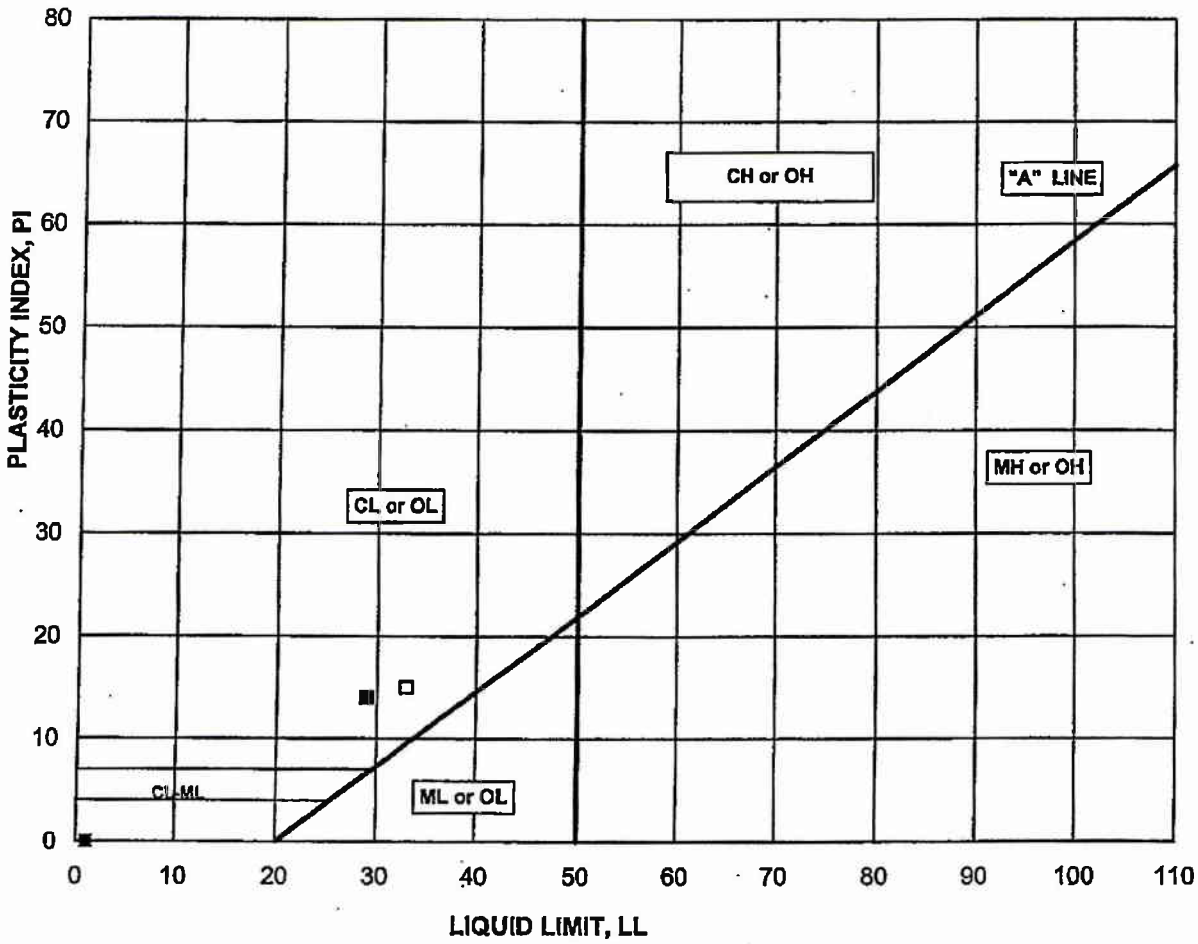


BORING/ SAMPLE No.	DEPTH (feet)	TEST SYMBOL	DESCRIPTION	WATER CONTENT (%)	LL	PL	PI
B-4 / BAG	2'-10'	□	DARK BROWN SANDY LEAN CLAY	13.4	33	18	15
B-10 / BAG	2'-10'	■	BROWN SANDY LEAN CLAY	3.9	29	15	14
/		△			-	-	-
/		▲			-	-	-
/		X			-	-	-
/		o			-	-	-
/		●			-	-	-
/		◇			-	-	-
/		◆			-	-	-
/		+			-	-	-
		✕					

Applicable ASTM: D-4318

Project: McKEESPORT WWTP EXPANSION

Project No.: 3364

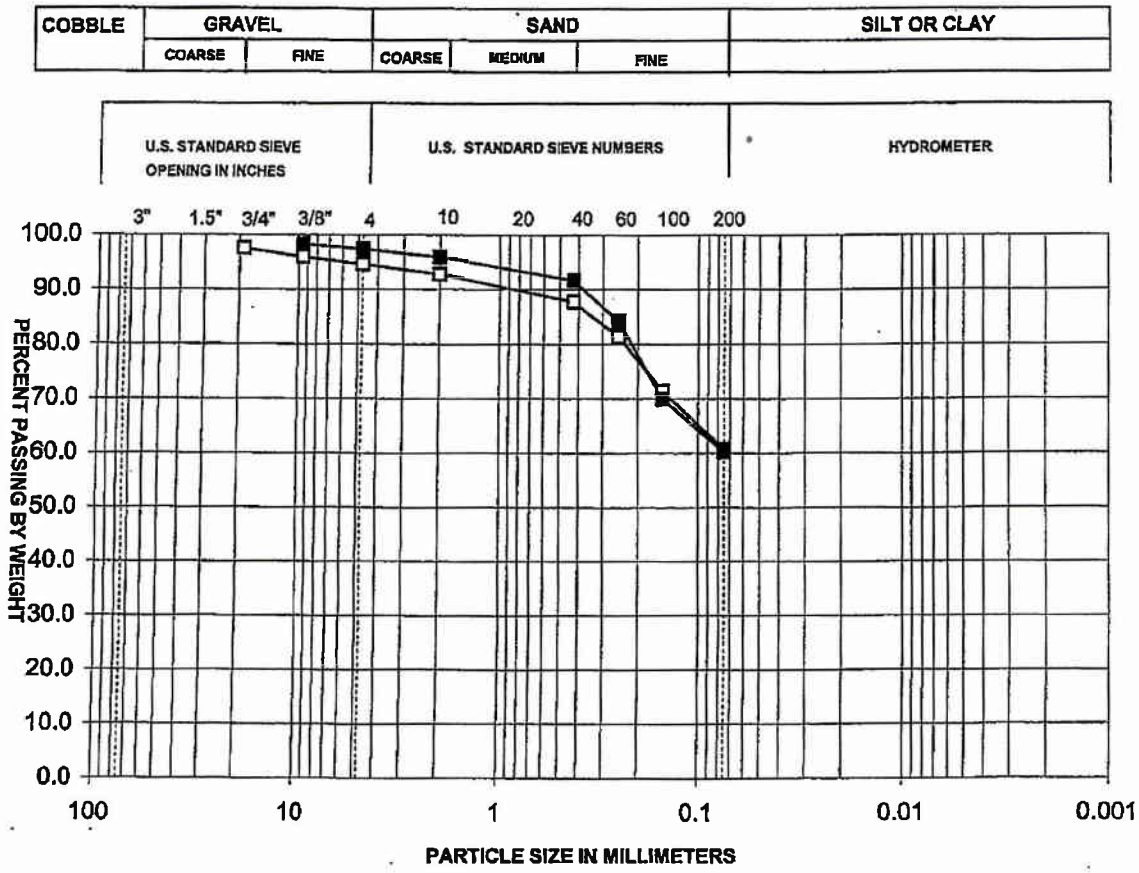
Date: 07/15/2008

ECS - MID ATLANTIC LLC

Frederick, Maryland

Plasticity Chart

203809 B4-BAG, B10-BAG MLIM.xls



Boring/ Sample No.	Depth (feet)	Symbol	LL	PI	Description
B-4 / BAG	2'-10'	□	33	15	DARK BROWN SANDY LEAN CLAY
B-10 / BA(	2'-10'	■	29	14	BROWN SANDY LEAN CLAY
/		△			
/		▲			

Project: McKEESPORT WWTP EXPANSION Project No.: 3364 Date: 15-Jul-08	ECS - Mid-Atlantic, LLC Frederick, Maryland Grain Size Analysis

REFERENCE NOTES FOR BORING LOGS

I. Drilling Sampling Symbols:

SS	Split Spoon Sampler	ST	Shelby Tube Sampler
RC	Rock Core, NX, BX, AX	PM	Pressuremeter
DC	Dutch Cone Penetrometer	RD	Rock Bit Drilling
BS	Bulk Sample of Cuttings	PA	Power Auger (no sample)
HAS	Hollow Stem Auger	WS	Wash Sample

II. Correlation of Penetration Resistances to Soil Properties:

Standard Penetration (Blows/Ft) refers to the blows per foot of a 140 lb. Hammer falling 30 inches on a 2-inch OD split spoon sampler, as specified in ASTM D-1586. The blow count is commonly referred to as the N value.

A. Non-Cohesive Soils (Silt, Sand, Gravel and Combinations)

Density		*Relative Properties*	
Under 3 blows/ft.	Very Loose	Adjective Form	36% to 49%
4 to 6 blows/ft.	Loose	With	21% to 35%
7 to 10 blows/ft.	Firm	Some	11% to 20%
11 to 30 blows/ft.	Medium Dense	Trace	1% to 10%
31 to 50 blows/ft.	Dense		
51 to 80 blows/ft.	Very Dense		
Over 80 blows/ft.	Extremely Dense		

Particle Size Identification

Boulders		8 inches or larger
Cobbles		3 to 8 inches
Gravel	Coarse	1 to 3 inches
	Medium	½ to 1 inch
	Fine	¼ to ½ inch
Sand	Coarse	2.00mm to ¼ inch (dia. of lead pencil)
	Medium	0.42 to 2.00mm (dia. of broom straw)
	Fine	0.074 to 0.42mm (dia. of human hair)
Silt and Clay		0 .0 to 0.074mm (particles cannot be seen)

B. Cohesive Soils (Clay, Silt, and Combinations)

Blows/Ft	*Consistency*	*Unconfined Comp. Strength Q_P(tsf)*	*Degree of Plasticity*	*Plasticity Index*
Under 4	Very Soft	Under 0.25	None to Slight	0 - 4
4 to 5	Soft	0.25-0.49	Slight	5 – 7
6 to 10	Med. Stiff	0.50-0.99	Medium	8- 22
11 to 15	Stiff	1.00-1.99	High to Very High	Over 22
16 to 30	Very Stiff	2.00-3.00		
31 to 50	Hard	4.00-8.00		
Over 51	Very Hard	Over 8.00		

III. Water Level Measurement Symbols

WL: Water Level Encountered While Drilling
WL(BCR): Water Level at Completion Before Auger or Casing Removal
WL(ACR): Water Level after Auger or Casing Removal

The water levels are those water levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in a granular soil. In clay and plastic silts, the accurate determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally applied.

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-1	1 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% — 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 748.49

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0	1	SS	18	16	Topsoil Depth 3"		10 (7-5-5)
	2	SS	18	14	Sandy SILT, Trace Gravel, Dark Brown and Gray, Moist, Very Loose to Medium Dense, (ML-FILL)	745	22 (5-9-13)
5	3	SS	18	12			7 (7-4-3)
	4	SS	18	10		740	3 (1-1-2)
10							
	5	SS	18	18	Sandy CLAY, Trace Rock Fragments, Brown and Gray, Moist, Soft to Stiff, (CL-FILL)	735	4 (2-2-2)
15							
	6	SS	18	16		730	12 (7-7-5)
20							
	7	SS	18	8		725	9 (3-4-5)
25							
	8	SS	18	16	Sandy CLAY, Grayish Brown, Moist, Very Soft to Soft, (CL)	720	5 (2-2-3) 23.7
30							

CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 33' WS OR WD	BORING STARTED 06-03-08	
▽WL(BCR) ▽WL(ACR)	BORING COMPLETED 06-03-08	CAVE IN DEPTH ● 38.0' ○ 24 HRS
▽WL 18.0' @ 24 HRS	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AMENDT (07-03-08) AMENDT (07-15-08) AMENDT (07-15-08) AMENDT (07-17-08)
grollcowski(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-1	2 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

ROCK QUALITY DESIGNATION & RECOVERY RQD% — REC.% 20% 40% 60% 80% 100%

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

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 748.49

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
30					Sandy CLAY, Grayish Brown, Moist, Very Soft to Soft, (CL)			
							715	W/□H (WOH-WOH-WOH)
35	9	SS	18	18				
							710	5 (1-2-3)
40	10	SS	18	18				
							705	8 (6-5-3)
45	11	SS	18	18	Clayey SAND, Trace Rock Fragments, Grayish Brown, Moist, Loose to Medium Dense, (SC)			
							700	6 (3-3-3)
50	12	SS	18	18				
							695	16 (5-7-9)
55	13	SS	18	18				
							690	20 (8-9-11)
60	14	SS	18	18				

END OF BORING @ 60.0'

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL 33'	WS OR WD	BORING STARTED 06-03-08	
WL(BCR)	WL(ACR)	BORING COMPLETED 06-03-08	CAVE IN DEPTH ●
WL 18.0' @ 24 HRS		RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AMCWIT (07-03-08) AMCWIT (07-15-08) AMCWIT (07-17-08)
prologs3(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-1-A	1 OF 3

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% ——— (20%, 40%, 60%, 80%, 100%)

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

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 750

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0							See Boring TB-1
	1	SS	24	18			8 (2-4-4-5)
5						745	
	2	SS	24	12			8 (4-6-2-1)
10						740	
	3	SS	24	18	▽		5 (WOH-2-3-3)
15					▼	735	
	4	SS	24	18			8 (2-4-4-5)
20					▼	730	
	5	SS	24	18			5 (2-2-3-4)
25						725	
	6	SS	24	12			3 (WOH-WOH-WOH-1)
30							

CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 13' WS OR (TD)	BORING STARTED 01-19-08	
▽WL(BCR) 15' ▽WL(ACR) 20'	BORING COMPLETED 01-19-08	CAVE IN DEPTH ● 32'
▽WL	RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA to 60', MUD-ROTARY TO 78.5'

AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (04-13-09) AHEWITT (04-13-09) AHEWITT (01-13-09)
grdtowsk(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-1-A	2 OF 3

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 6+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% ——— 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 750

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
30					See Boring TB-1			
35							715	
40							710	
45							705	
50							700	
55							695	
60	7	SS	18	18	Silty SAND, With Gravel, Brownish Gray, Saturated, Firm, (SM)			⊗ 7 (4-3-4)

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 13' WS OR WD	BORING STARTED 01-19-08	
▽WL(BCR) 15' ▽WL(ACR) 20'	BORING COMPLETED 01-19-08	CAVE IN DEPTH @ 32'
▽WL	RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA to 60', MUD-ROTARY TO 78.5'

AMEMIT (03-24-09) AMEMIT (03-24-09) AMEMIT (03-24-09) AMEMIT (04-13-09) AMEMIT (04-13-09)
grdtemp(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-1-A	3 OF 3

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% ——— 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 750

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS)	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
60					Silty SAND, With Gravel, Brownish Gray, Saturated, Firm, (SM)			
65	8	SS	18	14	Clayey SAND, With Rock Fragments, Greenish Gray, Moist, Very Dense, (SC)		685	(14-29-31) 60
70	9	SS	18	12	Clayey SAND, With Rock Fragments, Brown, Moist, Medium Dense, (SC)		680	17 (12-9-8)
75	10	SS	18	16	Clayey SAND, With Rock Fragments, Geenish Gray, Moist, Very Dense, (SC)		675	(18-22-30) 52
	11	SS	0	0	AUGER REFUSAL @ 78.5'		670	(50/0) 50/0
80								
85							665	
90								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 13' WS OR FD	BORING STARTED 01-19-08	
▽WL(BCR) 15' ▽WL(ACR) 20'	BORING COMPLETED 01-19-08	CAVE IN DEPTH ● 32'
▽WL	RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA to 60', MUD-ROTARY TO 78.5'

AMEWITT (03-24-09) AMEWITT (03-24-09) AMEWITT (03-24-09) AMEWITT (04-13-09) AMEWITT (01-13-09)
grellowski(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-2	1 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 750.71

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — REC.% (20%, 40%, 60%, 80%, 100%)

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

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0	1	SS	18	10	Sandy SILT, With Rock Fragments, Reddish Brown and Gray, Moist, Medium Dense, (ML-FILL)	750	11 (2-5-6)
	2	SS	18	18	Sandy SILT, Trace Clay, Brown, Moist, Firm, (ML-FILL)		8 (2-3-5)
5	3	SS	18	18		745	6 (2-3-3)
							20.6
	4	SS	18	18	Clayey SAND, Brown, Moist, Firm, (SC)		7 (3-3-4)
10						740	
	5	SS	18	18			7 (4-4-3)
15						735	
	6	SS	18	14	Clayey SAND, Brown, Moist, Very Loose to Loose, (SC)		4 (3-2-2)
20						730	
	7	SS	18	12			2 (2-1-1)
25						725	
	8	SS	18	1			2 (1-1-1)
30							

CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL 27.5' WS OR FD	BORING STARTED 06-03-08		
WL(BCR) WL(ACR)	BORING COMPLETED 06-03-08		CAVE IN DEPTH ●
WL WATER ADDED FOR CORING	RIG 45C	FOREMAN GIFFIN	DRILLING METHOD HSA

AHEWIT (07-03-08) AHEWIT (07-15-08) AHEWIT (07-15-08) AHEWIT (07-17-08)

gatkowski(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-2	2 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 6+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% ——— 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 750.71

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
30					Clayey SAND, Brown, Moist, Very Loose to Loose, (SC)		720	2 (1-1-1)
35	9	SS	18	10	Clayey SAND, Brown, Wet, Loose, (SC)		715	4 (2-2-2)
40	10	SS	18	18	Sandy CLAY, Brown, Moist, Soft, (CL)		710	4 (1-2-2)
	11	SS	1	1	Possible Boulder [Recovery=66%,RQD=0%]			(50/1) 50/1
45	12	SS	18	12	Clayey SAND, With Rock Fragments, Grayish Brown, Moist, Medium Dense, (SC)		705	15 (5-6-9)
50	13	SS	18	16			700	15 (11-8-7)
55	14	SS	18	12			695	13 (7-5-8)
60	15	SS	18	16				28 (12-14-14)

END OF BORING @ 60.0'

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 27.5' WS OR WD	BORING STARTED 06-03-08		
▽WL(BCR) ▽WL(ACR)	BORING COMPLETED 06-03-08	CAVE IN DEPTH ●	
▽WL WATER ADDED FOR CORING	RIG 45C	FOREMAN GIFFIN	DRILLING METHOD HSA

AHEMIT (07-03-08) AHEMIT (07-15-08) AHEMIT (07-15-08) AHEMIT (07-17-08)

rotbcwmk(07/01/2005)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-3	1 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% 20% 40% 60% 80% 100%

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

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 749.63

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0	1	SS	18	12	Topsoil Depth 4"		13 (5-6-7)
	2	SS	18	18	Sandy SILT, Trace Clay, Trace Rock Fragments, Gray and Dark Brown, Moist, Medium Dense, (ML-FILL)	745	17 (4-7-10)
5	3	SS	18	18	Sandy SILT, Trace Clay, Brown, Moist, Medium Dense, (ML)		14 (5-6-8) ● 21.2
10	4	SS	18	10	Clayey SAND, Brown, Moist, Firm, (SC)	740	6 (1-2-4)
15	5	SS	18	16		735	9 (3-4-5)
20	6	SS	18	14	Sandy CLAY, Brown, Moist, Medium Stiff, (CL)	730	6 (2-3-3) ● 22.0
25	7	SS	18	16	Clayey SAND, Brown, Wet, Loose, (SC)	725	3 (1-2-1)
30	8	SS	18	12		720	6 (1-2-4)

CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 24' WS OR WD	BORING STARTED 06-05-08	
▽WL(BCR) 24' ▽WL(ACR) 34'	BORING COMPLETED 06-05-08	CAVE IN DEPTH ● 39.0' ○ 24 HRS
▽WL 31' @ 24 HRS	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AHEWITT (07-03-08) AHEWITT (07-15-08) AHEWITT (07-15-08) AHEWITT (07-17-08)

gpdtcore4(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-3	2 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% ——— 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 749.63

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
30					Clayey SAND, Brown, Wet, Loose, (SC)			
35	9	SS	18	18	Sandy CLAY, Brown, Moist, Medium Stiff, (CL)		715	7 (3-3-4)
40	10	SS	18	18	Sandy CLAY, Trace Rock Fragments, Grayish Brown, Moist, Stiff, (CL)		710	14 (5-6-8)
45	11	SS	18	18	Clayey SAND, Trace Rock Fragments, Dark Grayish Brown to Dark Gray, Moist, Medium Dense to Dense, (SC)		705	14 (4-7-7)
50	12	SS	18	18			700	19 (7-9-10)
55	13	SS	18	18			695	24 (9-11-13)
60	14	SS	18	14			690	(12-20-21) 41

END OF BORING @ 60.0'

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 24' WS OR WD	BORING STARTED 06-05-08	
▽WL(BCR) 24' ▽WL(ACR) 34'	BORING COMPLETED 06-05-08	CAVE IN DEPTH ● 39.0' ○ 24 HRS
▽WL 31' @ 24 HRS	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AHENITT (07-03-08) AHENITT (07-15-08) AHENITT (07-15-08) AHENITT (07-17-08)

yatkonak(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-4	1 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — REC.% (20%, 40%, 60%, 80%, 100%)

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

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 747.70

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0	1	SS	18	18	Sandy SILT, With Gravel, Dark Brown and Gray, Moist, Firm to Medium Dense, (ML-FILL)		745	16 (10-9-7)
	2	SS	18	18				8 (3-3-5)
5	3	SS	18	18			740	13 (4-5-7)
10	4	SS	18	18	Sandy CLAY, Trace Gravel, Dark Brown and Gray, Moist, Soft to Medium Stiff, (CL-FILL)		735	10 (3-4-5)
15	5	SS	18	18			730	5 (2-2-3)
20	6	SS	18	18	Clayey SAND, Brown, Moist, Very Loose to Medium Dense, (SC)		725	3 (3-1-2)
25	7	SS	18	18			720	8 (2-4-4)
30	8	SS	18	18				12 (3-5-7)

Plot values: PLASTIC LIMIT % = 18; WATER CONTENT % = 13.4; LIQUID LIMIT % = 33; CALIBRATED PENETROMETER = 22.2

CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL 28.5' WS OR WD	BORING STARTED 06-06-09	
WL(BCR) 31.0' WL(ACR)	BORING COMPLETED 06-06-09	CAVE IN DEPTH ● 21.0' ⊗ 24 HRS
WL 15.0' @ 24 HRS	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AHENITT (07-03-08) AHENITT (07-15-08) AHENITT (07-15-08) AHENITT (07-17-08)
geotlsw4(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-4	2 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY
RQD% — — — REC.%
20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 747.70

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
30					Clayey SAND, Brown, Moist, Very Loose to Medium Dense, (SC)		715	
	9	SS	18	18	Sandy CLAY, Brown, Moist, Soft to Very Stiff, (CL)			4 (1-2-2)
35							710	
	10	SS	18	18				24 (9-11-13)
40							705	
	11	SS	18	18				16 (5-7-9)
45							700	
	12	SS	18	18	Sandy CLAY, Trace Rock Fragments, Brown, Wet, Very Stiff, (CL)			18 (7-7-11)
50							695	
	13	SS	18	18				24 (6-11-13)
55							690	
	14	SS	18	18	Clayey SAND, Trace Rock Fragments, Brown, Moist, Medium Dense, (SC)			28 (8-14-14)
60								

END OF BORING @ 60.0'

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 28.5' WS OR WD	BORING STARTED 06-06-09	
▽WL(BCR) 31.0' ▽WL(ACR)	BORING COMPLETED 06-06-09	CAVE IN DEPTH ●
▽WL 15.0' @ 24 HRS	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AHEMIT (07-03-06) AHEMIT (07-15-06) AHEMIT (07-15-06) AHEMIT (07-17-06)

grdbswsk(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-4-A	1 OF 3

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 747.7

CALIBRATED PENETROMETER TONS/FT.² 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% — 20% 40% 60% 80% 100%

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

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0					See Boring TB-4			
							745	
5	1	SS	24	12				8 (2-4-4-4)
							740	
10	2	SS	24	18				11 (4-5-6-6)
							735	
15	3	SS	24	8		▽		13 (7-5-8-8)
							730	
20	4	SS	24	8		▽		8 (3-4-4-4)
							725	
25	5	SS	24	8				6 (3-3-3-3)
							720	
30	6	SS	24	18				6 (3-3-3-3)

CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 15' WS OR WD	BORING STARTED 01-19-08	
▽WL(BCR) 20' ▽WL(ACR) DRY	BORING COMPLETED 01-19-08	CAVE IN DEPTH ● 9'
▽WL	RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA

AMEWITT (03-24-09) AMEWITT (03-24-09) AMEWITT (03-24-09) AMEWITT (03-24-09) AMEWITT (04-13-09) AMEWITT (04-13-09)
grellowes&(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-4-A	2 OF 3

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% 20% 40% 60% 80% 100%

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

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 747.7

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)
30					See Boring TB-4		
35							715
40							710
45							705
50							700
55							695
60	7	SS	18	18	Clayey SAND, With Rock Fragments, Brown, Wet, Medium Dense, (SC)		690

16 (6-8-8)

CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL 15' WS OR WD	BORING STARTED 01-19-08	
WL(BCR) 20' WL(ACR) DRY	BORING COMPLETED 01-19-08	CAVE IN DEPTH ● 9'
WL	RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA

AMEWIT (03-24-09) AMEWIT (03-24-09) AMEWIT (03-24-09) AMEWIT (03-24-09) AMEWIT (04-13-09) AMEWIT (01-13-09)

gatkowski/01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-4-A	3 OF 3

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 747.7

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
60					Clayey SAND, With Rock Fragments, Brown, Wet, Medium Dense, (SC)	685	
	8	SS	18	18			22 (4-10-12)
65						680	
	9	SS	18	18	Clayey SAND, Trace Rock Fragments, Brown, Moist, Dense, (SC)		(9-12-18) 30
70						675	
	10	SS	3	3	Decomposed Rock, With Rock Fragments, Dark Brownish Gray, Moist, Very Dense		(50/3) 50/3
75							
	11	SS	0	0	AUGER REFUSAL @ 76.5'	670	(50/0) 50/0
80						665	
85						660	
90							

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 15' WS OR WD	BORING STARTED 01-19-08	
▽WL(BCR) 20' ▽WL(ACR) DRY	BORING COMPLETED 01-19-08	CAVE IN DEPTH ● 9'
▽WL	RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA

AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (04-13-09) AHEWITT (04-13-09)

grellowek(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-5	1 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — REC.% (20%, 40%, 60%, 80%, 100%)

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

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 745.40

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0	1	SS	18	10	Topsoil Depth 2"	745	12 (4-6-6)
	2	SS	18	10	Sandy SILT, Trace Gravel, Dark Grayish Brown, Moist, Firm to Medium Dense, (ML-FILL)		7 (6-4-3)
5	3	SS	18	14	Sandy SILT, Trace Gravel, Trace Roots, Dark Grayish Brown, Moist, Loose, (ML-FILL)	740	4 (2-2-2)
	4	SS	18	10			3 (1-2-1)
10						735	
	5	SS	18	16	Clayey SAND, Brown, Moist, Firm, (SC)		8 (2-4-4)
15						730	
	6	SS	18	17			7 (3-4-3)
20						725	
	7	SS	18	18	Clayey SAND, Brown, Wet, Firm, (SC)		6 (3-3-3)
25						720	
	8	SS	18	8	Clayey SAND, Grayish Brown, Moist, Loose to Medium Dense, (SC)		5 (3-3-2)
30							

WATER LEVELS

Water content: 14.1 (at 7), 22.4 (at 8)

CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL 22.5' WS OR WD	BORING STARTED 06-10-08	
WL(BCR) 31' WL(ACR) 17'	BORING COMPLETED 06-10-08	CAVE IN DEPTH ● 36.0' @ 24 HRS
WL 16.5' @ 24 HRS	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AHEWIT (07-03-08) AHEWIT (07-15-08) AHEWIT (07-15-08) AHEWIT (07-17-08)
gpjlibrary(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-5	2 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 745.40

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — REC.% (20%, 40%, 60%, 80%, 100%)

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

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
30					Clayey SAND, Grayish Brown, Moist, Loose to Medium Dense, (SC)	715	
	9	SS	18	18			9 (2-4-5)
35						710	
	10	SS	18	18			16 (5-7-9)
40						705	
	11	SS	18	18			14 (5-6-8)
45						700	
	12	SS	18	18	Clayey SAND, Trace Rock Fragments, Brownish Gray, Moist, Medium Dense, (SC)		26 (9-11-15)
50						695	
	13	SS	18	18			23 (7-8-15)
55						690	
	14	SS	18	18			29 (13-13-16)
60							

END OF BORING @ 60.0'

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL 22.5' WS OR WD	BORING STARTED 06-10-08	
WL(BCR) 31' WL(ACR) 17'	BORING COMPLETED 06-10-08	CAVE IN DEPTH ● 36.0' ○ 24 HRS
WL 16.5' @ 24 HRS	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AHEWITT (07-03-08) AHEWITT (07-15-08) AHEWITT (07-15-08) AHEWITT (07-17-08)

gratkowski(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-6	1 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

-O- CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% ——— 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 748.70

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0	1	SS	18	12	Sandy SILT, Trace Gravel, Dark Brown, Moist, Firm to Medium Dense, (ML-FILL)			26 (18-14-12)
	2	SS	18	12			745	7 (3-3-4)
5	3	SS	18	3				11 (3-5-6)
	4	SS	18	10			740	9 (4-4-5) ● 18.9
10								
	5	SS	18	10	Clayey SAND, Brown, Moist, Loose to Firm, (SC)		735	6 (3-3-3)
15								
	6	SS	18	12			730	7 (3-4-3)
20								
	7	SS	18	18			725	5 (2-2-3) ● 23.0
25								
	8	SS	18	18			720	8 (2-3-5)
30								

CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 23' WS OR WD	BORING STARTED 06-09-08	
▽WL(BCR) 27' ▽WL(ACR) 30'	BORING COMPLETED 06-09-08	CAVE IN DEPTH ● 24.0' ⊙ 24 HRS
▽WL 15.0' @ 24 HRS	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AHENITT (07-03-08) AHENITT (07-15-08) AHENITT (07-15-08) AHENITT (07-17-08)

yellowpak(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-6	2 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

-O- CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% ——— (20%, 40%, 60%, 80%, 100%)

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

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 748.70

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS)	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
30					Clayey SAND, Brown, Moist, Loose to Firm, (SC)		
	9	SS	18	18	Clayey SAND, Trace Rock Fragments, Grayish Brown, Moist, Medium Dense, (SC)	715	18 (5-8-10)
35							
	10	SS	18	0		710	16 (5-7-9)
40							
	11	SS	18	18		705	16 (7-7-9)
45							
	12	SS	18	18		700	25 (8-12-13)
50							
	13	SS	18	18		695	14 (4-6-8)
55							
	14	SS	18	18		690	20 (6-10-10)
60							

END OF BORING @ 60.0'

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 23' WS OR ⓓ	BORING STARTED 06-09-08	
▼WL(BCR) 27' ▼WL(ACR) 30'	BORING COMPLETED 06-09-08	CAVE IN DEPTH ● 24.0' ○ 24 HRS
▽WL 15.0' @ 24 HRS	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AHEWITT (07-03-08) AHEWITT (07-15-08) AHEWITT (07-15-08) AHEWITT (07-17-08)

grolkowski(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-6-A	1 OF 3

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% — 20% 40% 60% 80% 100%

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

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 748.7

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0					See Boring TB-6			
	1	SS	24	18			745	9 (3-4-5-6)
5								
	2	SS	24	16			740	10 (5-5-5-5)
10								
	3	SS	24	8		▽	735	7 (3-4-3-3)
15								
	4	SS	24	18			730	5 (2-3-2-4)
20						▽		
	5	SS	24	18			725	7 (3-3-4-4)
25						▽		
	6	SS	24	18			720	8 (3-3-5-6)
30								

CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 15' WS OR WD	BORING STARTED 01-19-08	
▽WL(BCR) 23' ▽WL(ACR) 27.5'	BORING COMPLETED 01-19-08	CAVE IN DEPTH ● 25'
▽WL	RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA

AMEWITT (03-24-09) AMEWITT (03-24-09) AMEWITT (03-24-09) AMEWITT (03-24-09) AMEWITT (04-13-09) AMEWITT (04-13-09)
grellowski(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-6-A	2 OF 3

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% ——— 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL — ENGLISH UNITS	WATER LEVELS	ELEVATION (FT)
					BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%		
					SURFACE ELEVATION 748.7		
30					See Boring TB-6		
							715
35							
							710
40							
							705
45							
							700
50							
							695
55							
							690
60	7	SS	18	10	Clayey SAND, With Rock Fragments, Brown, Wet, Firm to Medium Dense, (SC)		

⊗ 8 (3-4-4)

CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 15' WS OR WD	BORING STARTED 01-19-08	
▽WL(BCR) 23' ▽WL(ACR) 27.5'	BORING COMPLETED 01-19-08	CAVE IN DEPTH ● 25'
▽WL	RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA

AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (04-13-09) AHEWITT (04-13-09)

gretkowski(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-6-A	3 OF 3

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2}: 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% — 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 748.7

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
60					Clayey SAND, With Rock Fragments, Brown, Wet, Firm to Medium Dense, (SC)			
	8	SS	18	18			685	22 (6-10-12)
65								
	9	SS	18	18	Silty SAND, Brown, Wet, Medium Dense, (SM)		680	18 (17-10-8)
70								
	10	SS	17	15	Decomposed Rock, With Clay and Rock Fragments, Gray, Moist, Very Dense		675	(10-15-50/5) 50/5
75								
	11	SS	0	0	AUGER REFUSAL @ 78.0'		670	(50/0) 50/0
80								
							665	
85								
							660	
90								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 15' WS OR WD	BORING STARTED 01-19-08	
▽WL(BCR) 23' ▽WL(ACR) 27.5'	BORING COMPLETED 01-19-08	CAVE IN DEPTH ● 25'
▽WL	RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA

AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (04-13-09) AHEWITT (04-13-09)

grallowak(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-7	1 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — REC.% (20%, 40%, 60%, 80%, 100%)

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

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 747.48

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0	1	SS	18	12	Topsoil Depth 2". Sandy CLAY, With Gravel, Brown and Gray, Moist, Very Stiff, (CL-FILL)	745	22 (21-12-10)
	2	SS	18	12			17 (10-8-9)
5	3	SS	18	18	Sandy CLAY, Brown, Moist, Stiff, (CL-FILL)	740	13 (4-6-7)
10	4	SS	18	18	Sandy CLAY, Brown, Moist, Soft, (CL)	735	5 (2-3-2)
15	5	SS	18	16		730	4 (2-3-1) 20.6
20	6	SS	18	16	Clayey SAND, Brown, Wet, Very Loose to Firm, (SC)	725	7 (3-3-4)
25	7	SS	18	16		720	7 (3-3-4)
30	8	SS	18	0			4 (3-2-2)

CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL 14' WS OR WD	BORING STARTED	
WL(BCR) 21' WL(ACR) 32'	BORING COMPLETED	CAVE IN DEPTH ● 41.0' ○ 24 HRS
WL 37.0' @ 24 HRS	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AHENITT (07-03-08) AHENITT (07-15-08) AHENITT (07-15-08) AHENITT (07-17-08)
gpdtcwsk(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-7	2 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

-O- CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 747.48

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
30					Clayey SAND, Brown, Wet, Very Loose to Firm, (SC)		715	
	9	SS	18	4				3 (2-2-1)
35							710	
	10	SS	18	18	Sandy CLAY, Trace Rock Fragments, Grayish Brown, Moist, Very Stiff, (CL)			21 (2-10-11)
40							705	
	11	SS	18	18	Clayey SAND, Trace Rock Fragments, Grayish Brown, Moist, Firm, (SC)			7 (3-3-4)
45							700	
	12	SS	18	18	Sandy CLAY, With Rock Fragments, Grayish Brown, Moist, Stiff to Very Stiff, (CL)			13 (4-5-8)
50							695	
	13	SS	18	18				20 (7-9-11)
55							690	
	14	SS	18	18				26 (9-12-14)
60								

END OF BORING @ 60.0'

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL.

▽WL 14' WS OR WD	BORING STARTED 06-10-08	
▽WL(BCR) 21' ▽WL(ACR) 32'	BORING COMPLETED 06-10-08	CAVE IN DEPTH ● 41.0' ⊗ 24 HRS
▽WL 37.0' @ 24 HRS	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AMEWIT (07-03-08) AMEWIT (07-15-08) AMEWIT (07-15-08) AMEWIT (07-17-08)

p:\ecs\ecs\07/01/2008

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-8	1 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% (20%, 40%, 60%, 80%, 100%)

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

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 747.71

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0	1	SS	18	10	Topsoil Depth 2"		12 (11-7-5)
	2	SS	18	6	Silty SAND, With Rock Fragments, Trace Roots, Gray and Brown, Moist, Loose to Medium Dense, (SM-FILL)	745	5 (3-3-2)
5	3	SS	18	18	Clayey SAND, Brown, Moist, Loose, (SC-FILL)	740	4 (2-2-2)
10	4	SS	18	10	Clayey SAND, With Rock Fragments, Dark Brown, Moist, Medium Dense, (SC-FILL)		11 (3-6-5)
15	5	SS	18	16	Clayey SAND, Trace Gravel, Grayish Brown, Moist, Very Loose to Loose, (SC)	735	4 (1-2-2)
20	6	SS	18	18		730	3 (2-1-2) ● 21.3
25	7	SS	18	18	Sandy CLAY, Brown, Moist, Medium Stiff, (CL)	725	7 (3-4-3)
30	8	SS	18	18	Clayey SAND, Brown, Moist, Medium Dense, (SC)	720	14 (3-6-8)

CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 29'	WS OR WD	BORING STARTED 06-09-08	
▽WL(BCR) 33' ▽WL(ACR) DRY		BORING COMPLETED 06-09-08	CAVE IN DEPTH ● 28.0' ○ 24 HRS
▽WL 14.0' @ 24 RHS	RIG 45C	FOREMAN GIFFIN	DRILLING METHOD HSA

AHEWIT (07-03-08) AHEWIT (07-15-08) AHEWIT (07-15-08) AHEWIT (07-17-08)
gratkowski(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-8	2 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% (20%, 40%, 60%, 80%, 100%)

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

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 747.71

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
30					Clayey SAND, Brown, Moist, Medium Dense, (SC)		715	
35	9	SS	18	18	Sandy CLAY, Trace Rock Fragments, Brown, Moist, Soft to Stiff, (CL)		710	4 (2-2-2) ● 24.3
40	10	SS	18	18			705	16 (4-7-9)
45	11	SS	18	18	Clayey SAND, Grayish Brown, Wet, Medium Dense, (SC)		700	16 (5-8-8)
50	12	SS	18	18	Sandy CLAY, Trace Rock Fragments, Brownish Gray, Moist, Stiff, (CL)		695	13 (7-6-7)
55	13	SS	18	18	Clayey SAND, Trace Rock Fragments, Brownish Gray, Moist, Medium Dense, (SC)		690	13 (5-7-6)
60	14	SS	18	18				18 (6-8-10)

END OF BORING @ 60.0'

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 29' WS OR WD	BORING STARTED 06-09-08	
▽WL(BCR) 33' ▽WL(ACR) DRY	BORING COMPLETED 06-09-08	CAVE IN DEPTH ● 28.0' ○ 24 HRS
▽WL 14.0' @ 24 RHS	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AHENTT (07-03-08) AHENTT (07-15-08) AHENTT (07-15-08) AHENTT (07-17-08)

goldsmith(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-8-A	1 OF 4

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 747.71

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0					See Boring TB-8		
	1	SS	24	16		745	5 (1-2-3-4)
5							
	2	SS	24	16		740	4 (1-2-2-2)
10							
	3	SS	24	18		735	8 (2-4-4-4)
15							
	4	SS	24	18		730	4 (WOH-2-2-3)
20							
	5	SS	24	18		725	4 (WOH-2-2-3)
25							
	6	SS	24	15		720	3 (1-1-2-2)
30							

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THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL 15'	WS OR FD	BORING STARTED 01-21-08	WATER ADDED FOR CORING
WL(BCR)	WL(ACR)	BORING COMPLETED 01-21-08	CAVE IN DEPTH ●
WL		RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA

AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (04-13-09) AHEWITT (04-13-09)

grulkowski(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-8-A	2 OF 4

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2}: 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% ——— 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 747.71

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
30					See Boring TB-8		715	
35							710	
40							705	
45							700	
50							695	
55							690	
60	7	SS	18	6	Silty SAND, Trace Gravel, Brown, Saturated, Medium Dense, (SM)			⊗ 12 (1-3-9)

CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 15'	WS OR WD	BORING STARTED 01-21-08	WATER ADDED FOR CORING
▽WL(BCR)	▽WL(ACR)	BORING COMPLETED 01-21-08	CAVE IN DEPTH ●
▽WL		RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA

AHEWIT (03-24-09) AHEWIT (03-24-09) AHEWIT (03-24-09) AHEWIT (03-24-09) AHEWIT (04-13-09)
gratkowski(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-8-A	3 OF 4

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 747.71

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — REC.% (20%, 40%, 60%, 80%, 100%)

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

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
60					Silty SAND, Trace Gravel, Brown, Saturated, Medium Dense, (SM)		685	
65	8	SS	18	18	Clayey SAND, With Rock Fragments, Brown, Wet, Medium Dense, (SC)		680	11 (1-4-7-2)
70	9	SS	18	14	Clayey SAND, With Rock Fragments, Brown, Moist, Medium Dense, (SC)		675	22 (7-11-11)
75	10	SS	9	9	Decomposed Rock, With Rock Fragments, Reddish Brown, Moist, Very Dense		670	(42-50/3) 50/3
80	11	SS	5	5			665	(50/5) 50/5
85	12	SS	3	3			660	(50/3) 50/3
90	13	SS	10	10				(18-50/4) 50/4

CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL 15' WS OR WD	BORING STARTED 01-21-08	WATER ADDED FOR CORING
WL(BCR) WL(ACR)	BORING COMPLETED 01-21-08	CAVE IN DEPTH ●
WL	RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA

AMEMITT (03-24-09) AMEMITT (03-24-09) AMEMITT (03-24-09) AMEMITT (04-13-09) AMEMITT (04-13-09)
grillowski(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-8-A	4 OF 4

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% ——— 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 747.71

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
90					Decomposed Rock, With Rock Fragments, Reddish Brown, Moist, Very Dense		655	
	14	SS	5	5				(50/5) 50/5
95							650	
	15	SS	4	4				(50/4) 50/4
100								
	16	SS	0	0	Shale, Grayish Blue, Moderately Hard, Moderately Severe to Moderately Weathered, Moderately Fractured, Horizontal Attitude, [Rec = 100%, RQD = 39%]		645	(50/0) 50/0
105								
					Shale, Grayish Blue, Moderately Hard, Moderately Severe to Moderately Weathered, Moderately Fractured, Horizontal Attitude, [Rec = 100%, RQD =80%]		640	
110								
					Shale, Grayish Blue, Moderately Hard, Moderately Severe to Moderately Weathered, Moderately Fractured, Steep Attitude, [Rec = 100%, RQD = 30%]		635	
115								
					END OF BORING @ 117.0'		630	
120								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 15'	WS OR ⊗	BORING STARTED 01-21-08	WATER ADDED FOR CORING
▽WL(BCR)	▽WL(ACR)	BORING COMPLETED 01-21-08	CAVE IN DEPTH ●
▽WL		RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA

AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (04-13-09) AHEWITT (04-13-09)
gridtowab(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-9	1 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% — 20% 40% 60% 80% 100%

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

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 750.86

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0	1	SS	18	10	Topsoil Depth 4"		750	7 (3-3-4)
	2	SS	18	18	Sandy SILT, Trace Gravel, Trace Roots, Dark Gray and Brown, Moist, Firm, (ML-FILL)			8 (4-4-4)
5	3	SS	18	18	Sandy CLAY, Brown, Moist, Medium Stiff, (CL-FILL)		745	8 (2-3-5)
	4	SS	18	18	Sandy CLAY, Brown, Moist, Medium Stiff, (CL)	▽		7 (4-3-4) ● 21.9
10							740	
	5	SS	18	18	Clayey SAND, Brown, Moist, Loose, (SC)			7 (3-3-4)
15							735	
	6	SS	18	18		▽		6 (2-3-3)
20							730	
	7	SS	18	18				5 (2-3-2)
25							725	
	8	SS	18	18	Sandy CLAY, Trace Rock Fragments, Brown, Moist, Medium Stiff, (CL)			7 (3-3-4)
30								

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THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 9' WS OR WD	BORING STARTED 06-04-08	
▽WL(BCR) 17' ▽WL(ACR) 22.5'	BORING COMPLETED 06-04-08	CAVE IN DEPTH ● 33' @ 24 HRS
▽WL 21' @ 24 HRS	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AMEWIT (07-03-08) AMEWIT (07-15-08) AMEWIT (07-15-08) AMEWIT (07-17-08)

gotbswak(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-9	2 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 750.86

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — REC.% (20%, 40%, 60%, 80%, 100%)

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

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
30					Sandy CLAY, Trace Rock Fragments, Brown, Moist, Medium Stiff, (CL)		720	
35	9	SS	18	18	Clayey SAND, Trace Rock Fragments, Grayish Brown, Moist, Firm, (SC)		715	8 (3-4-4)
40	10	SS	18	18	Sandy CLAY, Brown, Moist, Stiff, (CL)		710	16 (6-9-7)
45	11	SS	18	18	Clayey SAND, Trace Rock Fragments, Grayish Brown, Moist, Firm, (SC)		705	10 (6-5-5)
50	12	SS	18	18	Sandy CLAY, Trace Rock Fragments, Grayish Brown, Moist, Medium Stiff to Very Stiff, (CL)		700	6 (3-3-3)
55	13	SS	18	18			695	11 (5-6-5)
60	14	SS	18	16	Clayey SAND, Trace Rock Fragments, Brownish Gray, Moist, Medium Dense, (SC)			18 (7-8-10)

END OF BORING @ 60.0'

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL 9' WS OR WD	BORING STARTED 06-04-08	
WL(BCR) 17' WL(ACR) 22.5'	BORING COMPLETED 06-04-08	CAVE IN DEPTH ● 33' ○ 24 HRS
WL 21' @ 24 HRS	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AMEMIT (07-03-08) AMEMIT (07-15-08) AMEMIT (07-15-08) AMEMIT (07-17-08)

gridtemk(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-10	1 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 745.79

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — REC.% (20%, 40%, 60%, 80%, 100%)

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

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.	PLASTIC LIMIT %	WATER CONTENT %	LIQUID LIMIT %
0	1	SS	18	10	Topsoil Depth 4"		745	7 (3-3-4)	3.9	15	29
					Sandy CLAY, Trace Gravel, Gray, Moist, Medium Stiff, (CL-FILL)						
	2	SS	18	18				8 (5-4-4)			
5	3	SS	18	12			740	7 (7-4-3)		21.8	
	4	SS	18	18	Sandy CLAY, Brown, Moist, Medium Stiff, (CL)		735	11 (5-5-6)			
10	5	SS	18	18			730	6 (3-3-3)			
	6	SS	18	18	Clayey SAND, Trace Rock Fragments, Brown, Moist, Loose, (SC)		725	7 (3-4-3)			
20	7	SS	18	18			720	6 (3-2-4)			
25	8	SS	18	3				5 (3-2-3)			
30											

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THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL 19' WS OR WD	BORING STARTED 06-04-08	
WL(BCR) 27' WL(ACR) 21'	BORING COMPLETED 06-04-08	CAVE IN DEPTH ● 43' ○ 24 HRS
WL 23' @ 24 HRS	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AHEWITT (07-03-08) AHEWITT (07-15-08) AHEWITT (07-15-08) AHEWITT (07-17-08)
rdbwr#3(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-10	2 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 745.79

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

ROCK QUALITY DESIGNATION & RECOVERY — RQD% — REC.% (20%, 40%, 60%, 80%, 100%)

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

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
30					Clayey SAND, Trace Rock Fragments, Brown, Moist, Loose, (SC)	715	
	9	SS	18	18	Sandy CLAY, Trace Rock Fragments, Grayish Brown, Moist, Medium Stiff, (CL)		7 (3-3-4)
35						710	
	10	SS	18	18			8 (2-4-4)
40						705	
	11	SS	18	18			7 (3-3-4)
45						700	
	12	SS	18	18	Clayey SAND, Trace Rock Fragments, Brownish Gray, Moist, Medium Dense, (SC)		18 (6-9-9)
50						695	
	13	SS	18	18	Sandy CLAY, With Rock Fragments, Brownish Gray, Moist, Very Stiff, (CL)		16 (7-9-7)
55						690	
	14	SS	18	18			19 (7-9-10)
60							

END OF BORING @ 60.0'

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL.

WL 19' WS OR TD	BORING STARTED 06-04-08		
WL(BCR) 27' WL(ACR) 21'	BORING COMPLETED 06-04-08	CAVE IN DEPTH ● 43' ○ 24 HRS	
WL 23' @ 24 HRS	RIG 45C	FOREMAN GIFFIN	DRILLING METHOD HSA

AMENIT (07-03-08) AMENIT (07-15-08) AMENIT (07-15-08) AMENIT (07-17-08)

gpdbcmk(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-11	1 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

ROCK QUALITY DESIGNATION & RECOVERY RQD% — REC.% 20% 40% 60% 80% 100%

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

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 751.20

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0	1	SS	18	10	Asphalt Depth 2"		750	8 (3-3-5)
					Gravel Depth 6"			
	2	SS	18	12	Sandy CLAY, With Asphalt Fragments, Gray, Moist, Medium Stiff, (CL-FILL)			9 (4-3-6)
5	3	SS	18	12	Sandy CLAY, Grayish Brown, Moist, Medium Stiff, (CL-FILL)		745	6 (3-3-3)
	4	SS	18	18	Clayey SAND, Grayish Brown, Moist, Firm, (SC-FILL)		740	6 (4-4-3)
10	5	SS	18	16			735	6 (1-3-3) ● 17.1
15	6	SS	18	18	Sandy CLAY, Brown, Moist, Medium Stiff, (CL)		730	6 (3-3-3)
20	7	SS	18	18	Clayey SAND, Brown, Moist, Loose, (SC)		725	5 (3-3-2)
25	8	SS	18	18	Sandy CLAY, Brown, Wet, Soft, (CL)			5 (3-2-3)
30								

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THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL 32' WS OR WD	BORING STARTED 06-10-08	
WL(BCR) 39' WL(ACR) 19'	BORING COMPLETED 06-10-08	CAVE IN DEPTH ● 29.5' ○ 24 HRS
WL 18.0' @ 24 HRS	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AHEWITT (07-03-08) AHEWITT (07-15-08) AHEWITT (07-15-08) AHEWITT (07-17-08)

yoskowski(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-11	2 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% (20%, 40%, 60%, 80%, 100%)

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

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 751.20

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
30					Sandy CLAY, Brown, Wet, Soft, (CL)		720	
	9	SS	18	18				5 (2-3-2)
35							715	
	10	SS	18	18	Sandy CLAY, Brownish Gray, Moist, Soft, (CL)			5 (1-3-2)
40							710	
	11	SS	18	18				4 (2-2-2)
45							705	
	12	SS	18	14	Sandy CLAY, With Rock Fragments, Gray and Dark Gray, Moist, Stiff, (CL)			13 (3-7-6)
50							700	
	13	SS	18	12				10 (4-4-6)
55							695	
	14	SS	18	16				13 (5-6-7)
60								

END OF BORING @ 60.0'

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 32' WS OR ⓓ	BORING STARTED 06-10-08	
▽WL(BCR) 39' ▽WL(ACR) 19'	BORING COMPLETED 06-10-08	CAVE IN DEPTH ● 29.5' @ 24 HRS
▽WL 18.0' @ 24 HRS	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AMEMIT (07-03-08) AMEMIT (07-15-08) AMEMIT (07-15-08) AMEMIT (07-17-08)

grdlowat(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-11-A	1 OF 3

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% (20%, 40%, 60%, 80%, 100%)

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

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 751.2

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0					See Boring TB-11		750	
	1	SS	24	14				7 (3-3-4-6)
5							745	
	2	SS	24	6				9 (3-3-6-6)
10							740	
	3	SS	24	18				6 (2-3-3-3)
15							735	
	4	SS	24	18				5 (2-2-3-3)
20							730	
	5	SS	24	14				5 (2-2-3-3)
25							725	
	6	SS	24	4				4 (1-1-3-3)
30								

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THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 13' WS OR WD	BORING STARTED 01-20-08	
▽WL(BCR) 25' ▽WL(ACR) 27'	BORING COMPLETED 01-20-08	CAVE IN DEPTH ● 36'
▽WL	RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA

AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (04-13-09) AHEWITT (04-13-09)
grabowski(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-11-A	2 OF 3

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% ——— 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 751.2

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)
30					See Boring TB-11		720
35							715
40							710
45							705
50							700
55							695
60	7	SS	18	18	Silty CLAY, Trace Fine Sand, Dark Brown, Wet, Medium Stiff, (CL)		

⊗ 6 (1-3-3)

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THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 13' WS OR WD	BORING STARTED 01-20-08	
▽WL(BCR) 25' ▽WL(ACR) 27'	BORING COMPLETED 01-20-08	CAVE IN DEPTH ● 36'
▽WL	RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA

AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (04-13-09) AHEWITT (04-13-09)
grotkowski(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-11-A	3 OF 3

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% ——— (20%, 40%, 60%, 80%, 100%)

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

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 751.2

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS)	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
60					Silty CLAY, Trace Fine Sand, Dark Brown, Wet, Medium Stiff, (CL)		690	
65	8	SS	18	18	Clayey SAND, With Rock Fragments, Brown, Wet, Medium Dense, (SC)		685	25 (7-12-13)
70	9	SS	5	5	Decomposed Rock, With Rock Fragments, Gray to Reddish Brown, Moist, Very Dense		680	(50/5) 50/5
	10	SS	3	3				(50/3) 50/3
75	11	SS	0	0	AUGER REFUSAL @ 74.5'		675	(50/0) 50/0
80							670	
85							665	
90								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 13' WS OR WD	BORING STARTED 01-20-08	
▽WL(BCR) 25' ▽WL(ACR) 27'	BORING COMPLETED 01-20-08	CAVE IN DEPTH ● 36'
▽WL	RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA

AMEWIT (03-24-09) AMEWIT (03-24-09) AMEWIT (03-24-09) AMEWIT (03-24-09) AMEWIT (04-13-09) AMEWIT (04-13-09)

gratkowski(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-12	1 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 752.26

CALIBRATED PENETROMETER TONS/FT.² (1, 2, 3, 4, 5+)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — REC.% (20%, 40%, 60%, 80%, 100%)

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

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0	1	SS	18	18	Topsoil Depth 2"		17 (11-10-7)
	2	SS	18	12	Sandy CLAY, With Asphalt Fragments, Brown and Black, Moist, Very Stiff, (CL-FILL)	750	8 (3-4-4)
5	3	SS	18	1	Sandy CLAY, With Brick Fragments, Brown, Moist, Medium Stiff, (CL-FILL)	745	10 (4-4-6)
10	4	SS	18	16	Sandy CLAY, Brown, Moist, Stiff, (CL)	740	11 (3-5-6)
15	5	SS	18	18	Clayey SAND, Brown, Moist, Loose to Firm, (SC)	735	7 (4-4-3)
20	6	SS	18	16		730	5 (4-2-3)
25	7	SS	18	18		725	9 (2-4-5)
30	8	SS	18	18			5 (1-3-2)

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THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL 28' WS OR WD	BORING STARTED 06-10-08	
WL(BCR) 32' WL(ACR) 14'	BORING COMPLETED 06-10-08	CAVE IN DEPTH ● 35.0' ○ 24 HRS
WL 15.2' @ 24 HRS	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AHENITT (07-03-08) AHENITT (07-15-08) AHENITT (07-15-08) AHENITT (07-17-08)
rollcrnk(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-12	2 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% ——— (20%, 40%, 60%, 80%, 100%)

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

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 752.26

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
30					Clayey SAND, Brown, Moist, Loose to Firm, (SC)		720	
	9	SS	18	14	Sandy CLAY, Trace Rock Fragments, Brown, Wet, Soft to Medium Stiff, (CL)			5 (3-2-3)
35							715	
	10	SS	18	18				7 (4-4-3)
40							710	
	11	SS	18	18	Sandy CLAY, With Rock Fragments, Gray, Moist, Soft to Very Stiff, (CL)			5 (3-2-3)
45							705	
	12	SS	18	18				11 (4-5-6)
50							700	
	13	SS	18	18				12 (3-5-7)
55							695	
	14	SS	18	18				(8-13-17) 30
60								

END OF BORING @ 60.0'

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 28'	WS OR WD	BORING STARTED 06-10-08	
▽WL(BCR) 32' ▽WL(ACR) 14'		BORING COMPLETED 06-10-08	CAVE IN DEPTH ● 35.0' @ 24 HRS
▽WL 15.2' @ 24 HRS		RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AHENITT (07-03-08) AHENITT (07-15-08) AHENITT (07-15-08) AHENITT (07-17-08)

gotkowski(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-13	1 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 750.66

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% ——— (20%, 40%, 60%, 80%, 100%)

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

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0	1	SS	18	6	Asphalt Depth 2"	750	6 (2-3-3)
					Gravel Depth 6"		
	2	SS	18	8	Sandy CLAY, Grayish Brown, Moist, Soft to Medium Stiff, (CL-FILL)		3 (1-2-1)
5	3	SS	18	10		745	5 (1-2-3)
	4	SS	18	14		740	8 (2-3-5)
10	5	SS	18	12	Clayey SAND, Brown, Moist, Loose to Medium Dense, (SC)	735	4 (1-2-2)
15	6	SS	18	18		730	12 (3-5-7)
20	7	SS	18	10	Sandy CLAY, Grayish Brown, Moist, Medium Stiff, (CL)	725	8 (3-4-4)
25	8	SS	18	12	Clayey SAND, Grayish Brown, Moist, Firm, (SC)		7 (3-3-4)
30							

CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 28' WS OR WD	BORING STARTED 06-10-08	
▽WL(BCR) 48' ▽WL(ACR) 9'	BORING COMPLETED 06-10-08	CAVE IN DEPTH ● 27.0' ○ 24 HRS
▽WL 11.0' @ 24 HRS	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AHEWITT (07-03-08) AHEWITT (07-15-08) AHEWITT (07-15-08) AHEWITT (07-17-08)

grnikam2(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TB-13	2 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 750.66

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS)	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
30					Clayey SAND, Grayish Brown, Moist, Firm, (SC)		720	
	9	SS	18	18	Sandy CLAY, Grayish Brown, Moist, Medium Stiff, (CL)			9 (3-4-5)
35							715	
	10	SS	18	18	Sandy CLAY, With Rock Fragments, Grayish Brown to Brownish Gray, Moist, Medium Stiff to Very Stiff, (CL)			16 (5-7-9)
40							710	
	11	SS	18	18				7 (2-3-4)
45						▼	705	
	12	SS	18	18				9 (2-3-6)
50							700	
	13	SS	18	18				9 (4-4-5)
55							695	
	14	SS	18	18				13 (3-6-7)
60								

END OF BORING @ 60.0'

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▼WL 28' WS OR WD	BORING STARTED 06-10-08	
▼WL(BCR) 48' ▼WL(ACR) 9'	BORING COMPLETED 06-10-08	CAVE IN DEPTH ● 27.0' ⊗ 24 HRS
▼WL 11.0' @ 24 HRS	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AHEMIT (07-03-08) AHEMIT (07-15-08) AHEMIT (07-15-08) AHEMIT (07-17-08)

gridscreek(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-15	1 OF 4

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% ——— (20%, 40%, 60%, 80%, 100%)

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

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 751

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0	1	SS	18	8	Gravelly SAND, Trace Organics, Black, Moist, Very Loose to Medium Dense, (SP-FILL)		750	11 (3-5-5)
	2	SS	18	10				8 (3-3-5)
5	3	SS	18	4			745	4 (3-2-2)
	4	SS	18	16	Sandy CLAY, With Gravel, Brownish Gray to Brown, Moist, Very Soft, (CL-FILL)			3 (4-1-2)
10							740	
	5	SS	18	6				3 (2-2-1)
15					Silty CLAY, Trace Gravel, Brownish Gray to Gray, Moist, Very Soft to Soft, (CH)		735	
	6	SS	18	18				6 (2-3-3)
20							730	
	7	SS	18	12				3 (1-1-2)
25							725	
	8	SS	18	18		▽		WOH (WOH-WOH-WOH)
30								

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THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 29' WS OR WD	BORING STARTED 01-29-09	WATER ADDED FOR CORING
▽WL(BCR) ▽WL(ACR)	BORING COMPLETED 01-29-09	CAVE IN DEPTH ● 37'
▽WL	RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA

AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (04-13-09) AHEWITT (04-13-09)
grabowski(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-15	2 OF 4

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% ——— 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

SURFACE ELEVATION 751

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS)	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
30					Silty CLAY, Trace Gravel, Brownish Gray to Gray, Moist, Very Soft to Soft, (CH)		720	
35	9	SS	18	10	Silty SAND, With Rock Fragments, Brown, Moist, Dense, (SM)		715	(12-16-16) 32
40	10	SS	18	8	Sandy SILT, Trace Rock Fragments, Dark Grayish Brown, Moist, Medium Dense, (ML)		710	13 (7-6-7)
45	11	SS	18	16			705	12 (3-5-7)
50	12	SS	18	18	SILT, Trace Rock Fragments, Dark Brown, Wet, Loose to Firm, (ML)		700	5 (WOH-2-3)
55	13	SS	18	10			695	9 (3-4-5)
60	14	SS	18	6	Sandy SILT, With Rock Fragments, Grayish Brown, Moist, Medium Dense, (ML)			13 (3-4-9)

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THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 29'	WS OR ⓦⓓ	BORING STARTED 01-29-09	WATER ADDED FOR CORING
▽WL(BCR) ▽WL(ACR)		BORING COMPLETED 01-29-09	CAVE IN DEPTH ● 37'
▽WL		RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA

AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (04-13-09) AHEWITT (04-13-09)
grabkowski(01/31/2009 11:30:18 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-15	3 OF 4

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 751

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — REC.% (20%, 40%, 60%, 80%, 100%)

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

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
60					Sandy SILT, With Rock Fragments, Grayish Brown, Moist, Medium Dense, (ML)		690	
65	15	SS	18	16			685	10 (10-5-5)
70	16	SS	18	14			680	23 (6-9-14)
75	17	SS	10	9	Decomposed Rock and Rock Fragments, Gray, Moist, Very Dense		675	(26-50/4) 50/4
80	18	SS	5	5			670	(50/5) 50/5
85	19	SS	11	11			665	(26-50/5) 50/5
90	20	SS	0	0	Shale, Gray, Hard, Fresh to Slightly Weathered, Very Slightly to Moderately Weathered, Low Attitude, [Rec = 100%, RQD = 87%]			(50/0) 50/0
	21	SS	0	0				(50/0) 50/0

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THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL 29'	WS OR WD	BORING STARTED 01-29-09	WATER ADDED FOR CORING
WL(BCR)	WL(ACR)	BORING COMPLETED 01-29-09	CAVE IN DEPTH ● 37'
WL		RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA

AMEMIT (03-24-09) AMEMIT (03-24-09) AMEMIT (03-24-09) AMEMIT (03-24-09) AMEMIT (04-13-09) AMEMIT (04-13-09)
grallowed(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-15	4 OF 4

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% ——— 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 751

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)
90					Shale, Gray, Hard, Fresh to Slightly Weathered, Very Slightly to Moderately Weathered, Low Attitude, [Rec = 100%, RQD = 87%]		660
95					Shale, Gray, Hard, Slightly Weathered, Slightly to Moderately Weathered, Low Attitude, [Rec = 100%, RQD = 48%]		655
100					Shale, Gray, Hard, Fresh to Slightly Weathered, Very Slightly to Moderately Weathered, Low Attitude, [Rec = 100%, RQD = 85%]		650
105					END OF BORING @ 104.0'		645
110							640
115							635
120							

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 29'	WS OR WD	BORING STARTED 01-29-09	WATER ADDED FOR CORING
▽WL(BCR) ▽WL(ACR)		BORING COMPLETED 01-29-09	CAVE IN DEPTH ● 37'
▽WL		RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA

AMEMITT (03-24-09) AMEMITT (03-24-09) AMEMITT (03-24-09) AMEMITT (04-13-09) AMEMITT (04-13-09)

gnilowski(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-16	1 OF 3

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 748

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0	1	SS	18	13	Topsoil Depth 5"			12 (WOH-6-6)
	2	SS	18	18	Sandy SILT, With Gravel, Dark Grayish Brown and Black, Moist, Firm to Medium Dense, (ML-FILL)		745	8 (4-5-3)
5	3	SS	18	18				7 (3-4-3)
							740	
	4	SS	18	18	Silty CLAY, Brown, Moist, Medium Stiff, (CL)			5 (2-2-3)
10							735	
	5	SS	18	18				9 (2-5-4)
15							730	
	6	SS	18	18	Silty CLAY, Trace Fine Sand, Dark Brownish Gray, Moist, Very Soft to Soft, (CL)			2 (2-1-1)
20							725	
	7	SS	18	18				WOH (WOH-WOH-WOH)
25							720	
	8	SS	18	18				4 (2-2-2)
30								

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THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL.

▽WL 30' WS OR ⓦD	BORING STARTED 02-03-09	
▽WL(BCR) 29' ▽WL(ACR) 28'	BORING COMPLETED 02-03-09	CAVE IN DEPTH ● 57.5'
▽WL	RIG 55LC FOREMAN KERSH	DRILLING METHOD HSA

AMEWITT (03-24-09) AMEWITT (03-24-09) AMEWITT (03-24-09) AMEWITT (03-24-09) AMEWITT (04-13-09) AMEWITT (04-13-09)
grallowski(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-16	2 OF 3

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% ——— 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 748

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
30					Silty CLAY, Trace Fine Sand, Dark Brownish Gray, Moist, Very Soft to Soft, (CL)		715	
	9	SS	18	18				4 (1-2-2)
35							710	
	10	SS	18	18	Silty CLAY, Dark Brownish Gray, Wet, Soft, (CL)			4 (2-2-2)
40							705	
	11	SS	18	18	Sandy CLAY, Trace Decomposed Rock and Rock Fragments, Light Brown and Gray, Moist, Very Stiff, (CL)			18 (4-6-12)
45							700	
	12	SS	18	18	Sandy CLAY, Trace Rock Fragments, Brown, Wet, Stiff to Very Stiff, (CL)			11 (5-5-6)
50							695	
	13	SS	18	10				21 (4-8-13)
55							690	
	14	SS	18	4				16 (7-7-9)
60								

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THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 30' WS OR ⊗	BORING STARTED 02-03-09	
▽WL(BCR) 29' ▽WL(ACR) 28'	BORING COMPLETED 02-03-09	CAVE IN DEPTH ● 57.5'
▽WL	RIG 55LC FOREMAN KERSH	DRILLING METHOD HSA

AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (04-13-09) AHEWITT (01-13-09)

grollowski(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-16	3 OF 3

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.² 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 748

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
60					Sandy CLAY, Trace Rock Fragments, Brown, Wet, Stiff to Very Stiff, (CL)		685	
65	15	SS	18	18	SILT, Trace Clay, Brown, Moist, Medium Dense to Very Dense, (ML)		680	20 (6-10-10)
70	16	SS	18	18			675	(7-21-39) 60
75	17	SS	5	5	Decomposed Rock, Brown, Moist, Very Dense		670	(50/5) 50/5
80	18	SS	2	2			665	(50/2) 50/2
85	19	SS	0	0	AUGER REFUSAL @ 83.0'		660	(50/0) 50/0
90								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 30' WS OR WD	BORING STARTED 02-03-09	
▽WL(BCR) 29' ▽WL(ACR) 28'	BORING COMPLETED 02-03-09	CAVE IN DEPTH ● 57.5'
▽WL	RIG 55LC FOREMAN KERSH	DRILLING METHOD HSA

AHEMIT (03-24-09) AHEMIT (03-24-09) AHEMIT (03-24-09) AHEMIT (03-24-09) AHEMIT (04-13-09) AHEMIT (04-13-09)

gratkowski(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-17	1 OF 2

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 726

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0					River Water		725	
5							720	
	1	SS	18	18	Clayey SAND, Brown and Gray, Wet, Loose, (SC)			2 (1-1-1)
10	2	SS	18	18			715	2 (1-1-1)
	3	SS	18	18	Silty SAND, Trace Clay, Brown, Wet, Loose to Medium Dense, (SM)			2 (1-1-1)
15	4	SS	18	18			710	2 (1-1-1)
	5	SS	18	18				(1-7-23) 30
20							705	
	6	SS	18	18				10 (3-5-5)
25							700	
	7	SS	18	18	Clayey SAND, With Gravel, Brown and Gray, Wet, Loose to Firm, (SC)			9 (2-4-5)
30								

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — REC.% (20%, 40%, 60%, 80%, 100%)

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

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THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL	WS OR WD	BORING STARTED 03-03-09	
WL(BCR)	WL(ACR)	BORING COMPLETED 03-03-09	CAVE IN DEPTH ●
WL		RIG CME850 FOREMAN E.W.	DRILLING METHOD HSA

AHEMITT (03-24-09) AHEMITT (03-24-09) AHEMITT (03-24-09) AHEMITT (04-13-09) AHEMITT (04-13-09) AHEMITT (04-17-09) AHEMITT (04-17-09) AHEMITT (04-17-09) AHEMITT (04-17-09) AHEMITT (04-17-09)
gpjdcwmbl(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-17	2 OF 2

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 726

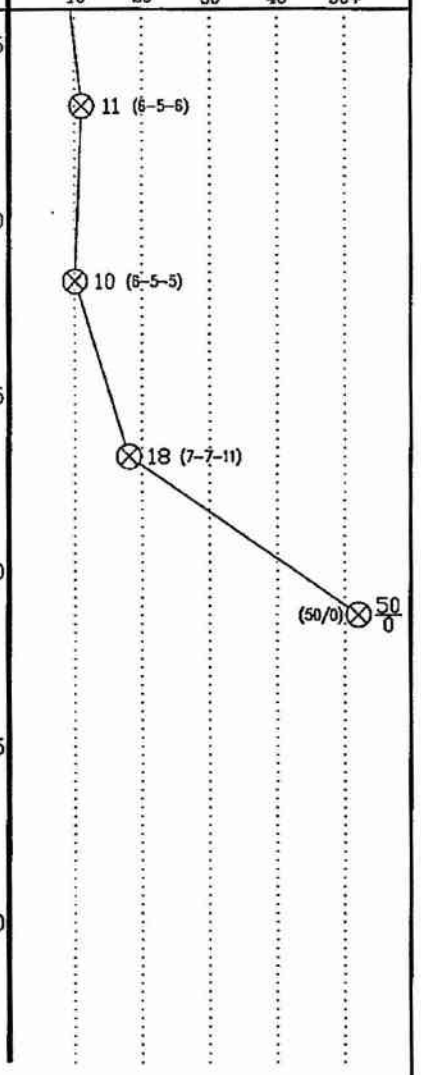
DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)
30					Clayey SAND, With Gravel, Brown and Gray, Wet, Loose to Firm, (SC)		695
	8	SS	18	18			
35							690
	9	SS	18	18			
40							685
	10	SS	18	18			
45							680
	11	SS	0	0	SANDSTONE, Gray, Moist, Very Dense		
50					AUGER REFUSAL @ 47.2'		675
55							670
60							

CALIBRATED PENETROMETER TONS/FT.^{2}: 1 2 3 4 5+

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — REC.% — 20% 40% 60% 80% 100%

STANDARD PENETRATION BLOWS/FT.: 10 20 30 40 50+



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL	WS OR WD	BORING STARTED 03-03-09
WL(BCR)	WL(ACR)	BORING COMPLETED 03-03-09
WL		RIG CME850 FOREMAN E.W.

CAVE IN DEPTH ●

DRILLING METHOD HSA

AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (04-13-09) AHEWITT (04-13-09) AHEWITT (04-13-09) AHEWITT (04-17-09) AHEWITT (04-17-09) AHEWITT (04-17-09) AHEWITT (04-17-09) AHEWITT (04-17-09) AHEWITT (04-17-09)

gnilkowski(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-18	1 OF 2

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

-O- CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 726

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0					River Water		725	
5							720	
10					Silty GRAVEL, Dark Brown, Wet, Loose, (GM)		715	
	1	SS	18	18				2 (1-1-1)
15	2	SS	18	18	Clayey SAND, With Gravel, Dark Brown, Wet, Loose to Dense, (SC)		710	5 (2-1-4)
	3	SS	18	18				14 (4-8-6)
20	4	SS	18	18			705	29 (14-19-10)
25	5	SS	18	18			700	3 (1-1-2)
30	6	SS	18	18				9 (3-5-4)

CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL	WS OR WD	BORING STARTED 03-03-09	
▼WL(BCR)	▼WL(ACR)	BORING COMPLETED 03-03-09	CAVE IN DEPTH ●
▽WL		RIG CME850 FOREMAN E.W.	DRILLING METHOD HSA

AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (04-13-09) AHEWITT (04-13-09) AHEWITT (04-17-09) AHEWITT (04-17-09) AHEWITT (04-17-09) AHEWITT (04-17-09) AHEWITT (04-17-09)
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CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-18	2 OF 2

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2}: 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% — 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 726

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS)	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
30					Clayey SAND, With Gravel, Dark Brown, Wet, Loose to Dense, (SC)		695	
35	7	SS	18	18			690	9 (3-5-4)
40	8	SS	18	18			685	9 (4-4-5)
45	9	SS	13	13			680	(34-15-50/1) 50/1
					SANDSTONE, Gray, Moist, Very Dense			
50					AUGER REFUSAL @ 46.3'		675	
55							670	
60								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL	WS OR WD	BORING STARTED 03-03-09	
▽WL(BCR)	▽WL(ACR)	BORING COMPLETED 03-03-09	CAVE IN DEPTH ●
▽WL		RIG CME850 FOREMAN E.W.	DRILLING METHOD HSA

AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (04-13-09) AHEWITT (04-13-09) AHEWITT (04-17-09) AHEWITT (04-17-09) AHEWITT (04-17-09) AHEWITT (04-17-09) AHEWITT (04-17-09) AHEWITT (04-17-09)

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CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-19	1 OF 1

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 726

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0					River Water		725	
5							720	
10							715	
	1	SS	18	18	Silty SAND, With Gravel, Dark Brown and Black, Wet, Loose to Firm, (SM)			2 (1-1-1)
15	2	SS	18	18			710	2 (1-1-1)
	3	SS	18	18				2 (1-1-1)
20	4	SS	18	18				7 (5-5-2)
	5	SS	18	18	SAND and GRAVEL, Brown, Wet, Very Dense (SW-GW)		705	(3-12-50) 62
25	6	SS	7	7			700	(4-50/1) 50/1
30	7	SS	0	0	SANDSTONE, Brown, Moist, Very Dense			(50/0) 50/0

AUGER REFUSAL @ 30.0'

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 1.5' WS OR WD	BORING STARTED 03-02-09	
▽WL(BCR) 1.5' ▽WL(ACR) 1.5'	BORING COMPLETED 03-02-09	CAVE IN DEPTH ●
▽WL	RIG CME850 FOREMAN E.W.	DRILLING METHOD HSA

AHEMIT (03-24-09) AHEMIT (03-24-09) AHEMIT (03-24-09) AHEMIT (04-13-09) AHEMIT (04-13-09) AHEMIT (04-17-09) AHEMIT (04-17-09) AHEMIT (04-17-09) AHEMIT (04-17-09) AHEMIT (04-17-09)
gnilkowski(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-20	1 OF 1

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% 20% 40% 60% 80% 100%

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

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 790

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0					Concrete Depth 12"			
					No Recovery			
	1	SS	18	0				6 (3-4-2)
5	2	SS	18	12	Silty SAND, With Rock Fragments, Dark Brown, Moist, Firm, (SM)		785	9 (1-4-5)
	3	SS	4	4	Decomposed Rock and Rock Fragments, Gray, Moist, Very Dense			(50/4) 50/4
10							780	
	4	SS	3	3				(50/3) 50/3
15							775	
	5	SS	9	9				(32-50/3) 50/3
20	6	SS	0	0			770	(50/0) 50/0
					AUGER REFUSAL @ 20.0'			
25							765	
30								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 9' WS OR WD	BORING STARTED 01-26-09	
▽WL(BCR) 5' ▽WL(ACR) 3'	BORING COMPLETED 01-26-09	CAVE IN DEPTH ● 14'
▽WL	RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA

AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (04-13-09) AHEWITT (04-13-09)

grolkowski(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-21	1 OF 1

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

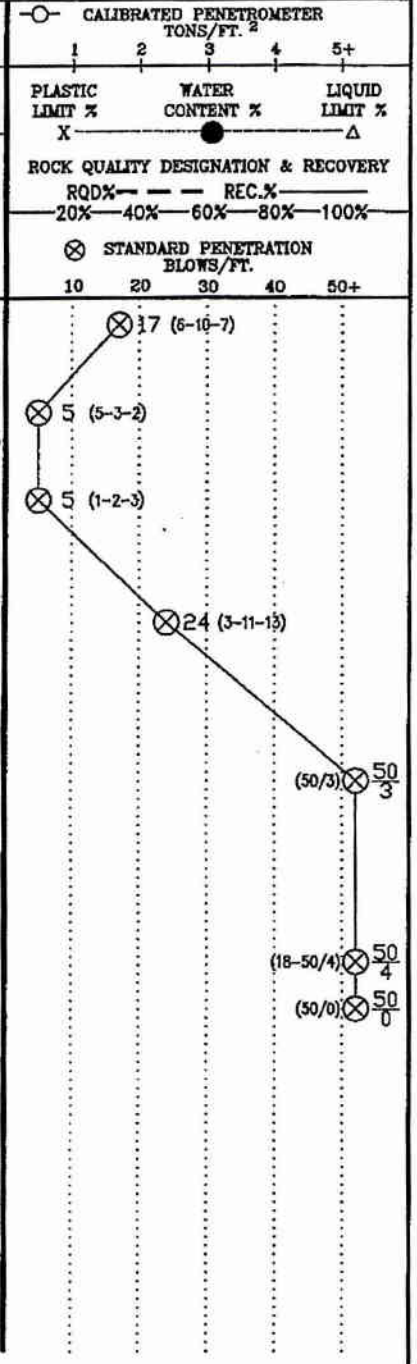
ALLEGHENY COUNTY

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 789

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)
0	1	SS	18	10	Silty SAND, With Rock Fragments, Dark Brown and Gray, Moist, Loose to Medium Dense, (SM-FILL)		
	2	SS	18	3			785
5	3	SS	18	10	Silty CLAY, Brown, Moist, Soft, (CH)		
	4	SS	18	4	Silty CLAY, With Rock Fragments, Brown and Gray, Moist, Very Stiff, (CL)		780
10	5	SS	3	3	Decomposed Rock and Rock Fragments, Gray, Moist, Very Dense		775
15	6	SS	10	10			770
20	7	SS	0	0	AUGER REFUSAL @ 20.0'		765
25							760
30							



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL 8.5' WS OR WD	BORING STARTED 01-26-09	
WL(BCR) 6' WL(ACR) 5'	BORING COMPLETED 01-26-09	CAVE IN DEPTH ● 12'
WL	RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA

AMEWIT (03-24-09) AMEWIT (03-24-09) AMEWIT (03-24-09) AMEWIT (03-24-09) AMEWIT (04-13-09) AMEWIT (04-13-09)
grubowski(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-22	1 OF 2

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% ——— (20%, 40%, 60%, 80%, 100%)

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

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 788

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0	1	SS	18	12	Silty SAND, With Rock Fragments, Dark Brown and Black, Moist, Firm to Dense, (SM-FILL)			(13-30-17) 47
	2	SS	18	14			785	8 (4-3-5)
5	3	SS	18	6	Silty CLAY, Trace Rock Fragments, Brown, Moist, Soft, (CH)			5 (2-2-3)
							780	
	4	SS	18	10	Decomposed Rock and Rock Fragments, Grayish Brown to Gray, Moist, Very Dense			(17-35-50/6) 50/6
10								
	5	SS	3	3			775	(50/3) 50/3
15								
							770	
20								
	6	SS	0	0	Shale, Gray, Moderately Hard to Hard, Fresh to Slightly Weathered, Very Slightly to Moderately Fractured, Low Attitude, [Rec = 100%, RQD = 89%]		765	(50/0) 50/0
25								
					Shale, Gray, Moderately Hard to Hard, Fresh to Slightly Weathered, Very Slightly to Moderately Fractured, Low Attitude, [Rec = 100%, RQD = 97%]		760	
30								

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THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 8.5'	WS OR WD	BORING STARTED 01-26-09	WATER ADDED FOR CORING
▽WL(BCR) ▽WL(ACR)		BORING COMPLETED 01-26-09	CAVE IN DEPTH ●
▽WL		RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA

AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (04-13-09) AHEWITT (04-13-09)
grolkowski(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-22	2 OF 2

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 788

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)
30					Shale, Gray, Moderately Hard to Hard, Fresh to Slightly Weathered, Very Slightly to Moderately Fractured, Low Attitude, [Rec = 100%, RQD = 97%]		755
35					Shale, Gray, Moderately Hard to Hard, Fresh to Slightly Weathered, Very Slightly to Moderately Fractured, Low Attitude, [Rec = 100%, RQD = 87%]		750
40					END OF BORING @ 37.0'		745
45							740
50							735
55							730
60							

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 8.5' WS OR WD	BORING STARTED 01-26-09	WATER ADDED FOR CORING
▽WL(BCR) ▽WL(ACR)	BORING COMPLETED 01-26-09	CAVE IN DEPTH ●
▽WL	RIG CME75 FOREMAN WOLFE	DRILLING METHOD HSA

AMEWIT (03-24-09) AMEWIT (03-24-09) AMEWIT (03-24-09) AMEWIT (03-24-09) AMEWIT (04-13-09) AMEWIT (04-13-09)
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CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-23	1 OF 2

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 753

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — REC.% (20%, 40%, 60%, 80%, 100%)

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

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0	1	SS	18	18	Topsoil Depth 5"		10 (3-5-5)
	2	SS	18	17	Sandy CLAY, Trace Gravel, Brown, Moist, Stiff to Hard, (CL-FILL)	750	(5-15-19) 34
5	3	SS	18	18	Silty SAND, Black, Moist, Firm, (SM-FILL)	745	7 (3-4-3)
	4	SS	18	18	Silty FAT CLAY, Brownish Gray, Moist, Medium Stiff, (CH)		7 (4-3-4)
10						740	
	5	SS	18	10			6 (2-3-3)
15						735	
	6	SS	18	18	Clayey SAND, Trace Rock Fragments, Brown, Moist, Medium Dense, (SC)		14 (5-7-7)
20						730	
	7	SS	18	18	Silty CLAY, Brown, Moist, Stiff, (CL)		11 (3-5-6)
25						725	
	8	SS	18	18	Sandy CLAY, With Rock Fragments, Brown, Moist, Medium Stiff, (CL)		10 (2-4-6)
30							

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THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL 33' WS OR PD	BORING STARTED 02-03-09	
WL(BCR) 35' WL(ACR) DRY	BORING COMPLETED 02-03-09	CAVE IN DEPTH ● 42' ○ 24 HRS
WL 35; @ 24 HRS	RIG 55LC FOREMAN KERSH	DRILLING METHOD HSA

AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (04-13-09) AHEWITT (04-13-09)
grdbore4(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-23	2 OF 2

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 753

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS)	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
30					Sandy CLAY, With Rock Fragments, Brown, Moist, Medium Stiff, (CL)		720	
35	9	SS	18	18	Clayey Fine SAND, Brown, Saturated, Loose, (SC)		715	5 (2-2-3)
40	10	SS	18	18	Clayey SAND, With Rock Fragments, Brown, Wet, Dense, (SC)		710	(17-19-21) 40
45	11	SS	1	1	Decomposed Rock, With Rock Fragments, Gray, Moist, Very Dense			(50/1) 50/1
50	12	SS	0	0	AUGER REFUSAL @ 47.0'		705	(50/0) 50/0
55							700	
60							695	

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL.

▽WL 33' WS OR WD	BORING STARTED 02-03-09	
▽WL(BCR) 35' ▽WL(ACR) DRY	BORING COMPLETED 02-03-09	CAVE IN DEPTH ● 42' ○ 24 HRS
▽WL 35; @ 24 HRS	RIG 55LC FOREMAN KERSH	DRILLING METHOD HSA

AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (03-24-09) AHEWITT (04-13-09) AHEWITT (04-13-09)
gratkowski(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-24	1 OF 2

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% ——— (20%, 40%, 60%, 80%, 100%)

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

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 745

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS)	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
0	1	SS	18	18	Asphalt Millings, Black, Moist, Firm, (FILL)			9 (12-5-4)
	2	SS	18	10	GRAVEL, With Silt and Sand, Gray, Moist, Medium Dense, (GM)			19 (8-14-5)
5	3	SS	18	18	SILT, With Rock Fragments, Reddish Brown and Gray, Moist, Loose, (ML-FILL)		740	5 (4-3-2)
	4	SS	18	6	Silty SAND, With Gravel, Black, Moist, Very Loose, (SM-FILL)			3 (1-2-1)
10							735	
	5	SS	18	14				3 (1-2-1)
15							730	
					Clayey SAND, Black, Wet, Very Loose, (SC-FILL)	▽		
	6	SS	18	18				2 (WOH-1-1)
20							725	
	7	SS	18	18	Silty FAT CLAY, Trace Fine Sand, Dark Brownish Gray, Wet, Very Soft to Medium Stiff, (CH)			6 (WOH-3-3)
25							720	
	8	SS	18	18				WOH (1-WOH-WOH)
30								

CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 18' WS OR WD	BORING STARTED 02-03-09	
▽WL(BCR) 35' ▽WL(ACR) DRY	BORING COMPLETED 02-03-09	CAVE IN DEPTH ● 5.5' ○ 24 HRS
▽WL DRY @ 24 HRS	RIG 55LC FOREMAN KERSH	DRILLING METHOD HSA

AHEWIT (03-24-09) AHEWIT (03-24-09) AHEWIT (03-24-09) AHEWIT (03-24-09) AHEWIT (04-13-09) AHEWIT (04-13-09)
grpbwerk3(01/21/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3549	TB-24	2 OF 2

PROJECT NAME: McKEESPORT WWTP ADDITIONAL BORINGS

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} 1 2 3 4 5+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % △

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50+

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION 745

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
30					Silty FAT CLAY, Trace Fine Sand, Dark Brownish Gray, Wet, Very Soft to Medium Stiff, (CH)			
	9	SS	18	18				14 (WOH-12-2)
35						▼	710	
	10	SS	18	18	Clayey SAND, Dark Brownish Gray, Moist, Loose, (SC)			5 (2-2-3)
40							705	
	11	SS	1	1	Rock Fragments, Brownish Gray, Moist, Very Dense, (GP)			(50/1) 50/1
45					Clayey SAND, With Rock Fragments, Dark Brownish Gray, Moist, Medium Dense, (SC)		700	
	12	SS	18	18				11 (4-4-7)
50					AUGER REFUSAL @ 50.0'		695	
55							690	
60								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 18' WS OR WD	BORING STARTED 02-03-09		
▽WL(BCR) 35' ▽WL(ACR) DRY	BORING COMPLETED 02-03-09	CAVE IN DEPTH ● 5.5' ○ 24 HRS	
▽WL DRY @ 24 HRS	RIG 55LC FOREMAN KERSH	DRILLING METHOD HSA	

AMEMITT (03-24-09) AMEMITT (03-24-09) AMEMITT (03-24-09) AMEMITT (03-24-09) AMEMITT (04-13-09) AMEMITT (04-13-09)
grabowski(01/31/2009 11:30:16 am)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TBLR-1	1 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — REC.% (20%, 40%, 60%, 80%, 100%)

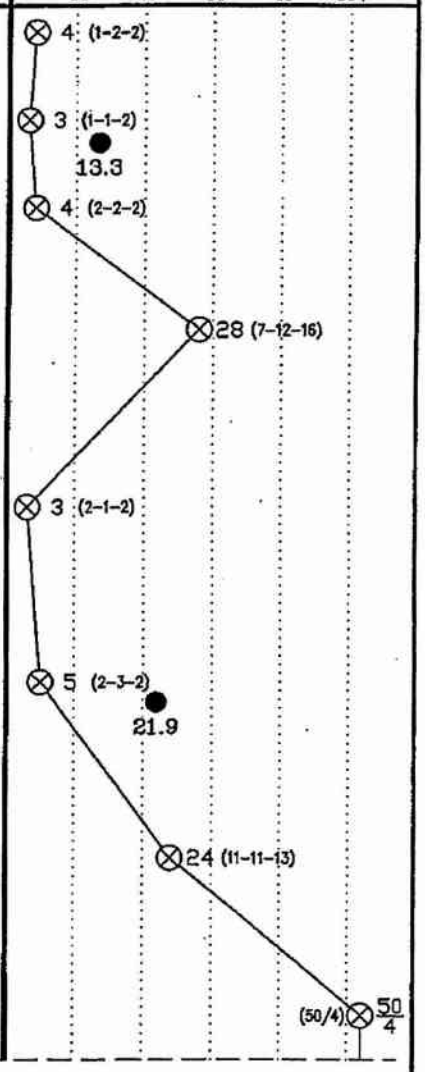
STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50+)

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING — LOSS OF CIRCULATION 100%

SURFACE ELEVATION

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)
0	1	SS	18	18	Topsoil Depth 2"		
					Sandy CLAY, Trace Gravel, Dark Brown, Moist, Very Soft, (CL-FILL)		
	2	SS	18	4			
5	3	SS	18	12			
	4	SS	18	10	Clayey SAND, Trace Rock Fragments, Dark Brown, Moist, Medium Dense, (SC-FILL)		
10							
	5	SS	18	8	Sandy CLAY, Trace Rock Fragments, Gray, Moist, Very Soft to Soft, (CL)		
15							
	6	SS	18	10			
20							
	7	SS	18	16	Sandy CLAY, With Rock Fragments, Brownish Gray, Moist, Very Stiff, (CL)		
25							
	8	SS	4	4	Decomposed Rock and Rock Fragments, Trace Sandy Clay, Brownish Gray, Very Dense		
30							



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THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL 18.5' WS OR WD	BORING STARTED 06-11-08	
WL(BCR) 21' WL(ACR) 12'	BORING COMPLETED 06-11-08	CAVE IN DEPTH ● 17.0' ○ EOD
WL 12.0' @ EOD	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AMEMITT (07-03-08) AMEMITT (07-15-08) AMEMITT (07-15-08) AMEMITT (07-17-08)
gnikowski(07/01/2008)

CLIENT	JOB #	BORING #	SHEET
KLH ENGINEERS	13-3364	TBLR-1	2 OF 2

PROJECT NAME: McKEESPORT WWTP EXPANSION

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: ATLANTIC AVENUE, McKEESPORT, PENNSYLVANIA

ALLEGHENY COUNTY

CALIBRATED PENETROMETER TONS/FT.² 1 2 3 4 6+

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% — 20% 40% 60% 80% 100%

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

BOTTOM OF CASING ▶ — LOSS OF CIRCULATION 100%

SURFACE ELEVATION

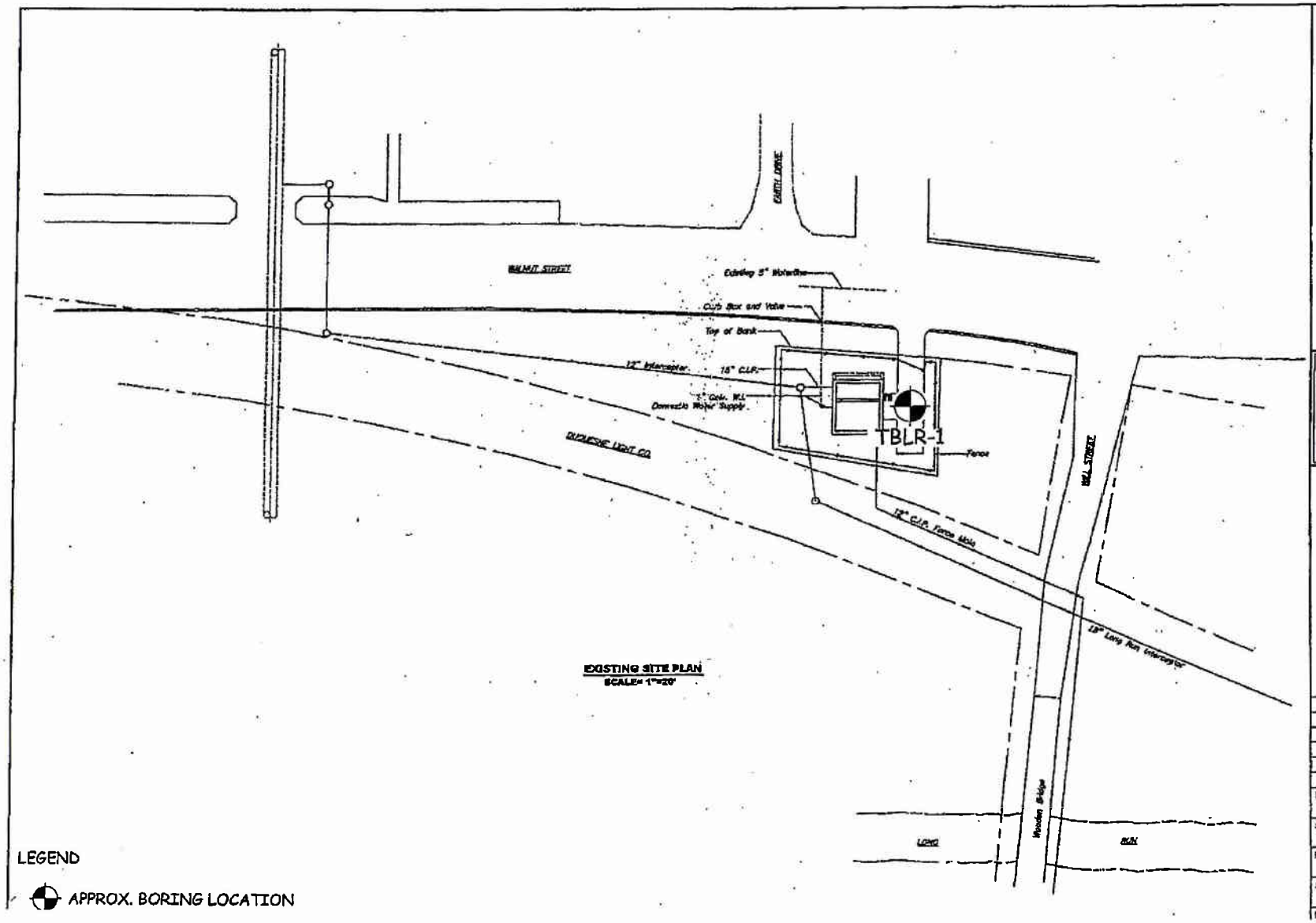
DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS)	WATER LEVELS	ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
30					Decomposed Rock and Rock Fragments, Trace Sandy Clay, Brownish Gray, Very Dense			
	9	SS	1	1				(50/1) 50/1
35								
	10	SS	0	0				(50/0) 50/0
					AUGER REFUSAL @ 37.0'			
40								
45								
50								
55								
60								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL 18.5' WS OR WD	BORING STARTED 06-11-08	
▽WL(BCR) 21' ▽WL(ACR) 12'	BORING COMPLETED 06-11-08	CAVE IN DEPTH ● 17.0' @ EOD
▽WL 12.0' @ EOD	RIG 45C FOREMAN GIFFIN	DRILLING METHOD HSA

AMEMIT (07-03-08) AMEMIT (07-15-08) AMEMIT (07-15-08) AMEMIT (07-17-08)

gpdbwsk(07/01/2008)



LEGEND

APPROX. BORING LOCATION

McKEESPORT WWTP EXPANSION

ALLEGHENY COUNTY

ECS LLC MID-ATLANTIC

BORING LOCATION DIAGRAM

KLH ENGINEERS

ECS REVISIONS

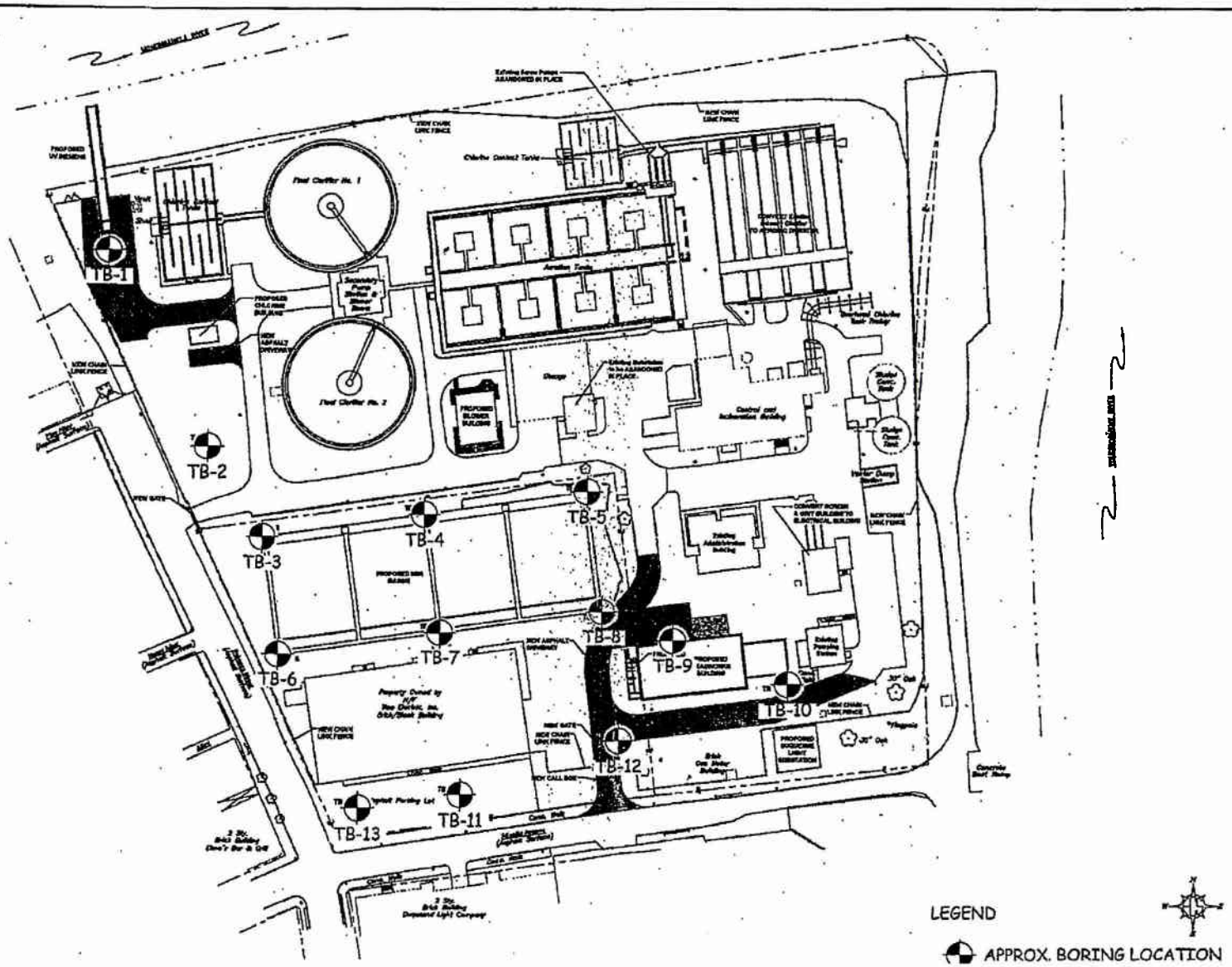
ENGINEER	DRAFTING
GAR	AMH

SCALE: NTS

PROJECT NO.: 13-3364

SHEET: 1 OF 2

DATE: 07-03-06



McKEESPORT WWTP EXPANSION

ALLEGHENY COUNTY

ECS LLC MID-ATLANTIC

BORING LOCATION DIAGRAM

KLH ENGINEERS

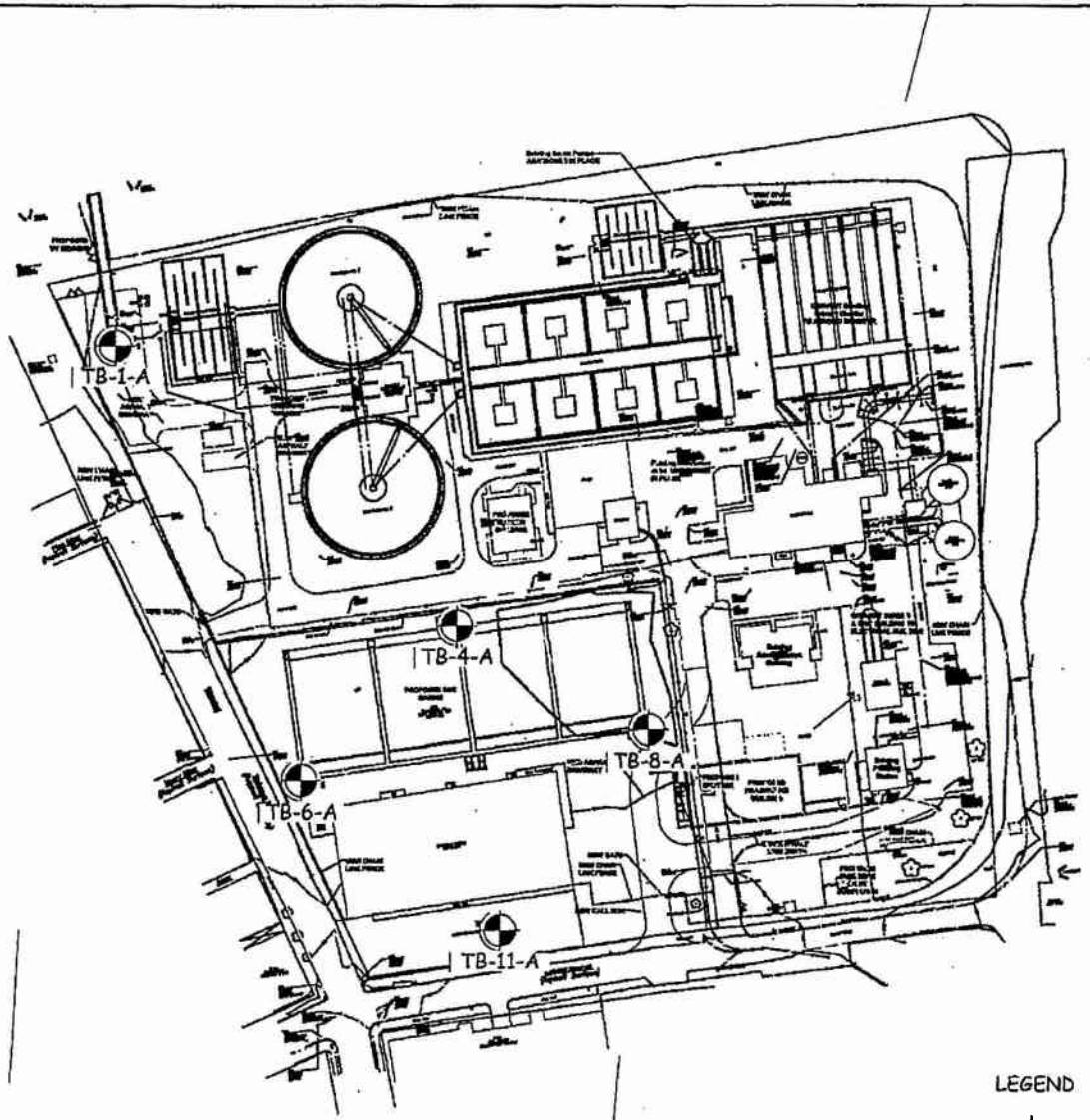
ECS REVISIONS

ENGINEER	DRAFTING
GAR	AMH

SCALE: NTS

PROJECT NO. 13-3364

SHEET 1 OF 2



SCALE (IN FEET)

50 100

100 0

LEGEND

APPROX. BORING LOCATION

***NOTE: Borings designated as "-A" were drilled at an apprioximate 5' offset from the original borings.

McKEESPORT WWTP ADDITIONAL BORINGS

ALLEGHENY COUNTY

ECS LLC MID-ATLANTIC

BORING LOCATION DIAGRAM

KLH ENGINEERS

ECS REVISIONS

ENGINEER	DRAFTING
JAM	AMH

SCALE 1" = 100'

PROJECT NO. 13-3549

SHEET 1 OF 4

DATE 04-13-09