

APPENDIX 7

SOIL INFORMATION

EAST BEND STATION

WEST LANDFILL

ATTACHMENT 34

Rock Core Log Data

West Special Waste Landfill East Bend Station Boone County, Kentucky

Boring and test pit logs included within this attachment consist of geological data obtained from investigations performed on the proposed landfill site. Locations of the explorations are depicted on the drawings included in Attachment 20, and on the Geologic Map included as Attachment 35.


THE H. C. NUTTING COMPANY
 GEOTECHNICAL AND TESTING ENGINEERS SINCE 1921
 4120 AIRPORT ROAD • CINCINNATI, OHIO 45226 • TEL. 513-321-5816

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

11-20-80 vf

FIELD TEST BORING REPORT

CLIENT Cincinnati Gas & Electric Company
The Dayton Power & Light Company ORDER No. 373,233
 PROJECT East Bend Generating Station, Boone County, Kentucky HOLE No. Well #7 (E6-7)
 LOCATION As shown on plan
 DRILLER C. Moore - E. Philpot DRILL No. 35 DATE STARTED 10-27-80
 ELEVATION REFERENCE _____ DATE COMPLETED 10-30-80
 CASING: DIAMETER 6" spin casing Revert drilling fluid HAMMER WT. _____ FALL _____
 SAMPLER: DIAMETER & TYPE None HAMMER WT. _____ FALL _____
 DEPTH TO WATER: IMMEDIATE 75.0' UPON COMPLETION 20'
 DEPTH TO WATER _____ DAYS AFTER COMPLETION _____ WATER USED IN DRILLING _____

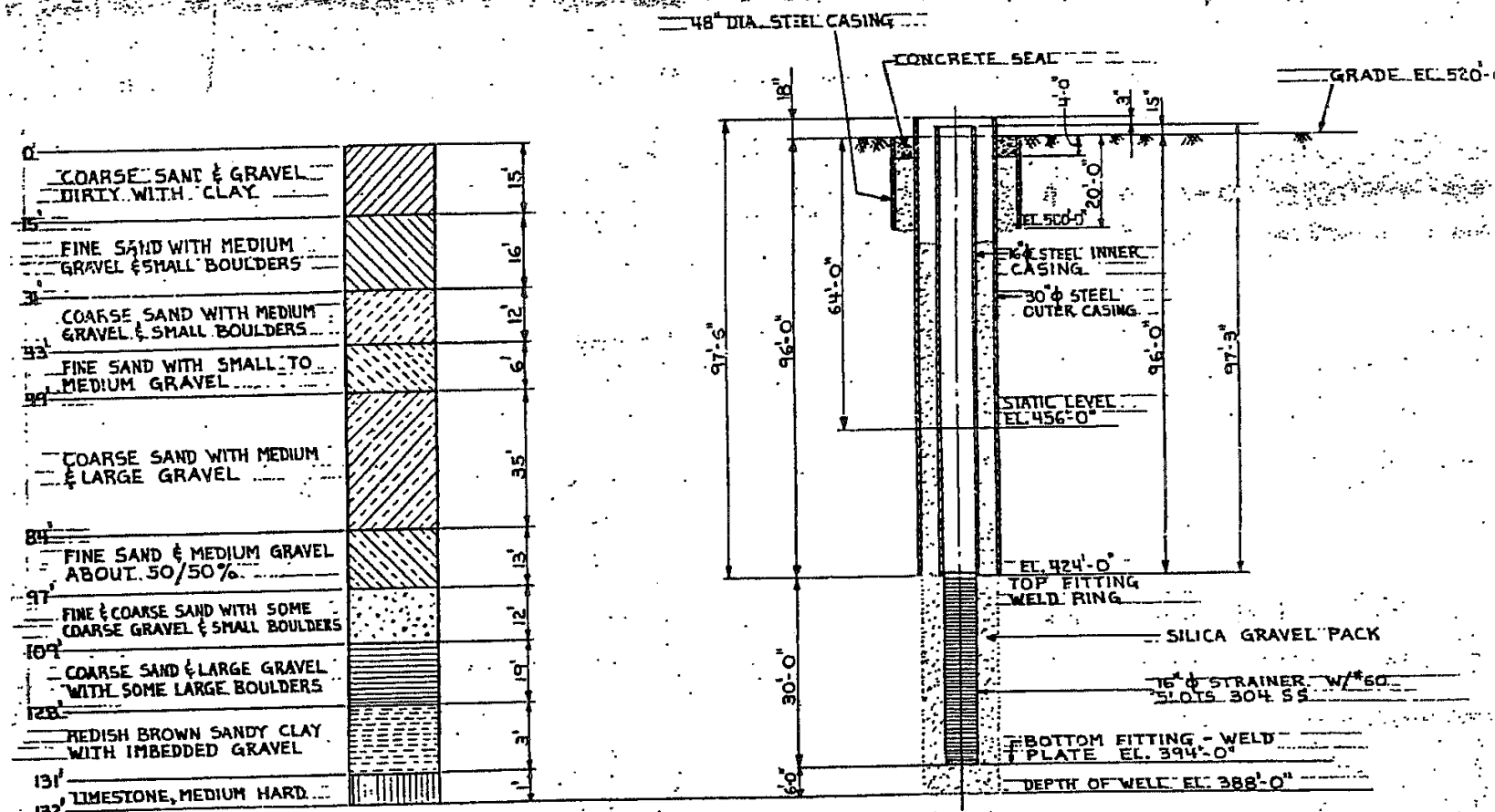
ELEVATION	DEPTH 0'	DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER 5" ON SAMPLER or % Core Rec.	Recovery
	1.5'	Brown fine sand					
	1.5'		No Samples				
	6.5'	Brown sandy clay					
	8.0'						
	78.0'	Brown fine to coarse sand and gravel and coarse gravel, dense					
	86.0'	(89.0' P.V.C. 4")					
		BORING COMPLETED					

Samples recovered from this test boring are available for inspection, which is strongly recommended. The company assumes no responsibility for interpretations made by others of load bearing, stability, excavating or other physical characteristics of materials penetrated in the boring.

Respectfully submitted,
THE H. C. NUTTING CO.

By _____

A | B | C | D | E | F | G | H | K



DATA PER MOODY'S OF DAYTON INC.
DRILLERS LOG, DATED: 10-13-78

LOG-WELL # 2 (G.E.B-12)

N.T.S.



**LOG OF BORING NO. B-1
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY**

Page 1 of 2

LOCATION: N-514,325; E-1,467,220 ELEVATION: 538.0 DATE: 10/14/03 - 10/15/03
 DRILLING METHOD: 4-1/4" I.D. Hollow-stem Auger COMPLETION DEPTH: 60.0'
 SAMPLER(S): 2" O.D. Split-barrel Sampler

DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
				PLASTIC LIMIT	LIQUID LIMIT			
				10	20	30	40	
0			FILL: Brown fine to coarse sand, trace fine to coarse gravel (access road).					
1	9	17/20						
5	2	5/2/4	Loose brown fine to medium sand, trace silt.					
10	3	2/5/6	Medium-stiff brown clayey silt, some fine to coarse sand, trace fine gravel.					H=0.75-1.0 G
15	4	16/26/23	Medium-dense to dense brown fine to coarse sand, some fine to coarse gravel, trace silt.					
20	5	15/11/10						
25	6	25/35/32	Very-dense brown fine to coarse sand, "and" fine to coarse gravel, trace silt, many cobble fragments.					
30	7	27/49/50-5"						
35	8	3/15/21	Dense brown fine to coarse sand, some fine to coarse gravel, trace silt, few cobble fragments.					

GDT 8/5/05
 BORLJ 1932005.GPJ

WATER LEVEL: ∇ Dry ∇ Dry ∇
 WATER NOTE: End of Day (5.0') Caved at 47.0'
 DATE: 10/15/03 10/15/03

SYMBOLS USED TO INDICATE TEST RESULTS
 G - GRADATION SEE H - PENETROMETER (tsf)
 Q - UNCONFINED COMPR SEPARATE W - UNIT DRY WEIGHT (pcf)
 T - TRIAXIAL COMPR CURVES D - RELATIVE DENSITY (%)
 C - CONSOLIDATION



**LOG OF BORING NO. B-1
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY**

Page 2 of 2

LOCATION: N-514,325; E-1,467,220 ELEVATION: 538.0 DATE: 10/14/03 - 10/15/03

DRILLING METHOD: 4-1/4" I.D. Hollow-stem Auger COMPLETION DEPTH: 60.0'

SAMPLER(S): 2" O.D. Split-barrel Sampler

DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
				PLASTIC LIMIT		LIQUID LIMIT		
				10	20	30	40	
35			Dense brown fine to coarse sand, some fine to coarse gravel, trace silt, few cobble fragments.					
40	9	14, 23, 11						
45	10	3, 4, 8	Medium-dense brown fine to coarse sand, little fine gravel, trace silty clay.					
50	11	3, 4, 5	Loose brown fine to coarse sand, little fine to coarse gravel, trace silt.					
55	12	1, 2, 4						
60	13	13, 16, 16	Dense brown fine to coarse sand, some fine to coarse gravel, trace silt, few cobble fragments.					
65			- Encountered cobbles from 13.5' to 14.5'. - Boring backfilled with cuttings at completion. - Boring elevation estimated from USGS topographic map.					

GDT 8/5/05

BOREH 19922005.GPJ

WATER LEVEL: Dry Dry
 WATER NOTE: End of Day (5.0') Caved at 47.0'
 DATE: 10/15/03 10/15/03

SYMBOLS USED TO INDICATE TEST RESULTS
 G - GRADATION SEE H - PENETROMETER (tsf)
 Q - UNCONFINED COMPR SEPARATE W - UNIT DRY WEIGHT (pcf)
 T - TRIAXIAL COMPR CURVES D - RELATIVE DENSITY (%)
 C - CONSOLIDATION

BBCM		LOG OF BORING NO. B-2 EAST BEND WEST LANDFILL BOONE COUNTY, KENTUCKY			Page 1 of 2
		LOCATION: <u>N-515,352; E-1,465,548</u>	ELEVATION: <u>525.0</u>	DATE: <u>10/15/03 - 10/16/03</u>	
DRILLING METHOD: <u>4-1/4" I.D. Hollow-stem Auger</u>		COMPLETION DEPTH: <u>60.0'</u>			
SAMPLER(S): <u>2" O.D. Split-barrel Sampler</u>					
DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION	NATURAL CONSISTENCY INDEX NATURAL MOISTURE CONTENT PLASTIC LIMIT — LIQUID LIMIT	TEST RESULTS
0			Loose brown fine to medium sand, trace clayey silt.	10 20 30 40	
1	2 / 2 / 3				
5	5 / 4 / 5		Loose brown fine to coarse sand, little fine to coarse gravel, trace clayey silt.		
10	8 / 15 / 17		Dense to very-dense brown fine to coarse gravel "and" fine to coarse sand, trace silt, few cobble fragments.		
15	17 / 26 / 21				G
20	23 / 33 / 44				
25	18 / 20 / 28				
30	23 / 29 / 50-5"				
35	38 / 50-4"				
WATER LEVEL: <input checked="" type="checkbox"/> Dry <input checked="" type="checkbox"/> Dry <input checked="" type="checkbox"/> Dry				SYMBOLS USED TO INDICATE TEST RESULTS	
WATER NOTE: <u>End of Drilling</u> <u>Extended</u> <u>Caved at Surface</u>				G - GRADATION SEE H - PENETROMETER (tsf)	
DATE: <u>10/15/03</u> <u>10/16/03</u> <u>10/16/03</u>				Q - UNCONFINED COMPR SEPARATE W - UNIT DRY WEIGHT (pcf)	
				T - TRIAXIAL COMPR CURVES D - RELATIVE DENSITY (%)	
				C - CONSOLIDATION	

BORLJ 13923005 GPI
GDT 8/5/05

		LOG OF BORING NO. B-2 EAST BEND WEST LANDFILL BOONE COUNTY, KENTUCKY			Page 2 of 2																				
		LOCATION: N-515,352; E-1,465,548	ELEVATION: 525.0	DATE: 10/15/03 - 10/16/03	COMPLETION DEPTH: 60.0'																				
DRILLING METHOD: 4-1/4" I.D. Hollow-stem Auger		SAMPLER(S): 2" O.D. Split-barrel Sampler																							
DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION - CONTINUED	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="4" style="text-align: center;">NATURAL CONSISTENCY INDEX</th> </tr> <tr> <td colspan="4" style="text-align: center;">NATURAL MOISTURE CONTENT</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;">●</td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> <tr> <td colspan="2" style="text-align: center;">PLASTIC LIMIT</td> <td colspan="2" style="text-align: center;">LIQUID LIMIT</td> </tr> <tr> <td style="text-align: center;">10</td> <td style="text-align: center;">20</td> <td style="text-align: center;">30</td> <td style="text-align: center;">40</td> </tr> </table>	NATURAL CONSISTENCY INDEX				NATURAL MOISTURE CONTENT				X	●	X	X	PLASTIC LIMIT		LIQUID LIMIT		10	20	30	40	TEST RESULTS
NATURAL CONSISTENCY INDEX																									
NATURAL MOISTURE CONTENT																									
X	●	X	X																						
PLASTIC LIMIT		LIQUID LIMIT																							
10	20	30	40																						
35			Dense to very-dense brown fine to coarse gravel "and" fine to coarse sand, trace silt, few cobble fragments.																						
40	9	47 30 33																							
45	10	16 38 34																							
50	11	17 26 22	Dense brown fine to coarse sand, trace fine gravel, trace silt.																						
55	12	18 31 38	Very-dense brown fine to coarse sand, little fine to coarse gravel, trace silt.																						
60	13	19 36 37	Very-dense brown fine to coarse sand, some fine to coarse gravel, trace silt, few cobble fragments.																						
65			- Augers left in ground overnight for extended water level readings. - Boring backfilled with cuttings when completed. - Boring elevation estimated from USGS topographic map.																						
70																									
WATER LEVEL: <input checked="" type="checkbox"/> Dry <input checked="" type="checkbox"/> Dry <input checked="" type="checkbox"/> Dry WATER NOTE: <u>End of Drilling</u> <u>Extended</u> <u>Caved at Surface</u> DATE: <u>10/15/03</u> <u>10/16/03</u> <u>10/16/03</u>			SYMBOLS USED TO INDICATE TEST RESULTS																						
			G - GRADATION	SEE	H - PENETROMETER (tsf)																				
			Q - UNCONFINED COMPR	SEPARATE	W - UNIT DRY WEIGHT (pcf)																				
			T - TRIAXIAL COMPR	CURVES	D - RELATIVE DENSITY (%)																				
			C - CONSOLIDATION																						

BORL 19523005.GPJ GDT 8/5/05

BBCM		LOG OF BORING NO. B-3 EAST BEND WEST LANDFILL BOONE COUNTY, KENTUCKY			Page 1 of 2				
		LOCATION: <u>N-517,491; E-1,464,176</u>	ELEVATION: <u>468.5</u>	DATE: <u>10/16/03 - 10/16/03</u>					
DRILLING METHOD: <u>4-1/4" I.D. Hollow-stem Auger</u>		COMPLETION DEPTH: <u>60.0'</u>							
SAMPLER(S): <u>2" O.D. Split-barrel Sampler</u>									
DEPTH, FEET	SAMPLE NUMBER	SAMPLE	SAMPLE EFFORT	DESCRIPTION	NATURAL CONSISTENCY INDEX				TEST RESULTS
					NATURAL MOISTURE CONTENT				
					X	●	X		
0				TOPSOIL: Very-stiff brown clayey silt, little fine sand.	10	20	30	40	
	1	3	3/3						H=2.5
				Very-stiff to hard brown silty clay, trace fine sand, few silt seams.					
5	2	4	4/5/6			●	X		H=3.5-4.25 G
10	3	4	4/4/6						H=2.0-2.5
15	4	7	7/3/4						H=2.5-3.0
				Soft brown clayey silt, "and" fine sand, few silt seams.					
20	5	1	1/1/2		X	●			H=0.25 G
25	6	2	2/2/1						H=2.0
				Stiff brown mottled with gray clayey silt, some fine sand, few silt seams.					
30	7	2	2/2/3		X	●	X		H=2.0 G
35			S/H	Very-loose to loose fine to coarse sand, "and" fine to					
WATER LEVEL: ∇ 34.0 ∇ 13.0 ∇ 32.0 WATER NOTE: <u>Prior to Mud Completion of Drilling Caved at 35.0'</u> DATE: <u>10/16/03</u> <u>10/16/03</u> <u>10/16/03</u>					SYMBOLS USED TO INDICATE TEST RESULTS				
G - GRADATION SEE Q - UNCONFINED COMPR SEPARATE T - TRIAXIAL COMPR CURVES C - CONSOLIDATION					H - PENETROMETER (tsf) W - UNIT DRY WEIGHT (pcf) D - RELATIVE DENSITY (%)				

BOREHOLE 19323005.GPJ GDT 8/5/05

BBCM		LOG OF BORING NO. B-3 EAST BEND WEST LANDFILL BOONE COUNTY, KENTUCKY			Page 2 of 2	
		LOCATION: N-517,491; E-1,464,176	ELEVATION: 468.5	DATE: 10/16/03 - 10/16/03		
DRILLING METHOD: 4-1/4" I.D. Hollow-stem Auger		COMPLETION DEPTH: 60.0'				
SAMPLER(S): 2" O.D. Split-barrel Sampler						
DEPTH, FEET	SAMPLE NUMBER	SAMPLE	SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX	TEST RESULTS
35	8	2	2 / 2 / 4	coarse gravel, trace silt.	10 20 30 40	
40	9	12	12 / 23 / 28	Medium-dense to very-dense fine to coarse sand, "and" fine to coarse gravel, trace silt.		
45	10	20	20 / 41 / 45			
50	11	16	16 / 8 / 12			
55	12	25	25 / 21 / 15	Dense fine to coarse sand, "and" fine to coarse gravel, trace silt.		
60	13	27	27 / 25 / 17	<p>- Seepage encountered at 32.0'.</p> <p>- Drilling technique switched to mud rotary using 3-inch ID casing below 40.0'.</p> <p>- Boring backfilled with cuttings when completed.</p> <p>- Boring elevation estimated from USGS topographic map.</p>		
65						
70						
WATER LEVEL: ∇ 34.0 ∇ 13.0 ∇ 32.0 WATER NOTE: <u>Prior to Mud Completion of Drilling Caved at 35.0'</u> DATE: <u>10/16/03</u> <u>10/16/03</u> <u>10/16/03</u>				SYMBOLS USED TO INDICATE TEST RESULTS		
				G - GRADATION	SEE	H - PENETROMETER (tsf)
				Q - UNCONFINED COMPR	SEPARATE	W - UNIT DRY WEIGHT (pcf)
				T - TRIAXIAL COMPR	CURVES	D - RELATIVE DENSITY (%)
				C - CONSOLIDATION		

GDT 8/5/05

BORL 1932305.GPI

		LOG OF BORING NO. B-4 EAST BEND WEST LANDFILL BOONE COUNTY, KENTUCKY		Page 1 of 2																					
		LOCATION: N-513,033; E-1,464,088	ELEVATION: 471.0	DATE: 10/16/03 - 10/17/03																					
DRILLING METHOD: 4-1/4" I.D. Hollow-stem Auger		COMPLETION DEPTH: 60.0'																							
SAMPLER(S): 2" O.D. Split-barrel Sampler																									
DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="4" style="text-align: center;">NATURAL CONSISTENCY INDEX</th> </tr> <tr> <td colspan="4" style="text-align: center;">NATURAL MOISTURE CONTENT</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;">●</td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> <tr> <td colspan="2" style="text-align: center;">PLASTIC LIMIT</td> <td colspan="2" style="text-align: center;">LIQUID LIMIT</td> </tr> <tr> <td style="text-align: center;">10</td> <td style="text-align: center;">20</td> <td style="text-align: center;">30</td> <td style="text-align: center;">40</td> </tr> </table>	NATURAL CONSISTENCY INDEX				NATURAL MOISTURE CONTENT				X	●	X	X	PLASTIC LIMIT		LIQUID LIMIT		10	20	30	40	TEST RESULTS
NATURAL CONSISTENCY INDEX																									
NATURAL MOISTURE CONTENT																									
X	●	X	X																						
PLASTIC LIMIT		LIQUID LIMIT																							
10	20	30	40																						
0			Very-stiff to hard brown silty clay, some fine sand, trace medium sand, few iron oxide stains.																						
1	2	2 / 4				H=2.75																			
5			Very-loose to loose brown fine to medium sand, trace silt, few clayey silt seams.																						
2	6	9 / 12				H=4.5																			
10			Very-stiff brown mottled with gray clayey silt, some fine to medium sand.	●	X																				
3	4	5 / 6				H=2.5-3.75 G																			
15			Loose brown fine to medium sand, few clayey silt seam.																						
4	2	3 / 3																							
20			Loose fine to coarse sand, some fine to coarse gravel.																						
5	1	2 / 2																							
25			Very-stiff brown mottled with gray clayey silt, some fine to medium sand.																						
6	2	2 / 4																							
30			Loose brown fine to medium sand, few clayey silt seam.																						
7	3	5 / 4				H=3.0																			
35	8A	3 / 3	Loose fine to coarse sand, some fine to coarse gravel.																						
8B	3	5																							
WATER LEVEL: ▽ 18.5 ▽ 17.0 ▽ WATER NOTE: <u>End of Day</u> <u>Prior to Mud</u> DATE: <u>10/16/03</u> <u>10/17/03</u>			SYMBOLS USED TO INDICATE TEST RESULTS G - GRADATION SEE SEPARATE CURVES H - PENETROMETER (tsf) Q - UNCONFINED COMPR W - UNIT DRY WEIGHT (pcf) T - TRIAXIAL COMPR D - RELATIVE DENSITY (%) C - CONSOLIDATION																						

BBCM		LOG OF BORING NO. B-4 EAST BEND WEST LANDFILL BOONE COUNTY, KENTUCKY			Page 2 of 2	
		LOCATION: N-513,033; E-1,464,088	ELEVATION: 471.0	DATE: 10/16/03 - 10/17/03		
DRILLING METHOD: 4-1/4" I.D. Hollow-stem Auger		COMPLETION DEPTH: 60.0'				
SAMPLER(S): 2" O.D. Split-barrel Sampler						
DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX		TEST RESULTS
35			Loose fine to coarse sand, some fine to coarse gravel.			
40	9	12, 18, 17	Dense fine to coarse sand, some fine to coarse gravel, trace silt.			
45	10	15, 23, 18				
50	11	13, 20, 20				
55	12	17, 18, 18				
60	13	9, 12, 12	<p>- Seepage encountered at 18.0'.</p> <p>- Drilling technique switched to mud rotary with 3-inch ID casing below 35.0'.</p> <p>- Boring backfilled with cuttings when completed.</p> <p>- Boring elevation estimated from USGS topographic map.</p>			
65						
70						
WATER LEVEL: <input checked="" type="checkbox"/> 18.5 <input checked="" type="checkbox"/> 17.0 <input checked="" type="checkbox"/> WATER NOTE: <u>End of Day</u> <u>Prior to Mud</u> DATE: <u>10/16/03</u> <u>10/17/03</u>			SYMBOLS USED TO INDICATE TEST RESULTS			
			G - GRADATION	SEE	H - PENETROMETER (tsf)	
			Q - UNCONFINED COMPR	SEPARATE	W - UNIT DRY WEIGHT (pcf)	
			T - TRIAXIAL COMPR	CURVES	D - RELATIVE DENSITY (%)	
			C - CONSOLIDATION			

BORLJ 19323005.GPJ
GPT 8/5/05



LOG OF BORING NO. B-101
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

Page 1 of 6

LOCATION: N-513,638; E-1,466,033 ELEVATION: 522.0 DATE: 5/25/05 - 6/3/05
 DRILLING METHOD: 4-1/4" I.D. Hollow-stem Auger COMPLETION DEPTH: 179.6'
 SAMPLER(S): 2" and 3" O.D. Split-barrel Samplers

DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION	NATURAL CONSISTENCY INDEX		TEST RESULTS
				NATURAL MOISTURE CONTENT	PLASTIC LIMIT	
0			TOPSOIL - 7 INCHES			
1	1	1/1	Stiff to very-stiff brown silty clay, some fine to medium sand, few silt seams.	●	—	H=1.1-1.5 G
2	2	1/3		●	—	G H=1.5-2.1
3	3	3/4		●	—	G H=2.9-3.5
5	4	2/3	Very-loose to loose brown interbedded silt and fine sand, trace medium sand, few silty clay seams.	●	—	H=1.1-1.5 G
5A	5A	1/3		●	—	H=1.9
5B	5B	1/2	Dense to very-dense brown fine to coarse sand, "and" fine to coarse gravel, trace silt, few cobbles, material varies from fine to coarse sand, "and" fine to coarse gravel to fine to coarse gravel, "and" fine to coarse sand.	●	—	H=0.75
6	6	3/13		●	—	
7	7	12/24		●	—	
8	8	14/21		●	—	
9	9	14/25		●	—	
10	10	13/27	●	—		
11	11	19/24	●	—		
12	12	33/23	●	—		

BORLJ 19323005.GPJ GDT 8/11/05

WATER LEVEL: 58.9
 WATER NOTE: A.M.
 DATE: 5/31/05

SYMBOLS USED TO INDICATE TEST RESULTS
 G - GRADATION SEE H - PENETROMETER (tsf)
 Q - UNCONFINED COMPR SEPARATE W - UNIT DRY WEIGHT (pcf)
 T - TRIAXIAL COMPR CURVES D - RELATIVE DENSITY (%)
 C - CONSOLIDATION



LOG OF BORING NO. B-101
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

LOCATION: N-513,638; E-1,466,033 ELEVATION: 522.0 DATE: 5/25/05 - 6/3/05

DRILLING METHOD: 4-1/4" I.D. Hollow-stem Auger COMPLETION DEPTH: 179.6'

SAMPLER(S): 2" and 3" O.D. Split-barrel Samplers

DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
				PLASTIC LIMIT		LIQUID LIMIT		
				10	20	30	40	
35	13	15 / 42, 28	Dense to very-dense brown fine to coarse sand, "and" fine to coarse gravel, trace silt, few cobbles, material varies from fine to coarse sand, "and" fine to coarse gravel to fine to coarse gravel, "and" fine to coarse sand.					
40	14A 14B	20 / 29, 22	Dense to very-dense brown fine to medium sand.					
45	15	6 / 32, 46	Dense to very-dense brown fine to coarse sand, some fine to coarse gravel, little silt, few cobbles.					
50	16	14 / 36, 37						
55	17	14 / 28, 28						
60	18	13 / 25, 21						
65	19	22 / 22, 19						
70								

BORLJ 19222005 GPI

WATER LEVEL: ▽ 58.9 ▽ ▽
 WATER NOTE: A.M.
 DATE: 5/31/05

SYMBOLS USED TO INDICATE TEST RESULTS
 G - GRADATION SEE SEPARATE CURVES
 Q - UNCONFINED COMPR
 T - TRIAXIAL COMPR
 C - CONSOLIDATION
 H - PENETROMETER (tsf)
 W - UNIT DRY WEIGHT (pcf)
 D - RELATIVE DENSITY (%)



LOG OF BORING NO. B-101
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

LOCATION: N-513,638; E-1,466,033 ELEVATION: 522.0 DATE: 5/25/05 - 6/3/05
 DRILLING METHOD: 4-1/4" I.D. Hollow-stem Auger COMPLETION DEPTH: 179.6'
 SAMPLER(S): 2" and 3" O.D. Split-barrel Samplers

DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
				PLASTIC LIMIT		LIQUID LIMIT		
				10	20	30	40	
70	20	12, 24, 30	Dense to very-dense brown fine to coarse sand, some fine to coarse gravel, little silt, few cobbles.					
75	21A 21B	26, 27, 44						
80	22	6, 10, 22						
85	23	17, 34, 41						
90	24	14, 18, 19	Medium-dense to dense brown fine to medium sand, trace coarse sand, trace fine to coarse gravel, trace silt.					
95	25	11, 17, 23						
100	26	8, 8, 22						

WATER LEVEL: 58.9
 WATER NOTE: A.M.
 DATE: 5/31/05

SYMBOLS USED TO INDICATE TEST RESULTS
 G - GRADATION SEE H - PENETROMETER (tsf)
 Q - UNCONFINED COMPR SEPARATE W - UNIT DRY WEIGHT (pcf)
 T - TRIAXIAL COMPR CURVES D - RELATIVE DENSITY (%)
 C - CONSOLIDATION

		LOG OF BORING NO. B-101 EAST BEND WEST LANDFILL BOONE COUNTY, KENTUCKY			Page 4 of 6	
		LOCATION: N-513,638; E-1,466,033	ELEVATION: 522.0	DATE: 5/25/05 - 6/3/05		
DRILLING METHOD: 4-1/4" I.D. Hollow-stem Auger		COMPLETION DEPTH: 179.6'				
SAMPLER(S): 2" and 3" O.D. Split-barrel Samplers						
DEPTH, FEET	SAMPLE NUMBER	SAMPLE SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX		TEST RESULTS
				NATURAL MOISTURE CONTENT PLASTIC LIMIT LIQUID LIMIT 10 20 30 40		
105	27	10 / 16 / 20	Medium-dense to dense brown fine to medium sand, trace coarse sand, trace fine to coarse gravel, trace silt.			
110	28	4 / 7 / 15				
115						
		2 / 7 / 11				
120	29	4 / 12 / 22				
125	30	3 / 10 / 18	Medium-dense brown fine to coarse sand, some fine to coarse gravel, little silt.			
130	31	7 / 8 / 10				
135	32	6 / 9 / 23				
140						
WATER LEVEL: <input checked="" type="checkbox"/> 58.9 <input type="checkbox"/> <input type="checkbox"/> WATER NOTE: <u>A.M.</u> DATE: <u>5/31/05</u>			SYMBOLS USED TO INDICATE TEST RESULTS G - GRADATION SEE SEPARATE CURVES Q - UNCONFINED COMPR T - TRIAXIAL COMPR C - CONSOLIDATION H - PENETROMETER (tsf) W - UNIT DRY WEIGHT (pcf) D - RELATIVE DENSITY (%)			

BBCM		LOG OF BORING NO. B-101 EAST BEND WEST LANDFILL BOONE COUNTY, KENTUCKY			Page 5 of 6			
		LOCATION: N-513,638; E-1,466,033	ELEVATION: 522.0	DATE: 5/25/05 - 6/3/05				
DRILLING METHOD: 4-1/4" I.D. Hollow-stem Auger		COMPLETION DEPTH: 179.6'						
SAMPLER(S): 2" and 3" O.D. Split-barrel Samplers								
DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
140	33	6 / 19 / 32	Medium-dense brown fine to coarse sand, some fine to coarse gravel, little silt.					
145	34	5 / 8 / 9						
150			Loose to medium-dense brown fine to medium sand, trace coarse sand, trace fine to coarse gravel, little silt.					
	35	12 / 22 / 25						
155	36A 36B	1 / 4 / 12	- 155.5' to 157.0': Black organic silt.					
160	37	4 / 6 / 13						
165	38A 38B	7 / 16 / 40						
170		1 / 12 / 3 / 16 / 4 / 25						
175								
WATER LEVEL: ∇ 58.9 ∇ ∇ WATER NOTE: A.M. DATE: 5/31/05				SYMBOLS USED TO INDICATE TEST RESULTS G - GRADATION SEE SEPARATE CURVES Q - UNCONFINED COMPR SEE SEPARATE CURVES T - TRIAXIAL COMPR C - CONSOLIDATION				H - PENETROMETER (tsf) W - UNIT DRY WEIGHT (pcf) D - RELATIVE DENSITY (%)

BOKLJ 19323005.GPJ

BBCM		LOG OF BORING NO. B-101 EAST BEND WEST LANDFILL BOONE COUNTY, KENTUCKY			Page 6 of 6
		LOCATION: N-513,638; E-1,466,033	ELEVATION: 522.0	DATE: 5/25/05 - 6/3/05	
DRILLING METHOD: 4-1/4" I.D. Hollow-stem Auger		COMPLETION DEPTH: 179.6'			
SAMPLER(S): 2" and 3" O.D. Split-barrel Samplers					
DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX NATURAL MOISTURE CONTENT PLASTIC LIMIT LIQUID LIMIT	TEST RESULTS
175	39	3 / 3 / 3	Loose to medium-dense brown fine to medium sand, trace coarse sand, trace fine to coarse gravel, little silt.	10 20 30 40	
180	40A 40B	23 50-4"R	Medium-hard gray limestone. - Encountered seepage at 5.0' to 8.8'. - Encountered water at 63.0'. - Heaving sand problems at 70', 80', and 115'. - Drilled using casing advancer below 160'. - Installed 2" diameter flush joint PVC casing to 179.6. PVC for geophysical testing, no perforations. Grouted PVC in place using tremmie methods; 10% Bentonite/Portland grout.		
185					
190					
195					
200					
205					
210					
WATER LEVEL: <input checked="" type="checkbox"/> 58.9			SYMBOLS USED TO INDICATE TEST RESULTS G - GRADATION SEE Q - UNCONFINED COMPR SEPARATE H - PENETROMETER (tsf) T - TRIAXIAL COMPR CURVES W - UNIT DRY WEIGHT (pcf) C - CONSOLIDATION D - RELATIVE DENSITY (%)		
WATER NOTE: <u>A.M.</u>					
DATE: <u>5/31/05</u>					

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**LOG OF BORING NO. B-101A
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY**

Page 1 of 1

LOCATION: **6' E of B-101** ELEVATION: **523.9** DATE: **6/1/05**
 DRILLING METHOD: **4-1/4" I.D. Hollow-stem Auger** COMPLETION DEPTH: **6.0'**
 SAMPLER(S): **Shelby Tube**

DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION	NATURAL CONSISTENCY INDEX				TEST RESULTS
				← NATURAL MOISTURE CONTENT →				
				PLASTIC LIMIT		LIQUID LIMIT		
				10	20	30	40	
0								
1	P		See Log of B-101.					H=2.3
2	P							H=1.4
5	P							
3								
10								
15								
20								
25								
30								
35								

GDT 8/1/05
BORL 1923005.GPI

WATER LEVEL:
 WATER NOTE: _____
 DATE: _____

SYMBOLS USED TO INDICATE TEST RESULTS
 G - GRADATION SEE H - PENETROMETER (tsf)
 Q - UNCONFINED COMPR SEPARATE W - UNIT DRY WEIGHT (pcf)
 T - TRIAXIAL COMPR CURVES D - RELATIVE DENSITY (%)
 C - CONSOLIDATION



LOG OF BORING NO. B-102
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

Page 1 of 5

LOCATION: N-516,040; E-1,464,511 ELEVATION: 494.0 DATE: 6/1/05

DRILLING METHOD: 4-1/4" I.D. Hollow-stem Auger COMPLETION DEPTH: 140.6'

SAMPLER(S): 2" O.D. Split-barrel Sampler, Shelby Tube

DEPTH, FEET	SAMPLE NUMBER	SAMPLE	SAMPLE EFFORT	DESCRIPTION	NATURAL CONSISTENCY INDEX		TEST RESULTS
					NATURAL MOISTURE CONTENT		
0				TOPSOIL - 4 INCHES			
1		P		Stiff to hard brown mottled with gray silty clay, little fine to medium sand, few silt seams.	●	X	G H=4.1
2		P				X	H=1.75 G
5		P			●		G
3							
4		1/3/3		Loose brown fine sand, some silt, trace medium sand, few silty clay seams, many silt seams.			
5		3/3/3					
6		2/2/3					
7		3/3/3					
8		7/3/3					
9		1/2/5					
10							
15							
20							
25		15/13/11		Medium-dense brown and gray fine to coarse sand, some fine to coarse gravel, little silt.			
30		15/20/13					
35							

BORING 19323005.GPJ
GPT 8/1/05

WATER LEVEL:
 WATER NOTE:
 DATE:

SYMBOLS USED TO INDICATE TEST RESULTS

G - GRADATION	SEE SEPARATE CURVES	H - PENETROMETER (tsf)
Q - UNCONFINED COMPR		W - UNIT DRY WEIGHT (pcf)
T - TRIAXIAL COMER		D - RELATIVE DENSITY (%)
C - CONSOLIDATION		



LOG OF BORING NO. B-102
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

LOCATION: N-516,040; E-1,464,511 ELEVATION: 494.0 DATE: 6/1/05
 DRILLING METHOD: 4-1/4" I.D. Hollow-stem Auger COMPLETION DEPTH: 140.6'
 SAMPLER(S): 2" O.D. Split-barrel Sampler, Shelby Tube

DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
				PLASTIC LIMIT		LIQUID LIMIT		
				10	20	30	40	
35	12	9 / 12, 15	Medium-dense brown and gray fine to coarse sand, some fine to coarse gravel, little silt.					
40	13	3 / 7, 9	Medium-dense brown fine to coarse gravel, some fine to coarse sand, trace silt.					
45	14	10 / 12, 16	Medium-dense brown fine to coarse sand, little fine to coarse gravel, trace silt.					
50	15	10 / 9, 9						
55	16	5 / 9, 9	Medium-dense brown fine to medium sand, trace coarse sand, trace fine to coarse gravel, trace silt.					
60	17	6 / 7, 9						
65	18	3 / 9, 14						

WATER LEVEL: ∇ ∇ ∇
 WATER NOTE: _____
 DATE: _____

SYMBOLS USED TO INDICATE TEST RESULTS
 G - GRADATION SEE H - PENETROMETER (tsf)
 Q - UNCONFINED COMPR SEPARATE W - UNIT DRY WEIGHT (pcf)
 T - TRIAXIAL COMPR CURVES D - RELATIVE DENSITY (%)
 C - CONSOLIDATION



LOG OF BORING NO. B-102
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

LOCATION: N-516,040; E-1,464,511 ELEVATION: 494.0 DATE: 6/1/05

DRILLING METHOD: 4-1/4" I.D. Hollow-stem Auger COMPLETION DEPTH: 140.6'

SAMPLER(S): 2" O.D. Split-barrel Sampler, Shelby Tube

DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFECT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT		PLASTIC LIMIT	LIQUID LIMIT	
70	19	3 / 4 / 10	Medium-dense brown fine to medium sand, trace coarse sand, trace fine to coarse gravel, trace silt.					
			Medium-dense becoming dense brown fine to coarse sand, some fine to coarse gravel, trace silt.					
75	20	7 / 7 / 9						
80	21	15 / 20 / 15						
85	22	13 / 13 / 15	Medium-dense becoming dense brown fine to medium sand, trace coarse sand, little fine gravel, trace silt.					
90	23	20 / 14 / 31						
			Medium-dense brown fine to coarse sand, little fine gravel, trace silt.					
95	24	14 / 11 / 14						
100	25	14 / 13 / 21	Medium-dense becoming dense brown fine to medium sand, trace coarse sand, trace fine to coarse gravel, trace silt.					

BORLJ 19323005.GPJ

WATER LEVEL: ∇ ∇ ∇
WATER NOTE: _____
DATE: _____

SYMBOLS USED TO INDICATE TEST RESULTS

G - GRADATION	SEE	H - PENETROMETER (tsf)
Q - UNCONFINED COMPR	SEPARATE	W - UNIT DRY WEIGHT (pcf)
T - TRIAXIAL COMPR	CURVES	D - RELATIVE DENSITY (%)
C - CONSOLIDATION		



LOG OF BORING NO. B-102
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

LOCATION: N-516,040; E-1,464,511 ELEVATION: 494.0 DATE: 6/1/05
 DRILLING METHOD: 4-1/4" I.D. Hollow-stem Auger COMPLETION DEPTH: 140.6'
 SAMPLER(S): 2" O.D. Split-barrel Sampler, Shelby Tube

DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
				PLASTIC LIMIT		LIQUID LIMIT		
				10	20	30	40	
105	26	20, 18, 22	Medium-dense becoming dense brown fine to medium sand, trace coarse sand, trace fine to coarse gravel, trace silt.					
110	27	27, 28, 50	Dense to very-dense brown fine to coarse gravel, and fine to coarse sand, little silt, few cobbles.					
115	28	20, 26, 30						
120	29	15, 22, 20						
125	30	5, 6, 5	Loose to medium-dense brown fine to coarse sand, some fine to coarse gravel, trace silt.					
130	31	13, 14, 16						
135	32	13, 20, 32						
140			Medium-hard brown sandstone.					

BORL 19323005.GPJ
GDT 8/1/05

WATER LEVEL:
 WATER NOTE: _____
 DATE: _____

SYMBOLS USED TO INDICATE TEST RESULTS
 G - GRADATION SEE SEPARATE CURVES
 Q - UNCONFINED COMPR
 T - TRIAXIAL COMPR
 C - CONSOLIDATION
 H - PENETROMETER (tsf)
 W - UNIT DRY WEIGHT (pcf)
 D - RELATIVE DENSITY (%)

BBCM		LOG OF BORING NO. B-102 EAST BEND WEST LANDFILL BOONE COUNTY, KENTUCKY			Page 5 of 5			
		LOCATION: <u>N-516,040; E-1,464,511</u>	ELEVATION: <u>494.0</u>	DATE: <u>6/1/05</u>				
		DRILLING METHOD: <u>4-1/4" I.D. Hollow-stem Auger</u>	COMPLETION DEPTH: <u>140.6'</u>					
		SAMPLER(S): <u>2" O.D. Split-barrel Sampler, Shelby Tube</u>						
DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
				X	●	X		
				PLASTIC LIMIT		LIQUID LIMIT		
				10	20	30	40	
140	33	50 50-1"R	Medium-hard brown sandstone.					
			- Encountered slight seepage at 18.5' to 19.2'.					
			- Boring grouted at completion, 10% Bentonite/Portland grout placed via tremie methods.					
145								
150								
155								
160								
165								
170								
175								
WATER LEVEL: <u>∇</u> <u>∇</u> <u>∇</u>			SYMBOLS USED TO INDICATE TEST RESULTS					
WATER NOTE: _____			G - GRADATION	SEE	H - PENETROMETER (tsf)			
DATE: _____			Q - UNCONFINED COMPR	SEPARATE	W - UNIT DRY WEIGHT (pcf)			
			T - TRIAXIAL COMER	CURVES	D - RELATIVE DENSITY (%)			
			C - CONSOLIDATION					

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LOG OF BORING NO. B-103
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

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LOCATION: N-513,685; E-1,464,745 ELEVATION: 492.0 DATE: 6/1/05
 DRILLING METHOD: 4-1/4" I.D. Hollow-stem Auger COMPLETION DEPTH: 131.4'
 SAMPLER(S): 2" and 3" O.D. Split-barrel Samplers, Shelby Tube

DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
				PLASTIC LIMIT		LIQUID LIMIT		
				10	20	30	40	
0			TOPSOIL - 4 INCHES					
1	P		Very-loose to loose brown silt, some clay "and" fine sand, trace medium to coarse sand.					H=1.7-3.1 G
2	P							G
5								
3	3 / 5 / 5		Loose to very-loose brown fine to medium sand, little silt, trace coarse sand, few silty clay seams.					
4	3 / 5 / 4							
10	5 / 5 / 6							
5	3 / 4 / 4							
6	2 / 2 / 1							
15	2 / 2 / 2							
7	2 / 2 / 2							
8	1 / 2 / 6		Brown fine to coarse sand, some fine to coarse gravel, little silt.					
20								
25	40 / 39 / 27		Very-dense brown and gray fine to coarse gravel, some fine to coarse sand, little silt.					
30	8 / 8 / 10		Medium-dense brown fine to medium sand, trace coarse sand, trace fine to coarse gravel, few silty clay seams.					
35			Medium-dense to dense brown fine to coarse sand, some fine to coarse gravel, trace silt.					

GDT 8/1/05
BORLJ 19222005.GPJ

WATER LEVEL:
 WATER NOTE: _____
 DATE: _____

SYMBOLS USED TO INDICATE TEST RESULTS
 G - GRADATION SEE SEPARATE CURVES
 Q - UNCONFINED COMPR W - UNIT DRY WEIGHT (pcf)
 T - TRIAXIAL COMPR D - RELATIVE DENSITY (%)
 C - CONSOLIDATION



LOG OF BORING NO. B-103
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

LOCATION: N-513,685; E-1,464,745 ELEVATION: 492.0 DATE: 6/1/05
 DRILLING METHOD: 4-1/4" I.D. Hollow-stem Auger COMPLETION DEPTH: 131.4'
 SAMPLER(S): 2" and 3" O.D. Split-barrel Samplers, Shelby Tube

DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
				PLASTIC LIMIT		LIQUID LIMIT		
				10	20	30	40	
35	11	9 / 7, 12	Medium-dense to dense brown fine to coarse sand, some fine to coarse gravel, trace silt.					
40	12	14 / 16, 16						
45	13	15 / 12, 11						
50	14	10 / 10, 13						
55	15	10 / 11, 12						
60	16	11 / 14, 16						
65	17	14 / 28, 18						

WATER LEVEL:
 WATER NOTE: _____
 DATE: _____

SYMBOLS USED TO INDICATE TEST RESULTS
 G - GRADATION SEE H - PENETROMETER (tsf)
 Q - UNCONFINED COMPR SEPARATE W - UNIT DRY WEIGHT (pcf)
 T - TRIAXIAL COMPR CURVES D - RELATIVE DENSITY (%)
 C - CONSOLIDATION



LOG OF BORING NO. B-103
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

LOCATION: N-513,685; E-1,464,745 ELEVATION: 492.0 DATE: 6/1/05

DRILLING METHOD: 4-1/4" I.D. Hollow-stem Auger COMPLETION DEPTH: 131.4'

SAMPLER(S): 2" and 3" O.D. Split-barrel Samplers, Shelby Tube

DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
				PLASTIC LIMIT		LIQUID LIMIT		
				10	20	30	40	
70	18	8 / 13 / 15	Medium-dense to dense brown fine to coarse sand, some fine to coarse gravel, trace silt.					
			Loose to medium-dense brown fine to medium sand, trace coarse sand, trace fine gravel, trace silt.					
75	19	5 / 5 / 6						
80	20	5 / 7 / 7						
85	21	5 / 8 / 11						
90	22	3 / 4 / 5						
95	23	5 / 5 / 9						
100	24	8 / 10 / 12						
			Medium-dense brown fine to coarse sand "and" fine to coarse gravel, little silt.					
105								

BOKLJ 19323005.GPJ

WATER LEVEL: ∇ ∇ ∇
 WATER NOTE: _____
 DATE: _____

SYMBOLS USED TO INDICATE TEST RESULTS
 G - GRADATION SEE
 Q - UNCONFINED COMPR SEPARATE
 T - TRIAXIAL COMER CURVES
 C - CONSOLIDATION
 H - PENETROMETER (tsf)
 W - UNIT DRY WEIGHT (pcf)
 D - RELATIVE DENSITY (%)



LOG OF BORING NO. B-103
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

Page 4 of 4

LOCATION: N-513,685; E-1,464,745 ELEVATION: 492.0 DATE: 6/1/05

DRILLING METHOD: 4-1/4" I.D. Hollow-stem Auger COMPLETION DEPTH: 131.4'

SAMPLER(S): 2" and 3" O.D. Split-barrel Samplers, Shelby Tube

DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
				PLASTIC LIMIT		LIQUID LIMIT		
				10	20	30	40	
105	25	9 / 11 / 12	Medium-dense brown fine to coarse sand "and" fine to coarse gravel, little silt.					
110	26	9 / 12 / 14						
115	27	10 / 21 / 24	Medium-dense brown fine to medium sand, trace coarse sand, trace fine gravel, trace silt.					
120	28	14 / 20 / 16						
125	29	16 / 20 / 22						
130	30	16 / 14 / 50-5"R	Medium-dense brown fine to coarse sand "and" fine to coarse gravel, trace silt.					
			Bedrock					
			- Boring grouted at completion, 10% Bentonite/Portland grout placed via tremie methods.					
135								
140								

BOKLJ 19323005.GPJ
GDT 8/11/05

WATER LEVEL:
 WATER NOTE:
 DATE:

SYMBOLS USED TO INDICATE TEST RESULTS

G - GRADATION	SEE	H - PENETROMETER (tsf)
Q - UNCONFINED COMPR	SEPARATE	W - UNIT DRY WEIGHT (pcf)
T - TRIAXIAL COMPR	CURVES	D - RELATIVE DENSITY (%)
C - CONSOLIDATION		



**LOG OF BORING NO. OW-101
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY**

Page 1 of 2

LOCATION: N-517,405; E-1,465,175 ELEVATION: 508.2 DATE: 5/4/05 - 5/5/05
 DRILLING METHOD: 4" I.D. Hollow-stem Auger COMPLETION DEPTH: 65.0'
 SAMPLER(S): 2" O.D. Split-barrel Sampler

DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
				PLASTIC LIMIT	LIQUID LIMIT			
0			TOPSOIL - 4 INCHES					
1	1	1/2	Very-stiff brown clayey silt, some fine to medium sand, trace coarse sand, few roots.				H=2.1-3.0	
2	2	2/3		Stiff to very-stiff brown silty clay, some to "and" fine to medium sand, trace coarse sand, trace fine gravel.				H=1.5
3	2	2/3					H=1.3-1.5	
4A	2	3/4					H=0.5-1.1	
5	4B	7/7	Medium-dense to dense brown and gray fine to coarse sand, "and" fine to coarse gravel, trace silt.					
5	15	7						
6	7	16/22	Dense to very-dense brown and gray fine to coarse gravel, "and" fine to coarse sand, trace to little silt, few cobbles.				G	
6	7	13/13						
10	10	20/29						
8	14	29/50-4"R	Dense brown fine to coarse sand, some to little fine to coarse gravel, little to trace silt, few cobbles.					
9	20	32/34						
15	19	21/31	Dense brown fine to coarse sand, some to little fine to coarse gravel, little to trace silt, few cobbles.				G	
10	15	32/45						
20	14	21/28						
25	13	11/16/23	Dense brown fine to coarse sand, some to little fine to coarse gravel, little to trace silt, few cobbles.					
30	23	11/27						
35	14	23/11/27					G	

WATER LEVEL: 49.0
 WATER NOTE: _____
 DATE: 5/6/05

SYMBOLS USED TO INDICATE TEST RESULTS
 G - GRADATION SEE SEPARATE CURVES
 Q - UNCONFINED COMPR
 T - TRIAXIAL COMPR
 C - CONSOLIDATION
 H - PENETROMETER (tsf)
 W - UNIT DRY WEIGHT (pcf)
 D - RELATIVE DENSITY (%)



LOG OF BORING NO. OW-101
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

LOCATION: N-517,405; E-1,465,175 ELEVATION: 508.2 DATE: 5/4/05 - 5/5/05
 DRILLING METHOD: 4" I.D. Hollow-stem Auger COMPLETION DEPTH: 65.0'
 SAMPLER(S): 2" O.D. Split-barrel Sampler

DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
				PLASTIC LIMIT		LIQUID LIMIT		
				10	20	30	40	
35			Dense brown fine to coarse sand, some to little fine to coarse gravel, little to trace silt, few cobbles.					
40	15	10, 22, 23						
45	16	19, 50-5"R	Dense to very-dense brown fine to coarse gravel, "and" fine to coarse sand, trace silt.					
50	17	21, 24, 21						
55	18	20, 14, 20						
60	19	29, 36, 32	Very-dense brown fine to coarse sand, "and" to some fine to coarse gravel, some to little silt.					G
65	20	33, 30, 29	- Encountered water at 49.0'. - Boring converted to observation well, see well completion diagram, (KY Well No. 8005-1796).					G
70								

BORLJ 19323005.GPJ .GDT 8/5/05

WATER LEVEL: 49.0
 WATER NOTE: _____
 DATE: 5/6/05

SYMBOLS USED TO INDICATE TEST RESULTS
 G - GRADATION SEE SEPARATE CURVES
 Q - UNCONFINED COMPR
 T - TRIAXIAL COMPR
 C - CONSOLIDATION
 H - PENETROMETER (tsf)
 W - UNIT DRY WEIGHT (pcf)
 D - RELATIVE DENSITY (%)



**LOG OF BORING NO. OW-102
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY**

Page 1 of 2

LOCATION: N-515,425; E-1,464,258 ELEVATION: 482.0 DATE: 5/4/05
 DRILLING METHOD: 4" I.D. Hollow-stem Auger COMPLETION DEPTH: 40.0'
 SAMPLER(S): 2" O.D. Split-barrel Sampler

DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
				PLASTIC LIMIT		LIQUID LIMIT		
				10	20	30	40	
0			TOPSOIL - 2 INCHES					H=0.75
1	1	1/1/3	Very-loose brown fine to coarse sand, "and" silt, trace fine gravel, few roots.					H=1.1
2	4	4/4/4	Stiff brown silty clay, "and" fine to coarse sand, trace fine gravel.					H=0.75
3	2	2/2/2	Very-loose brown fine to coarse sand, some silty clay, trace fine gravel.					G
5	4	2/3/3	Loose brown silt, some fine sand, little clay, trace medium to coarse sand.					
5	2	2/3/3	Loose brown fine to medium sand, some to little silt, trace coarse sand, trace fine gravel.					
6	1	1/3/3						
7A	S/H	4/5						
10	7B	4/5	Very-dense brown and gray fine to coarse gravel, "and" to some fine to coarse sand, little silt.					
8	20	23/24						
9	15	30/27						G
15	17	17/16	Medium-dense to dense brown fine to coarse sand, "and" to some fine to coarse gravel, trace silt.					
10	5	6/8						
20			Medium-dense brown fine to coarse sand, trace fine gravel, trace silt.					
25	12	S/H 8/9						
			Very-loose brown fine to coarse sand, trace fine gravel, trace silt.					
30	13	S/H=12 4						G
			Medium-dense brown fine to coarse sand, little fine to coarse gravel, little to trace silt.					
35	14	8/11/8						G

BORING 19323005.GPJ
GDT 8/5/05

WATER LEVEL: 22.6
 WATER NOTE: _____
 DATE: 5/5/05

SYMBOLS USED TO INDICATE TEST RESULTS
 G - GRADATION SEE SEPARATE CURVES
 Q - UNCONFINED COMPR
 T - TRIAXIAL COMPR
 C - CONSOLIDATION
 H - PENETROMETER (tsf)
 W - UNIT DRY WEIGHT (pcf)
 D - RELATIVE DENSITY (%)



LOG OF BORING NO. OW-102
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

LOCATION: N-515,425; E-1,464,258 ELEVATION: 482.0 DATE: 5/4/05
 DRILLING METHOD: 4" I.D. Hollow-stem Auger COMPLETION DEPTH: 40.0'
 SAMPLER(S): 2" O.D. Split-barrel Sampler

DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
				PLASTIC LIMIT		LIQUID LIMIT		
				10	20	30	40	
35			Medium-dense brown fine to coarse sand, little fine to coarse gravel, little to trace silt.					
40	15	3 / 9 / 11	- Encountered slight seepage from 8.5' to 10.0'. - Encountered water at 23.5'. - Boring converted to observation well, see well completion diagram (KY Well No. 8005-1795).					
45								
50								
55								
60								
65								
70								

BORL 15225005 GEI
GDT 8/5/05

WATER LEVEL: ∇ 22.6 ∇ ∇
 WATER NOTE:
 DATE: 5/5/05

SYMBOLS USED TO INDICATE TEST RESULTS

G - GRADATION	SEE	H - PENETROMETER (tsf)
Q - UNCONFINED COMPR	SEPARATE	W - UNIT DRY WEIGHT (pcf)
T - TRIAXIAL COMPR	CURVES	D - RELATIVE DENSITY (%)
C - CONSOLIDATION		



LOG OF BORING NO. OW-103
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

Page 1 of 2

LOCATION: **N-512,569; E-1,464,846** ELEVATION: **482.2** DATE: **5/3/05**
 DRILLING METHOD: **4" I.D. Hollow-stem Auger** COMPLETION DEPTH: **40.0'**
 SAMPLER(S): **2" and 2-1/2" O.D. Split-barrel Samplers**

DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION	NATURAL CONSISTENCY INDEX		TEST RESULTS
				NATURAL MOISTURE CONTENT		
0			TOPSOIL - 2 INCHES			
1	1	1/2/3	Very-stiff to hard brown mottled with gray silty clay, some fine sand, trace medium to coarse sand, trace fine gravel.			H=2.0
2	4	6/7				H=2.1-3.2
3	2	4/7				H=2.1-3.6
5	3	4/4				H=2.7-3.6
5A	4	5/7	Loose brown fine to medium sand, some silty clay, trace coarse sand, trace fine gravel.			H=2.7-2.8
5B	4	4/7				
6	4	5/5	Loose brown fine to medium sand, trace to little silt, trace coarse sand, trace fine gravel.			
7	3	4/4				H=0.25
8	3	3/3				
9	3	3/3				
10	1	3/4				
11	2	2/3				
12	S/H	1/1	Very-loose brown fine to coarse sand, "and" silty clay, trace fine gravel.			
13	S/H	1/1	Very-loose brown fine to coarse gravel, some fine to coarse sand, little silt. Loose brown fine to coarse gravel, some fine to coarse sand, little silt.			
14	2	4/5	Medium-dense brown fine to coarse sand, some to little fine to coarse gravel, little silt, trace clay.			
15	10	9/11				
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						

BORL 1992005.GPJ GDT 8/5/05

WATER LEVEL: ∇ 22.4 ∇ ∇
 WATER NOTE: _____
 DATE: 5/5/05

SYMBOLS USED TO INDICATE TEST RESULTS
 G - GRADATION SEE H - PENETROMETER (tsf)
 Q - UNCONFINED COMPR SEPARATE W - UNIT DRY WEIGHT (pcf)
 T - TRIAXIAL COMPR CURVES D - RELATIVE DENSITY (%)
 C - CONSOLIDATION

BBCM		LOG OF BORING NO. OW-103 EAST BEND WEST LANDFILL BOONE COUNTY, KENTUCKY				Page 2 of 2
		LOCATION: N-512,569; E-1,464,846	ELEVATION: 482.2	DATE: 5/3/05		
DRILLING METHOD: 4" I.D. Hollow-stem Auger		COMPLETION DEPTH: 40.0'				
SAMPLER(S): 2" and 2-1/2" O.D. Split-barrel Samplers						
DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX ← NATURAL MOISTURE CONTENT PLASTIC LIMIT — LIQUID LIMIT	TEST RESULTS	
35			Medium-dense brown fine to coarse sand, some to little fine to coarse gravel, little silt, trace clay.	10 20 30 40		
40	15	2 / 17 / 25	<p>- Encountered slight seepage in sand at 7.0' to 14.8'.</p> <p>- Encountered water at 23.5'.</p> <p>- Boring converted to observation well, see well completion diagram (KY Well No. 8005-1794).</p>		G	
45						
50						
55						
60						
65						
70						
WATER LEVEL: ∇ 22.4 ∇ ∇ WATER NOTE: _____ DATE: <u>5/5/05</u>			SYMBOLS USED TO INDICATE TEST RESULTS			
			G - GRADATION	SEE	H - PENETROMETER (tsf)	
			Q - UNCONFINED COMPR	SEPARATE	W - UNIT DRY WEIGHT (pcf)	
			T - TRIAXIAL COMPR	CURVES	D - RELATIVE DENSITY (%)	
			C - CONSOLIDATION			

BORLJ 19223005.GPJ I.GDT 8/5/05

BBCM		LOG OF BORING NO. OW-104 EAST BEND WEST LANDFILL BOONE COUNTY, KENTUCKY			Page 1 of 2	
		LOCATION: N-512,428; E-1,466,674	ELEVATION: 501.9	DATE: 4/29/05 - 5/2/05		
DRILLING METHOD: 4" I.D. Hollow-stem Auger		COMPLETION DEPTH: 65.0'				
SAMPLER(S): 2" and 2-1/2" O.D. Split-barrel Samplers						
DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION	NATURAL CONSISTENCY INDEX		TEST RESULTS
				NATURAL MOISTURE CONTENT		
				PLASTIC LIMIT	LIQUID LIMIT	
0			TOPSOIL - 4 INCHES	10	20	
1	1	1/2, 4	Loose brown silt, "and" fine sand, little clay, trace medium to coarse sand.			H=1.4
2	2	5/50, 5		Stiff brown silty clay, "and" to some fine to coarse sand, some to little fine to coarse gravel.		
3	3	4/6, 5	Medium-dense to dense brown fine to coarse sand, "and" fine to coarse gravel, trace silt.			
5	4	4/2, 2				H=1.6
5			Dense to very-dense brown fine to coarse sand, "and" fine to coarse gravel, trace silt.			
6						
10	7	9/17, 16	Dense to very-dense brown fine to coarse sand, "and" fine to coarse gravel, trace silt.			
8	8	11/26, 30				
15	9	13/17, 30	Dense to very-dense brown fine to coarse sand, some to little fine to coarse gravel, little to trace silt.			
10	10	17/17, 21				
20	11	27/34, 34	Dense to very-dense brown fine to coarse sand, some to little fine to coarse gravel, little to trace silt.			
25	12	20/40, 35				
30	13	11/25, 25	Dense to very-dense brown fine to coarse sand, some to little fine to coarse gravel, little to trace silt.			
35	14	11/21, 32				
WATER LEVEL: ∇ 42.3 ∇ ∇			SYMBOLS USED TO INDICATE TEST RESULTS			
WATER NOTE: _____			G - GRADATION	SEE	H - PENETROMETER (tsf)	
DATE: 5/6/05			Q - UNCONFINED COMPR	SEPARATE	W - UNIT DRY WEIGHT (pcf)	
			T - TRIAXIAL COMPR	CURVES	D - RELATIVE DENSITY (%)	
			C - CONSOLIDATION			

BORLJ 19523005.GPJ
GDT 8/5/05

BBCM		LOG OF BORING NO. OW-104 EAST BEND WEST LANDFILL BOONE COUNTY, KENTUCKY			Page 2 of 2			
		LOCATION: <u>N-512,428; E-1,466,674</u>	ELEVATION: <u>501.9</u>	DATE: <u>4/29/05 - 5/2/05</u>				
DRILLING METHOD: <u>4" I.D. Hollow-stem Auger</u>		COMPLETION DEPTH: <u>65.0'</u>						
SAMPLER(S): <u>2" and 2-1/2" O.D. Split-barrel Samplers</u>								
DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
				X	●	X		
				PLASTIC LIMIT		LIQUID LIMIT		
35			Dense to very-dense brown fine to coarse sand, some to little fine to coarse gravel, little to trace silt.	10	20	30	40	
40	15	17 26 25						G
45	16	24 25 21						
50	17	42 37 33						
55	18	4 11 12	Medium-dense to dense brown fine to coarse sand, some to little fine to coarse gravel, little to trace silt.					
60	19	7 13 20						G
65	20	28 33 37	Very-dense brown fine to coarse sand, some fine gravel, little silt.					
			- Encountered water at 42.5'.					G
			- Boring converted to observation well, see well completion diagram (KY Well No. 8005-1793).					
70								
WATER LEVEL: <u>42.3</u>					SYMBOLS USED TO INDICATE TEST RESULTS			
WATER NOTE:					G - GRADATION	SEE	H - PENETROMETER (tsf)	
DATE: <u>5/6/05</u>					Q - UNCONFINED COMPR	SEPARATE	W - UNIT DRY WEIGHT (pcf)	
					T - TRIAXIAL COMPR	CURVES	D - RELATIVE DENSITY (%)	
					C - CONSOLIDATION			

BORL 19323005.GP
LGDT 8/5/05

BBCM		LOG OF BORING NO. OW-105 EAST BEND WEST LANDFILL BOONE COUNTY, KENTUCKY			Page 1 of 4			
		LOCATION: N-514,994; E-1,467,434	ELEVATION: 529.4	DATE: 4/25/05 - 4/27/05				
DRILLING METHOD: 4" I.D. Hollow-stem Auger		COMPLETION DEPTH: 115.0'						
SAMPLER(S): 2" and 2-1/2" O.D. Split-barrel Samplers								
DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
				X	●	X		
				PLASTIC LIMIT		LIQUID LIMIT		
0			TOPSOIL - 4 INCHES	10	20	30	40	
1	1	2 / 2	Loose to medium-dense brown fine to medium sand, little to trace silt, trace coarse sand, trace fine gravel.					
2A	2A	3 / 9						
2B	2B	3 / 9	Very-stiff to hard brown mottled with gray silty clay, some to little fine to coarse sand, trace fine gravel.					H=2.6
3A	3A	3 / 4						H=2.3-4.5+
3B	3B	1 / 4	Very-loose to loose brown fine to coarse sand, "and" silt, little clay, trace fine gravel.					H=3.8-4.5+
4A	4A	1 / 3						H=2.1
4B	4B	2 / 3	Very-stiff to hard brown mottled with gray silty clay, some fine to coarse sand, trace medium to coarse sand, trace fine gravel.					
5	5	2 / 3						
6A	6A	3 / 3	Loose brown fine to coarse sand, some silt, little clay, trace fine gravel.					H=0.8
6B	6B	13 / 17	Medium-stiff brown silty clay, "and" fine to coarse sand, trace fine gravel.					
7	7	15 / 21	Very-stiff to hard brown silty clay, "and" fine to coarse sand, trace fine gravel.					
8	8	14 / 16	Medium-dense to dense brown fine to coarse gravel, "and" fine to coarse sand, little to trace silt.					
9	9	9 / 9						
10	10	7 / 22	Dense to very-dense brown fine to coarse sand, some fine to coarse gravel, trace silt.					
11	11	12 / 16						
12	12	12 / 23						
13	13	19 / 27						
14	14	50-5"R	Medium-dense to dense brown fine to coarse sand, "and" fine to coarse gravel, few cobbles.					
15								
20								
25								
30								
35								

BORING 199223005 GBU
LOGDT 8/5/05

WATER LEVEL: ∇ **67.4** ∇ ∇

WATER NOTE: _____

DATE: **5/3/05**

SYMBOLS USED TO INDICATE TEST RESULTS

G - GRADATION	SEE	H - PENETROMETER (tsf)
Q - UNCONFINED COMPR	SEPARATE	W - UNIT DRY WEIGHT (pcf)
T - TRIAXIAL COMPR	CURVES	D - RELATIVE DENSITY (%)
C - CONSOLIDATION		



**LOG OF BORING NO. OW-105
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY**

Page 2 of 4

LOCATION: N-514,994; E-1,467,434 ELEVATION: 529.4 DATE: 4/25/05 - 4/27/05

DRILLING METHOD: 4" I.D. Hollow-stem Auger COMPLETION DEPTH: 115.0'

SAMPLER(S): 2" and 2-1/2" O.D. Split-barrel Samplers

DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFECT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
				PLASTIC LIMIT		LIQUID LIMIT		
				10	20	30	40	
35			Medium-dense to dense brown fine to coarse sand, "and" fine to coarse gravel, few cobbles.					
40	15	15 / 17 / 12						
45	16	11 / 10 / 13 9 / 13 / 17						
50	17	17 / 18 / 9						
55	18	11 / 12 / 9						
60	19	9 / 12 / 10	Medium-dense to dense brown fine to coarse sand, little to trace fine to coarse gravel, little to trace silt, trace clay.					
65	20	6 / 12 / 12						
70	21	7 / 14 / 16						

BORL 1922005.GPJ GDT 8/5/05

WATER LEVEL: ▽ 67.4 ▽ ▽
 WATER NOTE: _____
 DATE: 5/3/05

SYMBOLS USED TO INDICATE TEST RESULTS
 G - GRADATION SEE
 Q - UNCONFINED COMPR SEPARATE
 T - TRIAXIAL COMPR CURVES
 C - CONSOLIDATION
 H - PENETROMETER (tsf)
 W - UNIT DRY WEIGHT (pcf)
 D - RELATIVE DENSITY (%)



LOG OF BORING NO. OW-105
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

LOCATION: N-514,994; E-1,467,434 ELEVATION: 529.4 DATE: 4/25/05 - 4/27/05

DRILLING METHOD: 4" I.D. Hollow-stem Auger COMPLETION DEPTH: 115.0'

SAMPLER(S): 2" and 2-1/2" O.D. Split-barrel Samplers

DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
				PLASTIC LIMIT		LIQUID LIMIT		
				10	20	30	40	
70			Medium-dense to dense brown fine to coarse sand, little to trace fine to coarse gravel, little to trace silt, trace clay.					
75	22	5 / 13 / 14						
80	23	16 / 19 / 22						G
85	24	5 / 12 / 13						
90	25	1 / 2 / 2						
95	25	6 / 9 / 9 3 / 6 / 10						
100	26	69 / 33 / 43	Very-dense brown fine to coarse sand, some to little fine to coarse gravel, trace silt.					G
105	27	11 / 27 / 27						

BORING 19923005.GPI
GDT 8/5/05

WATER LEVEL: ▽ 67.4 ▽ ▽
 WATER NOTE: _____
 DATE: 5/3/05

SYMBOLS USED TO INDICATE TEST RESULTS
 G - GRADATION } SEE H - PENETROMETER (tsf)
 Q - UNCONFINED COMPR } SEPARATE W - UNIT DRY WEIGHT (pcf)
 T - TRIAXIAL COMPR } CURVES D - RELATIVE DENSITY (%)
 C - CONSOLIDATION

BBCM		LOG OF BORING NO. OW-105 EAST BEND WEST LANDFILL BOONE COUNTY, KENTUCKY			Page 4 of 4
		LOCATION: N-514,994; E-1,467,434	ELEVATION: 529.4	DATE: 4/25/05 - 4/27/05	
DRILLING METHOD: 4" I.D. Hollow-stem Auger		COMPLETION DEPTH: 115.0'			
SAMPLER(S): 2" and 2-1/2" O.D. Split-barrel Samplers					
DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX NATURAL MOISTURE CONTENT PLASTIC LIMIT LIQUID LIMIT	TEST RESULTS
105			Very-dense brown fine to coarse sand, some to little fine to coarse gravel, trace silt.		
110	28	16, 49, 50-3"R			
115	29	32, 50-4-1/5"R	<p>- Encountered slight seepage from 6.0' to 7.5'.</p> <p>- Encountered water at 68.5'.</p> <p>- Boring converted to observation well, see well completion diagram (KY Well No. 8005-1791).</p>		
120					
125					
130					
135					
140					
WATER LEVEL: ∇ 67.4 ∇ ∇ WATER NOTE: _____ DATE: 5/3/05			SYMBOLS USED TO INDICATE TEST RESULTS G - GRADATION SEE SEPARATE CURVES Q - UNCONFINED COMPR T - TRIAXIAL COMPR C - CONSOLIDATION H - PENETROMETER (tsf) W - UNIT DRY WEIGHT (pcf) D - RELATIVE DENSITY (%)		

BORL 19323005.GP
4.GDT 8/5/05

BBCM		LOG OF BORING NO. OW-106 EAST BEND WEST LANDFILL BOONE COUNTY, KENTUCKY			Page 1 of 3				
		LOCATION: N-514,764; E-1,465,562	ELEVATION: 527.0	DATE: 4/28/05					
DRILLING METHOD: 4" I.D. Hollow-stem Auger		COMPLETION DEPTH: 85.0'							
SAMPLER(S): 2" and 2-1/2" O.D. Split-barrel Samplers									
DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION	NATURAL CONSISTENCY INDEX				TEST RESULTS	
				NATURAL MOISTURE CONTENT					
0			TOPSOIL - 4 INCHES						
1	1	1/1	Very-stiff brown silty clay, "and" fine sand, trace medium to coarse sand, trace fine gravel, silt seams.					H=0.75-2.1	
2	2	6/5		Medium-dense brown fine to medium sand, some silt, little clay, trace coarse sand, trace fine gravel.					H=1.6-2.1
3	3	5/6							
5	4	2/3	Very-loose to loose brown silt, some to little fine to coarse sand, little to trace clay, trace fine gravel.					G	
	5	3/4							
	6	3/6							
10	7	2/2	Very-dense brown fine to coarse gravel, "and" fine to coarse sand, trace silt.					G	
	8A	3/8							
	8B	1/15							
15	9	22/30	Very-dense brown fine to coarse sand, "and" to some fine to coarse gravel, trace silt.					G	
	10	22/27							
	11	23/22							
20			Very-dense brown fine to coarse gravel, "and" fine to coarse sand, trace silt.					G	
	12	19/33							
	13	22/26							
30									
	14	19/27							
35									

BOKL 19923005.GPJ .GDT 8/5/05

WATER LEVEL: ∇ 67.0 ∇ ∇
 WATER NOTE: _____
 DATE: **5/2/05**

SYMBOLS USED TO INDICATE TEST RESULTS

G - GRADATION	SEE	H - PENETROMETER (tsf)
Q - UNCONFINED COMPR	SEPARATE	W - UNIT DRY WEIGHT (pcf)
T - TRIAXIAL COMPR	CURVES	D - RELATIVE DENSITY (%)
C - CONSOLIDATION		



LOG OF BORING NO. OW-106
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

LOCATION: N-514,764; E-1,465,562 ELEVATION: 527.0 DATE: 4/28/05
 DRILLING METHOD: 4" I.D. Hollow-stem Auger COMPLETION DEPTH: 85.0'
 SAMPLER(S): 2" and 2-1/2" O.D. Split-barrel Samplers

DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
				PLASTIC LIMIT		LIQUID LIMIT		
				10	20	30	40	
35			Very-dense brown fine to coarse gravel, "and" fine to coarse sand, trace silt.					
40	15	20 / 35 / 24						
45	16	34 / 49 / 50-4"R						
50	17	50-3"R / 50-4"R	Very-dense brown fine to coarse sand, "and" fine to coarse gravel, little to trace silt.					
55	18	50-3"R / 50-4"R						
60	19	17 / 39 / 50						
65	20	19 / 32 / 46	Dense to very-dense brown fine to coarse sand, some to little fine to coarse gravel, trace silt.					
70	21	21 / 34 / 20						

WATER LEVEL: ▽ 67.0 ▽ ▽
 WATER NOTE: _____
 DATE: 5/2/05 _____
 SYMBOLS USED TO INDICATE TEST RESULTS
 G - GRADATION SEE H - PENETROMETER (tsf)
 Q - UNCONFINED COMPR SEPARATE W - UNIT DRY WEIGHT (pcf)
 T - TRIAXIAL COMPR CURVES D - RELATIVE DENSITY (%)
 C - CONSOLIDATION

BBCM		LOG OF BORING NO. OW-106 EAST BEND WEST LANDFILL BOONE COUNTY, KENTUCKY			Page 3 of 3			
		LOCATION: <u>N-514,764; E-1,465,562</u>	ELEVATION: <u>527.0</u>	DATE: <u>4/28/05</u>				
DRILLING METHOD: <u>4" I.D. Hollow-stem Auger</u>		COMPLETION DEPTH: <u>85.0'</u>						
SAMPLER(S): <u>2" and 2-1/2" O.D. Split-barrel Samplers</u>								
DEPTH, FEET	SAMPLE NUMBER	SAMPLE EFFORT	DESCRIPTION - CONTINUED	NATURAL CONSISTENCY INDEX				TEST RESULTS
				NATURAL MOISTURE CONTENT				
70			Dense to very-dense brown fine to coarse sand, some to little fine to coarse gravel, trace silt.					
	22	10, 15, 14	Medium-dense brown fine to coarse sand, some fine to coarse gravel, trace silt.					
75								
	23	11, 23, 50	Very-dense brown fine to coarse sand, little silt, trace fine gravel.					G
80								
	24	13, 14, 16	Medium-dense brown fine to coarse sand, little silt, trace fine gravel.					G
85								
			- Encountered slight seepage from 8.3' to 9.0'. - Encountered water at 68.5'. - Boring converted to observation well, see well completion diagram (KY Well No. 8005-1792).					
90								
95								
100								
105								
WATER LEVEL: <u>67.0</u>					SYMBOLS USED TO INDICATE TEST RESULTS			
WATER NOTE: _____					SEE SEPARATE CURVES		H - PENETROMETER (tsf) W - UNIT DRY WEIGHT (pcf) D - RELATIVE DENSITY (%)	
DATE: <u>5/2/05</u>								

BORL 19323005.GPJ
GDT 8/5/05



LOG OF TEST PIT NO. TP-12
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

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DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER tsf	MOISTURE CONTENT %	LIQUID LIMIT %	PLASTIC LIMIT %	TYPE: <u>Rubber-Tired Backhoe</u> LOCATION: <u>N-517,671</u> <u>24-Inch Bucket</u> <u>E-1,468,396</u>	
							COMPLETION DEPTH: <u>6.3'</u>	ELEVATION: <u>578.0</u> DATE: <u>10/21/03</u>
0							DESCRIPTION	
							TOPSOIL: Medium-dense dark grayish-brown silt, some fine sand, many roots. Very-stiff to hard brown mottled with gray silty clay, trace fine to coarse sand, trace fine to coarse gravel, few roots.	
1			2.4					
2	1		4.5+	21				
	4*		4.5+	24	73	27		
4	2		4.5+		80	27		
			4.5+					
6	3						Very-soft to soft brown shale, fragmental structure, similar to hard silty clay, few layers of hard gray and brown limestone.	
8								
10							* Sample No. 4 is bag sample obtained between 0.3' to 5.3'. - Walls of test pit did not cave. - No seepage noted.	
12								
14								
16								
WATER LEVEL: <input checked="" type="checkbox"/> "Dry"			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
WATER NOTE:								
DATE: 10/21/03								

GDT 8/5/05

PITL 19323001.GPJ



LOG OF TEST PIT NO. TP-13
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

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DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u> LOCATION: <u>N-517,065</u>	
							<u>24-Inch Bucket</u>	
							COMPLETION DEPTH: <u>10.7'</u> ELEVATION: <u>560.0</u> DATE: <u>10/16/03</u>	
							DESCRIPTION	
0							TOPSOIL: Medium-dense dark-brown silt, some fine sand, many roots, few cobbles and boulders at surface. Medium-dense brown mottled with gray silt, some fine sand, trace clay.	
2	1							
4	2							
6								
8							Medium-dense to dense brown fine to medium sand, trace coarse sand, some silty clay	
10	4*			21	54	20	Hard brown mottled with gray silty clay, some fine to coarse sand, trace fine to coarse gravel.	
	3		4.5+		45	23		
12							* Sample No. 4 is bag sample obtained between 8.8' to 10.7'. - Walls of test pit did not cave. - No seepage noted.	
14								
16							WATER LEVEL: <u>∇</u> "Dry" <u>∇</u> <u>∇</u> <u>∇</u> <u>∇</u> <u>∇</u>	
							WATER NOTE: _____	
							DATE: <u>10/16/03</u>	

GDT 8/5/05
PITL 19323001.GPJ



LOG OF TEST PIT NO. TP-26
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

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DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u> LOCATION: <u>N-516,900</u>	
							<u>24-Inch Bucket</u> LOCATION: <u>E-1,464,108</u>	
							COMPLETION DEPTH: <u>11.5'</u> ELEVATION: <u>474.0</u> DATE: <u>10/15/03</u>	
							DESCRIPTION	
0	1		4.5+				TOPSOIL: Loose to medium-dense dark-brown silt, some fine sand, little clay.	
2	5* 2		4.5+	20	38	21	Hard brown silty clay, little fine sand, trace medium to coarse sand, few seams of silt and fine sand.	
			4.5+		37	21		
4	3		4.5+				Medium-dense brown and gray fine sand, some silt, trace clay.	
6								
8								
10								
12	4			22	27	20	Medium-dense brown and gray fine sand, "and" silty clay, few lenses of silt.	
14							* Sample No. 5 is bag sample obtained between 1.0' to 3.3'. - Walls of test pit did not cave. - No seepage noted.	
16							WATER LEVEL: <u>∇ "Dry"</u> <u>∇</u> <u>∇</u> <u>∇</u> <u>∇</u> <u>∇</u> WATER NOTE: _____ DATE: <u>10/15/03</u>	

PIT# 1992001.OP1 : 3DT 8/5/05



LOG OF TEST PIT NO. TP-27
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u>	LOCATION: <u>N-515,692</u>	
							<u>24-Inch Bucket</u>		<u>E-1,463,662</u>
							COMPLETION DEPTH: <u>10.7'</u>	ELEVATION: <u>472.0</u>	DATE: <u>10/15/03</u>
							DESCRIPTION		
0							TOPSOIL: Stiff dark grayish-brown organic clayey silt, some fine sand.		
1.3							Stiff to hard brown mottled with gray silty clay, some fine sand, trace medium to coarse sand, trace fine to coarse gravel, few silt and fine sand seams.		
2	1 4*		4.5+	20	37 28	23 18			
3.7									
4	2		4.2		28	21	Very-stiff brown clayey silt, some fine sand, trace medium to coarse sand, few silt seams.		
5*				16	27	17			
6									
8							Medium-dense brown fine sand, some silt, little clay.		
10	3								
12							* Samples No. 4 and 5 are bag samples obtained between 1.1' to 3.5' and 3.5' to 7.5'. - Walls of test pit did not cave. - No seepage noted.		
14									
16							WATER LEVEL: <input checked="" type="checkbox"/> "Dry" WATER NOTE: DATE: <u>10/15/03</u>		

3DT 8/5/05

PITL 19323001.GPJ



LOG OF TEST PIT NO. TP-28
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

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DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u> <u>24-Inch Bucket</u>	LOCATION: <u>N-513,648</u> <u>E-1,463,780</u>
0							DESCRIPTION	
							TOPSOIL - 10 INCHES	
1.8							Stiff to hard brown mottled with gray silty clay, some fine sand, trace medium to coarse sand, trace fine to coarse gravel, few seams of silt, "and" fine sand with depth.	
2	1		4.5+	19	35	21		
4	4*		4.5+	16	32	18		
2	2		4.5+		29	20		
6								
8								
							Medium-dense brown fine sand, some silt, trace clay, trace medium sand.	
10								
	3							
12								
14								
							* Sample No. 4 is bag sample obtained between 0.8' to 7.5'. - Walls of test pit did not cave. - No seepage noted.	
16								
			WATER LEVEL: <u>∇ "Dry"</u>					
			WATER NOTE: _____					
			DATE: <u>10/15/03</u>					

GDI 8/5/05
PIT# 19923001.GPI
JOB: 011-09323-001



LOG OF TEST PIT NO. TP-29
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

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DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u>	LOCATION: <u>N-517,238</u>	
							<u>24-Inch Bucket</u>	<u>E-1,464,877</u>	
							COMPLETION DEPTH: <u>10.1'</u>	ELEVATION: <u>502.0</u>	DATE: <u>10/15/03</u>
							DESCRIPTION		
0							TOPSOIL: Loose to medium-dense dark-brown silt, "and" fine sand, trace clay.		
2	1						Medium-dense brown mottled with gray silt, "and" fine sand, little clay.		
4									
6							Medium-dense brown silt, some fine sand, trace clay, few seams of fine sand.		
8									
10	2								
12							- Walls of test pit did not cave. - No seepage noted.		
14									
16									
WATER LEVEL:			∇	"Dry"	∇	∇	∇	∇	
WATER NOTE:									
DATE:				10/15/03					

GDT 8/5/05
PITLJ 19923001.GPJ
JOB: 011-09323-001



LOG OF TEST PIT NO. TP-30
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

Page 1 of 1

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u>	LOCATION: <u>N-516,144</u>	
							<u>24-Inch Bucket</u>		<u>E-1,464,573</u>
			COMPLETION DEPTH: <u>11.0'</u>		ELEVATION: <u>494.0</u>		DATE: <u>10/13/03</u>		
							DESCRIPTION		
0							TOPSOIL: Loose to medium-dense dark-brown silt, "and" fine sand, trace clay.		
2	3*		3.3				Stiff to very-stiff brown silty clay, some fine sand, trace medium sand, few seams of fine sand, little silt.		
	1		2.4	20	29	20			
			1.3		27	19			
4			3.2				Medium-dense brown and light-brown fine sand, little silt, trace clay.		
6									
8									
10	2								
12									
14							* Sample No. 3 is bag sample obtained between 0.8' to 4.7'. - Walls of test pit did not cave. - No seepage noted.		
16									
WATER LEVEL: <u>∇</u>			<u>"Dry"</u>			<u>∇</u>			
WATER NOTE: _____			_____			_____			
DATE: <u>10/13/03</u>			_____			_____			

PIT# 19923001.GPJ
JDT 8/2/05



LOG OF TEST PIT NO. TP-31
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

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DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u>	LOCATION: <u>N-515,959</u>	
							<u>24-Inch Bucket</u>	<u>E-1,465,119</u>	
							COMPLETION DEPTH: <u>10.0'</u>	ELEVATION: <u>502.0</u>	DATE: <u>10/15/03</u>
							DESCRIPTION		
0							TOPSOIL: Loose to medium-dense dark-brown fine sand, some silt, trace clay.		
1			1.3				Loose to medium-dense brown silt, some fine sand, some clay.		
2							Medium-dense brown fine to coarse sand, some fine to coarse gravel, some silty clay.		
4			2.5				Medium-dense brown and gray fine to coarse gravel, "and" fine to coarse sand, trace silt.		
6									
8									
10									
12							- Walls of test pit caved between depths of 5.0' and 10.0'.		
14							- No seepage noted.		
16									
WATER LEVEL: <u>∇ "Dry"</u>									
WATER NOTE: _____									
DATE: <u>10/15/03</u>									

PIT# 19523001.GPJ 1
JDT 8/2/05



LOG OF TEST PIT NO. TP-32
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

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DEPTH, FEET	SAMPLE NO.	SAMPLES	SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u>	LOCATION: <u>N-514,940</u>		
								<u>24-Inch Bucket</u>	<u>E-1,464,726</u>		
								COMPLETION DEPTH: <u>10.5'</u>	ELEVATION: <u>492.0</u>	DATE: <u>10/14/03</u>	
								DESCRIPTION			
0								TOPSOIL: Medium-dense dark-brown silt, "and" fine sand, trace clay.			
				1.8				Loose to medium-dense brown fine sand, some silt, little clay.			
2	4*			4.5+	18	24	20				
	1					28	21				
	2				15			Medium-dense brown and gray fine sand, some silt, little clay, trace medium sand.			
4								Medium-dense brown and gray fine sand, little silt, trace medium to coarse sand, few lenses of silty clay.			
6											
8											
10	3										
12								* Sample No. 4 is bag sample obtained between 0.9' to 2.8'. - Walls of test pit did not cave. - No seepage noted.			
14											
16											
WATER LEVEL: <u>∇</u> <u>"Dry"</u>				WATER NOTE: <u>∇</u>				DATE: <u>10/14/03</u>			

GDT 9/5/05

PIT# 19323001.GPI



LOG OF TEST PIT NO. TP-33
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u>	LOCATION: <u>N-514,249</u>	
							<u>24-Inch Bucket</u>		<u>E-1,464,277</u>
							COMPLETION DEPTH: <u>10.5'</u>	ELEVATION: <u>488.0</u>	DATE: <u>10/15/03</u>
			tsf	%	%	%	DESCRIPTION		
0							TOPSOIL: Loose to medium-dense dark-brown fine sand, "and" silt, trace clay.		
1							Medium-dense brown fine sand, "and" silt, little clay, few seams of fine sand, some silty clay.		
2									
2									
4									
6									
8							Medium-dense brown and light-brown fine sand, little to some silt, trace clay.		
10	3								
12							- Walls of test pit did not cave. - No seepage noted.		
14									
16			∇	"Dry"	∇	∇	∇	∇	∇
WATER LEVEL:									
WATER NOTE:									
DATE:			10/15/03						

PIT# 19922001.GPJ
GDT 8/5/05



LOG OF TEST PIT NO. TP-34
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u> <u>24-Inch Bucket</u>	LOCATION: <u>N-513,623</u> <u>E-1,464,978</u>
0			tsf	%	%	%	DESCRIPTION	
							TOPSOIL: Loose to medium-dense brown silt, some fine sand, little clay.	
2	1 4*		3.0	21	26	18	Very-stiff brown clayey silt, some fine sand, trace medium to coarse sand, few seams of silt.	
			3.6		29	20		
4			2.3				Medium-dense brown fine sand, some silt, trace clay, trace medium sand, becoming little silt with depth.	
6	2		3.4					
8								
10								
12	3							
14							<p>* Sample No. 4 is bag sample obtained between 0.8' to 4.2'.</p> <p>- Walls of test pit did not cave.</p> <p>- No seepage noted.</p>	
16								
WATER LEVEL:			∇	"Dry"	∇	∇	∇	∇
WATER NOTE:								
DATE:				10/15/03				

JDI 8/5/05

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LOG OF TEST PIT NO. TP-35
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

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DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u>	LOCATION: <u>N-512,642</u>	
							<u>24-Inch Bucket</u>	<u>E-1,465,402</u>	
							COMPLETION DEPTH: <u>10.0'</u>	ELEVATION: <u>492.0</u>	DATE: <u>10/13/03</u>
							DESCRIPTION		
0							TOPSOIL: Loose to medium-dense dark-brown fine sand, some silt.		
2	1						Medium-dense brown fine sand, some silt, trace clay.		
4							Medium-dense brown and gray fine sand, little silt, trace clay, few pockets with some silt.		
6	2								
8									
10	3								
12							- Walls of test pit did not cave.		
14							- No seepage noted.		
16									
WATER LEVEL: <input checked="" type="checkbox"/>			"Dry"			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
WATER NOTE:									
DATE:			10/13/03						

BTL 8/5/05

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LOG OF TEST PIT NO. TP-36
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

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DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u> LOCATION: <u>N-512,661</u>	
							<u>24-Inch Bucket</u>	
							COMPLETION DEPTH: <u>10.5'</u> ELEVATION: <u>500.5</u> DATE: <u>10/15/03</u>	
							DESCRIPTION	
0							TOPSOIL: Loose to medium-dense dark-brown silt, "and" fine sand, little clay.	
1	1		.8				Medium-dense brown fine to coarse sand, little fine to coarse gravel, some silty clay, few cobbles.	
2	4* 2		2.6-4.5+ 4.5+	15	41 48	17 26		
4							Medium-dense to dense brown fine to coarse gravel, some to "and" fine to coarse sand, little silt, few cobbles.	
6								
8								
10	3							
12							* Sample No. 4 is bag sample obtained between 1.0' to 3.8'. - Walls of test pit caved slightly between 3.8' and 10.5'. - No seepage noted.	
14								
16							WATER LEVEL: <input checked="" type="checkbox"/> "Dry" WATER NOTE: DATE: <u>10/15/03</u>	

3DI 8/5/05

PIT# 19323001.GPJ



LOG OF TEST PIT NO. TP-37
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

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DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u>	LOCATION: <u>N-511,385</u>	
							<u>24-Inch Bucket</u>		<u>E-1,466,129</u>
			tsf	%	%	%	COMPLETION DEPTH: <u>10.2'</u>	ELEVATION: <u>480.0</u>	DATE: <u>10/15/03</u>
DESCRIPTION									
0							TOPSOIL: Loose to medium-dense dark-brown fine sand, "and" silt, trace clay.		
			2.8				Very-stiff brown clayey silt, "and" fine sand, few silt seams.		
2	4*		3.8	17	28	20			
	1				27	18			
			3.8						
4							Medium-dense brown fine sand, some silt, trace clay.		
6									
8									
10	3						Medium-dense brown fine sand, little silt, trace medium sand.		
12							* Sample No. 4 is bag sample obtained between 0.3' to 3.7'. - Walls of test pit did not cave. - No seepage noted.		
14									
16									
WATER LEVEL:			∇	"Dry"	∇	∇	∇	∇	∇
WATER NOTE:									
DATE:			10/15/03						

PIT# 19323001LCP1
SDT 8/5/05



LOG OF TEST PIT NO. TP-38
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

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DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u>	LOCATION: <u>N-517,893</u>	
							<u>24-Inch Bucket</u>		<u>E-1,466,136</u>
							COMPLETION DEPTH: <u>10.5'</u>	ELEVATION: <u>520.0</u>	DATE: <u>10/16/03</u>
							DESCRIPTION		
0							TOPSOIL: Loose to medium-dense dark-brown silt, some fine sand, little clay.		
1							Medium-dense brown silt, some fine sand, little clay.		
2	1								
3							Medium-dense brown silt, "and" fine sand, trace clay.		
4	2								
5									
6									
7									
8							Medium-dense to dense brown and gray fine to coarse gravel, some fine to coarse sand, trace silt, few cobbles.		
9									
10	3								
11									
12							- Walls of test pit did not cave.		
13							- No seepage noted.		
14									
15									
16							WATER LEVEL: <u>∇ "Dry"</u>	∇	
							WATER NOTE:		
							DATE: <u>10/16/03</u>		

PIT# 19323001.GPI.1
3DI 8/5/05



LOG OF TEST PIT NO. TP-39
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

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DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u>	LOCATION: <u>N-517,555</u>	
							<u>24-Inch Bucket</u>		<u>E-1,466,545</u>
							COMPLETION DEPTH: <u>10.0'</u>	ELEVATION: <u>525.5</u>	DATE: <u>10/16/03</u>
							DESCRIPTION		
0			tsf	%	%	%	TOPSOIL: Loose to medium-dense dark-brown silt, some fine sand, trace clay.		
1							Medium-dense brown silt, "and" fine sand, trace clay.		
2							Medium-dense brown fine sand, some silt, trace clay, trace medium to coarse sand.		
3							Medium-dense brown silt, some fine sand, trace clay.		
4							Medium-dense to dense brown and gray fine to coarse gravel, some fine to coarse sand, trace silt, few cobbles.		
6									
8									
10	4						- Walls of test pit caved slightly from 4.8' to 10.0'. - No seepage noted.		
12									
14									
16							WATER LEVEL: <u>∇</u> <u>"Dry"</u> <u>∇</u>	WATER NOTE: <u>∇</u> <u>∇</u> <u>∇</u> <u>∇</u> <u>∇</u>	
							DATE: <u>10/16/03</u>		

ZDT 8/5/05

PIT# 1925001.GPI |

JOB: 011-09323-001

PLATE 57



LOG OF TEST PIT NO. TP-40
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

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DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u> LOCATION: <u>N-517,046</u>	
							<u>24-Inch Bucket</u>	
							COMPLETION DEPTH: <u>10.5'</u> ELEVATION: <u>522.0</u> DATE: <u>10/16/03</u>	
							DESCRIPTION	
0							TOPSOIL: Loose to medium-dense dark-brown silt, some fine sand, trace clay.	
2	1						Medium-dense brown silt, "and" fine sand, trace to little clay.	
4								
6	2						Medium-dense brown silt, some fine sand, trace clay.	
8								
10	3						Medium-dense to dense brown and gray fine to coarse gravel, some fine to coarse sand, trace silt, few cobbles.	
12							- Walls of test pit caved slightly from 6.7' to 10.5'. - No seepage noted.	
14								
16							WATER LEVEL: <u>∇</u> <u>"Dry"</u> <u>∇</u> <u>∇</u> <u>∇</u> <u>∇</u> <u>∇</u> WATER NOTE: _____ DATE: <u>10/16/03</u>	

EDIT: 8/5/05
 PTLJL 19323001.GPJ



LOG OF TEST PIT NO. TP-41
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

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DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u>	LOCATION: <u>N-516,425</u>	
							<u>24-Inch Bucket</u>		<u>E-1,465,777</u>
							COMPLETION DEPTH: <u>11.0'</u>	ELEVATION: <u>526.0</u>	DATE: <u>10/16/03</u>
							DESCRIPTION		
0							TOPSOIL: Loose to medium-dense dark-brown silt, "and" fine sand, trace clay.		
2	1						Medium-dense brown silt, "and" fine sand, little clay.		
4									
6	2						Medium-dense brown silt, some fine sand, trace medium to coarse sand, trace fine gravel, trace clay.		
8									
10	3						Medium-dense to dense brown and gray fine to coarse gravel, some fine to coarse sand, trace silt, few cobbles.		
12									
14							- Walls of test pit caved slightly from 7.5' to 11.0'. - No seepage noted.		
16									
WATER LEVEL: <u>∇ "Dry"</u>									
WATER NOTE: _____									
DATE: <u>10/16/03</u>									

SDT 8/5/05

PIT# 19923001.GPJ



LOG OF TEST PIT NO. TP-42
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

Page 1 of 1

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u>	LOCATION: <u>N-516,221</u>	
							<u>24-Inch Bucket</u>		<u>E-1,467,664</u>
							COMPLETION DEPTH: <u>11.0'</u>	ELEVATION: <u>528.0</u>	DATE: <u>10/13/03</u>
							DESCRIPTION		
0			tsf	%	%	%	TOPSOIL: Medium-dense dark-brown fine sand, some silt. Medium-dense brown fine sand, some silt, trace medium to coarse sand.		
2	1								
4									
6							Medium-dense to dense brown and gray fine to coarse sand, some fine to coarse gravel, trace silt, few seams of fine sand.		
8									
10	2								
12									
14							- Walls of test pit caved from 5.3' to 11.0'. - No seepage noted.		
16							WATER LEVEL: <u>∇ "Dry"</u> <u>∇</u> <u>∇</u> <u>∇</u> <u>∇</u> <u>∇</u> WATER NOTE: _____ DATE: <u>10/13/03</u>		

GDT: 8/5/05
PTL: 10/23/01.GPI
JOB: 011-09323-001



LOG OF TEST PIT NO. TP-43
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

Page 1 of 1

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TRONETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u> LOCATION: <u>N-515,411</u>	
							<u>24-Inch Bucket</u>	
							COMPLETION DEPTH: <u>10.0'</u> ELEVATION: <u>525.0</u> DATE: <u>10/13/03</u>	
							DESCRIPTION	
0							TOPSOIL: Medium-dense dark-brown silt, "and" fine sand. Medium-dense brown silt, "and" fine sand, little clay.	
2	3* 1		2.5	21	43 37	19 20	Stiff to very-stiff brown silty clay, some fine to coarse sand, trace fine to coarse gravel, few silt lenses.	
4			1.9-3.2				Medium-dense to dense brown and gray fine to coarse gravel, "and" fine to coarse sand, little silt, few cobbles.	
6								
8								
10	2							
12							* Sample No. 3 is bag sample obtained between 0.9' to 3.1'. - Walls of test pit caved from 3.1' to 10.0'. - No seepage noted.	
14								
16							WATER LEVEL: <u>∇</u> "Dry" <u>∇</u> <u>∇</u> <u>∇</u> <u>∇</u> <u>∇</u> WATER NOTE: _____ DATE: <u>10/13/03</u>	

PIT 8/5/05
PULL 19323001.GPJ J



LOG OF TEST PIT NO. TP-44
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

Page 1 of 1

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u> LOCATION: <u>N-515,299</u>	
							<u>24-Inch Bucket</u>	
							COMPLETION DEPTH: <u>10.0'</u> ELEVATION: <u>523.0</u> DATE: <u>10/13/03</u>	
							DESCRIPTION	
0							TOPSOIL: Medium-dense dark-brown silt, "and" fine sand, trace clay.	
2	1						Medium-dense brown silt, some fine sand, little clay.	
4							Medium-dense brown and gray fine to coarse sand, some fine to coarse gravel, some silty clay.	
6							Medium-dense to dense brown and gray fine to coarse gravel, "and" fine to coarse sand, trace silt.	
8								
10	2							
12							- Walls of test pit caved from 5.2' to 10.0'. - No seepage noted.	
14								
16							WATER LEVEL: <input checked="" type="checkbox"/> "Dry" <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> WATER NOTE: _____ DATE: <u>10/13/03</u>	

GDT 8/5/05

PITLJ 19323001.GPJ



LOG OF TEST PIT NO. TP-45
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

Page 1 of 1

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u> LOCATION: <u>N-514,986</u>		
							<u>24-Inch Bucket</u>		
							COMPLETION DEPTH: <u>10.2'</u>	ELEVATION: <u>543.0</u>	DATE: <u>10/13/03</u>
							DESCRIPTION		
0							TOPSOIL: Medium-dense dark-brown fine sand, some silt. Medium-dense brown silt, some clay, some fine sand, trace medium sand.		
1				15					
2									
4							Medium-dense brown fine to medium sand, little silt, trace clay.		
6				6					
8									
10									
12							- Walls of test pit did not cave. - No seepage noted.		
14									
16							∇	"Dry"	∇
WATER LEVEL:							∇		∇
WATER NOTE:									
DATE:								10/13/03	

EDT 8/5/05
PTLJ 192323001.GPJ



LOG OF TEST PIT NO. TP-46
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u> <u>24-Inch Bucket</u>	LOCATION: <u>N-514,460</u> <u>E-1,466,094</u>	COMPLETION DEPTH: <u>10.0'</u> ELEVATION: <u>522.5</u> DATE: <u>10/13/03</u>	DESCRIPTION
0										TOPSOIL: Medium-dense dark-brown silt, "and" fine sand, trace clay.
2	3* 1		3.5 4.5+	17	31 33	20 20				Medium-dense brown silt, some fine sand, little clay. Very-stiff to hard brown silty clay, some fine sand, trace medium to coarse sand, trace fine to coarse gravel, few lenses and seams of silt.
4										Medium-dense to dense brown and gray fine to coarse gravel, "and" fine to coarse sand, little silt, few cobbles, from 3.1' to 4.1' little silty clay.
6										
8										
10	2									
12										* Sample No. 3 is bag sample obtained between 1.9' to 3.1'. - Walls of test pit caved slightly from 4.1' to 10.0'. - No seepage noted.
14										
16										
WATER LEVEL: <input checked="" type="checkbox"/> "Dry"										
WATER NOTE:										
DATE: 10/13/03										

GDI 8/5/05
PITLJ 19923001.GPI
JOB: 011-09323-001



LOG OF TEST PIT NO. TP-47
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

Page 1 of 1

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u>	LOCATION: <u>N-514,104</u>	
							<u>24-Inch Bucket</u>		<u>E-1,467,069</u>
							COMPLETION DEPTH: <u>9.8'</u>	ELEVATION: <u>541.0</u>	DATE: <u>10/13/03</u>
							DESCRIPTION		
0			tsf	%	%	%	TOPSOIL: Medium-dense dark-brown fine sand, some silt. Loose to medium-dense brown fine sand, some silt, trace clay.		
2	1								
4									
6									
8	2						Loose gray and brown fine sand, trace medium sand, trace silt.		
10									
12							- Walls of test pit caved from 2.5' to 9.8'. - No seepage noted.		
14									
16									
WATER LEVEL: <u>∇ "Dry"</u>									
WATER NOTE: _____									
DATE: <u>10/13/03</u>									

3DT 8/2/05
PITLJ 19323001.GPJ
JOB: 011-09323-001



**LOG OF TEST PIT NO. TP-48
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY**

Page 1 of 1

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u> LOCATION: <u>N-513,502</u>	
							<u>24-Inch Bucket</u>	
							COMPLETION DEPTH: <u>10.5'</u> ELEVATION: <u>523.5</u> DATE: <u>10/13/03</u>	
							DESCRIPTION	
0							TOPSOIL: Medium-dense dark-brown silt, "and" fine sand, trace clay.	
2	3*	1	2.6	16	28	16	Very-stiff to hard brown silty clay, some fine sand, trace medium to coarse sand, trace fine to coarse gravel, few seams of fine sand, from 0.8' to 1.2' silt, little clay, some fine sand.	
4			4.5+		30	19	Medium-dense to dense brown and gray fine to coarse gravel, some fine to coarse sand, trace silt, few cobbles.	
6								
8								
10	2							
12							* Sample No. 3 is bag sample obtained between 1.2' to 3.7'. - Walls of test pit caved slightly from 5.0' to 10.5'. - No seepage noted.	
14								
16							WATER LEVEL: <u>∇</u> "Dry" <u>∇</u> <u>∇</u> <u>∇</u> <u>∇</u> <u>∇</u> WATER NOTE: _____ DATE: <u>10/13/03</u>	

EDT 8/5/03
 PVTL 19232001.GPJ
 JOB: 011-09323-001



LOG OF TEST PIT NO. TP-49
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Rubber-Tired Backhoe</u>	LOCATION: <u>N-514,472</u>	
							<u>24-Inch Bucket</u>	<u>E-1,467,662</u>	
							COMPLETION DEPTH: <u>10.2'</u>	ELEVATION: <u>529.5</u>	DATE: <u>10/13/03</u>
							DESCRIPTION		
0							TOPSOIL - 2 INCHES		
1							Medium-dense brown silt, some fine sand, some silty clay.		
2							Loose to medium-dense brown fine sand, some silt, trace clay, trace medium to coarse sand.		
4	2								
6									
8							Medium-dense to dense brown and gray fine to coarse gravel, "and" fine to coarse sand, trace silt, trace clay, few cobbles, few silt lenses.		
10	3								
12							- Walls of test pit caved slightly from 7.5' to 10.2'. - No seepage noted.		
14									
16									
WATER LEVEL: <u>∇ "Dry"</u>									
WATER NOTE: _____									
DATE: <u>10/13/03</u>									

GDT 8/5/05

PIT# 1922001.GFI



LOG OF TEST PIT NO. TP-50
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

Page 1 of 1

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE:	LOCATION:
							tsf	%
0	1						Rubber-Tired Backhoe 24-Inch Bucket	N-513,982 E-1,468,515
2	2			18				
4								
6								
8								
10	3							
12								
14								
16								

COMPLETION DEPTH: 10.0' ELEVATION: 528.0 DATE: 10/13/03

DESCRIPTION

TOPSOIL: Medium-dense dark-brown fine sand, "and" silt.
Medium-dense brown silt, "and" fine to medium sand, little clay, trace coarse sand.

Medium-dense to dense brown and gray fine to coarse gravel, some fine to coarse sand, little silt, few cobbles, few pockets of silty clay.

- Walls of test pit caved slightly from 5.0' to 10.0'.
- No seepage noted.

WATER LEVEL: "Dry"
WATER NOTE: _____
DATE: 10/13/03

PIT# 1992001.GPI.1
JOB: 011-09323-001



LOG OF TEST PIT NO. TP-101
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Backhoe</u>	LOCATION: <u>N 516,217</u>	
							<u>24-Inch Bucket</u>		<u>E 1,465,255</u>
							COMPLETION DEPTH: <u>11.0'</u>	ELEVATION: <u>510.0</u>	DATE: <u>6/28/05</u>
							DESCRIPTION		
0							TOPSOIL - 2 INCHES		
1			3.6-4.5+				Medium-dense (est.) brown silt, little fine sand, little clay, trace medium to coarse sand, trace fine gravel.		
2				15	30	18	Medium-dense (est.) brown fine to coarse sand, "and" fine to coarse gravel, trace silt, trace clay.		
4									
6									
8									
10									
12									
14							- No water encountered.		
16							- Bag samples were obtained from 2.0' to 2.5' and 8.0' to 11.0'.		
WATER LEVEL: <u>∇ "Dry"</u> <u>∇</u> <u>∇</u> <u>∇</u> <u>∇</u> <u>∇</u>							WATER NOTE: _____ DATE: <u>6/28/05</u>		

PIT# 19323005.GPJ
JOB: 011-09323-005



LOG OF TEST PIT NO. TP-102
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

Page 1 of 1

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Backhoe</u>	LOCATION: <u>N 515,133</u>	
							<u>24-Inch Bucket</u>		<u>E 1,465,515</u>
							COMPLETION DEPTH: <u>11.0'</u>	ELEVATION: <u>526.0</u>	DATE: <u>6/28/05</u>
							DESCRIPTION		
0							Medium-dense (est.) orange brown silt, some fine sand, little clay, trace medium sand.		
2				19	30	23			
4	1		3.3-4.4						
6							Medium-dense (est.) brown fine to coarse sand, little fine to coarse gravel, contains lenses of brown fine sand, trace silt, trace clay.		
8	2								
10									
12									
14							- No water encountered. - Bag samples were obtained from 1.0' to 3.0' and 6.0' to 11.0'.		
16									
WATER LEVEL: <u>∇ "Dry"</u>			∇			∇			
WATER NOTE:			∇			∇			
DATE: <u>6/28/05</u>			∇			∇			

PITLJ 19523005.GPJ
3DT 8/5/05



LOG OF TEST PIT NO. TP-103
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Backhoe</u>	LOCATION: <u>N 514,324</u>	
							<u>24-Inch Bucket</u>		<u>E 1,465,532</u>
							COMPLETION DEPTH: <u>11.0'</u>	ELEVATION: <u>503.5</u>	DATE: <u>6/28/05</u>
							DESCRIPTION		
0							TOPSOIL - 2 INCHES		
1			2.9-4.5+				Medium-dense (est.) brown silt, little fine sand, little clay, trace medium to coarse sand, trace fine gravel.		
2							Medium-dense (est.) brown fine to coarse gravel, some fine to coarse sand, trace silt, trace clay.		
4									
6									
8									
10						NP NP			
12									
14							- No water encountered.		
16							- Bag samples were obtained from 1.5' to 2.0' and 8.0' to 11.0'.		
WATER LEVEL: <u>∇</u>			"Dry" <u>∇</u>			<u>∇</u>			
WATER NOTE: _____			_____			_____			
DATE: <u>6/28/05</u>			_____			_____			

PITL 19323005.GPJ 1
PDT 8/5/05



LOG OF TEST PIT NO. TP-104
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

Page 1 of 1

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Backhoe</u>	LOCATION: <u>N 512,996</u>	
							<u>24-Inch Bucket</u>		<u>E 1,466,319</u>
							COMPLETION DEPTH: <u>11.0'</u>	ELEVATION: <u>506.0</u>	DATE: <u>6/28/05</u>
							DESCRIPTION		
0							TOPSOIL - 2 INCHES		
1			3.9-4.5+				Medium-dense (est.) brown silt, little fine sand, little clay, trace medium to coarse sand, trace fine gravel.		
2							Medium-dense (est.) brown fine to coarse sand, "and" fine to coarse gravel, trace silt, trace clay.		
4									
6									
8									
10									
12									
14							- No water encountered.		
16							- Bag samples were obtained from 1.5' to 2.0' and 8.0' to 11.0'.		
WATER LEVEL: <u>∇</u>			"Dry"			<u>∇</u>			
WATER NOTE:									
DATE:			<u>6/28/05</u>						

DT 8/5/05

PIT# 19323005.GPJ E

JOB: 011-09323-005

PLATE 72



**LOG OF TEST PIT NO. TP-105
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY**

Page 1 of 1

DEPTH, FEET	SAMPLE NO.	SAMPLES	SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>Backhoe</u> LOCATION: <u>N 513,768</u>	
								<u>24-Inch Bucket</u>	
								COMPLETION DEPTH: <u>11.0'</u>	ELEVATION: <u>531.0</u> DATE: <u>6/28/05</u>
DESCRIPTION									
0								TOPSOIL - 2 INCHES	
1								Medium-dense (est.) brown and gray fine sand, trace medium sand, trace fine to coarse gravel, little silt, trace clay.	
2						NP	NP		
4	2							Medium-dense (est.) brown silt, little fine sand, little clay, trace medium to coarse sand, trace fine gravel.	
6								Medium-dense (est.) brown fine to coarse sand, some fine to coarse gravel, trace silt, trace clay.	
8	3								
10						NP	NP		
12									
14								- No water encountered.	
16								- Bag samples were obtained from 1.0' to 2.5', 3.0' to 5.0', and 8.0' to 11.0'.	
								WATER LEVEL: <u>∇</u>	"Dry" <u>∇</u>
								WATER NOTE: _____	DATE: <u>6/28/05</u>

PIT 8/5/05

PIT 19323005.GPI 1



LOG OF TEST PIT NO. TP-106
EAST BEND WEST LANDFILL
BOONE COUNTY, KENTUCKY

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE:	LOCATION:		
							tsf	%	%	%
0							24-Inch Bucket	E 1,467,062		
							COMPLETION DEPTH:	ELEVATION:	DATE:	
							12.0'	531.0	6/28/05	
							DESCRIPTION			
							TOPSOIL - 2 INCHES			
0							Medium-dense (est.) brown fine to medium sand, trace coarse sand, trace fine gravel, trace silt, trace clay, few roots.			
2	1				NP	NP				
4							Medium-dense (est.) gray fine sand, trace medium to coarse sand, trace fine to coarse gravel.			
6	2									
6			0.7-1.3				Medium-stiff to stiff gray clayey silt, trace fine to coarse sand, trace fine to coarse gravel, many organics present.			
8	3									
8							Medium-dense (est.) brown fine to coarse sand, little fine to coarse gravel, some clayey silt.			
10	4				15	22	14			
12							- Encountered slight seepage at 4.0' to 4.5'.			
14							- 0.24.0 sand is moist not wet.			
14							- Bag samples were obtained from 1.0' to 2.5', 4.0' to 6.0', 6.0' to 8.0', and 10.0' to 12.0'.			
16										
WATER LEVEL:			∇	"Dry"	∇	∇	∇	∇	∇	
WATER NOTE:										
DATE:				6/28/05						

BPT 8/5/05

PTLL 19323005.GPJ 1

APPENDIX 8

REPORTING AND NOTIFICATION REQUIREMENTS

EAST BEND STATION

WEST LANDFILL

ATTACHMENT 42

Recordkeeping and Reporting System

West Special Waste Landfill East Bend Station Boone County, Kentucky

GROUNDWATER MONITORING

Submittals

The Owner will submit following documents to the Cabinet:

- Monitoring Well Installation Reports;
- Monitoring Well Abandonment Reports (if required);
- Sampling Event Reports for Baseline Groundwater Quality Determination;
- Sampling Event Reports for Detection Monitoring;
- Groundwater Assessment Plan (if required);
- Groundwater Assessment Report (if required);
- Remedial Action Plan (if required); and,
- Remedial Action Reports (if required).

Details regarding the content and submittal schedule for these items are described in Attachment 44. The owner will maintain copies of these documents throughout the life of the landfill including the closure and post-closure care periods.

Notifications

The Owner will notify the cabinet of the following occurrences:

- installation of groundwater monitoring wells (at least 5 days prior to installation);
- abandonment of groundwater monitoring wells (at least 5 days prior to abandonment); and,
- statistically significant increase at a down-gradient sampling point during detection monitoring (not more than 48-hours after receipt of statistical analysis).

SURFACE WATER MONITORING

The Owner will submit following documents to the Cabinet:

- Sampling Event Reports for Baseline Surface Water Quality Determination; and,
- Sampling Event Reports for Detection Monitoring.

Details regarding the content and submittal schedule for these items are described in Attachment 43. The owner will maintain copies of these documents throughout the life of the landfill including the closure and post-closure care periods.

LANDFILL CONSTRUCTION

Submittals

The Owner will submit following documents to the Cabinet:

- Subgrade Preparation Certification Reports;
- Geocomposite Liner System Certification Reports;
- Leachate Collection System and Drainage Layer Certification Reports; and,
- Final Cap Certification Reports.

Details of the contents of these reports are included in Attachment 41. The owner will maintain copies of these documents throughout the life of the landfill including the closure and post-closure care periods.

Notifications

The Owner will notify the cabinet of the following occurrences:

- Pre-Construction Meeting (1 week prior to meeting);
- proofrolling of subgrade foundation soils (not less than 48-hours prior to proofroll)
- proofrolling of structural fill beneath prepared subgrade (not less than 48-hours prior to proofroll);
- geocomposite liner system installation (not less than 48-hours prior to initiation of installation);
- leachate collection system installation (not less than 48-hours prior to initiation of installation);
- drainage layer installation (not less than 48-hours prior to initiation of installation); and,
- design or specification changes (prior to implementation of change).

Other Construction Documents

Other documents which will be made available to the cabinet upon request include:

- Daily Summary Reports;
- Observation Logs and Test Data Sheets;
- Construction Problem and Solution Report (if required); and,
- Progress Reports.

APPENDIX 9

UNANTICIPATED ARCHAEOLOGICAL DISCOVERY PLAN

EAST BEND STATION

WEST LANDFILL

ATTACHMENT 16

Archaeological Sites

West Special Waste Landfill East Bend Station Boone County, Kentucky

Commonwealth Cultural Resources Group, Inc. (CCRG), in coordination with the Kentucky State Historic Preservation Office (KSHPO), performed a Phase I Survey and Phase II Evaluation for the East Bend Station proposed west landfill property located in Boone County, Kentucky. Archaeological investigations had also been performed during the 1970's for portions of the site. The CCRG Phase II Evaluation Report (rev. August 2007), which incorporates the data from the prior investigations, is included as part of this Attachment. Kentucky Heritage Council concurrence with the CCRG findings is also included as part of this Attachment. Additionally, a map depicting the locations of identified archeological sites and the landfill cut/fill limits is included in this Attachment.

Landfill construction will impact ten identified archaeological sites. The CCRG archeological work and report concluded that none of these sites are eligible for listing in the National Register of Historic Places. Sites 15BE86 and 15BE87, which are among the group of sites to be impacted and were believed to have the highest potential for eligibility, were investigated during the Phase II work; lack of eligibility for the National Register of Historic Places was confirmed. The locations and identifications of the sites to be impacted are depicted on the enclosed map and details of the nature of the sites are included in the attached CCRG report.

Based on the anticipated nature of the sites to be impacted, further investigation and/or preservation of these sites will not be performed. However, because of the presence of these sites and other nearby sites, special archeological considerations will be made during landfill construction. An Unanticipated Discoveries Plan has been prepared and will be implemented during landfill earthwork operations. The Unanticipated Discoveries Plan is included as part of this Attachment. One of the key elements of the Unanticipated Discoveries Plan includes site monitoring during topsoil stripping by a qualified archaeologist whose credentials will be approved by the Kentucky Heritage Council.

Site 15BE200 is beyond the landfill cut/fill limits. This site is believed to be eligible for listing on the National Register of Historic Places under Criterion D (potential to yield information important in prehistory). Because of this site, the landfill design was altered so as not to disturb this area. Additionally, because of the close proximity of this site to

the landfill, this area will be fenced to prevent unintended disturbance during landfill construction and operation.

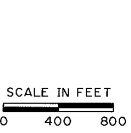
Archeological Site 15BE560 (formerly known as site CCRG4) and Site 15BE259 (which has been enlarged to encompass former sites 15BE78, 15BE258, 15BE279, and the areas between) are beyond the landfill cut/fill limits. These two areas were concluded to be significant and eligible for listing on the National Register of Historic Places. Initial landfill plans included excavation within portions of these areas for borrow material; however, because of the presence of these archeological sites, borrow excavations will not be permitted in these areas. Borrow for the landfill will be obtained from within the cut/fill limits depicted on the map included in this Attachment. Additionally, other excavation, fill placement, construction/operations traffic, and stockpiling of materials will not be permitted in these areas. These two areas are currently farmed and farming practices will continue.

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NOTE 1: ARCHEOLOGICALLY SENSITIVE AREA, TO BE ISOLATED WITH FENCING, STRIPPING/CUT/FILL PROHIBITED, CONSTRUCTION OPERATIONS TRAFFIC PROHIBITED, STOCKPILING OF EQUIPMENT/MATERIALS PROHIBITED

NOTE 2: ARCHEOLOGICALLY SENSITIVE AREA, STRIPPING/CUT/FILL PROHIBITED, STOCKPILING OF EQUIPMENT/MATERIALS PROHIBITED



LEGEND

—●— PROPERTY LINE

⊗ 15BE200 ARCHEOLOGICAL SITE NUMBER AND LOCATION



ATTACHMENT 16

**WEST SPECIAL WASTE LANDFILL
EAST BEND STATION
BOONE COUNTY, KENTUCKY**

Project: 011-09323-005 Drawn By: EDV
 Drawing Date: 7/25/07 Approved By: CKH
 Revision Date: Scale: 1" = 800'



**UNANTICIPATED DISCOVERY PLAN
For
Historic Properties or Human Remains
Discovered During Construction**

I. INTRODUCTION

Duke Energy, in coordination with Commonwealth Cultural Resources Group Inc. (CCRG) has established the following procedures to be used in the event that previously unreported and unanticipated historic properties or human remains are found during construction of the proposed West Special Waste Landfill at the East Bend Station in Boone County, Kentucky. In the event such discoveries are made, investigation, characterization, and treatment of the discoveries will be in accordance with this document and applicable local, state, and federal regulations.

II. AVOIDANCE OF ARCHAEOLOGICAL SITES

Area of Potential Effects

The area of potential effects (APE) is defined as the area within which the proposed landfill will be constructed, as well as all associated areas of disturbance, such as access roads and borrow areas.

Known Archaeological Resources

Duke Energy, with the assistance of CCRG, has identified the boundaries of archaeological sites 15BE200 (multi-component Late Archaic to historic Euro-American), 15BE259 (Late Archaic), and 15BE560 (Middle to Late Archaic) and will avoid these sites during construction. Because of the close proximity to construction, Site 15BE200 will be protected by fencing during construction, the other areas will be identified as off-limits to construction activities.

Site Monitoring

To ensure that archaeological resources are not impacted by the proposed project during construction, a Secretary of Interior-qualified archaeologist (Archaeological Monitor) will conduct on-site monitoring during the stripping of topsoil within the proposed landfill project site. Geo-archaeological investigations of the project have determined that the construction area exhibits only low potential for buried archaeological remains. Consequently, monitoring for buried deposits will not be completed.

To further ensure that no known or unknown cultural materials are disturbed, the Archaeological Monitor will review, on at least a monthly basis, the construction site to ensure that construction crews are aware of the potential presence of, and are actively monitoring for archaeological resources, including both artifacts and features. CCRG, or an equivalent approved firm, will

provide construction supervisors with training in the identification of these resources prior to initiation of construction activities.

Individual artifacts are not to be considered significant finds and will not be grounds for stopping construction.

III. DISCOVERY OF UNANTICIPATED CULTURAL MATERIALS

In the event of discovery of unanticipated cultural materials during construction, Duke Energy will adhere to the following requirements:

1. Duke Energy and Duke Energy's contractors (hereafter referred to as Contractor) will stop work immediately in the area of the archaeological find to protect the integrity of the site location. The term "archaeological find" is defined as undisturbed sub-plowzone features and not as individual artifacts found in the disturbed plowzone.
2. Duke Energy's on-site Project Site Manager will immediately notify the Cultural Resource Specialist at CCRG, or equivalent approved firm, and an Archaeological Monitor, if not already on-site, will travel to the site area within 48 hours to inspect the location of the find and evaluate its significance. The CCRG contact is:

Cultural Resource Specialist, CCRG

Contact: Donald J. Weir, RPA

Office Telephone: (517) 788-3550

Cell Phone: (517) 262-3871

Fax: (517) 788-6594

Address: CCRG

2530 Spring Arbor Road

Jackson, MI 49203-3602

3. The Archaeological Monitor will evaluate the find and immediately notify Duke Energy's on-site Project Site Manager of the potential of National Register of Historic Places (NRHP) significance of the find.
4. The Contractor will not resume work in the area (as specified below) of the find until clearance is granted by the Archaeological Monitor, in consultation with the Kentucky Heritage Council (State Historic Preservation Office [SHPO]).
5. If the archaeological site is determined to be significant, Duke Energy will follow the procedures outlined in Section III A of this plan. If the materials are human remains, the procedures described in Section III B of this plan will be followed.

A. Discovery of Possibly Significant Cultural Materials

In the event of unanticipated discovery during construction of cultural materials, not including human remains, Duke Energy will adhere to the following requirements:

1. Duke Energy's on-site Project Site Manager, with assistance from the Archaeological Monitor, will fence the archaeological find spot to protect the find from further construction-related impacts and will direct construction personnel to move to another location, a minimum of 200 feet from the find spot.
2. The Archaeological Monitor will initiate studies to fully assess the find's NRHP significance and the potential effect of construction.
3. After completing the initial assessment of the find, Archaeological Monitor will report to Duke Energy's on-site Project Site Manager.
4. Duke Energy's Cultural Resource Specialist will promptly notify the Kentucky SHPO of the find and its significance. The SHPO contact is:

Kentucky Heritage Council (SHPO)

Contact:

Telephone: 502-564-7005

Fax: 502-564-5820

Address: 300 Washington Street
Frankfort, KY 40601

- 5a. If it is determined by the Kentucky SHPO that the find is possibly NRHP eligible, and therefore deemed significant, and that other materials or features may be damaged by continued construction, Duke Energy's Cultural Resource Specialist will request recommendations from SHPO regarding appropriate measures to avoid damage. These measures may include:
 - i) formal archaeological evaluation of the site
 - ii) on-site visits by the SHPO
 - iii) preparation and implementation of a Mitigation Plan by Duke Energy, as approved by the SHPO
 - iv) approval by the SHPO to resume construction following completion of the field work component of the evaluation or mitigation plan
- 5b. If the find is determined to be isolated or completely disturbed by construction activities, Duke Energy's Cultural Resource Specialist will consult with SHPO and will request approval to resume construction.

B. Discovery of Human Remains

The property within the boundaries of the East Bend Proposed Landfill Project APE does not contain federal or tribal land; therefore, the regulations of the Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. 3001 et seq. [Nov. 16, 1990]) do not apply to project activities. Rather, Duke Energy will comply with KRS 164.705, et seq., Archaeology, and all other federal, state, and local laws regarding human burials. At a minimum, Duke Energy will implement the following procedures:

1. Duke Energy's on-site Project Site Manager, with assistance from the on-site Archaeological Monitor, will flag or fence the suspected human remains to protect the find from further construction-related impacts and will direct construction personnel to move to another location, a minimum of 200 ft from the find spot.
2. Duke Energy's on-site Project Site Manager will promptly notify Duke Energy's Cultural Resource Specialist and the appropriate agencies as required by state law.
3. Duke Energy's Cultural Resource Specialist will immediately notify the Kentucky SHPO. The SHPO contact is:

Kentucky Heritage Council (SHPO)

Contact:

Telephone: 502-564-7005

Fax: 502-564-5820

Address: 300 Washington Street
Frankfort, KY 40601

4. At the direction of the SHPO, the Archaeological Monitor will begin a detailed assessment of the find's significance and the potential effect of construction.
- 5a. If it is determined that intact interments are present and may be damaged by continued construction, Duke Energy's Cultural Resource Specialist will consult with the SHPO regarding additional measures to avoid or mitigate further impacts to the interments. These measures may include:
 - i) on-site visits by the SHPO and other interested parties
 - ii) preparation and implementation of a mitigation plan by Duke Energy, including procedures for disinterment and analysis, as approved by the SHPO
 - iii) SHPO approval to resume construction following completion of the field work component of the mitigation plan.
- 5b. If the find is determined to be isolated or completely disturbed by construction activities, Duke Energy's Cultural Resource Specialist will consult with the SHPO and will request approval to resume construction.

APPENDIX 10

INSPECTION AND TEST PLAN

EAST BEND STATION

WEST LANDFILL

Inspection and Test Plan										
Customer: Project Name: East Bend Station, West Landfill, Cell 2 Construction Customer PO#: Part/Drawing #: Drawing Set Titled: Cell 2 Construction and Operation Description: Construction of Landfill Cell 2 Work Activity: multiple Work Area: East Bend Station, West Landfill							Document # Issue Date: 4/13/2018 Issued By: S&ME Approved by: JDR Rev #: Rev Date:			
Ref no	Operation or Stage of Work		Stage / Frequency	Records / Verifying Documents	Requirement/ Standard/ Specification	Acceptance Criteria	Inspection/test Procedure	Inspection Responsibilities		
	Description	Characteristics						Engineer	Contractor	Owner
3.1	Topsoil Stripping & Stockpiling	Cultural Resource Monitoring/Subgrade Preparation	all	Field Report	Unanticipated Discoveries Plan and Article 3	All topsoil removed and minimal proofroll deflection	Visual & Proofroll	W		S
3.2	Structural Fill	Source of Fill Material	Not less than 1 per soil type	Lab Report	Article 3	NA	ASTM D698	D		W
3.2	Structural Fill	Everything except Prepared Subgrade	1 per each 2,000 c.y	Field Report	Article 3	98% Compaction, Moisture from -2% to +2% of optimum	Nuclear Densitometer	W, D		S
3.2	Structural Fill	Prepared Subgrade	9 tests per acre per lift	Field Report	Article 3	98% Compaction, Moisture from -2% to +2% of optimum	Nuclear Densitometer	W, D		S
3.3	Perimeter Berm Soil	Source of Fill Material	Not less than 1 per soil type	Lab Report	Article 3	NA	ASTM D698	D		W
3.3	Perimeter Berm Soil	Source of Fill Material	1 per each 2,000 c.y	Field Report	Article 3	98% Compaction, Moisture from -2% to +2% of optimum	Nuclear Densitometer	W, D		S
3.2, 3.3	Structural Fill, Perimeter Berm Soil	Fill Material from Stockpile Area	1 test per lift per acre	Lab and Field Reports	Article 3	LOI ≤ 3%	ASTM D2974	W, D		S
3.4	Ditch Cover (Topsoil Replaced)	Fill Material	1 per each 200 Linear feet	Field Report	Article 3	Adequate thickness	Test Holes			W
4.1	Geocomposite Liner, Geosynthetic Clay Liner	Bentonite Filled Geotextile	See Specifications and CQC Plan	Lab & Field Reports	Article 4 and CQC Plan Section 3	See Specifications and CQC Plan	Visual and Conformance Testing	W, D		S
4.2	Geocomposite Liner, Textured Geomembrane Liner	HDPE Liner	See Specifications and CQC Plan	Lab & Field Reports	Article 4 and CQC Plan Section 3	See Specifications and CQC Plan	Visual, Conformance Testing, Installation Testing, and Electronic Leak Detection (ASTM D7007)	W, D		S
4.3	Geocomposite Liner, Nonwoven Geotextile	HDPE Liner cushion layer	See Specifications and CQC Plan	Lab & Field Reports	Article 4 and CQC Plan Section 3	See Specifications and CQC Plan	Visual and Conformance Testing	W, D		S
5.1, 5.2, 5.3, 5.4, 5.5, 5.6	Leachate Collection Piping System	Pipe Installation	Continuous	Supplier Info and Field Reports	Article 5 and CQC Plan Section 4	See Specifications and CQC Plan	Visual and Contractor Data Review	W	D	S
5.1, 5.2	Leachate Collection Piping System	Aggregate Backfill	Continuous	Supplier Info and Field Reports	Article 5 and CQC Plan Section 4	See Specifications and CQC Plan	Visual	W, D		S
6.1	Drainage Layer	Sand Placement	Continuous	Supplier Info, Lab & Field Reports	Article 5 and CQC Plan Section 4	See Specifications and CQC Plan	Visual	W, D		S
7.1	Biaxial Geogrid, US Fabric Base Grid 12	Reinforcement for Road Sub-Grade	all	Supplier Info and Field Reports	Article 7	Overlap	Visual	W, D		S
7.2	Granular Base, KYTC 805, No. 2 Stone	Roadway Stone, buried	Periodic	Supplier Info and Field Report	Article 7	Minimal proofroll deflection	Proofroll	W		D
7.3	Granular Wearing Surface, KYTC 805.06	Roadway Stone, exposed	1 per each 2,000 c.y	Supplier Info and Field Report	Article 7	98% Compaction, Moisture from -2% to +2% of optimum	nuclear densometer	W		D
8.1	Concrete Run-Off Channel Outlet Apron and Splash Board	Reinforced Concrete	Periodic	Supplier Mix Design, Shop Drawings and Field Reports	Article 8	Per Shop Drawing and Mix Design	Visual for Steel, Testing for Concrete	W, D		S
8.2	Temporary Pipe Culverts, 24" Concrete Pipes	Pipe Installation	Periodic	Supplier Info and Field Report	Article 8	See Specifications and CQC Plan	Visual	W		S
12.1	Vegetative Cover	Grass sowing	6 and 12 months after sowing	Supplier Info	Article 12	> 40% coverage	Visual		D	S
15.1	Erosion and Sedimentation Control	SWPPP Implementation	Periodic	Inspection Report	Article 15	See SWPPP	Visual		D	S

H=Hold, W=Witness, S=Surveillance, D=Document Review