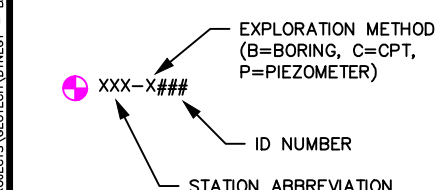


**The following are attachments to the testimony of Scott M. Payne,  
PhD, PG and Ian Magruder, M.S..**



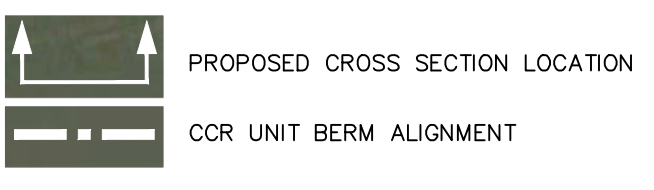
**Appendix A4**  
**AECOM Boring Logs**  
**and Well Details**

File: P:\PROJECTS\GEO\DYNEGY - BALDWIN 2014\CCR\04TASKS\00 PROGRAM TASKS\1.0 TASK 1 INITIAL UNIT ASSESSMENT\CCR FACT SHEETS\SITE MAPS\FIGURE 1 BORING LOCATION PLAN (HENNEPIN OLD WEST ASH POND NO. 1 AND NO. 2).DWG Last edited: JUL 15, 15 @ 11:19 a.m. by: david\_dequire



**LEGEND**

- ⊕ PROPOSED BORING LOCATION
- ▲ PROPOSED CPT LOCATION
- PROPOSED PIEZOMETER LOCATION



DRAFT

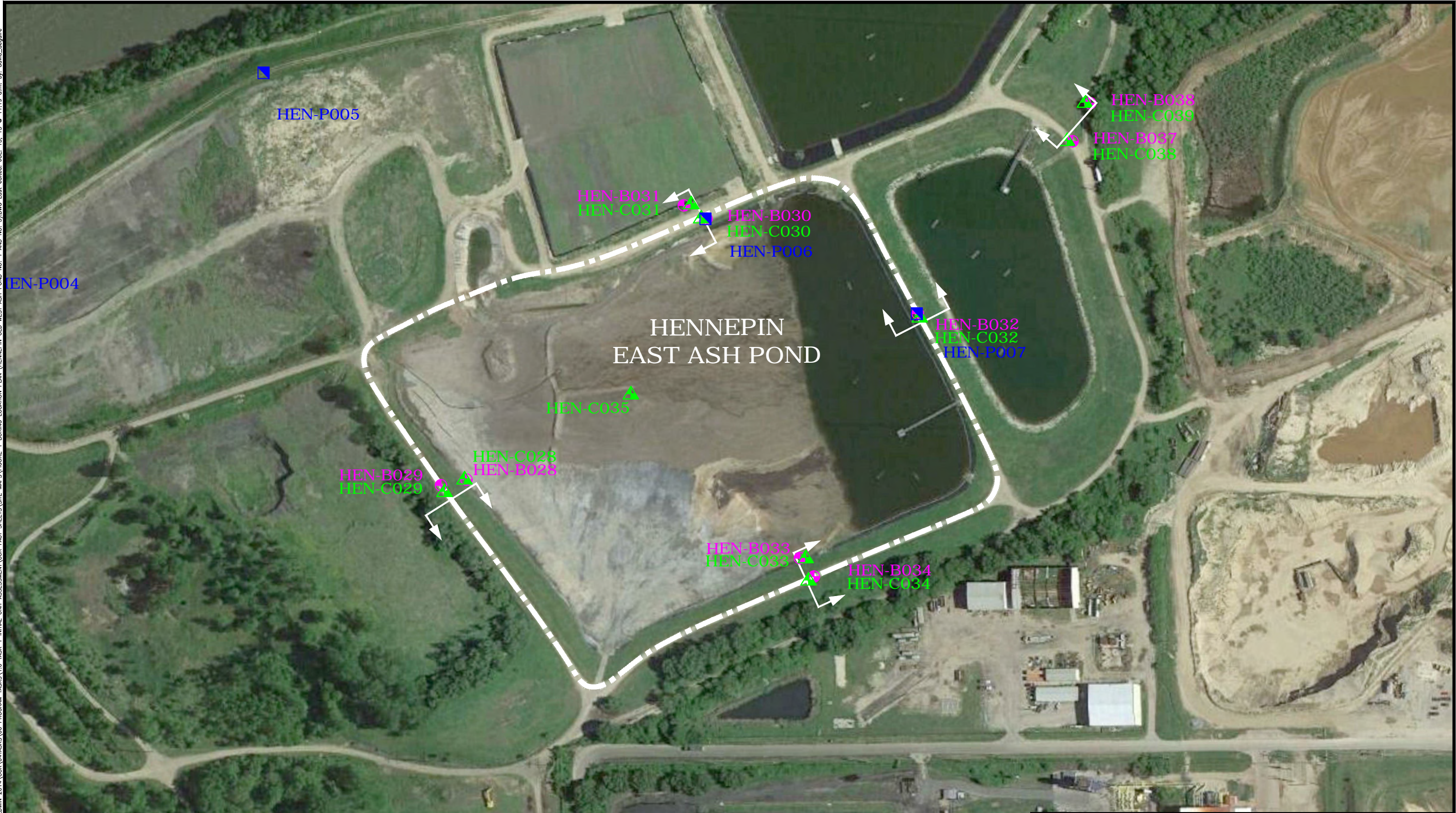
0 200

APPROXIMATE SCALE FEET

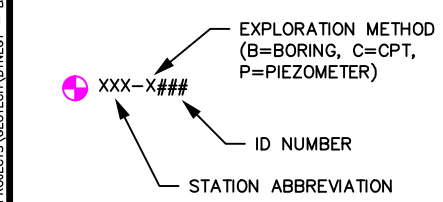
SOURCE:  
MAP PROVIDED BY GOOGLE EARTH PRO 2015

DYNEGY, INC	PROJECT NO. 60428794
<b>AECOM</b>	
DRN. BY:djd July 2015 DSGN. BY:eg CHKD. BY:eg	Hennepin Ash Pond No. 2 Field Investigation Plan
FIG. NO. D-01	

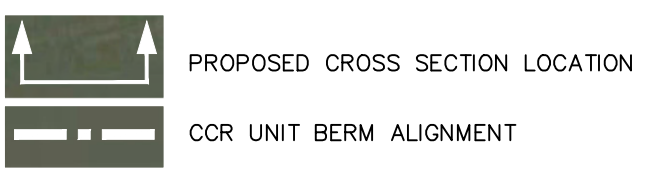
File: P:\PROJECTS\GEO\DYNEGY - BALDWIN 2014\CCR\04TASKS\00 PROGRAM TASKS\1.0 TASK 1 INITIAL UNIT ASSESSMENT\CCR FACT SHEETS\SITE MAPS\FIGURE 1 BORING LOCATION PLAN (HENNEPIN OLD WEST ASH POND NO. 1 AND NO. 3).DWG Last edited: JUL 15 11:19 a.m. by: david\_dequire



HENNEPIN  
EAST ASH POND



- LEGEND**
- PROPOSED BORING LOCATION
  - ▲ PROPOSED CPT LOCATION
  - PROPOSED PIEZOMETER LOCATION



**DRAFT**

0 200

APPROXIMATE SCALE FEET

SOURCE:  
MAP PROVIDED BY GOOGLE EARTH PRO 2015

DYNEGY, INC		PROJECT NO. 60428794
<b>AECOM</b>		
DRN. BY:djd July 2015 DSGN. BY:eg CHKD. BY:eg	Hennepin East Ash Pond Field Investigation Plan	FIG. NO. D-02

<b>Project: Hennepin Power Station</b>	<b>Log of Boring HEN-B020</b>
Project Location: Hennepin, Illinois	Sheet 1 of 2
Project Number: 60439752	

Date(s) Drilled: 10/01/2015 to 10/02/2015	Logged By: Robert Weseljak	Checked By: AJW
Drilling Method: Mud Rotary	Drill Bit Size/Type: 3 7/8" Tricone Roller Bit	Borehole Depth: 41.5 ft
Drill Rig Type: Mobile 50 Truck Mounted	Drilling Contractor: Strata Earth Services	Surface Elevation: ft
Borehole Backfill: Portland Cement and Grout	Sampling Method(s): Split Spoon/3" Thin Walled Tube	Hammer Data: Automatic, 140 lbs, 30" drop
Groundwater Level(s) ft on		

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol										
0	SS-1	19 17 13	56		Gravel (GP). Lean CLAY (CL), trace fine to coarse gravel.	0.0								
	SS-2	6 8 7	67		Medium dense, moist, brown, clayey fine to coarse GRAVEL (GC).	2.5					0.0 1.0			
5	SS-3	6 8 7	83		Stiff, moist, sandy lean CLAY (CL), trace fine to coarse gravel.	5.0					1.5			
	SS-4	1 3 4	78								1.0			
10	ST-5		52											Pushed shelly tube from 9.5 to 11.5 feet
15	SS-6	5 3 7	6		Loose, brown well graded GRAVEL (GW).	15.0								
20	SS-7	30 48 50/5"	72		Dry, brown with some rust and black, well graded SAND (SW) with gravel [Fill].	20.0								17.0 feet: Drillers Note - cobbles from 17.0 to 20.0 feet
25	SS-8	22 33 29	67		Very dense, dry, brown clayey GRAVEL (GC), little sand.	25.0								
30														

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:42:56 AM

**Project: Hennepin Power Station**

**Log of Boring HEN-B020**

Project Location: Hennepin, Illinois

Sheet 2 of 2

Project Number: 60439752

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY\_CCR\HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:42:56 AM

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Elevation (feet)										
30	SS-9	27 19 22	78											
35	SS-10	19 27 20	78											
40	SS-11	15 16 41	56											
					End of Boring at 41.5 ft	41.5								Less fines in Sample 11  Boring backfilled with 94 pounds of Portland Cement and 25 pounds of bentonite
45														
50														
55														
60														
65														

Date(s) Drilled: 10/01/2015 to 10/02/2015	Logged By: Robert Weseljak	Checked By: AJW
Drilling Method: Mud Rotary	Drill Bit Size/Type: 3 7/8" Tricone Roller Bit	Borehole Depth: 45.1 ft
Drill Rig Type: Mobile 57 Truck Mounted	Drilling Contractor: Strata Earth Services	Surface Elevation: ft
Borehole Backfill: Portland Cement and Grout	Sampling Method(s): Split Spoon/3" Thin Walled Tube	Hammer Data: Automatic, 140 lbs, 30" drop
Groundwater Level(s): ft on		

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Elevation (feet)	Depth (feet)	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)													
0	SS-1	80/6"	17		Topsoil, lean CLAY (CL).	0.0										
	SS-2	6 5 4	44		Stiff, brown, sandy lean CLAY (CL), trace fine to coarse gravel.	2.5						<0.5				
5	ST-3											2.0				<i>Pushed Shelby tube from 5.0 to 6.0 feet</i>
	SS-4	10 61	83		Very dense, dry, brown, silty GRAVEL (GM).	8.3										
10	SS-5	14 14 12	67		Medium dense, moist, brown, clayey GRAVEL (GC).	10.0										
15	SS-6	20 15 19	44		Stiff, moist, dark brown to gray and black, medium plastic cohesive lean CLAY (CL).	15.0						<0.5				
20	SS-7	9 12 9	100		Very stiff, moist, gray to black, sandy SILT (ML) with Ash [Fill].	20.0						1.0				
	ST-8		72													<i>Pushed Shelby tube from 22.0 to 24.0 feet</i>
25	SS-9	6 20 32	100									<0.5				
30																

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:01 AM

**Project: Hennepin Power Station**

Project Location: Hennepin, Illinois

Project Number: 60439752

**Log of Boring HEN-B021**

Sheet 2 of 2

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPINDYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:01 AM

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Elevation (feet)										
30	SS-10	11 20 24	94								0.5			Less sand in Sample 10
35	SS-11	4 8 10	100		Stiff, moist, black, lean CLAY (CL) with Ash, trace to little sand [Fill].						2.5			
40	SS-12	5 6 5	100		Medium dense, moist to wet, brown, silty SAND (SM).									
45	SS-13	50/2"	0		End of Boring at 45.1 ft									45.0 feet: Drillers Note - hit rock Boring backfilled with 94 pounds of Portland Cement and 25 pounds of bentonite
50														
55														
60														
65														



Date(s) Drilled: 09/23/2015 to 09/23/2015	Logged By: Robert Weseljak	Checked By: AJW
Drilling Method: Hollow-Stem Auger	Drill Bit Size/Type: 3 7/8" Tricone Roller Bit	Borehole Depth: 21.5 ft
Drill Rig Type: Diedrich D-120 Rubber Tired ATV	Drilling Contractor: Strata Earth Services	Surface Elevation: ft
Borehole Backfill: Drill Cuttings and Bentonite Chips	Sampling Method(s): Split Spoon/3" Thin Walled Tube	Hammer Data: Automatic, 140 lbs, 30" drop
Groundwater Level(s): ft on		

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:07 AM

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Elevation (feet)										
0	SS-1	1 1 1	100	0.0	Very soft, moist, brown to dark gray, sandy SILT (ML).						0.0 0.5			0.0 feet: Trace roots from 0.0 to 0.5 feet
	ST-2		71											Pushed Shelby tube from 2.5 to 4.5 feet
5	SS-3	2 2 2	100	5.0	Soft, moist, dark gray, SILT (ML).						0.5			
	ST-4		100	6.3										Pushed Shelby tube from 7.5 to 9.5 feet
10	SS-5	5 5 6	67		Stiff, dry, dark gray, silty SAND (SM) with Ash [Fill].						0.0 0.5			
	SS-6	21 25 20	100	15.0								0.0 0.75		
20	SS-7	3 4 5	100	20.0	Stiff, moist, brown, sandy lean CLAY (CL).						1.0 1.25			
				21.5										
					End of Boring at 21.5 ft									
25														
30														

Date(s) Drilled: 09/22/2015 to 09/23/2015	Logged By: Robert Weseljak	Checked By: AJW
Drilling Method: Mud Rotary	Drill Bit Size/Type: 3 7/8" Tricone Roller Bit	Borehole Depth: 76.5 ft
Drill Rig Type: Diedrich D-120 Rubber Tired ATV	Drilling Contractor: Strata Earth Services	Surface Elevation: ft
Borehole Backfill: Portland Cement and Grout	Sampling Method(s): Split Spoon/3" Thin Walled Tube	Hammer Data: Automatic, 140 lbs, 30" drop
Groundwater Level(s): ft on		

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Elevation (feet)	Depth (feet)	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS	
	Type	Number	Sampling Resist. OR Core RQD (%)	Recovery (%)													
0	SS-1	7 11 15	100		Dense, moist, brown, fine to medium sandy silty GRAVEL (GM) [Fill]	0.0											
	SS-2	8 15 18	100		Stiff to hard, moist, sandy silty CALY (CL) with medium to coarse gravel [Fill]. Grades with medium brown sand in occasional lenses. Grades with zones of high plastic clay.	2.0						4.5					
5	SS-3	10 27 18	100									3.5 4.25					
	SS-4	7 17 20	100									4.5					
10	SS-5	13 12 10	83		Medium dense, moist, brown clayey silty fine to medium SAND (SM) [Fill].	9.5						4.5					
					Hard, moist, brown, silty sandy CLAY (CL) with fine to medium gravel [Fill].	11.0											
					Medium dense, moist, brown fine to medium GRAVEL with sand and clay lenses [Fill].	13.0											
15	SS-6	22 32 52	83														
					Moist, dark gray to black, silt to fine gravel sized fly / bottom ASH [Fill].	18.0											
20	SS-7	51 39 26	94														
					Moist to wet, dark gray, silt sized fly ash with some sand to small gravel sized FLY ASH particles [Fill].	23.0											
25	SS-8	4 6 5	83									0.0 0.25					
	ST-9		63														
30																	

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:10 AM

**Project: Hennepin Power Station**

Project Location: Hennepin, Illinois

Project Number: 60439752

**Log of Boring HEN-B023**

Sheet 2 of 3

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPINDYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:10 AM

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Elevation (feet)										
30	SS-10	15 11 11	100								0.25 0.5			
35	SS-11	20 36 53	100		33.0 Medium dense to dense, moist, dark gray to black, silty sand to small gravel sized bottom ASH [Fill].						0.5 3.5			
40	SS-12	14 11 12	100		40.0 Medium dense, moist to wet, dark gray to black, silty SAND (SM), trace gravel and ash [Fill].						0.5 1.3			
45	SS-13	7 4 14	33		44.0 Very stiff, wet, brown, sandy lean CLAY (CL) with fine to coarse gravel.						0.5			
50	SS-14	34 52	83		50.0 Very dense, wet, brown, clayey fine to coarse angular GRAVEL (GC) with sand.									
55	SS-15	18 11 8	78											
60	SS-16	11 7 8	17											
65					65.0									

**Project: Hennepin Power Station**

Project Location: Hennepin, Illinois

Project Number: 60439752

**Log of Boring HEN-B023**

Sheet 3 of 3

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY\_CCR\HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPINDYNEGBORINGLOGS.GPJ; 12/18/2015 9:43:10 AM

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Elevation (feet)	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)												
67	SS-17	6 4 5	67		Loose, wet, brown, silty fine to coarse GRAVEL (GM).										
70	SS-18	19 19 13	67		Dense, wet, brown, silty fine to coarse GRAVEL (GM) with fine sand.	70.0									70.6 feet: Sand seam from 70.6 to 71.0 feet
75	SS-19	18 17 9	33		Medium dense, wet, silty fine to coarse GRAVEL (GM).	75.0									
76.5					End of Boring at 76.5 ft	76.5									Boring backfilled with 94 pounds of Portland Type I Cement
80															
85															
90															
95															
100															

<b>Project: Hennepin Power Station</b>	<b>Log of Boring HEN-B024</b>
Project Location: Hennepin, Illinois	Sheet 1 of 2
Project Number: 60439752	

Date(s) Drilled: 09/22/2015 to 09/22/2015	Logged By: Andrew Wilding	Checked By: AJW
Drilling Method: Mud Rotary	Drill Bit Size/Type: 3 7/8" Tricone Roller Bit	Borehole Depth: 62.7 ft
Drill Rig Type: Diedrich D-120 Rubber Tired ATV	Drilling Contractor: Strata Earth Services	Surface Elevation: ft
Borehole Backfill: Portland Cement and Grout	Sampling Method(s): Split Spoon/3" Thin Walled Tube	Hammer Data: Automatic, 140 lbs, 30" drop
Groundwater Level(s): ft on		

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol										
0	SS-1	14 15 15	100		Dense, moist, brown fine to medium silty GRAVEL [Fill].									
	SS-2	19 23 18	100											
5	SS-3	5 7 15	100		Stiff, moist, brown silty CLAY with some medium gravel and sand [Fill].	4.5					3.5			
	SS-4	4 15 23	78		Medium dense, moist, brown, silty medium SAND, trace organics [Fill].	5.8					2.25 3.0			
	SS-4	4 15 23	78		Medium stiff, moist, brown, silty SAND, with some small to medium gravel [Fill].	7.0								
10	SS-5	10 12 16	78		Medium stiff, moist, dark gray, clayey SILT with medium to coarse sand, some gravel (presumably fly ash) and seams of brown silty clay [Fill].	9.5					4.0 4.5			
	SS-6	13 20 29	94		Dense, moist, dark gray to black fine to coarse sand sized bottom ASH with some fine gravel [Fill].	13.0								
					Grades with fine gravel.									
20	SS-7	75/0.3'	38											
25	SS-4	3 2 3	100											
	ST-9		57											
30														
														Pushed Shelby tube from 27.0 to 29.0 feet Shelby tube refusal at 29.2

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:18 AM

**Project: Hennepin Power Station**

Project Location: Hennepin, Illinois

Project Number: 60439752

**Log of Boring HEN-B024**

Sheet 2 of 2

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:18 AM

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Elevation (feet)										
30	SS-10	1 3 2	100		Grades with thin, hard cemented layers.									
35	SS-11	5 9 12	100								0.5			
40	SS-12	55/6"	50		Medium dense, wet, sandy silty fine to coarse GRAVEL (GM).	39.0								
45	SS-13	22 27 21	78											
50	SS-14	15 18 15	50		Grades with ~1" silty clay layers and zones of silty clay matrix (silty clay, brownish gray, soft to medium stiff, moist).									
55	SS-15	55/0.2'	0											
60	SS-16	20 22 13	78		Medium dense, moist, silty SAND (SM) with trace to fine medium gravel.	58.0								
	SS-17	80/0.1'	17		Wet, sandy fine to medium, rounded GRAVEL (GP).	62.0								
65					End of Boring at 62.7 ft	62.7								

*Boring backfilled with Portland Type I cement*

<b>Project: Hennepin Power Station</b>	<b>Log of Boring HEN-B025</b>
<b>Project Location:</b> Hennepin, Illinois	Sheet 1 of 2
<b>Project Number:</b> 60439752	

Date(s) Drilled 10/01/2015 to 10/01/2015	Logged By Robert Weseljak	Checked By AJW
Drilling Method Mud Rotary	Drill Bit Size/Type 3 7/8" Tricone Roller Bit	Borehole Depth 56.5 ft
Drill Rig Type Mobile 50 Truck Mounted	Drilling Contractor Strata Earth Services	Surface Elevation ft
Borehole Backfill Portland Cement and Grout	Sampling Method(s) Split Spoon/3" Thin Walled Tube	Hammer Data Automatic, 140 lbs, 30" drop
Groundwater Level(s) ft on		

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:23 AM

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Elevation (feet)										
0	SS-1	23 19 22	56	0.0	Medium dense, dry, brown, silty SAND (SM) with gravel [Road Fill].									
2.5	SS-2	5 7 9	72	2.5	Stiff, dry, brown, lean CLAY (CL).					3.0				
5	SS-3	14 26 19	78	5.0	Dense, dry, silty GRAVEL (GM) with sand [Fill].									
7.5	SS-4	2 2 2	89	7.5	Soft, gray with some black SILT (ML) to very fine silty SAND (SM).					<0.5				
10	SS-5	2 3 4	33							0.5				Pushed Shelby tube from 10.5 to 14.0 feet
	ST-6		100							1.0				
15	SS-7	2 3 2	56							<0.5				
20	SS-8	9 5 3	56	20.0	Stiff, moist to wet, gray with some black layering, sandy SILT (ML).					<0.5				
25	ST-9		100											Pushed Shelby tube from 25.0 to 27.0 feet
	SS-10	4 4 5	56							1.0				
30														

**Project: Hennepin Power Station**

Project Location: Hennepin, Illinois

Project Number: 60439752

**Log of Boring HEN-B025**

Sheet 2 of 2

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:23 AM

Depth (feet)	SAMPLES				Graphic Symbol	Elevation (feet)	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)												
30	SS-11	3 4 5	67									<0.5			
35	SS-12	5 7 7	72									1.0			
40	SS-13	6 12 11	61									1.1			
45	SS-14	6 7 8	83									1.0			
50	SS-15	7 8 10	89									0.5 1.5			
55	SS-16	10 12 13	94		55.0	Very stiff, moist to wet, black, gray and some dark brown, sandy SILT (ML).						3.5 4.0			
					56.5	End of Boring at 56.5 ft									
60															
65															

*Boring backfilled with 94 pounds of Portland Cement and 25 pounds of bentonite*



<b>Project: Hennepin Power Station</b>	<b>Log of Boring HEN-B026</b>
Project Location: Hennepin, Illinois	Sheet 1 of 1
Project Number: 60439752	

Date(s) Drilled: 09/23/2015 to 09/23/2015	Logged By: Norm Seiler	Checked By: AJW
Drilling Method: Mud Rotary	Drill Bit Size/Type: 3 7/8" Tricone Roller Bit	Borehole Depth: 12.0 ft
Drill Rig Type: Diedrich D-26 Barge Mounted	Drilling Contractor: Strata Earth Services	Surface Elevation: ft
Borehole Backfill: Portland Cement and Grout	Sampling Method(s): Split Spoon/3" Thin Walled Tube	Hammer Data: Automatic, 140 lbs, 30" drop
Groundwater Level(s) ft on		







Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:29 AM

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Elevation (feet)	Depth (feet)	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS		
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)															
0						Barge.		0.0										
						Water.		1.5										
5	SS-1	4 5 7	56		Dark brown fine to coarse SAND and GRAVEL (SP-GP). Dark gray to brown gravelley CLAY (GC), trace sand.			4.0 4.5										
	SS-2	8 4 9																
10																		
						End of Boring at 12 ft		11.5										
15																		
20																		
25																		
30																		

11.5 feet: Drillers Note - hard drilling from 11.5 to 12.0 feet  
12.0 feet: Possible boulder or obstruction  
Boring backfilled with bentonite grout

<b>Project: Hennepin Power Station</b>	<b>Log of Boring HEN-B026A</b>
Project Location: Hennepin, Illinois	Sheet 1 of 1
Project Number: 60439752	

Date(s) Drilled: 09/23/2015 to 09/23/2015	Logged By: Norm Seiler	Checked By: AJW
Drilling Method: Mud Rotary	Drill Bit Size/Type: 3 7/8" Tricone Roller Bit	Borehole Depth: 26.5 ft
Drill Rig Type: Diedrich D-26 Barge Mounted	Drilling Contractor: Strata Earth Services	Surface Elevation: ft
Borehole Backfill: Portland Cement and Grout	Sampling Method(s): Split Spoon/3" Thin Walled Tube	Hammer Data: Automatic, 140 lbs, 30" drop
Groundwater Level(s): ft on		

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Elevation (feet)										
0						Blind drill - see HEN-B026.								Blind drilled to 10.0 feet
10	SS-1	7 6 7	11	10.0		Brown gravelly CLAY (GC), trace sand.								Large rock in Sample 3
	SS-2	25 42 13	0											
	SS-3	6 7 5	33											
	SS-4	5 5 9	11											
20	SS-5	7 8 6	11	20.0		Brown GRAVEL (GP) with sand and clay.								
25	SS-6	8 9 6	33	25.0 26.5		Brown fine to coarse SAND (SP) and GRAVEL (GP), trace silt and clay.								
				26.5		End of Boring at 26.5 ft								Boring backfilled with bentonite grout
30														

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:31 AM

<b>Project: Hennepin Power Station</b>	<b>Log of Boring HEN-B027</b>
Project Location: Hennepin, Illinois	Sheet 1 of 2
Project Number: 60439752	

Date(s) Drilled: 09/22/2015 to 09/22/2015	Logged By: Norm Seiler	Checked By: AJW
Drilling Method: Mud Rotary	Drill Bit Size/Type: 3 7/8" Tricone Roller Bit	Borehole Depth: 31.5 ft
Drill Rig Type: Diedrich D-26 Barge Mounted	Drilling Contractor: Strata Earth Services	Surface Elevation: ft
Borehole Backfill: Portland Cement and Grout	Sampling Method(s): Split Spoon/3" Thin Walled Tube	Hammer Data: Automatic, 140 lbs, 30" drop
Groundwater Level(s): ft on		

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Elevation (feet)										
0						Barge.								
						Water.								
5														
	SS-1	2 3 3 WOH	78	7.5		Dark brown SAND (SP) and GRAVEL (GP). Dark gray, silty CLAY (CL), trace sand.					1.5			
10	ST-2		72	12.0							2.5			<i>Pushed Shelby tube from 10.0 to 12.0 feet</i>
	SS-3	3 4 7	61			Dark gray to brown, silty CLAY (CL) with some gravel and sand.					1.5 2.0			
15	SS-4	4 5 7	22								1.75			
20	SS-5	3 5 4	33	20.0		Brown gravelly CLAY (GP) with some sand.								
25	SS-6	7 8 12	22	25.0		Brown to gray clayey SILT (ML) with some sand and gravel.								
30				28.0		Fine to coarse SAND (SP) and GRAVEL (GP).								28.0 feet: Cave in

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:34 AM

**Project: Hennepin Power Station**

Project Location: Hennepin, Illinois

Project Number: 60439752

**Log of Boring HEN-B027**

Sheet 2 of 2

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Elevation (feet)										
30	SS-7	898	56											
					End of Boring at 31.5 ft	31.5								Boring backfilled with bentonite grout
35														
40														
45														
50														
55														
60														
65														

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:34 AM

**Project: Hennepin Power Station**

**Log of Boring HEN-B029**

Project Location: Hennepin, Illinois

Sheet 1 of 2

Project Number: 60439752

Date(s) Drilled	10/01/2015 to 10/01/2015	Logged By	Robert Weseljak	Checked By	AJW
Drilling Method	Mud Rotary	Drill Bit Size/Type	3 7/8" Tricone Roller Bit	Borehole Depth	41.5 ft
Drill Rig Type	Mobile 57 Truck Mounted	Drilling Contractor	Strata Earth Services	Surface Elevation	ft
Borehole Backfill	Portland Cement and Grout	Sampling Method(s)	Split Spoon/3" Thin Walled Tube	Hammer Data	Automatic, 140 lbs, 30" drop
		Groundwater Level(s)	ft on		

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Elevation (feet)	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)												
0	SS-1	24 28 34	100		Very dense, dry, brown, silty GRAVEL (GM) [Road Fill].	0.0									
	SS-2	10 6 11	100		Stiff to very stiff, dry, lean CLAY (CL).	2.5						4.5			
5	ST-3		100									4.5			<i>Pushed Shelby tube from 5.0 to 7.0 feet</i>
	SS-4	12 14 17	100									4.0			
10	ST-5		100									2.5			<i>Pushed Shelby tube from 10.0 to 12.0 feet</i>
15	SS-6	4 6 8	83		Stiff, dark brown with trace rust, lean CLAY (CL), trace fine to coarse gravel.	15.0						1.5			
20	SS-7	6 12 20	78		Dense, dry, brown, clayey GRAVEL (GC).	20.2						1.5			
25	SS-8	17 17 43	56												
30															

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:40 AM

**Project: Hennepin Power Station**

**Log of Boring HEN-B029**

Project Location: Hennepin, Illinois

Sheet 2 of 2

Project Number: 60439752

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY\_CCR\HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:40 AM

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Elevation (feet)	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS	
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)													
30	SS-9	29 50/5"	22												Less fines in Sample 9	
35	SS-10	20 25 28	61													
40	SS-11	16 14 15	6													
						End of Boring at 41.5 ft	41.5								Boring backfilled with 94 pounds of Portland Cement and 25 pounds of bentonite	
45																
50																
55																
60																
65																

<b>Project: Hennepin Power Station</b>	<b>Log of Boring HEN-B030</b>
Project Location: Hennepin, Illinois	Sheet 1 of 1
Project Number: 60439752	

Date(s) Drilled: 09/29/2015 to 09/30/2015	Logged By: Norm Seiler	Checked By: AJW
Drilling Method: Hollow-Stem Auger	Drill Bit Size/Type: 3 7/8" Tricone Roller Bit	Borehole Depth: 11.0 ft
Drill Rig Type: Mobile 57 Truck Mounted	Drilling Contractor: Strata Earth Services	Surface Elevation: ft
Borehole Backfill: Portland Cement and Grout	Sampling Method(s): Split Spoon/3" Thin Walled Tube	Hammer Data: Automatic, 140 lbs, 30" drop
Groundwater Level(s): 9.0 ft on 9/29/2015		

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Elevation (feet)	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)												
0	SS-1	22 17 37	83		Brownish gray sand, gravel, and clay [Fill].	0.0									
	SS-2	15 17 15	67		Brown fine to coarse sand and gravel with some clay [Fill].	2.5									
5	SS-3	18 20 30	83												
	SS-4	4 5 6	100		Dark gray with trace gravel, sand, and clay, with ASH [Fill].	7.5									
10	ST-5		33		Black ASH with gravel [Fill].	10.0									
					End of Boring at 11 ft	11.0									
15															
20															
25															
30															

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:45 AM

<b>Project: Hennepin Power Station</b>	<b>Log of Boring HEN-B032</b>
Project Location: Hennepin, Illinois	Sheet 1 of 2
Project Number: 60439752	

Date(s) Drilled: 09/30/2015 to 09/30/2015	Logged By: Robert Weseljak	Checked By: AJW
Drilling Method: Mud Rotary	Drill Bit Size/Type: 3 7/8" Tricone Roller Bit	Borehole Depth: 41.5 ft
Drill Rig Type: Mobile 57 Truck Mounted	Drilling Contractor: Strata Earth Services	Surface Elevation: ft
Borehole Backfill: Portland Cement and Grout	Sampling Method(s): Split Spoon/3" Thin Walled Tube	Hammer Data: Automatic, 140 lbs, 30" drop
Groundwater Level(s): ft on		

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:48 AM

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol										
0	SS-1	32 29 20	67		Very dense, dry, brown, fine to coarse well graded GRAVEL (GW) with silt and sand [Fill].						4.5			
	SS-2	6 18 17	100		Hard, dry, black, lean CLAY (CL), trace fine to medium gravel.						3.5			
5	ST-3		79								4.5			Pushed shelly tube from 5.0 to 7.0 feet
	SS-4	8 12 16	100								3.5			10.0 feet: Coarse gravel
10	SS-5	8 16 20	44								0.5			10.0 feet: Coarse gravel
15	SS-6	19 39 43	72		Very dense, moist, brown and black, clayey fine to coarse GRAVEL (GC).									
20	SS-7	18 36 50/3"	61											24.5: Drillers Note - boulder from 24.5 to 25.2 feet
25	SS-8	98 35 50/4"	78											24.5: Drillers Note - boulder from 24.5 to 25.2 feet
30														



**Project: Hennepin Power Station**

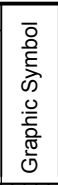

Project Location: Hennepin, Illinois

Project Number: 60439752

**Log of Boring HEN-B032**

Sheet 2 of 2

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:48 AM

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS	
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Elevation (feet)											
30	SS-9	18 11 30	100			Hard, moist, brown, fine to coarse gravelly lean CLAY (CL).					3.0 4.5				
35	SS-10	41 28 40	67				35.0		Very dense, moist, brown and black, clayey fine to coarse GRAVEL (GC).						
40	SS-11	12 18 50/4"	72				41.5			End of Boring at 41.5 ft					
45														Boring backfilled with 94 pounds of Portland Cement and 25 pounds of bentonite	
50															
55															
60															
65															

Date(s) Drilled: 09/30/2015 to 10/01/2015	Logged By: Robert Weseljak	Checked By: AJW
Drilling Method: Mud Rotary	Drill Bit Size/Type: 3 7/8" Tricone Roller Bit	Borehole Depth: 41.5 ft
Drill Rig Type: Mobile 57 Truck Mounted	Drilling Contractor: Strata Earth Services	Surface Elevation: ft
Borehole Backfill: Portland Cement and Grout	Sampling Method(s): Split Spoon/3" Thin Walled Tube	Hammer Data: Automatic, 140 lbs, 30" drop
Groundwater Level(s): ft on		

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:53 AM

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol										
0														
0.5	SS-1	25 19 21	100		Very dense, dry, brown, silty SAND (SM) [Fill].						1.5 2.5			
	SS-2	7 8 11	100		Hard, dry, black, gravelly lean CLAY (CL) [Fill].						3.5 4.5			
5														
5.5	SS-3	17 28 32	100		Dense, dry, brown, silty SAND (SM). Very dense, brown to gray, silty fine to coarse GRAVEL (GM) with sand.									
	SS-4	11 18 32	100											
10														
10.0	SS-5	27 35 18	56		Very dense, moist, brown, clayey GRAVEL (GC).									
15														
	SS-6	21 24 25	44											
20														
20.0	SS-7	10 11 9	44		Medium dense, dry, silty fine to coarse GRAVEL (GM).									
25														
	SS-8	11 13 16	6											
30														

**Project: Hennepin Power Station**

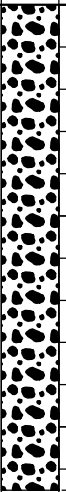
Project Location: Hennepin, Illinois

Project Number: 60439752

**Log of Boring HEN-B034**

Sheet 2 of 2

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:53 AM

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS	
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Elevation (feet)											
30	SS-9	14 14 12	22			Medium dense, moist to wet, brown, well graded GRAVEL (GW).									
35	SS-10	9 11 10	67												
40	SS-11	10 8 9	17												
						End of Boring at 41.5 ft	41.5								Boring backfilled with 94 pounds of Portland Cement and 25 pounds of bentonite
45															
50															
55															
60															
65															

<b>Project: Hennepin Power Station</b>	<b>Log of Boring HEN-B037</b>
Project Location: Hennepin, Illinois	Sheet 1 of 2
Project Number: 60439752	

Date(s) Drilled: 09/23/2015 to 09/24/2015	Logged By: Robert Weseljak	Checked By: AJW
Drilling Method: Mud Rotary	Drill Bit Size/Type: 3 7/8" Tricone Roller Bit	Borehole Depth: 41.5 ft
Drill Rig Type: Diedrich D-120 Rubber Tired ATV	Drilling Contractor: Strata Earth Services	Surface Elevation: ft
Borehole Backfill: Portland Cement and Grout	Sampling Method(s): Split Spoon/3" Thin Walled Tube	Hammer Data: Automatic, 140 lbs, 30" drop
Groundwater Level(s): ft on		

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Elevation (feet)	Depth (feet)	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)													
0	SS-1	12 15 21	100		Dense, dry, brown, silty SAND (SM) with fine to coarse gravel [Road Fill].	0.0										
	SS-2	12 17 20	100		Dense, dry, poorly graded SAND (SP), trace fine to medium gravel [Fill].	2.0										
5	SS-3	12 19 26	100		Dense, dry, brown, silty SAND (SM) with fine to coarse gravel [Fill].	5.0										
	SS-4	10 8 12	94		Very stiff, dark gray to black, lean CLAY (CL), trace fine to coarse gravel [Fill].	8.0										
10	SS-5	12 33 31	100		Dry to moist, dark brown, clayey fine to coarse GRAVEL (GC) with sand.	10.0										11.3 feet: Rusty in color
	SS-6	10 43 40	67		Very dense, moist, light brown, fine to coarse clayey GRAVEL (GC) with sand.	15.0										13.0 feet: 100% water loss
20	SS-7	10 14 22	94													
25	SS-8	19 21 16	56													
30																

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:59 AM

**Project: Hennepin Power Station**



Project Location: Hennepin, Illinois

Project Number: 60439752

**Log of Boring HEN-B037**

Sheet 2 of 2

Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:43:59 AM

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Elevation (feet)										
30	SS-9	21 14 19	83	30.5	 Hard, moist, dark greenish gray, fine to coarse, rounded to angular gravelly lean CLAY (CL).					1.25				
35	SS-10	7 12 18	83	35.0		 Very stiff, moist, brown, clayey fine to coarse GRAVEL (GC).								
40	SS-11	13 20 21	67	41.5										
					End of Boring at 41.5 ft									Boring backfilled with Portland Type I Cement
45														
50														
55														
60														
65														

<b>Project: Hennepin Power Station</b>	<b>Log of Boring HEN-B038</b>
Project Location: Hennepin, Illinois	Sheet 1 of 1
Project Number: 60439752	

Date(s) Drilled: 09/23/2015 to 09/23/2015	Logged By: Robert Weseljak	Checked By: AJW
Drilling Method: Hollow-Stem Auger	Drill Bit Size/Type: 3 7/8" Tricone Roller Bit	Borehole Depth: 21.5 ft
Drill Rig Type: Diedrich D-120 Rubber Tired ATV	Drilling Contractor: Strata Earth Services	Surface Elevation: ft
Borehole Backfill: Drill Cuttings and Bentonite Chips	Sampling Method(s): Split Spoon/3" Thin Walled Tube	Hammer Data: Automatic, 140 lbs, 30" drop
Groundwater Level(s) ft on		

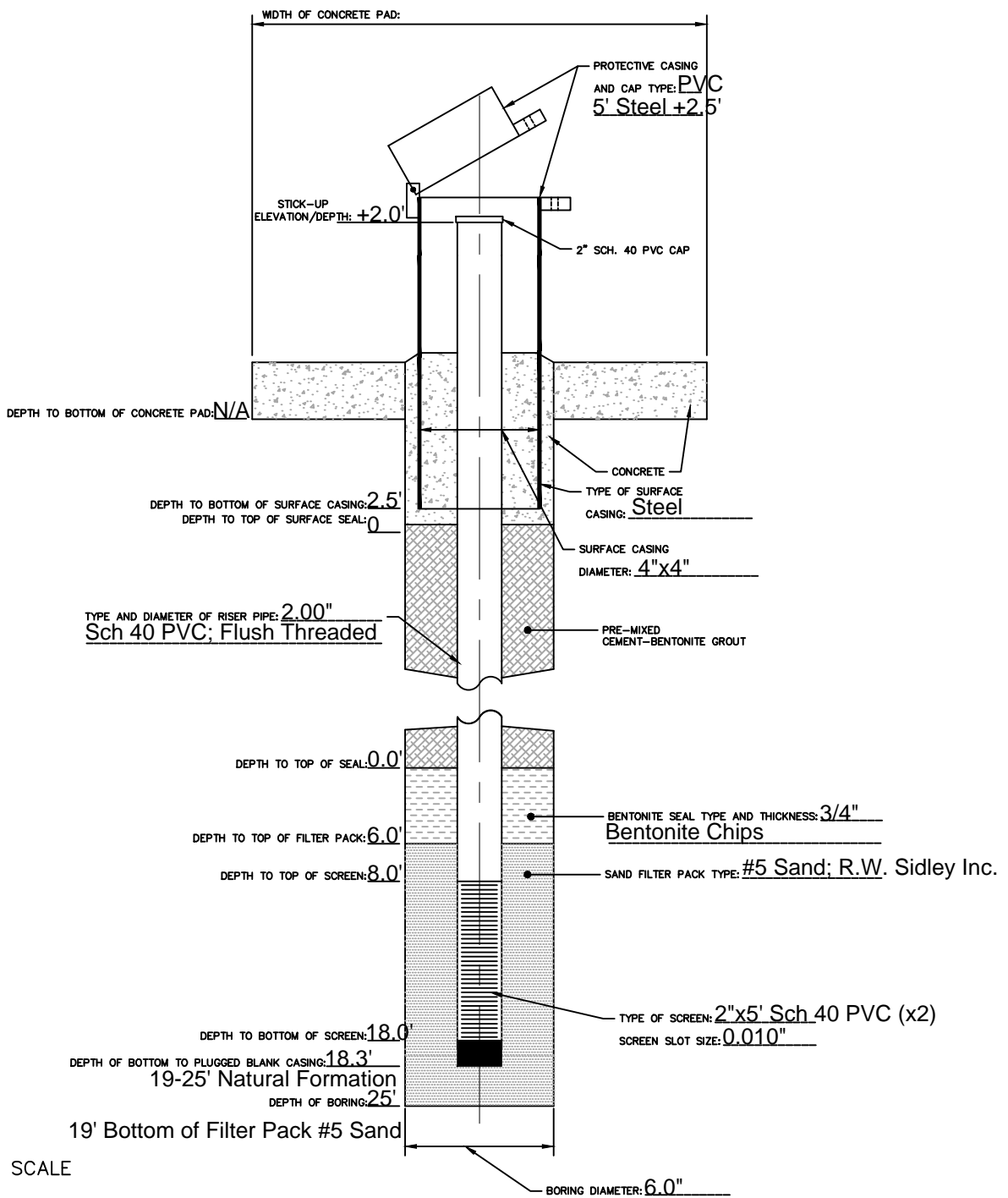
Report: GEO\_SOIL; File K:\PROJECTS\60439752\_DYNEGY CCR HENNEPIN\400-TECHNICAL\BORING LOGS\60439752\_HENNEPIN\DYNEGYBORINGLOGS.GPJ; 12/18/2015 9:44:04 AM

Depth (feet)	SAMPLES				Graphic Symbol	MATERIAL DESCRIPTION	Elevation (feet)	Depth (feet)	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)													
0	SS-1	12 18 22	89		Dense, dry, dark brown, well graded GRAVEL with CLAY (GW-GC) [Road fill]		0.0									
	SS-2	16 30 50/5.5"	97		Very dense, dry, gray, well graded fine to coarse GRAVEL (GW) [Fill].		3.0									
5	SS-3	37 50/5"	50													
	SS-4	5 6 31	94		Stiff, moist, black and brown, lean CLAY (CL), trace sand and fine gravel [Fill].		8.1									
					Very dense, dry, brown, well graded GRAVEL (GW) [Fill].		8.6									
10	SS-5	6 10 12	100		Very stiff, dry, greenish gray, lean CLAY (CL) [Fill].		10.5					6.0				
15	SS-6	15 15 24	100		Dense, moist, brown, clayey GRAVEL (GC) with sand [Fill].		15.0									
20	SS-7	7 17 13	94													
					End of Boring at 21.5 ft		21.5									
25																
30																
																Boring backfilled with 75 pounds of bentonite chips and soil cuttings

**Project: Dynegy**  
 Project Location: Hennepin, IL  
 Project Number: 60439752

**Log of Piezometer**  
 Sheet 1 of 1

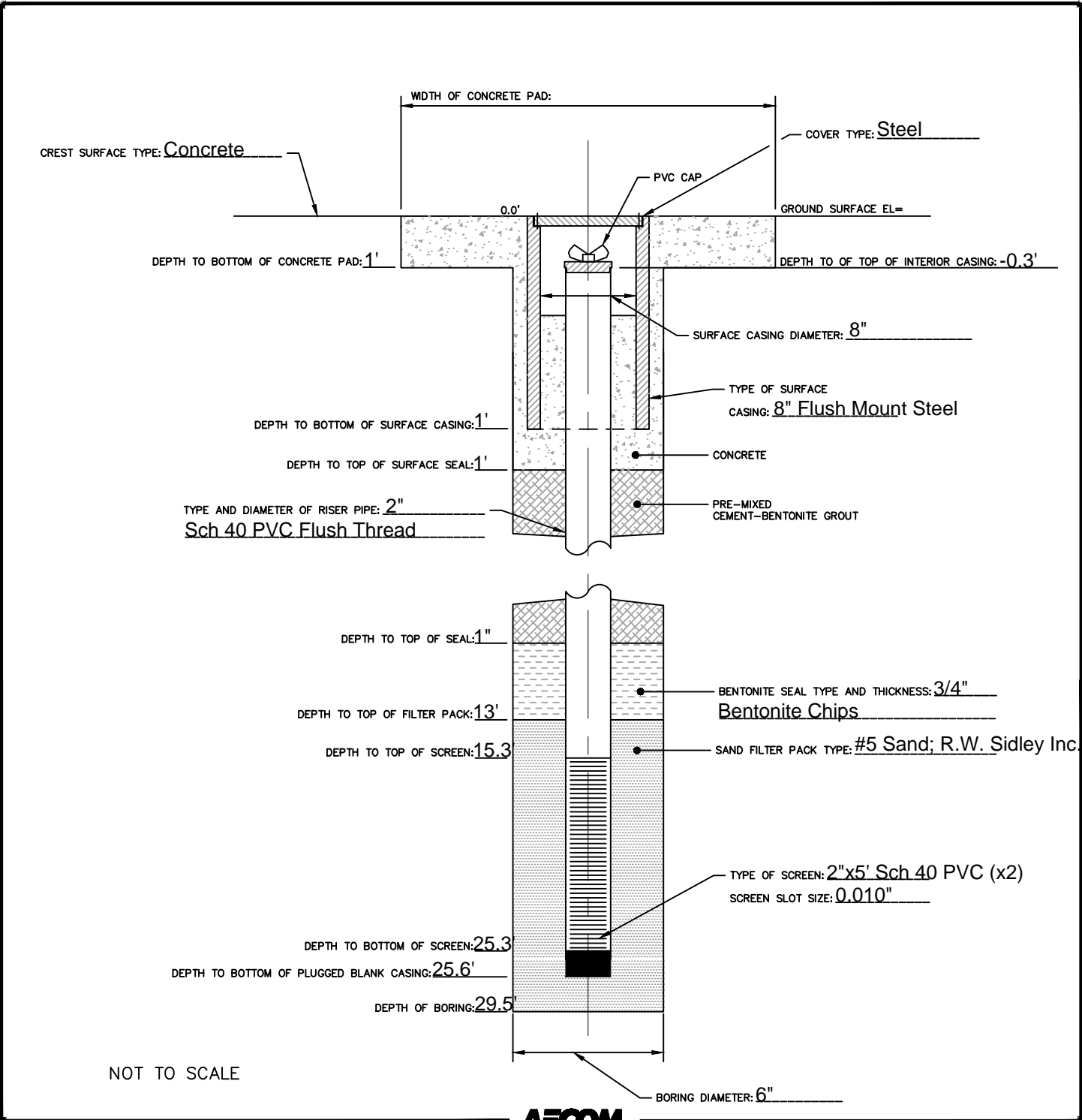
Piezometer Location	P001	Date Installed	10/15/15	Time	9:10 A.M.
Installed By	Scott Komen	Observed By	R. Weseljak	Total Depth	25'
Method of Installation	6" Solid Flight Auger	Drilling Contractor	Strata	Surface Elevation	
Screened Interval	8-18'	Completion Zone	Silts and Clays		
Remarks	Groundwater Level(s) 13.33' T.O.C.				



NOT TO SCALE

<b>Project: Dynege</b>	<b>Log of Piezometer</b>	
Project Location: Hennepin, IL	Sheet 1 of 1	
Project Number: 60439752		

Piezometer Location <b>P002</b>	Date Installed <b>10/15/15</b>	Time <b>11:10 A.M.</b>
Installed By <b>Scott Komen</b>	Observed By <b>R. Weseljak</b>	Total Depth <b>29.5'</b>
Method of Installation <b>6" Solid Flight Auger</b>	Drilling Contractor <b>Strata</b>	Surface Elevation
Screened Interval <b>15.3-25.3'</b>	Completion Zone <b>Sands</b>	
Remarks	Groundwater Level(s) <b>15.90' T.O.C.</b>	

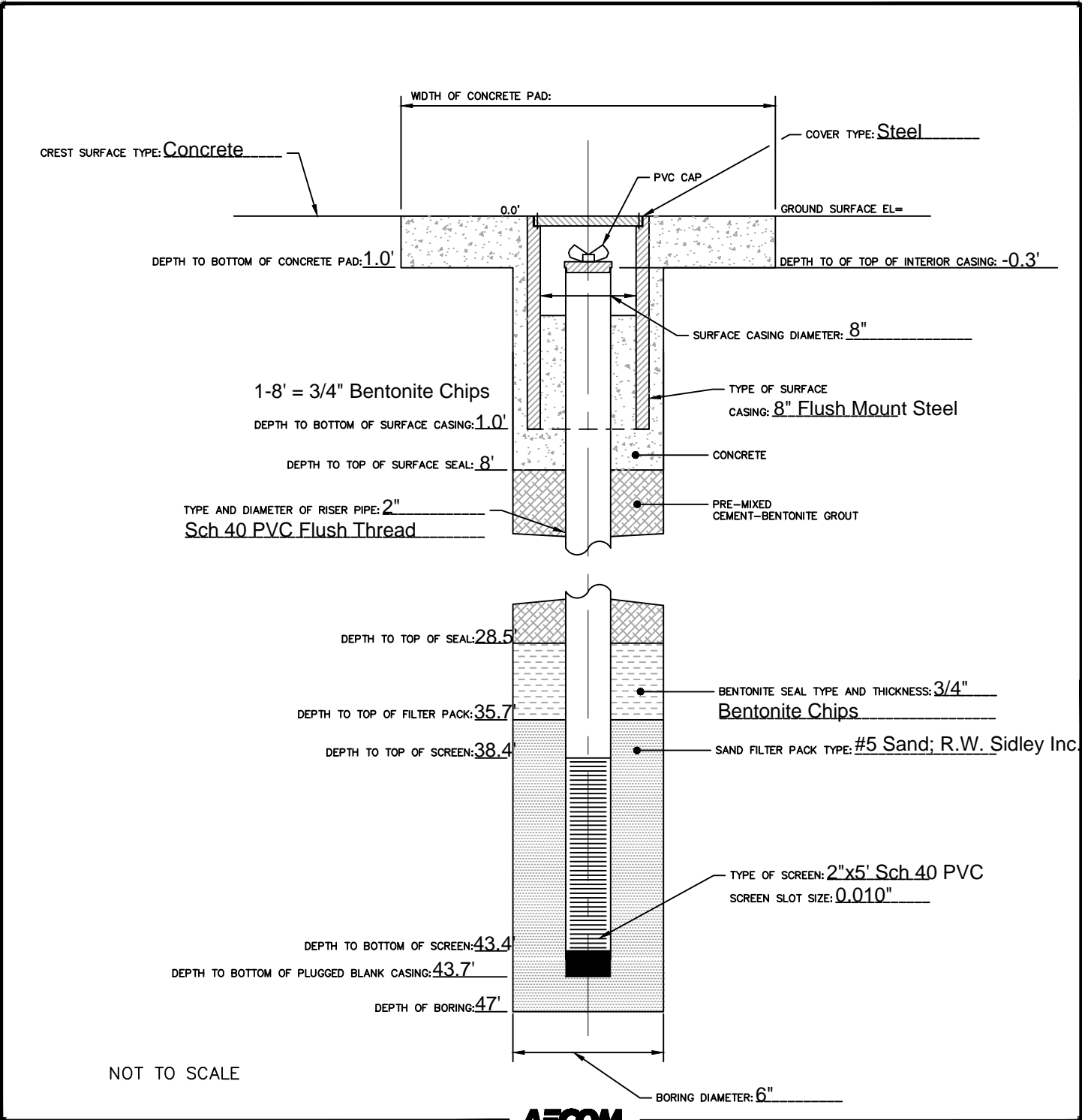




**Project: Dynegy**  
 Project Location: Hennepin, IL  
 Project Number: 60439752

**Log of Piezometer**  
 Sheet 1 of 1

Piezometer Location <b>P003</b>	Date Installed <b>10/14/15</b>	Time <b>9:45 A.M.</b>
Installed By <b>Scott Komen</b>	Observed By <b>R. Weseljak</b>	Total Depth <b>47'</b>
Method of Installation <b>6" Mud Rotary/ 6" Casing</b>	Drilling Contractor <b>Strata</b>	Surface Elevation
Screened Interval <b>38.4'-43.4'</b>	Completion Zone <b>Gravels</b>	
Remarks	Groundwater Level(s) <b>17.15' T.O.C.</b>	



**Project: Dynegy**

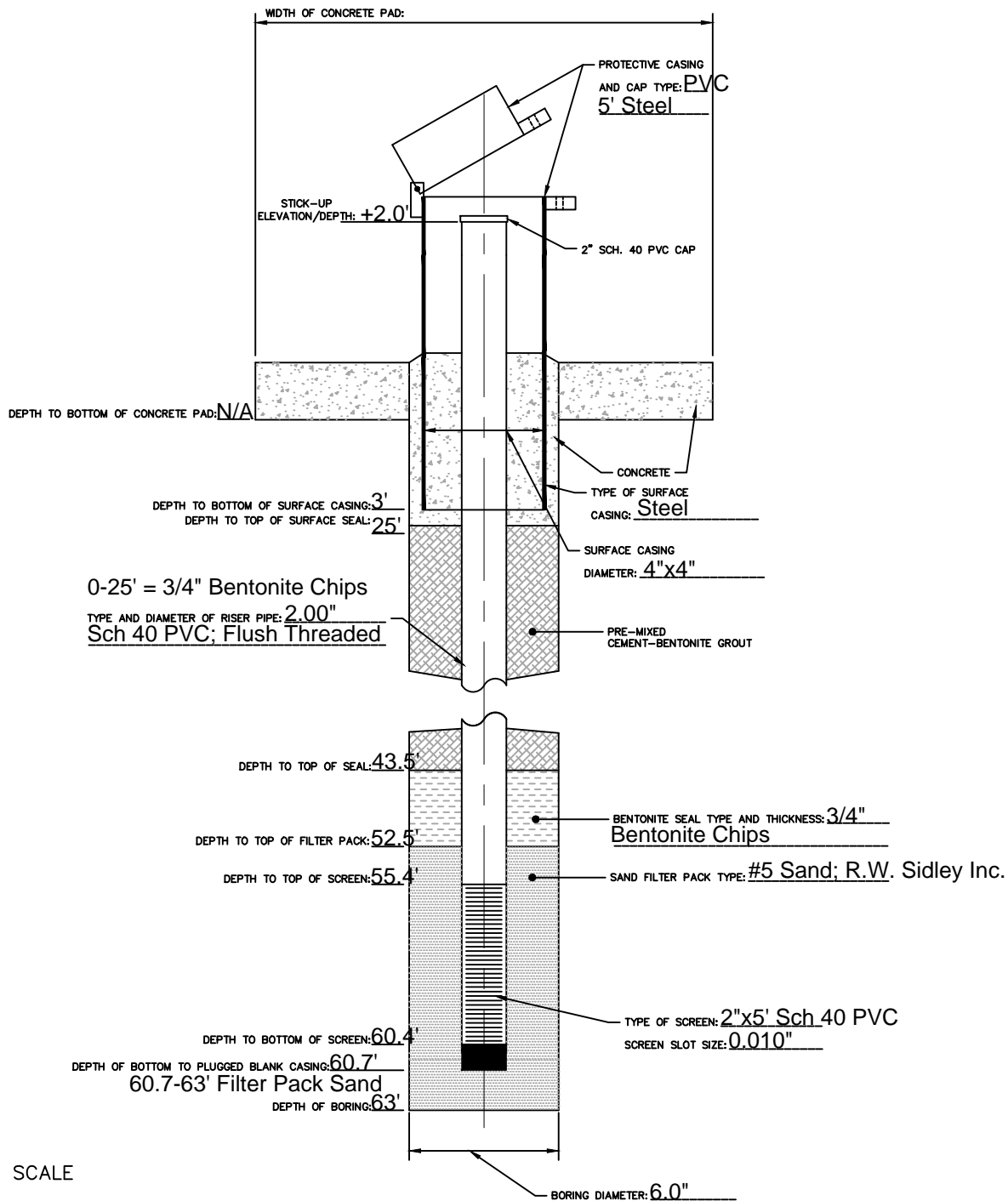
Project Location: Hennepin, IL

Project Number: 60439752

**Log of Piezometer**

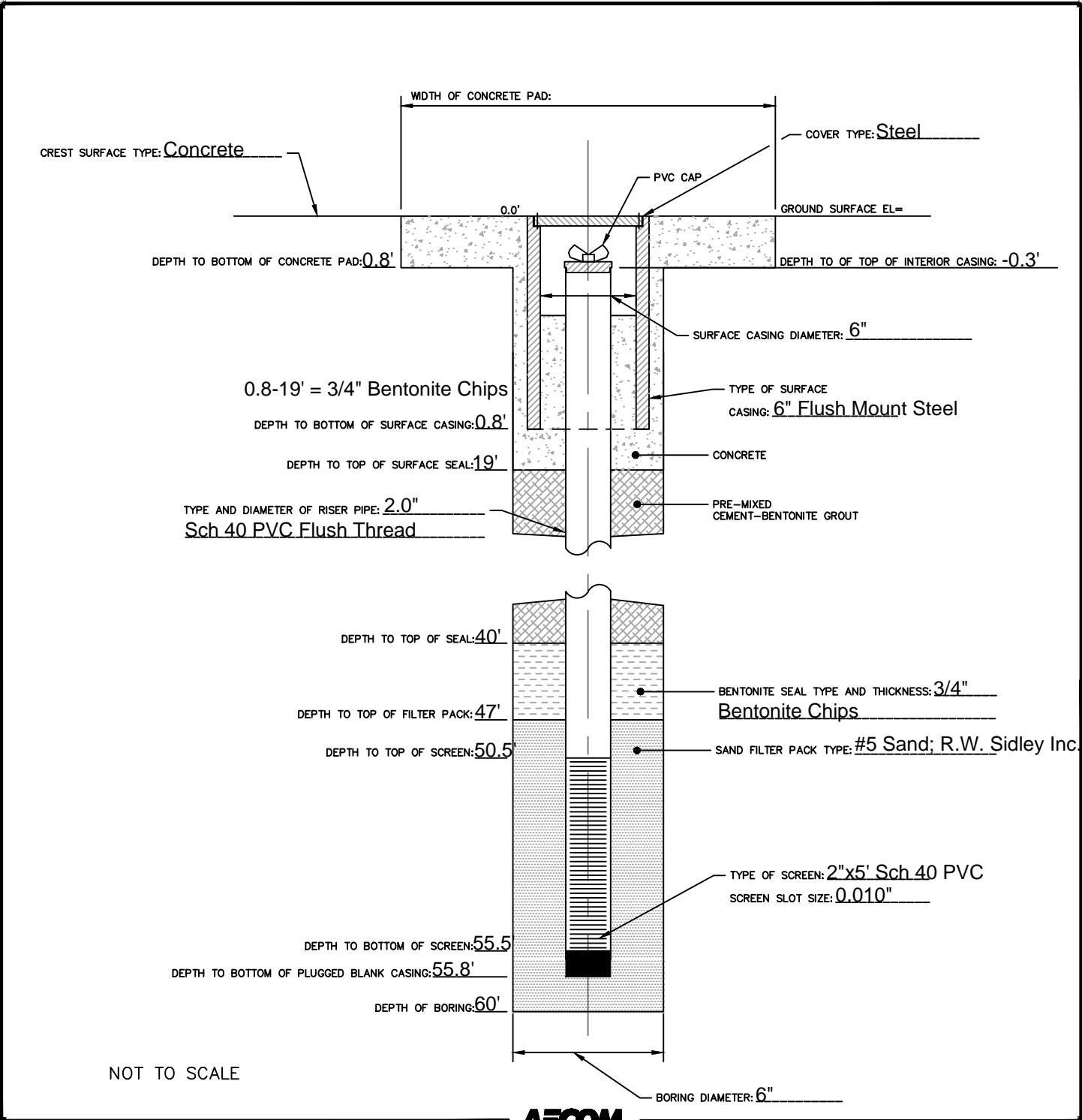
Sheet 1 of 1

Piezometer Location	P004	Date Installed	10/16/15-10/19/15	Time	8:00 A.M.
Installed By	Scott Komen	Observed By	R. Weseljak	Total Depth	63'
Method of Installation	6" Mud Rotary with 6' Casing	Drilling Contractor	Strata	Surface Elevation	
Screened Interval	55.4-60.4'	Completion Zone	Gravels		
Remarks	Groundwater Level(s) 48.65' T.O.C.				



<b>Project: Dynegy</b>	<b>Log of Piezometer</b>	
Project Location: Hennepin, IL	Sheet 1 of 1	
Project Number: 60439752		

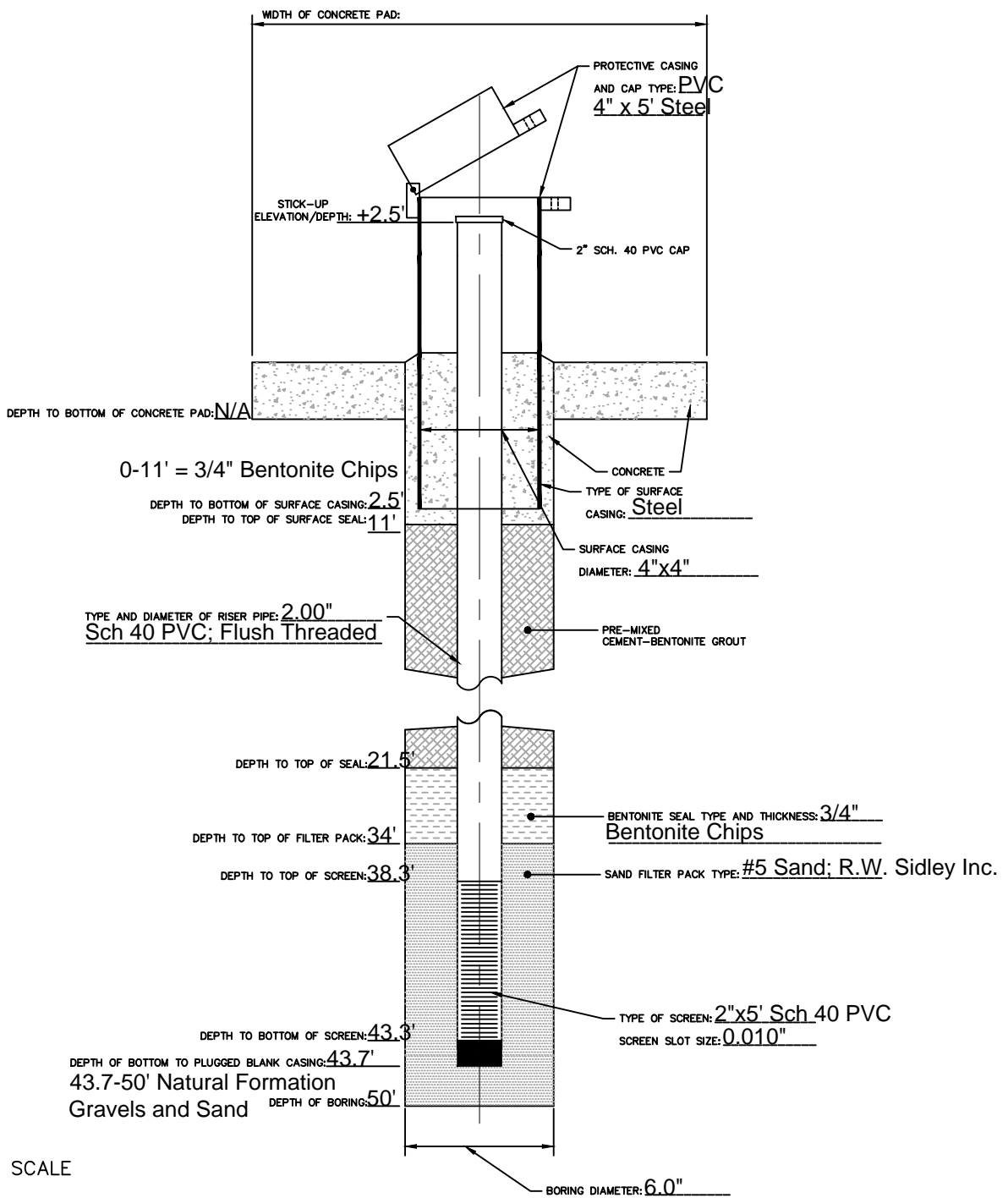
Piezometer Location <b>P005</b>	Date Installed <b>10/20/15</b>	Time <b>4:30 P.M.</b>
Installed By <b>Scott Komen</b>	Observed By <b>R. Weseljak</b>	Total Depth <b>60'</b>
Method of Installation <b>6" Tricone Mud Rotary</b>	Drilling Contractor <b>Strata</b>	Surface Elevation
Screened Interval <b>50.5-55.5'</b>	Completion Zone <b>Gravels and Sands</b>	
Remarks	Groundwater Level(s) <b>45.80' T.O.C.</b>	



**Project: Dynegy**  
 Project Location: Hennepin, IL  
 Project Number: 60439752

**Log of Piezometer**  
 Sheet 1 of 1

Piezometer Location	P006	Date Installed	10/20/15	Time	11:20 A.M.
Installed By	Scott Komen	Observed By	R. Weseljak	Total Depth	50'
Method of Installation	6" Tricone Mud Rotary	Drilling Contractor	Strata	Surface Elevation	
Screened Interval	38.3-43.3'	Completion Zone	Gravel		
Remarks	Groundwater Level(s) 45.74' T.O.C.				

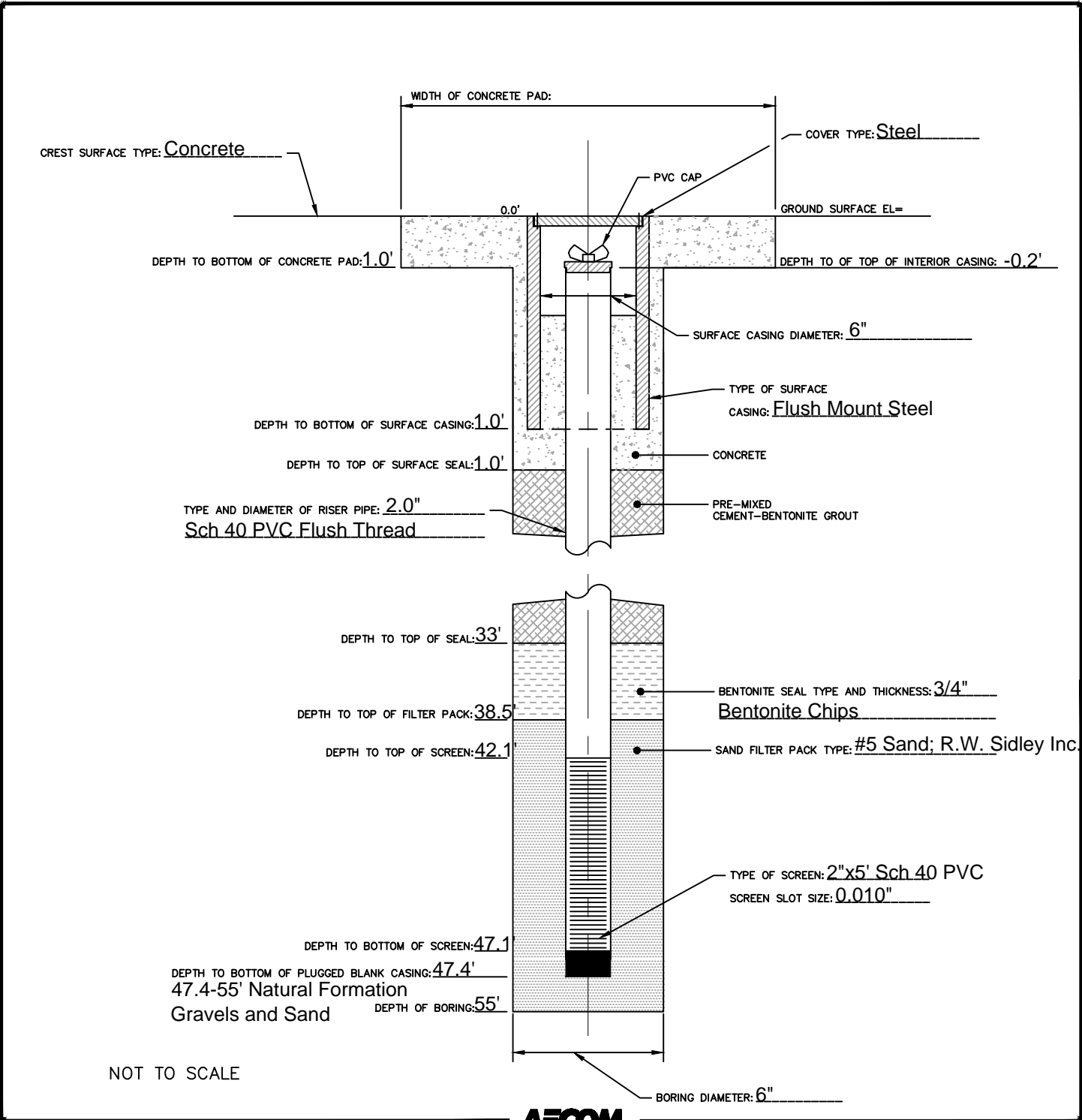


NOT TO SCALE

**Project: Dynegy**  
 Project Location: Hennepin, IL  
 Project Number: 60439752

**Log of Piezometer**  
 Sheet 1 of 1

Piezometer Location <b>P007</b>	Date Installed <b>10/21/15</b>	Time <b>5:00 P.M.</b>
Installed By <b>Scott Komen</b>	Observed By <b>R. Weseljak</b>	Total Depth <b>55'</b>
Method of Installation <b>6" Tricone Mud Rotary</b>	Drilling Contractor <b>Strata</b>	Surface Elevation
Screened Interval <b>42.1-47.1'</b>	Completion Zone <b>Gravels</b>	
Remarks	Groundwater Level(s) <b>44.65' T.O.C.</b>	



NOT TO SCALE

**The following are attachments to the testimony of Scott M. Payne,  
PhD, PG and Ian Magruder, M.S..**



**Appendix A5**  
**CEC Boring Logs**  
**and Well Details**



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# BORING NUMBER B-1

PAGE 1 OF 3

CLIENT <u>Dynegy - Hennepin Power Station</u>	PROJECT NAME <u>Dry Ash Landfill Feasibility Study</u>
PROJECT NUMBER <u>082-255</u>	PROJECT LOCATION <u>Hennepin, Illinois</u>
DATE STARTED <u>2/23/09</u> COMPLETED <u>2/23/09</u>	GROUND ELEVATION <u>494.2 ft</u> BACKFILL <u>Cement Grout</u>
DRILLING CONTRACTOR <u>Groff Testing</u>	GROUND WATER LEVELS:
DRILLING METHOD <u>Hollow Stem Auger</u>	▽ WHILE DRILLING <u>46.0 ft / Elev 448.2 ft</u>
CEC REP <u>CAC</u> CHECKED BY <u>MDJ</u>	AT END OF DRILLING <u>NA</u>
NOTES _____	AFTER DRILLING <u>NA</u>

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲		
									PL	MC	
494		Brown gravelly CLAY, some sand, moist, medium stiff, large limestone rounded and angular. <b>(BERM FILL)</b>	0								
				SS 1	84	28 18 9 10	1.0		6		
490				SS 2	88	13 22 15 10	1.0				
		Less gravelly		5	SS 3	75	10 15 8 10	-			
					SS 4	65	15 25 44 15	-		8	
485			Dark brown silty CLAY, with light brown SAND, trace gravel, moist, stiff, <b>(BERM FILL)</b>	10	SS 5	50	8 20 12 14	-			
			Dark gray sandy SILT, trace small gravel, moist, medium dense, <b>(ASH)</b>		SS 6	100	8 15 22 25	1.0			
480				15	SS 7	60	18 18 5 7	NP		14	
			Light gray SILT, trace coal pieces, trace sand, dry to moist, loose, <b>(ASH)</b>		SS 8	70	6 5 4 2	NP			
					SS 9	100	4 3 3 3	NP			
475				SS 10	100	3 2 2 3	NP			32	
			20								

CEC\_CUSTOM\_LOG - DJ STYLE 082-255 BORING LOG'S QP1\_CEC\_TEMPLATE.GDT 4-2009

(Continued Next Page)





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# BORING NUMBER B-1

PAGE 2 OF 3

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲					
									PL	MC	LL			
									20	40	60	80		
									20	40	60	80		
									□ UCS (tsf) □		20	40	60	80
470		Light gray SILT, trace coal pieces, trace sand, dry to moist, loose, (ASH) (continued)	20	SS 11	100	2 2 2 2	NP							
				SS 12	90	2 2 2 2	NP							
			25	SS 13	95	3 2 2 1	NP		26					
		Moist to wet		SS 14	85	2 2 1 1	NP							
465				SS 15	90	1 1 3 4	NP							
		Grades to Wet	30	SS 16	100	3 1 1 1	NP		53					
		Gr - 0.0%, Sa - 12.%, Si - 73.7%, Cl - 13.9%		SS 17	100	0 0 2 4	NP							
460		Reddish brown silty SAND, trace small gravel, moist, loose, poorly graded, (STREAM TERRACE DEPOSIT)	35	SS 18	100	3 4 8 8	NP							
				SS 19	13	4 3 2 2	NP		12					
				SS 20	80	0 2 2 1	NP							
455			40	SS 21	90	6 4 5 5	NP							
		Large gravel				4								

CEC\_CUSTOM\_LOG - D:\STYLE\_082-255 BORING LOGS.GPJ\_CECTEMPLATE.GDT 4/3/09

(Continued Next Page)



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# BORING NUMBER B-1

PAGE 3 OF 3

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲		
									20	40	60
450		Brown gravelly SAND, trace silt, dry to moist, very dense, poorly graded, (GLACIAL OUTWASH)	45	SS 22	60	7 7 33	NP		▲		
		Brown medium SAND, trace fine gravel, moist to wet, very dense, poorly graded, (GLACIAL OUTWASH)		SS 23	60	40 30 35	NP				
					SS 24	75	30 30 32 26	NP			
445				50	SS 25	59	13 20 27 30	NP	● 11		
					SS 26	70	30 20 15 25	NP			
		End of Borehole at 52.0 feet.									

CEC\_CUSTOM\_LOG...DJ STYLE 082-255 BORING LOGS.GPJ; CECTEMPDATE.QDT 4/8/09



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# BORING NUMBER B-2

PAGE 1 OF 3

CLIENT <u>Dynegy - Hennepin Power Station</u>	PROJECT NAME <u>Dry Ash Landfill Feasibility Study</u>
PROJECT NUMBER <u>082-255</u>	PROJECT LOCATION <u>Hennepin, Illinois</u>
DATE STARTED <u>2/25/09</u> COMPLETED <u>2/25/09</u>	GROUND ELEVATION <u>493.2 ft</u> BACKFILL <u>Cement Grout</u>
DRILLING CONTRACTOR <u>Groff Testing</u>	GROUND WATER LEVELS: ∇ WHILE DRILLING <u>21.5 ft / Elev 471.7 ft</u>
DRILLING METHOD <u>Hollow Stem Auger</u>	AT END OF DRILLING <u>---</u>
CEC REP <u>CAC</u> CHECKED BY <u>MDJ</u>	AFTER DRILLING <u>---</u>
NOTES	

CEC CUSTOM LOG - DJ STYLE 082-255 BORING LOGS.GPJ CECTEMP.LATE.GDT 4/8/09

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									20	40
493.2		Dark brown gravelly CLAY, trace sand, moist, (BERM FILL)	0				0.5			
		Brown gravelly SAND, trace clay, moist, medium dense, poorly graded, (BERM FILL)		SS 1	75	3 8 8 10	NP			
490				SS 2	70	7 12 15 18	NP		6	
			5	SS 3	80	10 13 18 18	NP			
		Gray gravelly CLAY, some sand, medium dense, (BERM FILL)		SS 4	80	8 13 13 12	NP			
485		Brown silty CLAY, trace sand and gravel, moist, stiff, (BERM FILL)		SS 5	70	4 5 10 12	1.6		17	
			10	SS 6	65	9 8 10 12	1.6			
480		Dark gray SAND, trace silt, trace gravel, dry, dense, poorly graded, (ASH)		SS 7	80	15 28 22 18	NP			
			15	SS 8	50	6 5 5 4	NP		10	
		Gray SILT, (ASH)		ST 9	100		NP		5	
475		Gray SANDY SILT, dry to moist, loose, laminated, (ASH)		SS 10	90	2 3 3 2	NP			
			20							

(Continued Next Page)



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# BORING NUMBER B-2

PAGE 2 OF 3

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20	40	60	80
									PL	MC	LL	
									20	40	60	80
									□ UCS (tsf) □			
									20	40	60	80
470		Gray SANDY SILT, dry to moist, loose, laminated, (ASH) <i>(continued)</i>	20	SS 11	100	3 2 2 2	NP		23			
		Moist to wet		SS 12	100	3 2 2 2	NP					
		Becoming darker gray.	25	SS 13	100	3 2 2 2	NP					
465		Gray Silt, (ASH)		SI 14	100		NP		56			
				SS 15	100	1 2 1 1	0.75		66			
		Gray SILT, with brown sand, trace roots, moist, very loose, laminate sand/silt layers, (ASH)	30	SS 16	100	1 1 2 3	NP					
460		Gray SILT, moist to wet, very loose, intermittent layers, (ASH)		SS 17	100	1 1 1 1	NP		48			
		Brown silty CLAY, (STREAM TERRACE DEPOSIT)	35	ST 18	100		1.0 2.0		20		15	
		Dark brown to reddish brown clayey SAND, trace silt, fine gravel, moist, loose, (STREAM TERRACE DEPOSIT)		SS 19	100	2 3 3 4	0.75		17			
455				SS 20	100	1 1 3 3	0.6		17			
		Brown medium to coarse SAND, trace gravel, moist, loose to medium dense, poorly graded, (GLACIAL OUTWASH)	40	SS 21	100	2 4 5 5	NP					
											2	

CEC-CUSTOM LOG - DJ STYLE 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 4/8/07

(Continued Next Page)



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**BORING NUMBER B-2**

PAGE 3 OF 3

CLIENT Dynergy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Per. (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									PL	LL
450		Brown medium to coarse SAND, trace gravel, moist, loose to medium dense, poorly graded. (GLACIAL OUTWASH) <i>(continued)</i>	45	SS 23	50	2 3 3	NP		20	80
	SS 23			55	5 7 6	NP	20		80	
445		Brown gravelly SAND, moist to wet, dense. (GLACIAL OUTWASH)		SS 24	65	8 16 24 18	NP		20	80
	SS 25			60	5 18 25 20	NP	20		80	
		End of Borehole at 50.0 feet	50							



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# BORING NUMBER B-3

PAGE 1 OF 3

CLIENT Dynegy - Hennepin Power Station  
 PROJECT NUMBER 082-255  
 DATE STARTED 2/18/09 COMPLETED 2/18/09  
 DRILLING CONTRACTOR Graff Testing  
 DRILLING METHOD Hollow Stem Auger  
 CEC REP D. KORTH CHECKED BY MDJ  
 NOTES East-Northeast Corner of Ash Pond on Berm

PROJECT NAME Dry Ash Landfill Feasibility Study  
 PROJECT LOCATION Hennepin, Illinois  
 GROUND ELEVATION 494.0 ft BACKFILL Cement Grout  
 GROUND WATER LEVELS:  
 ∇ WHILE DRILLING 47.0 ft / Elev 447.0 ft  
 AT END OF DRILLING —  
 AFTER DRILLING —

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲		
									PL	MC	
									20	40	
									20	40	
									□ UCS (tsf) □	20	
									20	40	
490		Brown clayey SAND AND GRAVEL, trace silt, moist, medium dense to dense, poorly graded, (BERM FILL)	0	SS 1	80	3 5 7 6	NP		8		
					SS 2	75	3 6 9 16	NP			
				5	SS 3	60	20 20 20 12	NP			
			Dark yellowish brown LEAN CLAY, trace sand and gravel, moist, very stiff to hard, (BERM FILL)		SS 4	90	8 10 8 15	4.0		9	
485			Very dark brown mottled with dark yellowish brown sandy lean CLAY, moist, very stiff, (BERM FILL)		SS 5	80	5 5 8 9	2.0			
				10	SS 6	100	3 7 10 12	2.6			
			Very dark gray silty SAND, with gravel, trace coal fragments, moist, dense, (ASH) Gr - 21.2%, Sa - 62.6%, Si - 13.2%, Cl - 2.9%		SS 7	90	12 20 18 18	NP		13	
480			Grades to loose	15	SS 8	60	1 4 4 5	NP			
			Gray SILT, trace fine sand, wet, loose, (ASH)		SS 9	65	5 4 2 1	NP			
475					SS 10	95	1 1 0 1	1.0 0.25		57	
			20								

CEC CUSTOM LOG - DJ STYLE DR2-255 BORING LOGS.GPJ CEC TEMPLATE.DDT 4/6/09

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# BORING NUMBER B-3

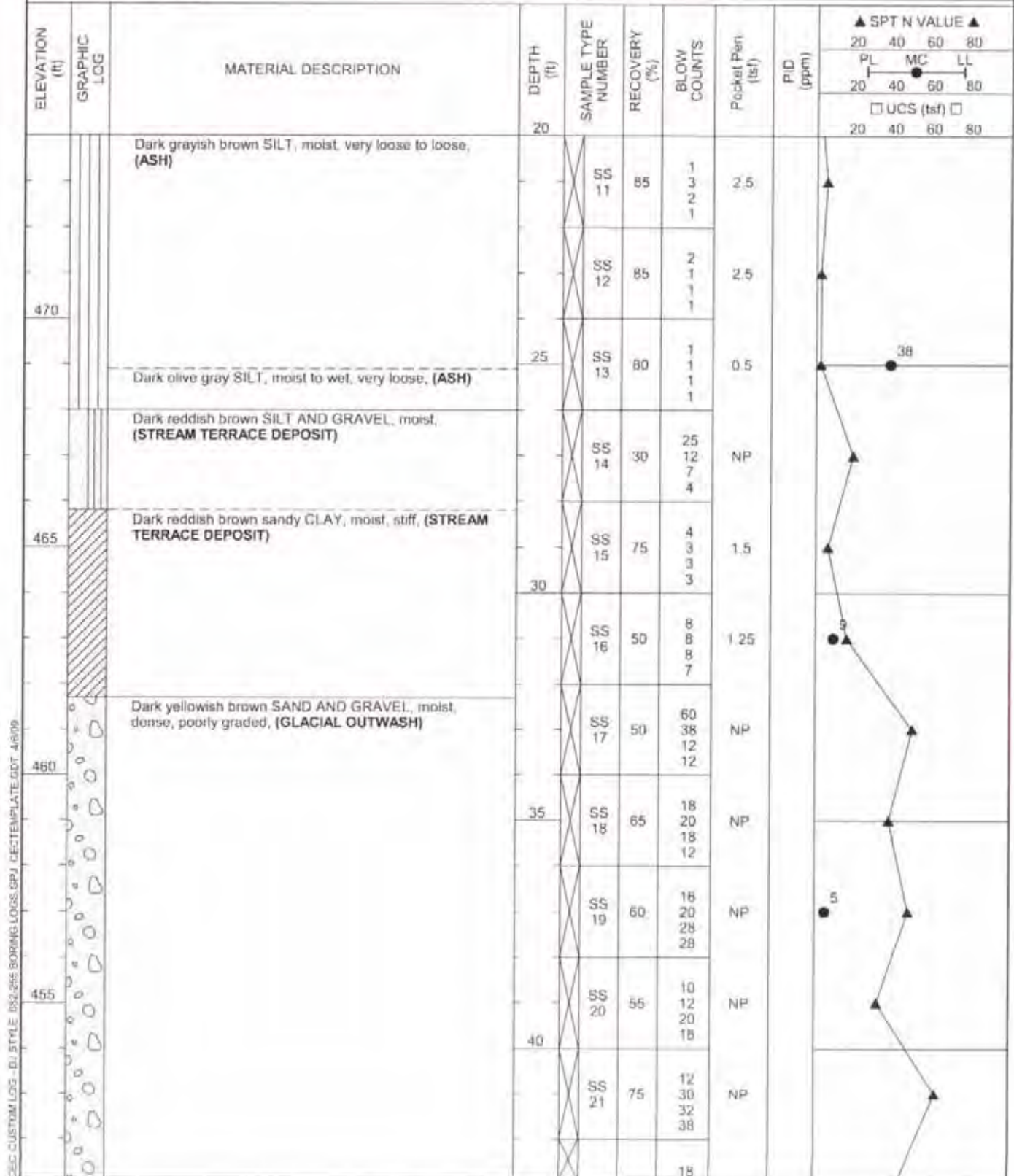
PAGE 2 OF 3

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois



(Continued Next Page)



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# BORING NUMBER B-3

PAGE 3 OF 3

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									PL	MC LL
									20	40 60 80
									20	40 60 80
									□ UCS (tsf) □	
									4 20 40 60 80	
450		Dark yellowish brown SAND AND GRAVEL, moist, dense, poorly graded, (GLACIAL OUTWASH) (continued)		SS 22	70	20 22 40	NP		▲	
		Grades moist to wet.	45	SS 23	60	18 20 28 15	NP		▲	
				SS 24	70	12 35 35 25	NP		▲	
445				SS 25	45	40 35 25 20	NP		● 12	▲
		End of Borehole at 50 (0) feet.	50							

CEC\_CUSTOM\_LOG - DJ STYLE 082-255 BORING LOGS.GPJ CEC\_TEMPLATE.GDT 4/8/05





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# BORING NUMBER B-4

PAGE 1 OF 3

CLIENT Dynegy - Hennepin Power Station PROJECT NAME Dry Ash Landfill Feasibility Study  
 PROJECT NUMBER 082-255 PROJECT LOCATION Hennepin, Illinois  
 DATE STARTED 2/17/09 COMPLETED 2/18/09 GROUND ELEVATION 494.0 ft BACKFILL Cement Grout  
 DRILLING CONTRACTOR Groff Testing GROUND WATER LEVELS:  
 DRILLING METHOD Hollow Stem Auger WHILE DRILLING 47.0 ft / Elev 447.0 ft  
 CEC REP D. KORTH CHECKED BY MDJ AT END OF DRILLING —  
 NOTES East End of Ash Pond on Berm AFTER DRILLING —

CEC-CUSTOM LOG - DL STYLE 082-255 BORING LOGS CFI TEMPLATE.GDT 4/6/09

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲		
									20	40	60
494		Brown clayey SAND AND GRAVEL FILL, moist, medium dense, poorly graded, (BERM FILL)	0	SS 1	65	3 10 11 12	NP				
490		Brown sandy CLAY FILL, trace gravel, moist, very stiff, (BERM FILL)		SS 2	80	8 6 6 7	3.0		11		
		Brown clayey SAND AND GRAVEL FILL, moist, dense, poorly graded, (BERM FILL)	5	SS 3	95	5 9 16 16	NP				
485		Very dark brown silty CLAY, moist, very stiff, (BERM FILL)		SS 4	85	20 15 8 9	3.5				
			10	SS 5	75	4 6 10 10	3.75		17		
				SS 6	50	7 11 16 20	—				
480		Very dark gray sandy SILT, trace coal fragments, moist, dense to medium dense, (ASH)		SS 7	60	17 28 25 15	NP				
		Gr - 0.0%, Sa - 4.6%, Si - 81.2%, Cl - 14.2%	15	SS 8	50	7 7 5 5	NP		13		
				SS 9	50	3 3 3 1	NP				
475				SS 10	50	3 3 2 3	NP				
			20								

(Continued Next Page)



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# BORING NUMBER B-4

PAGE 2 OF 3

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20	40	80	
									PL	MC	LL	
									20	40	60	80
									□ UCS (tsf) □			
									20	40	60	80
470		Gray SILT, laminated, moist, loose, (ASH)	20	SS 11	100	1 1 1 1	NP					30
		Wet 24.0 between 24.5 feet		SS 12	90	1 2 1 1	NP					
		Grades to wet at 26 feet	25	SS 13	90	1 1 2 2	NP					
				SS 14	90	0 0 0 1	NP					53
465		Dark olive brown SILT, wet, very loose, (ASH)	30	SS 15	90	0 0 0 0	NP					
		Gray SILT, moist to wet, loose, Laminated with an organic interval from 30.7 to 30.9 feet, (ASH)		SS 16	100	0 1 1 1	NP					
				SS 17	100	1 2 2 2	NP					40
460		Grades to wet at 35 feet	35	SS 18	95	1 0 1 2	NP					
				SS 19	100	0 0 1 1	NP					
455		Dark yellowish brown sandy CLAY, trace fine gravel, moist, dense, (STREAM TERRACE DEPOSIT)	40	SS 20	100	0 5 18 50	>4.5					83
				SS 21	50	75 50	2.5					
		Dark yellowish brown poorly graded SAND AND GRAVEL, moist, (GLACIAL OUTWASH)										

250 CUSTOM LOG - D1 - STYLE 082-255 BORING LOGS.DPJ CECTEMPLATE.GDT 4/0/09

(Continued Next Page)



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# BORING NUMBER B-4

PAGE 3 OF 3

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									20 40 60 80	
									PL MC LL	
									□ UCS (tsf) □	
									20 40 60 80	
450		Dark yellowish brown poorly graded SAND AND GRAVEL, moist, (GLACIAL OUTWASH) (continued)		SS 22	50	50 50	NP			
		45		SS 23	80	100	NP	8		
			Grade to wet at 47.0 feet		SS 24	80	100	NP		
445				50	SS 25	50	20 80	NP		
					SS 26	30	70 50	NP	12	
		End of Borehole at 52.0 feet								



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# BORING NUMBER B-5

PAGE 1 OF 3

CLIENT <u>Dynegy - Hennepin Power Station</u>	PROJECT NAME <u>Dry Ash Landfill Feasibility Study</u>
PROJECT NUMBER <u>082-255</u>	PROJECT LOCATION <u>Hennepin, Illinois</u>
DATE STARTED <u>2/17/09</u> COMPLETED <u>2/17/09</u>	GROUND ELEVATION <u>492.9 ft</u> BACKFILL <u>Cement Grout</u>
DRILLING CONTRACTOR <u>Groff Testing</u>	GROUND WATER LEVELS:
DRILLING METHOD <u>Hollow Stem Auger</u>	∇ WHILE DRILLING <u>45.1 ft / Elev 447.8 ft</u>
CEC REP <u>D. KORTH</u> CHECKED BY <u>MDJ</u>	AT END OF DRILLING <u>NA</u>
NOTES <u>Southeast Corner of Ash Pond on Berm</u>	AFTER DRILLING <u>NA</u>

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲				
									PL	MC	LL		
									20	40	60	80	
									□ UCS (tsf) □	20	40	60	80
490		Brown poorly graded SAND AND GRAVEL FILL, moist, medium dense to dense. (BERM FILL)	0	SS 1	50	13 8 26 20	NP						
				SS 2	55	8 10 9 25	NP						
		Dark yellowish brown clayey SAND AND GRAVEL, to sandy CLAY, trace gravel, moist, medium dense, poorly graded. (BERM FILL)	5	SS 3	75	8 8 9 10	NP	0					
485		Very dark brown silty CLAY, moist, hard. (BERM FILL)		SS 4	85	4 4 8 7	4.5						
				SS 5	75	4 8 10 10	4.5						
		Very dark gray sandy SILT, moist, medium dense to dense. (ASH)	10	SS 6	80	8 15 30 25	NP	15					
480				SS 7	65	8 9 6 6	NP						
			15	SS 8	60	3 3 2 3	NP						
		Gray SILT, moist to wof, loose. (ASH)		SS 9	85	2 2 1 1	NP						44
475		Wet between 17.0 and 18.0 feet		SS 10	50	2 1 1 1	NP						
			20										

CEC CUSTOM LOG - DJ STYLE - 082-255 BORING LOGS.GPJ, CEC TEMPLATE.DOT 4/6/09

(Continued Next Page)



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# BORING NUMBER B-5

PAGE 2 OF 3

CLIENT Dynergy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen (tsf)	P/D (ppm)	▲ SPT N VALUE ▲		
									20	40	60
470		Gray SILT, moist to wet, loose, (ASH) (continued)		SS 11	90	1 1 1	NP				
		Grades to wet below 23.0 feet.		SS 12	75	1 1 1	NP			47	
		Dark grayish brown SILT, wet, very loose, laminated, (ASH)	25	SS 13	95	1 1 1	NP				
465				SS 14	100	0 0 1 1	NP				
				SS 15	100	0 1 1 1	NP			43	
		Dark reddish brown SILT, trace sand and gravel, trace plant matter, moist, stiff, (STREAM TERRACE DEPOSIT)		SS 16	90	1 1 2 8	NP				
460				SS 17	35	5 5 7 6	NP				
				SS 18	65	3 4 4 8	1.75			17	
		Dusky red silty CLAY, trace sand and gravel, moist, very stiff, (STREAM TERRACE DEPOSIT)		SS 19	100	2 5 12 10	2.25				
455				SS 20	100	2 5 12 10	2.25				
		Dark yellowish brown SAND AND GRAVEL, moist, medium dense, poorly graded, (GLACIAL OUTWASH)	40	SS 21	50	5 8 13 10	NP				
						10					

CEC CUSTOM LOG - DJ STYLE 082 255 BORING LOGS D.P., CEC TEMPLATE.GDT 4/9/09

(Continued Next Page)



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# BORING NUMBER B-5

PAGE 3 OF 3

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									PL	MC LL
450									20	40 60 80
		Dark yellowish brown SAND AND GRAVEL, moist, medium dense, poorly graded, (GLACIAL OUTWASH) (continued)		SS 22	60	12 13 14	NP			
		Grades to wet at 45.1 feet	45	SS 23	75	9 10 11 12	NP			
				SS 24	0	4 6 9 16	NP			
445				SS 25	45	3 7 7 10	NP			13
		End of Borehole at 50.0 feet	50							

CEC\_CUSTOM\_LOG - D:\STYLE\082-255\BORING\LOGS.GPJ CECTEMPLATE.GDT 4/8/09



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# BORING NUMBER B-6

PAGE 1 OF 2

CLIENT <u>Dynergy - Hennepin Power Station</u>	PROJECT NAME <u>Dry Ash Landfill Feasibility Study</u>
PROJECT NUMBER <u>082-255</u>	PROJECT LOCATION <u>Hennepin, Illinois</u>
DATE STARTED <u>2/26/09</u> COMPLETED <u>2/26/09</u>	GROUND ELEVATION <u>494.5 ft</u> BACKFILL <u>Cement Grout</u>
DRILLING CONTRACTOR <u>Groff Testing</u>	GROUND WATER LEVELS:
DRILLING METHOD <u>Hollow Stem Auger</u>	WHILE DRILLING <u>Dry</u>
CEC REP <u>CAC</u> CHECKED BY <u>MDJ</u>	AT END OF DRILLING <u>---</u>
NOTES	AFTER DRILLING <u>---</u>

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									PL	MC
490		Brown sandy GRAVEL, trace clay, medium sand, moist, medium dense, poorly graded, (BERM FILL)	0	SS 1	75	7 4 9 11	NP			
		Brown gray gravelly CLAY, some sand, moist, stiff, low to no plasticity, (BERM FILL)		SS 2	80	6 6 8 10	2.0		7	
		Coarse gravel	5	SS 3	70	5 8 7 6	1.3			
		Dark gray to black silty CLAY, trace coarse gravel, to cobbles, moist, very stiff, low plasticity, (BERM FILL)		SS 4	100	11 13 6 13	3.75			
485		Dark gray sandy SILT, trace coal pieces, coarse sand, dry to moist, dense, non-plastic, (BERM FILL)	10	SS 5	100	4 6 8 10	3.5		21	
		Dark gray to black silty CLAY, trace coarse gravel, with cobbles, moist, low plasticity, (BERM FILL)		SS 6	100	8 15 26 18	2.5			
		Dark gray to black silty CLAY, trace coarse gravel, with cobbles, moist, low plasticity, (BERM FILL)	15	SS 7	0	5 5 6 6	-			
480		Dark gray to black silty CLAY, trace coarse gravel, with cobbles, moist, low plasticity, (BERM FILL)		SS 8	70	7 4 5 4	-			
		Dark gray to black silty CLAY, trace coarse gravel, with cobbles, moist, low plasticity, (BERM FILL)		SS 9	50	5 4 5 10	-		18	
475		Gray sandy SILT moist to wet, (ASH)	20	SS 10	100	5 4 3 2	NP		32	

(Continued Next Page)



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**BORING NUMBER B-6**

PAGE 2 OF 2

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									PL	LL
									20	40
									MC	80
									20	40
									60	80
									□ UCS (tsf) □	
									20	40
									60	80
		Gray sandy SILT, moist to wet, (ASH) (continued)	20	SS 11	0	2 2 2 3	NP			
		Brown gravelly CLAY, moist, medium dense, low plasticity, poorly graded, (STREAM TERRACE DEPOSIT)		SS 12	70	8 9 19 10	NP		9	
470		Tan medium SAND, trace fine gravel, dry to moist, medium dense, poorly graded, (STREAM TERRACE DEPOSIT)	25	SS 13	60	8 8 6 6	NP			
		Brown gravelly SAND, dry to moist, medium dense, non-plastic, poorly graded, (STREAM TERRACE DEPOSIT)		SS 14	25	20 22 15 10	NP			
		Sandy GRAVEL, dry, poorly graded, (GLACIAL OUTWASH)		SS 15	50	11 7 11 10	NP		5	
465			30	SS 16	60	11 12 40 40	NP			
				SS 17	75	18 30 70	NP			
460			35	SS 18	50	100	NP		8	
		End of Borehole at 36.0 feet								

CEC CUSTOM LOG - D3 STYLE 082-255 BORING LOGS.GPJ, DECTEMPLATE.GDT 4/00/05





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# BORING NUMBER B-7

PAGE 1 OF 2

CLIENT <u>Dynegy - Hennepin Power Station</u>	PROJECT NAME <u>Dry Ash Landfill Feasibility Study</u>
PROJECT NUMBER <u>082-255</u>	PROJECT LOCATION <u>Hennepin, Illinois</u>
DATE STARTED <u>2/27/09</u> COMPLETED <u>2/27/09</u>	GROUND ELEVATION <u>475 ft</u> BACKFILL <u>Cement Grout</u>
DRILLING CONTRACTOR <u>Groff Testing</u>	GROUND WATER LEVELS:
DRILLING METHOD <u>Hollow Stem Auger</u>	WHILE DRILLING <u>---</u>
CEC REP <u>CAC</u> CHECKED BY <u>MOJ</u>	AT END OF DRILLING <u>---</u>
NOTES <u>---</u>	AFTER DRILLING <u>---</u>

CEC CUSTOM LOG - DJ STYLE (082-255 BORING LOGS.GPJ) CEC TEMPLATE.GDT 4/6/09

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen (tsf)	PID (ppm)	▲ SPT N VALUE ▲		
									20	40	60
475		Brown - gray clayey GRAVEL, with sand, roots, coarse gravel, moist, low plasticity, poorly graded. (BERM FILL)	0	SS 1	100	5 8 12 14	NP				
		Gr - 33.8%, Sa - 25.7%, Si - 19.8%, Cl - 20.6%		SS 2	85	9 11 6 11	NP		6	16	39
470		Brown silty CLAY, with cobbles, some sand, moist, stiff, low plasticity. (BERM FILL)	5	SS 3	80	7 8 10 12	1.75				
		Dark brown silty CLAY, trace coarse gravel, trace sand, soft, low plasticity. (BERM FILL)		SS 4	0	12 9 8 10	-				
465		Trace coarse gravel, crushed limestone, trace sand, stiff	10	SS 5	50	3 5 8 10	0.5			12	
		Trace coarse gravel, crushed limestone, trace sand, stiff		SS 6	100	4 7 9 11	2.5				
		Brown silty CLAY, with silt layers, trace coarse gravel, dry to moist, very stiff, low plasticity. (BERM FILL)	15	SS 7	17	5 6 9 14	NP				
460		Crushed limestone GRAVEL, dry, dense, non-plastic, poorly graded. (BERM FILL)		SS 8	75	9 14 38 12	2.5			14	
		Dark brown silty CLAY, with gravel, trace wood chips, sand, cobbles to coarse gravel. (BERM FILL)		SS 9	60	6 6 12 15	3.0				
				SS 10	75	10 8 5 3	-				
455			20								

(Continued Next Page)



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**BORING NUMBER B-7**

PAGE 2 OF 2

CLIENT Dynegy - Hennepin Power Station

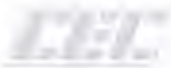
PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲
									20 40 60 80
									PL MC LL
									20 40 60 80
									□ UCS (tsf) □
									20 40 60 80
455		Gray SILT, trace fine sand, moist to wet, loose, (ASH) <i>(continued)</i>	20	SS 11	90	2 1 1 5	NP		35
		SAND AND GRAVEL, limestone fragments, dry, medium dense to dense, non-plastic, (GLACIAL OUTWASH)		SS 12	70	14 14 14 12	NP		
450			25	SS 13	50	50 30 20	NP		
				SS 14	50	65 35	NP		9
		End of Borehole at 28.0 feet.							

CEC\_CUSTOM\_LOG - D:\STYLE\BORING LOGS.GPJ\_CEC\_TEMPLATE.DOT 4/6/09



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# BORING NUMBER B-8

PAGE 1 OF 2

CLIENT <u>Dynegy - Hennepin Power Station</u>	PROJECT NAME <u>Dry Ash Landfill Feasibility Study</u>
PROJECT NUMBER <u>082-255</u>	PROJECT LOCATION <u>Hennepin, Illinois</u>
DATE STARTED <u>2/24/09</u> COMPLETED <u>2/24/09</u>	GROUND ELEVATION <u>487.4 ft</u> BACKFILL <u>Bentonite Chips</u>
DRILLING CONTRACTOR <u>Groff Testing</u>	GROUND WATER LEVELS: ▽ WHILE DRILLING <u>42.0 ft / Elev 445.4 ft</u>
DRILLING METHOD <u>Hollow Stem Auger</u>	AT END OF DRILLING <u>—</u>
CEC REP <u>CAC</u> CHECKED BY <u>MDJ</u>	AFTER DRILLING <u>—</u>
NOTES	

CEC CUSTOM LOG - D:\STYLE\082-255 BORING LOGS\07\_CECTEMPLATE.GDT\_40801

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									PL	MC
485		Dark gray SILT, trace coal pieces and fine sand, moist, very loose, (ASH)	0	SS 1	100	6 2 1 1	NP		30	
				SS 2	90	4 4 4 3	NP			
			5	SS 3	95	1 1 1 1	NP			
480		Moist to wet. Grades to finer, blockier silt Gr - 4.0%, Sa - 7.4%, Si - 77.9%, Cl - 14.8%		SS 4	80	0 0 1 1	NP		45	
				SS 5	70	1 2 5 5	NP			
			10	SS 6	100	2 1 1 1	NP			
475		Dark gray SILT, some sand, dry to moist, very loose, (ASH)		SS 7	100	2 2 2 2	NP		6	
			15	SS 8	100	2 1 1 1	NP			
				SS 9	90	2 1 2 2	NP			
470				SS 10		2 2 1 1	NP		27	
			20							

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**BORING NUMBER B-9**  
PAGE 1 OF 2

CLIENT <u>Dynegy - Hennepin Power Station</u>	PROJECT NAME <u>Dry Ash Landfill Feasibility Study</u>
PROJECT NUMBER <u>082-255</u>	PROJECT LOCATION <u>Hennepin, Illinois</u>
DATE STARTED <u>2/24/09</u> COMPLETED <u>2/24/09</u>	GROUND ELEVATION <u>482.3 ft</u> BACKFILL <u>Bentonite Chips</u>
DRILLING CONTRACTOR <u>Groff Testing</u>	GROUND WATER LEVELS:
DRILLING METHOD <u>Hollow Stem Auger</u>	<input checked="" type="checkbox"/> WHILE DRILLING <u>38.0 ft / Elev 444.3 ft</u>
CEC REP <u>CAC</u> CHECKED BY <u>MDJ</u>	AT END OF DRILLING <u>—</u>
NOTES <u>—</u>	AFTER DRILLING <u>—</u>

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									PL	MC	LI	
									20	40	60	80
480		Dark gray SILT, trace roots and sand, moist, very loose, (ASH)	0	SS 1	100	3 1 1 1	NP					
				SS 2	100	2 1 1 1	NP					
			5	SS 3	100	2 1 1 1	NP			40		
475				SS 4	100	3 2 3 2	NP					
				SS 5	100	2 2 2 1	NP			11		
470			10	SS 6	100	1 1 1 1	NP			37		
				SS 7	95	2 1 2 1	NP					
		Wet at 15 feet	15	SS 8	90	1 1 1 1	NP					
465				SS 9	100	0 1 2 5	NP				37	
				SS 10	100	3 4 5 5	NP					
			20									

CEC\_CUSTOM\_LOG - DJ STYLE 082-255 BORING LOGS.CPJ DECEMBER 03 4:05:09

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# BORING NUMBER B-10

PAGE 1 OF 2

CLIENT Dynegy - Hennepin Power Station PROJECT NAME Dry Ash Landfill Feasibility Study  
 PROJECT NUMBER 082-255 PROJECT LOCATION Hennepin, Illinois  
 DATE STARTED 2/23/09 COMPLETED 2/23/09 GROUND ELEVATION 481.6 ft BACKFILL Bentonite Chips  
 DRILLING CONTRACTOR Groff Testing GROUND WATER LEVELS:  
 DRILLING METHOD Hollow Stem Auger  WHILE DRILLING 28.5 ft / Elev 453.1 ft  
 CEC REP CAC CHECKED BY MDJ AT END OF DRILLING ---  
 NOTES AFTER DRILLING ---

CEC CUSTOM LOG - DJ STYLE 082-255 BORING LOGS.GPJ DECTEMPLATE.GDT 4/6/09

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen (tsf)	PID (ppm)	▲ SPT N VALUE ▲		
									PL	MC	LL
480		Dark gray SILT, trace sand, moist to wet, very loose. (ASH)	0	SS 1	50	4 2 1 1	NP				
				SS 2	50	0 0 1 1	NP		44		
475		Grades to wet	5	SS 3	75	1 2 4 4	NP				
				SS 4	70	4 3 2 2	NP				
				SS 5	100	2 1 1 1	NP				
470			10	SS 6	80	1 1 1 1	NP		40		
				SS 7	80	1 2 2 1	NP				
				SS 8	100	1 1 2 1	NP		41		
465			15	SS 9	95	0 2 1 1	NP				
				SS 10	100	1 1 1 2	NP				
			20								

(Continued Next Page)



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**BORING NUMBER B-10**

PAGE 2 OF 2

CLIENT Dynergy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									PL	MC
									20	40
									20	40
									□ UCS (tsf) □	20
									20	40
460		Dark gray SILT, trace sand, moist to wet, very loose. (ASH) (continued)	20	SS 11	100	1 2 2 4	NP			50
				SS 12	85	2 2 3 3	NP			
		Grades to medium dense	25	SS 13	100	5 12 14 10	NP			
455		Dark brown sandy SILT, moist, very dense, (STREAM TERRACE DEPOSIT)		SS 14	100	15 26 60	NP			23
				SS 15	88	22 80	NP			
		Brown SAND AND GRAVEL, medium to coarse sand, fine to coarse gravel, moist, very dense, (GLACIAL OUTWASH)	30	SS 16	76	60 40	NP			
450				SS 17	89	26 30 55	NP			7
			35	SS 18	100	100	NP			
		End of Borehole at 36.0 feet								

GEC\_CUSTOM\_LOG - D1\_STYLE 082-255 BORING LOGS BIP1\_GEC\_TEMPLATE.GDT 4/0/09





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# BORING NUMBER B-11

PAGE 1 OF 2

CLIENT Dynegy - Hennepin Power Station  
 PROJECT NUMBER 082-255  
 DATE STARTED 2/20/09 COMPLETED 2/20/09  
 DRILLING CONTRACTOR Groff Testing  
 DRILLING METHOD Hollow Stem Auger  
 CEC REP D. KORTH CHECKED BY MDJ  
 NOTES East End of Ash Pond

PROJECT NAME Dry Ash Landfill Feasibility Study  
 PROJECT LOCATION Hennepin, Illinois  
 GROUND ELEVATION 479.8 ft BACKFILL Bentonite Chips  
 GROUND WATER LEVELS:  
 ∇ WHILE DRILLING 34.0 ft / Elev 445.8 ft  
 AT END OF DRILLING NA  
 AFTER DRILLING NA

CEC CUSTOM LOG - D:\STYLE\052-255 BORING LOGS\GPJ\CECTEMPLATE.GDT 4/9/09

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20	40	60	80
		Gray SILT, wet, loose, laminated, (ASH)	0									
				SS 1	85	2 2 1 1	NP					34
		Grades to moist.		SS 2	75	1 1 1 1	NP					
475			5	SS 3	80	2 2 1 1	NP					
		Grades to wet		SS 4	75	1 1 2 1	NP					46
470			10	SS 5	65	0 0 1 2	NP					
				SS 6	75	0 1 1 1	NP					
		Dark grayish brown to dark olive brown SILT, wet, loose (ASH)		SS 7	75	2 2 1 1	NP					34
465			15	SS 8	85	1 1 1 1	NP					
				SS 9	100	2 3 3 3	NP					
460			20	SS 10	100	1 2 2 2	NP					58

(Continued Next Page)



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CLIENT Dyegy Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									PL	MC
									20	40
									20	40
									20	40
									20	40
		Dark grayish brown to dark olive brown SILT, wet, loose, (ASH) (continued)	20	SS 11	95	3 3 4 5	NP			
		Grayish brown laminated with brown SILT AND LEAN CLAY, moist, loose, (STREAM TERRACE DEPOSIT)		SS 12	100	2 3 3 6	NP			
455		Dark yellowish brown fine SAND, trace gravel, moist, dense, poorly graded, (GLACIAL OUTWASH)	25	SS 13	100	13 20 22 25	NP		20	
		Dark yellowish brown SAND AND GRAVEL, moist, dense, poorly graded, (GLACIAL OUTWASH)		SS 14	67	32 65 25	NP			
				SS 15	53	25 30 45	NP			
450			30	SS 16	20	75 25	NP			
				SS 17	25	50 50	NP			
445		Grades to wet at 34 0 feet.	35	SS 18	80	70 30	NP			
		End of Borehole at 36 0 feet.								

CEC-CUSTOM LOG - DJ STYLE 082-255 BORING LOGS.OPJ CECTEMPLATE.GDT 4/8/09



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# BORING NUMBER B-12

PAGE 1 OF 2

CLIENT <u>Dynegy - Hennepin Power Station</u>	PROJECT NAME <u>Dry Ash Landfill Feasibility Study</u>
PROJECT NUMBER <u>082-255</u>	PROJECT LOCATION <u>Hennepin, Illinois</u>
DATE STARTED <u>2/20/09</u> COMPLETED <u>2/20/09</u>	GROUND ELEVATION <u>479.5 ft</u> BACKFILL <u>Bentonite Chrgs.</u>
DRILLING CONTRACTOR <u>Groff Testing</u>	GROUND WATER LEVELS: ▽ WHILE DRILLING <u>32.5 ft / Elev 447.0 ft</u>
DRILLING METHOD <u>Hollow Stem Auger</u>	AT END OF DRILLING <u>---</u>
CEC REP <u>D. KORTH</u> CHECKED BY <u>MDJ</u>	AFTER DRILLING <u>---</u>
NOTES <u>East End of Ash Pond</u>	

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲				
									20	40	60	80	
475		Gray SILT, laminated with sandy silt, with a few black coal laminations, moist to wet, very loose. (ASH)	0	SS 1	50	3 1 2 2	NP						
				SS 2	90	0 1 3 4	NP						
			5	SS 3	65	0 0 1 1	NP		40				
				SS 4	75	0 0 0 1	NP						
470		Very dark grayish brown SILT, trace little fine sand laminations, wet, very loose. (ASH)	10	SS 5	90	0 1 2 2	NP						
				SS 6	100	0 0 1 1	NP		12				
				SS 7	95	0 0 1 1	NP						
465		Very dark grayish brown SANDY SILT, laminated, wet, very loose. (ASH)	15	SS 8	85	0 0 1 1	NP		42				
		Dark olive brown SILT TO SILT WITH SAND, laminated, wet, very loose. (ASH)		SS 9	95	1 1 2 2	NP						
		Gr - 0.0%, Sa - 7.7%, Si - 85.2%, Cl - 7.2%		SS 10	90	0 1 1 1	NP		36				
460			20										

CEC-CUSTOM LOG - DLS STYLE DRG-255 BORING LOGS.DPJ 02/20/09 4:00PM

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# BORING NUMBER B-12

PAGE 2 OF 2

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲				
									PL	MC	LL		
			20						20	40	60	80	
									20	40	60	80	
									□ UCS (tsf) □				
									20	40	60	80	
		Dark gray SILT WITH SAND, with fine sand, wet, loose to medium dense, (ASH)		SS 11	100	5 6 16 18	NP						
		Brown sandy SILT, moist to wet, (STREAM TERRACE DEPOSIT)		SS 12	95	3 4 7 10	NP						
455		Dusky red sandy SILT, trace fine gravel, moist, dense, (STREAM TERRACE DEPOSIT)											
		Dark yellowish brown GRAVEL WITH SAND, moist, dense to very dense, poorly graded, (GLACIAL OUTWASH)	25	SS 13	70	15 40 40 25	NP						31
				SS 14	25	45 62	NP						
				SS 15	60	75 40	NP						
450			30	SS 16	60	60 50	NP						39
		Dark yellowish brown SAND WITH GRAVEL, moist to wet, very dense, poorly graded, (GLACIAL OUTWASH) Grades to wet at 32.5		SS 17	100	85	NP						
445			35	SS 18	100	100	NP						
		End of Borehole at 36.0 feet											

CEC CUSTOM LOG - D1 STYLE: 082-255 BORING LOGS GPJ\_CECTEMPLATE.GDT 4/0/09



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# BORING NUMBER B-13

PAGE 1 OF 2

<b>CLIENT</b> <u>Dynergy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>2/17/09</u> <b>COMPLETED</b> <u>3/17/09</u>	<b>GROUND ELEVATION</b> <u>482.7 ft</u> <b>BACKFILL</b> <u>Cement Grout</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	▽ <b>WHILE DRILLING</b> <u>34.0 ft / Elev 448.7 ft</u>
<b>CEC REP</b> <u>D. KORTH</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b> <u>West end of Ash Pond on North Perimeter Road</u>	<b>AFTER DRILLING</b> <u>---</u>

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20	40	60	80
			0						PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
480		Yellowish brown GRAVEL WITH SAND, some inter-layered clayey gravel, moist, medium dense, (BERM FILL)		SS 1	55	3 6 6 12	NP					
		Dark yellowish brown SAND WITH GRAVEL, fine to coarse sand with fine to coarse gravel, trace silt, moist to wet, (BERM FILL)		SS 2	80	6 7 13 20	NP					
		Very dark grayish brown to very dark gray SILT WITH SAND, interbedded with sand lenses, trace coal fragments, moist, medium dense to dense, (ASH/ML)	5	SS 3	85	13 16 16 20	NP			17		
475		Gravel ~ 0% Sand ~ 21.1% Silt ~ 60.5% Clay ~ 18.4%		SS 4	85	14 16 25 20	NP			24		
				SS 5	75	16 20 25 20	NP			13		
		Grades moist to wet.	10	SS 6	95	18 20 25 16	NP					
470				SS 7	90	25 26 20 18	NP					
			15	SS 8	80	10 13 13 15	NP			24		
				SS 9	75	5 12 18 30	NP					
465				SS 10	80	13 13 13 12	NP					

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CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09



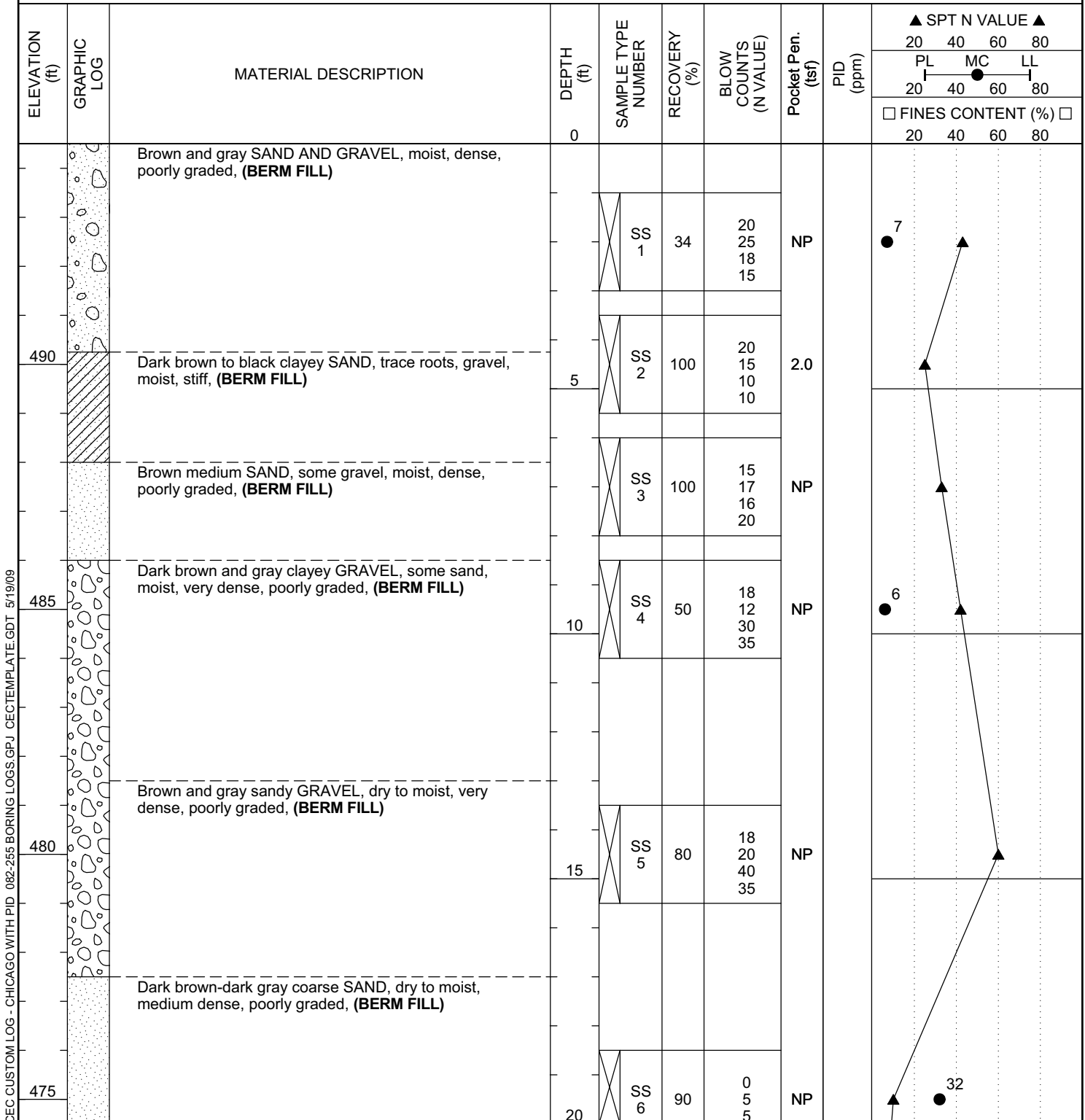


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# BORING NUMBER B-14

PAGE 1 OF 3

<b>CLIENT</b> <u>Dynegy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>3/19/09</u> <b>COMPLETED</b> <u>3/19/09</u>	<b>GROUND ELEVATION</b> <u>494.5 ft</u> <b>BACKFILL</b> <u>Cement Grout</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	▽ <b>WHILE DRILLING</b> <u>43.5 ft / Elev 451.0 ft</u>
<b>CEC REP</b> <u>CAC</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b>	<b>AFTER DRILLING</b> <u>---</u>



(Continued Next Page)



CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20	40	60	80
		Dark brown-dark gray coarse SAND, dry to moist, medium dense, poorly graded, <b>(BERM FILL)</b> (continued)	20			6						
		Gray SILT TO SANDY SILT, trace coal pieces, dry to moist, very loose, <b>(ASH)</b>										
470			25	SS 7	42	1 1 0 1	NP					
				SS 8	38	2 1 2 2	NP			14		
465			30	SS 9	90	2 3 8 20	NP					
		Grades to dense.		SS 10	90	25 23 18 18	NP			14		
460			35	SS 11	100	15 15 25 35	NP					
				SS 12	95	20 30 25 22	NP			18		
455		Dark brown medium SAND, moist, medium dense, poorly graded, <b>(STREAM TERRACE DEPOSIT)</b>	40	SS 13	100	6 6 7 5	NP					
		Brown medium clayey SAND, some gravel, moist to wet, loose, poorly graded, <b>(STREAM TERRACE DEPOSIT)</b>		SS 14	85	1 1 4 3	0.5 1.5			16		

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

(Continued Next Page)





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# BORING NUMBER B-14

PAGE 3 OF 3

CLIENT Dynergy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲					
									20	40	60	80		
450		Brown medium clayey SAND, some gravel, moist to wet, loose, poorly graded, <b>(STREAM TERRACE DEPOSIT)</b> <i>(continued)</i> Grades to wet.	45	SS 15	50	3 3 3 2	NP							
		End of Borehole at 45.5 feet.												



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# BORING NUMBER B-15

PAGE 1 OF 3

<b>CLIENT</b> <u>Dynegy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>3/18/09</u> <b>COMPLETED</b> <u>3/18/09</u>	<b>GROUND ELEVATION</b> <u>495.1 ft</u> <b>BACKFILL</b> <u>Cement Grout</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	▽ <b>WHILE DRILLING</b> <u>44.0 ft / Elev 451.1 ft</u>
<b>CEC REP</b> <u>CAC</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b>	<b>AFTER DRILLING</b> <u>---</u>

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
495		Brown and gray clayey to sandy GRAVEL, moist, medium dense, poorly graded, (BERM FILL)	0	SS 1	50	4 8 11 14	1.25					
				SS 2	75	8 8 8 12	NP					
		Brown gravelly SAND, moist, medium dense, poorly graded, (BERM FILL)										
490			5	SS 3	95	6 8 10 10	NP					
		Dark brown clayey SAND, some gravel, moist, poorly graded, (BERM FILL)										
				SS 4	75	5 7 7 8	NP					
		Gravel ~ 41.3% Sand ~39.0% Silt ~ 10.6% Clay ~ 9.2%										
			10	SS 5	100	11 12 14 11	1.0					
485		Sandy CLAY between 10 - 12 feet.										
				SS 6	100	6 5 11 22	NP					
				SS 7	0	18 14 11 22	NP					
		Dark brown to dark gray coarse SILTY SAND, dry to moist, medium dense, poorly graded, (BERM FILL/SM)	15	SS 8	100	8 8 9 12	NP					
480				SS 9	100	6 5 6 4	NP					
		Gravel ~ 8.5% Sand ~68.6% Silt ~ 20.5% Clay ~ 2.3%										
				SS 10	90	2 2 6 13	NP					
			20									

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

(Continued Next Page)



CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									PL	MC
										□ FINES CONTENT (%) □
475			20							
		Dark gray SILT, some sand laminations, trace coal pieces, moist, dense, (ASH)		SS 11	95	9 16 30 20	NP			
				SS 12	100	3 4 5 5	NP			
470		Grades moist to wet.	25	SS 13	90	6 6 4 4	NP			43
				SS 14	80	2 4 5 8	NP			
				ST 15	0		-			
465		Grades to wet between 30 - 32 feet.	30	SS 16	100	4 4 2 6	NP			54
				SS 17	100	5 7 25 20	NP			42
460		Grades moist to wet.	35	SS 18	90	5 9 10 10	NP			43
				SS 19	100	1 3 2 5	NP			
				SS 20	100	2 3 5 9	NP			
455		Dark brown - dark gray coarse SAND WITH SILT, trace gravel and cobbles, moist to wet, very dense, poorly graded, (GLACIAL OUTWASH)	40	SS 21	90	8 20 25 28	NP			14
						6				

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

(Continued Next Page)



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# BORING NUMBER B-15

PAGE 3 OF 3

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									20	40
450		Dark brown - dark gray coarse SAND WITH SILT, trace gravel and cobbles, moist to wet, very dense, poorly graded, <b>(GLACIAL OUTWASH)</b> (continued) Grades to wet.	45	SS 22	80	8 7 6	NP		▲	▲
		Brown and gray gravelly SAND, wet, dense, poorly graded, <b>(GLACIAL OUTWASH)</b>		SS 23	13	3 4 6 4	NP			
		End of Borehole at 48.0 feet.		SS 24	80	11 32 30 18	NP		● 11	▲

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

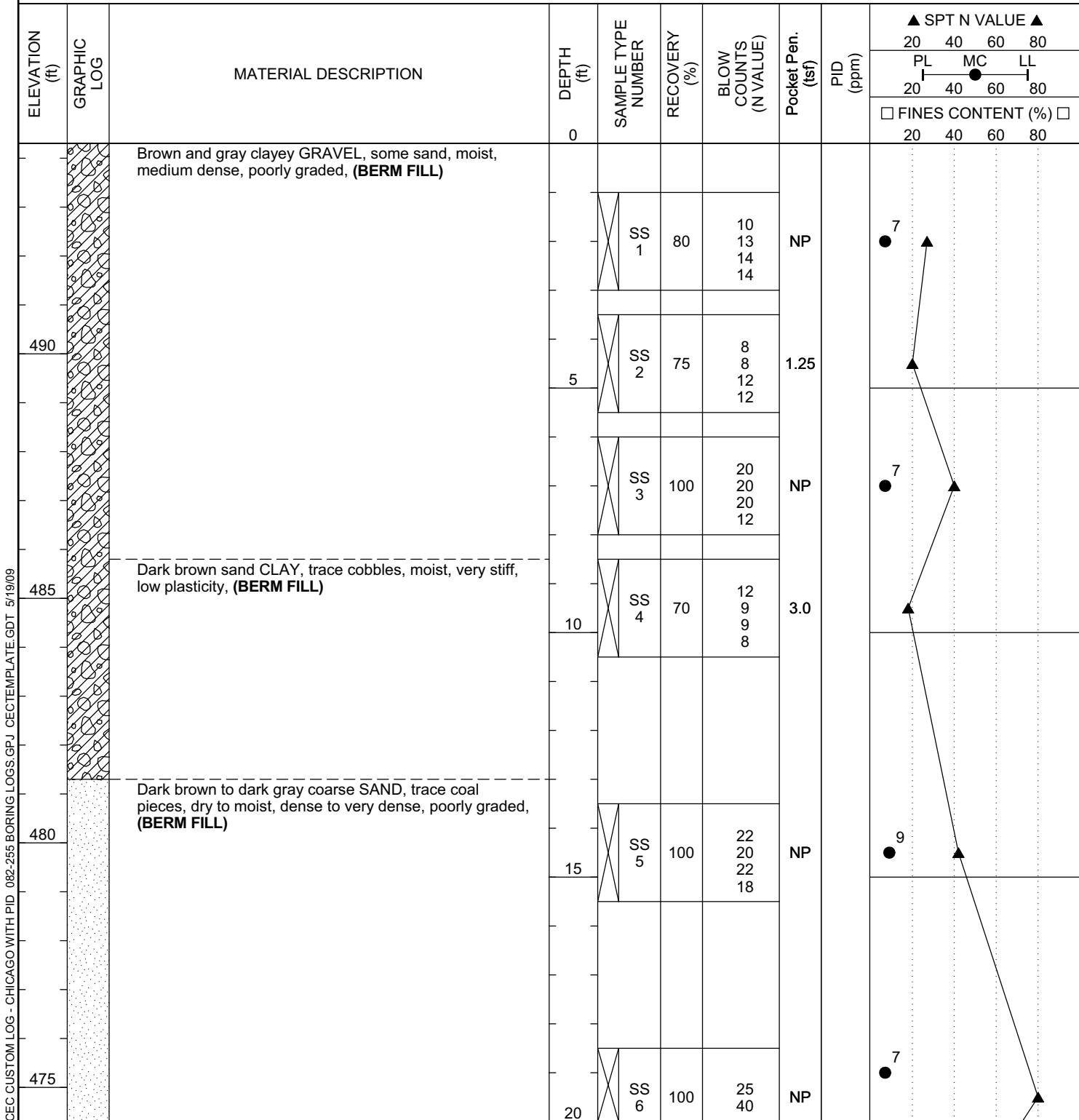


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 Downers Grove, IL 60510

# BORING NUMBER B-16

PAGE 1 OF 3

<b>CLIENT</b> <u>Dynegy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>3/18/09</u> <b>COMPLETED</b> <u>3/18/09</u>	<b>GROUND ELEVATION</b> <u>494.3 ft</u> <b>BACKFILL</b> <u>Cement Grout</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	▽ <b>WHILE DRILLING</b> <u>48.5 ft / Elev 445.8 ft</u>
<b>CEC REP</b> <u>CAC</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b> _____	<b>AFTER DRILLING</b> <u>---</u>



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CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09



CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
		Dark brown to dark gray coarse SAND, trace coal pieces, dry to moist, dense to very dense, poorly graded, <b>(BERM FILL)</b> (continued)	20			40						
		Gray fine SILT, with sand laminations, moist to wet, very loose, <b>(ASH/ML)</b>										
470			25	SS 7	100	3 2 2 2	<0.5					90
		Grades to wet.										
		Gravel ~ 0%										
465		Sand ~ 13.4%										
		Silt ~ 73.5%										
		Clay ~ 13.1%										
			30	ST 8	100		1.0					52
		Grades to medium dense; moist with brown and black sand laminations										
460			35	SS 9	85	16 8 10 12	NP					69
			40	SS 10	95	6 5 4 6	0.75					63
		Dark brown clayey SAND, trace gravel, moist to wet, loose to medium stiff, <b>(STREAM TERRACE DEPOSIT)</b>										

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

(Continued Next Page)



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# BORING NUMBER B-16

PAGE 3 OF 3

CLIENT Dynergy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20	40	60	80
									PL	MC	LL	
									20	40	60	80
									□ FINES CONTENT (%) □			
									20	40	60	80
450		Dark brown clayey SAND, trace gravel, moist to wet, loose to medium stiff, <b>(STREAM TERRACE DEPOSIT)</b> (continued)	45	SS 11	65	2 5 8 10	0.75					
		Brown and gray SAND AND GRAVEL, with cobbles, moist, medium dense, poorly graded, <b>(GLACIAL OUTWASH)</b>						NP				
445		Grades to wet.										
			50	SS 12	80	11 15 10 8	NP					
		End of Borehole at 50.5 feet.										

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

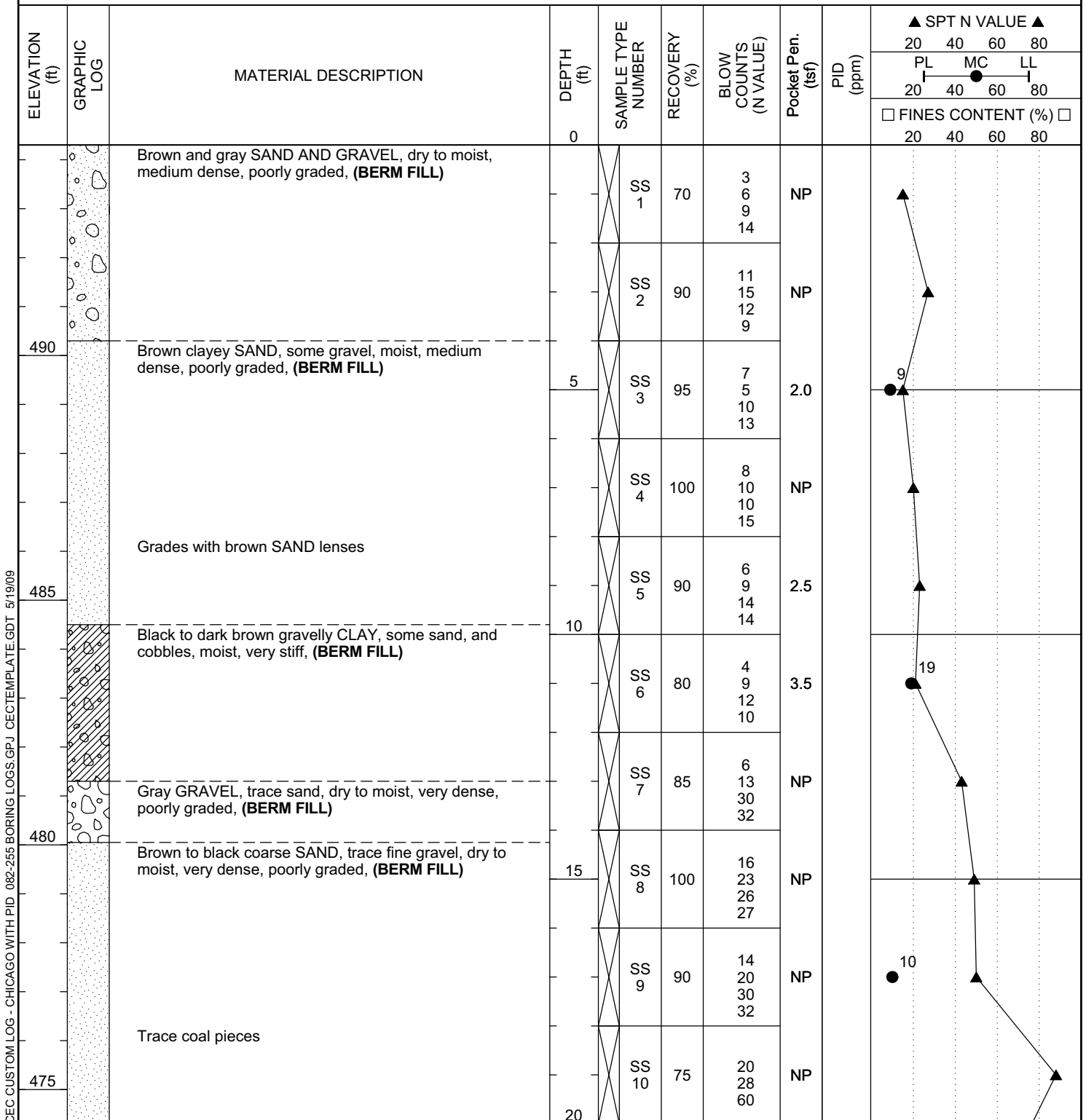


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 Downers Grove, IL 60510

# BORING NUMBER B-17

PAGE 1 OF 2

<b>CLIENT</b> <u>Dynergy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>3/11/09</u> <b>COMPLETED</b> <u>3/11/09</u>	<b>GROUND ELEVATION</b> <u>494.3 ft</u> <b>BACKFILL</b> <u>Cement Grout</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	<b>WHILE DRILLING</b> <u>---</u>
<b>CEC REP</b> <u>CAC</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b> _____	<b>AFTER DRILLING</b> <u>---</u>



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CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09





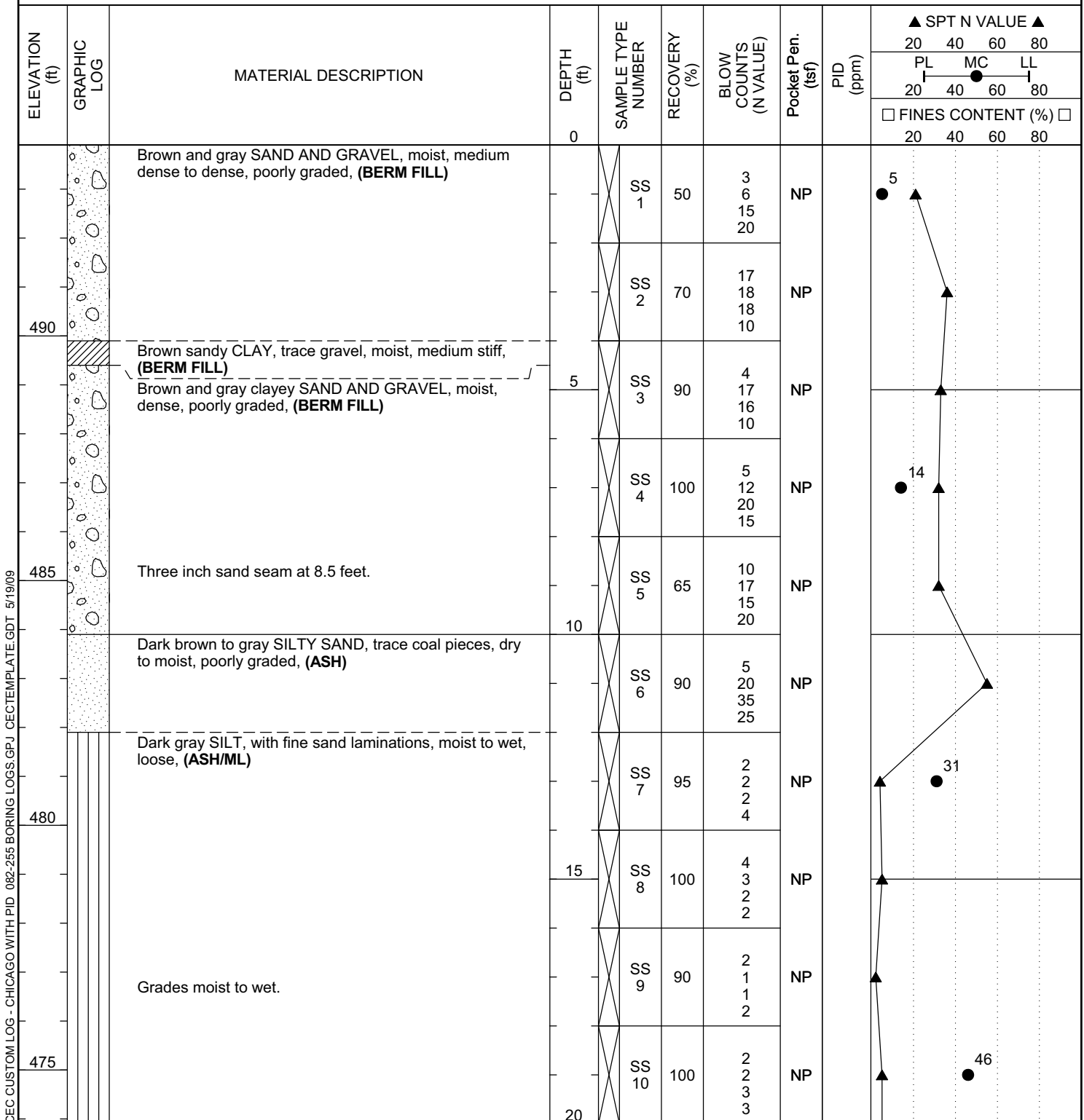


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# BORING NUMBER B-18

PAGE 1 OF 2

<b>CLIENT</b> <u>Dynergy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>3/6/09</u> <b>COMPLETED</b> <u>3/6/09</u>	<b>GROUND ELEVATION</b> <u>493.9 ft</u> <b>BACKFILL</b> <u>Cement Grout</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	<b>WHILE DRILLING</b> <u>---</u>
<b>CEC REP</b> <u>CAC</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b>	<b>AFTER DRILLING</b> <u>---</u>



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CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09



CLIENT Dynegy - Hennepin Power Station

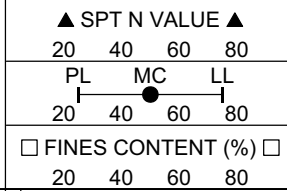
PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲					
									20	40	60	80		
470		Dark gray SILT, with fine sand laminations, moist to wet, loose, (ASH/ML) (continued)	20	SS 11	100	3 3 2 2	NP							
				SS 12	100	3 3 3 2	NP							
		Grades moist to wet.	25	SS 13	90	3 2 2 1	NP				47			
				SS 14	90	2 1 1 2	NP							
465				SS 15	90	2 1 1 1	NP							
		Grades to moist.	30	ST 16	100		NP					46		
		Gravel ~ 0% Sand ~ 13.4% Silt ~ 73.5% Clay ~ 13.1%		SS 17	100	3 6 5 9	NP							
460			35	SS 18	100	2 1 3 6	NP							
		Grades to wet.		ST 19	50		NP					11		
		Brown and gray SILTY SAND, dry to moist, very dense, poorly graded, (GLACIAL OUTWASH/SM)		SS 20	85	16 20 35 25	NP							
455		Gravel ~ 4.0% Sand ~ 79.1% Silt ~ 10.9% Clay ~ 6.1%												
		End of Borehole at 40.0 feet.	40											





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# BORING NUMBER B-19

PAGE 1 OF 3

<b>CLIENT</b> <u>Dynergy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>3/5/09</u> <b>COMPLETED</b> <u>3/5/09</u>	<b>GROUND ELEVATION</b> <u>494.2 ft</u> <b>BACKFILL</b> <u>Cement Grout</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	▽ <b>WHILE DRILLING</b> <u>44.8 ft / Elev 449.4 ft</u>
<b>CEC REP</b> <u>CAC</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b> _____	<b>AFTER DRILLING</b> <u>---</u>

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲				
									20	40	60	80	
									PL		MC	LL	
			0						□ FINES CONTENT (%) □				
									20	40	60	80	
490		Brown and gray SAND AND GRAVEL, trace clay, moist, medium dense, poorly graded, <b>(BERM FILL)</b>		SS 1	75	2 4 12 15	NP						
				SS 2	90	10 12 16 20	NP						
			5	SS 3	95	14 16 12 10	NP						
		Grades to gravelly SAND		SS 4	90	5 9 25 18	NP						
485		Black silty CLAY, trace sand, roots, moist, very stiff, <b>(BERM FILL)</b>		SS 5	100	6 11 20 11	3.5						
		Dark gray coarse SAND, dry to moist, medium dense, poorly graded, <b>(BERM FILL)</b>		SS 6	90	10 11 15 14	NP						
				SS 7	75	4 4 6 5	NP						
480		Gray SILT, with fine sand laminations, dry to moist, very loose to loose, <b>(ASH/ML)</b>		SS 8	100	3 2 3 2	NP						
				SS 9	90	3 2 2 2	NP						
475				SS 10	90	3 2 2 2	NP						
			20										

(Continued Next Page)

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09



CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									20	40	60	80
									20	40	60	80
									□ FINES CONTENT (%) □			
									20	40	60	80
		Gray SILT, with fine sand laminations, dry to moist, very loose to loose, <b>(ASH/ML)</b> (continued)	20	ST 11	100							
		Gravel ~ 0.6%; Sand ~ 22.8% Silt ~ 62.6%; Clay ~ 14.0%										31
		Dark gray SILT, some black sand laminations, dry to moist, very loose, <b>(ASH)</b>		SS 12	100	2 1 1 1	NP					
470		Grades to moist.	25	SS 13	85	2 3 2 6	NP					
		Grades moist to wet.		SS 14	95	1 3 4 3	NP					
465		Grades to wet.	30	SS 15	100	0 0 1 1	NP					
				SS 16	90	3 4 12 8	NP					
				SS 17	100	2 3 2 2	NP					
460			35	SS 18	100	2 3 2 2	NP					
				SS 19	95	2 2 6 13	NP					
		Brown medium SAND, trace gravel, moist, medium dense, poorly graded, <b>(STREAM TERRACE DEPOSIT)</b>		SS 20	65	8 12 35 25	NP					
455		Brown gravelly SAND, moist, dense, poorly graded, <b>(GLACIAL OUTWASH)</b>	40	SS 21	75	18 20 35 15	NP					
						8						

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

(Continued Next Page)



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# BORING NUMBER B-19

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									20 40 60 80	20 40 60 80
									PL	MC
									20 40 60 80	20 40 60 80
									□ FINES CONTENT (%) □	
									20 40 60 80	20 40 60 80
450		Brown gravelly SAND, moist, dense, poorly graded, (GLACIAL OUTWASH) (continued)		SS 22	65	18 20 26	NP			
		Grades to wet.	45	SS 23	90	25 15 13 12	NP			
		End of Borehole at 46.0 feet.								

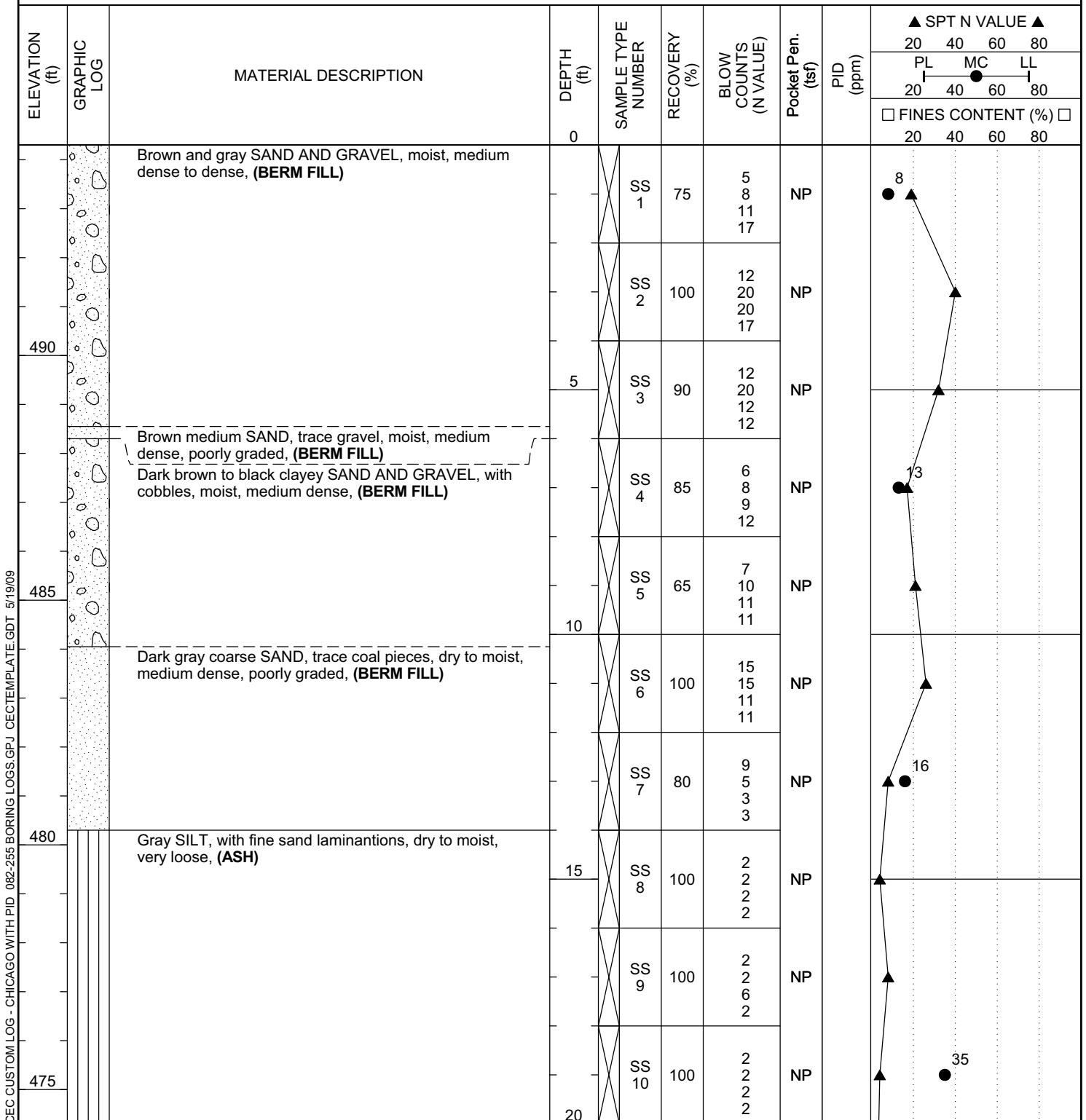


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# BORING NUMBER B-20

PAGE 1 OF 3

<b>CLIENT</b> <u>Dynergy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>3/5/09</u> <b>COMPLETED</b> <u>3/5/09</u>	<b>GROUND ELEVATION</b> <u>494.3 ft</u> <b>BACKFILL</b> <u>Cement Grout</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	▽ <b>WHILE DRILLING</b> <u>46.0 ft / Elev 448.3 ft</u>
<b>CEC REP</b> <u>CAC</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b>	<b>AFTER DRILLING</b> <u>---</u>



(Continued Next Page)

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09



CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲				
									20	40	60	80	
470		Gray SILT, with fine sand laminations, dry to moist, very loose, <b>(ASH)</b> (continued)  Grades to wet.	20	SS 11	100	1 1 2 2	NP						
		Grades to moist.		SS 12	100	2 2 1 2	NP						
		Dark brown to gray SILT, with fine sand laminations, trace coal pieces, moist, very loose, <b>(ASH)</b>	25	SS 13	95	2 3 2 2	NP				31		
				SS 14	100	3 4 2 1	NP						
465				SS 15	100	2 2 1 1	NP						
		Grades to wet.	30	SS 16	100	2 0 1 1 1	NP					43	
				SS 17	100	0 1 1 1	NP						
460			35	SS 18	100	3 3 3 4	NP						
				SS 19	100	3 4 5 9	NP						
455		Brown and gray SAND AND GRAVEL, dry to moist, very dense, poorly graded, <b>(GLACIAL OUTWASH)</b>	40	SS 20	55	20 44 40	NP						
				SS 21	100	25 75	NP				6		

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

(Continued Next Page)





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# BORING NUMBER B-20

CLIENT Dynergy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲		
									20	40	60
450		Brown and gray SAND AND GRAVEL, dry to moist, very dense, poorly graded, <b>(GLACIAL OUTWASH)</b> <i>(continued)</i>  Grades to wet.  End of Borehole at 46.8 feet.		SS 22	100	10 20 65	NP			▲	
			45	SS 23	100	40 60	NP				
				SS 24	58	70 30	NP				



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# BORING NUMBER B-21

PAGE 1 OF 3

<b>CLIENT</b> <u>Dynegy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>2/25/09</u> <b>COMPLETED</b> <u>2/25/09</u>	<b>GROUND ELEVATION</b> <u>494.3 ft</u> <b>BACKFILL</b> <u>Cement Grout</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	<b>WHILE DRILLING</b> <u>Dry</u>
<b>CEC REP</b> <u>CAC</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b>	<b>AFTER DRILLING</b> <u>---</u>

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20	40	60	80
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
490		Brown gravelly SAND, moist, medium dense, poorly graded, (BERM FILL)	0	SS 1	0	7 10 12 14	NP					
				SS 2	90	10 16 22 20	NP					
			5	SS 3	85	12 10 9 8	NP		6			
		Gray SAND, some gravel, moist, medium dense, poorly graded, (BERM FILL)		SS 4	100	9 10 10 14	NP					
		Grades to brown										
		Brown gravelly SAND, moist, medium dense, (BERM FILL)		SS 5	85	14 14 14 10	NP					
485			10	SS 6	95	7 10 14 12	NP		9			
		Dark gray medium SAND, trace coal pieces, dry to moist, medium dense, non plastics; poorly graded, (BERM FILL)		SS 7	50	13 8 7 5	NP					
480				SS 8	80	6 5 3 3	NP					
		Gray SILT, with fine sand laminations, moist, loose, poorly graded, (ASH)	15	SS 9	100	4 3 3 2	NP					28
				SS 10	34	3 4 5 5	NP					
475			20									

(Continued Next Page)



CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20	40	60	80
									PL	MC	LL	
									20	40	60	80
									□ FINES CONTENT (%) □			
									20	40	60	80
470		Gray SILT, with fine sand laminations, moist, loose, poorly graded, <b>(ASH)</b> (continued)	20	SS 11	100	2 2 2 3	NP					
		Grades to dark gray		SS 12	100	3 2 2 4	NP			36		
			25	SS 13	100	2 2 1 6	NP					
				SS 14	100	2 2 1 1	NP					
465		Moist		SS 15	100	1 1 2 4	NP			50		
			30	SS 16	100	2 1 1 1	NP					
		Grades to wet.		SS 17	100	1 1 1 0	NP					
				SS 18	100	1 2 1 1	NP			48		
				SS 19	100	0 0 0 1	NP			48		
460			35	SS 20		0 1 3 6	NP NP NP					
		Dark brown silty SAND, trace fine gravel, moist, very stiff, <b>(STREAM TERRACE DEPOSIT)</b>	40	SS 21	80	3 8 12 45	NP			19		20 35
		Reddish brown clayey SAND WITH GRAVEL, trace silt, moist, medium dense, <b>(STREAM TERRACE DEPOSIT/SC)</b> Gr ~ 2.1%; Sa ~ 46.2%; Si ~ 18.4%; Cl ~ 15.4%.										
		Brown gravelly SAND, dry to moist, dense, <b>(GLACIAL OUTWASH)</b>				10						

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

(Continued Next Page)



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# BORING NUMBER B-21

PAGE 3 OF 3

CLIENT Dynergy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20 40 60 80	20 40 60 80		
									PL	MC	LL	
									20	40	60	80
									□ FINES CONTENT (%) □			
									20	40	60	80
450		Brown gravelly SAND, dry to moist, dense, <b>(GLACIAL OUTWASH)</b> <i>(continued)</i>		SS 22	90	18 18 22	NP					
		Brown SAND AND GRAVEL, with cobbles, dry to moist, dense, <b>(GLACIAL OUTWASH)</b>	45	SS 23	100	8 20 15 15	NP					
		End of Borehole at 46.0 feet.										



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# BORING NUMBER B-24

PAGE 1 OF 2

<b>CLIENT</b> <u>Dynergy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>3/20/09</u> <b>COMPLETED</b> <u>3/20/09</u>	<b>GROUND ELEVATION</b> <u>494.9 ft</u> <b>BACKFILL</b> <u>Cement Grout</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	<b>WHILE DRILLING</b> <u>Dry</u>
<b>CEC REP</b> <u>D. KORTH</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b> _____	<b>AFTER DRILLING</b> <u>---</u>

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲				
									PL	MC	LL		
									□ FINES CONTENT (%) □				
									20	40	60	80	
490		Dark brown LEAN CLAY WITH SAND, trace fine to coarse gravel, moist, hard, <b>(BERM FILL)</b>	0	SS 1	70	3 4 6 12	>4.5						
		Dark yellowish brown SAND AND GRAVEL, moist, medium dense, <b>(BERM FILL)</b>		SS 2	55	7 6 5 4	NP						
485			5	SS 3	70	7 8 6 5	NP						
				SS 4	80	8 8 6 12	NP						
				SS 5	100	65	NP						
		Black LEAN CLAY, trace medium to coarse sand, moist, stiff, <b>(BERM FILL)</b>	10	SS 6	55	6 4 4 3	1.5						
				SS 7	100	6 12 11 25	4.0						
480		Dark yellowish brown with very dark brown SILTY SAND WITH GRAVEL, moist, very dense, <b>(ASH/SM)</b> Gravel ~ 22.3% Sand ~ 59.4% Silt ~ 16.0% Clay ~ 2.2%	15	SS 8	80	20 25 26 20	NP						
		Yellowish brown SILTY SAND, trace fine gravel, moist, loose, <b>(STREAM TERRACE DEPOSIT)</b>		SS 9	80	3 4 3 3	NP						
475		Dark yellowish brown SILTY GRAVEL WITH SAND, with cobbles, moist, dense, <b>(GLACIAL OUTWASH/GM)</b>	20	SS 10	40	2 5 1 30	NP						

(Continued Next Page)





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# BORING NUMBER B-25

PAGE 1 OF 3

<b>CLIENT</b> <u>Dynergy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>3/19/09</u> <b>COMPLETED</b> <u>3/20/09</u>	<b>GROUND ELEVATION</b> _____ <b>BACKFILL</b> <u>Cement Grout</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	<b>WHILE DRILLING</b> <u>---</u>
<b>CEC REP</b> <u>D. KORTH</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b> _____	<b>AFTER DRILLING</b> <u>---</u>

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20	40	60	80
		Brown and gray SAND AND GRAVEL, moist, medium dense, poorly graded, <b>(BERM FILL)</b>	0	SS 1	34	11 10 10 14	NP					
		Brown medium SAND, trace gravel, moist, medium dense, poorly graded, <b>(BERM FILL)</b>		SS 2	85	5 5 4 9	1.0					
			5	SS 3	80	15 15 20 35	NP					
				SS 4	25	4 7 9 12	NP					
				SS 5	75	15 17 22 32	NP					
		Dark yellowish brown LEAN CLAY WITH GRAVEL, trace fine to coarse sand, moist, stiff to very stiff, <b>(BERM FILL)</b>	10	SS 6	75	8 6 8 6	2.25					
				SS 7	50	4 6 6 6	1.0					
		Dark grayish brown to brown sandy CLAY, trace gravel, moist, soft to very stiff, <b>(BERM FILL)</b>	15	SS 8	80	6 8 10 8	3.0					
				SS 9	85	7 7 12 11	NP					
		Very dark grayish brown SILT, with fine sand laminations, moist, medium dense, <b>(ASH)</b>		SS 10	75	5 7 9 9	2.25					
			20									

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

(Continued Next Page)



CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20	40	60	80
									PL	MC	LL	
									20	40	60	80
									□ FINES CONTENT (%) □			
									20	40	60	80
		Very dark grayish brown SILT, with fine sand laminations, moist, medium dense, <b>(ASH)</b> (continued)	20									
		Grades loose to medium dense		SS 11	100	5 3 3 3	NP					
				SS 12	100	2 4 4 3	NP					
		Grades moist to wet.	25	SS 13	100	3 4 4 7	NP		35			
				SS 14	100	12 5 7 7	NP					
				SS 15	95	6 5 4 6	NP					
		Very dark grayish brown to very dark brown SILTY SAND, trace fine gravel, moist, dense, <b>(ASH/SM)</b> Gravel ~ 14.2% Sand ~ 64.9% Silt ~ 18.9% Clay ~ 2.0%	30	SS 16	100	4 6 4 4	NP		56			
				SS 17	90	16 25 25 18	NP		29			
		Black LEAN CLAY, with fine sand, moist, medium stiff to stiff, <b>(LOESS DEPOSIT)</b>	35	SS 18	85	16 10 5 3	1.5					
				SS 19	90	2 3 3 2	0.5		27			
		Very dark brown to olive brown fine SAND, moist to wet, loose, poorly graded, <b>(STREAM TERRACE DEPOSIT)</b>		SS 20	95	0 2 2 5	NP					
		Dark yellowish brown fine SAND, moist to wet, very loose, <b>(STREAM TERRACE DEPOSIT)</b>	40	SS 21	85	3 3 3 4	NP		23			
						1						

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

(Continued Next Page)





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# BORING NUMBER B-25

PAGE 3 OF 3

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									20	40
		Dark yellowish brown fine SAND, moist to wet, very loose, <b>(STREAM TERRACE DEPOSIT)</b> (continued)		SS 22	100	1 2 4	NP			
		Dark yellowish brown GRAVEL AND SAND, wet, medium dense, <b>(GLACIAL OUTWASH)</b>	45	SS 23	80	2 5 9 18	NP			
				SS 24	55	25 16 12 17	NP			
		End of Borehole at 48.0 feet.								

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09



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# BORING NUMBER B-26

PAGE 1 OF 3

**CLIENT** Dynergy - Hennepin Power Station **PROJECT NAME** Dry Ash Landfill Feasibility Study  
**PROJECT NUMBER** 082-255 **PROJECT LOCATION** Hennepin, Illinois  
**DATE STARTED** 3/13/09 **COMPLETED** 3/13/09 **GROUND ELEVATION** 494.0 ft **BACKFILL** Well sand & Bentonite Chips  
**DRILLING CONTRACTOR** Groff Testing **GROUND WATER LEVELS:**  
**DRILLING METHOD** Hollow Stem Auger **WHILE DRILLING** ---  
**CEC REP** CAC **CHECKED BY** MDJ **AT END OF DRILLING** ---  
**NOTES** Far West, Well (MW-26) installed. **AFTER DRILLING** ---

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20	40	60	80
									PL	MC	LL	
									20	40	60	80
									□ FINES CONTENT (%) □			
									20	40	60	80
		Brown-black coarse SAND, trace silt, roots, coal pieces, trace gravel, dry to moist, non-plastic; poorly graded, (SP)	0	SS 1	85	2 2 4 4	NP					
490		Gray sandy SILT, moist, medium dense, non-plastic, (ML)		SS 2	80	3 8 15 14	NP					33
		Black-gray coarse SAND, some silt, moist, non-plastic; poorly graded, (SP)	5	SS 3	95	23 16 9 4	NP					
		Gray sandy SILT, some black and brown sand lenses, wet to moist, medium dense, adhesive, (SM)		SS 4	80	3 4 2 6	<0.25					
485				SS 5	100	3 8 12 8	NP					24
			10	SS 6	95	4 7 10 10	0.5 1.0					
480		Gray SILT, some sand lenses, dry to moist, dense, non-plastic, (ML)		SS 7	90	10 11 26 6	NP					
			15	SS 8	100	2 0 0 1	<0.25					41
		Grades to wet.		SS 9	100	0 0 0 1	<0.25					46
475				SS 10	100	2 1 1 1	<0.25					
			20									

(Continued Next Page)

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09



CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲					
									20	40	60	80		
470		Gray SILT, some sand lenses, dry to moist, dense, non-plastic, <b>(ML)</b> (continued)	20	ST 11	100									
		Grades moist to wet.		SS 12	100	1 1 1 3							33	
			25	ST 13	100									
				SS 14	100	11 6 18 6	1.5							
465				SS 15	100	6 3 3 8	<0.5							56
		Gray silty coarse SAND, moist, dense, non-plastic; poorly graded, <b>(SP)</b>	30	SS 16	100	2 11 16 40	NP							
460		Grades to silty sand.		SS 17	90	15 15 12 30	NP							
			35	SS 18	100	15 30 10 10	NP							34
				SS 19	100	20 40 35 25	<4.0							
455		Dark gray - dark brown silty coarse SAND, moist, very dense, non-plastic; poorly graded, <b>(SM)</b>		SS 20	100	35 65	NP							
			40	SS 21	100	6 30 8 10	<1.0							51
		Grades moist to wet.				4								

(Continued Next Page)

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09



CLIENT Dynergy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									20	40
450		Dark gray - dark brown silty coarse SAND, moist, very dense, non-plastic; poorly graded, <b>(SM)</b> <i>(continued)</i>		SS 22	100	2 6 13	NP			
		Dark brown gray clayey SAND, trace silt, moist, medium stiff, low plasticity, <b>(SC)</b>	45	SS 23	100	5 3 5 6	0.5			
		Grades moist to wet.		SS 24	95	2 2 6 7	1.75			29
445				SS 25	100	2 2 2 3	1.25			
				50	SS 26	100	1 3 5 5	1.0		
		End of Borehole at 52.0 feet.								



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# BORING NUMBER B-27

PAGE 1 OF 3

<b>CLIENT</b> <u>Dynergy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>3/16/09</u> <b>COMPLETED</b> <u>3/16/09</u>	<b>GROUND ELEVATION</b> <u>493.8 ft</u> <b>BACKFILL</b> <u>Bentonite Chips</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	▽ <b>WHILE DRILLING</b> <u>46.2 ft / Elev 447.6 ft</u>
<b>CEC REP</b> <u>D. KORTH</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b> _____	<b>AFTER DRILLING</b> <u>---</u>

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20	40	60	80
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
490		Gray SILT, with fine sand laminations, trace of small coal fragments, moist to wet, very loose to loose, (ASH)	0	SS 1	85	1 2 2 3	NP					
				SS 2	80	1 1 1 3	NP					46
			5	SS 3	65	4 4 3 2	NP					
				SS 4	75	5 5 2 2	NP					16
485				SS 5	95	2 2 2 1	NP					56
			10	SS 6	85	1 2 3 3	NP					
		Very dark grayish brown SILTY SAND, moist, loose, (ASH)		SS 7	95	12 12 8 5	3.5					41
480		Gray SANDY SILT, moist, loose to medium dense, (ASH)		SS 8	90	4 4 3 4	2.0					
		Very dark grayish brown SILTY SAND, moist, (ASH)		SS 9	85	2 3 3 2	NP					
		Dark olive gray to gray SANDY SILT, moist to wet, loose, (ASH)		SS 10		8 12 15 10	2.5					
475		Dark olive gray to very dark gray SILTY SAND, moist to wet, medium dense, (ASH)										
			20									

(Continued Next Page)

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09



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# BORING NUMBER B-27

CLIENT Dynergy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20	40	60	80
									PL	MC	LL	
									20	40	60	80
□ FINES CONTENT (%) □												
20 40 60 80												
		Dark olive gray to very dark gray SILTY SAND, moist to wet, medium dense, (ASH) (continued)	20	SS 11	100	4 7 5 2	NP				42	
		Dark olive gray to very dark gray SILT WITH SAND, laminated, moist to wet, loose, (ASH/ML)		SS 12	90	3 2 3 2	NP					
470		Gravel ~ 0.8% Sand ~ 27.0% Silt ~ 65.3% Clay ~ 6.9%	25	SS 13	90	5 3 2 3	NP				31	
				SS 14	85	2 2 4 5	NP				52	
465				SS 15	100	4 1 1 4	NP				49	
		Coarse granular Bottom Ash Layer from 30.8 to 31.2 feet.	30	SS 16	100	4 6 6 9	NP					
		Very dark gray SILTY SAND, laminated, moist to wet, medium dense, (ASH FILL)		SS 17	90	4 11 14 7	NP				70	
460		Grades to very dense.	35	SS 18	85	30 22 50	NP					
		Gravel ~ 0% Sand ~ 28.9% Silt ~ 66.2% Clay ~ 4.9%		SS 19	90	7 14 20 30	NP				57	
455				SS 20	95	10 17 22 35	NP					
			40	SS 21	100	15 20 15 32	NP				60	
						6						

(Continued Next Page)

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09



CLIENT Dynergy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲		
									20	40	60
450		Dark olive brown CLAYEY SAND, moist to wet, loose, (STREAM TERRACE DEPOSIT)	45	SS 22	90	5 4 4	NP				
		Dark yellowish brown GRAVEL WITH SAND, wet, medium dense, (GLACIAL OUTWASH)		SS 23	100	3 3 6 5	4.0				
				SS 24	70	3 6 8 12	NP				15
		End of Borehole at 48.0 feet.									



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# BORING NUMBER B-28

PAGE 1 OF 3

**CLIENT** Dynegy - Hennepin Power Station **PROJECT NAME** Dry Ash Landfill Feasibility Study  
**PROJECT NUMBER** 082-255 **PROJECT LOCATION** Hennepin, Illinois  
**DATE STARTED** 3/11/09 **COMPLETED** 3/11/09 **GROUND ELEVATION** 496.6 ft **BACKFILL** Bentonite Chips  
**DRILLING CONTRACTOR** Groff Testing **GROUND WATER LEVELS:**  
**DRILLING METHOD** Hollow Stem Auger **▽ WHILE DRILLING** 47.8 ft / Elev 448.9 ft  
**CEC REP** CAC **CHECKED BY** MDJ **AT END OF DRILLING** ---  
**NOTES** 15 feet North o/s from stake **AFTER DRILLING** ---

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20	40	60	80
495		Brown and black to brown and gray medium SAND, some coal pieces, trace gravel, dry to moist, medium dense, (ASH)	0	SS 1	90	2 10 12 14	NP					
				SS 2	100	10 12 13 9	NP					
		Gray SILT, with fine sand laminations, trace coal pieces, dry to moist, loose to very loose, (ASH)	5	SS 3	100	6 2 2 5	NP					
490		Black-dark gray SAND, dry to moist, very loose, poorly graded, (ASH)		SS 4	90	2 2 2 1	NP					
		Gray SILT, with fine sand laminations, dry to moist, loose, (ASH/ML)		SS 5	100	2 3 2 4	NP					
485			10	SS 6	100	2 2 2 2	NP					
		Grades moist to wet.		SS 7	100	3 2 2 2	NP					
			15	SS 8	100	1 1 1 2	NP					
480		Grades to wet.		SS 9	100	1 0 0 1	<0.25					
		Grades to moist.		SS 10	80	1 3 3 5						
			20									

(Continued Next Page)

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CEC TEMPLATE.GDT 5/19/09





CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲				
									20	40	60	80	
475		Gray SILT, with fine sand laminations, dry to moist, loose, <b>(ASH/ML)</b> (continued) Grades to dark gray; trace coal pieces.	20	SS 11	100	6 6 5 3	NP						
		Grades moist to wet with a three inch sand seam at 22.5 feet. Gravel ~ 0.0% Sand ~ 10.4% Grades dark brown to dark gray; moist to wet. Silt ~ 76.3% Clay ~ 13.2%	25	SS 12	85	3 4 3 6	NP						45
470		Black-dark gray SAND, trace silt, moist, loose, poorly graded, <b>(ASH)</b> Dark gray SILT, trace sand, wet, very loose	25	SS 13	100	3 4 5 4	NP						
			30	SS 14	90	1 1 5 4	NP						
			30	SS 15	100	1 0 0 1	NP						
465		Grades moist to wet with sand	35	SS 16	80	1 4 7 8	NP						
			35	SS 17	100	7 6 5 4	NP						
			35	SS 18	95	3 3 4 6	NP						
460			40	SS 19	90	2 8 12 16	NP						
			40	SS 20	100	2 18 35 15	NP						
455				SS 21	100	5 7 7 12	NP						58
						8							

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

(Continued Next Page)



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# BORING NUMBER B-28

PAGE 3 OF 3

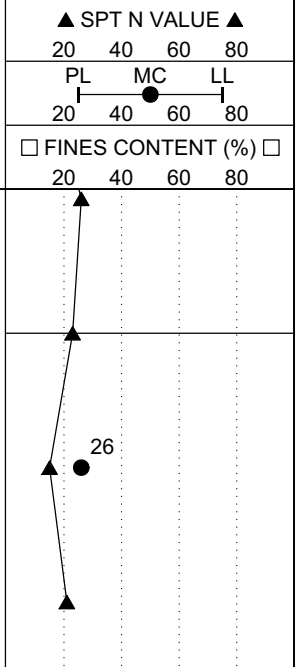
CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									20	40
		Dark gray SILT, trace sand, wet, very loose <i>(continued)</i>		SS 22	85	14 12 35	NP			
			45	SS 23	100	10 12 11 9	NP			
450		Dark brown medium SAND, trace silty gravel, moist to wet, medium dense, poorly graded, <b>(STREAM TERRACE DEPOSIT)</b>		SS 24	100	6 6 9 10	NP			
		Brown and gray SAND AND GRAVEL, wet, medium dense, poorly graded, <b>(GLACIAL OUTWASH)</b>		SS 25	70	7 9 12 25	NP			26
		End of Borehole at 50.0 feet.	50							





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# BORING NUMBER B-29

PAGE 1 OF 3

<b>CLIENT</b> <u>Dynergy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>3/12/09</u> <b>COMPLETED</b> <u>3/12/09</u>	<b>GROUND ELEVATION</b> <u>494.4 ft</u> <b>BACKFILL</b> <u>Monitoring Well</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	▽ <b>WHILE DRILLING</b> <u>46.0 ft / Elev 448.4 ft</u>
<b>CEC REP</b> <u>CAC</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b>	<b>AFTER DRILLING</b> <u>---</u>

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲				
									20	40	60	80	
									PL	MC	LL		
									□ FINES CONTENT (%) □				
									20	40	60	80	
494.4		Dark brown silty SAND, trace gravel, roots, and coal, moist, poorly graded, (ASH)	0	SS 1	80	2 2 4 2	NP						
490		Gray SILT, with fine sand laminations, wet to moist, very loose, low to no plasticity, (ASH)		SS 2	75	1 1 2 2	NP						
485			5	SS 3	90	1 2 2 1	NP			41			
				SS 4	85	2 1 1 1	NP						
				SS 5	90	2 3 4 4	NP						
			10	SS 6	100	2 4 2 2	NP			36			
				SS 7	85	2 1 2 5	NP						
480			15	SS 8	100	1 5 6 9	NP						
				SS 9	95	2 2 10 13	NP			25			
475		Grades to silty SAND, (ASH)		SS 10	95	2 4 2 2	NP						
			20										

(Continued Next Page)

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09



CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20	40	60	80
									PL	MC	LL	
									20	40	60	80
									□ FINES CONTENT (%) □			
									20	40	60	80
		Grades to silty SAND, (ASH) (continued)	20									
				SS 11	85	2 2 2 2	NP					
				SS 12	95	2 2 1 4	NP				38	
470		Dark gray to black coarse SAND, some silt, trace fine gravel and coal, dry to moist, medium dense, non plastic, (ASH)	25	SS 13	90	6 10 10 7	NP					
		Gray SILT, some sand lenses, moist to wet, loose to medium dense, (ASH)		SS 14	100	2 3 6 14	NP					
		Dark brown-dark gray silty SANDY SILT, trace coal pieces, dry to moist, medium dense, poorly graded, (ASH/ML) Gravel ~ 2.9% Sand ~ 39.7% Silt ~ 61.9% Clay ~ 5.5%		SS 15	100	5 8 14 10	NP					47
465		Grades moist to wet.	30	SS 16	100	8 8 7 3	NP					
		Gray SILT, with fine sand laminations, moist to wet, loose, (ASH)		SS 17	95	4 2 5 4	NP					
460		Grades to very dense	35	SS 18	75	3 3 2 5	NP					57
				SS 19	100	12 13 10 22	NP					
				SS 20	100	18 13 10 8	NP					
455		Wet between 40.0 to 40.25 feet.	40	SS 21	100	13 13 25 30	NP					52
		Dark brown to black silty CLAY, trace sand, trace roots, moist, stiff, (LOESS DEPOSIT)				1						

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

(Continued Next Page)



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 3041 Woodcreek Dr. Suite 210  
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# BORING NUMBER B-29

PAGE 3 OF 3

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									20	40
450		Dark brown to black silty CLAY, trace sand, trace roots, moist, stiff, <b>(LOESS DEPOSIT)</b> <i>(continued)</i>		SS 22	90	1 3 6	2.5			
		Dark brown to black sandy CLAY, trace silt, moist, stiff, <b>(STREAM TERRACE DEPOSIT)</b>	45	SS 23	85	3 3 3 4	2.5			
		Dark brown coarse SAND, trace gravel, wet, loose to medium stiff, poorly graded, <b>(STREAM TERRACE DEPOSIT)</b>		SS 24	90	2 2 2 4	1.0			20
445		Gray-black-brown clayey GRAVEL, some sand, wet, loose, poorly graded, <b>(GLACIAL OUTWASH)</b>		SS 25	75	3 4 5 5	NP			
		End of Borehole at 50.0 feet.	50							

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09



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# BORING NUMBER B-30

PAGE 1 OF 3

<b>CLIENT</b> <u>Dynergy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>3/2/09</u> <b>COMPLETED</b> <u>3/2/09</u>	<b>GROUND ELEVATION</b> <u>490.8 ft</u> <b>BACKFILL</b> <u>Bentonite Chips</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	▽ <b>WHILE DRILLING</b> <u>42.0 ft / Elev 448.8 ft</u>
<b>CEC REP</b> <u>CAC</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b> _____	<b>AFTER DRILLING</b> <u>---</u>

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲						
									20	40	60	80			
490		Gray SILT WITH SAND, moist to wet, very loose to loose, (ASH/ML)	0												
					SS 1	80	2 2 1 1	NP							44
					SS 2	70	2 2 1 1	NP							
				5	SS 3	90	2 3 2 1	NP							
485					SS 4	90	3 1 1 1	NP							36
					SS 5	60	1 1 0 1	NP							
				10	SS 6	100	5 5 4 5	NP							
					SS 7	100	2 2 3 4	NP							33
				15	SS 8	90	3 4 3 2	NP							
475			With black and brown sand lenses		SS 9	95	1 1 4 2	NP							
					SS 10	100	3 2 2 2	NP							40
			20												

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

(Continued Next Page)



CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20	40	60	80
									PL	MC	LL	
									20	40	60	80
									□ FINES CONTENT (%) □			
									20	40	60	80
470		Gray SILT WITH SAND, moist to wet, very loose to loose, <b>(ASH/ML)</b> (continued)  Grades to dark gray at 21 feet.		SS 11	100	2 4 3 5	NP					
		Grades moist to wet.		SS 12	90	3 2 2 2	NP					
465			25	SS 13	75	5 3 3 4	NP		29			
		Gravel ~ 0.0% Sand ~ 24.6% Silt ~ 66.9% Clay ~ 8.5%		SS 14	90	5 8 4 3	NP					
				SS 15	100	6 8 9 6	NP					
460		Grades to wet.	30	SS 16	100	4 4 4 5	NP			71		
		Wet to moist, Grades to light gray at 33 feet.		SS 17	100	3 6 9 14	NP					
455			35	SS 18	100	10 10 10 10	NP		55			
		Dark brown to brown fine to medium SILTY SAND, dry to moist, medium dense, non-plastic; poorly graded, <b>(STREAM TERRACE DEPOSIT)</b>		SS 19	90	6 6 11 12	NP					
				SS 20	80	5 14 11 14	NP					
450		Brown and gray SAND AND GRAVEL, coarse to cobble gravel, dry to moist, medium dense, non-plastic; poorly graded, <b>(GLACIAL OUTWASH)</b> Grades to wet.	40	SS 21	50	15 15 12 10	NP					
						9						

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

(Continued Next Page)



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# BORING NUMBER B-30

PAGE 3 OF 3

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲				
									20	40	60	80	
									PL	MC	LL		
									20	40	60	80	
									□ FINES CONTENT (%) □				
									7	20	40	60	80
		Brown and gray SAND AND GRAVEL, coarse to cobble gravel, dry to moist, medium dense, non-plastic; poorly graded, <b>(GLACIAL OUTWASH)</b> (continued)		SS 22	50	12 12 11	NP		●	▲			
445		End of Borehole at 44.0 feet.											





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# BORING NUMBER B-31

PAGE 1 OF 3

<b>CLIENT</b> <u>Dynergy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>3/3/09</u> <b>COMPLETED</b> <u>3/3/09</u>	<b>GROUND ELEVATION</b> <u>488.4 ft</u> <b>BACKFILL</b> <u>Bentonite Chips</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	<b>WHILE DRILLING</b> <u>---</u>
<b>CEC REP</b> <u>CAC</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b> <u>Surveyed location; truck mounted rig</u>	<b>AFTER DRILLING</b> <u>---</u>

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									PL	MC	LL	
			0						20	40	60	80
485		Gray SILT, with fine sand laminations, trace gravel and organics, moist to wet, very loose, <b>(ASH/ML)</b>		SS 1	65	3 2 2 1	NP					52
		Grades to moist with frequent sand lenses	5	SS 2	85	3 1 1 1	NP					
480				SS 3	95	3 1 1 2	NP					52
			10	SS 4	95	4 3 3 3	NP					
475				SS 5	100	2 2 2 2	NP					43
470		Grades moist to wet	20	SS 6	95	2 1 1	NP					

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

(Continued Next Page)



CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									20	40
		Gray SILT, with fine sand laminations, trace gravel and organics, moist to wet, very loose, <b>(ASH/ML)</b> (continued)	20			4				
465		Grades moist to wet								
		Gravel ~ 0.0% Sand ~ 13.3% Silt ~ 79.0% Clay ~ 7.6%	25	SS 7	100	1 3 4 5	NP			44
460			30	SS 8	100	4 5 5 5				
455			35	SS 9	90	7 7 6 5	1.5			31
		Brown to black clayey SILT, trace sand, moist, stiff, low plasticity, <b>(ML)</b>								
450		Brown silty SAND, trace fine to coarse gravel, trace clay, moist to wet, medium dense, poorly graded, <b>(STREAM TERRACE DEPOSIT)</b>	40	SS 10	80	3 5 7 4	NP			

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

(Continued Next Page)



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# BORING NUMBER B-31

PAGE 3 OF 3

CLIENT Dynergy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲					
									20	40	60	80		
445		Brown and gray SAND AND GRAVEL, wet, poorly graded, <b>(GLACIAL OUTWASH)</b>	45	SS 11	81	50 50								
		End of Borehole at 45.5 feet.												



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# BORING NUMBER B-32

PAGE 1 OF 3

<b>CLIENT</b> <u>Dynergy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>3/3/09</u> <b>COMPLETED</b> <u>3/3/09</u>	<b>GROUND ELEVATION</b> <u>494.7 ft</u> <b>BACKFILL</b> <u>Bentonite Chips</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	▽ <b>WHILE DRILLING</b> <u>48.5 ft / Elev 446.2 ft</u>
<b>CEC REP</b> <u>CAC</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b> <u>Staked boring location</u>	<b>AFTER DRILLING</b> <u>---</u>

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20	40	60	80
		Dark brown coarse SAND, trace coal pieces, dry to moist, medium dense, poorly graded, (ASH)	0	SS 1	100		NP					
				SS 2	90	6 9 9 6	NP					
490		Gray SILT, with fine sand laminations, dry to moist, loose, (ASH/SM)	5	SS 3	100	5 2 3 6	NP					17
				SS 4	100	3 2 2 2	NP					
485			10	SS 5	100	3 2 2 3	NP					40
				SS 6	100	2 2 1 1	NP					
480		Moist to wet, fine black sand seams	15	ST 7	100		NP					40
		Gravel ~ 0.0% Sand ~ 40.0% Silt ~ 53.5% Clay ~ 6.5% Bulk Unit Weight = 104.1 pcf		SS 8	100	3 2 2 2	NP					42
475			20									

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

(Continued Next Page)



CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									20	40	60	80
									20	40	60	80
									□ FINES CONTENT (%) □			
									20	40	60	80
		Gray SILT, with fine sand laminations, dry to moist, loose, <b>(ASH/SM)</b> (continued) Grades moist to wet	20			2						
				SS 9	100	3 5 6 6	NP					
470		Grades to Gray SILT WITH SAND, <b>(ASH/ML)</b>	25	ST 10	100		NP				38	
		Gravel ~ 0.0% Sand ~ 17.0% Silt ~ 69.0% Clay ~ 13.9% Bulk Unit Weight = 95.4 pcf									39	
465		Medium dense	30	SS 11	95	5 7 12 18	NP					
				ST 12	100		NP				53	
		Gravel ~ 0.0% Sand ~ 31.5% Silt ~ 59.8% Clay ~ 8.6% Bulk Unit Weight = 106.4 pcf									58	
460		Moist to wet, with sand lenses	35	SS 13		12 10 10 12	NP					69
				SS 14		7 12 18 28	NP					
455			40									

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

(Continued Next Page)



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# BORING NUMBER B-32

PAGE 3 OF 3

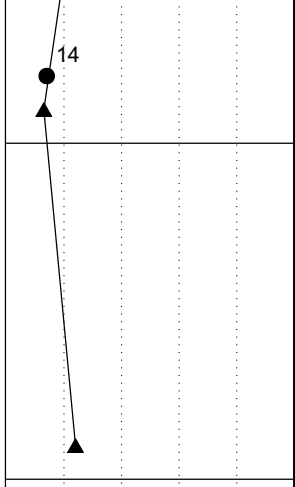
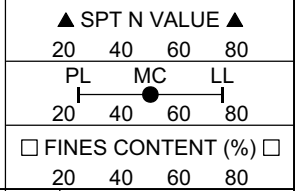
CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									20	40
		Gray SILT, with fine sand laminations, dry to moist, loose, <b>(ASH/SM)</b> (continued)								
450		Dark brown fine SAND, moist, medium dense, poorly graded, <b>(SP)</b>	45	SS 15	100	4 6 7 7	NP			
445		Brown and gray SAND AND GRAVEL, moist to wet, medium dense to dense, poorly graded, <b>(GLACIAL OUTWASH)</b>	50	SS 16	65	7 12 12 20	NP			
		End of Borehole at 50.5 feet.								



CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09



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# BORING NUMBER B-33

PAGE 1 OF 3

<b>CLIENT</b> <u>Dynergy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>3/2/09</u> <b>COMPLETED</b> <u>3/2/09</u>	<b>GROUND ELEVATION</b> <u>493.1 ft</u> <b>BACKFILL</b> <u>Bentonite Chips</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	<b>WHILE DRILLING</b> <u>---</u>
<b>CEC REP</b> <u>CAC</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b> _____	<b>AFTER DRILLING</b> <u>---</u>

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲				
									20	40	60	80	
									PL	MC	LL		
			0						□ FINES CONTENT (%) □				
									20	40	60	80	
490		Gray SILT WITH SAND, moist to wet, loose, non plastic, (ASH/ML)		SS 1	100	4 3 3 3	NP						
		With fine sand laminations		SS 2	100	2 3 3 4	NP						
			5	SS 3	85	2 2 3 2	NP				31		
				SS 4	90	2 2 1 2	NP						
485		Gravel ~ 0.0% Sand ~ 18.7% Silt ~ 65.8% Clay ~ 15.5%		SS 5	90	3 2 2 2	NP				33		
			10	SS 6	95	2 2 2 1	NP					43	
480				SS 7	100	4 2 3 5	NP						
			15	SS 8	100	2 3 2 2	NP						
		Grades dry to moist		SS 9	100	2 2 2 4	NP					48	
475				SS 10	100	2 2 2 2	NP						
			20										

(Continued Next Page)

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09



CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									20	40	60	80
									20	40	60	80
									□ FINES CONTENT (%) □			
									20	40	60	80
		Gray SILT WITH SAND, moist to wet, loose, non plastic, <b>(ASH/ML)</b> (continued)	20	SS 11	100	2 1 3 6	NP					
470		Dark gray SILT, trace sand, dry to moist, loose, <b>(ASH)</b>		SS 12	95	5 2 2 3	NP				33	
			25	SS 13	100	3 2 2 2	NP					
		Grades moist to wet		SS 14	100	5 4 2 2	NP					
465		Gray SILT, trace sand, wet, loose, poorly graded, <b>(ASH)</b>		SS 15	100	3 2 2 2	NP				50	
			30	SS 16	100	3 11 15 15	NP					
				SS 17	100	4 5 6 10	NP				42	
460			35	SS 18	80	7 11 10 28	NP				38	
		Dark brown fine to medium SAND, trace fine gravel, organics, moist, dense to very dense, poorly graded, <b>(STREAM TERRACE DEPOSIT)</b>		SS 19	100	12 25 25 30	NP					
455		Brown and gray SAND AND GRAVEL, dry to moist, non plastic; poorly graded, <b>(GLACIAL OUTWASH)</b>		SS 20	100	35 60	NP					
			40	SS 21	100	20 20 30	NP				7	

(Continued Next Page)

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09





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# BORING NUMBER B-33

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲				
									20	40	60	80	
450		Brown and gray SAND AND GRAVEL, dry to moist, non plastic; poorly graded, <b>(GLACIAL OUTWASH)</b> <i>(continued)</i>		SS 22	100	25 75	NP						
		End of Borehole at 44.0 feet.											



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# BORING NUMBER B-34

PAGE 1 OF 3

<b>CLIENT</b> <u>Dynergy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>3/3/09</u> <b>COMPLETED</b> <u>3/3/09</u>	<b>GROUND ELEVATION</b> <u>491.0 ft</u> <b>BACKFILL</b> <u>Bentonite Chips</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	<b>WHILE DRILLING</b> <u>---</u>
<b>CEC REP</b> <u>CAC</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b> <u>Surveyed location</u>	<b>AFTER DRILLING</b> <u>---</u>

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20	40	60	80
									PL	MC	LL	
										□ FINES CONTENT (%) □		
										20 40 60 80		
490		Gray to dark gray SILT, with fine sand laminations, dry to moist, loose to very loose, poorly graded, <b>(ASH)</b>	0									
				SS 1	85	3 2 3 3	2.5			29		
			5	SS 2	100	3 4 2 1	2.6					
485				SS 3	100	2 2 2 3	2.5			32		
		Grades moist to wet	10	SS 4	85	2 2 1 5	NP					
480				SS 5		2 4 4 2	NP			39		
		Grades to moist	15									
475			20	SS 6		2 1 1	NP					

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

(Continued Next Page)



CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲					
									20	40	60	80		
470		Gray to dark gray SILT, with fine sand laminations, dry to moist, loose to very loose, poorly graded, <b>(ASH)</b> <i>(continued)</i>	20			3								
465			25	SS 7	100	4 3 2 2	NP						40	
460		Grades moist to wet	30	SS 8	100	5 2 2 4	NP						47	
455		Brown silty SAND, trace gravel, moist, loose, poorly graded, <b>(STREAM TERRACE DEPOSIT)</b>	35	SS 9	85	2 2 7 15	2.5							
450		Brown and gray SAND AND GRAVEL, dry to moist, medium dense, poorly graded, <b>(GLACIAL OUTWASH)</b>	40	SS 10	0	20 25 30 25	NP							

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

(Continued Next Page)



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# BORING NUMBER B-34

PAGE 3 OF 3

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									20	40
		Brown and gray SAND AND GRAVEL, dry to moist, medium dense, poorly graded, <b>(GLACIAL OUTWASH)</b> <i>(continued)</i>								
		Brown gravelly SAND, some cobbles, wet, medium dense, poorly graded, <b>(SP)</b>	45	SS 11		7 6 4 4	NP			13
445		End of Borehole at 45.5 feet.								



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# BORING NUMBER B-35

PAGE 1 OF 3

<b>CLIENT</b> <u>Dynergy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>3/3/09</u> <b>COMPLETED</b> <u>3/3/09</u>	<b>GROUND ELEVATION</b> <u>487.8 ft</u> <b>BACKFILL</b> <u>Bentonite Chips</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	<b>WHILE DRILLING</b> <u>---</u>
<b>CEC REP</b> <u>CAC</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b> <u>Surveyed location</u>	<b>AFTER DRILLING</b> <u>---</u>

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20	40	60	80
									PL	MC	LL	
									20	40	60	80
									□ FINES CONTENT (%) □			
									20	40	60	80
485		Dark gray to gray SILT, with fine sand laminations, moist to wet, loose to very loose, poorly graded, (ASH/ML)		SS 1	85	0 3 2 2	NP					35
			5	SS 2	90	4 3 1 1	NP					37
480		Gravel ~ 0.0% Sand ~ 12.2% Silt ~ 70.3% Clay ~ 17.6%		SS 3	85	2 2 1 1	NP					36
			10	SS 4	100	3 4 5 6	NP					31
475				SS 5	100	3 1 2 2	NP					
470				SS 6	100	3 4 1	NP					
			20									

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

(Continued Next Page)



CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									☐ FINES CONTENT (%) ☐			
									20	40	60	80
465		Dark gray to gray SILT, with fine sand laminations, moist to wet, loose to very loose, poorly graded, <b>(ASH/ML)</b> (continued)	20			1						
460		Grades to medium dense	25	SS 7	100	3 4 2 2	NP				45	
455		Dark brown silty SAND, trace fine gravel, moist, medium dense, poorly graded, <b>(STREAM TERRACE DEPOSIT)</b>	30	SS 8	100	3 4 7 9	NP				53	
450		SAND AND GRAVEL, with cobbles, dry, dense to very dense, poorly graded, <b>(GLACIAL OUTWASH)</b>	35	SS 9	100	2 2 3 5	NP					
445			40	SS 10	100	100	NP				13	

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

(Continued Next Page)



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**BORING NUMBER B-35**

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									20 40 60 80	20 40 60 80
		SAND AND GRAVEL, with cobbles, dry, dense to very dense, poorly graded, <b>(GLACIAL OUTWASH)</b> <i>(continued)</i>								
		End of Borehole at 45.0 feet.	45	SS 11	90	25 40 32	NP			
440										

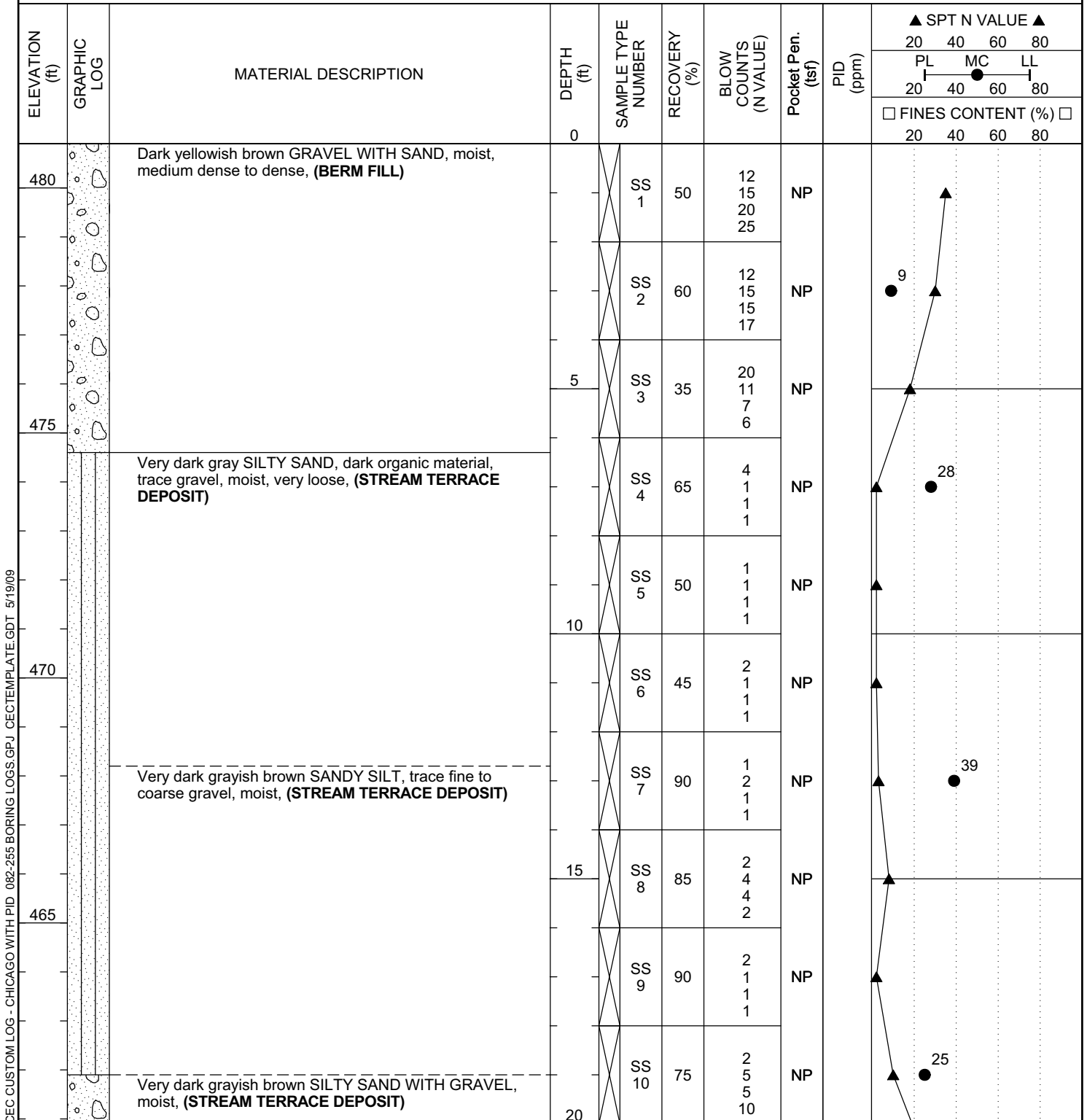


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# BORING NUMBER B-36

PAGE 1 OF 2

<b>CLIENT</b> <u>Dynergy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>3/16/09</u> <b>COMPLETED</b> <u>3/16/09</u>	<b>GROUND ELEVATION</b> <u>480.9 ft</u> <b>BACKFILL</b> <u>Cement Grout</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	▽ <b>WHILE DRILLING</b> <u>24.0 ft / Elev 456.9 ft</u>
<b>CEC REP</b> <u>D. KORTH</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b>	<b>AFTER DRILLING</b> <u>---</u>



(Continued Next Page)

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09





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# BORING NUMBER B-36

PAGE 2 OF 2

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲		
									20	40	60
460		Very dark grayish brown SILTY SAND WITH GRAVEL, moist, ( <b>STREAM TERRACE DEPOSIT</b> ) (continued)	20	SS 11	75	5 8 20 10	4.0		16		
		Dark yellowish brown GRAVEL WITH SAND, moist to wet, dense, ( <b>GLACIAL OUTWASH</b> )		SS 12	90	12 15 16 12	NP				
455				25	SS 13	50	8 15 18 18	NP	10		
		End of Borehole at 26.0 feet.									

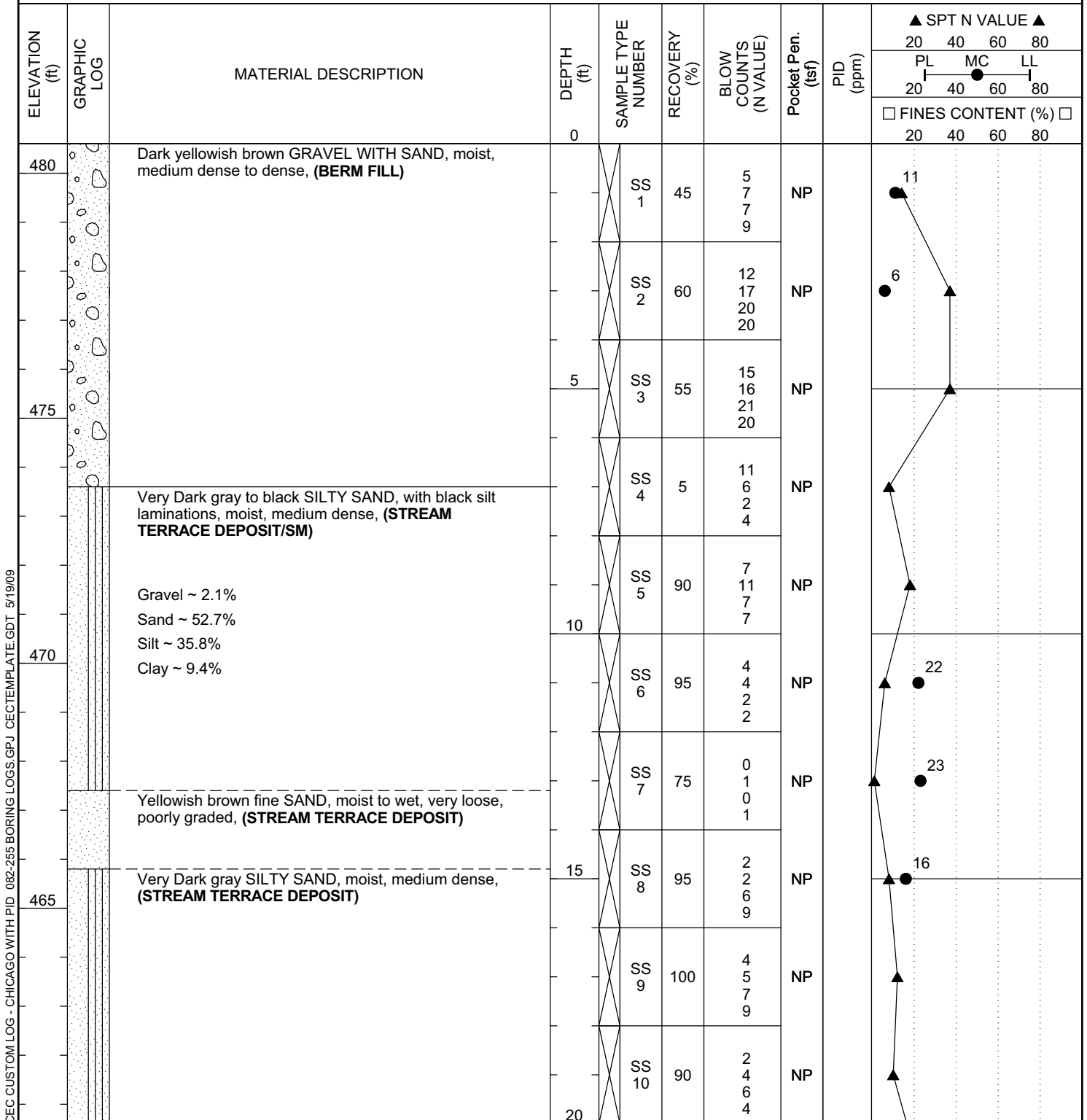


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# BORING NUMBER B-37

PAGE 1 OF 2

<b>CLIENT</b> <u>Dynegy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>3/17/09</u> <b>COMPLETED</b> <u>3/17/09</u>	<b>GROUND ELEVATION</b> <u>480.6 ft</u> <b>BACKFILL</b> <u>Cement Grout</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	▽ <b>WHILE DRILLING</b> <u>26.0 ft / Elev 454.6 ft</u>
<b>CEC REP</b> <u>D. KORTH</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b>	<b>AFTER DRILLING</b> <u>---</u>



(Continued Next Page)

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09



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# BORING NUMBER B-37

PAGE 2 OF 2

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									20	40
460		Very Dark gray SILTY SAND, moist, medium dense, (STREAM TERRACE DEPOSIT) (continued) Grades moist to wet	20	SS 11	90	3 13 10 7	NP		25	
				SS 12	75	3 5 10 11	NP			
455		Dark yellowish brown GRAVEL WITH SAND, moist, medium dense, poorly graded, (GLACIAL OUTWASH)  Grades to wet.	25	SS 13	50	12 13 20 18	NP			
				SS 14	75	5 20 15 20	NP			11
		End of Borehole at 28.0 feet.								

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

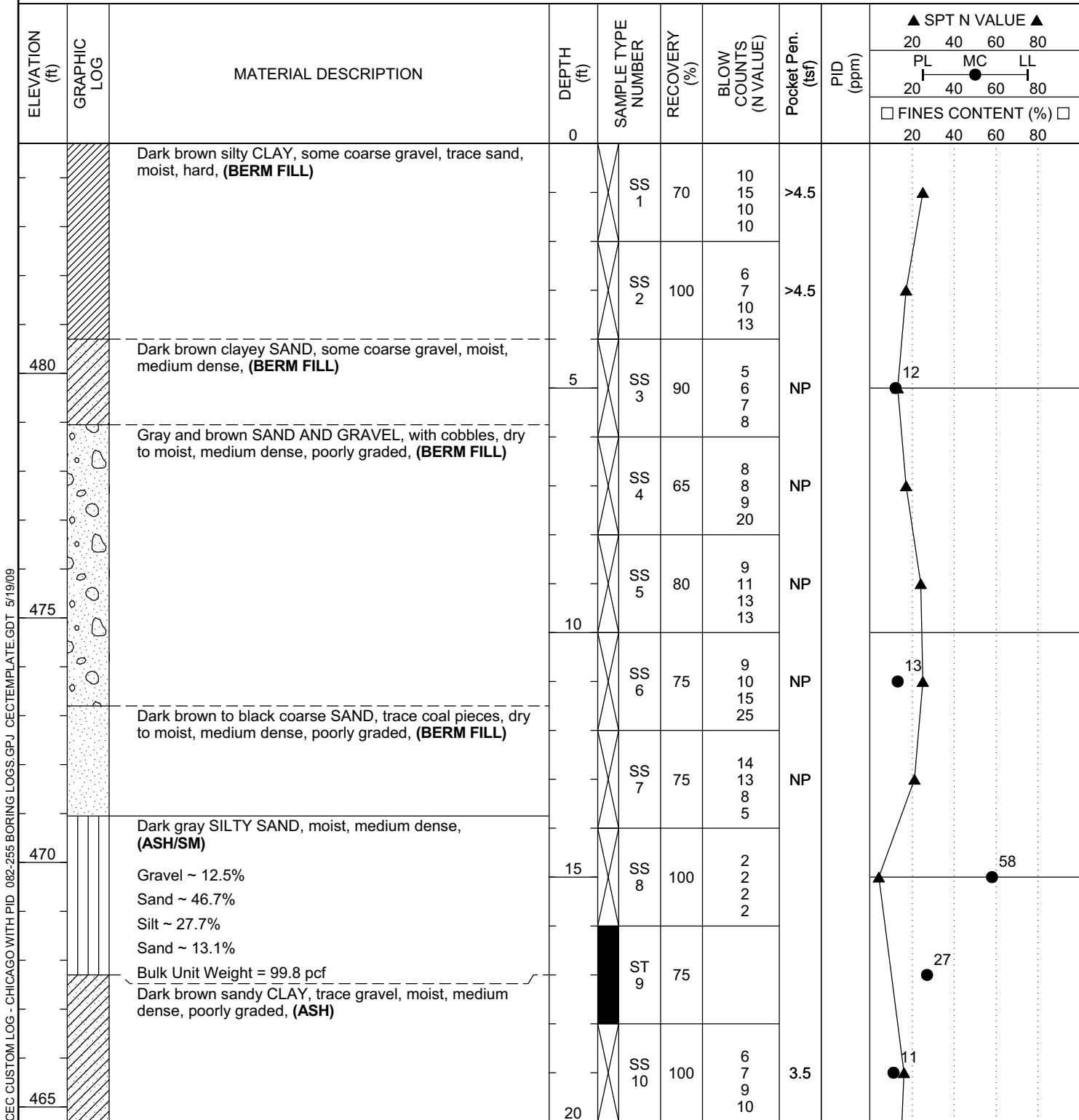


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# BORING NUMBER B-38

PAGE 1 OF 2

CLIENT Dynergy - Hennepin Power Station PROJECT NAME Dry Ash Landfill Feasibility Study  
 PROJECT NUMBER 082-255 PROJECT LOCATION Hennepin, Illinois  
 DATE STARTED 3/4/09 COMPLETED 3/4/09 GROUND ELEVATION 484.7 ft BACKFILL Bentonite Chips  
 DRILLING CONTRACTOR Groff Testing GROUND WATER LEVELS:  
 DRILLING METHOD Hollow Stem Auger WHILE DRILLING 38.0 ft / Elev 446.7 ft  
 CEC REP CAC CHECKED BY MDJ AT END OF DRILLING ---  
 NOTES Lower Dike North of B-19 AFTER DRILLING ---



(Continued Next Page)

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09



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# BORING NUMBER B-38

PAGE 2 OF 2

CLIENT Dynegy - Hennepin Power Station

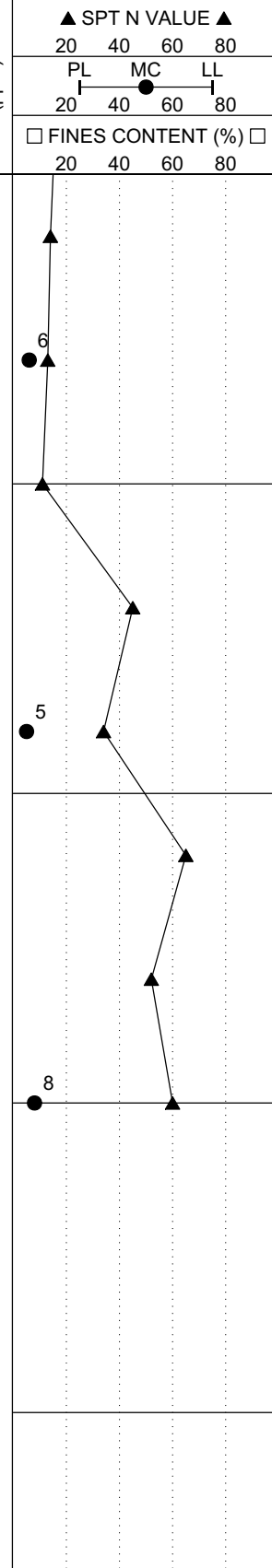
PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲				
									20	40	60	80	
460		Dark brown sandy CLAY, trace gravel, moist, medium dense, poorly graded, <b>(ASH)</b> (continued)	20	SS 11	100	6 7 7 8	2.5						
460		Brown gravelly SAND, dry to moist, medium dense, poorly graded, <b>(STREAM TERRACE DEPOSIT)</b>	25	SS 12	65	7 7 6 5	NP						
455		Brown and gray SAND AND GRAVEL, with cobbles, dry to moist, dense to very dense, poorly graded, <b>(GLACIAL OUTWASH)</b>	30	SS 13	100	8 6 5 5	NP						
455				SS 14	90	14 20 25 15	NP						
455				SS 15	85	15 19 15 12	NP						
450				SS 16	100	22 25 40	NP						
450				SS 17	85	20 27 25 25	NP						
450		Grade to wet.	35	SS 18	100	40 30 30	NP						
450				SS 19	75	40 60	NP						
445				SS 20	100	100	NP						
		End of Borehole at 40.0 feet.	40										

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09





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# BORING NUMBER B-39

PAGE 1 OF 2

<b>CLIENT</b> <u>Dynergy - Hennepin Power Station</u>	<b>PROJECT NAME</b> <u>Dry Ash Landfill Feasibility Study</u>
<b>PROJECT NUMBER</b> <u>082-255</u>	<b>PROJECT LOCATION</b> <u>Hennepin, Illinois</u>
<b>DATE STARTED</b> <u>3/4/09</u> <b>COMPLETED</b> <u>3/4/09</u>	<b>GROUND ELEVATION</b> <u>484.7 ft</u> <b>BACKFILL</b> <u>Cement Grout</u>
<b>DRILLING CONTRACTOR</b> <u>Groff Testing</u>	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> <u>Hollow Stem Auger</u>	▽ <b>WHILE DRILLING</b> <u>36.0 ft / Elev 448.7 ft</u>
<b>CEC REP</b> <u>CAC</u> <b>CHECKED BY</b> <u>MDJ</u>	<b>AT END OF DRILLING</b> <u>---</u>
<b>NOTES</b> <u>Lower Dike by River</u>	<b>AFTER DRILLING</b> <u>---</u>

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS (N VALUE)	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20	40	60	80
		Brown SAND, trace gravel, moist to wet, medium dense, poorly graded, <b>(BERM FILL)</b>	0			14						
		Gray crushed limestone GRAVEL, trace sand, coarse to cobbles, dry to moist, medium dense, poorly graded, <b>(BERM FILL)</b>		SS 1	55	14	np					
		Black to dark brown silty CLAY, trace sand and gravel, trace coal fragments, moist, hard, <b>(BERM FILL)</b>		SS 2	90	5	>4.5					
		Black to gray GRAVEL, trace sand, dry to moist, dense, poorly graded, <b>(BERM FILL)</b>				11						
480		Black to dark brown silty CLAY, trace sand and gravel, moist, very stiff, <b>(BERM FILL)</b>	5	SS 3	80	5	3.5			15		
						10						
						10						
		Brown sandy CLAY, with gravel, moist, medium dense, <b>(BERM FILL)</b>		SS 4	70	5	2.0					
						5						
						6						
475			10	SS 5	50	9	3.0					
						9						
						8						
		Reddish brown to black coarse SAND, trace gravel, coal pieces, dry to moist, medium dense to dense, <b>(BERM FILL)</b>		SS 6	75	4	NP			10		
						6						
						9						
						9						
470			15	SS 7	100	14	NP					
						20						
						20						
						12						
		Dark brown fine SAND, trace coal pieces and gravel, dry to moist, medium dense, poorly graded, <b>(BERM FILL)</b>		SS 8	90	6	NP					
						4						
						6						
						6						
						6						
		Dark gray to brown SILT, with fine sand laminations, trace coal fragments, moist to wet, loose, <b>(ASH)</b>		SS 9	100	6	NP					
						5						
						8						
						5						
465		Gray SILT, with black sand laminations, moist, loose, <b>(ASH)</b>	20	SS 10	100	2	NP					
						2						
						3						
						4						

(Continued Next Page)

CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09

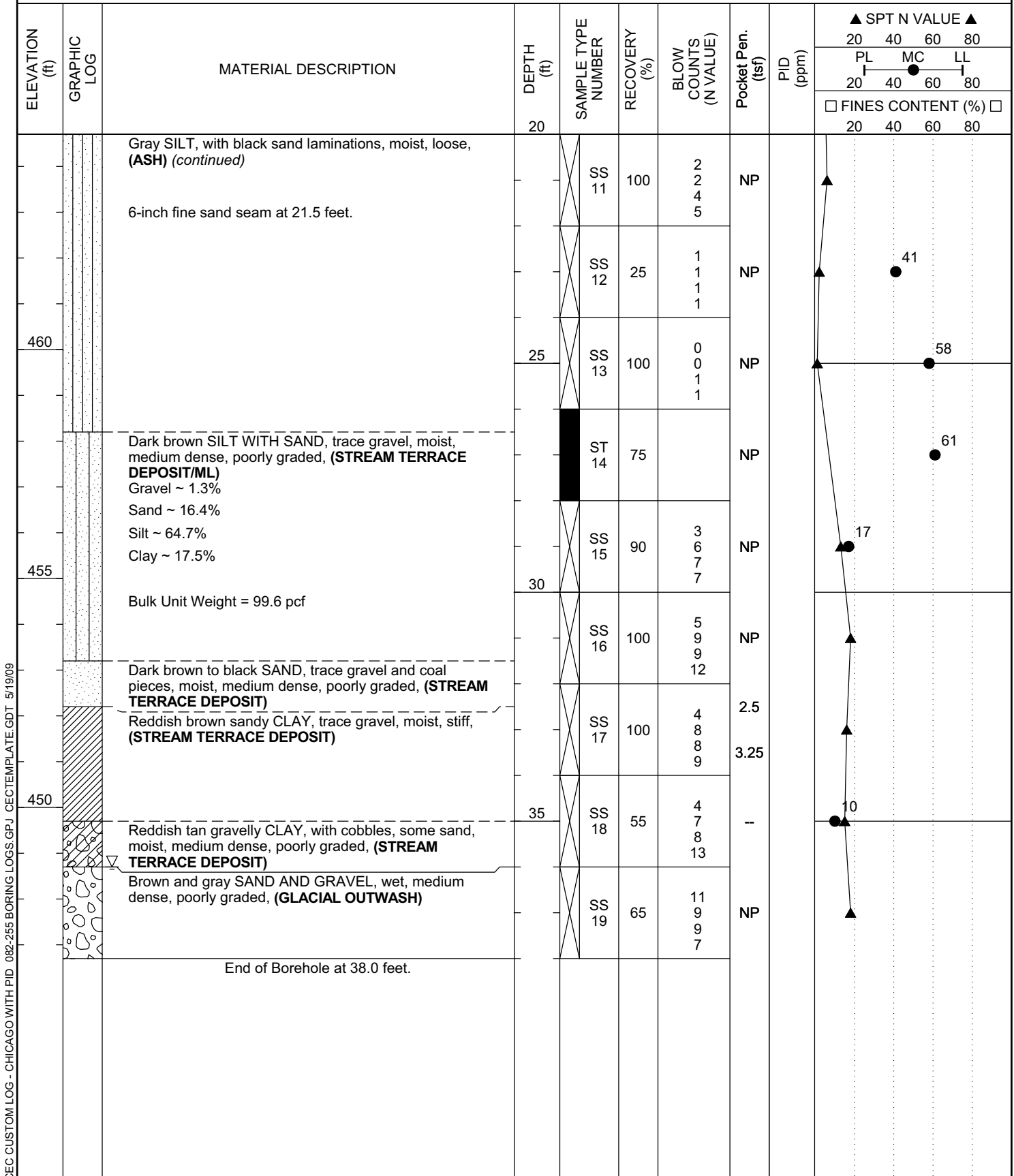


CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois



CEC CUSTOM LOG - CHICAGO WITH PID 082-255 BORING LOGS.GPJ CECTEMPLATE.GDT 5/19/09



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# BORING NUMBER B-40

PAGE 1 OF 2

CLIENT <u>Dynergy - Hennepin Power Station</u>	PROJECT NAME <u>Dry Ash Landfill Feasibility Study</u>
PROJECT NUMBER <u>062-255</u>	PROJECT LOCATION <u>Hennepin, Illinois</u>
DATE STARTED <u>3/9/09</u> COMPLETED <u>3/9/09</u>	GROUND ELEVATION <u>483.2 ft</u> BACKFILL <u>Cement Grout</u>
DRILLING CONTRACTOR <u>Groff Testing</u>	GROUND WATER LEVELS:
DRILLING METHOD <u>Hollow Stem Auger</u>	∇ WHILE DRILLING <u>31.3 ft / Elev 452.0 ft</u>
CEC REP <u>CAC</u> CHECKED BY <u>MDJ</u>	AT END OF DRILLING _____
NOTES _____	AFTER DRILLING _____

DEC CUSTOM LOG - DJ STYLE (MR255-BORING LOGS.GPJ) CECTEMPLATE.GDT 4/10/09

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen (tsf)	PID (ppm)	▲ SPT N VALUE ▲		
									20	40	60
483.2		Dark brown SAND, trace silt, trace gravel, moist to wet, loose to medium dense, poorly graded, (BERM FILL)	0	SS 1	65	5 16 11	NP		2	16	
480		Brown coarse GRAVEL, trace sand, dry to moist, medium dense, poorly graded, (BERM FILL)		SS 2	90	5 6 11 15	1.9				
		Brown sandy CLAY, trace gravel, moist, stiff to very stiff, (BERM FILL)		SS 3	75	6 8 8 20	2.5				
475				SS 4	50	5 7 7 6	-		18		
				SS 5	50	5 7 6 8	-				9
		Brown and gray SAND AND GRAVEL, moist, poorly graded, (BERM FILL)	10	SS 6	55	3 3 6 10	NP				
470		Reddish brown clayey SAND, some gravel, moist, (BERM FILL)		SS 7	100	5 6 22 18	2.0		8		
		Black and dark brown coarse SAND, trace silt, coal pieces, dry to moist, dense, poorly graded, (BERM FILL)		SS 8	0	17 14 6 9	-				
		Brown to gray SILT, trace sand lenses, trace fine gravel, moist to wet, very loose, (STREAM TERRACE DEPOSIT)	15	SS 9	90	2 2 2 1	NP				
465		Reddish brown sandy SILT, trace fine gravel, dry to moist, very loose, (STREAM TERRACE DEPOSIT)		SS 10	90	0 1 1 2	NP			14	
			20								

[Continued Next Page]





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# BORING NUMBER B-40

PAGE 2 OF 2

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study

PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲	
									PL	MC LL
			20						20	40 60 80
									20	40 60 80
		Reddish brown sandy SILT, trace fine gravel, dry to moist, very loose, (STREAM TERRACE DEPOSIT) <i>(continued)</i>		SS 11	25	2 2 7 9	NP			
450		Grades to dark brown		SS 12	85	2 10 6 15	NP			
		Brown and gray SAND AND GRAVEL, dry to moist, medium dense, poorly graded. (GLACIAL OUTWASH)	25	SS 13	50	8 8 10 15	NP	4		
		Brown medium SAND, trace gravel, moist, medium dense, poorly graded. (GLACIAL OUTWASH)		ST 14	85	5 8 8 3	NP			
455		Brown and gray SAND AND GRAVEL, dry to moist, medium dense to dense. (GLACIAL OUTWASH)		SS 15	85	8 22 14 6	NP			
		Brown coarse SAND, trace pebbles, moist, loose, poorly graded. (GLACIAL OUTWASH)	30	SS 16	100	3 4 5 5	NP			
		Wet		SS 17	95	3 6 8 15	NP		18	
450		End of Borehole at 34.0 feet.								

CEC-CUSTOM LOG - DJ STYLE 082-255 BORING LOGS.GPJ CECTEMPLATE.DJT 4/6/07



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# BORING NUMBER B-41

PAGE 1 OF 2

CLIENT Dynegy - Hennepin Power Station  
 PROJECT NUMBER 082-255  
 DATE STARTED 3/9/08 COMPLETED 3/9/09  
 DRILLING CONTRACTOR Groff Testing  
 DRILLING METHOD Hollow Stem Auger  
 CEC REP CAC CHECKED BY MDJ  
 NOTES \_\_\_\_\_

PROJECT NAME Dry Ash Landfill Feasibility Study  
 PROJECT LOCATION Hennepin, Illinois  
 GROUND ELEVATION 493.3 ft BACKFILL Cement Grout  
 GROUND WATER LEVELS:  
 WHILE DRILLING 32.0 ft / Elev 461.3 ft  
 AT END OF DRILLING \_\_\_\_\_  
 AFTER DRILLING \_\_\_\_\_

CEC CUSTOM LOG - DJ STYLE (82-255 BORING LOGS.GPJ) CEC TEMPLATE.GDT 4/5/09

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									20	40	80	
									PL	MC	LL	
									20	40	60	80
									□ UCS (tsf) □			
									20	40	60	80
		Brown to black CLAY, some sand, coarse gravel, moist, very stiff, (BERM FILL)	0									
				SS 1	75	6 6 10 10	2.5					
490		Brown clayey GRAVEL, some sand, moist, medium dense, poorly graded, (BERM FILL)		SS 2	85	3 8 16 13	3.3					
			5	SS 3	75	8 45 18 18	NP					
				SS 4	85	10 15 32 20	NP					
485				SS 5	85	25 15 15 20	NP					
		Dark brown to black silty CLAY, trace sand, gravel, moist, hard, (BERM FILL)	10	SS 6	95	8 10 20 42	4.1					
		Black silty SAND, trace clay, moist to wet, medium dense, poorly graded, (BERM FILL)		SS 7	90	7 10 10 11	2.1					
480		Dark brown to black silty CLAY, trace sand, gravel, trace roots, moist, stiff, (BERM FILL)		SS 8	80	7 5 6 7	1.5					
			15	SS 9	70	4 3 4 5	NP					
		Dark brown to brown fine SAND, some gravel, trace silt, moist, loose, poorly graded, (BERM FILL)		SS 10	75	5 4 5 2	NP					
475												
			20									

(Continued Next Page)



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# BORING NUMBER B-41

PAGE 2 OF 2

CLIENT Dynegy - Hennepin Power Station

PROJECT NAME Dry Ash Landfill Feasibility Study


PROJECT NUMBER 082-255

PROJECT LOCATION Hennepin, Illinois

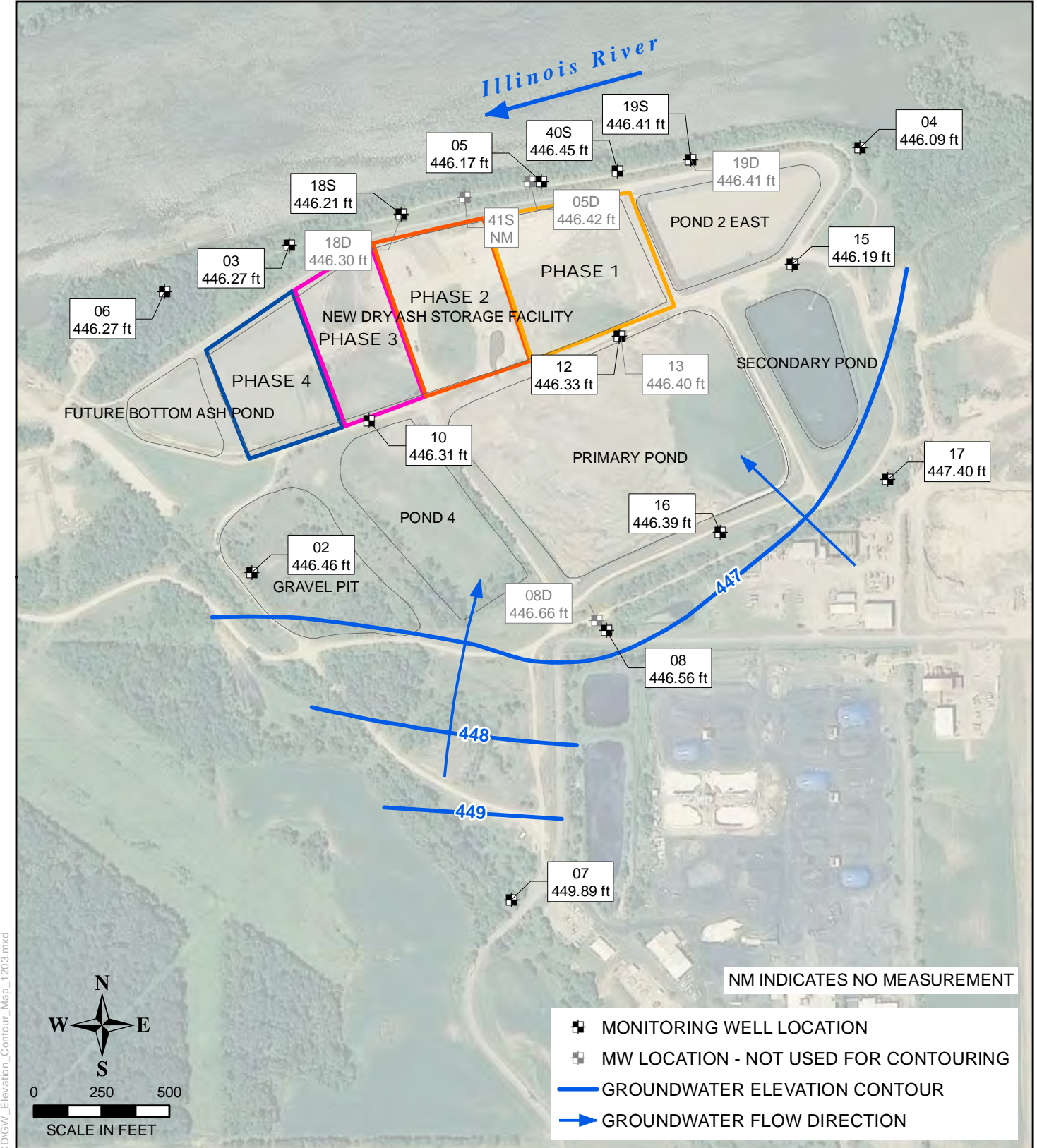
ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (%)	BLOW COUNTS	Pocket Pen. (tsf)	PID (ppm)	▲ SPT N VALUE ▲			
									PL	MC	LL	
			20						20	40	60	80
									20	40	60	80
									□ UCS (tsf) □			
									20	40	60	80
		Gray SILT, trace sand, wet, very soft to very loose, (ASH) (continued)		SS 11	0	0 0 1 1	NP					42
470				ST 12	100		NP					
		Dark brown-gray silty CLAY, moist to wet, very soft, (TERRACE DEPOSIT)	25	SS 13	85	0 0 0 1	<0.25					
		Dark brown fine SAND, some silt, trace wood, roots, dry to moist, dense, poorly graded, (GLACIAL OUTWASH)		SS 14	100	8 15 15 0	NP					
465		Brown fine SAND, trace silt, dry to moist, dense, poorly graded, (GLACIAL OUTWASH)		SS 15	100	5 10 20 13	NP					19
			30	SS 16	100	5 20 35 26	NP					
		Brown and gray SAND AND GRAVEL, trace clay, dry to moist, very dense, poorly graded, (GLACIAL OUTWASH)		SS 17	58	22 80	NP					14
460		End of Borehole at 34.0 feet.										

DEC CUSTOM LOG - D1 STYLE (MS-205 BORING LOGS-GPJ) CECTEMPLATE.GDT 4/8/09

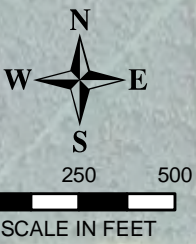
**The following are attachments to the testimony of Scott M. Payne,  
PhD, PG and Ian Magruder, M.S..**



**Appendix B**  
**Groundwater Contour**  
**Maps 2012 through 2016**




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**GROUNDWATER ELEVATION CONTOURS  
MARCH 1, 2012**

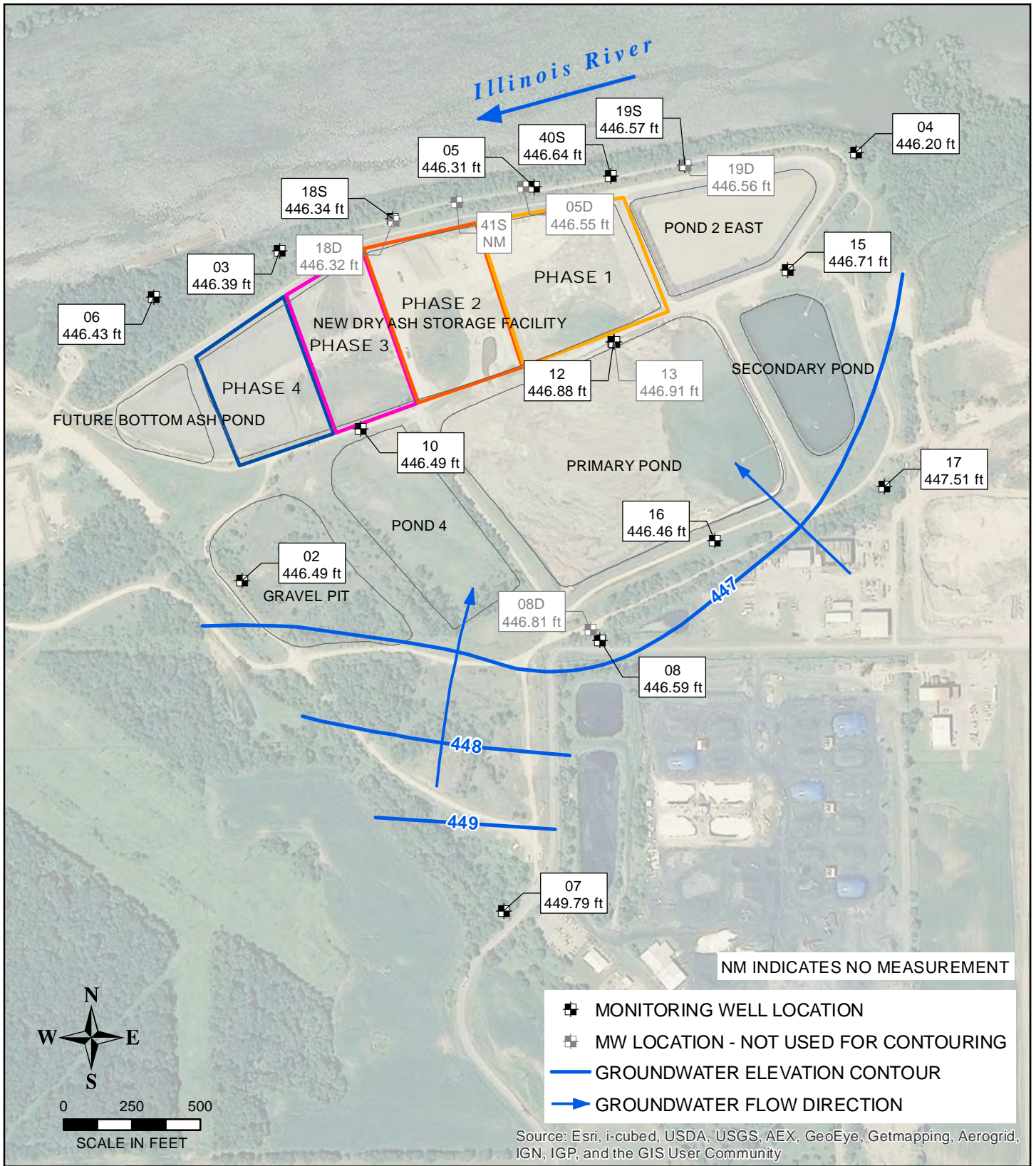
**NEW CCW LANDFILL - HENNEPIN POWER STATION  
DYNEGY MIDWEST GENERATION, LLC  
PUTNAM COUNTY, ILLINOIS**

  
**NATURAL  
RESOURCE  
TECHNOLOGY**

PROJECT NO: 1645  
 FIGURE NO: 1

---

DRAWN BY/DATE: TDC 5/8/12  
 CHECKED BY/DATE: JJW 5/8/12  
 APPROVED BY/DATE: BRH 5/11/12




NM INDICATES NO MEASUREMENT

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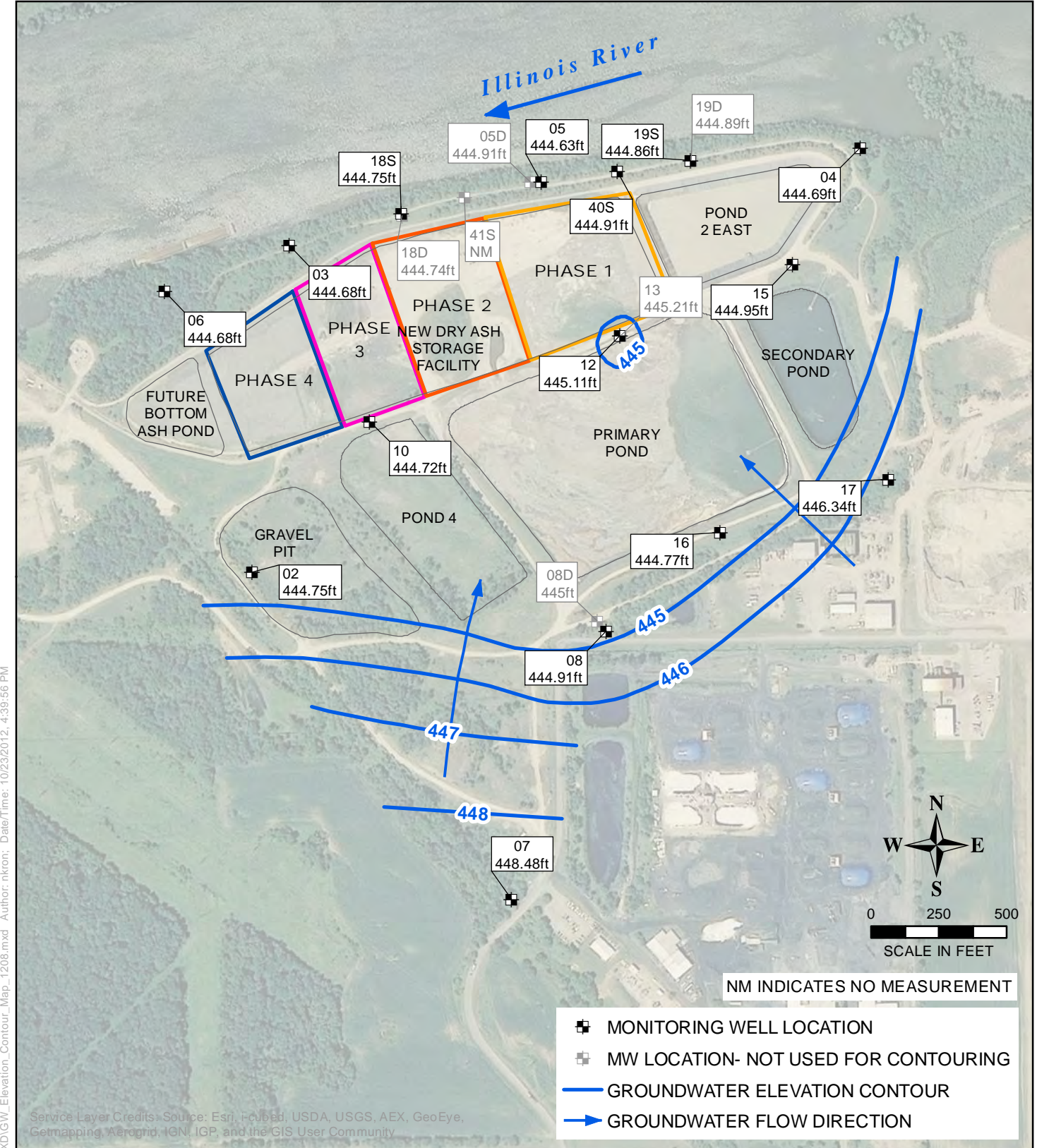
## GROUNDWATER ELEVATION CONTOURS MAY 30, 2012

### NEW CCW LANDFILL - HENNEPIN POWER STATION DYNEGY MIDWEST GENERATION, LLC PUTNAM COUNTY, ILLINOIS



**NATURAL  
RESOURCE  
TECHNOLOGY**

PROJECT NO: 1645 FIGURE NO: 1	
DRAWN BY/DATE:	NDK 7/25/12
CHECKED BY/DATE:	BRH 7/30/12
APPROVED BY/DATE:	BRH 7/30/12



Y:\GIS\Projects\161645\Hennepin\_LF\MXD\GW\_Elevation\_Contour\_Map\_1208.mxd Author: nkron Date/Time: 10/23/2012, 4:39:56 PM


Service Layer Credits: Source: Esri, DeLorme, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

DRAWN BY/DATE:  
 NDK 10/19/12  
 REVIEWED BY/DATE:  
 TDC 10/19/12  
 APPROVED BY/DATE:  
 BRH 10/23/12

**GROUNDWATER ELEVATION CONTOURS**  
**AUGUST 28, 2012**

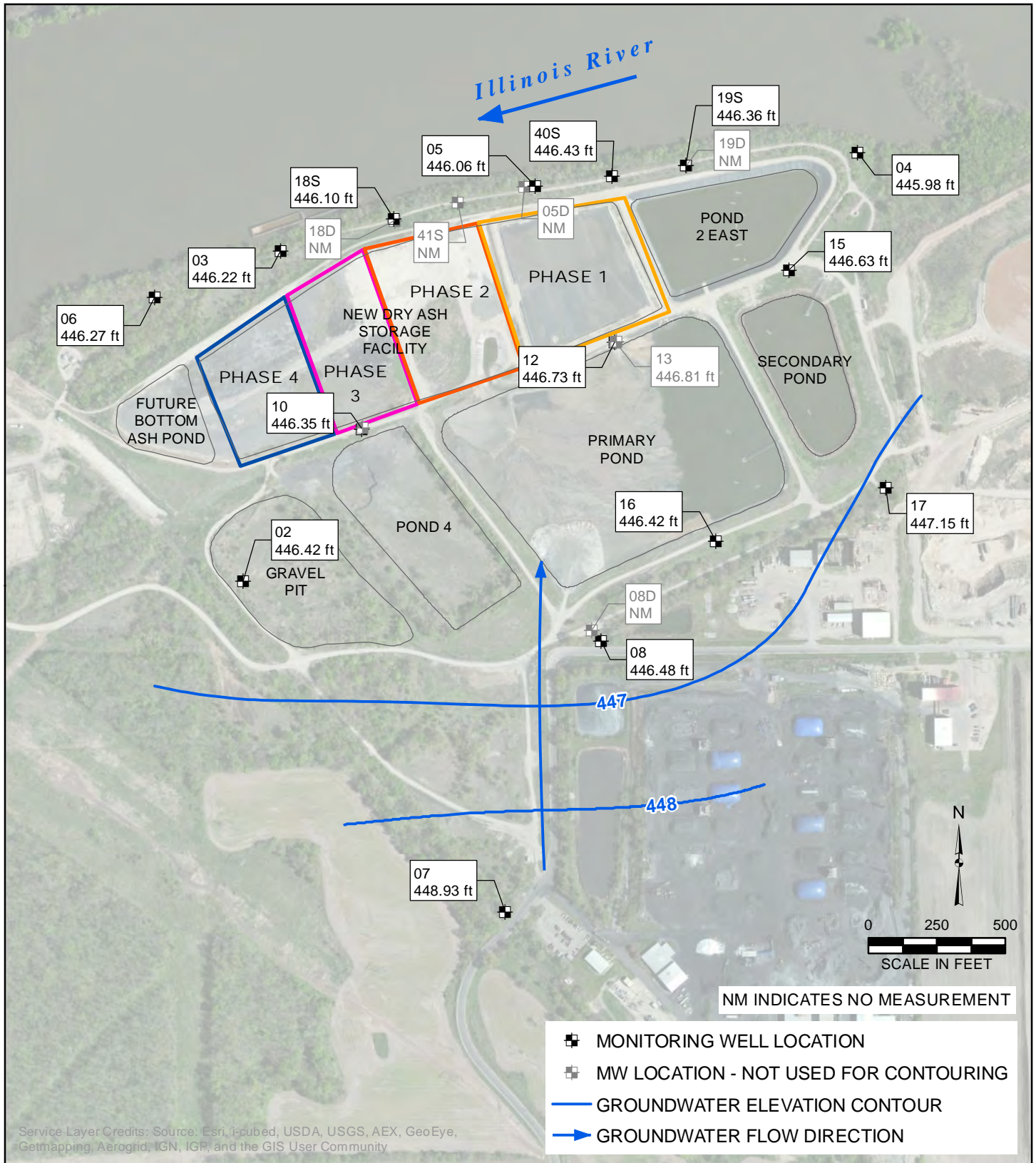
**NEW CCW LANDFILL - HENNEPIN POWER STATION**  
**DYNEGY MIDWEST GENERATION, LLC**  
**PUTNAM COUNTY, ILLINOIS**

PROJECT NO: 1645  
 FIGURE NO: 1





Y:\GIS\Projects\161645\Hennepin\_LF\MXD\GW\_Elevation\_Contour\_Map\_1211.mxd Author: tcushman; Date/Time: 1/22/2013, 9:14:16 AM



Service Layer Credits: Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGR, and the GIS User Community

DRAWN BY/DATE:  
TDC 1/21/13

REVIEWED BY/DATE:  
BRH 1/21/13

APPROVED BY/DATE:  
BRH 1/22/13

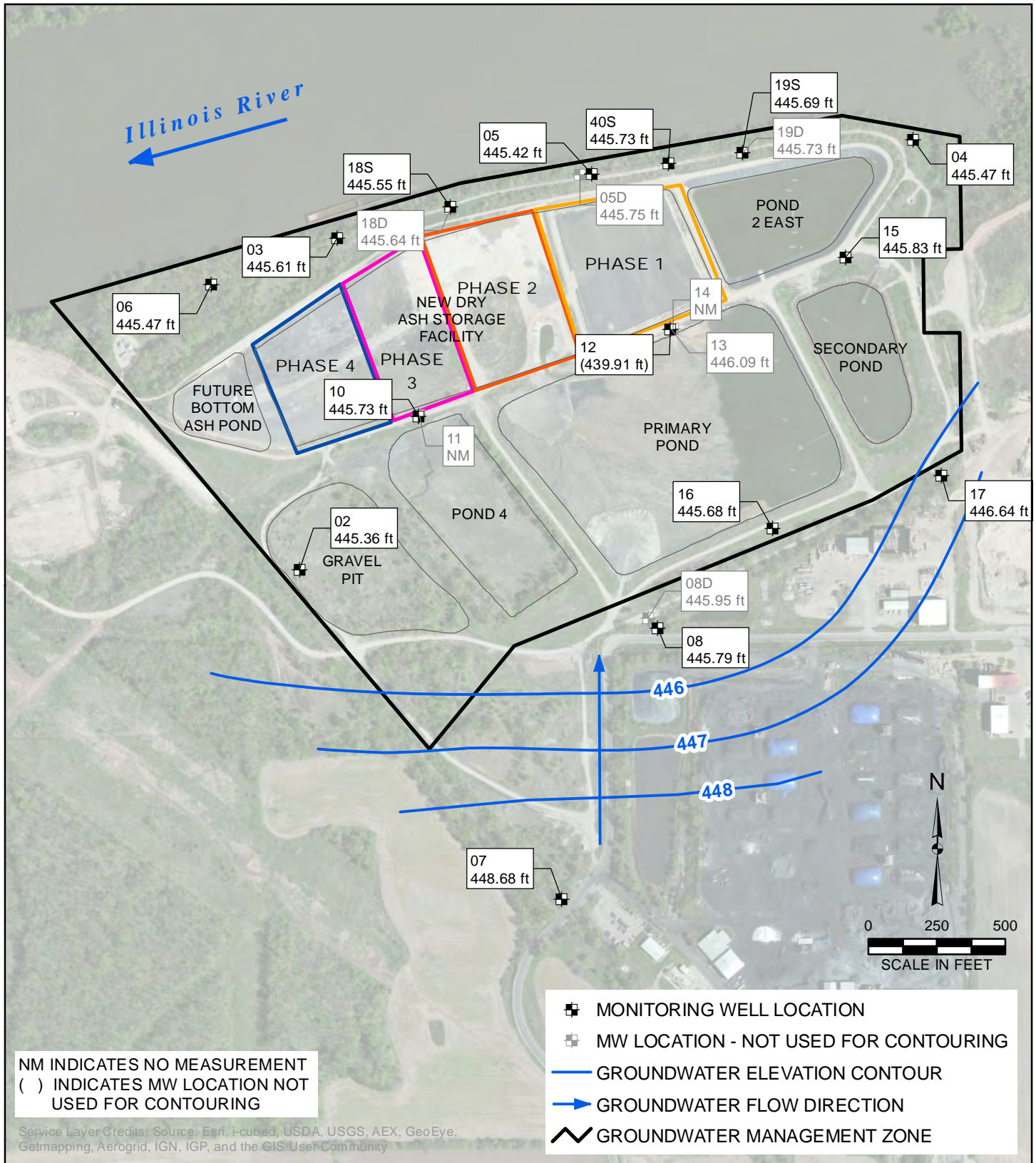
**GROUNDWATER ELEVATION CONTOURS**  
**NOVEMBER 27, 2012**

**NEW CCW LANDFILL - HENNEPIN POWER STATION**  
**DYNEGY MIDWEST GENERATION, LLC**  
**PUTNAM COUNTY, ILLINOIS**

PROJECT NO: 1645

FIGURE NO: 1

Y:\GIS\Projects\161645\Hennepin\_LF\MXD\GW\_Elevation\_Contour\_Map\_1305.mxd Author: tushman Date/Time: 5/8/2013, 8:56:13 AM



NM INDICATES NO MEASUREMENT  
 ( ) INDICATES MW LOCATION NOT  
 USED FOR CONTOURING

Service Layer Credits: Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye,  
 Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

- MONITORING WELL LOCATION
- MW LOCATION - NOT USED FOR CONTOURING
- GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- GROUNDWATER MANAGEMENT ZONE

### GROUNDWATER ELEVATION CONTOURS MARCH 7, 2013

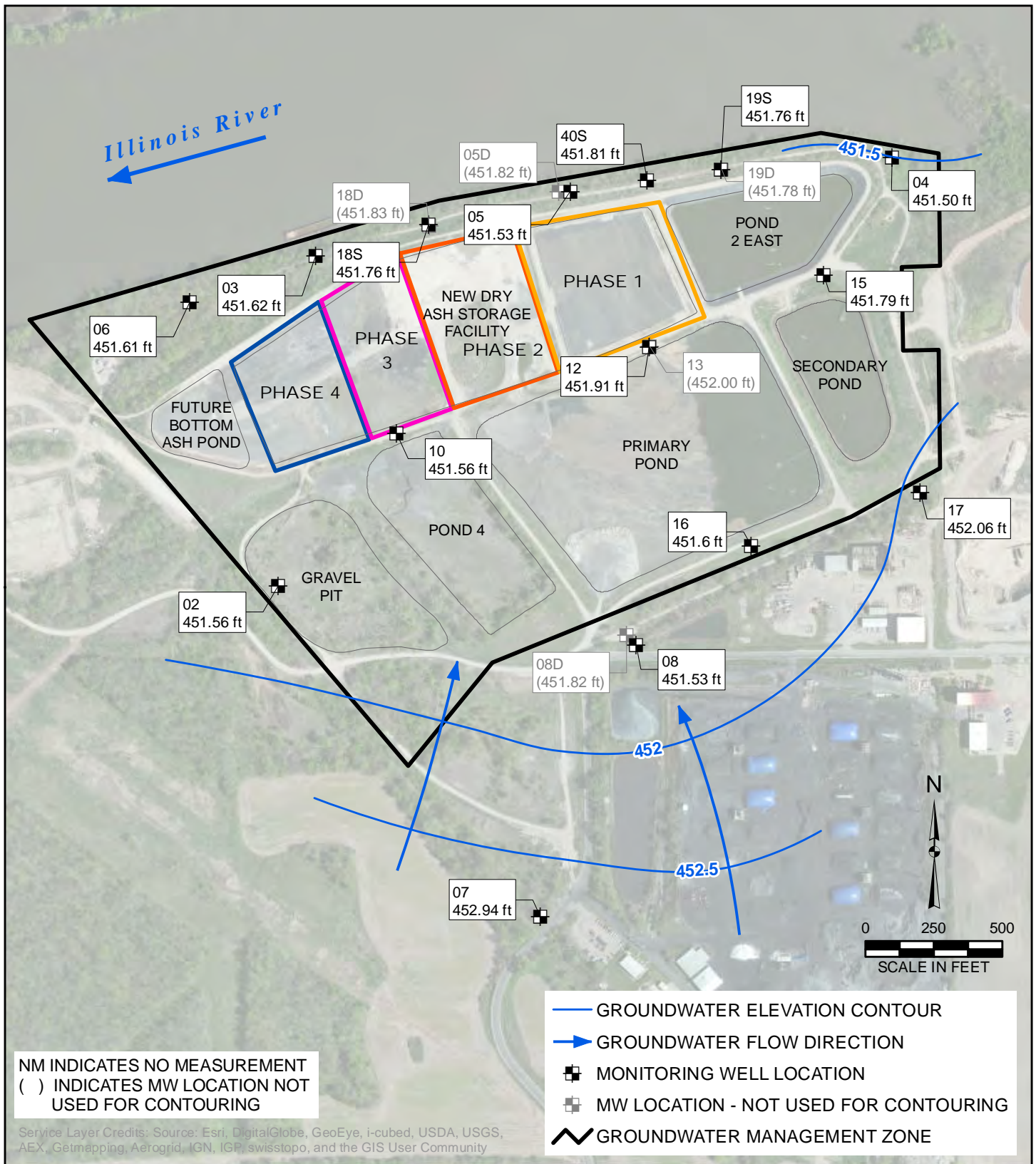
**NEW CCW LANDFILL - HENNEPIN POWER STATION  
 DYNEGY MIDWEST GENERATION, LLC  
 PUTNAM COUNTY, ILLINOIS**

DRAWN BY/DATE:  
 NDK 5/7/13  
 REVIEWED BY/DATE:  
 TDC 5/7/13  
 APPROVED BY/DATE:  
 BRH 5/7/13

PROJECT NO: 1645  
 FIGURE NO: 1



Y:\GIS\Projects\161645\Hennepin\_LF\W\XD\GW\_Elevation\_Contour\_Map\_1306.mxd Author: touthman Date/Time: 8/7/2013, 11:22:38 AM



**GROUNDWATER ELEVATION CONTOURS  
JUNE 6, 2013**

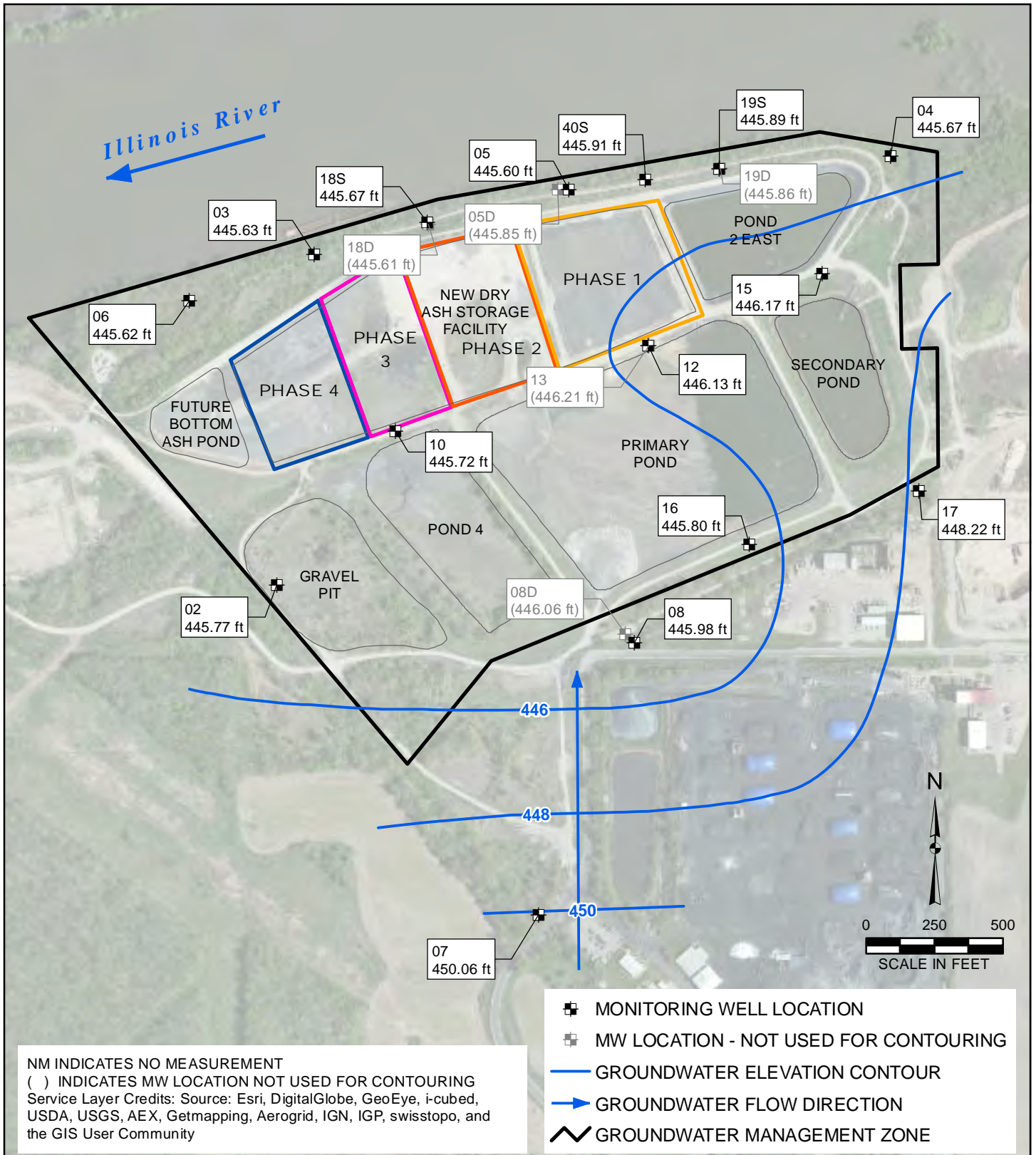
**NEW CCW LANDFILL - HENNEPIN POWER STATION  
DYNEGY MIDWEST GENERATION, LLC  
PUTNAM COUNTY, ILLINOIS**

PROJECT NO: 1645  
FIGURE NO: 1



DRAWN BY/DATE:  
TDC 8/5/13  
REVIEWED BY/DATE:  
BRH 8/7/13  
APPROVED BY/DATE:  
BRH 8/7/13

Y:\GIS\Projects\161645\Hennepin\_LF\MXD\GW\_Elevation\_Contour\_Map\_1309.mxd Author: tushman Date/Time: 10/30/2013, 9:44:35 AM



**GROUNDWATER ELEVATION CONTOURS  
 SEPTEMBER 3, 2013**

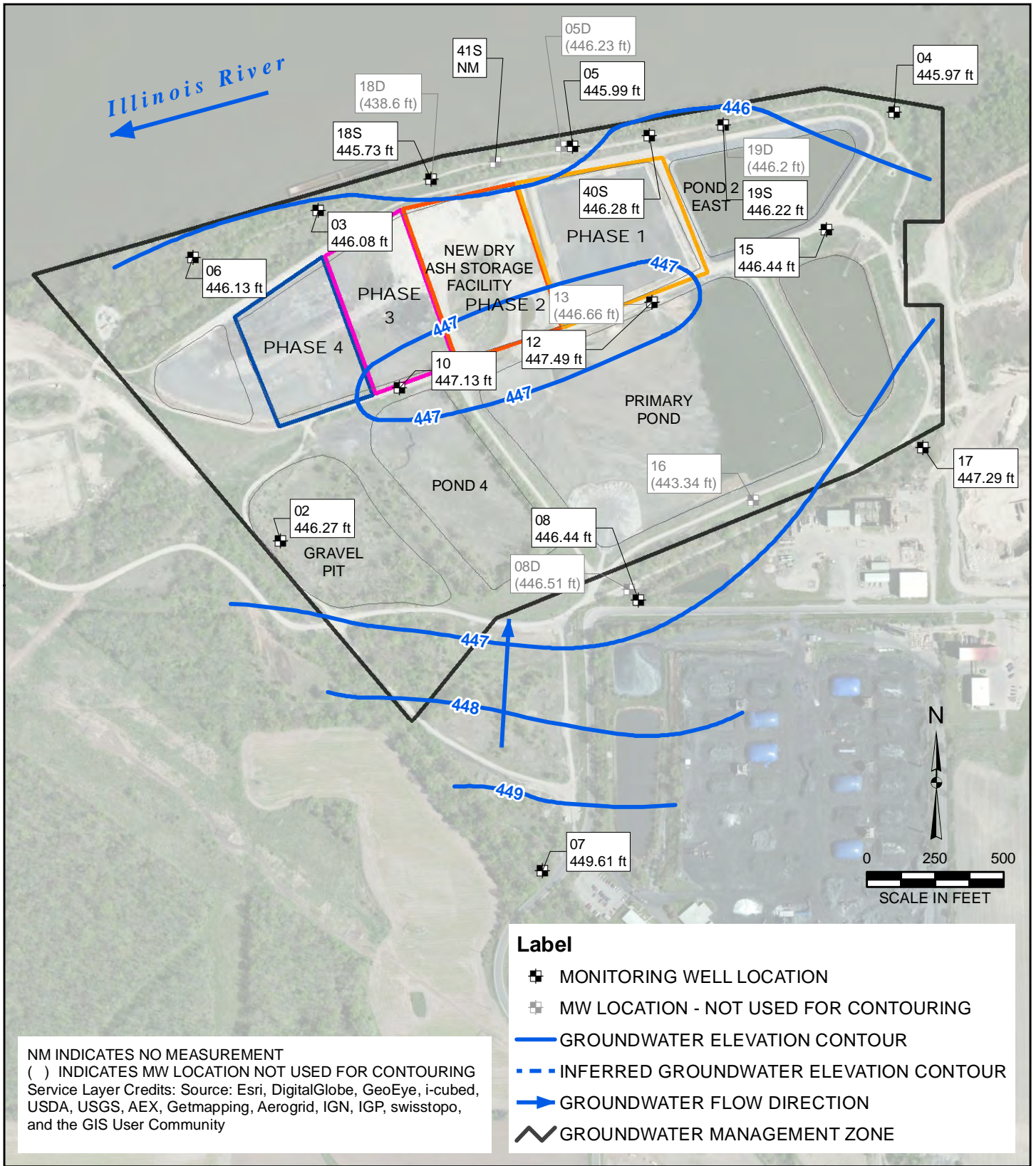
**NEW CCW LANDFILL - HENNEPIN POWER STATION  
 DYNEGY MIDWEST GENERATION, LLC  
 PUTNAM COUNTY, ILLINOIS**

PROJECT NO: 1645  
 FIGURE NO: 1



DRAWN BY/DATE:  
 TDC 10/29/13  
 REVIEWED BY/DATE:  
 BRH 10/30/13  
 APPROVED BY/DATE:  
 BRH 10/30/13

Y:\GIS\Projects\161645\Hennepin\_LFW\XD\GW\_Elevation\_Contour\_Map\_1312.mxd Author: mmejac; Date/Time: 1/29/2014, 8:20:38 AM



NM INDICATES NO MEASUREMENT  
 ( ) INDICATES MW LOCATION NOT USED FOR CONTOURING  
 Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

- Label**
- ⊕ MONITORING WELL LOCATION
  - ⊕ MW LOCATION - NOT USED FOR CONTOURING
  - GROUNDWATER ELEVATION CONTOUR
  - - - INFERRED GROUNDWATER ELEVATION CONTOUR
  - ➔ GROUNDWATER FLOW DIRECTION
  - ▬ GROUNDWATER MANAGEMENT ZONE

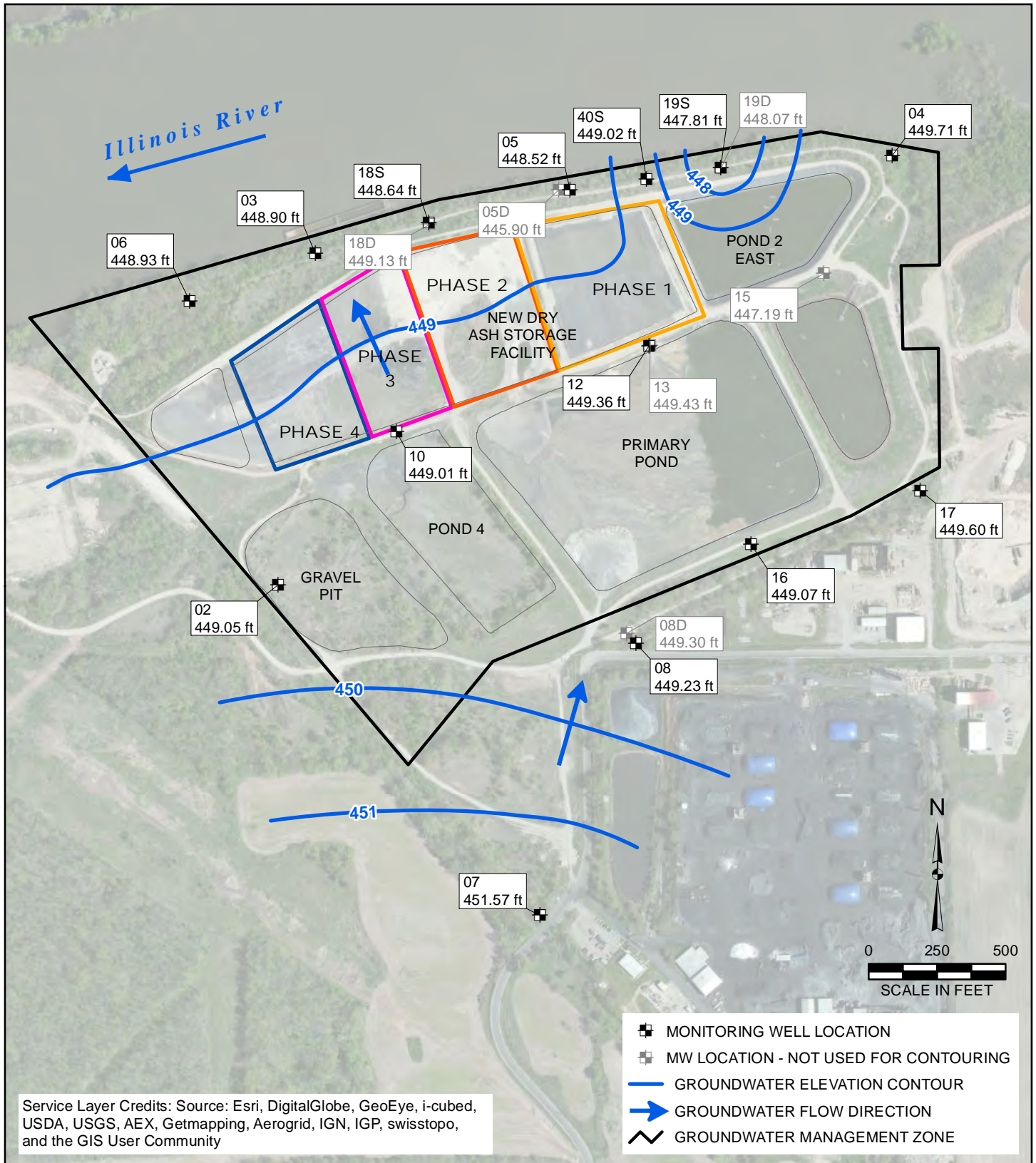
DRAWN BY/DATE:  
 MDM 1/28/14  
 REVIEWED BY/DATE:  
 NDK 1/28/14  
 APPROVED BY/DATE:  
 BRH 1/28/14

**GROUNDWATER ELEVATION CONTOURS  
 DECEMBER 11, 2013**

**NEW CCW LANDFILL - HENNEPIN POWER STATION  
 DYNEGY MIDWEST GENERATION, LLC  
 PUTNAM COUNTY, ILLINOIS**

PROJECT NO: 1645  
 FIGURE NO: 1

Y:\GIS\Projects\16\1645\Hennepin\_LF\WXD\GW\_Elevation\_Contour\_Map\_1403.mxd Author: tushman Date/Time: 5/2/2014, 9:06:36 AM



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

- MONITORING WELL LOCATION
- MW LOCATION - NOT USED FOR CONTOURING
- GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- GROUNDWATER MANAGEMENT ZONE

DRAWN BY/DATE:  
TDC 4/28/14  
REVIEWED BY/DATE:  
NDK 4/28/14  
APPROVED BY/DATE:  
BRH 4/30/14

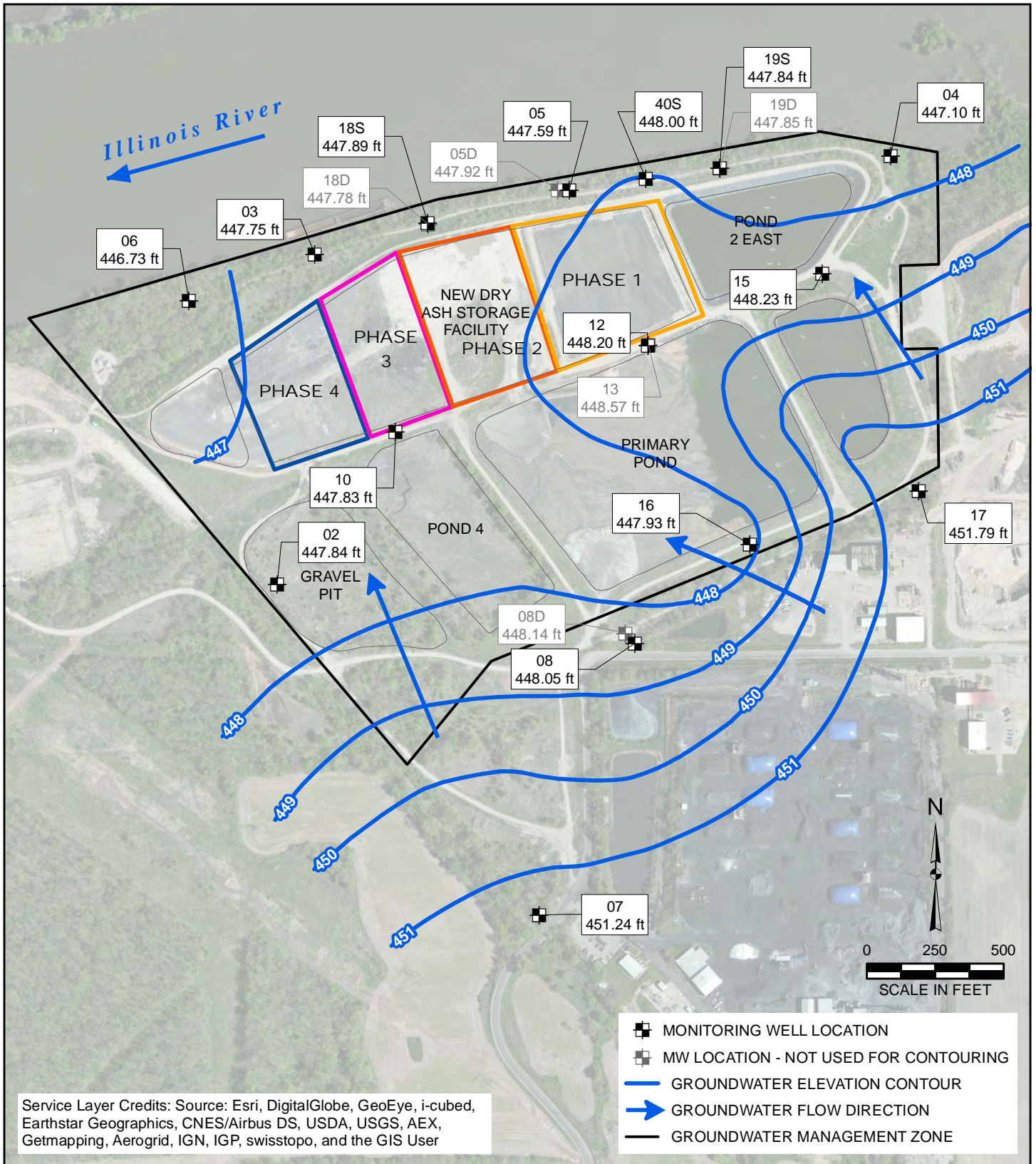
**GROUNDWATER ELEVATION CONTOURS**  
**MARCH 26, 2014**

**NEW CCW LANDFILL - HENNEPIN POWER STATION**  
**DYNEGY MIDWEST GENERATION, LLC**  
**PUTNAM COUNTY, ILLINOIS**

PROJECT NO: 1645  
FIGURE NO: 1



Y:\Mapping\Projects\22\2205\MXD\GW\_Elevation\_Contour\_Map\_1406.mxd Author: mmcljac; Date/Time: 8/7/2014, 3:19:16 PM



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User

- MONITORING WELL LOCATION
- MW LOCATION - NOT USED FOR CONTOURING
- GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- GROUNDWATER MANAGEMENT ZONE

DRAWN BY/DATE:  
MDM 7/31/14  
REVIEWED BY/DATE:  
NDK 7/31/14  
APPROVED BY/DATE:  
SJC 8/1/14

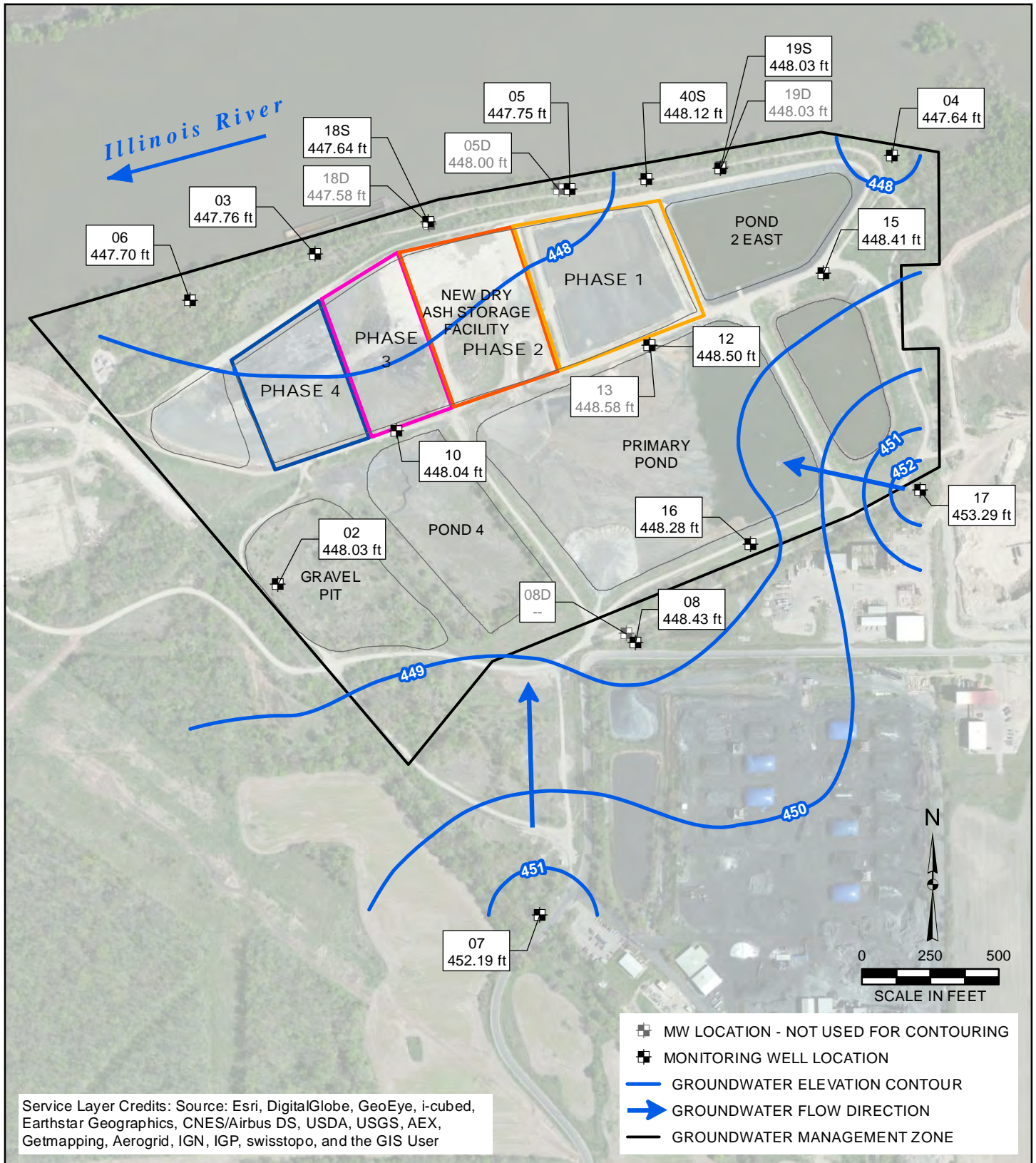
**GROUNDWATER ELEVATION CONTOURS**  
**JUNE 18, 2014**

**NEW CCW LANDFILL - HENNEPIN POWER STATION**  
**DYNEGY MIDWEST GENERATION, LLC**  
**PUTNAM COUNTY, ILLINOIS**

PROJECT NO: 2205  
FIGURE NO: 1



Y:\Mapping\Projects\222205\MXD\GW\_Elevation\_Contour\_Map\_1408.mxd Author: mmejac; Date/Time: 11/6/2014, 8:33:17 AM



**GROUNDWATER ELEVATION CONTOURS  
AUGUST 20, 2014**

**NEW CCW LANDFILL - HENNEPIN POWER STATION  
DYNEGY MIDWEST GENERATION, LLC  
PUTNAM COUNTY, ILLINOIS**

PROJECT NO: 2205

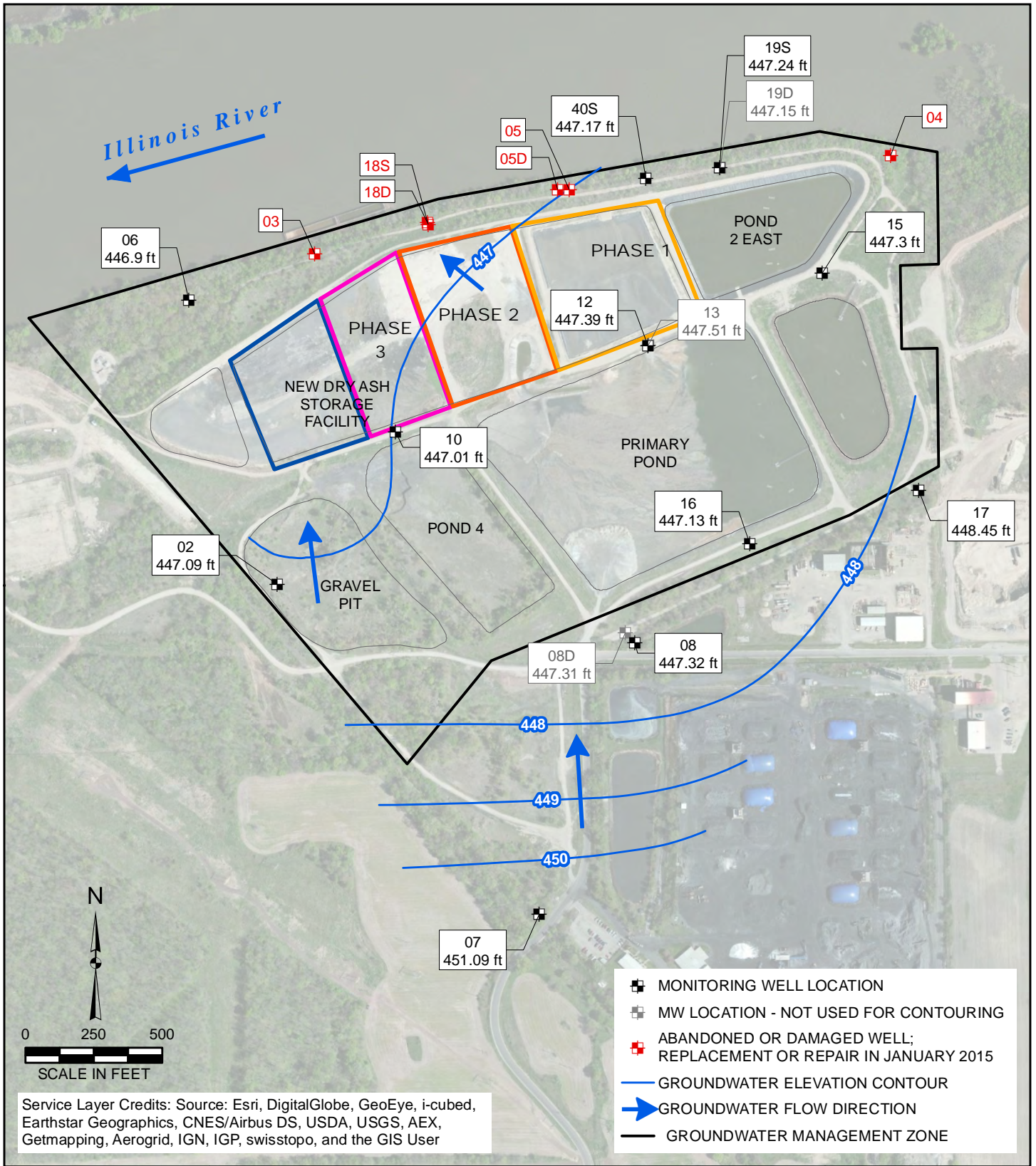
FIGURE NO: 1



DRAWN BY/DATE:  
MDM 10/1/14  
REVIEWED BY/DATE:  
SJC 10/14/14  
APPROVED BY/DATE:  
SJC 11/6/14



Y:\Mapping\Projects\22\2205\MXD\GW\_Elevation\_Contour\_Map\_1412.mxd Author: mmejac; Date/Time: 1/13/2015, 10:26:13 AM



DRAWN BY/DATE:  
MDM 1/12/15  
REVIEWED BY/DATE:  
SJC 1/13/15  
APPROVED BY/DATE:  
SJC 1/13/15

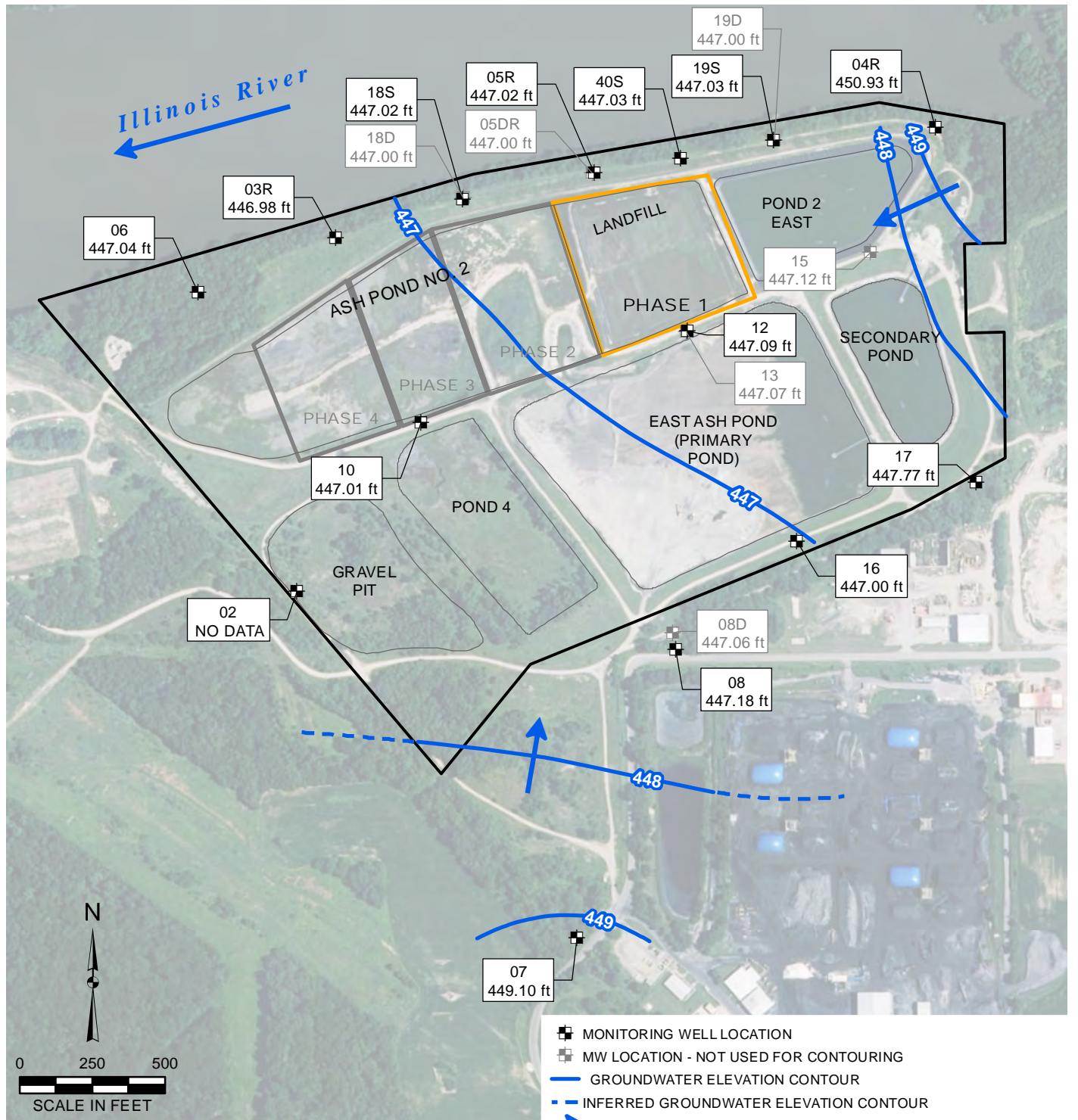
**GROUNDWATER ELEVATION CONTOURS  
DECEMBER 9, 2014**

**NEW CCW LANDFILL - HENNEPIN POWER STATION  
DYNEGY MIDWEST GENERATION, LLC  
PUTNAM COUNTY, ILLINOIS**

PROJECT NO: 2205  
FIGURE NO: 1



Y:\Mapping\Projects\222205\MXD\Hen\_East\_G3-4\_2015\GW\_Elevation\_Contour\_Map\_1503.mxd Author: tcushman; Date/Time: 3/10/2016, 3:03:34 PM



NOTE: GROUNDWATER ELEVATION AT MONITORING WELL 02 RECORDED MARCH 19, 2015.

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

- MONITORING WELL LOCATION
- MW LOCATION - NOT USED FOR CONTOURING
- GROUNDWATER ELEVATION CONTOUR
- INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- GROUNDWATER MANAGEMENT ZONE AND EAST ASH POND SYSTEM
- NEW DRY ASH STORAGE FACILITY
- PLANNED LANDFILL PHASES

## GROUNDWATER ELEVATION CONTOURS MARCH 18, 2015

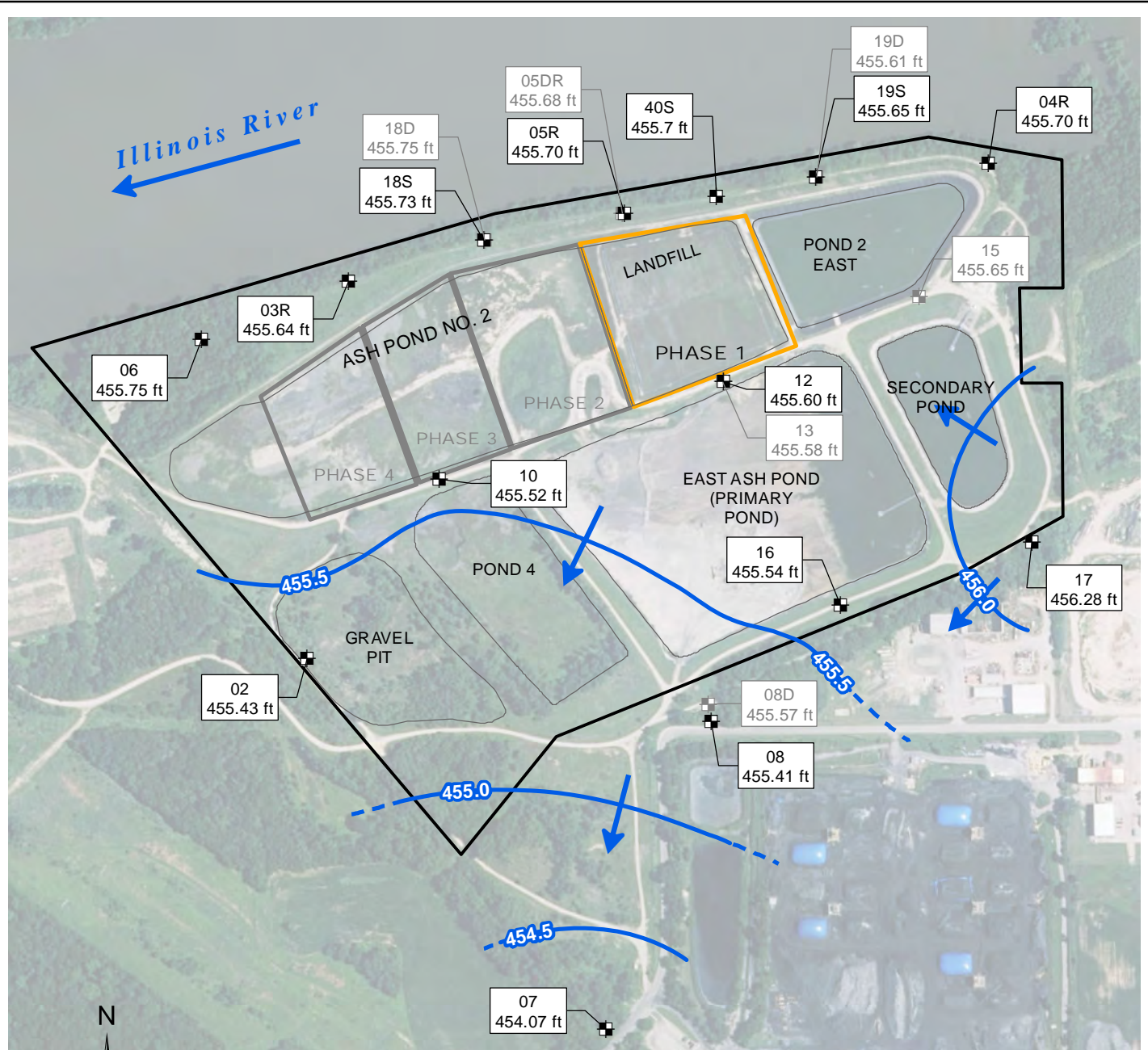
NEW CCW LANDFILL - HENNEPIN POWER STATION  
DYNEGY MIDWEST GENERATION, LLC  
PUTNAM COUNTY, ILLINOIS

PROJECT NO: 2205



DRAWN BY/DATE:  
MDM 9/25/15  
REVIEWED BY/DATE:  
YAD 10/6/15  
APPROVED BY/DATE:  
SJC 10/6/15

Y:\Mapping\Projects\222205\MXD\Hen\_East\_G3-4\_2015\GW\_Elevation\_Contour\_Map\_1506.mxd Author: t.cushman Date/Time: 3/10/2016, 3:02:28 PM



- MONITORING WELL LOCATION
- MW LOCATION - NOT USED FOR CONTOURING
- GROUNDWATER ELEVATION CONTOUR
- INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- GROUNDWATER MANAGEMENT ZONE AND EAST ASH POND SYSTEM
- NEW DRY ASH STORAGE FACILITY
- PLANNED LANDFILL PHASES

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

## GROUNDWATER ELEVATION CONTOURS JUNE 22-23, 2015

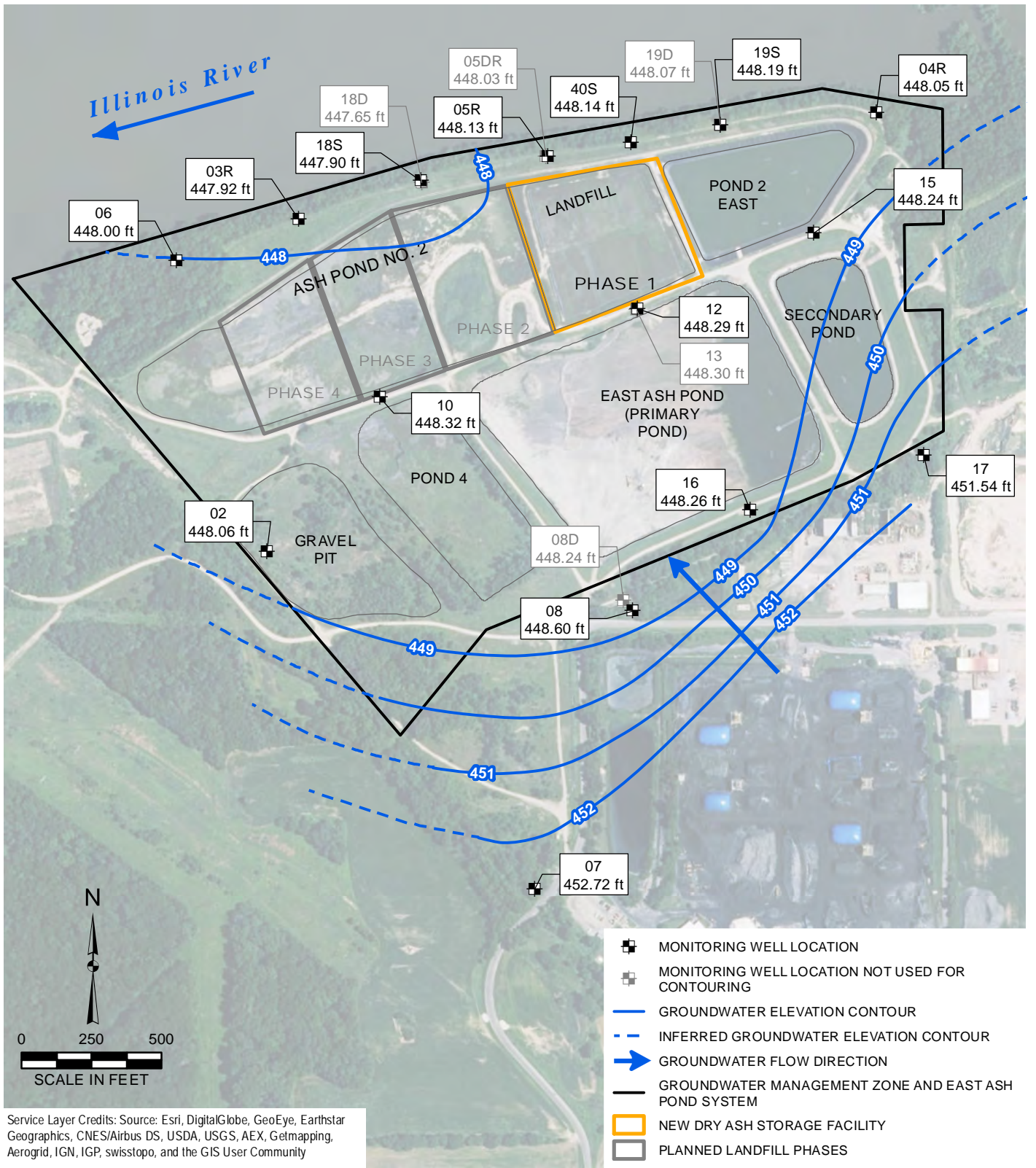
NEW CCW LANDFILL - HENNEPIN POWER STATION  
DYNEGY MIDWEST GENERATION, LLC  
PUTNAM COUNTY, ILLINOIS

DRAWN BY/DATE:  
MDM 9/25/15  
REVIEWED BY/DATE:  
YAD 10/6/15  
APPROVED BY/DATE:  
SJC 10/6/15

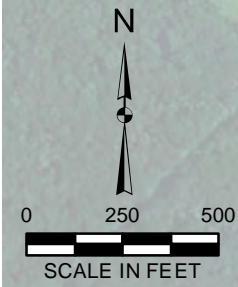
PROJECT NO: 2205



Y:\Mapping\Projects\222205\MXD\Hen\_EasL\_Q3-4\_2015\GW\_Elevation\_Contour\_Map\_1509.mxd Author: tushman Date/Time: 3/10/2016, 3:42:04 PM



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



**GROUNDWATER ELEVATION CONTOURS  
SEPTEMBER 16, 2015**

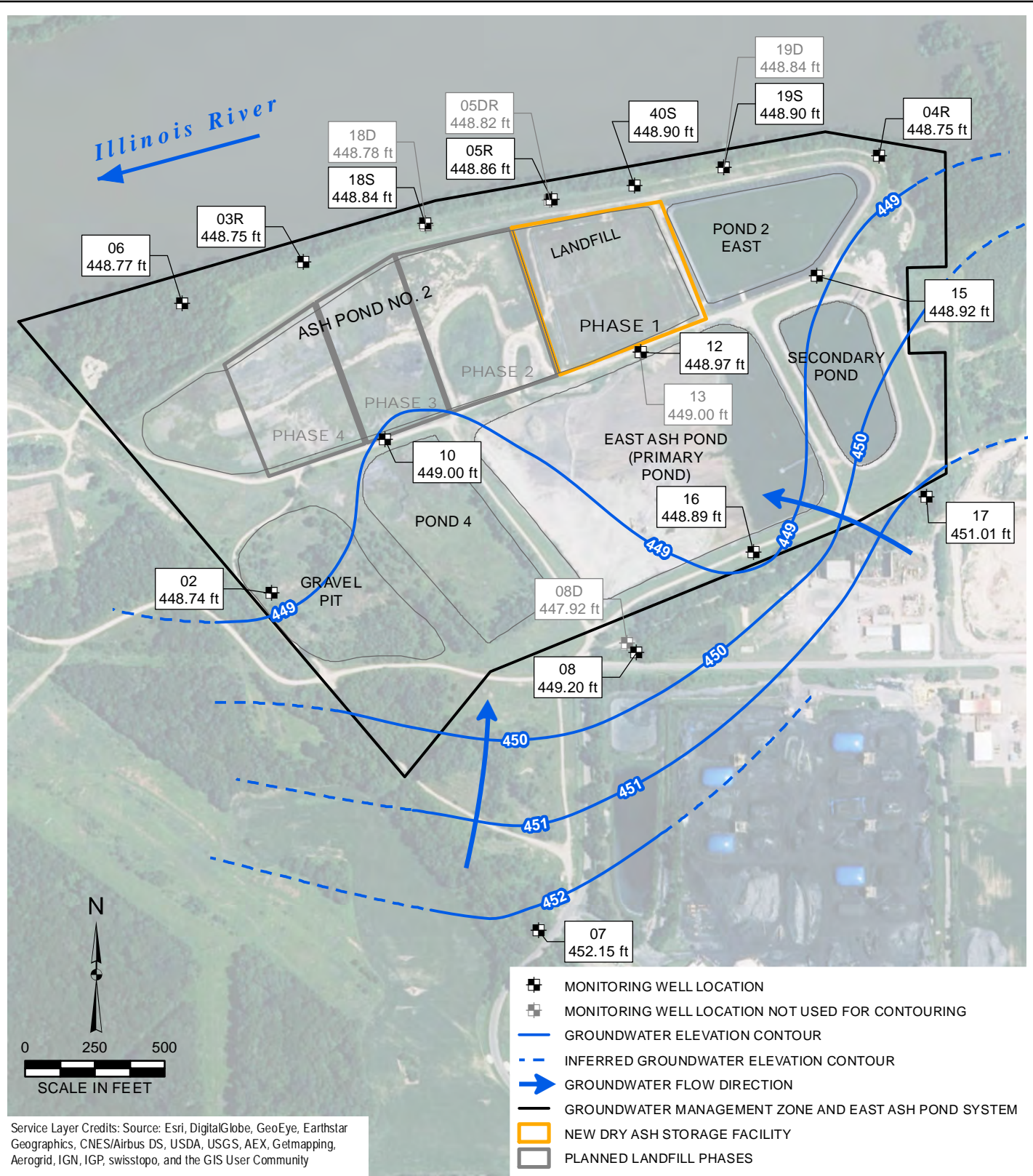
**NEW CCW LANDFILL - HENNEPIN POWER STATION  
DYNEGY MIDWEST GENERATION, LLC  
PUTNAM COUNTY, ILLINOIS**

PROJECT NO: 2205



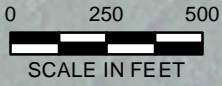
DRAWN BY/DATE:  
TDC 3/8/16  
REVIEWED BY/DATE:  
KLT 3/9/16  
APPROVED BY/DATE:  
JJW 3/10/16

Y:\Mapping\Projects\222205\MXD\Hen\_EasL\_Q3-4\_2015\GW\_Elevation\_Contour\_Map\_1512.mxd Author: tushman Date/Time: 3/10/2016, 3:41:11 PM



Illinois River

N



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

- MONITORING WELL LOCATION
- MONITORING WELL LOCATION NOT USED FOR CONTOURING
- GROUNDWATER ELEVATION CONTOUR
- INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- GROUNDWATER MANAGEMENT ZONE AND EAST ASH POND SYSTEM
- NEW DRY ASH STORAGE FACILITY
- PLANNED LANDFILL PHASES

**GROUNDWATER ELEVATION CONTOURS  
DECEMBER 8, 2015**

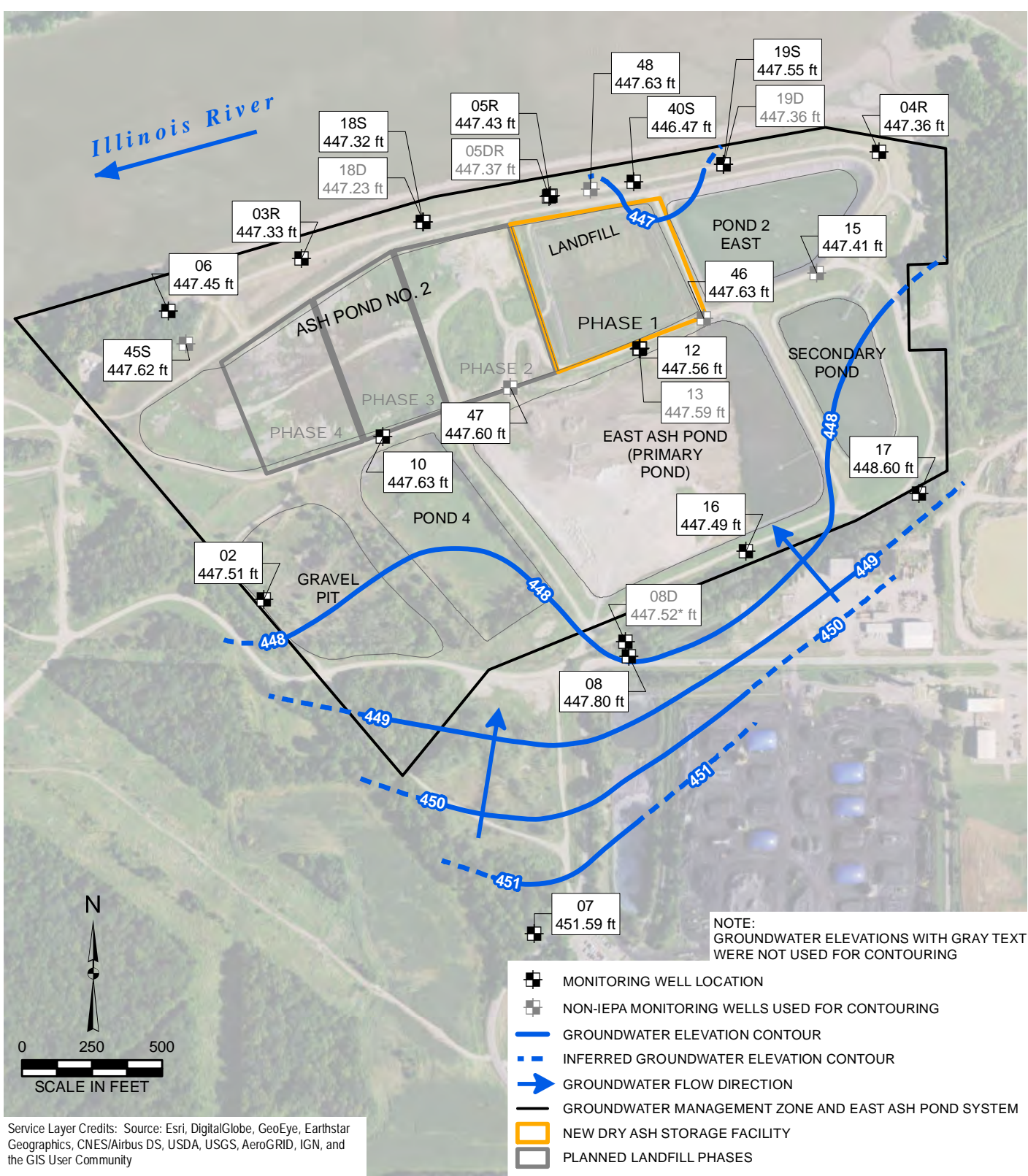
**NEW CCW LANDFILL - HENNEPIN POWER STATION  
DYNEGY MIDWEST GENERATION, LLC  
PUTNAM COUNTY, ILLINOIS**

PROJECT NO: 2205

DRAWN BY/DATE:  
TDC 3/8/16  
REVIEWED BY/DATE:  
KLT 3/8/16  
APPROVED BY/DATE:  
JJW 3/10/16



Y:\Mapping\Projects\23\2362\mxd\IEPA\_GW\_Contours\GW\_Elevation\_Contour\_Map\_1603.mxd Author: CushmanTD; Date/Time: 3/10/2017, 10:15:20 AM



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

### GROUNDWATER ELEVATION CONTOURS MARCH 8, 2016

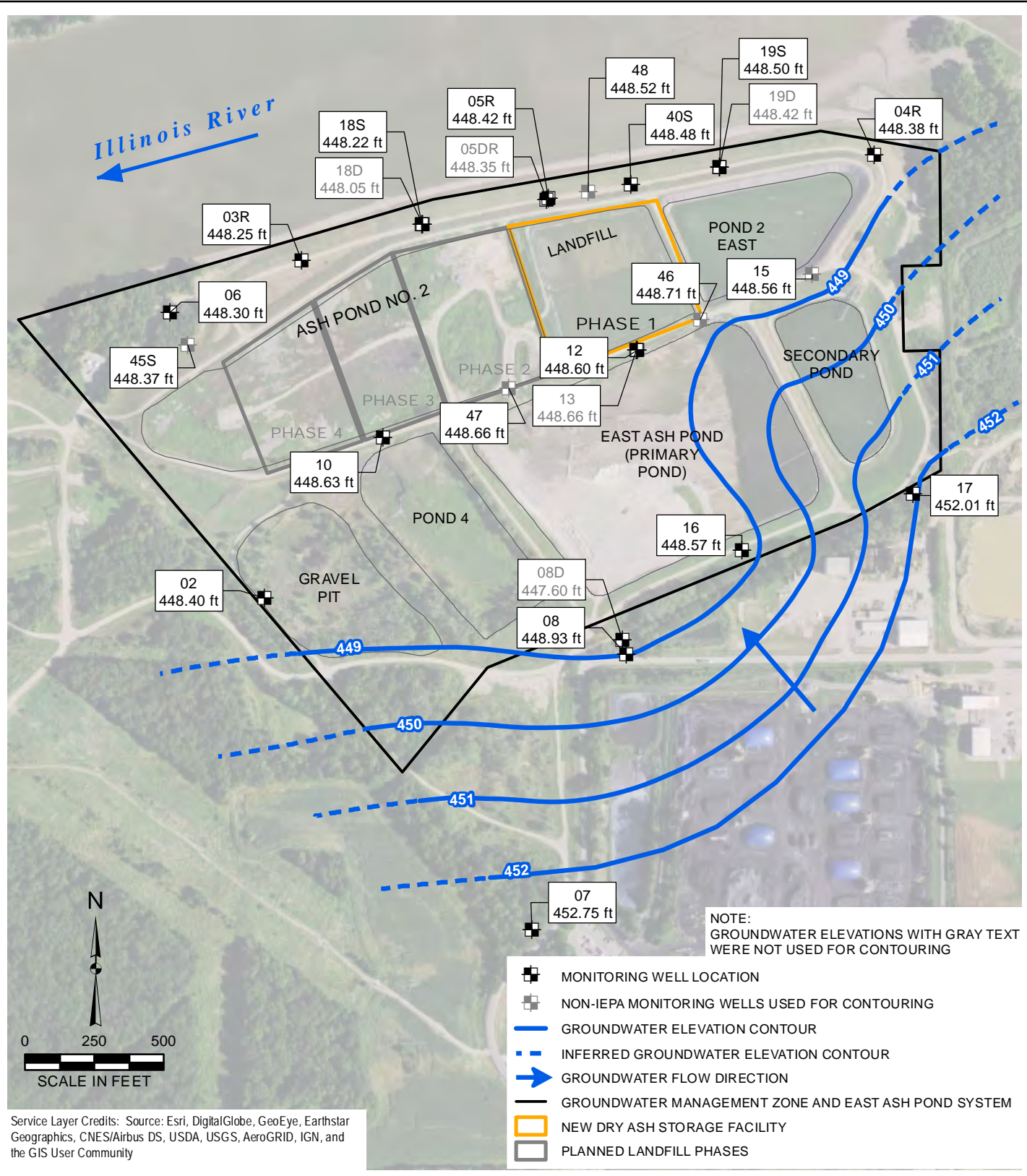
NEW CCW LANDFILL - HENNEPIN POWER STATION  
DYNEGY MIDWEST GENERATION, LLC  
PUTNAM COUNTY, ILLINOIS

PROJECT NO: 2362



DRAWN BY/DATE:  
TDC 3/10/17  
REVIEWED BY/DATE:  
TBN 3/10/17  
APPROVED BY/DATE:  
SJC 3/10/17

Y:\Mapping\Projects\23\2362\mxd\IEPA\_GW\_Contours\GW\_Elevation\_Contour\_Map\_1606.mxd Author: stolzscj Date/Time: 3/8/2017, 11:02:19 PM



**GROUNDWATER ELEVATION CONTOURS  
JUNE 7, 2016**

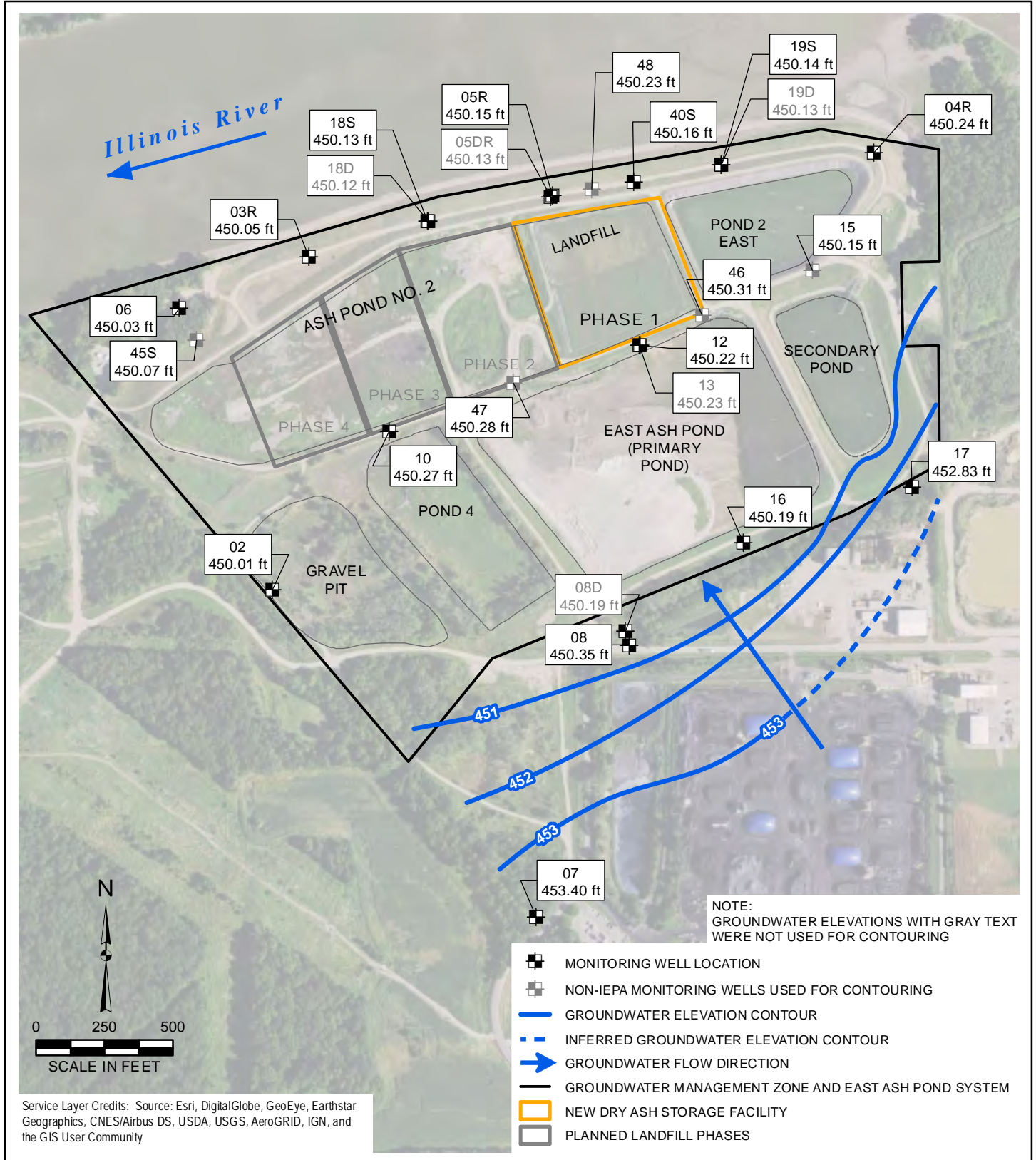
**NEW CCW LANDFILL - HENNEPIN POWER STATION  
DYNEGY MIDWEST GENERATION, LLC  
PUTNAM COUNTY, ILLINOIS**

PROJECT NO: 2362



DRAWN BY/DATE:  
SDS 3/7/17  
REVIEWED BY/DATE:  
TBN 3/7/17  
APPROVED BY/DATE:  
SJC 3/10/17

Y:\Mapping\Projects\232362\mxd\IEPA\_GW\_Contours\GW\_Elevation\_Contour\_Map\_1609.mxd Author: stolzsd; Date/Time: 3/8/2017, 11:30:03 PM



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

DRAWN BY/DATE:  
SDS 3/7/17  
REVIEWED BY/DATE:  
TBN 3/7/17  
APPROVED BY/DATE:  
SJC 3/10/17

### GROUNDWATER ELEVATION CONTOURS SEPTEMBER 15, 2016

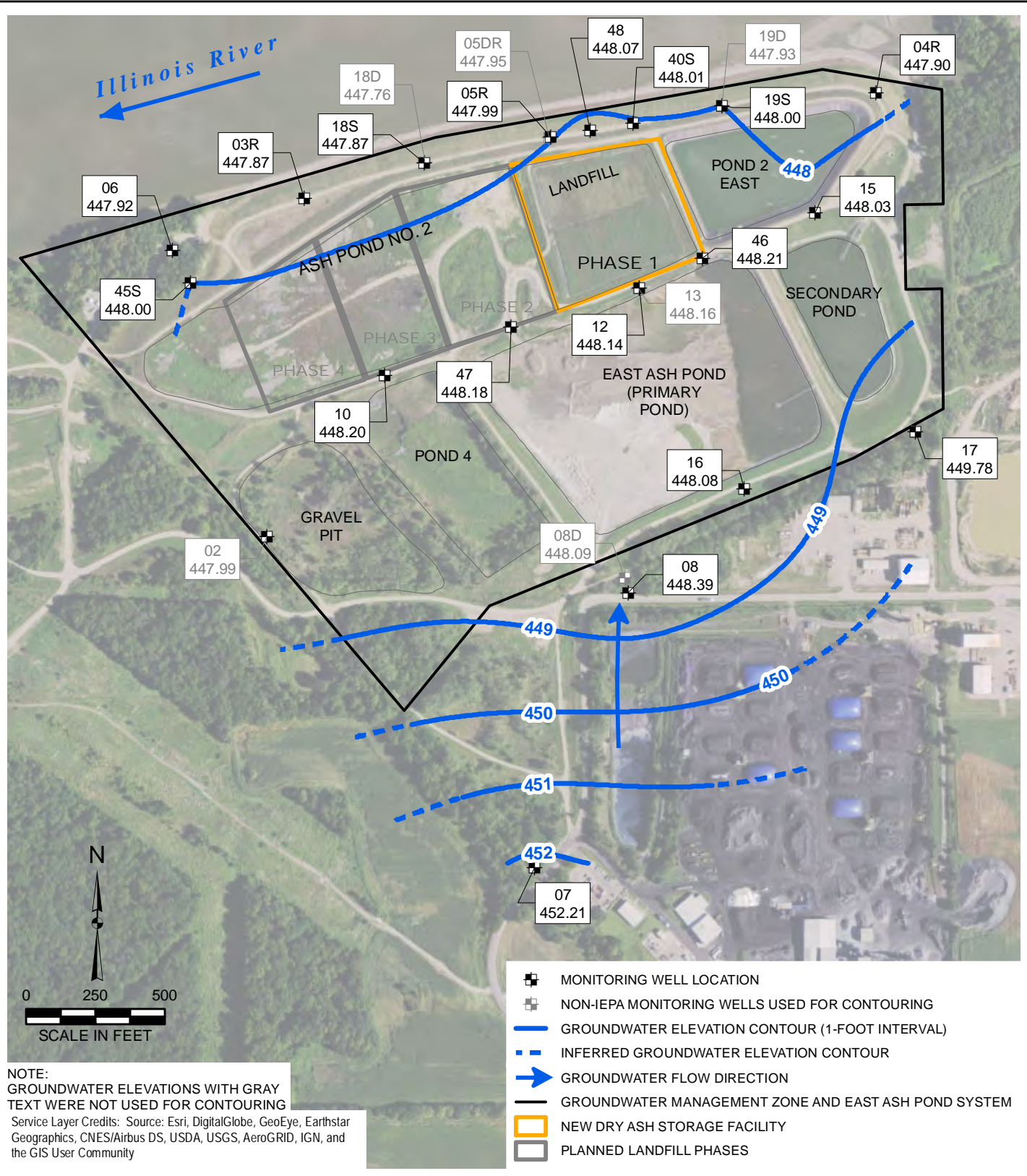
NEW CCW LANDFILL - HENNEPIN POWER STATION  
DYNEGY MIDWEST GENERATION, LLC  
PUTNAM COUNTY, ILLINOIS

PROJECT NO: 2362





Y:\Mapping\Projects\22\226\5\MXD\GW\_Contours\Round\_05\R5\_HennepinEast\_GW\_Contours\_IIEPA\_format\_1.mxd Author: CushmanTD Date/Time: 3/10/2017, 1:48:28 PM



NOTE:  
 GROUNDWATER ELEVATIONS WITH GRAY  
 TEXT WERE NOT USED FOR CONTOURING

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar  
 Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and  
 the GIS User Community


DRAWN BY/DATE:  
 TDC 3/10/17  
 REVIEWED BY/DATE:  
 TBN 3/10/17  
 APPROVED BY/DATE:  
 SJC 3/10/17

**GROUNDWATER ELEVATION CONTOURS**  
**DECEMBER 9, 2016**

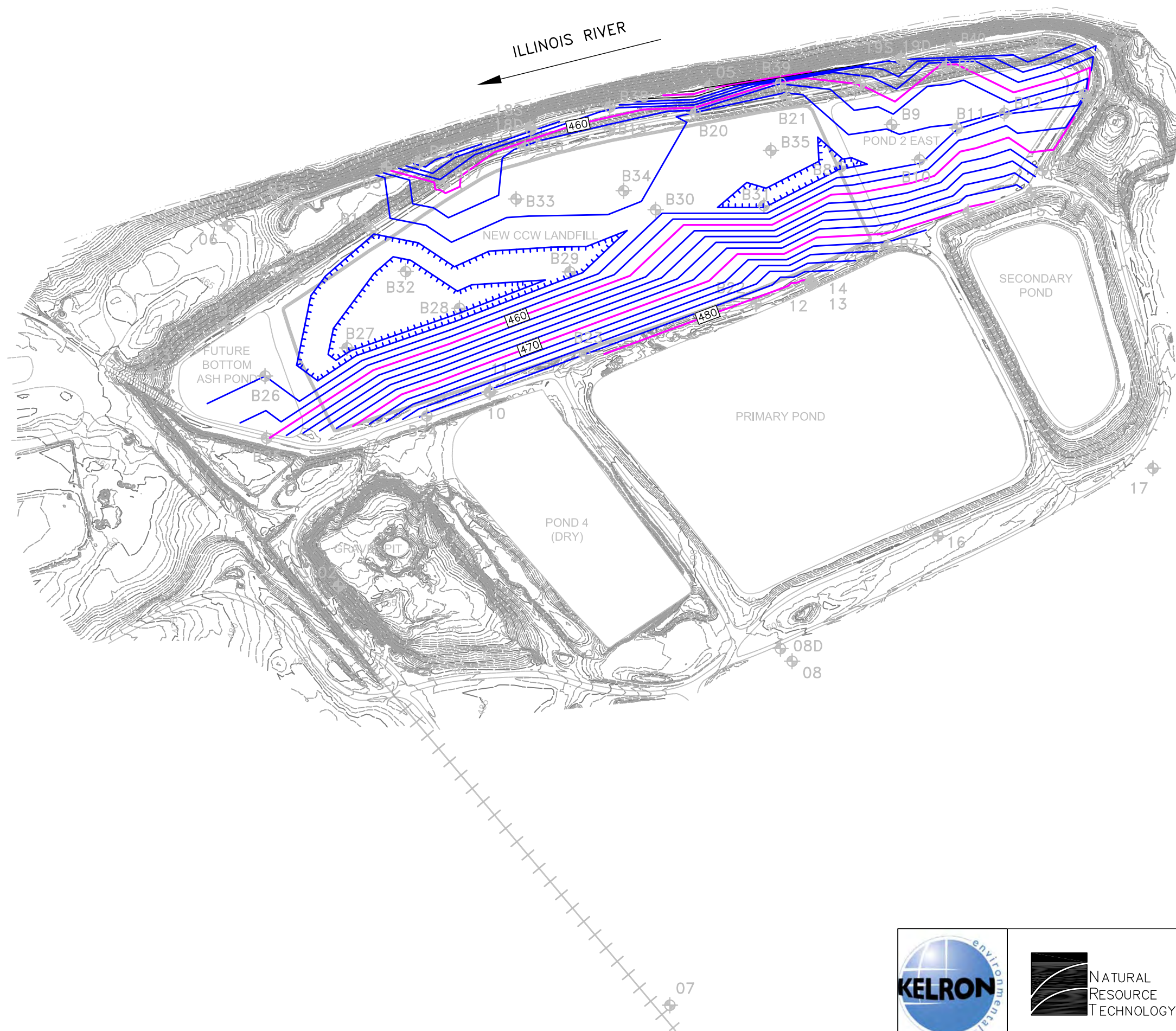
NEW CCW LANDFILL - HENNEPIN POWER STATION  
 DYNEGY MIDWEST GENERATION, LLC  
 PUTNAM COUNTY, ILLINOIS

PROJECT NO: 2362

**Natural  
 Resource  
 Technology**  
 AN OBG COMPANY



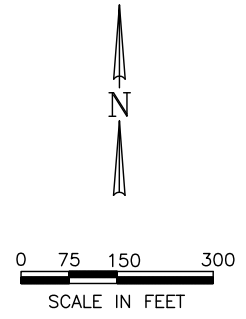
**Appendix C**  
**Ash Pond No 2 Base**  
**Grades**



**LEGEND**

- BASE OF ASH CONTOUR, 2 FT. INTERVALS
- SOIL BORING LOCATION AND IDENTIFICATION
- EXISTING GROUND SURFACE CONTOURS (1 FOOT)
- SHORELINE
- RAILROAD

SOURCE NOTES:  
 CIVIL AND ENVIRONMENTAL CONSULTANTS,  
 INC., DRAWING 3H DRAFT 30% SUBMITTAL TOP  
 OF CAP-FINAL GRADING PLAN, DATED APRIL,  
 2010.  
 STMI, STMI/135/96-02, DRAWING DATED  
 JUNE 1996.




PROJECT NO.  
1940/3.0  
 DRAWN BY:  
KNW 09/22/10  
 CHECKED BY:  
BGH 12/08/10  
 APPROVED BY:  
BRH 12/08/10


**BASE OF ASH ELEVATIONS**  
 INITIAL FACILITY REPORT, NEW CCW LANDFILL  
 HENNEPIN POWER STATION  
 DYNEGY MIDWEST GENERATION, INC.  
 HENNEPIN, ILLINOIS

DRAWING NO: 1940-3-B19C  
 REFERENCE: .

FIGURE  
25-5



**Appendix D**  
**Hydraulic Conductivity**  
**Test Data**



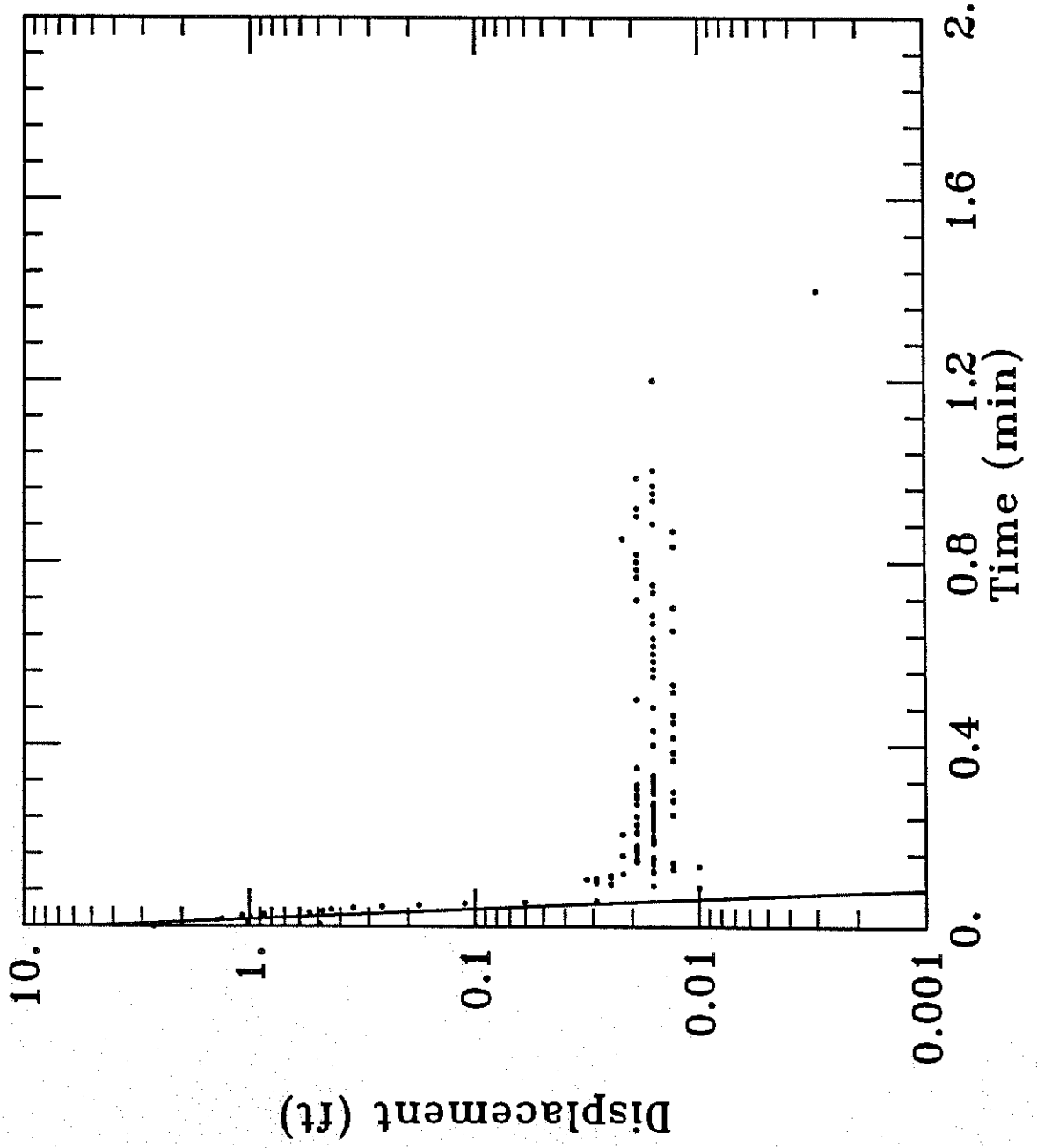
**Appendix D1**  
**STMI Field Hydraulic**  
**Conductivity Tests**

DATA SET:  
T4W3.DAT  
10/09/95

AQUIFER MODEL:  
Unconfined  
SOLUTION METHOD:  
Bouwer-Rice

TEST DATA:  
H0 = 2.67 ft  
rc = 0.083 ft  
rw = 0.083 ft  
L = 15. ft  
b = 40. ft  
H = 18. ft

PARAMETER ESTIMATES:  
K = 0.08738 ft/min  
y0 = 4.852 ft



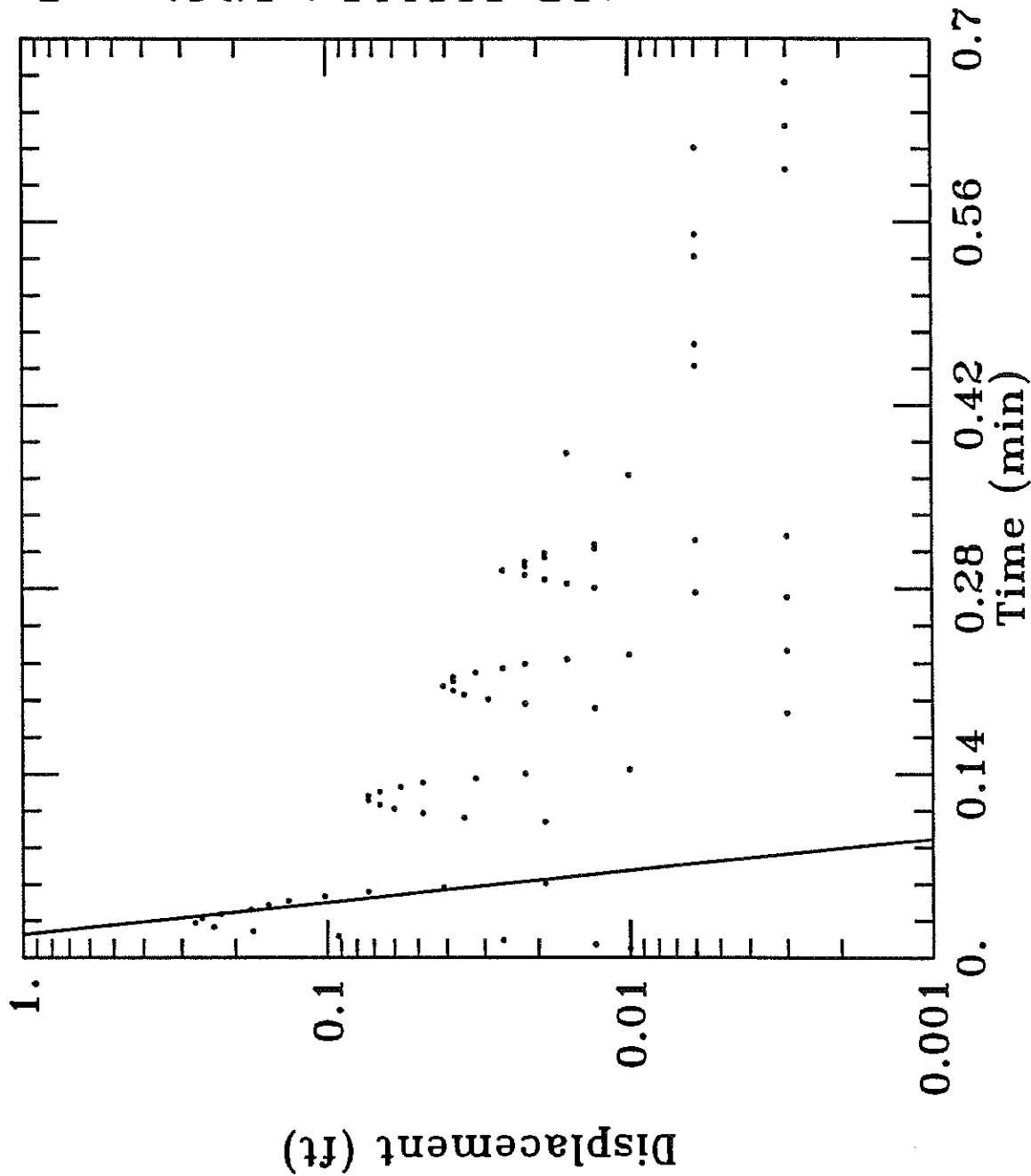
DATA SET:  
T4W11.DAT  
10/04/95

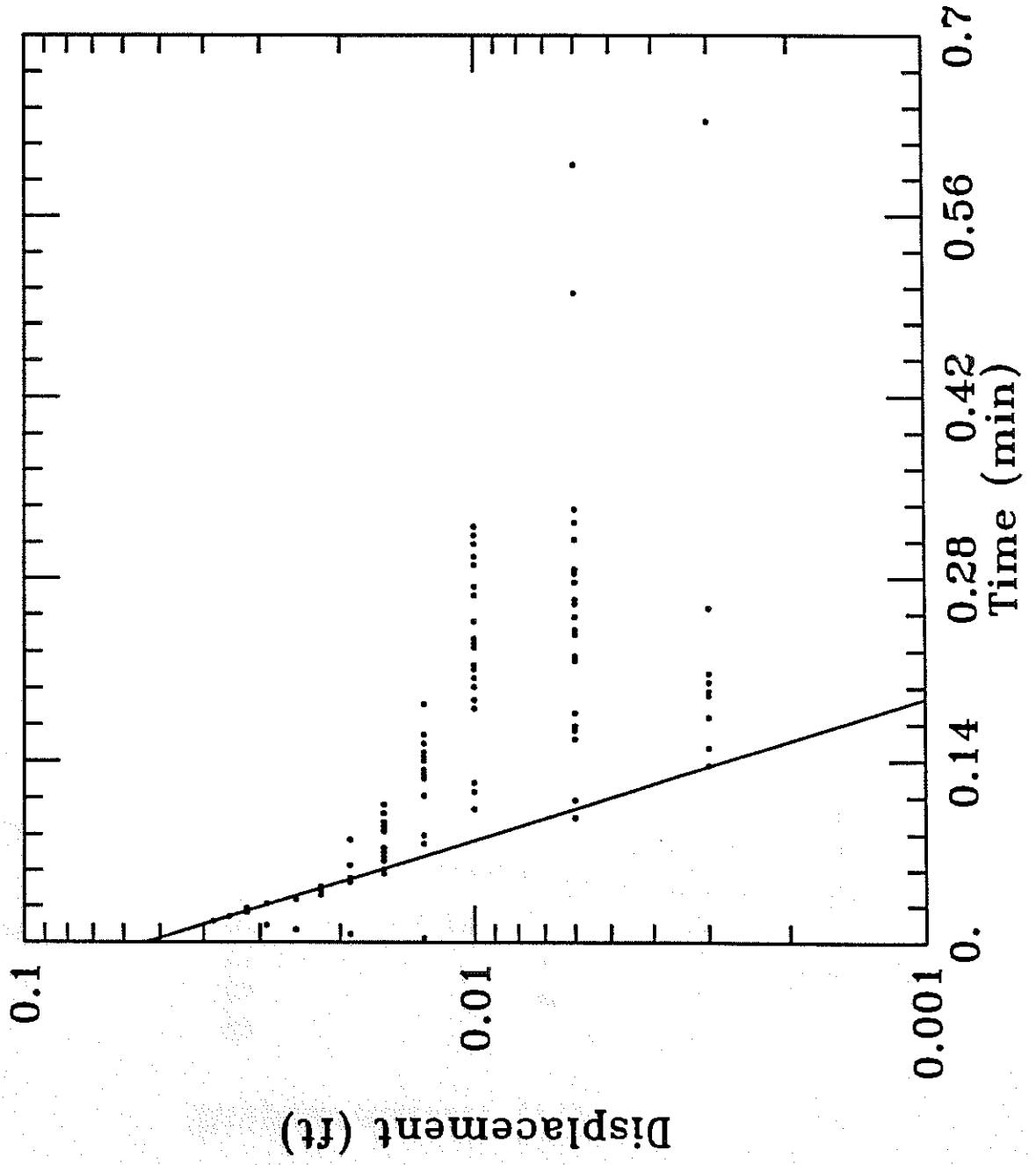
AQUIFER MODEL:  
Unconfined

SOLUTION METHOD:  
Bouwer-Rice

TEST DATA:  
H0 = 2.67 ft  
rc = 0.083 ft  
rw = 0.083 ft  
L = 2. ft  
b = 40. ft  
H = 20. ft

PARAMETER ESTIMATES:  
K = 0.4336 ft/min  
y0 = 5.299 ft





DATA SET:  
 T1W12.DAT  
 10/03/95

AQUIFER MODEL:  
 Unconfined

SOLUTION METHOD:  
 Bouwer-Rice

TEST DATA:  
 H0 = 2.67 ft  
 rc = 0.083 ft  
 rw = 0.083 ft  
 L = 10. ft  
 b = 40. ft  
 H = 11. ft

PARAMETER ESTIMATES:  
 K = 0.02397 ft/min  
 y0 = 0.05333 ft



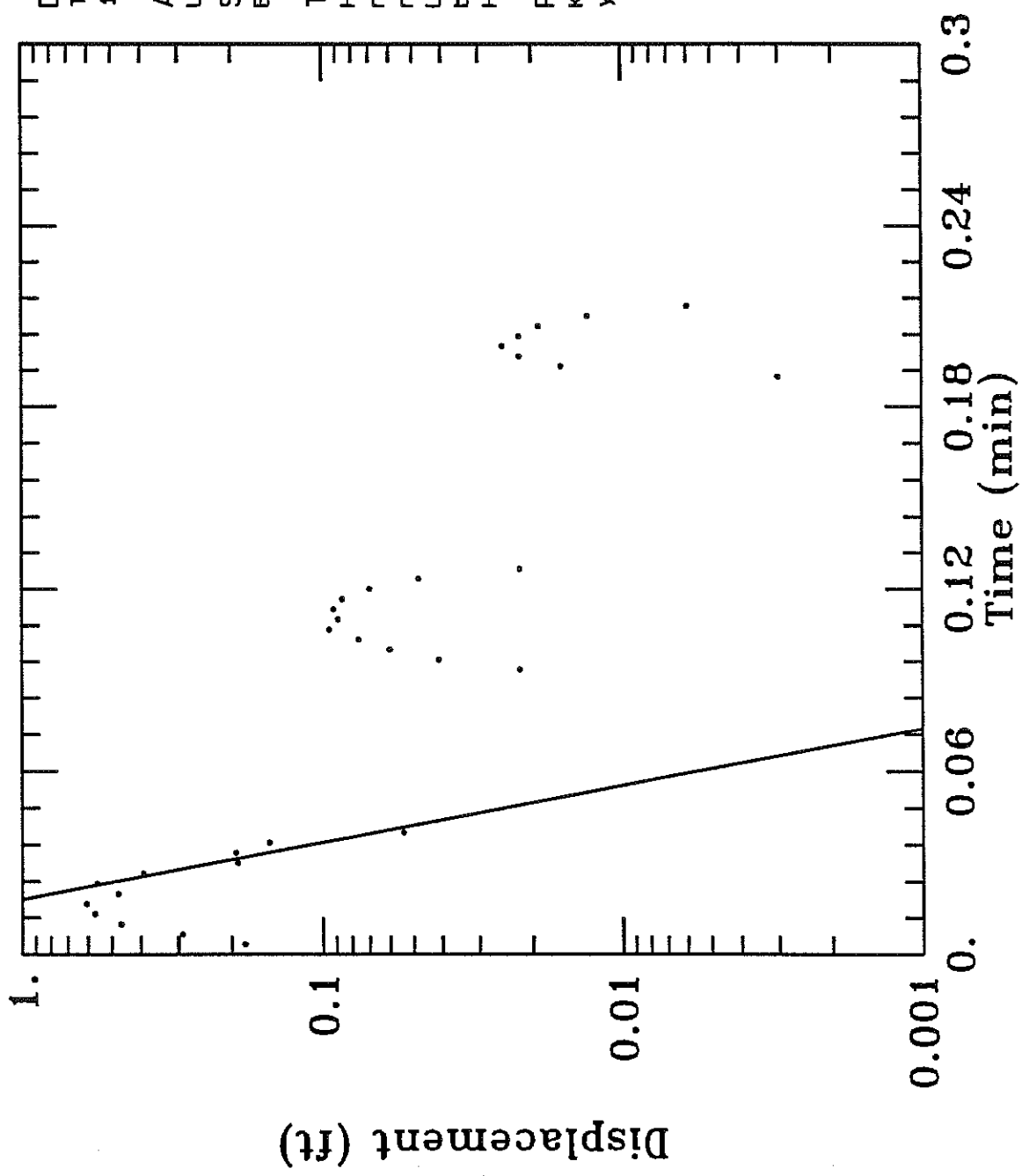
DATA SET:  
TOM13.DAT  
10/03/95


AQUIFER MODEL:  
Unconfined

SOLUTION METHOD:  
Bauer-Rice

TEST DATA:  
H0 = 2.67 ft  
rc = 0.083 ft  
rw = 0.083 ft  
L = 2. ft  
b = 40. ft  
H = 21. ft

PARAMETER ESTIMATES:  
K = 0.5669 ft/min  
y0 = 9.152 ft





**Appendix D2**  
**AECOM Laboratory**  
**Hydraulic Conductivity**  
**Tests**


# Hydraulic Conductivity Tests ASTM D 5084

TERRACON PROJECT NO.: **MR155233**  
PROJECT NAME: **DYNERGY - HENNEPIN SITE**  
CLIENT: **AECOM**  
LOCATION : **HENNEPIN, IL**

**12/21/2015**

**SUMMARY OF TEST RESULTS**

BORING NO. HEN-B010  
SAMPLE NO. S-5  
DEPTH: 10.0'-11.5'  
CLASSIFICATION VERY DARK GRAY FLY ASH WITH SAND AND GRAVEL

	<u>INITIAL</u>	<u>FINAL</u>	<u>SAMPLE PHOTO</u>
DRY UNIT WEIGHT (pcf)	86.6	93.3	
WATER CONTENT (%)	26.5	23.2	
DIAMETER (cm)	7.215	6.956	
LENGTH (cm)	4.527	4.521	
HYDRAULIC GRADIENT (MAXIMUM)	20.83		
PERCENT SATURATION	99.5	(Percent saturation calculation is based on final measurements and an estimated specific gravity.)	
HYDRAULIC CONDUCTIVITY k (cm/sec)	<b>1.16E-05</b>		


Deaired water was used as the liquid permeant.

TERRACON PROJECT NO.: **MR155233**  
PROJECT NAME: **DYNERGY - HENNEPIN SITE**  
CLIENT: **AECOM**  
LOCATION : **HENNEPIN, IL**

**12/21/2015**

**SUMMARY OF TEST RESULTS**

BORING NO. HEN-B017  
SAMPLE NO. S-3  
DEPTH: 5.0'-7.0'  
CLASSIFICATION VERY DARK GRAY LEAN CLAY WITH SAND

	<u>INITIAL</u>	<u>FINAL</u>	<u>SAMPLE PHOTO</u>
DRY UNIT WEIGHT (pcf)	76.0	82.8	
WATER CONTENT (%)	36.7	38.2	
DIAMETER (cm)	6.929	6.692	
LENGTH (cm)	7.541	7.425	
HYDRAULIC GRADIENT (MAXIMUM)	26.49		
PERCENT SATURATION	99.3		(Percent saturation calculation is based on final measurements and an estimated specific gravity.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	6.79E-07		


Deaired water was used as the liquid permeant.

TERRACON PROJECT NO.: **MR155233**  
PROJECT NAME: **DYNERGY - HENNEPIN SITE**  
CLIENT: **AECOM**  
LOCATION : **HENNEPIN, IL**


**12/21/2015**

**SUMMARY OF TEST RESULTS**

BORING NO. HEN-B023  
SAMPLE NO. S-9  
DEPTH: 27.0'-29.0'  
CLASSIFICATION VERY DARK GRAY FLY ASH WITH SAND AND GRAVEL

	<u>INITIAL</u>	<u>FINAL</u>	<u>SAMPLE PHOTO</u>
DRY UNIT WEIGHT (pcf)	81.8	83.2	
WATER CONTENT (%)	28.3	31.5	
DIAMETER (cm)	7.154	7.063	
LENGTH (cm)	5.432	5.479	
HYDRAULIC GRADIENT (MAXIMUM)	17.36		
PERCENT SATURATION	100.4		(Percent saturation calculation is based on final measurements and an estimated specific gravity.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	1.00E-05		

Deaired water was used as the liquid permeant.



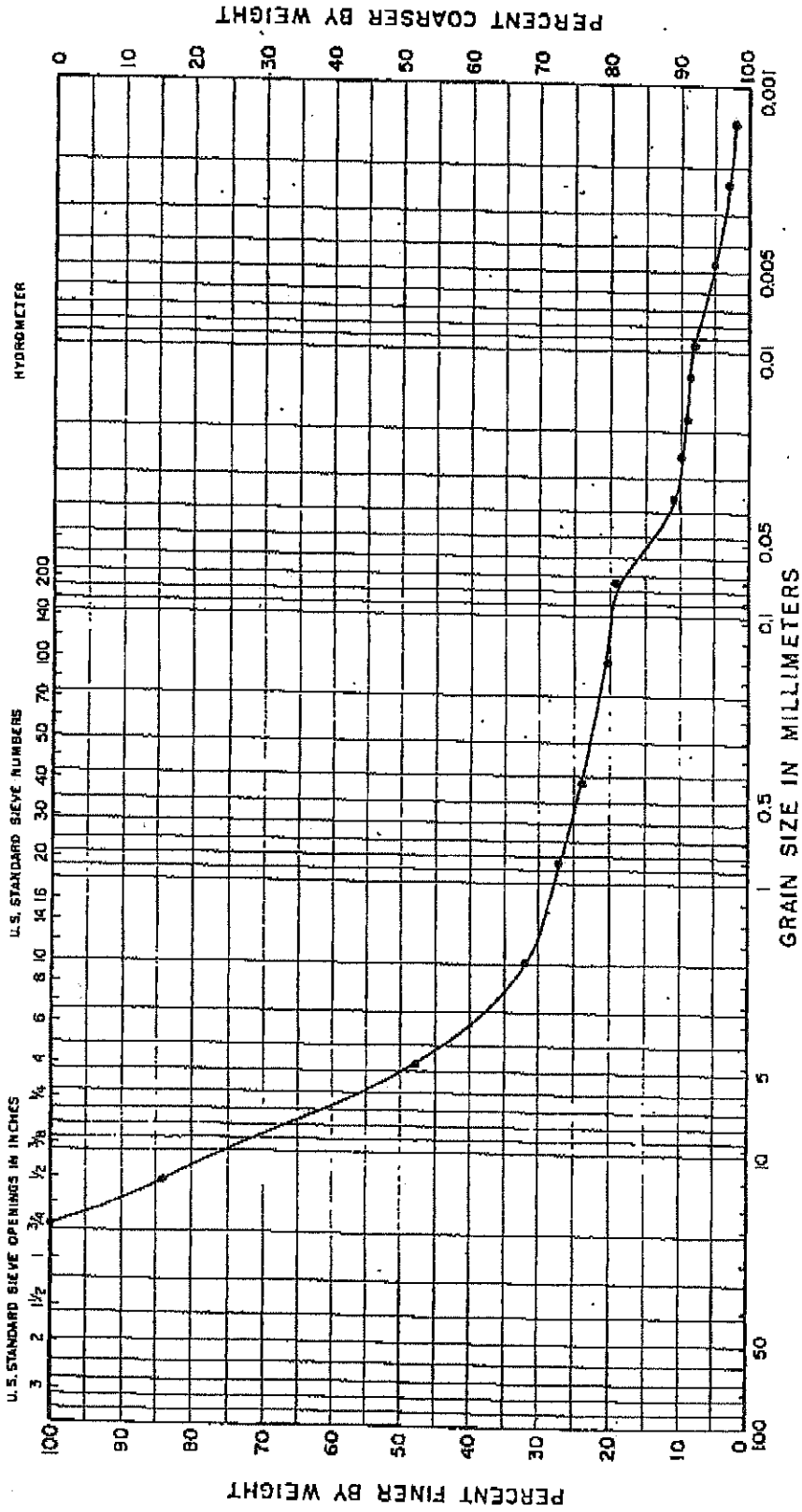
**Appendix E**  
**Geotechnical Test Data**



**Appendix E1**  
**MATHES Grain Size**  
**Analysis**



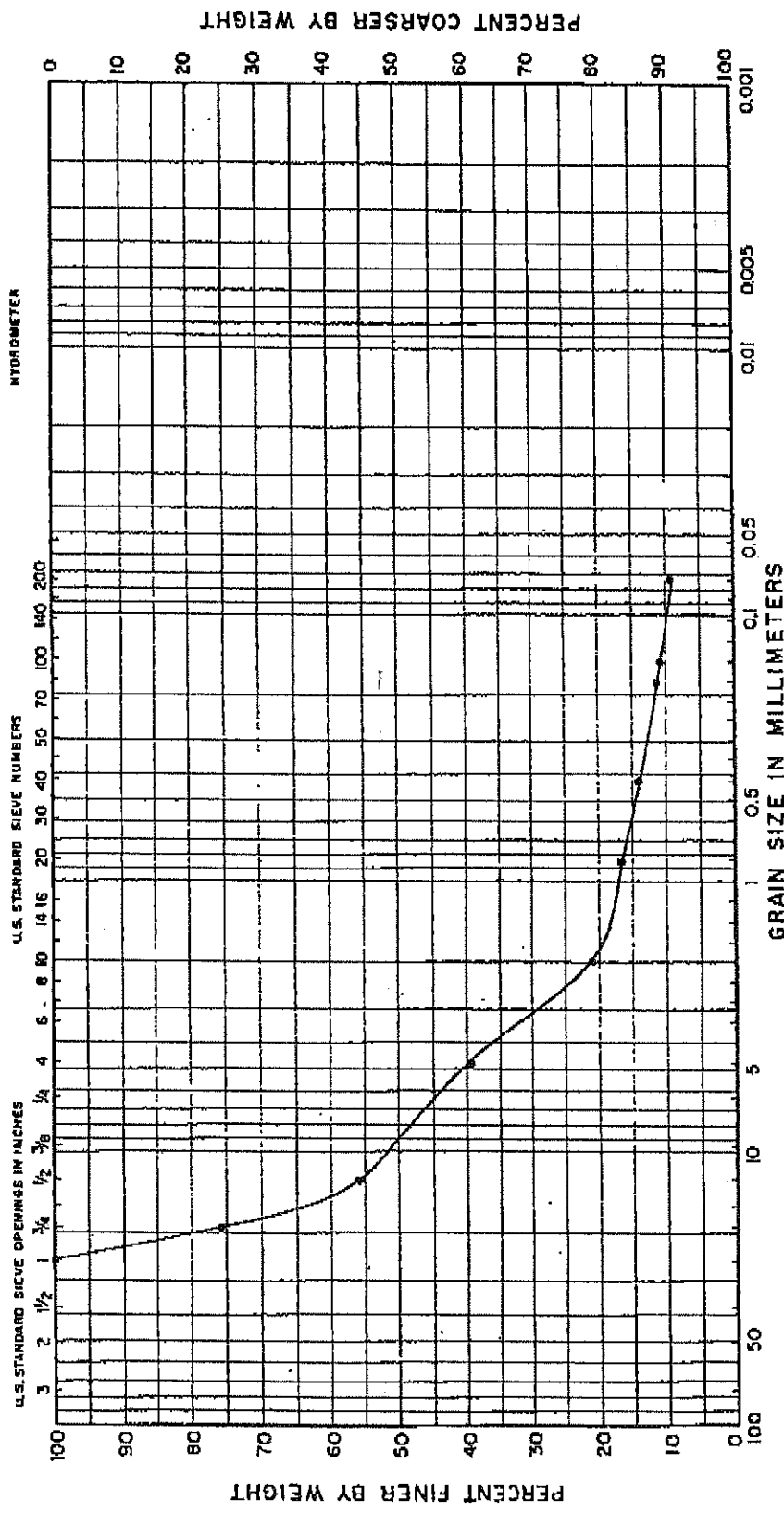
# GRAIN SIZE CURVES



GRAVEL		SAND			SILT or CLAY	
Coarse	Fine	Coarse	Medium	Fine		
					D <sub>10</sub>	Description
					.03	Gray-Brown GRAVEL w/Sand, Silt, GM

Boring: E4  
 Sample: 9  
 Depth: 39.0-40.5'  
 Description: Gray-Brown GRAVEL w/Sand, Silt, GM

# GRAIN SIZE CURVES



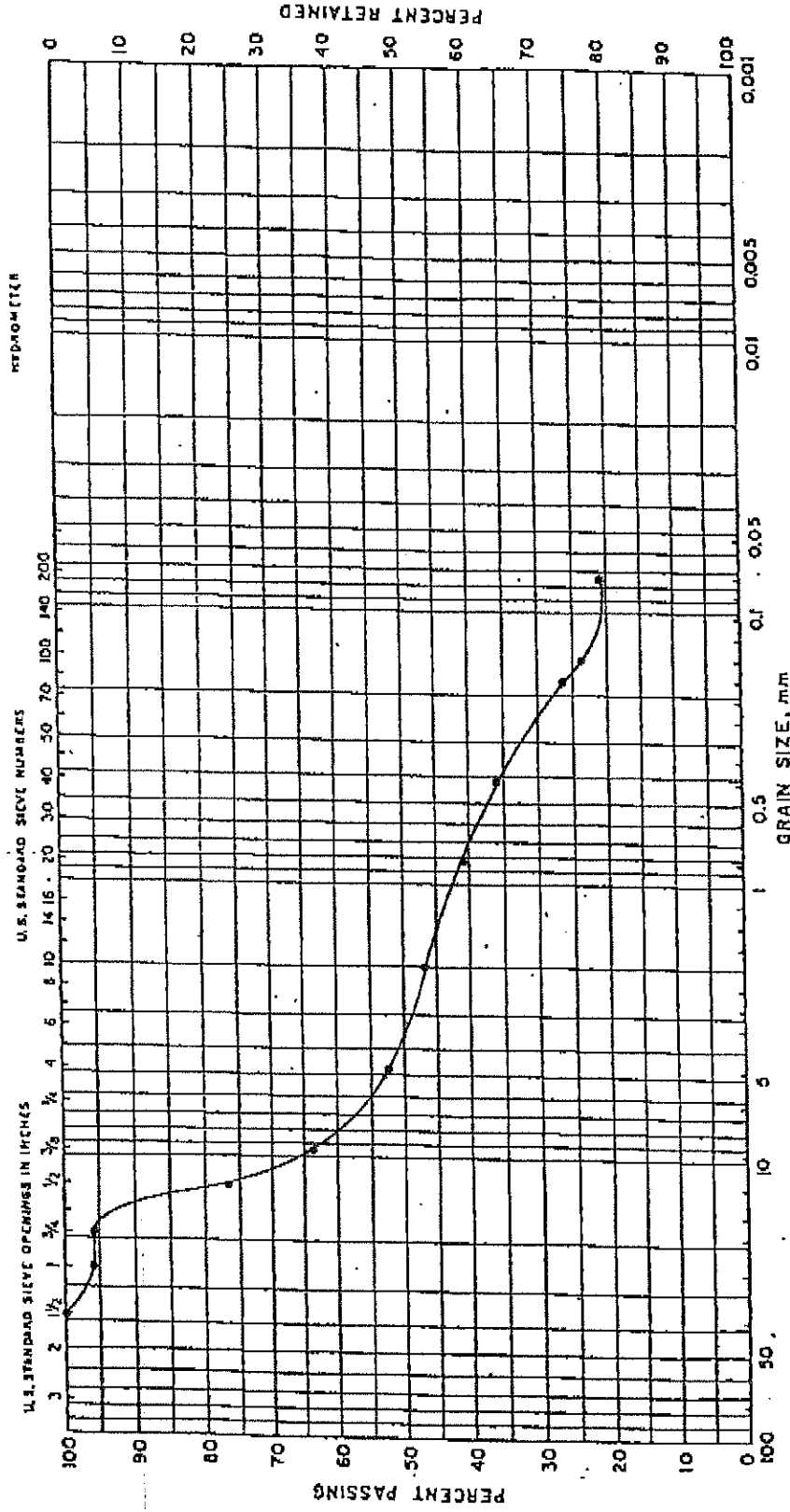
GRAVEL		SAND		SILT or CLAY	
Coarse	Fine	Coarse	Medium	Fine	

Spring E5      Sample 9      Depth 44.0-45.5'       $D_{10}$  .11      Description Brown GRAVEL w/Sand Trace silt, GP-GH

PERCENT COARSER BY WEIGHT

PERCENT FINER BY WEIGHT

# PARTICLE SIZE ANALYSIS

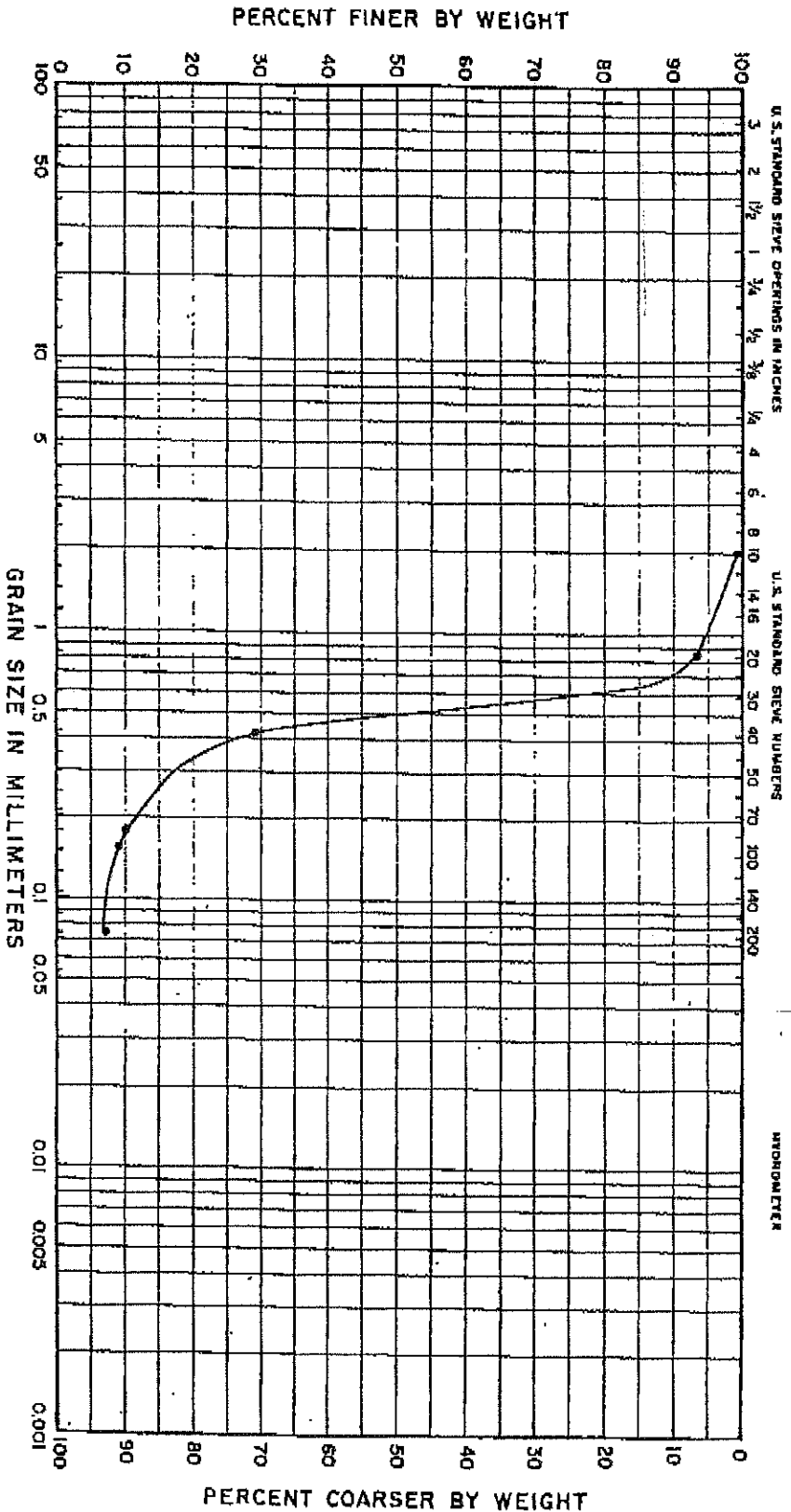


GRAVEL		SAND		SILT or CLAY	
Coarse	Fine	Coarse	Medium	Fine	Fine

JOB NO. 04-1934 PROJECT I.P. Hennepin, Hydrogeologic Investigation

CURVE 3 BORING        SAMPLE 12 DEPTH, ft        DESCRIPTION Brown Sandy GRAVEL w/Silt, Clay, GC-GM

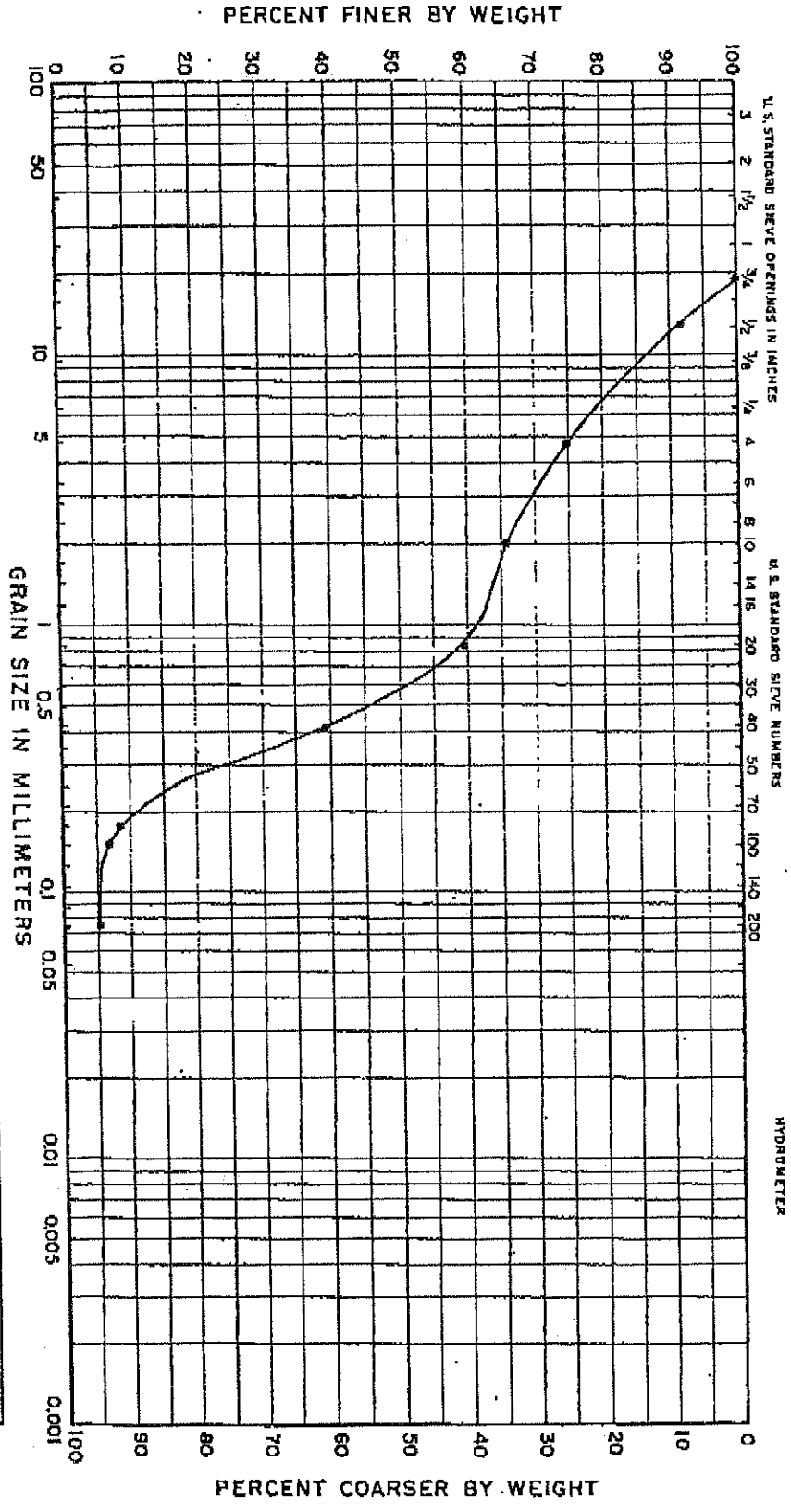
# GRAIN SIZE CURVES



GRAVEL	Coarse	SAND	Medium	SILT or CLAY
	Fine		Fine	

Boring: \_\_\_\_\_ Sample: 11 Depth: 54.0-55.5'  $D_{10}$ : 0.2  
 Description: Gray Fine-Medium SAND w/Shell's Trace  
 Silt, SP-SM

# GRAIN SIZE CURVES

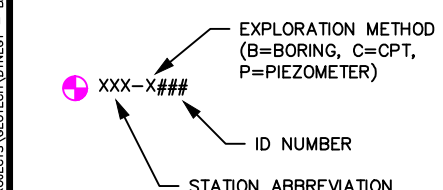


GRAVEL		SAND		SILT or CLAY	
Coarse	Fine	Coarse	Medium	Fine	
Boring			Sample		
W4			13		
Depth			Description		
59.0-60.5'			Dark Gray Gravelly Fine-Medium SAND		
			Trace Silt, SP-SM		
			D <sub>10</sub>		
			.19		

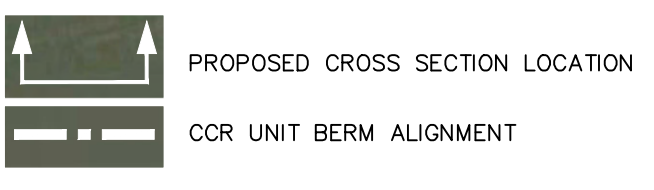


**Appendix E2**  
**AECOM Geotechnical Test**  
**Results**

File: P:\PROJECTS\GEO\DYNEGY - BALDWIN 2014\CCR\04TASKS\00 PROGRAM TASKS\1.0 TASK 1 INITIAL UNIT ASSESSMENT\CCR FACT SHEETS\FIGURE 1 BORING LOCATION PLAN (HENNEPIN OLD WEST ASH POND NO. 1 AND NO. 2).DWG Last edited: JUL 15, 15 @ 11:19 a.m. by: david\_dequire



- LEGEND**
- PROPOSED BORING LOCATION
  - ▲ PROPOSED CPT LOCATION
  - PROPOSED PIEZOMETER LOCATION



DRAFT

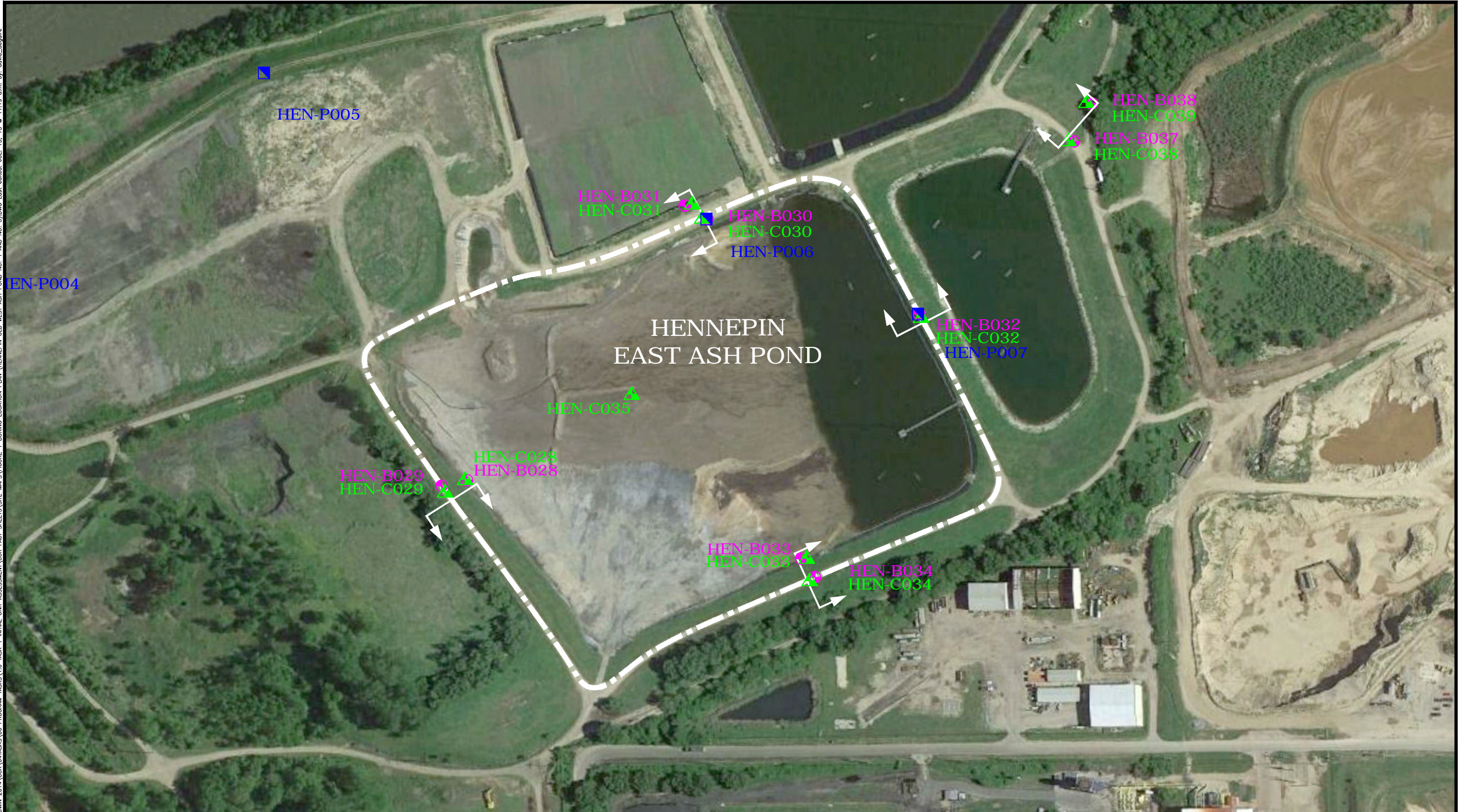
0 200

APPROXIMATE SCALE FEET

SOURCE:  
MAP PROVIDED BY GOOGLE EARTH PRO 2015

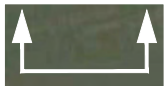

DYNEGY, INC	PROJECT NO. 60428794		
<b>AECOM</b>			
DRN. BY:djd July 2015 DSGN. BY:eg CHKD. BY:eg	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%; padding: 5px;">Hennepin Ash Pond No. 2 Field Investigation Plan</td> <td style="width: 20%; padding: 5px;">FIG. NO. D-01</td> </tr> </table>	Hennepin Ash Pond No. 2 Field Investigation Plan	FIG. NO. D-01
Hennepin Ash Pond No. 2 Field Investigation Plan	FIG. NO. D-01		

File: P:\PROJECTS\GEO\DYNEGY - BALDWIN 2014\CCR\04TASKS\00 PROGRAM TASKS\1.0 TASK 1 INITIAL UNIT ASSESSMENT\CCR FACT SHEETS\SITE MAPS\FIGURE 1 BORING LOCATION PLAN (HENNEPIN OLD WEST ASH POND NO. 1 AND NO. 3).DWG Last edited: JUL 15 11:19 a.m. by: david\_dequire



XXX-X###  
 ——— EXPLORATION METHOD (B=BORING, C=CPT, P=PIEZOMETER)  
 ——— ID NUMBER  
 ——— STATION ABBREVIATION

**LEGEND**  
 ● PROPOSED BORING LOCATION  
 ▲ PROPOSED CPT LOCATION  
 ■ PROPOSED PIEZOMETER LOCATION

 PROPOSED CROSS SECTION LOCATION  
 CCR UNIT BERM ALIGNMENT

**DRAFT**  
 0 200  
 APPROXIMATE SCALE FEET

SOURCE:  
 MAP PROVIDED BY GOOGLE EARTH PRO 2015

DYNEGY, INC	PROJECT NO. 60428794
<b>AECOM</b>	
DRN. BY:djd July 2015 DSGN. BY:eg CHKD. BY:eg	Hennepin East Ash Pond Field Investigation Plan
	FIG. NO. D-02



LABORATORY TESTING SUMMARY



PROJECT NAME: Dynergy - Hennepin Site

PROJECT NUMBER: MR155233

CLIENT: AECOM

Boring Number	Sample Number	Depth	Description	USCS	WC %	Qp (tsf)	% Gravel	% Sand	% Silt	% Clay	% Fines	LL	PL	PI	Specific Gravity	
HEN-B001	S-1	0.0'-1.5'	POSSIBLE FILL: REDDISH BROWN SANDY LEAN CLAY - ROOTS AND BRICK NOTED	CL	7.6											
HEN-B001	S-2	2.5'-4.0'	DARK BROWN SANDY LEAN CLAY	CL	13.1											
HEN-B001	S-3	5.0'-7.5'	DARK BROWN LEAN CLAY WITH SAND	CL	19.0											
HEN-B001	S-4	7.5'-9.5'	BROWN AND GRAY LEAN CLAY WITH SAND - SAND SEAMS NOTED	CL	17.4							21	14	7		
HEN-B001	S-5	10.0'-11.5'	BROWN AND DARK BROWN SANDY LEAN CLAY	CL	16.8											
HEN-B001	S-6	15.0'-16.5'	GRAY LEAN CLAY	CL	44.8											
HEN-B001	S-7	20.0'-22.0'	GRAY ORGANIC LEAN CLAY - SHELL NOTED	CL	37.0							38	22	16		
HEN-B001	S-8	25.0'-26.5'	GRAYISH BROWN LEAN CLAY	CL	30.6											
HEN-B001	S-9	30.0'-31.5'	BROWN LEAN CLAY	CL	36.6											
HEN-B001	S-10	35.0'-36.5'	DARK GRAY LEAN CLAY - ORGANICS NOTED	CL	39.8											
HEN-B001	S-11	40.0'-41.5'	DARK GRAY FAT CLAY	CH	43.3							59	30	29		
HEN-B001	S-12	45.0'-46.5'	GRAY SANDY LEAN CLAY	CL	31.5											
HEN-B001	S-13	50.0'-51.5'	GRAY SAND WITH GRAVEL	SP	18.6											
HEN-B001	S-14	55.0'-56.5'	BROWN AND GRAY SILTY SAND WITH GRAVEL	SM	7.4											
HEN-B002	S-1	0.0'-1.5'	FILL: BROWN SANDY LEAN CLAY	CL	5.7											
HEN-B002	S-2	2.5'-4.0'	BROWN POORLY GRADED SAND WITH CLAY	SP-SC	6.8											2.68
HEN-B002	S-3	5.5'-6.5'	GRAY SANDY LEAN CLAY	CL	15.0											
HEN-B002	S-4	7.5'-9.0'	BROWN SILT WITH CLAY	ML	9.3							20	14	6		
HEN-B002	S-6	15.0'-16.5'	BROWN POORLY GRADED SAND WITH SILT AND GRAVEL	SP-SM	15.7		22.7	65.7	7.2	4.4	11.6					
HEN-B002	S-7A	20.0'-20.8'	BROWN CLAYEY SAND	SC	7.4											
HEN-B002	S-7B	20.8'-21.5'	GRAY SILTY LEAN CLAY	CL-ML	47.1											
HEN-B002	S-8	25.0'-27.0'	DARK GRAY LEAN CLAY WITH SAND AND GRAVEL - FLY ASH NOTED	OL	24.6							41	23	18		
HEN-B002	S-9	30.0'-31.5'	GRAYISH BROWN LEAN CLAY	CL	32.0											
HEN-B002	S-10	35.0'-37.0'	GRAY LEAN CLAY	CL	31.7							46	21	25		
HEN-B002	S-11	40.0'-41.5'	BROWN AND GRAY LEAN CLAY	CL	57.9											
HEN-B002	S-12A	45.0'-46.0'	DARK GRAY LEAN CLAY - ORGANICS NOTED	CL	57.9											
HEN-B002	S-12B	46.0'-46.5'	GRAY CLAYEY SILT	CL-ML	43.1											
HEN-B002	S-13	50.0'-51.5'	BROWN AND GRAY SILTY SAND	SM	21.2											
HEN-B002	S-14	55.0'-56.5'	BROWN POORLY GRADED SAND WITH SILT AND GRAVEL	SP-SM	15.3		16.8	71.3			11.9					
HEN-B002	S-15	60.0'-61.5'	GRAY GRAVEL	GP	4.0											

LABORATORY TESTING SUMMARY



PROJECT NAME: Dynergy - Hennepin Site

PROJECT NUMBER: MR155233

CLIENT: AECOM

Boring Number	Sample Number	Depth	Description	USCS	WC %	Qp (tsf)	% Gravel	% Sand	% Silt	% Clay	% Fines	LL	PL	PI	Specific Gravity
HEN-B003	S-1	0.0'-1.5'	GRAY SILTY LEAN CLAY	CL	70.4										
HEN-B003	S-2	2.5'-4.0'	GRAY CLAYEY SILT	CL-ML	42.9										
HEN-B003	S-3	5.0'-6.5'	GRAY CLAYEY SILT	CL-ML	49.5										
HEN-B003	S-4	7.5'-9.0'	GRAY SILTY LEAN CLAY	CL	48.5										
HEN-B003	S-5	10.0'-12.0'	BLACK ORGANIC CLAY WITH SAND - WOOD NOTED	OL	38.5										
HEN-B003	S-6	15.0'-16.5'	BROWN TO GRAY LEAN CLAY	CL	36.8										
HEN-B003	S-7	20.0'-21.5'	GRAYISH BROWN LEAN CLAY	CL	32.2										
HEN-B003	S-8	25.0'-27.5'	DARK GRAY LEAN CLAY	CL	32.1							45	21	24	
HEN-B003	S-9	30.0'-31.5'	DARK GRAY LEAN CLAY	CL	66.3										
HEN-B003	S-10	35.0'-36.5'	GRAY LEAN CLAY	CL	44.4										
HEN-B003	S-11	40.0'-41.5'	BROWN AND GRAY SANDY SILT	ML	30.3										
HEN-B003	S-12	45.0'-46.5'	CLAYEY SAND WITH SILT	SC	15.6										
HEN-B003	S-13	50.0'-51.5'	BROWN CLAYEY SAND WITH GRAVEL	SC	7.7										
HEN-B004	S-1	0.0'-0.5'	FILL: SILTY SAND - CLAY LENSES NOTED	SM	8.9										
HEN-B004	S-1A	0.5'-1.5'	BROWN SILTY SAND WITH GRAVEL - CLAY LENSES NOTED	SM	6.8										
HEN-B004	S-2	2.5'-4.0'	BROWN, TAN AND GRAY POORLY GRADED GRAVEL WITH SAND	GP	2.9										2.746
HEN-B004	S-3	5.0'-6.5'	BROWN SANDY LEAN CLAY WITH GRAVEL	CL	6.3										
HEN-B004	S-4	7.5'-9.0'	GRAY SILTY SAND	SM	22.2										
HEN-B004	S-5	10.0'-12.0'	BROWN BLACK AND GRAY SANDY SILT WITH GRAVEL	ML	36.8							32	35	NP	
HEN-B004	S-6	15.0'-16.5'	DARK BROWN SANDY LEAN CLAY	CL	14.9										
HEN-B004	S-7	20.0'-22.0'	VERY DARK GRAY LEAN CLAY - ORGANICS NOTED	CL	29.7							45	23	22	
HEN-B004	S-8	25.0'-26.5'	GRAY LEAN CLAY	CL	32.0										
HEN-B004	S-9	30.0'-32.0'	BROWN AND GRAY LEAN CLAY	CL	33.5							43	22	21	
HEN-B004	S-10	35.0'-36.5'	GRAYISH BROWN LEAN CLAY WITH SAND	CL	19.5										
HEN-B004	S-11	40.0'-41.5'	DARK BROWN LEAN CLAY	CL	10.9										
HEN-B004	S-12	45.0'-46.5'	BROWN CLAYEY SAND WITH SILT AND GRAVEL	SC	7.2										
HEN-B005	S-1	4.0'-6.0'	DARK GRAY TO BROWN CLAYEY SILT WITH SAND	CL-ML	28.5										
HEN-B005	S-2	7.5'-9.5'	BLACK TO VERY DARK GRAY ORGANIC CLAY	OL	59.5										
HEN-B005	S-4	12.5'-14.5'	DARK GRAY LEAN CLAY WITH SAND AND FLY ASH	CL	53.0		0.0	16.2	51.2	32.6	83.8	43	24	19	
HEN-B005	S-5	14.5'-16.0'	DARK GRAY LEAN CLAY WITH GRAVEL	CL	16.3										
HEN-B005	S-3	10.0'-12.5'	GRAY ORGANIC CLAY WITH SAND	OL	41.4										
HEN-B005	S-6	20.0'-21.5'	BROWN AND GRAY CLAYEY GRAVEL WITH SAND	GC	7.8										
HEN-B005	S-7	25.0'-27.0'	BROWN CLAYEY GRAVEL	GC	7.2										

LABORATORY TESTING SUMMARY



PROJECT NAME: Dynergy - Hennepin Site

PROJECT NUMBER: MR155233

CLIENT: AECOM

Boring Number	Sample Number	Depth	Description	USCS	WC %	Qp (tsf)	% Gravel	% Sand	% Silt	% Clay	% Fines	LL	PL	PI	Specific Gravity
HEN-B006	S-1	0.0'-1.5'	FILL: BROWN SILTY SAND WITH GRAVEL	SM	4.4										
HEN-B006	S-2	2.5'-4.0'	BROWN AND LIGHT BROWN POORLY GRADED SAND WITH GRAVEL	SP	6.8										2.665
HEN-B006	S-3	5.0'-6.5'	BROWN SILTY SAND - CLAY LENSES NOTED	SM	5.9										
HEN-B006	S-4	7.5'-9.0'	POSSIBLE FILL: DARK BROWN SANDY LEAN CLAY	CL	7.1										
HEN-B006	S-5	10.0'-11.5'	BROWN SILTY SAND	SM	14.6										
HEN-B006	S-6	15.0'-16.5'	BROWN SILTY SAND	SM	13.8		0.8	62.3	23.1	13.8	36.9				
HEN-B006	S-7	20.0'-21.5'	BROWN GRAVELLY SAND	SP-SM	7.9										
HEN-B006	S-8	25.0'-26.5'	BROWN GRAVELLY SAND	SP-SC	8.2										
HEN-B006	S-9	30.0'-31.5'	LIGHT BROWN SILTY GRAVEL WITH SAND	GM	15.2		42.4	38.3	12.1	7.2	19.3				
HEN-B006	S-10	35.0'-36.5'	BROWN GRAVELLY LEAN CLAY WITH SAND	CL	10.7										
HEN-B006	S-11	40.0'-41.5'	BROWN GRAVELLY SAND	SP	9.1										
HEN-B007	S-1	3.5'-5.0'	FILL: GRAY SILTY SAND - ASPHALT NOTED	SM	31.2										
HEN-B007	S-2	5.0'-5.5'	GRAYISH BROWN TO DARK GRAY SILTY SAND WITH CLAY	SM	36.2										
HEN-B007	S-2A	5.5'-6.5'	GRAY GRAVELLY LEAN CLAY WITH SAND	CL	7.1										
HEN-B007	S-3	7.5'-9.0'	GRAYISH BROWN CLAYEY GRAVEL WITH SAND	GC	6.0										
HEN-B007	S-4	10.0'-11.0'	BROWN POORLY GRADED GRAVEL WITH CLAY	GP-GC	17.6										
HEN-B007	S-4A	11.0'-11.5'	BROWN CLAYEY GRAVEL WITH SAND	GC	9.5										
HEN-B007	S-5	12.5'-14.5'	BROWN CLAYEY SAND WITH SILT	SC	10.2										
HEN-B007	S-6	15.0'-16.5'	BROWN GRAVEL WITH POORLY GRADED SAND AND SILT	GP	11.1		59.2	28.9	7.2	4.7	11.9				
HEN-B007	S-7	20.0'-21.5'	BROWN CLAYEY SAND WITH GRAVEL	SC	11.3										
HEN-B008	S-1	0.0'-1.5'	POSSIBLE FILL: GRAY FLY ASH - WOODCHIPS NOTED		34.5										
HEN-B008	S-2	2.5'-4.0'	GRAY FLY ASH		44.7										
HEN-B008	S-3	5.0'-6.5'	DARK GRAY TO BLACK SANDY SILT	ML	49.0		1.5	41.0	47.9	9.6	57.5				
HEN-B008	S-4	7.5'-9.5'	MULTI STRATA SAMPLE: TOP, FLY ASH - MIDDLE, FLY ASH LEAN CLAY WITH SAND MIX - BOTTOM, BROWN SANDY CLAY		43.4										
HEN-B008	S-5	10.0'-11.5'	BROWN AND DARK BROWN LEAN CLAY	CL	16.2										
HEN-B008	S-6	15.0'-16.5'	BROWN POORLY GRADED SAND WITH GRAVEL	SP	9.8										
HEN-B008	S-7	20.0'-21.5'	BROWN POORLY GRADED GRAVEL WITH SILT AND SAND	GP-GM	7.4		54.4	33.9			11.7				

LABORATORY TESTING SUMMARY



PROJECT NAME: Dynergy - Hennepin Site

PROJECT NUMBER: MR155233

CLIENT: AECOM

Boring Number	Sample Number	Depth	Description	USCS	WC %	Qp (tsf)	% Gravel	% Sand	% Silt	% Clay	% Fines	LL	PL	PI	Specific Gravity
HEN-B009	S-1	0.0'-1.5'	FILL: DARK BROWN SILTY SAND	SM	10.6										
HEN-B009	S-2	2.5'-4.0'	DARK GRAY AND BLACK SILT WITH SAND AND GRAVEL	ML	11.3										
HEN-B009	S-3	5.0'-6.5'	GRAY SILTY SAND	SM	15.5										
HEN-B009	S-4	8.0'-9.0'	DARK BROWN SILT WITH SAND	ML	10.0										2.672
HEN-B009	S-5	10.0'-11.5'	DARK BROWN AND BROWN LEAN CLAY WITH SILT AND SAND	CL	17.7										
HEN-B009	S-6	15.0'-16.5'	BROWN SILTY SAND WITH GRAVEL	SM	7.3										
HEN-B009	S-7	20.0'-21.5'	BROWN CLAYEY SAND WITH GRAVEL	SC	7.7										
HEN-B009	S-8	25.0'-26.5'	BROWN SILTY SAND	SM	20.1		0.4	76.9			22.7				
HEN-B009	S-9	30.0'-31.5'	BROWN POORLY GRADED SAND	SP	20.9										
HEN-B009	S-10A	35.0'-35.5'	BROWN SILTY LEAN CLAY	CL	27.7										
HEN-B009	S-10B	35.5'-36.0'	BROWN SILTY LEAN CLAY	CL	26.4										
HEN-B009	S-10C	36.0'-36.5'	BROWN SILTY LEAN CLAY	CL	25.9										
HEN-B009	S-11	40.0'-41.5'	BROWN SILTY SAND	SM	27.2		0.0	70.3			29.7				
HEN-B009	S-12A	45.0'-45.5'	BROWN SILTY LEAN CLAY	CL	24.4										
HEN-B009	S-12B	45.5'-46.5'	BROWN SILTY SAND	SM	26.4										
HEN-B009	S-13	50.0'-51.5'	BROWN AND DARK BROWN CLAYEY SAND WITH GRAVEL	SC	10.3										
HEN-B010	S-1	0.0'-1.5'	POSSIBLE FILL: BROWN, GRAYISH BROWN AND GRAY SAND WITH GRAVEL	SP-SM	3.6										
HEN-B010	S-2A	2.5'-3.5'	BROWN SANDY CLAY	CL	11.2										
HEN-B010	S-2B	3.5'-4.0'	BROWN, GRAY AND DARK GRAY POORLY GRADED SAND WITH GRAVEL	SP	7.6										
HEN-B010	S-3	5.0'-6.5'	DARK GRAY FLY ASH		26.6										
HEN-B010	S-4	7.5'-9.0'	BROWN AND DARK BROWN SILTY SAND	SM	28.3		1.3	77.9			20.8				2.723
HEN-B010	S-5	10.0'-11.5'	VERY DARK GRAY FLY ASH WITH SAND AND GRAVEL		29.8							29	33	NP	
HEN-B010	S-6	15.0'-16.5'	DARK BROWN LEAN CLAY	CL	19.7										
HEN-B010	S-7	20.0'-21.5'	BROWN TO DARK BROWN POORLY GRADED SAND WITH SILT AND GRAVEL	SP-SM	14.2		24.8	61.0	9.3	4.9	14.2				
HEN-B010	S-8	25.0'-26.5'	BROWN POORLY GRADED SAND	SP	10.4										
HEN-B010	S-9	30.0'-31.5'	BROWN GRAVELLY SAND	SP	9.1										
HEN-B010	S-10	35.0'-36.5'	BROWN POORLY GRADED SAND	SP	20.3										
HEN-B010	S-11	40.0'-41.5'	BROWN SILTY SAND WITH GRAVEL	SM	16.2		8.2	67.9			23.9				
HEN-B011	S-1	0.0'-1.5'	POSSIBLE FILL: DARK BROWN POORLY GRADED SAND - ROOTS NOTED	SP	10.5										
HEN-B011	S-2	2.5'-4.0'	RUST BROWN SANDY LEAN CLAY	CL	12.7							22	15	7	2.693
HEN-B011	S-3	5.0'-6.5'	BROWN POORLY GRADED SAND	SP	15.2										
HEN-B011	S-4	7.5'-9.0'	BROWN AND DARK BROWN POORLY GRADED SAND	SP	19.8										
HEN-B011	S-5	10.0'-11.5'	BROWN POORLY GRADED SAND	SP	13.2										
HEN-B011	S-6	15.0'-16.5'	BROWN SILTY GRAVEL WITH SAND	GM	7.3		47.4	36.6			16.0				
HEN-B011	S-7	20.0'-21.5'	BROWN AND GRAYISH BROWN POORLY GRADED GRAVEL	GP	6.3										

LABORATORY TESTING SUMMARY



PROJECT NAME: Dynergy - Hennepin Site

PROJECT NUMBER: MR155233

CLIENT: AECOM

Boring Number	Sample Number	Depth	Description	USCS	WC %	Qp (tsf)	% Gravel	% Sand	% Silt	% Clay	% Fines	LL	PL	PI	Specific Gravity
HEN-B012	S-1	0.0'-1.5'	DARK BROWN SILTY SAND WITH GRAVEL - CLAY LENSES NOTED	SM	4.5										
HEN-B012	S-2	2.5'-4.0'	LIGHT BROWN AND LIGHT GRAY SILTY GRAVEL WITH SAND	GM	4.9		47.5	33.4	11.1	8.0	19.1				
HEN-B012	S-3	5.0'-6.5'	BROWN SANDY LEAN CLAY WITH GRAVEL	CL	7.7										
HEN-B012	S-4	8.0'-9.0'	BROWN SILTY LEAN CLAY WITH SAND	CL	9.0										
HEN-B012	S-5	10.0'-11.5'	DARK BROWN LEAN CLAY WITH SILT AND SAND - SILT AND SAND SEAM NOTED	CL	14.3							23	14	9	
HEN-B012	S-6	15.0'-16.5'	DARK GRAY SILTY SAND	SM	45.4										
HEN-B012	S-7	20.0'-22.0'	VERY DARK GRAY LEAN CLAY - ORGANICS NOTED	CL	38.1		0.0	2.7	38.5	58.8	97.3				
HEN-B012	S-8	25.0'-26.5'	DARK GRAY LEAN CLAY	CL	22.5										
HEN-B012	S-9	30.0'-32.0'	BROWN AND GRAYISH BROWN LEAN CLAY WITH SAND	CL	26.0							30	15	15	
HEN-B012	S-10	35.0'-36.5'	GRAYISH BROWN LEAN CLAY	CL	26.2										
HEN-B012	S-11	40.0'-41.5'	BROWN SILTY SAND WITH GRAVEL	SM	4.4										
HEN-B012	S-12	45.0'-46.5'	BROWN SILTY SAND WITH GRAVEL	SM	11.3										
HEN-B014	S-1	0.0'-1.5'	FILL: DARK BROWN AND GRAYISH BROWN SILTY SAND WITH GRAVEL	SM	7.0										
HEN-B014	S-2	2.5'-4.0'	FILL: DARK BROWN SILTY SAND WITH GRAVEL - ORGANIC CLAY AND BRICK NOTED	SM	7.0										
HEN-B014	S-3	5.5'-6.5'	GREENISH GRAY CLAYEY SILT WITH SAND	CL-ML	39.2										
HEN-B014	S-4	7.5'-9.0'	DARK GRAY FLY ASH		36.8		1.1	32.1	58.1	8.7	66.8				
HEN-B014	S-5A	10.0'-11.0'	DARK GRAY FLY ASH WITH SAND		34.2										
HEN-B014	S-5B	11.0'-11.5'	DARK GRAY FLY ASH		43.4										
HEN-B014	S-6A	15.0'-16.0'	DARK GRAY FLY ASH		61.1										
HEN-B014	S-6B	16.0'-16.5'	DARK GRAY LEAN CLAY - ORGANICS NOTED	CL	29.8										
HEN-B014	S-7	20.0'-21.5'	GRAYISH BROWN AND DARK GRAY LEAN CLAY - ORGANICS NOTED	CL	33.7										
HEN-B014	S-8	25.0'-27.0'	BROWN AND GRAY LEAN CLAY	CL	32.4							43	20	23	
HEN-B014	S-9	30.0'-31.5'	GRAYISH BROWN AND DARK GRAY LEAN CLAY - ORGANICS NOTED	CL	38.1										
HEN-B014	S-10	35.0'-37.0'	VERY DARK BROWNISH GRAY ORGANIC SILT	OH	63.4							70	38	32	
HEN-B014	S-11	40.0'-41.5'	DARK GRAY PEAT	PT	77.8										
HEN-B014	S-12	45.0'-46.5'	GRAY POORLY GRADED SAND WITH SILT	SP-SM	22.6		4.3	86.4	5.1	4.2	9.3				
HEN-B014	S-13	50.0'-51.5'	GRAY SILTY SAND	SM	13.2										
HEN-B014	S-14	55.0'-56.5'	GRAYISH BROWN SILTY SAND WITH GRAVEL	SM	8.1										
HEN-B014	S-15	60.0'-61.5'	BROWN AND GRAYISH BROWN SILTY SAND WITH CLAY AND GRAVEL	SM	14.4										

LABORATORY TESTING SUMMARY



PROJECT NAME: Dynergy - Hennepin Site

PROJECT NUMBER: MR155233

CLIENT: AECOM

Boring Number	Sample Number	Depth	Description	USCS	WC %	Qp (tsf)	% Gravel	% Sand	% Silt	% Clay	% Fines	LL	PL	PI	Specific Gravity
HEN-B015	S-1	0.5'-1.5'	BROWN AND GRAY SANDY LEAN CLAY	CL	18.4										
HEN-B015	S-2	2.5'-4.0'	DARK GRAY LEAN CLAY	CL	2.9										
HEN-B015	S-3	5.0'-6.5'	BROWN TO GRAY LEAN CLAY	CL	35.7										
HEN-B015	S-4	7.5'-9.5'	BLACK AND DARK GRAY ORGANIC LEAN CLAY WITH SAND AND GRAVEL	OL	131.9							48	25	23	
HEN-B015	S-5	10.0'-11.5'	DARK BROWN TO GRAY LEAN CLAY	CL	32.3										
HEN-B015	S-6	15.0'-16.5'	BROWN AND GRAY LEAN CLAY	CL	32.1										
HEN-B015	S-7	20.0'-21.5'	GRAY LEAN CLAY	CL	41.6										
HEN-B015	S-8	25.0'-27.0'	BLACK ORGANIC SILT WITH SAND	OH	67.8							74	37	37	
HEN-B015	S-9	30.0'-31.5'	GRAY AND DARK GRAY CLAYEY SAND WITH SILT	SC	40.1										
HEN-B015	S-10	35.0'-36.5'	GRAY POORLY GRADED SAND WITH SILT	SP-SM	24.5										
HEN-B015	S-11	40.0'-41.5'	BROWN CLAYEY SAND WITH GRAVEL	SC	8.7										
HEN-B015	S-12	45.0'-46.5'	GRAY AND BROWN POORLY GRADED GRAVEL WITH SILT AND SAND	GP-GM	10.9		49.3	40.5	7.1	3.1	10.2				
HEN-B016	S-1	0.0'-1.5'	POSSIBLE FILL: DARK BROWN SANDY LEAN CLAY - GRAVEL AND BRICK NOTED	CL	7.1										
HEN-B016	S-2	2.5'-4.5'	BROWN SANDY LEAN CLAY	CL	6.3										
HEN-B016	S-3	5.0'-6.5'	DARK BROWN AND BROWN SILTY SAND WITH GRAVEL		10.1		31.5	45.2	13.0	10.3	23.3				
HEN-B016	S-4	7.5'-9.0'	BROWN SANDY LEAN CLAY WITH GRAVEL	CL	7.3										
HEN-B016	S-5	10.0'-11.5'	DARK GRAY FLY ASH WITH SAND		29.8										
HEN-B016	S-6	15.0'-16.5'	DARK GRAY LEAN CLAY - ORGANICS NOTED	CL	31.8										
HEN-B016	S-7	20.0'-22.0'	VERY DARK GRAY CLAY WITH SAND AND GRAVEL - ORGANICS AND ASH NOTED	CL	35.2							38	21	17	
HEN-B016	S-8	25.0'-26.5'	GRAY LEAN CLAY	CL	32.7										
HEN-B016	S-9	30.0'-31.5'	GRAYISH BROWN LEAN CLAY	CL	32.9										
HEN-B016	S-10	35.0'-37.0'	DARK GRAY LEAN CLAY WITH SAND - FLY ASH AND ORGANICS NOTED	CL	22.3							41	23	18	
HEN-B016	S-11	40.0'-41.5'	DARK GRAY ORGANIC CLAY	OL	48.8										
HEN-B016	S-12	45.0'-46.5'	GRAY LEAN CLAY	CL	42.3										
HEN-B016	S-13	51.0'-51.5'	GRAY POORLY GRADED SAND	SP	26.4										
HEN-B016	S-14	55.0'-56.5'	GRAY TO BROWN POORLY GRADED SAND	SP	18.7										
HEN-B016	S-15	60.0'-61.5'	DARK GRAY LEAN CLAY WITH SILT	CL	51.9							55	34	21	
HEN-B016	S-16	65.0'-66.5'	BROWN LEAN CLAY	CL	38.9										
HEN-B016	S-17	70.0'-71.5'	BROWNISH GRAY GRAVEL WITH SILT AND SAND	GP-GM	10.4		52.4	35.5	9.0	3.1	12.1				
HEN-B016	S-18	75.0'-76.5'	GRAYISH BROWN GRAVELLY SAND	SP	6.5										

LABORATORY TESTING SUMMARY



PROJECT NAME: Dynergy - Hennepin Site

PROJECT NUMBER: MR155233

CLIENT: AECOM

Boring Number	Sample Number	Depth	Description	USCS	WC %	Qp (tsf)	% Gravel	% Sand	% Silt	% Clay	% Fines	LL	PL	PI	Specific Gravity
HEN-B017	S-1	0.0'-1.5'	FILL: SILTY LEAN CLAY WITH SAND	CL	20.6										
HEN-B017	S-2	2.5'-4.0'	DARK BROWN SILTY SAND WITH CLAY	SM	24.1										
HEN-B017	S-3	5.0'-7.0'	VERY DARK GRAY LEAN CLAY WITH SAND	CL	36.7							39	21	18	
HEN-B017	S-4	7.5'-9.0'	GRAY TO BROWN ORGANIC CLAY	OL	35.4										
HEN-B017	S-5	10.0'-11.5'	GRAYISH BROWN LEAN CLAY - ORGANICS NOTED	CL	31.4										
HEN-B017	S-6	15.0'-17.0'	BROWN AND GRAY LEAN CLAY	CL	34.1							45	24	21	
HEN-B017	S-7	20.0'-21.5'	BROWN LEAN CLAY - ORGANICS NOTED	CL	34.8										
HEN-B017	S-8	25.0'-26.5'	BROWN AND GRAY LEAN CLAY	CL	31.7										
HEN-B017	S-9	30.0'-32.0'	DARK BROWNISH GRAY ORGANIC CLAY WITH SAND - SAND SEAMS AND SHELL NOTED	OL	50.0							60	35	25	
HEN-B017	S-10	35.0'-36.5'	GRAY LEAN CLAY	CL	41.8										
HEN-B017	S-11	40.5'-41.5'	GRAY CLAYEY SAND WITH SILT	SC	24.0										
HEN-B017	S-12	45.0'-46.5'	DARK GRAY SAND WITH SILT	SM	19.2		0.0	91.9	4.1	4.0	8.1				
HEN-B017	S-13	50.0'-51.5'	GRAY LEAN CLAY - ORGANICS NOTED	CL	46.8										
HEN-B017	S-14	55.0'-56.5'	GRAYISH BROWN LEAN CLAY - ORGANICS NOTED	CL	40.9										
HEN-B017	S-15	60.0'-61.5'	GRAY SILTY SAND WITH GRAVEL	SM	9.7										
HEN-B017	S-16	65.0'-66.5'	BROWN SILTY SAND WITH GRAVEL	SM	7.2										
HEN-B018	S-1	0.0'-1.5'	FILL: BROWN SILTY SAND WITH GRAVEL	SM	6.7										
HEN-B018	S-2A	2.5'-3.5'	BROWN SANDY LEAN CLAY	CL	10.2										
HEN-B018	S-2B	3.5'-4.0'	BROWN SILTY LEAN CLAY WITH GRAVEL	CL	9.7										
HEN-B018	S-3	5.0'-6.5'	BROWN, TAN AND GRAY SILT WITH CLAY AND GRAVEL	ML	9.3										2.7
HEN-B018	S-4	7.5'-9.0'	DARK GRAY FLY ASH WITH SAND		62.5										
HEN-B018	S-5	10.0'-12.0'	GRAY TO VERY DARK GRAY FLY ASH WITH SAND AND GRAVEL		44.3										
HEN-B018	S-6	15.0'-16.5'	DARK GRAY ORGANIC CLAY	CL	41.1										
HEN-B018	S-7	20.0'-21.5'	GRAYISH BROWN LEAN CLAY	CL	30.0										
HEN-B018	S-8	25.0'-27.0'	DARK BROWNISH GRAY LEAN CLAY	CL	31.8							43	22	21	
HEN-B018	S-9	30.0'-31.5'	GRAYISH BROWN LEAN CLAY	CL	33.0										
HEN-B018	S-10	35.0'-36.5'	DARK BROWN ORGANIC CLAY	OL	58.1										
HEN-B018	S-11	40.0'-42.0'	DARK BROWN AND GRAY ORGANIC CLAY WITH SAND - SAND SEAMS AND SHELL NOTED	OL	40.5							27	20	7	
HEN-B018	S-12	45.0'-46.5'	DARK GRAY LEAN CLAY	CL	37.6										
HEN-B018	S-13	50.0'-51.5'	GRAY POORLY GRADED SAND	SP	21.5										
HEN-B018	S-14	55.0'-56.5'	GRAY AND BROWN SILTY SAND	SM	16.8		0.0	79.1			20.9				
HEN-B018	S-15	60.0'-61.5'	GRAYISH BROWN AND DARK GRAY LEAN CLAY - ORGANICS NOTED	CL	49.2										
HEN-B018	S-16	65.0'-66.5'	BROWN AND GRAY SILTY SAND WITH GRAVEL	SM	10.5										
HEN-B018	S-17	70.0'-71.5'	GRAY SILTY SAND WITH GRAVEL	SM	10.6										

LABORATORY TESTING SUMMARY



PROJECT NAME: Dynergy - Hennepin Site

PROJECT NUMBER: MR155233

CLIENT: AECOM

Boring Number	Sample Number	Depth	Description	USCS	WC %	Qp (tsf)	% Gravel	% Sand	% Silt	% Clay	% Fines	LL	PL	PI	Specific Gravity
HEN-B019	S-1	4.0'-4.3'	GRAYISH BROWN GRAVELLY SAND	SP	9.9										
HEN-B019	S-1A	4.3'-5.8'	BROWN AND GRAY LEAN CLAY	CL	34.8										
HEN-B019	S-2	7.5'-9.5'	DARK BROWN LEAN CLAY WITH SAND	CL	33.0							41	22	19	
HEN-B019	S-3	10.0'-11.5'	BROWN LEAN CLAY	CL	35.5										
HEN-B019	S-4	12.5'-14.5'	GRAY AND BROWN LEAN CLAY	CL	34.5							45	24	21	
HEN-B019	S-5	14.5'-16.0'	BROWN TO GRAY LEAN CLAY	CL	31.1										
HEN-B019	S-6	20.0'-22.0'	BROWN AND GRAY LEAN CLAY	CL	33.9							38	22	16	
HEN-B019	S-7	25.0'-27.0'	VERY DARK GRAY ORGANIC SILT WITH SAND - SHELL NOTED	ML	44.5							34	26	8	
HEN-B019	S-8	30.0'-31.5'	DARK GRAY SANDY LEAN CLAY	CL	30.9										
HEN-B019	S-9	35.0'-36.0'	GRAY SANDY LEAN CLAY	CL	39.1										
HEN-B019	S-9A	36.0'-36.5'	GRAY CLAYEY SAND	SC	22.5										
HEN-B019	S-10	40.0'-41.5'	BROWN AND GRAY SILTY SAND	SM	20.2		0.5	76.1			23.4				
HEN-B019	S-11	45.0'-46.5'	BROWN TO GRAY LEAN CLAY	CL	42.6										
HEN-B019	S-12	50.0'-51.5'	GRAY LEAN CLAY WITH SILT	CL	43.7							46	29	17	
HEN-B019	S-13	54.0'-55.5'	GRAYISH BROWN GRAVELLY SAND	SP	12.6										
HEN-B020	S-1	0.0'-1.5'	BROWN AND DARK BROWN LEAN CLAY WITH SILT AND GRAVEL	CL	4.9							25	17	8	
HEN-B020	S-2	2.5'-4.0'	BROWN GRAVELLY SAND - CLAY LENSES NOTED	SP	5.5										
HEN-B020	S-3	5.0'-6.5'	BROWN SILT WITH CLAY, SAND AND GRAVEL	ML	12.6										2.672
HEN-B020	S-4	7.5'-9.0'	BROWN SANDY LEAN CLAY	CL	11.4										
HEN-B020	S-5	9.5'-11.5'	BROWN SANDY LEAN CLAY WITH GRAVEL	CL	14.2							30	17	13	
HEN-B020	S-6	15.0'-16.5'	BROWN GRAVEL	GP											
HEN-B020	S-7	20.0'-21.4'	BROWN AND REDDISH BROWN SILTY SAND WITH GRAVEL	SM	8.5		33.5	48.9	10.6	7.0	17.6				
HEN-B020	S-8	25.0'-26.5'	BROWN CLAYEY SAND WITH GRAVEL	SC	9.1										
HEN-B020	S-9	30.0'-31.5'	BROWN AND LIGHT BROWN GRAVELLY SAND	SP	9.3										
HEN-B020	S-10	35.0'-36.5'	BROWN CLAYEY SAND WITH GRAVEL	SC	10.8										
HEN-B020	S-11	40.0'-41.5'	BROWN CLAYEY SAND WITH GRAVEL	SC	8.3										



LABORATORY TESTING SUMMARY



PROJECT NAME: Dynergy - Hennepin Site

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Boring Number	Sample Number	Depth	Description	USCS	WC %	Qp (tsf)	% Gravel	% Sand	% Silt	% Clay	% Fines	LL	PL	PI	Specific Gravity
HEN-B021	S-1	0.0'-0.5'	FILL: BROWN AND DARK BROWN SANDY LEAN CLAY WITH ROOT HAIRS	CL	7.3										
HEN-B021	S-2	2.5'-4.0'	BROWN SANDY LEAN CLAY	CL	16.5										
HEN-B021	S-3	5.0'-6.0'	BROWN LEAN CLAY WITH SAND AND GRAVEL	CL	15.7										
HEN-B021	S-4A	7.5'-8.3'	BROWN LEAN CLAY	CL	13.1										
HEN-B021	S-4B	8.3'-8.5'	BROWN SILTY SAND WITH GRAVEL	SM	2.9										
HEN-B021	S-5	10.0'-11.5'	BROWN CLAYEY SAND WITH GRAVEL	SC	9.0										
HEN-B021	S-6	15.0'-16.5'	BROWN LEAN CLAY WITH SAND - ROOTS NOTED	CL	16.7							22	14	8	
HEN-B021	S-7	20.0'-21.5'	DARK GRAY FLY ASH		34.9										
HEN-B021	S-8	22.0'-24.0'	DARK GRAY VARVED FLY ASH		31.9		1.7	20.0	60.8	17.5	78.3				
HEN-B021	S-9	25.0'-26.5'	GRAY AND DARK GRAY FLY ASH		41.6										
HEN-B021	S-10	30.0'-31.5'	GRAY FLY ASH		48.8										
HEN-B021	S-11	35.0'-36.5'	DARK GRAY AND BLACK SILTY SAND WITH CLAY	SM	20.3		0.9	44.3	31.6	23.2	54.8				
HEN-B021	S-12	40.0'-41.5'	BROWN CLAYEY SAND	SC	17.1										
HEN-B022	S-1	0.0'-1.5'	GRAY FLY ASH		37.4										
HEN-B022	S-2	2.5'-4.5'	VERY DARK GRAY VARVED FLY ASH		26.8							36	42	NP	
HEN-B022	S-3A	5.0'-6.3'	GRAY FLY ASH		37.0										
HEN-B022	S-3B	6.3'-6.5'	GRAY FLY ASH		21.8										
HEN-B022	S-4	7.5'-9.0'	VERY DARK GRAY VARVED FLY ASH WITH SAND - SAND SEAMS NOTED		34.2		1.4	26.4	57.3	14.9	72.2				
HEN-B022	S-5	10.0'-11.5'	GRAY SILTY SAND	SM	31.5										
HEN-B022	S-6	15.0'-16.5'	FILL: BLACK POORLY GRADED SAND - CINDERS NOTED	SP-SM	7.2										
HEN-B022	S-7	20.0'-21.5'	REDDISH BROWN SANDY LEAN CLAY	CL	18.3							26	16	10	

LABORATORY TESTING SUMMARY



PROJECT NAME: Dynergy - Hennepin Site

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CLIENT: AECOM

Boring Number	Sample Number	Depth	Description	USCS	WC %	Qp (tsf)	% Gravel	% Sand	% Silt	% Clay	% Fines	LL	PL	PI	Specific Gravity
HEN-B023	S-1	0.0'-1.5'	FILL: BROWN AND DARK BROWN SILTY SAND WITH GRAVEL	SM	5.3										
HEN-B023	S-2	2.5'-4.0'	BROWN AND TAN SILTY SAND WITH GRAVEL	SM	6.5		31.7	44.3	12.2	11.8	24.0				
HEN-B023	S-3	5.0'-6.5'	FILL: BROWN AND DARK BROWN SILT WITH CLAY, SAND AND GRAVEL	ML	8.3										2.701
HEN-B023	S-5A	10.0'-11.0'	BROWN AND GRAY SILTY LEAN CLAY WITH SAND	CL	15.9										
HEN-B023	S-5B	11.0'-11.5'	POSSIBLE FILL: BROWN TO DARK BROWN LEAN CLAY	CL	21.6										
HEN-B023	S-6	15.0'-16.5'	BROWN SILTY SAND WITH GRAVEL - SILT POCKETS NOTED	SM	3.3										
HEN-B023	S-7	20.0'-21.5'	DARK GRAY AND BLACK SILTY SAND AND FLY ASH - CINDERS NOTED	SM	25.5		7.2	44.9	39.9	8.0	47.9				
HEN-B023	S-8	25.0'-26.5'	GRAY FLY ASH		38.9										
HEN-B023	S-9	27.0'-29.0'	VERY DARK GRAY FLY ASH WITH SAND AND GRAVEL		27.1										
HEN-B023	S-10	30.0'-31.5'	DARK GRAY FLY ASH		35.6										
HEN-B023	S-11	35.0'-36.5'	DARK GRAY FLY ASH WITH SAND AND CINDERS		18.6		23.3	51.4	20.6	4.7	25.3				
HEN-B023	S-12	40.0'-41.5'	DARK GRAY SILTY SAND	SM	14.4										
HEN-B023	S-13	45.0'-46.5'	BROWN AND GRAY LEAN CLAY	CL	19.8										
HEN-B023	S-14	50.0'-51.0'	LIGHT BROWN POORLY GRADED GRAVEL WITH SAND AND SILT	GP-GM	10.2		48.7	38.5	7.8	5.0	12.8				
HEN-B023	S-15	55.0'-56.5'	BROWN POORLY GRADED SAND WITH SILT AND GRAVEL	SP-SM	15.2										
HEN-B023	S-16	60.0'-61.5'	BROWN POORLY GRADED SAND WITH SILT AND GRAVEL	SP-SM	9.7										
HEN-B023	S-17	65.0'-66.5'	BROWN SILTY SAND	SM	15.1										
HEN-B023	S-18	70.0'-71.5'	BROWN SILTY SAND WITH CLAY	SM	19.3										
HEN-B023	S-19	75.0'-76.5'	BROWN SILTY SAND WITH GRAVEL	SM	9.6										
HEN-B023	S-4	7.5'-9.0'	BROWN POORLY GRADED GRAVEL WITH SAND AND CLAY	GP-GC	8.0										

LABORATORY TESTING SUMMARY



PROJECT NAME: Dynergy - Hennepin Site

PROJECT NUMBER: MR155233

CLIENT: AECOM

Boring Number	Sample Number	Depth	Description	USCS	WC %	Qp (tsf)	% Gravel	% Sand	% Silt	% Clay	% Fines	LL	PL	PI	Specific Gravity
HEN-B024	S-1	0.0'-1.5'	FILL: GRAYISH BROWN SILTY SAND WITH GRAVEL - ASPHALT AND CONCRETE NOTED	SM	6.2										
HEN-B024	S-2	2.5'-4.0'	BROWN AND GRAY SAND WITH SILT, CLAY AND GRAVEL	SM	6.7										2.756
HEN-B024	S-3A	5.0'-5.8'	BROWN SILTY SAND WITH CLAY	SM	9.9										
HEN-B024	S-3B	5.8'-6.5'	BROWN LEAN CLAY WITH SAND AND GRAVEL	CL	8.5										
HEN-B024	S-4	7.0'-8.5'	DARK BROWN SANDY LEAN CLAY	CL	11.3										
HEN-B024	S-4	7.5'-9.0'	BROWN SILTY SAND WITH GRAVEL	SM	7.5										
HEN-B024	S-5	10.0'-11.5'	BROWN LEAN CLAY WITH GRAVEL	CL	10.0										
HEN-B024	S-6	15.0'-16.5'	BLACK FLY ASH WITH CINCERS AND SAND		16.4		14.8	62.8	19.4	3.0	22.4				
HEN-B024	S-7	20.0'-20.3'	DARK GRAY CLAYEY SAND	SC	16.3										
HEN-B024	S-8	25.0'-26.5'	BROWN CLAYEY SILT	CL-ML	47.3										
HEN-B024	S-9	26.5'-28.5'	DARK GRAY ORGANIC CLAY WITH SAND	OH	48.2							58	23	35	
HEN-B024	S-10	30.0'-31.5'	GRAY LEAN CLAY	CL	53.6										
HEN-B024	S-11	35.0'-36.5'	GRAY FLY ASH		47.4										
HEN-B024	S-12	40.0'-41.5'	BROWN AND GRAY CLAYEY SAND WITH GRAVEL	SC	13.0										
HEN-B024	S-13	45.0'-46.5'	BROWN AND DARK BROWN SILTY GRAVEL WITH SAND	GM	11.0		48.6	34.4	11.1	5.9	17.0				
HEN-B024	S-14	50.0-51.5	BROWN AND DARK BROWN LEAN CLAY WITH SAND AND GRAVEL	CL	11.2										
HEN-B024	S-16	60.0'-61.5'	BROWN POORLY GRADED SAND	SP	15.7										
HEN-B024	S-17	62.5'-62.7'	BROWN AND GRAY GRAVELLY SAND	SP	2.9										
HEN-B025	S-1	0.0'-1.5'	FILL: BROWN POORLY GRADED SAND WITH SILT AND GRAVEL	SP	6.2										
HEN-B025	S-2	2.5'-4.0'	BROWN LEAN CLAY WITH SILT AND SAND	CL	10.1										2.708
HEN-B025	S-3	5.0'-6.5'	BROWN AND GRAY SILTY GRAVEL WITH SAND	GM	4.3		37.3	35.4	18.6	8.7	27.3				
HEN-B025	S-4	7.5'-9.0'	GRAY FLY ASH		22.6										
HEN-B025	S-5	10.0'-11.5'	GRAY LEAN CLAYEY SILT WITH SAND AND GRAVEL	CL-ML	31.1										
HEN-B025	S-6	11.5'-14.0'	VERY DARK GRAY FLY ASH WITH SAND		31.9		16.8	10.7	52.3	20.2	72.5	38	38	NP	
HEN-B025	S-7	15.0'-16.5'	GRAY FLY ASH		31.1										
HEN-B025	S-8	20.0'-21.5'	GRAY SILTY LEAN CLAY WITH SAND	CL	46.7										
HEN-B025	S-9	25.0'-27.0'	VERY DARK GRAY TO GRAY FLY ASH WITH SAND		36.1							32	34	NP	
HEN-B025	S-10	27.0'-28.5'	GRAY CLAYEY SILT	CL-ML	38.9										
HEN-B025	S-11	30.0'-31.5'	GRAY CLAYEY SILT	CL-ML	44.8										
HEN-B025	S-12	35.0'-36.5'	GRAY FLY ASH - CLAY LENSES NOTED		38.3										
HEN-B025	S-13	40.0'-41.5'	GRAY FLY ASH WITH CLAY		42.9										
HEN-B025	S-14	45.0'-46.5'	GRAY FLY ASH		58.6										
HEN-B025	S-15	50.0'-51.5'	GRAY FLY ASH		66.7										
HEN-B025	S-16	55.0'-56.5'	GRAY SANDY LEAN CLAY	CL	19.1										

LABORATORY TESTING SUMMARY



PROJECT NAME: Dynergy - Hennepin Site

PROJECT NUMBER: MR155233

CLIENT: AECOM

Boring Number	Sample Number	Depth	Description	USCS	WC %	Qp (tsf)	% Gravel	% Sand	% Silt	% Clay	% Fines	LL	PL	PI	Specific Gravity
HEN-B026	S-1	4.0'-4.5'	GRAY POORLY GRADED SAND	SP	13.7										
HEN-B026	S-1A	4.5'-5.5'	GRAY AND GRAYISH BROWN SANDY LEAN CLAY	CL	15.5										
HEN-B026	S-2	7.5'-9.0'	GRAYISH BROWN LEAN CLAY WITH GRAVEL	CL	24.0										
HEN-B026A	S-1	10.0'-11.5'	BROWN TO GRAY SANDY LEAN CLAY WITH GRAVEL	CL	11.1										
HEN-B026A	S-2	13.5'-15.0'	BROWN SILTY SAND WITH GRAVEL	SM	19.2		32.6	33.8	18.4	15.2	33.6				
HEN-B026A	S-3	16.5'-18.5'	BROWN SANDY LEAN CLAY WITH GRAVEL	CL	11.9										
HEN-B026A	S-4	20.0'-21.5'	BROWN CLAYEY GRAVEL WITH SAND	GC	10.6										
HEN-B026A	S-5	25.0'-26.5'	BROWN SANDY GRAVEL WITH SILT	GP-GM	17.2										
HEN-B027	S-1	7.0'-7.5'	BROWN SANDY GRAVEL WITH SILT	GP-GM	15.7										
HEN-B027	S-1A	7.5'-9.0'	DARK GRAY LEAN CLAY - ORGANICS NOTED	CL	41.5										
HEN-B027	S-2	10.0'-12.0'	GRAY LEAN CLAY WITH SAND AND GRAVEL	CL	36.3										
HEN-B027	S-3	12.0'-13.5'	GRAYISH BROWN LEAN CLAY WITH SAND AND GRAVEL	CL	16.3										
HEN-B027	S-4	15.0'-16.5'	BROWN LEAN CLAY WITH GRAVEL	CL	26.4										
HEN-B027	S-5	20.0'-21.5'	BROWN LEAN CLAY WITH GRAVEL	CL	13.2										
HEN-B027	S-6	25.0'-26.5'	BROWN TO GREENISH GRAY SILTY LEAN CLAY WITH SAND	CL	9.7										
HEN-B027	S-7	30.0'-31.5'	BROWN SANDY GRAVEL WITH SILT	GP-GM	11.2										
HEN-B029	S-1	0.0'-1.5'	BROWN POORLY GRADED SAND	SP	4.7										
HEN-B029	S-2	2.5'-4.0'	DARK BROWN SANDY LEAN CLAY	CL	14.7										
HEN-B029	S-3	5.0'-7.0'	BROWN LEAN CLAY WITH SAND AND GRAVEL	CL	10.8							22	15	7	
HEN-B029	S-4	7.0'-8.5'	DARK BROWN LEAN CLAY	CL	14.8										
HEN-B029	S-5	10.0'-12.0'	VERY DARK BROWN AND GRAY SLIGHTLY ORGANIC LEAN CLAY WITH SAND AND GRAVEL	CL	16.7							31	17	14	
HEN-B029	S-6	15.0'-16.5'	POSSIBLE FILL: BROWN TO DARK BROWN LEAN CLAY	CL	21.7										
HEN-B029	S-7	20.0'-21.5'	BROWN TO GRAY SILTY LEAN CLAY	CL	11.5										
HEN-B029	S-8	25.0'-26.5'	BROWN SILTY LEAN CLAY WITH SAND	CL	8.8										
HEN-B029	S-9	30.0'-30.9'	BROWN SILTY LEAN CLAY WITH SAND	CL	12.7										
HEN-B029	S-10	35.0'-36.5'	LIGHT BROWN POORLY GRADED GRAVEL WITH SAND AND CLAY	GP-GC	13.8		61.0	26.0			13.0				
HEN-B029	S-11	40.0'-41.5'	BROWN SILTY SAND WITH CLAY	SM	4.6										

LABORATORY TESTING SUMMARY



PROJECT NAME: Dynergy - Hennepin Site

PROJECT NUMBER: MR155233

CLIENT: AECOM

Boring Number	Sample Number	Depth	Description	USCS	WC %	Qp (tsf)	% Gravel	% Sand	% Silt	% Clay	% Fines	LL	PL	PI	Specific Gravity
HEN-B030	S-1A	0.0'-1.5'	FILL: DARK BROWN AND BROWN SANDY LEAN CLAY WITH GRAVEL	CL	7.0										
HEN-B030	S-2	2.5'-4.0'	BROWN AND LIGHT BROWN SILTY SAND WITH GRAVEL	SM	6.4		34.0	45.7	11.0	9.3	20.3				
HEN-B030	S-3	5.0'-6.5'	FILL: BROWN AND GRAY LEAN CLAY WITH SILT, SAND AND GRAVEL	CL	11.5										2.746
HEN-B030	S-4	7.5'-9.0'	BROWN LEAN CLAY	CL	17.1										
HEN-B030	S-5	10.0'-11.0'	DARK BROWNISH GRAY FLY ASH AND LEAN CLAY MIXTURE WITH SAND		18.1										
HEN-B030	S-6	15.0'-16.5'	LIGHT BROWN AND TAN WELL GRADED GRAVEL WITH SAND	GW	17.6		81.4	14.8			3.8				
HEN-B030	S-7	21.5'	DARK BROWN AND BLACK ORGANIC CLAY WITH GRAVEL - WOOD NOTED	OL	23.9										
HEN-B030	S-8	25.0'-26.5'	BROWN SILTY SAND WITH GRAVEL	SM	11.2										
HEN-B030	S-10	35.0'-36.5'	BROWN CLAYEY SAND WITH GRAVEL	SC	8.9										
HEN-B030	S-11	40.0'-41.5'	BROWN CLAYEY SAND	SC	9.0										
HEN-B032	S-1A	0.0'-1.0'	BROWN AND GRAYISH BROWN CLAYEY SAND	SC	2.7										
HEN-B032	S-1B	1.0'-1.5'	FILL: BROWN SANDY LEAN CLAY	CL	7.9										
HEN-B032	S-2	2.5'-4.0'	FILL: DARK BROWN SANDY LEAN CLAY	SC	9.7										
HEN-B032	S-3	5.0'-7.0'	DARK BROWNISH GRAY LEAN CLAY WITH SAND AND GRAVEL	CL	14.0							35	18	17	
HEN-B032	S-4	7.5'-9.0'	DARK BROWN LEAN CLAY	CL	16.7										
HEN-B032	S-5	10.0'-11.5'	DARK BROWN AND DARK GRAY LEAN CLAY WITH GRAVEL	CL	16.2										
HEN-B032	S-6	15.0'-16.5'	BROWN AND GRAYISH BROWN SILTY SAND WITH GRAVEL	SM	8.2										
HEN-B032	S-7	20.0'-21.5'	BROWN SILTY SAND WITH GRAVEL	SM	11.1		30.5	43.6	13.4	12.5	25.9				
HEN-B032	S-8	25.0'-26.5'	BROWN SILTY SAND WITH GRAVEL AND CLAY	SM	9.1										
HEN-B032	S-9	30.0'-31.5'	BROWN LEAN CLAY WITH SAND AND GRAVEL	CL	10.6										
HEN-B032	S-10	35.0'-36.5'	BROWN SILTY SAND WITH GRAVEL	SM	5.5										
HEN-B032	S-11	40.0'-41.3'	BROWN AND GRAYISH BROWN SILTY LEAN CLAY WITH SAND AND GRAVEL	CL	10.9										
HEN-B034	S-1A	0.0'-0.5'	BROWN SILTY SAND WITH GRAVEL	SM	4.2										
HEN-B034	S-1B	0.5'-1.5'	POSSIBLE FILL: DARK BROWN LEAN CLAY	CL	9.1										
HEN-B034	S-2	2.5'-4.0'	DARK BROWN LEAN CLAY WITH SILT AND SAND	CL	14.2										2.704
HEN-B034	S-3A	5.0'-5.5'	BROWN SILTY SAND	SM	15.9										
HEN-B034	S-3B	5.5'-6.5'	BROWN GRAVELLY SAND	SP	1.4										
HEN-B034	S-4	7.5'-9.0'	BROWN AND GRAYISH BROWN SILTY SAND WITH GRAVEL	SM	2.5										
HEN-B034	S-5	10.0'-11.5'	BROWN AND LIGHT BROWN POORLY GRADED GRAVEL WITH SILT AND	GP-GM	11.2		60.1	27.0	7.7	5.2	12.9				
HEN-B034	S-6	15.0'-16.5'	BROWN AND LIGHT BROWN POORLY GRADED GRAVEL WITH CLAY AND	GP-GC	9.1										2.808
HEN-B034	S-7	20.0'-21.5'	LIGHT BROWN SILTY SAND WITH GRAVEL	SM	12.5										
HEN-B034	S-9	30.0'-31.5'	BROWN, GRAY AND PINKISH BROWN POORLY GRADED GRAVEL	GP	13.6										
HEN-B034	S-10	35.0'-36.5'	LIGHT BROWN AND TAN POORLY GRADED GRAVEL WITH SAND AND SILT	GP-GM	10.9		82.8	11.3			5.9				
HEN-B034	S-11	40.0'-41.5'	BROWN POORLY GRADED GRAVEL WITH SILT AND SAND	GP-GM	1.5										

LABORATORY TESTING SUMMARY



PROJECT NAME: Dynergy - Hennepin Site

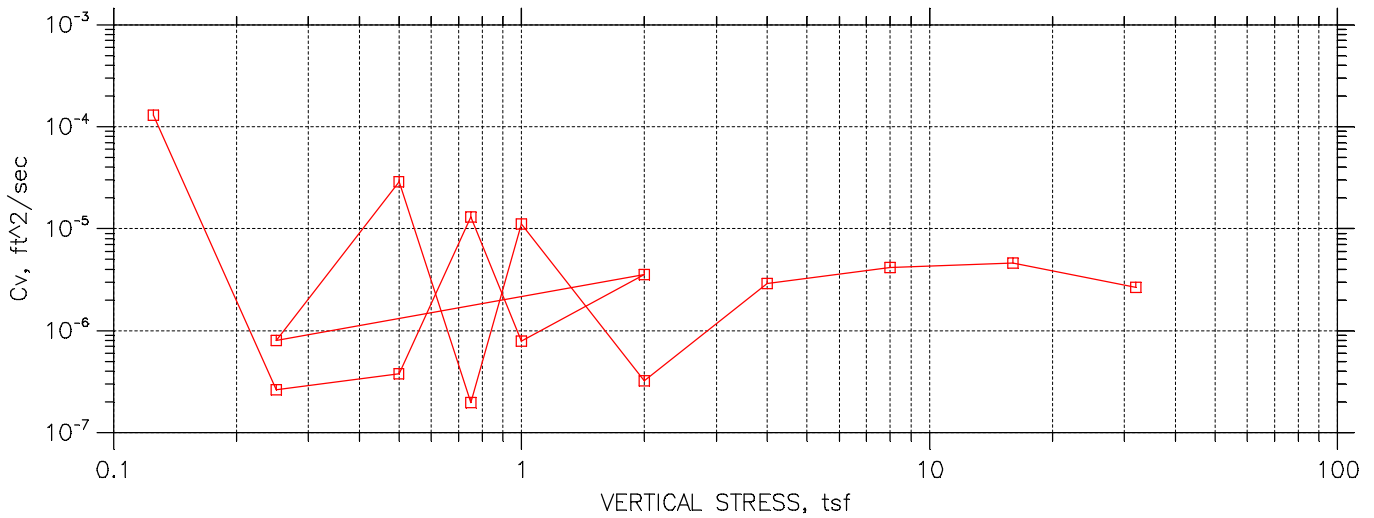
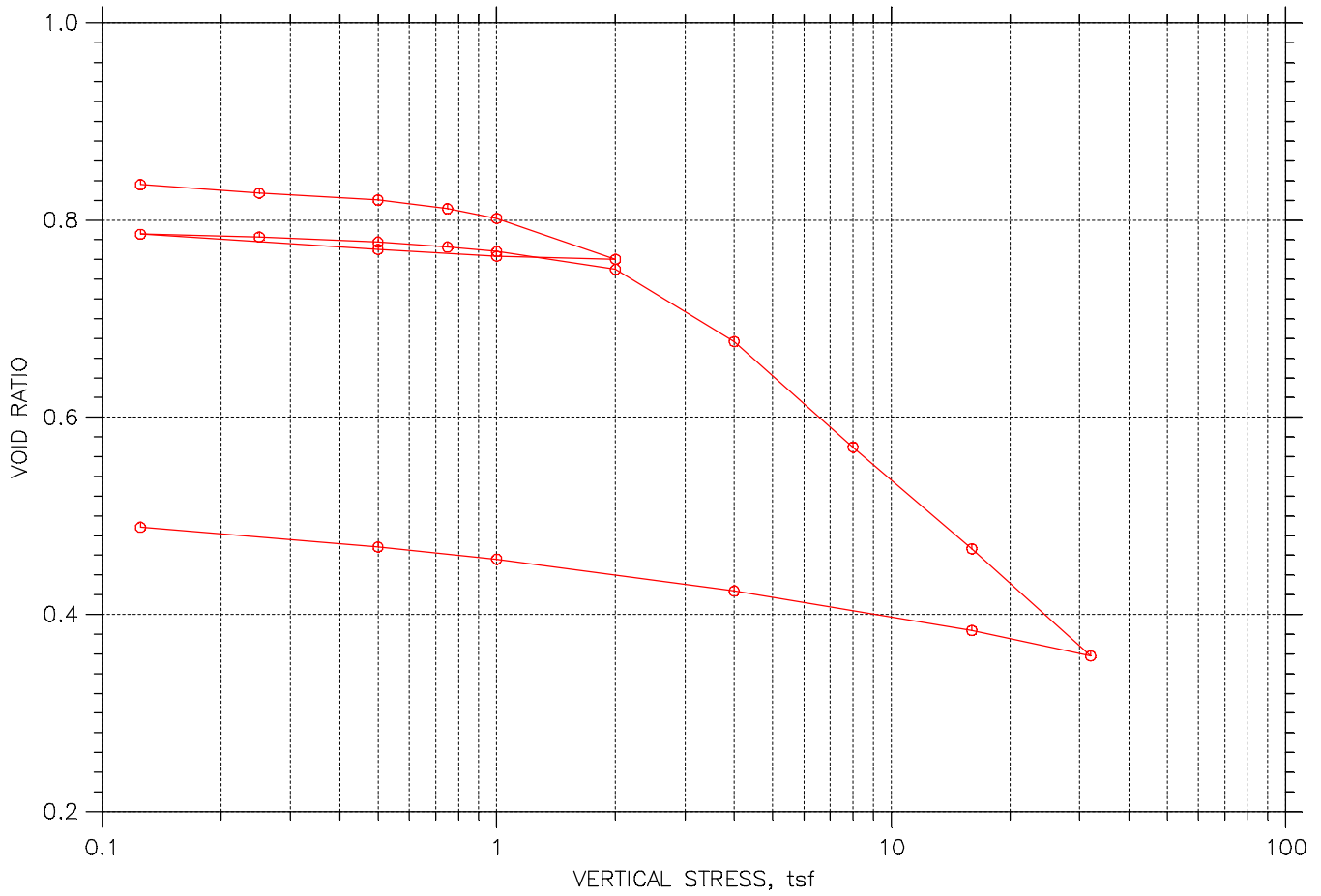
PROJECT NUMBER: MR155233


CLIENT: AECOM

Boring Number	Sample Number	Depth	Description	USCS	WC %	Qp (tsf)	% Gravel	% Sand	% Silt	% Clay	% Fines	LL	PL	PI	Specific Gravity
HEN-B037	S-1	0.0'-1.5'	DARK BROWN POORLY GRADED SAND	SP	3.2										
HEN-B037	S-2	2.5'-4.0'	BROWN POORLY GRADED SAND WITH SILT AND GRAVEL	SP-SM	4.6										2.685
HEN-B037	S-3	5.0'-6.5'	BROWN AND DARK BROWN SILTY SAND WITH GRAVEL	SM	4.0		41.3	51.0			7.7				
HEN-B037	S-4A	7.5'-8.0'	DARK BROWN CLAYEY SAND	SC	4.8										
HEN-B037	S-4B	8.0'-9.0'	DARK BROWN LEAN CLAY	CL	15.4										
HEN-B037	S-5	10.0'-11.5'	BROWN SILTY SAND WITH GRAVEL - CLAY LENSES NOTED	SM	9.3										
HEN-B037	S-6	15.0'-16.5'	BROWN AND LIGHT BROWN CLAYEY GRAVEL WIRTH SAND	GC	9.6		34.1	26.5	16.2	23.2	39.4				
HEN-B037	S-7	20.0'-21.5'	BROWN AND GRAYISH BROWN SILTY LEAN CLAY WITH SAND	CL	9.5										
HEN-B037	S-8	25.0'-26.5'	BROWN SILTY SAND WITH GRAVEL	SM	12.1										
HEN-B037	S-9A	30.0'-30.5'	LIGHT BROWN SILTY SAND WITH GRAVEL	SM	14.1										
HEN-B037	S-9B	30.5'-31.5'	BROWN SILTY LEAN CLAY	CL	20.5										
HEN-B037	S-10	35.0'-36.5'	BROWN SILTY SAND WITH GRAVEL	SM	7.6										
HEN-B037	S-11	40.0'-41.5'	BROWN SILTY GRAVEL	GM	14.2										
HEN-B038	S-1	0.0'-1.5'	FILL: BROWN SILTY SAND	SM	7.0										
HEN-B038	S-2A	2.5'-3.0'	BROWN SANDY LEAN CLAY	CL	9.8										
HEN-B038	S-2B	3.0'-4.0'	LIGHT BROWN SILTY SAND WITH GRAVEL	SM	2.7										
HEN-B038	S-3	5.0'-6.5'	TAN POORLY GRADED SAND WITH GRAVEL AND SILT	SP-SM	2.3		30.1	61.6	4.4	3.9	8.3				
HEN-B038	S-4A	8.1'-8.6'	FILL: BROWN LEAN CLAY WITH SAND	CL	44.1										
HEN-B038	S-4B	8.6'-9.0'	BROWN SILTY SAND WITH GRAVEL	SM	6.0										
HEN-B038	S-5A	10.0'-10.5'	BROWN SANDY LEAN CLAY	CL	4.5										
HEN-B038	S-5B	10.5'-11.5'	GREENISH GRAY FAT CLAY	CH	18.8							55	23	32	
HEN-B038	S-6	15.0'-16.5'	BROWN POORLY GRADED GRAVEL WITH CLAY AND SILT	GP-GC	6.5										2.763
HEN-B038	S-7	20.0'-21.5'	BROWN AND GRAY GRAVELLY SAND	SP	4.6										

# One-Dimensional Consolidation Tests ASTM D 2435

# ONE DIMENSIONAL CONSOLIDATION TEST ASTM D2435



	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: $P_c = 2.1$ tsf $C_c = 0.235$ $C_{cr} = 0.056$ TEST PERFORMED AS PER ASTM D 2435		
219			



CONSOLIDATION TEST DATA

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-016 S-7  
 Sample No.: S-7  
 Test No.: HENB016S7

Location: HENNEPIN, IL  
 Tested By: HP  
 Test Date: 12/13/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: BCM  
 Depth: 30.0'-22.0'  
 Elevation: ----



Soil Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL  
 Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435

Estimated Specific Gravity: 2.72  
 Initial Void Ratio: 0.84  
 Final Void Ratio: 0.49

Liquid Limit: 38  
 Plastic Limit: 21  
 Plasticity Index: 17

Initial Height: 0.74 in  
 Specimen Diameter: 2.50 in

Container ID	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
	X-11	RING	RING	X-19
Wt. Container + Wet Soil, gm	310.43	192.3	183.59	145.61
Wt. Container + Dry Soil, gm	249.7	167.91	167.91	130.41
Wt. Container, gm	44.46	79.89	79.89	45.08
Wt. Dry Soil, gm	205.24	88.021	88.021	85.33
Water Content, %	29.59	27.71	17.81	17.81
Void Ratio	---	0.84	0.49	---
Degree of Saturation, %	---	89.65	99.22	---
Dry Unit Weight, pcf	---	92.25	114.09	---

CONSOLIDATION TEST DATA

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-016 S-7  
 Sample No.: S-7  
 Test No.: HENB016S7

Location: HENNEPIN, IL  
 Tested By: HP  
 Test Date: 12/13/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: BCM  
 Depth: 30.0'-22.0'  
 Elevation: ----



Soil Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL  
 Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435

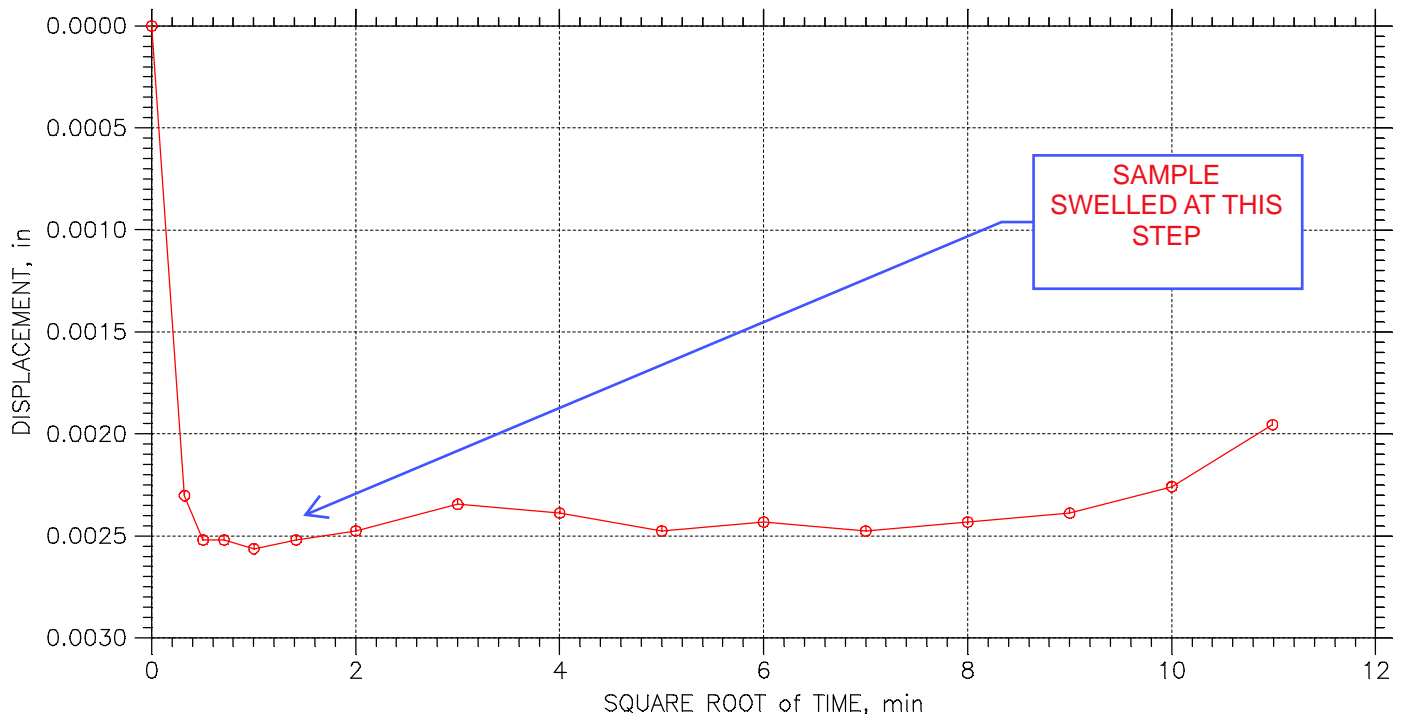
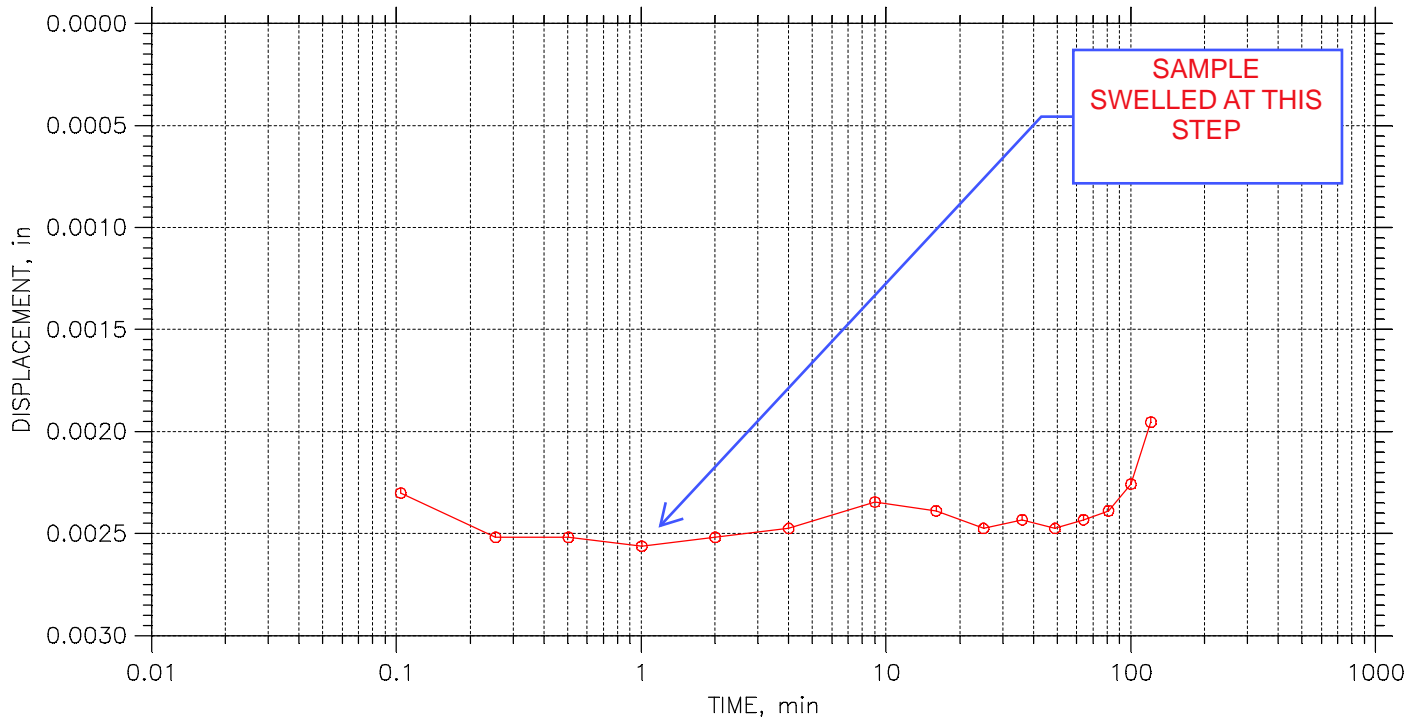
	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting		Coefficient of Consolidation		
					Sq.Rt. min	Log min	Sq.Rt. ft <sup>2</sup> /sec	Log ft <sup>2</sup> /sec	Ave. ft <sup>2</sup> /sec
1	0.125	0.001955	0.836	0.26	0.0	0.0	1.29e-004	0.00e+000	1.29e-004
2	0.25	0.005429	0.827	0.73	11.9	0.0	2.63e-007	0.00e+000	2.63e-007
3	0.5	0.008253	0.820	1.11	8.2	0.0	3.77e-007	0.00e+000	3.77e-007
4	0.75	0.01181	0.811	1.59	0.2	0.0	1.30e-005	0.00e+000	1.30e-005
5	1	0.01581	0.802	2.13	3.8	0.0	7.94e-007	0.00e+000	7.94e-007
6	2	0.03249	0.760	4.37	1.5	0.2	2.00e-006	1.60e-005	3.56e-006
7	1	0.03123	0.763	4.20	0.1	0.0	2.83e-005	0.00e+000	2.83e-005
8	0.5	0.02849	0.770	3.83	0.1	0.0	3.01e-005	0.00e+000	3.01e-005
9	0.125	0.02224	0.786	2.99	3.6	0.0	8.17e-007	0.00e+000	8.17e-007
10	0.25	0.02341	0.783	3.15	3.7	0.0	8.03e-007	0.00e+000	8.03e-007
11	0.5	0.0255	0.778	3.43	0.1	0.0	2.87e-005	0.00e+000	2.87e-005
12	0.75	0.02754	0.772	3.70	14.9	0.0	1.96e-007	0.00e+000	1.96e-007
13	1	0.02932	0.768	3.94	0.3	0.0	1.11e-005	0.00e+000	1.11e-005
14	2	0.03666	0.750	4.93	8.9	0.0	3.24e-007	0.00e+000	3.24e-007
15	4	0.06615	0.677	8.90	0.9	0.0	2.90e-006	0.00e+000	2.90e-006
16	8	0.1094	0.570	14.72	1.0	0.2	2.54e-006	1.12e-005	4.14e-006
17	16	0.151	0.467	20.32	0.5	0.5	4.59e-006	4.58e-006	4.58e-006
18	32	0.1949	0.358	26.23	1.0	0.4	1.95e-006	4.19e-006	2.66e-006
19	16	0.1845	0.384	24.82	0.1	0.0	1.70e-005	0.00e+000	1.70e-005
20	4	0.1684	0.424	22.66	0.2	0.0	8.35e-006	0.00e+000	8.35e-006
21	1	0.1553	0.456	20.89	3.7	0.0	5.18e-007	0.00e+000	5.18e-007
22	0.5	0.1504	0.468	20.23	19.6	12.7	1.01e-007	1.57e-007	1.23e-007
23	0.125	0.1423	0.488	19.14	14.5	0.0	1.40e-007	0.00e+000	1.40e-007


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 1 of 23

Stress: 0.125 tsf



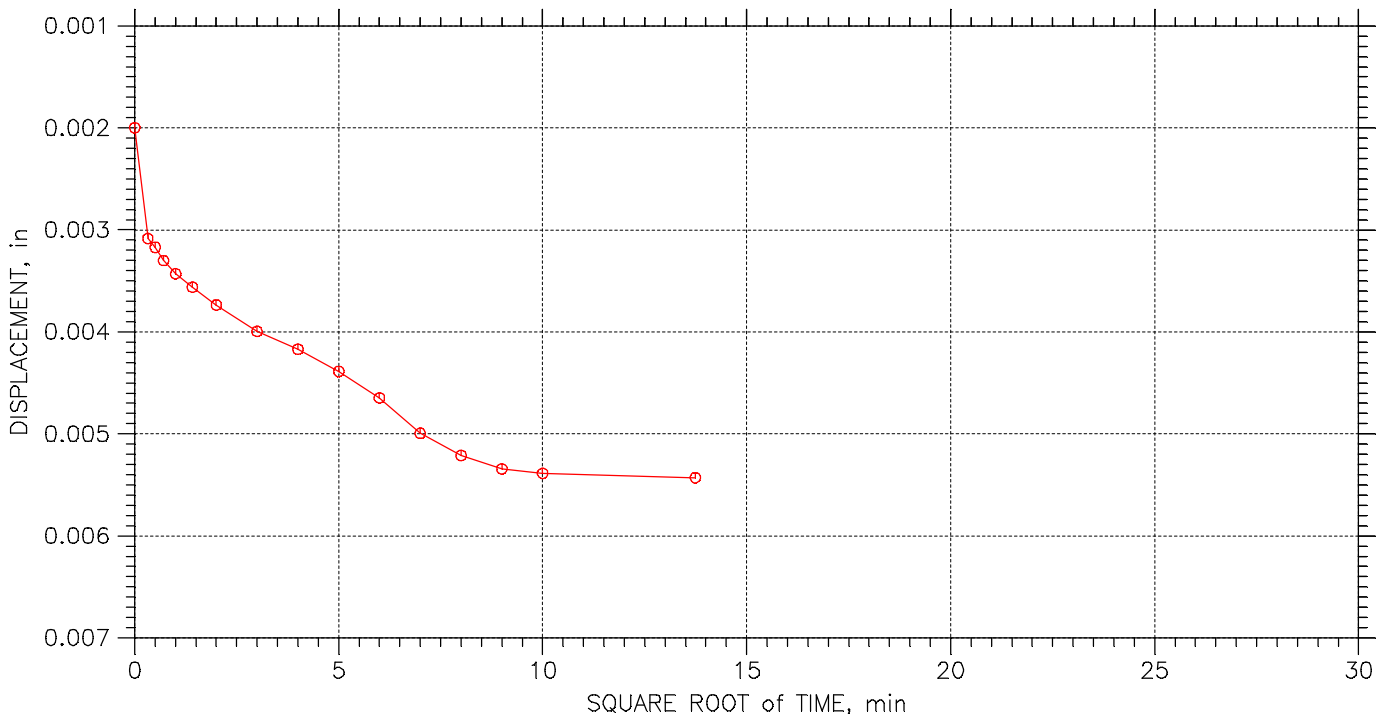
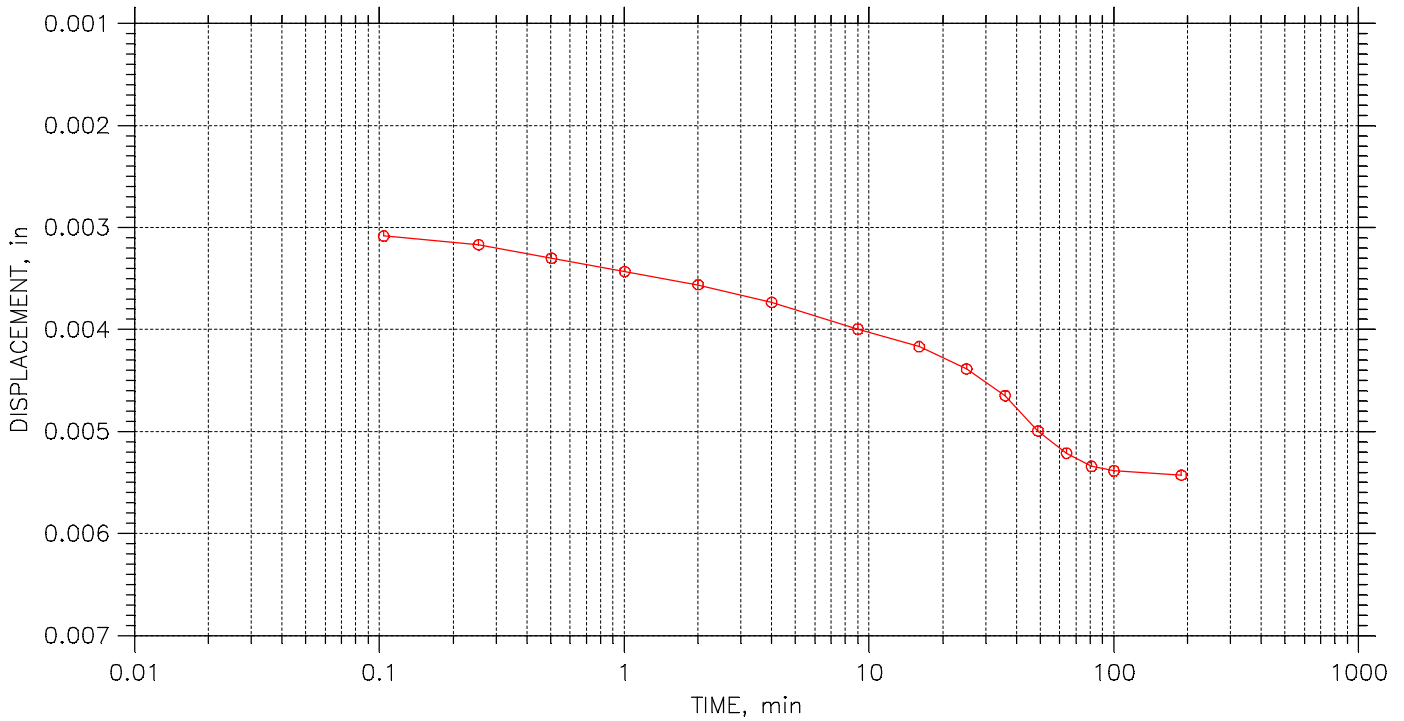
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
222			


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 2 of 23

Stress: 0.25 tsf



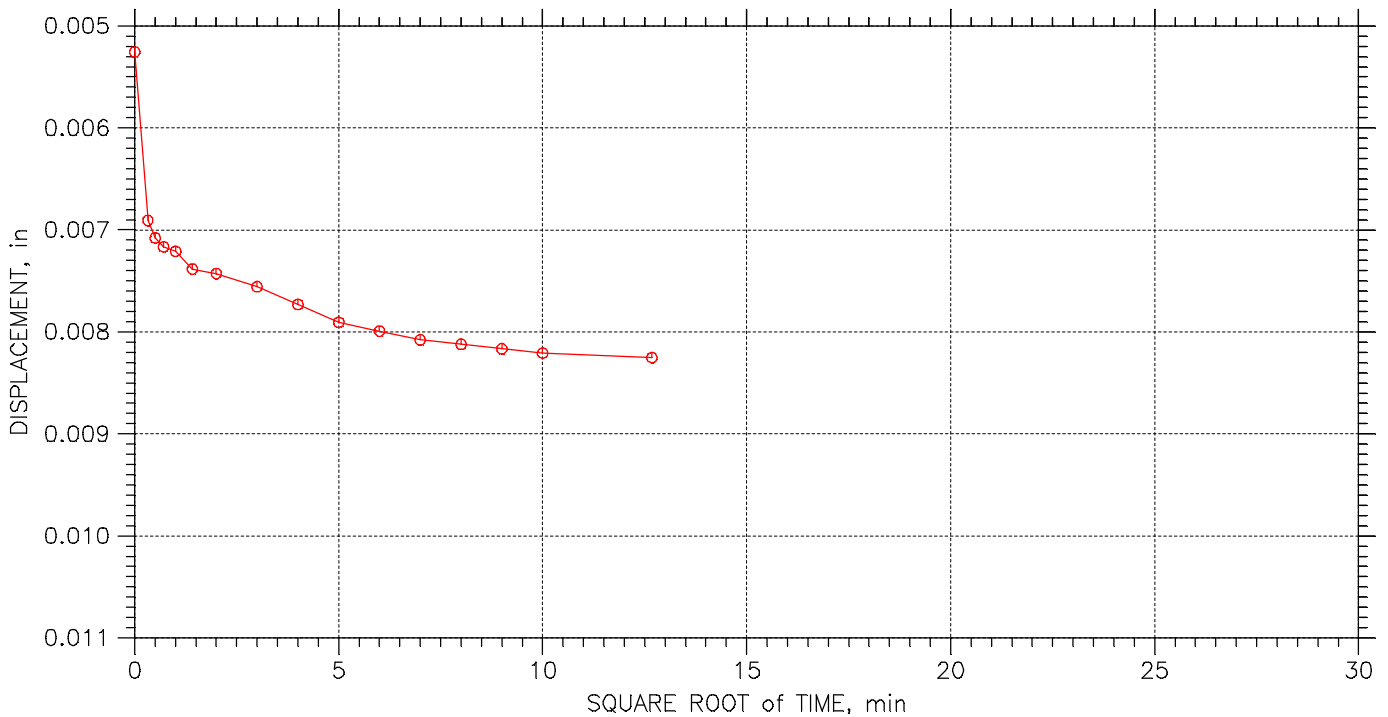
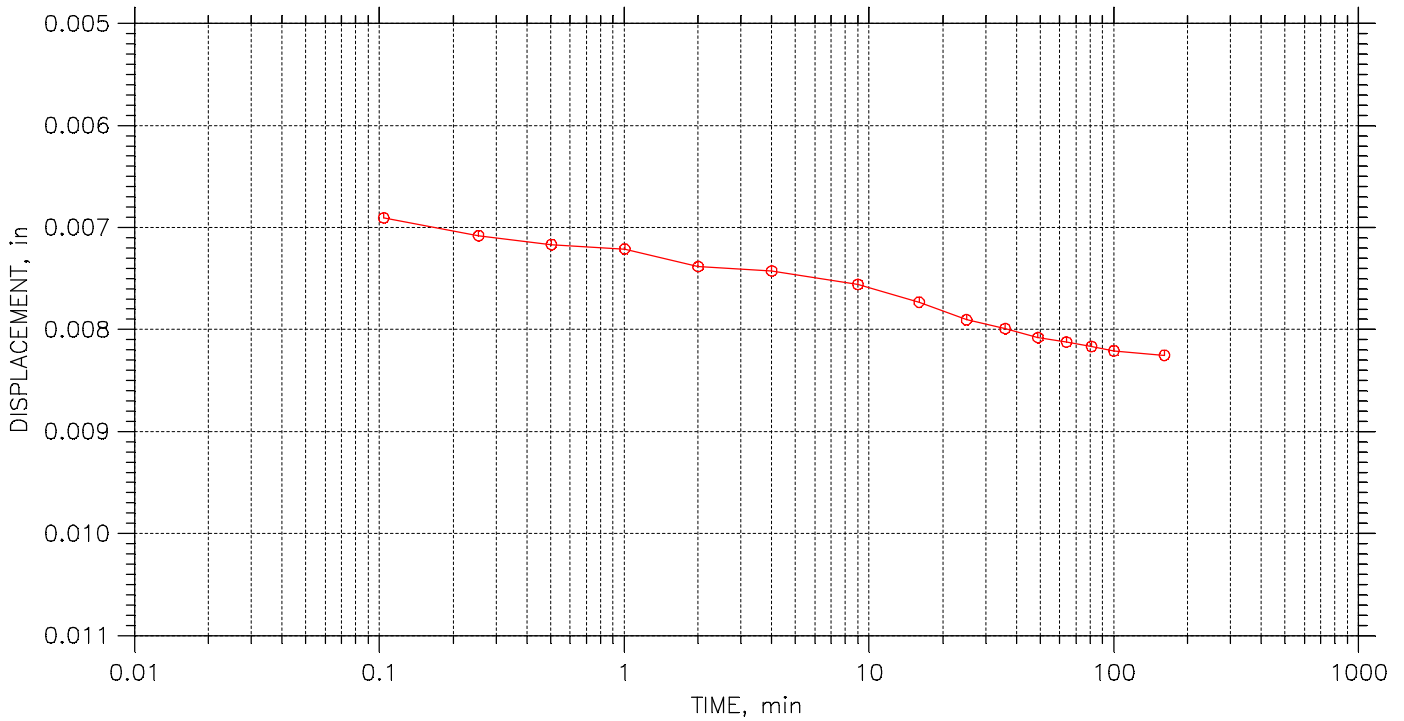
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
223			


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 3 of 23

Stress: 0.5 tsf



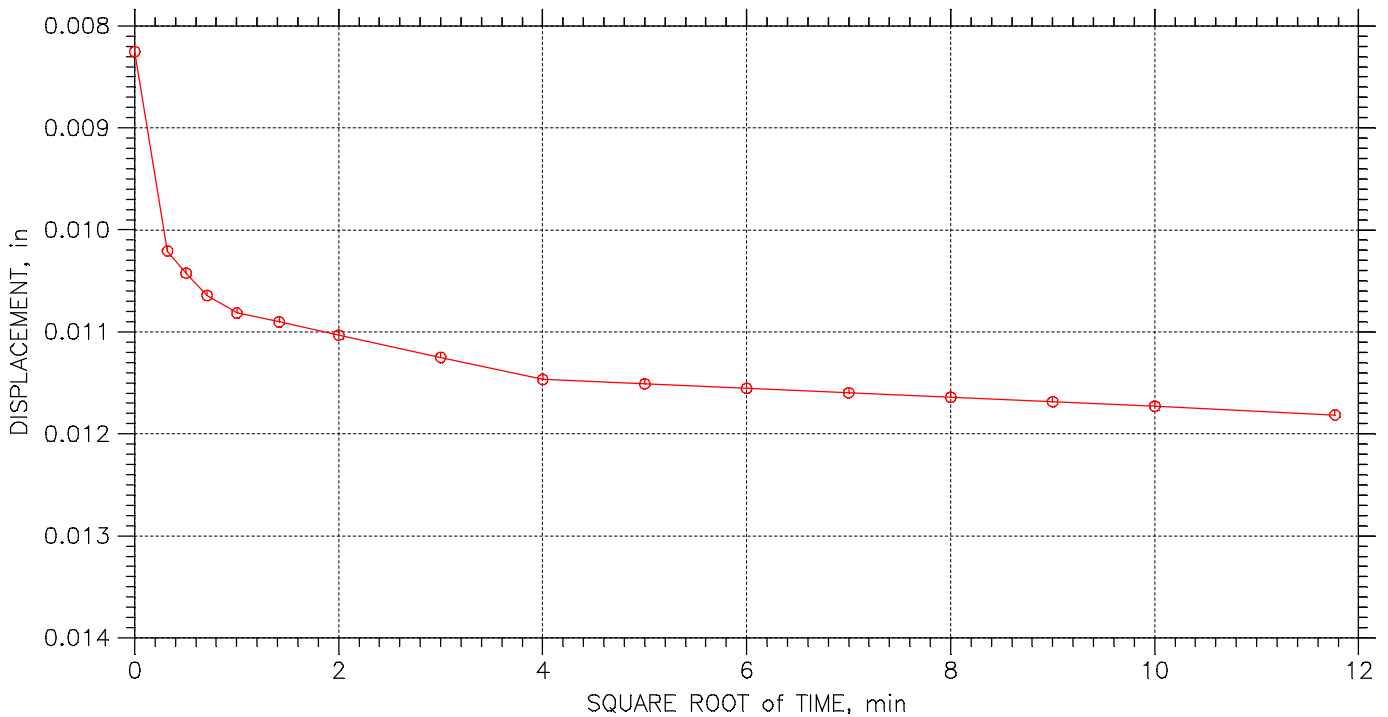
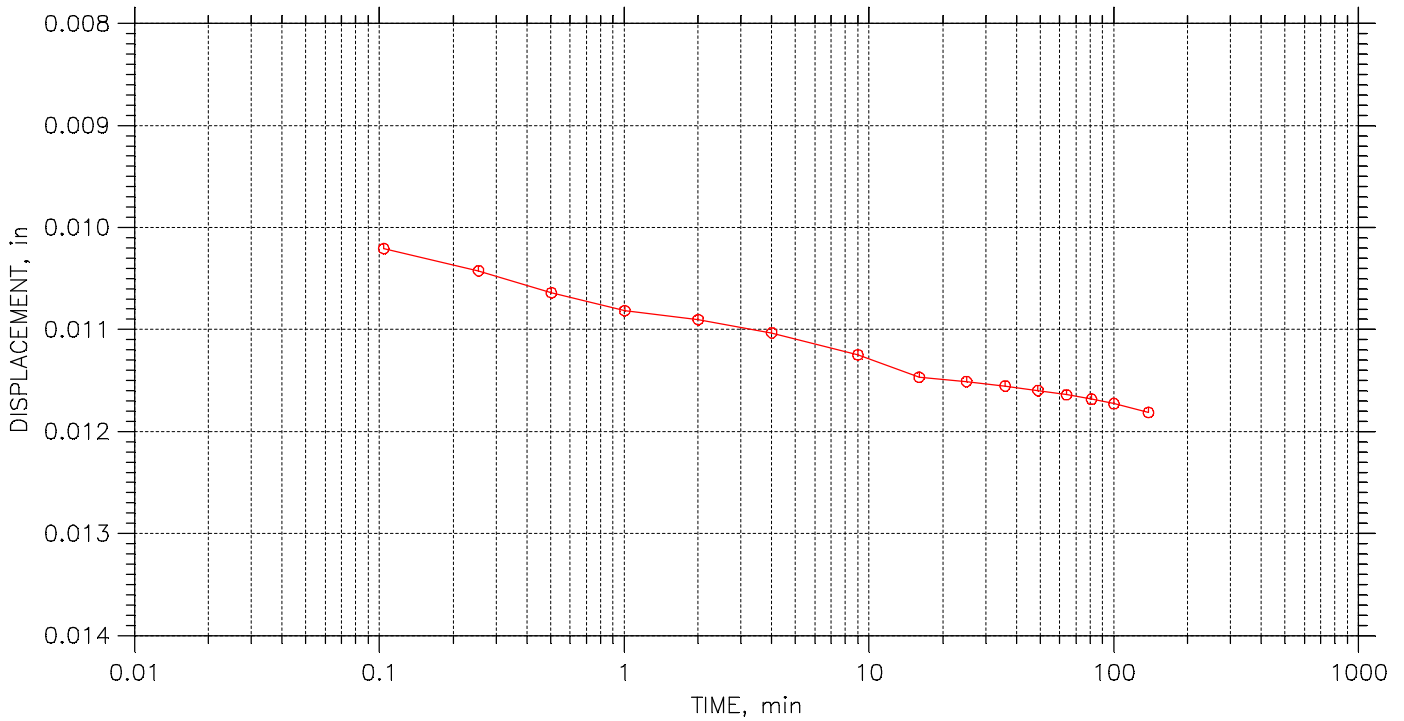
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
	224		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 4 of 23

Stress: 0.75 tsf



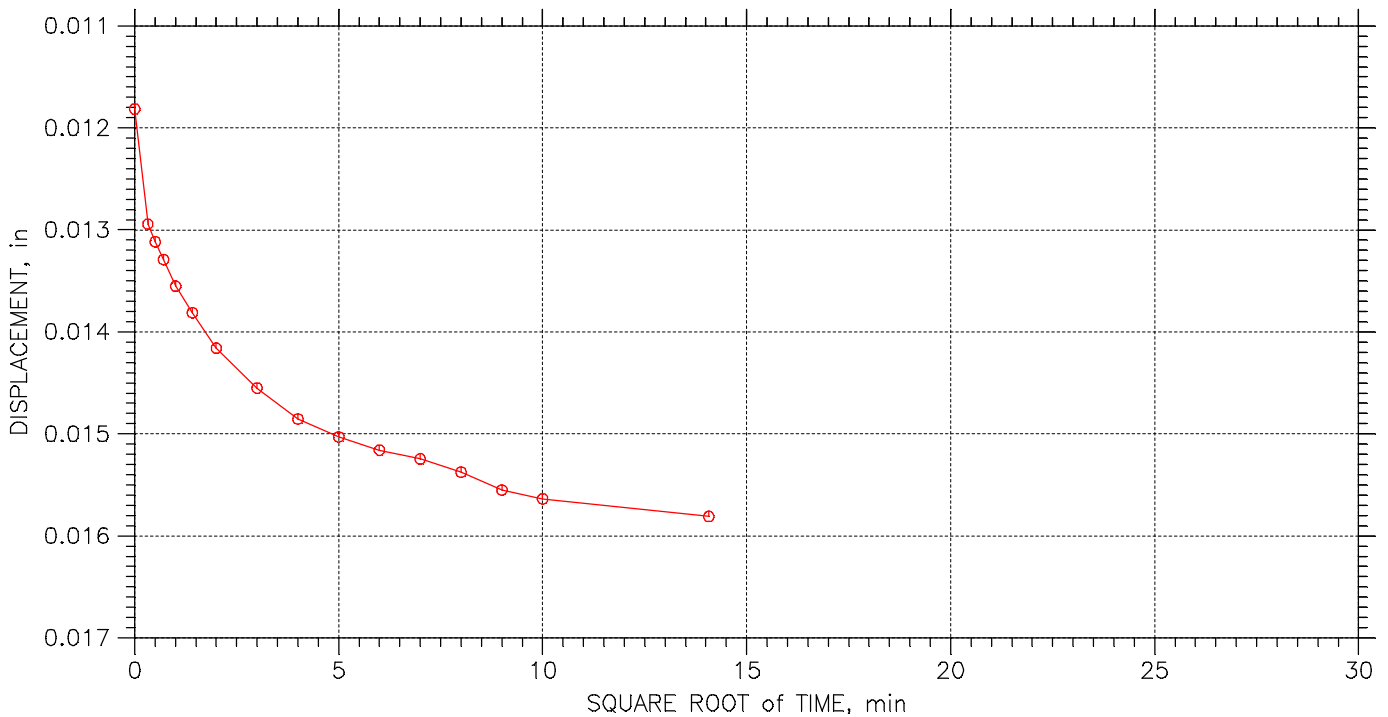
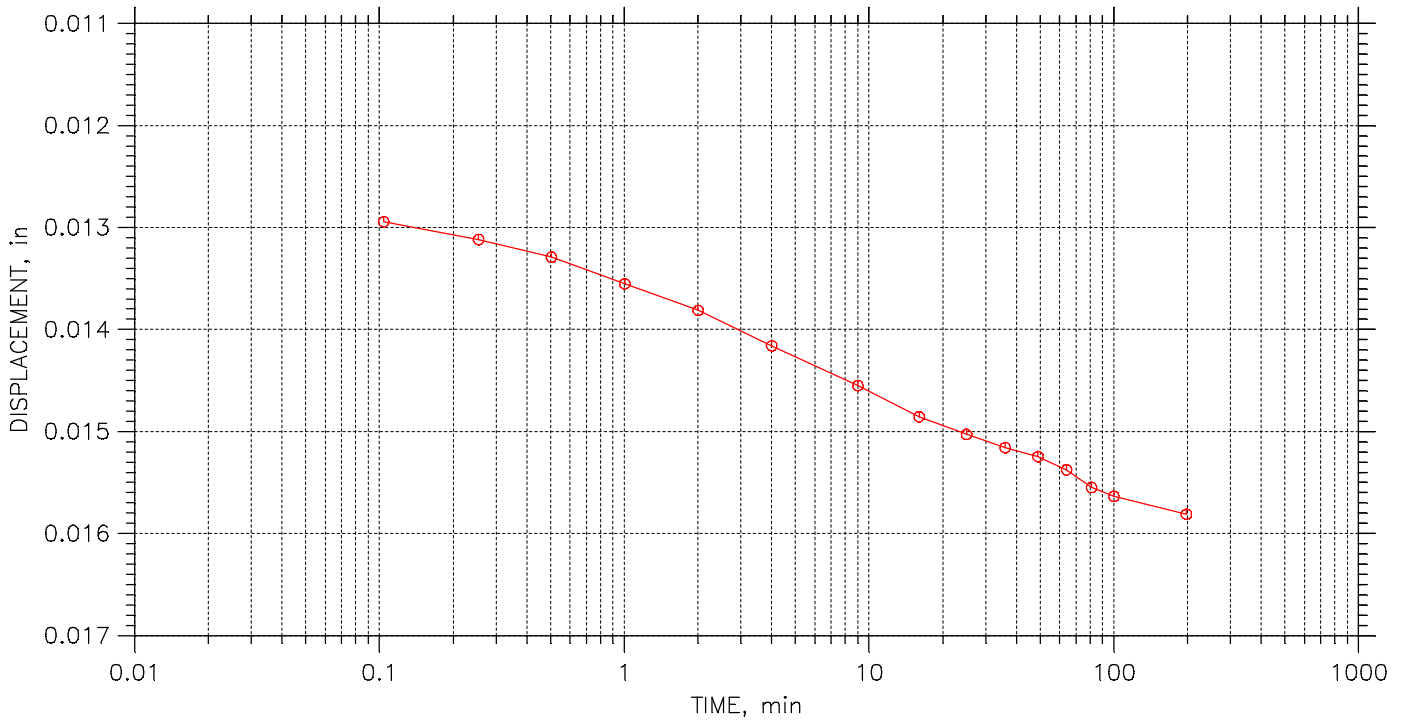
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
	225		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 5 of 23

Stress: 1. tsf



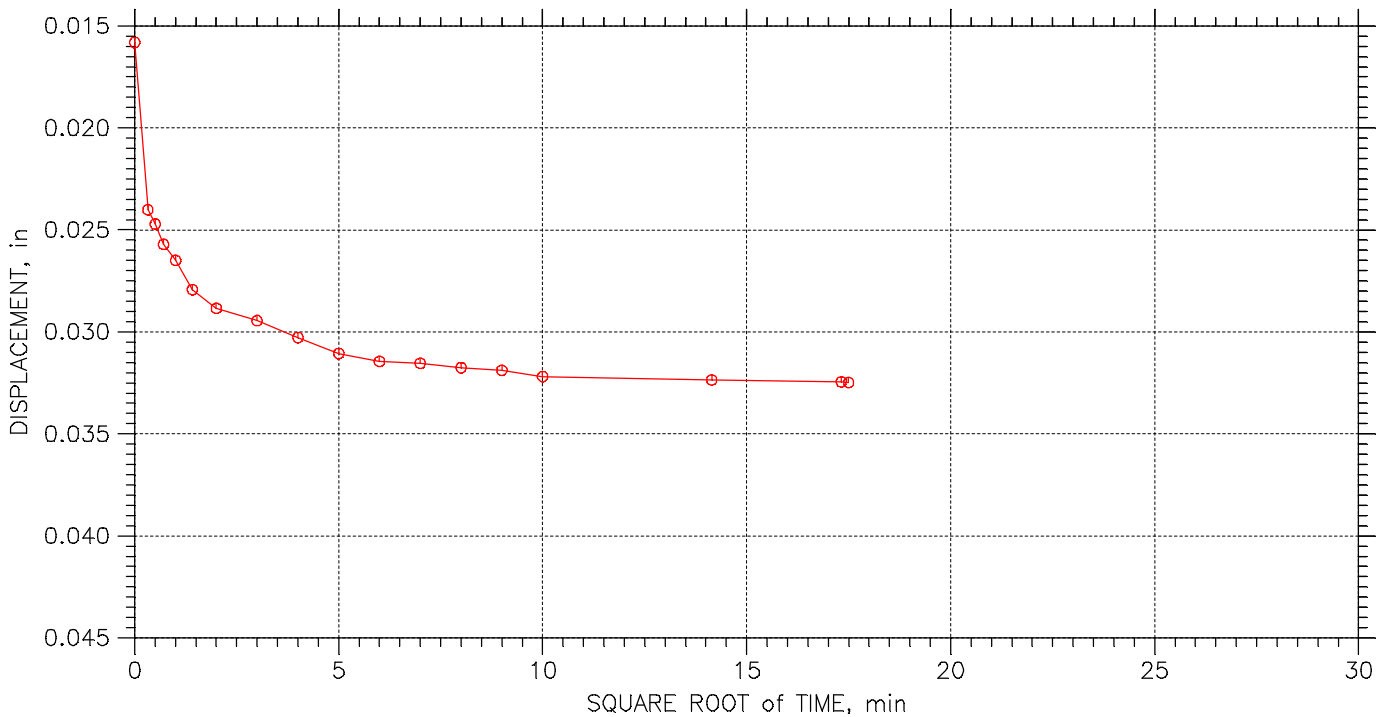
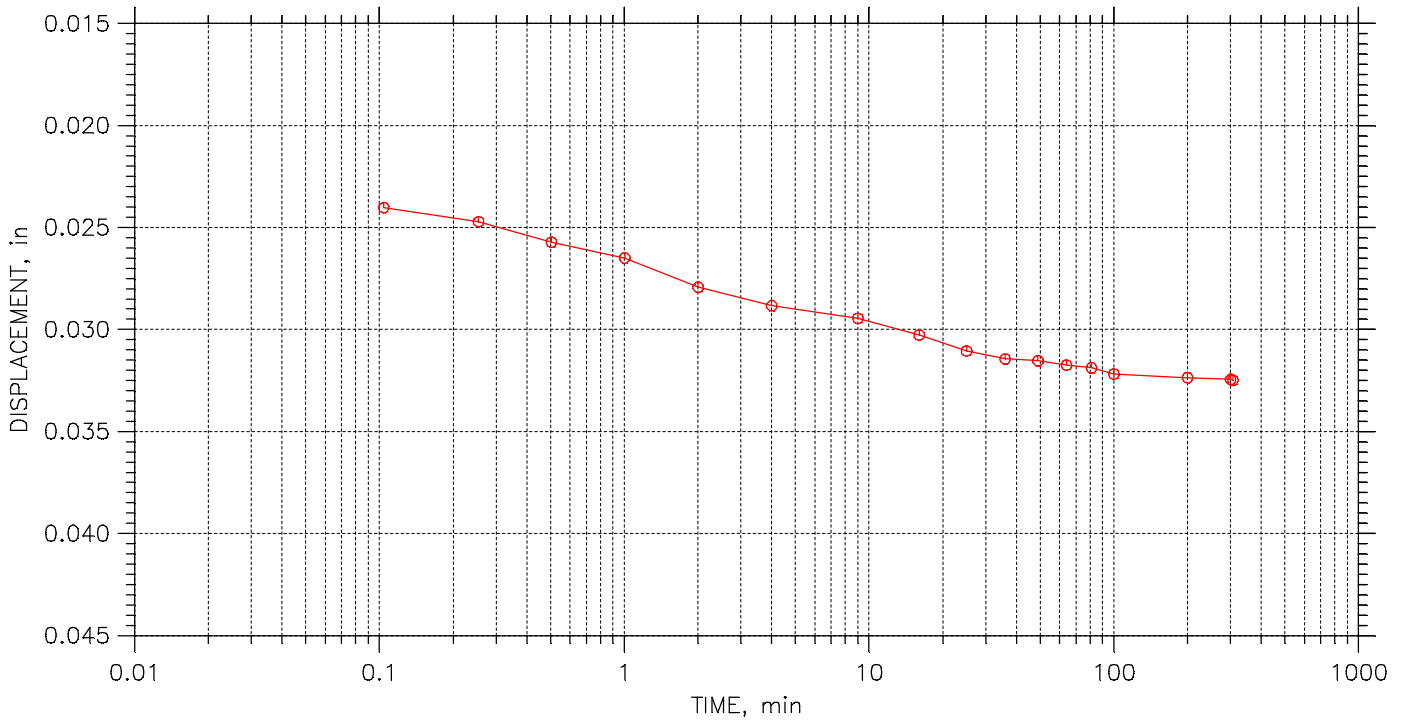
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
	226		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 6 of 23

Stress: 2. tsf



	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
	227		

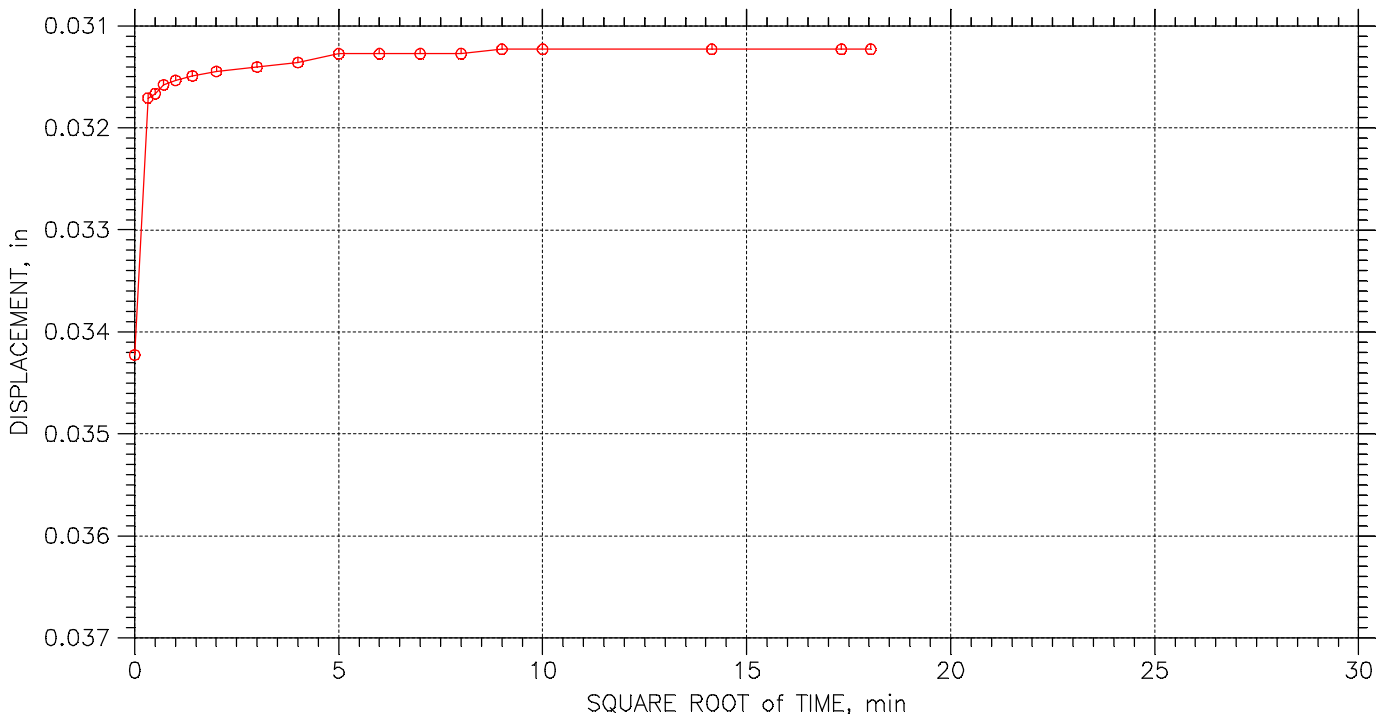
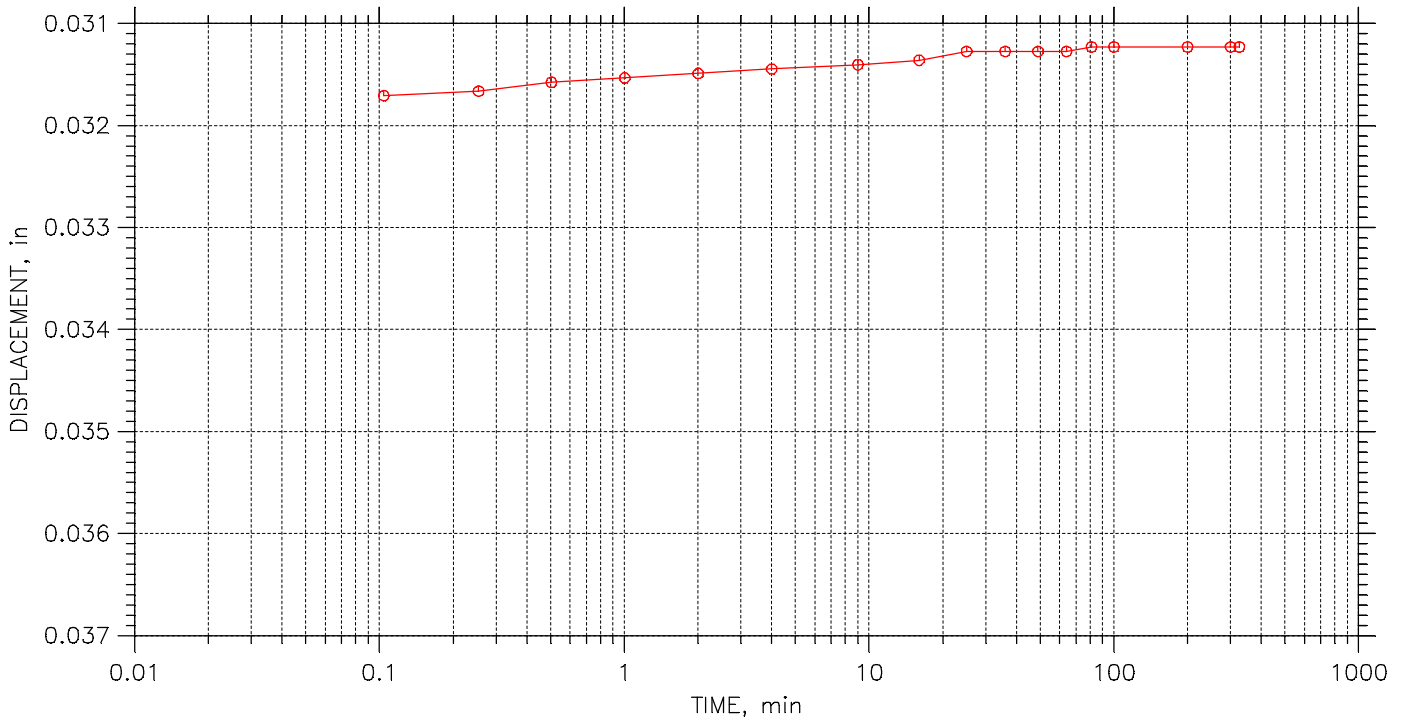



# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 7 of 23

Stress: 1. tsf



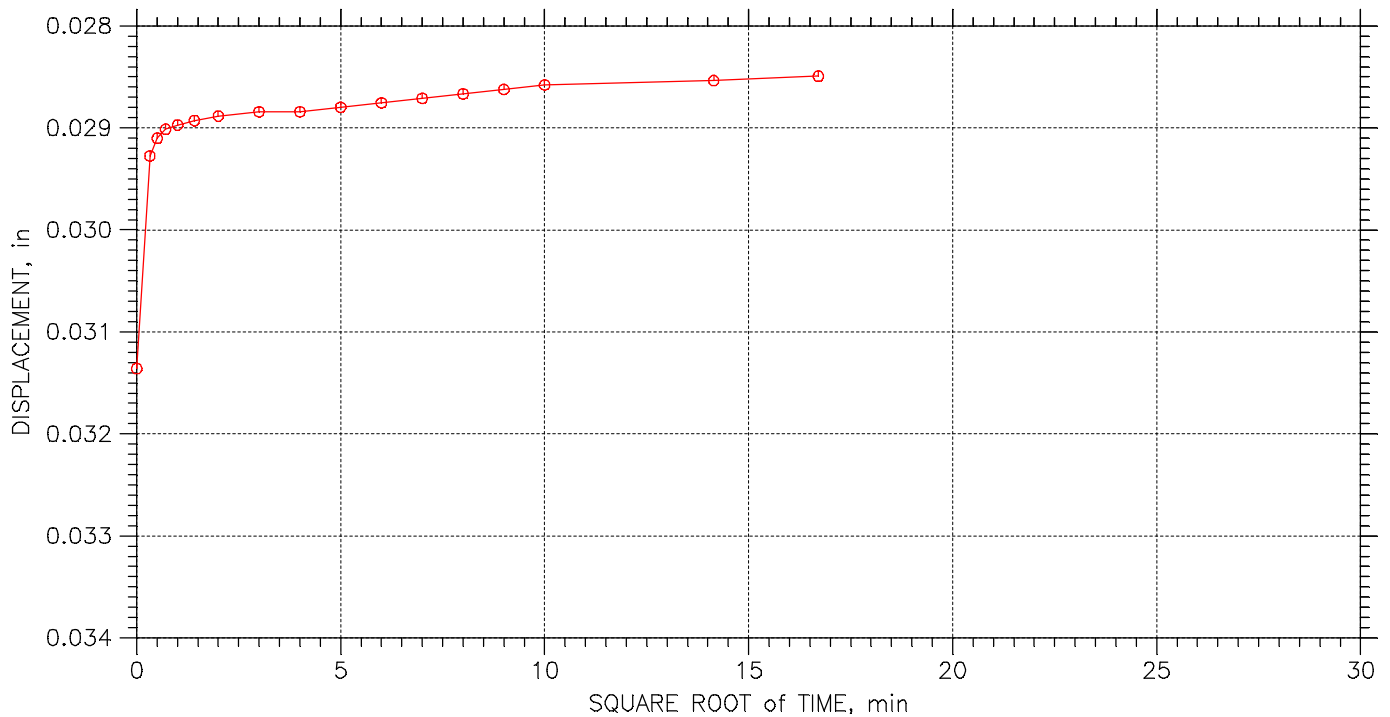
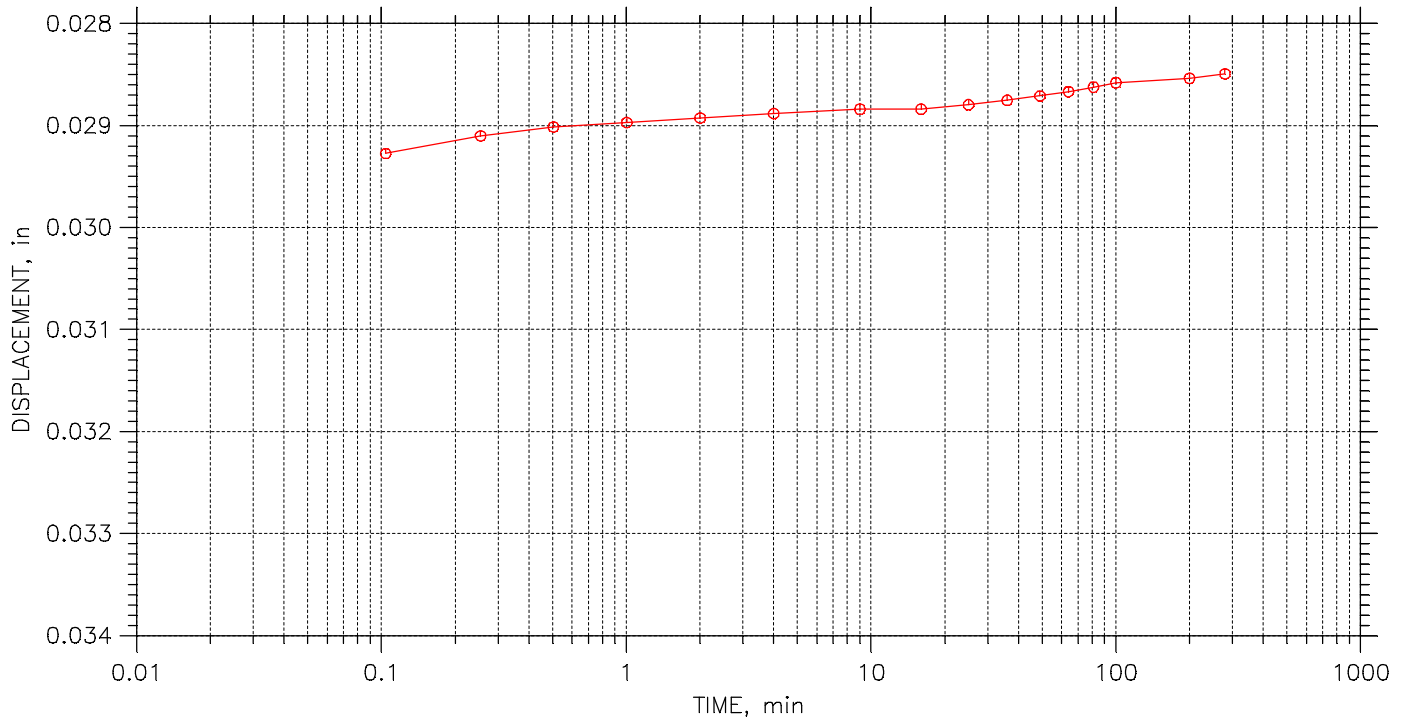
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
	228		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 8 of 23

Stress: 0.5 tsf



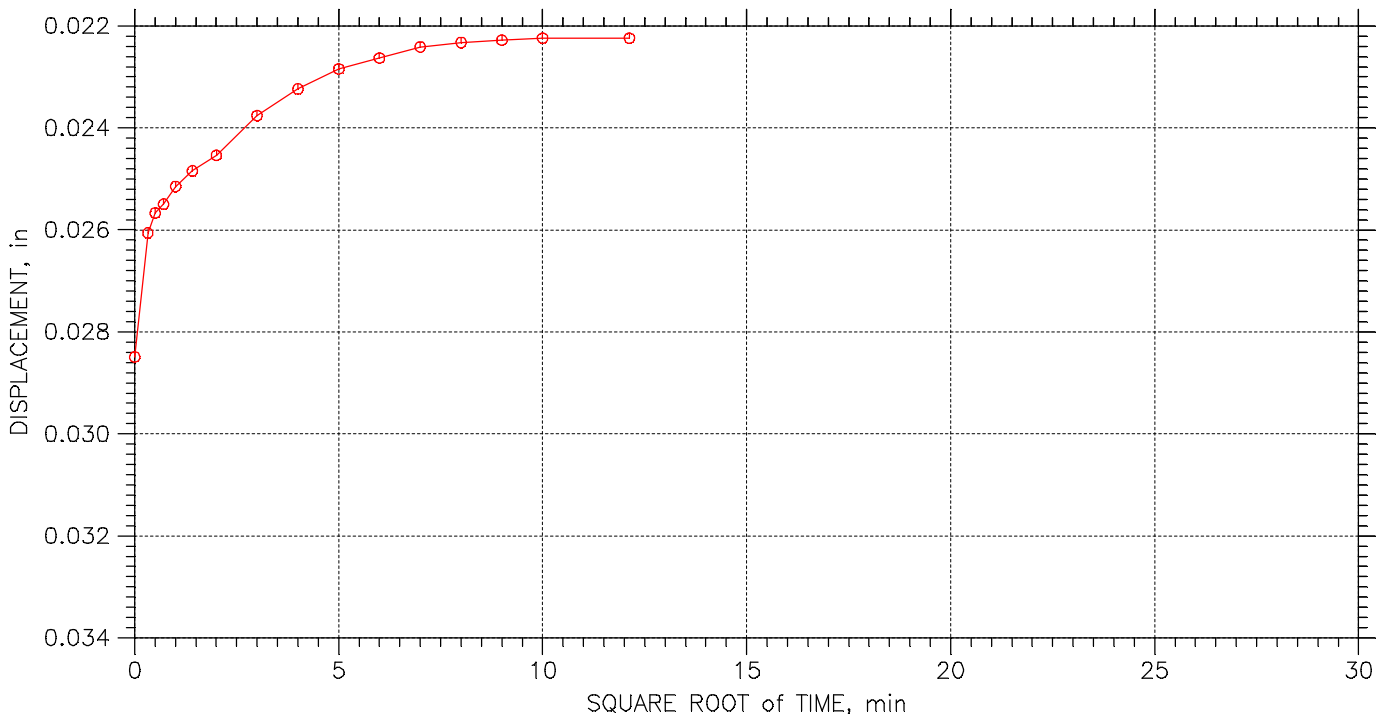
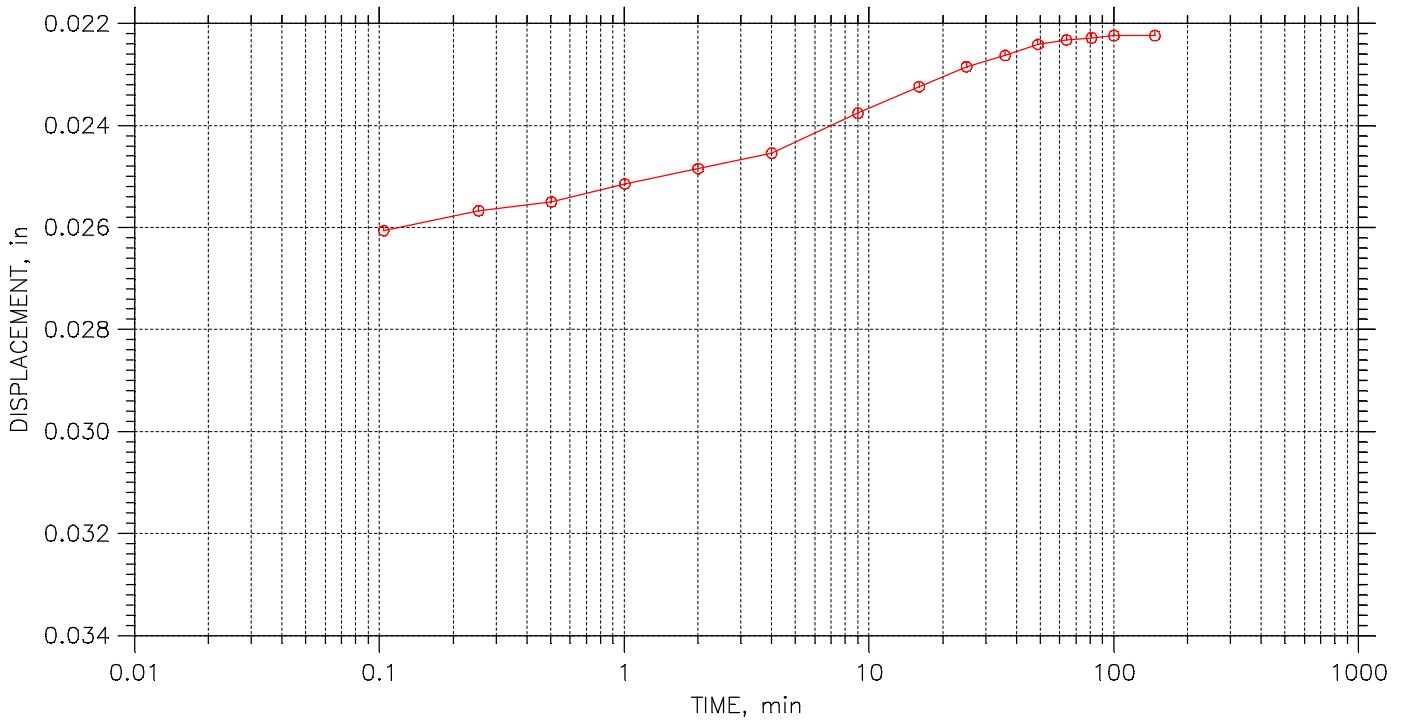
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
	229		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 9 of 23

Stress: 0.125 tsf



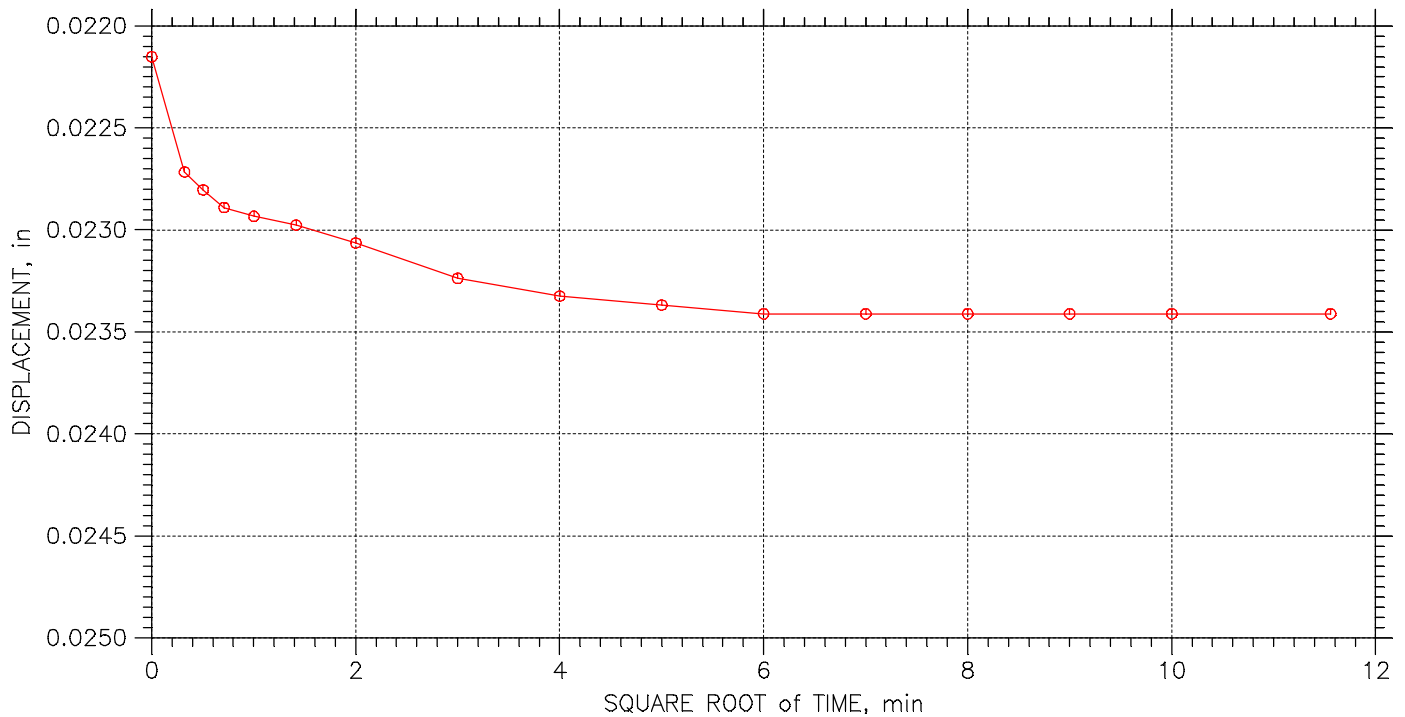
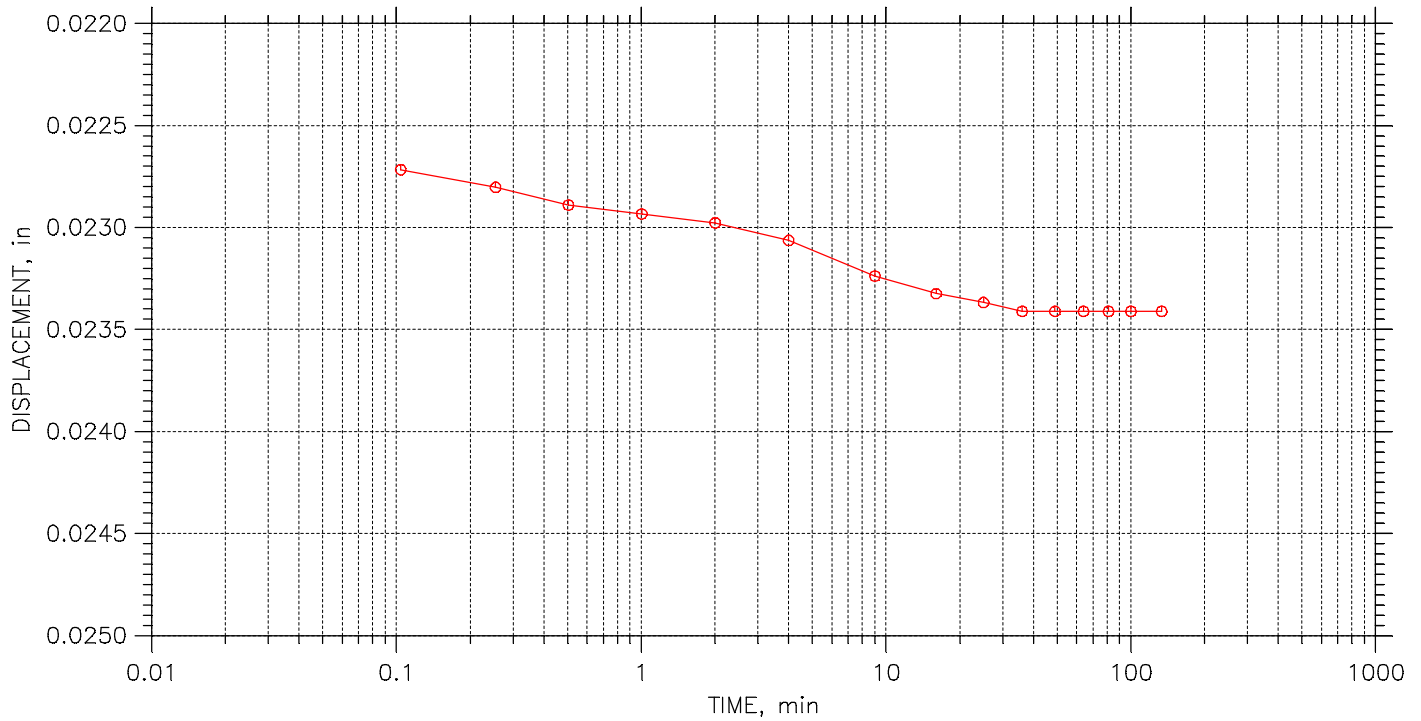
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
	230		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 10 of 23

Stress: 0.25 tsf



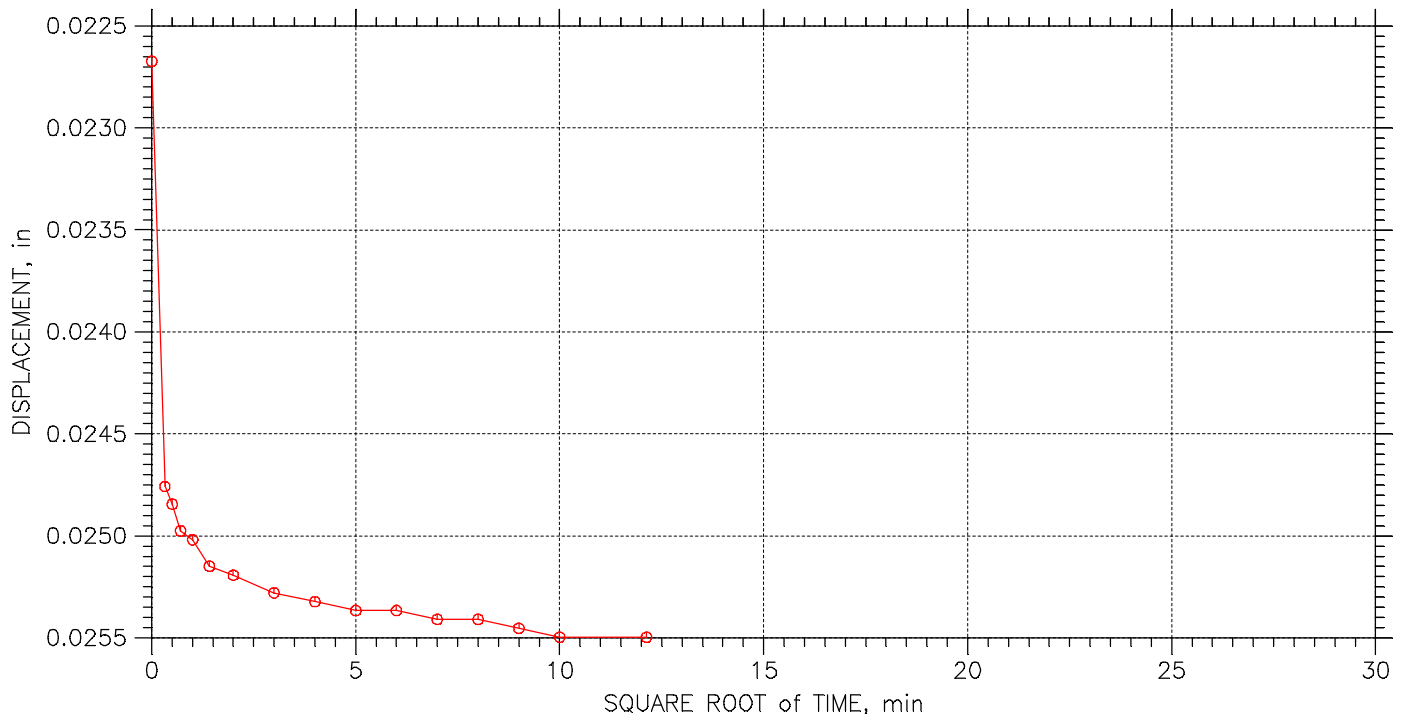
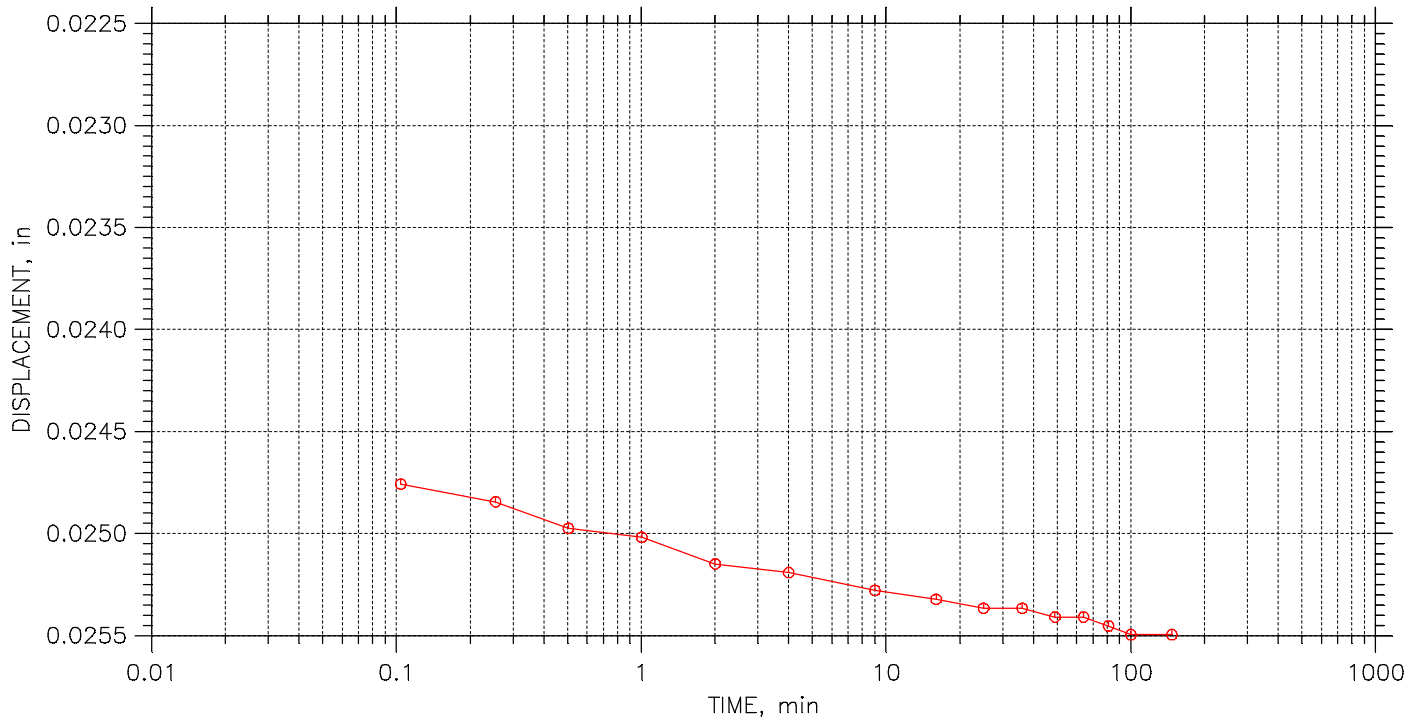
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
231			


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 11 of 23

Stress: 0.5 tsf



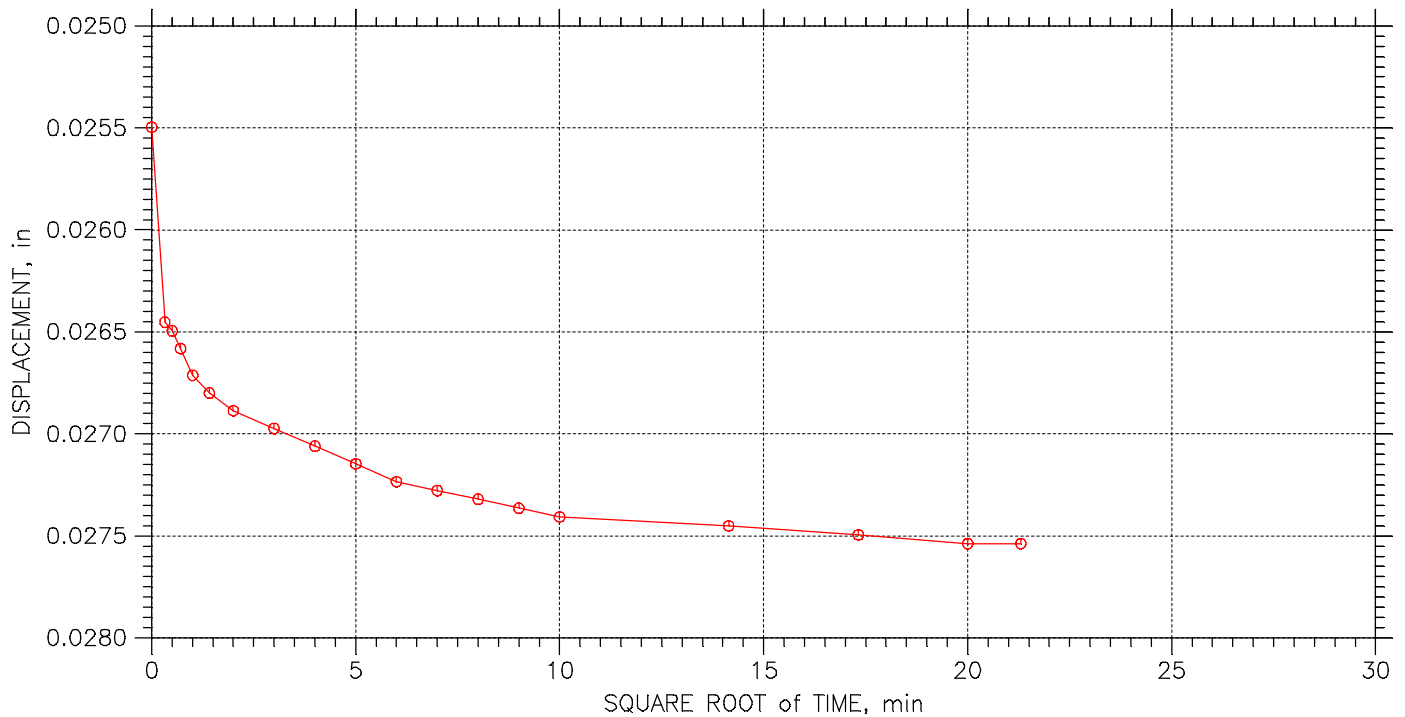
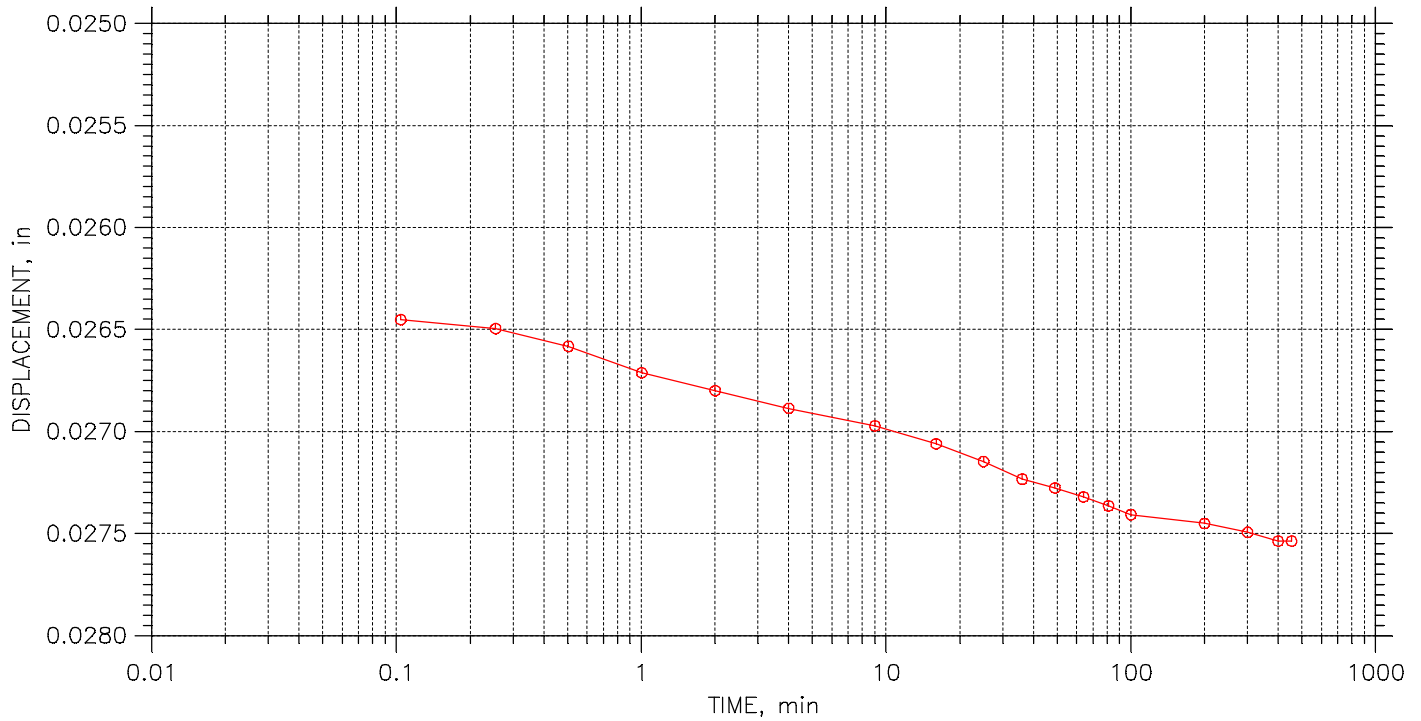
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
232			


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 12 of 23

Stress: 0.75 tsf



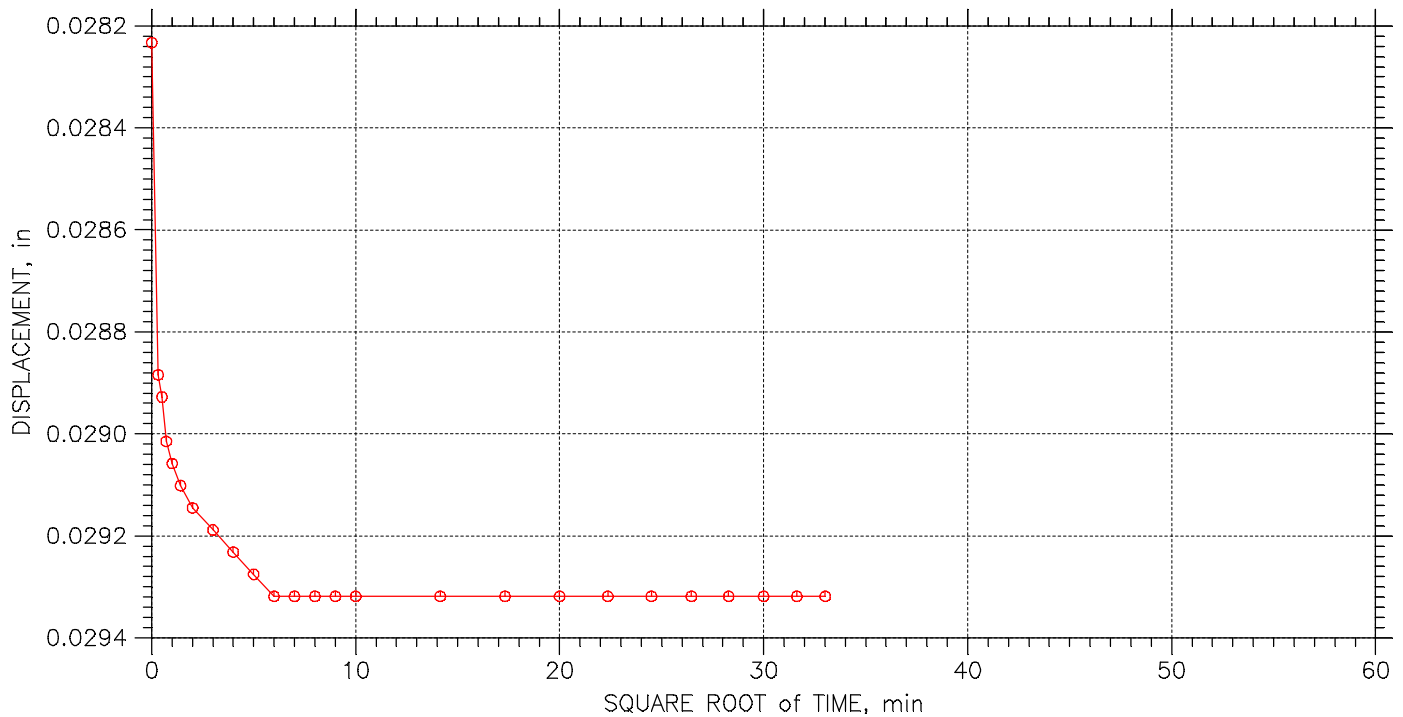
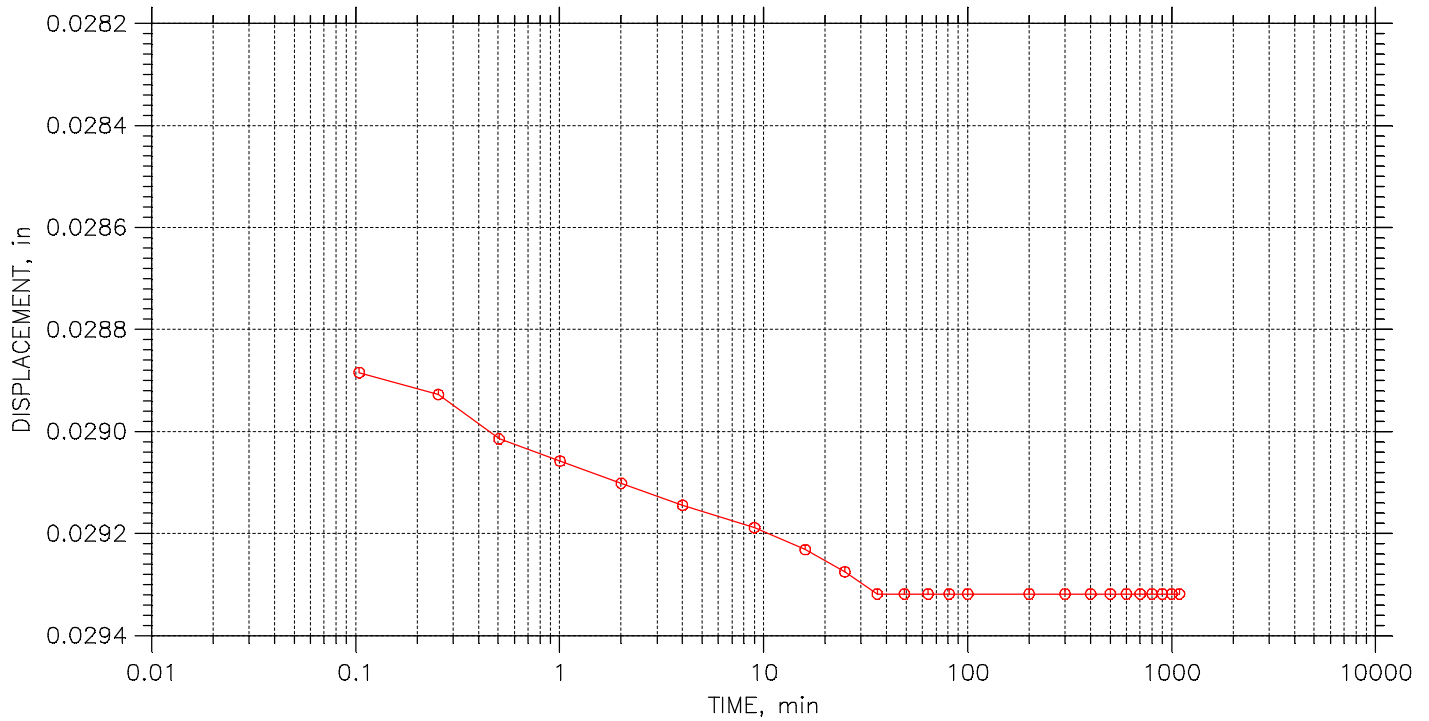
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
233			


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 13 of 23

Stress: 1. tsf



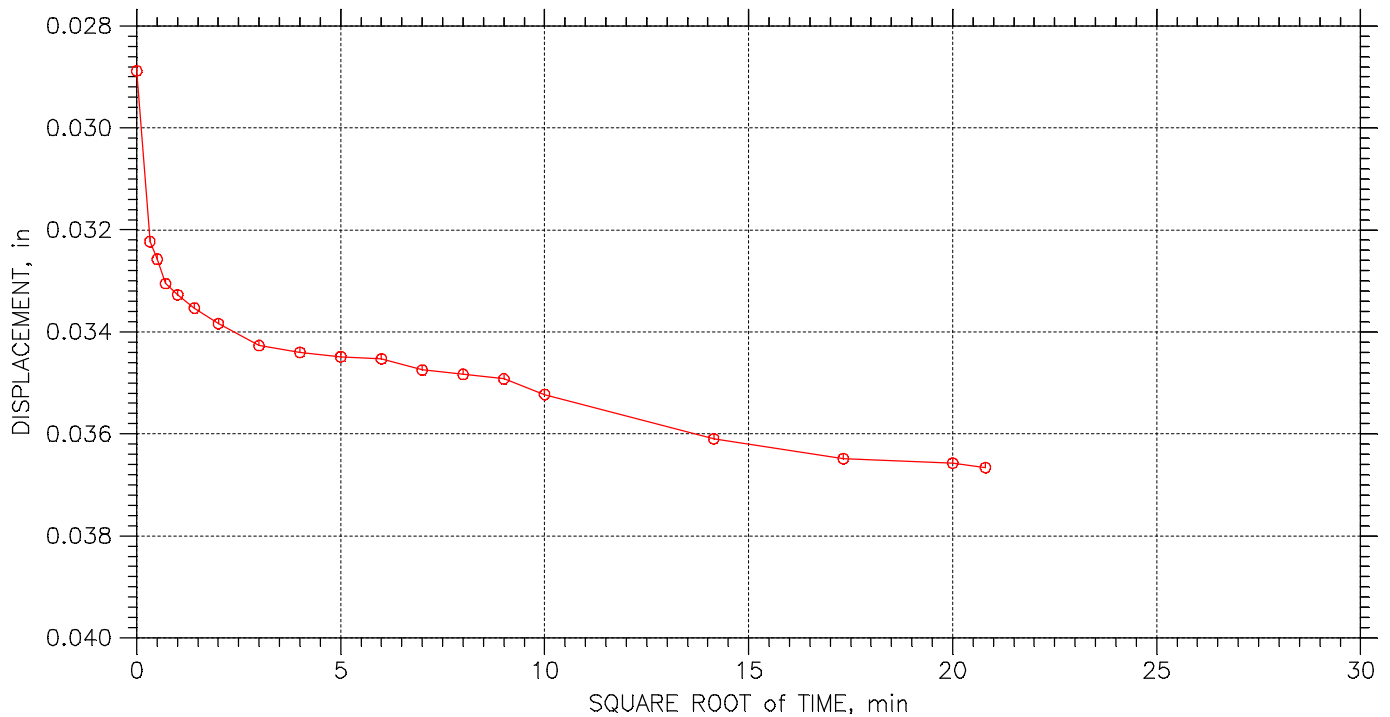
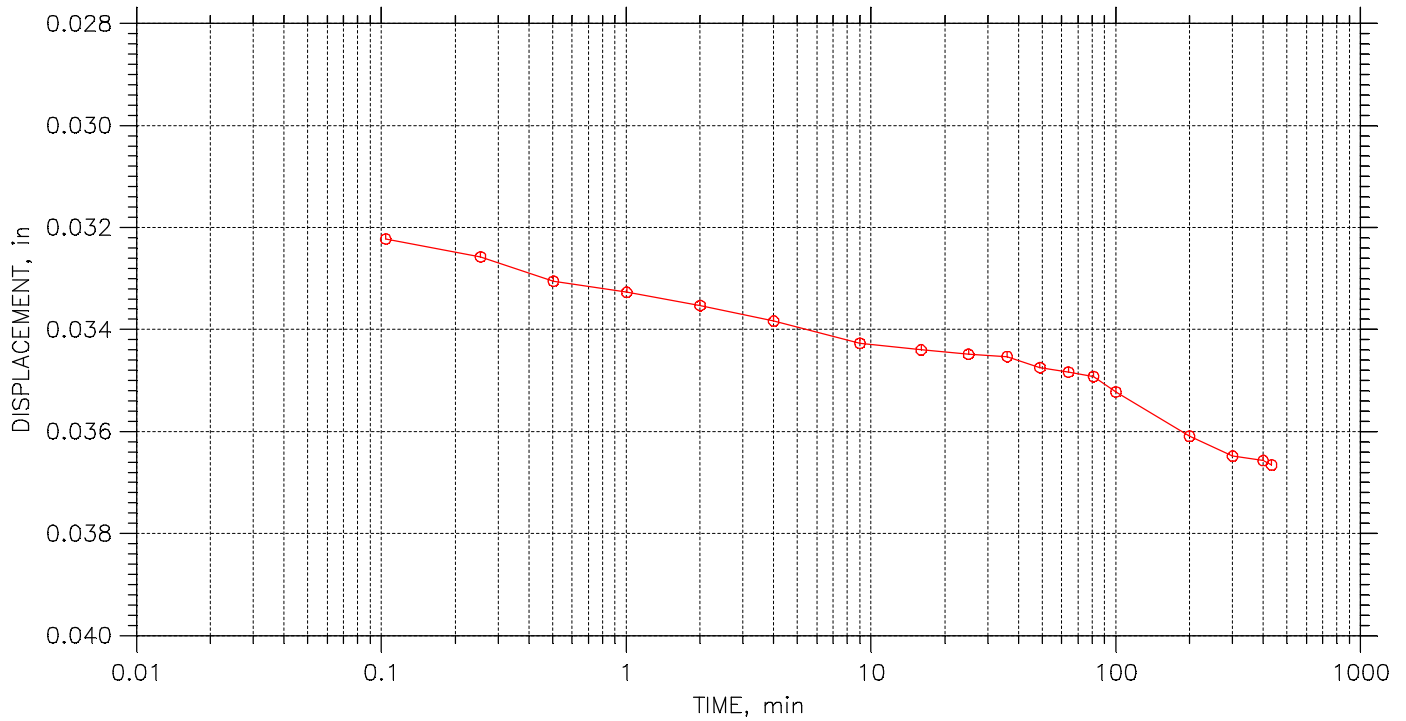
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
	234		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 14 of 23

Stress: 2. tsf



	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
	235		

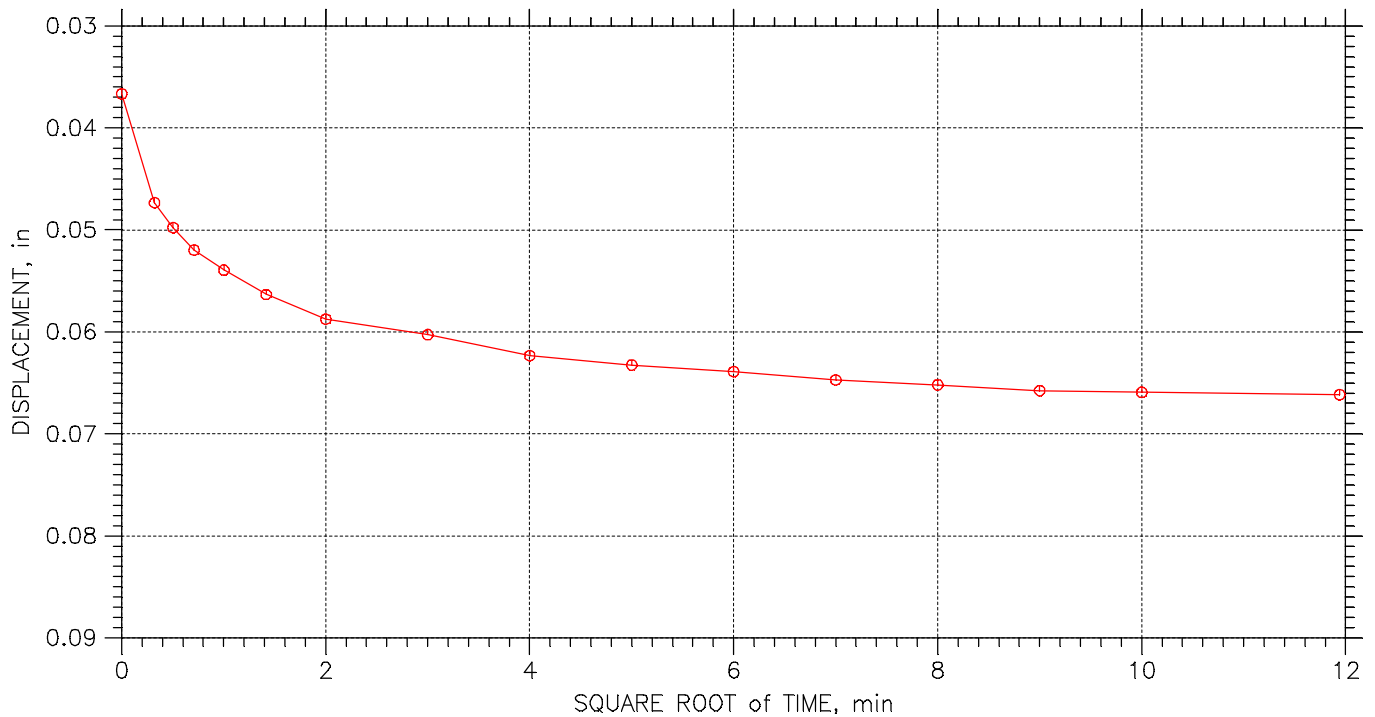
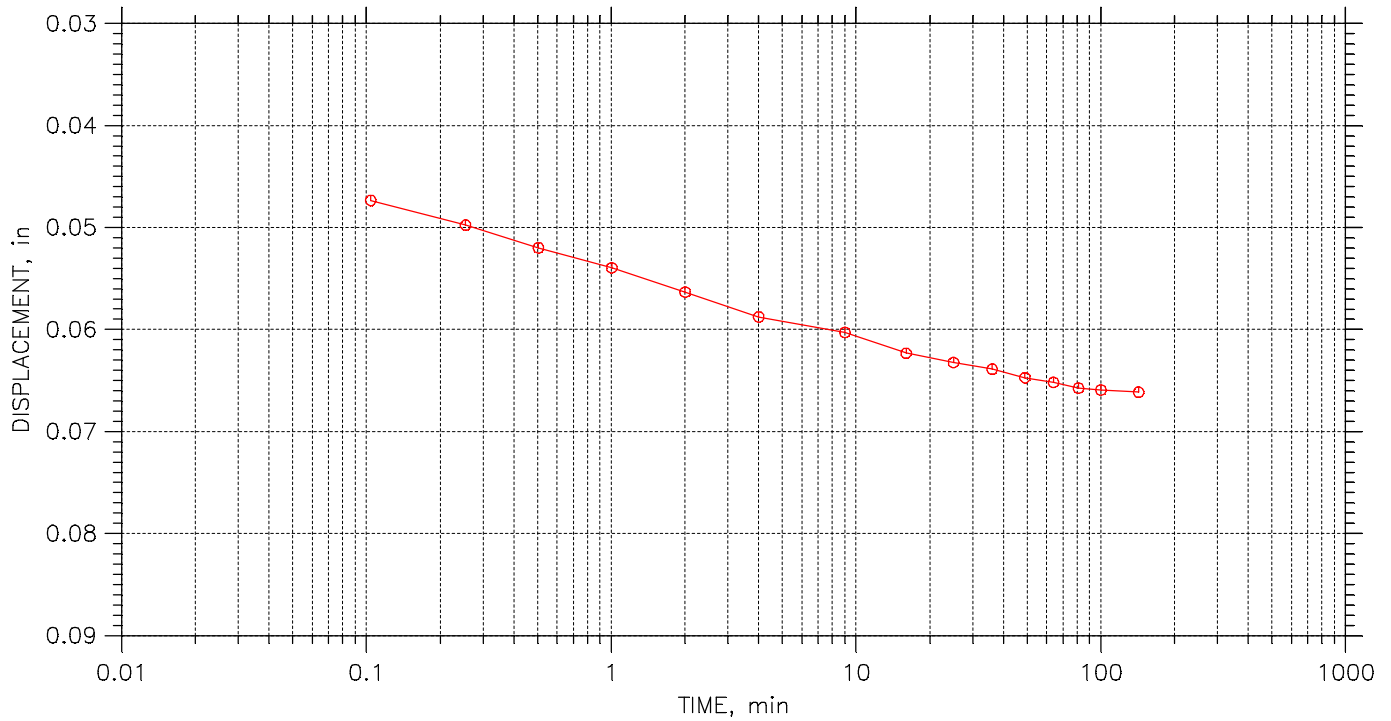



# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 15 of 23

Stress: 4. tsf



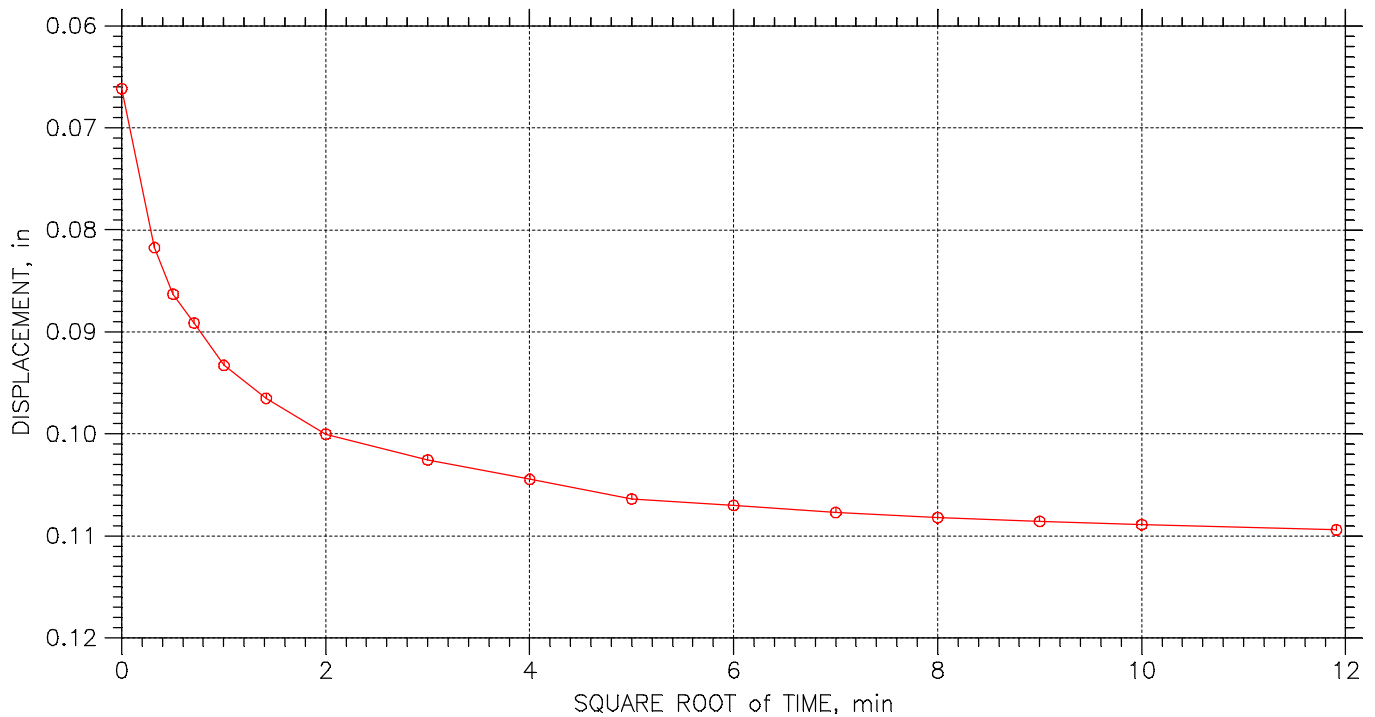
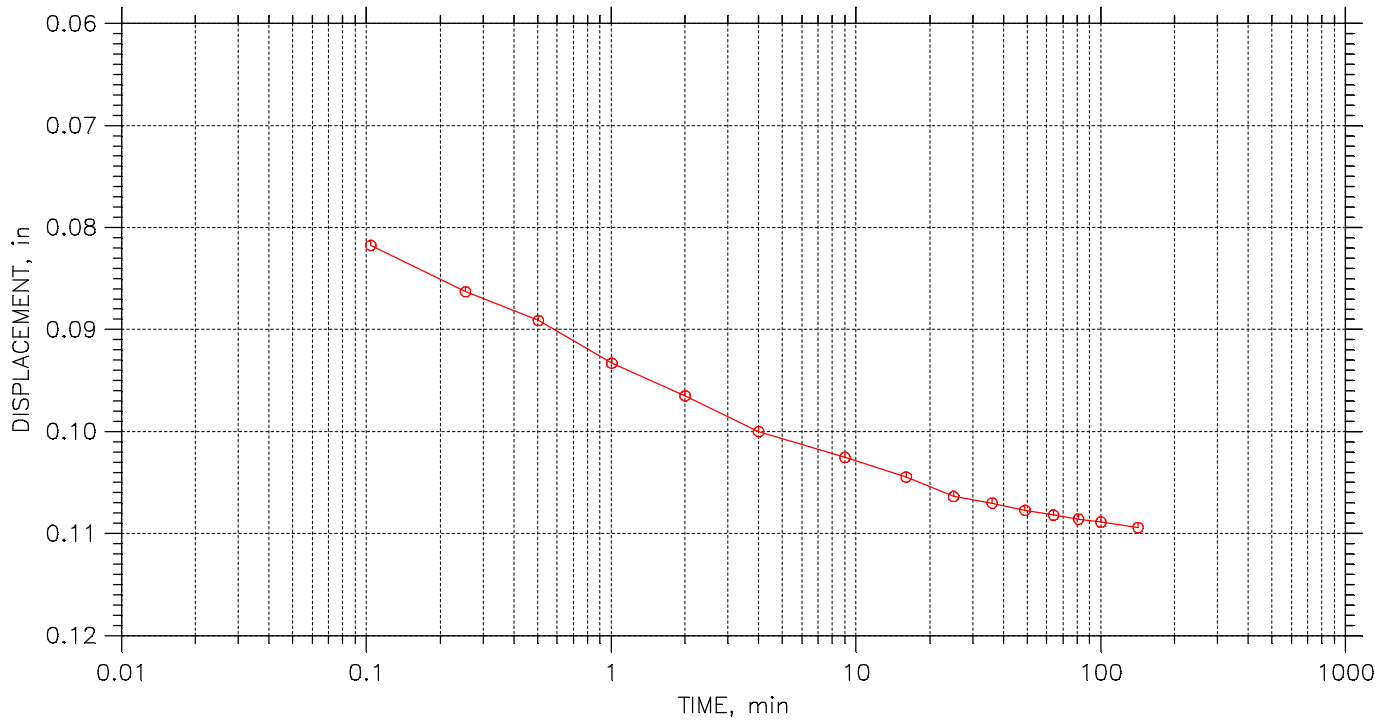
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
	236		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 16 of 23

Stress: 8. tsf



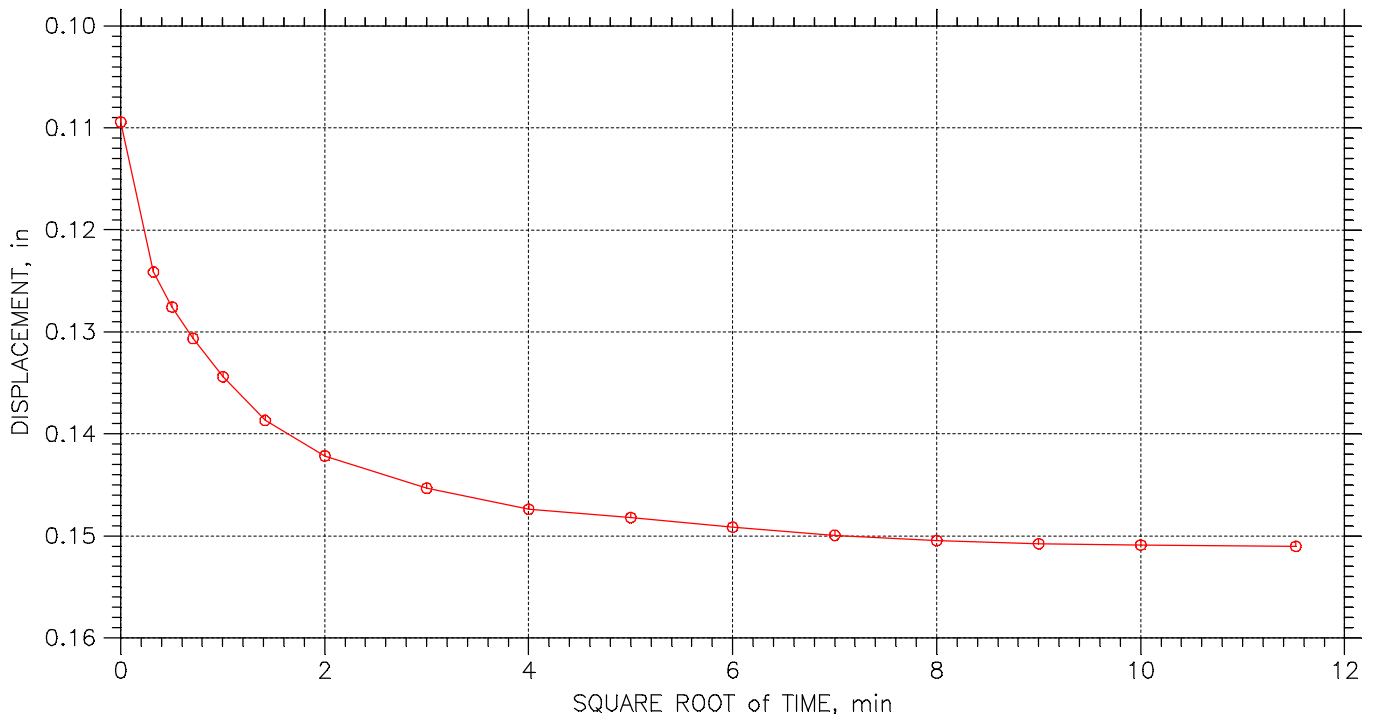
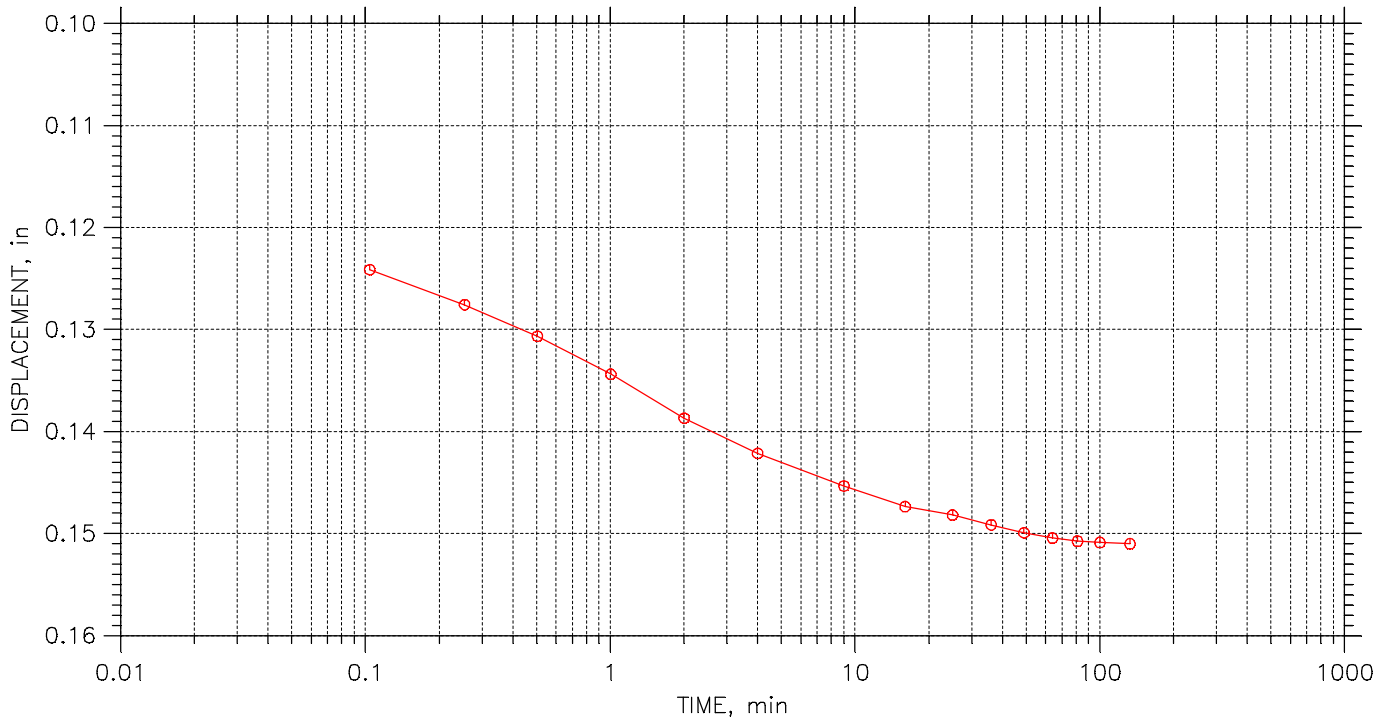
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
	237		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 17 of 23

Stress: 16. tsf



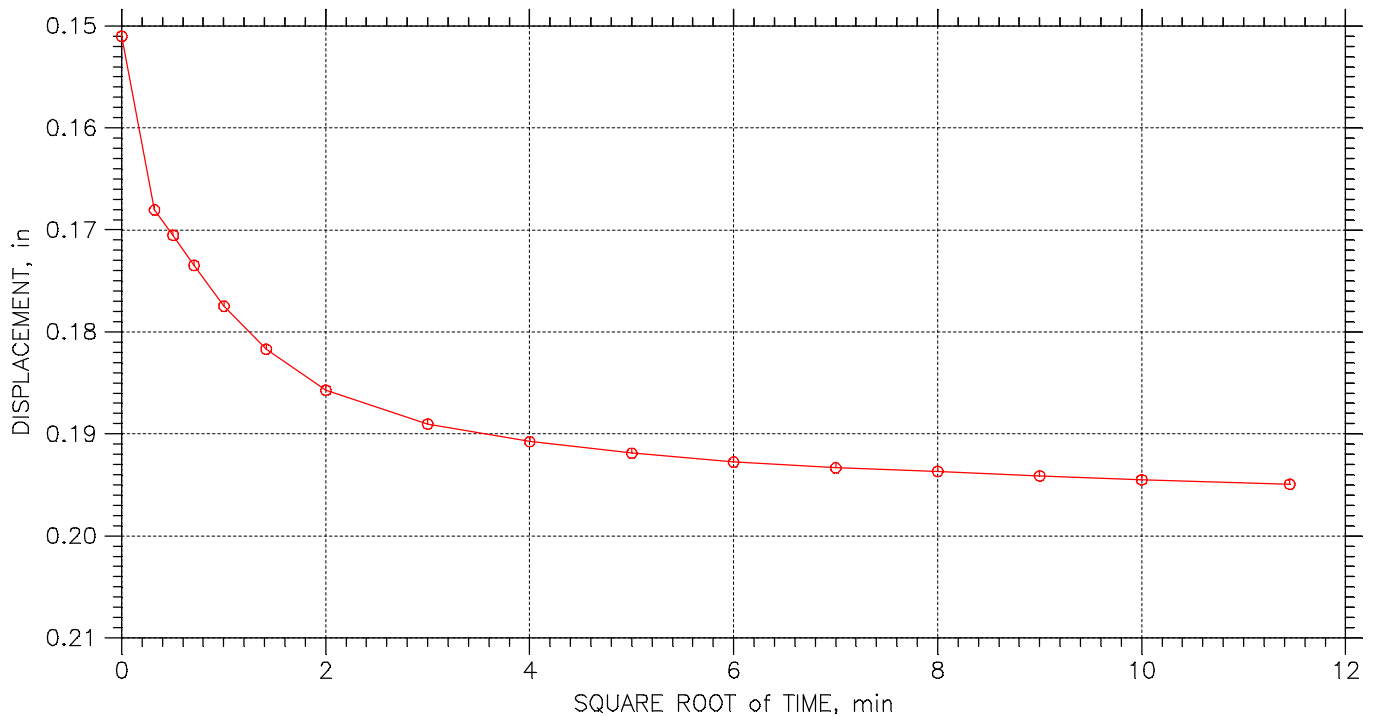
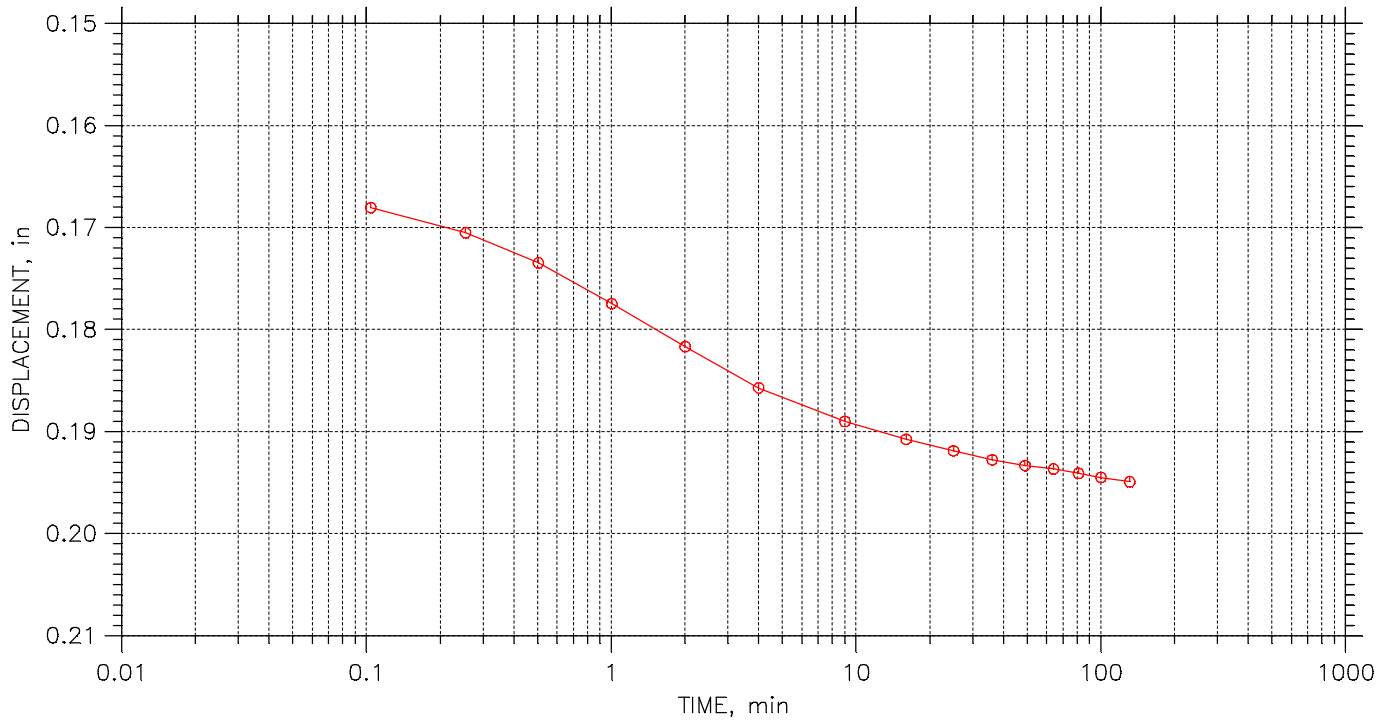
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
238			


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 18 of 23

Stress: 32. tsf



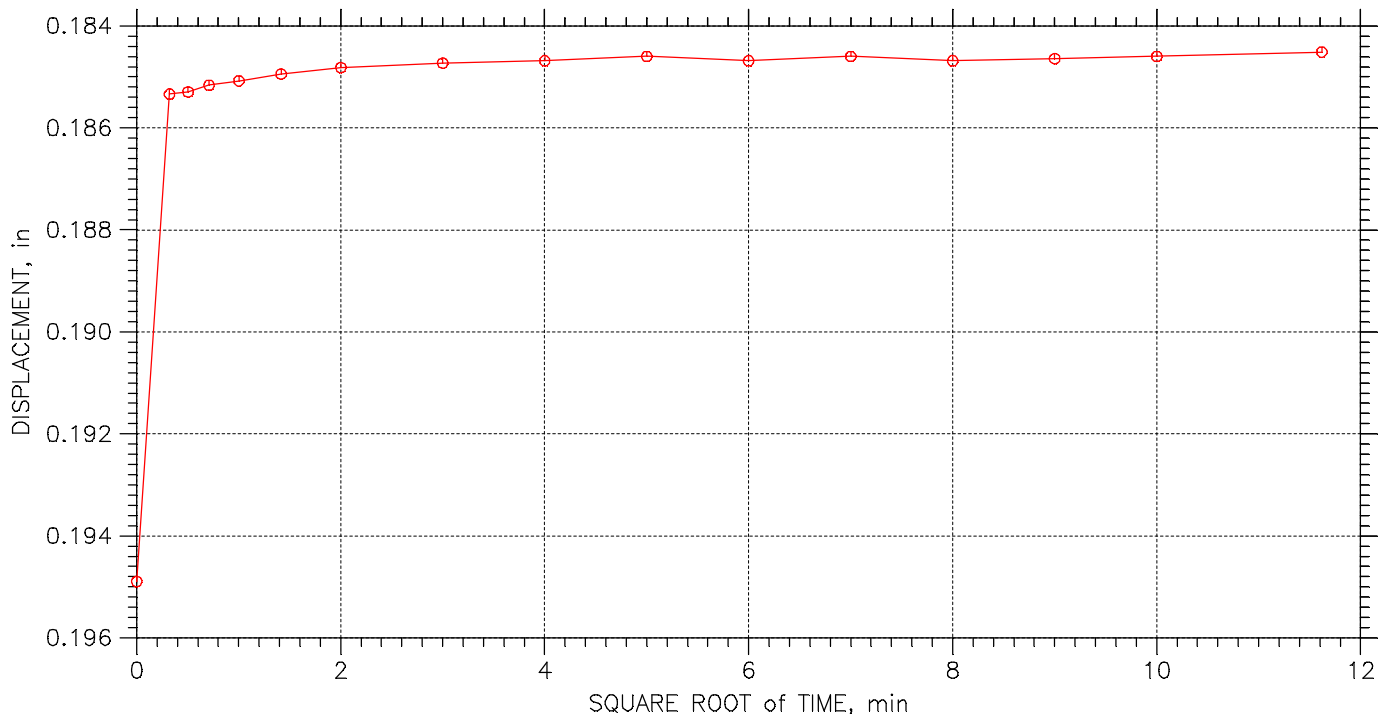
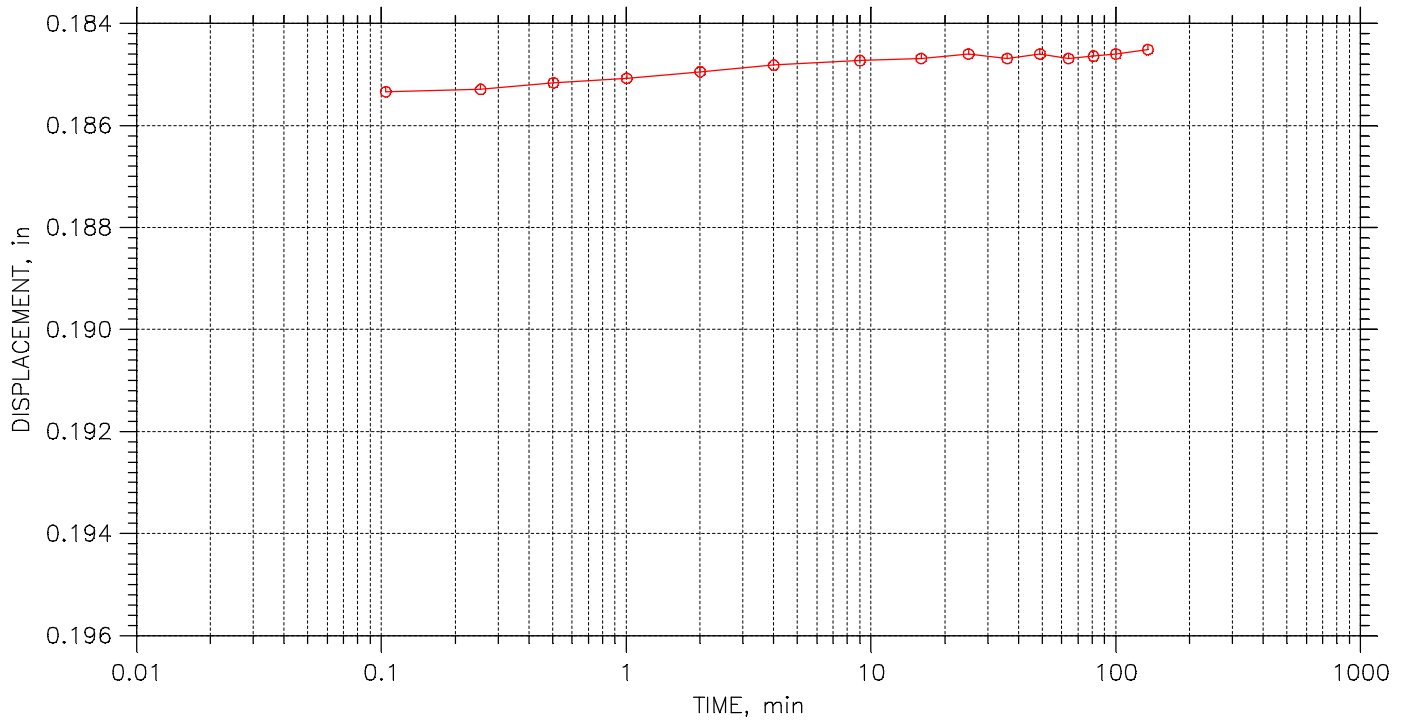
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
	239		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 19 of 23

Stress: 16. tsf



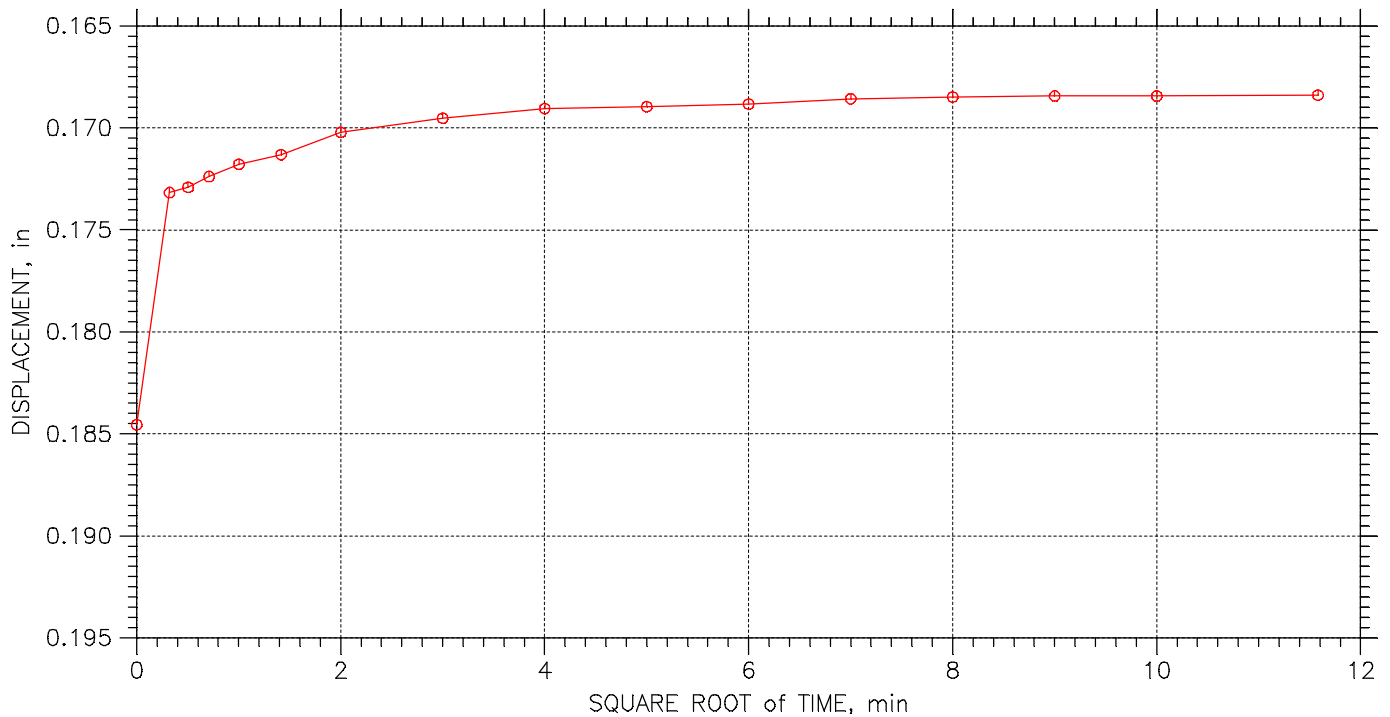
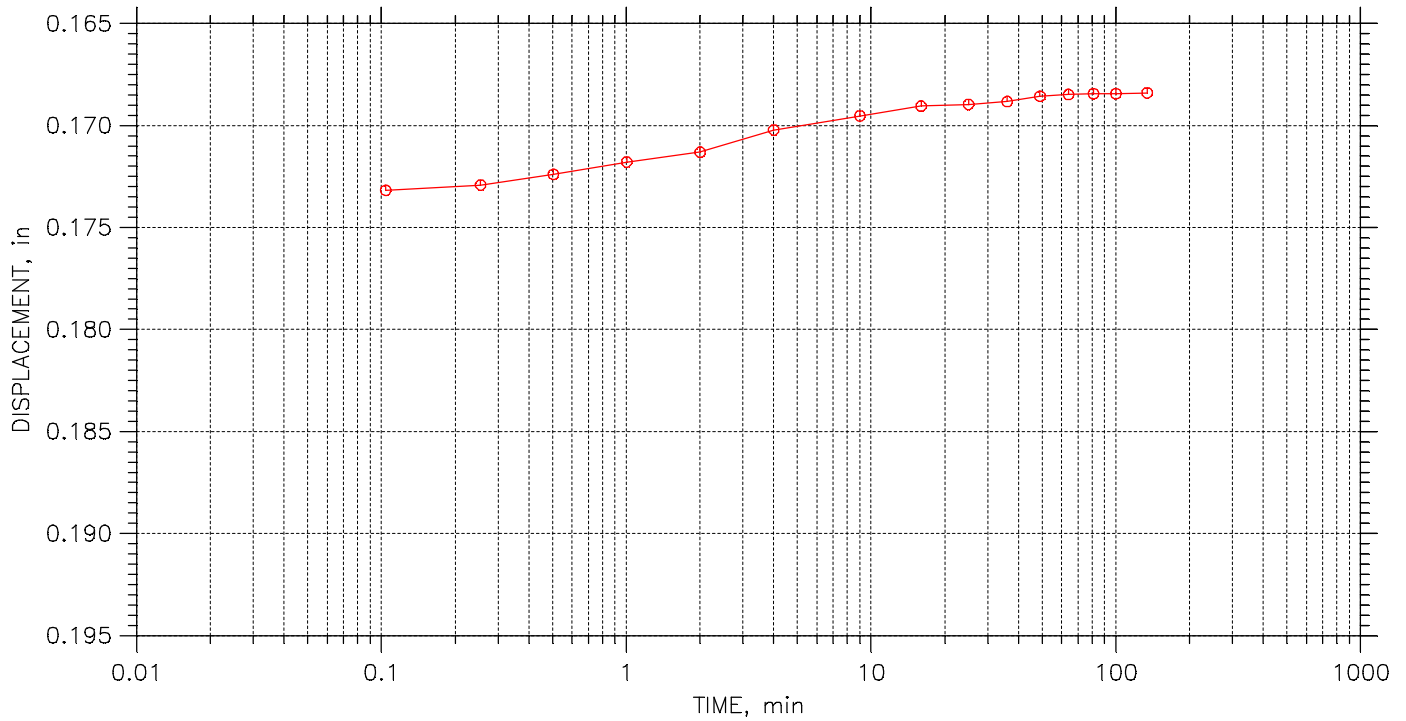
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
	240		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 20 of 23

Stress: 4. tsf



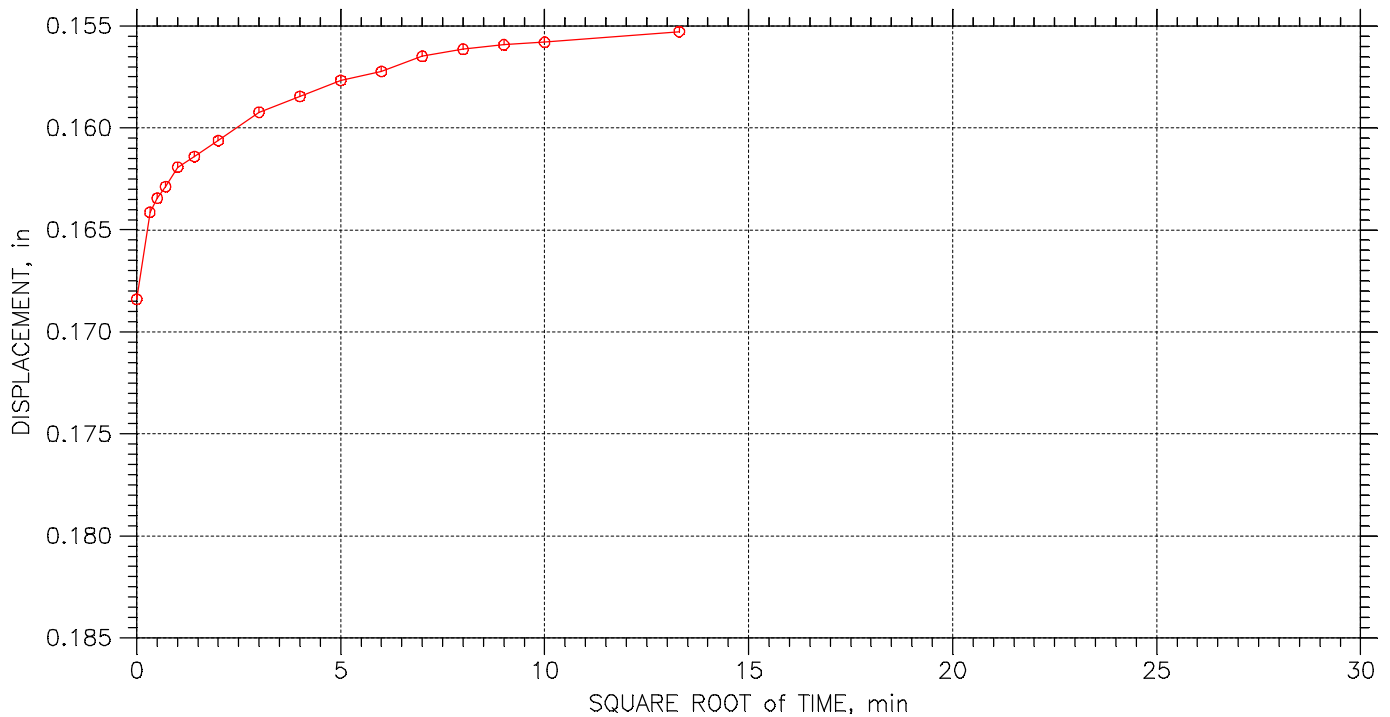
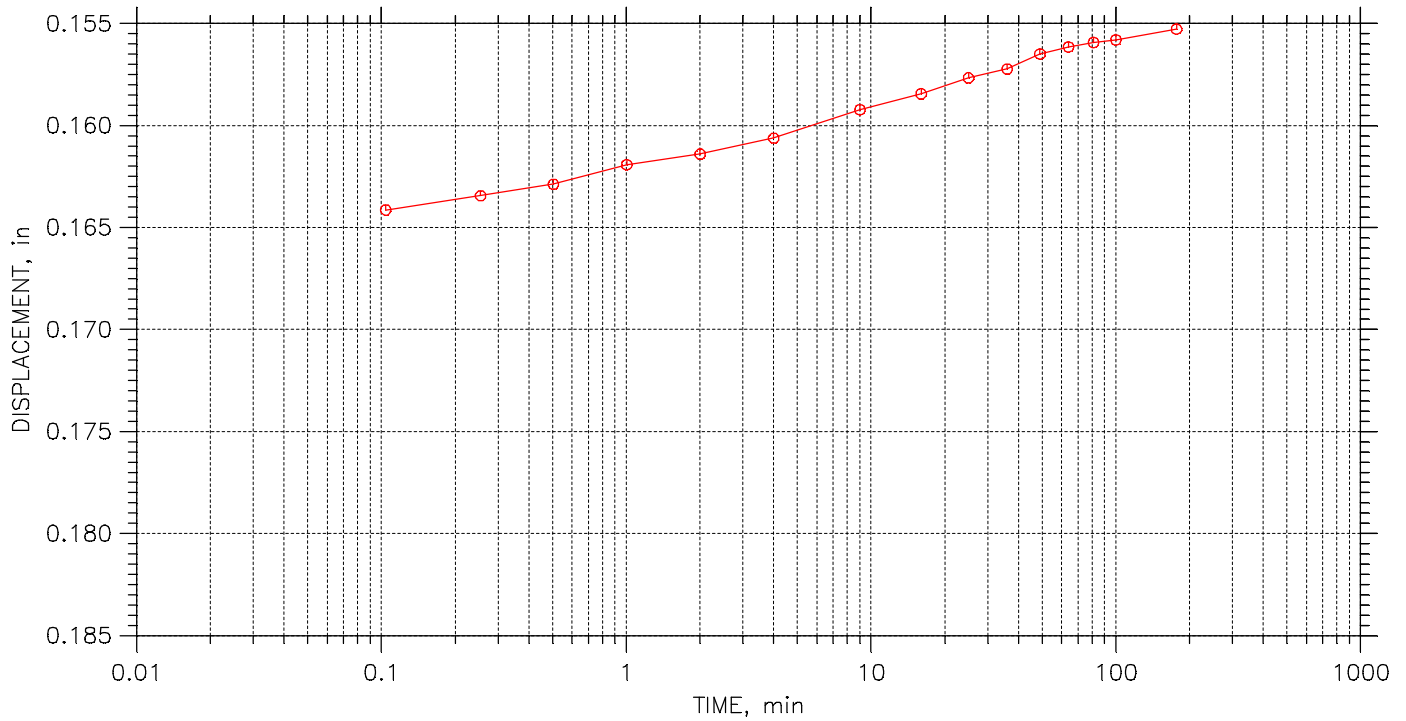
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
241			


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 21 of 23

Stress: 1. tsf



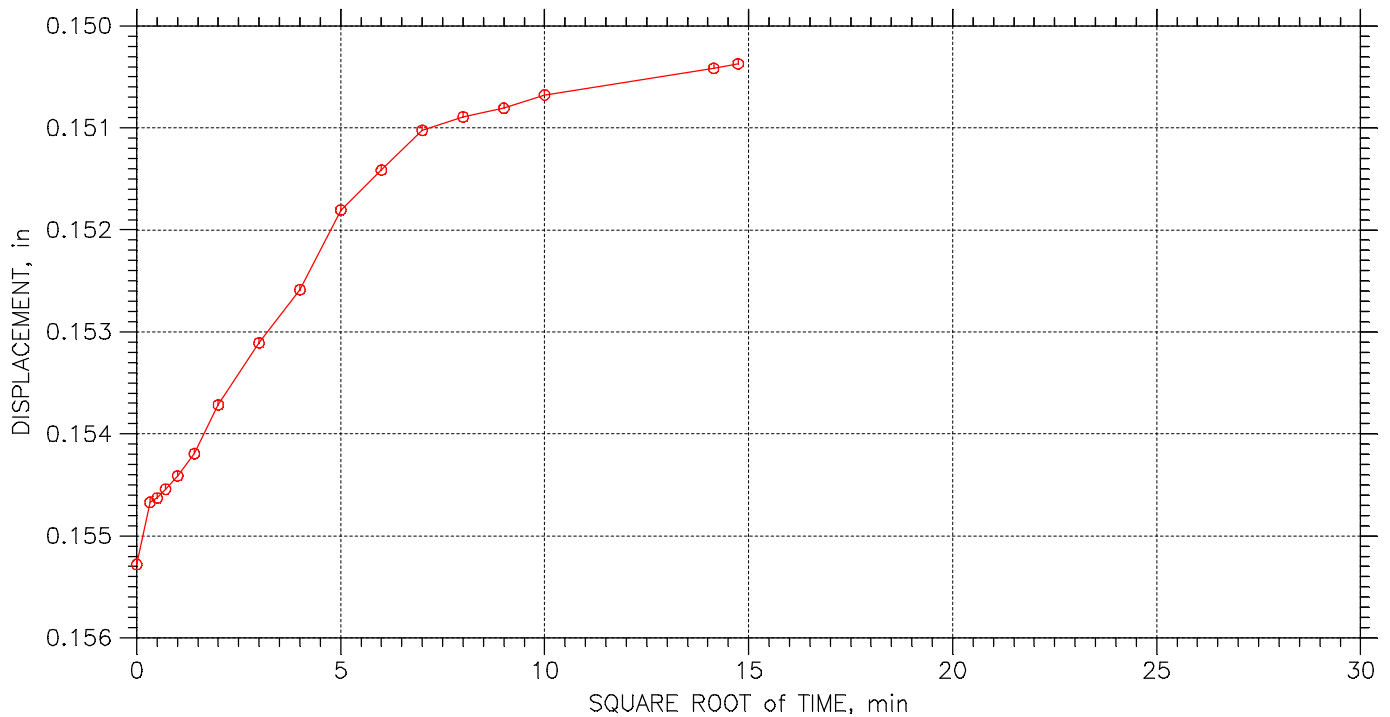
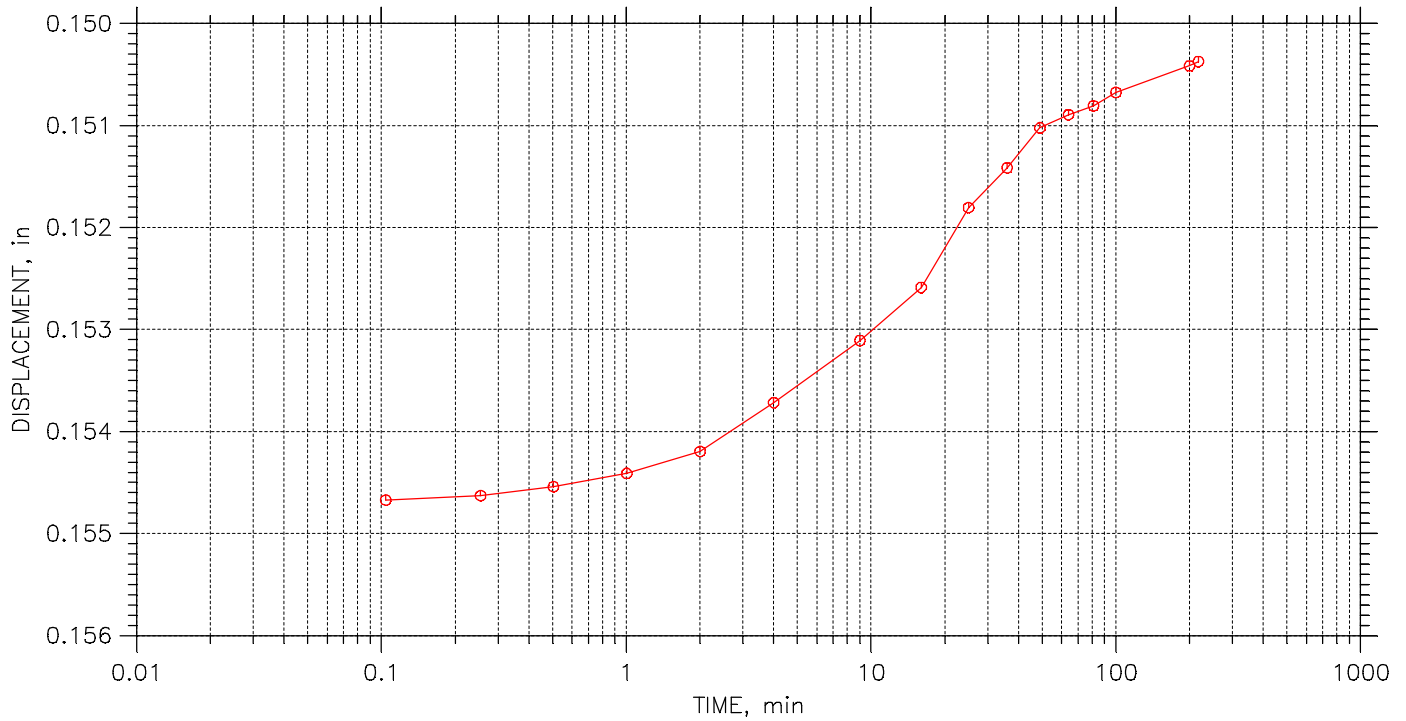
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
	242		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 22 of 23

Stress: 0.5 tsf



	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
243			

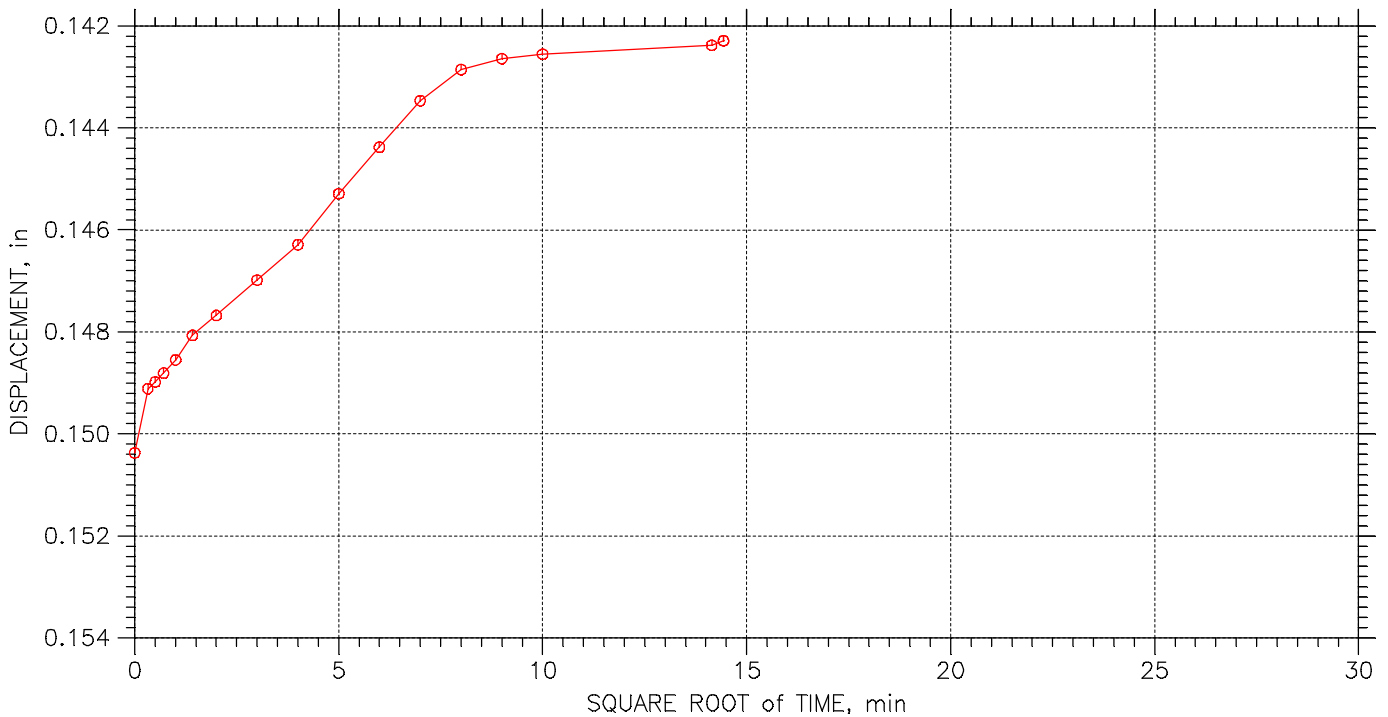
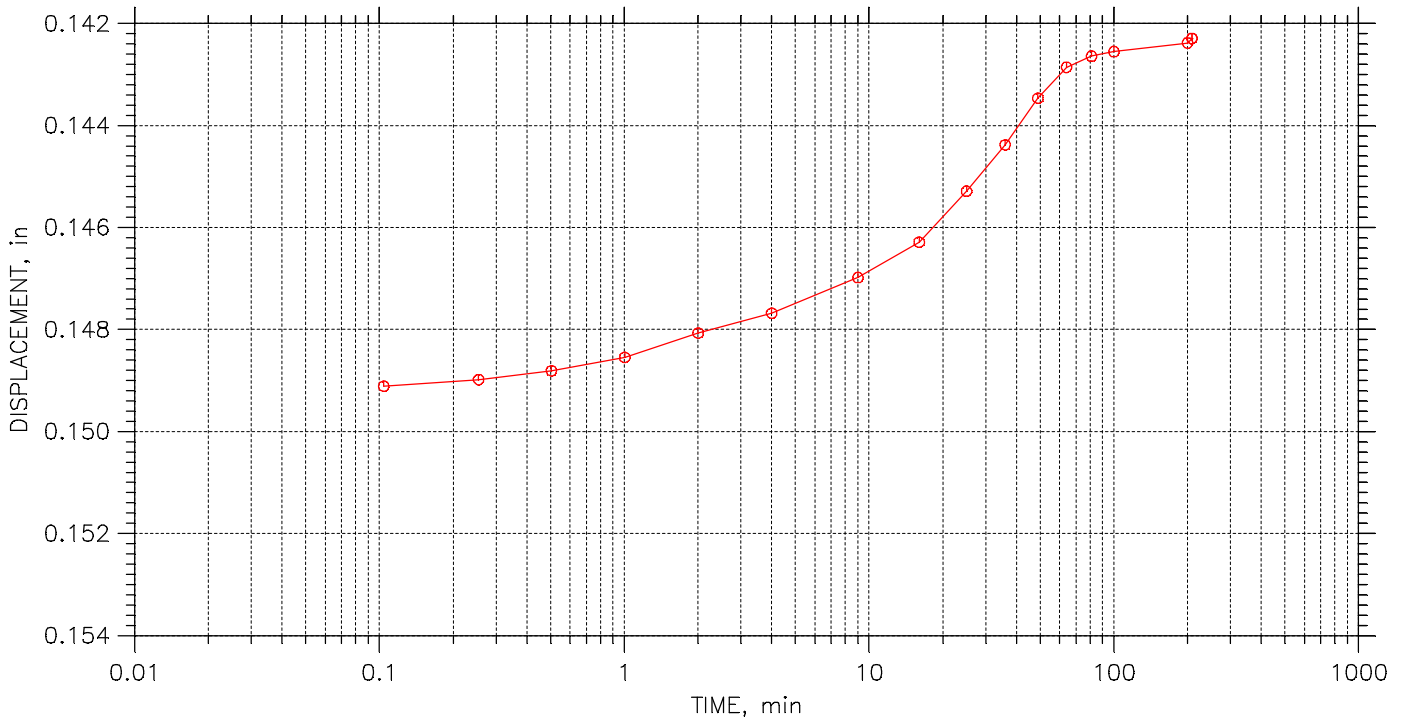



# CONSOLIDATION TEST DATA

## TIME CURVES

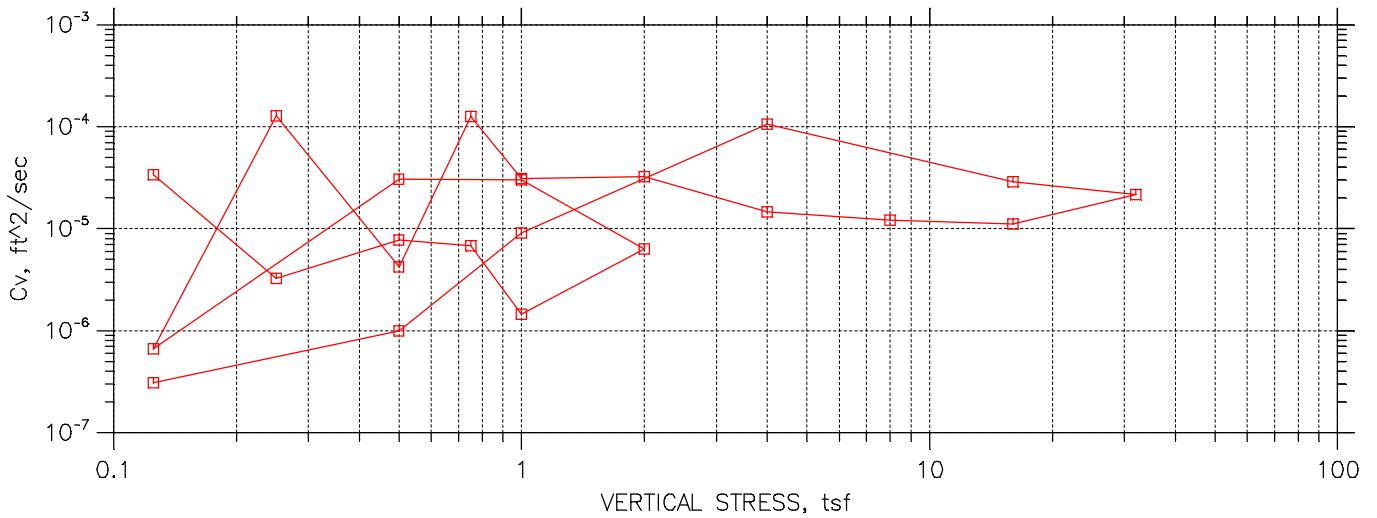
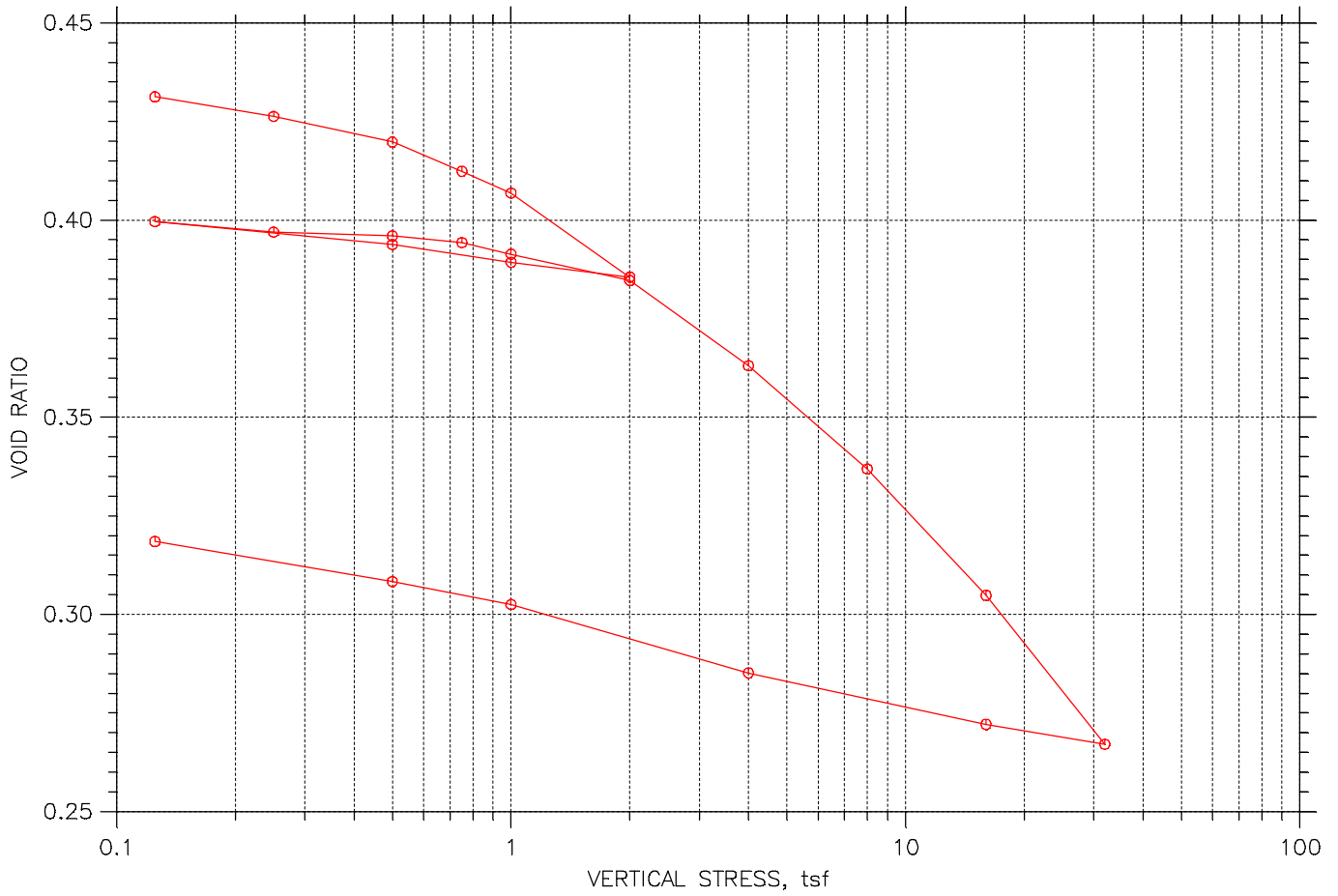
Constant Load Step: 23 of 23


Stress: 0.125 tsf



	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-016 S-7	Tested By: HP	Checked By: BCM
	Sample No.: S-7	Test Date: 12/13/15	Depth: 30.0'-22.0'
	Test No.: HENB016S7	Sample Type: 3.0" ST	Elevation: ----
	Description: VERY DARK GRAY ORGANIC CLAY WITH SAND AND GRAVEL		
	Remarks: Pc = 2.1 tsf Cc = 0.235 Ccr = 0.056 TEST PERFORMED AS PER ASTM D 2435		
244			

# ONE DIMENSIONAL CONSOLIDATION TEST ASTM D2435



	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
	245		

CONSOLIDATION TEST DATA

Project: DYNERGY HENNEPIN  
 Boring No.: HEN B020  
 Sample No.: S-5  
 Test No.: HENB020

Location: HENNEPIN, IL  
 Tested By: HP  
 Test Date: 12/14/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: BCM  
 Depth: 9.5'-11.5'  
 Elevation: -----



Soil Description: BROWN SANDY LEAN CLAY AND GRAVEL  
 Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435

Estimated Specific Gravity: 2.72  
 Initial Void Ratio: 0.44  
 Final Void Ratio: 0.32

Liquid Limit: 0  
 Plastic Limit: 0  
 Plasticity Index: 0

Initial Height: 0.75 in  
 Specimen Diameter: 2.50 in

Container ID	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
	X-1	RING	RING	X-9
Wt. Container + Wet Soil, gm	111.2	202.4	200.77	169.91
Wt. Container + Dry Soil, gm	102.93	187.19	187.19	152.25
Wt. Container, gm	44.86	73.34	73.34	4.21
Wt. Dry Soil, gm	58.07	113.85	113.85	148.04
Water Content, %	14.24	13.36	11.93	11.93
Void Ratio	---	0.44	0.32	---
Degree of Saturation, %	---	82.94	101.88	---
Dry Unit Weight, pcf	---	118.07	128.79	---

CONSOLIDATION TEST DATA

Project: DYNERGY HENNEPIN  
 Boring No.: HEN B020  
 Sample No.: S-5  
 Test No.: HENB020

Location: HENNEPIN, IL  
 Tested By: HP  
 Test Date: 12/14/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: BCM  
 Depth: 9.5'-11.5'  
 Elevation: -----



Soil Description: BROWN SANDY LEAN CLAY AND GRAVEL  
 Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435

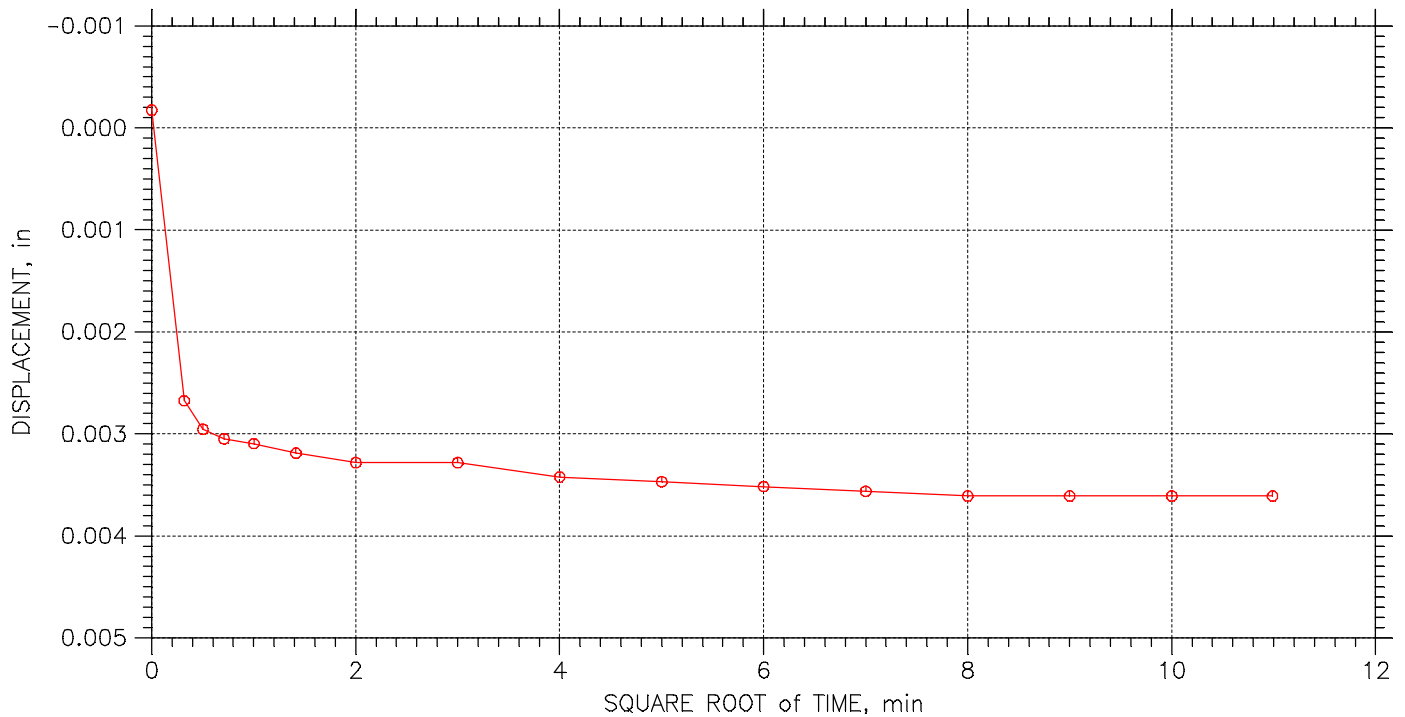
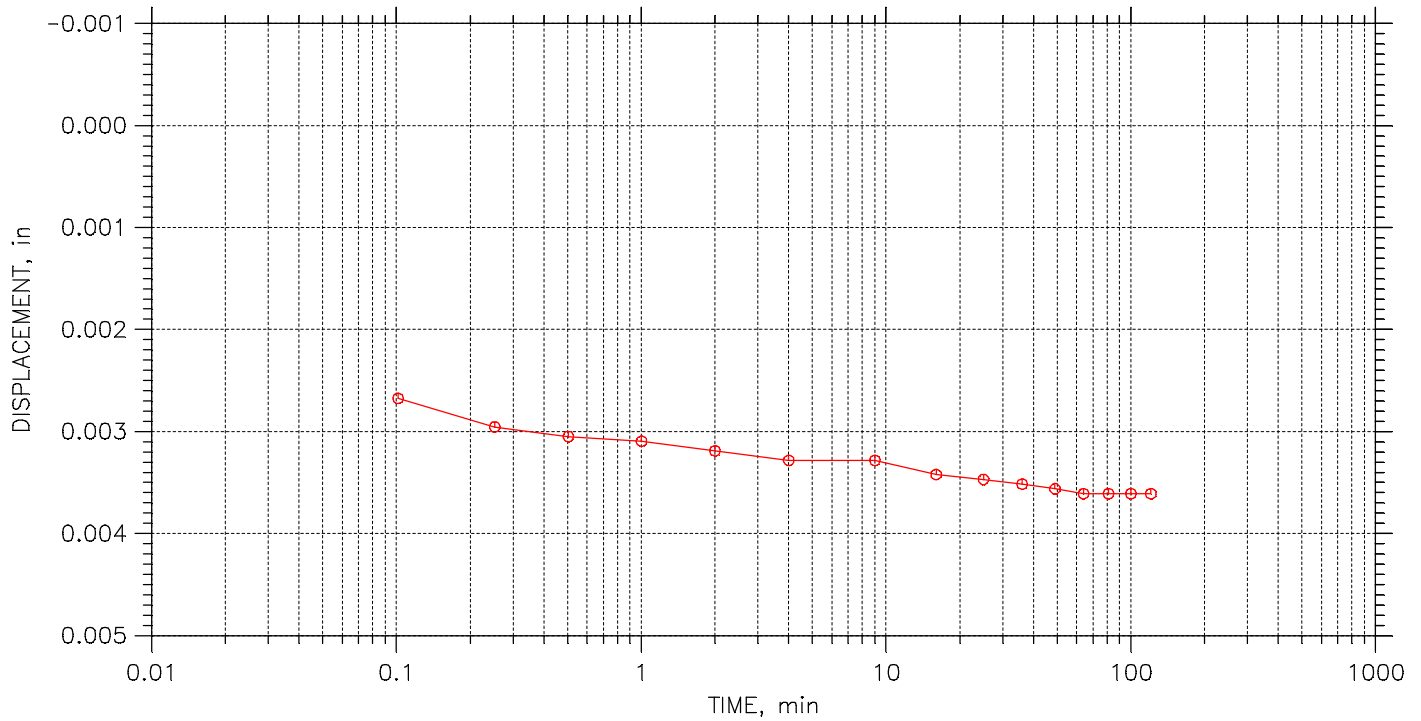
	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting		Coefficient of Consolidation		
					Sq.Rt. min	Log min	Sq.Rt. ft <sup>2</sup> /sec	Log ft <sup>2</sup> /sec	Ave. ft <sup>2</sup> /sec
1	0.125	0.00361	0.431	0.48	0.1	0.0	3.40e-005	0.00e+000	3.40e-005
2	0.25	0.006166	0.426	0.82	1.0	0.0	3.26e-006	0.00e+000	3.26e-006
3	0.5	0.009553	0.420	1.28	0.4	0.0	7.74e-006	0.00e+000	7.74e-006
4	0.75	0.01341	0.412	1.79	0.5	0.0	6.84e-006	0.00e+000	6.84e-006
5	1	0.01633	0.407	2.18	2.1	0.5	1.46e-006	6.72e-006	2.40e-006
6	2	0.02736	0.386	3.66	0.5	0.0	6.30e-006	0.00e+000	6.30e-006
7	1	0.02531	0.389	3.39	0.1	0.0	3.04e-005	0.00e+000	3.04e-005
8	0.5	0.02311	0.394	3.09	0.1	0.0	3.06e-005	0.00e+000	3.06e-005
9	0.125	0.02032	0.399	2.72	0.9	0.0	3.23e-006	0.00e+000	3.23e-006
10	0.25	0.02154	0.397	2.88	0.1	0.0	3.18e-005	0.00e+000	3.18e-005
11	0.5	0.02194	0.396	2.94	0.2	0.0	1.52e-005	0.00e+000	1.52e-005
12	0.75	0.02305	0.394	3.08	0.1	0.0	3.12e-005	0.00e+000	3.12e-005
13	1	0.02438	0.391	3.26	0.1	0.0	2.54e-005	0.00e+000	2.54e-005
14	2	0.02792	0.384	3.73	0.1	0.0	3.25e-005	0.00e+000	3.25e-005
15	4	0.03906	0.363	5.22	0.2	0.0	1.45e-005	0.00e+000	1.45e-005
16	8	0.05266	0.337	7.04	0.2	0.0	1.22e-005	0.00e+000	1.22e-005
17	16	0.06932	0.305	9.27	0.2	0.0	1.11e-005	0.00e+000	1.11e-005
18	32	0.08893	0.267	11.90	0.1	0.0	2.17e-005	0.00e+000	2.17e-005
19	16	0.08627	0.272	11.54	0.1	0.0	2.47e-005	0.00e+000	2.47e-005
20	4	0.07955	0.285	10.64	0.0	0.0	1.06e-004	0.00e+000	1.06e-004
21	1	0.07068	0.302	9.45	0.3	0.0	9.06e-006	0.00e+000	9.06e-006
22	0.5	0.06777	0.308	9.07	9.7	0.0	2.72e-007	0.00e+000	2.72e-007
23	0.125	0.06223	0.318	8.32	8.3	8.9	3.20e-007	3.00e-007	3.10e-007


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 1 of 23

Stress: 0.125 tsf



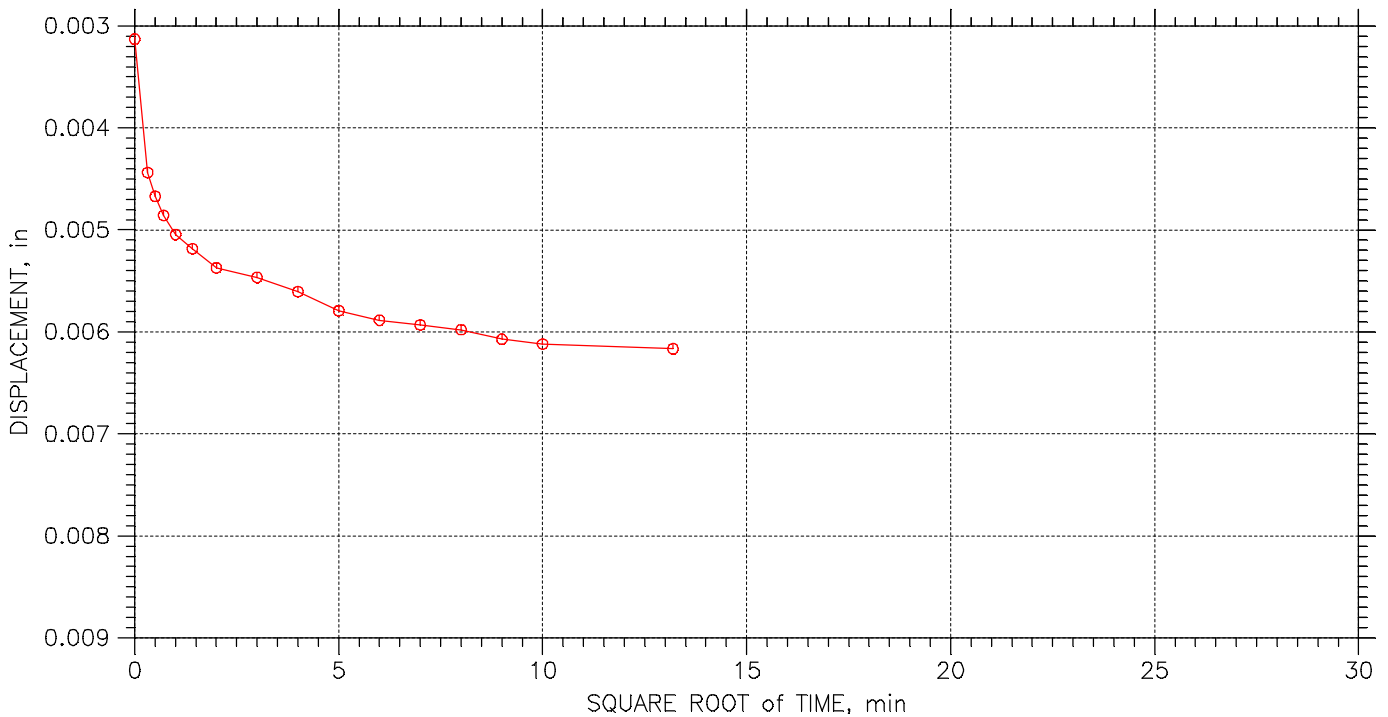
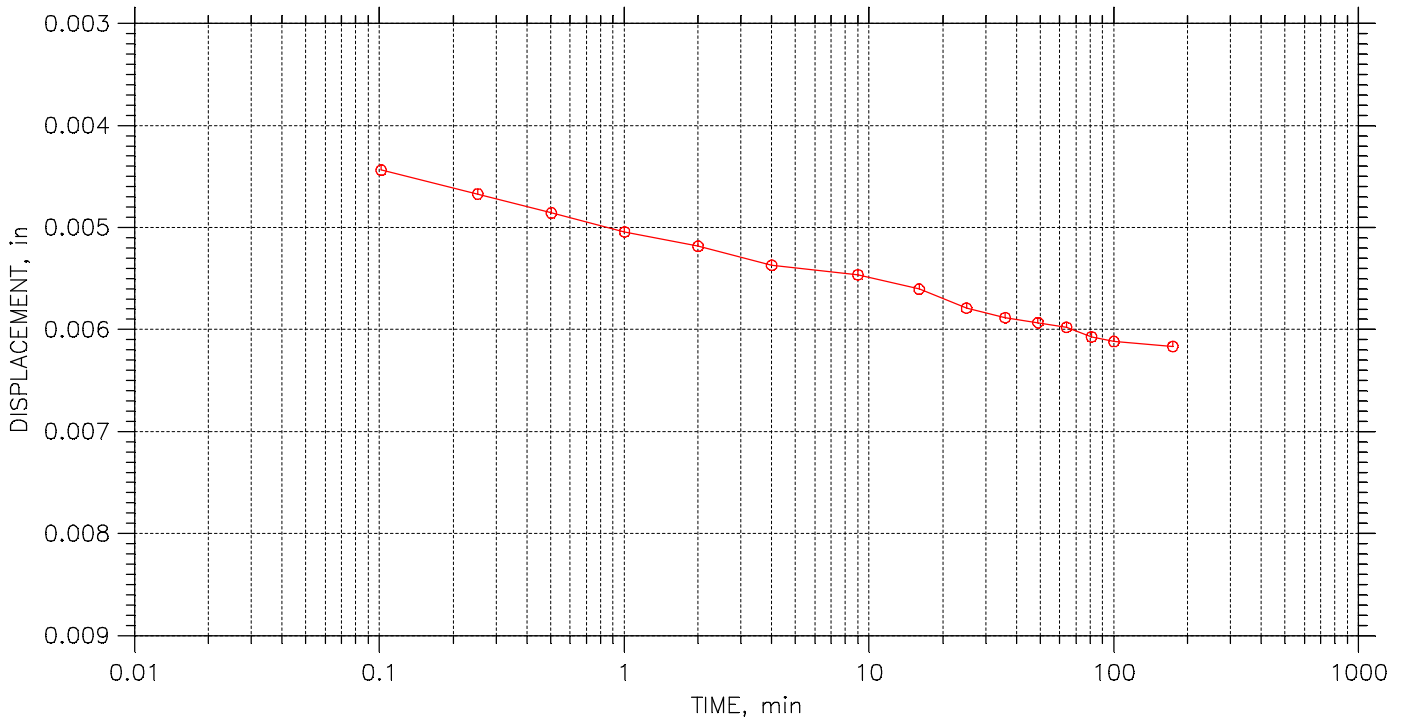
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
	248		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 2 of 23

Stress: 0.25 tsf



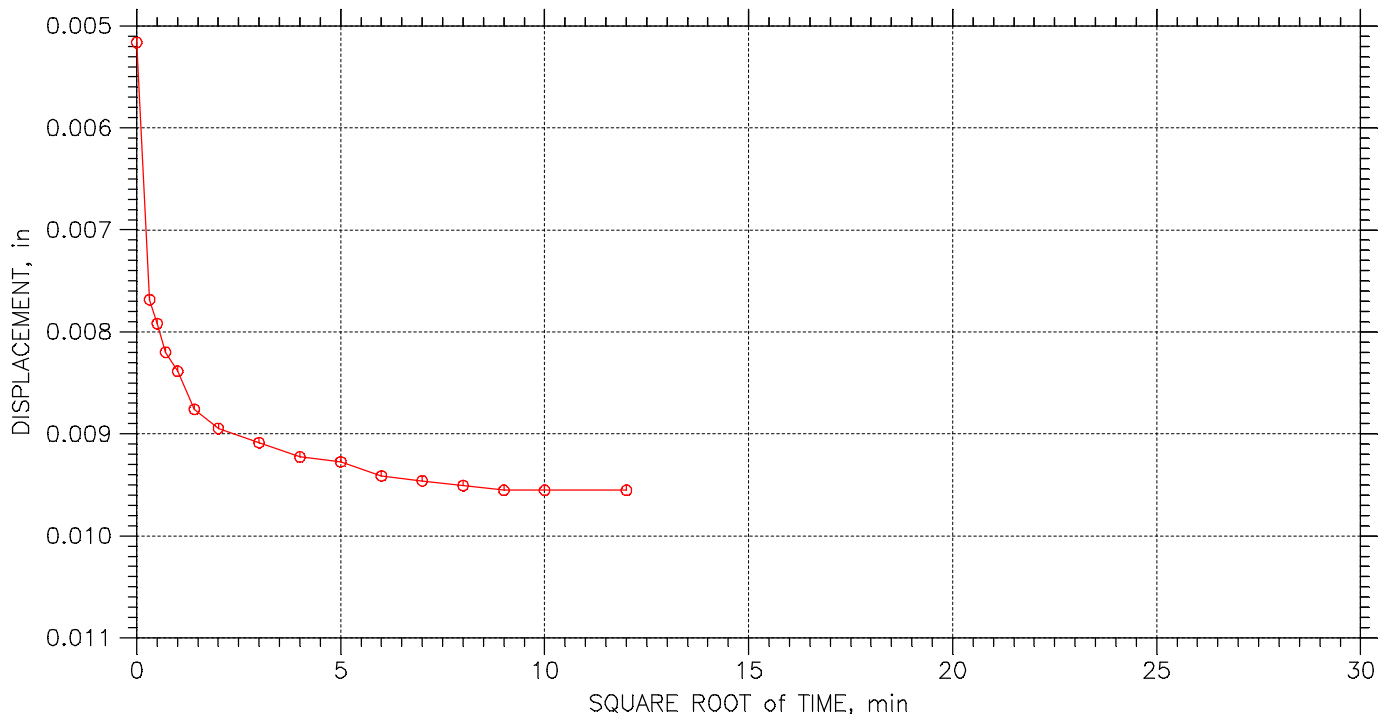
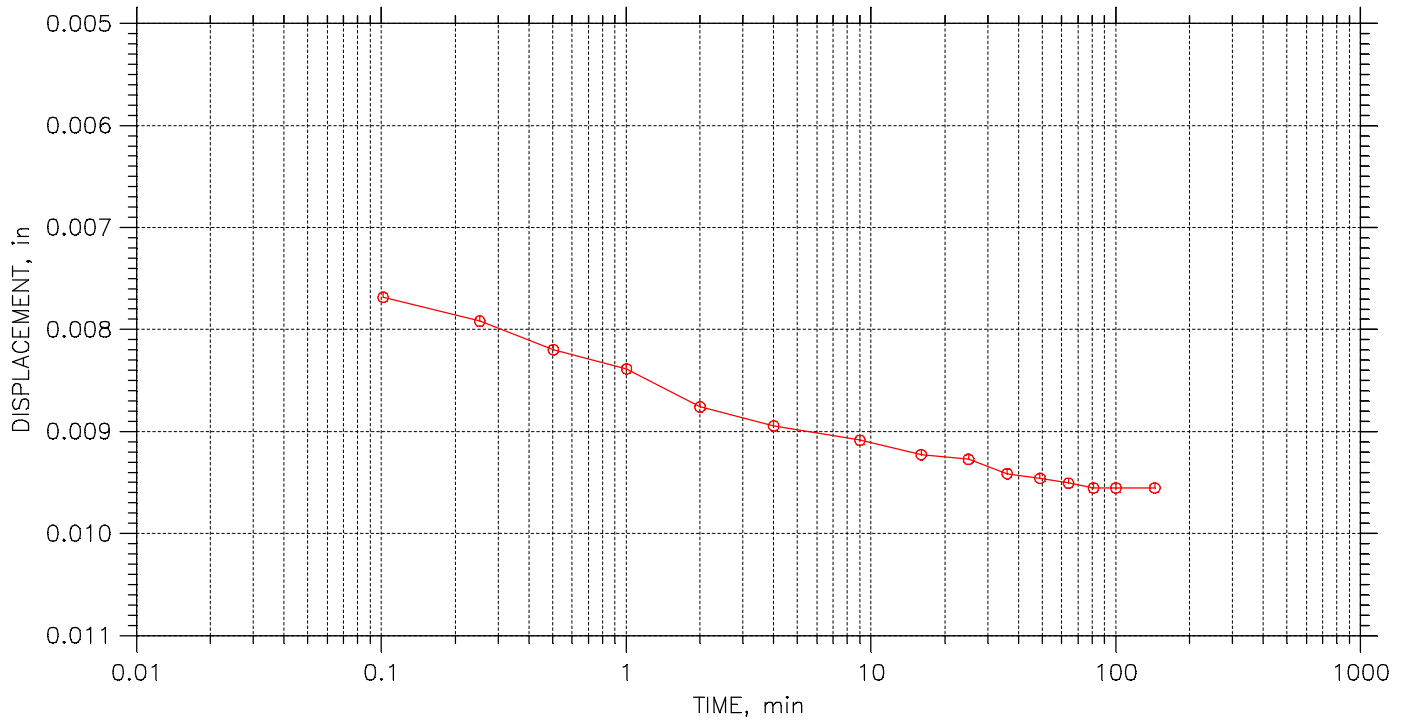
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
	249		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 3 of 23

Stress: 0.5 tsf



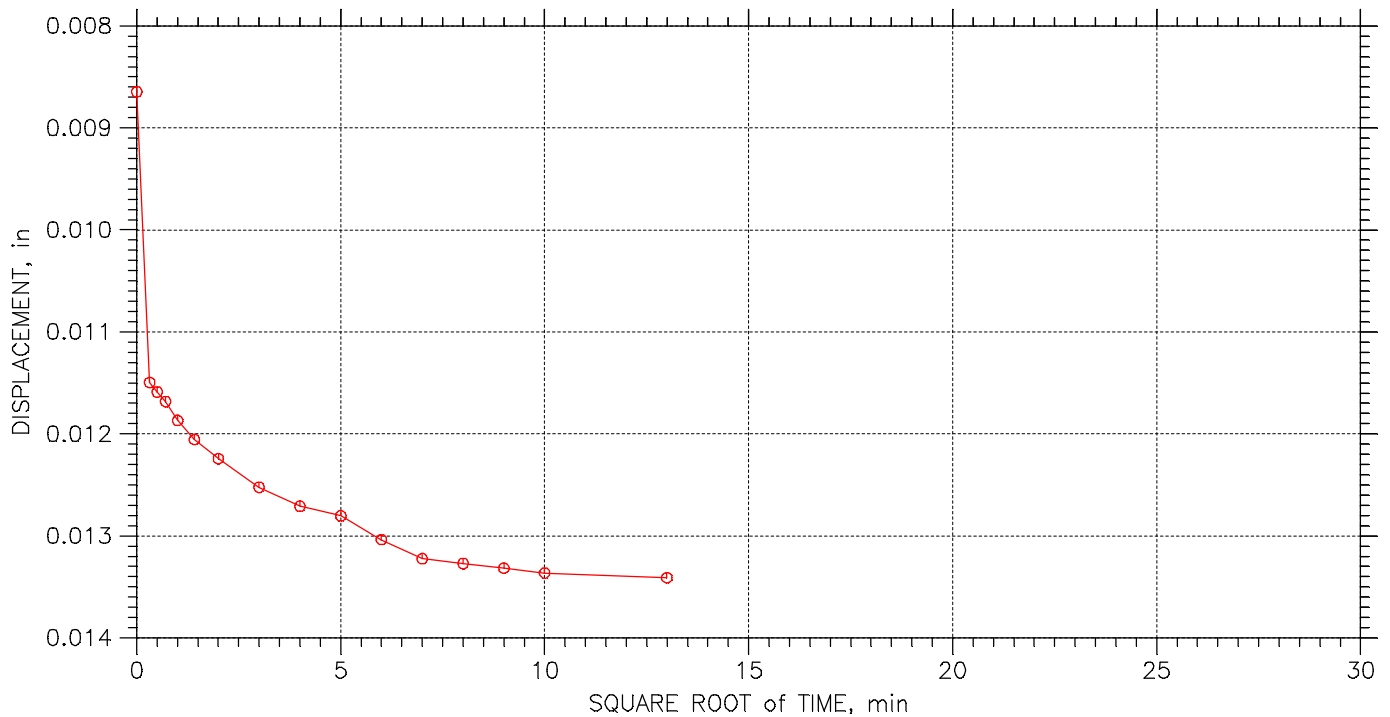
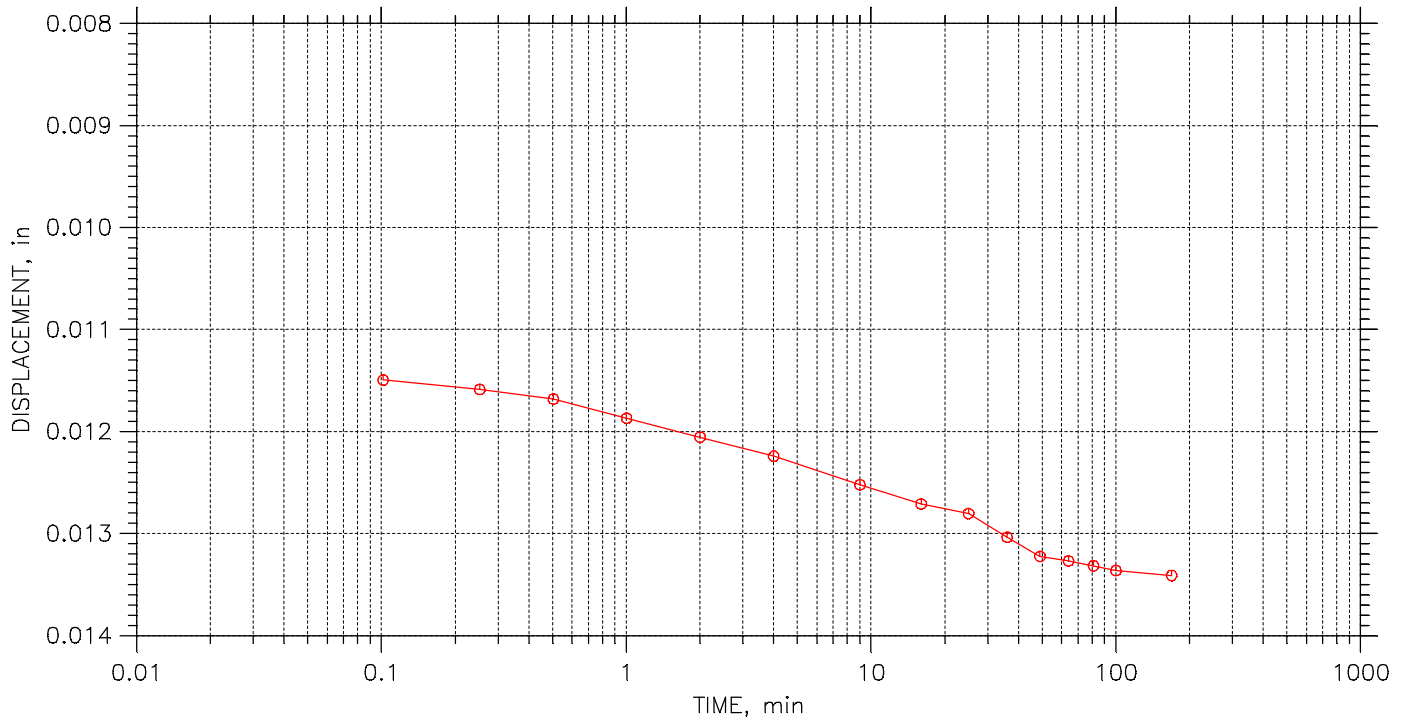
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
	250		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 4 of 23

Stress: 0.75 tsf



	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
	251		

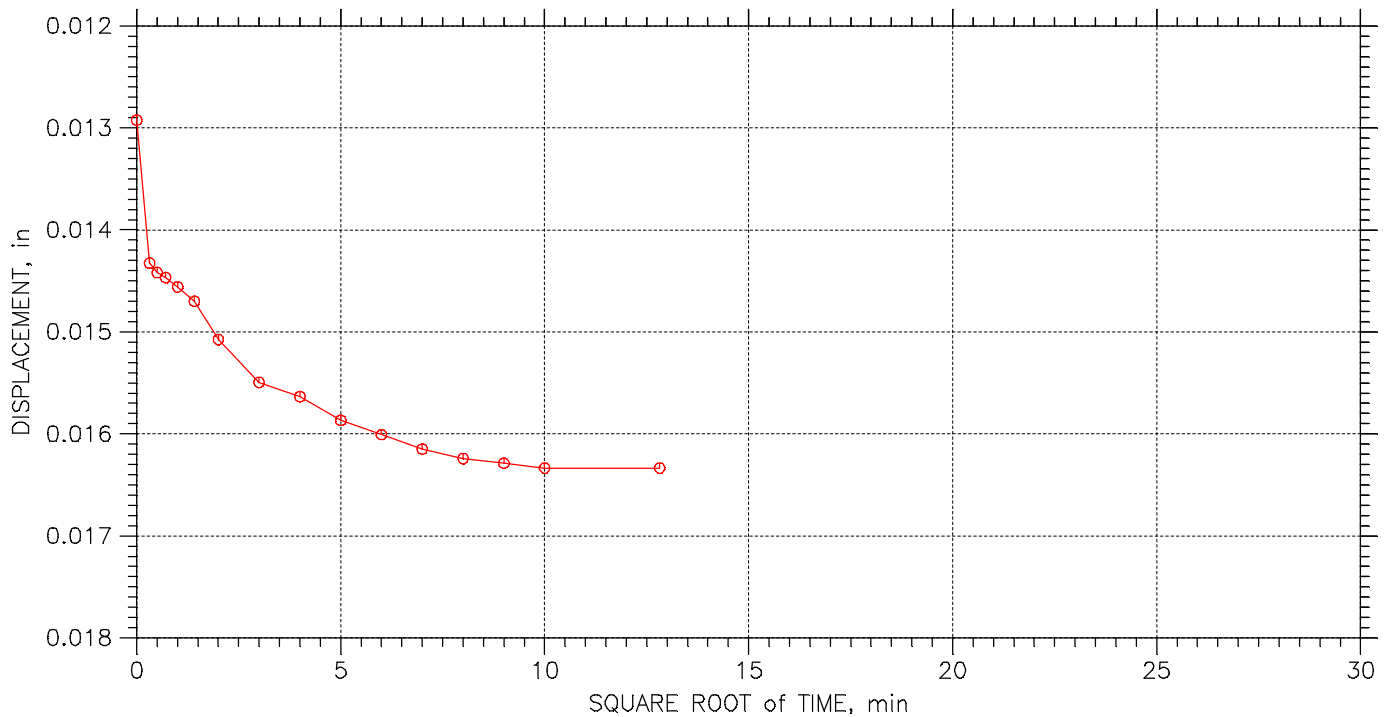
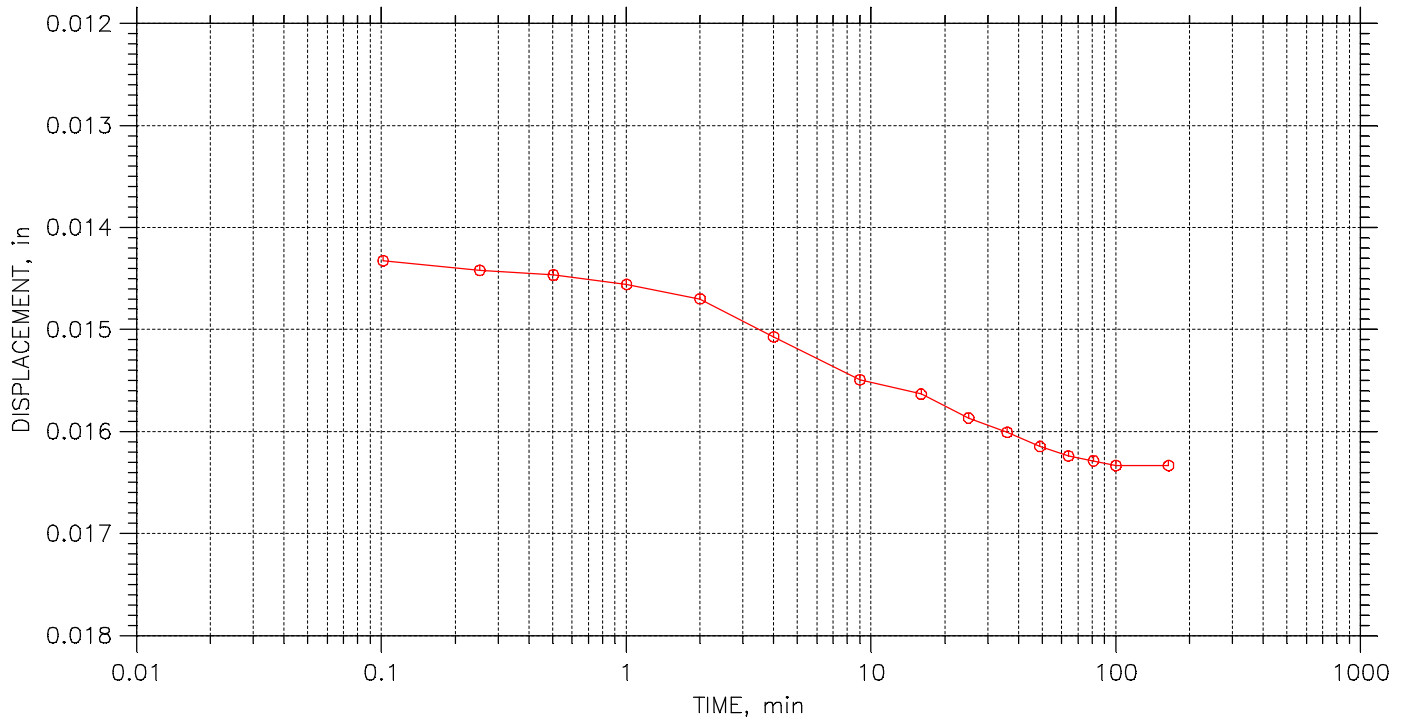



# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 5 of 23

Stress: 1. tsf



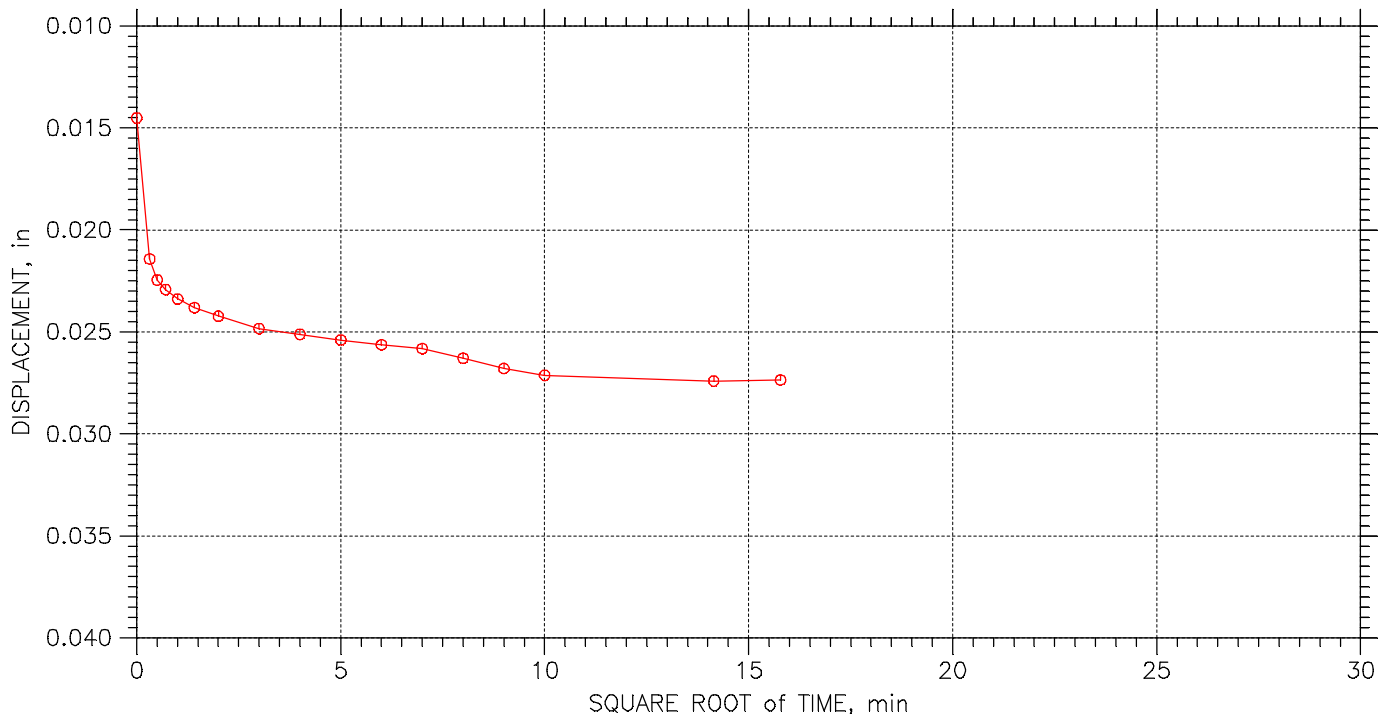
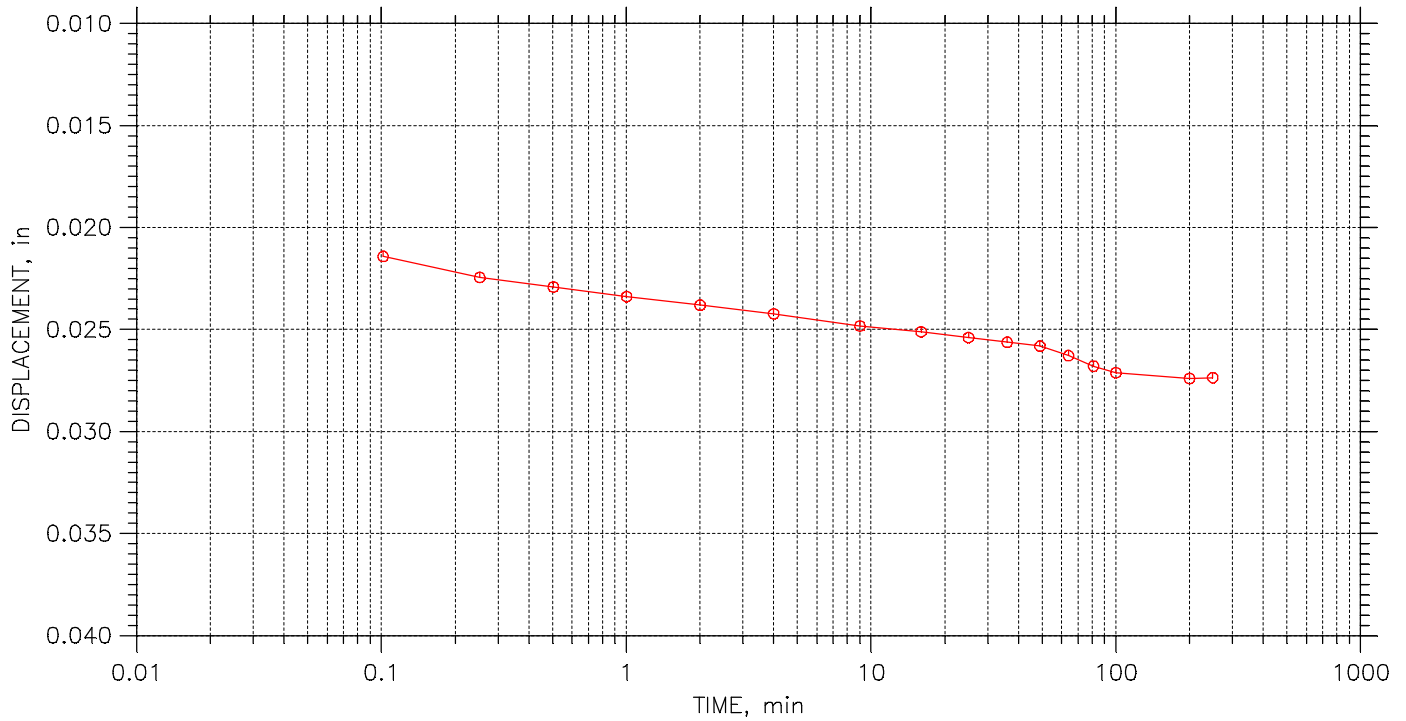
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	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
	252		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 6 of 23

Stress: 2. tsf



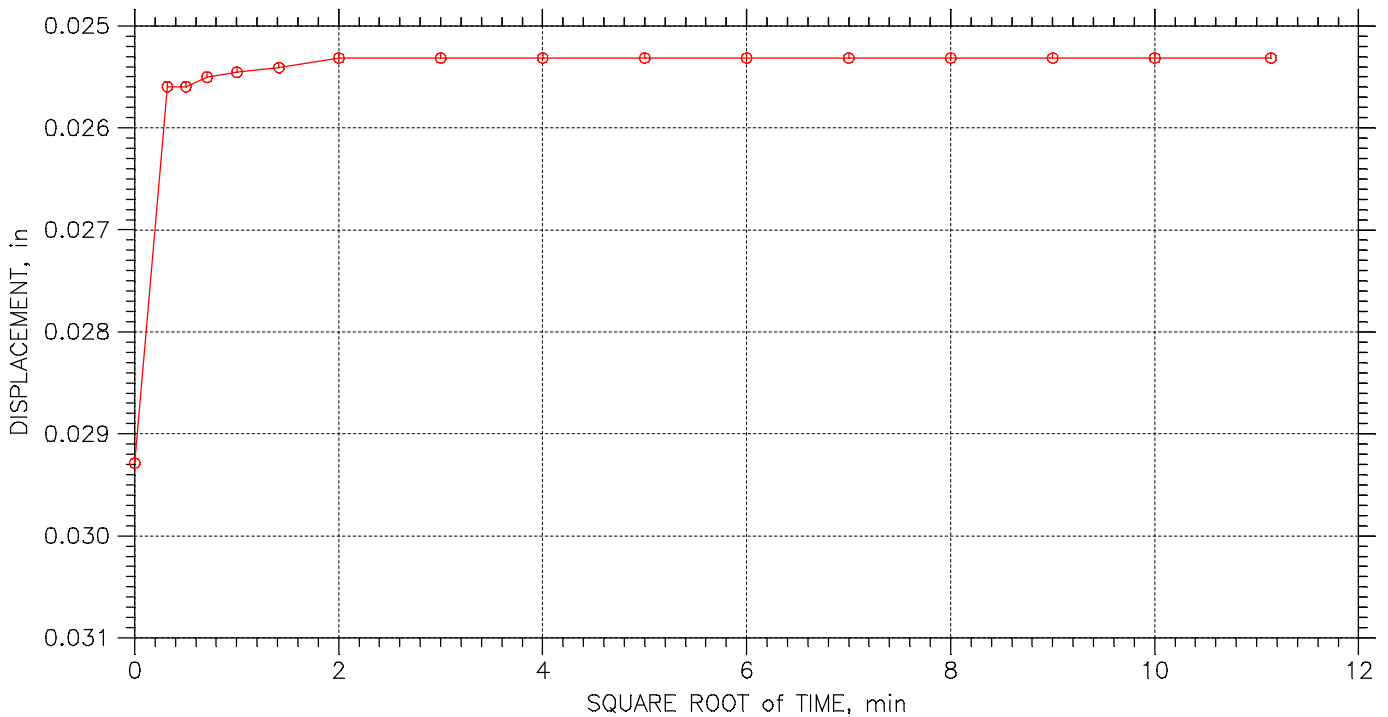
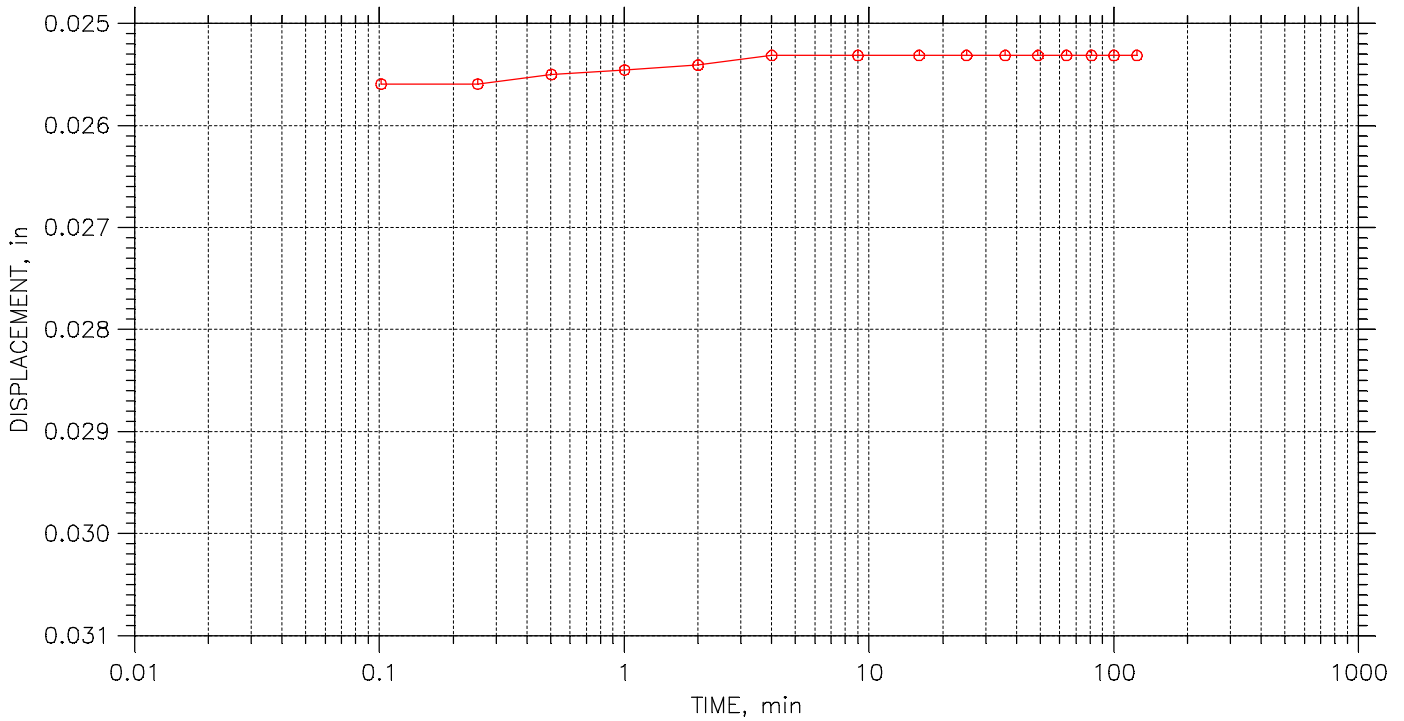
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
253			


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 7 of 23

Stress: 1. tsf



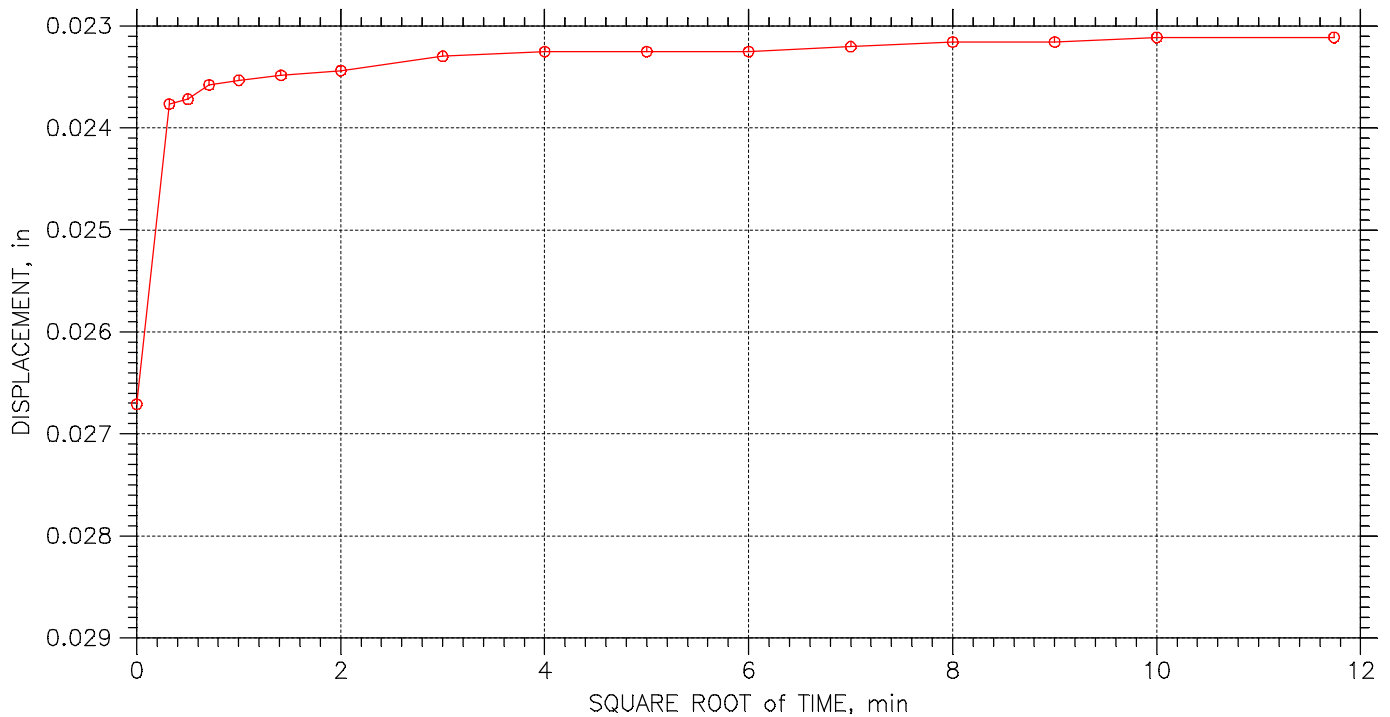
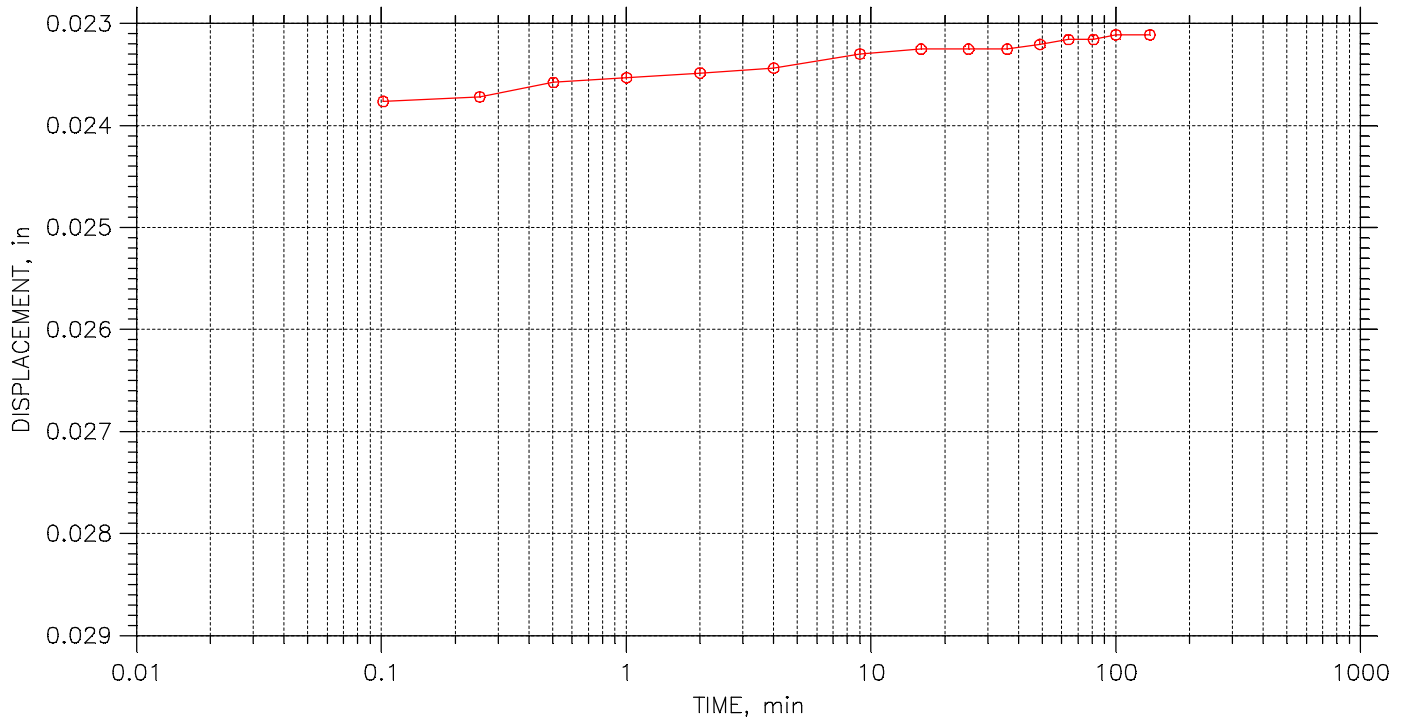
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	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
	254		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 8 of 23

Stress: 0.5 tsf



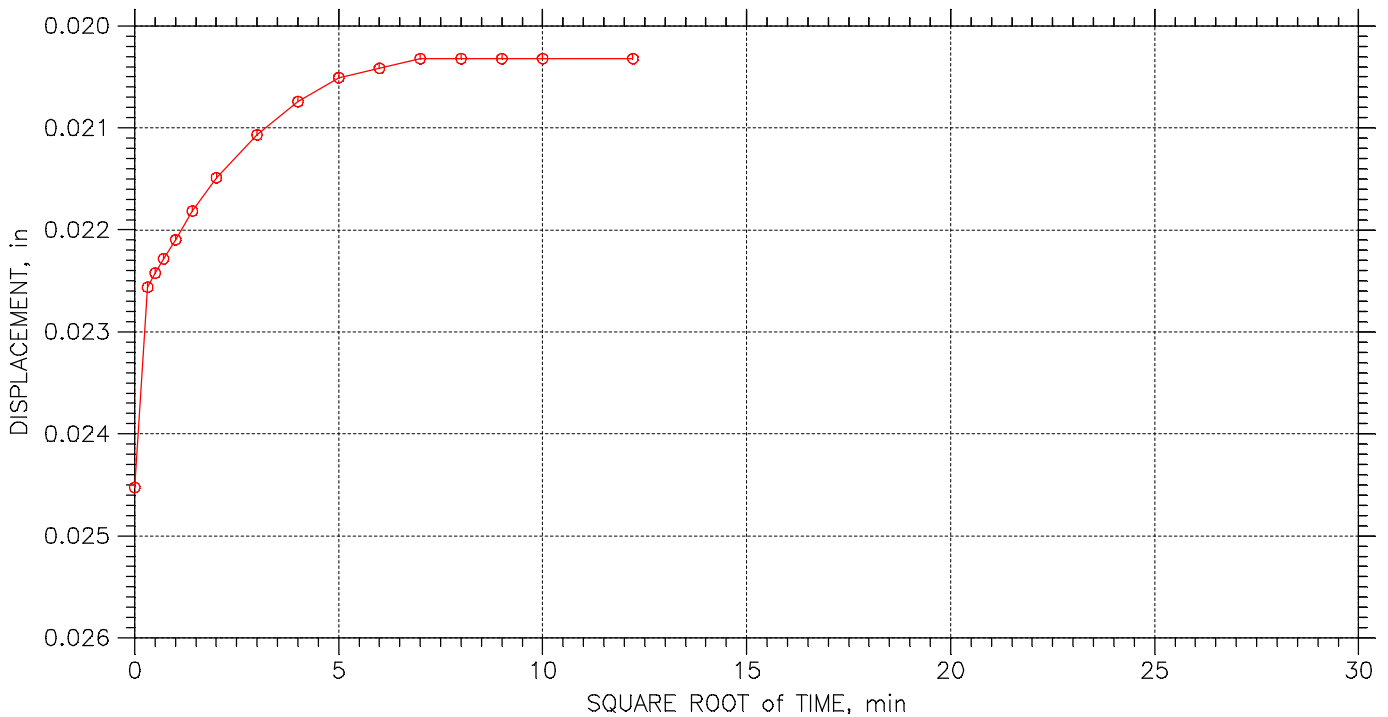
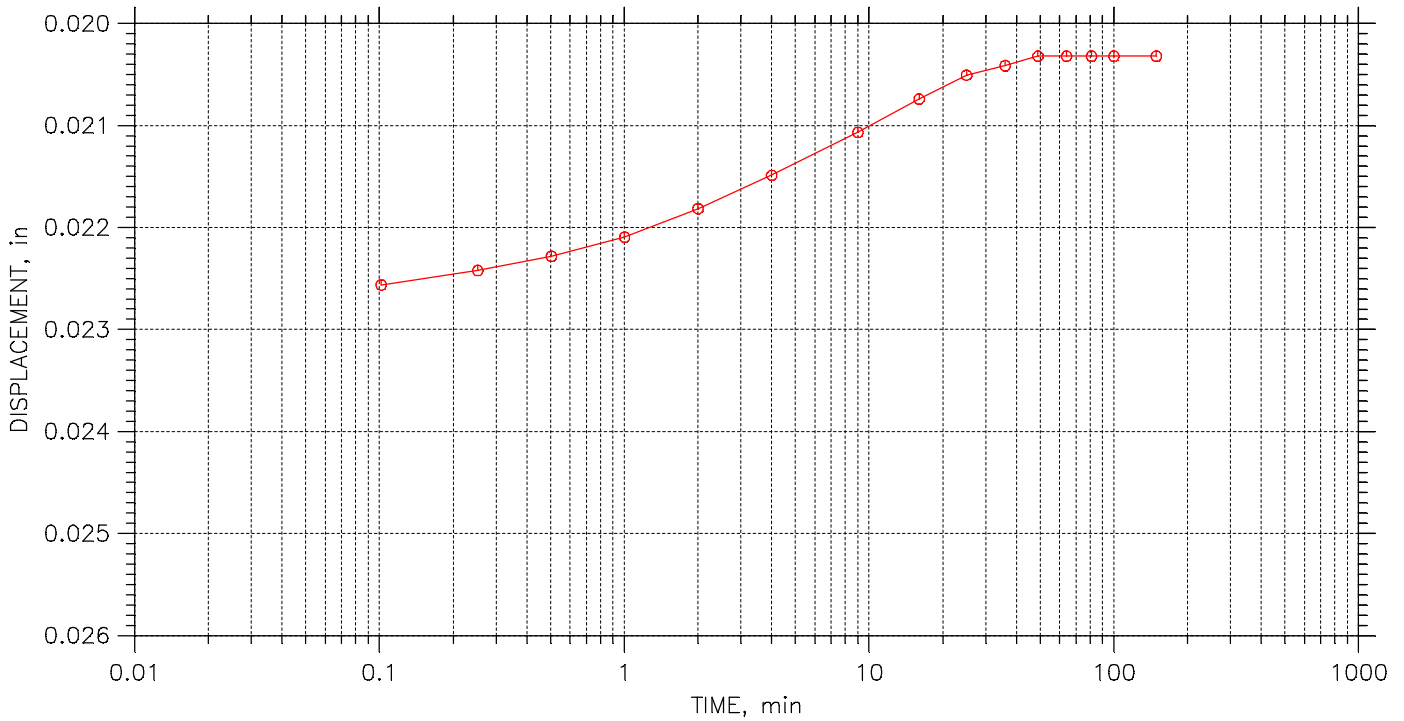
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	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
	255		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 9 of 23

Stress: 0.125 tsf



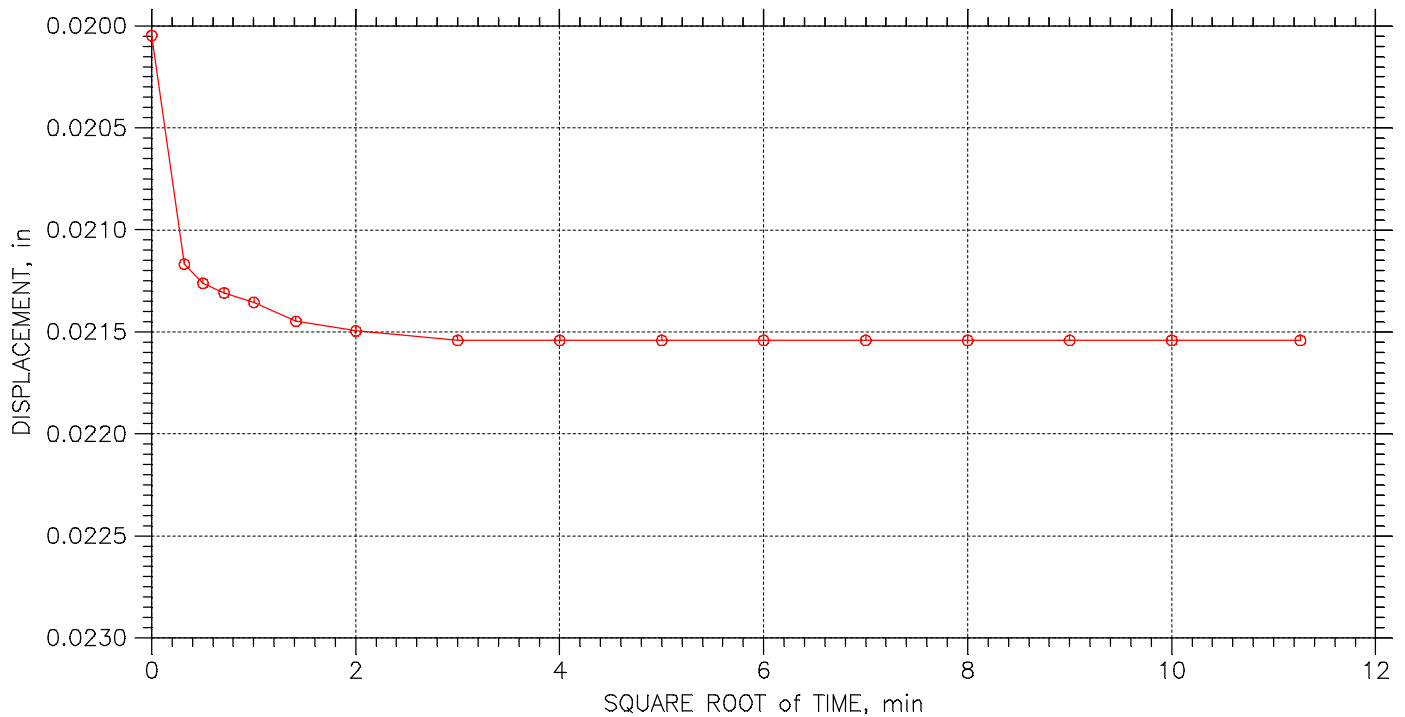
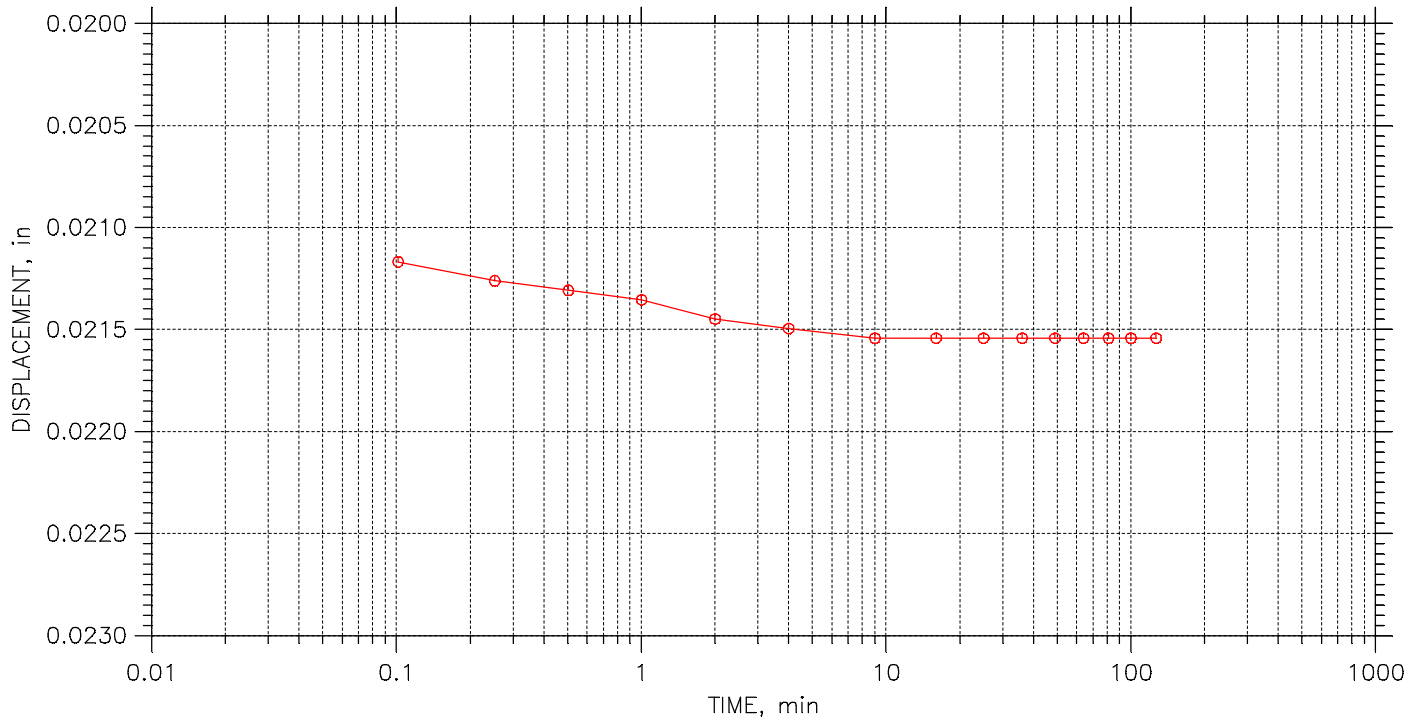
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
	256		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 10 of 23

Stress: 0.25 tsf



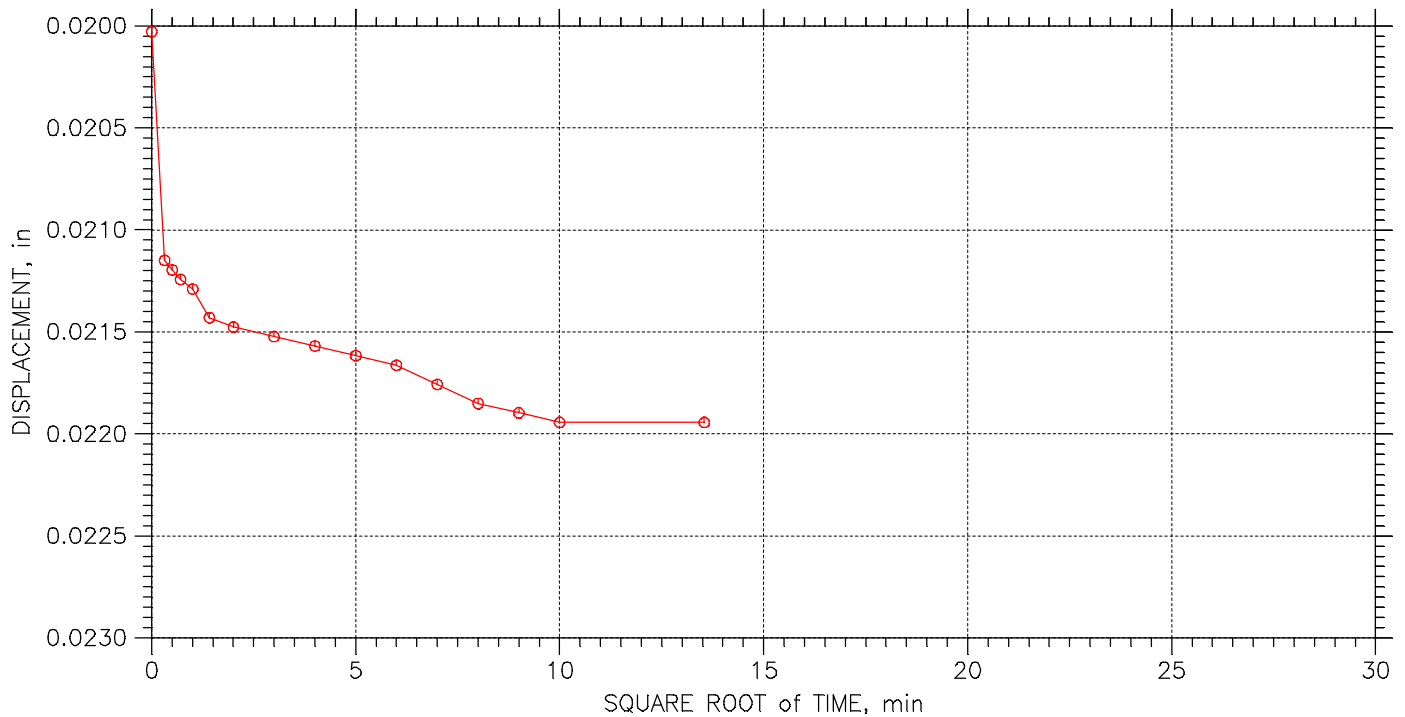
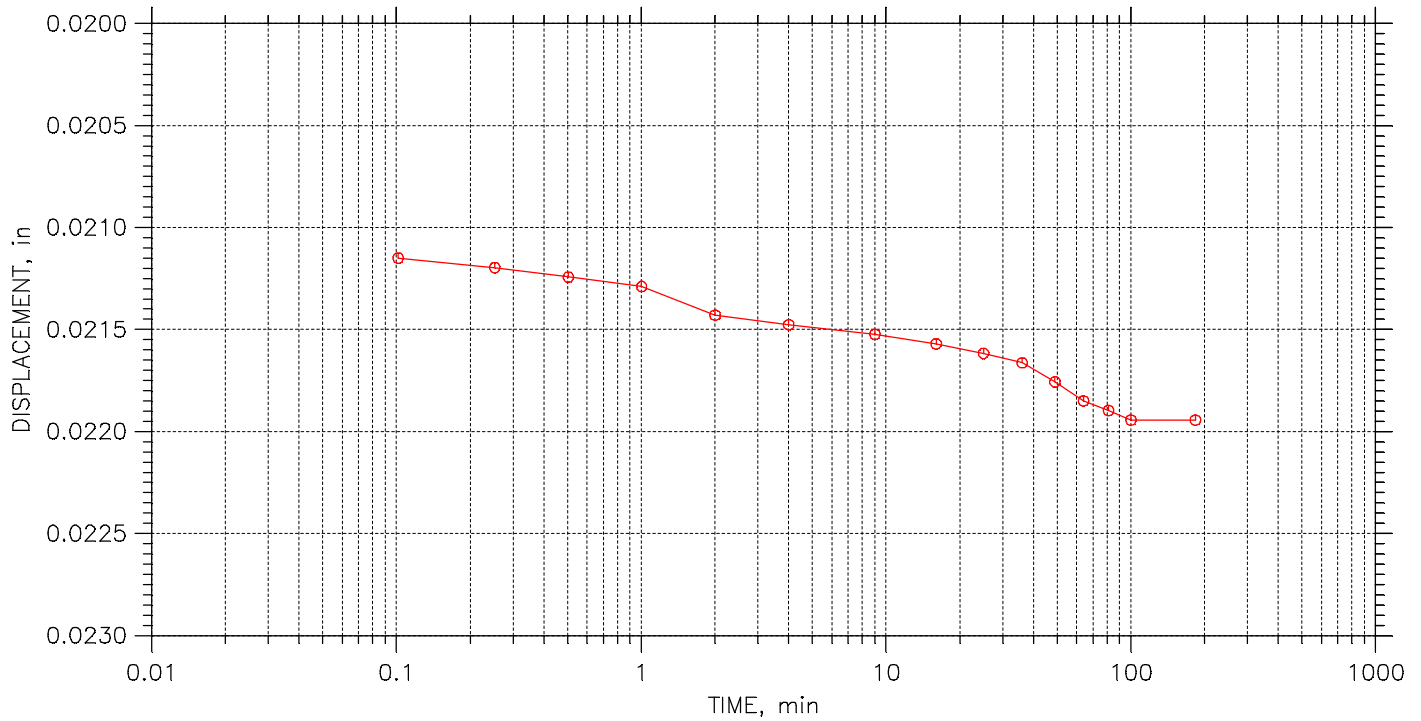
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
	257		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 11 of 23

Stress: 0.5 tsf



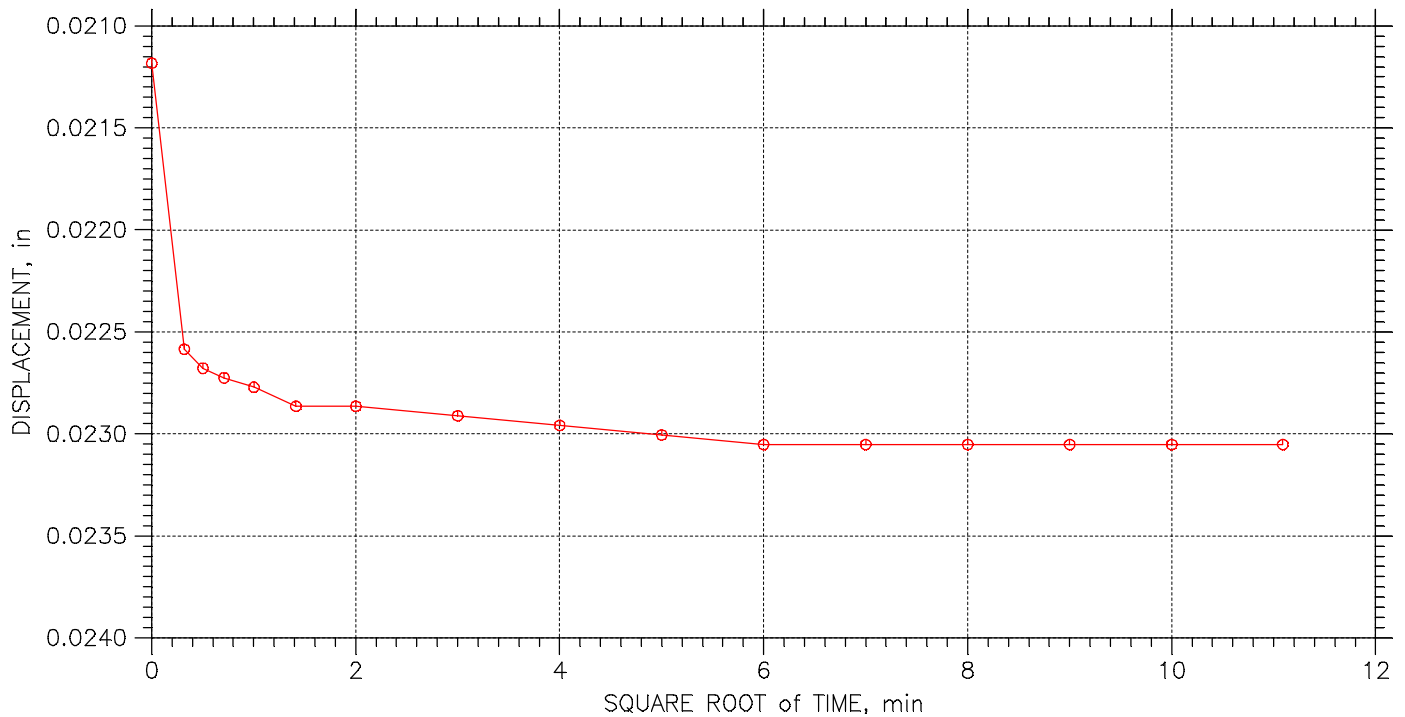
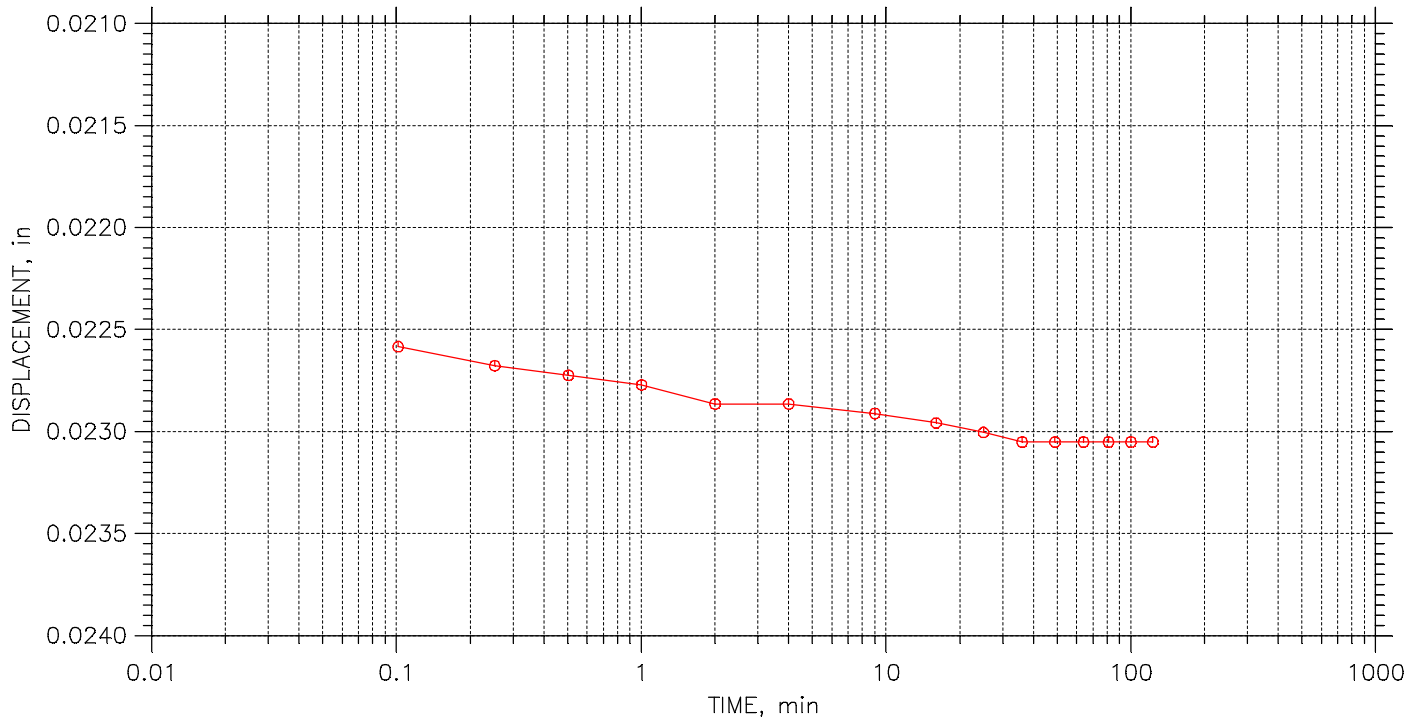
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
	258		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 12 of 23

Stress: 0.75 tsf



	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
	259		

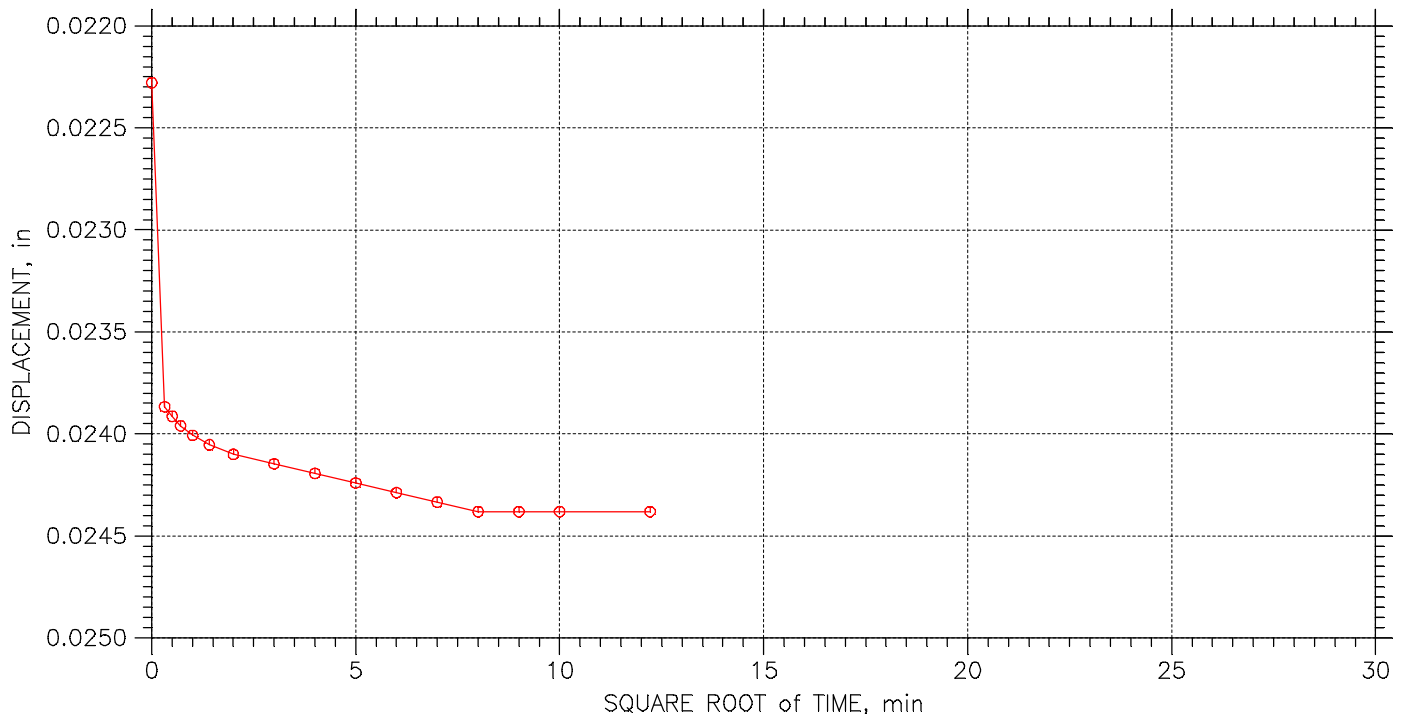
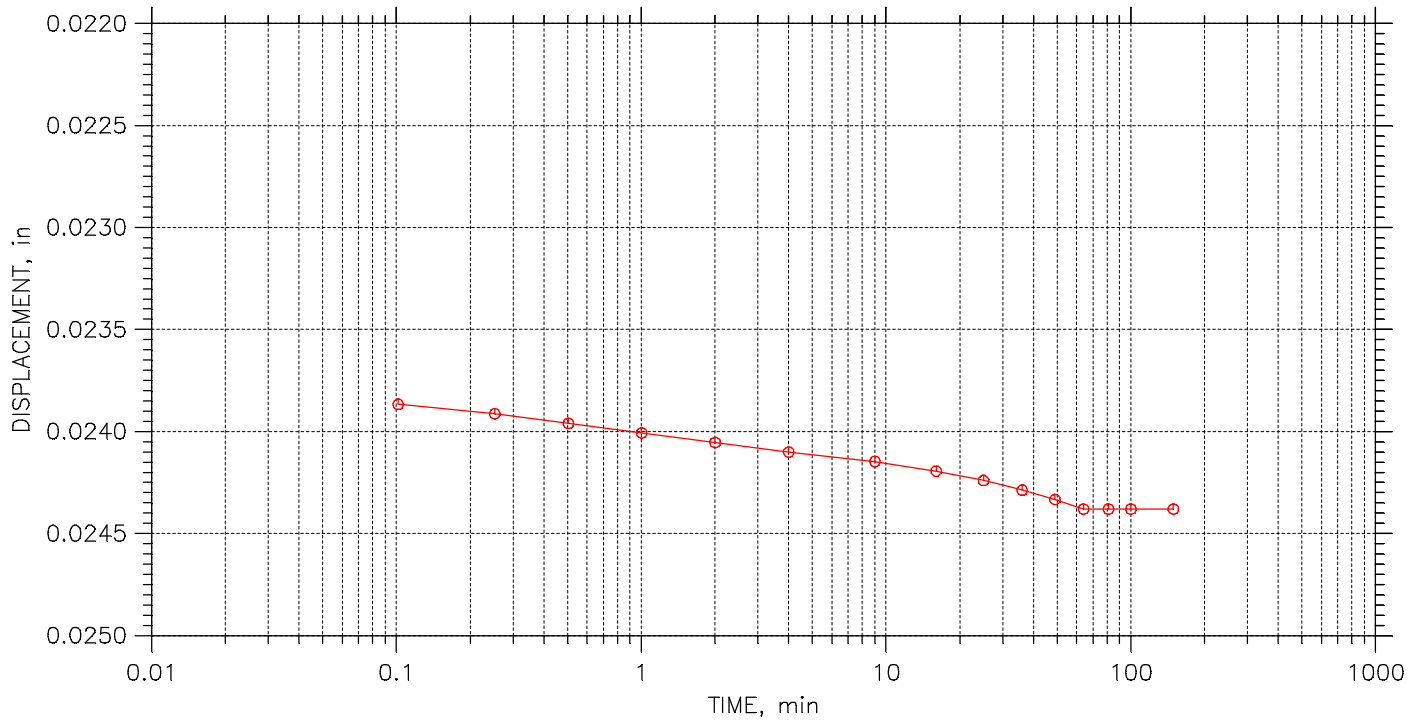



# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 13 of 23

Stress: 1. tsf



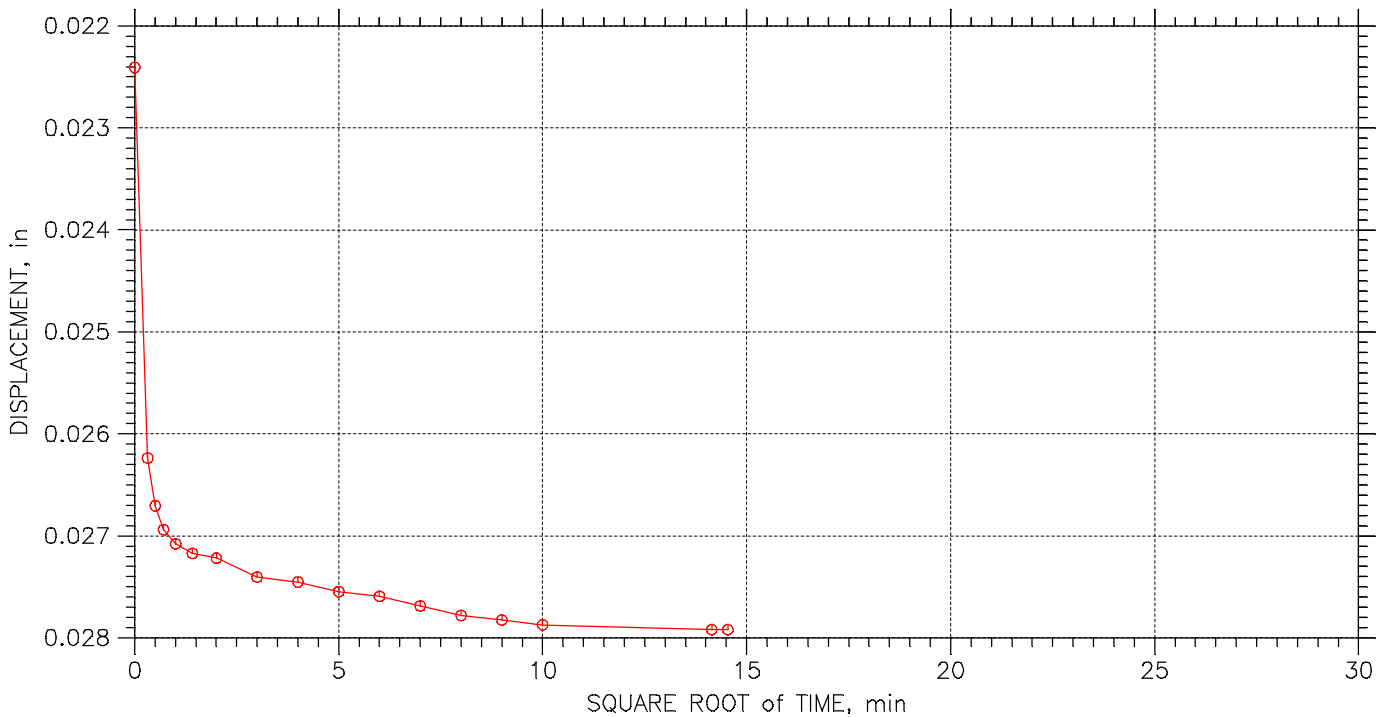
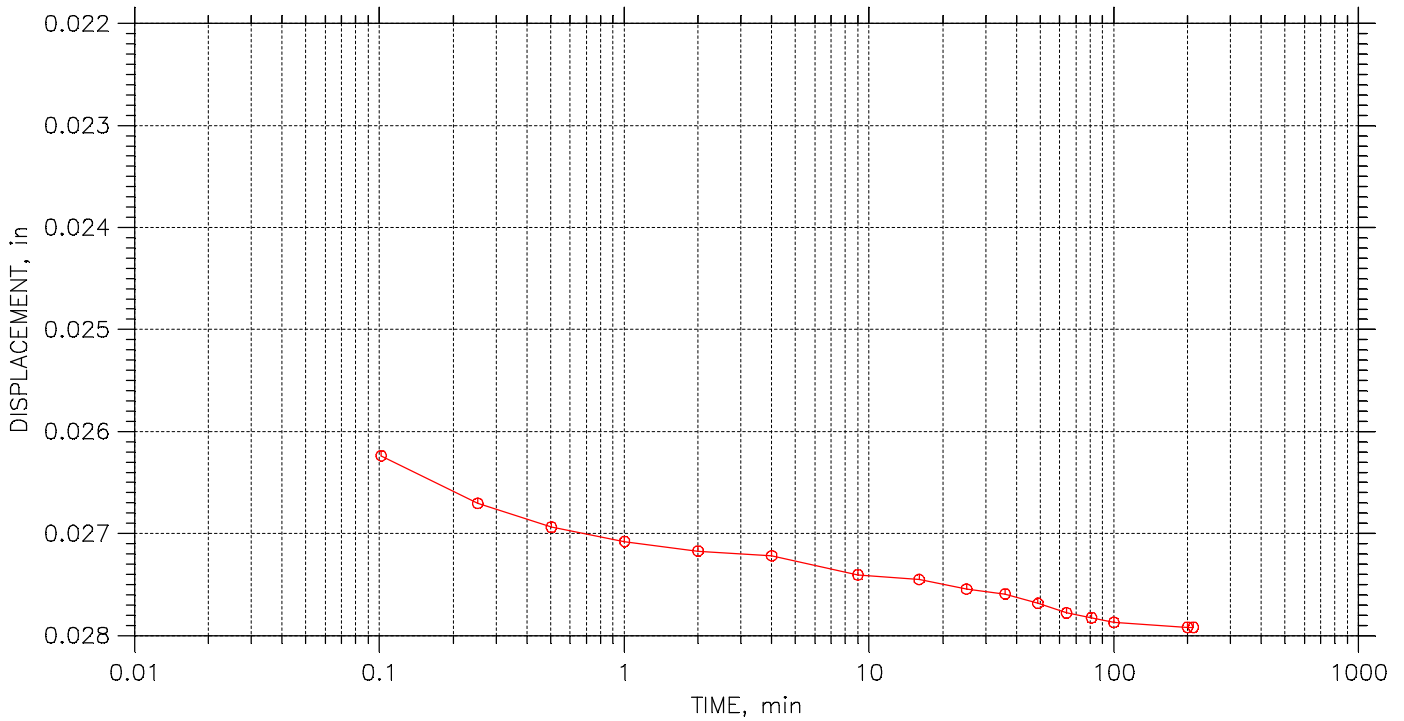
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	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
260			


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 14 of 23

Stress: 2. tsf



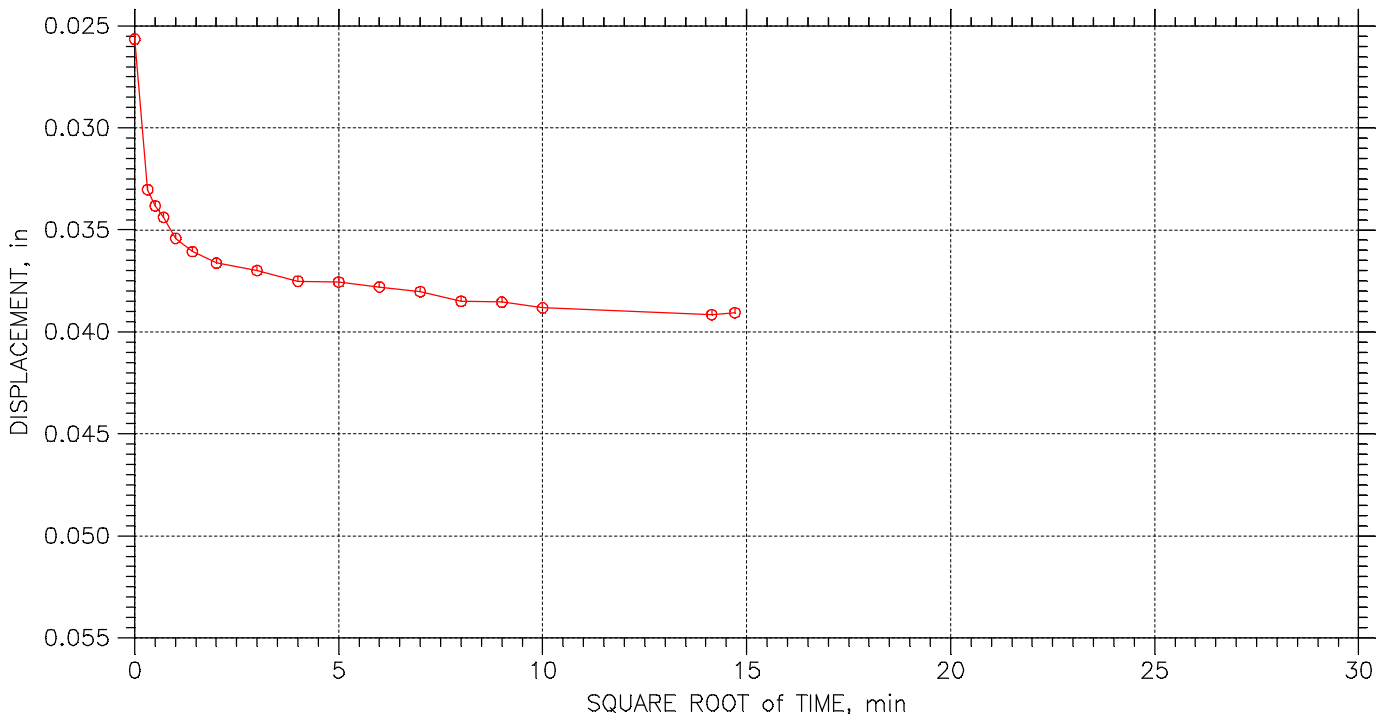
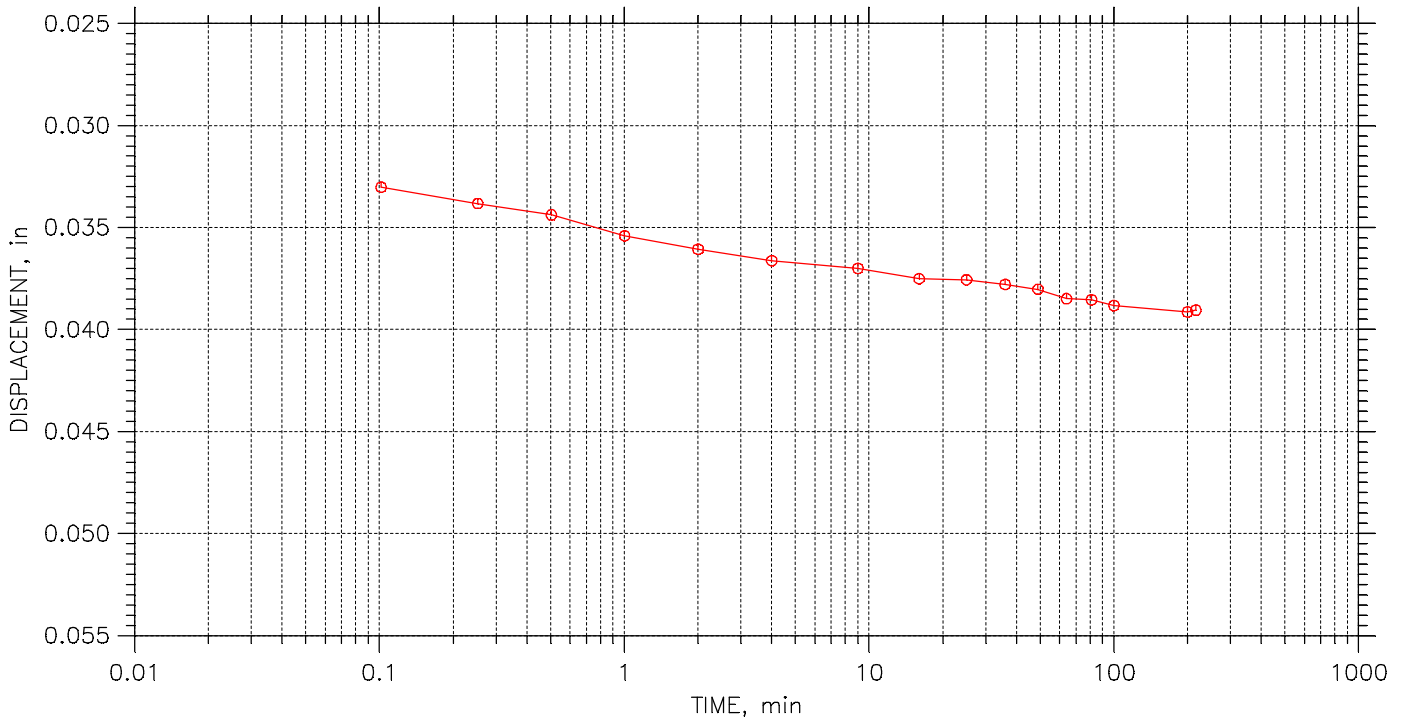
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
	261		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 15 of 23

Stress: 4. tsf



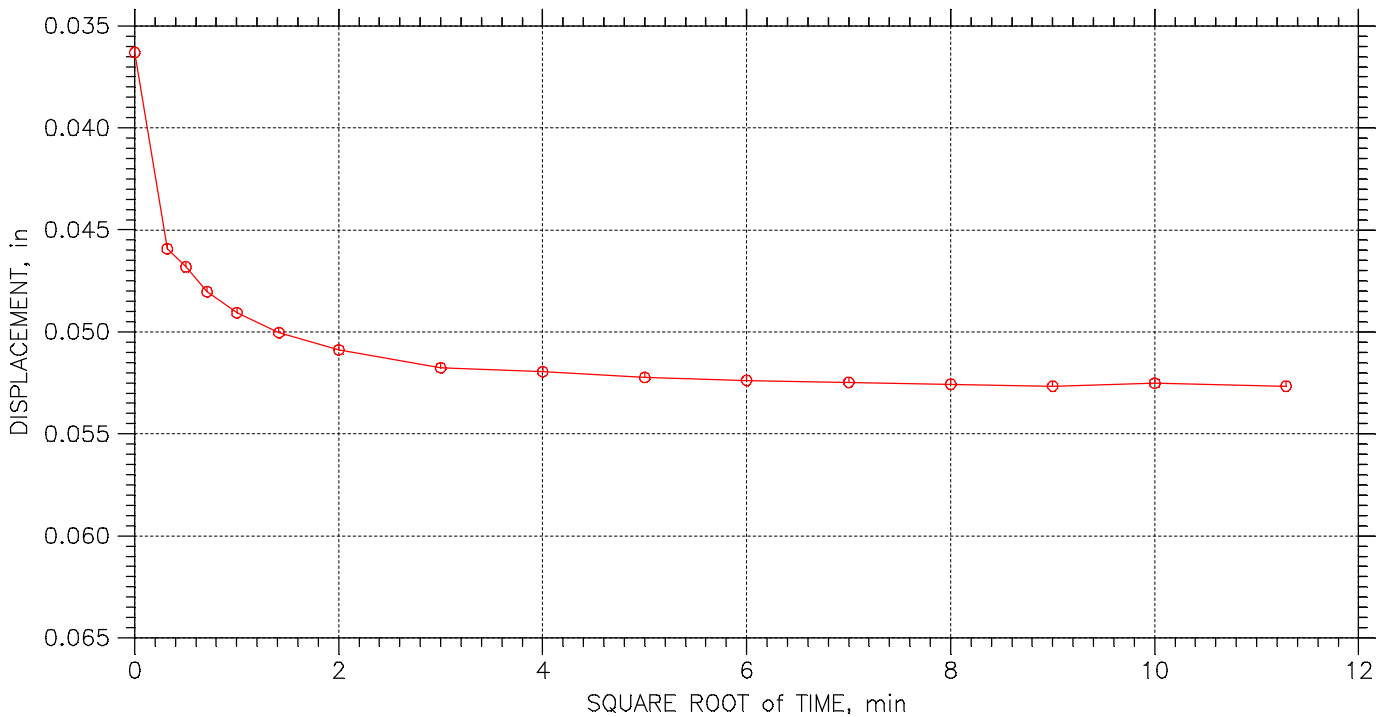
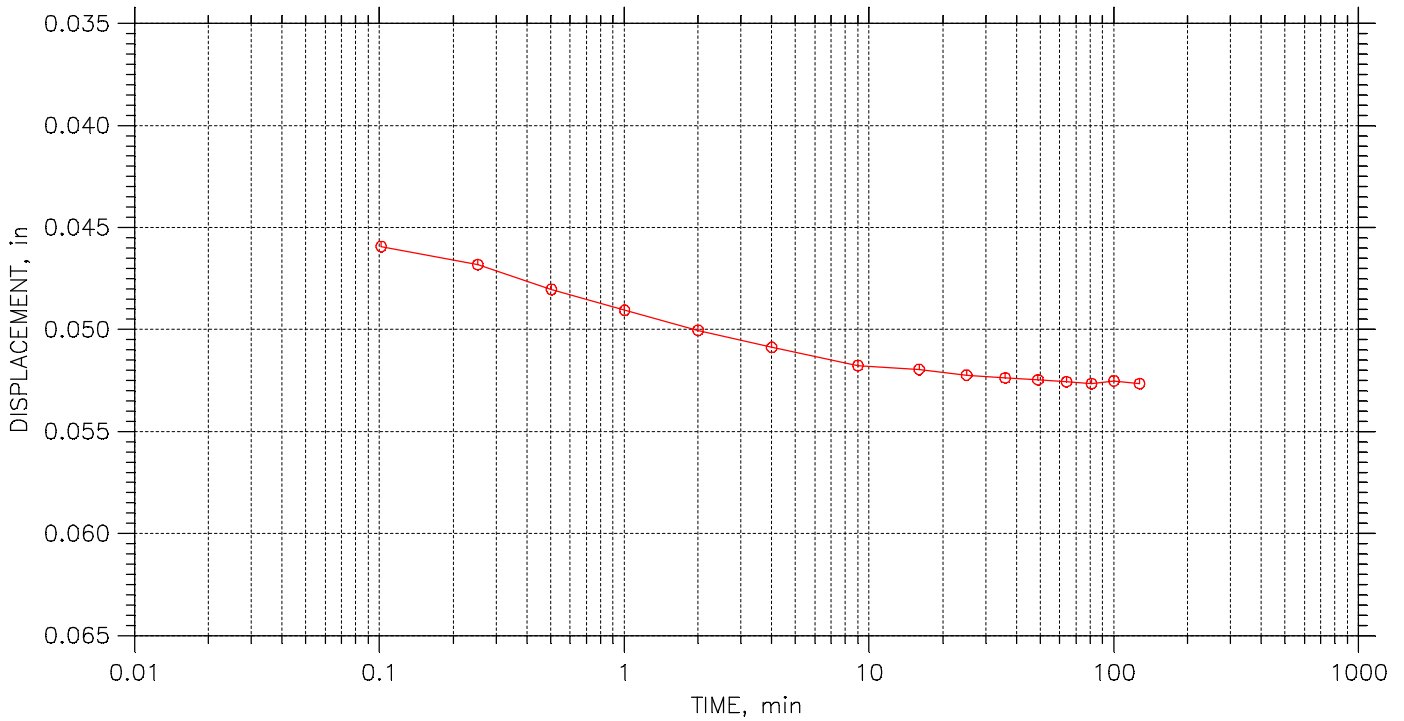
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
	262		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 16 of 23

Stress: 8. tsf



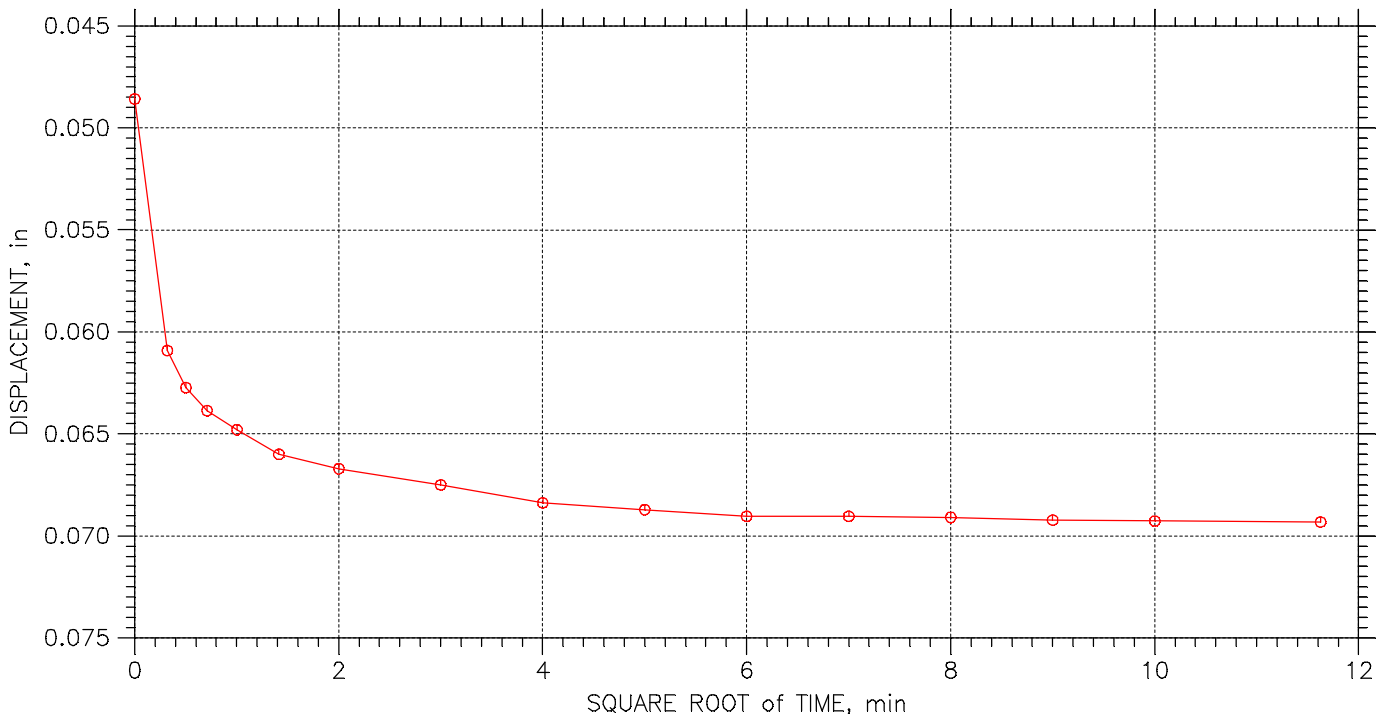
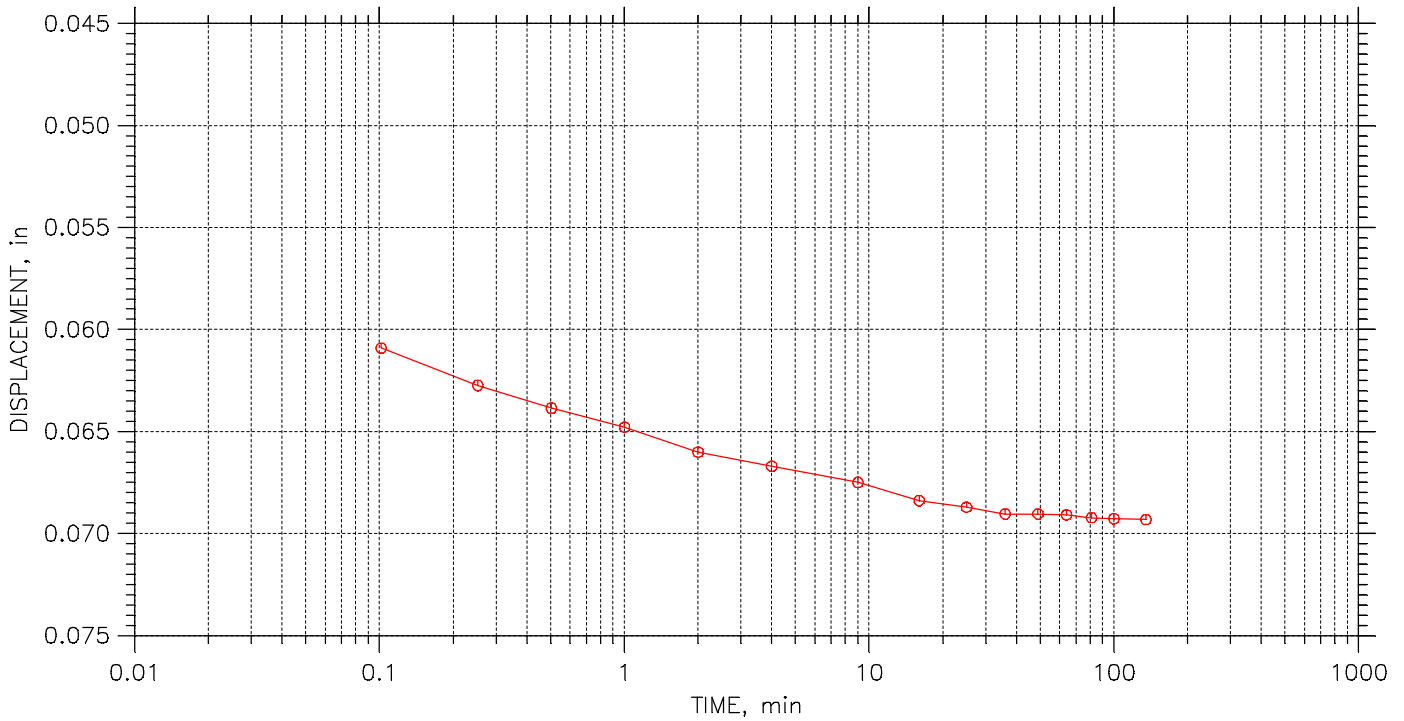
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
	263		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 17 of 23

Stress: 16. tsf



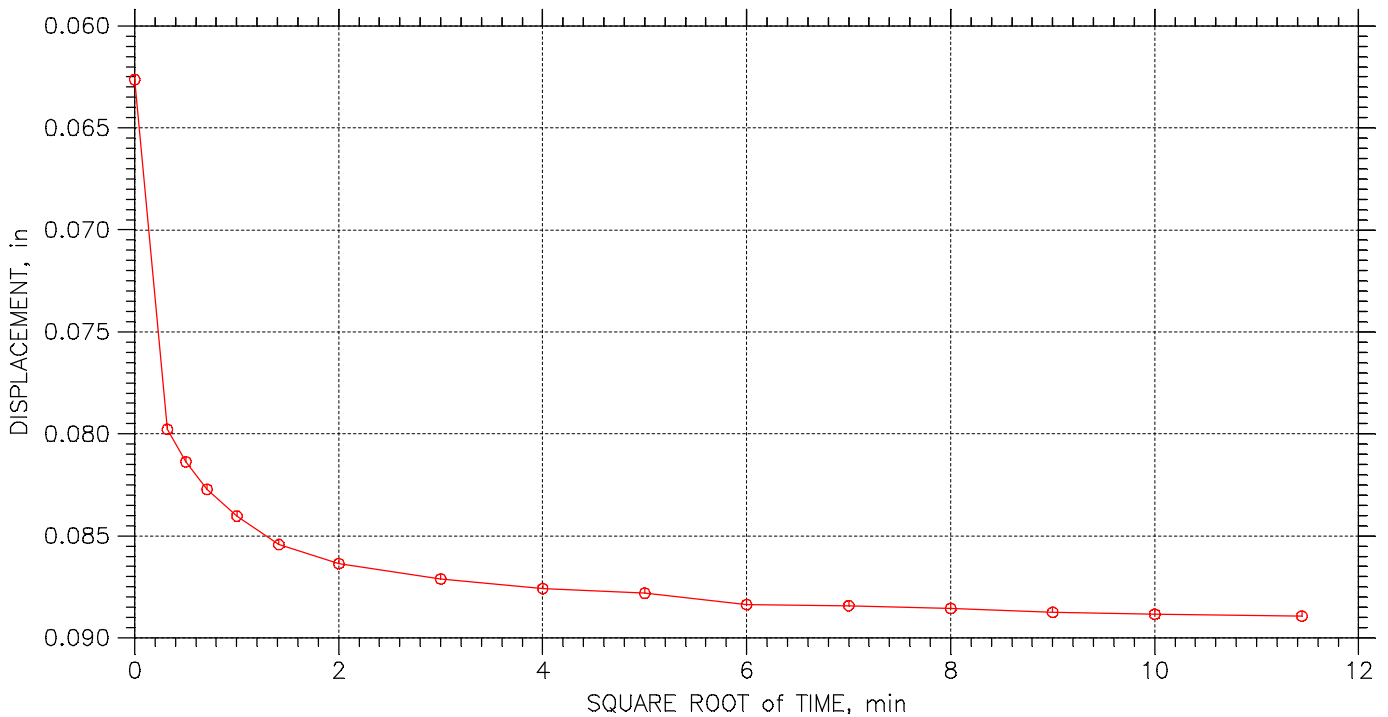
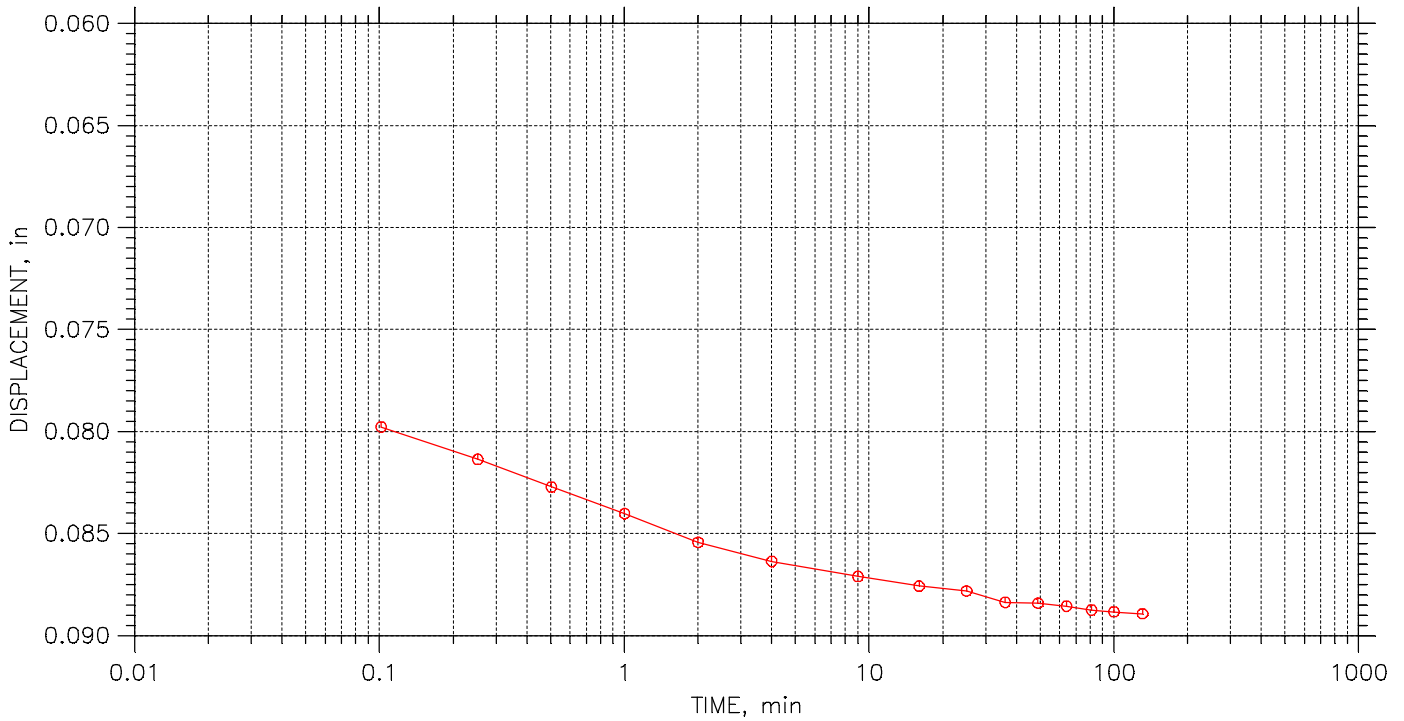
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
	264		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 18 of 23

Stress: 32. tsf



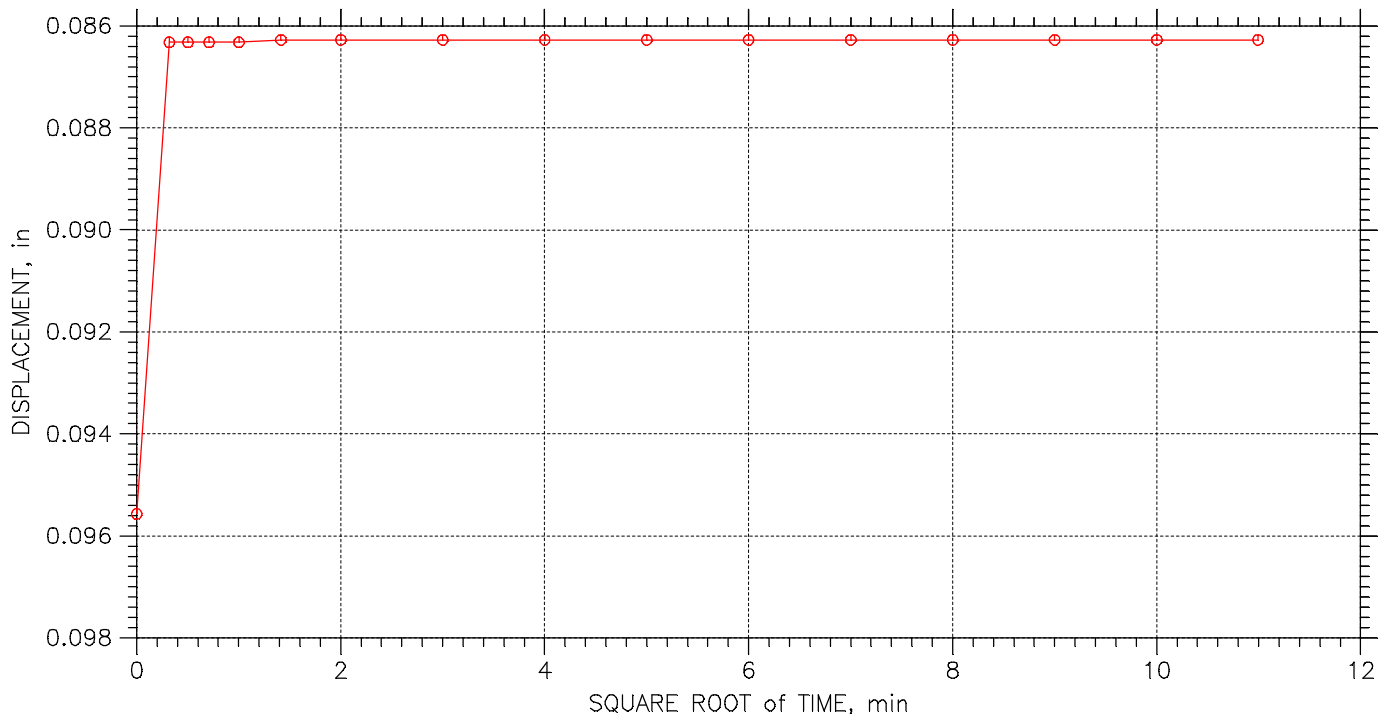
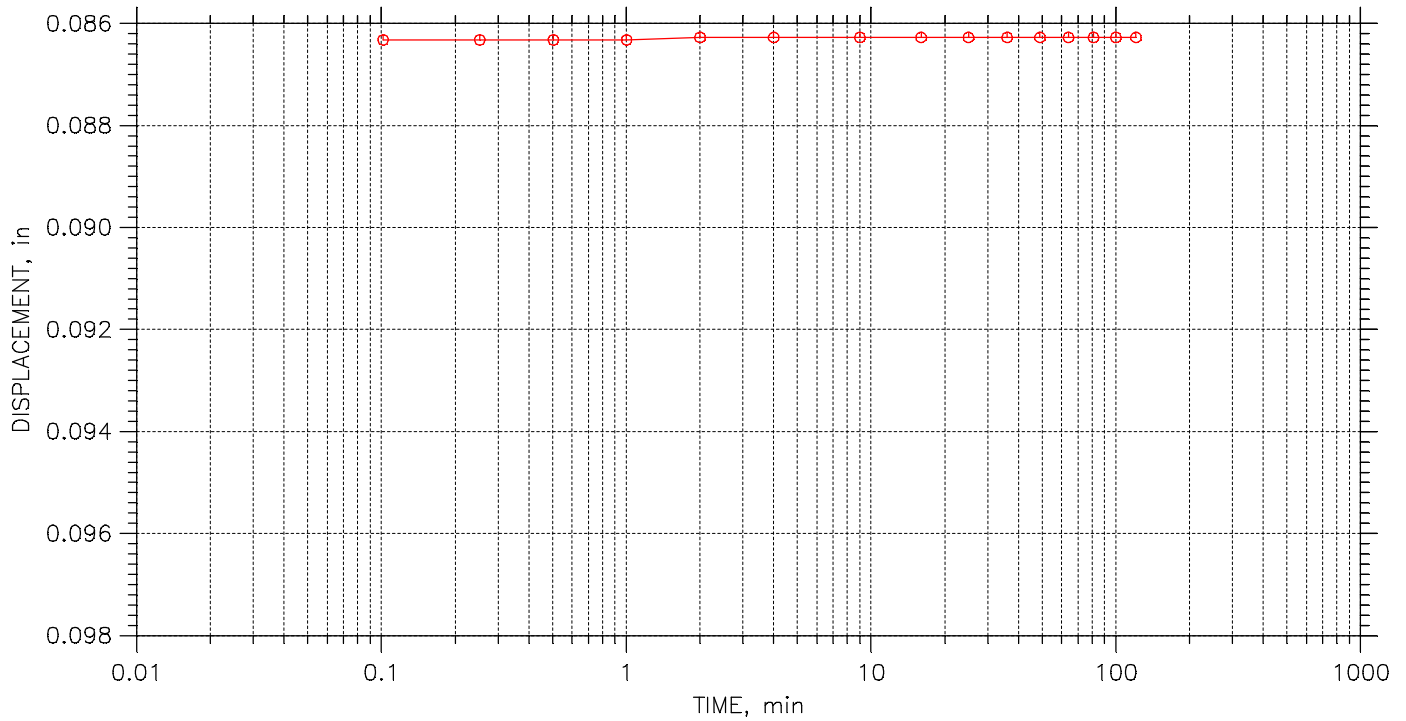
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
	265		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 19 of 23

Stress: 16. tsf



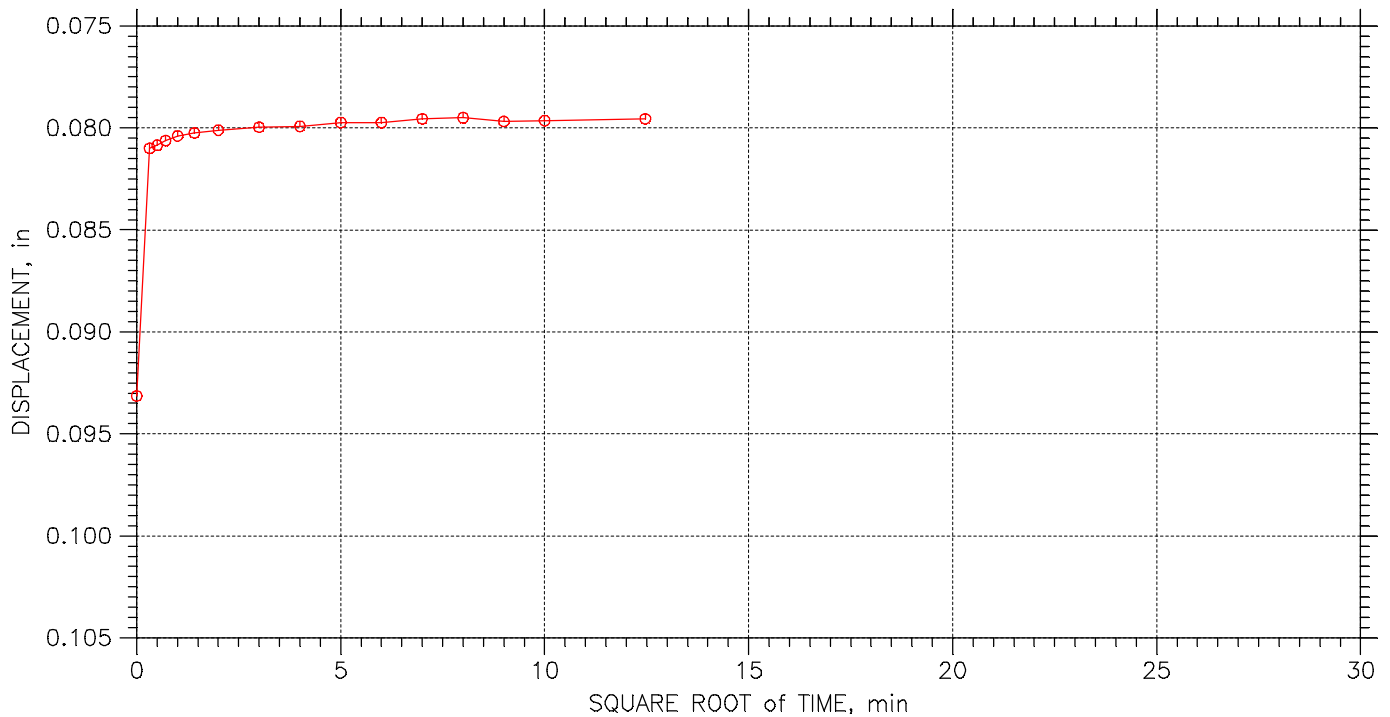
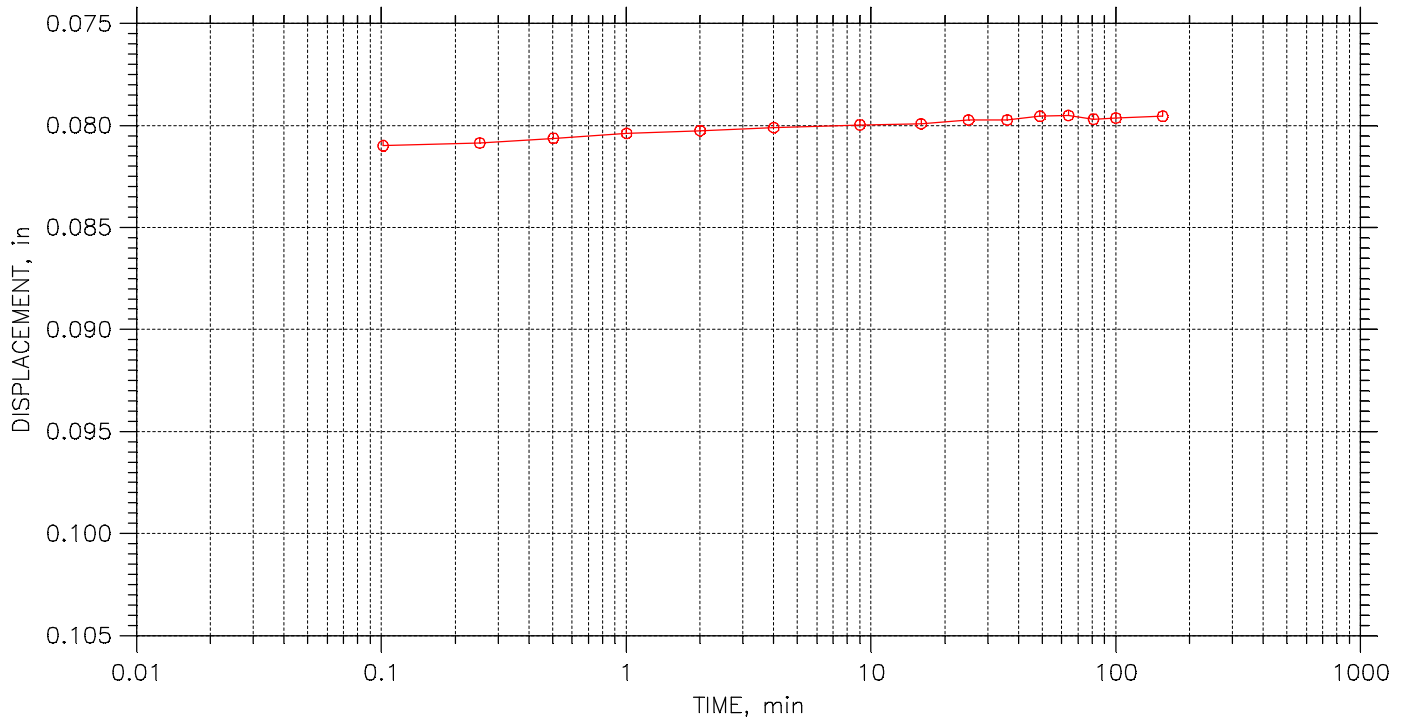
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
	266		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 20 of 23

Stress: 4. tsf



	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
267			

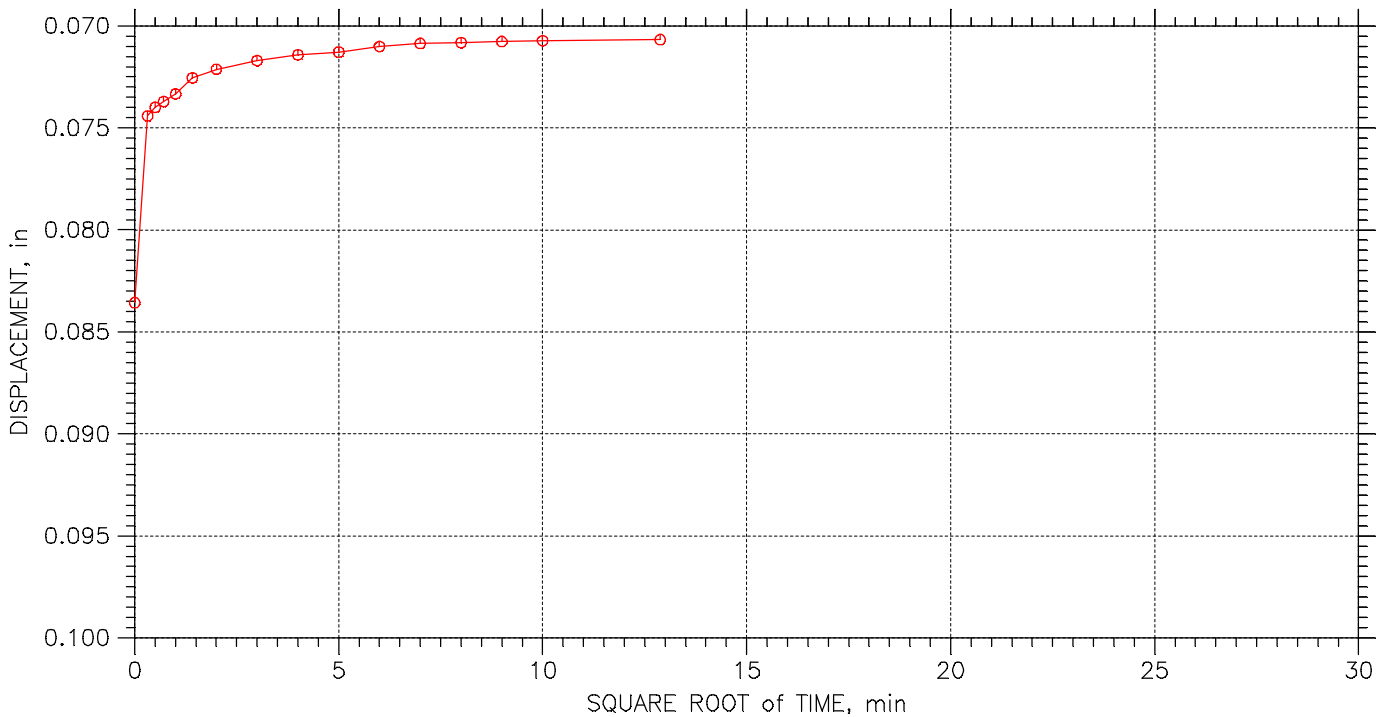
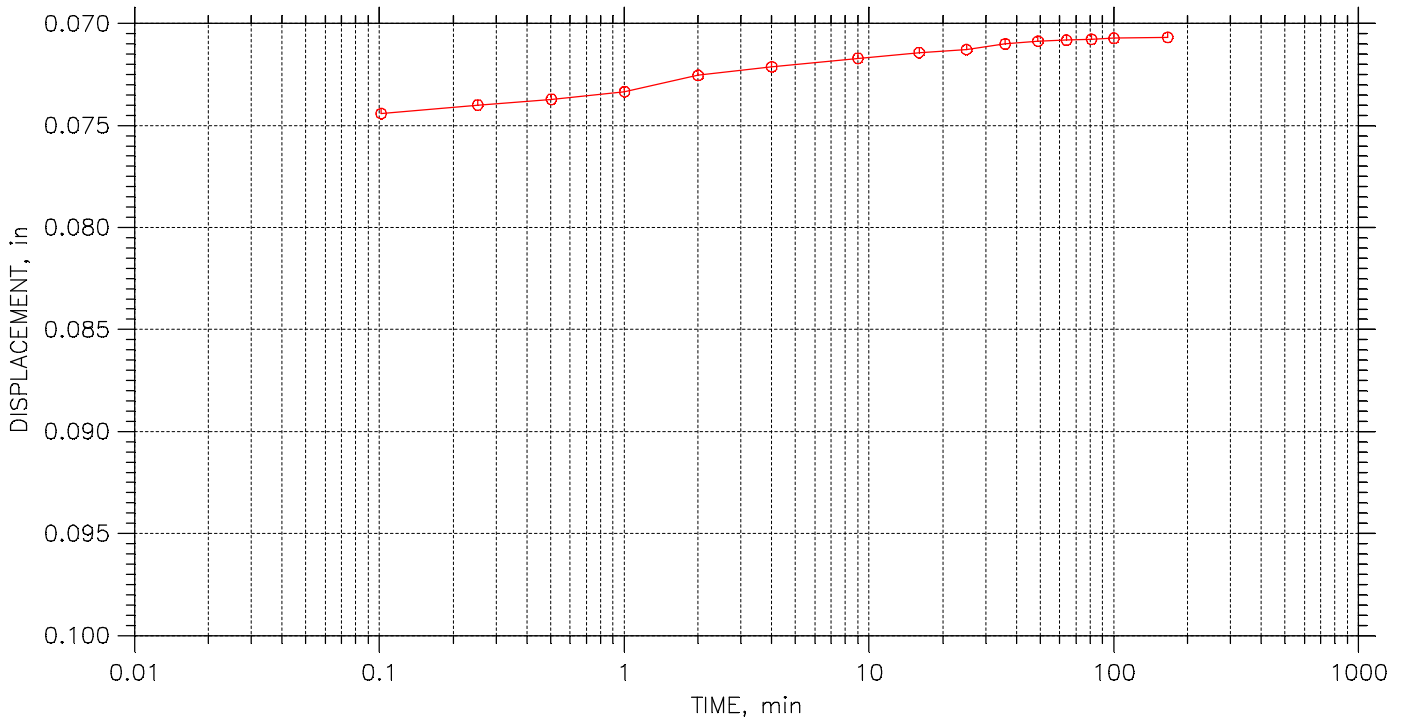



# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 21 of 23

Stress: 1. tsf



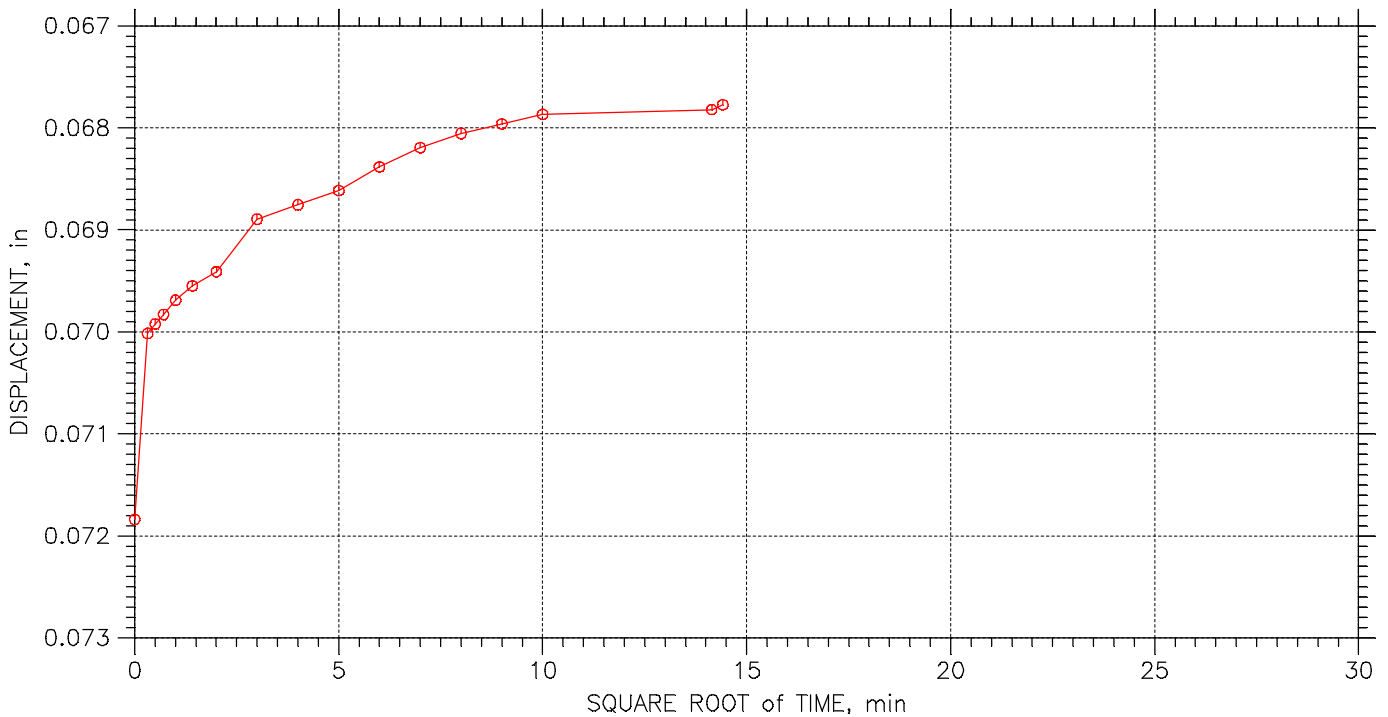
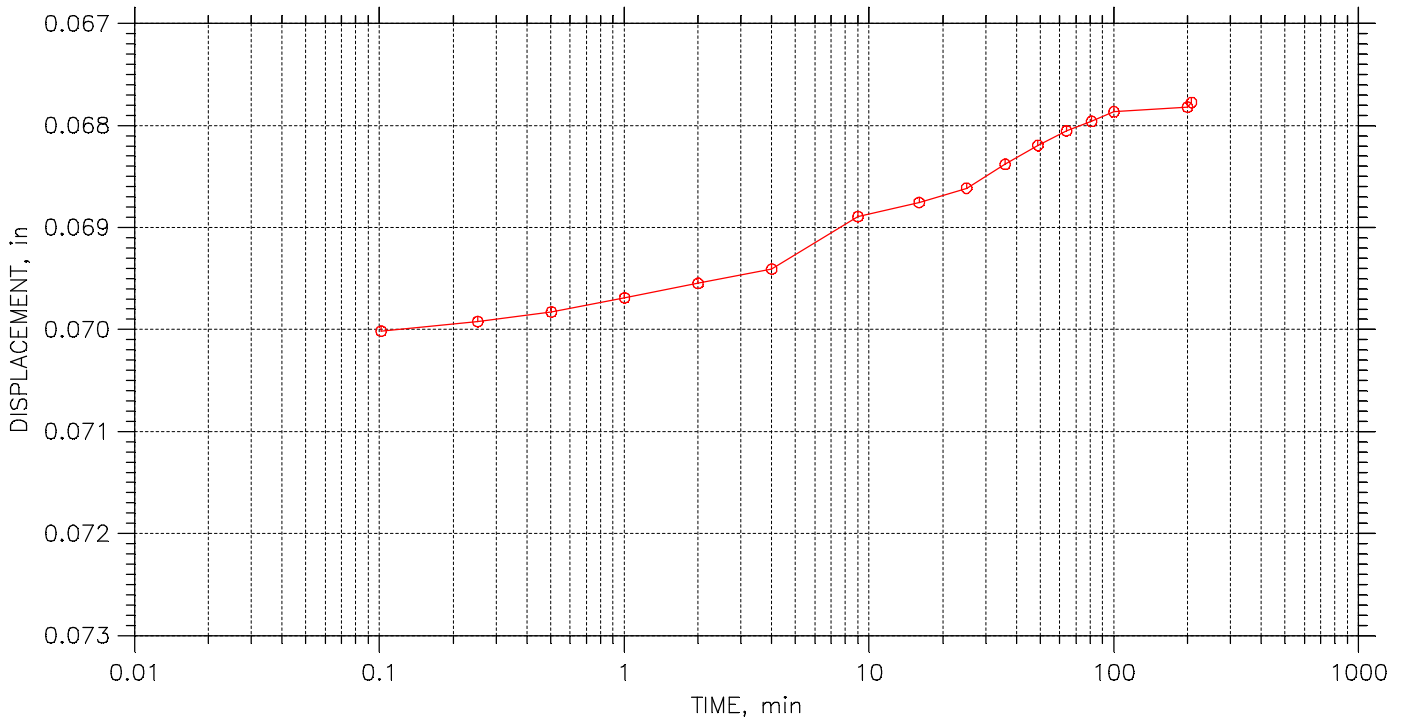
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
	268		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 22 of 23

Stress: 0.5 tsf



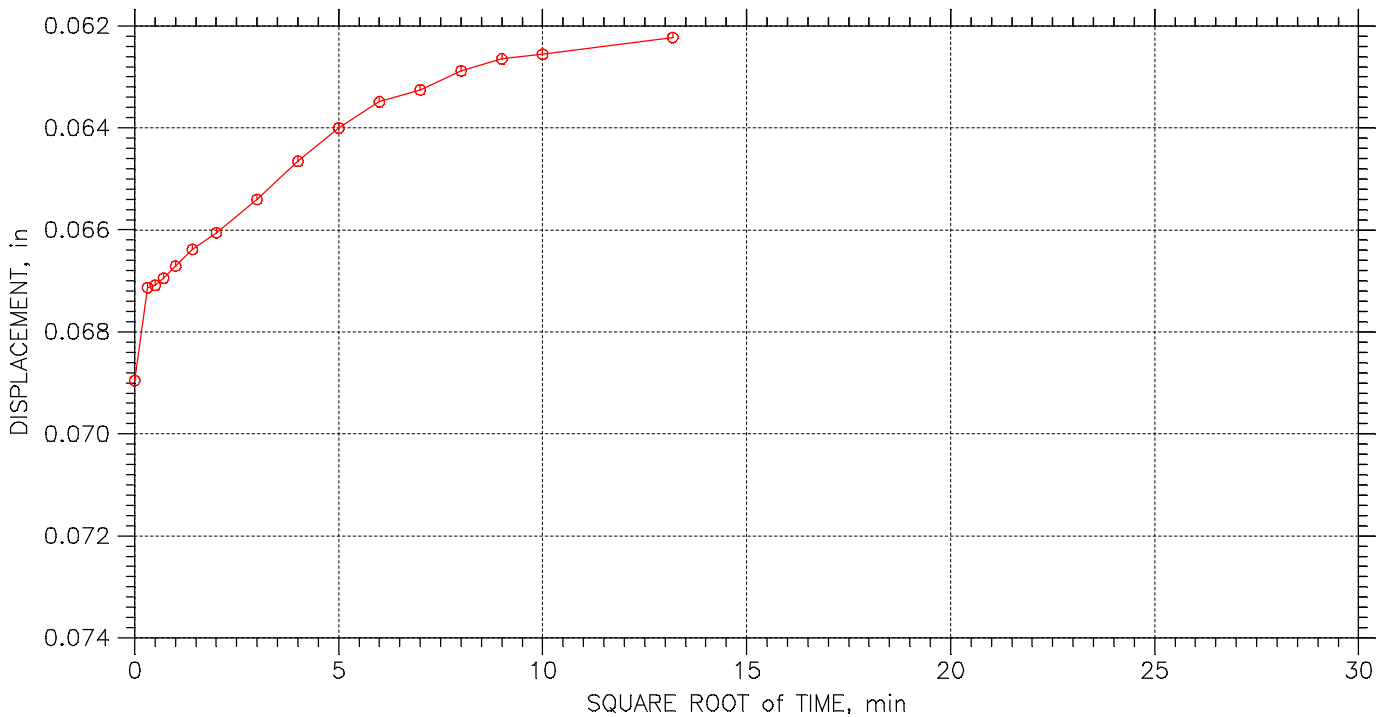
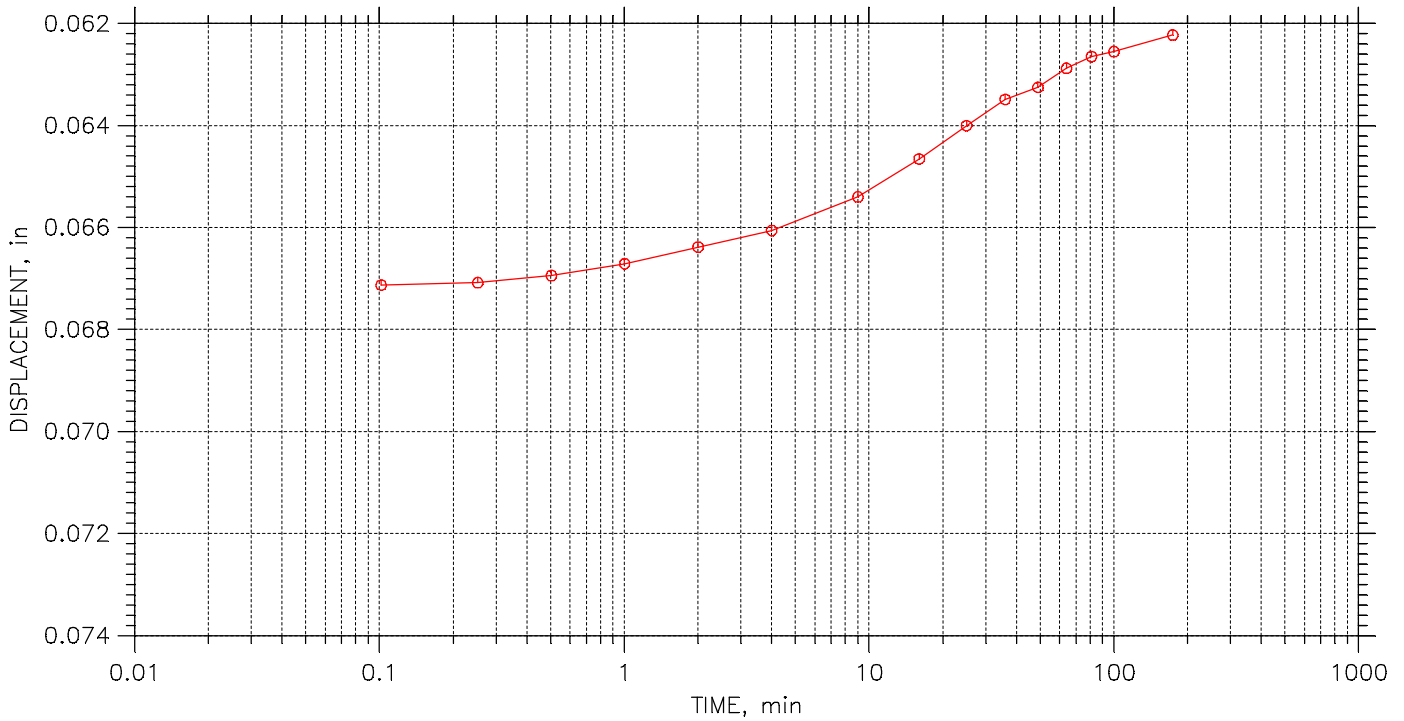
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
	269		


# CONSOLIDATION TEST DATA

## TIME CURVES

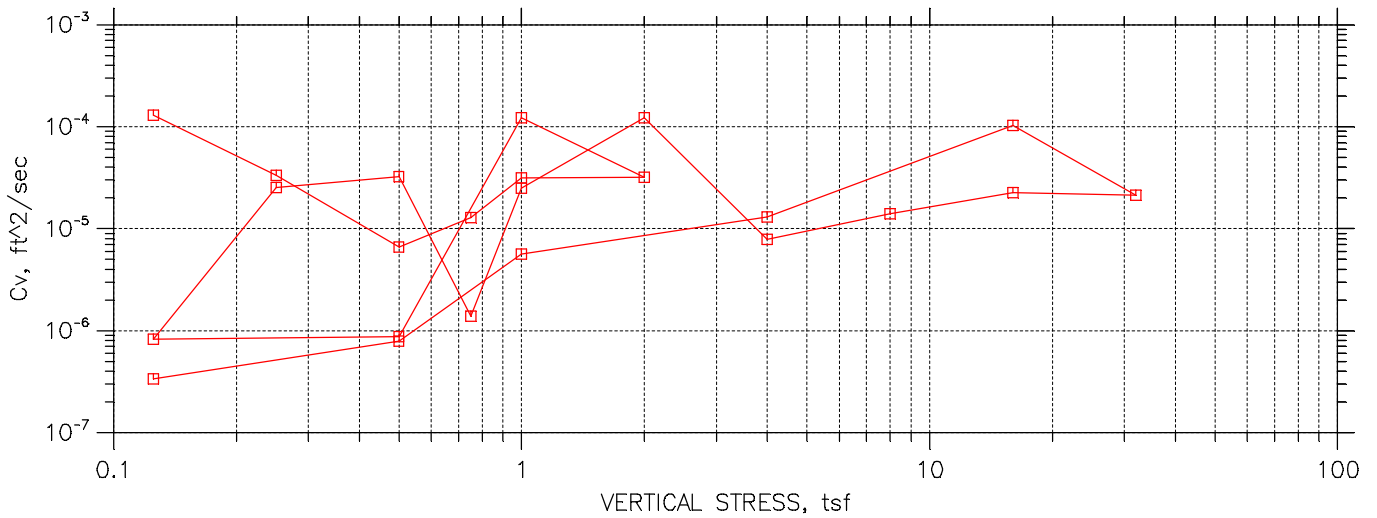
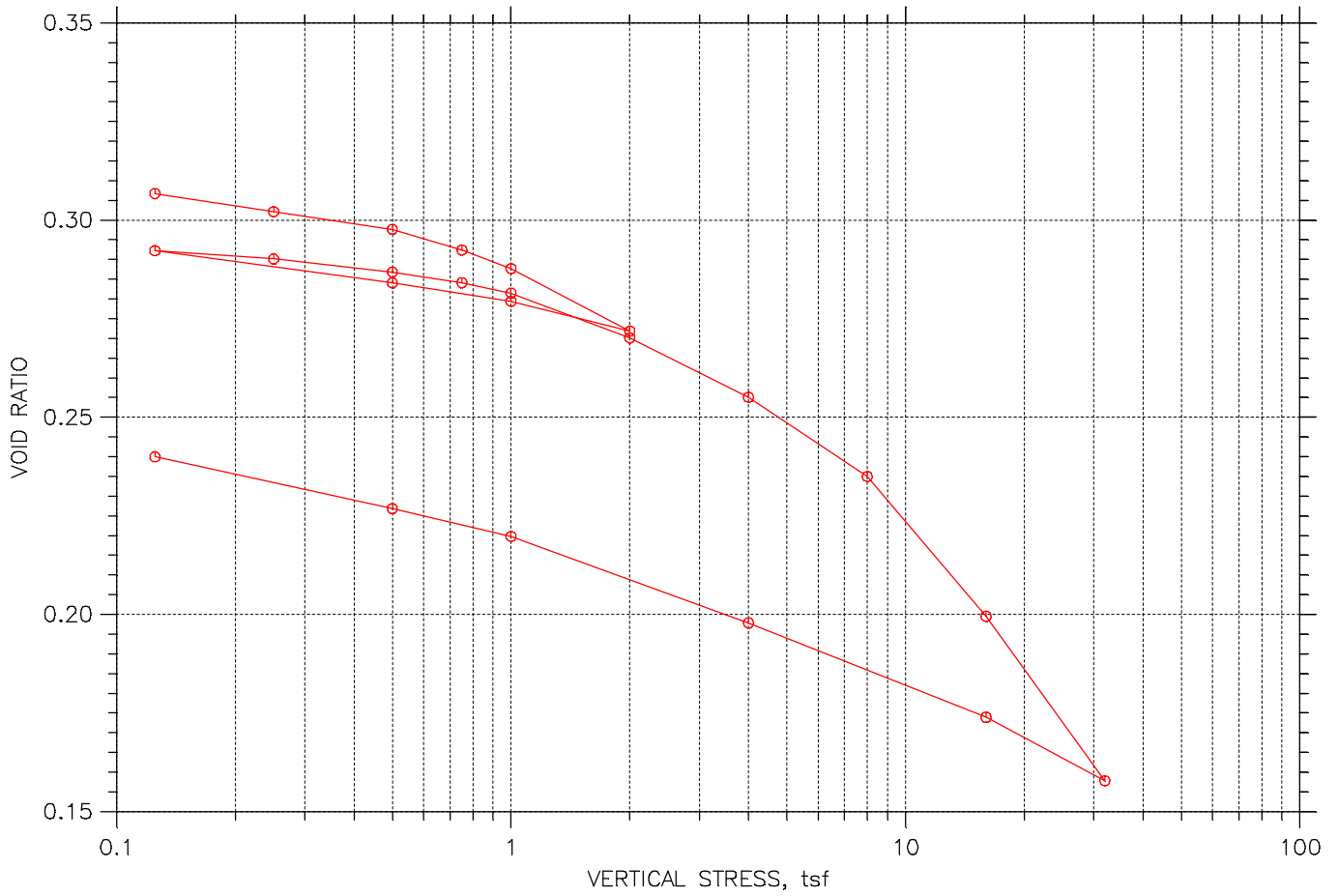
Constant Load Step: 23 of 23

Stress: 0.125 tsf



	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN B020	Tested By: HP	Checked By: BCM
	Sample No.: S-5	Test Date: 12/14/15	Depth: 9.5'-11.5'
	Test No.: HENB020	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN SANDY LEAN CLAY AND GRAVEL		
	Remarks: Pc = 1.8 tsf Cc = 0.116 Ccr = 0.021 TEST PERFORMED AS PER ASTM D2435		
	270		

# ONE DIMENSIONAL CONSOLIDATION TEST ASTM D2435



	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	271		

CONSOLIDATION TEST DATA

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-029 S-3  
 Sample No.: S-3  
 Test No.: HENB029S3

Location: HENNEPIN, IL  
 Tested By: HP  
 Test Date: 12/14/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: BCM  
 Depth: 5.0'-7.0'  
 Elevation: ----



Soil Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL  
 Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435

Estimated Specific Gravity: 2.72  
 Initial Void Ratio: 0.31  
 Final Void Ratio: 0.24

Liquid Limit: 22  
 Plastic Limit: 15  
 Plasticity Index: 7

Initial Height: 0.74 in  
 Specimen Diameter: 2.49 in

Container ID	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
	X-7	RING	RING	118
Wt. Container + Wet Soil, gm	167.52	207.79	207.7	156.24
Wt. Container + Dry Soil, gm	155.54	196.84	196.84	145.48
Wt. Container, gm	44.63	74.87	74.87	24.64
Wt. Dry Soil, gm	110.91	121.97	121.97	120.84
Water Content, %	10.80	8.98	8.90	8.90
Void Ratio	---	0.31	0.24	---
Degree of Saturation, %	---	77.94	100.93	---
Dry Unit Weight, pcf	---	129.29	136.94	---

CONSOLIDATION TEST DATA

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-029 S-3  
 Sample No.: S-3  
 Test No.: HENB029S3

Location: HENNEPIN, IL  
 Tested By: HP  
 Test Date: 12/14/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: BCM  
 Depth: 5.0'-7.0'  
 Elevation: ----



Soil Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL  
 Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting		Coefficient of Consolidation		
					Sq.Rt. min	Log min	Sq.Rt. ft <sup>2</sup> /sec	Log ft <sup>2</sup> /sec	Ave. ft <sup>2</sup> /sec
1	0.125	0.00369	0.307	0.50	0.0	0.0	1.30e-004	0.00e+000	1.30e-004
2	0.25	0.006259	0.302	0.85	0.1	0.0	3.32e-005	0.00e+000	3.32e-005
3	0.5	0.008782	0.298	1.19	0.5	0.0	6.59e-006	0.00e+000	6.59e-006
4	0.75	0.01172	0.292	1.59	0.2	0.0	1.28e-005	0.00e+000	1.28e-005
5	1	0.01434	0.288	1.95	0.1	0.0	3.13e-005	0.00e+000	3.13e-005
6	2	0.02322	0.272	3.16	0.1	0.0	3.18e-005	0.00e+000	3.18e-005
7	1	0.01901	0.279	2.58	0.0	0.0	1.23e-004	0.00e+000	1.23e-004
8	0.5	0.0164	0.284	2.23	3.4	0.0	8.69e-007	0.00e+000	8.69e-007
9	0.125	0.01182	0.292	1.61	3.6	0.0	8.29e-007	0.00e+000	8.29e-007
10	0.25	0.01299	0.290	1.76	0.1	0.0	2.54e-005	0.00e+000	2.54e-005
11	0.5	0.01485	0.287	2.02	0.1	0.0	3.22e-005	0.00e+000	3.22e-005
12	0.75	0.01635	0.284	2.22	2.1	0.0	1.38e-006	0.00e+000	1.38e-006
13	1	0.01784	0.281	2.43	0.1	0.0	2.51e-005	0.00e+000	2.51e-005
14	2	0.0242	0.270	3.29	0.0	0.0	1.23e-004	0.00e+000	1.23e-004
15	4	0.03265	0.255	4.44	0.4	0.0	7.87e-006	0.00e+000	7.87e-006
16	8	0.04391	0.235	5.97	0.2	0.0	1.39e-005	0.00e+000	1.39e-005
17	16	0.06376	0.200	8.67	0.1	0.0	2.26e-005	0.00e+000	2.26e-005
18	32	0.08712	0.158	11.84	0.1	0.0	2.12e-005	0.00e+000	2.12e-005
19	16	0.0781	0.174	10.61	0.0	0.0	1.03e-004	0.00e+000	1.03e-004
20	4	0.0647	0.198	8.79	0.2	0.0	1.30e-005	0.00e+000	1.30e-005
21	1	0.05241	0.220	7.12	0.5	0.0	5.63e-006	0.00e+000	5.63e-006
22	0.5	0.04844	0.227	6.58	3.4	0.0	7.92e-007	0.00e+000	7.92e-007
23	0.125	0.04111	0.240	5.59	8.1	0.0	3.37e-007	0.00e+000	3.37e-007

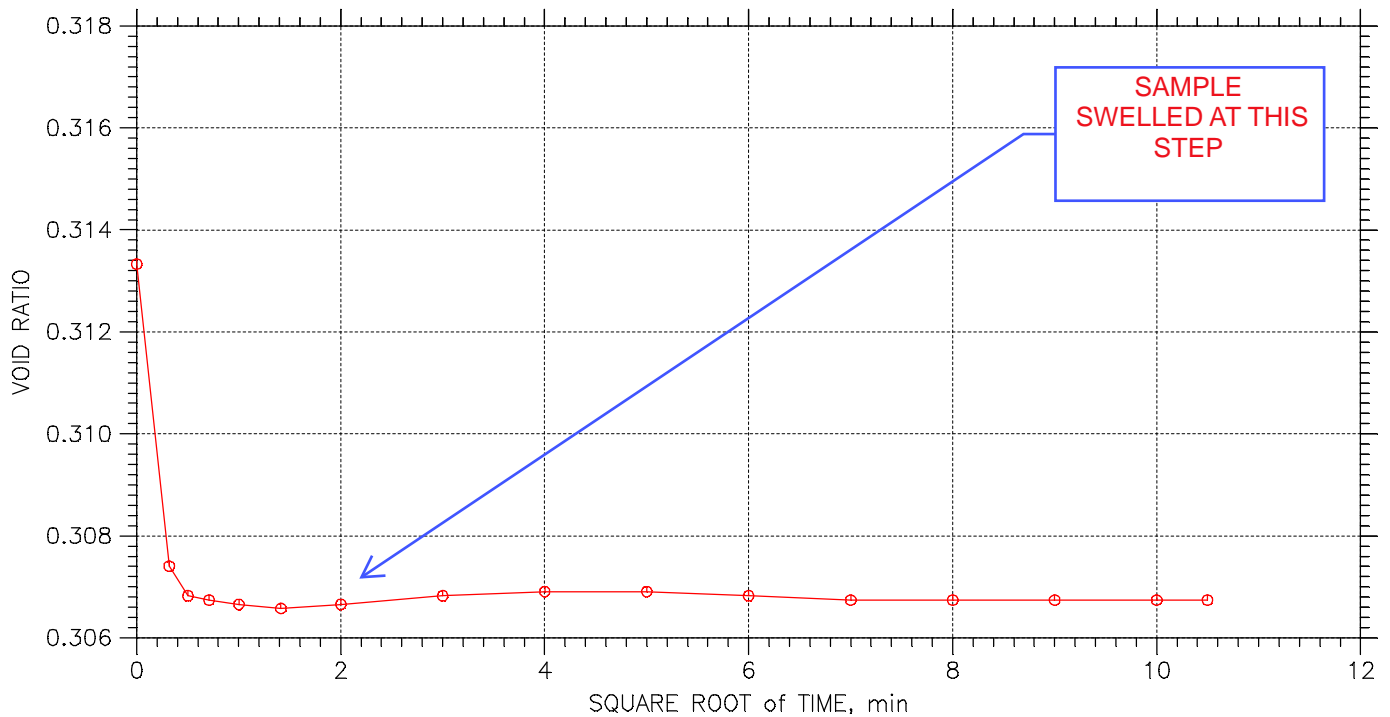
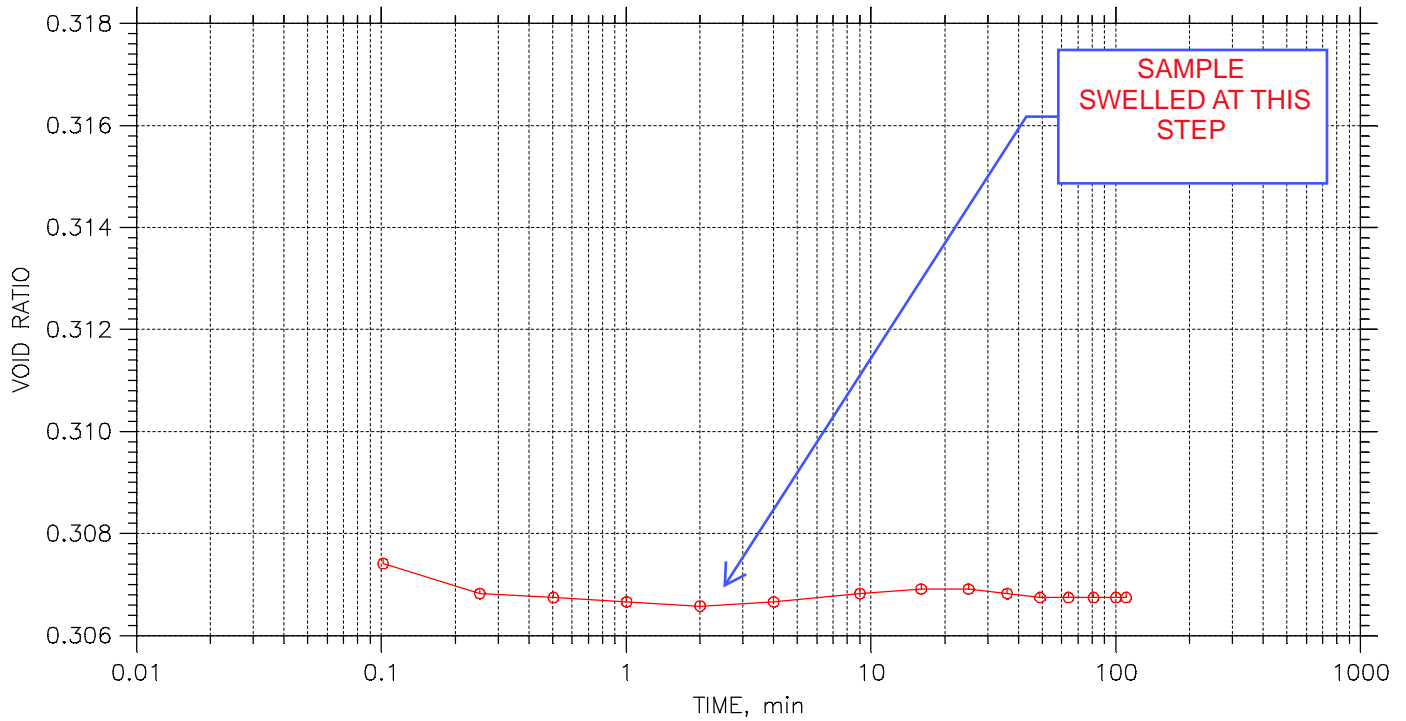
**The following are attachments to the testimony of Scott M. Payne,  
PhD, PG and Ian Magruder, M.S..**


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 1 of 23

Stress: 0.125 tsf



	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	274		

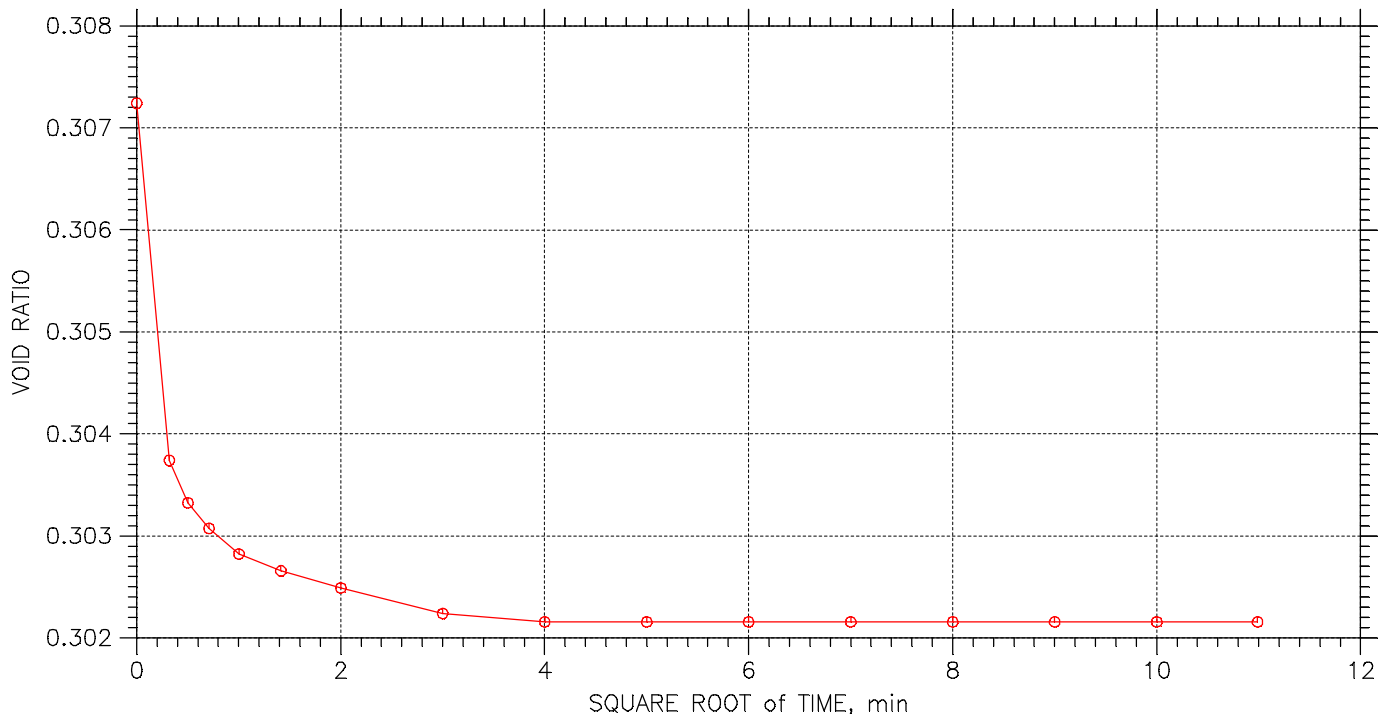
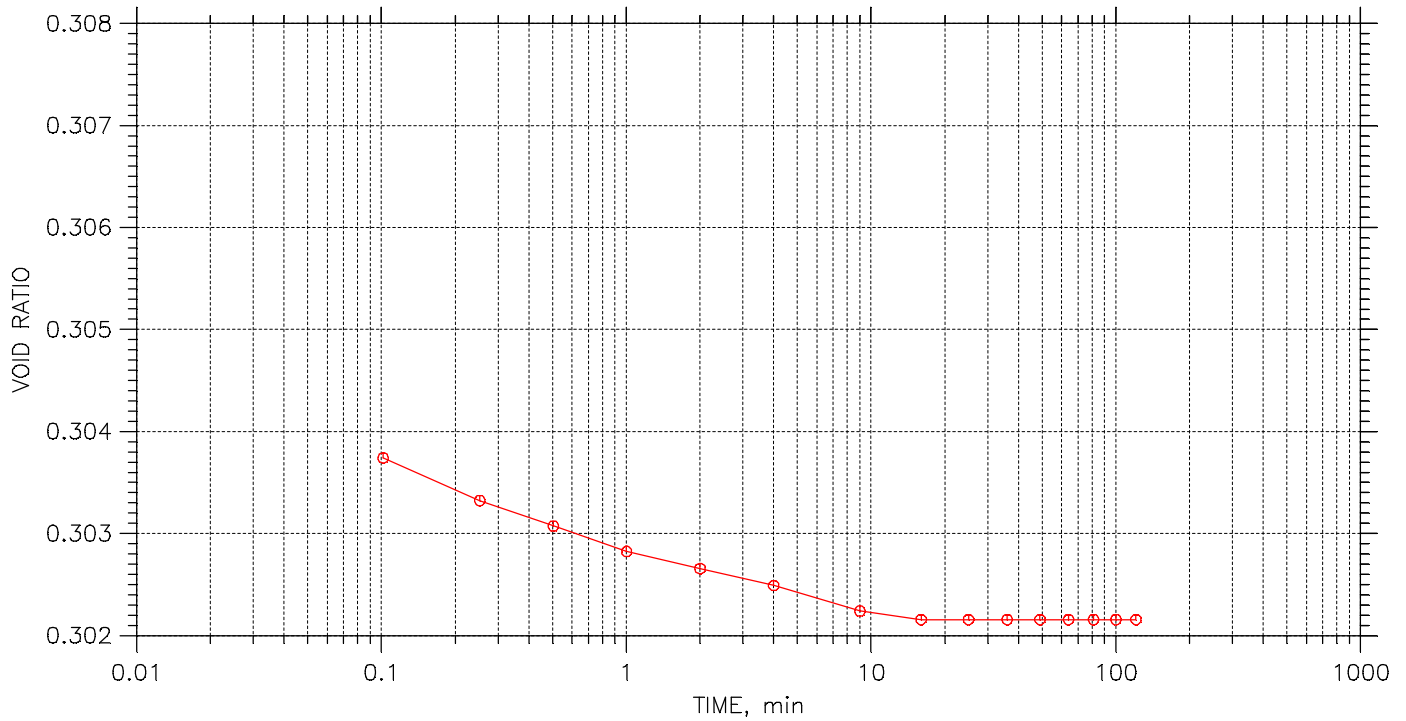



# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 2 of 23

Stress: 0.25 tsf



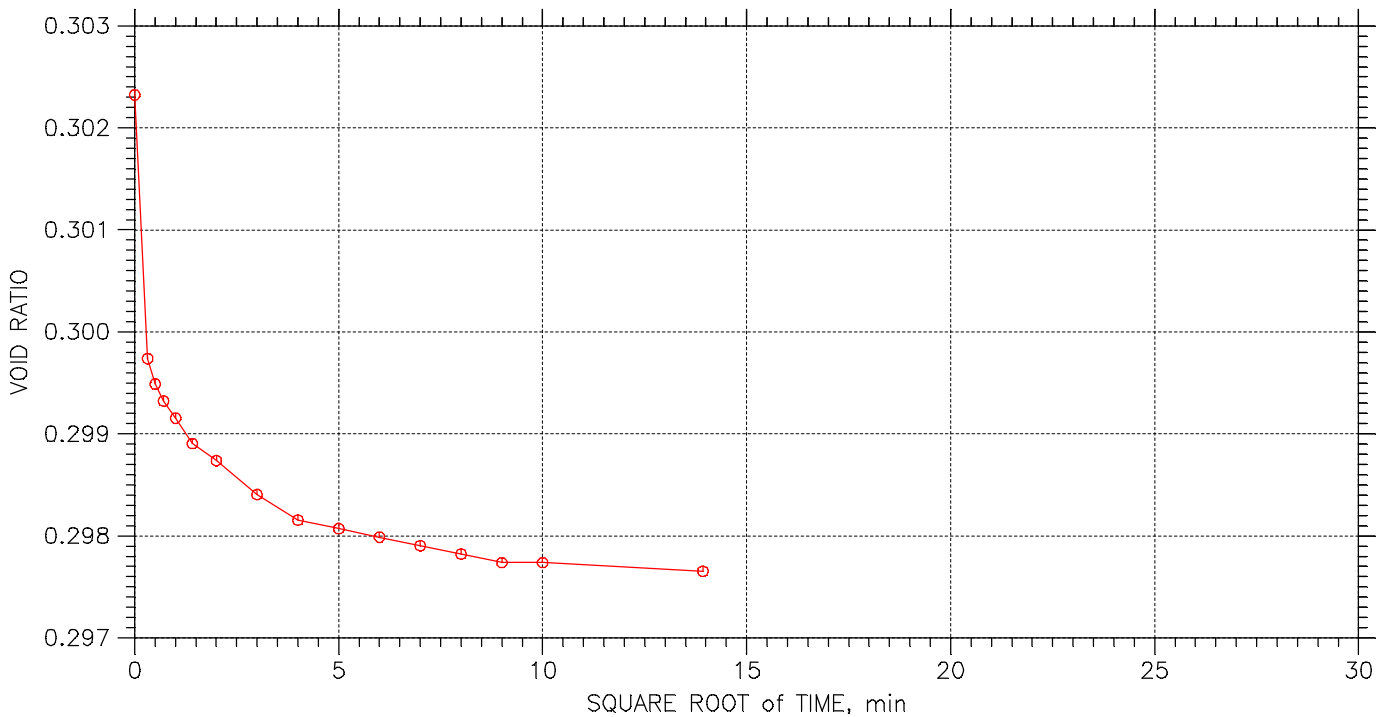
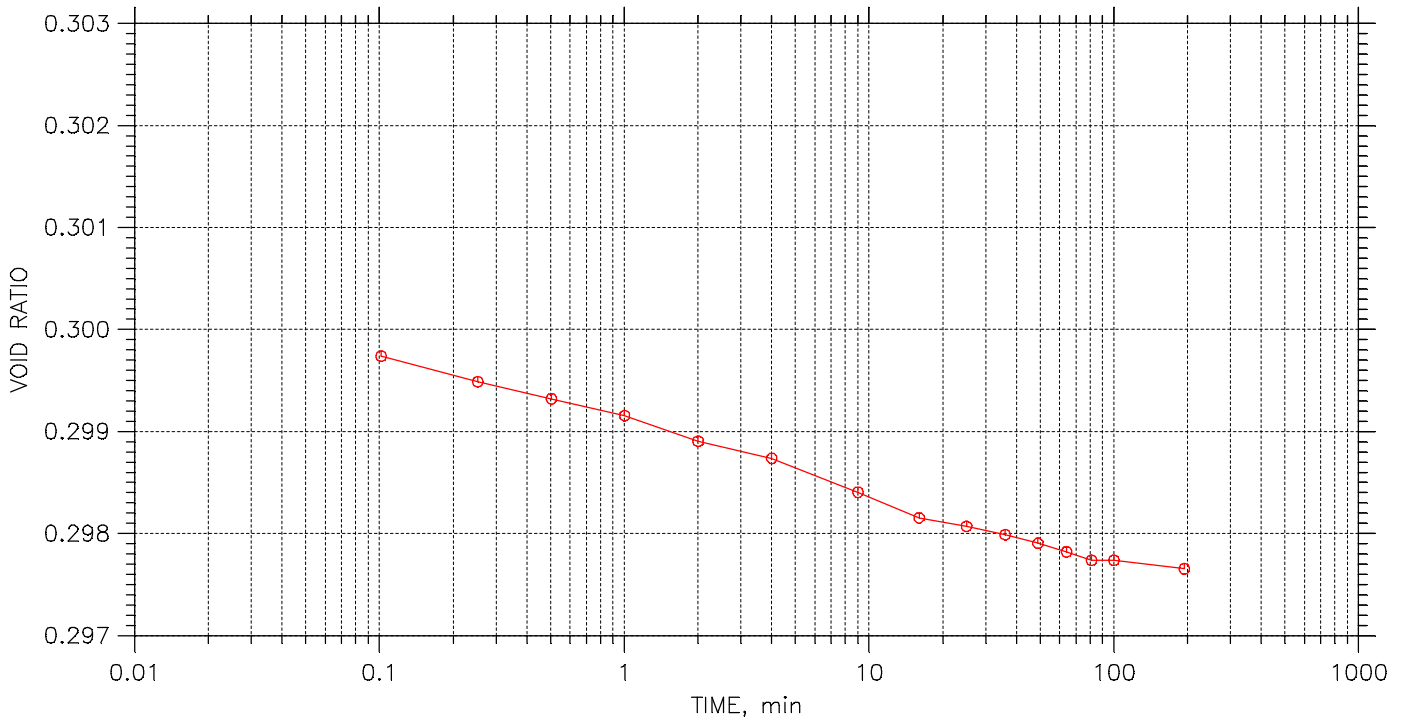
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	275		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 3 of 23

Stress: 0.5 tsf



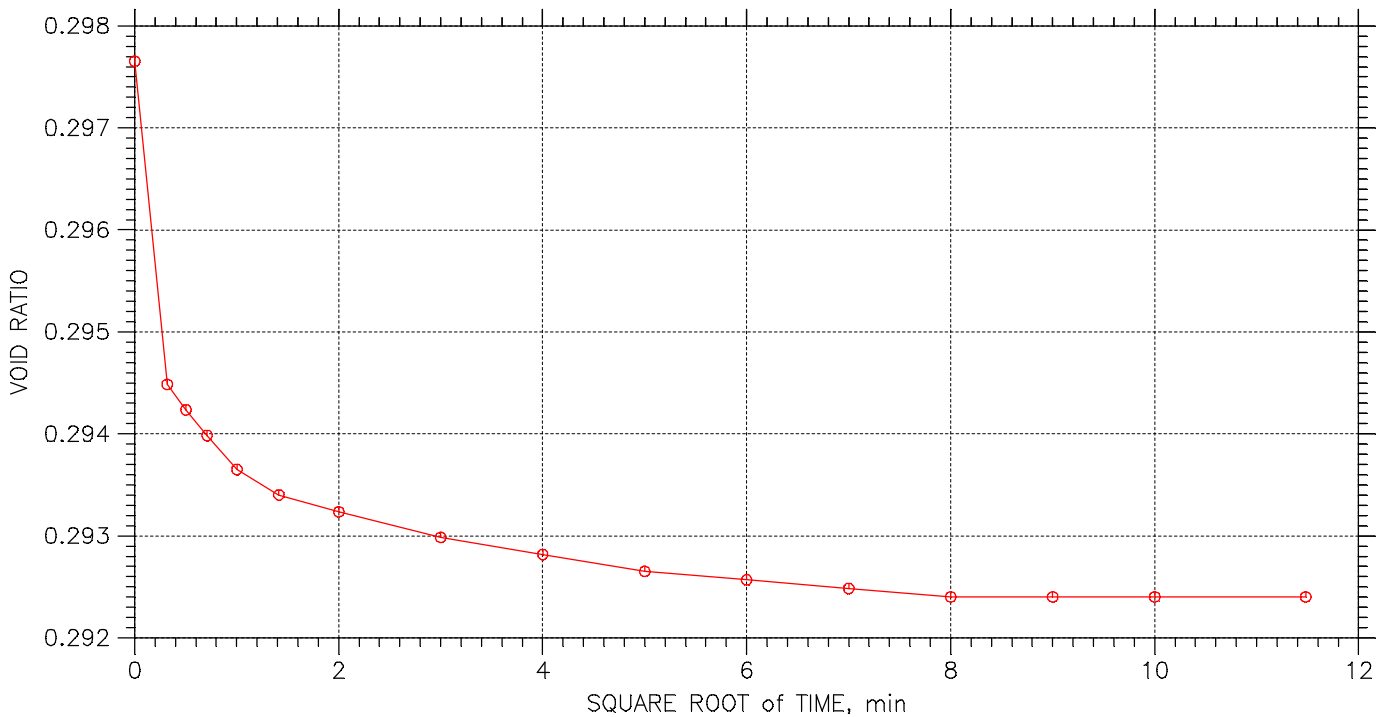
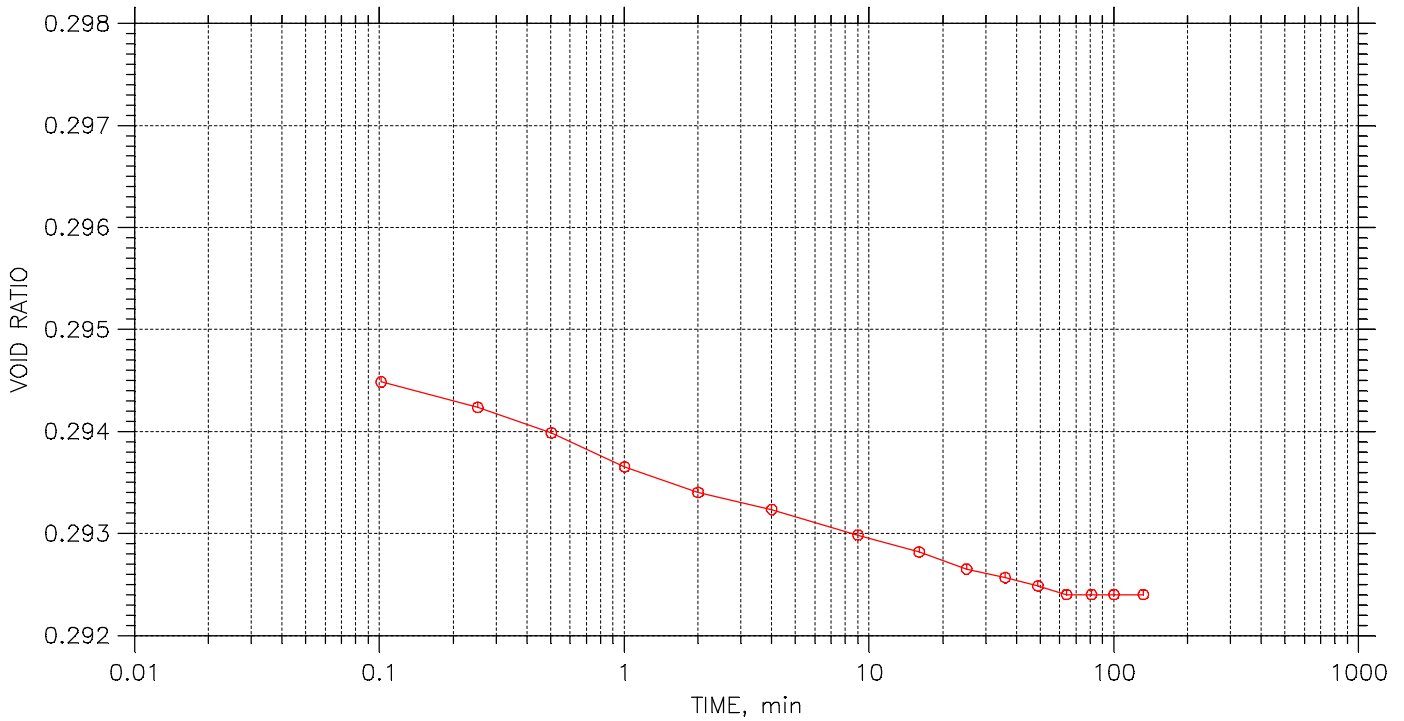
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	276		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 4 of 23

Stress: 0.75 tsf



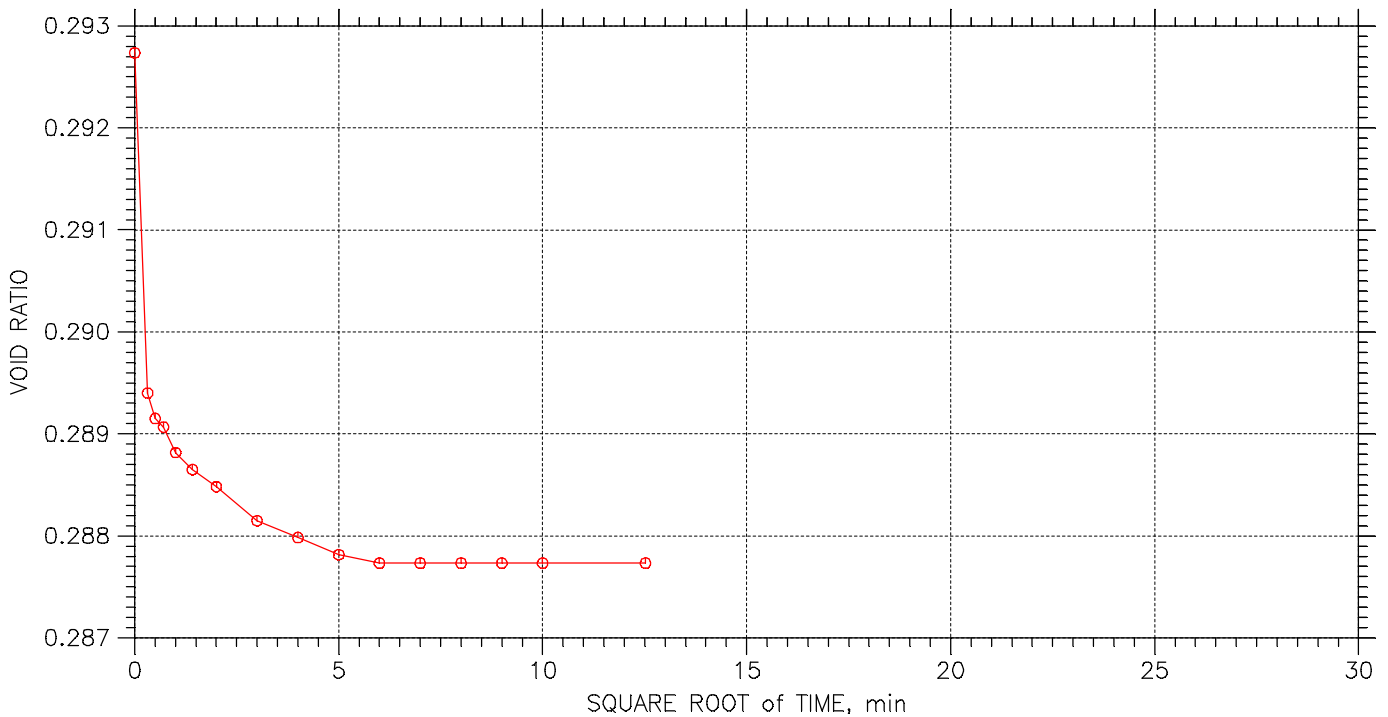
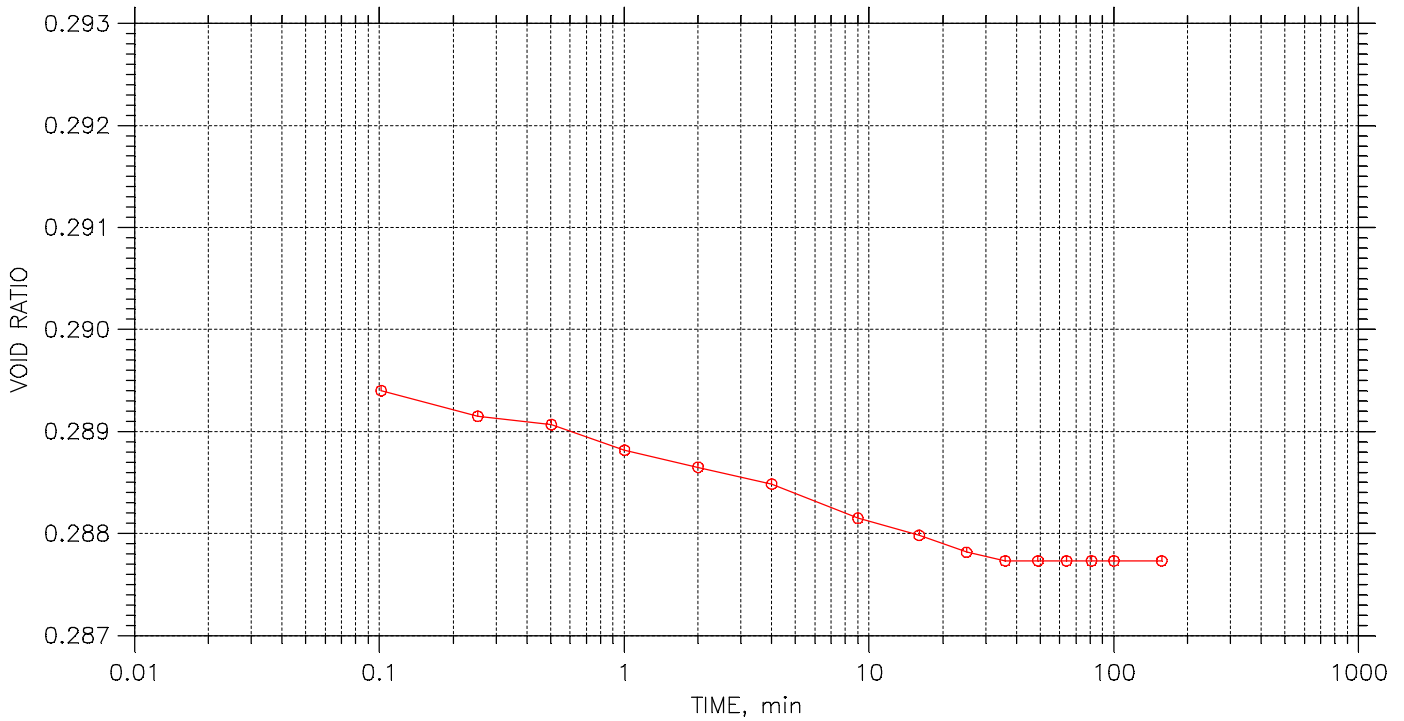
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	277		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 5 of 23

Stress: 1. tsf



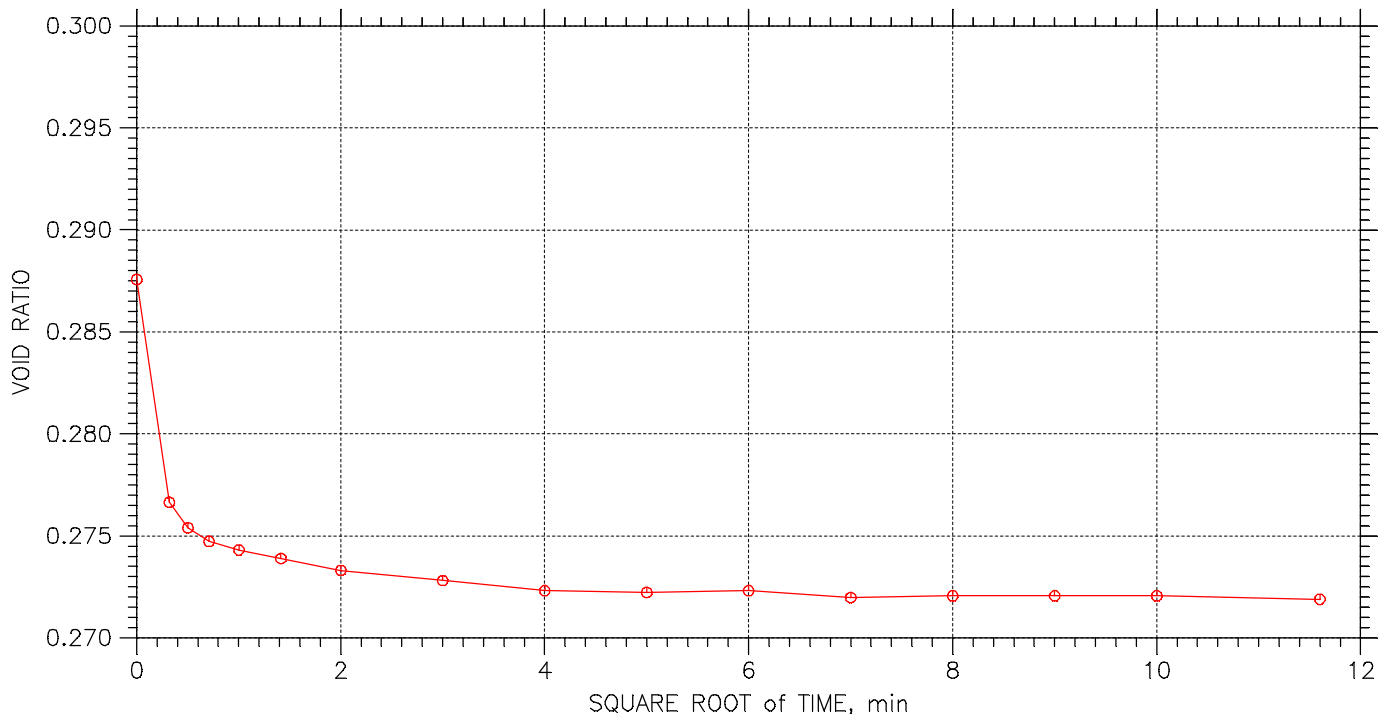
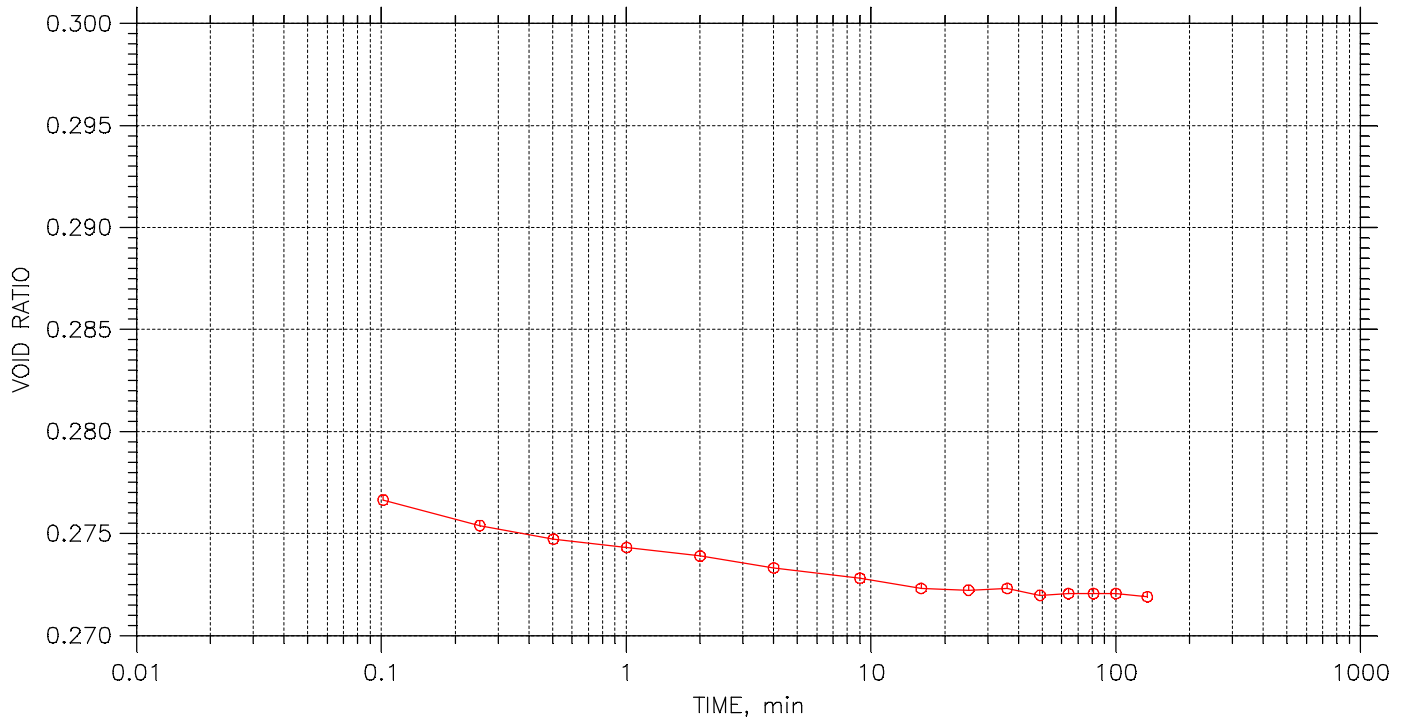
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	278		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 6 of 23

Stress: 2. tsf



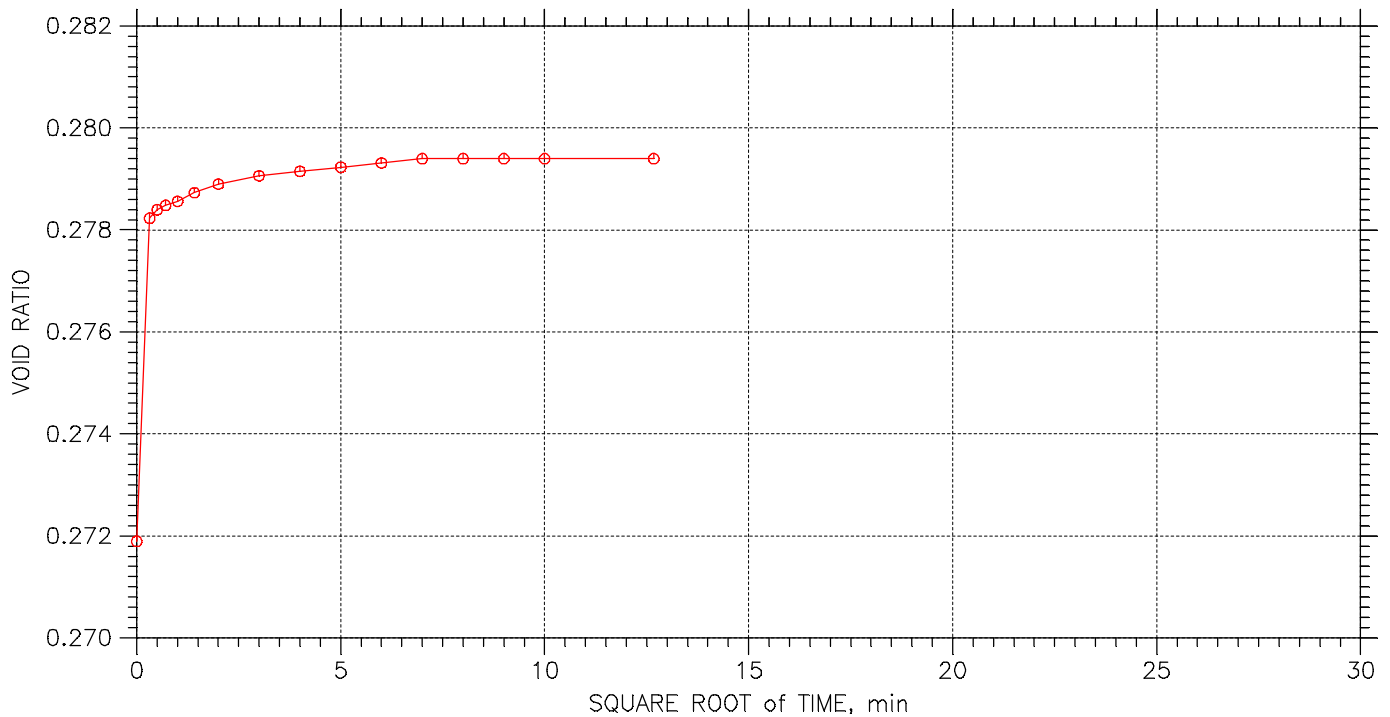
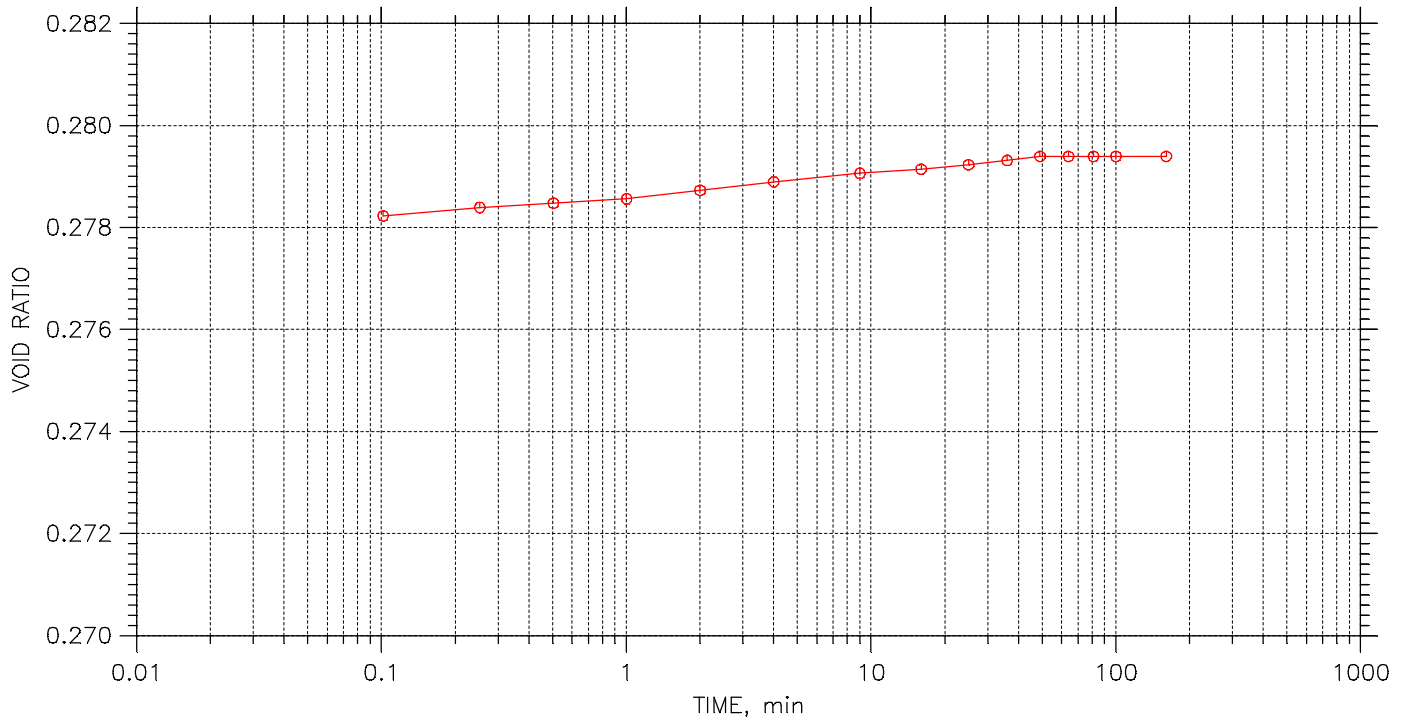
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	279		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 7 of 23

Stress: 1. tsf



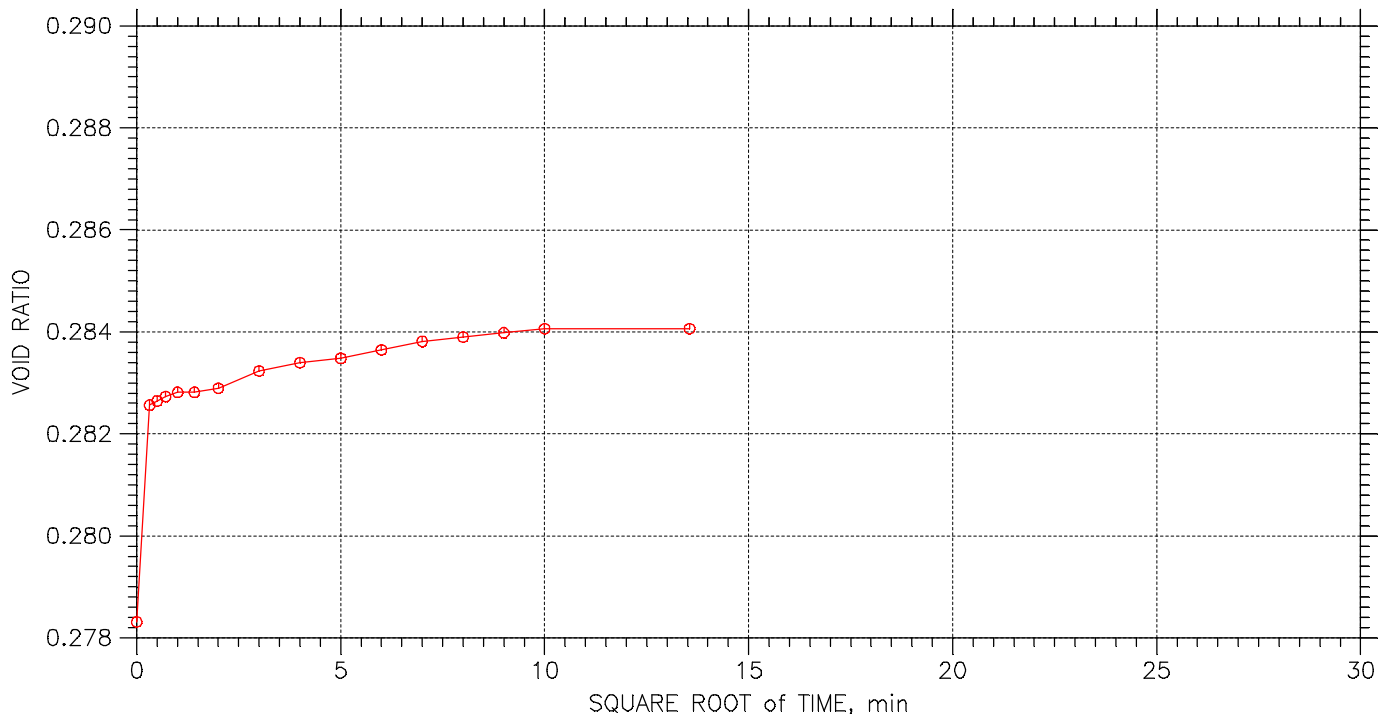
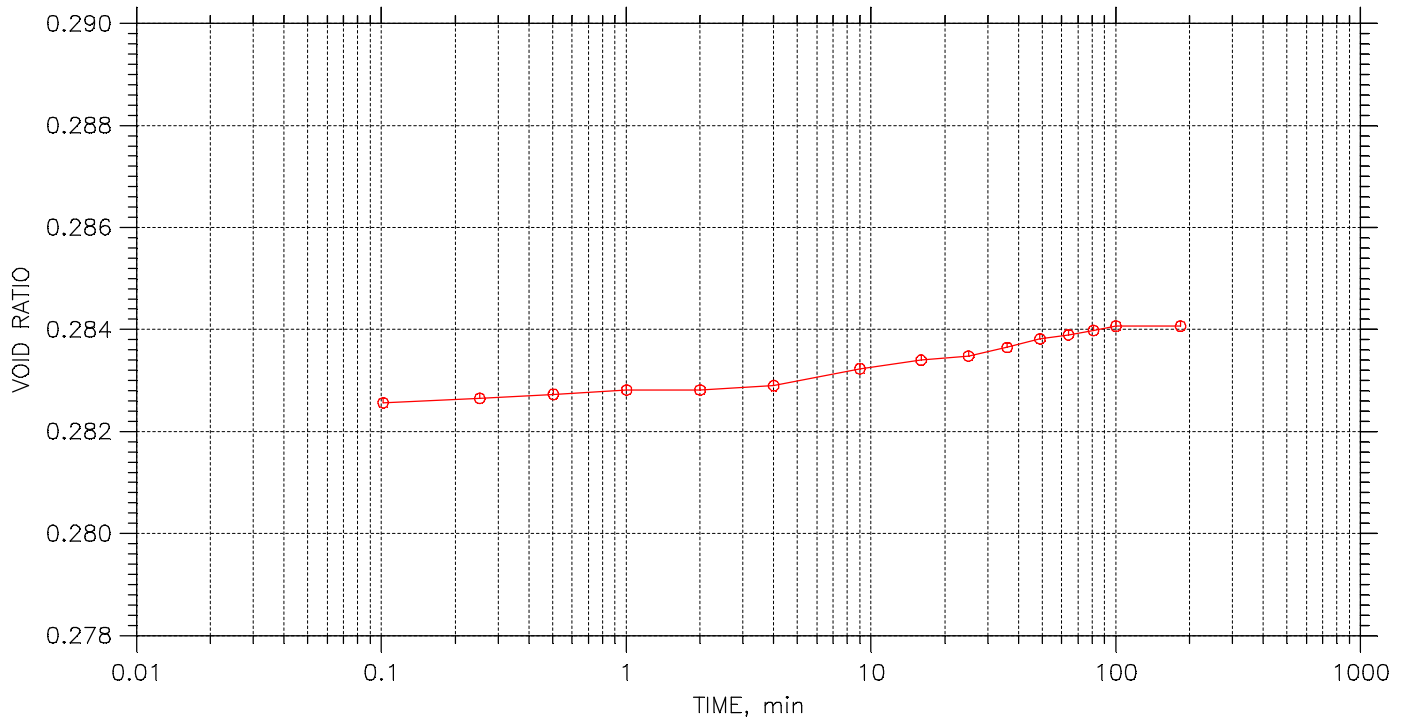
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	280		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 8 of 23

Stress: 0.5 tsf



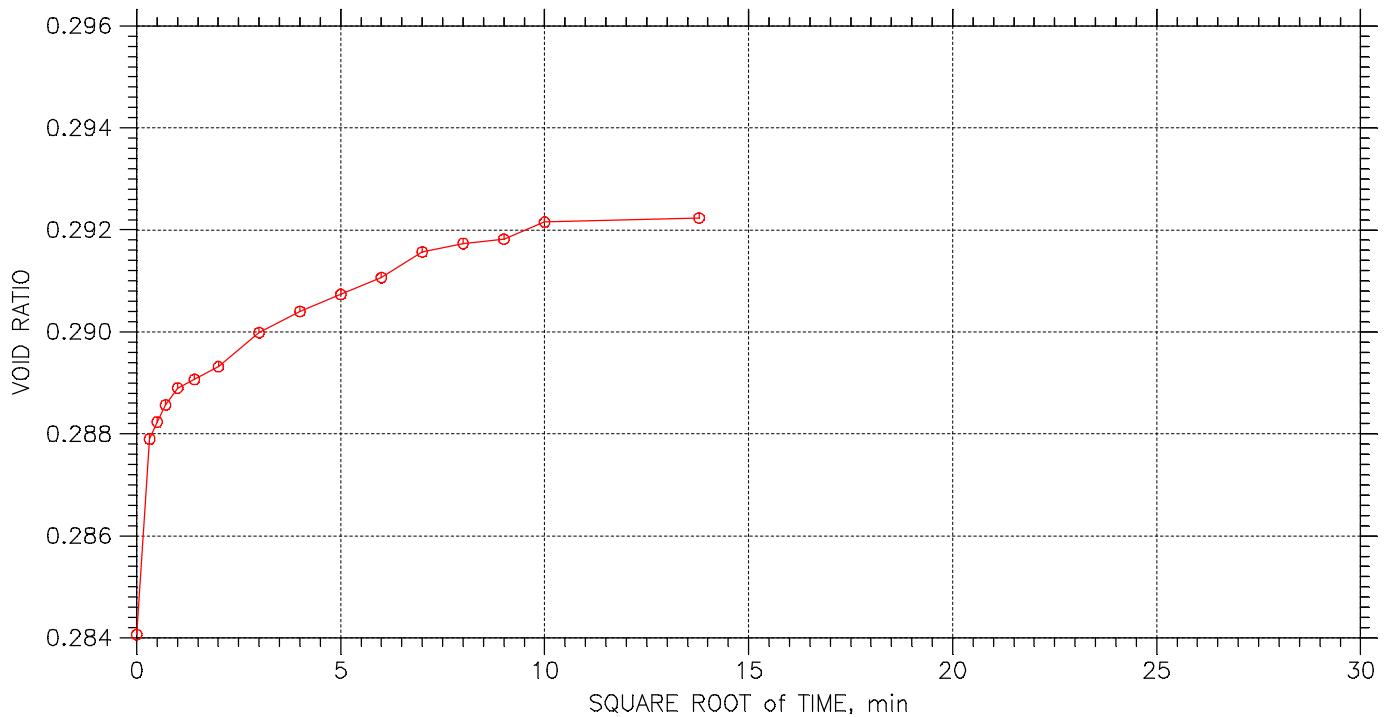
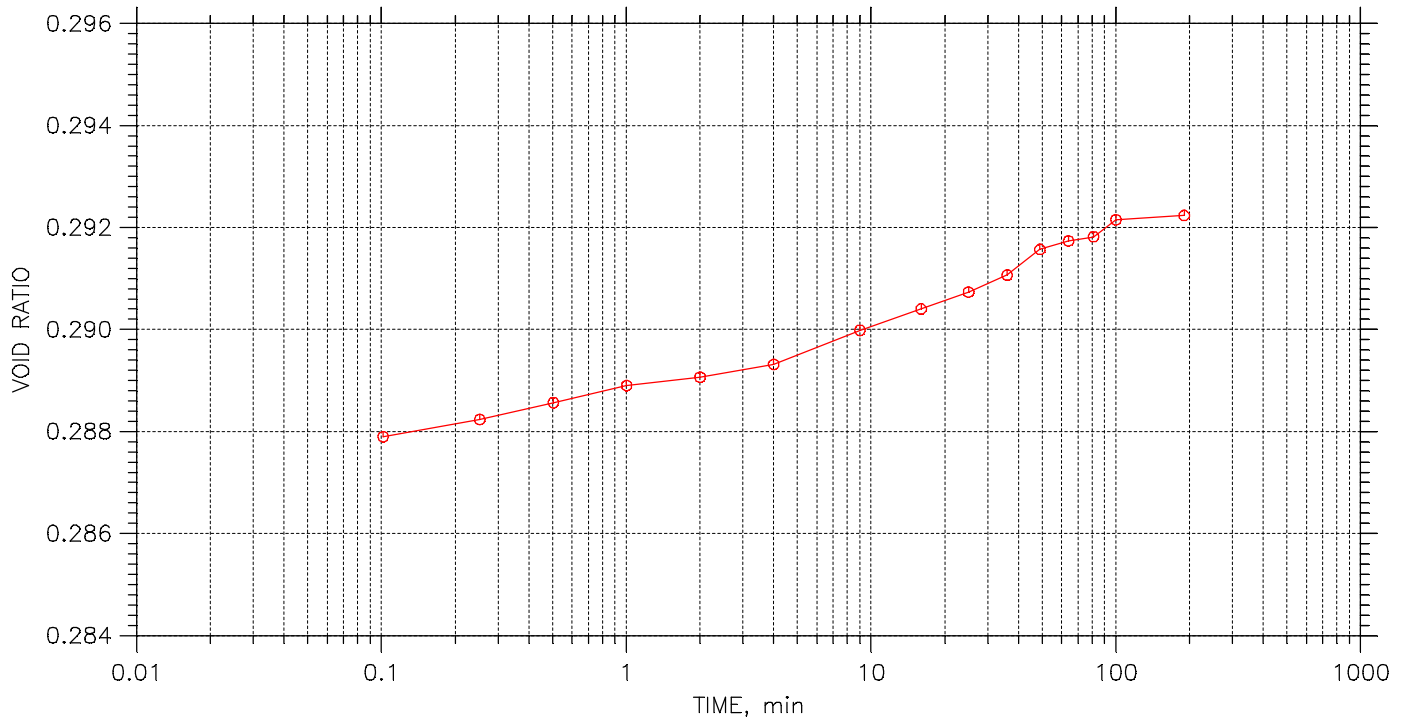
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	281		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 9 of 23

Stress: 0.125 tsf



	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	282		

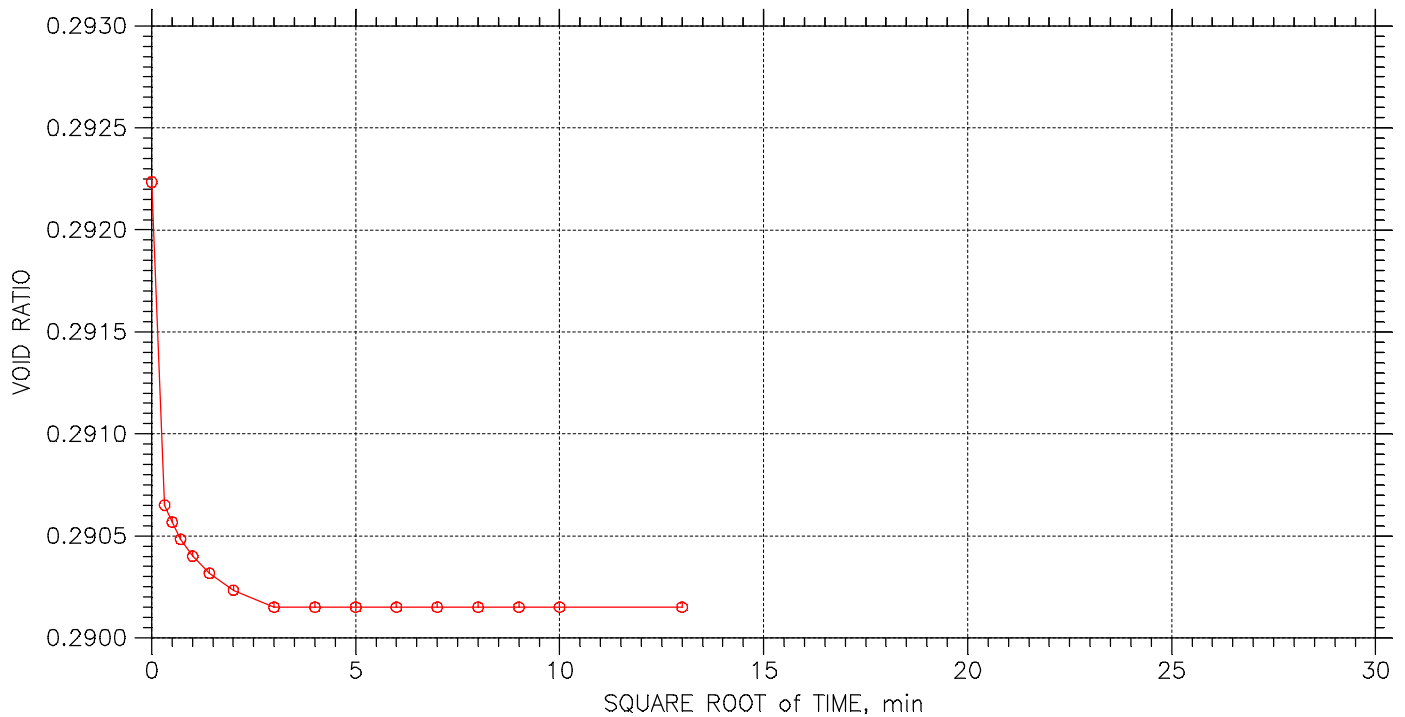
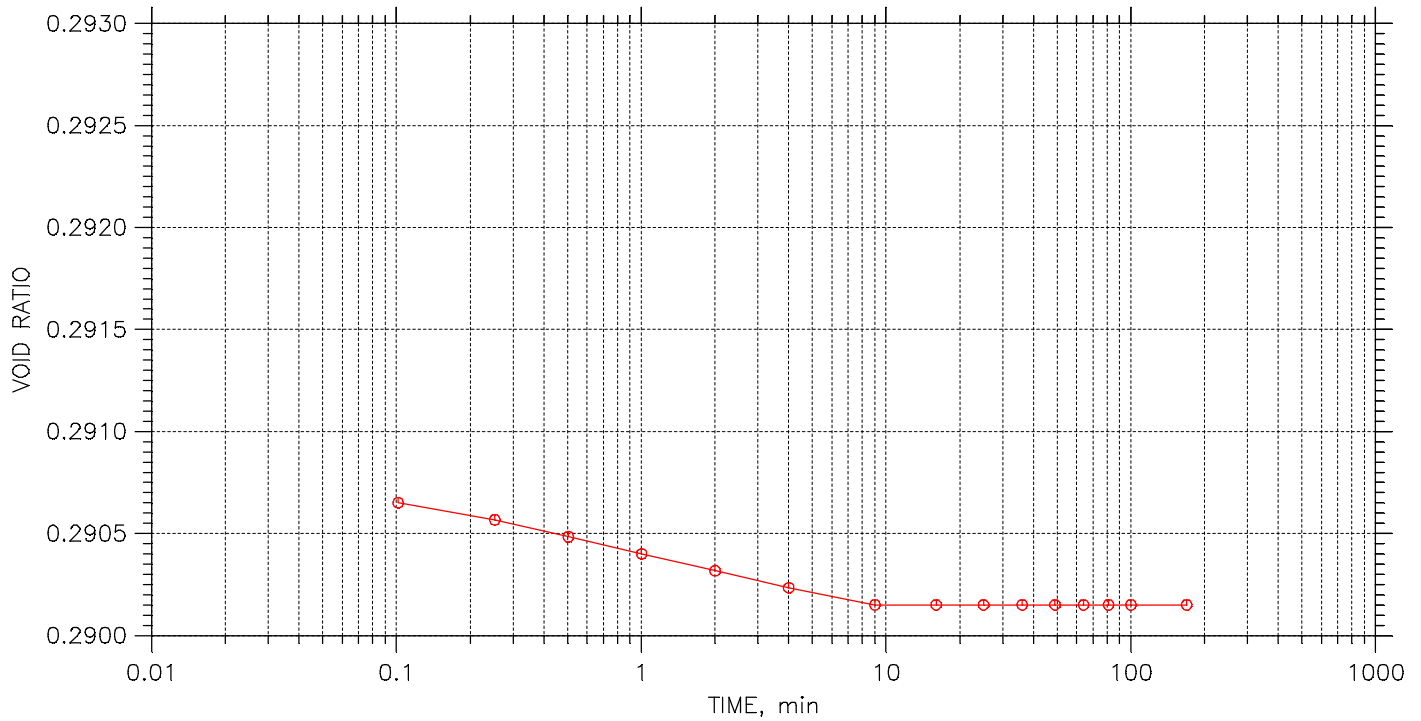



# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 10 of 23

Stress: 0.25 tsf



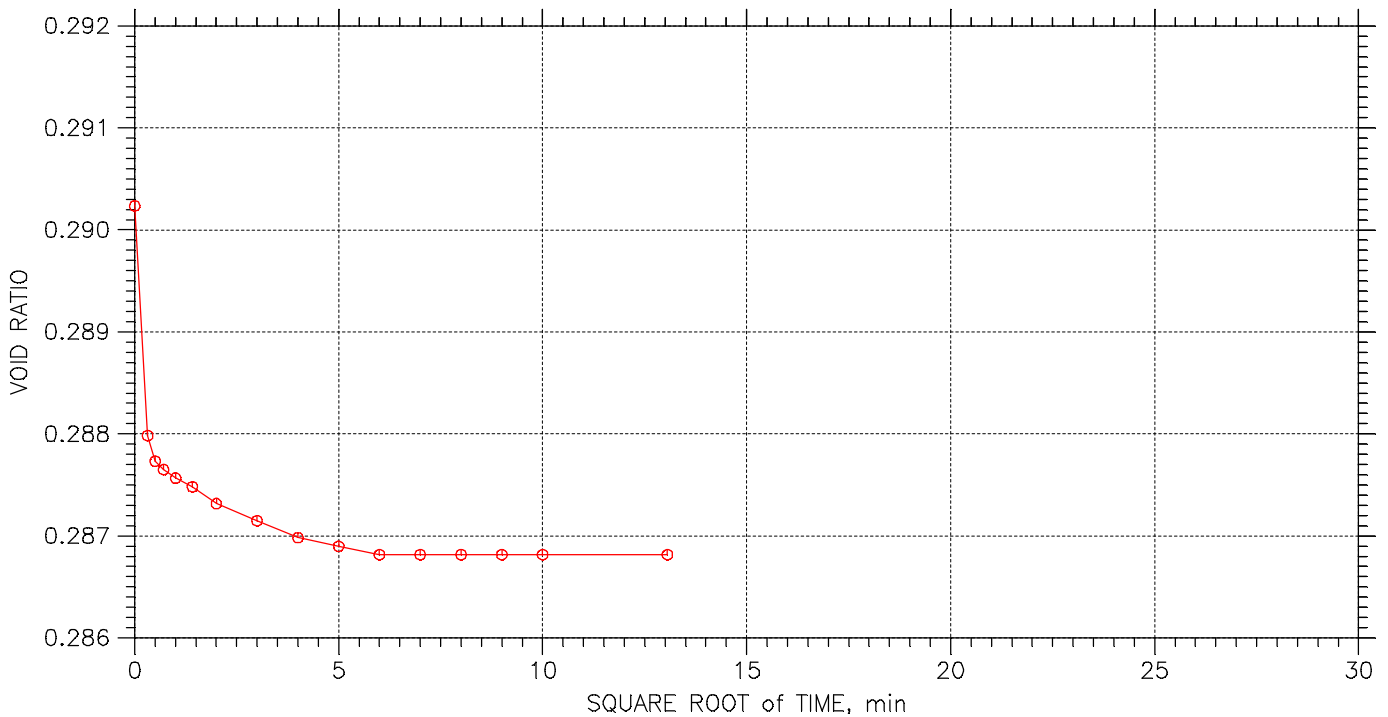
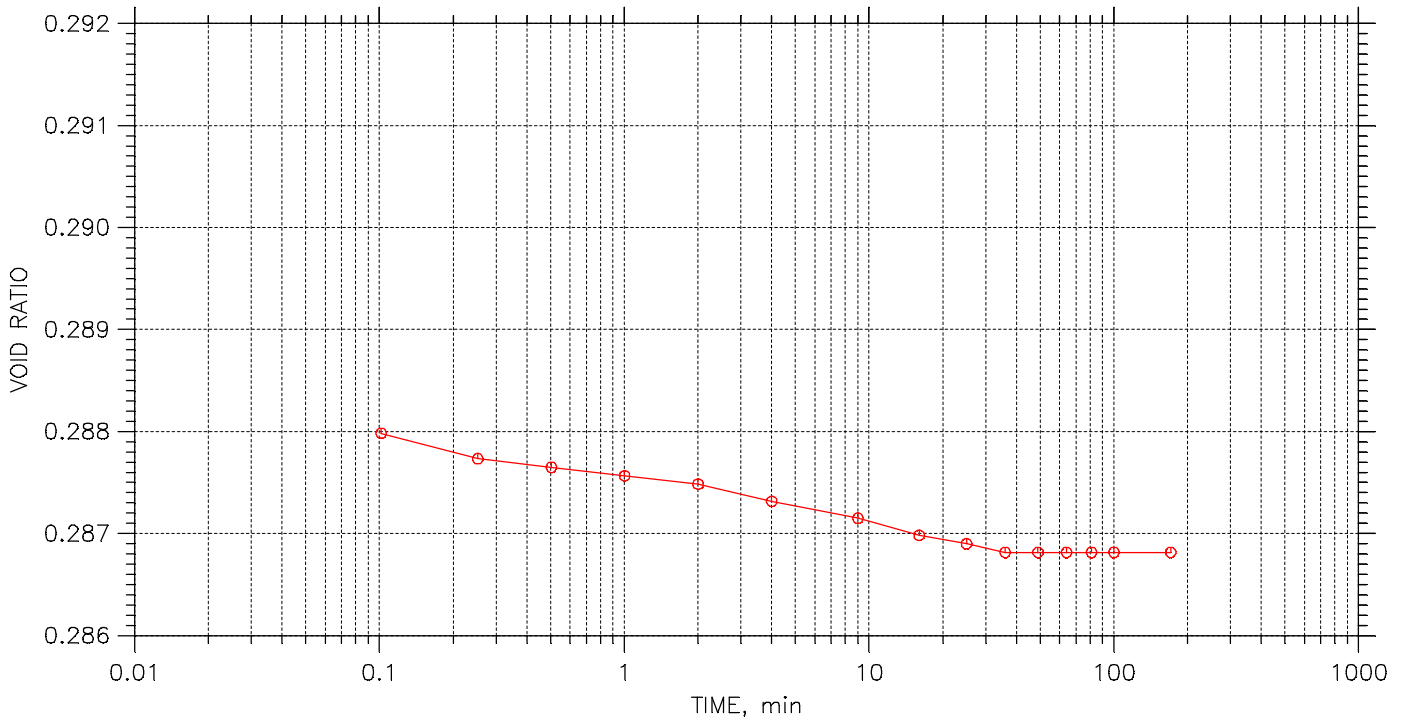
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	283		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 11 of 23

Stress: 0.5 tsf



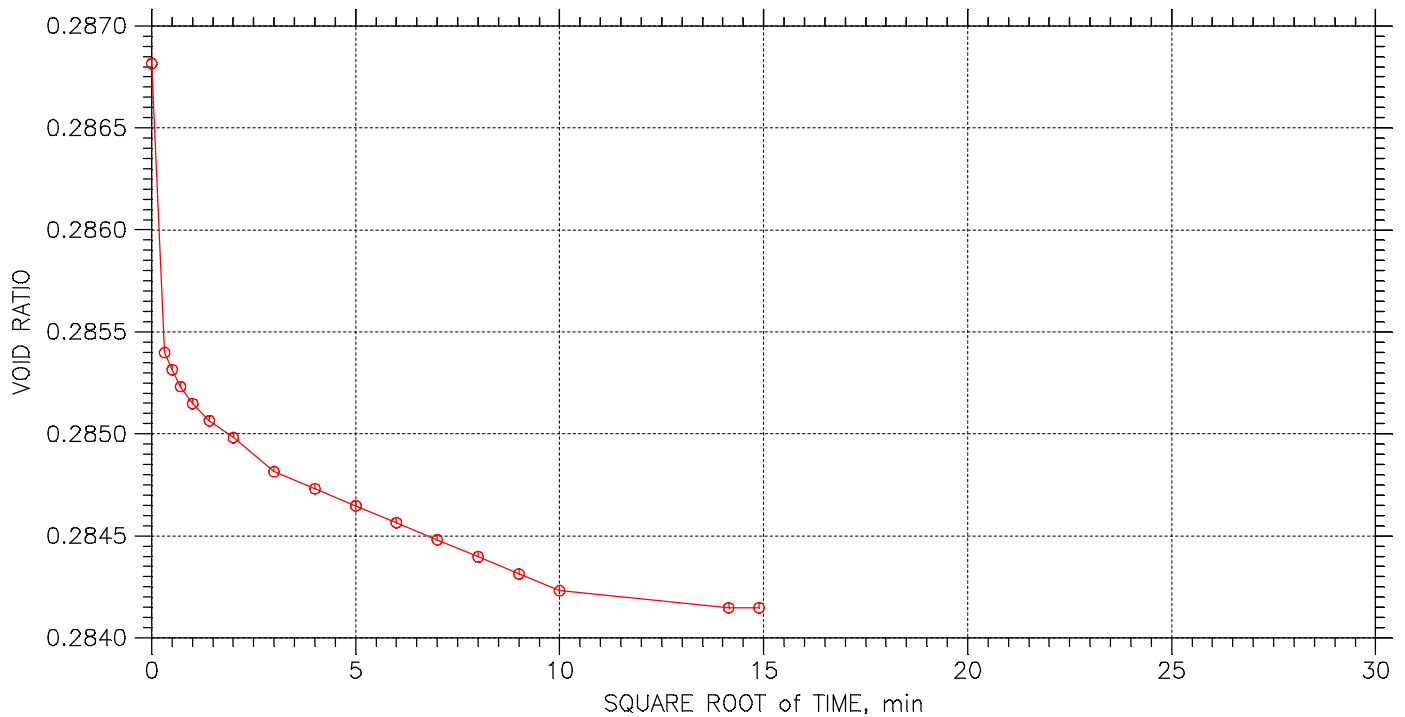
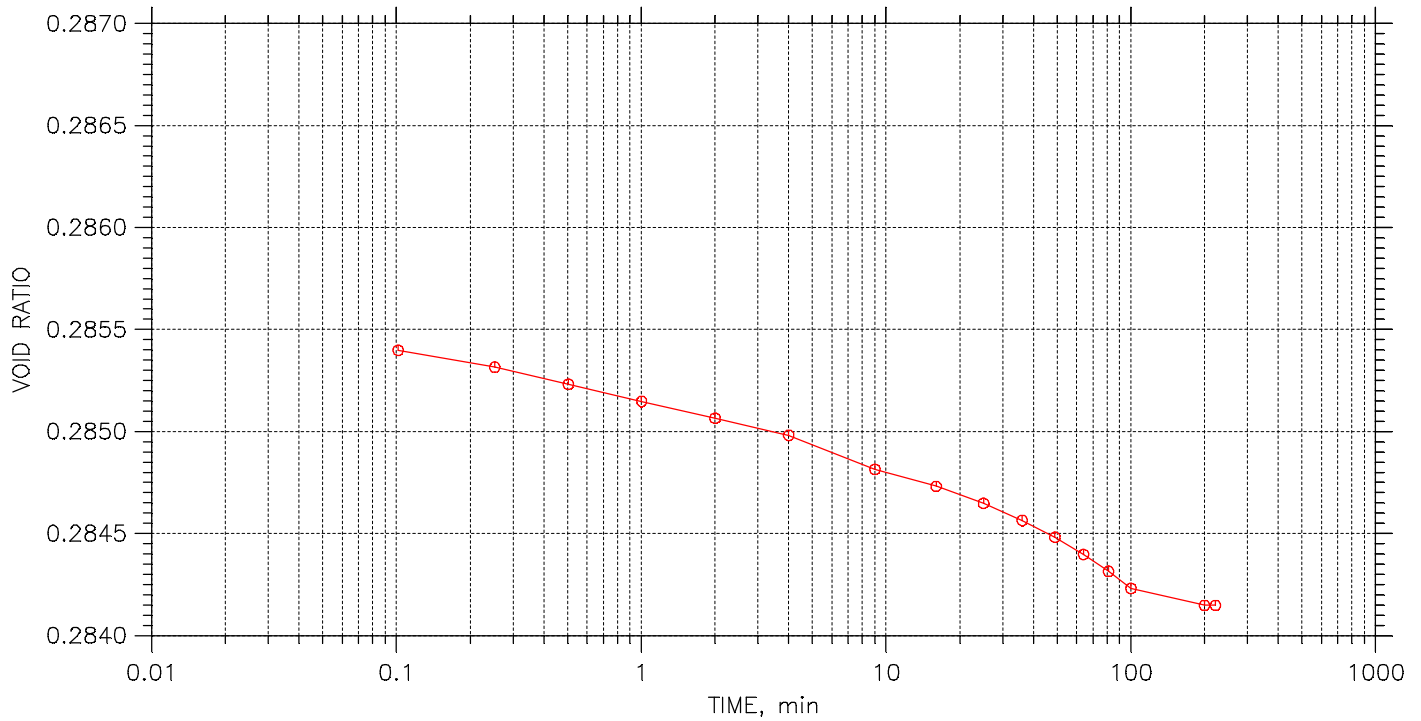
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	284		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 12 of 23

Stress: 0.75 tsf



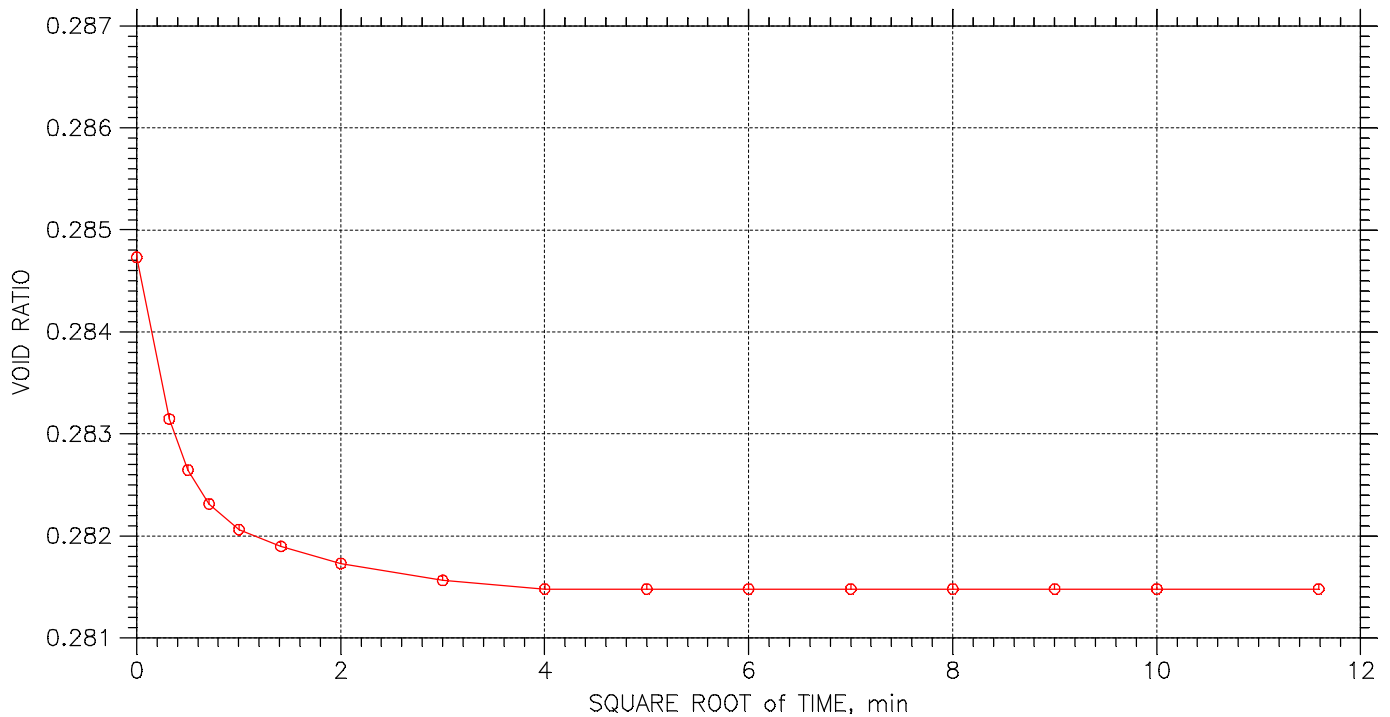
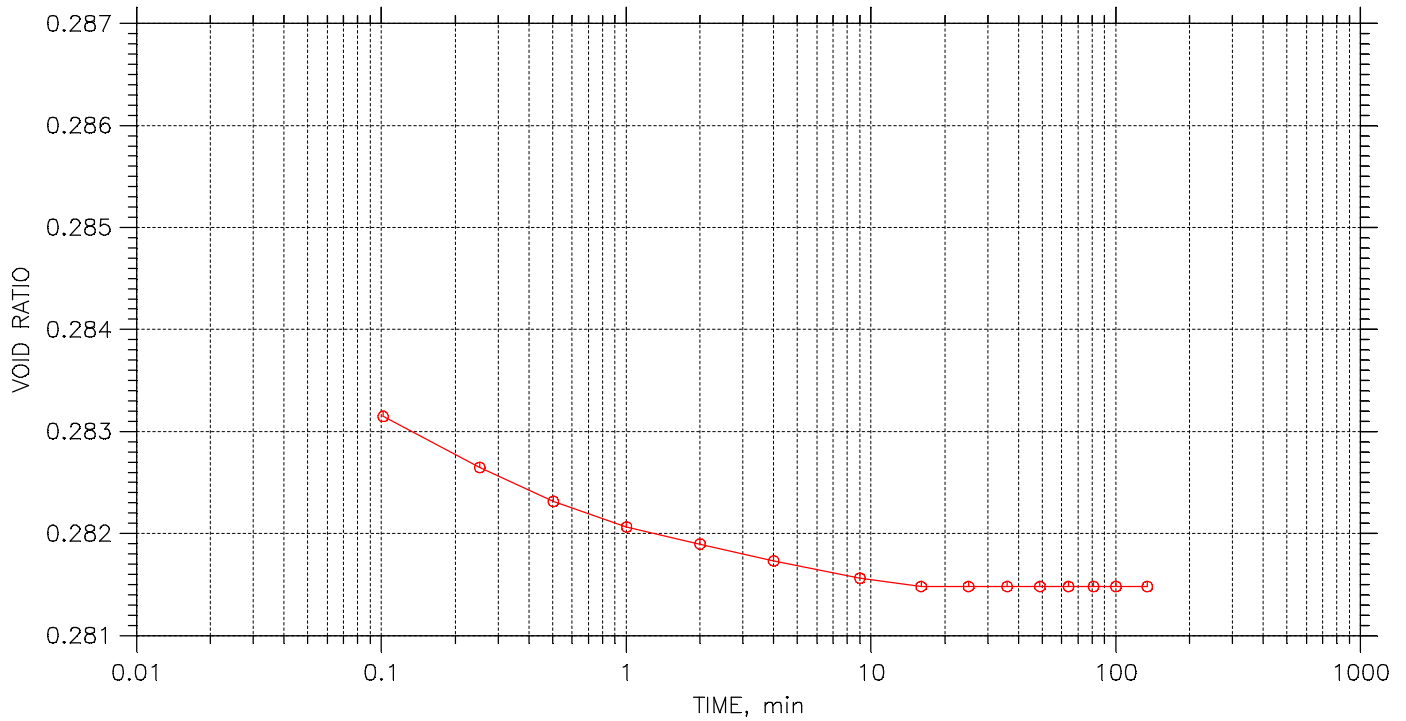
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	285		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 13 of 23

Stress: 1. tsf



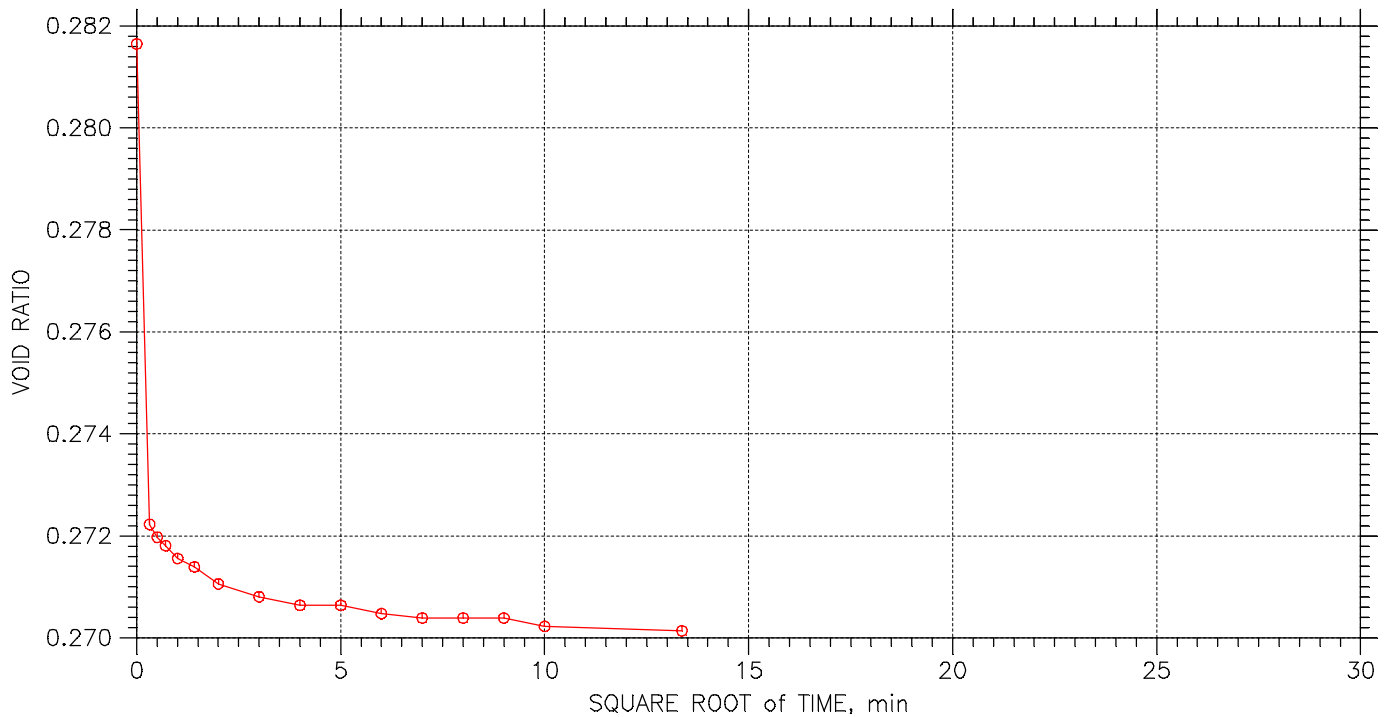
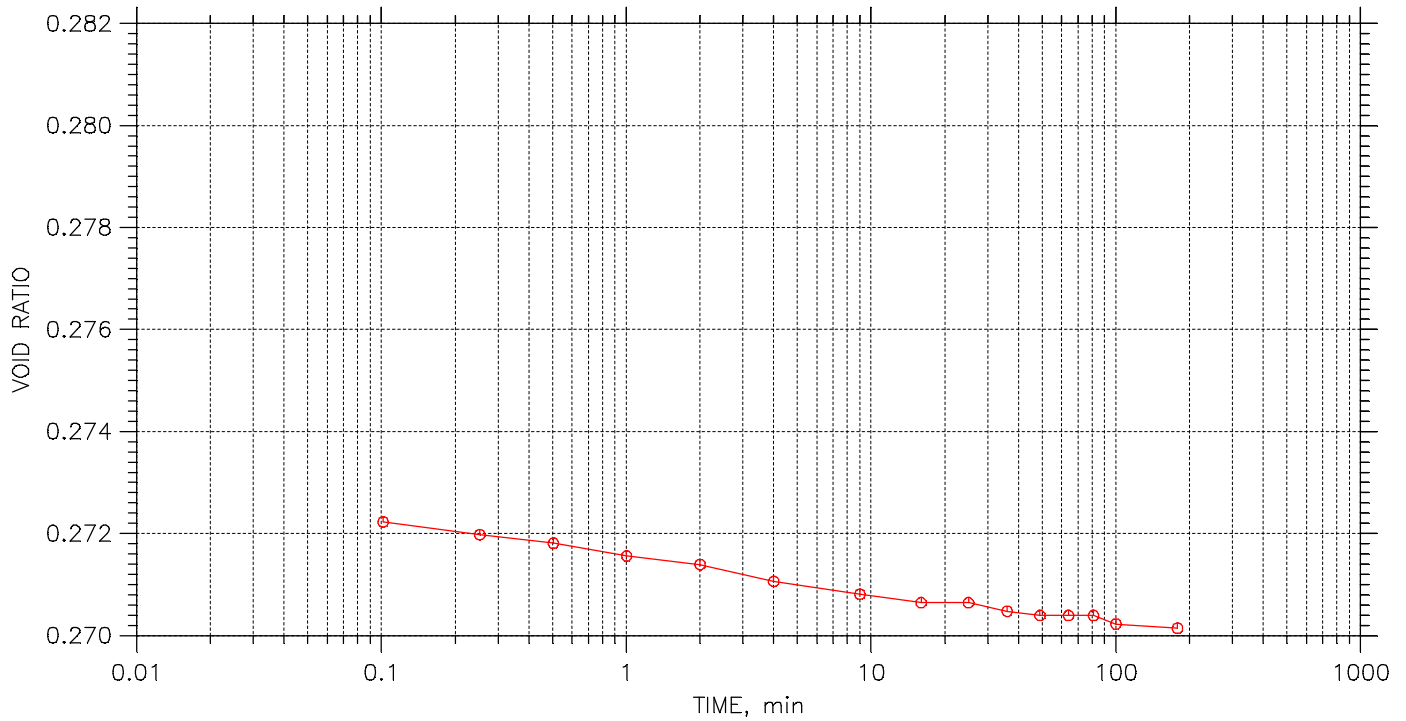
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	286		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 14 of 23

Stress: 2. tsf



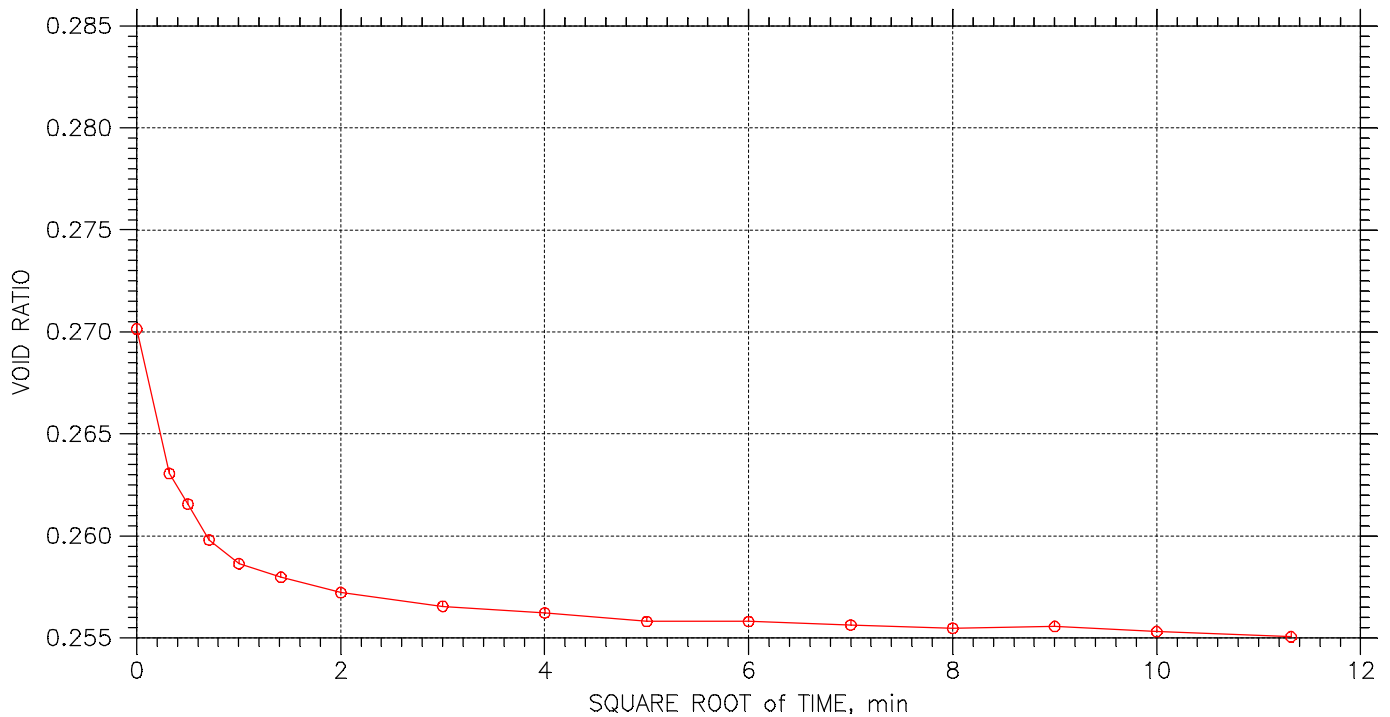
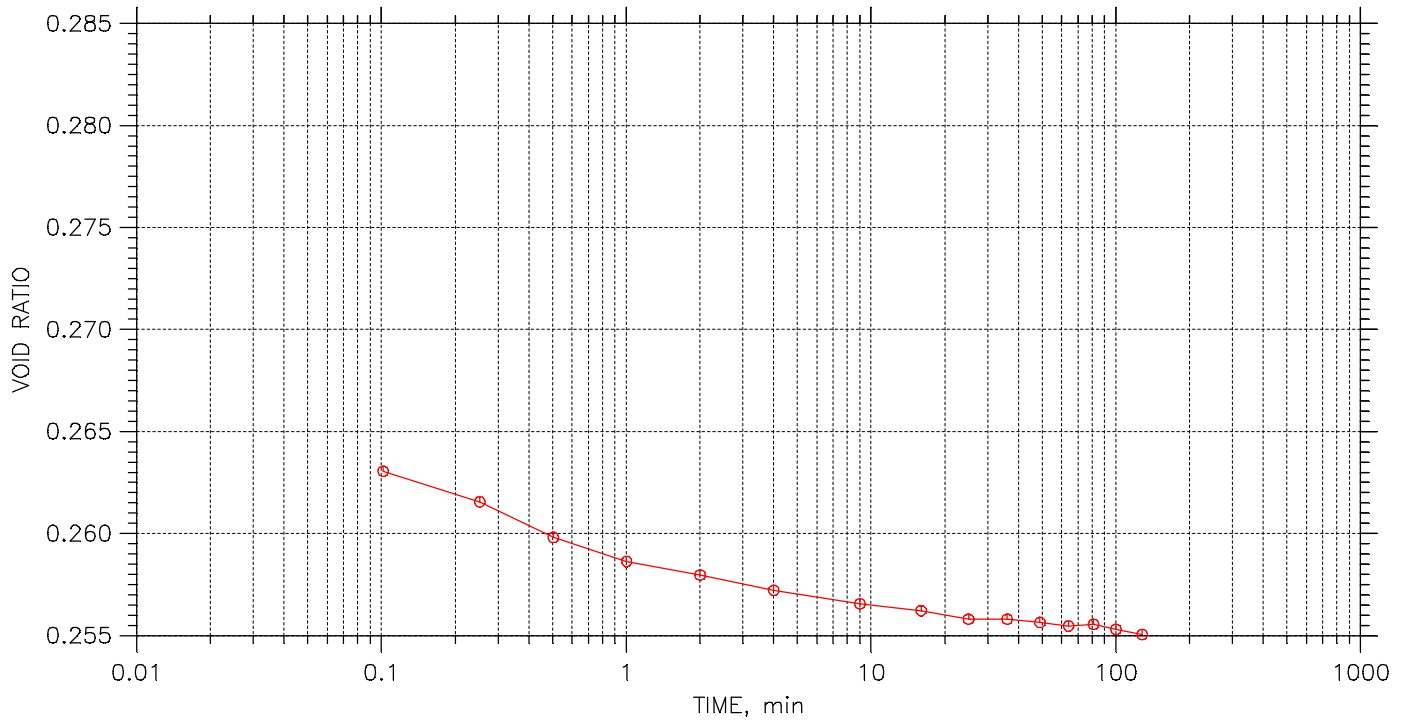
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	287		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 15 of 23

Stress: 4. tsf



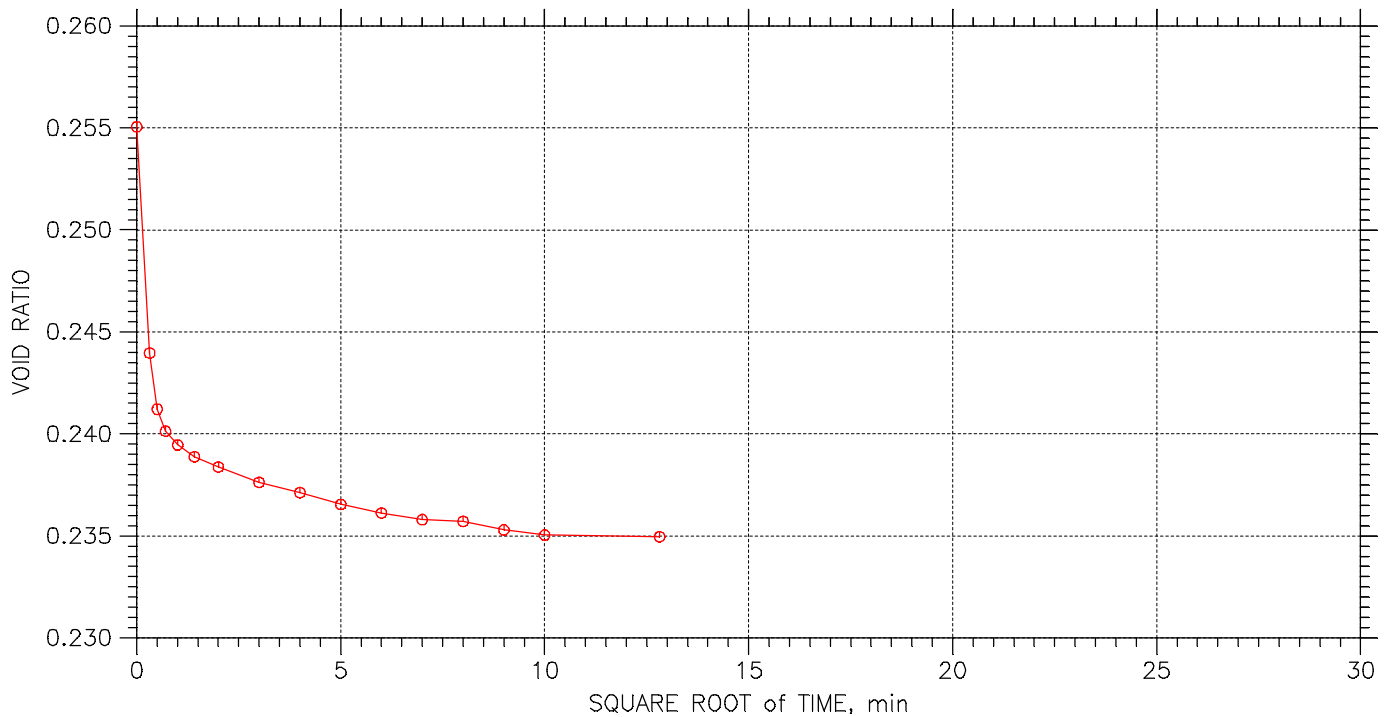
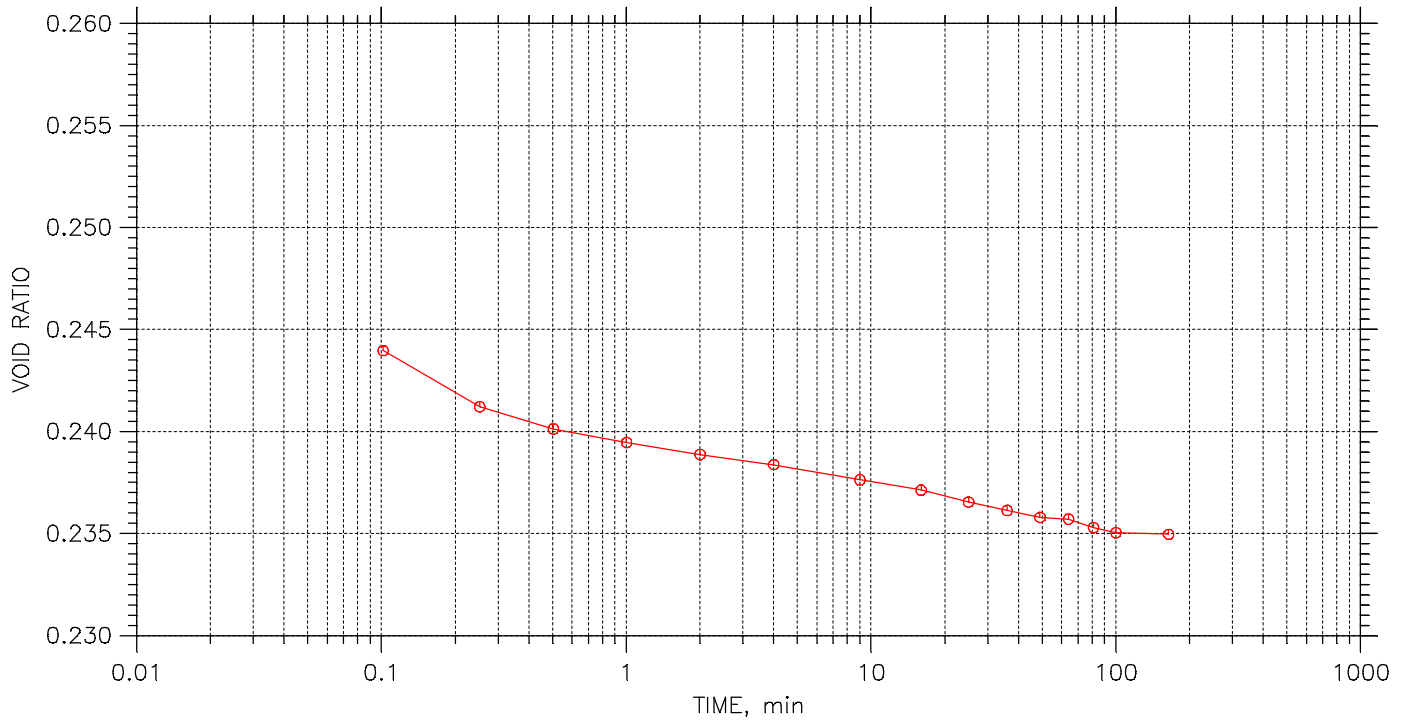
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	288		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 16 of 23

Stress: 8. tsf



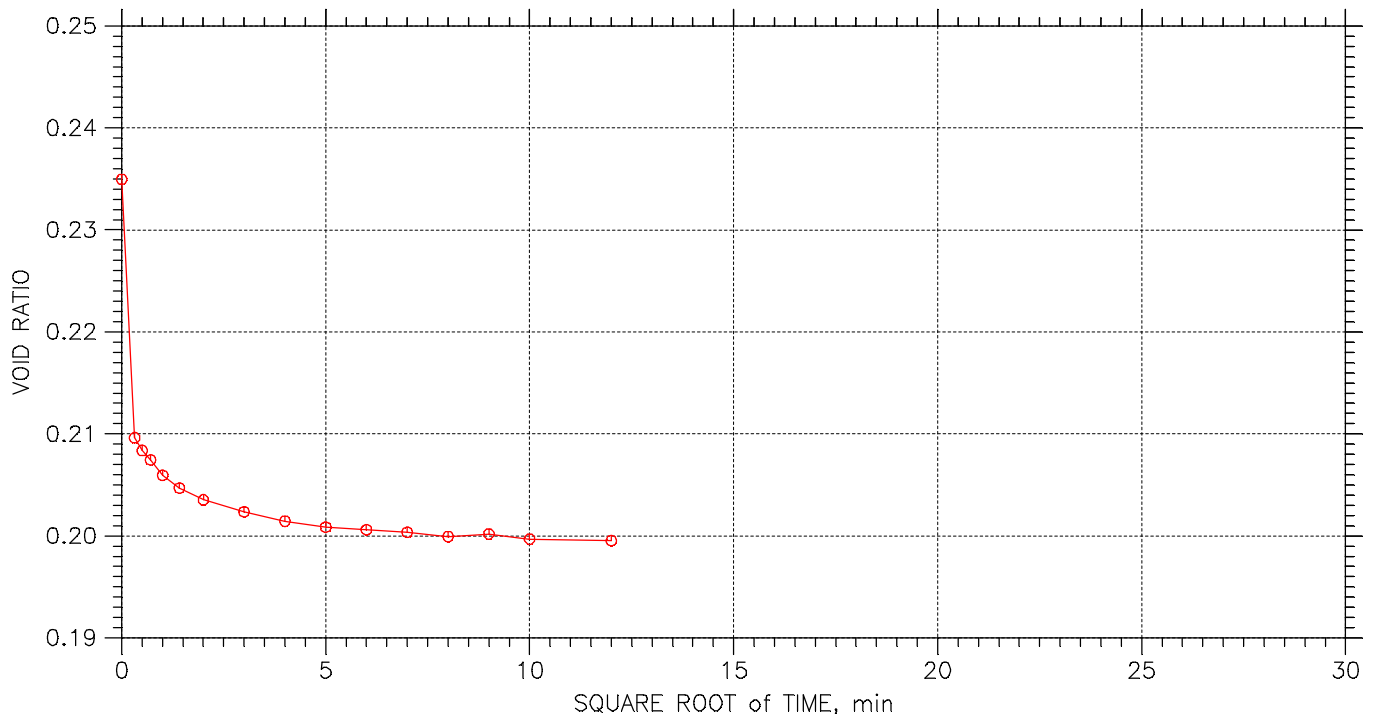
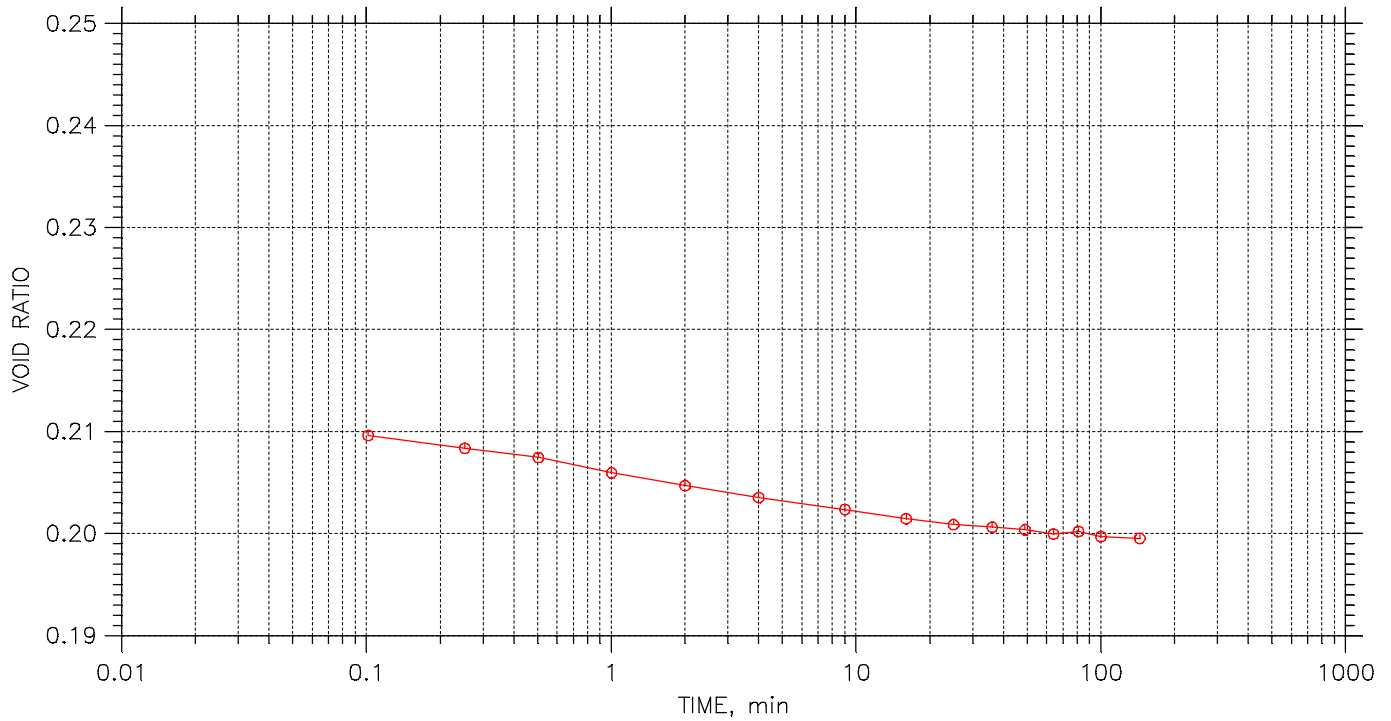
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	289		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 17 of 23

Stress: 16. tsf



	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	290		

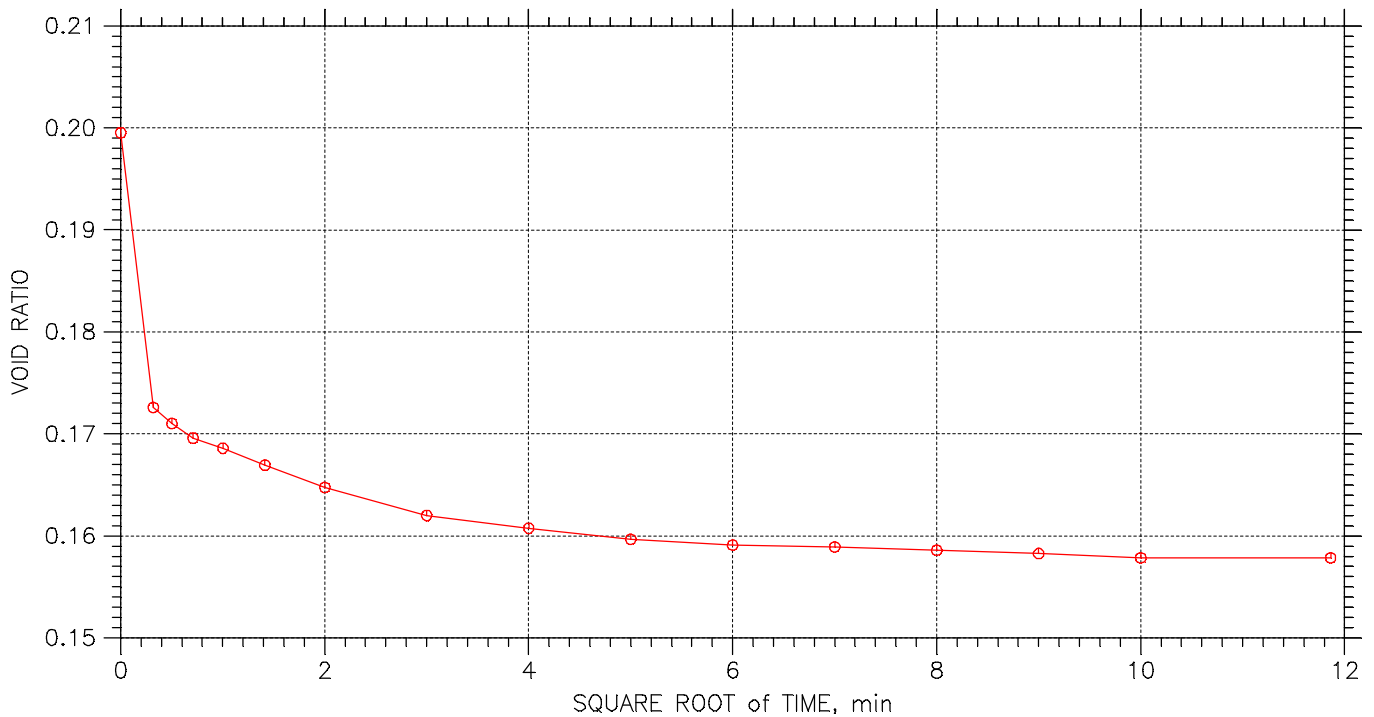
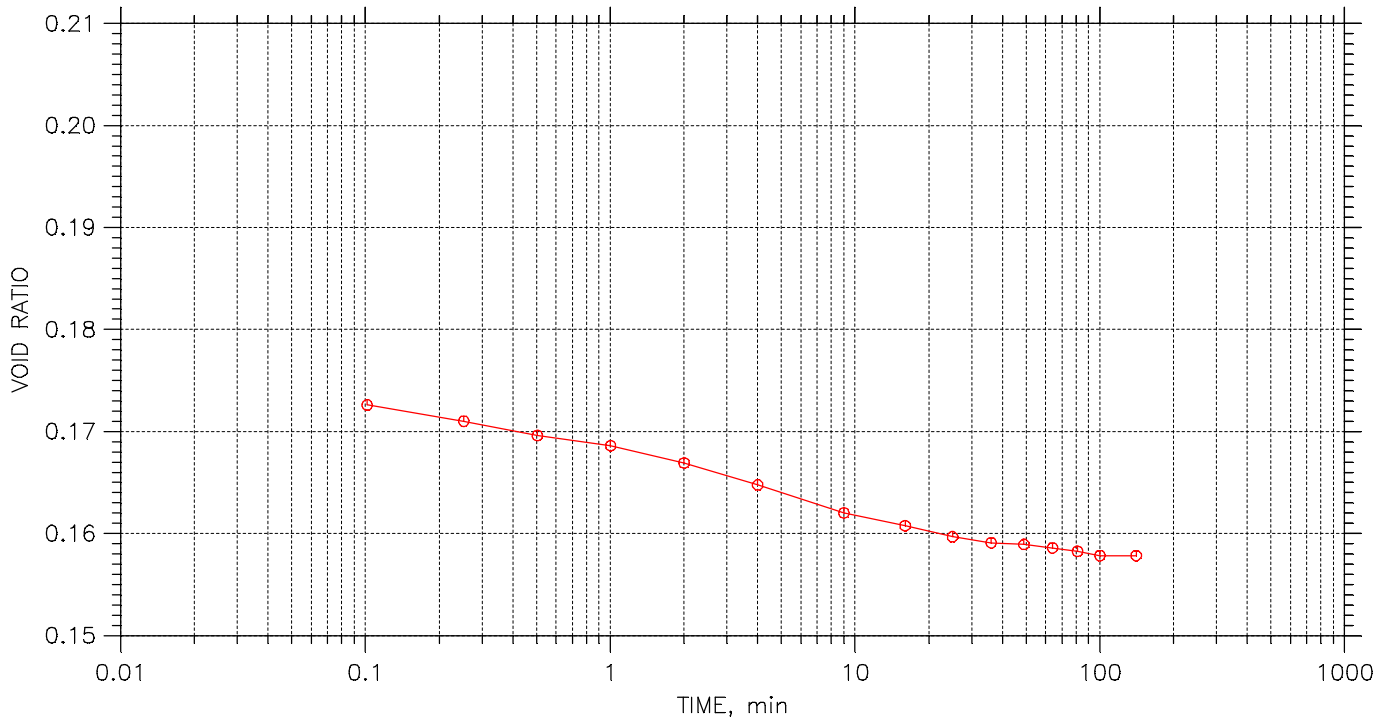



# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 18 of 23

Stress: 32. tsf



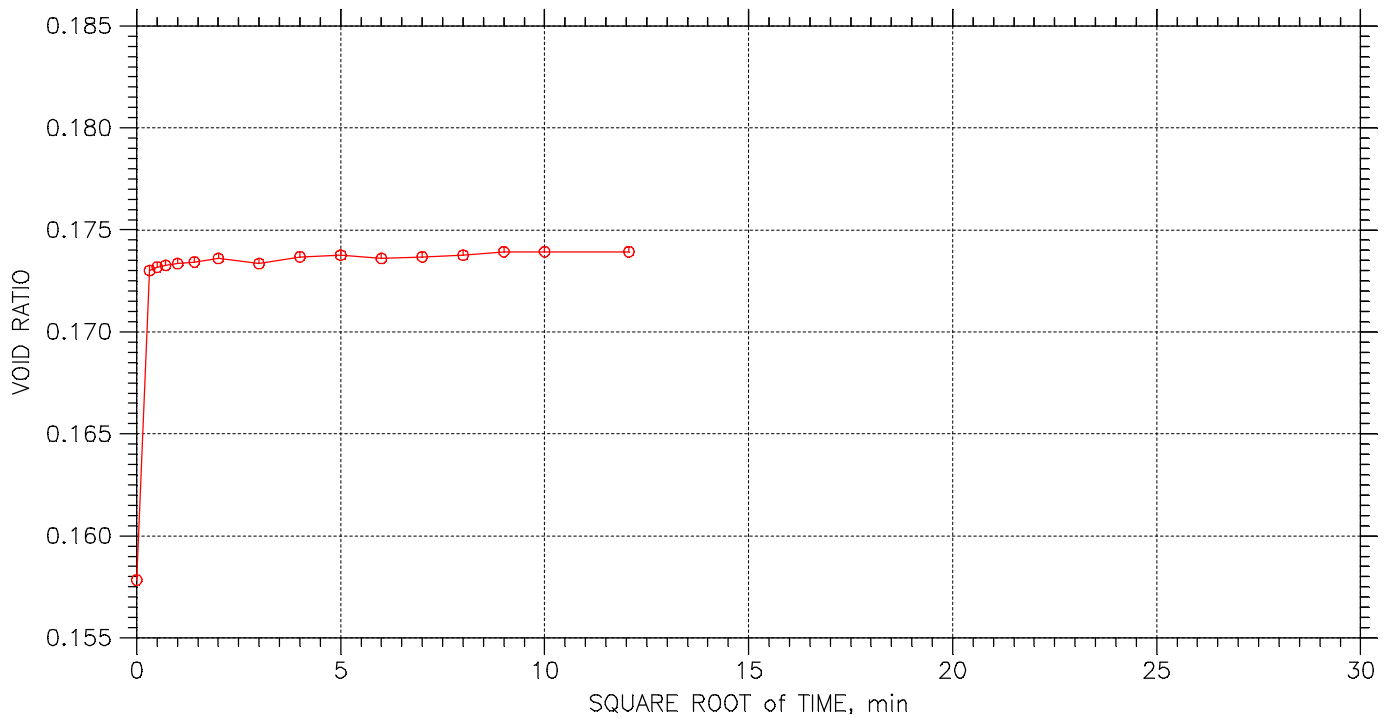
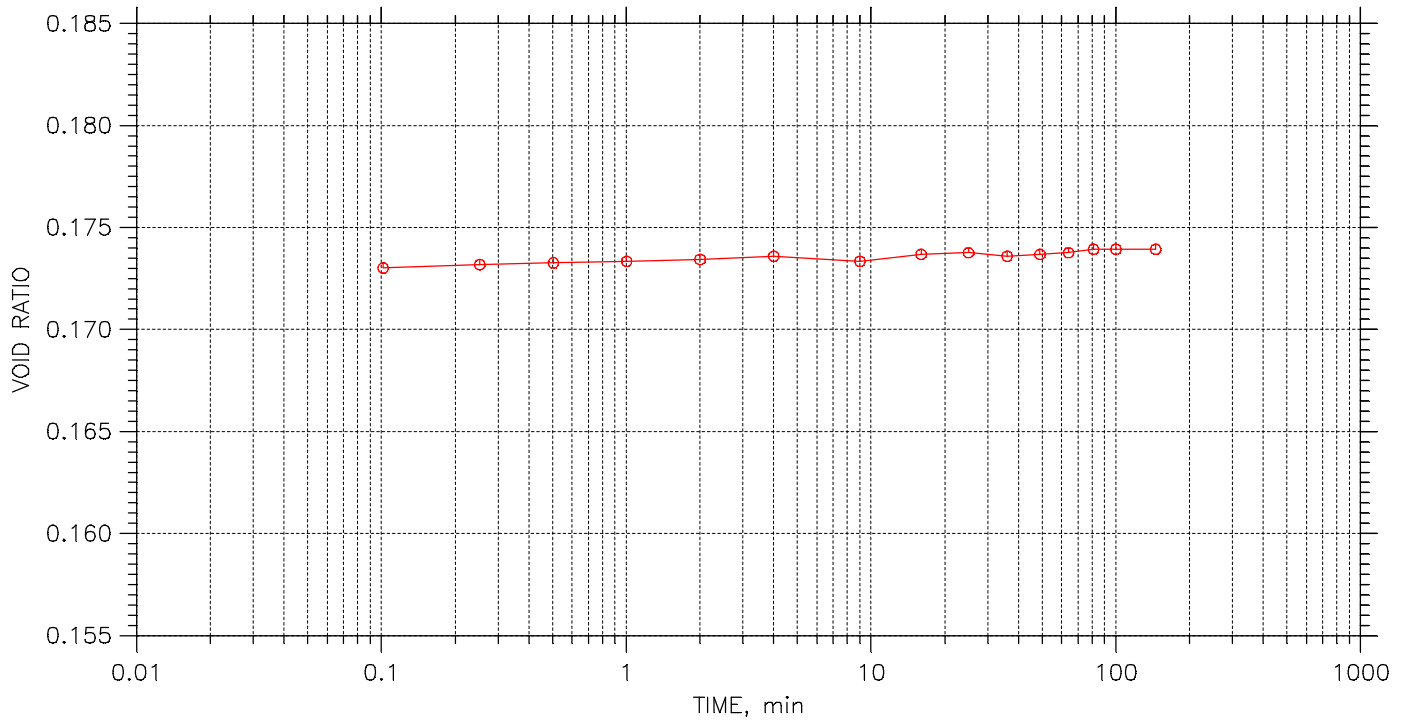
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	291		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 19 of 23

Stress: 16. tsf



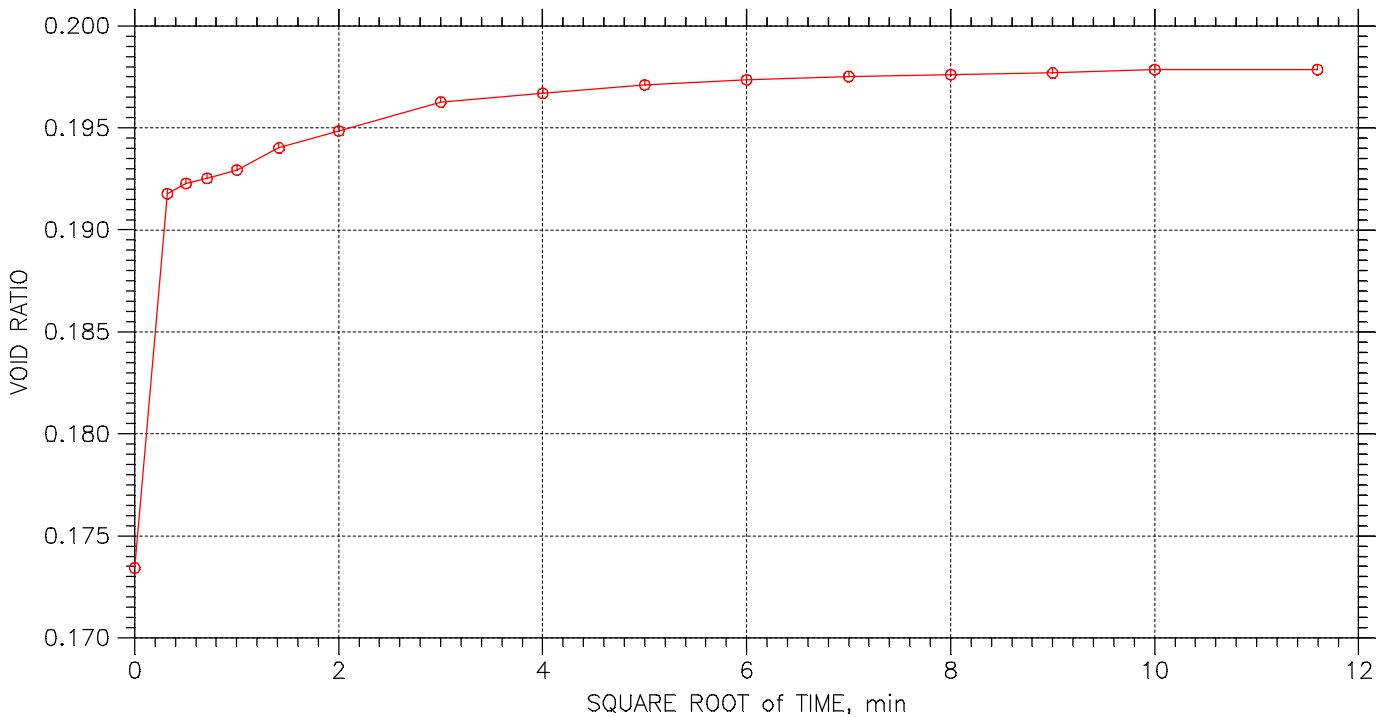
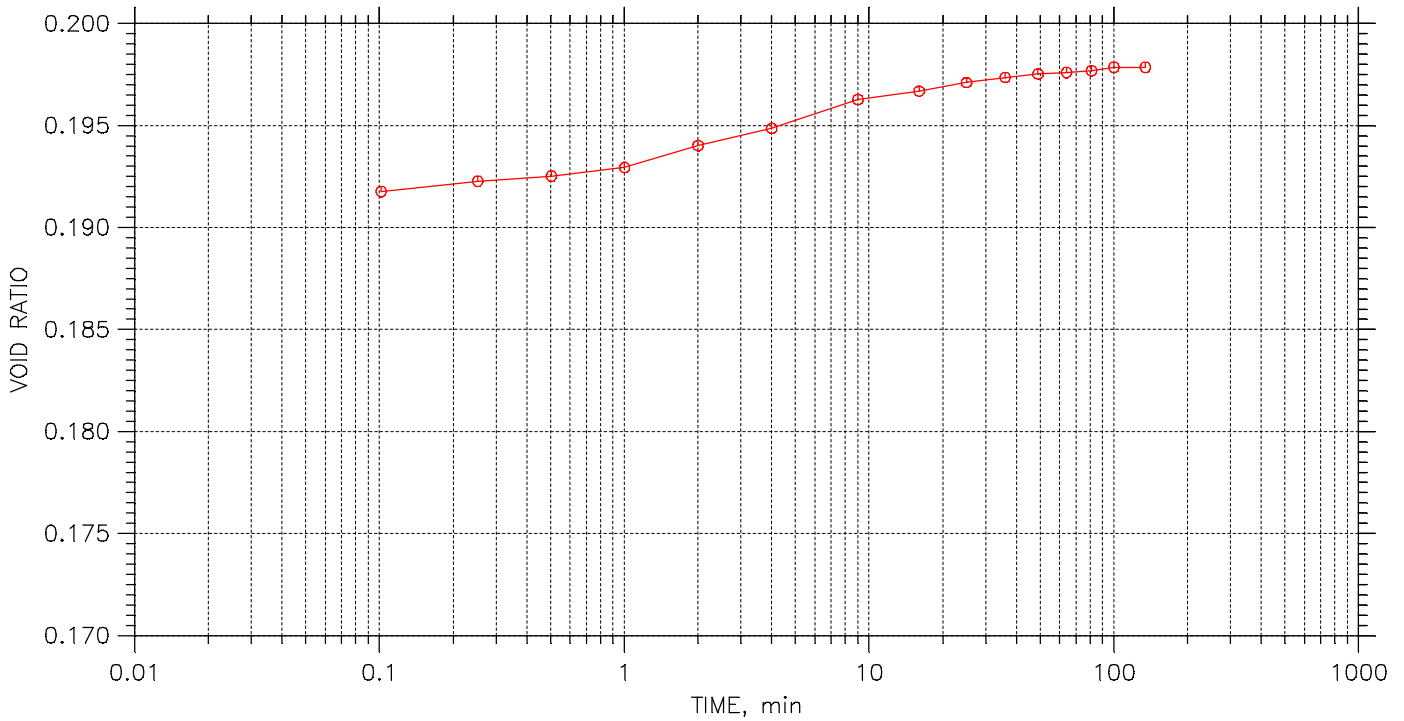
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	292		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 20 of 23

Stress: 4. tsf



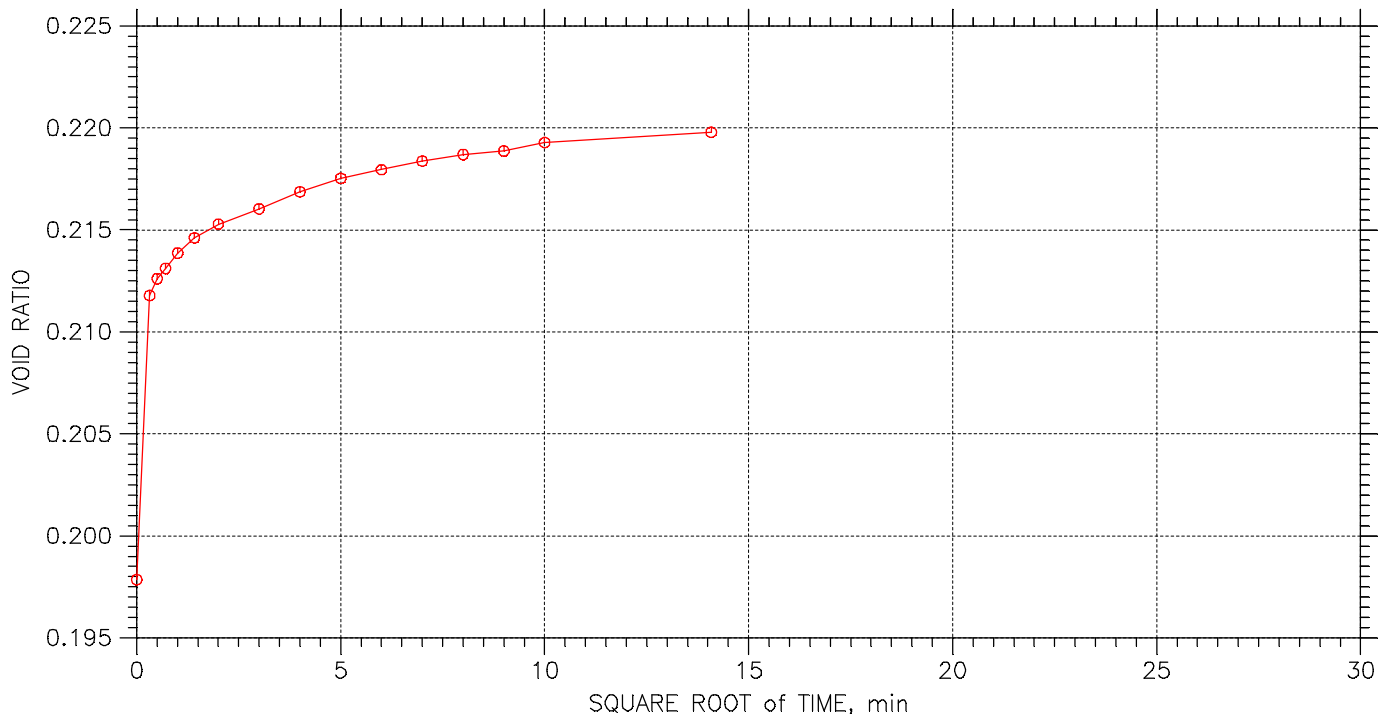
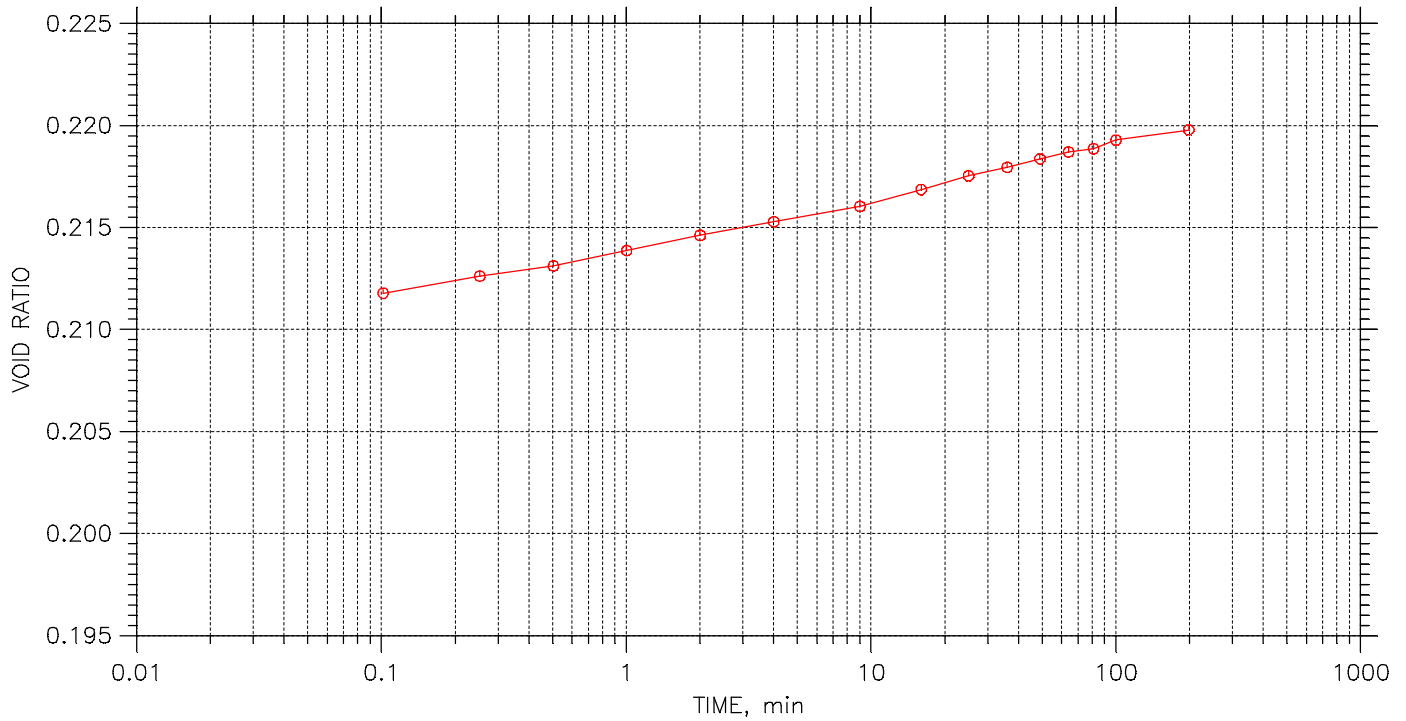
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	293		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 21 of 23

Stress: 1. tsf



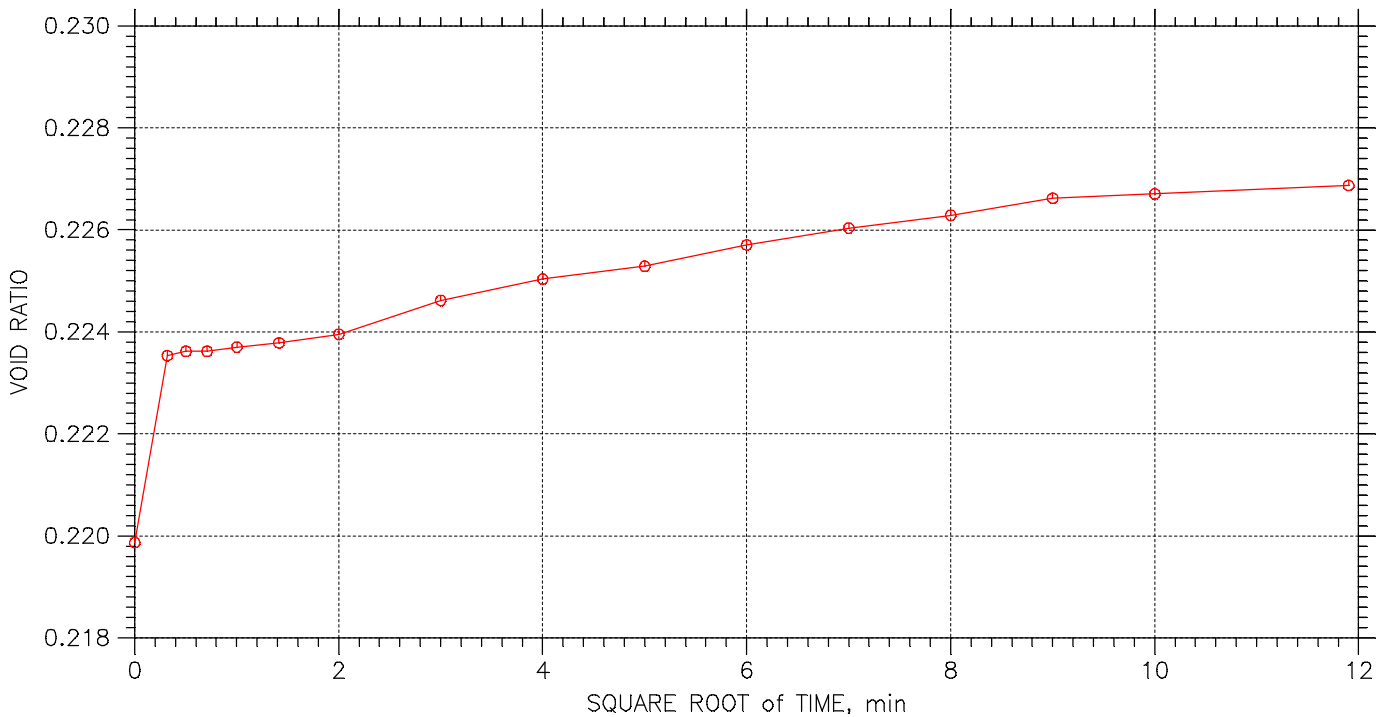
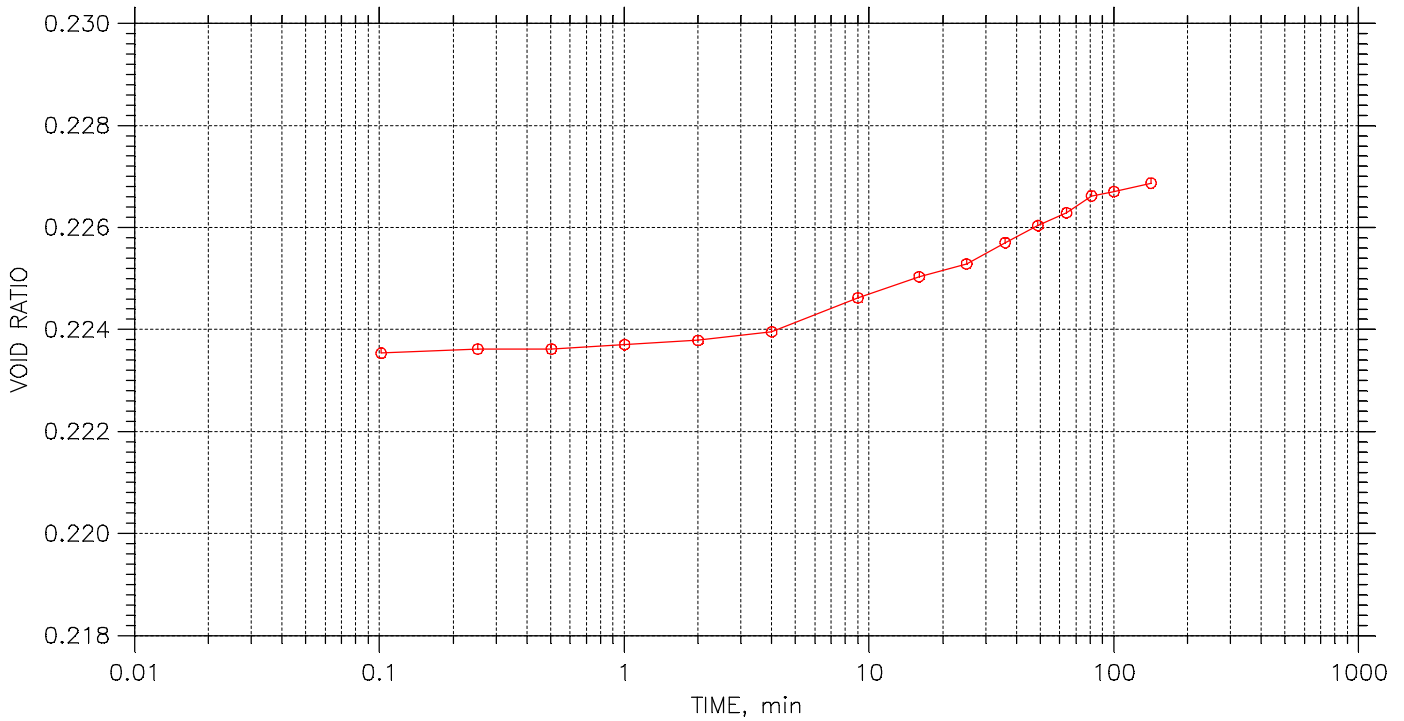
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	294		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 22 of 23

Stress: 0.5 tsf



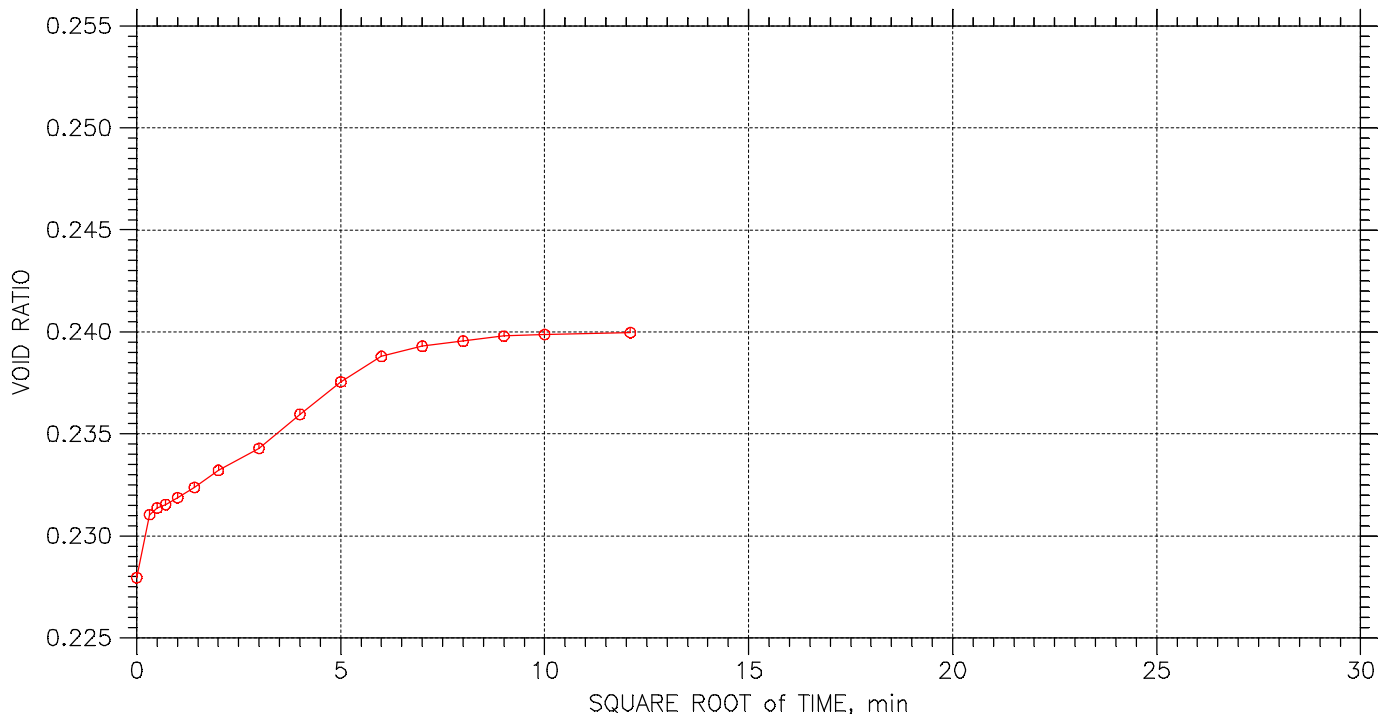
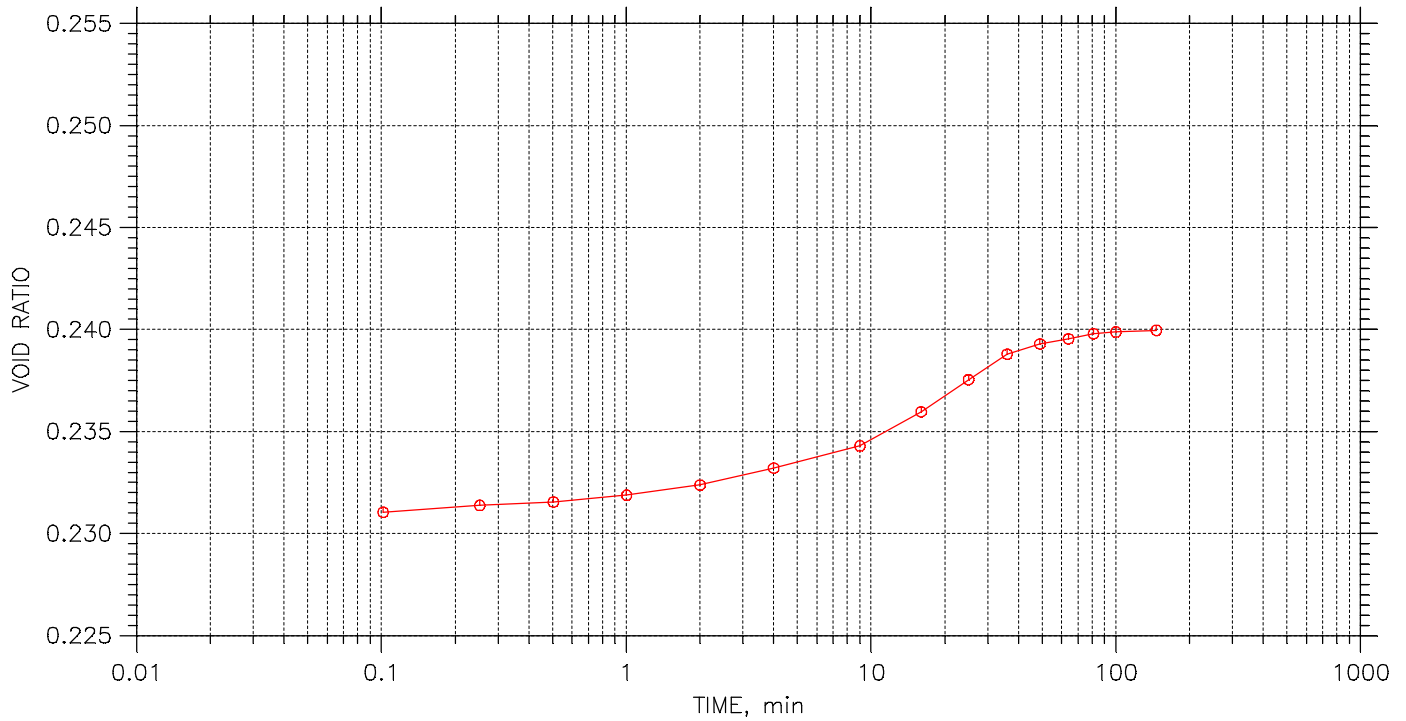
	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	295		


# CONSOLIDATION TEST DATA

## TIME CURVES

Constant Load Step: 23 of 23

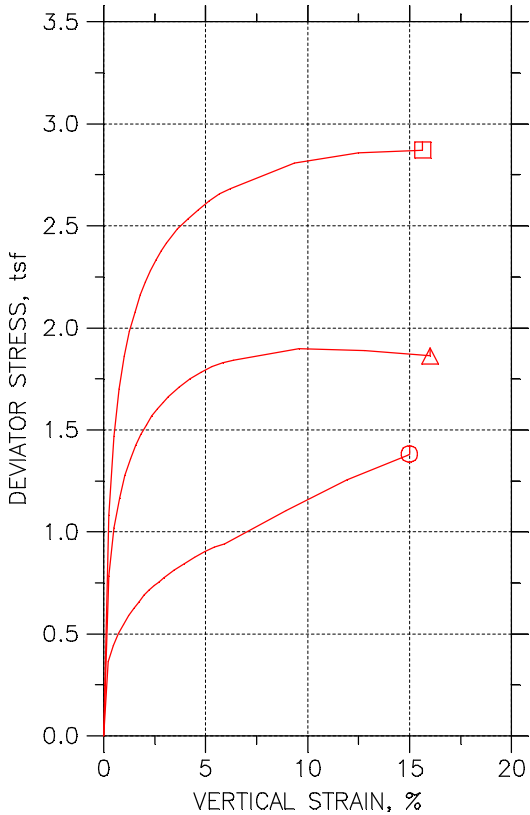
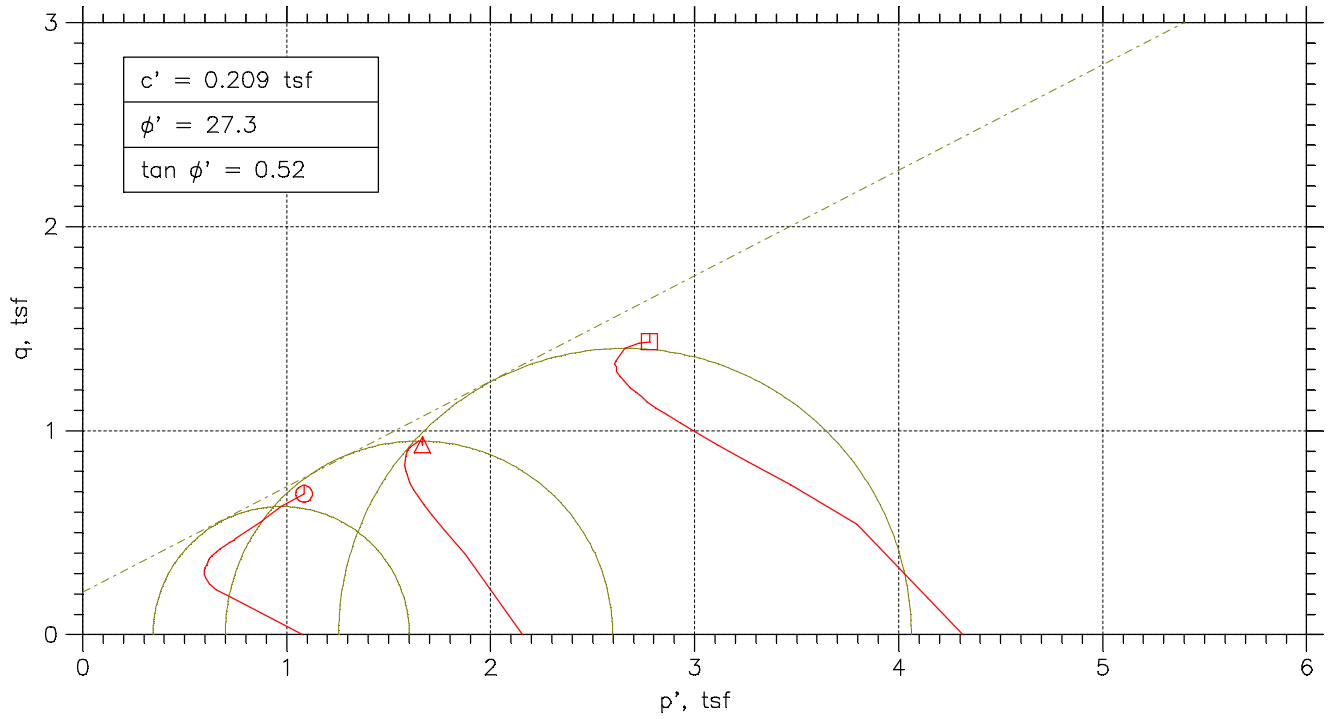
Stress: 0.125 tsf



	Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
	Boring No.: HEN-029 S-3	Tested By: HP	Checked By: BCM
	Sample No.: S-3	Test Date: 12/14/15	Depth: 5.0'-7.0'
	Test No.: HENB029S3	Sample Type: 3.0" ST	Elevation: -----
	Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
	Remarks: Pc = 3.1 tsf Cc = 0.128 Ccr = 0.034 TEST PERFORMED AS PER ASTM D2435		
	296		

# Consolidated Undrained Triaxial Compression Tests ASTM D 4767

# CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST ASTM D4767



Symbol	⊙	△	□	
Test No.	15.0 PSI	30.0 PSI	60.0 PSI	
Initial	Diameter, in	2.8094	2.7933	2.8169
	Height, in	5.8933	5.7862	5.9791
	Water Content, %	18.24	19.46	31.44
	Dry Density, pcf	113.4	98.63	90.07
	Saturation, %	99.86	73.35	96.60
Before Shear	Void Ratio	0.49693	0.72163	0.88521
	Water Content, %	17.26	23.33	24.34
	Dry Density, pcf	115.6	103.9	102.2
	Saturation, %	100.00	100.00	100.00
	Void Ratio	0.46942	0.63453	0.66201
	Back Press., tsf	5.0445	5.0434	5.0461
Minor Prin. Stress, tsf	1.0755	2.1566	4.3139	
Max. Dev. Stress, tsf	1.3812	1.8986	2.8714	
Time to Failure, min	302.24	180	300	
Strain Rate, %/min	0.02	0.02	0.02	
B-Value	<b>0.99</b>	<b>0.97</b>	<b>0.97</b>	
Estimated Specific Gravity	2.72	2.72	2.72	
Liquid Limit	41	41	41	
Plastic Limit	23	23	23	
Plasticity Index	18	18	18	

Project: DYNERGY HENNEPIN
Location: HENNEPIN, IL
Project No.: MR155233
Boring No.: HEN-002 S8
Sample Type: 3.0" ST

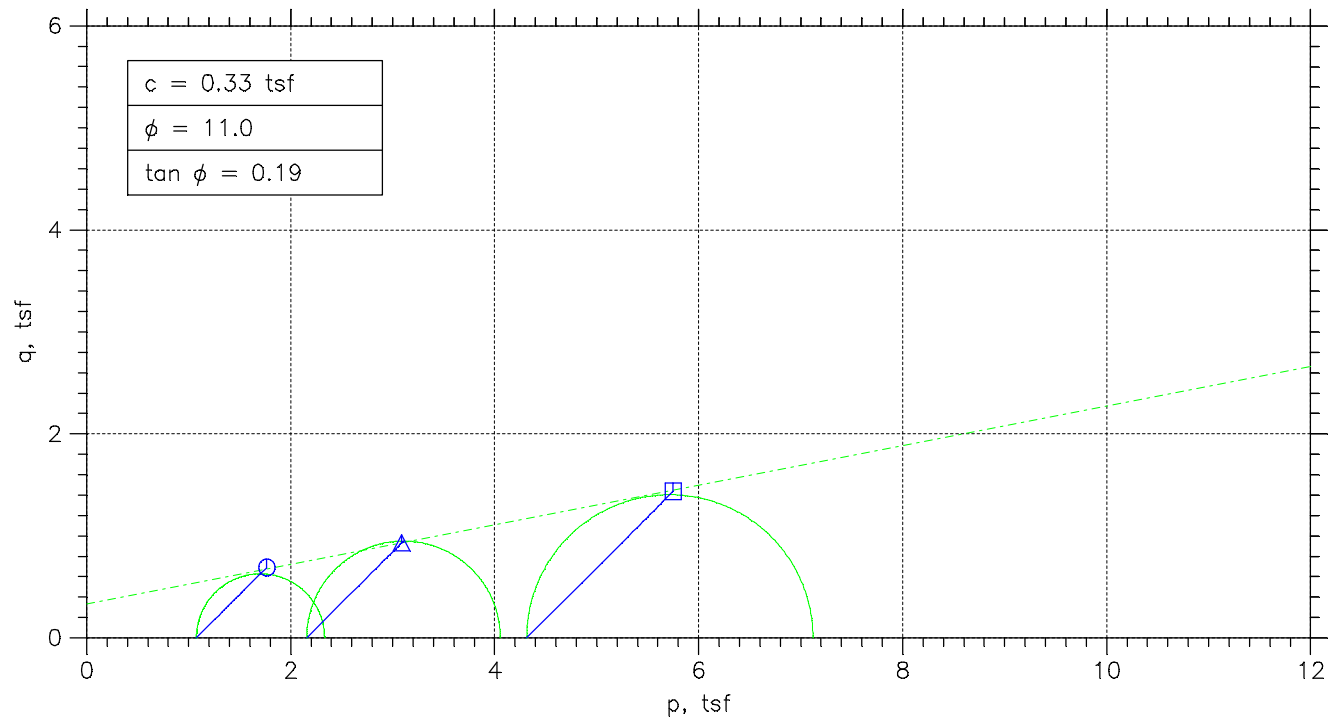
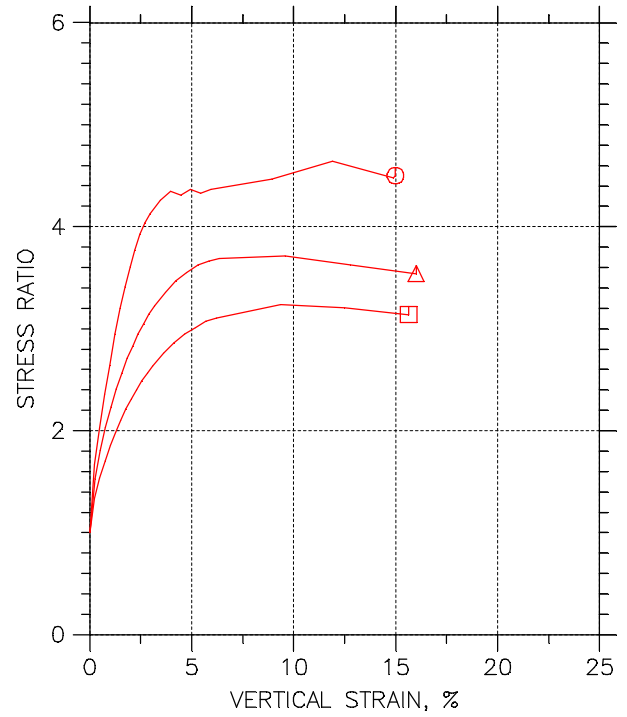
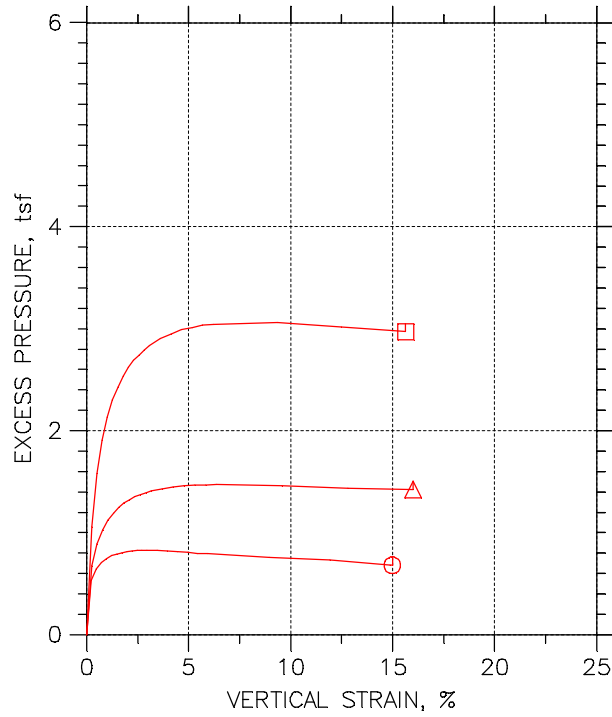
NOTE: SAMPLE TRANSITIONS INTO FLY ASH

Description: DARK GRAY LEAN CLAY WITH SAND AND GRAVEL CL - FLY ASH NOTED

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767



# CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST ASTM D4767



Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
Boring No.: HEN-002 S8	Tested By: BCM	Checked By: WPQ
Sample No.: S-8	Test Date: 12/16/15	Depth: 25.0'-27.0'
Test No.: HEN-002 S8	Sample Type: 3.0" ST	Elevation: -----
Description: DARK GRAY LEAN CLAY WITH SAND AND GRAVEL CL - FLY ASH NOTED		
Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767		

TRIAXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-002 S8  
 Sample No.: S-8  
 Test No.: 15.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 25.0' -27.0'  
 Elevation: -----



Soil Description: DARK GRAY LEAN CLAY WITH SAND AND GRAVEL CL - FLY ASH NOTED  
 Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767

Specimen Height: 5.89 in  
 Specimen Area: 6.20 in<sup>2</sup>  
 Specimen Volume: 36.53 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: 41

Plastic Limit: 23

Estimated Specific Gravity: 2.72

	Time min	Vertical Strain %	Corrected Area in <sup>2</sup>	Deviator Load lb	Deviator Stress tsf	Pore Pressure tsf	Horizontal Stress tsf	Vertical Stress tsf
1	0	0	6.1991	0	0	5.0445	6.12	6.12
2	5.0042	0.23264	6.2136	31.483	0.36481	5.574	6.12	6.4848
3	10	0.47992	6.229	38.274	0.4424	5.6893	6.12	6.5624
4	15	0.72426	6.2444	43.434	0.50081	5.7504	6.12	6.6208
5	20	0.973	6.2601	47.488	0.54618	5.787	6.12	6.6662
6	25	1.2247	6.276	51.331	0.58888	5.8179	6.12	6.7089
7	30	1.4763	6.292	54.49	0.62353	5.8365	6.12	6.7435
8	35	1.7265	6.3081	57.333	0.65439	5.8487	6.12	6.7744
9	40	1.9782	6.3243	60.544	0.68928	5.8557	6.12	6.8093
10	45	2.224	6.3402	62.966	0.71505	5.8621	6.12	6.8351
11	50	2.4683	6.356	65.019	0.73652	5.8685	6.12	6.8565
12	55	2.7112	6.3719	66.651	0.75313	5.872	6.12	6.8731
13	60	2.9556	6.388	68.704	0.77438	5.8726	6.12	6.8944
14	70	3.4516	6.4208	72.39	0.81175	5.8708	6.12	6.9317
15	80	3.9564	6.4545	75.759	0.84509	5.8673	6.12	6.9651
16	90	4.4568	6.4883	78.76	0.87399	5.8557	6.12	6.994
17	100	4.9455	6.5217	81.866	0.90381	5.8516	6.12	7.0238
18	110	5.4371	6.5556	84.183	0.92458	5.8423	6.12	7.0446
19	120	5.9375	6.5905	86.288	0.94269	5.84	6.12	7.0627
20	180	8.9296	6.807	104.29	1.1032	5.8016	6.12	7.2232
21	240	11.909	7.0372	122.77	1.2561	5.7748	6.12	7.3761
22	300	14.874	7.2824	138.94	1.3736	5.7248	6.12	7.4936
23	302.24	14.986	7.2919	139.88	1.3812	5.7253	6.12	7.5012

TRI AXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-002 S8  
 Sample No.: S-8  
 Test No.: 15.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 25.0' -27.0'  
 Elevation: -----



Soil Description: DARK GRAY LEAN CLAY WITH SAND AND GRAVEL CL - FLY ASH NOTED  
 Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767

Specimen Height: 5.89 in  
 Specimen Area: 6.20 in<sup>2</sup>  
 Specimen Volume: 36.53 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: 41

Plastic Limit: 23

Estimated Specific Gravity: 2.72

	Vertical Strain %	Total Vertical Stress tsf	Total Horizontal Stress tsf	Excess Pore Pressure tsf	A Parameter	Effective Vertical Stress tsf	Effective Horizontal Stress tsf	Stress Ratio	Effective p tsf	q tsf
1	0.00	6.12	6.12	0	0.000	1.0755	1.0755	1.000	1.0755	0
2	0.23	6.4848	6.12	0.52953	1.452	0.91076	0.54595	1.668	0.72836	0.1824
3	0.48	6.5624	6.12	0.64475	1.457	0.87314	0.43074	2.027	0.65194	0.2212
4	0.72	6.6208	6.12	0.70585	1.409	0.87045	0.36964	2.355	0.62004	0.2504
5	0.97	6.6662	6.12	0.74251	1.359	0.87916	0.33298	2.640	0.60607	0.27309
6	1.22	6.7089	6.12	0.77335	1.313	0.89102	0.30214	2.949	0.59658	0.29444
7	1.48	6.7435	6.12	0.79197	1.270	0.90704	0.28352	3.199	0.59528	0.31176
8	1.73	6.7744	6.12	0.80419	1.229	0.92569	0.2713	3.412	0.59849	0.3272
9	1.98	6.8093	6.12	0.81117	1.177	0.95359	0.26431	3.608	0.60895	0.34464
10	2.22	6.8351	6.12	0.81757	1.143	0.97296	0.25791	3.772	0.61544	0.35753
11	2.47	6.8565	6.12	0.82397	1.119	0.98803	0.25151	3.928	0.61977	0.36826
12	2.71	6.8731	6.12	0.82747	1.099	1.0012	0.24802	4.037	0.62459	0.37657
13	2.96	6.8944	6.12	0.82805	1.069	1.0218	0.24744	4.130	0.63463	0.38719
14	3.45	6.9317	6.12	0.8263	1.018	1.0609	0.24918	4.258	0.65506	0.40587
15	3.96	6.9651	6.12	0.82281	0.974	1.0978	0.25268	4.345	0.67522	0.42255
16	4.46	6.994	6.12	0.81117	0.928	1.1383	0.26431	4.307	0.70131	0.43699
17	4.95	7.0238	6.12	0.8071	0.893	1.1722	0.26839	4.368	0.72029	0.45191
18	5.44	7.0446	6.12	0.79779	0.863	1.2023	0.2777	4.329	0.73999	0.46229
19	5.94	7.0627	6.12	0.79546	0.844	1.2227	0.28002	4.366	0.75137	0.47135
20	8.93	7.2232	6.12	0.75706	0.686	1.4216	0.31843	4.464	0.87001	0.55158
21	11.91	7.3761	6.12	0.73029	0.581	1.6013	0.3452	4.639	0.97326	0.62807
22	14.87	7.4936	6.12	0.68024	0.495	1.7689	0.39524	4.475	1.0821	0.68682
23	14.99	7.5012	6.12	0.68083	0.493	1.7759	0.39466	4.500	1.0853	0.6906

TRIAXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-002 S8  
 Sample No.: S8  
 Test No.: 30.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 25.0' -27.0'  
 Elevation: ----



Soil Description: DARK GRAY LEAN CLAY WITH SAND AND GRAVEL CL - FLY ASH NOTED

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.

Specimen Height: 5.79 in  
 Specimen Area: 6.13 in<sup>2</sup>  
 Specimen Volume: 35.46 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: 41

Plastic Limit: 23

Estimated Specific Gravity: 2.72

	Time min	Vertical Strain %	Corrected Area in <sup>2</sup>	Deviator Load lb	Deviator Stress tsf	Pore Pressure tsf	Horizontal Stress tsf	Vertical Stress tsf
1	0	0	6.1281	0	0	5.0434	7.2	7.2
2	5.0038	0.25301	6.1437	66.941	0.7845	5.7164	7.2	7.9845
3	10.004	0.51759	6.16	87.336	1.0208	5.9351	7.2	8.2208
4	15.004	0.77886	6.1762	100.19	1.1679	6.0704	7.2	8.3679
5	20.004	1.0451	6.1928	109.71	1.2756	6.1648	7.2	8.4756
6	25.004	1.3064	6.2092	117.13	1.3582	6.236	7.2	8.5582
7	30.004	1.5693	6.2258	123.08	1.4233	6.2908	7.2	8.6233
8	35.004	1.8322	6.2425	128.19	1.4785	6.3334	7.2	8.6785
9	40.004	2.1001	6.2596	132.6	1.5252	6.3666	7.2	8.7252
10	45.004	2.368	6.2768	136.69	1.568	6.394	7.2	8.768
11	50.004	2.6376	6.2941	140.15	1.6032	6.4168	7.2	8.8032
12	55.004	2.9071	6.3116	143.34	1.6352	6.436	7.2	8.8352
13	60.004	3.1766	6.3292	146.09	1.6619	6.4518	7.2	8.8619
14	70.004	3.7025	6.3637	151.14	1.7101	6.4739	7.2	8.9101
15	80.004	4.2283	6.3987	155.56	1.7504	6.4908	7.2	8.9504
16	90	4.7641	6.4347	159.14	1.7806	6.5013	7.2	8.9806
17	100	5.3032	6.4713	162.59	1.809	6.5101	7.2	9.009
18	110	5.839	6.5081	165.27	1.8284	6.513	7.2	9.0284
19	120	6.3665	6.5448	167.45	1.8421	6.5147	7.2	9.0421
20	180	9.5729	6.7769	178.7	1.8986	6.5007	7.2	9.0986
21	240	12.794	7.0272	184.33	1.8886	6.4803	7.2	9.0886
22	300	15.999	7.2953	188.74	1.8627	6.4663	7.2	9.0627

TRIAXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-002 S8  
 Sample No.: S8  
 Test No.: 30.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 25.0' -27.0'  
 Elevation: ----



Soil Description: DARK GRAY LEAN CLAY WITH SAND AND GRAVEL CL - FLY ASH NOTED  
 Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.

Specimen Height: 5.79 in  
 Specimen Area: 6.13 in<sup>2</sup>  
 Specimen Volume: 35.46 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: 41

Plastic Limit: 23

Estimated Specific Gravity: 2.72

	Vertical Strain %	Total Vertical Stress tsf	Total Horizontal Stress tsf	Excess Pore Pressure tsf	A Parameter	Effective Vertical Stress tsf	Effective Horizontal Stress tsf	Stress Ratio	Effective p tsf	q tsf
1	0.00	7.2	7.2	0	0.000	2.1566	2.1566	1.000	2.1566	0
2	0.25	7.9845	7.2	0.67299	0.858	2.2681	1.4836	1.529	1.8759	0.39225
3	0.52	8.2208	7.2	0.89169	0.874	2.2857	1.2649	1.807	1.7753	0.51041
4	0.78	8.3679	7.2	1.027	0.879	2.2976	1.1296	2.034	1.7136	0.58397
5	1.05	8.4756	7.2	1.1215	0.879	2.3107	1.0352	2.232	1.6729	0.63778
6	1.31	8.5582	7.2	1.1926	0.878	2.3222	0.96402	2.409	1.6431	0.6791
7	1.57	8.6233	7.2	1.2474	0.876	2.3325	0.9092	2.565	1.6209	0.71167
8	1.83	8.6785	7.2	1.29	0.872	2.3452	0.86662	2.706	1.6059	0.73927
9	2.10	8.7252	7.2	1.3232	0.868	2.3586	0.83338	2.830	1.596	0.76262
10	2.37	8.768	7.2	1.3507	0.861	2.374	0.80597	2.945	1.59	0.784
11	2.64	8.8032	7.2	1.3734	0.857	2.3864	0.78323	3.047	1.5848	0.80159
12	2.91	8.8352	7.2	1.3926	0.852	2.3992	0.76398	3.140	1.5816	0.8176
13	3.18	8.8619	7.2	1.4084	0.847	2.4102	0.74824	3.221	1.5792	0.83097
14	3.70	8.9101	7.2	1.4305	0.837	2.4361	0.72608	3.355	1.5811	0.85503
15	4.23	8.9504	7.2	1.4475	0.827	2.4595	0.70916	3.468	1.5843	0.87518
16	4.76	8.9806	7.2	1.458	0.819	2.4793	0.69867	3.549	1.589	0.89031
17	5.30	9.009	7.2	1.4667	0.811	2.4989	0.68992	3.622	1.5944	0.90448
18	5.84	9.0284	7.2	1.4696	0.804	2.5154	0.687	3.661	1.6012	0.91422
19	6.37	9.0421	7.2	1.4714	0.799	2.5274	0.68525	3.688	1.6063	0.92105
20	9.57	9.0986	7.2	1.4574	0.768	2.5978	0.69925	3.715	1.6485	0.94929
21	12.79	9.0886	7.2	1.437	0.761	2.6083	0.71966	3.624	1.664	0.9443
22	16.00	9.0627	7.2	1.423	0.764	2.5964	0.73366	3.539	1.665	0.93136

TRIAXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-002 S8  
 Sample No.: S-8  
 Test No.: 60.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 25.0' -27.0'  
 Elevation: ----



Soil Description: DARK GRAY LEAN CLAY WITH SAND AND GRAVEL CL - FLY ASH NOTED

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.

Specimen Height: 5.98 in  
 Specimen Area: 6.23 in<sup>2</sup>  
 Specimen Volume: 37.26 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: 41

Plastic Limit: 23

Estimated Specific Gravity: 2.72

	Time min	Vertical Strain %	Corrected Area in <sup>2</sup>	Deviator Load lb	Deviator Stress tsf	Pore Pressure tsf	Horizontal Stress tsf	Vertical Stress tsf
1	0	0	6.2322	0	0	5.0461	9.36	9.36
2	5.004	0.24293	6.2474	93.936	1.0826	6.1049	9.36	10.443
3	10.004	0.49961	6.2635	127.82	1.4693	6.625	9.36	10.829
4	15.004	0.75323	6.2795	148.22	1.6995	6.9512	9.36	11.059
5	20.004	1.0084	6.2957	162.75	1.8613	7.1795	9.36	11.221
6	25.004	1.2666	6.3122	173.87	1.9832	7.3449	9.36	11.343
7	30.004	1.5248	6.3287	182.68	2.0783	7.4724	9.36	11.438
8	35.004	1.7845	6.3454	190.5	2.1615	7.5784	9.36	11.521
9	40.004	2.0427	6.3622	196.63	2.2253	7.6646	9.36	11.585
10	45.004	2.304	6.3792	202.14	2.2815	7.7345	9.36	11.641
11	50.004	2.5668	6.3964	207.49	2.3356	7.7887	9.36	11.696
12	55.004	2.8281	6.4136	211.79	2.3776	7.8388	9.36	11.738
13	60.004	3.0909	6.431	215.83	2.4164	7.8825	9.36	11.776
14	70.004	3.6118	6.4657	223.22	2.4857	7.9477	9.36	11.846
15	80.004	4.1328	6.5009	228.94	2.5356	7.9954	9.36	11.896
16	90.004	4.6508	6.5362	234.24	2.5803	8.0345	9.36	11.94
17	100	5.1748	6.5723	239.48	2.6235	8.0554	9.36	11.984
18	110	5.6958	6.6086	243.78	2.656	8.0793	9.36	12.016
19	120	6.2184	6.6454	247.51	2.6816	8.0863	9.36	12.042
20	180	9.352	6.8752	268.01	2.8068	8.1049	9.36	12.167
21	240	12.498	7.1223	282.81	2.8589	8.0642	9.36	12.219
22	300	15.636	7.3873	294.61	2.8714	8.017	9.36	12.231

TRIAXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-002 S8  
 Sample No.: S-8  
 Test No.: 60.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 25.0' -27.0'  
 Elevation: ----



Soil Description: DARK GRAY LEAN CLAY WITH SAND AND GRAVEL CL - FLY ASH NOTED  
 Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.

Specimen Height: 5.98 in  
 Specimen Area: 6.23 in<sup>2</sup>  
 Specimen Volume: 37.26 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

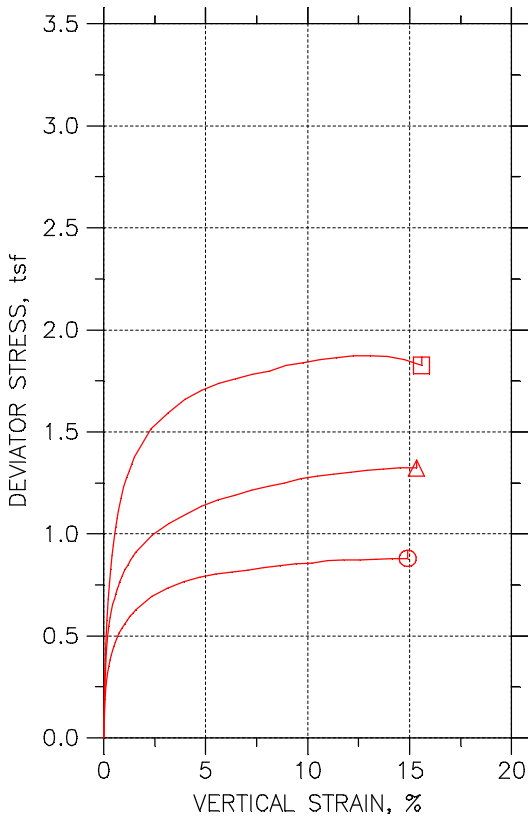
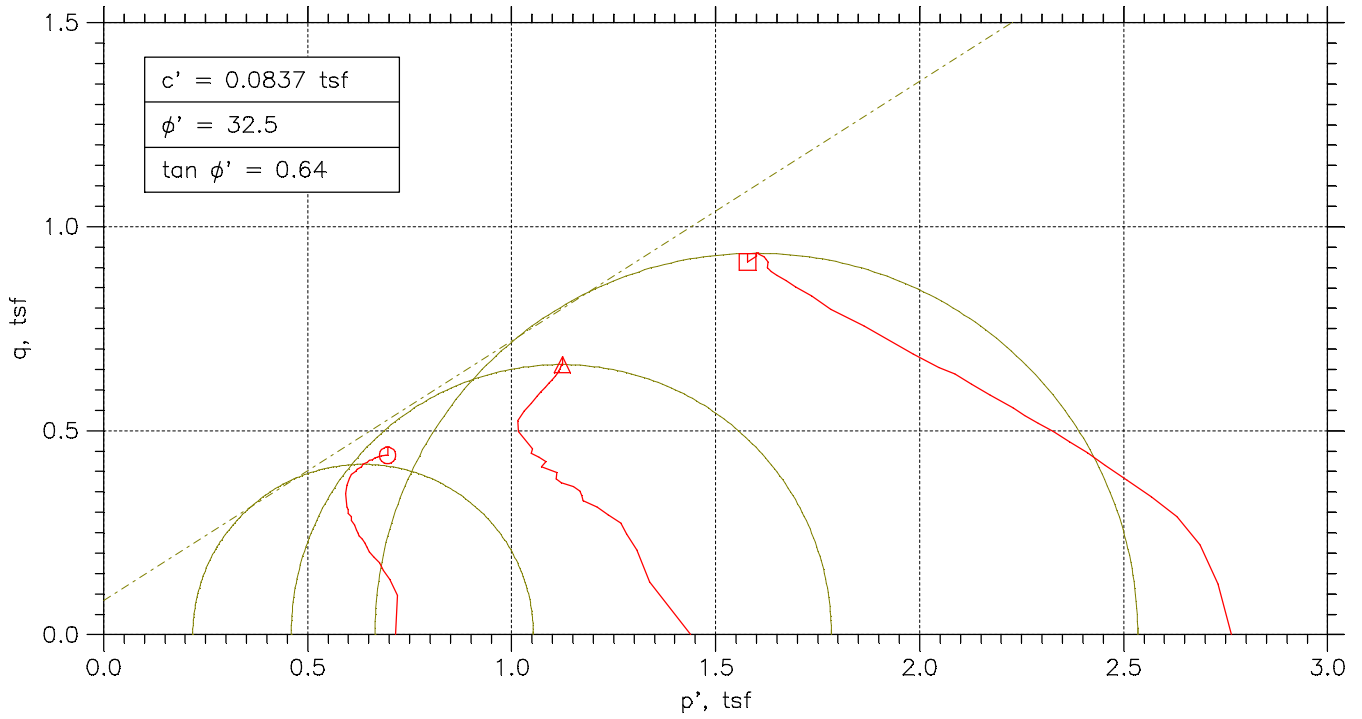
Liquid Limit: 41

Plastic Limit: 23

Estimated Specific Gravity: 2.72

	Vertical Strain %	Total Vertical Stress tsf	Total Horizontal Stress tsf	Excess Pore Pressure tsf	A Parameter	Effective Vertical Stress tsf	Effective Horizontal Stress tsf	Stress Ratio	Effective p tsf	q tsf
1	0.00	9.36	9.36	0	0.000	4.3139	4.3139	1.000	4.3139	0
2	0.24	10.443	9.36	1.0588	0.978	4.3377	3.2551	1.333	3.7964	0.5413
3	0.50	10.829	9.36	1.5789	1.075	4.2043	2.735	1.537	3.4696	0.73465
4	0.75	11.059	9.36	1.9051	1.121	4.1083	2.4088	1.706	3.2586	0.84974
5	1.01	11.221	9.36	2.1334	1.146	4.0418	2.1805	1.854	3.1112	0.93063
6	1.27	11.343	9.36	2.2988	1.159	3.9984	2.0151	1.984	3.0067	0.99162
7	1.52	11.438	9.36	2.4264	1.167	3.9659	1.8876	2.101	2.9267	1.0392
8	1.78	11.521	9.36	2.5324	1.172	3.9431	1.7816	2.213	2.8623	1.0807
9	2.04	11.585	9.36	2.6186	1.177	3.9206	1.6954	2.313	2.808	1.1126
10	2.30	11.641	9.36	2.6884	1.178	3.907	1.6255	2.404	2.7662	1.1407
11	2.57	11.696	9.36	2.7426	1.174	3.9069	1.5713	2.486	2.7391	1.1678
12	2.83	11.738	9.36	2.7927	1.175	3.8988	1.5212	2.563	2.71	1.1888
13	3.09	11.776	9.36	2.8364	1.174	3.8939	1.4775	2.635	2.6857	1.2082
14	3.61	11.846	9.36	2.9016	1.167	3.898	1.4123	2.760	2.6552	1.2429
15	4.13	11.896	9.36	2.9494	1.163	3.9002	1.3646	2.858	2.6324	1.2678
16	4.65	11.94	9.36	2.9884	1.158	3.9058	1.3255	2.947	2.6157	1.2901
17	5.17	11.984	9.36	3.0094	1.147	3.9281	1.3046	3.011	2.6163	1.3118
18	5.70	12.016	9.36	3.0332	1.142	3.9367	1.2807	3.074	2.6087	1.328
19	6.22	12.042	9.36	3.0402	1.134	3.9553	1.2737	3.105	2.6145	1.3408
20	9.35	12.167	9.36	3.0589	1.090	4.0618	1.2551	3.236	2.6584	1.4034
21	12.50	12.219	9.36	3.0181	1.056	4.1547	1.2958	3.206	2.7253	1.4294
22	15.64	12.231	9.36	2.9709	1.035	4.2144	1.343	3.138	2.7787	1.4357

# CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST ASTM D4767



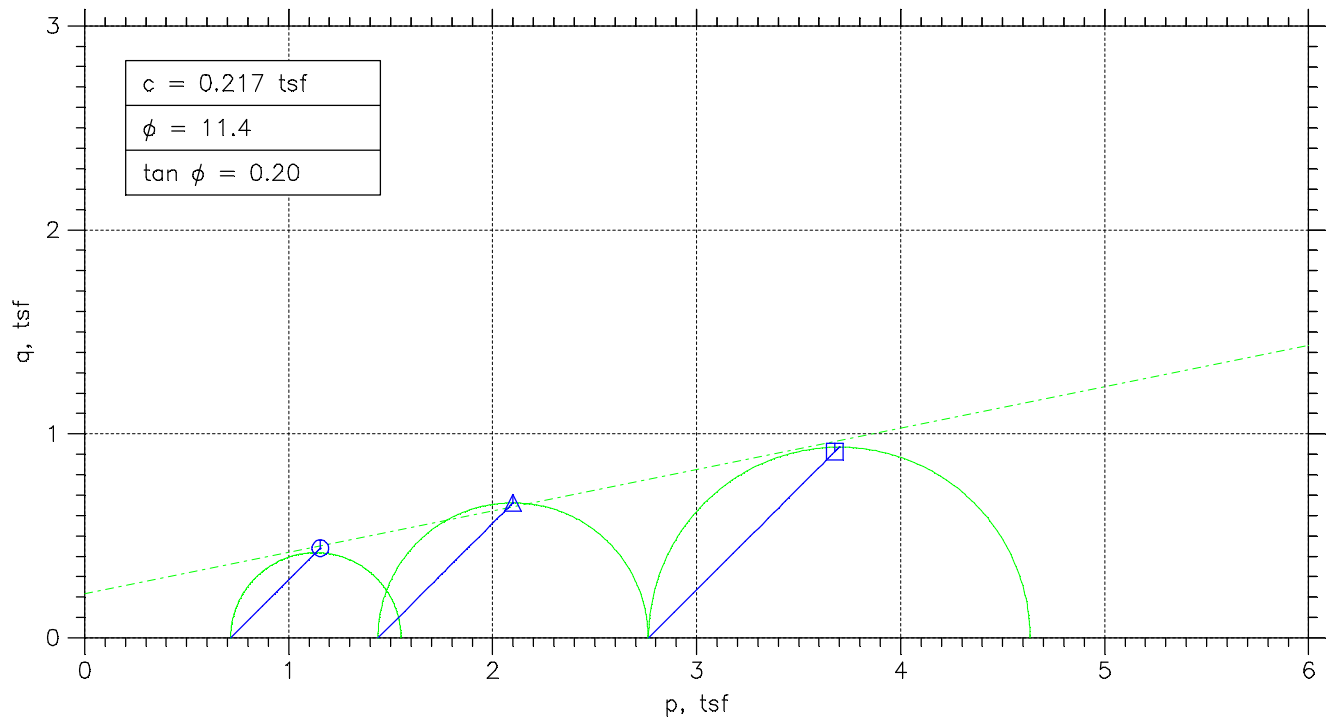
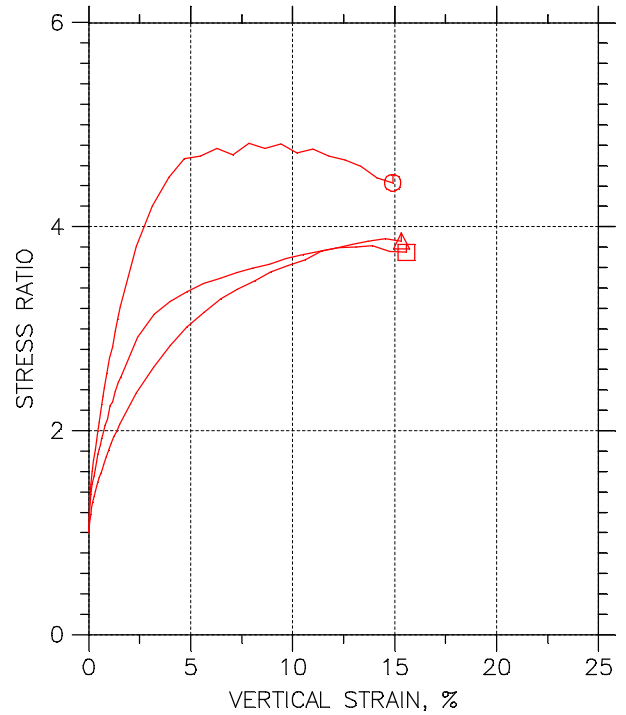
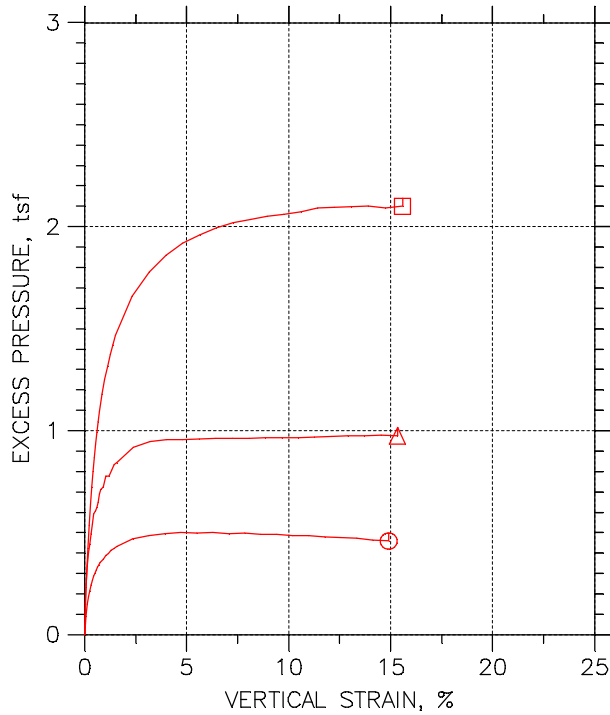
Symbol	⊙	△	□	
Test No.	10.0 PSI	20.0 PSI	40.0 PSI	
Initial	Diameter, in	2.8071	2.7992	2.802
	Height, in	5.9681	6.1213	6.0421
	Water Content, %	34.07	34.53	33.55
	Dry Density, pcf	86.29	87.22	79.75
	Saturation, %	95.76	99.18	80.83
Before Shear	Void Ratio	0.96775	0.94695	1.1292
	Water Content, %	32.71	29.92	32.67
	Dry Density, pcf	89.86	93.61	89.91
	Saturation, %	100.00	100.00	100.00
	Void Ratio	0.88973	0.81387	0.8885
	Back Press., tsf	5.0445	5.0422	5.1556
Minor Prin. Stress, tsf	0.71549	1.4378	2.7644	
Max. Dev. Stress, tsf	0.87949	1.3239	1.8718	
Time to Failure, min	1080	1080	900	
Strain Rate, %/min	0.02	0.02	0.02	
B-Value	<b>0.97</b>	<b>0.95</b>	<b>0.99</b>	
Estimated Specific Gravity	2.72	2.72	2.72	
Liquid Limit	38	38	38	
Plastic Limit	21	21	21	
Plasticity Index	17	17	17	
Failure Sketch				

Project: DYNERGY HENNEPIN
Location: HENNEPIN, IL
Project No.: MR155233
Boring No.: HEN-016 S7
Sample Type: 3.0" ST

Description: VERY DARK GRAY CLAY WITH SAND AND GRAVEL - ORGANICS AND ASH NOTED  
 Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767



# CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST ASTM D4767



Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
Boring No.: HEN-016 S7	Tested By: BCM	Checked By: WPQ
Sample No.: S-7	Test Date: 12/16/15	Depth: 20.0'-22.0'
Test No.: HEN-016 S7	Sample Type: 3.0" ST	Elevation: -----
Description: VERY DARK GRAY CLAY WITH SAND AND GRAVEL - ORGANICS AND ASH NOTED		
Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767		

TRIAXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-016 S7  
 Sample No.: S-7  
 Test No.: 10.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 20.0' -22.0'  
 Elevation: -----



Soil Description: VERY DARK GRAY CLAY WITH SAND AND GRAVEL - ORGANICS AND ASH NOTED

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767

Specimen Height: 5.97 in  
 Specimen Area: 6.19 in<sup>2</sup>  
 Specimen Volume: 36.94 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: 38

Plastic Limit: 21

Estimated Specific Gravity: 2.72

	Time min	Vertical Strain %	Corrected Area in <sup>2</sup>	Deviator Load lb	Deviator Stress tsf	Pore Pressure tsf	Horizontal Stress tsf	Vertical Stress tsf
1	0	0	6.1887	0	0	5.0445	5.76	5.76
2	5	0.057793	6.1923	16.531	0.19221	5.1359	5.76	5.9522
3	10	0.12136	6.1962	23.217	0.26978	5.1929	5.76	6.0298
4	15	0.18494	6.2002	27.218	0.31608	5.2319	5.76	6.0761
5	20	0.24851	6.2041	30.325	0.35192	5.2604	5.76	6.1119
6	25	0.31208	6.2081	32.904	0.38162	5.2895	5.76	6.1416
7	30	0.3771	6.2122	35.063	0.40639	5.3116	5.76	6.1664
8	35	0.44211	6.2162	37.116	0.4299	5.3308	5.76	6.1899
9	40	0.50713	6.2203	38.853	0.44973	5.3454	5.76	6.2097
10	45	0.57215	6.2243	40.433	0.46771	5.3593	5.76	6.2277
11	50	0.63716	6.2284	41.907	0.48444	5.3756	5.76	6.2444
12	55	0.70363	6.2326	43.223	0.49932	5.3873	5.76	6.2593
13	60	0.76864	6.2367	44.487	0.51358	5.3977	5.76	6.2736
14	70	0.90012	6.2449	46.751	0.539	5.4152	5.76	6.299
15	80	1.033	6.2533	48.593	0.5595	5.4326	5.76	6.3195
16	90	1.1645	6.2616	50.331	0.57873	5.442	5.76	6.3387
17	100	1.2974	6.2701	51.805	0.59488	5.4588	5.76	6.3549
18	110	1.4318	6.2786	53.437	0.61278	5.4676	5.76	6.3728
19	120	1.5647	6.2871	54.753	0.62703	5.4775	5.76	6.387
20	180	2.3464	6.3374	60.965	0.69263	5.5135	5.76	6.4526
21	240	3.128	6.3886	65.019	0.73277	5.531	5.76	6.4928
22	300	3.9256	6.4416	68.546	0.76617	5.5403	5.76	6.5262
23	360	4.7029	6.4941	70.968	0.78682	5.5455	5.76	6.5468
24	420	5.4845	6.5478	72.969	0.80236	5.5426	5.76	6.5624
25	480	6.2806	6.6035	74.443	0.81168	5.5444	5.76	6.5717
26	540	7.0637	6.6591	76.022	0.82197	5.538	5.76	6.582
27	600	7.8468	6.7157	77.865	0.8348	5.5415	5.76	6.5948
28	660	8.6386	6.7739	79.497	0.84498	5.5356	5.76	6.605
29	720	9.4144	6.8319	80.971	0.85334	5.5362	5.76	6.6133
30	780	10.195	6.8913	82.077	0.85754	5.5298	5.76	6.6175
31	840	10.991	6.9529	83.814	0.86793	5.5292	5.76	6.6279
32	900	11.769	7.0143	84.867	0.87114	5.524	5.76	6.6311
33	960	12.555	7.0773	85.762	0.87249	5.5211	5.76	6.6325
34	1020	13.35	7.1422	86.815	0.87517	5.5164	5.76	6.6352
35	1080	14.12	7.2063	88.026	0.87949	5.5071	5.76	6.6395
36	1140	14.906	7.2728	88.815	0.87926	5.5036	5.76	6.6393

TRIAXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-016 S7  
 Sample No.: S-7  
 Test No.: 10.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 20.0' -22.0'  
 Elevation: -----



Soil Description: VERY DARK GRAY CLAY WITH SAND AND GRAVEL - ORGANICS AND ASH NOTED

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767

Specimen Height: 5.97 in  
 Specimen Area: 6.19 in<sup>2</sup>  
 Specimen Volume: 36.94 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: 38

Plastic Limit: 21

Estimated Specific Gravity: 2.72

	Vertical Strain %	Total Vertical Stress tsf	Total Horizontal Stress tsf	Excess Pore Pressure tsf	A Parameter	Effective Vertical Stress tsf	Effective Horizontal Stress tsf	Stress Ratio	Effective p tsf	q tsf
1	0.00	5.76	5.76	0	0.000	0.71549	0.71549	1.000	0.71549	0
2	0.06	5.9522	5.76	0.091359	0.475	0.81634	0.62413	1.308	0.72023	0.096107
3	0.12	6.0298	5.76	0.14839	0.550	0.83688	0.5671	1.476	0.70199	0.13489
4	0.18	6.0761	5.76	0.18737	0.593	0.84419	0.52811	1.599	0.68615	0.15804
5	0.25	6.1119	5.76	0.21589	0.613	0.85152	0.4996	1.704	0.67556	0.17596
6	0.31	6.1416	5.76	0.24498	0.642	0.85212	0.4705	1.811	0.66131	0.19081
7	0.38	6.1664	5.76	0.26709	0.657	0.85478	0.44839	1.906	0.65158	0.20319
8	0.44	6.1899	5.76	0.2863	0.666	0.85909	0.42919	2.002	0.64414	0.21495
9	0.51	6.2097	5.76	0.30084	0.669	0.86437	0.41464	2.085	0.63951	0.22487
10	0.57	6.2277	5.76	0.31481	0.673	0.86838	0.40068	2.167	0.63453	0.23385
11	0.64	6.2444	5.76	0.3311	0.683	0.86882	0.38438	2.260	0.6266	0.24222
12	0.70	6.2593	5.76	0.34274	0.686	0.87207	0.37274	2.340	0.62241	0.24966
13	0.77	6.2736	5.76	0.35321	0.688	0.87585	0.36227	2.418	0.61906	0.25679
14	0.90	6.299	5.76	0.37067	0.688	0.88382	0.34481	2.563	0.61431	0.2695
15	1.03	6.3195	5.76	0.38813	0.694	0.88685	0.32736	2.709	0.6071	0.27975
16	1.16	6.3387	5.76	0.39744	0.687	0.89678	0.31805	2.820	0.60741	0.28936
17	1.30	6.3549	5.76	0.41431	0.696	0.89605	0.30117	2.975	0.59861	0.29744
18	1.43	6.3728	5.76	0.42304	0.690	0.90523	0.29244	3.095	0.59883	0.30639
19	1.56	6.387	5.76	0.43294	0.690	0.90958	0.28255	3.219	0.59607	0.31352
20	2.35	6.4526	5.76	0.46901	0.677	0.9391	0.24647	3.810	0.59279	0.34632
21	3.13	6.4928	5.76	0.48647	0.664	0.96179	0.22901	4.200	0.5954	0.36639
22	3.93	6.5262	5.76	0.49578	0.647	0.98587	0.2197	4.487	0.60279	0.38308
23	4.70	6.5468	5.76	0.50102	0.637	1.0013	0.21447	4.669	0.60788	0.39341
24	5.48	6.5624	5.76	0.49811	0.621	1.0197	0.21738	4.691	0.61856	0.40118
25	6.28	6.5717	5.76	0.49985	0.616	1.0273	0.21563	4.764	0.62147	0.40584
26	7.06	6.582	5.76	0.49345	0.600	1.044	0.22203	4.702	0.63302	0.41099
27	7.85	6.5948	5.76	0.49694	0.595	1.0533	0.21854	4.820	0.63594	0.4174
28	8.64	6.605	5.76	0.49113	0.581	1.0693	0.22436	4.766	0.64685	0.42249
29	9.41	6.6133	5.76	0.49171	0.576	1.0771	0.22378	4.813	0.65045	0.42667
30	10.19	6.6175	5.76	0.48531	0.566	1.0877	0.23018	4.726	0.65895	0.42877
31	10.99	6.6279	5.76	0.48472	0.558	1.0987	0.23076	4.761	0.66472	0.43396
32	11.77	6.6311	5.76	0.47949	0.550	1.1071	0.236	4.691	0.67157	0.43557
33	12.56	6.6325	5.76	0.47658	0.546	1.1114	0.23891	4.652	0.67515	0.43624
34	13.35	6.6352	5.76	0.47192	0.539	1.1187	0.24356	4.593	0.68115	0.43759
35	14.12	6.6395	5.76	0.46261	0.526	1.1324	0.25287	4.478	0.69262	0.43975
36	14.91	6.6393	5.76	0.45912	0.522	1.1356	0.25636	4.430	0.69599	0.43963

TRIAXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-016 S7  
 Sample No.: S-7  
 Test No.: 20.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 20.0' -22.0'  
 Elevation: ----



Soil Description: VERY DARK GRAY CLAY WITH SAND AND GRAVEL - ORGANICS AND ASH NOTED

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.

Specimen Height: 6.12 in  
 Specimen Area: 6.15 in<sup>2</sup>  
 Specimen Volume: 37.67 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: 38

Plastic Limit: 21

Estimated Specific Gravity: 2.72

	Time min	Vertical Strain %	Corrected Area in <sup>2</sup>	Deviator Load lb	Deviator Stress tsf	Pore Pressure tsf	Horizontal Stress tsf	Vertical Stress tsf
1	0	0	6.1541	0	0	5.0422	6.48	6.48
2	5.0039	0.051583	6.1572	22.233	0.25998	5.2726	6.48	6.74
3	10.004	0.11723	6.1613	35.573	0.4157	5.3816	6.48	6.8957
4	15.004	0.18289	6.1653	42.348	0.49455	5.4452	6.48	6.9746
5	20.004	0.2501	6.1695	47.007	0.54859	5.486	6.48	7.0286
6	25.004	0.31731	6.1736	50.448	0.58834	5.5379	6.48	7.0683
7	30.004	0.38453	6.1778	53.571	0.62435	5.5828	6.48	7.1043
8	35.004	0.45174	6.182	56.271	0.65537	5.633	6.48	7.1354
9	40.004	0.52052	6.1863	58.547	0.68141	5.6487	6.48	7.1614
10	45.004	0.58617	6.1903	60.558	0.70435	5.6645	6.48	7.1844
11	50.004	0.65495	6.1946	62.517	0.72663	5.6919	6.48	7.2066
12	55.004	0.72216	6.1988	64.105	0.74459	5.7309	6.48	7.2246
13	60.004	0.78782	6.2029	65.852	0.76437	5.7537	6.48	7.2444
14	70	0.91756	6.211	68.605	0.79528	5.7665	6.48	7.2753
15	80	1.0504	6.2194	71.145	0.82363	5.819	6.48	7.3036
16	90	1.1817	6.2277	73.316	0.84763	5.8202	6.48	7.3276
17	100	1.313	6.2359	75.433	0.87095	5.8488	6.48	7.351
18	110	1.4459	6.2443	77.18	0.88992	5.8767	6.48	7.3699
19	120	1.5803	6.2529	78.98	0.90943	5.8843	6.48	7.3894
20	180	2.3947	6.305	87.079	0.99439	5.9607	6.48	7.4744
21	240	3.2075	6.358	92.69	1.0497	5.9899	6.48	7.5297
22	300	4.0032	6.4107	97.613	1.0963	5.9969	6.48	7.5763
23	360	4.816	6.4654	101.85	1.1342	5.9992	6.48	7.6142
24	420	5.6319	6.5213	105.82	1.1683	6.0015	6.48	7.6483
25	480	6.4323	6.5771	108.68	1.1897	6.0033	6.48	7.6697
26	540	7.2467	6.6349	111.8	1.2132	6.0039	6.48	7.6932
27	600	8.0579	6.6934	114.61	1.2328	6.005	6.48	7.7128
28	660	8.8551	6.752	116.99	1.2475	6.0062	6.48	7.7275
29	720	9.6695	6.8128	120.16	1.2699	6.0074	6.48	7.7499
30	780	10.479	6.8744	122.44	1.2824	6.0091	6.48	7.7624
31	840	11.28	6.9365	124.56	1.2929	6.0115	6.48	7.7729
32	900	12.1	7.0012	126.67	1.3027	6.0132	6.48	7.7827
33	960	12.91	7.0663	128.85	1.3128	6.0155	6.48	7.7928
34	1020	13.702	7.1312	130.65	1.3191	6.0185	6.48	7.7991
35	1080	14.526	7.1999	132.39	1.3239	6.0202	6.48	7.8039
36	1140	15.334	7.2687	133.56	1.323	6.0173	6.48	7.803

TRI AXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-016 S7  
 Sample No.: S-7  
 Test No.: 20.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 20.0' -22.0'  
 Elevation: ----



Soil Description: VERY DARK GRAY CLAY WITH SAND AND GRAVEL - ORGANICS AND ASH NOTED  
 Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.

Specimen Height: 6.12 in  
 Specimen Area: 6.15 in<sup>2</sup>  
 Specimen Volume: 37.67 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: 38

Plastic Limit: 21

Estimated Specific Gravity: 2.72

	Vertical Strain %	Total Vertical Stress tsf	Total Horizontal Stress tsf	Excess Pore Pressure tsf	A Parameter	Effective Vertical Stress tsf	Effective Horizontal Stress tsf	Stress Ratio	Effective p tsf	q tsf
1	0.00	6.48	6.48	0	0.000	1.4378	1.4378	1.000	1.4378	0
2	0.05	6.74	6.48	0.23036	0.886	1.4674	1.2074	1.215	1.3374	0.12999
3	0.12	6.8957	6.48	0.33941	0.816	1.5141	1.0984	1.378	1.3062	0.20785
4	0.18	6.9746	6.48	0.40298	0.815	1.5294	1.0348	1.478	1.2821	0.24728
5	0.25	7.0286	6.48	0.4438	0.809	1.5426	0.99399	1.552	1.2683	0.27429
6	0.32	7.0683	6.48	0.49571	0.843	1.5304	0.94209	1.625	1.2363	0.29417
7	0.38	7.1043	6.48	0.54061	0.866	1.5215	0.89718	1.696	1.2094	0.31217
8	0.45	7.1354	6.48	0.59077	0.901	1.5024	0.84703	1.774	1.1747	0.32768
9	0.52	7.1614	6.48	0.60651	0.890	1.5127	0.83128	1.820	1.172	0.3407
10	0.59	7.1844	6.48	0.62226	0.883	1.5199	0.81554	1.864	1.1677	0.35218
11	0.65	7.2066	6.48	0.64967	0.894	1.5148	0.78813	1.922	1.1514	0.36332
12	0.72	7.2246	6.48	0.68874	0.925	1.4936	0.74905	1.994	1.1213	0.37229
13	0.79	7.2444	6.48	0.71148	0.931	1.4907	0.72631	2.052	1.1085	0.38219
14	0.92	7.2753	6.48	0.72431	0.911	1.5088	0.71348	2.115	1.1111	0.39764
15	1.05	7.3036	6.48	0.7768	0.943	1.4846	0.66099	2.246	1.0728	0.41181
16	1.18	7.3276	6.48	0.77797	0.918	1.5075	0.65983	2.285	1.0836	0.42381
17	1.31	7.351	6.48	0.80654	0.926	1.5022	0.63125	2.380	1.0667	0.43548
18	1.45	7.3699	6.48	0.83454	0.938	1.4932	0.60326	2.475	1.0482	0.44496
19	1.58	7.3894	6.48	0.84212	0.926	1.5051	0.59568	2.527	1.0504	0.45472
20	2.39	7.4744	6.48	0.91851	0.924	1.5137	0.51928	2.915	1.0165	0.4972
21	3.21	7.5297	6.48	0.94767	0.903	1.5398	0.49012	3.142	1.0149	0.52483
22	4.00	7.5763	6.48	0.95467	0.871	1.5794	0.48312	3.269	1.0313	0.54816
23	4.82	7.6142	6.48	0.957	0.844	1.615	0.48079	3.359	1.0479	0.5671
24	5.63	7.6483	6.48	0.95934	0.821	1.6468	0.47846	3.442	1.0626	0.58415
25	6.43	7.6697	6.48	0.96109	0.808	1.6664	0.47671	3.496	1.0716	0.59484
26	7.25	7.6932	6.48	0.96167	0.793	1.6894	0.47612	3.548	1.0827	0.60661
27	8.06	7.7128	6.48	0.96284	0.781	1.7078	0.47496	3.596	1.0914	0.6164
28	8.86	7.7275	6.48	0.964	0.773	1.7213	0.47379	3.633	1.0975	0.62375
29	9.67	7.7499	6.48	0.96517	0.760	1.7426	0.47262	3.687	1.1076	0.63496
30	10.48	7.7624	6.48	0.96692	0.754	1.7533	0.47087	3.723	1.1121	0.64119
31	11.28	7.7729	6.48	0.96925	0.750	1.7614	0.46854	3.759	1.115	0.64645
32	12.10	7.7827	6.48	0.971	0.745	1.7695	0.46679	3.791	1.1181	0.65136
33	12.91	7.7928	6.48	0.97333	0.741	1.7773	0.46446	3.827	1.1209	0.65641
34	13.70	7.7991	6.48	0.97625	0.740	1.7806	0.46154	3.858	1.1211	0.65953
35	14.53	7.8039	6.48	0.978	0.739	1.7837	0.45979	3.879	1.1218	0.66197
36	15.33	7.803	6.48	0.97508	0.737	1.7857	0.46271	3.859	1.1242	0.66148

TRIAXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-016 S7  
 Sample No.: S-7  
 Test No.: 40.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 20.0' -22.0'  
 Elevation: ----



Soil Description: VERY DARK GRAY CLAY WITH SAND AND GRAVEL - ORGANICS AND ASH NOTED

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.

Specimen Height: 6.04 in  
 Specimen Area: 6.17 in<sup>2</sup>  
 Specimen Volume: 37.26 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: 38

Plastic Limit: 21

Estimated Specific Gravity: 2.72

	Time min	Vertical Strain %	Corrected Area in <sup>2</sup>	Deviator Load lb	Deviator Stress tsf	Pore Pressure tsf	Horizontal Stress tsf	Vertical Stress tsf
1	0	0	6.1662	0	0	5.1556	7.92	7.92
2	5.0003	0.042334	6.1688	21.452	0.25038	5.314	7.92	8.1704
3	10	0.093739	6.172	37.711	0.43992	5.4532	7.92	8.3599
4	15	0.15119	6.1755	49.512	0.57726	5.5784	7.92	8.4973
5	20	0.21167	6.1793	58.061	0.67652	5.6902	7.92	8.5965
6	25	0.27366	6.1831	65.037	0.75733	5.7904	7.92	8.6773
7	30	0.33716	6.187	71.173	0.82826	5.8784	7.92	8.7483
8	35	0.40066	6.191	76.785	0.893	5.9558	7.92	8.813
9	40	0.46567	6.195	81.296	0.94484	6.0245	7.92	8.8648
10	45.001	0.52917	6.199	85.702	0.99541	6.0898	7.92	8.9154
11	50.001	0.59419	6.203	89.216	1.0355	6.1474	7.92	8.9555
12	55.001	0.6592	6.2071	92.73	1.0756	6.2004	7.92	8.9956
13	60.001	0.72421	6.2112	96.034	1.1132	6.2482	7.92	9.0332
14	70.001	0.85575	6.2194	101.38	1.1737	6.3344	7.92	9.0937
15	80.001	0.98729	6.2277	106.31	1.2291	6.4078	7.92	9.1491
16	90.001	1.1203	6.236	110.56	1.2765	6.4718	7.92	9.1965
17	100	1.2519	6.2444	113.55	1.3093	6.5278	7.92	9.2293
18	110	1.3849	6.2528	116.65	1.3432	6.5767	7.92	9.2632
19	120	1.518	6.2612	119.64	1.3757	6.6233	7.92	9.2957
20	180	2.3344	6.3136	132.8	1.5145	6.8143	7.92	9.4345
21	240	3.169	6.368	141.04	1.5946	6.9349	7.92	9.5146
22	300	3.987	6.4222	148.06	1.66	7.0152	7.92	9.58
23	360	4.8125	6.4779	153.26	1.7034	7.0752	7.92	9.6234
24	420	5.6486	6.5353	157.66	1.737	7.116	7.92	9.657
25	480	6.462	6.5922	161.28	1.7615	7.1509	7.92	9.6815
26	540	7.2875	6.6509	164.48	1.7806	7.1742	7.92	9.7006
27	600	8.1266	6.7116	167.63	1.7983	7.1923	7.92	9.7183
28	660	8.9355	6.7712	171.82	1.827	7.2051	7.92	9.747
29	720	9.7625	6.8333	174.6	1.8397	7.2168	7.92	9.7597
30	780	10.606	6.8978	177.54	1.8532	7.2272	7.92	9.7732
31	840	11.424	6.9615	180.22	1.8639	7.2459	7.92	9.7839
32	900	12.251	7.0271	182.68	1.8718	7.2505	7.92	9.7918
33	960	13.09	7.0949	184.41	1.8714	7.2523	7.92	9.7914
34	1020	13.905	7.1621	185.98	1.8697	7.2552	7.92	9.7897
35	1080	14.744	7.2326	186.35	1.8551	7.2476	7.92	9.7751
36	1140	15.58	7.3042	185.3	1.8266	7.2552	7.92	9.7466

TRIAXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-016 S7  
 Sample No.: S-7  
 Test No.: 40.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 20.0' -22.0'  
 Elevation: ----



Soil Description: VERY DARK GRAY CLAY WITH SAND AND GRAVEL - ORGANICS AND ASH NOTED

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.

Specimen Height: 6.04 in  
 Specimen Area: 6.17 in<sup>2</sup>  
 Specimen Volume: 37.26 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

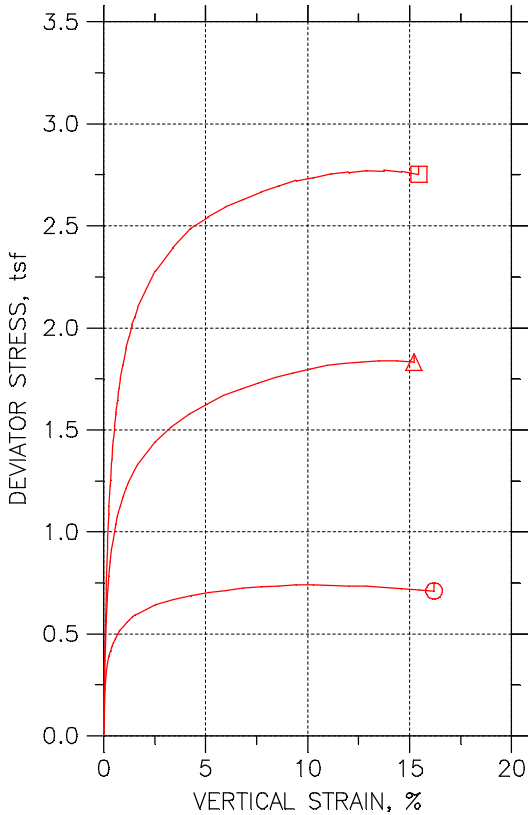
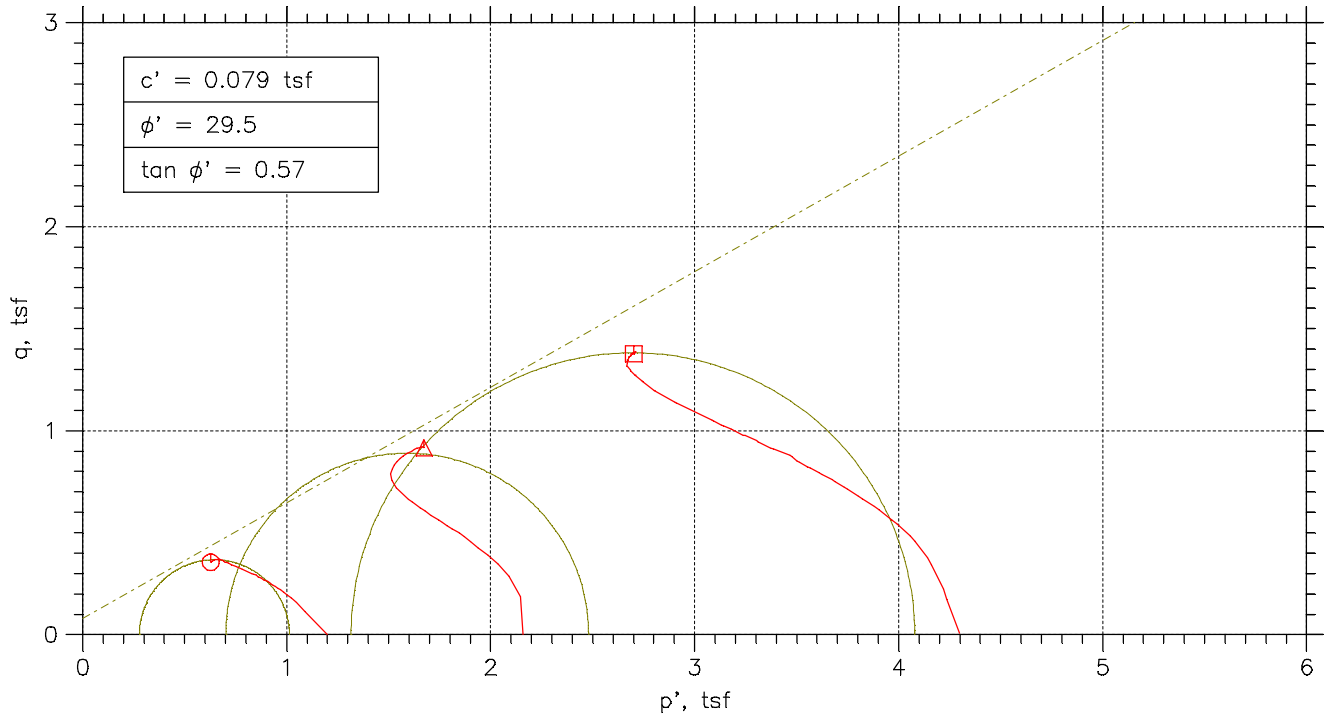
Liquid Limit: 38

Plastic Limit: 21

Estimated Specific Gravity: 2.72

	Vertical Strain %	Total Vertical Stress tsf	Total Horizontal Stress tsf	Excess Pore Pressure tsf	A Parameter	Effective Vertical Stress tsf	Effective Horizontal Stress tsf	Stress Ratio	Effective p tsf	q tsf
1	0.00	7.92	7.92	0	0.000	2.7644	2.7644	1.000	2.7644	0
2	0.04	8.1704	7.92	0.15842	0.633	2.8564	2.606	1.096	2.7312	0.12519
3	0.09	8.3599	7.92	0.29762	0.677	2.9067	2.4668	1.178	2.6868	0.21996
4	0.15	8.4973	7.92	0.42284	0.732	2.9188	2.3416	1.247	2.6302	0.28863
5	0.21	8.5965	7.92	0.53466	0.790	2.9063	2.2298	1.303	2.568	0.33826
6	0.27	8.6773	7.92	0.63484	0.838	2.8869	2.1296	1.356	2.5083	0.37867
7	0.34	8.7483	7.92	0.72278	0.873	2.8699	2.0416	1.406	2.4558	0.41413
8	0.40	8.813	7.92	0.80024	0.896	2.8572	1.9642	1.455	2.4107	0.4465
9	0.47	8.8648	7.92	0.86897	0.920	2.8403	1.8955	1.498	2.3679	0.47242
10	0.53	8.9154	7.92	0.9342	0.939	2.8256	1.8302	1.544	2.3279	0.4977
11	0.59	8.9555	7.92	0.99186	0.958	2.8081	1.7726	1.584	2.2903	0.51777
12	0.66	8.9956	7.92	1.0449	0.971	2.7952	1.7196	1.626	2.2574	0.53782
13	0.72	9.0332	7.92	1.0926	0.981	2.785	1.6718	1.666	2.2284	0.55662
14	0.86	9.0937	7.92	1.1788	1.004	2.7593	1.5856	1.740	2.1725	0.58685
15	0.99	9.1491	7.92	1.2522	1.019	2.7414	1.5122	1.813	2.1268	0.61457
16	1.12	9.1965	7.92	1.3163	1.031	2.7247	1.4482	1.881	2.0864	0.63827
17	1.25	9.2293	7.92	1.3722	1.048	2.7016	1.3922	1.940	2.0469	0.65465
18	1.38	9.2632	7.92	1.4211	1.058	2.6865	1.3433	2.000	2.0149	0.67159
19	1.52	9.2957	7.92	1.4677	1.067	2.6725	1.2967	2.061	1.9846	0.68787
20	2.33	9.4345	7.92	1.6587	1.095	2.6202	1.1057	2.370	1.8629	0.75723
21	3.17	9.5146	7.92	1.7793	1.116	2.5798	0.98514	2.619	1.7824	0.79731
22	3.99	9.58	7.92	1.8597	1.120	2.5647	0.90476	2.835	1.7347	0.82998
23	4.81	9.6234	7.92	1.9197	1.127	2.5482	0.84477	3.016	1.6965	0.8517
24	5.65	9.657	7.92	1.9604	1.129	2.541	0.804	3.160	1.6725	0.86848
25	6.46	9.6815	7.92	1.9954	1.133	2.5306	0.76906	3.290	1.6498	0.88076
26	7.29	9.7006	7.92	2.0187	1.134	2.5264	0.74576	3.388	1.6361	0.8903
27	8.13	9.7183	7.92	2.0367	1.133	2.526	0.72771	3.471	1.6268	0.89913
28	8.94	9.747	7.92	2.0495	1.122	2.5419	0.71489	3.556	1.6284	0.91352
29	9.76	9.7597	7.92	2.0612	1.120	2.543	0.70324	3.616	1.6231	0.91987
30	10.61	9.7732	7.92	2.0717	1.118	2.546	0.69276	3.675	1.6194	0.9266
31	11.42	9.7839	7.92	2.0903	1.121	2.538	0.67412	3.765	1.6061	0.93195
32	12.25	9.7918	7.92	2.095	1.119	2.5412	0.66946	3.796	1.6053	0.93588
33	13.09	9.7914	7.92	2.0967	1.120	2.5391	0.66772	3.803	1.6034	0.93571
34	13.91	9.7897	7.92	2.0996	1.123	2.5345	0.66481	3.812	1.5997	0.93485
35	14.74	9.7751	7.92	2.092	1.128	2.5275	0.67238	3.759	1.5999	0.92756
36	15.58	9.7466	7.92	2.0996	1.149	2.4914	0.66481	3.748	1.5781	0.91329

# CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST ASTM D4767



Symbol	⊙	△	□	
Test No.	15.0 PSI	30.0 PSI	60.0 PSI	
Initial	Diameter, in	2.828	2.8043	2.7835
	Height, in	5.7787	5.8472	5.7602
	Water Content, %	23.57	23.55	25.59
	Dry Density, pcf	92.14	96.79	92.12
	Saturation, %	76.04	84.91	82.54
Before Shear	Void Ratio	0.84297	0.75427	0.84321
	Water Content, %	26.53	21.69	21.75
	Dry Density, pcf	98.64	106.8	106.7
	Saturation, %	100.00	100.00	100.00
	Void Ratio	0.72151	0.59007	0.59162
	Back Press., tsf	5.0451	5.0416	5.0706
Minor Prin. Stress, tsf	1.1973	2.1584	4.2894	
Max. Dev. Stress, tsf	0.73973	1.8396	2.773	
Time to Failure, min	660	1020	960	
Strain Rate, %/min	0.02	0.02	0.02	
B-Value	<b>0.99</b>	<b>0.97</b>	<b>0.98</b>	
Estimated Specific Gravity	2.72	2.72	2.72	
Liquid Limit	41	41	41	
Plastic Limit	23	23	23	
Plasticity Index	18	18	18	

Project: DYNERGY HENNEPIN
Location: HENNEPIN, IL
Project No.: MR155233
Boring No.: HEN-016 S10
Sample Type: 3 "ST

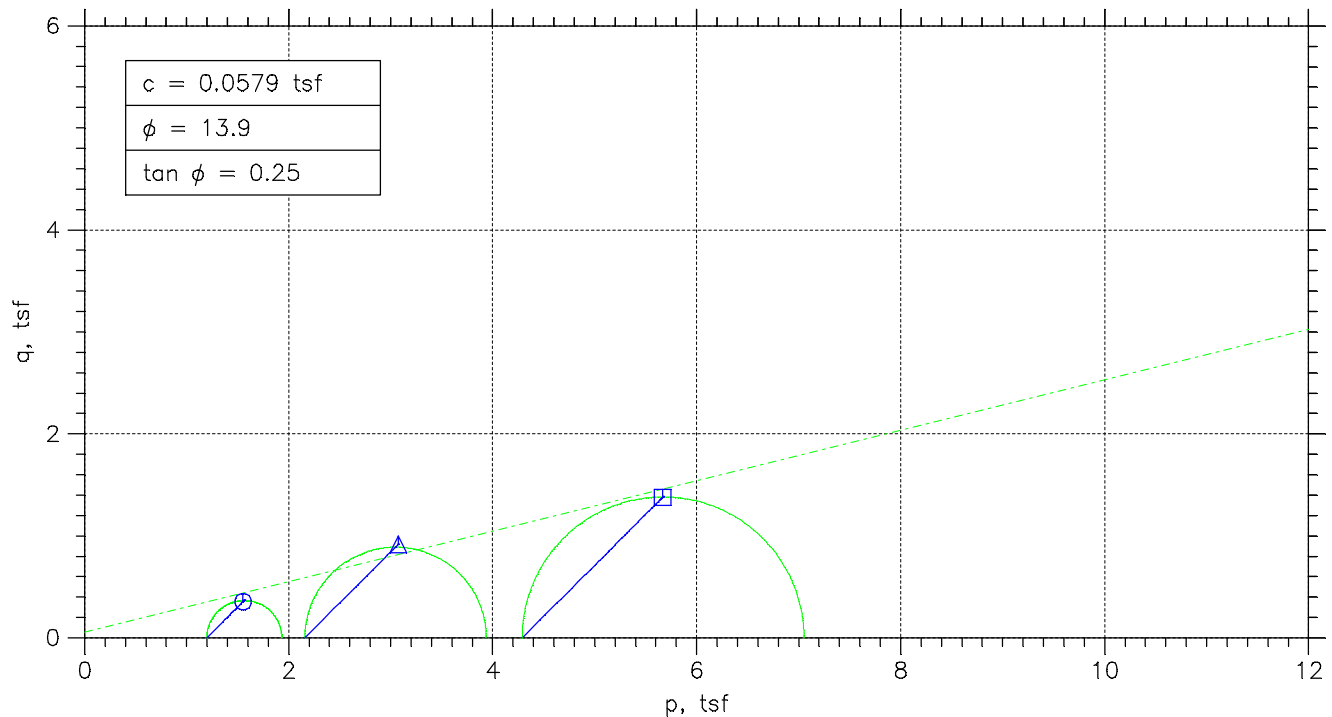
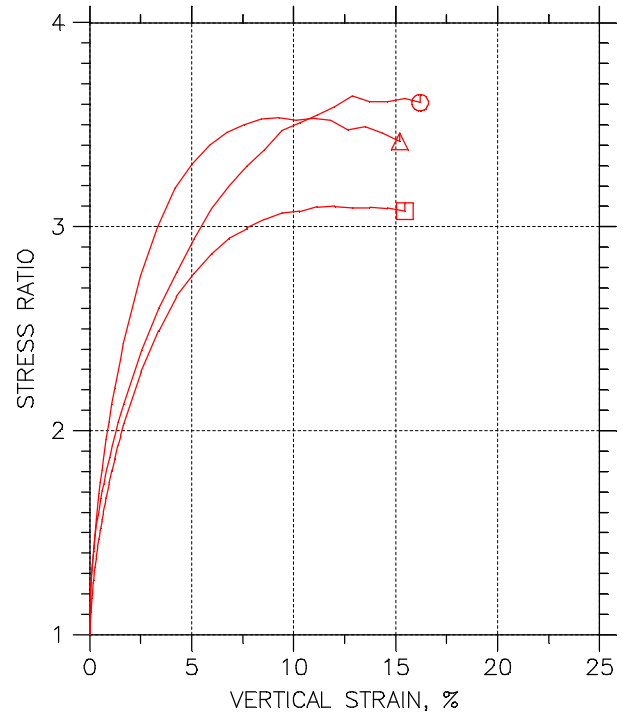
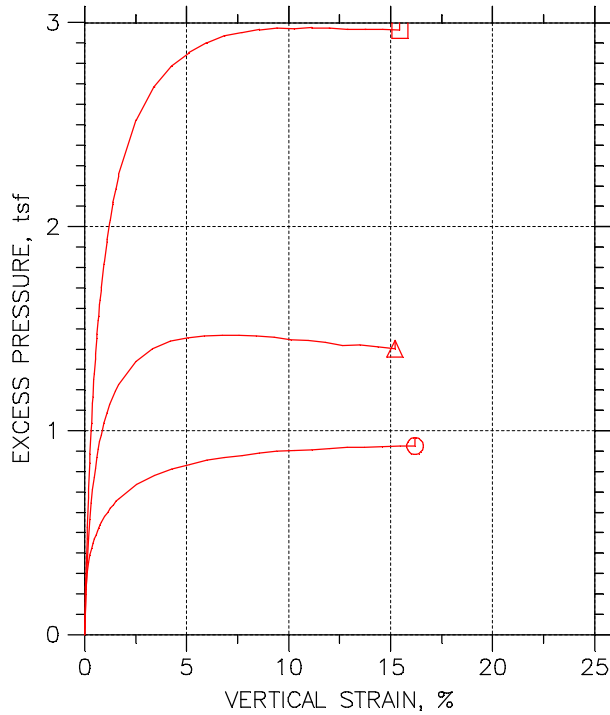
Description: VERY DARK GRAY LEAN CLAY WITH SAND CL FLY ASH AND SHELL NOTED

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D 4767





# CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST ASTM D4767



Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
Boring No.: HEN-016 S10	Tested By: BCM	Checked By: WPQ
Sample No.: S-10	Test Date: 12/16/15	Depth: 35.0'-37.0'
Test No.: HEN-016 S10	Sample Type: 3 "ST	Elevation: ----
Description: VERY DARK GRAY LEAN CLAY WITH SAND CL FLY ASH AND SHELL NOTED		
Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D 4767		
315		

TRIAXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-016 S10  
 Sample No.: S-10  
 Test No.: 15.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3 "ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 35.0' -37.0'  
 Elevation: ----



Soil Description: VERY DARK GRAY LEAN CLAY WITH SAND CL FLY ASH AND SHELL NOTED

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D 4767

Specimen Height: 5.78 in  
 Specimen Area: 6.28 in<sup>2</sup>  
 Specimen Volume: 36.30 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: 41

Plastic Limit: 23

Estimated Specific Gravity: 2.72

	Time min	Vertical Strain %	Corrected Area in <sup>2</sup>	Deviator Load lb	Deviator Stress tsf	Pore Pressure tsf	Horizontal Stress tsf	Vertical Stress tsf
1	0	0	6.2811	0	0	5.0451	6.2424	6.2424
2	5.0001	0.054641	6.2845	19.902	0.22801	5.2685	6.2424	6.4704
3	10	0.12584	6.289	27.345	0.31307	5.3507	6.2424	6.5555
4	15	0.19373	6.2933	31.283	0.3579	5.3997	6.2424	6.6003
5	20	0.26658	6.2979	34.249	0.39155	5.4364	6.2424	6.634
6	25	0.33778	6.3024	36.622	0.41838	5.4673	6.2424	6.6608
7	30	0.40732	6.3068	38.456	0.43903	5.4918	6.2424	6.6814
8	35	0.48018	6.3114	39.912	0.45532	5.514	6.2424	6.6977
9	40.001	0.55137	6.3159	41.476	0.47282	5.5332	6.2424	6.7152
10	45.001	0.62257	6.3204	42.609	0.48539	5.5525	6.2424	6.7278
11	50.001	0.69377	6.325	43.742	0.49793	5.5694	6.2424	6.7403
12	55.001	0.76166	6.3293	45.036	0.51232	5.5834	6.2424	6.7547
13	60.001	0.83286	6.3338	45.899	0.52176	5.5968	6.2424	6.7642
14	70.001	0.97525	6.3429	47.355	0.53754	5.6242	6.2424	6.7799
15	80.001	1.1176	6.3521	48.92	0.5545	5.6446	6.2424	6.7969
16	90.001	1.26	6.3612	50.214	0.56835	5.6662	6.2424	6.8108
17	100	1.4008	6.3703	51.616	0.58339	5.6825	6.2424	6.8258
18	110	1.5448	6.3796	52.479	0.59228	5.6995	6.2424	6.8347
19	120	1.6889	6.389	53.234	0.59992	5.7129	6.2424	6.8423
20	180	2.5532	6.4456	57.495	0.64224	5.7817	6.2424	6.8846
21	240	3.4126	6.503	60.462	0.66942	5.8248	6.2424	6.9118
22	300	4.2653	6.5609	62.511	0.686	5.8563	6.2424	6.9284
23	360	5.1329	6.6209	64.615	0.70266	5.8802	6.2424	6.9451
24	420	5.9889	6.6812	66.125	0.7126	5.9012	6.2424	6.955
25	480	6.8466	6.7427	67.851	0.72452	5.9135	6.2424	6.9669
26	540	7.7093	6.8058	69.092	0.73094	5.924	6.2424	6.9733
27	600	8.5637	6.8693	70.008	0.73378	5.9339	6.2424	6.9762
28	660	9.428	6.9349	71.249	0.73973	5.9432	6.2424	6.9821
29	720	10.292	7.0017	71.896	0.73932	5.9479	6.2424	6.9817
30	780	11.145	7.0689	72.436	0.73779	5.9526	6.2424	6.9802
31	840	12.008	7.1382	72.813	0.73443	5.9584	6.2424	6.9768
32	900	12.874	7.2092	73.568	0.73475	5.9642	6.2424	6.9771
33	960	13.726	7.2804	73.676	0.72862	5.9636	6.2424	6.971
34	1020	14.596	7.3545	73.73	0.72181	5.966	6.2424	6.9642
35	1080	15.46	7.4297	73.892	0.71607	5.9701	6.2424	6.9585
36	1131.9	16.195	7.4949	73.946	0.71036	5.9701	6.2424	6.9528

TRI AXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-016 S10  
 Sample No.: S-10  
 Test No.: 15.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3 "ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 35.0' -37.0'  
 Elevation: ----



Soil Description: VERY DARK GRAY LEAN CLAY WITH SAND CL FLY ASH AND SHELL NOTED

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D 4767

Specimen Height: 5.78 in  
 Specimen Area: 6.28 in<sup>2</sup>  
 Specimen Volume: 36.30 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: 41

Plastic Limit: 23

Estimated Specific Gravity: 2.72

	Vertical Strain %	Total Vertical Stress tsf	Total Horizontal Stress tsf	Excess Pore Pressure tsf	A Parameter	Effective Vertical Stress tsf	Effective Horizontal Stress tsf	Stress Ratio	Effective p tsf	q tsf
1	0.00	6.2424	6.2424	0	0.000	1.1973	1.1973	1.000	1.1973	0
2	0.05	6.4704	6.2424	0.22336	0.980	1.2019	0.97392	1.234	1.0879	0.11401
3	0.13	6.5555	6.2424	0.30559	0.976	1.2048	0.89169	1.351	1.0482	0.15653
4	0.19	6.6003	6.2424	0.35458	0.991	1.2006	0.8427	1.425	1.0217	0.17895
5	0.27	6.634	6.2424	0.39132	0.999	1.1975	0.80596	1.486	1.0017	0.19578
6	0.34	6.6608	6.2424	0.42223	1.009	1.1934	0.77505	1.540	0.98424	0.20919
7	0.41	6.6814	6.2424	0.44672	1.018	1.1896	0.75056	1.585	0.97007	0.21951
8	0.48	6.6977	6.2424	0.46888	1.030	1.1837	0.7284	1.625	0.95606	0.22766
9	0.55	6.7152	6.2424	0.48812	1.032	1.182	0.70915	1.667	0.94556	0.23641
10	0.62	6.7278	6.2424	0.50737	1.045	1.1753	0.68991	1.704	0.9326	0.24269
11	0.69	6.7403	6.2424	0.52428	1.053	1.1709	0.67299	1.740	0.92196	0.24897
12	0.76	6.7547	6.2424	0.53828	1.051	1.1713	0.659	1.777	0.91516	0.25616
13	0.83	6.7642	6.2424	0.55169	1.057	1.1673	0.64559	1.808	0.90647	0.26088
14	0.98	6.7799	6.2424	0.5791	1.077	1.1557	0.61818	1.870	0.88695	0.26877
15	1.12	6.7969	6.2424	0.59951	1.081	1.1523	0.59776	1.928	0.87501	0.27725
16	1.26	6.8108	6.2424	0.62109	1.093	1.1445	0.57619	1.986	0.86036	0.28418
17	1.40	6.8258	6.2424	0.63742	1.093	1.1432	0.55986	2.042	0.85155	0.2917
18	1.54	6.8347	6.2424	0.65433	1.105	1.1352	0.54294	2.091	0.83908	0.29614
19	1.69	6.8423	6.2424	0.66775	1.113	1.1295	0.52953	2.133	0.82949	0.29996
20	2.55	6.8846	6.2424	0.73656	1.147	1.103	0.46072	2.394	0.78184	0.32112
21	3.41	6.9118	6.2424	0.77972	1.165	1.087	0.41756	2.603	0.75227	0.33471
22	4.27	6.9284	6.2424	0.81121	1.183	1.0721	0.38607	2.777	0.72907	0.343
23	5.13	6.9451	6.2424	0.83512	1.189	1.0648	0.36216	2.940	0.71349	0.35133
24	5.99	6.955	6.2424	0.85611	1.201	1.0538	0.34116	3.089	0.69746	0.3563
25	6.85	6.9669	6.2424	0.86836	1.199	1.0534	0.32892	3.203	0.69118	0.36226
26	7.71	6.9733	6.2424	0.87886	1.202	1.0494	0.31842	3.296	0.68389	0.36547
27	8.56	6.9762	6.2424	0.88877	1.211	1.0423	0.30851	3.379	0.6754	0.36689
28	9.43	6.9821	6.2424	0.8981	1.214	1.0389	0.29917	3.473	0.66904	0.36986
29	10.29	6.9817	6.2424	0.90277	1.221	1.0338	0.29451	3.510	0.66417	0.36966
30	11.15	6.9802	6.2424	0.90743	1.230	1.0276	0.28984	3.545	0.65874	0.36889
31	12.01	6.9768	6.2424	0.91327	1.243	1.0184	0.28401	3.586	0.65123	0.36722
32	12.87	6.9771	6.2424	0.9191	1.251	1.0129	0.27818	3.641	0.64555	0.36737
33	13.73	6.971	6.2424	0.91851	1.261	1.0074	0.27876	3.614	0.64307	0.36431
34	14.60	6.9642	6.2424	0.92085	1.276	0.99824	0.27643	3.611	0.63733	0.3609
35	15.46	6.9585	6.2424	0.92493	1.292	0.98842	0.27235	3.629	0.63038	0.35804
36	16.20	6.9528	6.2424	0.92493	1.302	0.98271	0.27235	3.608	0.62753	0.35518

TRIAXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-016 S10  
 Sample No.: S-10  
 Test No.: 30.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/17/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 25.0' -37.0'  
 Elevation: ----



Soil Description: VERY DARK GRAY LEAN CLAY WITH SAND CL FLY ASH AND SHELL NOTED  
 Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.

Specimen Height: 5.85 in  
 Specimen Area: 6.18 in<sup>2</sup>  
 Specimen Volume: 36.12 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: 41

Plastic Limit: 23

Estimated Specific Gravity: 2.72

	Time min	Vertical Strain %	Corrected Area in <sup>2</sup>	Deviator Load lb	Deviator Stress tsf	Pore Pressure tsf	Horizontal Stress tsf	Vertical Stress tsf
1	0	0	6.1766	0	0	5.0416	7.2	7.2
2	5.0037	0.054	6.1799	31.761	0.37004	5.2399	7.2	7.57
3	10.004	0.11946	6.184	49.071	0.57134	5.3956	7.2	7.7713
4	15.004	0.18655	6.1881	59.764	0.69537	5.5105	7.2	7.8954
5	20.004	0.25528	6.1924	67.387	0.78352	5.605	7.2	7.9835
6	25.004	0.32237	6.1966	73.369	0.8525	5.686	7.2	8.0525
7	30.004	0.39109	6.2008	78.503	0.91153	5.7543	7.2	8.1115
8	35.004	0.45982	6.2051	82.844	0.96127	5.812	7.2	8.1613
9	40.004	0.52855	6.2094	86.444	1.0023	5.8575	7.2	8.2023
10	45.004	0.60055	6.2139	89.726	1.0396	5.9088	7.2	8.2396
11	50.004	0.66764	6.2181	92.584	1.072	5.9508	7.2	8.272
12	55.004	0.73473	6.2223	95.019	1.0995	5.9875	7.2	8.2995
13	60.004	0.80837	6.2269	97.507	1.1274	6.019	7.2	8.3274
14	70.004	0.94583	6.2356	101.48	1.1717	6.0791	7.2	8.3717
15	80.004	1.0882	6.2445	105.18	1.2128	6.1287	7.2	8.4128
16	90.004	1.2306	6.2535	108.25	1.2464	6.1695	7.2	8.4464
17	110	1.5153	6.2716	113.44	1.3023	6.2366	7.2	8.5023
18	120	1.6577	6.2807	115.93	1.329	6.2681	7.2	8.529
19	180	2.5037	6.3352	126.62	1.4391	6.3818	7.2	8.6391
20	240	3.3431	6.3902	134.46	1.515	6.443	7.2	8.715
21	300	4.2006	6.4474	141.18	1.5766	6.4798	7.2	8.7766
22	360	5.04	6.5044	146.84	1.6255	6.4955	7.2	8.8255
23	420	5.8779	6.5623	152.03	1.668	6.5048	7.2	8.868
24	480	6.7321	6.6224	156.32	1.6995	6.5095	7.2	8.8995
25	540	7.5781	6.683	160.45	1.7286	6.5083	7.2	8.9286
26	600	8.4224	6.7446	164.47	1.7557	6.5054	7.2	8.9557
27	660	9.2734	6.8079	168.18	1.7786	6.4984	7.2	8.9786
28	720	10.116	6.8717	171.56	1.7976	6.4868	7.2	8.9976
29	780	10.964	6.9372	174.9	1.8153	6.4827	7.2	9.0153
30	840	11.811	7.0038	177.7	1.8268	6.4757	7.2	9.0268
31	900	12.661	7.0719	179.98	1.8324	6.4599	7.2	9.0324
32	960	13.502	7.1407	182.42	1.8393	6.4611	7.2	9.0393
33	1020	14.359	7.2122	184.27	1.8396	6.4518	7.2	9.0396
34	1080	15.204	7.284	185.33	1.8319	6.4424	7.2	9.0319

TRI AXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-016 S10  
 Sample No.: S-10  
 Test No.: 30.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/17/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 25.0' -37.0'  
 Elevation: ----



Soil Description: VERY DARK GRAY LEAN CLAY WITH SAND CL FLY ASH AND SHELL NOTED  
 Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.

Specimen Height: 5.85 in  
 Specimen Area: 6.18 in<sup>2</sup>  
 Specimen Volume: 36.12 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: 41

Plastic Limit: 23

Estimated Specific Gravity: 2.72

	Vertical Strain %	Total Vertical Stress tsf	Total Horizontal Stress tsf	Excess Pore Pressure tsf	A Parameter	Effective Vertical Stress tsf	Effective Horizontal Stress tsf	Stress Ratio	Effective p tsf	q tsf
1	0.00	7.2	7.2	0	0.000	2.1584	2.1584	1.000	2.1584	0
2	0.05	7.57	7.2	0.19828	0.536	2.3301	1.9601	1.189	2.1451	0.18502
3	0.12	7.7713	7.2	0.35399	0.620	2.3757	1.8044	1.317	2.0901	0.28567
4	0.19	7.8954	7.2	0.46888	0.674	2.3849	1.6895	1.412	2.0372	0.34768
5	0.26	7.9835	7.2	0.56336	0.719	2.3785	1.595	1.491	1.9868	0.39176
6	0.32	8.0525	7.2	0.64442	0.756	2.3665	1.514	1.563	1.9402	0.42625
7	0.39	8.1115	7.2	0.71265	0.782	2.3573	1.4457	1.631	1.9015	0.45577
8	0.46	8.1613	7.2	0.77039	0.801	2.3493	1.388	1.693	1.8686	0.48063
9	0.53	8.2023	7.2	0.81587	0.814	2.3448	1.3425	1.747	1.8437	0.50117
10	0.60	8.2396	7.2	0.86719	0.834	2.3308	1.2912	1.805	1.811	0.51982
11	0.67	8.272	7.2	0.90918	0.848	2.3212	1.2492	1.858	1.7852	0.53602
12	0.73	8.2995	7.2	0.94592	0.860	2.3119	1.2125	1.907	1.7622	0.54975
13	0.81	8.3274	7.2	0.97742	0.867	2.3084	1.181	1.955	1.7447	0.56372
14	0.95	8.3717	7.2	1.0375	0.885	2.2926	1.1209	2.045	1.7068	0.58586
15	1.09	8.4128	7.2	1.0871	0.896	2.2841	1.0713	2.132	1.6777	0.60638
16	1.23	8.4464	7.2	1.1279	0.905	2.2769	1.0305	2.209	1.6537	0.62319
17	1.52	8.5023	7.2	1.1949	0.918	2.2658	0.96343	2.352	1.6146	0.65117
18	1.66	8.529	7.2	1.2264	0.923	2.2609	0.93194	2.426	1.5964	0.66449
19	2.50	8.6391	7.2	1.3402	0.931	2.2573	0.81822	2.759	1.5378	0.71953
20	3.34	8.715	7.2	1.4014	0.925	2.2719	0.75699	3.001	1.5145	0.75748
21	4.20	8.7766	7.2	1.4381	0.912	2.2968	0.72025	3.189	1.5085	0.78829
22	5.04	8.8255	7.2	1.4539	0.894	2.33	0.7045	3.307	1.5172	0.81273
23	5.88	8.868	7.2	1.4632	0.877	2.3632	0.69517	3.399	1.5292	0.83402
24	6.73	8.8995	7.2	1.4679	0.864	2.39	0.6905	3.461	1.5403	0.84976
25	7.58	8.9286	7.2	1.4667	0.848	2.4203	0.69167	3.499	1.556	0.8643
26	8.42	8.9557	7.2	1.4638	0.834	2.4503	0.69458	3.528	1.5725	0.87787
27	9.27	8.9786	7.2	1.4568	0.819	2.4802	0.70158	3.535	1.5909	0.88931
28	10.12	8.9976	7.2	1.4451	0.804	2.5108	0.71325	3.520	1.612	0.8988
29	10.96	9.0153	7.2	1.441	0.794	2.5326	0.71733	3.531	1.625	0.90763
30	11.81	9.0268	7.2	1.434	0.785	2.5511	0.72433	3.522	1.6377	0.91341
31	12.66	9.0324	7.2	1.4183	0.774	2.5725	0.74007	3.476	1.6563	0.9162
32	13.50	9.0393	7.2	1.4195	0.772	2.5782	0.73891	3.489	1.6586	0.91965
33	14.36	9.0396	7.2	1.4101	0.767	2.5878	0.74824	3.459	1.668	0.91979
34	15.20	9.0319	7.2	1.4008	0.765	2.5895	0.75757	3.418	1.6735	0.91595

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-016 S10  
 Sample No.: S-10  
 Test No.: 60.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/17/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 35.0' -37.0'  
 Elevation: ----



Soil Description: VERY DARK GRAY LEAN CLAY WITH SAND CL FLY ASH AND SHELL NOTED  
 Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.

Specimen Height: 5.76 in  
 Specimen Area: 6.09 in<sup>2</sup>  
 Specimen Volume: 35.05 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: 41

Plastic Limit: 23

Estimated Specific Gravity: 2.72

	Time min	Vertical Strain %	Corrected Area in <sup>2</sup>	Deviator Load lb	Deviator Stress tsf	Pore Pressure tsf	Horizontal Stress tsf	Vertical Stress tsf
1	0	0	6.085	1.2705	0.015032	5.0706	9.36	9.375
2	5.0035	0.047279	6.0879	29.485	0.34871	5.2986	9.36	9.7087
3	5.0001	0.063039	6.0888	37.849	0.44756	5.3655	9.36	9.8076
4	10.004	0.11189	6.0918	57.964	0.68509	5.5412	9.36	10.045
5	10	0.12923	6.0929	64.052	0.75691	5.5964	9.36	10.117
6	15.004	0.17966	6.096	77.815	0.91908	5.7401	9.36	10.279
7	15	0.197	6.097	81.838	0.96643	5.7855	9.36	10.326
8	20.004	0.24585	6.1	92.214	1.0884	5.9146	9.36	10.448
9	20	0.26476	6.1012	95.39	1.1257	5.9576	9.36	10.486
10	25.004	0.31519	6.1042	103.81	1.2244	6.0699	9.36	10.584
11	25	0.3341	6.1054	106.51	1.256	6.1071	9.36	10.616
12	30.004	0.38611	6.1086	113.02	1.3321	6.2054	9.36	10.692
13	30	0.40345	6.1097	115.03	1.3556	6.2368	9.36	10.716
14	35.004	0.45545	6.1129	120.9	1.4241	6.3229	9.36	10.784
15	35	0.47279	6.1139	122.97	1.4481	6.3496	9.36	10.808
16	40.004	0.52322	6.117	127.42	1.4997	6.4229	9.36	10.86
17	40	0.54213	6.1182	129.32	1.5219	6.4485	9.36	10.882
18	45.004	0.59572	6.1215	133.82	1.574	6.5218	9.36	10.934
19	45	0.61305	6.1225	134.93	1.5868	6.5451	9.36	10.947
20	50.004	0.66506	6.1257	138.9	1.6326	6.6096	9.36	10.993
21	50	0.68397	6.1269	140.17	1.6472	6.6317	9.36	11.007
22	55.004	0.73598	6.1301	143.67	1.6874	6.6899	9.36	11.047
23	55	0.75331	6.1312	145.15	1.7045	6.7097	9.36	11.065
24	60.004	0.80374	6.1343	148.85	1.7471	6.7574	9.36	11.107
25	60	0.82108	6.1354	149.81	1.758	6.7731	9.36	11.118
26	70.004	0.94558	6.1431	155.37	1.821	6.8865	9.36	11.181
27	70	0.96449	6.1443	156.27	1.8312	6.9033	9.36	11.191
28	80.004	1.0874	6.1519	161.82	1.8939	6.997	9.36	11.254
29	80	1.1063	6.1531	162.78	1.9047	7.0086	9.36	11.265
30	90.004	1.2277	6.1606	167.06	1.9525	7.0889	9.36	11.313
31	90	1.2466	6.1618	167.44	1.9565	7.1017	9.36	11.316
32	100	1.3727	6.1697	172.09	2.0083	7.1802	9.36	11.368
33	100	1.39	6.1708	172.78	2.016	7.1907	9.36	11.376
34	110	1.5145	6.1786	175.85	2.0492	7.243	9.36	11.409
35	110	1.5334	6.1798	176.43	2.0556	7.2552	9.36	11.416
36	120	1.6563	6.1875	180.19	2.0968	7.3175	9.36	11.457
37	120	1.6753	6.1887	180.72	2.1025	7.3274	9.36	11.463
38	180	2.5168	6.2421	197.34	2.2763	7.5908	9.36	11.636
39	180	2.5357	6.2433	197.56	2.2783	7.5961	9.36	11.638
40	240	3.3789	6.2978	209.2	2.3917	7.7543	9.36	11.752
41	240	3.3978	6.299	209.36	2.3931	7.7549	9.36	11.753
42	300	4.2409	6.3545	219.21	2.4837	7.8566	9.36	11.844
43	300	4.2598	6.3558	219.52	2.4868	7.8601	9.36	11.847
44	360	5.103	6.4122	226.41	2.5422	7.9229	9.36	11.902
45	360	5.1235	6.4136	226.62	2.544	7.9253	9.36	11.904
46	420	5.9698	6.4713	232.81	2.5903	7.9706	9.36	11.95
47	420	5.9871	6.4725	233.13	2.5933	7.9712	9.36	11.953
48	480	6.8271	6.5309	238.42	2.6285	8.0055	9.36	11.988
49	480	6.8444	6.5321	238.63	2.6303	8.0073	9.36	11.99
50	540	7.686	6.5916	243.77	2.6627	8.0207	9.36	12.023
51	540	7.7049	6.593	244.14	2.6662	8.023	9.36	12.026
52	600	8.5543	6.6542	249.06	2.6949	8.0364	9.36	12.055
53	600	8.5733	6.6556	249.11	2.6949	8.0352	9.36	12.055
54	660	9.4117	6.7172	253.99	2.7224	8.0433	9.36	12.082
55	660	9.4306	6.7186	253.77	2.7196	8.0433	9.36	12.08
56	720	10.267	6.7813	257.8	2.7371	8.041	9.36	12.097
57	720	10.286	6.7827	257.64	2.7349	8.0416	9.36	12.095
58	780	11.136	6.8475	262.03	2.7552	8.0474	9.36	12.115
59	780	11.153	6.8489	261.93	2.7535	8.0451	9.36	12.114
60	840	11.998	6.9146	265.37	2.7632	8.0445	9.36	12.123
61	840	12.017	6.9161	265.26	2.7615	8.0439	9.36	12.121
62	900	12.861	6.9831	268.54	2.7688	8.0364	9.36	12.129
63	900	12.88	6.9847	268.6	2.7688	8.0364	9.36	12.129
64	960	13.731	7.0536	270.98	2.766	8.0375	9.36	12.126
65	960	13.75	7.0551	271.72	2.773	8.0369	9.36	12.133
66	1020	14.592	7.1246	273.41	2.763	8.0369	9.36	12.123
67	1020	14.611	7.1262	273.73	2.7656	8.0381	9.36	12.126
68	1080	15.451	7.197	275.11	2.7522	8.0346	9.36	12.112

TRI AXIAL TEST

Project: DYNERGY HENNEPIN  
Boring No.: HEN-016 S10  
Sample No.: S-10  
Test No.: 60.0 PSI

Location: HENNEPIN, IL  
Tested By: BCM  
Test Date: 12/17/15  
Sample Type: 3.0" ST

Project No.: MR155233  
Checked By: WPO  
Depth: 35.0' -37.0'  
Elevation: ----



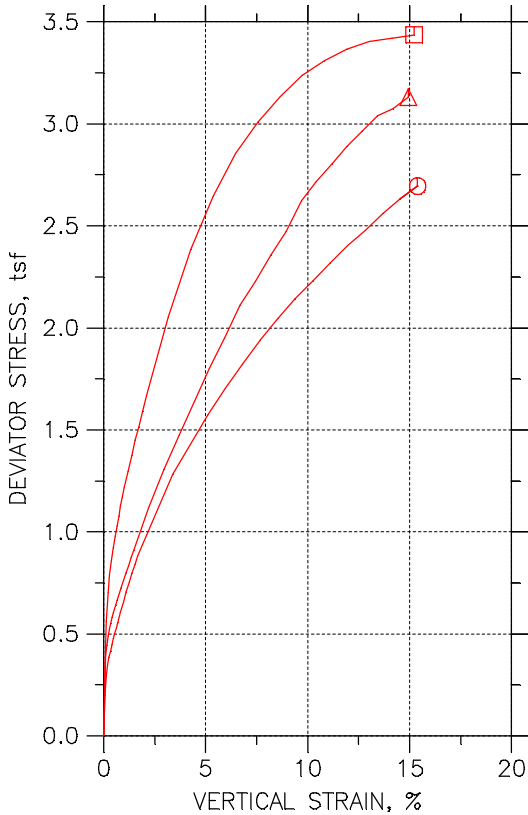
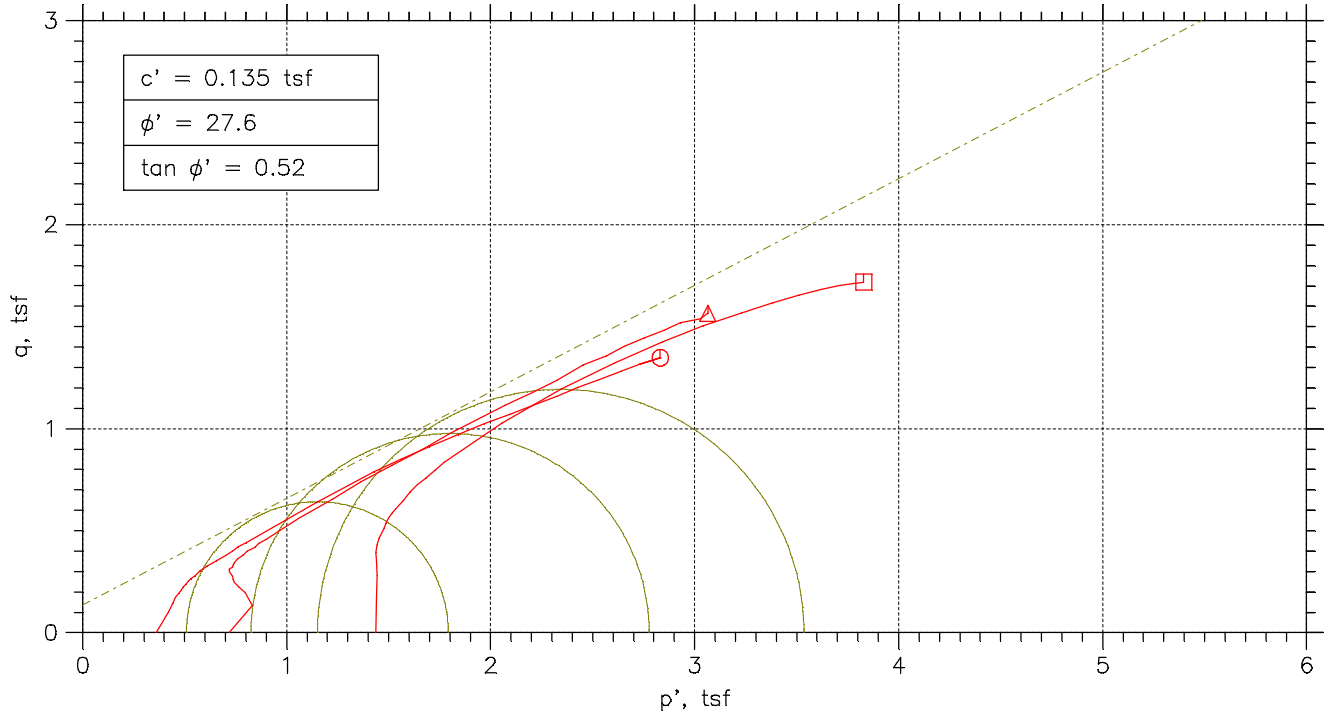
Soil Description: VERY DARK GRAY LEAN CLAY WITH SAND CL FLY ASH AND SHELL NOTED  
Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.





Specimen Height: 5.76 in  
Specimen Area: 6.09 in^2  
Specimen Volume: 35.05 in^3  
Piston Area: 0.00 in^2  
Piston Friction: 0.00 lb  
Piston Weight: 0.00 lb  
Filter Strip Correction: 0.00 tsf  
Membrane Correction: 0.00 lb/in  
Correction Type: Uni form

Liquid Limit: 41  
Plastic Limit: 23  
Estimated Specific Gravity: 2.72

Table with 11 columns: Vertical Strain %, Total Vertical Stress tsf, Total Horizontal Stress tsf, Excess Pore Pressure tsf, A Parameter, Effective Vertical Stress tsf, Effective Horizontal Stress tsf, Stress Ratio, Effective p tsf, Effective q tsf. Rows 1-68.

# CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST ASTM D4767



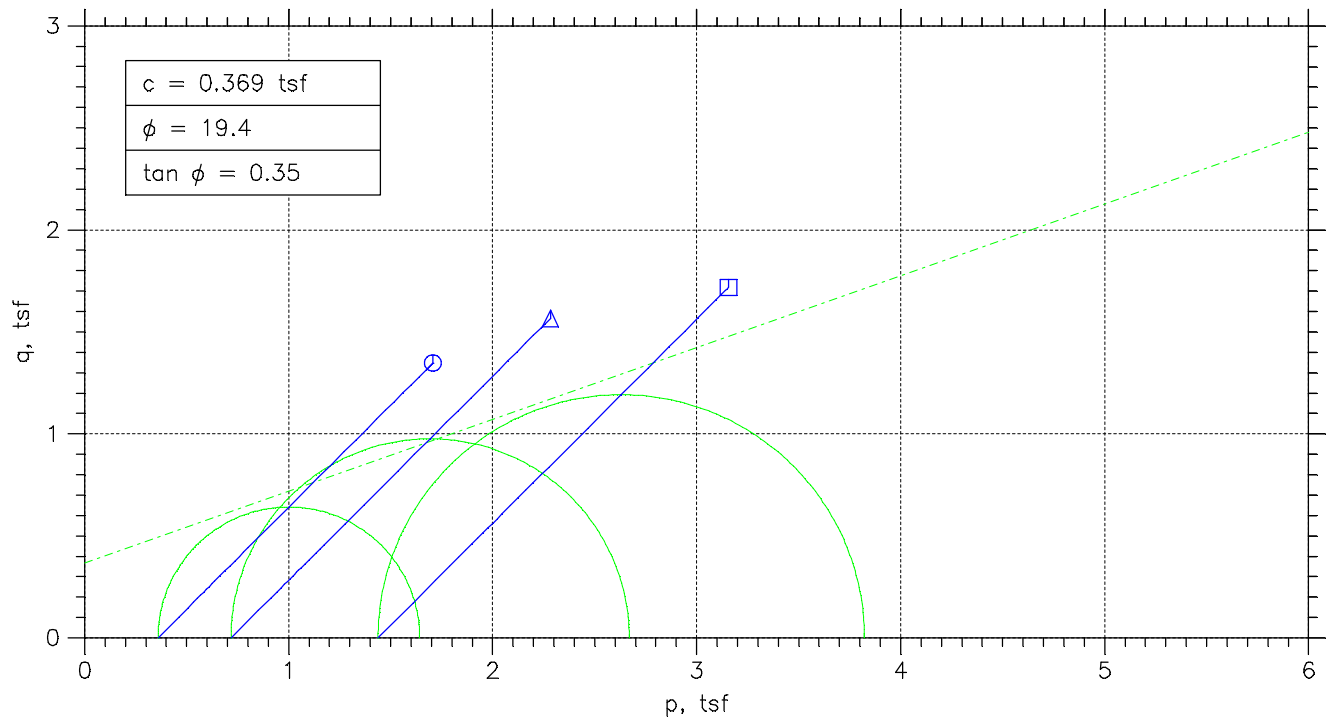
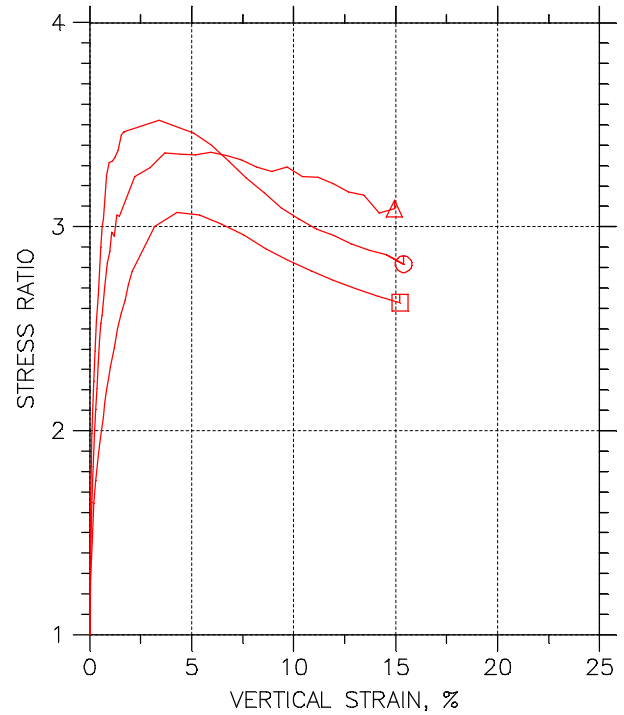
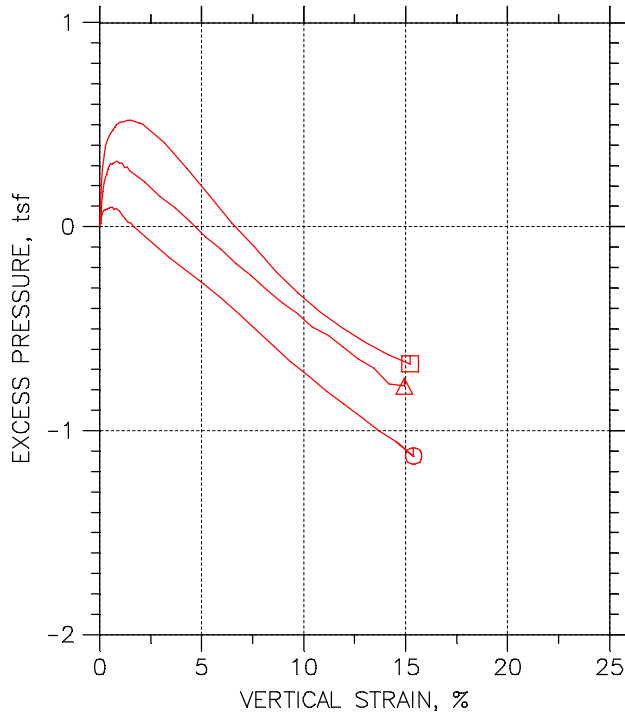
Symbol	⊙	△	□	
Test No.	5.0 PSI	10.0 PSI	20.0 PSI	
Initial	Diameter, in	2.8799	2.8646	2.8394
	Height, in	5.9846	5.9776	5.9764
	Water Content, %	45.39	45.24	43.38
	Dry Density, pcf	69.73	70.52	76.64
	Saturation, %	98.57	100.41	114.22
Before Shear	Void Ratio	1.0592	1.0362	0.87359
	Water Content, %	45.39	45.24	43.38
	Dry Density, pcf	70.25	70.37	71.87
	Saturation, %	100.00	100.00	100.00
	Void Ratio	1.044	1.0404	0.99783
	Back Press., tsf	5.0405	5.0425	5.0416
Minor Prin. Stress, tsf	0.35947	0.71748	1.4384	
Max. Dev. Stress, tsf	2.6948	3.1306	3.4366	
Time to Failure, min	1080	1200	840	
Strain Rate, %/min	0.02	0.02	0.02	
B-Value	<b>0.98</b>	<b>0.99</b>	<b>0.96</b>	
Estimated Specific Gravity	2.30	2.30	2.30	
Liquid Limit	NP	NP	NP	
Plastic Limit	NP	NP	NP	
Plasticity Index	NP	NP	NP	
Failure Sketch				

Project: DYNERGY HENNEPIN  
 Location: HENNEPIN, IL  
 Project No.: MR155233  
 Boring No.: HEN-018 S-5  
 Sample Type: 3.0" ST  
 Description: DARK GRAY TO GRAY FLY ASH WITH SAND AND GRAVEL

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.



# CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST ASTM D4767



Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
Boring No.: HEN-018 S-5	Tested By: BCM	Checked By: WPQ
Sample No.: S-5	Test Date: 12/16/15	Depth: 10.0'-12.0'
Test No.: HEN-018 S-5	Sample Type: 3.0" ST	Elevation: ----
Description: DARK GRAY TO GRAY FLY ASH WITH SAND AND GRAVEL		
Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.		

TRIAXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-018 S-5  
 Sample No.: S-5  
 Test No.: 5.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 10.0' -12.0'  
 Elevation: ----



Soil Description: DARK GRAY TO GRAY FLY ASH WITH SAND AND GRAVEL  
 Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.

Specimen Height: 5.98 in  
 Specimen Area: 6.51 in<sup>2</sup>  
 Specimen Volume: 38.98 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: NP

Plastic Limit: NP

Estimated Specific Gravity: 2.30

	Time min	Vertical Strain %	Corrected Area in <sup>2</sup>	Deviator Load lb	Deviator Stress tsf	Pore Pressure tsf	Horizontal Stress tsf	Vertical Stress tsf
1	0	0	6.5141	0	0	5.0405	5.4	5.4
2	5.001	0.052041	6.5174	18.3	0.20216	5.0794	5.4	5.6022
3	10.001	0.12301	6.5221	26.427	0.29174	5.1044	5.4	5.6917
4	15.001	0.19239	6.5266	31.613	0.34875	5.1201	5.4	5.7487
5	20.001	0.26336	6.5313	35.053	0.38643	5.1224	5.4	5.7864
6	25.001	0.33432	6.5359	37.995	0.41856	5.1271	5.4	5.8186
7	30.001	0.40687	6.5407	40.738	0.44844	5.13	5.4	5.8484
8	35.001	0.47625	6.5452	43.231	0.47556	5.1334	5.4	5.8756
9	40.001	0.54722	6.5499	45.774	0.50317	5.1352	5.4	5.9032
10	45.001	0.61818	6.5546	48.267	0.5302	5.1352	5.4	5.9302
11	50.001	0.68757	6.5591	50.611	0.55555	5.1271	5.4	5.9556
12	60.002	0.82793	6.5684	55.348	0.60669	5.1305	5.4	6.0067
13	70.002	0.96828	6.5777	59.935	0.65605	5.1166	5.4	6.056
14	80.002	1.1086	6.5871	64.522	0.70526	5.0963	5.4	6.1053
15	90.002	1.2506	6.5965	69.06	0.75377	5.0777	5.4	6.1538
16	100	1.3925	6.606	73.149	0.79726	5.0643	5.4	6.1973
17	110	1.536	6.6157	77.237	0.84059	5.0568	5.4	6.2406
18	120	1.6779	6.6252	81.226	0.88273	5.0417	5.4	6.2827
19	240	3.4	6.7433	120.17	1.2831	4.8913	5.4	6.6831
20	360	5.1095	6.8648	150.09	1.5742	4.76	5.4	6.9742
21	420	5.9674	6.9274	163.85	1.703	4.6898	5.4	7.103
22	480	6.8205	6.9909	177.11	1.8241	4.6143	5.4	7.2241
23	540	7.6753	7.0556	190.18	1.9407	4.533	5.4	7.3407
24	600	8.5395	7.1223	202.49	2.047	4.4552	5.4	7.447
25	660	9.391	7.1892	213.96	2.1428	4.3762	5.4	7.5428
26	720	10.252	7.2582	224.88	2.2308	4.3059	5.4	7.6308
27	780	11.108	7.3281	235.9	2.3178	4.2345	5.4	7.7178
28	840	11.958	7.3988	246.92	2.4028	4.1718	5.4	7.8028
29	900	12.826	7.4724	257.29	2.4791	4.1062	5.4	7.8791
30	960	13.68	7.5464	268.41	2.5609	4.0417	5.4	7.9609
31	1020	14.53	7.6215	278.53	2.6313	3.9871	5.4	8.0313
32	1080	15.39	7.6989	288.16	2.6948	3.9163	5.4	8.0948
33	1020	14.53	7.6215	278.53	2.6313	3.9871	5.4	8.0313
34	1080	15.39	7.6989	288.16	2.6948	3.9163	5.4	8.0948
35	1080	15.39	7.6989	288.16	2.6948	3.9163	5.4	8.0948

TRI AXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-018 S-5  
 Sample No.: S-5  
 Test No.: 5.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 10.0' -12.0'  
 Elevation: ----



Soil Description: DARK GRAY TO GRAY FLY ASH WITH SAND AND GRAVEL  
 Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.

Specimen Height: 5.98 in  
 Specimen Area: 6.51 in<sup>2</sup>  
 Specimen Volume: 38.98 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: NP

Plastic Limit: NP

Estimated Specific Gravity: 2.30

	Vertical Strain %	Total Vertical Stress tsf	Total Horizontal Stress tsf	Excess Pore Pressure tsf	A Parameter	Effective Vertical Stress tsf	Effective Horizontal Stress tsf	Stress Ratio	Effective p tsf	q tsf
1	0.00	5.4	5.4	0	0.000	0.35947	0.35947	1.000	0.35947	0
2	0.05	5.6022	5.4	0.038907	0.192	0.52273	0.32057	1.631	0.42165	0.10108
3	0.12	5.6917	5.4	0.063878	0.219	0.58734	0.2956	1.987	0.44147	0.14587
4	0.19	5.7487	5.4	0.079557	0.228	0.62866	0.27992	2.246	0.45429	0.17437
5	0.26	5.7864	5.4	0.08188	0.212	0.66402	0.27759	2.392	0.47081	0.19321
6	0.33	5.8186	5.4	0.086525	0.207	0.69151	0.27295	2.533	0.48223	0.20928
7	0.41	5.8484	5.4	0.089429	0.199	0.71849	0.27004	2.661	0.49427	0.22422
8	0.48	5.8756	5.4	0.092913	0.195	0.74212	0.26656	2.784	0.50434	0.23778
9	0.55	5.9032	5.4	0.094655	0.188	0.76799	0.26482	2.900	0.5164	0.25159
10	0.62	5.9302	5.4	0.094655	0.179	0.79502	0.26482	3.002	0.52992	0.2651
11	0.69	5.9556	5.4	0.086525	0.156	0.8285	0.27295	3.035	0.55072	0.27778
12	0.83	6.0067	5.4	0.090009	0.148	0.87616	0.26946	3.251	0.57281	0.30335
13	0.97	6.056	5.4	0.076072	0.116	0.93945	0.2834	3.315	0.61142	0.32802
14	1.11	6.1053	5.4	0.055748	0.079	1.009	0.30373	3.322	0.65636	0.35263
15	1.25	6.1538	5.4	0.037165	0.049	1.0761	0.32231	3.339	0.69919	0.37689
16	1.39	6.1973	5.4	0.023809	0.030	1.1329	0.33566	3.375	0.73429	0.39863
17	1.54	6.2406	5.4	0.01626	0.019	1.1838	0.34321	3.449	0.76351	0.4203
18	1.68	6.2827	5.4	0.0011614	0.001	1.241	0.35831	3.464	0.79968	0.44137
19	3.40	6.6831	5.4	-0.14924	-0.116	1.7918	0.50871	3.522	1.1503	0.64154
20	5.11	6.9742	5.4	-0.28048	-0.178	2.2141	0.63995	3.460	1.427	0.78708
21	5.97	7.103	5.4	-0.35075	-0.206	2.4132	0.71022	3.398	1.5617	0.85148
22	6.82	7.2241	5.4	-0.42624	-0.234	2.6098	0.78571	3.322	1.6978	0.91205
23	7.68	7.3407	5.4	-0.50754	-0.262	2.8077	0.86701	3.238	1.8374	0.97034
24	8.54	7.447	5.4	-0.58535	-0.286	2.9919	0.94482	3.167	1.9683	1.0235
25	9.39	7.5428	5.4	-0.66433	-0.310	3.1666	1.0238	3.093	2.0952	1.0714
26	10.25	7.6308	5.4	-0.73459	-0.329	3.3249	1.0941	3.039	2.2095	1.1154
27	11.11	7.7178	5.4	-0.80602	-0.348	3.4833	1.1655	2.989	2.3244	1.1589
28	11.96	7.8028	5.4	-0.86874	-0.362	3.6311	1.2282	2.956	2.4296	1.2014
29	12.83	7.8791	5.4	-0.93436	-0.377	3.7729	1.2938	2.916	2.5334	1.2396
30	13.68	7.9609	5.4	-0.99881	-0.390	3.9192	1.3583	2.885	2.6387	1.2804
31	14.53	8.0313	5.4	-1.0534	-0.400	4.0442	1.4129	2.862	2.7285	1.3156
32	15.39	8.0948	5.4	-1.1242	-0.417	4.1786	1.4837	2.816	2.8311	1.3474
33	14.53	8.0313	5.4	-1.0534	-0.400	4.0442	1.4129	2.862	2.7285	1.3156
34	15.39	8.0948	5.4	-1.1242	-0.417	4.1786	1.4837	2.816	2.8311	1.3474
35	15.39	8.0948	5.4	-1.1242	-0.417	4.1786	1.4837	2.816	2.8311	1.3474

TRI AXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-018 S-5  
 Sample No.: S-5  
 Test No.: 10.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 10.0' -12.0'  
 Elevation: -----



Soil Description: DARK GRAY TO GRAY FLY ASH WITH SAND AND GRAVEL

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D 4767

Specimen Height: 5.98 in  
 Specimen Area: 6.44 in<sup>2</sup>  
 Specimen Volume: 38.52 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: NP

Plastic Limit: NP

Estimated Specific Gravity: 2.30

	Time min	Vertical Strain %	Corrected Area in <sup>2</sup>	Deviator Load lb	Deviator Stress tsf	Pore Pressure tsf	Horizontal Stress tsf	Vertical Stress tsf
1	0	0	6.4448	0	0	5.0425	5.76	5.76
2	5.0003	0.049768	6.448	23.994	0.26792	5.0618	5.76	6.0279
3	10.001	0.11059	6.4519	35.036	0.39099	5.1571	5.76	6.151
4	15.001	0.17142	6.4558	40.066	0.44685	5.2185	5.76	6.2068
5	20.001	0.23225	6.4598	43.94	0.48975	5.2612	5.76	6.2498
6	25.001	0.29308	6.4637	47.12	0.52487	5.2851	5.76	6.2849
7	30.001	0.35667	6.4678	49.722	0.5535	5.3009	5.76	6.3135
8	35.001	0.42026	6.472	52.15	0.58016	5.3243	5.76	6.3402
9	40.001	0.48109	6.4759	54.289	0.60359	5.3424	5.76	6.3636
10	45.001	0.54191	6.4799	56.139	0.62378	5.3518	5.76	6.3838
11	50.001	0.60274	6.4839	58.047	0.64459	5.3483	5.76	6.4046
12	55.001	0.66633	6.488	59.84	0.66406	5.3535	5.76	6.4241
13	60.001	0.72716	6.492	61.69	0.68418	5.3582	5.76	6.4442
14	70.001	0.84881	6.4999	65.332	0.72368	5.3623	5.76	6.4837
15	80.002	0.97323	6.5081	68.859	0.76179	5.3541	5.76	6.5218
16	90.002	1.0949	6.5161	72.386	0.79983	5.3547	5.76	6.5598
17	100	1.2193	6.5243	75.739	0.83583	5.3325	5.76	6.5958
18	110	1.341	6.5324	79.324	0.87431	5.3348	5.76	6.6343
19	120	1.4626	6.5404	82.677	0.91014	5.3161	5.76	6.6701
20	180	2.2091	6.5904	102.22	1.1167	5.2623	5.76	6.8767
21	240	2.9529	6.6409	120.37	1.3051	5.1898	5.76	7.0651
22	300	3.6939	6.692	137.14	1.4755	5.1355	5.76	7.2355
23	360	4.4487	6.7448	153.62	1.6398	5.0642	5.76	7.3998
24	420	5.1869	6.7973	169.86	1.7993	4.9946	5.76	7.5593
25	480	5.9306	6.8511	185.76	1.9522	4.9349	5.76	7.7122
26	540	6.6882	6.9067	202.59	2.1119	4.8613	5.76	7.8719
27	600	7.4403	6.9628	215.48	2.2282	4.8022	5.76	7.9882
28	660	8.1785	7.0188	229.65	2.3557	4.7327	5.76	8.1157
29	720	8.9361	7.0772	243.12	2.4733	4.6707	5.76	8.2333
30	780	9.6881	7.1361	259.94	2.6227	4.6163	5.76	8.3827
31	840	10.432	7.1954	271.39	2.7156	4.5508	5.76	8.4756
32	900	11.189	7.2568	282.66	2.8045	4.5093	5.76	8.5645
33	960	11.933	7.3181	293.71	2.8897	4.4532	5.76	8.6497
34	1020	12.677	7.3804	303.94	2.9651	4.3942	5.76	8.7251
35	1080	13.443	7.4457	314.29	3.0392	4.3497	5.76	8.7992
36	1140	14.189	7.5105	320.82	3.0756	4.2708	5.76	8.8356
37	1200	14.939	7.5766	329.44	3.1306	4.2609	5.76	8.8906

TRI AXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-018 S-5  
 Sample No.: S-5  
 Test No.: 10.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 10.0' -12.0'  
 Elevation: -----



Soil Description: DARK GRAY TO GRAY FLY ASH WITH SAND AND GRAVEL

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D 4767

Specimen Height: 5.98 in  
 Specimen Area: 6.44 in<sup>2</sup>  
 Specimen Volume: 38.52 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: NP

Plastic Limit: NP

Estimated Specific Gravity: 2.30

	Vertical Strain %	Total Vertical Stress tsf	Total Horizontal Stress tsf	Excess Pore Pressure tsf	A Parameter	Effective Vertical Stress tsf	Effective Horizontal Stress tsf	Stress Ratio	Effective p tsf	q tsf
1	0.00	5.76	5.76	0	0.000	0.71748	0.71748	1.000	0.71748	0
2	0.05	6.0279	5.76	0.019293	0.072	0.96611	0.69819	1.384	0.83215	0.13396
3	0.11	6.151	5.76	0.11459	0.293	0.99388	0.60289	1.649	0.79839	0.19549
4	0.17	6.2068	5.76	0.17598	0.394	0.98835	0.5415	1.825	0.76493	0.22342
5	0.23	6.2498	5.76	0.21866	0.446	0.98858	0.49882	1.982	0.7437	0.24488
6	0.29	6.2849	5.76	0.24263	0.462	0.99973	0.47485	2.105	0.73729	0.26244
7	0.36	6.3135	5.76	0.25841	0.467	1.0126	0.45907	2.206	0.73582	0.27675
8	0.42	6.3402	5.76	0.2818	0.486	1.0158	0.43568	2.332	0.72577	0.29008
9	0.48	6.3636	5.76	0.29992	0.497	1.0212	0.41756	2.446	0.71936	0.3018
10	0.54	6.3838	5.76	0.30927	0.496	1.032	0.40821	2.528	0.7201	0.31189
11	0.60	6.4046	5.76	0.30577	0.474	1.0563	0.41171	2.566	0.73401	0.32229
12	0.67	6.4241	5.76	0.31103	0.468	1.0705	0.40645	2.634	0.73848	0.33203
13	0.73	6.4442	5.76	0.31571	0.461	1.0859	0.40177	2.703	0.74386	0.34209
14	0.85	6.4837	5.76	0.3198	0.442	1.1214	0.39768	2.820	0.75952	0.36184
15	0.97	6.5218	5.76	0.31161	0.409	1.1677	0.40587	2.877	0.78676	0.3809
16	1.09	6.5598	5.76	0.3122	0.390	1.2051	0.40528	2.974	0.8052	0.39991
17	1.22	6.5958	5.76	0.28998	0.347	1.2633	0.4275	2.955	0.84541	0.41791
18	1.34	6.6343	5.76	0.29232	0.334	1.2995	0.42516	3.056	0.86231	0.43715
19	1.46	6.6701	5.76	0.27361	0.301	1.354	0.44387	3.050	0.89894	0.45507
20	2.21	6.8767	5.76	0.21982	0.197	1.6144	0.49766	3.244	1.056	0.55837
21	2.95	7.0651	5.76	0.14733	0.113	1.8752	0.57015	3.289	1.2227	0.65254
22	3.69	7.2355	5.76	0.092958	0.063	2.1	0.62452	3.363	1.3623	0.73775
23	4.45	7.3998	5.76	0.021632	0.013	2.3357	0.69585	3.357	1.5158	0.81992
24	5.19	7.5593	5.76	-0.04794	-0.027	2.5647	0.76542	3.351	1.665	0.89963
25	5.93	7.7122	5.76	-0.10757	-0.055	2.7773	0.82505	3.366	1.8012	0.97612
26	6.69	7.8719	5.76	-0.18124	-0.086	3.0106	0.89872	3.350	1.9547	1.0559
27	7.44	7.9882	5.76	-0.24029	-0.108	3.186	0.95777	3.326	2.0719	1.1141
28	8.18	8.1157	5.76	-0.30986	-0.132	3.3831	1.0273	3.293	2.2052	1.1779
29	8.94	8.2333	5.76	-0.37183	-0.150	3.5627	1.0893	3.271	2.326	1.2367
30	9.69	8.3827	5.76	-0.4262	-0.163	3.7664	1.1437	3.293	2.455	1.3113
31	10.43	8.4756	5.76	-0.49168	-0.181	3.9248	1.2092	3.246	2.567	1.3578
32	11.19	8.5645	5.76	-0.53319	-0.190	4.0552	1.2507	3.242	2.6529	1.4023
33	11.93	8.6497	5.76	-0.58932	-0.204	4.1965	1.3068	3.211	2.7516	1.4448
34	12.68	8.7251	5.76	-0.64837	-0.219	4.3309	1.3658	3.171	2.8484	1.4826
35	13.44	8.7992	5.76	-0.6928	-0.228	4.4495	1.4103	3.155	2.9299	1.5196
36	14.19	8.8356	5.76	-0.77172	-0.251	4.5648	1.4892	3.065	3.027	1.5378
37	14.94	8.8906	5.76	-0.78166	-0.250	4.6297	1.4991	3.088	3.0644	1.5653

TRI AXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-018 S-5  
 Sample No.: S-5  
 Test No.: 20.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 10.0' -12.0'  
 Elevation: ----



Soil Description: DARK GRAY TO GRAY FLY ASH WITH SAND AND GRAVEL  
 Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767

Specimen Height: 5.98 in  
 Specimen Area: 6.33 in<sup>2</sup>  
 Specimen Volume: 37.84 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: NP

Plastic Limit: NP

Estimated Specific Gravity: 2.30

	Time min	Vertical Strain %	Corrected Area in <sup>2</sup>	Deviator Load lb	Deviator Stress tsf	Pore Pressure tsf	Horizontal Stress tsf	Vertical Stress tsf
1	0	0	6.3319	0	0	5.0416	6.48	6.48
2	5.0042	0.056979	6.3355	29.948	0.34034	5.2096	6.48	6.8203
3	10	0.13295	6.3403	49.51	0.56223	5.3192	6.48	7.0422
4	15	0.21525	6.3456	61.928	0.70267	5.3921	6.48	7.1827
5	20	0.29756	6.3508	69.621	0.78931	5.4364	6.48	7.2693
6	25.001	0.38619	6.3564	75.886	0.85956	5.4656	6.48	7.3396
7	30.001	0.47483	6.3621	81.545	0.92285	5.4878	6.48	7.4028
8	35.001	0.56557	6.3679	86.436	0.9773	5.5041	6.48	7.4573
9	40.001	0.65843	6.3739	90.997	1.0279	5.5169	6.48	7.5079
10	45.001	0.74495	6.3794	95.503	1.0779	5.5315	6.48	7.5579
11	50.001	0.83147	6.385	99.844	1.1259	5.542	6.48	7.6059
12	55.001	0.92011	6.3907	103.8	1.1694	5.5484	6.48	7.6494
13	60.001	1.0109	6.3966	108.03	1.216	5.5542	6.48	7.696
14	70.001	1.1902	6.4082	115.39	1.2965	5.5577	6.48	7.7765
15	80.001	1.3675	6.4197	122.54	1.3743	5.5636	6.48	7.8543
16	90.001	1.549	6.4315	129.41	1.4487	5.5618	6.48	7.9287
17	100	1.7305	6.4434	135.73	1.5166	5.5554	6.48	7.9966
18	110	1.9077	6.455	142.76	1.5923	5.5513	6.48	8.0723
19	120	2.0892	6.467	149.96	1.6695	5.5432	6.48	8.1495
20	180	3.1824	6.54	186.55	2.0538	5.4534	6.48	8.5338
21	240	4.2755	6.6147	219.03	2.3841	5.3286	6.48	8.8641
22	300	5.3666	6.691	245.68	2.6437	5.1956	6.48	9.1237
23	360	6.4598	6.7692	268.26	2.8534	5.0626	6.48	9.3334
24	420	7.5571	6.8495	286.18	3.0082	4.9442	6.48	9.4882
25	480	8.6482	6.9313	301.84	3.1354	4.8206	6.48	9.6154
26	540	9.7392	7.0151	315.3	3.2361	4.7168	6.48	9.7161
27	600	10.837	7.1015	326.51	3.3104	4.6235	6.48	9.7904
28	660	11.93	7.1896	336.18	3.3667	4.5436	6.48	9.8467
29	720	13.031	7.2807	344.26	3.4045	4.4736	6.48	9.8845
30	780	14.125	7.3733	350.25	3.4202	4.4165	6.48	9.9002
31	840	15.213	7.468	356.46	3.4366	4.3692	6.48	9.9166

TRI AXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-018 S-5  
 Sample No.: S-5  
 Test No.: 20.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 10.0' -12.0'  
 Elevation: ----



Soil Description: DARK GRAY TO GRAY FLY ASH WITH SAND AND GRAVEL  
 Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767

Specimen Height: 5.98 in  
 Specimen Area: 6.33 in<sup>2</sup>  
 Specimen Volume: 37.84 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

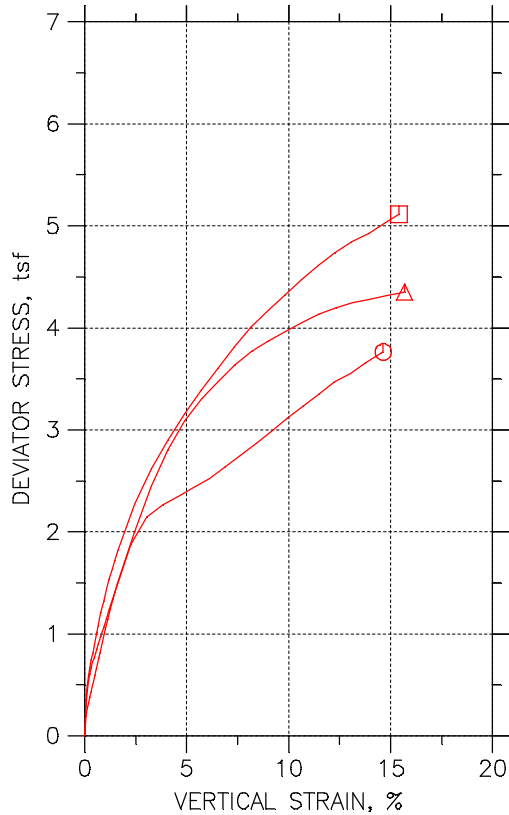
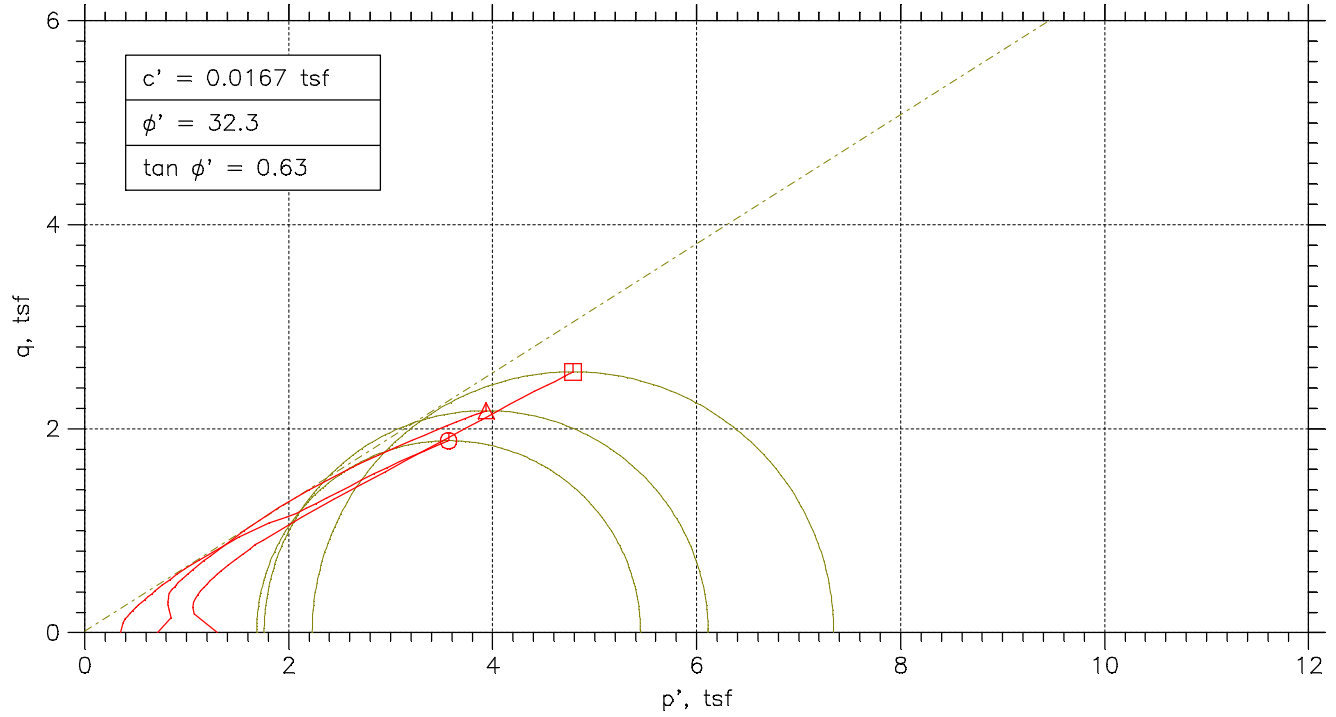
Liquid Limit: NP

Plastic Limit: NP

Estimated Specific Gravity: 2.30

	Vertical Strain %	Total Vertical Stress tsf	Total Horizontal Stress tsf	Excess Pore Pressure tsf	A Parameter	Effective Vertical Stress tsf	Effective Horizontal Stress tsf	Stress Ratio	Effective p tsf	q tsf
1	0.00	6.48	6.48	0	0.000	1.4384	1.4384	1.000	1.4384	0
2	0.06	6.8203	6.48	0.16796	0.493	1.6108	1.2704	1.268	1.4406	0.17017
3	0.13	7.0422	6.48	0.2776	0.494	1.723	1.1608	1.484	1.4419	0.28111
4	0.22	7.1827	6.48	0.35049	0.499	1.7906	1.0879	1.646	1.4392	0.35134
5	0.30	7.2693	6.48	0.39482	0.500	1.8329	1.0436	1.756	1.4382	0.39465
6	0.39	7.3396	6.48	0.42397	0.493	1.874	1.0144	1.847	1.4442	0.42978
7	0.47	7.4028	6.48	0.44614	0.483	1.9151	0.99224	1.930	1.4537	0.46142
8	0.57	7.4573	6.48	0.46246	0.473	1.9532	0.97591	2.001	1.4646	0.48865
9	0.66	7.5079	6.48	0.47529	0.462	1.991	0.96308	2.067	1.477	0.51396
10	0.74	7.5579	6.48	0.48987	0.454	2.0264	0.9485	2.136	1.4874	0.53893
11	0.83	7.6059	6.48	0.50037	0.444	2.0639	0.938	2.200	1.5009	0.56294
12	0.92	7.6494	6.48	0.50679	0.433	2.101	0.93159	2.255	1.5163	0.58472
13	1.01	7.696	6.48	0.51262	0.422	2.1418	0.92576	2.314	1.5338	0.608
14	1.19	7.7765	6.48	0.51612	0.398	2.2188	0.92226	2.406	1.5705	0.64827
15	1.37	7.8543	6.48	0.52195	0.380	2.2907	0.91643	2.500	1.6036	0.68716
16	1.55	7.9287	6.48	0.5202	0.359	2.3669	0.91818	2.578	1.6425	0.72434
17	1.73	7.9966	6.48	0.51378	0.339	2.4412	0.92459	2.640	1.6829	0.75832
18	1.91	8.0723	6.48	0.5097	0.320	2.521	0.92867	2.715	1.7248	0.79617
19	2.09	8.1495	6.48	0.50154	0.300	2.6064	0.93684	2.782	1.7716	0.83477
20	3.18	8.5338	6.48	0.41173	0.200	3.0804	1.0266	3.000	2.0535	1.0269
21	4.28	8.8641	6.48	0.28693	0.120	3.5355	1.1514	3.071	2.3435	1.192
22	5.37	9.1237	6.48	0.15396	0.058	3.9281	1.2844	3.058	2.6063	1.3219
23	6.46	9.3334	6.48	0.020995	0.007	4.2708	1.4174	3.013	2.8441	1.4267
24	7.56	9.4882	6.48	-0.097392	-0.032	4.544	1.5358	2.959	3.0399	1.5041
25	8.65	9.6154	6.48	-0.22103	-0.070	4.7948	1.6594	2.889	3.2271	1.5677
26	9.74	9.7161	6.48	-0.32483	-0.100	4.9993	1.7632	2.835	3.3813	1.6181
27	10.84	9.7904	6.48	-0.41814	-0.126	5.1669	1.8565	2.783	3.5117	1.6552
28	11.93	9.8467	6.48	-0.49804	-0.148	5.3031	1.9364	2.739	3.6198	1.6833
29	13.03	9.8845	6.48	-0.56802	-0.167	5.4109	2.0064	2.697	3.7086	1.7022
30	14.12	9.9002	6.48	-0.62517	-0.183	5.4837	2.0635	2.657	3.7736	1.7101
31	15.21	9.9166	6.48	-0.67241	-0.196	5.5474	2.1108	2.628	3.8291	1.7183

# CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST ASTM D4767



Symbol	⊖	△	□	
Test No.	5.0 PSI	10.0 PSI	20.0 PSI	
Initial	Diameter, in	2.813	2.7921	2.8256
	Height, in	6.0902	5.9878	6.0303
	Water Content, %	8.98	11.83	8.88
	Dry Density, pcf	128.2	127.1	126.
	Saturation, %	75.28	95.64	69.49
Before Shear	Void Ratio	0.32442	0.33638	0.34747
	Water Content, %	13.14	12.04	11.49
	Dry Density, pcf	125.1	127.9	129.4
	Saturation, %	100.00	100.00	100.00
	Void Ratio	0.35748	0.32749	0.31248
Back Press., tsf	5.0458	5.0445	5.1811	
Minor Prin. Stress, tsf	0.35425	0.71546	1.2989	
Max. Dev. Stress, tsf	3.764	4.3529	5.114	
Time to Failure, min	1147.2	1143.8	1128.7	
Strain Rate, %/min	0.02	0.02	0.02	
B-Value	<b>0.95</b>	<b>0.97</b>	<b>0.95</b>	
Estimated Specific Gravity	2.72	2.72	2.72	
Liquid Limit	22	22	22	
Plastic Limit	15	15	15	
Plasticity Index	7	7	7	
Failure Sketch				

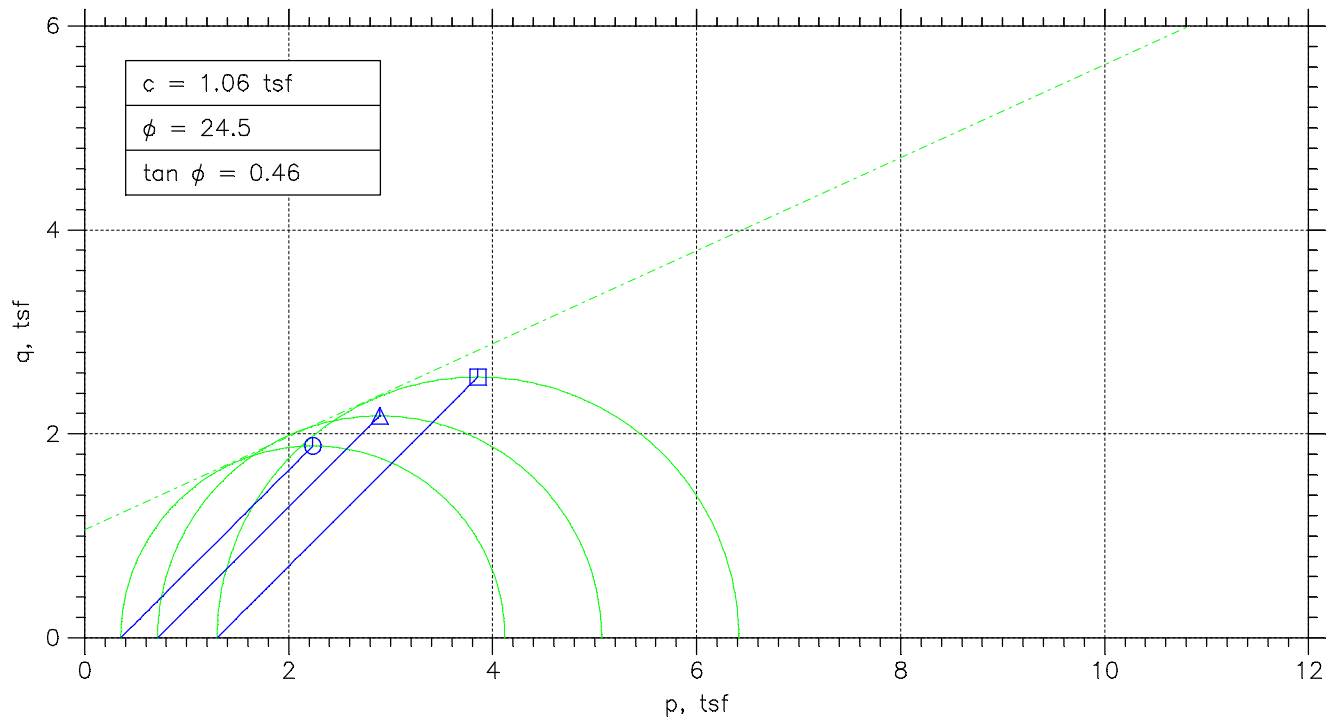
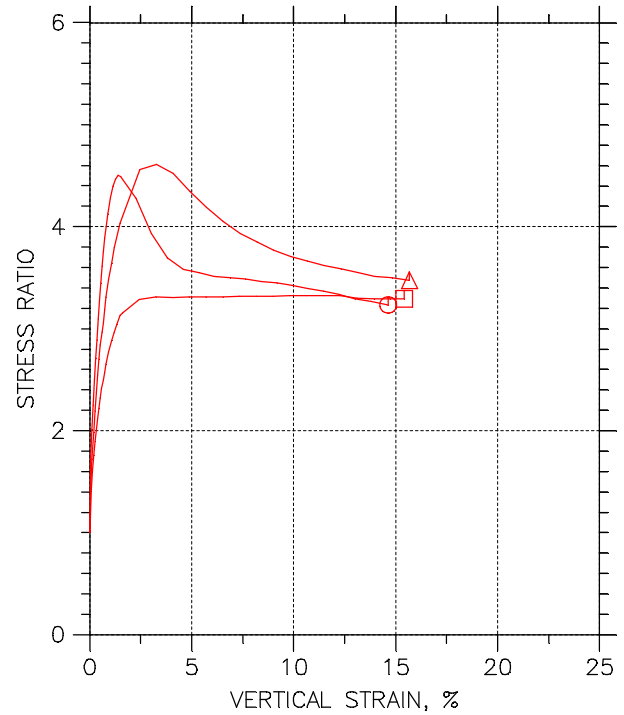
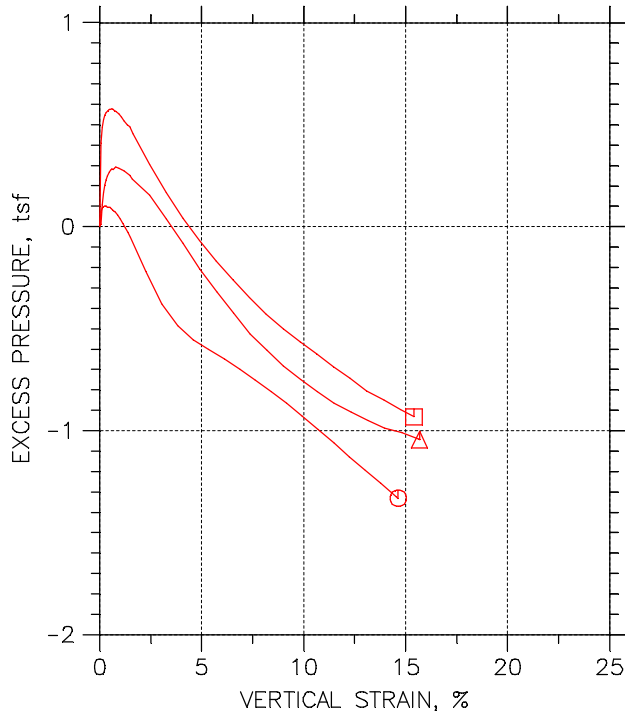
Project: DYNERGY HENNEPIN  
 Location: HENNEPIN, IL  
 Project No.: MR155233  
 Boring No.: HEN-029 S-3  
 Sample Type: 3.0" ST

Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.



# CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST ASTM D4767



Project: DYNERGY HENNEPIN	Location: HENNEPIN, IL	Project No.: MR155233
Boring No.: HEN-029 S-3	Tested By: BCM	Checked By: WPQ
Sample No.: S-3	Test Date: 12/17/15	Depth: 5.0'-7.0'
Test No.: HEN-029 S-3	Sample Type: 3.0" ST	Elevation: ----
Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL		
Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.		

TRI AXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-029 S-3  
 Sample No.: S-3  
 Test No.: 5.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/17/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 5.0' -7.0'  
 Elevation: ----



Soil Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.

Specimen Height: 6.09 in  
 Specimen Area: 6.21 in<sup>2</sup>  
 Specimen Volume: 37.85 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: 22

Plastic Limit: 15

Estimated Specific Gravity: 2.72

	Time min	Vertical Strain %	Corrected Area in <sup>2</sup>	Deviator Load lb	Deviator Stress tsf	Pore Pressure tsf	Horizontal Stress tsf	Vertical Stress tsf
1	0	0	6.2148	0	0	5.0458	5.4	5.4
2	5.0035	0.055219	6.2182	17.005	0.1969	5.1201	5.4	5.5969
3	10.003	0.11893	6.2222	23.059	0.26683	5.1363	5.4	5.6668
4	15.003	0.17981	6.226	27.85	0.32207	5.1427	5.4	5.7221
5	20.003	0.24353	6.23	32.852	0.37967	5.1462	5.4	5.7797
6	25.003	0.30866	6.234	37.643	0.43475	5.1462	5.4	5.8348
7	30.003	0.37237	6.238	42.276	0.48795	5.1422	5.4	5.8879
8	35.003	0.43609	6.242	46.961	0.54168	5.1422	5.4	5.9417
9	40.003	0.49838	6.2459	51.752	0.59657	5.1392	5.4	5.9966
10	45.003	0.5621	6.2499	56.385	0.64956	5.1346	5.4	6.0496
11	50.003	0.6244	6.2538	61.386	0.70674	5.1294	5.4	6.1067
12	55.003	0.68811	6.2579	66.335	0.76322	5.123	5.4	6.1632
13	60.003	0.75041	6.2618	71.126	0.81783	5.1172	5.4	6.2178
14	70.003	0.87784	6.2698	80.918	0.92923	5.1027	5.4	6.3292
15	80.003	1.0067	6.278	90.553	1.0385	5.0835	5.4	6.4385
16	90.003	1.1341	6.2861	99.661	1.1415	5.0638	5.4	6.5415
17	100	1.2601	6.2941	108.72	1.2436	5.0411	5.4	6.6436
18	110	1.3904	6.3024	117.14	1.3382	5.0179	5.4	6.7382
19	120	1.5164	6.3105	124.88	1.4248	4.9917	5.4	6.8248
20	180	2.271	6.3592	165.63	1.8753	4.828	5.4	7.2753
21	240	3.037	6.4095	191.27	2.1486	4.6677	5.4	7.5486
22	300	3.8158	6.4613	203.48	2.2674	4.5591	5.4	7.6674
23	360	4.5789	6.513	212.11	2.3449	4.4923	5.4	7.7449
24	420	5.3421	6.5655	222.17	2.4364	4.4447	5.4	7.8364
25	480	6.1095	6.6192	231.96	2.5232	4.3959	5.4	7.9232
26	540	6.874	6.6735	244.18	2.6344	4.346	5.4	8.0344
27	600	7.6386	6.7288	257.13	2.7513	4.2926	5.4	8.1513
28	660	8.4116	6.7856	270.03	2.8652	4.2357	5.4	8.2652
29	720	9.1663	6.842	283.82	2.9867	4.1793	5.4	8.3867
30	780	9.9295	6.8999	298.25	3.1122	4.1172	5.4	8.5122
31	840	10.708	6.9601	312.3	3.2307	4.051	5.4	8.6307
32	900	11.471	7.0201	326.83	3.3521	3.986	5.4	8.7521
33	960	12.232	7.0809	340.94	3.4668	3.9169	5.4	8.8668
34	1020	13.009	7.1442	352.31	3.5507	3.8512	5.4	8.9507
35	1080	13.774	7.2075	366.11	3.6572	3.7891	5.4	9.0572
36	1140	14.538	7.272	379.11	3.7536	3.7217	5.4	9.1536
37	1147.2	14.632	7.28	380.59	3.764	3.7142	5.4	9.164

TRIAXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-029 S-3  
 Sample No.: S-3  
 Test No.: 5.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/17/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 5.0' -7.0'  
 Elevation: ----



Soil Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.

Specimen Height: 6.09 in  
 Specimen Area: 6.21 in<sup>2</sup>  
 Specimen Volume: 37.85 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: 22

Plastic Limit: 15

Estimated Specific Gravity: 2.72

	Vertical Strain %	Total Vertical Stress tsf	Total Horizontal Stress tsf	Excess Pore Pressure tsf	A Parameter	Effective Vertical Stress tsf	Effective Horizontal Stress tsf	Stress Ratio	Effective p tsf	q tsf
1	0.00	5.4	5.4	0	0.000	0.35425	0.35425	1.000	0.35425	0
2	0.06	5.5969	5.4	0.07433	0.378	0.47681	0.27992	1.703	0.37837	0.098449
3	0.12	5.6668	5.4	0.09059	0.340	0.53049	0.26366	2.012	0.39707	0.13342
4	0.18	5.7221	5.4	0.096978	0.301	0.57934	0.25727	2.252	0.4183	0.16104
5	0.24	5.7797	5.4	0.10046	0.265	0.63345	0.25378	2.496	0.44362	0.18983
6	0.31	5.8348	5.4	0.10046	0.231	0.68854	0.25378	2.713	0.47116	0.21738
7	0.37	5.8879	5.4	0.096397	0.198	0.7458	0.25785	2.892	0.50182	0.24397
8	0.44	5.9417	5.4	0.096397	0.178	0.79953	0.25785	3.101	0.52869	0.27084
9	0.50	5.9966	5.4	0.093494	0.157	0.85732	0.26075	3.288	0.55904	0.29829
10	0.56	6.0496	5.4	0.088848	0.137	0.91496	0.2654	3.447	0.59018	0.32478
11	0.62	6.1067	5.4	0.083622	0.118	0.97736	0.27062	3.611	0.62399	0.35337
12	0.69	6.1632	5.4	0.077234	0.101	1.0402	0.27701	3.755	0.65862	0.38161
13	0.75	6.2178	5.4	0.071427	0.087	1.1007	0.28282	3.892	0.69173	0.40892
14	0.88	6.3292	5.4	0.056909	0.061	1.2266	0.29734	4.125	0.76195	0.46462
15	1.01	6.4385	5.4	0.037746	0.036	1.355	0.3165	4.281	0.83576	0.51926
16	1.13	6.5415	5.4	0.018002	0.016	1.4777	0.33624	4.395	0.907	0.57075
17	1.26	6.6436	5.4	-0.0046456	-0.004	1.6025	0.35889	4.465	0.98071	0.62182
18	1.39	6.7382	5.4	-0.027874	-0.021	1.7203	0.38212	4.502	1.0512	0.66911
19	1.52	6.8248	5.4	-0.054006	-0.038	1.8331	0.40825	4.490	1.1207	0.71241
20	2.27	7.2753	5.4	-0.21776	-0.116	2.4473	0.57201	4.278	1.5096	0.93763
21	3.04	7.5486	5.4	-0.37804	-0.176	2.8809	0.73229	3.934	1.8066	1.0743
22	3.82	7.6674	5.4	-0.48663	-0.215	3.1083	0.84088	3.696	1.9746	1.1337
23	4.58	7.7449	5.4	-0.55341	-0.236	3.2525	0.90766	3.583	2.0801	1.1724
24	5.34	7.8364	5.4	-0.60103	-0.247	3.3917	0.95528	3.550	2.1735	1.2182
25	6.11	7.9232	5.4	-0.64981	-0.258	3.5272	1.0041	3.513	2.2656	1.2616
26	6.87	8.0344	5.4	-0.69975	-0.266	3.6884	1.054	3.499	2.3712	1.3172
27	7.64	8.1513	5.4	-0.75318	-0.274	3.8588	1.1074	3.484	2.4831	1.3757
28	8.41	8.2652	5.4	-0.81008	-0.283	4.0295	1.1643	3.461	2.5969	1.4326
29	9.17	8.3867	5.4	-0.86641	-0.290	4.2074	1.2207	3.447	2.714	1.4934
30	9.93	8.5122	5.4	-0.92855	-0.298	4.395	1.2828	3.426	2.8389	1.5561
31	10.71	8.6307	5.4	-0.99475	-0.308	4.5797	1.349	3.395	2.9643	1.6153
32	11.47	8.7521	5.4	-1.0598	-0.316	4.7661	1.414	3.371	3.0901	1.676
33	12.23	8.8668	5.4	-1.1289	-0.326	4.9499	1.4831	3.337	3.2165	1.7334
34	13.01	8.9507	5.4	-1.1945	-0.336	5.0994	1.5488	3.293	3.3241	1.7753
35	13.77	9.0572	5.4	-1.2566	-0.344	5.2681	1.6109	3.270	3.4395	1.8286
36	14.54	9.1536	5.4	-1.324	-0.353	5.4318	1.6783	3.237	3.555	1.8768
37	14.63	9.164	5.4	-1.3316	-0.354	5.4499	1.6858	3.233	3.5678	1.882

TRIAXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-029 S-3  
 Sample No.: S-3  
 Test No.: 10.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/17/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 5.0' -7.0'  
 Elevation: ----



Soil Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.

Specimen Height: 5.99 in  
 Specimen Area: 6.12 in<sup>2</sup>  
 Specimen Volume: 36.66 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: 22

Plastic Limit: 15

Estimated Specific Gravity: 2.72

	Time min	Vertical Strain %	Corrected Area in <sup>2</sup>	Deviator Load lb	Deviator Stress tsf	Pore Pressure tsf	Horizontal Stress tsf	Vertical Stress tsf
1	0	0	6.1229	0	0	5.0445	5.76	5.76
2	5.0033	0.057527	6.1265	25.039	0.29426	5.058	5.76	6.0543
3	10.003	0.12145	6.1304	37.584	0.44142	5.1518	5.76	6.2014
4	15.003	0.19176	6.1347	45.895	0.53865	5.2102	5.76	6.2986
5	20.003	0.25727	6.1387	52.089	0.61094	5.2487	5.76	6.3709
6	25.003	0.32599	6.143	57.012	0.66822	5.2731	5.76	6.4282
7	30.003	0.3931	6.1471	61.458	0.71985	5.2947	5.76	6.4799
8	35.003	0.46021	6.1512	65.375	0.76522	5.3111	5.76	6.5252
9	40.003	0.52573	6.1553	69.134	0.80868	5.321	5.76	6.5687
10	45.003	0.59444	6.1596	72.945	0.85267	5.3262	5.76	6.6127
11	50.003	0.66316	6.1638	76.651	0.89536	5.3239	5.76	6.6554
12	55.003	0.72867	6.1679	80.356	0.93803	5.3315	5.76	6.698
13	60.003	0.79898	6.1723	84.009	0.97997	5.3355	5.76	6.74
14	70.003	0.93481	6.1807	91.314	1.0637	5.3309	5.76	6.8237
15	80.003	1.0674	6.189	98.884	1.1504	5.3251	5.76	6.9104
16	90.003	1.2049	6.1976	106.24	1.2343	5.3186	5.76	6.9943
17	110	1.4781	6.2148	121.28	1.405	5.2971	5.76	7.165
18	120	1.6155	6.2235	129.06	1.4931	5.2784	5.76	7.2531
19	180	2.4465	6.2765	174.42	2.0009	5.1979	5.76	7.7609
20	240	3.2615	6.3294	215.08	2.4466	5.0819	5.76	8.2066
21	300	4.0812	6.3835	248.9	2.8074	4.9623	5.76	8.5674
22	360	4.909	6.439	275.85	3.0845	4.8381	5.76	8.8445
23	420	5.7319	6.4952	298.08	3.3042	4.7238	5.76	9.0642
24	480	6.5549	6.5524	316.61	3.479	4.6206	5.76	9.239
25	540	7.3826	6.611	334.34	3.6413	4.5173	5.76	9.4013
26	600	8.1976	6.6697	349.06	3.7681	4.4392	5.76	9.5281
27	660	9.0189	6.7299	362.08	3.8737	4.3628	5.76	9.6337
28	720	9.8547	6.7923	374.04	3.9649	4.2946	5.76	9.7249
29	780	10.668	6.8541	386.11	4.056	4.2374	5.76	9.816
30	840	11.485	6.9174	397.49	4.1373	4.1808	5.76	9.8973
31	900	12.324	6.9836	407.45	4.2007	4.1354	5.76	9.9607
32	960	13.15	7.05	415.97	4.2482	4.0945	5.76	10.008
33	1020	13.976	7.1177	423.01	4.279	4.0578	5.76	10.039
34	1080	14.808	7.1873	430.74	4.315	4.0345	5.76	10.075
35	1140	15.625	7.2568	438.47	4.3503	4.003	5.76	10.11
36	1143.8	15.678	7.2613	438.99	4.3529	4.0001	5.76	10.113

TRIAXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-029 S-3  
 Sample No.: S-3  
 Test No.: 10.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/17/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 5.0' -7.0'  
 Elevation: ----



Soil Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.

Specimen Height: 5.99 in  
 Specimen Area: 6.12 in<sup>2</sup>  
 Specimen Volume: 36.66 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: 22

Plastic Limit: 15

Estimated Specific Gravity: 2.72

	Vertical Strain %	Total Vertical Stress tsf	Total Horizontal Stress tsf	Excess Pore Pressure tsf	A Parameter	Effective Vertical Stress tsf	Effective Horizontal Stress tsf	Stress Ratio	Effective p tsf	q tsf
1	0.00	5.76	5.76	0	0.000	0.71546	0.71546	1.000	0.71546	0
2	0.06	6.0543	5.76	0.013413	0.046	0.99631	0.70205	1.419	0.84918	0.14713
3	0.12	6.2014	5.76	0.10731	0.243	1.0496	0.60815	1.726	0.82886	0.22071
4	0.19	6.2986	5.76	0.16562	0.307	1.0885	0.54984	1.980	0.81916	0.26932
5	0.26	6.3709	5.76	0.20411	0.334	1.1223	0.51135	2.195	0.81681	0.30547
6	0.33	6.4282	5.76	0.22861	0.342	1.1551	0.48685	2.373	0.82096	0.33411
7	0.39	6.4799	5.76	0.25019	0.348	1.1851	0.46527	2.547	0.8252	0.35993
8	0.46	6.5252	5.76	0.26651	0.348	1.2142	0.44895	2.704	0.83155	0.38261
9	0.53	6.5687	5.76	0.27643	0.342	1.2477	0.43903	2.842	0.84337	0.40434
10	0.59	6.6127	5.76	0.28168	0.330	1.2865	0.43378	2.966	0.86012	0.42633
11	0.66	6.6554	5.76	0.27935	0.312	1.3315	0.43612	3.053	0.8838	0.44768
12	0.73	6.698	5.76	0.28693	0.306	1.3666	0.42853	3.189	0.89755	0.46901
13	0.80	6.74	5.76	0.29101	0.297	1.4044	0.42445	3.309	0.91444	0.48999
14	0.93	6.8237	5.76	0.28634	0.269	1.4928	0.42912	3.479	0.96098	0.53186
15	1.07	6.9104	5.76	0.28051	0.244	1.5853	0.43495	3.645	1.0101	0.57518
16	1.20	6.9943	5.76	0.2741	0.222	1.6756	0.44136	3.796	1.0585	0.61713
17	1.48	7.165	5.76	0.25252	0.180	1.8679	0.46294	4.035	1.1654	0.7025
18	1.62	7.2531	5.76	0.23386	0.157	1.9747	0.4816	4.100	1.2281	0.74654
19	2.45	7.7609	5.76	0.15338	0.077	2.563	0.56208	4.560	1.5625	1.0004
20	3.26	8.2066	5.76	0.037324	0.015	3.1248	0.67814	4.608	1.9014	1.2233
21	4.08	8.5674	5.76	-0.082229	-0.029	3.6051	0.79769	4.519	2.2014	1.4037
22	4.91	8.8445	5.76	-0.20645	-0.067	4.0064	0.92191	4.346	2.4641	1.5422
23	5.73	9.0642	5.76	-0.32075	-0.097	4.3404	1.0362	4.189	2.6883	1.6521
24	6.55	9.239	5.76	-0.42397	-0.122	4.6184	1.1394	4.053	2.8789	1.7395
25	7.38	9.4013	5.76	-0.5272	-0.145	4.8839	1.2427	3.930	3.0633	1.8206
26	8.20	9.5281	5.76	-0.60534	-0.161	5.0889	1.3208	3.853	3.2049	1.8841
27	9.02	9.6337	5.76	-0.68174	-0.176	5.2709	1.3972	3.772	3.3341	1.9369
28	9.85	9.7249	5.76	-0.74997	-0.189	5.4304	1.4654	3.706	3.4479	1.9825
29	10.67	9.816	5.76	-0.80713	-0.199	5.5785	1.5226	3.664	3.5506	2.028
30	11.48	9.8973	5.76	-0.8637	-0.209	5.7165	1.5792	3.620	3.6478	2.0687
31	12.32	9.9607	5.76	-0.90918	-0.216	5.8254	1.6246	3.586	3.725	2.1004
32	13.15	10.008	5.76	-0.95001	-0.224	5.9137	1.6655	3.551	3.7896	2.1241
33	13.98	10.039	5.76	-0.98675	-0.231	5.9812	1.7022	3.514	3.8417	2.1395
34	14.81	10.075	5.76	-1.0101	-0.234	6.0405	1.7255	3.501	3.883	2.1575
35	15.62	10.11	5.76	-1.0416	-0.239	6.1074	1.757	3.476	3.9322	2.1752
36	15.68	10.113	5.76	-1.0445	-0.240	6.1128	1.7599	3.473	3.9364	2.1764

TRIAXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-029 S-3  
 Sample No.: S-3  
 Test No.: 20.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/17/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 5.0' -7.0'  
 Elevation: ----



Soil Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.

Specimen Height: 6.03 in  
 Specimen Area: 6.27 in<sup>2</sup>  
 Specimen Volume: 37.81 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: 22

Plastic Limit: 15

Estimated Specific Gravity: 2.72

	Time min	Vertical Strain %	Corrected Area in <sup>2</sup>	Deviator Load lb	Deviator Stress tsf	Pore Pressure tsf	Horizontal Stress tsf	Vertical Stress tsf
1	0	0	6.2706	0	0	5.1811	6.48	6.48
2	5.0002	0.061721	6.2745	31.946	0.36658	5.5924	6.48	6.8466
3	10	0.12796	6.2786	43.274	0.49624	5.6668	6.48	6.9762
4	15	0.19419	6.2828	51.605	0.59138	5.7058	6.48	7.0714
5	20	0.26043	6.287	58.557	0.67061	5.7267	6.48	7.1506
6	25	0.32817	6.2912	65.03	0.74424	5.7413	6.48	7.2242
7	30	0.39441	6.2954	71.383	0.8164	5.7511	6.48	7.2964
8	35	0.45914	6.2995	77.257	0.88301	5.7558	6.48	7.363
9	40	0.52538	6.3037	83.31	0.95156	5.7575	6.48	7.4316
10	45	0.59312	6.308	89.244	1.0186	5.7587	6.48	7.4986
11	50	0.66086	6.3123	94.878	1.0822	5.7558	6.48	7.5622
12	55	0.72861	6.3166	100.57	1.1464	5.7511	6.48	7.6264
13	60	0.79635	6.3209	106.15	1.2091	5.7477	6.48	7.6891
14	70	0.93334	6.3297	116.22	1.3219	5.7337	6.48	7.8019
15	80.001	1.0688	6.3383	126.22	1.4338	5.718	6.48	7.9138
16	90.001	1.2043	6.347	135.51	1.5373	5.6994	6.48	8.0173
17	100	1.3428	6.3559	144.26	1.6342	5.6796	6.48	8.1142
18	110	1.4798	6.3648	152.18	1.7215	5.6726	6.48	8.2015
19	120	1.6183	6.3737	160.81	1.8165	5.6371	6.48	8.2965
20	180	2.4372	6.4272	202.52	2.2687	5.4865	6.48	8.7487
21	240	3.2501	6.4812	235.37	2.6147	5.3475	6.48	9.0947
22	300	4.0781	6.5372	263.42	2.9013	5.2224	6.48	9.3813
23	360	4.8865	6.5927	289.19	3.1583	5.1119	6.48	9.6383
24	420	5.7054	6.65	313.16	3.3906	5.0119	6.48	9.8706
25	480	6.5349	6.709	335.88	3.6046	4.92	6.48	10.085
26	540	7.3478	6.7679	358.41	3.813	4.8328	6.48	10.293
27	600	8.1637	6.828	379.99	4.0069	4.7525	6.48	10.487
28	660	8.9992	6.8907	399.41	4.1734	4.6792	6.48	10.653
29	720	9.8151	6.953	417.75	4.3259	4.6164	6.48	10.806
30	780	10.631	7.0165	435.67	4.4706	4.5565	6.48	10.951
31	840	11.459	7.0821	453.83	4.6139	4.4954	6.48	11.094
32	900	12.269	7.1475	470.55	4.7401	4.4396	6.48	11.22
33	960	13.094	7.2154	485.54	4.8451	4.3744	6.48	11.325
34	1020	13.928	7.2853	498.42	4.9259	4.3314	6.48	11.406
35	1080	14.742	7.3549	513.89	5.0307	4.2854	6.48	11.511
36	1128.7	15.412	7.4131	526.53	5.114	4.2494	6.48	11.594

TRIAXIAL TEST

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-029 S-3  
 Sample No.: S-3  
 Test No.: 20.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/17/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPO  
 Depth: 5.0' -7.0'  
 Elevation: ----



Soil Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767.

Specimen Height: 6.03 in  
 Specimen Area: 6.27 in<sup>2</sup>  
 Specimen Volume: 37.81 in<sup>3</sup>

Piston Area: 0.00 in<sup>2</sup>  
 Piston Friction: 0.00 lb  
 Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 tsf  
 Membrane Correction: 0.00 lb/in  
 Correction Type: Uni form

Liquid Limit: 22

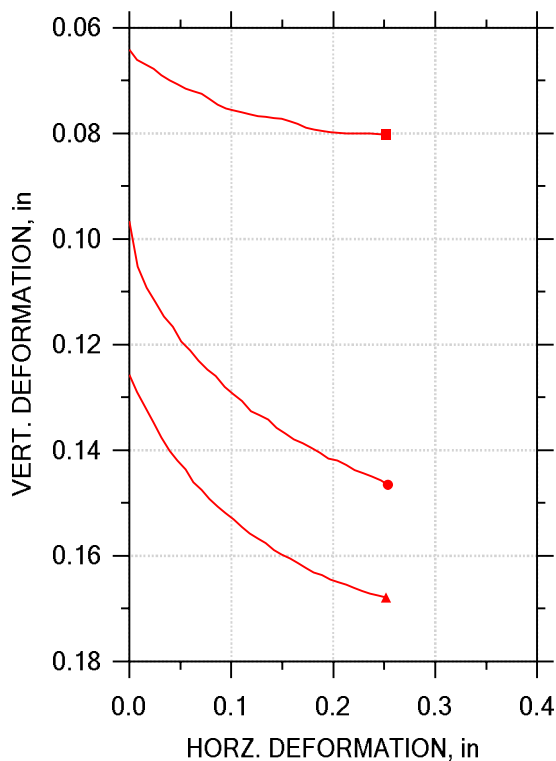
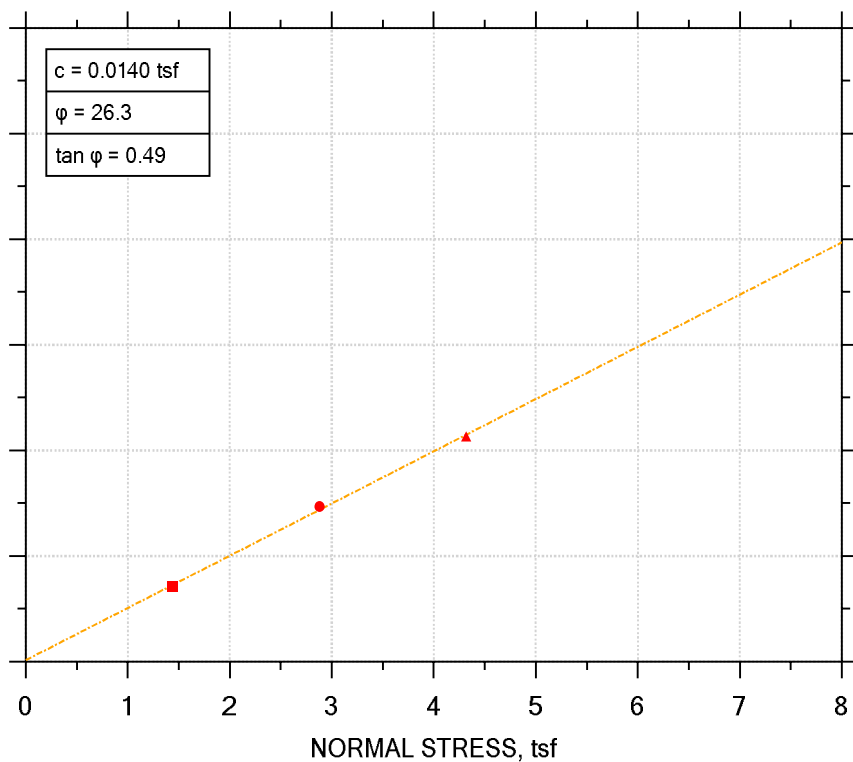
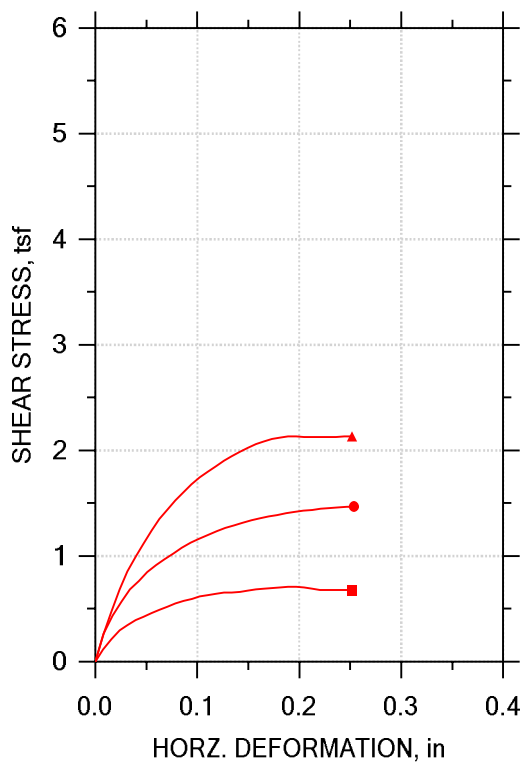
Plastic Limit: 15

Estimated Specific Gravity: 2.72

	Vertical Strain %	Total Vertical Stress tsf	Total Horizontal Stress tsf	Excess Pore Pressure tsf	A Parameter	Effective Vertical Stress tsf	Effective Horizontal Stress tsf	Stress Ratio	Effective p tsf	q tsf
1	0.00	6.48	6.48	0	0.000	1.2989	1.2989	1.000	1.2989	0
2	0.06	6.8466	6.48	0.41121	1.122	1.2542	0.88764	1.413	1.0709	0.18329
3	0.13	6.9762	6.48	0.48566	0.979	1.3094	0.81319	1.610	1.0613	0.24812
4	0.19	7.0714	6.48	0.52463	0.887	1.3656	0.77423	1.764	1.0699	0.29569
5	0.26	7.1506	6.48	0.54557	0.814	1.4239	0.75329	1.890	1.0886	0.33531
6	0.33	7.2242	6.48	0.56011	0.753	1.483	0.73875	2.007	1.1109	0.37212
7	0.39	7.2964	6.48	0.57	0.698	1.5453	0.72886	2.120	1.1371	0.4082
8	0.46	7.363	6.48	0.57465	0.651	1.6072	0.72421	2.219	1.1657	0.4415
9	0.53	7.4316	6.48	0.57639	0.606	1.674	0.72246	2.317	1.1982	0.47578
10	0.59	7.4986	6.48	0.57756	0.567	1.7399	0.7213	2.412	1.2306	0.50932
11	0.66	7.5622	6.48	0.57465	0.531	1.8064	0.72421	2.494	1.2653	0.5411
12	0.73	7.6264	6.48	0.57	0.497	1.8752	0.72886	2.573	1.302	0.57319
13	0.80	7.6891	6.48	0.56651	0.469	1.9414	0.73235	2.651	1.3369	0.60454
14	0.93	7.8019	6.48	0.55255	0.418	2.0683	0.74631	2.771	1.4073	0.66097
15	1.07	7.9138	6.48	0.53684	0.374	2.1959	0.76201	2.882	1.4789	0.71692
16	1.20	8.0173	6.48	0.51823	0.337	2.3179	0.78062	2.969	1.5493	0.76863
17	1.34	8.1142	6.48	0.49846	0.305	2.4346	0.8004	3.042	1.6175	0.81712
18	1.48	8.2015	6.48	0.49148	0.285	2.5288	0.80738	3.132	1.6681	0.86073
19	1.62	8.2965	6.48	0.456	0.251	2.6594	0.84286	3.155	1.7511	0.90827
20	2.44	8.7487	6.48	0.30535	0.135	3.2622	0.9935	3.284	2.1279	1.1344
21	3.25	9.0947	6.48	0.16635	0.064	3.7472	1.1325	3.309	2.4399	1.3073
22	4.08	9.3813	6.48	0.041296	0.014	4.1588	1.2576	3.307	2.7082	1.4506
23	4.89	9.6383	6.48	-0.069214	-0.022	4.5263	1.3681	3.309	2.9472	1.5791
24	5.71	9.8706	6.48	-0.16925	-0.050	4.8588	1.4681	3.310	3.1634	1.6953
25	6.53	10.085	6.48	-0.26115	-0.072	5.1646	1.56	3.311	3.3623	1.8023
26	7.35	10.293	6.48	-0.3484	-0.091	5.4602	1.6472	3.315	3.5537	1.9065
27	8.16	10.487	6.48	-0.42866	-0.107	5.7345	1.7275	3.319	3.731	2.0035
28	9.00	10.653	6.48	-0.50195	-0.120	5.9742	1.8008	3.318	3.8875	2.0867
29	9.82	10.806	6.48	-0.56476	-0.131	6.1895	1.8636	3.321	4.0266	2.1629
30	10.63	10.951	6.48	-0.62467	-0.140	6.3942	1.9235	3.324	4.1588	2.2353
31	11.46	11.094	6.48	-0.68574	-0.149	6.5985	1.9846	3.325	4.2915	2.3069
32	12.27	11.22	6.48	-0.74158	-0.156	6.7805	2.0404	3.323	4.4105	2.3701
33	13.09	11.325	6.48	-0.80672	-0.167	6.9506	2.1056	3.301	4.5281	2.4225
34	13.93	11.406	6.48	-0.84976	-0.173	7.0745	2.1486	3.293	4.6116	2.463
35	14.74	11.511	6.48	-0.89571	-0.178	7.2252	2.1946	3.292	4.7099	2.5153
36	15.41	11.594	6.48	-0.93177	-0.182	7.3446	2.2306	3.293	4.7876	2.557

# Drained Direct Shear Tests ASTM D 3080





Symbol	■	●	▲	
Test No.	20.0 PSI	40.0 PSI	60.0 PSI	
Sample No.	S-10	S-10	S-10	
Shape	Circular	Circular	Circular	
Initial	Dimension, in	2.5008	2.4941	2.4941
	Area, in <sup>2</sup>	4.9118	4.8856	4.8856
	Height, in	0.99488	0.99134	0.99134
	Water Content, %	31.89	31.11	31.27
	Dry Density, pcf	90.09	91.18	91.04
	Saturation, %	98.03	98.12	98.32
	Void Ratio	0.88489	0.8623	0.86515
Consol. Height, in	0.9307	0.89469	0.86562	
Consol. Void Ratio	0.76329	0.68073	0.62862	
Final	Water Content, %	26.56	21.67	19.99
	Dry Density, pcf	97.99	107.0	109.6
	Saturation, %	98.57	100.41	98.99
	Void Ratio	0.73289	0.58702	0.5493
Normal Stress, tsf	1.4397	2.8796	4.3197	
Max. Shear Stress, tsf	0.7101	1.4695	2.1341	
Ult. Shear Stress, tsf	0.67742	1.4695	2.1332	
Time to Failure, min	3213.2	1360.9	976.75	
Disp. Rate, in/min	5.9055e-05	0.00020472	0.00020472	
Estimated Specific Gravity	2.72	2.72	2.72	
Liquid Limit	46	46	46	
Plastic Limit	21	21	21	
Plasticity Index	25	25	25	

Project: DYNEGY HENNEPIN
Location: HENNEPIN, IL
Project No.: MR155233
Boring No.: HEN-002 S-10
Sample Type: TRIMMED
Description: GRAY LEAN CLAY CL
Remarks:

DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-002 S-10  
 Sample No.: S-10  
 Test No.: 20.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/22/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 35.0'-37.0'  
 Elevation: ----

Soil Description: GRAY LEAN CLAY CL  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	1.44	0.06418	0.000	0.0000	0.0000
2	131.60	1.44	0.06602	0.118	0.007867	0.007867
3	254.56	1.44	0.06694	0.209	0.01577	0.01577
4	403.13	1.44	0.06782	0.298	0.02364	0.02364
5	547.67	1.44	0.06897	0.348	0.03150	0.03150
6	674.90	1.44	0.06998	0.392	0.03937	0.03937
7	808.72	1.44	0.07065	0.423	0.04724	0.04724
8	938.15	1.44	0.07157	0.460	0.05514	0.05514
9	1062.33	1.44	0.07200	0.493	0.06300	0.06300
10	1186.07	1.44	0.07247	0.522	0.07087	0.07087
11	1319.95	1.44	0.07342	0.551	0.07874	0.07874
12	1456.77	1.44	0.07454	0.576	0.08660	0.08660
13	1592.98	1.44	0.07522	0.595	0.09451	0.09451
14	1735.33	1.44	0.07565	0.616	0.1024	0.1024
15	1877.85	1.44	0.07603	0.633	0.1102	0.1102
16	2020.47	1.44	0.07634	0.644	0.1181	0.1181
17	2150.55	1.44	0.07672	0.655	0.1260	0.1260
18	2262.37	1.44	0.07684	0.654	0.1339	0.1339
19	2385.54	1.44	0.07709	0.660	0.1417	0.1417
20	2525.44	1.44	0.07726	0.671	0.1496	0.1496
21	2675.94	1.44	0.07772	0.682	0.1575	0.1575
22	2805.55	1.44	0.07819	0.690	0.1653	0.1653
23	2942.54	1.44	0.07888	0.696	0.1732	0.1732
24	3076.86	1.44	0.07922	0.705	0.1811	0.1811
25	3213.20	1.44	0.07954	0.710	0.1890	0.1890
26	3343.01	1.44	0.07974	0.710	0.1968	0.1968
27	3473.34	1.44	0.07985	0.704	0.2047	0.2047
28	3608.85	1.44	0.07996	0.692	0.2126	0.2126
29	3746.25	1.44	0.07996	0.681	0.2205	0.2205
30	3883.52	1.44	0.08005	0.680	0.2283	0.2283
31	4012.40	1.44	0.08003	0.681	0.2362	0.2362
32	4135.33	1.44	0.08007	0.677	0.2441	0.2441
33	4281.23	1.44	0.08023	0.677	0.2520	0.2520



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-002 S-10  
 Sample No.: S-10  
 Test No.: 40.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/28/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 35.0'-37.0'  
 Elevation: ----

Soil Description: GRAY LEAN CLAY CL  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	2.88	0.09665	0.000	0.0000	0.0000
2	63.01	2.88	0.1053	0.266	0.008527	0.008527
3	113.06	2.88	0.1093	0.435	0.01702	0.01702
4	161.97	2.88	0.1120	0.572	0.02551	0.02551
5	207.04	2.88	0.1147	0.682	0.03400	0.03400
6	246.29	2.88	0.1166	0.766	0.04252	0.04252
7	290.78	2.88	0.1194	0.846	0.05101	0.05101
8	336.22	2.88	0.1211	0.914	0.05950	0.05950
9	381.75	2.88	0.1231	0.971	0.06799	0.06799
10	427.55	2.88	0.1247	1.02	0.07648	0.07648
11	476.78	2.88	0.1260	1.08	0.08505	0.08505
12	524.26	2.88	0.1281	1.12	0.09350	0.09350
13	568.33	2.88	0.1294	1.16	0.1020	0.1020
14	609.05	2.88	0.1306	1.20	0.1105	0.1105
15	655.39	2.88	0.1326	1.24	0.1190	0.1190
16	700.01	2.88	0.1334	1.27	0.1275	0.1275
17	744.02	2.88	0.1342	1.29	0.1360	0.1360
18	791.88	2.88	0.1358	1.32	0.1445	0.1445
19	840.22	2.88	0.1369	1.34	0.1530	0.1530
20	881.51	2.88	0.1380	1.36	0.1615	0.1615
21	924.69	2.88	0.1387	1.37	0.1700	0.1700
22	970.07	2.88	0.1395	1.39	0.1785	0.1785
23	1012.97	2.88	0.1404	1.40	0.1870	0.1870
24	1060.61	2.88	0.1416	1.42	0.1954	0.1954
25	1102.24	2.88	0.1419	1.43	0.2039	0.2039
26	1147.68	2.88	0.1428	1.44	0.2125	0.2125
27	1193.57	2.88	0.1438	1.45	0.2210	0.2210
28	1237.05	2.88	0.1444	1.46	0.2294	0.2294
29	1282.41	2.88	0.1449	1.46	0.2380	0.2380
30	1326.10	2.88	0.1457	1.47	0.2464	0.2464
31	1360.88	2.88	0.1465	1.47	0.2535	0.2535



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-002 S-10  
 Sample No.: S-10  
 Test No.: 60.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/29/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 35.0'-37.0'  
 Elevation: ----

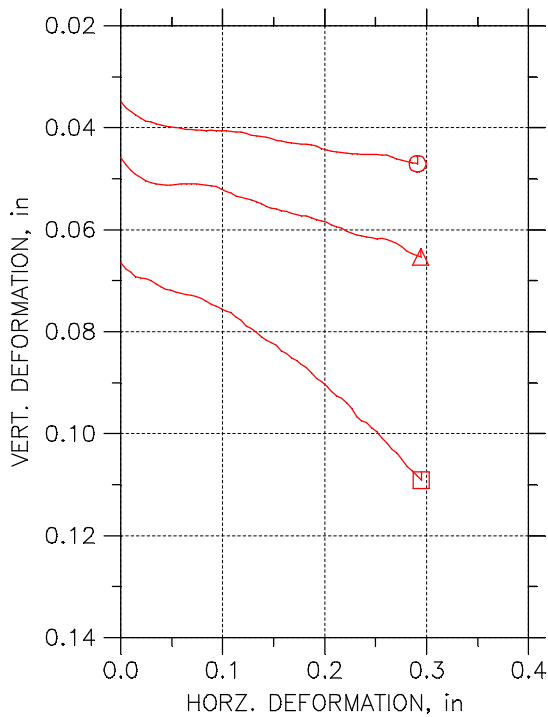
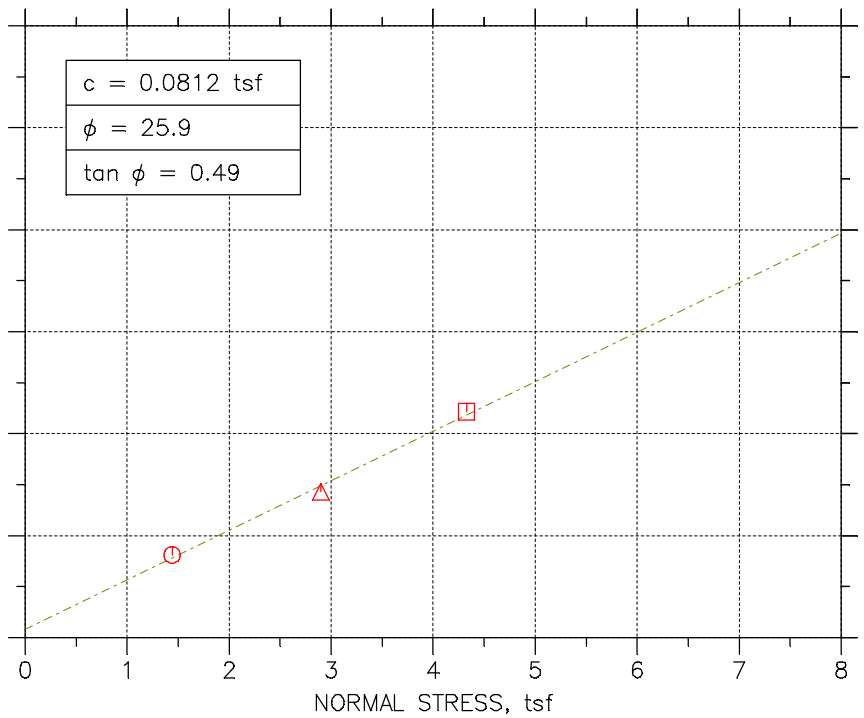
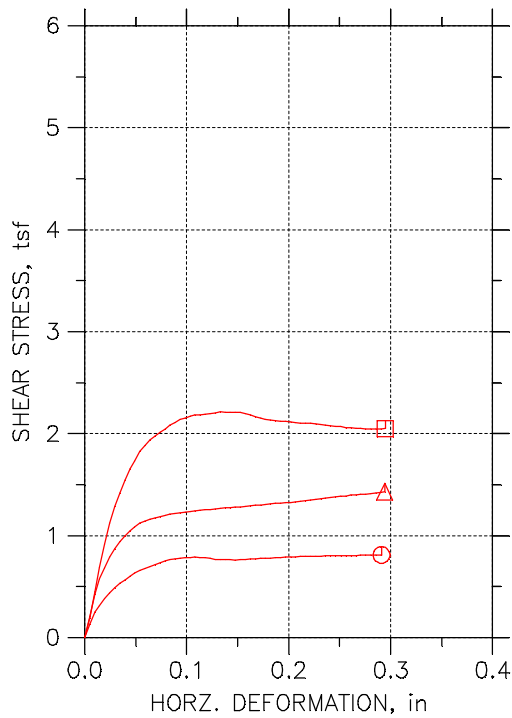
Soil Description: GRAY LEAN CLAY CL  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	4.32	0.1257	0.000	0.0000	0.0000
2	36.45	4.32	0.1290	0.248	0.007867	0.007867
3	76.38	4.32	0.1319	0.473	0.01573	0.01573
4	117.56	4.32	0.1348	0.683	0.02360	0.02360
5	158.10	4.32	0.1376	0.854	0.03150	0.03150
6	195.04	4.32	0.1402	0.991	0.03937	0.03937
7	234.81	4.32	0.1419	1.12	0.04724	0.04724
8	276.54	4.32	0.1437	1.24	0.05510	0.05510
9	317.01	4.32	0.1460	1.35	0.06297	0.06297
10	354.77	4.32	0.1475	1.44	0.07087	0.07087
11	393.79	4.32	0.1492	1.53	0.07874	0.07874
12	432.98	4.32	0.1507	1.61	0.08660	0.08660
13	471.79	4.32	0.1519	1.68	0.09447	0.09447
14	510.07	4.32	0.1530	1.74	0.1023	0.1023
15	550.12	4.32	0.1546	1.80	0.1102	0.1102
16	586.12	4.32	0.1558	1.85	0.1181	0.1181
17	626.51	4.32	0.1567	1.90	0.1260	0.1260
18	667.00	4.32	0.1576	1.95	0.1338	0.1338
19	705.99	4.32	0.1589	1.99	0.1417	0.1417
20	740.73	4.32	0.1598	2.02	0.1496	0.1496
21	783.69	4.32	0.1604	2.06	0.1575	0.1575
22	822.45	4.32	0.1613	2.09	0.1654	0.1654
23	862.70	4.32	0.1624	2.11	0.1732	0.1732
24	899.50	4.32	0.1631	2.12	0.1811	0.1811
25	938.61	4.32	0.1637	2.13	0.1890	0.1890
26	976.75	4.32	0.1645	2.13	0.1968	0.1968
27	1016.13	4.32	0.1649	2.13	0.2047	0.2047
28	1052.08	4.32	0.1654	2.12	0.2126	0.2126
29	1090.23	4.32	0.1661	2.13	0.2204	0.2204
30	1128.98	4.32	0.1666	2.13	0.2283	0.2283
31	1166.56	4.32	0.1671	2.13	0.2362	0.2362
32	1203.36	4.32	0.1675	2.13	0.2441	0.2441
33	1242.33	4.32	0.1679	2.13	0.2519	0.2519



# DIRECT SHEAR TEST REPORT



Symbol	⊖	△	□	
Test No.	20.0 PSI	40.0 PSI	60.0 PSI	
Sample No.	S-8	S-8	S-8	
Shape	Circular	Circular	Circular	
Initial	Dimension, in	2.4961	2.4961	2.4965
	Area, in <sup>2</sup>	4.8933	4.8933	4.8948
	Height, in	1.0122	1.0122	1.0039
	Water Content, %	32.17	32.73	32.51
	Dry Density, pcf	87.418	87.479	87.762
	Saturation, %	92.85	94.60	94.59
	Void Ratio	0.94243	0.94108	0.93482
Consol. Height, in	0.97952	0.97134	0.94117	
Consol. Void Ratio	0.87971	0.86272	0.81385	
Final	Water Content, %	31.22	30.03	26.52
	Dry Density, pcf	91.684	93.514	98.465
	Saturation, %	99.66	100.12	99.56
	Void Ratio	0.85205	0.81582	0.72452
Normal Stress, tsf	1.4402	2.8996	4.3279	
Max. Shear Stress, tsf	0.8107	1.4297	2.2144	
Ult. Shear Stress, tsf	0.8107	1.4297	2.0494	
Time to Failure, min	1757.8	1807.9	847.22	
Disp. Rate, in/min	0.000173	0.000173	0.000173	
Estimated Specific Gravity	2.72	2.72	2.72	
Liquid Limit	45	45	45	
Plastic Limit	21	21	21	
Plasticity Index	24	24	24	

Project: DYNEGY HENNEPIN
Location: HENNEPIN, IL
Project No.: MR155233
Boring No.: HEN-003 S-8
Sample Type: 3" ST
Description: DARK GRAY LEAN CLAY
Remarks: TEST PERFORMED AS PER ASTM D 3080

DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-003 S-8  
 Sample No.: S-8  
 Test No.: 20.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/30/15  
 Sample Type: 3" ST

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 25.0'-27.5'  
 Elevation: ----

Soil Description: DARK GRAY LEAN CLAY  
 Remarks: TEST PERFORMED AS PER ASTM D 3080

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in
1	0.00	1.439	0.03483	0	0
2	96.13	1.44	0.03603	0.1338	0.004953
3	131.38	1.439	0.03684	0.2532	0.00986
4	155.73	1.44	0.03749	0.3118	0.01477
5	187.84	1.44	0.03813	0.3833	0.01972
6	217.18	1.441	0.03869	0.4396	0.02463
7	243.52	1.44	0.0389	0.4875	0.02953
8	275.52	1.44	0.03916	0.5354	0.03449
9	300.06	1.439	0.0395	0.5673	0.03939
10	328.84	1.44	0.03976	0.6016	0.0443
11	357.41	1.44	0.03985	0.6312	0.04925
12	389.00	1.44	0.03993	0.6594	0.05416
13	412.41	1.44	0.0401	0.6799	0.05907
14	439.26	1.44	0.04036	0.6997	0.06402
15	469.45	1.44	0.0404	0.7187	0.06892
16	492.76	1.44	0.04049	0.7347	0.07383
17	525.42	1.44	0.04053	0.7521	0.07878
18	555.92	1.44	0.04058	0.7651	0.08369
19	584.60	1.44	0.04053	0.7734	0.0886
20	614.13	1.44	0.04062	0.7788	0.0935
21	638.65	1.44	0.04062	0.7826	0.09846
22	668.06	1.44	0.04066	0.7871	0.1034
23	694.56	1.44	0.04075	0.7886	0.1083
24	724.56	1.44	0.04083	0.7818	0.1132
25	753.15	1.44	0.04088	0.7833	0.1181
26	781.97	1.44	0.04105	0.7772	0.123
27	808.98	1.439	0.04143	0.7666	0.128
28	836.74	1.44	0.04161	0.7658	0.1329
29	867.05	1.439	0.04173	0.7628	0.1378
30	895.41	1.44	0.04186	0.7674	0.1428
31	924.95	1.44	0.04212	0.7605	0.1477
32	952.02	1.44	0.04246	0.7628	0.1526
33	982.73	1.44	0.04255	0.7674	0.1575
34	1008.92	1.44	0.04289	0.7704	0.1624
35	1040.42	1.44	0.04294	0.7742	0.1673
36	1068.99	1.439	0.04306	0.7772	0.1723
37	1097.71	1.44	0.04319	0.7795	0.1772
38	1125.56	1.44	0.04319	0.781	0.1821
39	1153.88	1.439	0.04332	0.7848	0.187
40	1182.79	1.44	0.04366	0.7871	0.192
41	1213.01	1.44	0.04409	0.7902	0.1969
42	1239.85	1.44	0.04435	0.7924	0.2018
43	1267.40	1.44	0.04457	0.7932	0.2067
44	1295.23	1.44	0.04478	0.7955	0.2116
45	1327.06	1.44	0.04491	0.7955	0.2165
46	1353.95	1.44	0.04499	0.7978	0.2215
47	1384.41	1.44	0.04517	0.7993	0.2264
48	1411.93	1.44	0.04517	0.7993	0.2313
49	1440.51	1.44	0.04525	0.8008	0.2363
50	1467.72	1.44	0.04529	0.8023	0.2412
51	1497.01	1.44	0.04525	0.8023	0.2461
52	1527.85	1.44	0.04529	0.8031	0.251
53	1553.35	1.44	0.04534	0.8039	0.2559
54	1581.68	1.44	0.04538	0.8054	0.2608
55	1611.88	1.44	0.04581	0.8061	0.2658
56	1640.02	1.44	0.04607	0.8069	0.2707
57	1670.18	1.44	0.04641	0.8084	0.2756
58	1699.23	1.44	0.04667	0.8077	0.2805
59	1723.65	1.44	0.04684	0.8077	0.2855
60	1753.88	1.44	0.04705	0.8107	0.2904
61	1757.84	1.44	0.0471	0.8107	0.291



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-003 S-8  
 Sample No.: S-8  
 Test No.: 40.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/30/15  
 Sample Type: 3" ST

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 25.0'-27.5'  
 Elevation: ----

Soil Description: DARK GRAY LEAN CLAY  
 Remarks: TEST PERFORMED AS PER ASTM D 3080

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in
1	0.00	2.897	0.04584	0	0
2	114.87	2.9	0.04725	0.2106	0.004953
3	145.95	2.9	0.04841	0.4274	0.00986
4	176.59	2.9	0.04916	0.58	0.01477
5	202.41	2.9	0.04974	0.6846	0.01972
6	232.48	2.9	0.0504	0.7905	0.02463
7	261.87	2.9	0.05081	0.8712	0.02953
8	290.11	2.9	0.05106	0.9393	0.03449
9	321.20	2.9	0.05114	0.9985	0.03939
10	352.66	2.9	0.05123	1.046	0.0443
11	382.71	2.9	0.05123	1.086	0.04925
12	414.39	2.9	0.05114	1.122	0.05416
13	438.31	2.9	0.05106	1.144	0.05907
14	468.23	2.897	0.05098	1.164	0.06402
15	494.07	2.9	0.05098	1.175	0.06892
16	525.08	2.9	0.05106	1.189	0.07383
17	555.16	2.9	0.05114	1.202	0.07878
18	584.30	2.9	0.05131	1.212	0.08369
19	613.31	2.9	0.05139	1.22	0.0886
20	638.98	2.9	0.05156	1.225	0.0935
21	665.57	2.9	0.05206	1.232	0.09846
22	698.58	2.9	0.05247	1.237	0.1034
23	723.48	2.9	0.0528	1.243	0.1083
24	754.38	2.9	0.05347	1.249	0.1132
25	779.70	2.9	0.05371	1.253	0.1181
26	807.48	2.9	0.05396	1.256	0.123
27	835.84	2.9	0.05421	1.261	0.128
28	866.30	2.9	0.05454	1.268	0.1329
29	897.54	2.9	0.05496	1.275	0.1378
30	923.22	2.9	0.05546	1.277	0.1428
31	948.87	2.897	0.05579	1.281	0.1477
32	977.74	2.9	0.05595	1.283	0.1526
33	1008.50	2.9	0.05628	1.287	0.1575
34	1036.20	2.9	0.05645	1.292	0.1624
35	1065.14	2.9	0.05678	1.299	0.1673
36	1090.22	2.9	0.05703	1.301	0.1723
37	1121.83	2.9	0.05728	1.307	0.1772
38	1150.05	2.9	0.05728	1.309	0.1821
39	1179.40	2.9	0.05769	1.315	0.187
40	1211.30	2.9	0.05802	1.32	0.192
41	1235.54	2.9	0.05836	1.321	0.1969
42	1267.50	2.9	0.05861	1.326	0.2018
43	1295.04	2.9	0.05902	1.333	0.2067
44	1325.43	2.9	0.05943	1.339	0.2116
45	1350.23	2.897	0.05968	1.345	0.2165
46	1376.84	2.9	0.06026	1.35	0.2215
47	1410.97	2.9	0.06068	1.355	0.2264
48	1438.72	2.902	0.06109	1.36	0.2313
49	1465.83	2.9	0.06117	1.368	0.2363
50	1495.50	2.9	0.06142	1.376	0.2412
51	1524.98	2.897	0.06159	1.378	0.2461
52	1553.26	2.9	0.06184	1.386	0.251
53	1581.27	2.9	0.06167	1.389	0.2559
54	1612.55	2.9	0.06192	1.397	0.2608
55	1641.33	2.9	0.06234	1.401	0.2658
56	1668.07	2.9	0.06275	1.406	0.2707
57	1694.82	2.897	0.06333	1.406	0.2756
58	1722.63	2.9	0.06416	1.411	0.2805
59	1752.47	2.9	0.06466	1.418	0.2855
60	1780.46	2.9	0.06507	1.425	0.2904
61	1807.89	2.9	0.06532	1.43	0.2941



DIRECT SHEAR TEST DATA

Project: FERMILAB  
 Boring No.: HEN-003 S-8  
 Sample No.: S-8  
 Test No.: 60.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/30/15  
 Sample Type: 3" ST

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 25.0'-27.5'  
 Elevation: ----

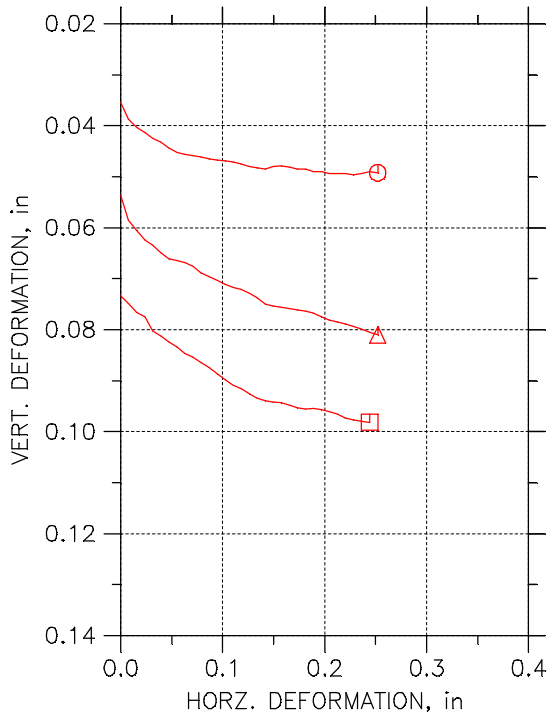
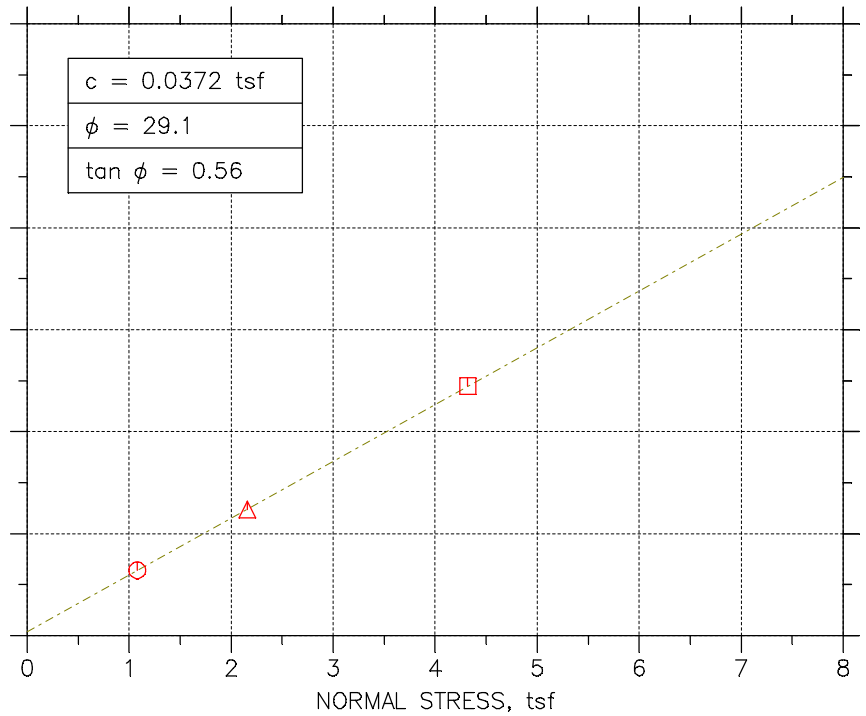
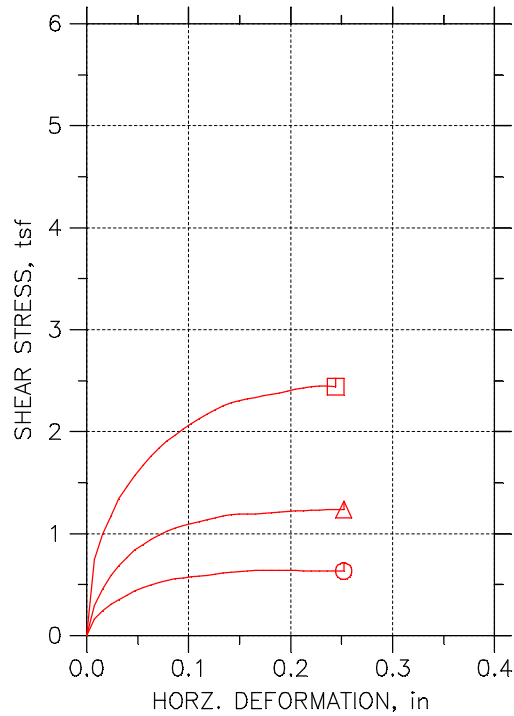
Soil Description: DARK GRAY LEAN CLAY  
 Remarks: TEST PERFORMED AS PER ASTM D 3080

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in
1	0.00	4.327	0.06641	0	0
2	86.54	4.328	0.06774	0.1957	0.004953
3	113.71	4.328	0.06836	0.4534	0.00986
4	146.70	4.328	0.06918	0.6917	0.01477
5	178.06	4.328	0.0695	0.9147	0.01972
6	210.27	4.327	0.06956	1.123	0.02463
7	240.13	4.329	0.06994	1.287	0.02953
8	268.05	4.328	0.07057	1.421	0.03449
9	298.27	4.328	0.07126	1.546	0.03939
10	328.20	4.329	0.0717	1.656	0.0443
11	354.47	4.328	0.07189	1.735	0.04925
12	388.91	4.328	0.0722	1.825	0.05416
13	415.00	4.328	0.07245	1.883	0.05907
14	444.61	4.329	0.07277	1.938	0.06402
15	472.16	4.328	0.07289	1.98	0.06892
16	499.33	4.328	0.07314	2.013	0.07383
17	533.88	4.328	0.07352	2.048	0.07878
18	565.33	4.328	0.07402	2.082	0.08369
19	592.80	4.328	0.07459	2.109	0.0886
20	623.55	4.328	0.07497	2.139	0.0935
21	648.04	4.328	0.07553	2.155	0.09846
22	676.07	4.328	0.07604	2.172	0.1034
23	703.78	4.328	0.07629	2.181	0.1083
24	734.95	4.328	0.07711	2.187	0.1132
25	764.15	4.328	0.0778	2.191	0.1181
26	793.49	4.327	0.07887	2.194	0.123
27	819.91	4.328	0.07943	2.204	0.128
28	847.22	4.328	0.08019	2.214	0.1329
29	876.38	4.328	0.08101	2.207	0.1378
30	904.29	4.327	0.0817	2.211	0.1428
31	933.31	4.328	0.0822	2.209	0.1477
32	960.71	4.328	0.0827	2.207	0.1526
33	989.71	4.328	0.08371	2.198	0.1575
34	1016.16	4.328	0.08421	2.184	0.1624
35	1046.73	4.328	0.08509	2.167	0.1673
36	1075.11	4.328	0.0856	2.149	0.1723
37	1100.97	4.327	0.08641	2.139	0.1772
38	1129.39	4.328	0.08698	2.135	0.1821
39	1159.96	4.328	0.08805	2.128	0.187
40	1187.52	4.328	0.08918	2.123	0.192
41	1218.23	4.328	0.08981	2.12	0.1969
42	1245.98	4.328	0.09069	2.115	0.2018
43	1274.07	4.328	0.0917	2.11	0.2067
44	1302.20	4.327	0.09258	2.103	0.2116
45	1333.73	4.327	0.09302	2.104	0.2165
46	1360.22	4.327	0.09396	2.103	0.2215
47	1391.01	4.327	0.09503	2.098	0.2264
48	1419.79	4.328	0.09667	2.09	0.2313
49	1447.73	4.328	0.09742	2.086	0.2363
50	1475.92	4.327	0.0978	2.08	0.2412
51	1504.97	4.329	0.09887	2.07	0.2461
52	1534.21	4.327	0.09962	2.068	0.251
53	1561.65	4.328	0.1008	2.061	0.2559
54	1590.39	4.328	0.1018	2.057	0.2608
55	1620.96	4.328	0.1031	2.054	0.2658
56	1648.88	4.328	0.1038	2.054	0.2707
57	1679.49	4.327	0.105	2.048	0.2756
58	1708.47	4.327	0.1064	2.045	0.2805
59	1733.25	4.328	0.1072	2.045	0.2855
60	1763.44	4.328	0.1082	2.045	0.2904
61	1786.77	4.328	0.1091	2.049	0.2947





# DIRECT SHEAR TEST by ASTM D3080



Symbol	⊖	△	□	
Test No.	15 PSI	30 PSI	60 PSI	
Sample No.	S-7	S-7	S-7	
Shape	Circular	Circular	Circular	
Initial	Dimension, in	2.5709	2.4937	2.4854
	Area, in <sup>2</sup>	5.191	4.884	4.8517
	Height, in	0.99843	0.98228	0.9622
	Water Content, %	29.74	29.77	29.48
	Dry Density, pcf	82.742	90.834	92.776
	Saturation, %	76.89	93.13	96.59
	Void Ratio	1.0522	0.86938	0.83025
	Consol. Height, in	0.963	0.93324	0.89292
	Consol. Void Ratio	0.9794	0.77604	0.69847
Final	Water Content, %	34.40	26.34	23.67
	Dry Density, pcf	87.034	98.998	103.32
	Saturation, %	98.39	100.17	100.04
	Void Ratio	0.95102	0.71522	0.64355
	Normal Stress, tsf	1.0798	2.1597	4.3201
	Max. Shear Stress, tsf	0.64126	1.2376	2.446
	Ult. Shear Stress, tsf	0.63334	1.2376	2.4421
	Time to Failure, min	895.63	1225.4	1252
	Disp. Rate, in/min	0.000207	0.000207	0.000207
	Estimated Specific Gravity	2.72	2.72	2.72
	Liquid Limit	45	45	45
	Plastic Limit	23	23	23
	Plasticity Index	22	22	22

Project: DYNEGY HENNEPIN	
Location: HENNEPIN, IL	
Project No.: MR155233	
Boring No.: HEN-004 S7	
Sample Type: 3.0" ST	
Description: VERY DARK GRAY LEAN CLAY CL- ORGANICS NOTED	
Remarks: TEST PERFORMED AS PER ASTM D3080.	347

DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-004 S7  
 Sample No.: S-7  
 Test No.: 15 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/6/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 20.0'-22.0'  
 Elevation: ----

Soil Description: VERY DARK GRAY LEAN CLAY CL- ORGANICS NOTED  
 Remarks: TEST PERFORMED AS PER ASTM D3080.

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in
1	0.00	1.079	0.03543	0	0
2	52.87	1.08	0.03877	0.1643	0.007876
3	92.18	1.08	0.04041	0.2425	0.01575
4	132.36	1.079	0.04135	0.3092	0.02363
5	171.72	1.08	0.04249	0.3538	0.0315
6	207.28	1.08	0.04325	0.3968	0.03938
7	247.73	1.08	0.04438	0.4399	0.04725
8	286.40	1.08	0.04526	0.472	0.05513
9	322.72	1.08	0.04558	0.4953	0.06301
10	362.86	1.08	0.04583	0.5181	0.07088
11	402.61	1.08	0.04615	0.5388	0.07876
12	441.62	1.08	0.04646	0.5562	0.08663
13	477.07	1.08	0.04671	0.568	0.09451
14	515.28	1.08	0.0469	0.5774	0.1024
15	554.10	1.08	0.04709	0.5853	0.1103
16	589.91	1.08	0.04747	0.5933	0.1181
17	631.34	1.08	0.04797	0.6051	0.126
18	664.33	1.08	0.04829	0.6145	0.1339
19	703.46	1.08	0.04848	0.6234	0.1418
20	745.35	1.08	0.04804	0.6289	0.1496
21	783.16	1.08	0.04791	0.6328	0.1575
22	820.22	1.08	0.04816	0.6373	0.1654
23	858.73	1.08	0.04854	0.6393	0.1733
24	895.63	1.08	0.04848	0.6413	0.1811
25	935.53	1.08	0.04898	0.6403	0.189
26	971.85	1.079	0.04905	0.6393	0.1969
27	1012.19	1.08	0.04936	0.6373	0.2048
28	1048.66	1.081	0.04942	0.6363	0.2126
29	1085.79	1.08	0.04942	0.6348	0.2205
30	1123.47	1.08	0.04961	0.6328	0.2284
31	1162.13	1.08	0.04942	0.6333	0.2362
32	1199.13	1.079	0.04905	0.6324	0.2441
33	1236.88	1.08	0.04923	0.6333	0.252



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-004 S7  
 Sample No.: S-7  
 Test No.: 30 PSI

Location: HENNEPIN, IL  
 Tested By: HP  
 Test Date: 12/6/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: BCM  
 Depth: 20.0'-22.0'  
 Elevation: ----

Soil Description: VERY DARK GRAY LEAN CLAY CL- ORGANICS NOTED  
 Remarks: TEST PERFORMED AS PER ASTM D3080.

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in
1	0.00	2.158	0.05365	0	0
2	44.38	2.16	0.05856	0.2976	0.007876
3	84.25	2.16	0.06058	0.4585	0.01575
4	125.18	2.159	0.06241	0.5878	0.02363
5	162.47	2.16	0.06348	0.6841	0.0315
6	197.93	2.16	0.06493	0.7629	0.03938
7	240.57	2.16	0.06613	0.8389	0.04725
8	274.16	2.16	0.06644	0.8908	0.05513
9	313.67	2.159	0.06689	0.942	0.06301
10	351.00	2.16	0.06764	0.9844	0.07088
11	389.72	2.159	0.06878	1.023	0.07876
12	427.42	2.159	0.06953	1.056	0.08663
13	466.41	2.159	0.07029	1.082	0.09451
14	502.85	2.16	0.07111	1.102	0.1024
15	538.11	2.16	0.07168	1.119	0.1103
16	576.81	2.16	0.07212	1.138	0.1181
17	619.31	2.16	0.07287	1.157	0.126
18	652.41	2.159	0.07376	1.171	0.1339
19	693.77	2.159	0.07496	1.184	0.1418
20	731.23	2.16	0.0754	1.19	0.1496
21	767.99	2.16	0.07565	1.19	0.1575
22	806.68	2.16	0.0759	1.192	0.1654
23	843.01	2.16	0.07609	1.196	0.1733
24	882.66	2.16	0.07634	1.203	0.1811
25	918.72	2.16	0.07672	1.211	0.189
26	955.92	2.16	0.07748	1.218	0.1969
27	995.76	2.16	0.07817	1.221	0.2048
28	1033.70	2.16	0.07849	1.226	0.2126
29	1073.13	2.16	0.07893	1.229	0.2205
30	1108.90	2.16	0.07937	1.231	0.2284
31	1147.19	2.16	0.07987	1.234	0.2362
32	1185.23	2.16	0.0805	1.236	0.2441
33	1225.37	2.16	0.08101	1.238	0.252



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-004 S7  
 Sample No.: S-7  
 Test No.: 60 PSI

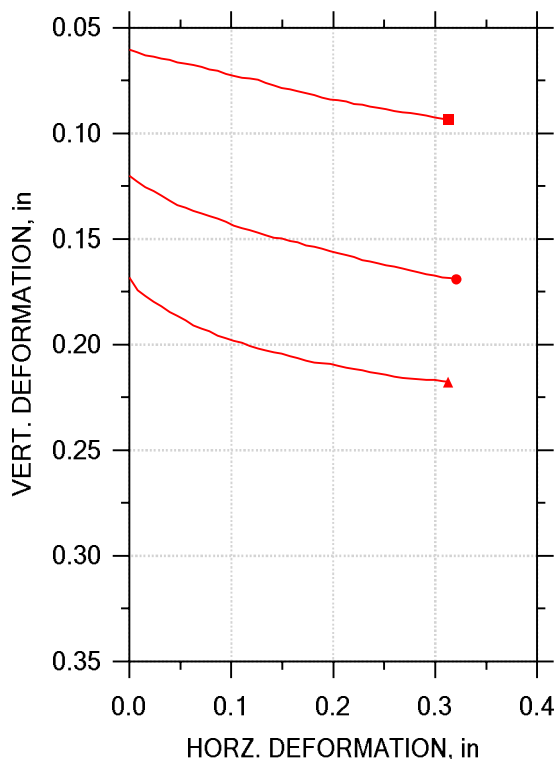
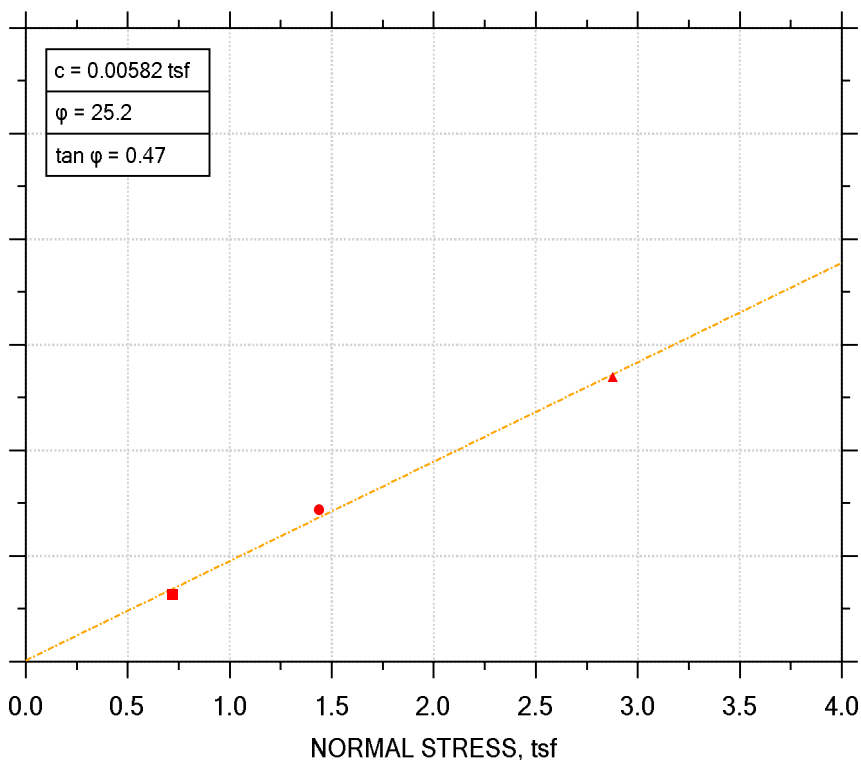
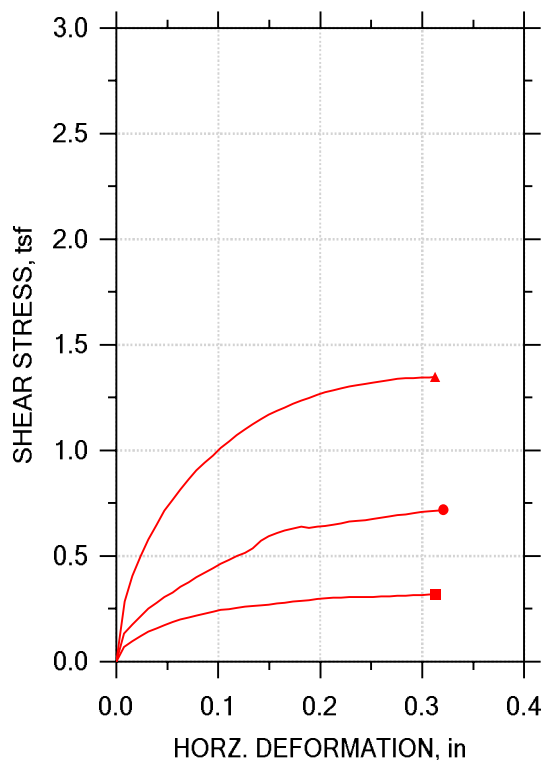
Location: HENNEPIN, IL  
 Tested By: HP  
 Test Date: 12/6/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: BCM  
 Depth: 20.0'-22.0'  
 Elevation: ----

Soil Description: VERY DARK GRAY LEAN CLAY CL- ORGANICS NOTED  
 Remarks: TEST PERFORMED AS PER ASTM D3080.

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in
1	0.00	4.319	0.07332	0	0
2	141.08	4.319	0.07483	0.744	0.007876
3	182.59	4.319	0.07659	1.001	0.01575
4	219.18	4.318	0.07754	1.176	0.02363
5	259.25	4.318	0.08025	1.34	0.0315
6	297.64	4.319	0.08126	1.465	0.03938
7	335.60	4.319	0.08233	1.571	0.04725
8	374.97	4.319	0.08334	1.67	0.05513
9	411.17	4.319	0.08466	1.754	0.06301
10	453.03	4.319	0.08536	1.841	0.07088
11	491.17	4.319	0.08637	1.907	0.07876
12	528.00	4.319	0.08744	1.966	0.08663
13	567.37	4.319	0.08863	2.025	0.09451
14	604.60	4.319	0.08977	2.075	0.1024
15	643.89	4.319	0.0909	2.128	0.1103
16	680.77	4.319	0.0916	2.174	0.1181
17	717.15	4.319	0.09261	2.214	0.126
18	754.96	4.318	0.09349	2.254	0.1339
19	791.57	4.319	0.09393	2.282	0.1418
20	831.59	4.319	0.09425	2.306	0.1496
21	873.07	4.319	0.09437	2.323	0.1575
22	908.73	4.318	0.09488	2.335	0.1654
23	946.00	4.319	0.09538	2.351	0.1733
24	984.76	4.319	0.09557	2.366	0.1811
25	1022.43	4.319	0.09544	2.377	0.189
26	1061.30	4.319	0.0957	2.395	0.1969
27	1100.41	4.319	0.09607	2.414	0.2048
28	1137.14	4.319	0.09658	2.428	0.2126
29	1175.39	4.319	0.09733	2.443	0.2205
30	1213.75	4.319	0.09771	2.446	0.2284
31	1251.96	4.32	0.0979	2.446	0.2362
32	1288.97	4.319	0.09815	2.442	0.2441





Symbol	■	●	▲	
Test No.	10 PSI	20 PSI	40 PSI	
Sample No.	S-4	S-4	S-4	
Shape	Circular	Circular	Circular	
Initial	Dimension, in	2.4823	2.4862	2.4819
	Area, in <sup>2</sup>	4.8394	4.8548	4.8379
	Height, in	1.002	0.98622	1.0028
	Water Content, %	53.29	53.23	53.48
	Dry Density, pcf	68.32	67.84	67.67
	Saturation, %	98.07	96.80	96.84
	Void Ratio	1.4671	1.4847	1.4909
Consol. Height, in	0.94176	0.86607	0.83469	
Consol. Void Ratio	1.3189	1.182	1.0734	
Final	Water Content, %	45.63	39.25	34.99
	Dry Density, pcf	75.33	81.87	86.43
	Saturation, %	99.55	100.09	99.42
	Void Ratio	1.2376	1.0587	0.9502
Normal Stress, tsf	0.71768	1.4381	2.8781	
Max. Shear Stress, tsf	0.3191	0.71924	1.348	
Ult. Shear Stress, tsf	0.3191	0.71924	1.348	
Time to Failure, min	80.5	80.604	81.975	
Disp. Rate, in/min	0.0039961	0.0039961	0.0039961	
Estimated Specific Gravity	2.70	2.70	2.70	
Liquid Limit	43	43	43	
Plastic Limit	24	24	24	
Plasticity Index	19	19	19	

Project: DYNEGY HENNEPIN
Location: HENNEPIN, IL
Project No.: MR155233
Boring No.: HEN-005 S4
Sample Type: 3.0" ST
Description: DARK GRAY LEAN CLAY WITH SAND AND FLY ASH
Remarks: TEST PERFORMED AS PER ASTM D3080.

DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-005 S4  
 Sample No.: S-4  
 Test No.: 10 PSI

Location: HENNEPIN, IL  
 Tested By: HP  
 Test Date: 12/30/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: BCM  
 Depth: 12.5'-14.5'  
 Elevation: ----

Soil Description: DARK GRAY LEAN CLAY WITH SAND AND FLY ASH  
 Remarks: TEST PERFORMED AS PER ASTM D3080.

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	0.718	0.06020	0.000	0.0000	0.0000
2	4.00	0.718	0.06153	0.0683	0.007876	0.007876
3	6.06	0.717	0.06310	0.0981	0.01575	0.01575
4	8.07	0.718	0.06380	0.121	0.02363	0.02363
5	10.15	0.718	0.06449	0.141	0.03150	0.03150
6	11.97	0.718	0.06531	0.157	0.03938	0.03938
7	13.94	0.718	0.06632	0.173	0.04725	0.04725
8	15.92	0.718	0.06689	0.187	0.05513	0.05513
9	17.78	0.717	0.06764	0.199	0.06301	0.06301
10	19.76	0.718	0.06859	0.209	0.07088	0.07088
11	21.79	0.718	0.06985	0.219	0.07876	0.07876
12	23.83	0.718	0.07042	0.228	0.08663	0.08663
13	25.79	0.718	0.07168	0.237	0.09451	0.09451
14	27.77	0.717	0.07281	0.244	0.1024	0.1024
15	29.83	0.718	0.07357	0.250	0.1103	0.1103
16	31.69	0.718	0.07395	0.255	0.1182	0.1182
17	33.69	0.718	0.07451	0.259	0.1260	0.1260
18	35.65	0.717	0.07596	0.264	0.1339	0.1339
19	37.72	0.717	0.07729	0.267	0.1418	0.1418
20	39.63	0.718	0.07842	0.271	0.1496	0.1496
21	41.54	0.718	0.07905	0.275	0.1575	0.1575
22	43.63	0.718	0.07987	0.279	0.1654	0.1654
23	45.58	0.717	0.08094	0.284	0.1733	0.1733
24	47.50	0.718	0.08189	0.288	0.1811	0.1811
25	49.57	0.718	0.08315	0.292	0.1890	0.1890
26	51.56	0.718	0.08391	0.296	0.1969	0.1969
27	53.48	0.718	0.08435	0.299	0.2048	0.2048
28	55.29	0.718	0.08485	0.302	0.2126	0.2126
29	57.40	0.718	0.08592	0.304	0.2205	0.2205
30	59.23	0.718	0.08649	0.305	0.2284	0.2284
31	61.35	0.718	0.08725	0.306	0.2362	0.2362
32	63.17	0.718	0.08788	0.307	0.2441	0.2441
33	65.13	0.718	0.08838	0.307	0.2520	0.2520
34	67.13	0.718	0.08933	0.308	0.2599	0.2599
35	69.22	0.718	0.09002	0.309	0.2677	0.2677
36	71.18	0.718	0.09046	0.311	0.2756	0.2756
37	73.11	0.718	0.09097	0.313	0.2835	0.2835
38	75.10	0.718	0.09153	0.315	0.2914	0.2914
39	77.07	0.718	0.09242	0.317	0.2992	0.2992
40	78.86	0.718	0.09298	0.318	0.3071	0.3071
41	80.50	0.718	0.09324	0.319	0.3129	0.3129



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-005 S4  
 Sample No.: S-4  
 Test No.: 20 PSI

Location: HENNEPIN, IL  
 Tested By: HP  
 Test Date: 12/30/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: BCM  
 Depth: 12.5'-14.5'  
 Elevation: ----

Soil Description: DARK GRAY LEAN CLAY WITH SAND AND FLY ASH  
 Remarks: TEST PERFORMED AS PER ASTM D3080.

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	1.43	0.1202	0.000	0.0000	0.0000
2	2.29	1.43	0.1228	0.133	0.007876	0.007876
3	4.23	1.43	0.1253	0.176	0.01575	0.01575
4	6.22	1.44	0.1272	0.215	0.02363	0.02363
5	8.28	1.44	0.1295	0.250	0.03150	0.03150
6	10.27	1.44	0.1319	0.279	0.03938	0.03938
7	12.30	1.44	0.1338	0.306	0.04725	0.04725
8	14.12	1.44	0.1352	0.329	0.05513	0.05513
9	16.11	1.44	0.1365	0.354	0.06301	0.06301
10	18.07	1.44	0.1380	0.377	0.07088	0.07088
11	19.97	1.44	0.1391	0.399	0.07876	0.07876
12	21.95	1.44	0.1404	0.421	0.08663	0.08663
13	23.99	1.44	0.1420	0.443	0.09451	0.09451
14	26.02	1.44	0.1436	0.463	0.1024	0.1024
15	27.95	1.44	0.1449	0.482	0.1103	0.1103
16	29.93	1.44	0.1457	0.499	0.1181	0.1181
17	31.99	1.44	0.1471	0.514	0.1260	0.1260
18	33.87	1.44	0.1482	0.535	0.1339	0.1339
19	35.86	1.44	0.1493	0.574	0.1418	0.1418
20	37.86	1.44	0.1498	0.594	0.1496	0.1496
21	39.90	1.44	0.1510	0.610	0.1575	0.1575
22	41.78	1.44	0.1517	0.620	0.1654	0.1654
23	43.73	1.44	0.1530	0.630	0.1733	0.1733
24	45.75	1.44	0.1538	0.638	0.1811	0.1811
25	47.75	1.44	0.1545	0.633	0.1890	0.1890
26	49.63	1.44	0.1559	0.638	0.1969	0.1969
27	51.74	1.44	0.1567	0.644	0.2048	0.2048
28	53.71	1.44	0.1577	0.650	0.2126	0.2126
29	55.61	1.44	0.1585	0.656	0.2205	0.2205
30	57.47	1.44	0.1599	0.662	0.2284	0.2284
31	59.60	1.44	0.1606	0.667	0.2362	0.2362
32	61.41	1.44	0.1615	0.670	0.2441	0.2441
33	63.52	1.44	0.1625	0.677	0.2520	0.2520
34	65.33	1.44	0.1631	0.683	0.2599	0.2599
35	67.28	1.44	0.1640	0.688	0.2677	0.2677
36	69.30	1.44	0.1649	0.693	0.2756	0.2756
37	71.37	1.44	0.1657	0.698	0.2835	0.2835
38	73.34	1.44	0.1666	0.703	0.2914	0.2914
39	75.29	1.44	0.1674	0.708	0.2993	0.2993
40	77.30	1.44	0.1682	0.711	0.3071	0.3071
41	79.27	1.44	0.1686	0.715	0.3150	0.3150
42	80.60	1.44	0.1691	0.719	0.3205	0.3205



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-005 S4  
 Sample No.: S-4  
 Test No.: 40 PSI

Location: HENNEPIN, IL  
 Tested By: HP  
 Test Date: 12/30/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: BCM  
 Depth: 12.5'-14.5'  
 Elevation: ----

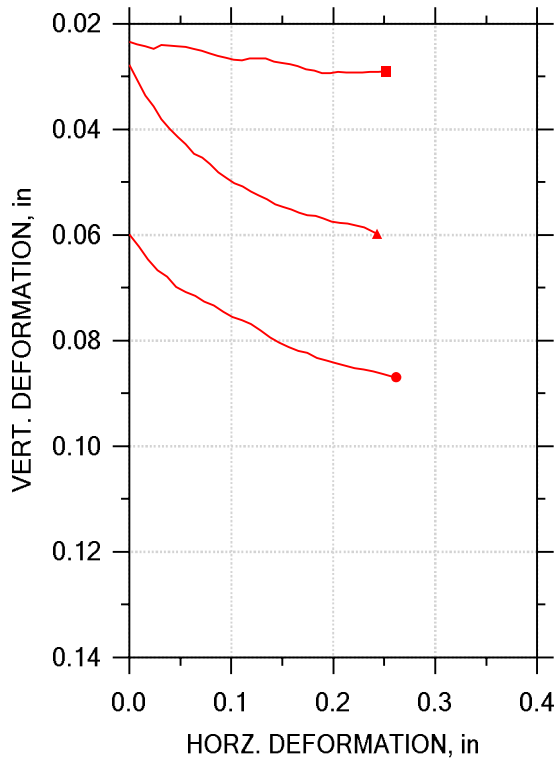
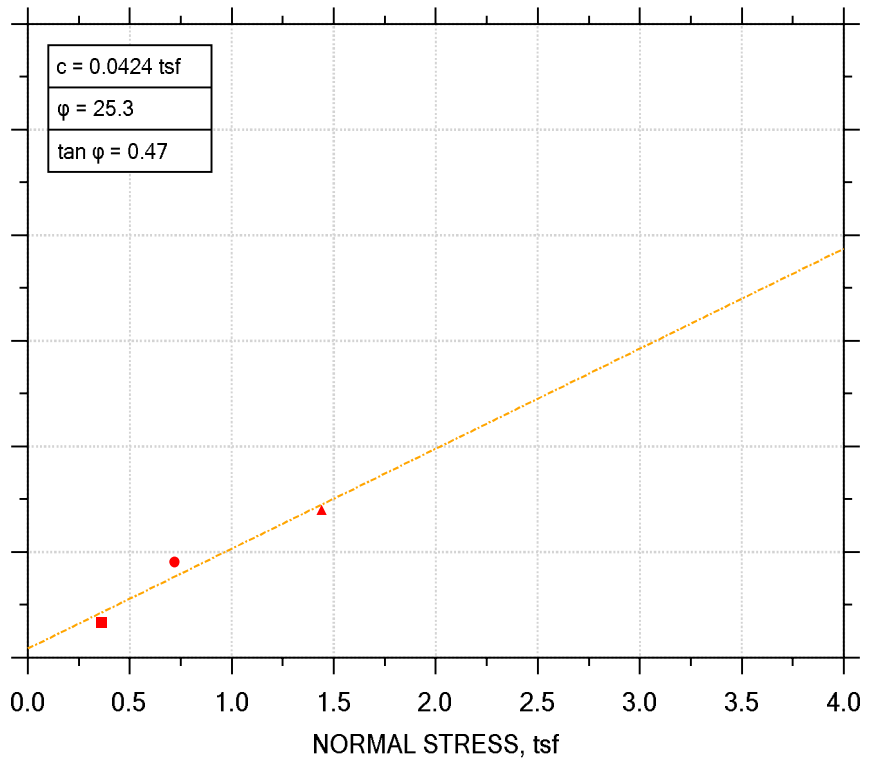
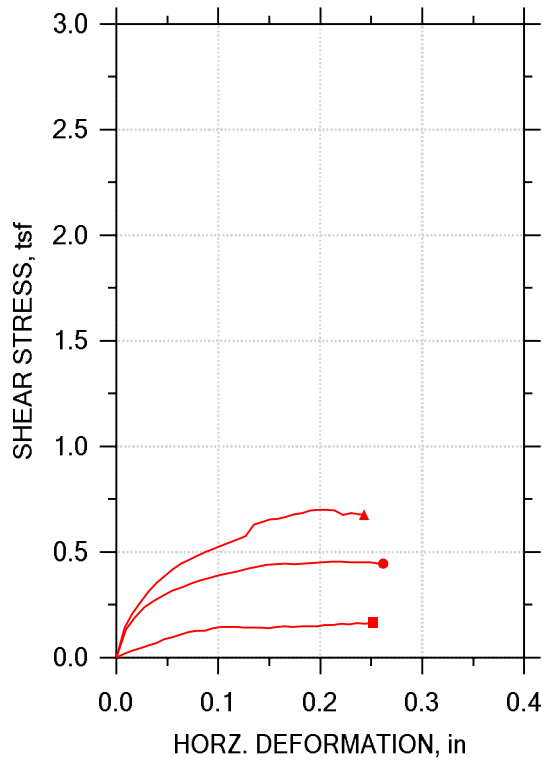
Soil Description: DARK GRAY LEAN CLAY WITH SAND AND FLY ASH  
 Remarks: TEST PERFORMED AS PER ASTM D3080.

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	2.88	0.1681	0.000	0.0000	0.0000
2	5.35	2.87	0.1742	0.285	0.007923	0.007923
3	7.35	2.87	0.1768	0.407	0.01575	0.01575
4	9.37	2.88	0.1797	0.499	0.02363	0.02363
5	11.37	2.88	0.1819	0.577	0.03150	0.03150
6	13.39	2.88	0.1845	0.648	0.03938	0.03938
7	15.49	2.88	0.1865	0.714	0.04725	0.04725
8	17.43	2.88	0.1886	0.766	0.05513	0.05513
9	19.35	2.88	0.1908	0.815	0.06301	0.06301
10	21.38	2.88	0.1925	0.863	0.07088	0.07088
11	23.40	2.88	0.1937	0.905	0.07876	0.07876
12	25.34	2.88	0.1957	0.943	0.08663	0.08663
13	27.19	2.88	0.1971	0.976	0.09451	0.09451
14	29.19	2.88	0.1981	1.01	0.1024	0.1024
15	31.08	2.88	0.1992	1.04	0.1103	0.1103
16	33.09	2.88	0.2007	1.07	0.1181	0.1181
17	35.10	2.88	0.2018	1.10	0.1260	0.1260
18	37.22	2.88	0.2029	1.12	0.1339	0.1339
19	39.11	2.88	0.2037	1.15	0.1418	0.1418
20	41.16	2.88	0.2044	1.17	0.1496	0.1496
21	43.03	2.88	0.2054	1.19	0.1575	0.1575
22	45.09	2.88	0.2064	1.20	0.1654	0.1654
23	47.11	2.88	0.2077	1.22	0.1733	0.1733
24	49.03	2.88	0.2085	1.24	0.1811	0.1811
25	51.03	2.88	0.2089	1.25	0.1890	0.1890
26	52.98	2.88	0.2092	1.26	0.1969	0.1969
27	54.99	2.88	0.2100	1.28	0.2048	0.2048
28	56.80	2.88	0.2108	1.29	0.2126	0.2126
29	58.83	2.88	0.2116	1.29	0.2205	0.2205
30	60.98	2.88	0.2122	1.30	0.2284	0.2284
31	62.85	2.88	0.2131	1.31	0.2362	0.2362
32	64.77	2.88	0.2137	1.32	0.2441	0.2441
33	66.81	2.88	0.2144	1.32	0.2520	0.2520
34	68.70	2.88	0.2153	1.33	0.2599	0.2599
35	70.65	2.88	0.2157	1.33	0.2677	0.2677
36	72.65	2.88	0.2161	1.34	0.2756	0.2756
37	74.82	2.88	0.2164	1.34	0.2835	0.2835
38	76.70	2.88	0.2165	1.34	0.2914	0.2914
39	78.62	2.88	0.2167	1.35	0.2992	0.2992
40	80.39	2.88	0.2172	1.35	0.3071	0.3071
41	81.97	2.88	0.2177	1.35	0.3126	0.3126







Symbol	■	●	▲	
Test No.	5.0 PSI	10.0 PSI	20.0 PSI	
Sample No.	S-4	S-4	S-4	
Shape	Circular	Circular	Circular	
Initial	Dimension, in	2.5744	2.5728	2.5728
	Area, in <sup>2</sup>	5.2053	5.1989	5.1989
	Height, in	0.99685	0.99134	0.99134
	Water Content, %	43.92	43.72	43.94
	Dry Density, pcf	68.44	68.81	69.02
	Saturation, %	81.69	82.05	82.92
	Void Ratio	1.4355	1.4225	1.415
Consol. Height, in	0.97344	0.93151	0.9636	
Consol. Void Ratio	1.3783	1.2763	1.3474	
Final	Water Content, %	49.94	45.37	46.75
	Dry Density, pcf	70.49	75.42	73.45
	Saturation, %	97.71	100.11	98.33
	Void Ratio	1.3647	1.2101	1.2694
Normal Stress, tsf	0.3602	0.71979	1.4396	
Max. Shear Stress, tsf	0.16591	0.45364	0.70049	
Ult. Shear Stress, tsf	0.16591	0.44507	0.67713	
Time to Failure, min	4266.5	1139.6	1013.5	
Disp. Rate, in/min	5.9055e-05	0.00020472	0.00020472	

Project: DYNEGY HENNEPIN			
Location: HENNEPIN, IL	Estimated Specific Gravity	2.67	2.67
Project No.: MR155233	Liquid Limit	NP	NP
Boring No.: HEN-008 S4	Plastic Limit	NP	NP
Sample Type: 3.0" ST	Plasticity Index	NP	NP
Description: FLY ASH / LEAN CLAY WITH SAND MIX SAMPLE TAKEN FROM THE FLY ASH STRATA			
Remarks: TEST PERFORMED AS PER ASTM D3080.			

DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-008 S4  
 Sample No.: S-4  
 Test No.: 5.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/146/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 35.0'-37.0'  
 Elevation: ----

Soil Description: FLY ASH / LEAN CLAY WITH SAND MIX SAMPLE TAKEN FROM THE FLY ASH STRATA  
 Remarks: TEST PERFORMED AS PER ASTM D3080.

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	0.359	0.02341	0.000	0.0000	0.0000
2	130.95	0.359	0.02385	0.0182	0.007876	0.007876
3	252.94	0.359	0.02424	0.0338	0.01575	0.01575
4	379.00	0.360	0.02471	0.0446	0.02363	0.02363
5	526.83	0.359	0.02406	0.0578	0.03150	0.03150
6	657.29	0.359	0.02411	0.0702	0.03938	0.03938
7	817.53	0.359	0.02428	0.0875	0.04725	0.04725
8	933.21	0.359	0.02437	0.0982	0.05513	0.05513
9	1068.43	0.359	0.02476	0.110	0.06301	0.06301
10	1213.40	0.359	0.02510	0.121	0.07088	0.07088
11	1339.35	0.359	0.02558	0.128	0.07876	0.07876
12	1469.39	0.359	0.02601	0.127	0.08663	0.08663
13	1605.55	0.359	0.02645	0.139	0.09451	0.09451
14	1727.16	0.359	0.02679	0.146	0.1024	0.1024
15	1864.59	0.359	0.02697	0.144	0.1103	0.1103
16	1999.57	0.359	0.02649	0.144	0.1181	0.1181
17	2145.44	0.359	0.02653	0.141	0.1260	0.1260
18	2273.92	0.359	0.02658	0.142	0.1339	0.1339
19	2405.83	0.359	0.02710	0.143	0.1418	0.1418
20	2539.29	0.359	0.02740	0.140	0.1496	0.1496
21	2670.74	0.359	0.02762	0.146	0.1575	0.1575
22	2795.67	0.359	0.02796	0.147	0.1654	0.1654
23	2917.16	0.359	0.02857	0.146	0.1733	0.1733
24	3055.69	0.359	0.02887	0.149	0.1811	0.1811
25	3181.49	0.359	0.02931	0.149	0.1890	0.1890
26	3308.15	0.359	0.02939	0.149	0.1968	0.1968
27	3445.58	0.359	0.02909	0.155	0.2047	0.2047
28	3579.69	0.359	0.02922	0.155	0.2126	0.2126
29	3731.12	0.359	0.02918	0.159	0.2205	0.2205
30	3860.05	0.359	0.02922	0.157	0.2284	0.2284
31	3999.46	0.359	0.02909	0.164	0.2362	0.2362
32	4141.08	0.359	0.02905	0.162	0.2441	0.2441
33	4266.47	0.360	0.02900	0.166	0.2520	0.2520



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-008 S4  
 Sample No.: S-4  
 Test No.: 10.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/28/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 35.0'-37.0'  
 Elevation: ----

Soil Description: FLY ASH / LEAN CLAY WITH SAND MIX SAMPLE TAKEN FROM THE FLY ASH STRATA  
 Remarks: TEST PERFORMED AS PER ASTM D3080.

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	0.719	0.05983	0.000	0.0000	0.0000
2	158.45	0.719	0.06222	0.132	0.009199	0.009199
3	205.56	0.720	0.06455	0.191	0.01840	0.01840
4	254.95	0.720	0.06663	0.238	0.02760	0.02760
5	299.15	0.719	0.06783	0.270	0.03679	0.03679
6	341.39	0.720	0.06979	0.295	0.04599	0.04599
7	391.35	0.720	0.07073	0.319	0.05519	0.05519
8	431.04	0.720	0.07155	0.335	0.06439	0.06439
9	476.57	0.720	0.07262	0.352	0.07359	0.07359
10	520.20	0.720	0.07332	0.365	0.08279	0.08279
11	563.92	0.720	0.07458	0.379	0.09199	0.09199
12	606.27	0.720	0.07546	0.390	0.1012	0.1012
13	652.13	0.720	0.07615	0.400	0.1104	0.1104
14	695.38	0.720	0.07691	0.410	0.1196	0.1196
15	736.80	0.719	0.07811	0.423	0.1288	0.1288
16	782.53	0.720	0.07937	0.431	0.1380	0.1380
17	831.29	0.720	0.08038	0.440	0.1472	0.1472
18	870.18	0.720	0.08120	0.443	0.1564	0.1564
19	918.37	0.720	0.08189	0.444	0.1656	0.1656
20	962.28	0.720	0.08233	0.443	0.1748	0.1748
21	1005.17	0.720	0.08328	0.446	0.1840	0.1840
22	1050.60	0.720	0.08378	0.450	0.1932	0.1932
23	1091.31	0.720	0.08429	0.453	0.2024	0.2024
24	1139.63	0.720	0.08479	0.454	0.2116	0.2116
25	1181.83	0.720	0.08517	0.453	0.2208	0.2208
26	1225.69	0.719	0.08542	0.452	0.2300	0.2300
27	1272.35	0.720	0.08580	0.451	0.2392	0.2392
28	1316.66	0.720	0.08630	0.450	0.2483	0.2483
29	1362.97	0.720	0.08674	0.445	0.2575	0.2575
30	1382.74	0.720	0.08693	0.445	0.2614	0.2614



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-008 S4  
 Sample No.: S-4  
 Test No.: 20.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/29/15  
 Sample Type: 3.0" ST

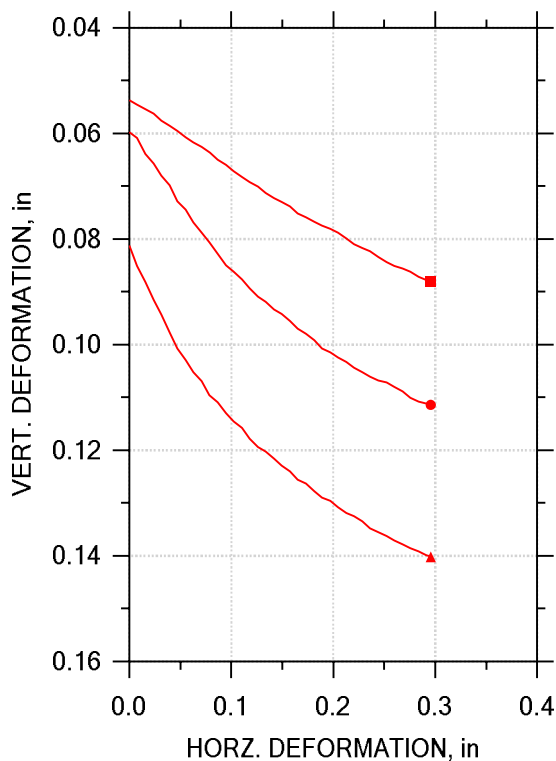
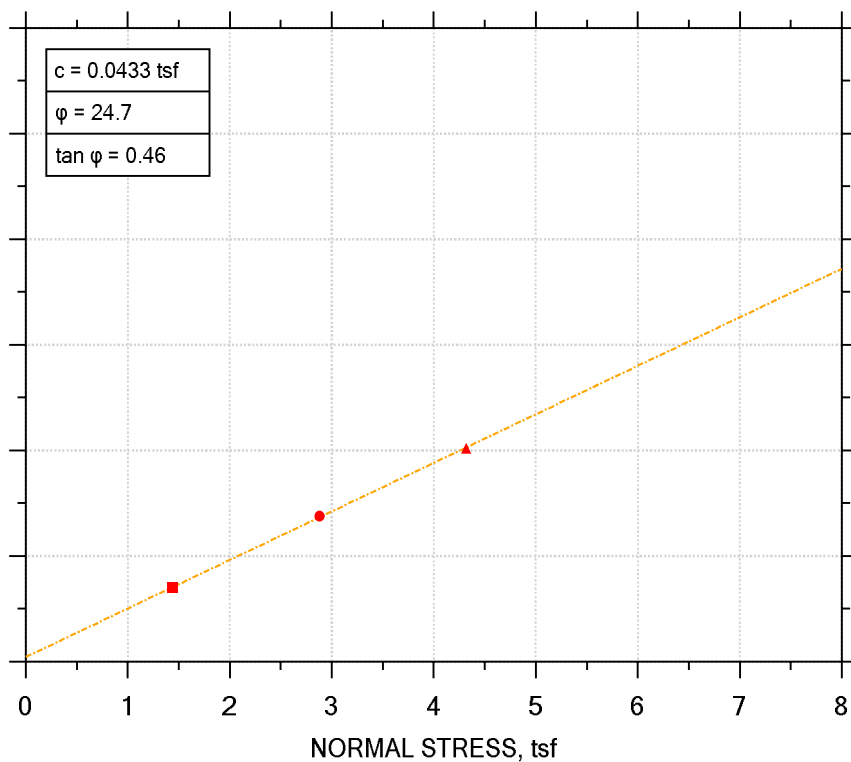
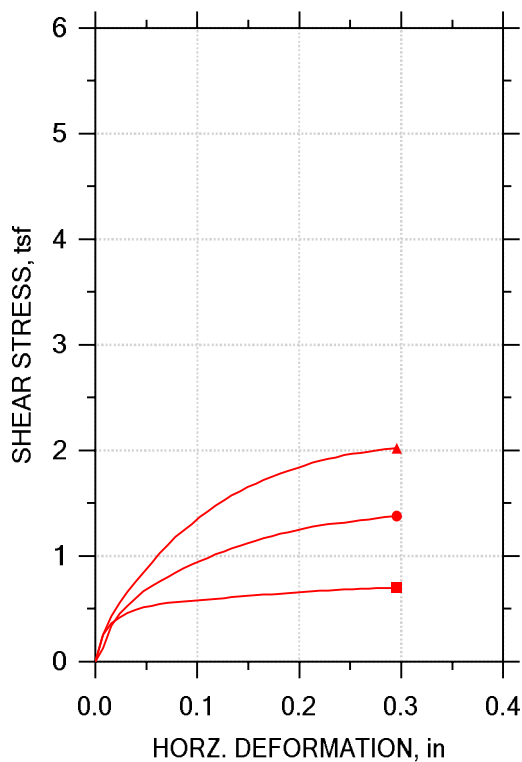
Project No.: MR155233  
 Checked By: WPQ  
 Depth: 35.0'-37.0'  
 Elevation: ----

Soil Description: FLY ASH / LEAN CLAY WITH SAND MIX SAMPLE TAKEN FROM THE FLY ASH STRATA  
 Remarks: TEST PERFORMED AS PER ASTM D3080.

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	1.44	0.02774	0.000	0.0000	0.0000
2	84.76	1.44	0.03083	0.143	0.007935	0.007935
3	122.53	1.44	0.03360	0.209	0.01587	0.01587
4	160.70	1.44	0.03562	0.264	0.02381	0.02381
5	200.90	1.44	0.03808	0.314	0.03174	0.03174
6	240.99	1.44	0.03990	0.354	0.03968	0.03968
7	279.87	1.44	0.04142	0.388	0.04761	0.04761
8	319.42	1.44	0.04274	0.418	0.05555	0.05555
9	357.55	1.44	0.04457	0.444	0.06348	0.06348
10	393.06	1.44	0.04533	0.464	0.07142	0.07142
11	433.53	1.44	0.04652	0.482	0.07935	0.07935
12	471.68	1.44	0.04816	0.499	0.08729	0.08729
13	508.29	1.44	0.04917	0.515	0.09522	0.09522
14	548.55	1.44	0.05018	0.531	0.1032	0.1032
15	588.53	1.44	0.05075	0.545	0.1111	0.1111
16	627.66	1.44	0.05176	0.559	0.1190	0.1190
17	663.82	1.44	0.05245	0.575	0.1270	0.1270
18	703.53	1.44	0.05321	0.630	0.1349	0.1349
19	742.80	1.44	0.05415	0.641	0.1428	0.1428
20	779.75	1.44	0.05472	0.655	0.1508	0.1508
21	821.94	1.44	0.05510	0.657	0.1587	0.1587
22	855.16	1.44	0.05579	0.666	0.1666	0.1666
23	894.84	1.44	0.05630	0.680	0.1746	0.1746
24	937.49	1.44	0.05636	0.685	0.1825	0.1825
25	975.40	1.44	0.05686	0.698	0.1904	0.1904
26	1013.53	1.44	0.05743	0.700	0.1984	0.1984
27	1052.23	1.44	0.05775	0.700	0.2063	0.2063
28	1089.85	1.44	0.05787	0.698	0.2142	0.2142
29	1130.18	1.44	0.05819	0.676	0.2221	0.2221
30	1166.99	1.44	0.05856	0.684	0.2301	0.2301
31	1208.40	1.44	0.05926	0.680	0.2380	0.2380
32	1235.66	1.44	0.05976	0.677	0.2431	0.2431





Symbol	■	●	▲	
Test No.	20.0 PSI	40.0 PSI	60.0 PSI	
Sample No.	S-9	S-9	S-9	
Shape	Circular	Circular	Circular	
Initial	Dimension, in	2.498	2.4992	2.5059
	Area, in <sup>2</sup>	4.901	4.9056	4.932
	Height, in	0.99213	0.99961	0.99291
	Water Content, %	26.32	26.88	27.01
	Dry Density, pcf	99.41	98.96	97.46
	Saturation, %	101.09	102.13	98.98
	Void Ratio	0.70807	0.71592	0.74226
Consol. Height, in	0.93839	0.93984	0.91168	
Consol. Void Ratio	0.61555	0.61332	0.59971	
Final	Water Content, %	20.28	18.96	17.91
	Dry Density, pcf	109.1	111.4	113.5
	Saturation, %	99.11	98.29	98.16
	Void Ratio	0.55655	0.52466	0.49629
Normal Stress, tsf	1.4387	2.8784	4.3182	
Max. Shear Stress, tsf	0.69878	1.3783	2.0224	
Ult. Shear Stress, tsf	0.69878	1.3783	2.0224	
Time to Failure, min	74.891	75.103	74.824	
Disp. Rate, in/min	0.0039823	0.0039823	0.0039823	
Estimated Specific Gravity	2.72	2.72	2.72	
Liquid Limit	30	30	30	
Plastic Limit	15	15	15	
Plasticity Index	15	15	15	

Project: DYNEGY HENNEPIN	
Location: HENNEPIN, IL	
Project No.: MR155233	
Boring No.: HEN-012 S-9	
Sample Type: TRIMMED	
Description: BROWN AND GRAYISH BROWN LEAN CLAY WITH SAND CL 359	
Remarks:	

DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-012 S-9  
 Sample No.: S-9  
 Test No.: 20.0 PSI

Location: HENNEPIN, IL  
 Tested By: HP  
 Test Date: 12/30/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: BCM  
 Depth: 30.0'-32.0'  
 Elevation: ----

Soil Description: BROWN AND GRAYISH BROWN LEAN CLAY WITH SAND CL  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	1.44	0.05374	0.000	0.0000	0.0000
2	2.36	1.44	0.05449	0.255	0.007902	0.007902
3	4.41	1.44	0.05541	0.361	0.01580	0.01580
4	6.20	1.44	0.05620	0.419	0.02364	0.02364
5	8.36	1.44	0.05759	0.461	0.03154	0.03154
6	10.28	1.44	0.05849	0.491	0.03940	0.03940
7	12.21	1.44	0.05946	0.514	0.04727	0.04727
8	14.37	1.44	0.06072	0.530	0.05514	0.05514
9	16.51	1.44	0.06170	0.545	0.06300	0.06300
10	18.51	1.44	0.06253	0.557	0.07087	0.07087
11	20.48	1.44	0.06368	0.563	0.07884	0.07884
12	22.37	1.44	0.06492	0.571	0.08664	0.08664
13	24.20	1.44	0.06593	0.574	0.09451	0.09451
14	26.24	1.44	0.06710	0.580	0.1024	0.1024
15	28.30	1.44	0.06820	0.586	0.1102	0.1102
16	30.30	1.44	0.06917	0.594	0.1181	0.1181
17	32.31	1.44	0.07004	0.603	0.1260	0.1260
18	34.44	1.44	0.07130	0.612	0.1339	0.1339
19	36.46	1.44	0.07221	0.620	0.1417	0.1417
20	38.12	1.44	0.07295	0.626	0.1497	0.1497
21	40.00	1.44	0.07385	0.630	0.1575	0.1575
22	42.18	1.44	0.07515	0.634	0.1654	0.1654
23	44.09	1.44	0.07589	0.638	0.1732	0.1732
24	46.27	1.44	0.07673	0.645	0.1811	0.1811
25	48.21	1.44	0.07745	0.650	0.1890	0.1890
26	50.13	1.44	0.07809	0.656	0.1969	0.1969
27	52.19	1.44	0.07879	0.662	0.2048	0.2048
28	54.02	1.44	0.07987	0.668	0.2126	0.2126
29	55.82	1.44	0.08097	0.671	0.2205	0.2205
30	57.85	1.44	0.08169	0.675	0.2283	0.2283
31	59.94	1.44	0.08230	0.678	0.2362	0.2362
32	61.95	1.44	0.08334	0.682	0.2441	0.2441
33	64.02	1.44	0.08442	0.687	0.2520	0.2520
34	65.84	1.44	0.08511	0.689	0.2598	0.2598
35	68.00	1.44	0.08554	0.692	0.2678	0.2678
36	69.87	1.44	0.08624	0.695	0.2757	0.2757
37	71.73	1.44	0.08714	0.696	0.2835	0.2835
38	73.67	1.44	0.08770	0.697	0.2914	0.2914
39	74.89	1.44	0.08801	0.699	0.2959	0.2959



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-012 S-9  
 Sample No.: S-9  
 Test No.: 40.0 PSI

Location: HENNEPIN, IL  
 Tested By: HP  
 Test Date: 12/30/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: BCM  
 Depth: 30.0'-32.0'  
 Elevation: ----

Soil Description: BROWN AND GRAYISH BROWN LEAN CLAY WITH SAND CL  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	2.88	0.05977	0.000	0.0000	0.0000
2	2.06	2.88	0.06089	0.127	0.007902	0.007902
3	4.31	2.88	0.06384	0.341	0.01577	0.01577
4	6.41	2.88	0.06564	0.452	0.02364	0.02364
5	8.28	2.88	0.06802	0.530	0.03150	0.03150
6	10.21	2.88	0.06982	0.600	0.03947	0.03947
7	12.15	2.88	0.07283	0.663	0.04727	0.04727
8	14.13	2.88	0.07441	0.714	0.05514	0.05514
9	16.14	2.88	0.07686	0.757	0.06300	0.06300
10	18.27	2.88	0.07875	0.799	0.07087	0.07087
11	20.38	2.88	0.08055	0.841	0.07877	0.07877
12	22.34	2.88	0.08280	0.882	0.08664	0.08664
13	24.49	2.88	0.08496	0.920	0.09451	0.09451
14	26.26	2.88	0.08615	0.954	0.1024	0.1024
15	28.11	2.88	0.08759	0.985	0.1102	0.1102
16	30.15	2.88	0.08930	1.02	0.1181	0.1181
17	32.26	2.88	0.09089	1.04	0.1260	0.1260
18	34.35	2.88	0.09193	1.07	0.1339	0.1339
19	36.34	2.88	0.09330	1.10	0.1417	0.1417
20	38.37	2.88	0.09418	1.12	0.1496	0.1496
21	40.32	2.88	0.09548	1.15	0.1575	0.1575
22	42.32	2.88	0.09696	1.17	0.1654	0.1654
23	44.13	2.88	0.09798	1.19	0.1732	0.1732
24	46.14	2.88	0.09912	1.21	0.1811	0.1811
25	48.23	2.88	0.1007	1.23	0.1890	0.1890
26	50.29	2.88	0.1015	1.24	0.1969	0.1969
27	52.22	2.88	0.1025	1.26	0.2047	0.2047
28	54.25	2.88	0.1032	1.28	0.2126	0.2126
29	56.19	2.88	0.1044	1.29	0.2205	0.2205
30	58.34	2.88	0.1053	1.30	0.2283	0.2283
31	59.96	2.88	0.1060	1.31	0.2362	0.2362
32	61.98	2.88	0.1068	1.32	0.2441	0.2441
33	64.03	2.88	0.1072	1.33	0.2520	0.2520
34	66.11	2.88	0.1080	1.34	0.2598	0.2598
35	68.11	2.88	0.1089	1.35	0.2678	0.2678
36	70.11	2.88	0.1101	1.36	0.2757	0.2757
37	72.14	2.88	0.1108	1.37	0.2835	0.2835
38	74.07	2.88	0.1112	1.38	0.2914	0.2914
39	75.10	2.88	0.1114	1.38	0.2953	0.2953



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-012 S-9  
 Sample No.: S-9  
 Test No.: 60.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/29/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 30.0'-32.0'  
 Elevation: ----

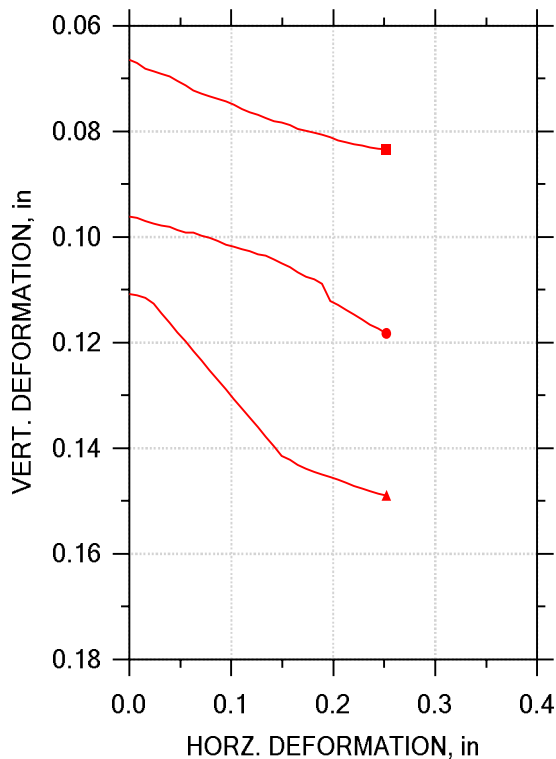
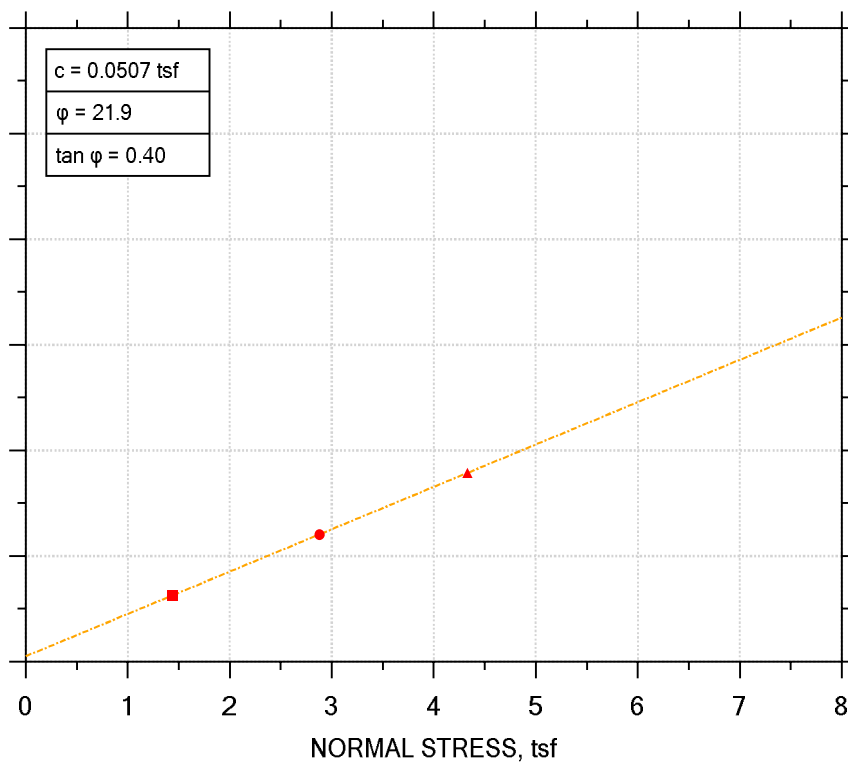
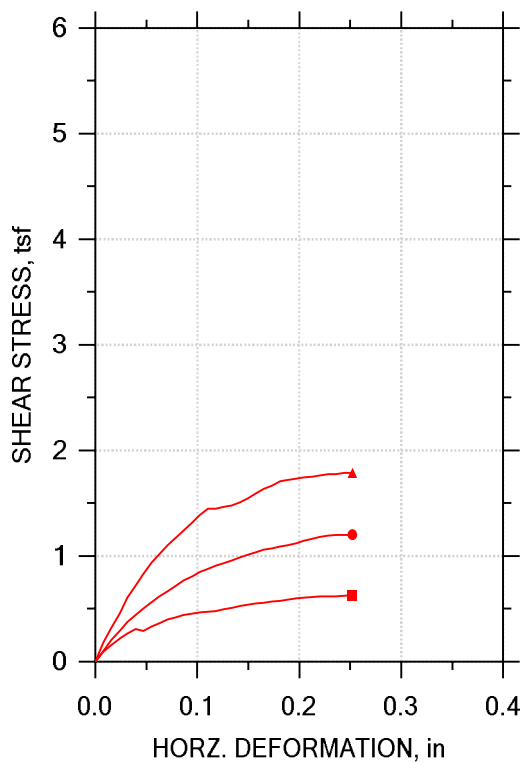
Soil Description: BROWN AND GRAYISH BROWN LEAN CLAY WITH SAND CL  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	4.31	0.08124	0.000	0.0000	0.0000
2	2.11	4.31	0.08504	0.255	0.007902	0.007902
3	3.99	4.31	0.08810	0.430	0.01587	0.01587
4	5.99	4.31	0.09148	0.557	0.02364	0.02364
5	8.00	4.31	0.09436	0.659	0.03150	0.03150
6	10.07	4.31	0.09768	0.755	0.03944	0.03944
7	12.06	4.32	0.1007	0.842	0.04727	0.04727
8	14.23	4.32	0.1029	0.931	0.05514	0.05514
9	16.27	4.32	0.1053	1.02	0.06300	0.06300
10	18.25	4.32	0.1070	1.10	0.07087	0.07087
11	20.40	4.32	0.1095	1.18	0.07877	0.07877
12	22.17	4.32	0.1109	1.24	0.08664	0.08664
13	24.09	4.32	0.1130	1.30	0.09451	0.09451
14	26.17	4.32	0.1145	1.37	0.1024	0.1024
15	28.27	4.32	0.1158	1.42	0.1103	0.1103
16	30.44	4.32	0.1178	1.48	0.1181	0.1181
17	32.30	4.32	0.1194	1.53	0.1260	0.1260
18	34.32	4.32	0.1202	1.58	0.1339	0.1339
19	36.24	4.32	0.1216	1.61	0.1417	0.1417
20	38.28	4.32	0.1229	1.66	0.1496	0.1496
21	40.11	4.32	0.1240	1.69	0.1575	0.1575
22	42.17	4.32	0.1256	1.72	0.1654	0.1654
23	44.24	4.32	0.1263	1.75	0.1732	0.1732
24	46.21	4.32	0.1278	1.78	0.1811	0.1811
25	48.15	4.32	0.1289	1.81	0.1890	0.1890
26	50.11	4.32	0.1296	1.83	0.1969	0.1969
27	52.12	4.32	0.1308	1.86	0.2047	0.2047
28	54.28	4.32	0.1319	1.89	0.2126	0.2126
29	55.96	4.32	0.1325	1.90	0.2205	0.2205
30	57.96	4.32	0.1335	1.92	0.2283	0.2283
31	60.01	4.32	0.1348	1.94	0.2362	0.2362
32	62.07	4.32	0.1355	1.96	0.2441	0.2441
33	64.02	4.32	0.1362	1.97	0.2520	0.2520
34	65.98	4.32	0.1370	1.98	0.2598	0.2598
35	68.04	4.32	0.1379	1.99	0.2678	0.2678
36	70.01	4.32	0.1386	2.00	0.2756	0.2756
37	72.03	4.32	0.1392	2.01	0.2835	0.2835
38	73.88	4.32	0.1399	2.02	0.2914	0.2914
39	74.82	4.32	0.1402	2.02	0.2953	0.2953







Symbol	■	●	▲	
Test No.	20.0 PSI	40.0 PSI	60.0 PSI	
Sample No.	S-10	S-10	S-10	
Shape	Circular	Circular	Circular	
Initial	Dimension, in	2.5004	2.4969	2.4925
	Area, in <sup>2</sup>	4.9103	4.8964	4.8794
	Height, in	0.98937	0.99173	0.9937
	Water Content, %	63.41	63.89	63.12
	Dry Density, pcf	59.35	58.29	59.56
	Saturation, %	92.67	90.85	92.76
	Void Ratio	1.8612	1.9129	1.8508
Consol. Height, in	0.92292	0.89565	0.88288	
Consol. Void Ratio	1.669	1.6307	1.5329	
Final	Water Content, %	59.75	57.69	52.17
	Dry Density, pcf	64.81	66.19	70.06
	Saturation, %	100.32	100.23	99.68
	Void Ratio	1.62	1.5655	1.4235
Normal Stress, tsf	1.4387	2.8788	4.328	
Max. Shear Stress, tsf	0.62916	1.2024	1.788	
Ult. Shear Stress, tsf	0.62916	1.2019	1.788	
Time to Failure, min	63.266	61.596	63.531	
Disp. Rate, in/min	0.004	0.004	0.004	
Estimated Specific Gravity	2.72	2.72	2.72	
Liquid Limit	70	70	70	
Plastic Limit	38	38	38	
Plasticity Index	32	32	32	

Project: DYNEGY HENNEPIN
Location: HENNEPIN, IL
Project No.: MR155233
Boring No.: HEN-014 S-10
Sample Type: TRIMMED
Description: VERY DARK BROWNISH GRAY ORGANIC SILT MH
Remarks:

DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-014 S-10  
 Sample No.: S-10  
 Test No.: 20.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/13/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 35.0'-37.0'  
 Elevation: ----

Soil Description: VERY DARK BROWNISH GRAY ORGANIC SILT MH  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	1.44	0.06645	0.000	0.0000	0.0000
2	1.99	1.44	0.06706	0.0884	0.007867	0.007867
3	3.95	1.44	0.06811	0.159	0.01577	0.01577
4	5.72	1.44	0.06858	0.215	0.02364	0.02364
5	7.78	1.44	0.06906	0.268	0.03150	0.03150
6	9.71	1.44	0.06958	0.306	0.03937	0.03937
7	11.55	1.44	0.07038	0.293	0.04724	0.04724
8	13.80	1.44	0.07126	0.333	0.05514	0.05514
9	15.82	1.44	0.07223	0.366	0.06300	0.06300
10	17.89	1.44	0.07286	0.397	0.07087	0.07087
11	19.81	1.44	0.07329	0.420	0.07874	0.07874
12	21.66	1.44	0.07380	0.443	0.08664	0.08664
13	23.47	1.44	0.07425	0.455	0.09451	0.09451
14	25.50	1.44	0.07490	0.466	0.1024	0.1024
15	27.62	1.44	0.07571	0.470	0.1103	0.1103
16	29.65	1.44	0.07641	0.477	0.1181	0.1181
17	31.63	1.44	0.07682	0.494	0.1260	0.1260
18	33.73	1.44	0.07749	0.511	0.1339	0.1339
19	35.77	1.44	0.07807	0.528	0.1418	0.1418
20	37.40	1.44	0.07832	0.541	0.1496	0.1496
21	39.24	1.44	0.07877	0.552	0.1575	0.1575
22	41.37	1.44	0.07947	0.560	0.1654	0.1654
23	43.43	1.44	0.07990	0.569	0.1732	0.1732
24	45.55	1.44	0.08028	0.575	0.1811	0.1811
25	47.50	1.44	0.08061	0.586	0.1890	0.1890
26	49.45	1.44	0.08111	0.597	0.1968	0.1968
27	51.42	1.44	0.08169	0.605	0.2047	0.2047
28	53.26	1.44	0.08205	0.612	0.2126	0.2126
29	55.04	1.44	0.08241	0.617	0.2205	0.2205
30	57.01	1.44	0.08271	0.619	0.2283	0.2283
31	59.20	1.44	0.08306	0.620	0.2362	0.2362
32	61.20	1.44	0.08324	0.626	0.2441	0.2441
33	63.27	1.44	0.08342	0.629	0.2520	0.2520



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-014 S-10  
 Sample No.: S-10  
 Test No.: 40.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/13/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 35.0'-37.0'  
 Elevation: ----

Soil Description: VERY DARK BROWNISH GRAY ORGANIC SILT MH  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	2.88	0.09608	0.000	0.0000	0.0000
2	2.14	2.88	0.09638	0.0973	0.007867	0.007867
3	4.46	2.88	0.09696	0.206	0.01577	0.01577
4	6.38	2.88	0.09744	0.291	0.02364	0.02364
5	8.47	2.88	0.09783	0.374	0.03150	0.03150
6	10.24	2.88	0.09812	0.442	0.03937	0.03937
7	12.06	2.88	0.09869	0.505	0.04724	0.04724
8	14.09	2.88	0.09913	0.564	0.05517	0.05517
9	16.18	2.88	0.09922	0.616	0.06300	0.06300
10	18.35	2.88	0.09981	0.664	0.07087	0.07087
11	20.32	2.88	0.1001	0.716	0.07874	0.07874
12	22.33	2.88	0.1008	0.768	0.08660	0.08660
13	24.20	2.88	0.1014	0.807	0.09451	0.09451
14	26.17	2.88	0.1018	0.850	0.1024	0.1024
15	27.99	2.88	0.1023	0.881	0.1102	0.1102
16	29.96	2.88	0.1027	0.908	0.1181	0.1181
17	32.02	2.88	0.1033	0.934	0.1260	0.1260
18	34.18	2.88	0.1035	0.958	0.1339	0.1339
19	36.19	2.88	0.1043	0.988	0.1417	0.1417
20	38.09	2.88	0.1050	1.01	0.1496	0.1496
21	40.08	2.88	0.1058	1.04	0.1575	0.1575
22	42.07	2.88	0.1066	1.06	0.1653	0.1653
23	43.72	2.88	0.1075	1.07	0.1732	0.1732
24	45.68	2.88	0.1080	1.09	0.1811	0.1811
25	47.72	2.88	0.1088	1.10	0.1890	0.1890
26	49.91	2.88	0.1121	1.12	0.1969	0.1969
27	51.97	2.88	0.1128	1.14	0.2047	0.2047
28	53.89	2.88	0.1138	1.16	0.2126	0.2126
29	55.91	2.88	0.1147	1.18	0.2205	0.2205
30	57.81	2.88	0.1156	1.20	0.2283	0.2283
31	59.72	2.88	0.1166	1.20	0.2362	0.2362
32	61.60	2.88	0.1174	1.20	0.2441	0.2441
33	63.64	2.88	0.1183	1.20	0.2520	0.2520



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-014 S-10  
 Sample No.: S-10  
 Test No.: 60.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/13/15  
 Sample Type: TRIMMED

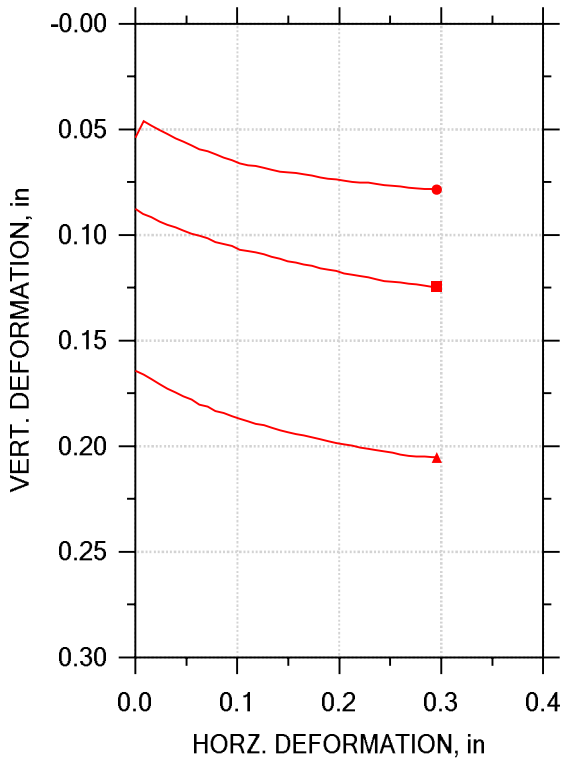
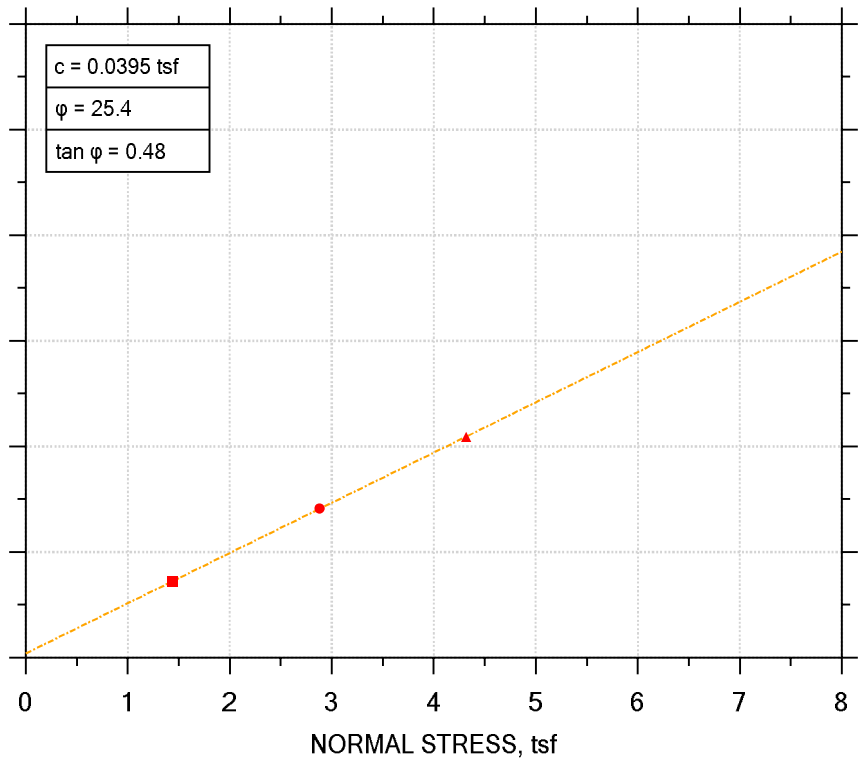
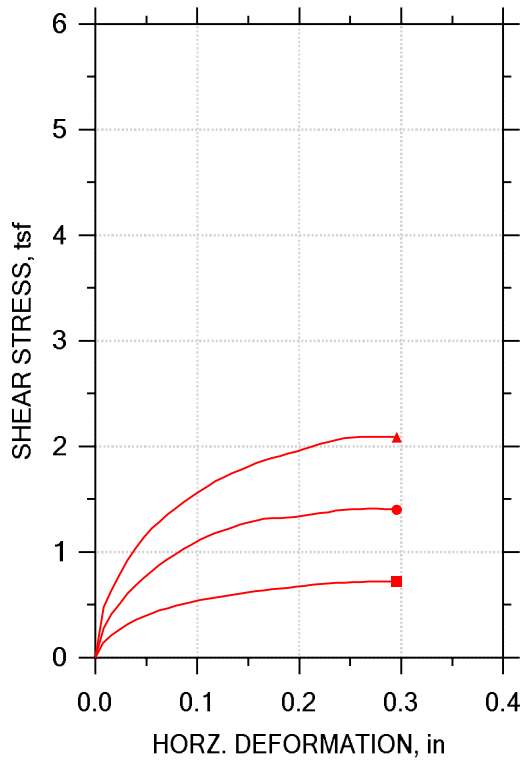
Project No.: MR155233  
 Checked By: WPQ  
 Depth: 35.0'-37.0'  
 Elevation: ----

Soil Description: VERY DARK BROWNISH GRAY ORGANIC SILT MH  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	4.32	0.1108	0.000	0.0000	0.0000
2	1.96	4.32	0.1110	0.174	0.007867	0.007867
3	3.96	4.32	0.1115	0.324	0.01577	0.01577
4	6.07	4.32	0.1126	0.454	0.02364	0.02364
5	8.38	4.32	0.1144	0.603	0.03150	0.03150
6	10.29	4.33	0.1162	0.722	0.03937	0.03937
7	12.37	4.32	0.1180	0.833	0.04724	0.04724
8	14.20	4.32	0.1198	0.936	0.05514	0.05514
9	15.96	4.33	0.1216	1.02	0.06304	0.06304
10	17.98	4.33	0.1234	1.10	0.07087	0.07087
11	20.04	4.33	0.1252	1.17	0.07874	0.07874
12	22.18	4.33	0.1270	1.24	0.08660	0.08660
13	24.18	4.33	0.1288	1.31	0.09451	0.09451
14	26.19	4.33	0.1307	1.39	0.1024	0.1024
15	28.05	4.33	0.1325	1.45	0.1102	0.1102
16	30.04	4.33	0.1342	1.45	0.1181	0.1181
17	31.83	4.33	0.1361	1.47	0.1260	0.1260
18	33.83	4.33	0.1378	1.48	0.1339	0.1339
19	35.92	4.33	0.1396	1.51	0.1417	0.1417
20	37.97	4.33	0.1414	1.54	0.1496	0.1496
21	39.90	4.33	0.1421	1.59	0.1575	0.1575
22	41.91	4.33	0.1432	1.64	0.1653	0.1653
23	43.88	4.33	0.1439	1.67	0.1732	0.1732
24	45.98	4.33	0.1445	1.71	0.1811	0.1811
25	47.55	4.33	0.1449	1.72	0.1890	0.1890
26	49.50	4.33	0.1454	1.73	0.1968	0.1968
27	51.56	4.33	0.1460	1.74	0.2047	0.2047
28	53.71	4.33	0.1466	1.75	0.2126	0.2126
29	55.70	4.33	0.1472	1.76	0.2205	0.2205
30	57.68	4.33	0.1476	1.77	0.2283	0.2283
31	59.68	4.33	0.1481	1.78	0.2362	0.2362
32	61.60	4.33	0.1487	1.79	0.2441	0.2441
33	63.53	4.33	0.1489	1.79	0.2520	0.2520





Symbol	■	●	▲	
Test No.	20.0 PSI	40.0 PSI	60.0 PSI	
Sample No.	S-9	S-10	S-10	
Shape	Circular	Circular	Circular	
Initial	Dimension, in	2.4988	2.4925	2.4949
	Area, in <sup>2</sup>	4.9041	4.8794	4.8887
	Height, in	0.99685	0.9937	0.99921
	Water Content, %	50.74	50.66	50.36
	Dry Density, pcf	63.80	64.49	64.25
	Saturation, %	83.06	84.38	83.37
	Void Ratio	1.6615	1.6331	1.6429
Consol. Height, in	0.90913	0.93973	0.83483	
Consol. Void Ratio	1.4273	1.4901	1.2081	
Final	Water Content, %	47.61	52.20	40.38
	Dry Density, pcf	72.91	70.02	80.86
	Saturation, %	97.45	99.63	99.86
	Void Ratio	1.3288	1.4251	1.0999
Normal Stress, tsf	1.4387	2.8787	4.3188	
Max. Shear Stress, tsf	0.72169	1.4131	2.0916	
Ult. Shear Stress, tsf	0.72113	1.4013	2.0888	
Time to Failure, min	73.304	70.325	72.709	
Disp. Rate, in/min	0.004	0.004	0.004	
Estimated Specific Gravity	2.72	2.72	2.72	
Liquid Limit	60	60	60	
Plastic Limit	35	35	35	
Plasticity Index	25	25	25	

Project: DYNEGY HENNEPIN	
Location: HENNEPIN, IL	
Project No.: MR155233	
Boring No.: HEN-017 S-9	
Sample Type: TRIMMED	
Description: DARK BROWNISH GRAY ORGANIC CLAY WITH SAND OL- SAND SEAMS AND SHELL NOTED	
Remarks:	

DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-017 S-9  
 Sample No.: S-9  
 Test No.: 20.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/13/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 30.0'-32.0'  
 Elevation: ----

Soil Description: DARK BROWNISH GRAY ORGANIC CLAY WITH SAND OL- SAND SEAMS AND SHELL NOTED  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	1.44	0.08772	0.000	0.0000	0.0000
2	2.20	1.44	0.08988	0.137	0.007902	0.007902
3	4.24	1.44	0.09150	0.210	0.01577	0.01577
4	6.12	1.44	0.09370	0.266	0.02374	0.02374
5	8.04	1.44	0.09516	0.314	0.03150	0.03150
6	10.02	1.44	0.09638	0.355	0.03940	0.03940
7	11.96	1.44	0.09802	0.391	0.04727	0.04727
8	13.90	1.44	0.09928	0.419	0.05517	0.05517
9	16.08	1.44	0.1002	0.446	0.06300	0.06300
10	18.20	1.44	0.1016	0.468	0.07091	0.07091
11	20.21	1.44	0.1033	0.491	0.07877	0.07877
12	22.29	1.44	0.1041	0.511	0.08664	0.08664
13	24.05	1.44	0.1051	0.528	0.09451	0.09451
14	25.85	1.44	0.1068	0.544	0.1024	0.1024
15	27.87	1.44	0.1076	0.557	0.1102	0.1102
16	29.97	1.44	0.1082	0.569	0.1182	0.1182
17	32.12	1.44	0.1092	0.582	0.1260	0.1260
18	34.05	1.44	0.1103	0.593	0.1339	0.1339
19	36.06	1.44	0.1112	0.606	0.1417	0.1417
20	38.04	1.44	0.1126	0.617	0.1496	0.1496
21	39.95	1.44	0.1131	0.628	0.1575	0.1575
22	41.73	1.44	0.1139	0.637	0.1654	0.1654
23	43.68	1.44	0.1147	0.646	0.1732	0.1732
24	45.76	1.44	0.1158	0.655	0.1811	0.1811
25	47.81	1.44	0.1163	0.663	0.1890	0.1890
26	49.83	1.44	0.1171	0.672	0.1969	0.1969
27	51.86	1.44	0.1181	0.681	0.2047	0.2047
28	53.73	1.44	0.1188	0.688	0.2126	0.2126
29	55.82	1.44	0.1195	0.698	0.2205	0.2205
30	57.41	1.44	0.1200	0.702	0.2283	0.2283
31	59.37	1.44	0.1210	0.707	0.2362	0.2362
32	61.47	1.44	0.1219	0.710	0.2441	0.2441
33	63.59	1.44	0.1222	0.713	0.2520	0.2520
34	65.57	1.44	0.1224	0.717	0.2598	0.2598
35	67.56	1.44	0.1230	0.718	0.2678	0.2678
36	69.58	1.44	0.1235	0.720	0.2756	0.2756
37	71.39	1.44	0.1240	0.721	0.2835	0.2835
38	73.30	1.44	0.1245	0.722	0.2914	0.2914
39	74.33	1.44	0.1246	0.721	0.2958	0.2958



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-014 S-10  
 Sample No.: S-10  
 Test No.: 40.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/13/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 35.0'-37.0'  
 Elevation: ----

Soil Description: DARK BROWNISH GRAY ORGANIC CLAY WITH SAND OL- SAND SEAMS AND SHELL NOTED  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	2.88	0.05397	0.000	0.0000	0.0000
2	2.48	2.88	0.04592	0.281	0.007936	0.007936
3	4.74	2.88	0.04821	0.415	0.01577	0.01577
4	6.92	2.88	0.05017	0.508	0.02364	0.02364
5	9.08	2.88	0.05215	0.604	0.03154	0.03154
6	11.02	2.88	0.05413	0.684	0.03940	0.03940
7	12.91	2.88	0.05577	0.754	0.04727	0.04727
8	14.79	2.88	0.05759	0.819	0.05514	0.05514
9	16.83	2.88	0.05936	0.881	0.06300	0.06300
10	18.90	2.88	0.06031	0.936	0.07091	0.07091
11	20.98	2.88	0.06175	0.984	0.07881	0.07881
12	22.90	2.88	0.06337	1.03	0.08664	0.08664
13	24.97	2.88	0.06458	1.08	0.09451	0.09451
14	27.05	2.88	0.06620	1.12	0.1024	0.1024
15	28.75	2.88	0.06688	1.15	0.1102	0.1102
16	30.65	2.88	0.06735	1.18	0.1181	0.1181
17	32.80	2.88	0.06820	1.21	0.1260	0.1260
18	34.81	2.88	0.06915	1.23	0.1339	0.1339
19	36.91	2.88	0.07005	1.26	0.1417	0.1417
20	38.79	2.88	0.07031	1.28	0.1496	0.1496
21	40.72	2.88	0.07061	1.30	0.1575	0.1575
22	42.75	2.88	0.07131	1.31	0.1654	0.1654
23	44.66	2.88	0.07191	1.32	0.1733	0.1733
24	46.49	2.88	0.07265	1.32	0.1811	0.1811
25	48.46	2.88	0.07326	1.33	0.1890	0.1890
26	50.53	2.88	0.07373	1.34	0.1969	0.1969
27	52.55	2.88	0.07427	1.35	0.2047	0.2047
28	54.57	2.88	0.07474	1.36	0.2126	0.2126
29	56.40	2.88	0.07513	1.37	0.2205	0.2205
30	58.54	2.88	0.07531	1.38	0.2283	0.2283
31	60.49	2.88	0.07567	1.39	0.2362	0.2362
32	62.38	2.88	0.07632	1.40	0.2441	0.2441
33	64.23	2.88	0.07663	1.40	0.2520	0.2520
34	66.35	2.88	0.07711	1.41	0.2598	0.2598
35	68.36	2.88	0.07753	1.41	0.2678	0.2678
36	70.32	2.88	0.07787	1.41	0.2756	0.2756
37	72.11	2.88	0.07805	1.41	0.2835	0.2835
38	74.02	2.88	0.07830	1.41	0.2914	0.2914
39	75.19	2.88	0.07850	1.40	0.2954	0.2954



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-014 S-10  
 Sample No.: S-10  
 Test No.: 60.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/13/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 35.0'-37.0'  
 Elevation: ----

Soil Description: DARK BROWNISH GRAY ORGANIC CLAY WITH SAND OL- SAND SEAMS AND SHELL NOTED  
 Remarks:

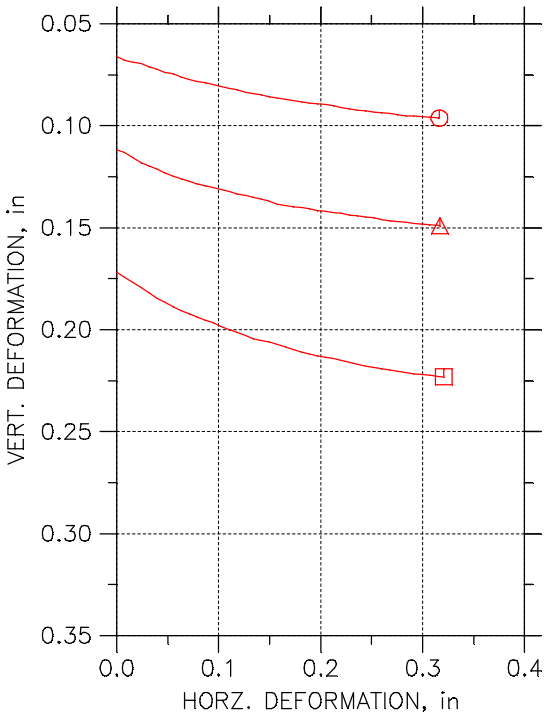
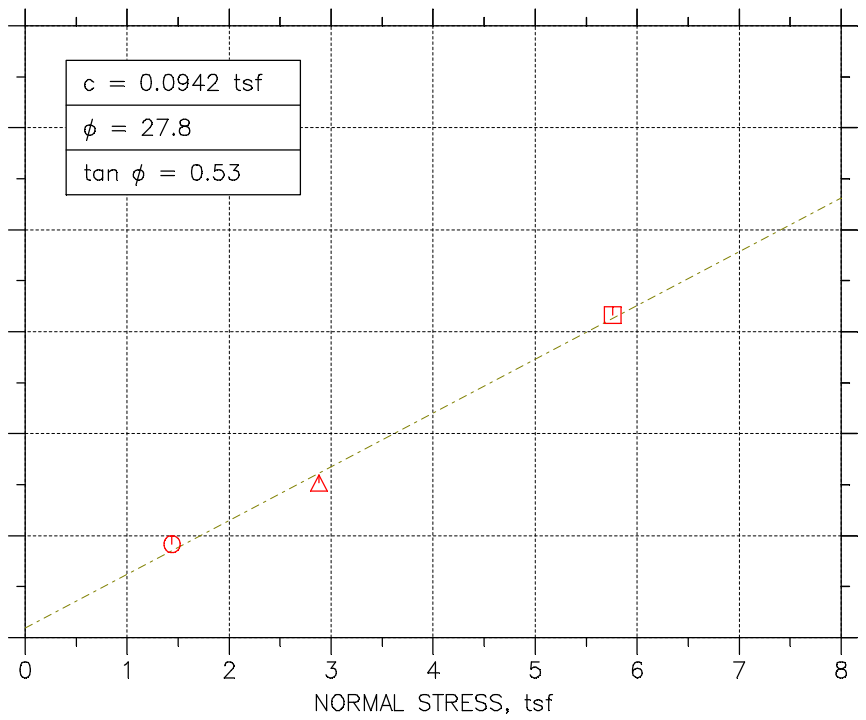
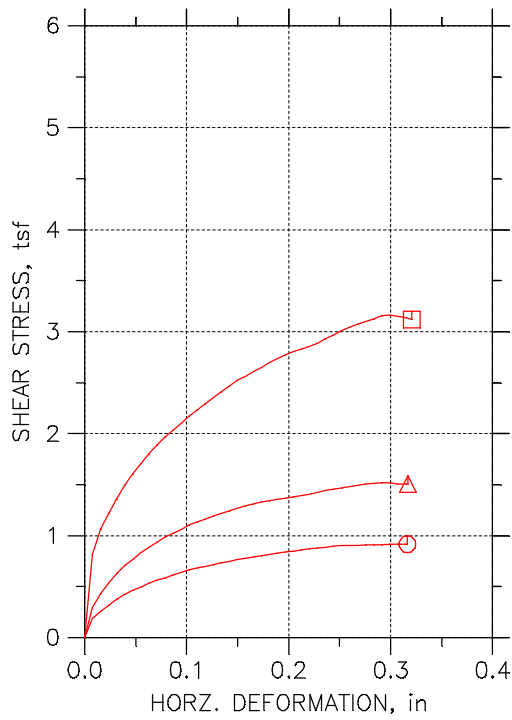
Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	4.32	0.1644	0.000	0.0000	0.0000
2	2.87	4.32	0.1661	0.476	0.007936	0.007936
3	5.02	4.32	0.1683	0.638	0.01580	0.01580
4	7.32	4.32	0.1706	0.785	0.02364	0.02364
5	9.43	4.32	0.1726	0.920	0.03150	0.03150
6	11.41	4.32	0.1746	1.04	0.03944	0.03944
7	13.32	4.32	0.1764	1.13	0.04727	0.04727
8	15.31	4.32	0.1780	1.23	0.05514	0.05514
9	17.28	4.32	0.1802	1.29	0.06304	0.06304
10	19.26	4.32	0.1812	1.36	0.07087	0.07087
11	21.42	4.32	0.1833	1.41	0.07877	0.07877
12	23.30	4.32	0.1844	1.47	0.08664	0.08664
13	25.32	4.32	0.1857	1.53	0.09454	0.09454
14	27.14	4.32	0.1869	1.58	0.1024	0.1024
15	29.28	4.32	0.1881	1.63	0.1102	0.1102
16	31.25	4.32	0.1893	1.67	0.1181	0.1181
17	33.23	4.32	0.1901	1.71	0.1260	0.1260
18	35.24	4.32	0.1913	1.75	0.1339	0.1339
19	37.22	4.32	0.1924	1.78	0.1417	0.1417
20	39.18	4.32	0.1934	1.81	0.1496	0.1496
21	41.14	4.32	0.1942	1.84	0.1575	0.1575
22	43.17	4.32	0.1948	1.87	0.1654	0.1654
23	45.13	4.32	0.1957	1.89	0.1732	0.1732
24	47.14	4.32	0.1966	1.91	0.1811	0.1811
25	49.12	4.32	0.1976	1.93	0.1890	0.1890
26	51.15	4.32	0.1984	1.95	0.1969	0.1969
27	53.20	4.32	0.1991	1.98	0.2048	0.2048
28	55.12	4.32	0.1997	2.00	0.2126	0.2126
29	56.93	4.32	0.2007	2.02	0.2205	0.2205
30	58.94	4.32	0.2012	2.04	0.2283	0.2283
31	61.01	4.32	0.2019	2.06	0.2362	0.2362
32	63.11	4.32	0.2025	2.08	0.2441	0.2441
33	64.90	4.32	0.2031	2.09	0.2520	0.2520
34	66.86	4.32	0.2039	2.09	0.2598	0.2598
35	68.95	4.32	0.2046	2.09	0.2678	0.2678
36	70.84	4.32	0.2048	2.09	0.2756	0.2756
37	72.71	4.32	0.2050	2.09	0.2835	0.2835
38	74.61	4.32	0.2052	2.09	0.2914	0.2914
39	75.80	4.32	0.2053	2.09	0.2956	0.2956





# DIRECT SHEAR TEST by ASTM D3080



Symbol	○	△	□	
Test No.	20 PSI	40 PSI	80 PSI	
Sample No.	S-11	S-11	S-11	
Shape	Circular	Circular	Circular	
Initial	Dimension, in	2.5783	2.574	2.5764
	Area, in <sup>2</sup>	5.2212	5.2037	5.2133
	Height, in	0.99882	0.99055	0.99331
	Water Content, %	40.96	40.97	40.38
	Dry Density, pcf	71.698	72.342	72.172
	Saturation, %	81.42	82.71	81.20
	Void Ratio	1.3683	1.3472	1.3528
Consol. Height, in		0.93345	0.88036	0.82222
Consol. Void Ratio		1.2133	1.0861	0.94751
Final	Water Content, %	42.12	36.41	30.26
	Dry Density, pcf	79.345	85.159	93.078
	Saturation, %	100.49	99.64	99.85
	Void Ratio	1.1401	0.99396	0.82432
Normal Stress, tsf		1.4387	2.8788	5.7589
Max. Shear Stress, tsf		0.91675	1.517	3.1636
Ult. Shear Stress, tsf		0.91675	1.5068	3.1176
Time to Failure, min		80.291	75.783	79.062
Disp. Rate, in/min		0.004	0.004	0.004
Estimated Specific Gravity		2.72	2.72	2.72
Liquid Limit		27	27	27
Plastic Limit		20	20	20
Plasticity Index		7	7	7

Project: DYNEGY HENNEPIN	
Location: HENNEPIN, IL	
Project No.: MR155233	
Boring No.: HEN-018 S11	
Sample Type: 3.0" ST	
Description: DARK BROWN AND GRAY ORGANIC CLAY WITH SAND OL - SAND SEAMS AND SHELL NOTED	
Remarks: TEST PERFORMED AS PER ASTM D3080.	

DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-018 S11  
 Sample No.: S-11  
 Test No.: 20 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 40.0'-42.0'  
 Elevation: ----

Soil Description: DARK BROWN AND GRAY ORGANIC CLAY WITH SAND OL - SAND SEAMS AND SHELL NOTED  
 Remarks: TEST PERFORMED AS PER ASTM D3080.

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in
1	0.00	1.439	0.066	0	0
2	2.61	1.437	0.06783	0.1909	0.007876
3	4.60	1.438	0.06884	0.2576	0.01575
4	6.53	1.436	0.06966	0.3184	0.02363
5	8.61	1.436	0.07117	0.3765	0.0315
6	10.63	1.436	0.07243	0.4272	0.03938
7	12.62	1.437	0.07376	0.4666	0.04725
8	14.54	1.437	0.07464	0.4992	0.05513
9	16.54	1.439	0.07622	0.5322	0.06301
10	18.52	1.439	0.07748	0.5621	0.07088
11	20.46	1.438	0.07823	0.5861	0.07876
12	22.45	1.438	0.07893	0.6149	0.08663
13	24.59	1.438	0.07994	0.64	0.09451
14	26.43	1.439	0.08075	0.6634	0.1024
15	28.43	1.439	0.0817	0.6837	0.1103
16	30.42	1.437	0.08227	0.6986	0.1181
17	32.47	1.438	0.08353	0.7173	0.126
18	34.56	1.438	0.08435	0.7354	0.1339
19	36.52	1.438	0.08492	0.7498	0.1418
20	38.29	1.438	0.08567	0.7674	0.1496
21	40.39	1.438	0.0863	0.7808	0.1575
22	42.43	1.438	0.087	0.793	0.1654
23	44.32	1.439	0.08769	0.8048	0.1733
24	46.47	1.438	0.08826	0.8186	0.1811
25	48.52	1.438	0.08901	0.8293	0.189
26	50.45	1.439	0.08927	0.8394	0.1969
27	52.21	1.439	0.08952	0.8495	0.2048
28	54.25	1.439	0.09034	0.857	0.2126
29	56.31	1.438	0.09116	0.8719	0.2205
30	58.23	1.439	0.09185	0.8805	0.2284
31	60.23	1.439	0.09242	0.8863	0.2362
32	62.18	1.439	0.0928	0.8991	0.2441
33	64.11	1.439	0.09336	0.9013	0.252
34	66.08	1.439	0.0938	0.9055	0.2599
35	68.01	1.439	0.09412	0.9061	0.2677
36	70.08	1.438	0.09462	0.9087	0.2756
37	71.98	1.439	0.09513	0.9125	0.2835
38	74.07	1.439	0.09538	0.9103	0.2914
39	76.00	1.439	0.0957	0.9141	0.2992
40	77.97	1.439	0.09595	0.9135	0.3071
41	79.91	1.439	0.0962	0.9162	0.315
42	80.29	1.439	0.09626	0.9167	0.3163



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-018 S11  
 Sample No.: S-11  
 Test No.: 40 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 40.0'-42.0'  
 Elevation: ----

Soil Description: DARK BROWN AND GRAY ORGANIC CLAY WITH SAND OL - SAND SEAMS AND SHELL NOTED  
 Remarks: TEST PERFORMED AS PER ASTM D3080.

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in
1	0.00	2.88	0.1118	0	0
2	2.24	2.874	0.1132	0.2943	0.007876
3	4.45	2.877	0.1156	0.4329	0.01575
4	6.47	2.879	0.1181	0.5399	0.02363
5	8.39	2.879	0.1197	0.625	0.0315
6	10.46	2.878	0.1212	0.7069	0.03938
7	12.43	2.878	0.1232	0.7647	0.04725
8	14.48	2.877	0.1248	0.8326	0.05513
9	16.38	2.877	0.126	0.8856	0.06301
10	18.29	2.879	0.1272	0.9343	0.07088
11	20.31	2.878	0.1284	0.9867	0.07876
12	22.28	2.877	0.1295	1.025	0.08663
13	24.27	2.878	0.1303	1.061	0.09451
14	26.47	2.879	0.1313	1.103	0.1024
15	28.29	2.878	0.1323	1.135	0.1103
16	30.33	2.878	0.1334	1.164	0.1181
17	32.24	2.878	0.1343	1.19	0.126
18	34.28	2.878	0.1352	1.218	0.1339
19	36.38	2.878	0.1362	1.245	0.1418
20	38.30	2.878	0.137	1.267	0.1496
21	40.17	2.879	0.1384	1.291	0.1575
22	42.16	2.877	0.1391	1.312	0.1654
23	44.26	2.879	0.1396	1.332	0.1733
24	46.14	2.879	0.14	1.343	0.1811
25	48.19	2.879	0.1408	1.355	0.189
26	50.33	2.879	0.1415	1.368	0.1969
27	52.21	2.879	0.142	1.382	0.2048
28	54.03	2.879	0.1425	1.394	0.2126
29	56.02	2.878	0.143	1.407	0.2205
30	58.15	2.879	0.1439	1.426	0.2284
31	60.05	2.879	0.1441	1.441	0.2362
32	62.00	2.879	0.1447	1.454	0.2441
33	64.00	2.879	0.1452	1.468	0.252
34	65.90	2.879	0.1461	1.481	0.2599
35	67.88	2.878	0.1467	1.493	0.2677
36	69.83	2.879	0.1471	1.504	0.2756
37	71.65	2.879	0.1475	1.512	0.2835
38	73.83	2.879	0.1481	1.516	0.2914
39	75.78	2.879	0.1484	1.517	0.2992
40	77.73	2.879	0.1486	1.508	0.3071
41	79.68	2.879	0.149	1.506	0.315
42	80.15	2.879	0.1491	1.507	0.317



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-018 S11  
 Sample No.: S-11  
 Test No.: 80 PSI

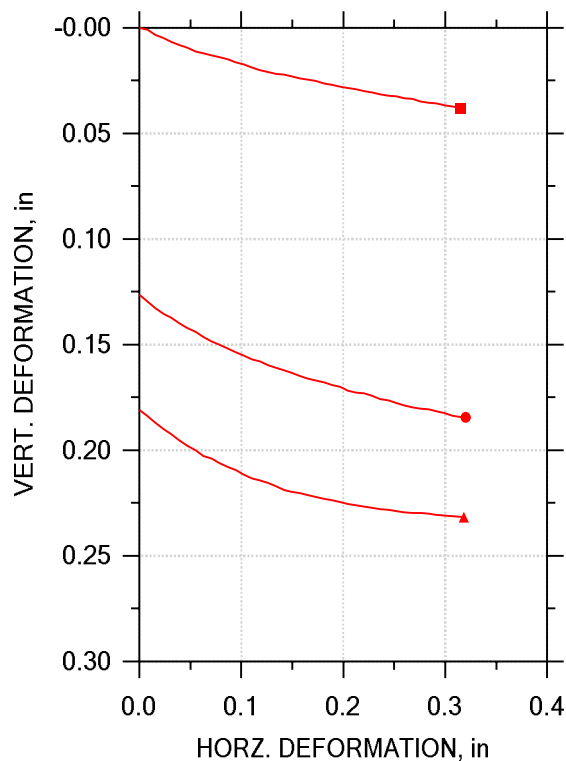
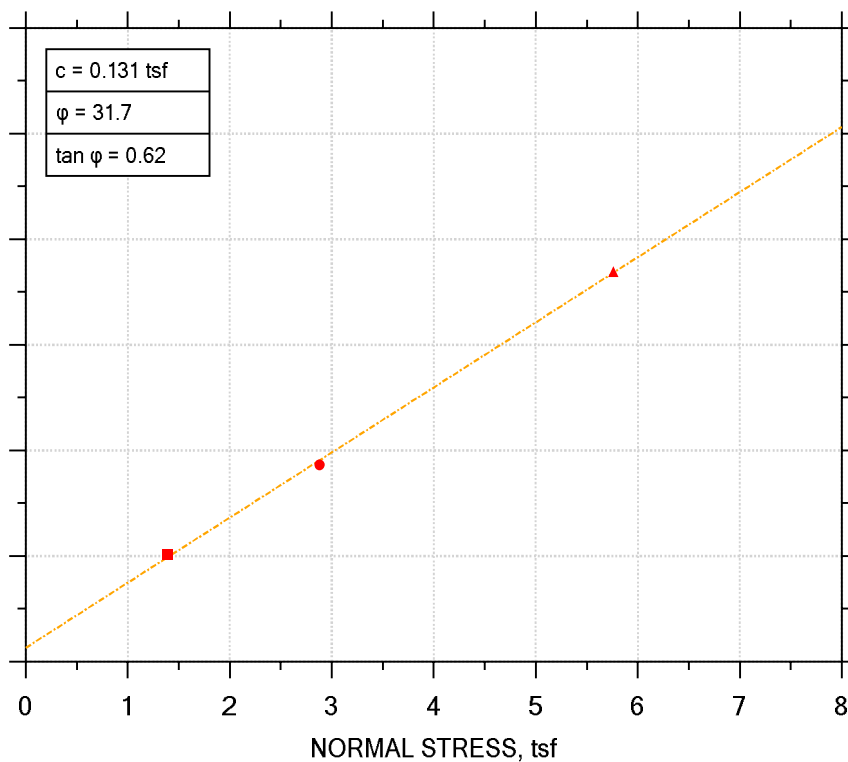
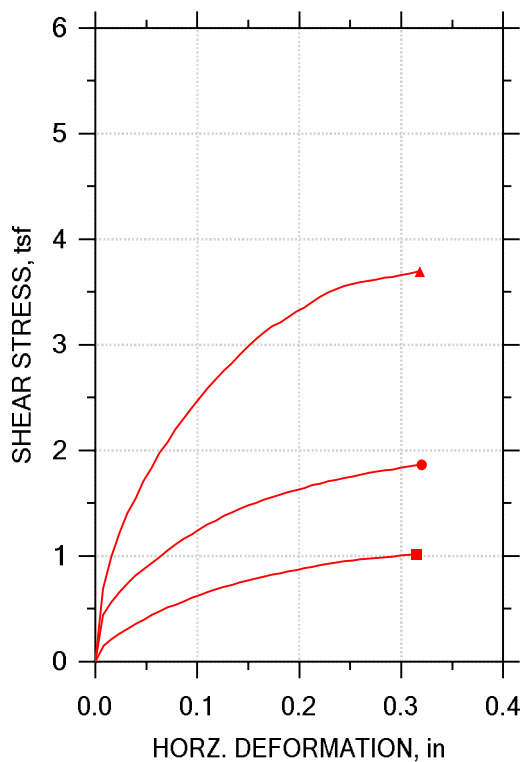
Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/16/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 40.0'-42.0'  
 Elevation: ----

Soil Description: DARK BROWN AND GRAY ORGANIC CLAY WITH SAND OL - SAND SEAMS AND SHELL NOTED  
 Remarks: TEST PERFORMED AS PER ASTM D3080.

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in
1	0.00	5.76	0.1718	0	0
2	5.76	5.758	0.1742	0.814	0.007876
3	7.82	5.758	0.1767	1.067	0.01575
4	9.78	5.755	0.1792	1.227	0.02363
5	11.79	5.756	0.1819	1.362	0.0315
6	13.84	5.757	0.1845	1.498	0.03938
7	15.81	5.754	0.1865	1.604	0.04725
8	17.73	5.754	0.1887	1.704	0.05518
9	19.75	5.759	0.1906	1.799	0.06301
10	21.92	5.757	0.1921	1.888	0.07088
11	23.73	5.757	0.1936	1.961	0.07876
12	25.77	5.758	0.1953	2.033	0.08663
13	27.88	5.759	0.1966	2.103	0.09451
14	29.82	5.758	0.1983	2.17	0.1024
15	31.77	5.756	0.2	2.236	0.1103
16	33.65	5.758	0.2012	2.29	0.1181
17	35.80	5.757	0.2029	2.354	0.126
18	37.75	5.759	0.2044	2.412	0.1339
19	39.72	5.756	0.2053	2.465	0.1418
20	41.79	5.757	0.2059	2.522	0.1496
21	43.76	5.757	0.2073	2.563	0.1575
22	45.75	5.757	0.2084	2.611	0.1654
23	47.50	5.759	0.2097	2.651	0.1733
24	49.59	5.759	0.211	2.697	0.1811
25	51.43	5.758	0.2118	2.737	0.189
26	53.61	5.758	0.2128	2.776	0.1969
27	55.44	5.759	0.2134	2.805	0.2048
28	57.33	5.759	0.2141	2.829	0.2126
29	59.33	5.758	0.215	2.856	0.2205
30	61.41	5.758	0.216	2.89	0.2284
31	63.37	5.759	0.2169	2.929	0.2362
32	65.33	5.759	0.2179	2.969	0.2441
33	67.37	5.758	0.2184	3.009	0.252
34	69.38	5.759	0.2192	3.047	0.2599
35	71.19	5.759	0.2197	3.075	0.2677
36	73.46	5.759	0.2205	3.1	0.2756
37	75.20	5.758	0.2211	3.128	0.2835
38	77.32	5.757	0.2218	3.156	0.2914
39	79.06	5.759	0.222	3.164	0.2992
40	81.22	5.759	0.2224	3.151	0.3071
41	83.02	5.759	0.2228	3.139	0.315
42	84.64	5.759	0.2231	3.118	0.3208





Symbol	■	●	▲	
Test No.	20 PSI	40 PSI	80 PSI	
Sample No.	S-7	S-7	S-7	
Shape	Circular	Circular	Circular	
Initial	Dimension, in	2.5748	2.576	2.5783
	Area, in <sup>2</sup>	5.2069	5.2117	5.2212
	Height, in	0.99449	0.99252	0.99488
	Water Content, %	44.55	44.66	44.88
	Dry Density, pcf	67.26	67.42	67.10
	Saturation, %	80.27	80.78	80.53
	Void Ratio	1.4873	1.4816	1.4935
Consol. Height, in	0.99449	0.86625	0.81402	
Consol. Void Ratio	1.4873	1.1659	1.0402	
Final	Water Content, %	50.59	40.33	34.75
	Dry Density, pcf	69.94	82.81	87.47
	Saturation, %	97.38	105.92	102.03
	Void Ratio	1.3922	1.0204	0.91268
Normal Stress, tsf	1.3947	2.8789	5.7584	
Max. Shear Stress, tsf	1.0185	1.8642	3.695	
Ult. Shear Stress, tsf	1.0185	1.8642	3.695	
Time to Failure, min	79.017	81.05	81.167	
Disp. Rate, in/min	0.004	0.004	0.004	
Estimated Specific Gravity	2.68	2.68	2.68	
Liquid Limit	34	34	34	
Plastic Limit	28	28	26	
Plasticity Index	6	6	8	

Project: DYNEGY HENNEPIN	
Location: HENNEPIN, IL	
Project No.: MR155233	
Boring No.: HEN-019 S-7	
Sample Type: TRIMMED	
Description: VERY DARK GRAY ORGANIC SILT WITH SAND OL SHELLS NOTED	
Remarks: TEST PERFORMED AS PER ASTM D3080.	

DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-019 S-7  
 Sample No.: S-7  
 Test No.: 20 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/146/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 25.0'-27.0'  
 Elevation: ----

Soil Description: VERY DARK GRAY ORGANIC SILT WITH SAND OL SHELLS NOTED  
 Remarks: TEST PERFORMED AS PER ASTM D3080.

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	1.40	0.0000	0.000	0.0000	0.0000
2	2.24	1.40	0.001009	0.150	0.008016	0.008016
3	4.21	1.39	0.003278	0.211	0.01589	0.01589
4	6.13	1.39	0.004728	0.264	0.02377	0.02377
5	8.15	1.39	0.006556	0.309	0.03164	0.03164
6	10.27	1.39	0.008132	0.356	0.03952	0.03952
7	12.08	1.39	0.009456	0.397	0.04740	0.04740
8	14.17	1.40	0.01122	0.442	0.05527	0.05527
9	16.22	1.39	0.01204	0.480	0.06315	0.06315
10	18.14	1.40	0.01292	0.512	0.07102	0.07102
11	20.08	1.39	0.01399	0.542	0.07890	0.07890
12	21.96	1.39	0.01488	0.567	0.08677	0.08677
13	24.13	1.39	0.01645	0.604	0.09465	0.09465
14	26.03	1.40	0.01734	0.632	0.1025	0.1025
15	27.97	1.40	0.01885	0.658	0.1104	0.1104
16	30.04	1.39	0.01992	0.683	0.1183	0.1183
17	32.00	1.39	0.02093	0.707	0.1262	0.1262
18	34.07	1.40	0.02169	0.730	0.1340	0.1340
19	35.81	1.39	0.02219	0.749	0.1419	0.1419
20	37.86	1.39	0.02307	0.767	0.1498	0.1498
21	39.69	1.39	0.02389	0.785	0.1577	0.1577
22	41.87	1.39	0.02465	0.806	0.1655	0.1655
23	43.68	1.39	0.02515	0.821	0.1734	0.1734
24	45.61	1.40	0.02622	0.838	0.1813	0.1813
25	47.58	1.39	0.02711	0.853	0.1892	0.1892
26	49.70	1.40	0.02774	0.869	0.1970	0.1970
27	51.63	1.39	0.02843	0.883	0.2049	0.2049
28	53.53	1.39	0.02912	0.898	0.2127	0.2127
29	55.49	1.39	0.03001	0.913	0.2206	0.2206
30	57.46	1.40	0.03076	0.927	0.2285	0.2285
31	59.32	1.40	0.03152	0.939	0.2364	0.2364
32	61.60	1.39	0.03221	0.952	0.2442	0.2442
33	63.33	1.40	0.03247	0.960	0.2521	0.2521
34	65.38	1.40	0.03322	0.970	0.2600	0.2600
35	67.15	1.40	0.03379	0.977	0.2679	0.2679
36	69.28	1.39	0.03486	0.983	0.2757	0.2757
37	71.08	1.40	0.03537	0.989	0.2836	0.2836
38	73.09	1.40	0.03587	0.994	0.2915	0.2915
39	75.11	1.39	0.03656	1.00	0.2994	0.2994
40	76.98	1.39	0.03713	1.01	0.3072	0.3072
41	79.02	1.39	0.03801	1.02	0.3151	0.3151



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-019 S-7  
 Sample No.: S-7  
 Test No.: 40 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/146/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 25.0'-27.0'  
 Elevation: ----

Soil Description: VERY DARK GRAY ORGANIC SILT WITH SAND OL SHELLS NOTED  
 Remarks: TEST PERFORMED AS PER ASTM D3080.

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	2.88	0.1263	0.000	0.0000	0.0000
2	2.71	2.88	0.1295	0.442	0.007876	0.007876
3	4.72	2.87	0.1327	0.566	0.01575	0.01575
4	6.72	2.87	0.1353	0.662	0.02363	0.02363
5	8.56	2.88	0.1374	0.742	0.03150	0.03150
6	10.61	2.88	0.1401	0.819	0.03938	0.03938
7	12.63	2.88	0.1420	0.871	0.04730	0.04730
8	14.64	2.88	0.1440	0.936	0.05513	0.05513
9	16.63	2.87	0.1464	0.990	0.06301	0.06301
10	18.60	2.88	0.1484	1.05	0.07088	0.07088
11	20.62	2.88	0.1499	1.11	0.07876	0.07876
12	22.64	2.88	0.1518	1.16	0.08663	0.08663
13	24.58	2.88	0.1536	1.21	0.09451	0.09451
14	26.52	2.88	0.1553	1.25	0.1024	0.1024
15	28.53	2.88	0.1568	1.30	0.1103	0.1103
16	30.56	2.88	0.1579	1.34	0.1181	0.1181
17	32.49	2.88	0.1596	1.38	0.1260	0.1260
18	34.47	2.88	0.1611	1.41	0.1339	0.1339
19	36.51	2.88	0.1621	1.45	0.1418	0.1418
20	38.44	2.88	0.1633	1.48	0.1496	0.1496
21	40.29	2.88	0.1647	1.50	0.1575	0.1575
22	42.52	2.88	0.1661	1.53	0.1654	0.1654
23	44.32	2.88	0.1671	1.56	0.1733	0.1733
24	46.34	2.88	0.1679	1.58	0.1811	0.1811
25	48.43	2.88	0.1690	1.60	0.1890	0.1890
26	50.30	2.88	0.1701	1.63	0.1969	0.1969
27	52.25	2.88	0.1718	1.64	0.2048	0.2048
28	54.26	2.88	0.1727	1.67	0.2126	0.2126
29	56.18	2.88	0.1732	1.68	0.2205	0.2205
30	58.19	2.88	0.1742	1.71	0.2284	0.2284
31	60.23	2.88	0.1757	1.72	0.2362	0.2362
32	62.17	2.88	0.1765	1.74	0.2441	0.2441
33	63.89	2.88	0.1776	1.75	0.2520	0.2520
34	66.05	2.88	0.1787	1.77	0.2599	0.2599
35	68.20	2.88	0.1798	1.79	0.2677	0.2677
36	69.90	2.88	0.1802	1.80	0.2756	0.2756
37	71.94	2.88	0.1807	1.81	0.2835	0.2835
38	73.80	2.88	0.1814	1.82	0.2914	0.2914
39	76.05	2.88	0.1826	1.84	0.2992	0.2992
40	77.78	2.88	0.1836	1.85	0.3071	0.3071
41	79.97	2.88	0.1842	1.86	0.3150	0.3150
42	81.05	2.88	0.1845	1.86	0.3199	0.3199



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-019 S-7  
 Sample No.: S-7  
 Test No.: 80 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/146/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 25.0'-27.0'  
 Elevation: ----

Soil Description: VERY DARK GRAY ORGANIC SILT WITH SAND OL SHELLS NOTED  
 Remarks: TEST PERFORMED AS PER ASTM D3080.

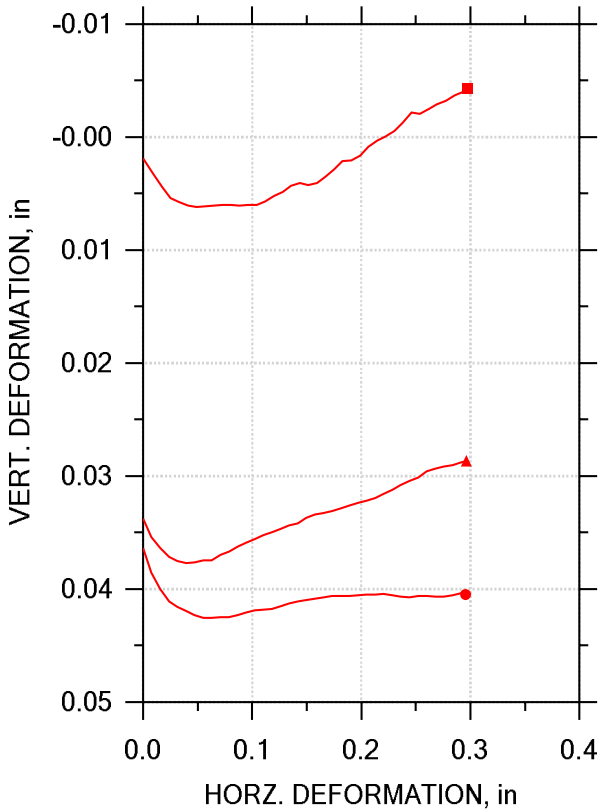
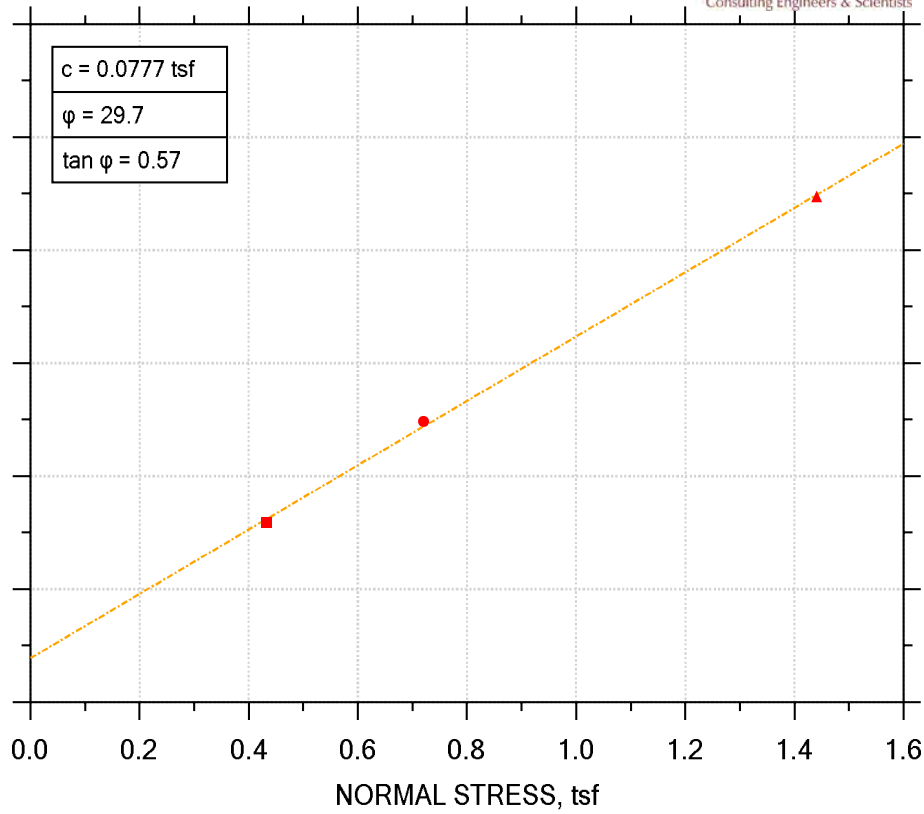
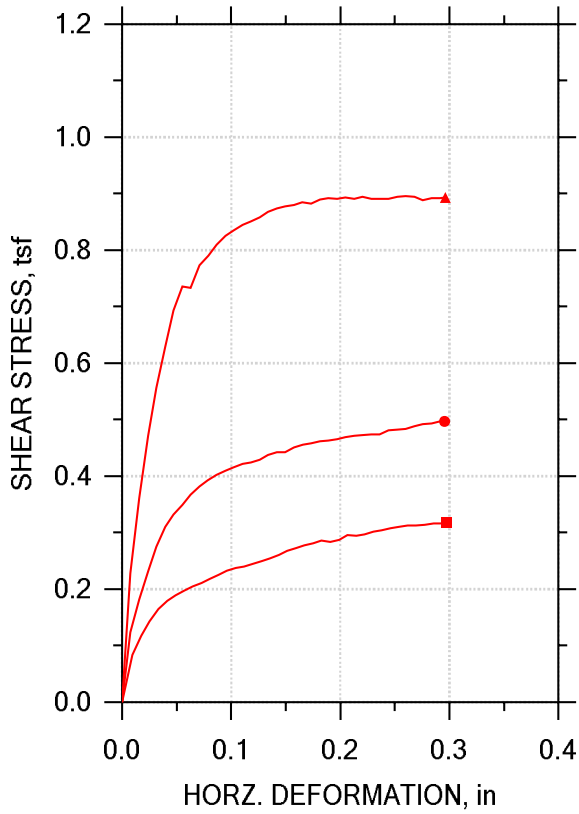
Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	5.76	0.1809	0.000	0.0000	0.0000
2	2.41	5.76	0.1838	0.693	0.007876	0.007876
3	4.56	5.76	0.1870	0.997	0.01575	0.01575
4	6.61	5.76	0.1899	1.23	0.02363	0.02363
5	8.66	5.76	0.1925	1.41	0.03150	0.03150
6	10.62	5.76	0.1954	1.55	0.03938	0.03938
7	12.67	5.75	0.1979	1.71	0.04725	0.04725
8	14.51	5.75	0.1999	1.84	0.05513	0.05513
9	16.84	5.76	0.2026	1.98	0.06301	0.06301
10	18.58	5.76	0.2041	2.08	0.07088	0.07088
11	20.61	5.76	0.2060	2.20	0.07876	0.07876
12	22.73	5.76	0.2080	2.30	0.08663	0.08663
13	24.64	5.76	0.2093	2.41	0.09451	0.09451
14	26.56	5.76	0.2116	2.50	0.1024	0.1024
15	28.75	5.76	0.2133	2.59	0.1103	0.1103
16	30.58	5.76	0.2143	2.67	0.1181	0.1181
17	32.68	5.76	0.2153	2.75	0.1260	0.1260
18	34.61	5.76	0.2171	2.83	0.1339	0.1339
19	36.73	5.76	0.2189	2.91	0.1418	0.1418
20	38.64	5.76	0.2196	2.98	0.1496	0.1496
21	40.62	5.76	0.2203	3.05	0.1575	0.1575
22	42.63	5.76	0.2213	3.11	0.1654	0.1654
23	44.66	5.76	0.2222	3.17	0.1733	0.1733
24	46.52	5.76	0.2229	3.21	0.1811	0.1811
25	48.51	5.76	0.2236	3.26	0.1890	0.1890
26	50.66	5.76	0.2246	3.32	0.1969	0.1969
27	52.51	5.76	0.2254	3.35	0.2048	0.2048
28	54.78	5.76	0.2261	3.41	0.2126	0.2126
29	56.49	5.76	0.2268	3.45	0.2205	0.2205
30	58.44	5.76	0.2273	3.50	0.2284	0.2284
31	60.62	5.76	0.2279	3.53	0.2362	0.2362
32	62.60	5.76	0.2283	3.55	0.2441	0.2441
33	64.58	5.76	0.2288	3.58	0.2520	0.2520
34	66.59	5.76	0.2295	3.59	0.2599	0.2599
35	68.47	5.76	0.2297	3.61	0.2677	0.2677
36	70.58	5.76	0.2298	3.62	0.2756	0.2756
37	72.44	5.76	0.2302	3.64	0.2835	0.2835
38	74.36	5.76	0.2306	3.65	0.2914	0.2914
39	76.49	5.76	0.2308	3.66	0.2992	0.2992
40	78.50	5.76	0.2312	3.67	0.3071	0.3071
41	80.37	5.76	0.2316	3.69	0.3150	0.3150
42	81.17	5.76	0.2317	3.70	0.3180	0.3180





# DIRECT SHEAR TEST by ASTM D3080



Symbol	■	●	▲	
Test No.	5.0 PSI	10.0 PSI	20.0 PSI	
Sample No.	S-5	S-5	S-5	
Shape	Circular	Circular	Circular	
Initial	Dimension, in	2.4835	2.4835	2.4874
	Area, in <sup>2</sup>	4.844	4.844	4.8594
	Height, in	0.98504	0.98504	0.99016
	Water Content, %	13.68	12.08	13.15
	Dry Density, pcf	115.5	116.2	119.6
	Saturation, %	79.15	71.31	85.21
	Void Ratio	0.47011	0.46082	0.41964
Consol. Height, in	0.98315	0.94868	0.95639	
Consol. Void Ratio	0.46729	0.4069	0.37123	
Final	Water Content, %	17.58	15.01	14.23
	Dry Density, pcf	115.0	121.2	123.2
	Saturation, %	100.38	101.90	102.21
	Void Ratio	0.47651	0.40079	0.37856
Normal Stress, tsf	0.4329	0.71995	1.4404	
Max. Shear Stress, tsf	0.31754	0.49691	0.89517	
Ult. Shear Stress, tsf	0.31754	0.49691	0.89342	
Time to Failure, min	70.449	70.931	63.315	

Project: DYNERGY HENNEPIN	Disp. Rate, in/min	0.0041764	0.0041764	0.0041764
Location: HENNEPIN, IL	Estimated Specific Gravity	2.72	2.72	2.72
Project No.: MR155233	Liquid Limit	30	30	30
Boring No.: HEN-020 S-5	Plastic Limit	17	17	17
Sample Type: TRIMMED	379 Plasticity Index	13	13	13
Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL				

Project: DYNERGY HENNEPIN  
 Boring No.: HEN-020 S-5  
 Sample No.: S-5  
 Test No.: 5.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/13/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 9.5'-11.5'  
 Elevation: ----



Soil Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	0.432	0.001891	0.000	0.0000	0.0000
2	2.06	0.431	0.003260	0.0842	0.009677	0.009677
3	3.96	0.431	0.004430	0.118	0.01754	0.01754
4	5.72	0.430	0.005385	0.143	0.02541	0.02541
5	7.48	0.432	0.005763	0.164	0.03328	0.03328
6	9.24	0.432	0.006051	0.180	0.04118	0.04118
7	11.16	0.432	0.006177	0.189	0.04905	0.04905
8	13.18	0.432	0.006141	0.198	0.05691	0.05691
9	15.12	0.432	0.006069	0.204	0.06481	0.06481
10	17.19	0.432	0.006015	0.211	0.07265	0.07265
11	19.08	0.432	0.006015	0.218	0.08055	0.08055
12	20.84	0.432	0.006051	0.225	0.08845	0.08845
13	22.43	0.432	0.006015	0.232	0.09628	0.09628
14	24.24	0.432	0.005979	0.237	0.1041	0.1041
15	26.28	0.433	0.005691	0.240	0.1120	0.1120
16	28.23	0.433	0.005222	0.245	0.1199	0.1199
17	30.17	0.432	0.004880	0.249	0.1278	0.1278
18	32.38	0.432	0.004286	0.255	0.1357	0.1357
19	34.18	0.432	0.004034	0.261	0.1435	0.1435
20	35.99	0.432	0.004268	0.268	0.1514	0.1514
21	37.60	0.433	0.004070	0.273	0.1593	0.1593
22	39.35	0.432	0.003494	0.277	0.1672	0.1672
23	41.44	0.432	0.002827	0.281	0.1750	0.1750
24	43.46	0.432	0.002143	0.286	0.1829	0.1829
25	45.45	0.432	0.002035	0.284	0.1908	0.1908
26	47.34	0.432	0.001621	0.287	0.1987	0.1987
27	49.26	0.432	0.0008464	0.296	0.2065	0.2065
28	50.99	0.432	0.0002881	0.295	0.2145	0.2145
29	52.78	0.432	-7.203e-05	0.297	0.2223	0.2223
30	54.50	0.433	-0.0005403	0.301	0.2301	0.2301
31	56.44	0.433	-0.001261	0.305	0.2380	0.2380
32	58.49	0.431	-0.002197	0.307	0.2459	0.2459
33	60.44	0.432	-0.002089	0.310	0.2538	0.2538
34	62.35	0.433	-0.002467	0.313	0.2616	0.2616
35	64.33	0.433	-0.002935	0.313	0.2695	0.2695
36	65.99	0.432	-0.003206	0.314	0.2774	0.2774
37	67.90	0.433	-0.003692	0.316	0.2853	0.2853
38	69.45	0.433	-0.004016	0.317	0.2932	0.2932
39	70.45	0.433	-0.004286	0.318	0.2972	0.2972



Project: DYNERGY HENNEPIN  
 Boring No.: HEN-020 S-5  
 Sample No.: S-5  
 Test No.: 10.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/13/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 9.5'-11.5'  
 Elevation: ----



Soil Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	0.720	0.03636	0.000	0.0000	0.0000
2	2.62	0.719	0.03857	0.124	0.007902	0.007902
3	4.55	0.720	0.04001	0.181	0.01577	0.01577
4	6.74	0.719	0.04108	0.232	0.02364	0.02364
5	8.83	0.719	0.04156	0.275	0.03150	0.03150
6	10.79	0.720	0.04192	0.310	0.03940	0.03940
7	12.32	0.719	0.04232	0.332	0.04727	0.04727
8	14.21	0.720	0.04254	0.349	0.05514	0.05514
9	15.98	0.720	0.04257	0.367	0.06300	0.06300
10	18.03	0.720	0.04246	0.382	0.07091	0.07091
11	19.96	0.720	0.04248	0.392	0.07877	0.07877
12	21.84	0.720	0.04228	0.402	0.08664	0.08664
13	23.80	0.720	0.04207	0.410	0.09454	0.09454
14	25.80	0.720	0.04189	0.415	0.1024	0.1024
15	27.44	0.720	0.04183	0.421	0.1102	0.1102
16	29.16	0.720	0.04174	0.424	0.1181	0.1181
17	31.06	0.720	0.04155	0.428	0.1260	0.1260
18	33.15	0.721	0.04128	0.438	0.1339	0.1339
19	35.08	0.720	0.04110	0.442	0.1418	0.1418
20	37.03	0.720	0.04099	0.442	0.1496	0.1496
21	38.86	0.720	0.04086	0.451	0.1575	0.1575
22	40.95	0.720	0.04074	0.456	0.1654	0.1654
23	42.69	0.720	0.04061	0.458	0.1732	0.1732
24	44.32	0.720	0.04059	0.462	0.1811	0.1811
25	46.09	0.720	0.04063	0.463	0.1890	0.1890
26	48.19	0.720	0.04056	0.466	0.1969	0.1969
27	50.25	0.720	0.04047	0.469	0.2047	0.2047
28	52.21	0.720	0.04047	0.472	0.2126	0.2126
29	54.11	0.719	0.04045	0.473	0.2205	0.2205
30	55.96	0.720	0.04052	0.474	0.2283	0.2283
31	57.73	0.720	0.04066	0.474	0.2363	0.2363
32	59.49	0.720	0.04075	0.481	0.2441	0.2441
33	61.13	0.720	0.04063	0.483	0.2520	0.2520
34	63.17	0.720	0.04063	0.484	0.2599	0.2599
35	65.27	0.720	0.04068	0.489	0.2678	0.2678
36	67.26	0.720	0.04065	0.492	0.2756	0.2756
37	69.25	0.720	0.04054	0.494	0.2835	0.2835
38	70.93	0.720	0.04038	0.497	0.2914	0.2914
39	71.92	0.720	0.04048	0.497	0.2955	0.2955



Project: DYNERGY HENNEPIN  
 Boring No.: HEN=020 S-5  
 Sample No.: S-5  
 Test No.: 20.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/13/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 9.5'-11.5'  
 Elevation: ----

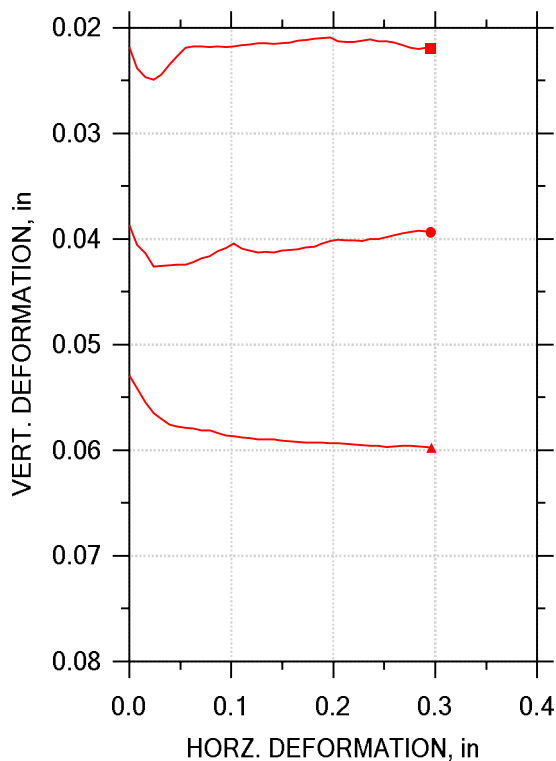
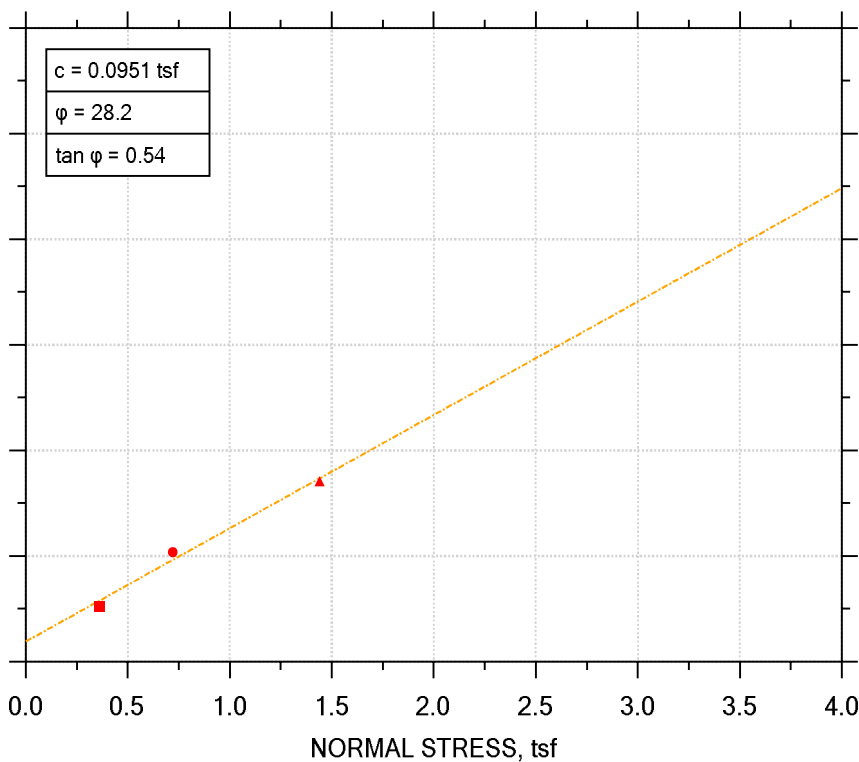
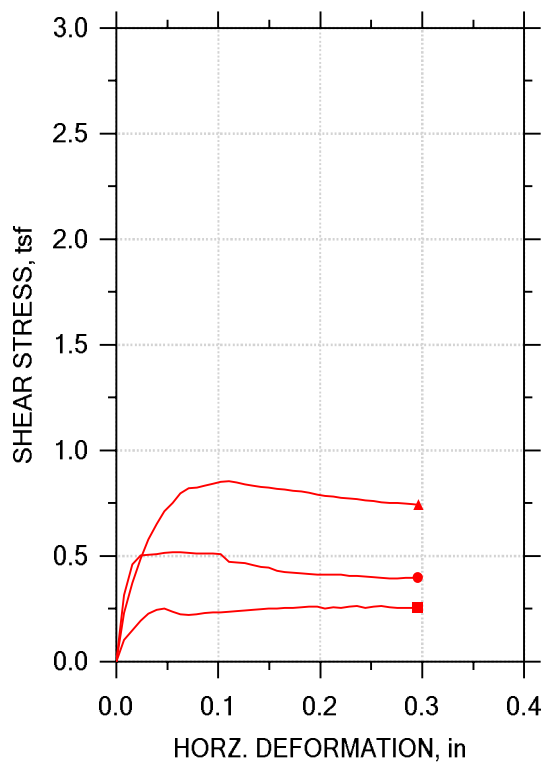


Soil Description: BROWN LEAN CLAY WITH SAND AND GRAVEL CL  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	1.44	0.03377	0.000	0.0000	0.0000
2	2.66	1.44	0.03542	0.228	0.007902	0.007902
3	4.70	1.44	0.03638	0.361	0.01577	0.01577
4	6.57	1.44	0.03717	0.472	0.02364	0.02364
5	8.27	1.44	0.03751	0.556	0.03154	0.03154
6	10.21	1.44	0.03773	0.628	0.03940	0.03940
7	12.14	1.44	0.03766	0.693	0.04731	0.04731
8	13.96	1.44	0.03746	0.736	0.05514	0.05514
9	15.73	1.44	0.03746	0.734	0.06300	0.06300
10	17.91	1.44	0.03695	0.774	0.07087	0.07087
11	19.88	1.44	0.03667	0.790	0.07881	0.07881
12	21.69	1.44	0.03625	0.810	0.08664	0.08664
13	23.58	1.44	0.03587	0.825	0.09454	0.09454
14	25.36	1.44	0.03555	0.835	0.1024	0.1024
15	27.29	1.44	0.03524	0.845	0.1102	0.1102
16	28.99	1.44	0.03497	0.851	0.1182	0.1182
17	31.07	1.44	0.03468	0.858	0.1260	0.1260
18	33.08	1.44	0.03438	0.868	0.1339	0.1339
19	34.88	1.44	0.03418	0.873	0.1417	0.1417
20	36.71	1.44	0.03369	0.877	0.1496	0.1496
21	38.55	1.44	0.03341	0.880	0.1575	0.1575
22	40.35	1.44	0.03326	0.885	0.1654	0.1654
23	42.34	1.44	0.03306	0.883	0.1732	0.1732
24	44.20	1.44	0.03285	0.890	0.1811	0.1811
25	46.28	1.44	0.03260	0.892	0.1890	0.1890
26	48.11	1.44	0.03236	0.891	0.1969	0.1969
27	50.08	1.44	0.03216	0.894	0.2047	0.2047
28	51.90	1.44	0.03191	0.891	0.2126	0.2126
29	53.75	1.44	0.03159	0.894	0.2205	0.2205
30	55.52	1.44	0.03123	0.891	0.2283	0.2283
31	57.38	1.44	0.03078	0.891	0.2362	0.2362
32	59.35	1.44	0.03045	0.891	0.2441	0.2441
33	61.35	1.44	0.03011	0.894	0.2520	0.2520
34	63.31	1.44	0.02955	0.895	0.2599	0.2599
35	65.06	1.44	0.02932	0.894	0.2678	0.2678
36	66.95	1.44	0.02917	0.889	0.2756	0.2756
37	68.86	1.44	0.02901	0.892	0.2835	0.2835
38	70.72	1.44	0.02880	0.892	0.2914	0.2914
39	71.60	1.44	0.02865	0.893	0.2960	0.2960





Symbol	■	●	▲	
Test No.	5.0 PSI	10 PSI	20 PSI	
Sample No.	S-4	S-4	S-4	
Shape	Circular	Circular	Circular	
Initial	Dimension, in	2.4878	2.4917	2.4929
	Area, in <sup>2</sup>	4.8609	4.8763	4.8809
	Height, in	0.99252	0.99409	0.99567
	Water Content, %	34.29	34.23	32.70
	Dry Density, pcf	74.65	74.24	73.55
	Saturation, %	85.41	84.30	78.99
	Void Ratio	0.92338	0.93397	0.95221
Consol. Height, in	0.97073	0.95541	0.94274	
Consol. Void Ratio	0.88115	0.85871	0.84844	
Final	Water Content, %	37.77	37.64	36.21
	Dry Density, pcf	76.34	77.30	78.25
	Saturation, %	98.62	100.97	99.73
	Void Ratio	0.88087	0.8574	0.83505
Normal Stress, tsf	0.35988	0.72024	1.4391	
Max. Shear Stress, tsf	0.26345	0.51869	0.85481	
Ult. Shear Stress, tsf	0.25625	0.39908	0.74345	
Time to Failure, min	58.762	15.262	25.728	
Disp. Rate, in/min	0.0044283	0.0044283	0.0044283	
Estimated Specific Gravity	2.30	2.30	2.30	
Liquid Limit	NP	NP	NP	
Plastic Limit	NP	NP	NP	
Plasticity Index	NP	NP	NP	

Project: DYNEGY HENNEPIN	
Location: HENNEPIN, IL	
Project No.: MR155233	
Boring No.: HEN-022 S-4	
Sample Type: TRIMMED	
Description: VERY DARK GRAY VARVED FLY ASH WITH SAND - SAND SEAMS NOTED	
Remarks:	

DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-022 S-4  
 Sample No.: S-4  
 Test No.: 5.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/13/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 7.5'-9.0'  
 Elevation: ----

Soil Description: VERY DARK GRAY VARVED FLY ASH WITH SAND - SAND SEAMS NOTED  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	0.360	0.02179	0.000	0.0000	0.0000
2	1.82	0.358	0.02383	0.102	0.007902	0.007902
3	3.38	0.360	0.02467	0.149	0.01577	0.01577
4	5.29	0.360	0.02492	0.195	0.02364	0.02364
5	6.98	0.361	0.02444	0.227	0.03150	0.03150
6	8.88	0.360	0.02348	0.245	0.03940	0.03940
7	10.59	0.360	0.02265	0.251	0.04727	0.04727
8	12.59	0.360	0.02186	0.237	0.05514	0.05514
9	14.44	0.359	0.02177	0.224	0.06300	0.06300
10	16.23	0.360	0.02177	0.222	0.07087	0.07087
11	17.90	0.360	0.02181	0.226	0.07877	0.07877
12	19.57	0.360	0.02177	0.229	0.08664	0.08664
13	21.32	0.360	0.02179	0.232	0.09454	0.09454
14	23.06	0.360	0.02175	0.234	0.1024	0.1024
15	24.91	0.360	0.02165	0.237	0.1102	0.1102
16	26.82	0.360	0.02159	0.239	0.1182	0.1182
17	28.76	0.360	0.02148	0.242	0.1260	0.1260
18	30.35	0.360	0.02145	0.244	0.1339	0.1339
19	31.96	0.361	0.02154	0.248	0.1417	0.1417
20	33.58	0.360	0.02145	0.250	0.1496	0.1496
21	35.60	0.360	0.02139	0.252	0.1575	0.1575
22	37.49	0.360	0.02121	0.253	0.1654	0.1654
23	39.23	0.360	0.02114	0.255	0.1732	0.1732
24	41.08	0.360	0.02105	0.258	0.1811	0.1811
25	42.93	0.360	0.02094	0.260	0.1890	0.1890
26	44.61	0.360	0.02093	0.261	0.1969	0.1969
27	46.36	0.360	0.02130	0.252	0.2047	0.2047
28	47.82	0.360	0.02136	0.257	0.2126	0.2126
29	49.66	0.360	0.02132	0.255	0.2205	0.2205
30	51.62	0.360	0.02120	0.259	0.2283	0.2283
31	53.54	0.360	0.02111	0.263	0.2362	0.2362
32	55.38	0.360	0.02129	0.255	0.2441	0.2441
33	57.05	0.360	0.02130	0.260	0.2520	0.2520
34	58.76	0.360	0.02139	0.263	0.2599	0.2599
35	60.45	0.360	0.02165	0.259	0.2678	0.2678
36	62.07	0.360	0.02188	0.256	0.2756	0.2756
37	63.81	0.360	0.02202	0.254	0.2835	0.2835
38	65.75	0.360	0.02190	0.255	0.2914	0.2914
39	66.77	0.359	0.02193	0.256	0.2956	0.2956



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-022 S-4  
 Sample No.: S-4  
 Test No.: 10 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/13/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 7.5'-9.0'  
 Elevation: ----

Soil Description: VERY DARK GRAY VARVED FLY ASH WITH SAND - SAND SEAMS NOTED  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	0.719	0.03869	0.000	0.0000	0.0000
2	2.62	0.719	0.04054	0.316	0.007902	0.007902
3	4.32	0.719	0.04135	0.461	0.01577	0.01577
4	6.40	0.719	0.04260	0.502	0.02364	0.02364
5	8.11	0.720	0.04257	0.505	0.03150	0.03150
6	9.82	0.720	0.04247	0.510	0.03940	0.03940
7	11.45	0.720	0.04240	0.516	0.04727	0.04727
8	13.23	0.720	0.04243	0.518	0.05514	0.05514
9	15.26	0.720	0.04220	0.519	0.06300	0.06300
10	16.97	0.720	0.04182	0.515	0.07087	0.07087
11	18.82	0.720	0.04162	0.512	0.07877	0.07877
12	20.59	0.720	0.04118	0.513	0.08664	0.08664
13	22.44	0.720	0.04088	0.511	0.09451	0.09451
14	24.17	0.720	0.04044	0.509	0.1024	0.1024
15	25.70	0.719	0.04091	0.474	0.1102	0.1102
16	27.41	0.720	0.04112	0.471	0.1181	0.1181
17	29.20	0.720	0.04125	0.466	0.1260	0.1260
18	31.17	0.720	0.04122	0.457	0.1339	0.1339
19	32.93	0.720	0.04125	0.450	0.1417	0.1417
20	34.76	0.720	0.04108	0.446	0.1497	0.1497
21	36.49	0.720	0.04101	0.429	0.1575	0.1575
22	38.19	0.720	0.04098	0.425	0.1654	0.1654
23	39.89	0.720	0.04081	0.421	0.1732	0.1732
24	41.41	0.720	0.04071	0.418	0.1811	0.1811
25	43.24	0.720	0.04041	0.415	0.1890	0.1890
26	45.33	0.720	0.04020	0.413	0.1969	0.1969
27	47.18	0.720	0.04004	0.413	0.2047	0.2047
28	48.98	0.720	0.04014	0.413	0.2126	0.2126
29	50.59	0.720	0.04014	0.411	0.2205	0.2205
30	52.50	0.720	0.04017	0.406	0.2283	0.2283
31	54.10	0.720	0.04000	0.405	0.2362	0.2362
32	55.71	0.720	0.04000	0.404	0.2441	0.2441
33	57.50	0.720	0.03983	0.401	0.2520	0.2520
34	59.41	0.720	0.03966	0.398	0.2598	0.2598
35	61.36	0.720	0.03943	0.395	0.2678	0.2678
36	63.21	0.720	0.03933	0.394	0.2756	0.2756
37	64.91	0.719	0.03919	0.396	0.2835	0.2835
38	66.55	0.720	0.03929	0.398	0.2914	0.2914
39	67.46	0.720	0.03936	0.399	0.2955	0.2955



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-022 S-4  
 Sample No.: S-4  
 Test No.: 20 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/13/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 7.5'-9.0'  
 Elevation: ----

Soil Description: VERY DARK GRAY VARVED FLY ASH WITH SAND - SAND SEAMS NOTED  
 Remarks:

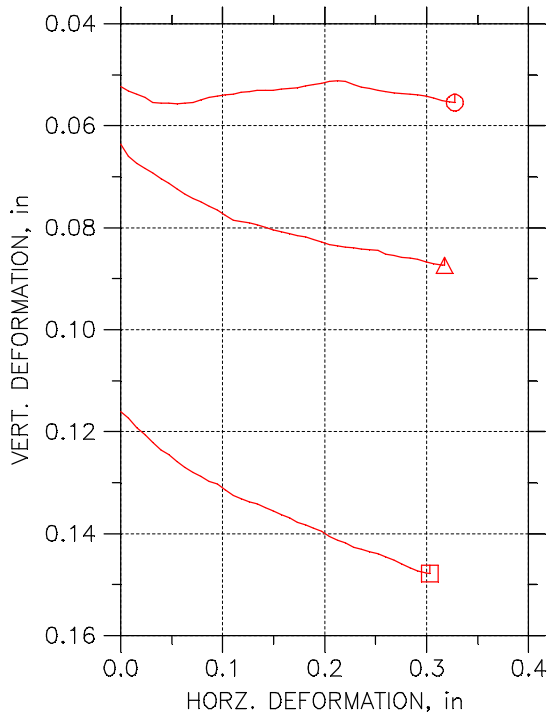
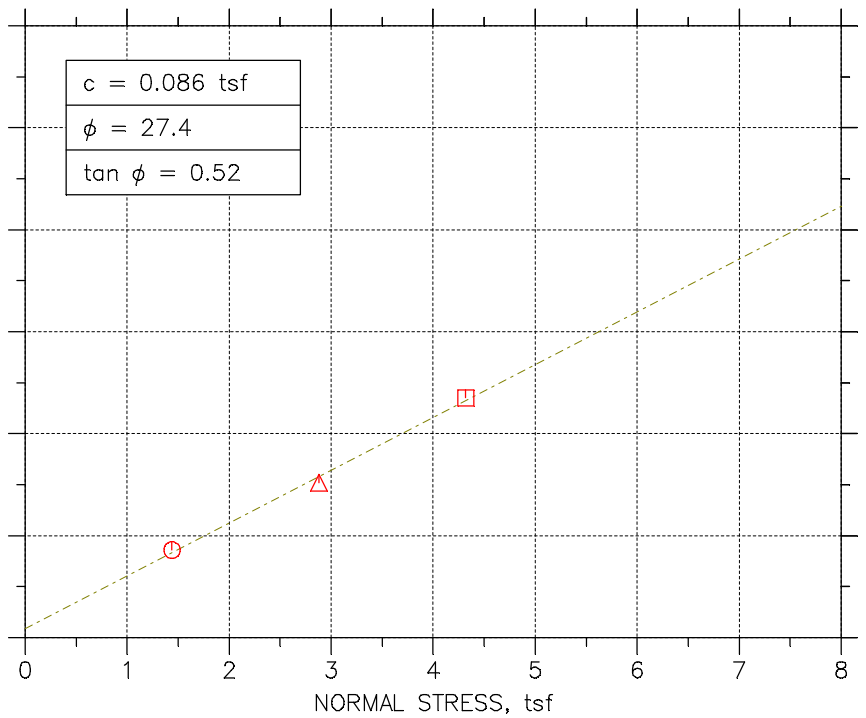
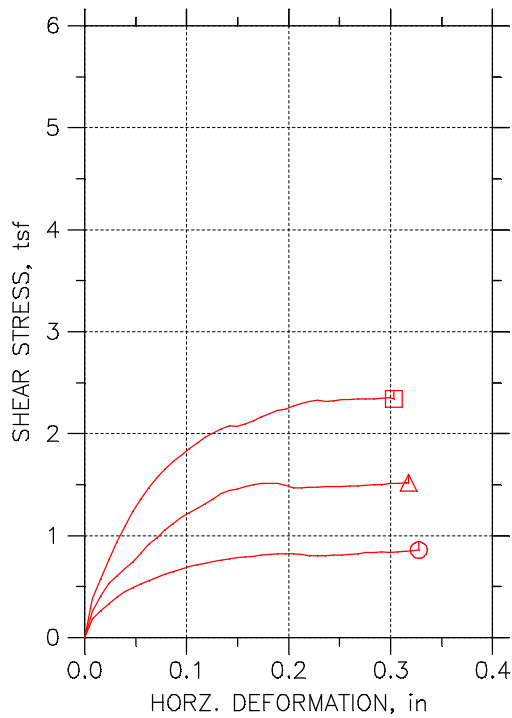
Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	1.44	0.05293	0.000	0.0000	0.0000
2	2.34	1.44	0.05415	0.230	0.007902	0.007902
3	4.34	1.44	0.05548	0.372	0.01577	0.01577
4	6.32	1.44	0.05646	0.488	0.02364	0.02364
5	8.15	1.44	0.05703	0.579	0.03161	0.03161
6	9.79	1.44	0.05757	0.653	0.03940	0.03940
7	11.59	1.44	0.05779	0.712	0.04727	0.04727
8	13.24	1.44	0.05790	0.753	0.05524	0.05524
9	15.17	1.44	0.05797	0.798	0.06300	0.06300
10	17.06	1.44	0.05811	0.821	0.07087	0.07087
11	18.69	1.44	0.05811	0.824	0.07884	0.07884
12	20.66	1.44	0.05837	0.834	0.08664	0.08664
13	22.39	1.44	0.05858	0.842	0.09451	0.09451
14	24.07	1.44	0.05865	0.851	0.1024	0.1024
15	25.73	1.44	0.05880	0.855	0.1102	0.1102
16	27.50	1.44	0.05887	0.850	0.1181	0.1181
17	29.48	1.44	0.05896	0.838	0.1260	0.1260
18	31.22	1.44	0.05896	0.833	0.1339	0.1339
19	33.08	1.44	0.05900	0.829	0.1418	0.1418
20	34.82	1.44	0.05907	0.824	0.1496	0.1496
21	36.71	1.44	0.05914	0.818	0.1575	0.1575
22	38.43	1.44	0.05919	0.814	0.1654	0.1654
23	40.07	1.44	0.05925	0.809	0.1732	0.1732
24	41.68	1.44	0.05930	0.806	0.1811	0.1811
25	43.49	1.44	0.05928	0.800	0.1890	0.1890
26	45.57	1.44	0.05936	0.792	0.1969	0.1969
27	47.30	1.44	0.05936	0.786	0.2047	0.2047
28	49.13	1.44	0.05937	0.781	0.2126	0.2126
29	50.86	1.44	0.05945	0.777	0.2205	0.2205
30	52.57	1.44	0.05952	0.773	0.2283	0.2283
31	54.32	1.44	0.05955	0.769	0.2362	0.2362
32	55.87	1.44	0.05955	0.765	0.2441	0.2441
33	57.62	1.44	0.05968	0.761	0.2520	0.2520
34	59.71	1.44	0.05961	0.755	0.2598	0.2598
35	61.58	1.44	0.05959	0.752	0.2678	0.2678
36	63.36	1.44	0.05959	0.750	0.2757	0.2757
37	64.97	1.44	0.05961	0.748	0.2835	0.2835
38	66.90	1.44	0.05972	0.746	0.2914	0.2914
39	67.87	1.44	0.05975	0.743	0.2961	0.2961





# DIRECT SHEAR TEST by ASTM D3080



Symbol	⊙	△	□	
Test No.	20 PSI	40 PSI	60 PSI	
Sample No.	S-9	S-9	S-9	
Shape	Circular	Circular	Circular	
Initial	Dimension, in	2.5803	2.5787	2.578
	Area, in <sup>2</sup>	5.2292	5.2228	5.2196
	Height, in	0.99646	0.99882	1.0004
	Water Content, %	27.10	27.49	27.75
	Dry Density, pcf	82.685	82.862	81.487
	Saturation, %	84.62	86.28	83.76
Void Ratio	0.73653	0.73281	0.76205	
Consol. Height, in	0.9488	0.93496	0.88478	
Consol. Void Ratio	0.65348	0.62203	0.55841	
Final	Water Content, %	27.69	24.38	21.54
	Dry Density, pcf	87.559	90.805	95.616
	Saturation, %	99.53	96.47	98.75
	Void Ratio	0.63985	0.58123	0.50167
Normal Stress, tsf	1.4387	2.8787	4.3188	
Max. Shear Stress, tsf	0.85913	1.5203	2.3505	
Ult. Shear Stress, tsf	0.85913	1.5203	2.3401	
Time to Failure, min	82.679	84.196	80.075	
Disp. Rate, in/min	0.004	0.004	0.004	
Estimated Specific Gravity	2.30	2.30	2.30	
Liquid Limit	---	---	---	
Plastic Limit	---	---	---	
Plasticity Index	---	---	---	

Project: DYNEGY HENNEPIN	
Location: HENNEPIN, IL	
Project No.: MR155233	
Boring No.: HEN-023 S1	
Sample Type: 3.0" ST	
Description: VERY DARK GRAY FLY ASH WITH SAND AND GRAVEL	
Remarks: TEST PERFORMED AS PER ASTM D3080.	387

DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-023 S1  
 Sample No.: S-9  
 Test No.: 20 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/146/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 27.0'-29.0'  
 Elevation: ----

Soil Description: VERY DARK GRAY FLY ASH WITH SAND AND GRAVEL  
 Remarks: TEST PERFORMED AS PER ASTM D3080.

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in
1	0.00	1.437	0.05232	0	0
2	2.57	1.439	0.05321	0.1845	0.007876
3	4.37	1.439	0.05384	0.262	0.01575
4	6.49	1.438	0.05447	0.3348	0.02363
5	8.64	1.439	0.05541	0.3987	0.0315
6	10.60	1.439	0.05554	0.4493	0.03938
7	12.60	1.439	0.0556	0.4929	0.04725
8	14.66	1.44	0.05566	0.5295	0.05513
9	16.62	1.44	0.05554	0.5601	0.06301
10	18.58	1.441	0.05541	0.5898	0.07088
11	20.52	1.44	0.05497	0.6213	0.07876
12	22.48	1.44	0.0544	0.6477	0.08663
13	24.33	1.44	0.05415	0.6723	0.09451
14	26.65	1.44	0.0539	0.6982	0.1024
15	28.33	1.44	0.05377	0.7149	0.1103
16	30.29	1.44	0.05346	0.7312	0.1181
17	32.44	1.44	0.05327	0.7446	0.126
18	34.34	1.44	0.05308	0.7604	0.1339
19	36.25	1.44	0.05302	0.7747	0.1418
20	38.33	1.44	0.05302	0.7854	0.1496
21	40.21	1.44	0.05276	0.7919	0.1576
22	42.27	1.44	0.05264	0.7998	0.1654
23	44.18	1.44	0.05251	0.81	0.1733
24	46.26	1.44	0.0522	0.8174	0.1811
25	48.13	1.44	0.05195	0.8211	0.189
26	50.09	1.439	0.05169	0.823	0.1969
27	52.06	1.439	0.05138	0.8202	0.2048
28	54.03	1.439	0.05125	0.8179	0.2126
29	55.86	1.439	0.05131	0.8049	0.2205
30	57.76	1.438	0.05195	0.8021	0.2284
31	59.91	1.438	0.05239	0.8021	0.2362
32	61.73	1.439	0.05264	0.81	0.2441
33	63.96	1.439	0.05302	0.8086	0.252
34	65.73	1.439	0.05327	0.8174	0.2599
35	67.59	1.439	0.05352	0.8225	0.2677
36	69.70	1.439	0.05371	0.8327	0.2756
37	71.64	1.439	0.05384	0.8364	0.2835
38	73.60	1.439	0.05396	0.8392	0.2914
39	75.59	1.439	0.05415	0.8373	0.2992
40	77.45	1.439	0.05453	0.8383	0.3071
41	79.47	1.439	0.05503	0.8462	0.315
42	81.41	1.439	0.05529	0.8526	0.3229
43	82.68	1.439	0.05548	0.8591	0.3275



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-023 S1  
 Sample No.: S-9  
 Test No.: 40 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/146/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 27.0'-29.0'  
 Elevation: ----

Soil Description: VERY DARK GRAY FLY ASH WITH SAND AND GRAVEL  
 Remarks: TEST PERFORMED AS PER ASTM D3080.

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in
1	0.00	2.879	0.06367	0	0
2	5.50	2.879	0.066	0.2558	0.007876
3	7.58	2.876	0.06739	0.4071	0.01575
4	9.71	2.879	0.0684	0.5366	0.02363
5	11.73	2.878	0.06928	0.6049	0.0315
6	13.68	2.878	0.07042	0.6796	0.03938
7	15.64	2.877	0.0713	0.7404	0.04725
8	17.61	2.877	0.07243	0.8268	0.05513
9	19.78	2.878	0.07344	0.914	0.06301
10	21.88	2.878	0.07432	0.9795	0.07088
11	23.89	2.878	0.07496	1.051	0.07876
12	25.89	2.879	0.07584	1.118	0.08663
13	27.97	2.876	0.07659	1.179	0.09451
14	29.98	2.879	0.0776	1.222	0.1024
15	31.97	2.878	0.07855	1.269	0.1103
16	34.06	2.878	0.0788	1.313	0.1181
17	36.03	2.878	0.07905	1.361	0.126
18	38.01	2.879	0.07943	1.411	0.1339
19	40.08	2.878	0.07987	1.443	0.1418
20	42.02	2.878	0.08038	1.453	0.1496
21	43.98	2.878	0.08082	1.483	0.1575
22	45.99	2.879	0.08113	1.499	0.1654
23	48.06	2.879	0.08157	1.516	0.1733
24	49.93	2.879	0.08183	1.51	0.1811
25	51.88	2.879	0.08233	1.512	0.189
26	54.00	2.879	0.08284	1.492	0.1969
27	55.79	2.879	0.08328	1.472	0.2048
28	57.64	2.879	0.08353	1.466	0.2126
29	59.87	2.879	0.08378	1.473	0.2205
30	61.83	2.878	0.08397	1.477	0.2284
31	63.72	2.879	0.08416	1.481	0.2362
32	65.75	2.879	0.08429	1.479	0.2441
33	67.56	2.879	0.08441	1.482	0.252
34	69.63	2.879	0.08523	1.486	0.2599
35	71.57	2.879	0.08548	1.49	0.2677
36	73.66	2.879	0.0858	1.494	0.2756
37	75.62	2.879	0.08599	1.499	0.2835
38	77.53	2.879	0.08624	1.502	0.2914
39	79.64	2.879	0.08668	1.51	0.2992
40	81.55	2.879	0.08712	1.514	0.3072
41	83.43	2.879	0.08737	1.518	0.315
42	84.20	2.879	0.08737	1.52	0.3176



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-023 S1  
 Sample No.: S-9  
 Test No.: 60 PSI

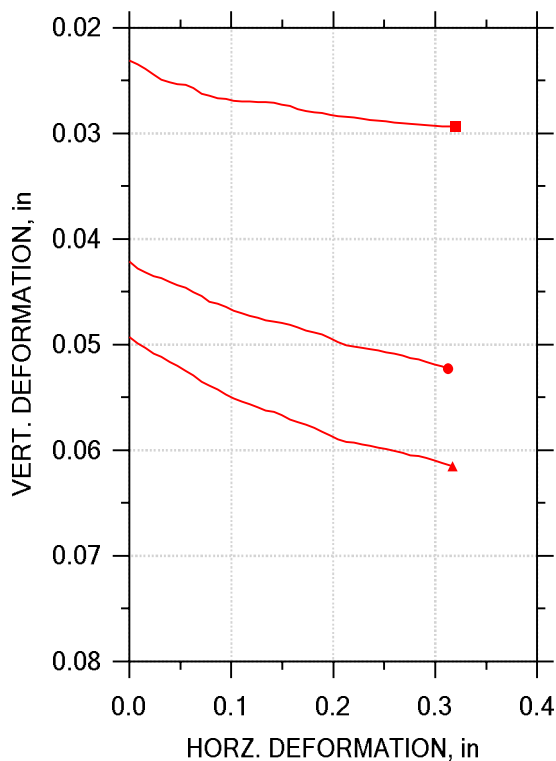
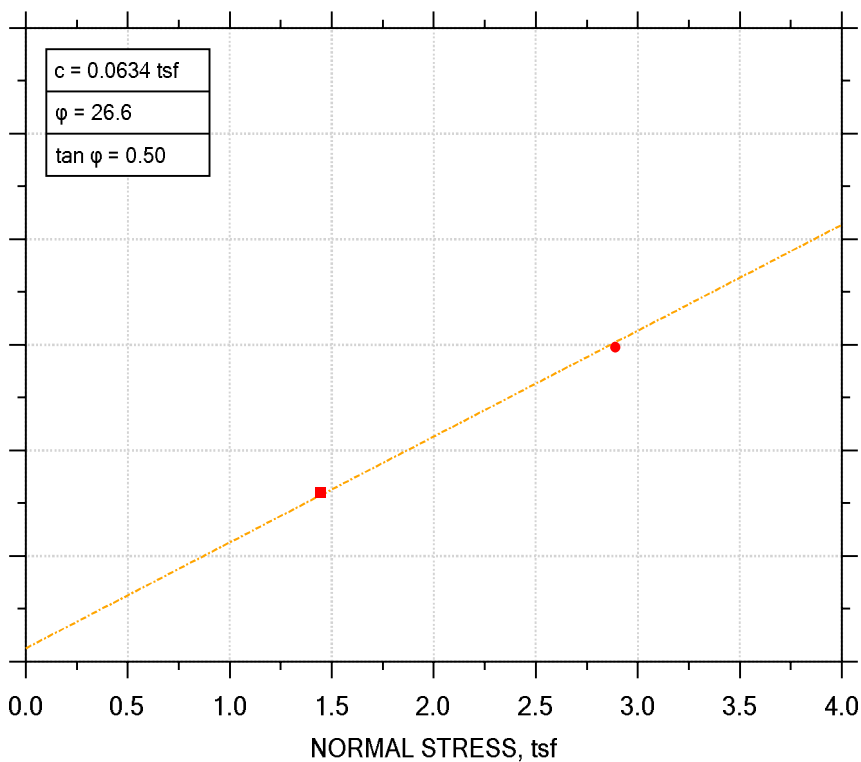
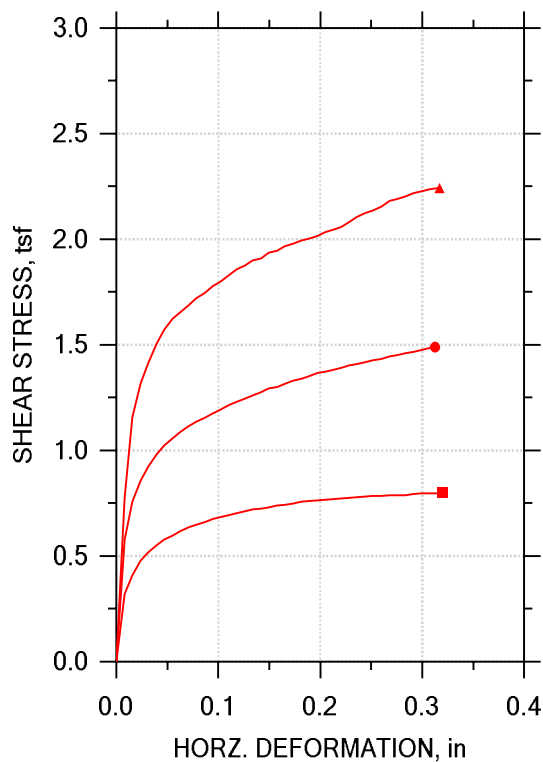
Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/146/15  
 Sample Type: 3.0" ST

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 27.0'-29.0'  
 Elevation: ----

Soil Description: VERY DARK GRAY FLY ASH WITH SAND AND GRAVEL  
 Remarks: TEST PERFORMED AS PER ASTM D3080.

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in
1	0.00	4.319	0.1161	0	0
2	6.63	4.317	0.1173	0.3858	0.007876
3	8.64	4.317	0.1192	0.5763	0.01575
4	10.67	4.319	0.1206	0.7651	0.02363
5	12.61	4.319	0.1221	0.938	0.0315
6	14.65	4.316	0.1236	1.092	0.03938
7	16.80	4.318	0.1244	1.238	0.04725
8	18.85	4.319	0.1259	1.362	0.05513
9	20.70	4.319	0.127	1.466	0.06301
10	22.72	4.317	0.128	1.566	0.07088
11	24.69	4.318	0.1288	1.652	0.07876
12	26.74	4.319	0.1297	1.728	0.08663
13	28.73	4.318	0.1303	1.792	0.09451
14	30.64	4.318	0.1314	1.849	0.1024
15	32.69	4.318	0.1325	1.908	0.1103
16	34.81	4.318	0.1331	1.962	0.1181
17	36.79	4.319	0.1337	2.006	0.126
18	38.68	4.317	0.1342	2.046	0.1339
19	40.54	4.318	0.1348	2.078	0.1418
20	42.61	4.319	0.1355	2.073	0.1496
21	44.59	4.317	0.1363	2.095	0.1575
22	46.53	4.318	0.1369	2.126	0.1654
23	48.62	4.318	0.1377	2.162	0.1733
24	50.61	4.318	0.1382	2.198	0.1811
25	52.53	4.319	0.1389	2.227	0.189
26	54.34	4.318	0.1395	2.24	0.1969
27	56.45	4.319	0.1406	2.273	0.2048
28	58.39	4.318	0.1413	2.297	0.2126
29	60.26	4.318	0.1418	2.315	0.2205
30	62.40	4.318	0.1427	2.325	0.2284
31	64.27	4.318	0.1431	2.315	0.2362
32	66.19	4.318	0.1435	2.324	0.2441
33	68.09	4.319	0.1439	2.334	0.252
34	70.02	4.319	0.1446	2.335	0.2599
35	72.17	4.318	0.1452	2.338	0.2677
36	74.03	4.318	0.1459	2.342	0.2756
37	76.23	4.318	0.1466	2.343	0.2835
38	78.15	4.319	0.1473	2.348	0.2914
39	80.07	4.319	0.1476	2.35	0.2992
40	81.07	4.318	0.1478	2.34	0.3032





Symbol	■	●	▲	
Test No.	20.0 PSI	40.0 PSI	60.0 PSI	
Sample No.	S-9	S-9	S-9	
Shape	Circular	Circular	Circular	
Initial	Dimension, in	2.4996	2.4996	2.5035
	Area, in <sup>2</sup>	4.9072	4.9072	4.9227
	Height, in	1.0012	1.0043	1.0063
	Water Content, %	48.30	48.74	48.73
	Dry Density, pcf	73.27	74.93	74.29
	Saturation, %	103.35	108.66	106.94
	Void Ratio	1.2152	1.1662	1.1848
Consol. Height, in	0.97808	0.96221	0.95704	
Consol. Void Ratio	1.1641	1.0754	1.0779	
Final	Water Content, %	43.69	39.99	40.37
	Dry Density, pcf	75.49	79.04	79.13
	Saturation, %	98.76	98.70	99.84
	Void Ratio	1.1502	1.0534	1.0513
Normal Stress, tsf	1.4455	2.8899	4.3244	
Max. Shear Stress, tsf	0.7992	1.4892	2.2422	
Ult. Shear Stress, tsf	0.7992	1.4892	2.2422	
Time to Failure, min	78.896	78.246	79.775	
Disp. Rate, in/min	0.004	0.004	0.004	
Estimated Specific Gravity	2.60	2.60	2.60	
Liquid Limit	58	58	58	
Plastic Limit	23	23	23	
Plasticity Index	35	35	35	

Project: DYNEGY HENNEPIN
Location: HENNEPIN, IL
Project No.: MR155233
Boring No.: HEN-024 S-9
Sample Type: 3" ST
Description: DARK GRAY ORGANIC CLAY WITH SAND OH
Remarks: TEST PERFORMED AS PER ASTM D3080

DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-024 S-9  
 Sample No.: S-9  
 Test No.: 20.0 PSI

Location: HENNEPIN, IL  
 Tested By: WPQ  
 Test Date: 12/16/15  
 Sample Type: 3" ST

Project No.: MR155233  
 Checked By: BCM  
 Depth: 26.5'-28.5'  
 Elevation: ----

Soil Description: DARK GRAY ORGANIC CLAY WITH SAND OH  
 Remarks: TEST PERFORMED AS PER ASTM D3080

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	1.45	0.02310	0.000	0.0000	0.0000
2	2.83	1.44	0.02346	0.322	0.007916	0.007916
3	4.68	1.44	0.02391	0.410	0.01578	0.01578
4	6.60	1.44	0.02445	0.478	0.02365	0.02365
5	8.62	1.44	0.02490	0.519	0.03152	0.03152
6	10.54	1.44	0.02516	0.550	0.03939	0.03939
7	12.47	1.44	0.02535	0.577	0.04726	0.04726
8	14.35	1.44	0.02542	0.598	0.05512	0.05512
9	16.24	1.44	0.02568	0.617	0.06299	0.06299
10	18.42	1.44	0.02622	0.636	0.07091	0.07091
11	20.09	1.44	0.02645	0.648	0.07878	0.07878
12	21.99	1.44	0.02667	0.661	0.08665	0.08665
13	24.07	1.44	0.02674	0.674	0.09451	0.09451
14	25.98	1.44	0.02690	0.685	0.1024	0.1024
15	27.86	1.44	0.02696	0.695	0.1102	0.1102
16	29.65	1.44	0.02699	0.703	0.1181	0.1181
17	31.66	1.44	0.02703	0.712	0.1260	0.1260
18	33.60	1.44	0.02706	0.720	0.1339	0.1339
19	35.46	1.44	0.02709	0.725	0.1418	0.1418
20	37.49	1.44	0.02728	0.732	0.1496	0.1496
21	39.55	1.44	0.02741	0.738	0.1575	0.1575
22	41.43	1.44	0.02770	0.744	0.1654	0.1654
23	43.16	1.44	0.02790	0.750	0.1732	0.1732
24	45.07	1.45	0.02799	0.756	0.1811	0.1811
25	47.14	1.44	0.02809	0.761	0.1890	0.1890
26	48.89	1.44	0.02825	0.765	0.1969	0.1969
27	50.73	1.44	0.02835	0.767	0.2048	0.2048
28	52.81	1.45	0.02844	0.770	0.2126	0.2126
29	54.81	1.44	0.02847	0.774	0.2205	0.2205
30	56.58	1.44	0.02864	0.775	0.2284	0.2284
31	58.54	1.45	0.02870	0.779	0.2362	0.2362
32	60.26	1.45	0.02876	0.782	0.2441	0.2441
33	62.26	1.45	0.02886	0.784	0.2520	0.2520
34	64.13	1.45	0.02896	0.786	0.2599	0.2599
35	66.07	1.45	0.02905	0.787	0.2678	0.2678
36	68.20	1.44	0.02912	0.788	0.2756	0.2756
37	69.92	1.45	0.02918	0.787	0.2835	0.2835
38	71.92	1.45	0.02921	0.792	0.2914	0.2914
39	73.61	1.44	0.02928	0.796	0.2992	0.2992
40	75.77	1.44	0.02931	0.798	0.3071	0.3071
41	77.51	1.44	0.02934	0.797	0.3150	0.3150
42	78.90	1.45	0.02938	0.799	0.3202	0.3202



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-024 S-9  
 Sample No.: S-9  
 Test No.: 40.0 PSI

Location: HENNEPIN, IL  
 Tested By: WPQ  
 Test Date: 12/16/15  
 Sample Type: 3" ST

Project No.: MR155233  
 Checked By: BCM  
 Depth: 26.5'-28.5'  
 Elevation: ----

Soil Description: DARK GRAY ORGANIC CLAY WITH SAND OH  
 Remarks: TEST PERFORMED AS PER ASTM D3080

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	2.89	0.04212	0.000	0.0000	0.0000
2	4.33	2.89	0.04276	0.579	0.007916	0.007916
3	6.24	2.89	0.04315	0.759	0.01578	0.01578
4	8.26	2.89	0.04350	0.856	0.02365	0.02365
5	10.18	2.89	0.04373	0.923	0.03152	0.03152
6	12.02	2.89	0.04405	0.981	0.03939	0.03939
7	13.99	2.89	0.04434	1.02	0.04726	0.04726
8	15.82	2.89	0.04463	1.06	0.05512	0.05512
9	17.65	2.89	0.04504	1.09	0.06299	0.06299
10	19.62	2.89	0.04540	1.11	0.07091	0.07091
11	21.62	2.89	0.04591	1.14	0.07878	0.07878
12	23.51	2.89	0.04614	1.15	0.08665	0.08665
13	25.43	2.89	0.04640	1.18	0.09451	0.09451
14	27.27	2.89	0.04678	1.20	0.1024	0.1024
15	29.24	2.89	0.04704	1.22	0.1102	0.1102
16	31.09	2.89	0.04730	1.23	0.1181	0.1181
17	33.03	2.89	0.04746	1.25	0.1260	0.1260
18	35.12	2.89	0.04768	1.26	0.1339	0.1339
19	36.86	2.89	0.04784	1.28	0.1418	0.1418
20	38.90	2.89	0.04794	1.30	0.1496	0.1496
21	40.73	2.89	0.04813	1.30	0.1575	0.1575
22	42.66	2.89	0.04839	1.32	0.1654	0.1654
23	44.59	2.89	0.04868	1.33	0.1732	0.1732
24	46.52	2.89	0.04887	1.34	0.1811	0.1811
25	48.24	2.89	0.04903	1.35	0.1890	0.1890
26	50.32	2.89	0.04942	1.37	0.1969	0.1969
27	52.25	2.89	0.04974	1.37	0.2048	0.2048
28	54.15	2.89	0.05006	1.38	0.2126	0.2126
29	56.03	2.89	0.05019	1.39	0.2205	0.2205
30	58.01	2.89	0.05029	1.40	0.2284	0.2284
31	59.88	2.89	0.05042	1.41	0.2362	0.2362
32	61.69	2.89	0.05055	1.42	0.2441	0.2441
33	63.69	2.89	0.05071	1.43	0.2520	0.2520
34	65.33	2.89	0.05087	1.43	0.2599	0.2599
35	67.31	2.89	0.05106	1.44	0.2678	0.2678
36	69.14	2.89	0.05129	1.45	0.2756	0.2756
37	71.13	2.89	0.05138	1.46	0.2835	0.2835
38	73.21	2.89	0.05164	1.47	0.2914	0.2914
39	75.04	2.89	0.05187	1.48	0.2992	0.2992
40	76.93	2.89	0.05209	1.49	0.3071	0.3071
41	78.25	2.89	0.05228	1.49	0.3125	0.3125



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-024 S-9  
 Sample No.: S-9  
 Test No.: 60.0 PSI

Location: HENNEPIN, IL  
 Tested By: WPQ  
 Test Date: 12/16/15  
 Sample Type: 3" ST

Project No.: MR155233  
 Checked By: BCM  
 Depth: 26.5'-28.5'  
 Elevation: ----

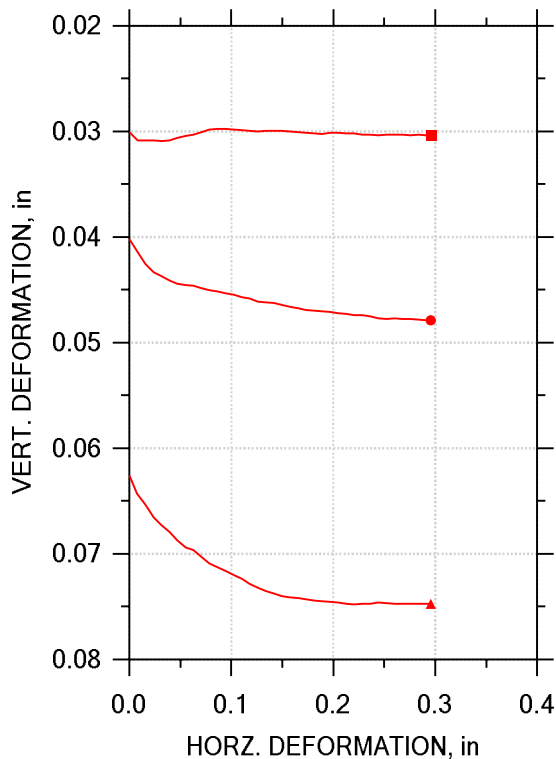
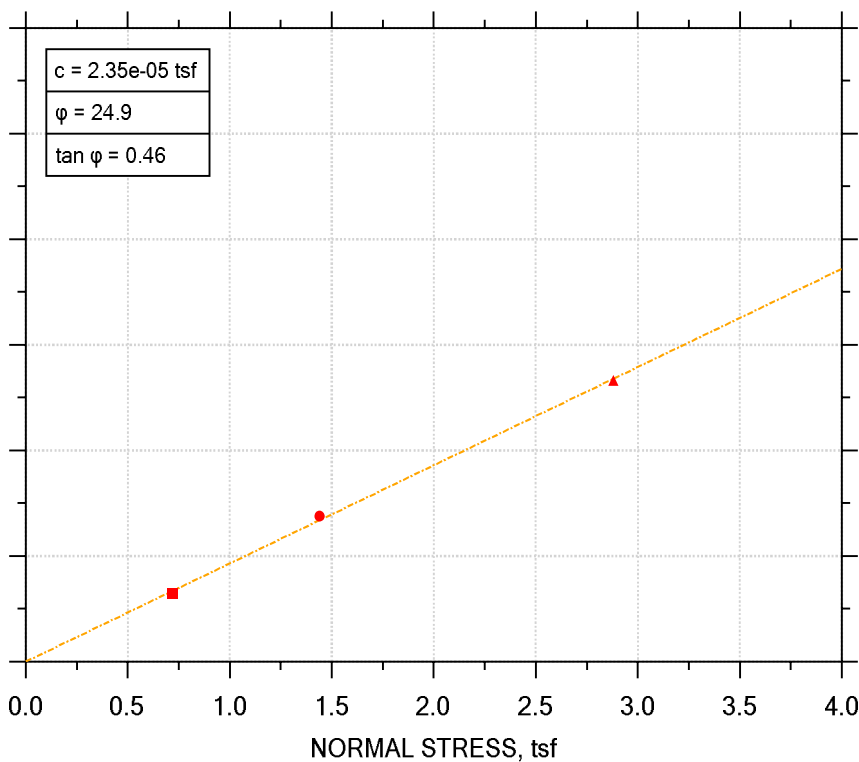
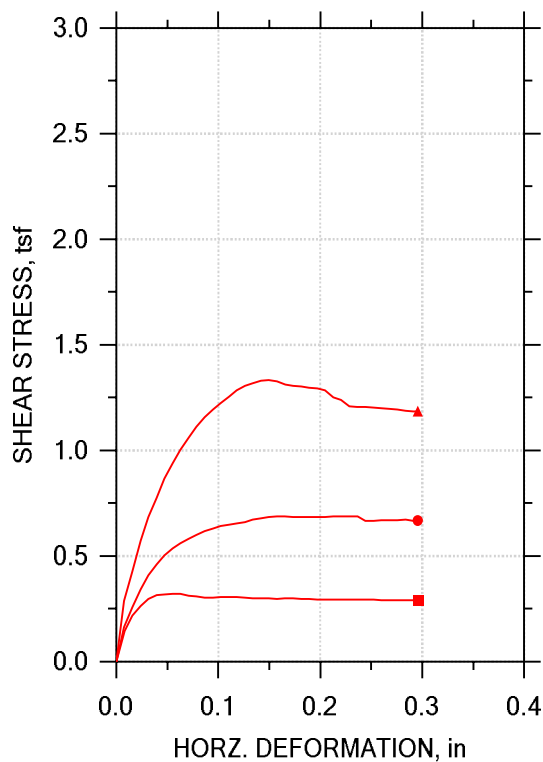
Soil Description: DARK GRAY ORGANIC CLAY WITH SAND OH  
 Remarks: TEST PERFORMED AS PER ASTM D3080

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	4.32	0.04926	0.000	0.0000	0.0000
2	4.54	4.32	0.04986	0.778	0.007916	0.007916
3	6.59	4.32	0.05030	1.16	0.01578	0.01578
4	8.54	4.32	0.05082	1.32	0.02365	0.02365
5	10.51	4.32	0.05114	1.42	0.03152	0.03152
6	12.34	4.32	0.05162	1.51	0.03939	0.03939
7	14.31	4.32	0.05202	1.57	0.04726	0.04726
8	16.21	4.32	0.05250	1.62	0.05512	0.05512
9	17.95	4.32	0.05290	1.66	0.06299	0.06299
10	19.92	4.32	0.05351	1.69	0.07091	0.07091
11	22.00	4.32	0.05391	1.72	0.07878	0.07878
12	23.87	4.32	0.05423	1.74	0.08665	0.08665
13	25.83	4.32	0.05471	1.78	0.09451	0.09451
14	27.73	4.32	0.05511	1.80	0.1024	0.1024
15	29.76	4.32	0.05539	1.83	0.1102	0.1102
16	31.70	4.32	0.05567	1.86	0.1181	0.1181
17	33.58	4.32	0.05595	1.88	0.1260	0.1260
18	35.51	4.32	0.05623	1.90	0.1339	0.1339
19	37.34	4.32	0.05639	1.91	0.1418	0.1418
20	39.30	4.32	0.05667	1.94	0.1496	0.1496
21	41.16	4.32	0.05707	1.95	0.1575	0.1575
22	43.16	4.32	0.05735	1.97	0.1654	0.1654
23	44.97	4.32	0.05755	1.98	0.1732	0.1732
24	46.86	4.32	0.05787	2.00	0.1811	0.1811
25	48.65	4.32	0.05827	2.00	0.1890	0.1890
26	50.79	4.32	0.05863	2.02	0.1969	0.1969
27	52.65	4.32	0.05899	2.03	0.2048	0.2048
28	54.53	4.32	0.05919	2.04	0.2126	0.2126
29	56.53	4.32	0.05927	2.06	0.2205	0.2205
30	58.38	4.32	0.05943	2.08	0.2284	0.2284
31	60.24	4.32	0.05959	2.11	0.2362	0.2362
32	62.16	4.32	0.05975	2.12	0.2441	0.2441
33	64.08	4.32	0.05987	2.14	0.2520	0.2520
34	65.85	4.32	0.06007	2.16	0.2599	0.2599
35	67.89	4.32	0.06023	2.18	0.2678	0.2678
36	69.71	4.32	0.06047	2.19	0.2756	0.2756
37	71.73	4.32	0.06055	2.20	0.2835	0.2835
38	73.61	4.32	0.06071	2.22	0.2914	0.2914
39	75.62	4.32	0.06095	2.23	0.2992	0.2992
40	77.34	4.32	0.06119	2.24	0.3071	0.3071
41	79.25	4.32	0.06148	2.24	0.3150	0.3150
42	79.77	4.32	0.06152	2.24	0.3167	0.3167







Symbol	■	●	▲	
Test No.	10 PSI	20 PSI	40 PSI	
Sample No.	S-6	S-6	S-6	
Shape	Circular	Circular	Circular	
Initial	Dimension, in	2.4969	2.4957	2.502
	Area, in <sup>2</sup>	4.8964	4.8917	4.9165
	Height, in	1.0035	0.99685	0.99685
	Water Content, %	31.49	31.84	31.90
	Dry Density, pcf	74.23	74.44	73.95
	Saturation, %	77.52	78.85	77.93
	Void Ratio	0.93443	0.92878	0.94155
Consol. Height, in	0.97345	0.95666	0.93431	
Consol. Void Ratio	0.87642	0.851	0.81974	
Final	Water Content, %	37.75	35.63	34.57
	Dry Density, pcf	76.55	78.20	79.95
	Saturation, %	99.14	98.01	99.89
	Void Ratio	0.87576	0.83613	0.79599
Normal Stress, tsf	0.72004	1.4392	2.8793	
Max. Shear Stress, tsf	0.32137	0.68923	1.332	
Ult. Shear Stress, tsf	0.28956	0.66847	1.1862	
Time to Failure, min	13.317	52.872	34.55	
Disp. Rate, in/min	0.0044283	0.0044283	0.0044283	
Estimated Specific Gravity	2.30	2.30	2.30	
Liquid Limit	NP	NP	NP	
Plastic Limit	NP	NP	NP	
Plasticity Index	NP	NP	NP	

Project: DYNEGY HENNEPIN
Location: HENNEPIN, IL
Project No.: MR155233
Boring No.: HEN-025 S-6
Sample Type: TRIMMED
Description: VERY DARK GRAY FLY ASH WITH SAND
Remarks:

DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-025 S-6  
 Sample No.: S-6  
 Test No.: 10 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/13/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 11.5'-13.5'  
 Elevation: ----

Soil Description: VERY DARK GRAY FLY ASH WITH SAND  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	0.719	0.03009	0.000	0.0000	0.0000
2	2.49	0.719	0.03083	0.147	0.007971	0.007971
3	4.56	0.720	0.03083	0.219	0.01577	0.01577
4	6.40	0.720	0.03083	0.264	0.02364	0.02364
5	8.22	0.720	0.03090	0.298	0.03154	0.03154
6	9.89	0.720	0.03087	0.314	0.03944	0.03944
7	11.62	0.720	0.03061	0.319	0.04727	0.04727
8	13.32	0.720	0.03045	0.321	0.05514	0.05514
9	15.05	0.720	0.03029	0.320	0.06300	0.06300
10	16.89	0.720	0.03007	0.312	0.07087	0.07087
11	18.73	0.720	0.02984	0.310	0.07877	0.07877
12	20.76	0.719	0.02975	0.303	0.08664	0.08664
13	22.51	0.719	0.02979	0.304	0.09451	0.09451
14	24.15	0.720	0.02982	0.306	0.1024	0.1024
15	25.71	0.720	0.02986	0.306	0.1102	0.1102
16	27.59	0.720	0.02993	0.305	0.1181	0.1181
17	29.28	0.720	0.02998	0.302	0.1260	0.1260
18	31.01	0.720	0.02993	0.300	0.1339	0.1339
19	32.97	0.719	0.02995	0.300	0.1417	0.1417
20	34.86	0.720	0.02995	0.298	0.1496	0.1496
21	36.70	0.720	0.03000	0.298	0.1575	0.1575
22	38.37	0.720	0.03007	0.298	0.1654	0.1654
23	40.03	0.720	0.03011	0.298	0.1732	0.1732
24	41.67	0.720	0.03018	0.298	0.1811	0.1811
25	43.57	0.720	0.03022	0.296	0.1890	0.1890
26	45.47	0.720	0.03015	0.294	0.1969	0.1969
27	47.27	0.720	0.03015	0.294	0.2047	0.2047
28	49.05	0.720	0.03016	0.294	0.2126	0.2126
29	50.95	0.720	0.03018	0.294	0.2205	0.2205
30	52.72	0.720	0.03029	0.293	0.2283	0.2283
31	54.18	0.719	0.03033	0.294	0.2362	0.2362
32	55.82	0.720	0.03034	0.294	0.2441	0.2441
33	57.83	0.720	0.03029	0.294	0.2520	0.2520
34	59.65	0.720	0.03031	0.291	0.2598	0.2598
35	61.60	0.720	0.03031	0.291	0.2678	0.2678
36	63.38	0.720	0.03036	0.290	0.2756	0.2756
37	65.11	0.720	0.03031	0.290	0.2835	0.2835
38	66.87	0.720	0.03038	0.290	0.2914	0.2914
39	67.77	0.720	0.03043	0.290	0.2959	0.2959



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-025 S-6  
 Sample No.: S-6  
 Test No.: 20 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/13/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 11.5'-13.5'  
 Elevation: ----

Soil Description: VERY DARK GRAY FLY ASH WITH SAND  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	1.44	0.04020	0.000	0.0000	0.0000
2	2.45	1.44	0.04135	0.162	0.007902	0.007902
3	4.38	1.44	0.04254	0.259	0.01577	0.01577
4	6.37	1.44	0.04333	0.343	0.02364	0.02364
5	8.17	1.44	0.04372	0.410	0.03154	0.03154
6	9.94	1.44	0.04414	0.461	0.03940	0.03940
7	11.65	1.44	0.04441	0.502	0.04731	0.04731
8	13.41	1.44	0.04452	0.537	0.05517	0.05517
9	15.14	1.44	0.04459	0.560	0.06300	0.06300
10	16.90	1.44	0.04482	0.582	0.07087	0.07087
11	18.84	1.44	0.04502	0.600	0.07877	0.07877
12	20.84	1.44	0.04513	0.618	0.08664	0.08664
13	22.56	1.44	0.04531	0.632	0.09451	0.09451
14	24.41	1.44	0.04544	0.643	0.1024	0.1024
15	26.03	1.44	0.04572	0.649	0.1102	0.1102
16	27.61	1.44	0.04585	0.654	0.1182	0.1182
17	29.43	1.44	0.04612	0.662	0.1260	0.1260
18	31.34	1.44	0.04617	0.671	0.1339	0.1339
19	33.28	1.44	0.04623	0.679	0.1417	0.1417
20	35.06	1.44	0.04643	0.684	0.1496	0.1496
21	36.88	1.44	0.04661	0.687	0.1575	0.1575
22	38.57	1.44	0.04675	0.687	0.1654	0.1654
23	40.34	1.44	0.04691	0.685	0.1732	0.1732
24	41.97	1.44	0.04697	0.684	0.1811	0.1811
25	43.74	1.44	0.04704	0.683	0.1890	0.1890
26	45.60	1.44	0.04711	0.684	0.1969	0.1969
27	47.52	1.44	0.04720	0.686	0.2048	0.2048
28	49.31	1.44	0.04725	0.687	0.2126	0.2126
29	51.07	1.44	0.04738	0.688	0.2205	0.2205
30	52.87	1.44	0.04738	0.689	0.2283	0.2283
31	54.66	1.44	0.04749	0.689	0.2363	0.2363
32	56.02	1.44	0.04772	0.667	0.2441	0.2441
33	57.82	1.44	0.04774	0.668	0.2520	0.2520
34	59.66	1.44	0.04770	0.669	0.2598	0.2598
35	61.64	1.44	0.04774	0.669	0.2678	0.2678
36	63.57	1.44	0.04776	0.669	0.2756	0.2756
37	65.29	1.44	0.04781	0.671	0.2835	0.2835
38	67.10	1.44	0.04787	0.666	0.2914	0.2914
39	67.98	1.44	0.04788	0.668	0.2953	0.2953



DIRECT SHEAR TEST DATA

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-025 S-6  
 Sample No.: S-6  
 Test No.: 40 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/13/15  
 Sample Type: TRIMMED

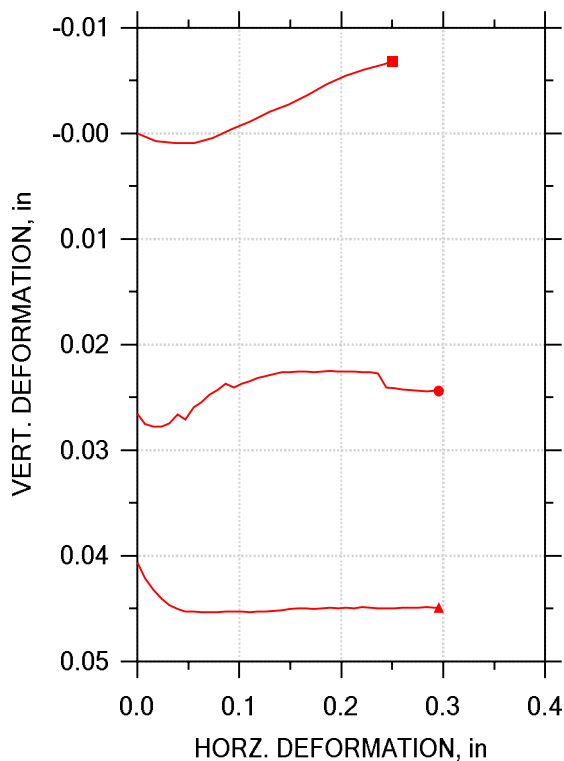
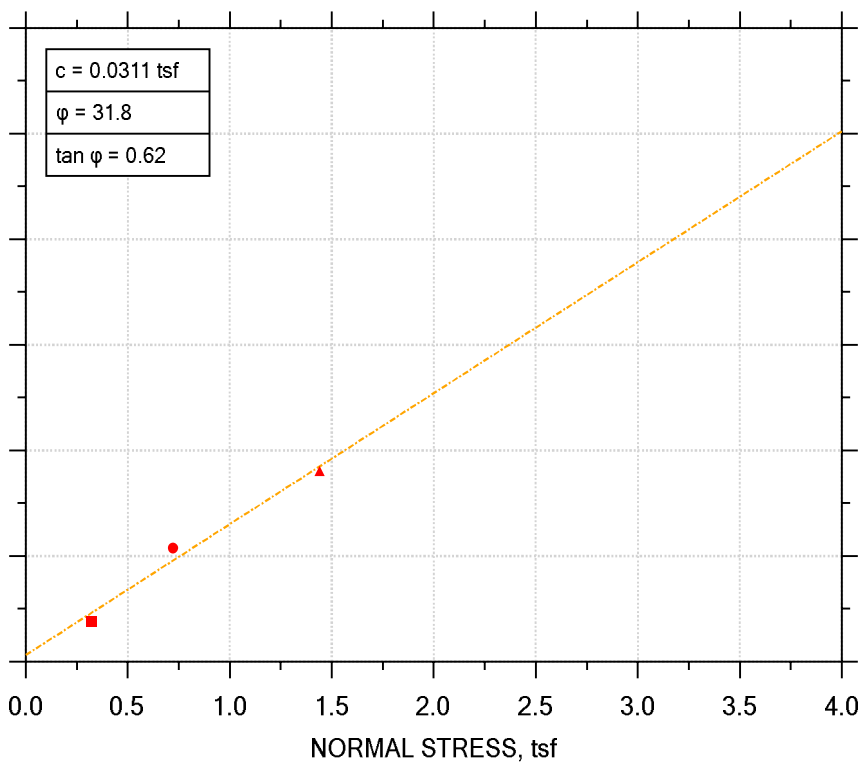
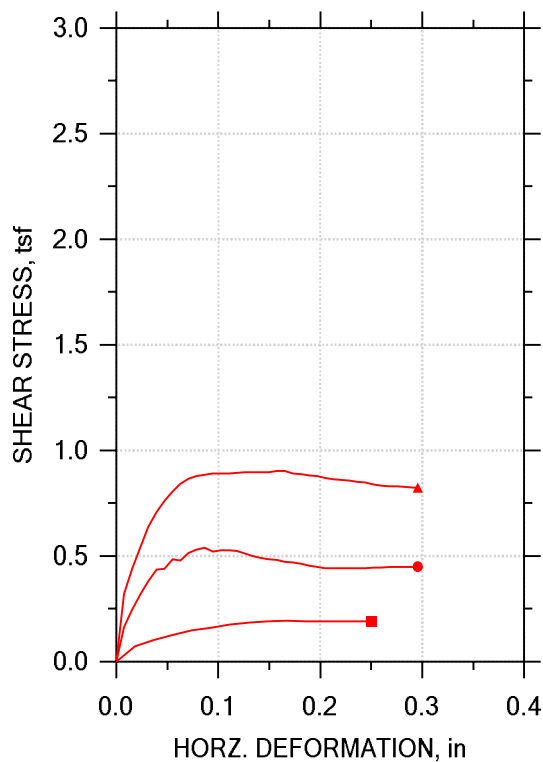
Project No.: MR155233  
 Checked By: WPQ  
 Depth: 11.5'-13.5'  
 Elevation: ----

Soil Description: VERY DARK GRAY FLY ASH WITH SAND  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	2.88	0.06254	0.000	0.0000	0.0000
2	2.06	2.88	0.06431	0.288	0.007902	0.007902
3	3.73	2.88	0.06535	0.427	0.01577	0.01577
4	5.68	2.88	0.06656	0.572	0.02364	0.02364
5	7.41	2.88	0.06726	0.683	0.03150	0.03150
6	9.18	2.88	0.06796	0.775	0.03940	0.03940
7	11.28	2.88	0.06874	0.867	0.04731	0.04731
8	13.15	2.88	0.06937	0.941	0.05514	0.05514
9	14.96	2.88	0.06966	1.00	0.06300	0.06300
10	16.75	2.88	0.07029	1.06	0.07087	0.07087
11	18.48	2.88	0.07094	1.11	0.07877	0.07877
12	20.21	2.88	0.07126	1.16	0.08664	0.08664
13	22.02	2.88	0.07162	1.19	0.09451	0.09451
14	23.89	2.88	0.07200	1.22	0.1024	0.1024
15	25.71	2.88	0.07238	1.26	0.1103	0.1103
16	27.46	2.88	0.07284	1.28	0.1182	0.1182
17	29.34	2.88	0.07322	1.31	0.1260	0.1260
18	31.19	2.88	0.07355	1.32	0.1339	0.1339
19	32.76	2.88	0.07378	1.33	0.1417	0.1417
20	34.55	2.88	0.07400	1.33	0.1496	0.1496
21	36.46	2.88	0.07414	1.33	0.1575	0.1575
22	38.17	2.88	0.07421	1.31	0.1654	0.1654
23	40.09	2.88	0.07432	1.31	0.1732	0.1732
24	41.83	2.88	0.07443	1.30	0.1811	0.1811
25	43.52	2.88	0.07448	1.30	0.1890	0.1890
26	45.41	2.88	0.07454	1.29	0.1969	0.1969
27	47.13	2.88	0.07463	1.29	0.2047	0.2047
28	48.78	2.88	0.07475	1.25	0.2126	0.2126
29	50.52	2.88	0.07479	1.24	0.2205	0.2205
30	52.37	2.88	0.07472	1.21	0.2283	0.2283
31	54.21	2.88	0.07472	1.21	0.2363	0.2363
32	56.04	2.88	0.07463	1.21	0.2441	0.2441
33	57.71	2.88	0.07466	1.20	0.2520	0.2520
34	59.65	2.88	0.07472	1.20	0.2599	0.2599
35	61.38	2.88	0.07472	1.20	0.2678	0.2678
36	63.12	2.88	0.07470	1.19	0.2756	0.2756
37	64.78	2.88	0.07470	1.19	0.2835	0.2835
38	66.67	2.88	0.07472	1.19	0.2914	0.2914
39	67.75	2.88	0.07474	1.19	0.2958	0.2958





Symbol	■	●	▲	
Test No.	5.0 PSI	10.0 PSI	20.0 PSI	
Sample No.	S-5	S-5	S-5	
Shape	Circular	Circular	Circular	
Initial	Dimension, in	2.4913	2.4941	2.4976
	Area, in <sup>2</sup>	4.8748	4.8856	4.8995
	Height, in	0.9878	0.99094	0.99252
	Water Content, %	16.30	16.70	16.83
	Dry Density, pcf	112.2	111.3	110.7
	Saturation, %	86.28	86.36	85.72
	Void Ratio	0.51397	0.52594	0.53408
Consol. Height, in	0.9878	0.9644	0.95193	
Consol. Void Ratio	0.51397	0.48506	0.47134	
Final	Water Content, %	19.67	18.05	17.75
	Dry Density, pcf	111.4	114.1	115.9
	Saturation, %	102.01	100.52	103.90
	Void Ratio	0.52446	0.48839	0.46469
Normal Stress, tsf	0.32343	0.72072	1.4396	
Max. Shear Stress, tsf	0.19271	0.53843	0.90226	
Ult. Shear Stress, tsf	0.19231	0.44946	0.82371	
Time to Failure, min	39.855	23.081	41.061	
Disp. Rate, in/min	0.047244	0.004	0.004	
Estimated Specific Gravity	2.72	2.72	2.72	
Liquid Limit	31	31	31	
Plastic Limit	17	17	17	
Plasticity Index	14	14	14	

Project: DYNEGY HENNEPIN	
Location: HENNEPIN, IL	
Project No.: MR155233	
Boring No.: HEN-029 S-5	
Sample Type: TRIMMED	
Description: DARK BROWN AND GRAY SLIGHTLY ORGANIC CLAY CL SAND SOCKETS NOTED	
Remarks:	

Project: DYNEGY HENNEPIN  
 Boring No.: HEN-029 S-5  
 Sample No.: S-5  
 Test No.: 5.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/13/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 10.0'-12.0'  
 Elevation: ----



Soil Description: DARK BROWN AND GRAY SLIGHTLY ORGANIC CLAY CL SAND POCKETS NOTED  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	0.323	0.0000	0.000202	0.0000	0.0000
2	5.49	0.322	0.0007383	0.0717	0.01854	0.01854
3	10.36	0.323	0.0009004	0.104	0.03709	0.03709
4	15.03	0.323	0.0009004	0.128	0.05563	0.05563
5	19.38	0.323	0.0004142	0.147	0.07418	0.07418
6	23.15	0.323	-0.0003962	0.161	0.09280	0.09280
7	27.26	0.323	-0.001135	0.175	0.1113	0.1113
8	31.47	0.323	-0.002053	0.186	0.1299	0.1299
9	35.85	0.324	-0.002755	0.191	0.1484	0.1484
10	39.85	0.323	-0.003638	0.193	0.1670	0.1670
11	44.32	0.323	-0.004646	0.192	0.1856	0.1856
12	48.69	0.323	-0.005475	0.192	0.2041	0.2041
13	53.17	0.323	-0.006051	0.192	0.2228	0.2228
14	57.05	0.323	-0.006537	0.192	0.2413	0.2413
15	60.08	0.322	-0.006843	0.192	0.2506	0.2506



Project: DYNEGY HENNEPIN  
 Boring No.: HEN-029 S-5  
 Sample No.: S-5  
 Test No.: 10.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/13/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 10.0'-12.0'  
 Elevation: ----



Soil Description: DARK BROWN AND GRAY SLIGHTLY ORGANIC CLAY CL SAND POCKETS NOTED  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	0.719	0.02654	0.000	0.0000	0.0000
2	2.71	0.719	0.02752	0.165	0.007902	0.007902
3	4.89	0.719	0.02777	0.248	0.01580	0.01580
4	7.16	0.720	0.02779	0.321	0.02364	0.02364
5	9.14	0.721	0.02746	0.382	0.03150	0.03150
6	11.21	0.721	0.02662	0.436	0.03940	0.03940
7	12.99	0.722	0.02710	0.441	0.04727	0.04727
8	14.76	0.722	0.02597	0.484	0.05517	0.05517
9	16.83	0.722	0.02543	0.479	0.06300	0.06300
10	18.94	0.722	0.02471	0.516	0.07087	0.07087
11	21.09	0.721	0.02433	0.529	0.07877	0.07877
12	23.08	0.721	0.02372	0.538	0.08664	0.08664
13	25.09	0.720	0.02404	0.521	0.09451	0.09451
14	26.95	0.721	0.02370	0.527	0.1024	0.1024
15	28.84	0.720	0.02343	0.528	0.1102	0.1102
16	30.60	0.720	0.02318	0.523	0.1182	0.1182
17	32.68	0.720	0.02294	0.512	0.1260	0.1260
18	34.69	0.720	0.02280	0.499	0.1339	0.1339
19	36.76	0.720	0.02262	0.491	0.1417	0.1417
20	38.80	0.720	0.02258	0.485	0.1496	0.1496
21	40.72	0.720	0.02256	0.482	0.1575	0.1575
22	42.71	0.720	0.02253	0.474	0.1654	0.1654
23	44.65	0.720	0.02258	0.468	0.1732	0.1732
24	46.29	0.720	0.02255	0.463	0.1811	0.1811
25	48.27	0.720	0.02249	0.455	0.1890	0.1890
26	50.29	0.720	0.02255	0.448	0.1969	0.1969
27	52.42	0.720	0.02253	0.444	0.2047	0.2047
28	54.59	0.720	0.02253	0.441	0.2126	0.2126
29	56.45	0.720	0.02260	0.441	0.2205	0.2205
30	58.41	0.720	0.02264	0.441	0.2283	0.2283
31	60.25	0.720	0.02271	0.443	0.2362	0.2362
32	62.14	0.719	0.02408	0.443	0.2441	0.2441
33	64.05	0.720	0.02410	0.444	0.2520	0.2520
34	66.14	0.720	0.02424	0.447	0.2598	0.2598
35	68.26	0.719	0.02431	0.448	0.2678	0.2678
36	70.36	0.719	0.02438	0.449	0.2756	0.2756
37	72.12	0.719	0.02442	0.449	0.2835	0.2835
38	74.01	0.719	0.02437	0.449	0.2914	0.2914
39	75.01	0.719	0.02438	0.449	0.2953	0.2953



Project: DYNEGY HENNEPIN  
 Boring No.: HEN-029 S-5  
 Sample No.: S-5  
 Test No.: 20.0 PSI

Location: HENNEPIN, IL  
 Tested By: BCM  
 Test Date: 12/13/15  
 Sample Type: TRIMMED

Project No.: MR155233  
 Checked By: WPQ  
 Depth: 10.0'-12.0'  
 Elevation: ----



Soil Description: DARK BROWN AND GRAY SLIGHTLY ORGANIC CLAY CL SAND POCKETS NOTED  
 Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress tsf	Vertical Displacement in	Horizontal Stress tsf	Horizontal Displacement in	Cumulative Displacement in
1	0.00	1.44	0.04059	0.000	0.0000	0.0000
2	2.82	1.44	0.04214	0.321	0.007867	0.007867
3	4.83	1.44	0.04324	0.444	0.01573	0.01573
4	7.10	1.44	0.04405	0.546	0.02360	0.02360
5	9.38	1.44	0.04470	0.641	0.03147	0.03147
6	11.33	1.44	0.04504	0.710	0.03937	0.03937
7	13.35	1.44	0.04526	0.759	0.04724	0.04724
8	15.20	1.44	0.04529	0.807	0.05510	0.05510
9	17.03	1.44	0.04533	0.841	0.06297	0.06297
10	19.00	1.44	0.04531	0.865	0.07087	0.07087
11	21.09	1.44	0.04531	0.877	0.07877	0.07877
12	23.26	1.44	0.04527	0.883	0.08660	0.08660
13	25.19	1.44	0.04529	0.890	0.09447	0.09447
14	27.24	1.44	0.04527	0.891	0.1023	0.1023
15	29.09	1.44	0.04533	0.890	0.1102	0.1102
16	30.98	1.44	0.04529	0.893	0.1181	0.1181
17	32.82	1.44	0.04526	0.896	0.1260	0.1260
18	34.93	1.44	0.04524	0.896	0.1338	0.1338
19	36.84	1.44	0.04513	0.895	0.1417	0.1417
20	39.05	1.44	0.04500	0.896	0.1496	0.1496
21	41.06	1.44	0.04499	0.902	0.1575	0.1575
22	42.87	1.44	0.04495	0.902	0.1653	0.1653
23	44.87	1.44	0.04502	0.889	0.1732	0.1732
24	46.86	1.44	0.04497	0.888	0.1811	0.1811
25	48.59	1.44	0.04493	0.883	0.1889	0.1889
26	50.54	1.44	0.04499	0.877	0.1968	0.1968
27	52.49	1.44	0.04493	0.869	0.2047	0.2047
28	54.68	1.44	0.04497	0.865	0.2126	0.2126
29	56.76	1.44	0.04488	0.862	0.2204	0.2204
30	58.63	1.44	0.04493	0.858	0.2283	0.2283
31	60.64	1.44	0.04497	0.850	0.2362	0.2362
32	62.54	1.44	0.04497	0.847	0.2441	0.2441
33	64.42	1.44	0.04499	0.840	0.2519	0.2519
34	66.26	1.44	0.04493	0.834	0.2598	0.2598
35	68.32	1.44	0.04493	0.831	0.2677	0.2677
36	70.44	1.44	0.04493	0.830	0.2756	0.2756
37	72.48	1.44	0.04488	0.828	0.2834	0.2834
38	74.27	1.44	0.04490	0.825	0.2913	0.2913
39	75.29	1.44	0.04490	0.824	0.2955	0.2955






# Hydraulic Conductivity Tests ASTM D 5084

TERRACON PROJECT NO.: **MR155233**  
PROJECT NAME: **DYNERGY - HENNEPIN SITE**  
CLIENT: **AECOM**  
LOCATION : **HENNEPIN, IL**

**12/21/2015**

**SUMMARY OF TEST RESULTS**

BORING NO. HEN-B010  
SAMPLE NO. S-5  
DEPTH: 10.0'-11.5'  
CLASSIFICATION VERY DARK GRAY FLY ASH WITH SAND AND GRAVEL

	<u>INITIAL</u>	<u>FINAL</u>	<u>SAMPLE PHOTO</u>
DRY UNIT WEIGHT (pcf)	86.6	93.3	
WATER CONTENT (%)	26.5	23.2	
DIAMETER (cm)	7.215	6.956	
LENGTH (cm)	4.527	4.521	
HYDRAULIC GRADIENT (MAXIMUM)	20.83		
PERCENT SATURATION	99.5		(Percent saturation calculation is based on final measurements and an estimated specific gravity.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	1.16E-05		


Deaired water was used as the liquid permeant.

TERRACON PROJECT NO.: **MR155233**  
PROJECT NAME: **DYNERGY - HENNEPIN SITE**  
CLIENT: **AECOM**  
LOCATION : **HENNEPIN, IL**

**12/21/2015**

**SUMMARY OF TEST RESULTS**

BORING NO. HEN-B017  
SAMPLE NO. S-3  
DEPTH: 5.0'-7.0'  
CLASSIFICATION VERY DARK GRAY LEAN CLAY WITH SAND

	<u>INITIAL</u>	<u>FINAL</u>	<u>SAMPLE PHOTO</u>
DRY UNIT WEIGHT (pcf)	76.0	82.8	
WATER CONTENT (%)	36.7	38.2	
DIAMETER (cm)	6.929	6.692	
LENGTH (cm)	7.541	7.425	
HYDRAULIC GRADIENT (MAXIMUM)	26.49		
PERCENT SATURATION	99.3		(Percent saturation calculation is based on final measurements and an estimated specific gravity.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	6.79E-07		


Deaired water was used as the liquid permeant.

TERRACON PROJECT NO.: **MR155233**  
PROJECT NAME: **DYNERGY - HENNEPIN SITE**  
CLIENT: **AECOM**  
LOCATION : **HENNEPIN, IL**

**12/21/2015**

**SUMMARY OF TEST RESULTS**

BORING NO. HEN-B023  
SAMPLE NO. S-9  
DEPTH: 27.0'-29.0'  
CLASSIFICATION VERY DARK GRAY FLY ASH WITH SAND AND GRAVEL

	<u>INITIAL</u>	<u>FINAL</u>	<u>SAMPLE PHOTO</u>
DRY UNIT WEIGHT (pcf)	81.8	83.2	
WATER CONTENT (%)	28.3	31.5	
DIAMETER (cm)	7.154	7.063	
LENGTH (cm)	5.432	5.479	
HYDRAULIC GRADIENT (MAXIMUM)	17.36		
PERCENT SATURATION	100.4		(Percent saturation calculation is based on final measurements and an estimated specific gravity.)
HYDRAULIC CONDUCTIVITY k (cm/sec)	1.00E-05		

Deaired water was used as the liquid permeant.