(D-F)=H Hgt. of Water Col. (ft)	I Volume of Water (gal)*	Vol. of Water Pgd. (gal)**	Temp. (°C)	Specific Cond. (umhos)	pH	Turbidity or Appearance
	MW-1	10-19-09	10:00	32		21.25		10.75	1.8	5.0				
	MW-2	"	10:30	20		11.40		8.6	1.4	4.0				
	MW-3	"	11:00	19		9.78		9.22	1.5	4.5				
	MW-4	"	11:30	19		9.30		9.70	1.5	4.5				
	MW-5	"	12:00	19		9.53		9.47	1.5	4.5				
	MW-6	"	12:30	19		10.40		8.6	1.4	4.0				
	MW-7	"	13:00	22		12.57		9.43	1.5	4.5				
	SW-1	"	11:15	—										
	SW-2	"	11:45	—										
	SW-3	"	12:15	—										
	SW-4	"	12:45	—										
	Field Blank	"	12:20	—										

Comments:

*To calculate volume of water in the well multiply "H" by 0.163 for a 2" well, 0.653 for a 4" well, or 1.469 for a 6" well.

**To calculate purge volume, multiply "I" by the desired number of well volumes (e.g., 3 to 5).

(e.g., after each well volume).

WELL DEVELOPMENT, PURGE, AND SAMPLE RECORD

CLIENT: Hwy 55 C&D Landfill, LLC
LOCATION: Apex, NC
PROJECT NAME/DESCRIPTION: Hwy 55 C&D
DATE OF WATER LEVEL MEASUREMENTS: 4-13-11

DEVELOP:
PURGING: ✓
SAMPLING: ✓

PROJECT NO.: EP-1306
PROJ. MGR.: THB
CHECKED BY:
PREPARED BY: THB

Sample ID	A Well No.	B Sample Date	C Time (hrs)	D Well Depth (ft)	E MP Elevation (ft)	F Depth to Water (ft-bmp)	(E-F)=G Water Level Elevation (ft)	(D-F)=H Hgt. of Water Col. (ft)	I Volume of Water (gal)*	Vol. of Water Rqd. (gal)**	Temp. (°C)	Specific Cond. (umhos)	pH	Turbidity or Appearance
	MW-1	4-13-11	9:30	32		20.03		11.97	1.95	5.85				
	MW-2	"	10:00	20		7.82		12.18	1.98	5.95				
	MW-3	"	10:30	19		5.95		13.05	2.12	6.3				
	MW-4	"	11:00	19		6.38		12.62	2.05	6.15				
	MW-5	"	11:30	19		5.60		13.4	2.18	6.5				
	MW-6	"	12:00	19		7.89		11.11	1.81	5.4				
	MW-7	"	12:30	22		8.21		13.79	2.24	6.7				
	SW-1	"	12:45	—	—	—	—	—	—	—				
	SW-2	"	13:00	—	—	—	—	—	—	—				
	SW-3	"	13:15	—	—	—	—	—	—	—				
	SW-4	"	13:30	—	—	—	—	—	—	—				
	Field Blank	"	11:15	—	—	—	—	—	—	—				

Comments:

*To calculate volume of water in the well multiply "H" by 0.163 for a 2" well, 0.652 for a 4" well, or 1.469 for a 6" well.

**To calculate purge volume, multiply "I" by the desired number of well volumes (e.g., 3 to 5).

(e.g., after each well volume)

111-370 / Draft Docs / 003 / P3 permitting / Hydro Data

WELL DEVELOPMENT, PURGE, AND SAMPLE RECORD

PROJECT NO.: EP-1306
PROJ. MGR.: THB
CHECKED BY:
PREPARED BY: THB

CLIENT: Hwy 55 C&D Landfill, LLC
LOCATION: Apex, NC
PROJECT NAME/DESCRIPTION: Hwy 55 C&D
DATE OF WATER LEVEL MEASUREMENTS: 10/10/11

DEVELOP:
PURGING: ✓
SAMPLING: ✓

Sample ID	A Well No.	B Sample Date	C Time (hrs)	D Well Depth (ft)	E MP Elevation (ft)	F Depth to Water (ft-bmp)	(E-F)=G Water Level Elevation (ft)	(D-F)=H Hgt. of Water Col. (ft)	I Volume of Water (gal)*	Vol. of Water Pgd. (gal)**	Temp. (°C)	Specific Cond. (umhos)	pH	Turbidity or Appearance
	MW-1	10-10-11	9:30	32		20.80		11.20	1.82	5.47				
	MW-2	"	10:00	20		11.68		8.32	1.3	4				
	MW-3	"	10:30	19		9.52		9.48	1.5	4.6				
	MW-4	"	11:00	19		8.71		10.29	1.6	5				
	MW-5	"	11:30	19		8.35		10.65	1.7	5.2				
	MW-6	"	12:00	19		9.23		9.77	1.5	4.7				
	MW-7	"	12:30	22		11.64		10.36	1.6	5				
	SW-1	"	12:45	—	—	—		—	—	—				
	SW-2	"	13:00	—	—	—		—	—	—				
	SW-3	"	13:15	—	—	—		—	—	—				
	SW-4	"	13:30	—	—	—		—	—	—				
	Field Blank	"	11:05	—	—	—		—	—	—				

Comments:

*To calculate volume of water in the well multiply "H" by 0.163 for a 2" well, 0.652 for a 4" well, or 1.469 for a 6" well.

**To calculate purge volume, multiply "I" by the desired number of well volumes (e.g., 3 to 5)

(e.g., after each well volume).

WELL DEVELOPMENT, PURGE, AND SAMPLE RECORD

CLIENT: Hwy 55 C&D Landfill, LLC
LOCATION: Apex, NC
PROJECT NAME/DESCRIPTION: Hwy 55 C&D
DATE OF WATER LEVEL MEASUREMENTS: 4-25-12

DEVELOP:
PURGING: ✓
SAMPLING: ✓

PROJECT NO.: ED-1306
PROJ. MGR.: THB
CHECKED BY:
PREPARED BY: THB

Sample ID	A Well No.	B Sample Date	C Time (hrs)	D Well Depth (ft)	E MP Elevation (ft)	F Depth to Water (ft-bmp)	(E-F)=G Water Level Elevation (ft)	(D-F)=H Hgt. of Water Col. (ft)	I Volume of Water (gal)*	Vol. of Water Pgd. (gal)**	Temp. (°C)	Specific Cond. (umhos)	pH	Turbidity or Appearance
	MW-1	4-25-12	9:30	32		21.9		10.1	1.65	4.94				
	MW-2	"	10:00	20		9.27		10.73	1.75	5.25				
	MW-3	"	10:30	19		6.89		12.11	1.97	5.92				
	MW-4	"	11:00	19		7.14		11.86	1.93	5.79				
	MW-5	"	11:30	19		7.42		11.58	1.89	5.66				
	MW-6	"	12:00	19		8.26		10.74	1.75	5.25				
	MW-7	"	12:30	22		10.07		11.93	1.94	5.83				
	SW-1	"	12:45											
	SW-2	"	13:00											
	SW-3	"	13:15											
	SW-4	"	13:30											
	Field Blank	"	12:15											

Comments:

*To calculate volume of water in the well multiply "H" by 0.163 for a 2" well, 0.652 for a 4" well, or 1.469 for a 6" well.

**To calculate purge volume, multiply "I" by the desired number of well volumes (e.g., 3 to 5)
(e.g., after each well volume).

WELL DEVELOPMENT, PURGE, AND SAMPLE RECORD

CLIENT: Hwy 55 C&D Landfill, LLC
LOCATION: Apex, NC
PROJECT NAME/DESCRIPTION Hwy 55 C&D
DATE OF WATER LEVEL MEASUREMENTS: 10-25-12

DEVELOP:
PURGING: ✓
SAMPLING: ✓

PROJECT NO. EP-1306
PROJ. MGR.: THB
CHECKED BY:
PREPARED BY: THB

Sample ID	A Well No.	B Sample Date	C Time (hrs)	D Well Depth (ft)	E MP Elevation (ft)	F Depth to Water (ft bmp)	(E-F)=G Water Level Elevation (ft)	(D-F)=H Hgt. of Water Col. (ft)	I Volume of Water (gal)*	Vol. of Water Pgd. (gal)**	Temp. (°C)	Specific Cond. (umhos)	pH	Turbidity or Appearance
	MW-1	10-25-12	9:30	32	20.94 →			11.06	1.8	5.4				
	MW-2	"	10:00	20	9.9			10.1	1.64	4.9				
	MW-3	"	10:30	19	11.24			7.76	1.2	3.6				
	MW-4	"	11:00	19	8.98			10.02	1.66	4.99				
	MW-5	"	11:30	19	8.85			10.15	1.65	4.96				
	MW-6	"	12:00	19	10.0			8.8	1.43	4.3				
	MW-7	"	12:30	22	12.6			9.4	1.5	4.5				
	MW-8	"	13:00	30	10.73			19.27	3	9				
	MW-9	"	13:30	20	13.12			6.8	1.2	3.6				
	MW-10	"	14:00	30	20.5			9.5	1.5	4.5				
	MW-11	"	14:30	20	7.31			12.69	2	6				
	SW-1	"	14:45											
	SW-2	"	15:00											
	SW-3	"	15:15											
	SW-4	"	15:30											
	Field Blank	"	13:15											

Comments:

*To calculate volume of water in the well multiply "H" by 0.163 for a 2" well, 0.652 for a 4" well, or 1.469 for a 6" well.

**To calculate purge volume, multiply "I" by the desired number of well volumes (e.g., 3 to 5) (e.g., after each well volume).

WELL DEVELOPMENT, PURGE, AND SAMPLE RECORD

CLIENT: Hwy 55 C&D Landfill
LOCATION: Apex, NC
PROJECT NAME/DESCRIPTION: Hwy 55 C&D
DATE OF WATER LEVEL MEASUREMENTS: 4-23-13

DEVELOP:
PURGING: ✓
SAMPLING: ✓

PROJECT NO.: EP-1306
PROJ. MGR.: THB
CHECKED BY:
PREPARED BY: THB

Sample ID	A Well No.	B Sample Date	C Time (hrs)	D Well Depth (ft)	E MP Elevation (ft)	F Depth to Water (ft-bmp)	(E-F)=G Water Level Elevation (ft)	(D-F)=H Hgt. of Water Col. (ft)	I Volume of Water (gal)*	Vol. of Water Rmvd. (gal)**	Temp. (°C)	Specific Cond. (umhos)	pH	Turbidity or Appearance
	MW-1	4-23-13	9:30	32	—	22.45		9.55	1.5	4.5				
	MW-2	"	10:00	20		8.75		11.25	1.8	5.5				
	MW-3	"	10:30	19		6.92		12.08	1.9	5.9				
	MW-4	"	11:00	19		6.56		12.44	2	6				
	MW-5	"	11:30	19		6.28		12.72	2	6				
	MW-6	"	12:00	19		7.41		11.59	1.8	5.5				
	MW-7	"	12:30	22		8.55		13.45	2.19	6.5				
	MW-8	"	13:00	30		22.85		7.15	1.16	3.49				
	MW-9	"	13:30	20		8.32		11.68	1.9	5.7				
	MW-10	"	14:00	30		20.85		9.15	1.49	4.47				
	MW-11	"	14:30	20		7.31		12.69	2	6				
	SW-1	"	14:45	—		—	—	—	—	—				
	SW-2	"	15:00	—		—	—	—	—	—				
	SW-3	"	15:15	—		—	—	—	—	—				
	SW-4	"	15:30	—		—	—	—	—	—				
	Field Blank	"	12:15	—		—	—	—	—	—				

Comments

*To calculate volume of water in the well multiply "H" by 0.163 for a 2" well, 0.653 for a 4" well, or 1.469 for a 6" well

**To calculate purge volume, multiply "I" by the desired number of well volumes (e.g., 3 to 5)

(e.g., after each well volume)

WELL DEVELOPMENT, PURGE, AND SAMPLE RECORD

CLIENT: Greenway Waste Solutions, LLC
LOCATION: Apex, NC
PROJECT NAME/DESCRIPTION: Hwy 55 CDD
DATE OF WATER LEVEL MEASUREMENTS: 11-4-13

DEVELOP:
PURGING: ✓
SAMPLING: ✓

PROJECT NO.: EP-1306
PROJ. MGR.: THB
CHECKED BY:
PREPARED BY: THB

Sample ID	A Well No.	B Sample Date	C Time (hrs)	D Well Depth (ft)	E MP Elevation (ft)	F Depth to Water (ft-bmp)	(E-F)=G Water Level Elevation (ft)	(D-F)=H Hgt. of Water Col. (ft)	I Volume of Water (gal)*	Vol. of Water Purg. (gal)**	Temp. (°C)	Specific Cond. (uMhos)	pH	Turbidity or Appearance
	MW-1	11-4-13	9:00	32	20.41 →			11.59	1.8	5.6				
	MW-2	"	9:30	20	11.67			8.33	1.3	4				
	MW-3	"	10:00	19	8.89			10.11	1.6	4.8				
	MW-4	"	10:30	19	8.65			10.35	1.6	4.8				
	MW-5	"	11:00	19	9.03			9.97	1.6	4.8				
	MW-6	"	11:30	19	9.48			9.52	1.5	4.5				
	MW-7	"	12:00	22	12.67			9.33	1.5	4.5				
	MW-8	"	12:30	30	21.95			8.05	2.11	6.33				
	MW-9	"	13:00	20	10.36			9.69	1.5	4.5				
	MW-10	"	13:30	30	17.45			12.55	2	6				
	MW-11	"	14:00	20	6.99			13.01	2	6				
	SW-1	"	14:15	—										
	SW-2	"	14:30	—										
	SW-3	"	14:45	—										
	SW-4	"	15:00	—										

Comments:

*To calculate volume of water in the well multiply "H" by 0.163 for a 2" well, 0.652 for a 4" well, or 1.469 for a 6" well.

**To calculate purge volume, multiply "I" by the desired number of well volumes (e.g., 3 to 5) (e.g., after each well volume).

WELL DEVELOPMENT, PURGE, AND SAMPLE RECORD

CLIENT: Greenway Waste Solutions of Apex
LOCATION: Apex, NC
PROJECT NAME/DESCRIPTION: Hwy 55 C&D
DATE OF WATER LEVEL MEASUREMENTS: 4-2-14

DEVELOP:
PURGING: ✓
SAMPLING: ✓

PROJECT NO.: EP-1306
PROJ. MGR.: THB
CHECKED BY:
PREPARED BY: THB

Sample ID	A Well No.	B Sample Date	C Time (hrs)	D Well Depth (ft)	E MP Elevation (ft)	F Depth to Water (ft-bmp)	(E-F)=G Water Level Elevation (ft)	(D-F)=H Hgt. of Water Col. (ft)	I Volume of Water (gal)*	Vol. of Water Pgd. (gal)**	Temp. (°C)	Specific Cond. (umhos)	pH	Turbidity or Appearance
	MW-1	4-2-14	9:00	32	—	20.79	—	11.21	1.8	5.4				
	MW-2	"	9:30	20	—	11.63	—	8.37	1.3	3.9				
	MW-3	"	10:00	19	—	8.25	—	10.75	1.75	5.2				
	MW-4	"	10:30	19	—	10.61	—	8.39	1.3	3.9				
	MW-5	"	11:00	19	—	7.44	—	11.56	1.8	5.6				
	MW-6	"	11:30	19	—	5.78	—	13.22	2.1	6.3				
	MW-7	"	12:00	22	—	8.52	—	13.48	2.1	6.3				
	MW-8	"	12:30	30	—	17.21	—	12.79	2	6				
	MW-9	"	13:00	20	—	8.29	—	11.71	1.9	5.7				
	MW-10	"	13:30	30	—	16.51	—	13.49	2.1	6.3				
	MW-11	"	14:00	20	—	6.27	—	13.73	2.2	6.5				
	SW-1	"	14:15	—	—	—	—	—	—	—				
	SW-2	"	14:30	—	—	—	—	—	—	—				
	SW-3	"	14:45	—	—	—	—	—	—	—				
	SW-4	"	15:00	—	—	—	—	—	—	—				

Comments:

*To calculate volume of water in the well multiply "H" by 0.163 for a 2" well, 0.652 for a 4" well, or 1.469 for a 6" well

**To calculate purge volume, multiply "I" by the desired number of well volumes (e.g., 3 to 5)

(e.g., after each well volume).

WELL DEVELOPMENT, PURGE, AND SAMPLE RECORD

CLIENT: Greenway Waste Solutions of Apex
LOCATION: Apex, NC
PROJECT NAME/DESCRIPTION: Hwy 55 C&D
DATE OF WATER LEVEL MEASUREMENTS: 10-20-14

DEVELOP: ___
PURGING: ✓
SAMPLING: ✓

PROJECT NO.: FP-1306
PROJ. MGR.: TAB
CHECKED BY: ___
PREPARED BY: TAB

Sample ID	A Well No.	B Sample Date	C Time (hrs)	D Well Depth (ft)	E MP Elevation (ft)	F Depth to Water (ft-bmp)	(E-F)=G Water Level Elevation (ft)	(D-F)=H Hgt. of Water Col. (ft)	I Volume of Water (gal)*	Vol. of Water Pgd. (gal)**	Temp. (°C)	Specific Cond. (umhos)	pH	Turbidity or Appearance
	MW-1	10-20-14	9:00	32	—	18.85	—	13.15	2.14	6.43				
	MW-2	"	9:30	20	—	11.80	—	8.2	1.34	4.01				
	MW-3	"	10:00	19	—	7.52	—	11.48	1.87	5.61				
	MW-4	"	10:30	19	—	7.64	—	11.36	1.85	5.56				
	MW-5	"	11:00	19	—	8.24	—	10.76	1.75	5.26				
	MW-6	"	11:30	19	—	7.81	—	11.19	1.82	5.47				
	MW-7	"	12:00	22	—	11.42	—	10.58	1.72	5.17				
	MW-8	"	12:30	30	—	22.35	—	7.65	1.25	3.75				
	MW-9	"	13:00	20	—	9.65	—	10.35	1.69	5.06				
	MW-10	"	13:30	30	—	19.21	—	10.79	1.76	5.29				
	MW-11	"	14:00	43 ~~43~~	—	28.00	—	15.00	2.45	7.34				
	SW-1	"	14:15	—	—	—	—	—	—	—				
	SW-2	"	14:30	—	—	—	—	—	—	—				
	SW-3	"	14:45	—	—	—	—	—	—	—				
	SW-4	"	15:00	—	—	—	—	—	—	—				

Comments

*To calculate volume of water in the well multiply "H" by 0.163 (for a 2" well, 0.653 (or a 4" well, or 1.469 (for a 6" well

**To calculate purge volume, multiply "I" by the desired number of well volumes (e.g., 3 to 5)

(e.g., after each well volume)

WELL DEVELOPMENT, PURGE, AND SAMPLE RECORD

CLIENT: Greenway Waste Solutions of Apex
LOCATION: Apex, NC
PROJECT NAME/DESCRIPTION: Hwy 55 C&D
DATE OF WATER LEVEL MEASUREMENTS: 4-23-15

DEVELOP:
PURGING: ✓
SAMPLING: ✓

PROJECT NO.: EP-1306
PROJ. MGR.: THB
CHECKED BY:
PREPARED BY: THB

Sample ID	A Well No.	B Sample Date	C Time (hrs)	D Well Depth (ft)	E MP Elevation (ft)	F Depth to Water (ft-bmp)	(E-F)=G Water Level Elevation (ft)	(D-F)=H Hgt. of Water Col. (ft)	I Volume of Water (gal)*	Vol. of Water Pgd. (gal)**	Temp. (°C)	Specific Cond. (units)	pH	Turbidity or Appearance
	MW-1	4-23-15	8:30	32		17.9		14.1	2.2	6.6				
	MW-2	"	9:00	20		8.29		11.71	1.9	5.7				
	MW-3	"	9:30	19		6.22		12.78	2	6				
	MW-4	"	10:00	19		5.5		13.5	2.2	6.6				
	MW-5	"	10:30	19		4.65		14.35	2.3	6.9				
	MW-6	"	11:00	19		6.8		12.2	1.9	5.9				
	MW-7	"	11:30	22		8.22		13.78	2.24	6.7				
	MW-8	"	12:00	30		17.83		12.17	1.9	5.95				
	MW-9	"	12:30	20		7.15		12.85	2.04	6.2				
	MW-10	"	13:00	30		16.31		13.69	2.23	6.69				
	MW-11	"	13:30	43		28.55		14.45	2.35	7				
	SW-1	"	13:45											
	SW-2	"	14:00											
	SW-3	"	14:15											
	SW-4	"	14:30											

Comments:

*To calculate volume of water in the well multiply "H" by 0.163 for a 2" well, 0.652 for a 4" well, or 1.469 for a 6" well.

**To calculate purge volume, multiply "I" by the desired number of well volumes (e.g., 3 to 5) (e.g., after each well volume).

WELL DEVELOPMENT, PURGE, AND SAMPLE RECORD

CLIENT: Greenway Waste Solutions of Apex
LOCATION: Apex, NC
PROJECT NAME/DESCRIPTION: Hwy 55 C&D
DATE OF WATER LEVEL MEASUREMENTS: 10-12-15

DEVELOP: ✓
PURGING: ✓
SAMPLING: ✓

PROJECT NO.: EP-1306
PROJ. MGR.: THB
CHECKED BY:
PREPARED BY: THB

Sample ID	A Well No.	B Sample Date	C Time (hrs)	D Well Depth (ft)	E MP Elevation (ft)	F Depth to Water (ft-btmp)	(E-F)=G Water Level Elevation (ft)	(D-F)=H Hgt. of Water Col. (ft)	I Volume of Water (gal)*	Vol. of Water Pgd. (gal)**	Temp. (°C)	Specific Cond. (umhos)	pH	Turbidity or Appearance
	MW-1	10-12-15	9:00	32		16.96		15.04	2.45	7.35				
	MW-2	"	9:30	20		10.92		9.08	1.48	4.44				
	MW-3	"	10:00	19		7.42		11.58	1.88	5.66				
	MW-4	"	10:30	19		7.80		11.20	1.82	5.49				
	MW-5	"	11:00	19		8.69		10.31	1.68	5.04				
	MW-6	"	11:30	19		8.97		10.03	1.63	4.90				
	MW-7	"	12:00	22		11.51		10.49	1.71	5.13				
	MW-8	"	12:30	30		20.72		9.28	1.51	4.53				
	MW-9	"	13:00	20		9.51		10.49	1.71	5.13				
	MW-10	"	13:30	30		21.52		8.48	1.38	4.15				
	MW-11	"	14:00	43		27.91		15.09	2.46	7.38				
	SW-1	"	14:15	—		—	—	—	—	—				
	SW-2	"	14:30	—		—	—	—	—	—				
	SW-3	"	14:45	—		—	—	—	—	—				
	SW-4	"	15:00	—		—	—	—	—	—				

Comments:

*To calculate volume of water in the well multiply "H" by 0.163 for a 2" well, 0.652 for a 4" well, or 1.469 for a 6" well.

**To calculate purge volume, multiply "I" by the desired number of well volumes (e.g., 3 to 5) (e.g., after each well volume).

BORING LOGS

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-1 Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

ect Location: Wake Co. State: NC Total Depth: 75'

TB Soil Sample Method: Split-Spoon Date Started: 9-10-01 Date Complete: 9-10-01

Simmons Drill Method: HSA/Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"

Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs

Surface Elevation (LS): 352.85 Measuring Point Elev. (MP): LS Remarks:

vation ft	Depth ft	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn. clayey Silt				
	5	24,31,32		Rd-brn clayey Silt				
	10	48, 50/3"						
	15			PWR - Sampled as tan-brn. sandy Silt w/ Rx frag.				
	20			Auger Refusal @ 20.5' bgs				
				Air drilled through weathered fanglomerate to 35' bgs				
	25							
	30							
	35			Began 1st Coring Run @ 35' bgs (35.0'-48.2') 36.5'-42.0' - Rd-brn fanglomerate w/ 0.5"-1" metamorphic/igneous rock inclusions				98% Rec. 56% RQD

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-1 Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

Location: Wake Co. State: NC Total Depth: 75'
FB Soil Sample Method: Split-spoon Date Started: 9-10-01 Date Complete: 9-10-01
R. Simmons Drill Method: HSA / Air Rotary Equipment Type: Centerra - CT-250 Boring Diameter: 8 1/4"
Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Surface Elevation (LS): 352.85 Measuring Point Elev. (MP): LS Remarks:

ion	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
	45			44.5'-49.0' - Highly fractured weathered zone				
				Began 2nd Core Run (48.2'-62.6')				99% Rec. 63% RQD
	50							
	55			53'-59' - 0.25"-1" metamorphic/igneous rock inclusions				
	60			61.0'-62.5' - Highly weathered clayey siltstone w/ rock fragments				
				Began 3rd Core Run (62.6'-75.0')				100% Rec. 89% RQD
	65			63.5'-67.0' - 0.5"-2" rock inclusions				
	70			67'-75' - 0.25"-1" rock inclusions				
	75			Terminated Coring @ 75' bgs				

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-2 Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

ect Location: Wake Co. State: NC Total Depth: 56'

TB Soil Sample Method: Split-Spoon Date Started: 9-10-01 Date Complete: 9-10-01

R. Simmons Drill Method: HSA/Air Rotary Equipment Type: Boring Diameter: 8"/6"

as Sample Method: Groundwater (bmp): 0 hrs 24 hrs

Surface Elevation (LS): 328.14 Measuring Point Elev. (MP): LS Remarks:

vation ft	Depth ft	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn. Clayey Silt				
		4,6,10						
	5			Rd-brn. sl. clayey Silt				
		16,28,50/6"						
	10			PWR - Sampled as rd-brn sl. sandy Silt w/ Rx. frag.				
	15	50/1"		Auger Refusal @ 17' bgs				
				Air Drilled to 56'				
	20							
				Rd-brn. Fanglomerate				
	25							
	30							
	55			Terminated Air Drilling @ 56' bgs				

ENVIRO-PRO, P.C.
Charlotte, North Carolina

LITHOLOGIC LOG

Boring No.: MW-3 Job No: EP-1306
Client: Hwy 55 C&D Landfill, LLC

ect Location: Wake Co. State: NC Total Depth: 55'
TB Soil Sample Method: Split-Spoon Date Started: 9-10-01 Date Complete: 9-10-01
R. Simmons Drill Method: HSA / Air Rotary Equipment Type: Canterra CT-250 Boring Diameter: 8"/6"
Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs
d Surface Elevation (LS): 318.49 Measuring Point Elev. (MP): LS Remarks:

vation ft.	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel.-brn clayey silt				
		25,35,50/1"						
	5							
				PWR - Sampled as Tan-brn sl. clayey sandy silt w/ Rx frag.				
	10							
				Auger Refusal @ 14' bgs Switched to Air Rotary				
	15							
	20							
				Rd-brn Fanglomerate				
	25							
	30							
	55			Terminated Air Drilling @ 55' bgs				

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-4 Job No: EP-1306 Client: Hwy 55 CLD Landfill, LLC

Project Location: Wake Co. State: NC Total Depth: 55'

Logged By: TB Soil Sample Method: Split-Spoon Date Started: 9-10-01 Date Complete: 9-10-01

R. Simmons Drill Method: HSA / Air Rotary Equipment Type: Centerra - CT-250 Boring Diameter: 8"/6"

Sample Method: Groundwater (bmp): 0 hrs 24 hrs

Land Surface Elevation (LS): 344.25 Measuring Point Elev. (MP): LS Remarks:

Elevation ft	Depth ft	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-tan brn clayey Silt				
		9,19,30						
	5							
				Rd-brn. sl. clayey Silt				
		50/1"						
	10							
				PWR- Sampled as rd-tan brn sl. clayey Sandy Silt w/ Rx frag.				
	15							
		50/1"						
				Auger Refusal @ 18'				
	20			Switched to Air Rotary				
	25			Rd-brn Fanglomerate				
	30							
	55			Terminated Air Drilling @ 55'				

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-5 Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

ct Location: Wake Co. State: NC Total Depth: 70'
TB Soil Sample Method: Split-Spoon Date Started: 9-10-01 Date Complete: 9-10-01
Simmons Drill Method: HSA/Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"
Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Surface Elevation (LS): 330.92 Measuring Point Elev. (MP): LS Remarks:

ation L	Depth ft	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn sl. clayey Silt				
	5	18, 34, 50/2"						
	10	50/1"		PWR - sampled as tan-brn sl. clayey sandy Silt w/ Rx frag.				
	15			Auger Refusal @ 15.5' bgs				
				Switched to Air Rotary				
	20							
	25			Rd-brn Fanglomerate				
	30							
	70			Terminated Drilling @ 70'				

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-6 Job No: EP-1306 Client: Hwy 55 CLD Landfill, LLC

ct Location: Wake Co. State: NC Total Depth: 55

[redacted]TB Soil Sample Method: Split-Spoon Date Started: 9-10-01 Date Complete: 9-10-01

, Simmons Drill Method: HSA / Air Rotary Equipment Type: Canterra CT-250 Boring Diameter: 8"/6"

Gas Sample Method: Groundwater (bmp): 0 hrs _____ 24 hrs _____

Surface Elevation (LS): 325.87 Measuring Point Elev. (MP): LS Remarks:

ation ft	Depth ft	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
		40, 50/5"		Yel-brn clayey Silt				
	5							
		50/1"		PWR - Sampled as tan-rd-brn sl. clayey Sandy Silt w/ Rx frag.				
	10							
	15			Auger Refusal @ 16' bgs				
				Switched to Air Rotary				
	20							
	25			Rd-brn Fanglomerate				
	30							
				Terminated Air Drilling @ 55' bgs				
	55							

ENVIRO-PRO, P.C.
Charlotte, North Carolina

LITHOLOGIC LOG

Boring No.: MW-7 Job No: EP-1306
Client: Hwy 55 C&D Landfill, LLC

ct Location: Wake Co State: NC Total Depth: 75'
TB Soil Sample Method: Split-Spoon Date Started: 9-11-01 Date Complete: 9-11-01
, Simmons Drill Method: HSA / Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"
Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Surface Elevation (LS): 353.23 Measuring Point Elev. (MP): LS Remarks:

ation L	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn. sl. clayey Silt				
		20, 50/5"						
	5							
		50/2"		PWR - Sampled as tan-rd. brn sl. clayey sandy silt w/ Rx frag.				
	10							
	15							
				Auger Refusal @ 18' bgs				
	20			Switched to Air Rotary				
	25			Rd-brn Fanglomerate				
	30							
	75			Terminated Air Drilling @ 75' bgs				

ENVIRO-PRO, P.C.
Charlotte, North Carolina

LITHOLOGIC LOG

Boring No.: MW-8 Job No: EP-1306
Client: Hwy 55 C&D Landfill, LLC

ect Location: Wake Co. State: NC Total Depth: 59'
T.B. Soil Sample Method: Split-Spoon Date Started: 9-11-01 Date Complete: 9-11-01
R. Simmons Drill Method: HSA/Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"
Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Surface Elevation (LS): 343.11 Measuring Point Elev. (MP): LS Remarks:

vation ft.	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn sl. clayey Silt				
	5	22,30,44		Rd-brn Clayey Silt				
	10	50/1"		PWR - Sampled as tan-brn sl. clayey sandy Silt w/ Rx frag.				
	15							
				Auger Refusal @ 19' bgs				
	20			Switched to Air Rotary				
	25			Rd-brn Fanglomerate				
	30							
				Terminated Air Drilling @ 59' bgs				
	60							

ENVIRO-PRO, P.C.
Charlotte, North Carolina

LITHOLOGIC LOG

Boring No.: MW-9 Job No: EP-1306
Client: Hwy 55 C&D Landfill, LLC

Location: Wake Co. State: NC Total Depth: 50'
TB Soil Sample Method: Split - Spoon Date Started: 9-11-01 Date Complete: 9-11-01
R. Simmons Drill Method: HSA / Air Rotary Equipment Type: Cauterra CT-250 Boring Diameter: 8"/6"
s Sample Method: Groundwater (bmp): 0 hrs _____ 24 hrs _____
urface Elevation (LS): 358.35 Measuring Point Elev. (MP): LS Remarks:

ion	Depth ft	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn sl. clayey Silt				
		28,39,50/4"		Rd-brn. clayey Silt				
	5							
		50/1"						
	10			PWR-Sampled as tan-brn. silty Sand w/ Rx frag.				
	15			Auger Refusal @ 17.5' bgs				
	20							
	25			Rd-brn Fanglomerate				
	30							
	50			Terminated Air Drilling @ 50' bgs				

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-10 Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

ct Location: Wake Co. State: NC Total Depth: 40'

TB Soil Sample Method: Split-Spoon Date Started: 9-12-01 Date Complete: 9-12-01

R. Simmons Drill Method: HSA/Air Rotary Equipment Type: Canterra CT-250 Boring Diameter: 8"/6"

Gas Sample Method: Groundwater (bmp): 0 hrs _____ 24 hrs _____

Surface Elevation (LS): 348.87 Measuring Point Elev. (MP): LS Remarks:

ation L	Depth ft	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
		12,16,24		Yel-brn clayey Silt				
	5							
		30,50/1"						
	10			PWR - Sampled as tan - rd brn. sl. clayey sandy Silt w/ Rx frag.				
	15							
				Auger Refusal @ 17' bgs				
				Switched to Air Rotary				
	20							
	25			Rd-brn Fanglomerate				
	30							
				Terminated Air Drilling @ 40' bgs				
	40							

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-11 Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

ect Location: Wake Co. State: NC Total Depth: 55'

TB Soil Sample Method: Split-Spoon Date Started: 9-12-01 Date Complete: 9-12-01

R. Simmons Drill Method: HSA / Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"

Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs

Surface Elevation (LS): 332.38 Measuring Point Elev. (MP): LS Remarks:

vation ft	Depth ft	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn clayey Silt				
		22, 39, 50/3"						
	5							
		35, 50/1"		PWR-Sampled as tan-rd brn clayey Silt w/ Rx frag.				
	10							
	15							
				Auger Refusal @ 18' bgs				
				Switched to Air Rotary				
	20							
	25			Rd-brn Fanglomerate				
	30							
	55			Terminated Air Drilling @ 55' bgs				

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-12 Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

Project Location: Wake Co. State: NC Total Depth: 30

By: FB Soil Sample Method: Split-Spoon Date Started: 9-12-01 Date Complete: 9-12-01

R. Simmons Drill Method: HSA / Air Rotary Equipment Type: Canterra CT-250 Boring Diameter: 8"/6"

Soil Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs

Land Surface Elevation (LS): 307.59 Measuring Point Elev. (MP): LS Remarks:

Elevation ft.	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
		22,37,43		Yel-brn sl. clayey silt				
	5							
	10	50/2"		PWR - Sampled as tan-brn sl. clayey sandy silt w/ Rx frag.				
	15			Auger Refusal @ 16' bgs				
				Switched to Air Rotary				
	20							
				Rd-brn Fanglomerate				
	25							
	30			Terminated Air Drilling @ 30' bgs				

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-13 Job No: EP-1306 Client: Hwy 55 CLD Landfill, LLC

ct Location: Wake Co. State: NC Total Depth: 40'

TB Soil Sample Method: Split-Spoon Date Started: 9-12-01 Date Complete: 9-12-01

, Simmons Drill Method: HSA/Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"

as Sample Method: Groundwater (bmp): 0 hrs 24 hrs

Surface Elevation (LS): 310.99 Measuring Point Elev. (MP): LS Remarks:

ation L	Depth ft	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn sl. Clayey Silt				
		27, 50/3"						
	5							
		50/1"		PWR - Sampled as tan-brn sl. clayey fine sandy Silt w/ Rx frag.				
	10							
	15			Auger Refusal @ 15' bgs				
				Switched to Air Rotary				
	20							
	25			Rd-brn. Fanglomerate				
	30							
	40			Terminated Air Drilling @ 40' bgs				

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-13D Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

ect Location: Wake Co. State: NC Total Depth: 50

[redacted] JB Soil Sample Method: Split-Spoon Date Started: 11-8-01 Date Complete: 11-8-01

. R. Simmons Drill Method: Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 6"

Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs

l Surface Elevation (LS): 310.51 Measuring Point Elev. (MP): LS Remarks:

vation ft.	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn sl. clayey Silt				
	5							
				PWR - Tan-brn sl. clayey fine sandy Silt w/ Rx frag.				
	10							
				Bedrock encountered @ 15' bgs				
	15							
	20							
				Rd-brn Fanglomerate				
	25							
	30							
				Air Drilling Terminated @ 50' bgs				
	50							

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-14 Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

Project Location: Wake Co. State: NC Total Depth: 55
Log: FB Soil Sample Method: Split-Spoon Date Started: 9-12-01 Date Complete: 9-12-01
Drill: R. Simmons Drill Method: HSA / Air Rotary Equipment Type: Canterra CT-250 Boring Diameter: 8"/6"
Soil Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Land Surface Elevation (LS): 314.06 Measuring Point Elev. (MP): Remarks:

Elevation ft	Depth ft	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn. sl. clayey Silt				
	5	32, 50/2"						
	10	50/1"		PWR - Sampled as tan-brn. sl. clayey fine sandy Silt w/ Rx frag.				
	15			Auger Refusal @ 16' bgs				
				Switched to Air Rotary				
	20							
	25			Rd-brn Fanglomerate				
	30							
	55			Terminated Air Drilling @ 55' bgs				

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-15 Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

Project Location: Wake Co. State: NC Total Depth: 38'
TB Soil Sample Method: Split-Spoon Date Started: 9-12-01 Date Complete: 9-12-01
R. Simmons Drill Method: HSA/Air Rotary Equipment Type: Canterra CT-250 Boring Diameter: 8"/6"
Soil Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Ground Surface Elevation (LS): 292.25 Measuring Point Elev. (MP): LS Remarks:

Elevation ft.	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn clayey Silt				
		40, 50/3"						
	5							
		50/2"						
	10							
		50/1"		PWR-Sampled as Tan-rd brn sl. clayey fine sandy Silt w/ Rx frag.				
	15							
	20							
	25							
	30			Auger Refusal @ 30' bgs				
				Weathered rd-brn. Fanglomerate				
	35			Began 1st Coring run (35.0'-48.9')				95% Rec. 65% RQD

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-15 Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

ct Location: Wake Co. State: NC Total Depth: 58'
TB Soil Sample Method: Split-Spoon Date Started: 9-12-01 Date Complete: 9-12-01
Simmons Drill Method: HSA / Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"
Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Surface Elevation (LS): 292.25 Measuring Point Elev. (MP): Remarks:

ation ft.	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				37.5'-39.5' - Weathered zone w/ high angle fracture				
	40			40.5' - medium angle fracture				
				42.0'-42.5' - Highly weathered zone				
	45			Rd-brn Fanglomerate				
				Began 2nd coring run (48.9'-58')				99% Rec. 88% RQD
	50			52.5'-53.5' - Highly weathered zone w/ vertical fracture.				
	55			Terminated coring / subsequent air rotary drilling @ 58' bgs				
	60							

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-16 Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

ct Location: Wake Co. State: NC Total Depth: 45'
r: TB Soil Sample Method: Split-Spoon Date Started: 9-13-01 Date Complete: 9-13-01
: Simmons Drill Method: HSA/Air Rotary Equipment Type: Canterra CT-250 Boring Diameter: 8"/6"
Gas Sample Method: Groundwater (bmp): 0 hrs _____ 24 hrs _____
Surface Elevation (LS): 311.84 Measuring Point Elev. (MP): LS Remarks:

ation ft.	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn. sl. clayey silt				
	5	12,14,27		Rd-brn. clayey silt				
	10	50/5"						
	15	50/1"		PWR - Sampled as lt. tan-brn. sl. clayey fine sandy silt w/ Rx frag.				
	20							
	25			Auger Refusal @ 27' bgs				
	30			Rd-brn. Fanglomerate				
	45			Terminated Air Drilling @ 45' bgs				

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-17 Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

ect Location: Wake Co. State: NC Total Depth: 60'

TB Soil Sample Method: Split-Spoon Date Started: 9-13-01 Date Complete: 9-13-01

R. Simmons Drill Method: HSA/Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"

Gas Sample Method: Groundwater (bmp): 0 hrs _____ 24 hrs _____

Surface Elevation (LS): 336.43 Measuring Point Elev. (MP): LS Remarks:

vation ft.	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn. sl. clayey Silt				
		33,50/3"						
	5							
		50/1"		PWR - Sampled as tan-rd. brn sl. clayey sandy silt w/ Rx frag.				
	10							
	15							
				Auger Refusal @ 18' bgs				
				Switched to Air Rotary				
	20							
	25							
				Rd-brn. Fanglomerate				
	30							
				Terminated Air Drilling @ 60' bgs				
	60							

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-18 Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

ct Location: Wake Co. State: NC Total Depth: 65'
B Soil Sample Method: Split-Spoon Date Started: 9-13-01 Date Complete: 9-13-01
R. Simmons Drill Method: HSA/Air Rotary Equipment Type: Canterra CT-250 Boring Diameter: 8"/6"
as Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Surface Elevation (LS): 335.09 Measuring Point Elev. (MP): LS Remarks:

ation	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn sl. clayey Silt				
				Tan-brn clayey Silt				
		16,38,50/2"						
	5							
		50/1"		PWR - Sampled as tan-rd brn. sl. clayey sandy Silt w/ Rx frag.				
	10							
	15							
				Auger Refusal @ 17' bgs				
				Rd-brn Fanglomerate				
	20			Began 1st Coring Run (20.0'-33.6')				93% Rec.
								90% RQD
				22.5'-23.5' - 0.25"-1" metamorphic/igneous rock inclusions				
	25							
				23.5'-30.5' - 0.5"-2" metamorphic/igneous rock inclusions				
	30							
				31.0'-47.2' - 0.25"-1" rock inclusions				
	35			Began 2nd coring run (33.6'-47.2')				96% Rec.
								89% RQD

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-18 Job No: EP-1306 Client: Hwy 55 LWD Landfill, LLC

Location: Wake Co. State: NC Total Depth: 65'
Soil Sample Method: Split-Spoon Date Started: 9-13-01 Date Complete: 9-13-01
Drill Method: HSA/Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"
Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Surface Elevation (LS): 335.09 Measuring Point Elev. (MP): Remarks:

Depth ft	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
			Rd-brn. Fanglomerate				
			43.0'-44.0' - Highly weathered zone				
45							
			Coring Terminated @ 49.9' bgs				
			Began 3rd coring run (47.2'-49.9')				96% Rec.
			Switched to Air Rotary				89% RQD
50							
55							
			Rd-brn Fanglomerate				
60							
65			Terminated Air Drilling @ 65' bgs				

ENVIRO-PRO, P.C.
Charlotte, North Carolina

LITHOLOGIC LOG

Boring No.: MW-21 Job No: EP-1306
Client: Hwy 55 C&D Landfill, LLC

t Location: Wake Co. State: NC Total Depth: 55
TB Soil Sample Method: Split-Spoon Date Started: 9-14-01 Date Complete: 9-14-01
R. Simmons Drill Method: HSA/Air Rotary Equipment Type: Canterra CT-250 Boring Diameter: 8"/6"
as Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Surface Elevation (LS): 351.07 Measuring Point Elev. (MP): LS Remarks:

ation	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn clayey silt				
	5	22,31,39		Rd-brn clayey silt				
	10	50/2"		PWR- Sampled as tan-rd. brn. sl. clayey fine sandy Silt w/ Rx frag.				
	15							
				Auger Refusal @ 19' bgs				
	20			Switched to Air Rotary				
	25			Rd-brn Fanglomerate				
	30							
				Terminated Air Drilling @ 55' bgs				
	55							

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-22 Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

ct Location: Wake Co. State: NC Total Depth: 50'

TB Soil Sample Method: Split-Spoon Date Started: 9-27-01 Date Complete: 9-27-01

R. Simmons Drill Method: HSA/Air Rotary Equipment Type: Canterra CT-250 Boring Diameter: 8"/6"

Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs

Surface Elevation (LS): 304.09 Measuring Point Elev. (MP): LS Remarks:

ation ft.	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn clayey Silt				
	5	19,40,45		Rd-brn clayey Silt				
	10	40, 50/3"						
	15	50/2"		PWR - Sampled as tan-brn sl. clayey fine sandy Silt w/ Rx frag.				
	20	50/1"		Auger Refusal @ 23' bgs				
	25			Switched to Air Rotary				
	30			Rd-brn Fanglomerate				
	50			Terminated Air Drilling @ 50' bgs				

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-23 Job No: EP-1306 Client:

ect Location: Wake Co. State: NC Total Depth: 71'
TB Soil Sample Method: Split-Spoon Date Started: 9-27-01 Date Complete: 9-27-01
.. Simmons Drill Method: HSA/Air Rotary Equipment Type: Canterra CT-250 Boring Diameter: 8"/6"
Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Surface Elevation (LS): 339.63 Measuring Point Elev. (MP): LS Remarks:

vation ft.	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn sl. clayey silt				
		18,35,45						
	5			Rd-brn clayey silt				
		50/1"						
	10			PWR-Sampled as tan-brn sl. clayey fine sandy silt w/ Rx frag.				
		50/1"						
	15			Auger Refusal @ 18' bgs				
	20			Switched to Air Rotary				
	25			Rd-brn Fanglomerate				
	30							
	70			Terminated Air Drilling @ 71' bgs				

ENVIRO-PRO, P.C.
Charlotte, North Carolina

LITHOLOGIC LOG

Boring No.: MW-24 Job No: EP-1306
Client: Hwy 55 C&D Landfill, LLC

Location: Wake Co. State: NC Total Depth: 60'
[illegible]3 Soil Sample Method: Split-Spoon Date Started: 9-28-01 Date Complete: 9-28-01
[illegible] R. Simmons Drill Method: HSA / Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"
[illegible]s Sample Method: Groundwater (bmp): 0 hrs 24 hrs
[illegible]urface Elevation (LS): 343.55 Measuring Point Elev. (MP): LS Remarks:

[illegible]tion	Depth ft	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn clayey silt				
	5	25,35,38		Tan-rd-brn clayey silt				
	10	40,50/3"						
	15			PWR - Sampled as tan-red-brn. fine sandy silt w/ Rx frag.				
	20			Auger Refusal @ 21.5' bgs				
				Switched to Air Rotary				
	25			Rd-brn. Fanglomerate				
	30							
	60			Terminated Air Drilling @ 60' bgs				

ENVIRO-PRO, P.C.
Charlotte, North Carolina

LITHOLOGIC LOG

Boring No.: MW-25 Job No: EP-1306
Client: Hwy 55 C&D Landfill, LLC

ct Location: Wake Co. State: NC Total Depth: 25'
TB Soil Sample Method: Split-Spoon Date Started: 11-6-01 Date Complete: 11-6-01
, Simmons Drill Method: HSA Equipment Type: Cafterra CT-250 Boring Diameter:
Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Surface Elevation (LS): 290.32 Measuring Point Elev. (MP): LS Remarks:

ation L	Depth ft	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn sl. clayey Silt				
	5	28,33,50/4"					SC	
	10	50/1"		PWR- Sampled as tan-rd. brn. sl. clayey sandy Silt w/ Rx frag.				
	15						CL	
	20							
	25			Auger Refusal @ 25' bgs				
	30							

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-26 Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

t Location: Wake Co. State: NC Total Depth: 35'
[redacted]73 Soil Sample Method: Split-spoon Date Started: 11-6-01 Date Complete: 11-6-01
[redacted] Simmons Drill Method: HSA/Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"
as Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Surface Elevation (LS): 289.89 Measuring Point Elev. (MP): LS Remarks:

ation	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
	5	30,41,44		Yel-brn sl. clayey Silt			CL	
	10	50/2"						
	15	50/1"		PWR - Sampled as tan-rd brn. sl. clayey Sandy Silt w/ Rx frag.				
	20							
	25							
	30			Auger Refusal @ 30' bgs Switched to Air Rotary				
	35			Terminated Air Drilling @ 35'				

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-27 Job No: EP-1306 Client: Hwy 55 (A-D) Landfill, LLC

ct Location: Wake Co. State: NC Total Depth: 35'
[redacted]B Soil Sample Method: Split-spoon Date Started: 11-7-01 Date Complete: 11-7-01
R. Simmons Drill Method: HSA / Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"
Gas Sample Method: Groundwater (bmp): 0 hrs _____ 24 hrs _____
Surface Elevation (LS): 328.50 Measuring Point Elev. (MP): LS Remarks:

ation ft.	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn. clayey Silt				
	5	28, 35, 41		Rd-brn. clayey Silt				
	10	42, 50/2"		PWR - Sampled as tan-rd brn. sl. clayey fine Sandy Silt w/ Rx frag.				
	15	50/1"		Auger Refusal @ 15' bgs Switched to Air Rotary				
	20							
	25			Rd-brn Fanglomerate				
	30							
	35			Terminated Air Drilling @ 35' bgs				

ENVIRO-PRO, P.C.
Charlotte, North Carolina

LITHOLOGIC LOG

Boring No.: MW-28 Job No: EP-1306
Client: Hwy 55 C&D Landfill, LLC

ct Location: Wake Co. State: NC Total Depth: 50'
TB Soil Sample Method: Split-Spoon Date Started: 11-7-01 Date Complete: 11-7-01
R. Simmons Drill Method: HSA/Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"
Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Surface Elevation (LS): 348.20 Measuring Point Elev. (MP): LS Remarks:

ation L	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn. clayey Silt				
	5	32, 41, 50/5"						
	10	50/1"		PWR - Sampled as tan-brn. fine sandy Silt w/ Rx frag.				
	15			Auger Refusal @ 17.5' bgs				
				Switched to Air Rotary				
	20							
	25			Rd-brn. Fanglomerate				
	30							
	50			Terminated Air Drilling @ 50' bgs				

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Charlotte, North Carolina

LITHOLOGIC LOG

Boring No.: MW-29 Job No: EP-1306
Client: Hwy 55 C&D Landfill, LLC

ct Location: Wake Co. State: NC Total Depth: 30'
TB Soil Sample Method: Split-spoon Date Started: 11-7-01 Date Complete: 11-7-01
R. Simmons Drill Method: HSA/Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"
Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Surface Elevation (LS): 332.14 Measuring Point Elev. (MP): LS Remarks:

ation L	Depth ft	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn. clayey Silt				
	5	22,27,38		Rd-brn clayey Silt			CL	
	10	39, 50/2"		PWR-Sampled as tan-rd brn. sl. clayey sandy Silt w/ Rx frag.				
				Auger Refusal @ 12' bgs				
	15	50/1"		Switched to Air Rotary				
	20			Rd-brn Fanglomerate				
	25							
	30			Terminated Air Drilling @ 30' bgs				

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-30 Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

ct Location: Wake Co. State: NC. Total Depth: 35'

B Soil Sample Method: Split-Spoon Date Started: 11-7-01 Date Complete: 11-7-01

R. Simmons Drill Method: HSA/Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"

Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs

Surface Elevation (LS): 297.82 Measuring Point Elev. (MP): LS Remarks:

ation ft	Depth ft	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
		32,44,50/2"		Yel-brn sl. clayey silt				
	5							
		50/1"		PWR-Sampled as tan-rd brn. sl. clayey sandy silt w/ Rx frag.				
	10			Auger Refusal @ 12.5' bgs				
				Switched to Air Rotary				
	15							
	20			Rd-brn Fanglomerate				
	25							
	30							
	35			Terminated Air Drilling @ 35' bgs				

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-31 Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

ct Location: Wake Co. State: NC Total Depth: 55'

[redacted]B Soil Sample Method: Split-Spoon Date Started: 11-7-01 Date Complete: 11-7-01

[redacted], Simmons Drill Method: HSA/Air Rotary Equipment Type: Canterra CT-250 Boring Diameter: 8"/6"

Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs

Surface Elevation (LS): 313.35 Measuring Point Elev. (MP): LS Remarks:

ation ft.	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn clayey Silt				
	5	33, 38, 50/2"						
	10	50/1"		PWR-Sampled as tan-brn sl. clayey sandy Silt w/ Rx frag.				
	15							
	20			Auger Refusal @ 20' bgs Switched to Air Rotary				
	25			Rd-brn Fanglomerate				
	30							
	55			Terminated Air Drilling @ 55' bgs				

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Charlotte, North Carolina

LITHOLOGIC LOG

Boring No.: MW-32 Job No: EP-1306
Client: Hwy 55 Carb Landfill, LLC

Location: Wake Co. State: NC Total Depth: 50'
[illegible]/B. Soil Sample Method: Split-Spoon Date Started: 11-8-01 Date Complete: 11-8-01
[illegible] Simmons Drill Method: HSA / Air Rotary Equipment Type: Cantera CT-250 Boring Diameter: 8"/6"
[illegible] Sample Method: Groundwater (bmp): 0 hrs 24 hrs
[illegible]rface Elevation (LS): 306.50 Measuring Point Elev. (MP): LS Remarks:

[illegible]on	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn. clayey Silt				
	5	30, 50/3"						
	10	50/1"		PWR - Sampled as tan-rd brn. sl. clayey fine sandy Silt w/ Rx frag.				
	15							
				Auger Refusal @ 18' bgs				
	20			Switched to Air Rotary				
	25			Rd-brn. Fanglomerate				
	30							
	50			Terminated Air Drilling @ 50' bgs				

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Charlotte, North Carolina

LITHOLOGIC LOG

Boring No.: MW-33 Job No: EP-1306
Client: Hwy 55 C&D Landfill, LLC

l Location: Wake Co. State: NC Total Depth: 50'
TB Soil Sample Method: Split-Spoon Date Started: 11-8-01 Date Complete: 11-8-01
, Simmons Drill Method: HSA / Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"
as Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Surface Elevation (LS): 316.47 Measuring Point Elev. (MP): LS Remarks:

tion	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn clayey silt				
		18,32,50/5"		Rd-brn clayey silt				
	5							
		50/2"						
	10			PWR-Sampled as Tan-brn sl. clayey sandy Silt w/ Rx frag.				
	15							
				Auger Refusal @ 18.5' bgs				
				Switched to Air Rotary				
	20							
	25			Rd-brn Fanglomerate				
	30							
	50			Terminated Air Drilling @ 50' bgs				

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Charlotte, North Carolina

LITHOLOGIC LOG

Boring No.: MW-34 Job No: EP-1306
Client: Hwy 55 C&D Landfill, LLC

Location: Wake Co. State: NC Total Depth: 45'
B Soil Sample Method: Split-Spoon Date Started: 11-8-01 Date Complete: 11-8-01
Simmons Drill Method: HSA/Air Rotary Equipment Type: Cantern CT-250 Boring Diameter: 8"/6"
s Sample Method: Groundwater (bmp): 0 hrs 24 hrs
urface Elevation (LS): 293.47 Measuring Point Elev. (MP): LS Remarks:

tion	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn. Clayey Silt				
	5	32, 50/3"						
		50/1"		PWR - Sampled as tan-rd brn. sl. clayey sandy Silt w/ Rx frag.				
	10			Auger Refusal @ 12' bgs				
				Switched to Air Rotary				
	15							
	20			Rd-brn Fanglomerate				
	25							
	30							
	45			Terminated Air Drilling @ 45' bgs				

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Charlotte, North Carolina

LITHOLOGIC LOG

Boring No.: MW-35 Job No: EP-1306
Client: Hwy 55 C&D Landfill, LLC

Location: Wake Co. State: NC Total Depth: 30'
TB Soil Sample Method: Split-spoon Date Started: 11-8-01 Date Complete: 11-8-01
R. Simmons Drill Method: HSA/Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"
as Sample Method: Groundwater (bmp): 0 hrs 24 hrs
urface Elevation (LS): 283.22 Measuring Point Elev. (MP): LS Remarks:

tion	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn clayey silt				
	5	28,35,42						
	10	37, 50/2"						
				PWR - Sampled as Tan - rd brn sl. clayey Sandy Silt w/ Rx frag.				
	15	50/1"						
	20							
	25			Auger Refusal @ 25' bgs				
				Switched to Air Rotary				
				Rd-brn Fanglomerate				
	30			Terminated Air Drilling @ 30' bgs				

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-35D Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

ct Location: Wake Co. State: NC Total Depth: 50'

B Soil Sample Method: Split-Spoon Date Started: 11-9-01 Date Complete: 11-9-01

Simmons Drill Method: Air Rotary Equipment Type: Cantern CT-250 Boring Diameter: 6"

Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs

Surface Elevation (LS): 283.37 Measuring Point Elev. (MP): LS Remarks:

ation ft.	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
	5							
	10			[Refer to MW-35 Lithologic Log for Description of Lithology from 0-30' bgs.]				
	15							
	20							
	25							
	30							
	50			Terminated Air Drilling @ 50' bgs				

ENVIRO-PRO, P.C.
Charlotte, North Carolina

LITHOLOGIC LOG

Boring No.: MW-36 Job No: EP-1306
Client: Hwy 55 C&D Landfill, LLC

ect Location: Wake Co. State: NC Total Depth: 30'
FB Soil Sample Method: Split-Spoon Date Started: 11-8-01 Date Complete: 11-8-01
R. Simmons Drill Method: HSA / Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"
Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Surface Elevation (LS): 292.24 Measuring Point Elev. (MP): LS Remarks:

vation ft	Depth ft	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn. clayey Silt				
	5	28,38,5/4"						
				PWR-Sampled as tan-rd.brn sl. clayey sandy Silt w/ Rx frag.				
		50/1"						
	10			Auger Refusal @ 12.5'bgs				
				Switched to Air Rotary				
	15							
	20			Rd-brn. Fanglomerate				
	25							
	30			Terminated Air Drilling @ 30' bgs				

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Charlotte, North Carolina

LITHOLOGIC LOG

Boring No.: MW-37 Job No: EP-1306
Client: Hwy 55 C&D Landfill, LLC

Location: Wake Co. State: NC Total Depth: 45
[illegible]B Soil Sample Method: Split-spoon Date Started: 11-8-01 Date Complete: 11-8-01
[illegible] Simmons Drill Method: HSA/Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"
Sample Method: Groundwater (bmp): 0 hrs 24 hrs
[illegible]rface Elevation (LS): 320.27 Measuring Point Elev. (MP): LS Remarks:

[illegible]on	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn clayey Silt				
	5	23,33,45		Rd-brn Clayey Silt				
		50/2"						
	10			PWR - Sampled as tan-brn - rd-brn. sl. Clayey Sandy Silt w/ Rx frag.				
				Auger Refusal @ 15' bgs				
	15			Switched to Air Rotary				
	20			Rd-brn Fanglomerate				
	25							
	30							
				Terminated Air Drilling @ 45' bgs				
	45							

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LITHOLOGIC LOG

Boring No.: MW-38 Job No: EP-1306
Client: Hwy 55 C&D Landfill, LLC

Location: Wake Co. State: NC Total Depth: 55'
[illegible]/13 Soil Sample Method: Split-Spoon Date Started: 11-8-01 Date Complete: 11-8-01
[illegible], Simmons Drill Method: HSA / Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"
[illegible]s Sample Method: Groundwater (bmp): 0 hrs 24 hrs
[illegible]urface Elevation (LS): 326.79 Measuring Point Elev. (MP): LS Remarks:

[illegible]ion	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn. sl. clayey Silt				
		32, 50/3"						
	5							
		50/1"		PWR - Sampled as tan-brn sl. clayey sandy Silt w/ Rx frag.				
	10							
				Auger Refusal @ 15' bgs				
	15			Switched to Air Rotary				
	20							
	25			Rd-brn Fanglomerate				
	30							
				Terminated Air Drilling @ 55' bgs				
	55							

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Charlotte, North Carolina

LITHOLOGIC LOG

Boring No.: MW-39 Job No: EP-1306
Client: Hwy 55 C&D Landfill, LLC

Location: Wake Co. State: NC Total Depth: 50'
TB Soil Sample Method: Split-spoon Date Started: 11-9-01 Date Complete: 11-9-01
Simmons Drill Method: HSA/Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"
Sample Method: Groundwater (bmp): 0 hrs 24 hrs
face Elevation (LS): 317.81 Measuring Point Elev. (MP): Remarks:

Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
			Yel-brn. sl. clayey Silt				
5	26,33,46						
10	50/2"		PWR - Sampled as tan-rd brn. sl. clayey sandy Silt w/ Rx frag				
	50/1"		Auger Refusal @ 14.5' bgs				
15			Switched to Air Rotary				
20			Rd-brn Fanglomerate				
25							
30							
50			Terminated Air Drilling @ 50' bgs				

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Charlotte, North Carolina

LITHOLOGIC LOG

Boring No.: MW-4D Job No: EP-1306
Client:

ct Location: Wake Co. State: NC Total Depth: 35'
TB Soil Sample Method: Split-Spoon Date Started: 11-9-01 Date Complete: 11-9-01
Simmons Drill Method: HSA/Air Rotary Equipment Type: Canterra CT-250 Boring Diameter: 8 1/4"
Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Surface Elevation (LS): 319.34 Measuring Point Elev. (MP): LS Remarks:

ation ft.	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn clayey Silt				
	5	31, 44, 50/3						
				PWR-Sampled as tan-brn sl. clayey fine sandy Silt w/ Rx frag.				
		50/1"						
	10			Auger Refusal @ 12' bgs				
				Switched to Air Rotary				
	15							
	20							
				Rd-brn. Fanglomerate				
	25							
	30							
	35			Terminated Air Drilling @ 35' bgs				

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: MW-41 Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

Project Location: Wake Co. State: NC Total Depth: 35'
Drilled By: TB Soil Sample Method: Split-spoon Date Started: 11-9-01 Date Complete: 11-9-01
Driller: R. Simmons Drill Method: HSA/ Air Rotary Equipment Type: Centerra CT-250 Boring Diameter: 8"/6"
Soil Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Land Surface Elevation (LS): 326.82 Measuring Point Elev. (MP): LS Remarks:

Elevation ft.	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn clayey silt				
	5	26, 33, 48		Rd-brn clayey silt				
	10	50/2"		PWR-Sampled as tan - rd. brn. sl. clayey Auger Refusal @ 12.5' bgs				
	15							
	20			Rd-brn Fanglomerate				
	25							
	30							
	35			Terminated Air Drilling @ 35' bgs				

ENVIRO-PRO, P.C.
Charlotte, North Carolina

LITHOLOGIC LOG

Boring No.: SB-1 Job No: EP-1306
Client: Hwy 55 C&D Landfill, LLC

Project Location: Wake Co. State: NC Total Depth: 16'
TB Soil Sample Method: Split Spoon Date Started: 11-6-01 Date Complete: 11-6-01
R. Simmons Drill Method: HSA Equipment Type: Centerra CT-250 Boring Diameter: 8"
Soil Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Land Surface Elevation (LS): 325.98 Measuring Point Elev. (MP): LS Remarks:

Elevation ft.	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn. sl. clayey silt			SC	
	5							
				PWR-Sampled as tan-brn. sl. clayey sandy silt				
	10							
							CL	
	15			Auger Refusal @ 16' bgs				
	20							

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ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: SB-2 Job No: EP-1306 Client: Hwy 55 C&D Land Dev, LLC

Location: Wake Co. State: NC Total Depth: 22'
Soil Sample Method: Split-Spoon Date Started: 11-6-01 Date Complete: 11-6-01
Drill Method: HSA Equipment Type: Boring Diameter: 8"
Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Surface Elevation (LS): 348.78 Measuring Point Elev. (MP): LS Remarks:

Elevation ft	Depth ft	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn. clayey Silt				
	5	33, 50/3"						
	10	50/1"		PWR-Sampled as tan-brn. sl. clayey sl. Sandy Silt			CL	
	15							
	20			Auger Refusal @ 22' bgs				
	25							

ENVIRO-PRO, P.C.
Charlotte, North Carolina

LITHOLOGIC LOG

Boring No.: SB-3 Job No: EP-1306
Client: Hwy 55 CLD Landfill, LLC

State: NC Total Depth: 20'
Location: Wake Co. Date Started: 11-6-01 Date Complete: 11-6-01
TB Soil Sample Method: Split-Spoon Equipment Type: Cafterra CT-250 Boring Diameter:
Driller: R. Simmons Drill Method: HSA Groundwater (bmp): 0 hrs 24 hrs
Soil Gas Sample Method: Remarks:
Ground Surface Elevation (LS): 334.80 Measuring Point Elev. (MP): LS

Elevation ft.	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn clayey Silt				
	5	33,42,48		Rd-brn clayey Silt			CL	
	10	50/2"		PWR-Sampled as tan-brn. sl. clayey sandy silt w/ Rx frag.				
	15	50/1"						
	20			Auger Refusal @ 20' bgs				

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: SB-4 Job No: EP-1306 Client: Hwy 55 Cell Landfill, LLC

State: NC Total Depth: 17'

Location: Wake Co. Date Started: 11-6-01 Date Complete: 11-6-01

TB Soil Sample Method: Split-spoon Equipment Type: Cantenna CT-250 Boring Diameter: 8"

Log: R. Simmons Drill Method: HSA Groundwater (bmp): 0 hrs 24 hrs

Gas Sample Method: Remarks:

Surface Elevation (LS): 347.77 Measuring Point Elev. (MP): LS

Elevation ft.	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn. clayey Silt				
	5	32,38,50/4"		Rd-brn clayey Silt			CL	
		50/1"					CL	
	10			PWR - Sampled as tan - rd brn. sl. clayey fine sandy Silt w/ Rx frag.				
	15			Auger Refusal @ 17' bgs				
	20							

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: SB-5 Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

Location: Wake Co. State: NC Total Depth: 20'
Logged By: TB Soil Sample Method: Split-Spoon Date Started: 12-10-01 Date Complete: 12-10-01
Driller: R. Simmons Drill Method: HSA Equipment Type: Cantera - CT-250 Boring Diameter: 8"
Soil Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Land Surface Elevation (LS): 362.50 Measuring Point Elev. (MP): LS Remarks:

Elevation ft.	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn clayey silt				
	5	28,36,45		Rd-brn clayey silt				
	10	50/2"						
				PWR - Sampled as tan-brn. sl. clayey sandy silt				
	15	50/1"						
	20			Auger Refusal @ 20' bgs				

ENVIRO-PRO, P.C. Charlotte, North Carolina	LITHOLOGIC LOG	Boring No.: SB-6 Job No: EP-1306 Client: Hwy 55 C&D Landfill, LLC

Location: Wake Co. State: NC Total Depth: 18'
TB Soil Sample Method: Split-Spoon Date Started: 12-10-01 Date Complete: 12-10-01
Driller: R. Simmons Drill Method: HSA Equipment Type: Centerm CT-250 Boring Diameter: 8"
Soil Gas Sample Method: Groundwater (bmp): 0 hrs 24 hrs
Land Surface Elevation (LS): 348.00 Measuring Point Elev. (MP): LS Remarks:

Elevation ft.	Depth ft.	SPT/Interval	Sample ID No.	Description	Soil Gas	Moisture	USCS Log	Comments
				Yel-brn. clayey silt				
		32,44,50/5"						
	5							
		50/2"						
	10			PWR- Sampled as Tan-brn-rd.-brn. sl. clayey sandy silt w/ Rx frag.				
		50/1"						
	15							
				Auger Refusal @ 18' bgs				
	20							