

APPENDIX C

**SOIL BORING LOGS, WELL COMPLETION
INFORMATION, GEOTECHNICAL DATA, AND
SOIL FLUORESCENCE DATA**

Contents

	<u>Page</u>
Soil Boring Logs	C-5
Well Completion Information	C-497
Geotechnical Data	C-519
Soil Fluorescence Data	C-553

Soil Boring Logs



Bore Log

Project Site CAMDS

Site ID 13-3X-01 Auger Size 8" x 4 1/4"

Date/Time Started 3MAY 1991 0922 hr Date/Time Completed 3MAY 1991 0949 hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. Layne Driller Kevin Cross

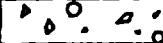
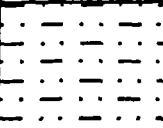
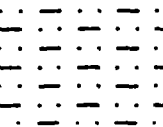
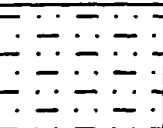
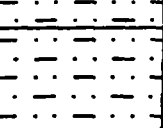
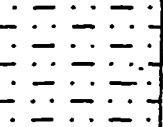
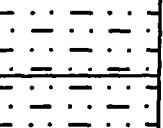
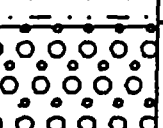
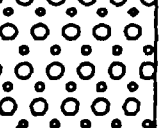
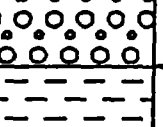
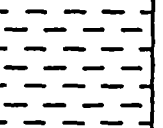
Drilling Type Auger Sample Type Split Spoon No. of Samples 3

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS			Boring: 13-3X-01			Page: 1 of 2			
Driller & Company: Kevin Cross			Layne						
Geologist/Logger & Company: John A. Burger			Signature: <i>John A. Burger</i>						
Date Boring Started: 3 May 1991			Completed: 3 May 1991						
Water Levels (From Ground Surface) N/A			Drilling Rig: 405						
First Encountered:			Date:						
While Drilling:			Date:						
At Boring Completion:			Date:						
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u> 				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 3X-01-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0922 hr. Stop: 0949 hr. HNu background: = 0.4 ppm		
0		Surface rubble	Core #1	6/6"	HNu = Bkg.		
1		Silt Calcareous Munsell = 2.5y/5/3	0 ft.- 2 ft.	11/6"			
2			14/6"				
3		Clayey silt Calcareous Munsell = 2.5y/5/3	Core #2	4/6"			
4			3 ft.- 5 ft.	7/6"			
5		6/6"					
6		Augerings = gravel at 5.5 ft. Angular to rounded. Up to 1 in. diameter Well graded					
7							
8		Augerings = silty clay water in gravel at 7.5 ft. Interface			HNu = 0.8 in hole HNu on core = bkg.		
9		Clay, slightly brown mottling (probably leaves) Not calcareous! Munsell = 5y/6/3 T.D. 10 ft.					
10			9 ft.- 10 ft.	10/6"			



Bore Log

Project Site CAMDS

Site ID 13-3X-02 Auger Size 8" x 4 1/4"

Date/Time Started 3 MAY 1991 1235hr Date/Time Completed 13 MAY 1991 1255hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spool No. of Samples 3

Geologist/Logger & Co. John A. Burger CNES.

BORING LOG GENERAL DATA

Project: <i>CAMDS</i>				Boring: <i>13-3X-02</i> Page: 1 of 2					
Driller & Company: <i>Kevin Cross</i>				Layne					
Geologist/Logger & Company: <i>John A. Burger</i>				Signature: <i>John A. Burger</i>					
Date Boring Started: <i>3 May 1991</i>				Completed: <i>3 May 1991</i>					
Water Levels (From Ground Surface) <i>N/A</i>				Drilling Rig: <i>405</i>					
First Encountered:				Date:					
While Drilling:				Date:					
At Boring Completion:				Date:					
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:					Location Sketch:				
Abbr Meaning					<p style="text-align: center;"> <i>52.5'</i> <i>99'</i> <i>133.8'</i> <i>13-38 B.</i> <i>13-3X-02</i> </p>				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 3X-02-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1235 hr. Stop: 1255 hr. HNu background: = 0.4 ppm		
0		Surface rubble		6/6"	HNu = Bkg.		
1		Clayey silt Calcareous Munsell = 2.5y/5/3	Core #1 0 ft.- 2 ft.	7/6"			
2				9/6"			
3		Augerings = clayey silt					
4		Slightly clayey silt Calcareous Munsell = 2.5y/5/3	Core #2 4 ft.- 5 ft.	5/6"			
5				7/6"			
6		Augerings = clayey silt					
7							
8							
9		Sand, fine-grained Several 1-2 in. diam. rounded blue limestone pebbles Slightly calcareous Munsell = 2.5y/6/2 T.D. 10 ft.	Core #3 9 ft.- 10 ft.	8/6"			
10				11/6"			



Bore Log

Project Site CAMDS

Site ID 13-3X-03 Auger Size 8" x 4 1/4"

Date/Time Started 3 MAY 1991 1318 hr Date/Time Completed 3 MAY 1991 1343 hr

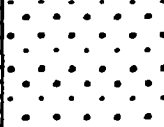
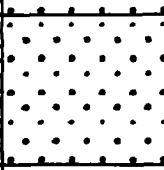
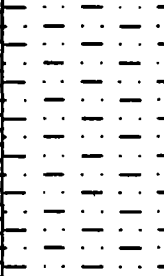
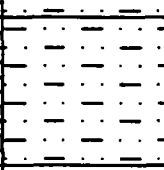
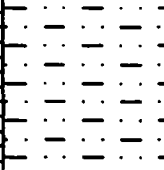
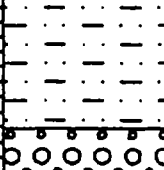
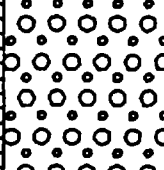
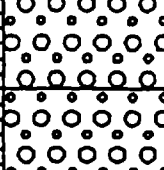
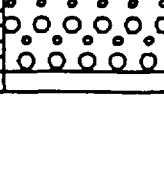


Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 3

Geologist/Logger & Co. John A Burger CNES

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 3X-03-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1318 hr. Stop: 1343 hr. HNu background: = 0.4 ppm		
0		Silty sand Calcareous Munsell = 2.5y/5/2 SM	Core #1 0 ft.- 2 ft.	11/6"	HNu = Bkg.		
1				8/6"			
2		Augerings = sandy silt		13/6"			
3				17/6"			
4		Sandy silt Core barrel is wet. Calcareous Munsell = 2.5y.5.2 ML	Core #2 4 ft.- 5 ft.	7/6"			
5		Augerings = sandy silt		10/6"			
6		Augerings = silty clay					
7		At 7 ft., gravel, rounded to angular, up to 1 in. dia.: silty					
8							
9		Gravel, limestone and quartzite clasts up to 1 in. diameter with poorly sorted fine- to coarse-grained sand. T.D. 10 ft. GW	Core #3 9 ft.- 10 ft.	10/6"			
10				21/6"	HNu = background	HNu = 1.1 ppm down hole	



Bore Log

Project Site CAMRS

Site ID 13-3X-04 Auger Size 8" * 4 1/4"

Date/Time Started 2 MAY 1991 1545hr Date/Time Completed 2 MAY 1991 1605hr

Surface Elevation (optional) D. A. Burger Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. LAYNE Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 3

Geologist/Logger & Co. D. A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS			Boring: 13-3X-04			Page: 1 of 2			
Driller & Company: Kevin Cross			Layne						
Geologist/Logger & Company: J. A. Burger			CNES			Signature: <i>John A. Burger</i>			
Date Boring Started: 2 MAY 1991			Completed: 2 MAY 1991						
Water Levels (From Ground Surface) N/A			Drilling Rig: 405						
First Encountered:			Date:						
While Drilling:			Date:						
At Boring Completion:			Date:						
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:					Location Sketch:				
Abbr Meaning					<p>Approx N.</p> <p>75.51</p> <p>49.06</p> <p>13-3X-04</p> <p>Steel Post upright Beam</p> <p>Corrugated steel Bunker</p>				

BORING LOG

Project: CAMDS		TEAD-5		Boring: 13 3X-04-91		Page: 2 of 2				
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: Stop: HNu background: = 0.4 ppm					
0		Construction base and rubble		8/6"	HNu = Bkg.					
1		Clayey silt, trace very fine sand Calcareous Munsell = 2.5y/5/3	Core #1 0 ft.- 2 ft.	9/6" 7/6" 7/6"						
2		Augerings = clayey silt, trace very fine sand Calcareous Munsell = 2.5y/5/3								
3										
4		Clayey silt, trace calcite veinlets (protocaliche) Munsell = 5y/6/2	Core #2 4 ft.- 5 ft.	6/6" 9/6"				HNu = Bkg.		
5										
6		Augerings = At 5.5 ft. clayey silt and gravel; Clasts of limestone up to 1 inch diameter, plus some sandy matrix.						HNu = 1.5 ppm downhole		
7										
8										
9		Slightly silty clay Slightly calcareous Munsell = 5y/7/2 T.D. 10 ft.	Core #3 9 ft.- 10 ft.	5/6" 12/6"						
10										



Bore Log

Project Site CAMDS

Site ID 13-3X-05 Auger Size 8" x 4 1/4"

Date/Time Started 2 MAY 1991 0905hr Date/Time Completed 2 MAY 1991 0950hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. LAYNE Driller Kevin Cross

Drilling Type Auger Sample Type Split Sp No. of Samples 3

Geologist/Logger & Co. John & Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS			Boring: 13- 3X -05			Page: 1 of 2					
Driller & Company: Kevin Cross			Layne								
Geologist/Logger & Company: J.A. Burger			Signature: <i>John A. Burger</i>								
Date Boring Started: 2 May 1991			Completed: 2 May 1991								
Water Levels (From Ground Surface)			N/A			Drilling Rig: 405					
First Encountered:			Date:								
While Drilling:			Date:								
At Boring Completion:			Date:								
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
		Start	End	Start	End			Start	End	Start	End
Abbreviations:						Location Sketch:					
Abbr Meaning						<p style="text-align: center;"> <i>JAB 13-38</i> <i>13-3X-05</i> </p> <p style="text-align: right;"> <i>Steel Post</i> <i>22.4'</i> <i>Bearing S32°W</i> </p>					

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 3X-05		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0905 hr. Stop: 0950 hr. HNU background: = 0.4 ppm		
0		Construction fill and rubble		6/6"	HNU = Bkg.		
1		Silt Slightly clayey Calcareous Munsell = 2.5y/5/3	Core #1 0 ft.- 2 ft.	8/6" -N/A -N/A			
2							
3							
4		Silty, sandy gravel, clasts of dark limestone up to 2 in. dia.; round to angular Munsell = 2.5y/5/3	Core #2 4 ft.- 5 ft.	8/6" 16/6"			
5							
6		Augerings = sandy gravel same as 4 ft. - 5 ft.					
7							
8		Out of gravel and into sandy silt at 8 ft.					
9		Clayey silt, trace 0.5 in. dia. limestone pebbles, quartzite pebbles Munsell = 5y/6/2 T.D. 10 ft.	Core #3 9 ft.- 10 ft.	5/6" 10/6"			
10							



Bore Log

Project Site CAMDS

Site ID 13-3X-06 Auger Size 8" X 4 1/4"

Date/Time Started 2 MAY 1991 1040 hr Date/Time Completed 2 May 1991 1101 hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spun No. of Samples 3

Geologist/Logger & Co. J.A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS			Boring: 13-3X-06			Page: 1 of 2			
Driller & Company: Kevin Cross			Layne						
Geologist/Logger & Company: J.A. Burger			CNE			Signature: <i>John A. Burger</i>			
Date Boring Started: 2 MAY 1991			Completed: 2 MAY 1991						
Water Levels (From Ground Surface)			N/A			Drilling Rig:			
First Encountered:						Date:			
While Drilling:						Date:			
At Boring Completion:						Date:			
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:					Location Sketch:				
Abbr		Meaning							

BORING LOG

Project: CAMDS		TEAD-5		Boring: 13 3X-06-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1040 hr. Stop: 1101 hr. HNu background: = 0.4 ppm		
0		Rubble		8/6"	Core #1 ft.- 2 ft.	HNu = Bkg.	
1		Silt, non-plastic, trace very fine- grained sand Calcareous Munsell = 2.5y/5/3	ML	6/6"			
2		Augerings = silt, non-plastic trace very fine-grained sand Calcareous Munsell = 2.5y/5/3		7/6"			
3		Augerings = silt, non-plastic trace very fine-grained sand Calcareous Munsell = 2.5y/5/3		6/6"			
4		Sandy silt Calcareous Munsell = 5y/5/2	ML	3/6"	Core #2 4 ft.- 5 ft.	HNu = Bkg.	
5		Augerings = clayey sandy silt		5/6"			
6		Silty, sandy, clayey gravel at 6 ft; round to angular limestone and quartzite clasts.	GW				
7							
8		Change from gravel to clay between 8 ft. and 9 ft.					
9		Clay, hard, dense, trace caliche veins: Calcareous (from veinlets?) clay not calcareous. Munsell = 5y/6/2 T.O. 10 ft.	CL	4/6"	Core #3 9 ft.- 10 ft.	HNu = Bkg. HNu = 1.5 ppm while hammering	
10				19/6"			



Bore Log

Project Site CAMDS

Site ID B-3X-07 Auger Size 8 * 4 1/4

Date/Time Started 2 MAY 1991 1447 hr Date/Time Completed 2 MAY 1991 1511 hr

Surface Elevation (optional) — Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 3

Geologist/Logger & Co. JOHN A. BURGER CNES

BORING LOG GENERAL DATA

Project: CAMDS			Boring: 13-3X-07 Page: 1 of 2						
Driller & Company: Kevin Cross			Layne						
Geologist/Logger & Company: J.A. Burger CNES			Signature:						
Date Boring Started: 2 MAY 1991			Completed: 2 MAY 1991						
Water Levels (From Ground Surface)			N/A		Drilling Rig: 405				
First Encountered:			Date:						
While Drilling:			Date:						
At Boring Completion:			Date:						
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:					Location Sketch:				
Abbr Meaning					<div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>13-3X-07</p> </div> <div> <p>Bearings from Concrete Base of Steel Beam</p> </div> </div>				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 3X-07-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1447 hr. Stop: 1511 hr. HNu background: = 0.4 ppm		
0		Construction rubble and fill		9/6"	Core #1 0 ft.- 2 ft.	7/6"	HNu = Bkg.
1		Silt Calcareous Munsell = 2.5y/5/3	[ML]	5/6"			
2		Augerings = clayey silt		6/6"			
3							
4		Silt Trace roots and calcareous veins (proto-caliche) Calcareous Munsell = 2.5/6/2	[ML]	5/6"	Core #2 4 ft.- 5 ft.		
5		Augerings = silt		6/6"			
6							
7		Rounded blue limestone pebbles up to 1 in. dia. with very fine grained sand matrix at 6.5 ft.	[GW]				
8		Base of gravel (Driller)					
9		Clayey silt; lense of blue limestone and quartzite gravel at 9.5 ft. Calcareous Munsell = 5y/6/2 T.D. 10 ft.	[ML]	7/6"	Core #3 9 ft.- 10 ft.		
10				10/6"			



Bore Log

Project Site CAMDS

Site ID B-3X-08 Auger Size 8" X 4 1/4"

Date/Time Started 3 MAY 1991 ^{0810 JAB} ~~0845~~ hr Date/Time Completed 3 MAY 1991 0845 hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 3

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS		Boring: B-3X-08		Page: 1 of 2								
Driller & Company: Kevin Cross			Layne									
Geologist/Logger & Company: J. H. Burger			Signature: <i>J. H. Burger</i>									
Date Boring Started: ³ May 1981 0810		Completed: ³ May 1981 0845										
Water Levels (From Ground Surface)		N/A		Drilling Rig: 805								
First Encountered:			Date:									
While Drilling:			Date:									
At Boring Completion:			Date:									
Drilling Shifts:												
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift		
	Start	End	Start	End		Start	End	Start	End		Start	End
Abbreviations:						Location Sketch:						
Abbr Meaning						<div style="text-align: right;"> SW corner concrete base of steel beam post. </div>						

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 3X-08-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0810 hr. Stop: 0845 hr. HNu background: = 0.4 ppm	
0		Construction rubble and fill		8/6"	HNu = Bkg.	
1		Silty, sandy clay CL Calcareous Munsell = 2.5y/5/3	Core #1 0 ft.- 2 ft.	6/6" 5/6" 6/6"		
2		Augering = silty clay				
3						
4		Slightly sandy silt ML Calcareous Munsell = 2.5y/5/3	Core #2 4 ft.- 5 ft.	3/6" 5/6"		HNu = Bkg.
5		Augerings = clayey silt				
6		0.5" blue, rounded GM limestone gravel, mixed with clayey silt at 6 ft.				HNu = Bkg.
7						
8						
9		0.5 in. blue rounded GM limestone gravel, Clay, trace silt CL Slightly calcareous Munsell = 5y/8/1 T.D. 10 ft.	Core #3 9 ft.- 10 ft.	13/6" 13/6"		
10						



Bore Log

Project Site CAMDS TOOLE ARMY DEPT SOUTH AREA

Site ID 13-BB-05-91 Auger Size 9 5/8" x 4 1/4"

Date/Time Started 22 July 1991 JB 1603 / 1405 hr Date/Time Completed 22 July 1991 1635 hr

Surface Elevation (optional) N/A Water Level (from Ground Surface) 6.1 ft.

Completion Depth 11 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 3

Geologist/Logger & Co. John Burger CNES

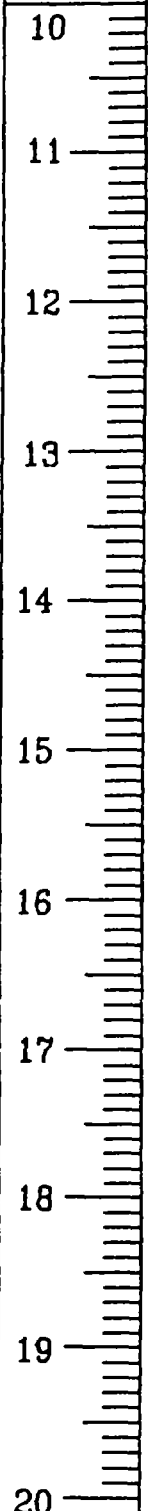
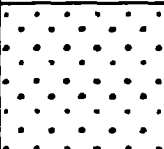
BORING LOG GENERAL DATA

Project: CAMDS		STEAD Boring: 13-BB-05 ⁹¹		Page: 1 of 2					
Driller & Company: Kevin Cross Layne									
Geologist/Logger & Company: John A. Burger ^{CVES}				Signature: <i>John A. Burger</i>					
Date Boring Started: 22 July 1991			Completed: 22 July 1991						
Water Levels (From Ground Surface)				Drilling Rig: #405					
First Encountered:			Date:						
While Drilling:			Date:						
At Boring Completion: 6.1			Date: 22 July 1991						
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning				Appendix N. ↑		<u>Location Sketch:</u>			
						□ BB-06 □ BB-05 — 53.5ft — □ BB-09 □ BB-08			

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 BB-05-91		Page: 2 of 3	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1603 hr. Stop: 1635 hr HNu background: = 0.4 ppm		
0		Clayey, sandy silt soft trace rootlets Calcareous Munsell = 10yr/5/4	ML Core #1 0 ft. - 2 ft.	10/6"	Top core = Bkg. Base core = Bkg.		
1				17/6"			
2				13/6"			
3				12/6"			
4		Augerings = same as 0 ft. to 2 ft.			Top core = Bkg.		
5				2/6"			
6				3/6"			
7				4/6"			
8	6/6"	Base core = Bkg. Water at 6.1 ft. after drilling.					
9							
10							
11							
12		Slightly silty, sand trace clay, soft, wet Calcareous Quartzose, slightly feldspathic, trace dark minerals Munsell = 2.5yr/6/2	SM Core #3 9 ft. - 11 ft.	10/6"	Top core = Bkg.		
13				9/6"			

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 88-05-91		Page: 3 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
10 		} Same as 9 ft. - 10 ft. T.D. 11 ft. <div style="text-align: right; border: 1px solid black; padding: 2px; margin-top: 5px;">SM</div>	Core #3 9 ft.- 11 ft.	10/6" 13/6"	Base core = Bkg.
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					



Bore Log

Project Site CAMPS - TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-BB-06-91 Auger Size 9 5/8" * 4 1/4"

Date/Time Started 22 July 1991 1135 hrs Date/Time Completed 22 July 1991 1217 hrs


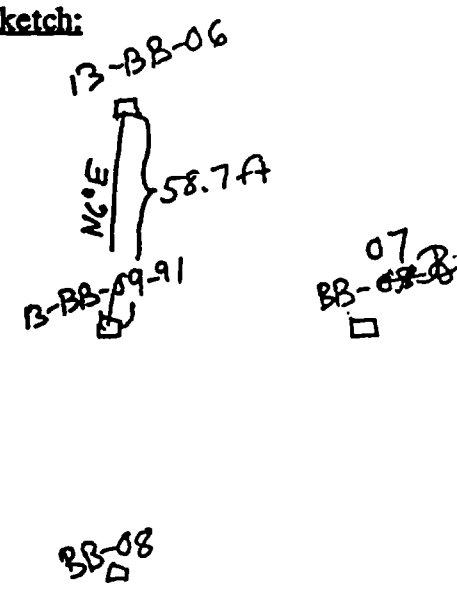
Surface Elevation (optional) N/A Water Level (from Ground Surface) 5.9 ft

Completion Depth 11 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 3

Geologist/Logger & Co. John A. Burger QNES

BORING LOG GENERAL DATA

Project: CAMDS		STEAD Boring: 13-BB-06 ⁻⁹¹		Page: 1 of 2							
Driller & Company: Kevin Cross											
Geologist/Logger & Company: John A. Burger - CNES				Signature: <i>John A. Burger</i>							
Date Boring Started: 22 July 1991			Completed: 22 July 1991								
Water Levels (From Ground Surface)				Drilling Rig: 405							
First Encountered:			Date:								
While Drilling:			Date:								
At Boring Completion: 5.9 ft.				Date: 22 July 1991							
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
		Start	End	Start	End			Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning						<u>Location Sketch:</u>					
Apprx N, 											

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 88-06-91		Page: 3 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">10</div> </div>		<p>Mostly quartzose SM with feldspars and dark minerals Calcareous Munsell = 2.5/6/2</p>	<p>Core #3 9 ft.- 11 ft.</p>	<p>9/6" 18/6"</p>	<p>Base core = Bkg.</p>
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">11</div> </div>	<p>T.D. 11 ft.</p>				
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">12</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">13</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">14</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">15</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">16</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">17</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">18</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">19</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">20</div> </div>					



Bore Log

Project Site CAMDS TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-BB-07-91 Auger Size 6 5/8" * 4 1/4"

Date/Time Started 22 July 1991 0938 Date/Time Completed 22 July 1991 1040 hr

Surface Elevation (optional) NA Water Level (from Ground Surface) 7.5 ft.

Completion Depth 11 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 3

Geologist/Logger & Co. John A. Burger CNES.

22 July 1991

BORING LOG GENERAL DATA

Project: CAMDS STEAD Boring: 13-BB-07-91 Page: 1 of 2

Driller & Company: Kevin Cross Layne

Geologist/Logger & Company: John A. Burger CUES Signature: *John A. Burger*

Date Boring Started: 22 July 1991 Completed: 22 July 1991

Water Levels (From Ground Surface) Drilling Rig: #405

First Encountered: Date:

While Drilling: 8.2 ft Date: 22 July 1991

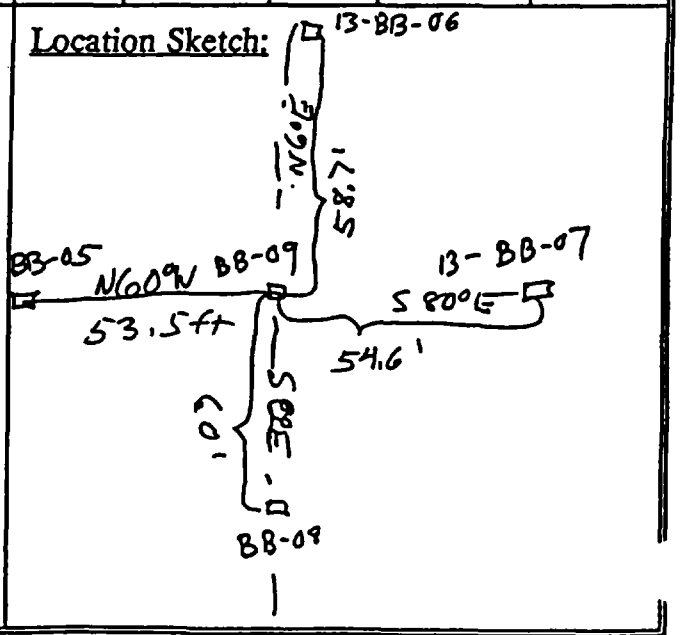
At Boring Completion: 7.5 ft Date: 22 July 1991

Drilling Shifts:

Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End

Abbreviations:

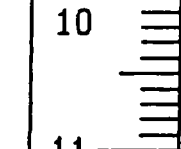
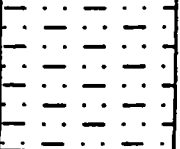
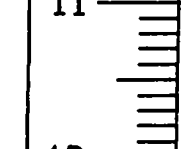
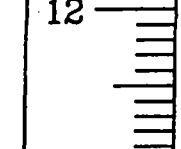
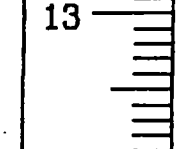
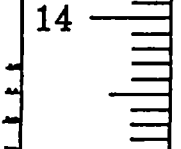
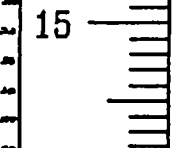
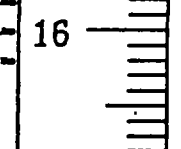
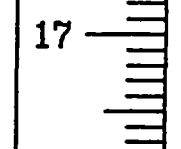
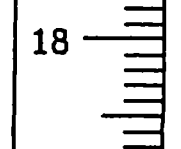
Abbr	Meaning



BORING LOG

Project: CAMDS		TEAD-5		Boring: 13 BB-07		Page: 2 of 3	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
						Start: 0938 hr. Stop: 1040 hr. H _{Nu} background: =0.4 ppm	
0		Clayey, sandy silt soft, dry trace snail shells trace animal borings Calcareous Munsell = 10yr/5/4	ML	Core #1 0 ft.- 2 ft.	5/6"	Top core = Bkg.	
1					7/6"		
2					7/6"		
3					6/6"		
4		Augerings as above but slightly more sandy				Base core = Bkg.	
5							
4		Silty, clayey sand soft, moist Calcareous Munsell = 2.5y/5/3	SM	Core #2 4 ft.- 6 ft.	2/6"	Top core = Bkg.	
5					2/6"		
6		Clayey silt, very little sand Calcareous Munsell = 2.5y/5/3	ML		6/6"	Base core = Bkg.	
7					8/6"		
8		Augerings = clayey, slightly sandy silt as from 5 ft. - 6 ft.				Water at 8.2 ft. at end of drilling and rose to 7.5 ft. prior to grouting.	
9							
9		Slightly silty sand fine-to medium- grained Slightly calcareous	SM	Core #3 9 ft.- 11 ft.	5/6"	Top core = Bkg.	
10					4/6"		

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 88-07		Page: 3 of 3					
Depth/ Eval.	USCS Symbol/ Core Sketch	Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data					
10 		Munsell = 2.5y/6/2 Quartz, feldspar, trace fine-grained dark minerals soft, wet	Core #3 9 ft.- 11 ft.	12/6" 4/6"	Base core = 8kg.					
11 	T.O. 11 ft.		12 	13 		14 	15 	16 	17 	18 



Bore Log

Project Site CAMDS TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-BB-08-91 Auger Size 6 5/8" x 4 1/4"

Date/Time Started 22 July 1991 0821 Date/Time Completed 22 July 1991 0854

Surface Elevation (optional) NA Water Level (from Ground Surface) 6.4 ft

Completion Depth 11 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 3

Geologist/Logger & Co. John A. Burger CNES.

BORING LOG GENERAL DATA

Project: CAMDS		STEAD Boring: 13-BB-08-91 Page: 1 of 2							
Driller & Company: Kevin Cross		Layne							
Geologist/Logger & Company: John A. Burger		Signature: John A. Burger							
Date Boring Started: 22 July 1991		Completed: 22 July 1991							
Water Levels (From Ground Surface)		Drilling Rig: # 405-							
First Encountered:		Date:							
While Drilling: 6.4 ft		Date: 22 July 1991							
At Boring Completion: 6.4 ft		Date: 22 July 1991							
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:					Location Sketch:				
Abbr Meaning					<div style="text-align: center;"> <p>Approx N</p> </div>				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13.88-08-91		Page: 2 of 3				
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0821 hr. Stop: 0854 hr. HNu background: =0.4 ppm.					
0		Clayey, sandy silt dry, moderately hard trace burrows trace snails Calcareous Munsell = 10yr/5/4	<div style="border: 1px solid black; padding: 2px; display: inline-block;">ML</div> Core #1 0 ft.- 2 ft.	4/6"	Top core = Bkg.					
1				9/6"						
2				6/6"						
3				8/6"						
4		Augerings = same as 0 ft. - 2 ft.		Base core = Bkg.						
5							<div style="border: 1px solid black; padding: 2px; display: inline-block;">CL</div> Silty clay moist Calcareous Munsell = 10yr/5/4	3/6"		
6								4/6"		
7								7/6"		
8		Augerings = Clayey silt moist, soft		Base core = Bkg. Water at 6.4 ft at end of drilling						
9							9/6"			
10							6/6"			
10		Slightly clayey, slightly silty sand soft, wet Calcareous Munsell = 2.5y/6/2	<div style="border: 1px solid black; padding: 2px; display: inline-block;">SM</div> Core #3 9 ft.- 11 ft.	6/6"	Top core = Bkg.					
10				6/6"						

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 BB-08-91		Page: 3 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">10</div> </div>	<div style="display: flex; align-items: center;"> <div style="margin-left: 5px; font-size: 2em;">}</div> </div>	See page 2 of 3.	Core #3 9 ft.- 11 ft.	9/6"	Base core = Bkg.
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">11</div> </div>	T.D. 11 ft.				
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">12</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">13</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">14</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">15</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">16</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">17</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">18</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">19</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">20</div> </div>					



Bore Log

Project Site CAMDS TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-BB-09-91 Auger Size 9 5/8" x 4 1/4"

Date/Time Started 16 July 1991 1528hr Date/Time Completed 13 July 1991 1553hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) 6.2 ft

Completion Depth 1.0 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger ^{SP} Split Sample Type Split Spoon No. of Samples 3

Geologist/Logger & Co. John A. Burger CNE

BORING LOG GENERAL DATA

Project: CAMDS - STEAD Boring: 13-BB-09-91 Page: 1 of 2									
Driller & Company: Kevin Cross Layne									
Geologist/Logger & Company: John A. Burger					Signature: <i>John A. Burger</i>				
Date Boring Started: 16 July 1991					Completed: 16 July 1991				
Water Levels (From Ground Surface)					Drilling Rig:				
First Encountered:					Date:				
While Drilling: 6.2 ft					Date: 16 July 1991				
At Boring Completion: 6.2 ft					Date: 16 July 1991				
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u> 				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 88-09-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
0		Clayey silt soft, dry Calcareous Munsell = 10yr/5/4	Core #1 0 ft.- 2 ft.	9/6"	Top core = Bkg.		
1				15/6"	Base core = Bkg.		
2				10/6"			
2				10/6"			
3		Augerings = same as 0 ft. to 2 ft.	Core #2 4 ft.- 6 ft.	2/6"	Top core = Bkg.		
4				3/6"	Base core = Bkg.		
5				4/6"			
6				8/6"			
7		Center bit has sandy silt, slightly moist	Core #3 8 ft.- 10 ft.	5/6"	Top core = Bkg.		
8				7/6"	No diesel smell while drilling or sampling.		
9				10/6"			
10				7/6"			
10		T.D. 10 ft.			Base core = Bkg.		



Bore Log

Project Site CAMDS TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-BB-10-91 Auger Size 6 5/8" x 4 1/4"

Date/Time Started 16 July 1991 1036 hrs Date/Time Completed 16 July 1991 1110 hrs

Surface Elevation (optional) _____ Water Level (from Ground Surface) 7.5 ft

Completion Depth 11.5 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spun No. of Samples 3

Geologist/Logger & Co. John A. Burger CNES

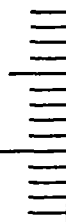
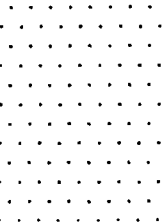
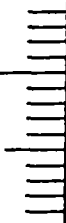
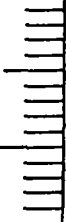

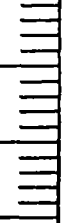
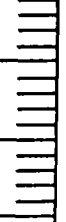



BORING LOG GENERAL DATA

Project: CAMDS		STEAD Boring: 13-BB-10-91 Page: 1 of 3							
Driller & Company: Kevin Cross Layne									
Geologist/Logger & Company: John A. Burger CNB Signature: <i>John A. Burger</i>									
Date Boring Started:					Completed:				
Water Levels (From Ground Surface)					Drilling Rig:				
First Encountered: ~ 8.0 ft					Date: 16 July 1991				
While Drilling:					Date:				
At Boring Completion: 7.5A					Date: 16 July 1991				
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u> 				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 BB-10-91		Page: 2 of 3	
Depth/ Feet	USCS Symbol/ Core	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1036 hr. Stop: 1110 hr. HNu background: = 0.4 ppm		
0		Road base	ML			Start at 1.5 ft. with core to be at same level as water in hole 13 BB-14-91	
1		Sandy silt, trace gravel				Top core = Bkg.	
2		Clayey silty sand fine-grained soft, moist Calcareous Munsell = 2.5y/5/3	SM		3/6"	Core #1 1.5 ft.- 3.5 ft.	Base core = Bkg.
3					3/6"		
4					3/6"		
5					3/6"		
		{Medium-grained sand with {less clay and silt				No diesel smell while drilling or sampling cores.	
6		Augerings = Slightly silty sand, medium-to fine- grained trace clay				Top core = Bkg.	
7					2/6"	Core #2 5.5 ft. 7.5 ft.	Base core = Bkg.
8					4/6"		
		{Clayey sandy silt {with stringers of cleaner {sand. {wet, soft {Calcareous {Munsell = 2.5y/6/4	ML		2/6"		
9		Augerings = Clayey sandy silt			4/6"		
10					2/6"		
		{Sand, trace silt. {fine-to coarse- {grained	SP			Top core = Bkg.	
					5/6"		

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 88-10-91		Page: 3 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
10  11		} wet, soft quartz, feldspar, rock fragments, chert, garnet (?) calcite and limestone fragments. Ferro-magnesian minerals. Calcareous Lower part of the core is coarser grained Munsell = 10yr/5/4	Core #3 9.5 ft.- 11.5 ft.	9/5" 11/5" 22/6"	Base core = Bkg. No diesel smell in drilling or sampling
12  13  14  15  16  17  18  19  20	T.D. 11.5 ft.				



Bore Log

Project Site CAMOS TOOLE ARMY DEPT SOUTH AREA

Site ID 13-BB-11-91 Auger Size 6 5/8" x 4 1/4"

Date/Time Started 16 July 1991 0852 hr Date/Time Completed 16 July 1991 0941

Surface Elevation (optional) _____ Water Level (from Ground Surface) 5.5 ft

Completion Depth 10 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 3

Geologist/Logger & Co. John K. Burger CNES

BORING LOG GENERAL DATA

Project: <i>C&MDS</i>		STEAD		Boring: <i>13-BB-11-91</i>		Page: 1 of 2			
Driller & Company: <i>Kevin Cross Layne</i>									
Geologist/Logger & Company: <i>John A. Burger CMES</i> Signature: <i>John A. Burger</i>									
Date Boring Started: <i>16 July 1991</i>				Completed: <i>16 July 1991</i>					
Water Levels (From Ground Surface)				Drilling Rig: <i>405</i>					
First Encountered:				Date:					
While Drilling: <i>5.5 ft</i>				Date: <i>16 July 1991</i>					
At Boring Completion: <i>5.5 ft</i>				Date: <i>16 July 1991</i>					
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:					Location Sketch:				
Abbr Meaning					<p style="text-align: center;"> <i>13-BB-11-91</i> <i>51.3 ft</i> <i>25.6 ft</i> <i>Gate Post</i> <i>DOUBLE FENCE</i> <i>SW Corner of CAMPS</i> </p>				

BORING LOG

Project: CAMDS		TEAD-5		Boring: 13 BB-11-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
0		Clayey, sandy silt soft, wet rootlets Calcareous Munsell = 10yr/5/4	Core #1 0 ft.- 2 ft.	1/6"	Top core = Bkg. pH of water = 8.5 Base core = Bkg.		
1				1/6"			
2				1/6"			
3				1/6"			
4		Clayey, sandy silt soft, moist no rootlets Calcareous Munsell = 2.5y/6/3	Core #2 4 ft.- 6 ft.	2/6"	Top core = Bkg. Water at 5.5 ft. at end of drilling Base core = Bkg.		
5				4/6"			
6				6/6"			
7				6/6"			
8		Slightly silty sand, trace clay; fine-to coarse- grained. angular to rounded; quartz, feldspar, chert, garnet(?), ferro- magnesian minerals, calcite and limestone grains. Base is coarser grained at 9.7 ft. than at top part of interval. Munsell = 2.5y/6/3	Core #3 8 ft.- 10 ft. I.D. 10 ft.	4/6"	Top core = Bkg. Base core = Bkg.		
9				7/6"			
9.7				8/6"			
10				17/6"			



Bore Log

Project Site CAMPS TOOLE ARMY DEPOT SOUTH AREA

Site ID 13-BB-12-91 Auger Size 6 5/8" x 4 1/4'

Date/Time Started 16 July 1991 1328hr Date/Time Completed 16 July 1991 1400hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) 6.5 ft

Completion Depth 11.5 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 3

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS		STEAD		Boring: 13-BB-12-91		Page: 1 of 3			
Driller & Company: Kevin Cross				Layne					
Geologist/Logger & Company: John A. Burger				CVES Signature: <i>[Signature]</i>					
Date Boring Started: 16 July 1991				Completed: 16 July 1991					
Water Levels (From Ground Surface)				Drilling Rig: #405					
First Encountered:				Date:					
While Drilling:				Date:					
At Boring Completion: 6.5 ft				Date: 16 July 1991					
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u> 				

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 88-12-91		Page: 2 of 3
Depth/ Feet	USCS Symbol/ Core	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1328 hr. Stop: 1400 hr. HNu background: = 0.4 ppm
0		Clayey, sandy silt ML			Top core = Bkg. Base core = Bkg. Top core = Bkg. No diesel odor Water at 6.5 ft. Base core = Bkg. Top core = Bkg.
1					
2		Clayey, sandy silt moist, soft abundant white blebs Calcareous Munsell = 2.5y/5/4	Core #1 1.5 ft. - 3.5 ft.	6/6"	
3				5/6"	
4				4/6"	
5		4/6"			
6		Augerings = same as 1.5 ft. - 3.5 ft.			
7		Slightly sandy, clayey silt ML moderately soft slightly moist Calcareous Munsell = 2.5y/5/4	Core #2 5.5 ft. 7.5 ft.	2/6"	
8		3/6"			
9		9/6"			
10		Augerings = sandy, clayey silt		14/6"	
9		Grading to fine- grained sand SP			
10		Slightly silty, medium- to fine- grained sand SP	Core #3 9.5 ft. - 11.5 ft.	5/6"	
10					

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 BB-12-91		Page: 3 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">10</div> </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">11</div> </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">12</div> </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">13</div> </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">14</div> </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">15</div> </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">16</div> </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">17</div> </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">18</div> </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">19</div> </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">20</div> </div>	<div style="text-align: center;"> </div> <div style="margin-top: 10px;"> T.D. 11.5 ft. </div>	Quartz, feldspar, rock fragments, rounded to angular no iron staining Calcareous Munsell = 10yr/4/3	<div style="border: 1px solid black; display: inline-block; padding: 2px;">SP</div> Core #3 9.5 ft.- 11.5 ft.	8/6" 11/6" 12/6"	Base core = Bkg.



Bore Log

Project Site CAMDS TUOELE ARMY DEPOT SOUTH AREA

Site ID 13-BB-13-91 Auger Size 6 5/8" x 4 1/4

Date/Time Started 15 July 1991 - 1526 hr Date/Time Completed 15 July 1991 1601 hr.

Surface Elevation (optional) _____ Water Level (from Ground Surface) 8.5 ft.

Completion Depth _____ Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Sp No. of Samples 3

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS STEAD Boring: 13-BB-13-91 Page: 1 of 3									
Driller & Company: Kevin Cross CNES									
Geologist/Logger & Company: John A. Burger CNES Signature: <i>John A. Burger</i>									
Date Boring Started: 15 July 1991 Completed: 15 July 1991									
Water Levels (From Ground Surface)					Drilling Rig: #405				
First Encountered:					Date:				
While Drilling:					Date:				
At Boring Completion:					Date:				
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u> <p>The location sketch shows a rectangular area with a north arrow pointing up. The overall dimensions are 62.0 ft wide and 44.0 ft high. Inside this area, there are three borings labeled BB-15, BB-17, and BB-13. BB-15 is located at the bottom left corner. BB-17 is located in the middle left. BB-13 is located in the middle right. The distance from the top edge to BB-13 is 152.4 ft. The distance from the top edge to BB-17 is 128.4 ft. The distance from the left edge to BB-17 is 149.4 ft. The distance from the left edge to BB-13 is 28.8 ft. The distance from the bottom edge to BB-13 is 44.0 ft. The distance from the bottom edge to BB-17 is 62.0 ft. The distance from the right edge to BB-13 is 28.8 ft. The distance from the right edge to BB-17 is 44.0 ft. The distance from the right edge to BB-15 is 62.0 ft. The distance from the bottom edge to BB-15 is 44.0 ft.</p>				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 BB-13-91		Page: 2 of 3	
Depth/ Feet	USCS Symbol/ Core	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
					Start: 1526 hr. Stop: 1601 hr. HNu background: = 0.4 ppm		
0		Rubble			Auger 2 ft. to start coring at approximate water level of hole number 13 BB-14		
1		Augerings = silty sand, sandy silt					
2		Clayey, sandy silt soft Calcareous Munsell = 2.5y/6/3 Color change white blebs slightly moist Munsell = 10yr/4/4	Core #1 2 ft. - 4 ft.	3/6"	Top core = Bkg.		
3				3/6"			
4		Augerings = same as 2 ft. - 4 ft.		5/6"	Base core = Bkg.		
5				4/6"			
6		Clayey, sandy silt soft, wet fine-grained sand Calcareous Munsell = 5y/6/3	Core #2 6 ft. - 8 ft.	5/6"	Water at 5.5 ft at end of drilling. Top core = Bkg.		
7				7/6"			
8		Augerings = same as 6 ft. - 8 ft.		7/6"	Base core = Bkg.		
9				7/6"			
10							

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 BB-13-91		Page: 3 of 3
Depth/ Eval. (Ft.)	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Complete: 1601 hr.
10		Clayey, silty sand wet, soft Calcareous SM	Core #3 10 ft - 12 ft.	4/6"	Top core = Bkg.
11				8/6"	
12		Silty sand not as much clay as above; abundant snail shells. fine-grained, wet quartzose Munsell = 5y/6/3 SM	T.D. 12 ft.	14/6"	Base core = Bkg.
13					
14					
15					
16					
17					
18					
19					
20					



Bore Log

Project Site CAMDS TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-BB-14-91 Auger Size 6 5/8" * 4 1/4"

Date/Time Started 15 July 1991 Date/Time Completed 15 July 1991

Surface Elevation (optional) _____ Water Level (from Ground Surface) Water from ditch flows into hole

Completion Depth _____ Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Firm No. of Samples 3

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS		STEAD		Boring: 13-BB-14-91		Page: 1 of 2			
Driller & Company: Kevin Cross				Layne					
Geologist/Logger & Company: John A. Burger				Signature: <i>John A. Burger</i>					
Date Boring Started: 15 July 1991				Completed: 15 July 1991					
Water Levels (From Ground Surface)				Drilling Rig: #405					
First Encountered:				Date:					
While Drilling:				Date:					
At Boring Completion: not determinable				Date:					
Drilling Shifts:		Stream water flows into borehole.							
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:				Approx N.					
Abbr		Meaning		↑					
Location Sketch:!									

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 BB-14-91		Page: 2 of 2
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1322 hr. Stop: 1415 hr. HNu background: = 0.4 ppm
0		Slightly clayey, silty sand wet, very soft roots and slime Calcareous Munsell = 2.5y/5/4	Core #1 0 ft.- 2 ft.	1/6"	Top core = Bkg. Core taken near water at side of Boiler Blowdown ditch Base core = Bkg.
1				1/6"	
2				1/6"	
3				1/6"	
4		Bottom auger had sandy, clayey silt	Core #2 4 ft.- 6 ft.	4/6"	Top core = Bkg. Water level at surface and flows into hole. Base core = Bkg.
5				5/6"	
6				4/6"	
7		No augerings available	Core #3 8 ft.- 10 ft.	4/6"	Top core = Bkg. No diesel smell in hole or in core. Base core = Bkg.
8				12/6"	
9				17/6"	
10		T.D. 10 ft.		24/6"	



Bore Log

Project Site CAMDS TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-BB-15-91 Auger Size 6 5/8" * 4 1/4"

Date/Time Started 15 July 1991 0958 Date/Time Completed 15 July 1991; 1030 hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) 9.5 ft

Completion Depth 12.5 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spun No. of Samples 3

Geologist/Logger & Co. John A. Burger CNES.

BORING LOG GENERAL DATA

Project: CAMDS		STEAD		Boring: 13-BB-15-91		Page: 1 of 3			
Driller & Company: Kevin Cross				Layne					
Geologist/Logger & Company: John A. Burger				CNES Signature: <i>John A. Burger</i>					
Date Boring Started:				Completed:					
Water Levels (From Ground Surface)				Drilling Rig: # 405					
First Encountered:				Date:					
While Drilling:				Date:					
At Boring Completion:				Date:					
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:				Location Sketch:					
Abbr	Meaning								

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 BB-15-91		Page: 2 of 3	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
0		Augerings = clayey, silty sand soft, dry Calcareous			Start coring at 2.5 ft. deep which is the same elevation as the water in the ditch. Top core = Bkg. Base core = Bkg. Top core = Bkg. Base core = Bkg. Water at 9.5 ft. while drilling		
1							
2							
3		Clayey, sandy silt soft, dry Calcareous Munsell = 2.5y/5/3	Core #1 2.5 ft.- 3.5 ft.	2/6"			
4		Clayey, sandy silt soft, moist Calcareous Munsell = 10yr/5/4		3/6"			
5		Augerings = same as 2.5 ft. - 4.5 ft.		4/6"			
6				3/6"			
7		Clay-sand-silt about equal proportions soft, wet to moist roots local darker brown mottling Calcareous Munsell = 2.5y/5/3	Core #2 6.5 ft.- 8.5 ft.	6/6"			
8				7/6"			
9		Augerings = same as 6.5 ft. - 8.5 ft.		7/6"			
10				11/6"			

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 88-15-91		Page: 3 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">10</div> </div>		<p>Slightly silty sand, SM trace clay trace fossils—shells (snails ?) wet, soft medium-to fine-grained Calcareous Munsell = 5y/6/3</p>	<p>Core #3 10.5 ft. - 12.5 ft.</p>		<p>Top core = Bkg. No diesel smell while drilling or sampling the core. At 1032 hrs. M-43-A went off. Got upwind. Cleared. Tested core with M-43-A and had no response at 1040 hrs. Base core = Bkg.</p>
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">11</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">12</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">13</div> </div>	<p>T.D. 12.5 ft.</p>	<p>Sedimentation test confirms observation that these are sand-clay-silt mixtures. Clay is more abundant than it appears with hand lens on Material from 10.5 ft. to 12.5 ft. is mostly sand and silt.</p>			
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">14</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">15</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">16</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">17</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">18</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">19</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">20</div> </div>					



Bore Log

Project Site CAMDS TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-BB-16-91 Auger Size 6 5/8" x 4 1/4"

Date/Time Started 14 July 1991 1425 hrs Date/Time Completed 14 July 1991 1521 hrs

Surface Elevation (optional) _____ Water Level (from Ground Surface) 9.5 ft.

Completion Depth _____ Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spm No. of Samples 3

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS		STEAD		Boring: 13-BB-16-91		Page: 1 of 2			
Driller & Company: Kevin Cross		Layno							
Geologist/Logger & Company: John A. Burger		CNES		Signature: <i>John A. Burger</i>					
Date Boring Started: 14 July 1991		Completed: 14 July 1991							
Water Levels (From Ground Surface)				Drilling Rig: # 405-					
First Encountered:				Date:					
While Drilling:				Date:					
At Boring Completion:				Date:					
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:					Location Sketch:				
Abbr Meaning									

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 BB-16-91		Page: 2 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1425 hr. Stop: 1521 hr. HNu background: = 0.6 ppm
0		Augerings = Clayey, silty sand SM			Auger to 2 ft. to get samples in holes BB-17 and BB-16 at approximately the same elevation with respect to water in Boiler Blowdown ditch.
1					
2		Clayey, silty sand fine-grained sand trace white stringers Calcareous Munsell = 2.5y/4/3 SM	Core #1 2 ft. - 4 ft.	2/6"	Top core = Bkg.
3				2/6"	
4				4/6"	
4				4/6"	
5		Augerings = same as 2 ft. - 4 ft.			Base core = Bkg.
6					
6		Clayey, silty sand fine-grained dark, soft, slightly moist Calcareous Munsell = 5yr/3/2 SM	Core #2 6 ft. - 8 ft.	3/6"	Top core = Bkg.
7				3/6"	
8		Clayey, silty sand fine-grained sand soft Calcareous Munsell = 2.5yr/6/4 SM		6/6"	Base core = Bkg.
8				7/6"	
9		Augerings = no returns			
10					

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 88-16-91		Page: 3 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">0</div> </div>		<p>Slightly clayey, SM slightly silty sand quartzose medium-to fine-grained wet, soft Calcareous Munsell = 5y/6/2</p>	<p>Core #3 10 ft.- 12 ft.</p>	<p>6/6" 9/6" 15/6" 16/6"</p>	<p>TOP CORE = BKG! Trace diesel smell in core when open and being sampled.</p>
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">2</div> </div>		<p>Water at 9.5 ft at 1539 hrs. Water was rising slowly.</p>	<p>T.D. 12 ft.</p>		<p>BASE CORE = BKG! Down hole HNu = 1.2 ppm at end of drilling.</p>
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">3</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">4</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">5</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">6</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">7</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">8</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">9</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">10</div> </div>					



Bore Log

Project Site CAMDS TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-BB-17-91 Auger Size 6 5/8" x 4 1/4"

Date/Time Started 14 July 1991 1137 hr Date/Time Completed 14 July 1991 1230 hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) 60 ff.

Completion Depth 11 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 3

Geologist/Logger & Co. John D. Burger CMES

BORING LOG GENERAL DATA

Project: <u>CAMDS</u>		STEAD		Boring: <u>13-BB-17-91</u>		Page: 1 of 2								
Driller & Company: <u>Kevin Cross</u>				<u>Layne</u>										
Geologist/Logger & Company: <u>John A. Burger</u>				CNES Signature: <u>John A. Burger</u>										
Date Boring Started: <u>14 July 1991</u>				Completed: <u>14 July 1991</u>										
Water Levels (From Ground Surface)				Drilling Rig: <u>405</u>										
First Encountered:				Date:										
While Drilling:				Date:										
At Boring Completion:				Date:										
Drilling Shifts:														
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift						
	Start	End	Start	End		Start	End	Start	End					
<u>Abbreviations:</u> <table style="width: 100%; border: none;"> <tr> <td style="border: none;"><u>Abbr</u></td> <td style="border: none;"><u>Meaning</u></td> </tr> </table>					<u>Abbr</u>	<u>Meaning</u>	Approx N 			<u>Location Sketch:</u> 				
<u>Abbr</u>	<u>Meaning</u>													

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 88-17-91		Page: 2 of 3	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
0		Upper 0 - 0.5 ft. = ML black organic muck plus sandy silt.	Core #1 0 ft.- 2 ft.	1/6"	Start: 1:37 hr.		
1		Clayey, sandy silt from 0.5 ft. to 2 ft. soft, wet Munsell = 5yr/3/2		1/6"	Stop: 1230 hr.		
2		Munsell = 2.5y/6/4 Augerings = wet, silty sand; fine-grained		1/6"	H _{Nu} background: = 0.4 ppm		
3				1/6"	Top core = Bkg.		
4		Clayey, sandy silt soft, wet, plastic sand is fine-grained Calcareous Munsell = 2.5y/6/4	Core #2 4 ft.- 6 ft.	5/6"	Top core = Bkg.		
5				10/6"	Base core = Bkg.		
6				6/6"	Base core = Bkg.		
7		Augerings = Clayey, silty sand fine-grained Calcareous Sample taken from center bit at about 9 ft. deep.		7/6"	Water is at 7.5 ft. while drilling. Level came up to 6 ft. when drilling stopped. H _{Nu} = 9.4 ppm in hole after coring at 9 ft. - 11 ft.		
8					Top core = 4.5 ppm		
9		Slightly silty fine- grained sand quartzose Calcareous Munsell = 5y/6/3	Core #3 9 ft.- 11 ft.	5/6"			
10				10/6"			

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 88-17-91		Page: 3 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 5px;">10</div> <div style="margin-top: 5px;">20</div> </div>		T.D. 11 ft.	Core #3	15/6" 8/6"	Base core = 1.3 ppm



Bore Log

Project Site CAMDS TOOLE ARMY DEPOT SOUTH AREA

Site ID 13-BB-18-91 Auger Size 6 5/8" x 4 1/4"

Date/Time Started 15 July 1991 0810 hr Date/Time Completed 15 July 1991 0856 hr.

Surface Elevation (optional) _____ Water Level (from Ground Surface) 8.7 ft

Completion Depth 12 ft. Drilling Co. Layne Driller Kerri Cross

Drilling Type Auger Sample Type Split Spun No. of Samples 3

Geologist/Logger & Co. John A. Burger QNES

BORING LOG GENERAL DATA

Project: CAMDS STEAD Boring: 13-BB-18-91 Page: 1 of 3											
Driller & Company: Kevin Cross Layne											
Geologist/Logger & Company: John A. Burger CNES Signature: <i>John A. Burger</i>											
Date Boring Started: 15 July 1991					Completed: 15 July 1991						
Water Levels (From Ground Surface)					Drilling Rig: #405						
First Encountered:					Date:						
While Drilling:					Date:						
At Boring Completion:					Date:						
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					Approx N. ↑						
					<u>Location Sketch:</u> 						
					A hand-drawn location sketch showing a rectangular area. The top horizontal dimension is marked with 'x' ticks and labeled '59.6 ft'. The right vertical dimension is marked with 'x' ticks and labeled '59.0 ft!'. Inside the rectangle, the text '13-BB-18-91' is written. To the right of the rectangle is a vertical rectangle labeled 'ETF Bldg'. A dashed vertical line is drawn near the left side of the main rectangle.						

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 88-18-91		Page: 2 of 3	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Date Start: 0810 hr. Stop: 0856 hr. HNU background: = 0.4 ppm		
0	[ML]	Auger to 2 ft. Slightly sandy, clayey silt soft, dry					
1							
2	[ML]	Clayey, sandy silt soft, moist trace white blebs Calcareous Munsell = 10yr/5/4	Core #1 2 ft.- 4 ft.	4/6"	HNU = Bkg.		
3				4/6"			
4	[SM]	Silty sand Medium-to fine- grained soft, moist Calcareous Munsell = 10yr/4/4		4/6"	HNU = Bkg.		
5				4/6"			
		Augerings = same as 2 ft. - 4 ft.					
6	[SM]	Clayey, silty sand fine-to medium- grained slight dark mottling soft, wet Calcareous Munsell = 2.5y/5/3	Core #2 6 ft.- 8 ft.	5/6"	HNU = Bkg.		
7				6/6"			
8				7/6"	HNU = Bkg.		
9				9/6"			
10		Augerings = clayey, sandy silt and silty sand					

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 88-18-91		Page: 3 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">10</div> </div>		<p>Slightly silty sand SM medium-to fine- grained soft, wet mostly quartz grains Calcareous Munsell = 5y/7/3</p>	<p>Core #3 10 ft- 12 ft.</p>	<p>5/6" 6/6" 6/6" 17/6"</p>	<p>Top core = Bkg.</p> <p>Base core = Bkg.</p> <p>No HNu reading down hole at T.D.</p> <p>Water after drilling at 8 ft.</p>
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">11</div> </div>	<p>T.D. 12 ft.</p>	<p>No diesel smell on core</p>			
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">12</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">13</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">14</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">15</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">16</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">17</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">18</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">19</div> </div>					
<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">20</div> </div>					



Bore Log

Project Site CAMDS TOOLE ARMY DEPOT SOUTH AREA

Site ID 13-BG-01-91 Auger Size 6 5/8" * 4 1/4"

Date/Time Started 23 July 1991 1618hrs Date/Time Completed 23 July 1991 1652hrs

Surface Elevation (optional) N/A Water Level (from Ground Surface) None

Completion Depth 10 ft Drilling Co. Layne Driller Kevin Cross

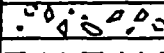
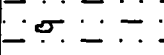
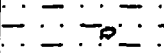

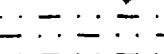
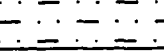

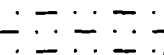
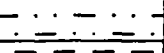
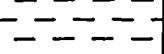
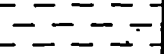
Drilling Type Auger Sample Type Split Spn No. of Samples 3

Geologist/Logger & Co. John A. Burger CNE

BORING LOG GENERAL DATA

Project: CAMDS		STEAD Boring: 13-B6-01-91		Page: 1 of 2					
Driller & Company: Kevin Cross Layne									
Geologist/Logger & Company: John A. Burger CNES Signature: <i>John A. Burger</i>									
Date Boring Started: 23 July 1991			Completed: 23 July 1991						
Water Levels (From Ground Surface)				Drilling Rig: # 405					
First Encountered:			Date:						
While Drilling: NONE			Date:						
At Boring Completion: NONE				Date: 23 July 1991					
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u>				
Approx N ↑					CAMDS FACILITY				
					<p>The sketch shows a vertical line labeled 'DOUBLE FENCE'. To the right of the fence, a well location is marked with a square and labeled '13-B6-01-91'. A bearing of 'S-54-90' is indicated. A distance of '45.8' is marked from the fence to the well. Another bearing of '104.3R' is shown. At the bottom, a bearing of 'Bearing = S70°E' is noted.</p>				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 BG-01-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
					Start: 1618	hr.	
					Stop: 1652	hr.	
					HNu background: = 0.4 ppm		
0		Rubble Sandy, clayey silt with trace pebbles (limestone and quartzite) hard Calcareous Munsell = 2.5y/5/4	ML			Top core = Bkg.	
1				Core #1 0 ft. - 2 ft.	12/6" 15/6" 32/6" 49/6"	May be construction fill	
2						Base core = Bkg.	
3		Augerings = same as 1 ft. - 2 ft.					
4		Slightly silty clay hard, dry mottled iron staining white flecks (gypsum?) Not calcareous! Munsell = 5y/7/2	CL			Top core = Bkg.	
5				Core #2 4 ft. - 6 ft.	6/6" 11/6" 17/6" 23/6"	Lake sediments	
6						Base core = Bkg.	
7		Augerings = same as 4 ft. - 6 ft. Clay					
8		Clay, hard, dense, dry trace white flecks traces of organic matter as brown stain. Very slightly calcareous Munsell = 5y/6/3	CL			Top core = Bkg.	
9				Core #3 8 ft. - 10 ft.	2/6" 5/6" 10/6" 11/6"	Base core = Bkg.	
10		T.D. 10 ft.					



Bore Log

Project Site CAMOS TOOLE ARMY DEPT SOUTH AREA

13 BG-02-91 DW
Site ID ~~13-S-85-91~~ 1510hr Auger Size 9 5/8" x 6 1/4"

Date/Time Started 19 MAY 1991 1510hr Date/Time Completed 19 MAY 1991 1712hr

Surface Elevation (optional) _____ Water Level (from Ground/Surface) 4.2 ft @ 1535hr

Completion Depth 35 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type from the No. of Samples 0
center-bit & Augers

Geologist/Logger & Co. John A. Burger CNES

The question on this hole is the thickness of the first clay.

The second clay is at 33.5 feet and is deeper or thicker than 1 1/2 ft., and where the hole bottoms in clay at 35 ft.

BORING LOG GENERAL DATA

Project: CAMDS		Boring: ^{DM} 13 S-85-91 Page: 1 of 5									
Driller & Company: Kevin Cross		Layne									
Geologist/Logger & Company: John A. Burger		CNES Signature: <i>John A. Burger</i>									
Date Boring Started: 19 MAY 1991		Completed: 19 MAY 1991									
Water Levels (From Ground Surface)		Drilling Rig: 405									
First Encountered:		Date:									
While Drilling: 4.2 ft @ 1335 hr?		Date: 19 MAY 1991									
		Prob 1535 hr									
At Boring Completion:		Date:									
Drilling Shifts:											
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift			
	Start	End	Start	End		Start	End	Start	End		
<u>Abbreviations:</u> <table style="width: 100%; border: none;"> <tr> <td style="border: none;"><u>Abbr</u></td> <td style="border: none;"><u>Meaning</u></td> </tr> </table>					<u>Abbr</u>	<u>Meaning</u>	<u>Location Sketch:</u> 				
<u>Abbr</u>	<u>Meaning</u>										

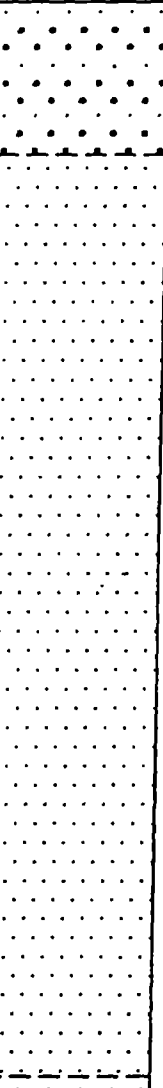
BORING LOG

Project: CAMDS TEAD-5		Boring: 13 86-02-91		Page: 2 of 5		
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1510 hr. Stop: 1712 hr. HNu background: = 0.2 ppm	
0		Silty sand, medium- to fine-grained SM Quartzose Calcareous Munsell = 10yr/5/3			No coring; samples are from augerings and pilot bit Add auger Water table at 4.2 ft. with auger out of the hole at 1535 hr.	
1						
2						
3						
4			Silty sand, Medium-grained SM quartzose Calcareous Munsell = 5y/6/2			
5						
6						
7			Silty sand wet			
8						
9			Silty sand SM wet Calcareous Munsell = 2.5yr/5/3			
10				Add auger		

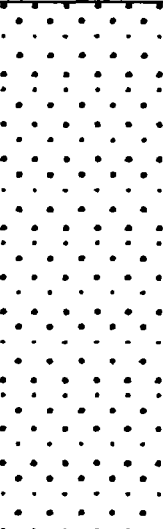
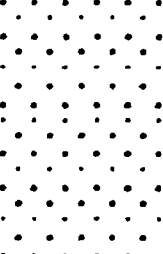

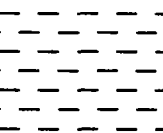
BORING LOG

Project: CAMDS TEAD-S		Boring: 13 BG-02-91		Page: 3 of 5		
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
10		<p>No augerings came to the surface</p> <p>wet, sandy, sloppy mud</p> <p>Sand, medium-to coarse-grained SP quartzose, feldspathic wet, soft Calcareous Munsell = 5y/6/2</p> <p>No returns on augerings wet, sloppy sand</p> <p>Slightly silty fine-to medium-grained SM Calcareous Munsell = 5y/6/2</p>				
11						
12						
13						
14						— Add auger
15						
16						
17						
18						
19						— Add auger
20						

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 BG-02-91		Page: 4 of 5
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
20		<p style="text-align: center;">No augering returns</p> <p>Sand, medium-to coarse-grained SP quartzose, feldspathic, rock fragments, dark minerals No clay during augering Very slightly Calcareous Munsell = 2.5y/6/3 At 24 ft. pilot bit brought clay Auger however showed clay to be less than 1 ft. thick.</p>			<p style="text-align: right;">Add auger</p> <p style="text-align: right;">Continue augering to 29 ft.</p>
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 BG-02-91		Page: 5 of 5
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
30		No returns while augering			
31					
32					
33					
34		Clay Calcareous Munsell = 5gy/6/1	<div style="border: 1px solid black; padding: 2px; display: inline-block;">CL</div>		Auger slowed while drilling
35		Clay same as above (from center bit)			No HNu reading above Bkg. during entire drilling
36	T.D. 35 ft.	On May 20, 1991 decision was made to grout entire hole, then offset and drill another hole to shallower depth.			
37					
38					
39					
40					



Bore Log

Project Site CAMPS TOGELE ARMY DEPOT SOUTH AREA

Site ID 13-BG-04 Auger Size 6 5/8" x 4 1/4" C

Date/Time Started 1 June 1991 0850hr Date/Time Completed 1 June 1991 0940hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) NONE

Completion Depth ^{JAB} ~~14~~ 16 ft Drilling Co. Layne Driller Kevin Cross



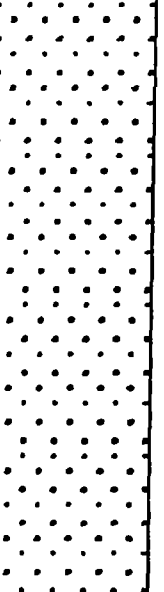
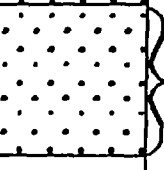
Drilling Type Auger Sample Type Split Spn No. of Samples 2

Geologist/Logger & Co. JOHN A BURGER C NES

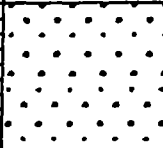
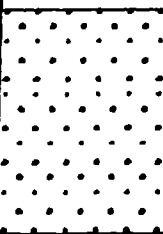

BORING LOG GENERAL DATA

Project: CAMDS			Boring: 13-BG-04 Page: 1 of 3						
Driller & Company: Kevin Cross			Layne						
Geologist/Logger & Company: John A. Burger			CNES Signature: <i>John A. Burger</i>						
Date Boring Started: 1 June 1991			Completed: 1 June 1991						
Water Levels (From Ground Surface) NONE			Drilling Rig: 405						
First Encountered:			Date:						
While Drilling:			Date:						
At Boring Completion:			Date:						
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u> <p>The sketch shows a road labeled 'Road to CAMDS' on the left. To the right is a rectangular 'UNLOADING BLDG' with dimensions '89.41'' and '24.8''. Further right is an 'RR Track' with a north arrow pointing upwards. The boring location '13-BG-04' is marked near the unloading building.</p>				

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 BG-04 -91		Page: 2 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0856 hr. Stop: 0940 hr. HNu background: 0.1 ppm
0		Asphalt			Drilled to 9 ft. for first core because the first 5 ft. are most likely fill and do not represent background.
1					
2					
3		Rubble and fill			
4					
5		Augering = silty sand soft, slightly moist SM Calcareous			Top core = bkg.
6					
7					
8					
9		Silty sand fine-grained trace roots, dry Calcareous Munsell = 2.5y/6/3	SM	Core #1 9 ft. - 11 ft.	
10				4/6" 6/6"	

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 BG-04-91		Page: 3 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
10		Augering = same as 9 ft. - 11 ft.	<div style="border: 1px solid black; padding: 2px; display: inline-block;">SM</div> Core #1 9ft - 11 ft.	5/6"	Geotechnical sample taken Base core = Bkg.
11				4/6"	
12		Sandy silt Calcareous Munsell = 5y/6/3 Clay hard dry several subangular 2 in. long limestone pebbles Calcareous Munsell = 5y/4/3 Pebbles covered by caliche. White calcite veins and blebs No water while augering or after augering.	<div style="border: 1px solid black; padding: 2px; display: inline-block;">ML</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">CL</div> Core #2 14 ft.- 16 ft.	6/6"	Top core = Bkg. Base core = Bkg.
13				19/6"	
14				27/6"	
15		T.D. 16 ft.	47/6"	47/6"	Base core = Bkg.
16				47/6"	
17					
18					
19					
20					



Bore Log

Project Site CAMDS TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-BG05-91 JAB
13-BG-S-81 Auger Size 6 1/4 x 4 1/4

Date/Time Started 21 MAY 1991 10:40hr Date/Time Completed 21 MAY 1991 16:15hr

Surface Elevation (optional) 41.4^{JB} Water Level (from Ground Surface) 2.7 ft.

Completion Depth 41.0 ft Drilling Co. LAYNE Driller Kevin Cross

Drilling Type Auger Sample Type split spoon No. of Samples 8

Geologist/Logger & Co. John A. Burger CNES

13 S-79-91 to be a 25' offset
at this well, upgradient to the N.E.

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 BG-05-91		Page: 2 of 6	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
0		Silty sand medium-to fine- grained soft Calcareous Munsell = 2/5y/5/4	SM				Start: 1040 hr. Stop: 1615 hr. H _{Nu} background: = 0.2 ppm
1							
2		Silty sand soft Calcareous	SM				Pushed core from 0 ft. - 5 ft. H _{Nu} top core = 0.2 ppm Water in hole at 2.7 ft. at 1111 hr.
3							
4		Silty sand, fine-to medium-grained Calcareous relatively hard Munsell = 5y/6/2	SM	Core #1 Sample 2 4 ft.- 5 ft.	90% recovery		Base core = Bkg. Top core = Bkg.
5							
6		Slightly silty sand Trace of roots, fossil snails, burrows 1-2 mm laminations in lower portion Calcareous Munsell = 5y/6/2	SP	Core #2 Sample 3 5 ft.- 6 ft.			Pushed core from 5 ft. - 8 ft.
7							
8		Slightly silty sand, fairly hard, dry Calcareous Munsell = 2.5y/6/3	SM	Core #2 Sample 4 7 ft.- 8 ft.			Pushed core to depth of 8 ft. Base core = Bkg. Top core = Bkg.
9							
10		Sand, medium-to coarse coarse grained. Laminated 1-2 mm. Dark minerals show the laminations Calcareous Munsell = 2.5y/5/3	SP	Core #3 Sample 4 8 ft.- 10 ft.	0/6" 2/6" 4/6" 9/6"		Base core = Bkg.

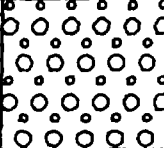
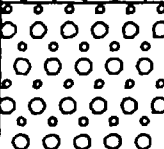
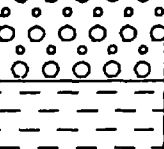
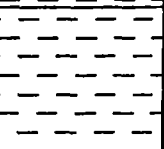

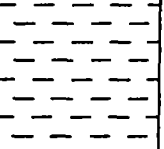
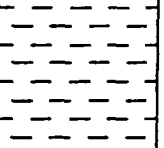
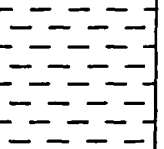
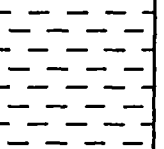
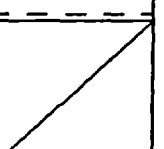

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 BG-05-91		Page: 3 of 6	
Depth/ Feet.	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
10		Augerings = wet and sloppy at outset				
11						
12						
13						
14			Sample from center bit SP Sand, fine-to medium-grained Calcareous			
15			Augering = sloppy sand and mud			
16						
17						Clay at 17 ft., determined by drilling break
18						Clay on center bit
19			Clay, compact, dry CL	Archive sample #6 19 ft. - 21 ft.	5/6" 10/6"	Top core = Bkg. Drove 2' split spoon 19 ft. to 21 ft.
20						

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 BG-05-91		Page: 4 of 6			
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data				
20		Clay, compact, dry CL	Sample #6 19 ft. - 12 ft.	13/6"	<p>Could not tell by drilling where base of clay is: but center bit had clay 1 ft. above end of bit.</p> <p>Top core = Bkg.</p> <p>Base core = Bkg.</p>				
21				13/6"					
22		Augerings = sandy mud, but augers were loaded with sand when augers came out of hole: No decent recovery while augering							
23									
24		Center bit has fine-to medium-grained sand Sand, fine-to medium-grained. SP	Core #5 Sample #7	12/6"	<p>Top core = Bkg.</p> <p>Base core = Bkg.</p>				
25				31/6"					
26		Munsell = 2.5y/6/4 Gravel up to 0.5 in. GW clasts of quartzite, limestone and chert. Sandy, wet	24 ft. - 26 ft.	43/6"					
27				53/6"					
28		Augerings = no returns			<p>Add auger Drive 2 ft. split spoon, but augers and hole are full - no sample was recovered</p>				
29									
30								No	X/6"
								Recovery	X/6"

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 BG-05-91		Page: 5 of 6
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
30		Base of gravel, top of clay, (driller's estimate)	No recovery	x/6" x/6"	
31					
32					
33		Clay, hard, dry Slightly calcareous Munsell = 5y/6/2	CL	Core #7 33 ft. - 34.7 ft.	X/6" X/6"
34					16/6" 16/6"
35					
36					
37					
38					
39			Core #8	13/6"	
40			No recovery	24/6"	



Bore Log

Project Site CAMDS TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-BG-06-91
~~5-92-91-38~~ Auger Size 9 5/8" x 6 1/4"

Date/Time Started 19 June 1991 0924 hr Date/Time Completed 19 June 1991 1228 hrs

Surface Elevation (optional) _____ Water Level (from Ground Surface) 12.5 ft

Completion Depth TD 46' bottom of core Drilling Co. Layne Driller Kevin Cross
grouted to surface after drilling & sampling

Drilling Type Auger Sample Type Split Spoon No. of Samples 7

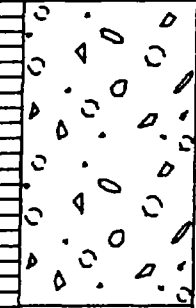
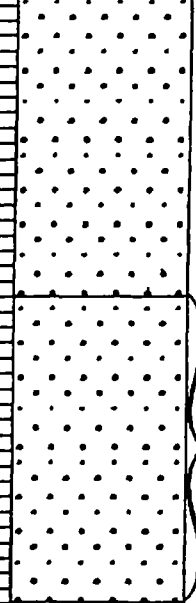
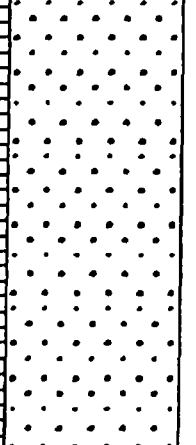
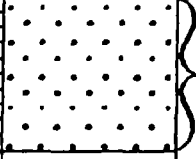
Geologist/Logger & Co. John A Burger CNES

BORING LOG GENERAL DATA

Burger

Project: CAMDS		Boring: ^{13-BG-06-91} 5-72-91 Page: 1 of 6							
Driller & Company: Kevin Cross Layne									
Geologist/Logger & Company: JOHN A. Burger		CNES Signature: <i>John A. Burger</i>							
Date Boring Started: 19 ^{June} July 1991		Completed: 19 ^{June} July 1991							
Water Levels (From Ground Surface)		Drilling Rig:							
First Encountered:		Date:							
While Drilling: 12.5 ft		Date: 19 June 1991							
At Boring Completion:		Date:							
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:					Location Sketch:				
Abbr Meaning					<p>The sketch shows a rectangular area labeled "Sewer Ponds" with a north arrow pointing up. A line labeled "S62°W" extends from the top-right corner of the ponds to a point labeled "Water Tower". The borehole location is marked with a small square and labeled "13 BG-06-91" and "5-92-91".</p>				

BORING LOG

Project: CAMDS		TEAD-S	Boring: -13 86-06-91		Page: 2 of 6	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0924 hr. Stop: 1228 hr. HNu background: = 0.1 ppm	
0		Rubble and fill first ~ 2 ft.				
1						
2		Augerings = dry, silty sand, but poor returns				
3						
4						
5						
6		Silty sand SM fine-grained very calcareous white calcareous flecks and blebs. Munsell = 10 yr/4/3	Core #1 4 ft.- 6 ft. 75% recovery	2/6"	Top core = Bkg.	
7				3/6"		
8		Augerings = same as 4 ft - 6 ft.			Base core = Bkg. dry	
9						
10		Slightly clayey, silty SM sand fine-grained, dry, hard trace organic matter and stains	Core #2 9 ft.- 11 ft.	7/6"	Top core = Bkg.	
10				15/6"		

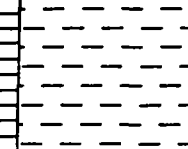
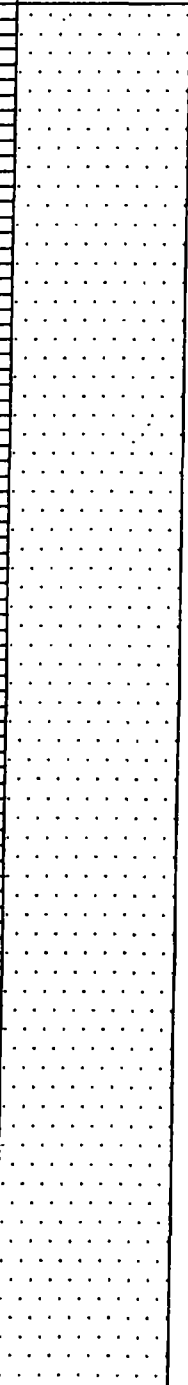
BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 86-06-91		Page: 3 of 6	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
10		Calcareous Munsell = 5y/6/4	Core #2 9 ft.- 11 ft.	24/6"			
11		Augerings = same as 9 ft. - 11 ft.. dry		34/6"			
12		Water on end of center bit			Water at 12.5 ft. between adding augers		
13							
14							
15		Sand Medium-to fine- grained wet trace organic, dark blebs very little silt Slightly calcareous Munsell = 5y/5/3	Core #3 14 ft.- 16 ft.	5/6"	Top core = Bkg.		
16		Augerings - no returns		12/6"			
17		Center bit has same as 14 ft. - 16 ft.			Base core = Bkg.		
18							
19		Sand with interbeds of silty sand. fine-to coarse-grained Calcareous	Core #4 19 ft.- 21 ft.	4/6"	Top core = Bkg.		
20				12/6"			

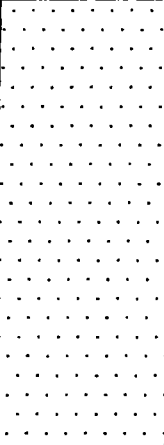
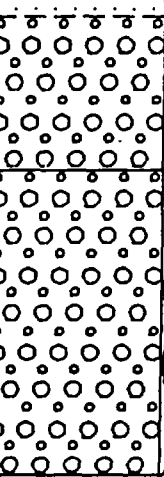
BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 86-06-91		Page: 4 of 6	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
20	[Dotted pattern]	2-3 mm laminae in lower part of core. wet limonite stains in blebs; trace organic matter, black to yellow Munsell = 5y/5/3	Core #4 19 ft.- 21 ft.	16/6" 17/6"	Base core = 8kg.		
21							
22	[Dotted pattern]	No returns while augering			Steady rate of drilling		
23							
24							
25	[Dotted pattern]	Slightly silty sand medium-to fine-grained wet Calcareous Black stain (MnO ₂ ?) vertical limonite stained-fractures blebs of organic matter Munsell = 5y/5/3	Core #5 24 ft.- 26 ft.	5/6" 10/6" 11/6" 12/6"	Top core = Bkg. Base core = Bkg.		
26							
27							
28	[Horizontal dashed pattern]	Clay on center bit			Steady rate of drilling to 27.5 ft. then a drilling break		
29							
30	[Horizontal dashed pattern]	Clay, hard, dry, chunky, no bedding, mottled gray and brown, trace roots, trace snail shells	Core #6 29 ft.- 31 ft.	8/6" 18/6"	Top core = Bkg.		

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 BG-06-91		Page: 5 of 6	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
30		Calcareous Munsell light part = 5y/5/2 Munsell dark part = 5b/4/1	Core #6	30/6"	Drilling break at approximately 31 ft. Softer material below 31 ft.	
31			29 ft.- 31 ft.	18/6"		
32		Center bit has sand fine-grained, wet.			Add auger	
33						
34						
35						
36						
37						Steady drilling
38						
39						Add auger
40						

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 86-06-91		Page: 6 of 6	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
40		<div style="border: 1px solid black; padding: 2px; display: inline-block;">SP</div>				
41						
42						
43						Drilling break at 43 ft.
44						<div style="border: 1px solid black; padding: 2px; display: inline-block;">GW</div>
45		Sand, gravel and cobbles: mostly gravel. Rock fragments: quartz, quartzite, limestone, chert, trace silt, trace clay; no uniform color Cobbles up to 2 inches long. Clasts are angular to well-rounded.			Base core = Bkg.	
46						T.D. 46 ft.
47						
48						
49						
50						



Bore Log

Project Site CAMDS TOOLE ARMY DEPOT SOUTH AREA

Site ID 13 BG-^{JAB}~~06~~-91 Auger Size ^{JAB}93 ~~6~~" 6 5/8" * 4 1/4"

Date/Time Started 22 JUNE 1991 0852hr Date/Time Completed 22 JUNE 1315hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) 4.5 ft while drilling

Completion Depth 46 Ft. Drilling Co. LAYNE Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 8

Geologist/Logger & Co. John A. Burger CNES.

BORING LOG GENERAL DATA

13-BG-07-91 ⁰⁷ JAB

Project: CAMDS			Boring: 13-BG- 06 ⁰⁷ -91 Page: 1 of 6						
Driller & Company: Kevin Cross			Layne						
Geologist/Logger & Company: John A. Burger			CNES Signature: <i>John A. Burger</i>						
Date Boring Started: 22 JUNE 1991			Completed: 22 JUNE 1991						
Water Levels (From Ground Surface)			Drilling Rig: 405						
First Encountered:			Date:						
While Drilling: 4.5 ft			Date: 22 JUNE 1991						
At Boring Completion:			Date:						
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u>				
S-85-91 JAB S-60-90									

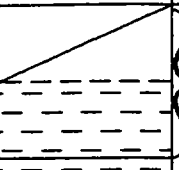
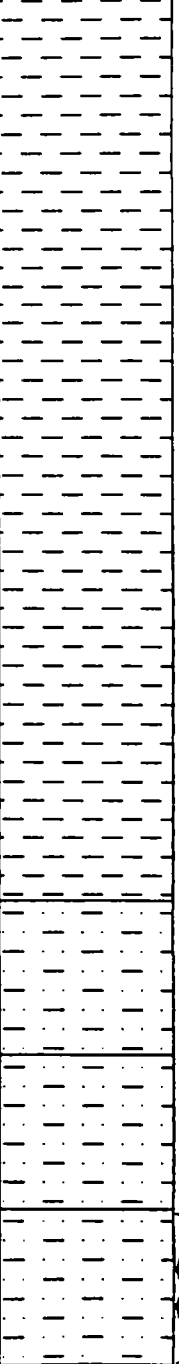
BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 BG-07-91		Page: 2 of 6	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0852 hr. Stop: 1315 hr. HNu background: = 0.2 ppm		
0		Silty sand slightly clayey fine-grained dry Calcareous Munsell = 10yr/5/3	SM	Core #1 0 ft.- 2 ft.	6/6"	Top core = Bkg. Base core = Bkg.	
1							
2							
3							
4		Augerings = clayey, silty sand Silty, clayey sand medium-to fine- grained in stringers plus sandy silt dry Calcareous Munsell = 2.5y/5/3	SM	Core #2 4 ft.- 5 ft.	2/6"	Top core = Bkg. Note: Sedimentation test shows little clay! Also very little sand! Base core = Bkg.	
5							
6							
7							
8		Augerings = slightly silty sand, moist				Water while drilling at 4.5 ft! metal detected! Stopped drilling at 0925 hr. Resumed drilling at 0955 hr. Offset 5 ft. to west Water at 3.8 ft. while drilling the offset.	
9							
10		Silty sand Medium-to coarse- grained Quartzose, feldspathic	SM	Core #3 9 ft.- 11 ft.	5/6"	Top core = Bkg.	

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 BG-07-91		Page: 3 of 6	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
10		wet Calcareous Munsell = 2.5y/5/3	SM	18/6"	Base core = Bkg.		
11		No returns while augering		19/6"			
12			SM Core #3 14 ft. - 16 ft.	3/6"	Top core = Bkg.		
13				7/6"			
14				12/6"			
15				11/6"			
16					Base core = Bkg.		
17							
18							
19		washing sands at 17 ft. - 19 ft. coarse-grained	CL Core #4 19 ft. - 21 ft.	3/6"	Drilling break at 19 ft. Top core = Bkg.		
20		6 in. of recovery in in the core barrel = clay, hard, slightly moist. Munsell = 5y/6/2		3/6"			

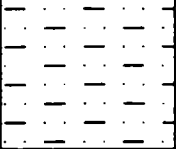
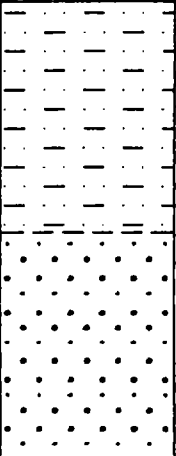
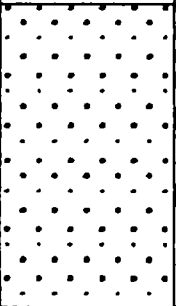
BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 BG-07-91		Page: 4 of 6	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
20		Slightly calcareous	<div style="border: 1px solid black; display: inline-block; padding: 2px;">CL</div> Core #4 19 ft.- 21 ft.	5/6"	Base core = Bkg.		
21		Center bit has clay, hard dense, only slightly moist 5y/5/5		5/6"			
22		Center bit has sand, fine-grained, wet			Add auger		
23							
24							
25							
26							
27	Center bit has sand, fine-grained, wet	Drilling break at 27 ft, Drilled out of the clay.					
28							
29	<div style="border: 1px solid black; display: inline-block; padding: 2px;">ML</div> Clayey silt moist Calcareous Munsell = 2.5y/6/3	Core #5 29 ft.- 31 ft.	3/6"	6/6"			
30							

BORING LOG

Project: CAMDS		ITEAD-S		Boring: 13 86-07-91		Page: 5 of 6		
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data			
30		Lower part is slightly silty sand medium grained Munsell = 5gy/6/1 Sedimentation test 30.0 ft. -30.3 ft shows: Sand 50% } approx. Silt 20% } Clay 30% }	Core #6 29 ft.- 31 ft.	8/6"	Break for lunch at 1130 hr. Resume at 1231 hr.			
31				10/6"				Base core = Bkg.
32		Silty clay, slightly moist, hard in part, trace iron staining, trace organic matter Calcareous Munsell = 5gy/6/1	Core #6 34 ft.- 36 ft.	3/6"	Steady easy drilling			
33				7/6"				Top core = Bkg.
34				8/6"				Base core = Bkg.
35		Slightly sandy, clayey silt wet, soft Calcareous Munsell = 5y/5/1	Core #7 39 ft.- 41 ft.	10/6"	Drilling break to easier drilling?			
36				3/6"				Top core = Bkg.
37				4/6"				
38								
39								
40								

BORING LOG

Project: CAMDS		TEAD-5	Boring: 13 86-07-91		Page: 6 of 6
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
40		<div style="border: 1px solid black; display: inline-block; padding: 2px;">ML</div>	Core #7 39 ft.- 41 ft.	6/6" 6/6"	Base core = Bkg.
41			Core #8 44 ft.- 46 ft.	2/6" 6/6" 7/6" 7/6"	
42		<div style="border: 1px solid black; display: inline-block; padding: 2px;">SM</div>	Core #8 44 ft.- 46 ft.	2/6"	Top core = Bkg.
43				6/6"	
44				7/6"	
45		Silty sand fine-grained wet, soft trace roots trace iron staining Calcareous Munsell = 2/5y/5/0	Core #8 44 ft.- 46 ft.	7/6"	Base core = Bkg.
46				7/6"	
47	T.D. 46 ft.	No good second clay above 46 ft. Best clay between 20.5 ft. and 27 ft. Decision made to grout hole to surface.			
48					
49					
50					



Bore Log

Project Site CAMDS TOOLE ARMY DEPOT SOUTH AREA

Site ID 13-BG-08-91 ^{EB}~~1433~~ hr Auger Size 6 5/8" * 4 1/4"

Date/Time Started 23 JUNE 1991 1433^{hr} Date/Time Completed 23 JUNE 1991 1744^{hr}

Surface Elevation (optional) _____ Water Level (from Ground Surface) none -

Completion Depth 46 ft Drilling Co. LAYNE Driller Kevin Cross

Drilling Type Auger Sample Type Split Spun No. of Samples 9

Geologist/Logger & Co. John A Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS			Boring: 13-BG-08-91 Page: 1 of 6								
Driller & Company: Kevin Cross			LAYME								
Geologist/Logger & Company: John A. Burger			CVES Signature: <i>John A. Burger</i>								
Date Boring Started: 23 June 1991			Completed:								
Water Levels (From Ground Surface)		NONE	Drilling Rig: #		405						
First Encountered:			Date:								
While Drilling:			Date:								
At Boring Completion:			Date:								
Drilling Shifts:											
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift			
	Start	End	Start	End		Start	End	Start	End		
<u>Abbreviations:</u> <table style="width: 100%; border: none;"> <tr> <td style="border: none;"><u>Abbr</u></td> <td style="border: none;"><u>Meaning</u></td> </tr> </table>					<u>Abbr</u>	<u>Meaning</u>	<u>Location Sketch:</u> 				
<u>Abbr</u>	<u>Meaning</u>										

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 BG-08-91		Page: 2 of 6	
Depth/ Eval. (Ft.)	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
0		Slightly silty sand SM hard, dry fine-to medium-grained trace calcite filled fractures trace mottling Calcareous Munsell = 5y/5/3	Core #1 0 ft.- 2 ft.	5/6"	Top core = Bkg.		
1				11/6"			
2				22/6"			
2		Augerings = same as 1 ft. - 2 ft.		28/6"	Base core = Bkg.		
3							
4		Clayey, slightly silty SM sand hard, dry Calcareous Munsell = 2.5y/6/3		11/6"	Top core = Bkg. Hard drilling		
5				29/6"			
6				35/6"			
6		Augerings = Clayey sand fine-grained		/6"	Base core = Bkg.		
7							
8		Clay on center bit. Slightly moist silty			Drilling break at 7.5 ft. Clay?		
9		Slightly sandy clay CL hard, dry Calcareous	Core #3 9 ft.- 11 ft.	2/6"	Top core = Bkg.		
10				10/6"			

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 BG-08-91		Page: 3 of 6
Depth/ Eval. (Ft.)	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
10	[Sketch: Dashed lines]	Munsell = 10yr/5/3	Core #3 9 ft.- 11 ft.	20/6"	Base core = Bkg.
11				23/6"	
12	[Sketch: Dashed lines]	Center bit has a slightly sandy, slightly silty clay - (volcanic ash?)			drilling break at 13 ft. to easier drilling
13					
14	[Sketch: Dashed lines]	Silty clay, soft Slightly calcareous Munsell = 5y/7/1	[CL]	2/6"	Top core = Bkg.
15	[Sketch: Dotted pattern]	Silty sand, soft, dry Fine-to medium-grained Slightly calcareous Munsell = 2.5y/6/2	[SM]	Core #4 14 ft.- 16 ft. 40/6"	
16	[Sketch: Dashed lines]	Clay, hard Very calcareous Munsell = 10yr/5/4	[CL]	49/6"	Base core = Bkg.
17	[Sketch: Dashed lines]	Augerings = variable and not determinate			Clay?
18					
19	[Sketch: Dashed lines]	Clay, locally trace silt hard, dense, dry Munsell = 2.5y/4/2	[CL]	Core #5 13/6"	Top core = Bkg.
20				22/6"	

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 86.-08-91		Page: 4 of 6
Depth/ Eval. (Ft.)	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
20		Calcareous	Core #5 19 ft.- 21 ft.	25/6"	Base core = Bkg.
21				28/6"	
22		Clay, hard, dry Calcareous Munsell = 5y/6/2	Core #6 24 ft.- 26 ft.	10/6"	Top core = Bkg. core barrel is dry
23				23/6"	
24		Clay, hard dry Calcareous Munsell = 2.5y/3/0	Core #7 29 ft.- 31 ft.	32/6"	Base core = Bkg.
25				35/6"	
26		Clay, soft, dry slightly silty Calcareous Munsell = 5y/4/2	Core #7 29 ft.- 31 ft.	13/6"	Steady augering
27				17/6"	
28		See next page for description	Core #7 29 ft.- 31 ft.	13/6"	Top core = Bkg.
29				17/6"	
30		See next page for description	Core #7 29 ft.- 31 ft.	13/6"	Top core = Bkg.

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 BG-08-91		Page: 5 of 6	
Depth/ Eval. (Ft.)	USCS Symbol/ Core Sketch	Soil/Rock Description		Sample No. & Depth	Blow Count & Recovery	Drilling Data	
30		Clay hard, dry Calcareous Munsell = 5y/7/1	CL	Core # 7 29 ft.- 31 ft.	18/6"	Base core = Bkg.	
31			21/6"				
32		Clay, hard, dry, tough trace green flecks stringers (glaucanite?) Calcareous Munsell = 5y/4/1	CL	Core # 8 34 ft.- 36 ft.	8/6"	Top core = Bkg.	
34			15/6"				
35			23/6"		Base core = Bkg.		
36	48/6"						
37		Clay, hard, dense, dry Calcareous Munsell = 5y/4/1	CL	Core # 9 39 ft.- 41 ft.	14/6"	Top core = Bkg.	
38			32/6"				
39							
40							

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 BG-08-91		Page: 6 of 6
Depth/ Eval. (Ft.)	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Complete: 1744 hr.
40		Clay, hard, dense, tough, dry Calcareous Munsell = 5gy/6/1	Core # 9 39 ft.- 41 ft.	38/6" 43/6"	Base core = Bkg.
41			42	43	
44		Clay, CL hard, tough, dry trace pyrite noted one small lense slightly pyrited trace organic fragments Non-calcareous! Munsell = 5gy/5/1	Core # 10 44 ft.- 46 ft.	10/6" 16/6" 16/6" 15/6"	Top core = Bkg.
45			46	T.D. 46 ft.	Base core = Bkg.
47			48	49	50
		Most of hole is clay! Large lithofacies Change takes place immediately to the west. The clays are lake sediments.			



Bore Log

Project Site CAMDS TOOELE ARMY DEPT SOUTH AREA

Site ID 13-CU-01-91 Auger Size 6 5/8" x 4 1/4"

Date/Time Started 23 July 1991 1352hr Date/Time Completed 23 July 1991 1520 hrs

Surface Elevation (optional) N/A Water Level (from Ground Surface) None

Completion Depth 9.5 FT Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spine No. of Samples 3

Geologist/Logger & Co. John A Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS		STEAD Boring: 13-CU-01-91		Page: 1 of 2					
Driller & Company: Kevin Cross Layne									
Geologist/Logger & Company: John A Burger CVS Signature: John A Burger									
Date Boring Started: 23 July 1991			Completed: 23 July 1991						
Water Levels (From Ground Surface)				Drilling Rig: # 405					
First Encountered:			Date:						
While Drilling:			Date:						
At Boring Completion: None				Date: 23 July 1991					
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations: Abbr Meaning					Location Sketch:				
Approx N 									

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 CU-01-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
0		Clayey silt soft dry Calcareous Munsell = 10yr/5/4	ML Core # 1 0 ft. - 2 ft.	6/6"	Start: 1352 hr. Stop: 1520 hr. HNu background: = 0.4 ppm	Top core = Bkg. Base core = Bkg.	
1				8/6"			
2				8/6"			
3				9/6"			
4		Augerings = same as 0 ft. - 2 ft.		5/6"	Stop drilling 1405 hr. Resume 1458 hr. (thunderstorm)	Top core = Bkg. Base core = Bkg.	
5				5/6"			
6				7/6"			
7				12/6"			
8		Clayey, sandy silt hard, dry Calcareous Munsell = 2.5y/7/2	ML Core # 3 8 ft. - 9.6 ft.	16/6"	Refusal at 9.6 ft. with 33 blows / in. Base core = Bkg.	Top core = Bkg.	
9				23/6"			
10				50/6"			
T.D. 9.5 ft.		Change in color at 8.7 ft. lower part slightly mottled trace roots and burrows plus trace organic matter Munsell = 5y/6/3					



Bore Log

Project Site CAMDS TOOLE ARMY DEPOT SOUTH AREA

Site ID 13-DD-01-91 1442 hr Auger Size 6 5/8" x 4 1/4" 1519 hr

Date/Time Started 24 July 1991 Date/Time Completed 24 July 1991

Surface Elevation (optional) N/A Water Level (from Ground Surface) 7.5 ft

Completion Depth 10 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 3

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS		STEAD Boring: 13-00-01-91		Page: 1 of 2									
Driller & Company: Kevin Cross Layne													
Geologist/Logger & Company: John A. Burger CNES Signature: John A. Burger													
Date Boring Started: 24 July 1991			Completed: 24 July 1991										
Water Levels (From Ground Surface)			Drilling Rig: # 405										
First Encountered:			Date:										
While Drilling:			Date:										
At Boring Completion: 7.5 ft			Date: 24 July 1991										
Drilling Shifts:													
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift			
		Start	End	Start	End			Start	End	Start	End		
<u>Abbreviations:</u> <table style="width: 100%; border: none;"> <tr> <td style="border: none;"><u>Abbr</u></td> <td style="border: none;"><u>Meaning</u></td> </tr> </table>						<u>Abbr</u>	<u>Meaning</u>	<u>Location Sketch:</u> <p style="text-align: center;">Approx N.</p>					
<u>Abbr</u>	<u>Meaning</u>												

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 00-01-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1442 hr. Stop: 1519 hr. HNU background: = 0.4 ppm		
0 1 2	ML	Slightly sandy silt slightly clayey soft, roots Calcareous Munsell = 2.5y/5/4	Core # 1 0 ft. - 2 ft.	11/6" 19/6" 13/6" 7/6"	Top core = Bkg. Base core = Bkg.		
2 3		Augerings = same as 0 ft. - 2 ft.					
4 5 6	SM	Slightly clayey, slightly silty, sand fine-grained Munsell in upper foot = 10y/5/4 quartzose trace roots slightly mottled in lower foot Munsell in lower foot = 5y/6/2	Core # 2 4 ft. - 6 ft.	2/6" 2/6" 1/6" 3/6"	Top core = Bkg. Very soft Base core = Bkg.		
6 7		Augerings = same as 4 ft. - 6 ft.					
8 9 10	SM	Silty sand calcareous soft wet uniform trace roots slight brownish mottling Munse;; = 2.5y/6/3 T.D. 10 ft.	Core # 3 8 ft. - 10 ft.	3/6" 5/6" 9/6" 14/6"	Water at 7.5 ft. with oily sheen on top of the water. Top core = Bkg. Base core = Bkg.		
10							



Bore Log

Project Site CAMDS TULEE ARMY DEPOT SOUTH AREA

Site ID 13-DP-02-91 Auger Size 6 7/8" * 4 1/4"

Date/Time Started 24 July 1991 0925hrs Date/Time Completed 24 July 1991 1015hrs

Surface Elevation (optional) N/A Water Level (from Ground Surface) 7.0 ft

Completion Depth 13 ft Drilling Co. Layne. Driller Kevin Cross

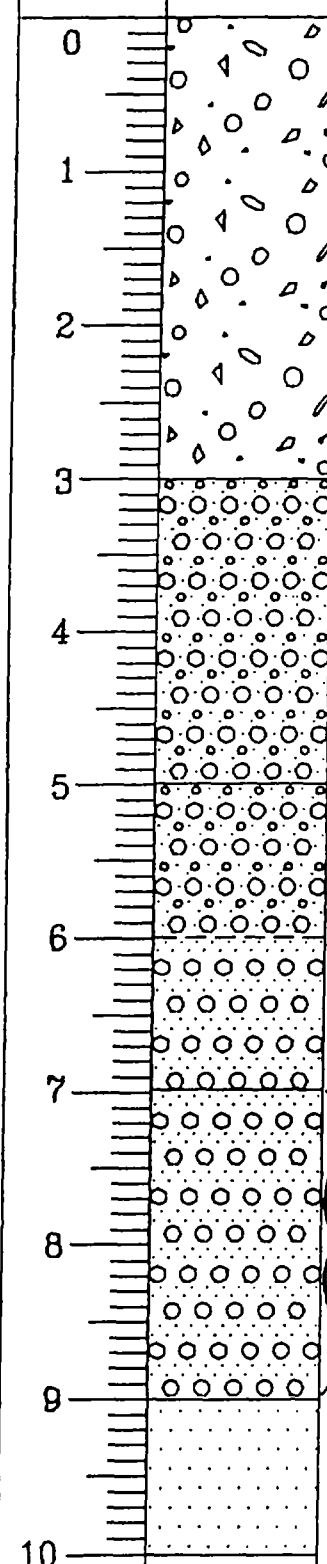
Drilling Type Auger Sample Type Split Spun No. of Samples 3

Geologist/Logger & Co. John A. Burger, CNES,

BORING LOG GENERAL DATA

Project: <i>CAMDS</i>		STEAD		Boring: <i>13-DD-02-91</i>		Page: 1 of 3			
Driller & Company: <i>Kevin Cross Layne</i>									
Geologist/Logger & Company: <i>John A. Berger CMES</i>				Signature: <i>John A. Berger</i>					
Date Boring Started: <i>24 July 1991</i>				Completed: <i>24 July 1991</i>					
Water Levels (From Ground Surface)				Drilling Rig: <i>#405-</i>					
First Encountered:				Date:					
While Drilling:				Date:					
At Boring Completion: <i>7.0 ft</i>				Date: <i>24 July 1991</i>					
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:					Location Sketch:				
Abbr Meaning					<p style="text-align: center;">13-DD-02-91</p>				

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 DD-02-91		Page: 2 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0925 hr. Stop: 1015 hr. HNu background: = 0.4 ppm
0 1 2 3 4 5 6 7 8 9 10		<p>Rubble and road base gravel and cobbles to 3 ft.</p> <p>Sandy, silty, gravel clasts mostly angular limestone, up to 2 in. diam. Calcareous Color approx. 5y/6/3 GM</p> <p>Augering = same as 4 ft. - 5 ft. but somewhat ground up by the auger.</p> <p>Sandy gravel Sand approximately 50% of the sample. clasts are chiefly up to 2 inches in diameter angular limestone and quartzite. Sand is fine-grained, mostly quartz Calcareous Munsell = 2.5y/5/3 GP</p> <p>Augerings - see page 3 of 3</p>	<p>Core # 1 3 ft. - 5 ft.</p> <p>Core # 2 7 ft. - 9 ft.</p>	<p>18/6"</p> <p>33/6"</p> <p>57/6"</p> <p>45/6"</p> <p>5/6"</p> <p>19/6"</p> <p>18/6"</p> <p>13/6"</p>	<p>Started drilling 3 ft. above drainage ditch water level. Hole is 2 ft. from center line of ditch.</p> <p>Top core = Bkg.</p> <p>Hard pounding</p> <p>Base core = Bkg.</p> <p>Slow augering</p> <p>Water at 7.0 ft. at end of drilling.</p> <p>Top core = Bkg.</p> <p>Bottom core is wet.</p> <p>Base core = Bkg.</p>

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 00-02-91		Page: 3 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
10 11 12 13 14 15 16 17 18 19 20		<p>Augerings 9 ft - 12 ft. = sand, wet, fine-grained, soft, lenses of coarse-grained sand and fine-grained sand above 12 ft.</p> <p>Slightly silty sand Slightly clayey fine-to medium-grained mottled Calcareous Munsell = 5y/6/3 Sample 12 ft. - 13 ft. large (3 in.) angular limestone cobble in core catcher at 12 ft.</p> <p>Entire hole probably consists of fill. Took second drive at same interval to obtain sufficient sample for all analyses</p>	<p>Core #.3 12 ft. - 13 ft.</p>		<p>Top core = Bkg. at 12 ft. Pushed core no driving Base core = Bkg.</p>
	T.D. 13 ft.	<div style="border: 1px solid black; display: inline-block; padding: 2px;">SM</div>			



Bore Log

Project Site CAMDS. TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-DD-03-91 Auger Size 6 5/8" * 4 1/4"

Date/Time Started 24 July 1991 1122 hrs Date/Time Completed 24 July 1991 1212 hrs

Surface Elevation (optional) N/A Water Level (from Ground Surface) 8.1 ft

Completion Depth 14' Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spun No. of Samples 3

Geologist/Logger & Co. John D. Burger CNES

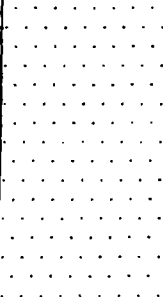
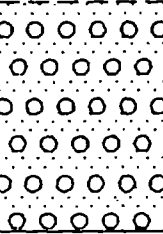
BORING LOG GENERAL DATA

Project: CAMDS		STEAD		Boring: 13-DD-03-91		Page: 1 of 3					
Driller & Company: Kevin Cross Layne											
Geologist/Logger & Company: John A Burger CNES Signature: <i>John A Burger</i>											
Date Boring Started: 24 July 1991				Completed: 24 July 1991							
Water Levels (From Ground Surface)						Drilling Rig: 405					
First Encountered:				Date:							
While Drilling:				Date:							
At Boring Completion: 8.1 ft				Date: 24 July 1991							
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
	Start	End		Start	End		Start	End		Start	End
<u>Abbreviations:</u> Abbr Meaning				Approx N <p>Location Sketch: CAMDS Double Fence 28.3 Eastern gate post 40.4 ft 31.7 ft 13-DD-03-91</p>							

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 DD-03-91		Page: 2 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1122 hr. Stop: 1212 hr. HNu background: = 0.4 ppm
0 1 2 3 4		Road base mixture of sand, silt, gravel and cobbles clasts are angular to rounded - mostly local blue limestone.			Began sampling at 4 ft. tried to begin at 3 ft. but rocks in hole would not allow core to be pounded.
4 5 6		Sandy, slightly silty gravel calcareous limestone clasts up to 3 in. diam. angular to rounded Clasts dominate over fine material mottled Munsell = 5y/6/3	Core # 1 4 ft. - 6 ft.	24/6" 39/6" 42/6" 34/6"	Top core = Bkg. Base core = Bkg.
6 7		Augerings = same as 4 ft. - 6 ft.			
8 9		Sandy gravel angular to rounded calcareous 2 in. dia. clasts of limestone and quartzite. Munsell = 2.5y/6/2	Core # 2 8 ft. - 10 ft.	6/6" 14/6"	Top core = Bkg. Water at 8.1 ft. after drilling
9 10		Sand, fine-grained calcareous mostly quartz Munsell = 5y/6/2		10/6" 6/6"	Base core = Bkg.

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 00-03-91		Page: 3 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
10		Augerings = sand, fine-grained, soft, wet, plus minor gravel; clasts are angular to rounded			
11					
12	} Sand	Sandy gravel below 12.5 ft. GP angular to rounded. <i>Calcareous matrix</i> ; clasts are mostly angular limestone clasts dominate over sandy matrix. Munsell = 2.5y/5/3	Core # 3 12 ft. - 14 ft.	8/6"	Top core = Bkg. Base core = Bkg.
13				23/6"	
14	T.D. 14 ft.			27/6"	
14				34/6"	
15					
16					
17					
18					
19					
20					



Bore Log

Project Site CAMDS TOOLE ARMY DEPOT SOUTH AREA

Site ID 13-DD-05-91 ^{04 B} Auger Size 6 5/8" x 4 1/4"

Date/Time Started 25 July 1991 1024 hrs Date/Time Completed 25 July 1991 1102 hrs

Surface Elevation (optional) N/A Water Level (from Ground Surface) 6.3 ft

Completion Depth 12 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spun No. of Samples 3

Geologist/Logger & Co. John D. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS		SWEAD Boring: 13-DD-04-91 Page: 1 of 3							
Driller & Company: Kevin Cross Layne									
Geologist/Logger & Company: John A. Burger CNES		Signature: <i>John A. Burger</i>							
Date Boring Started: 25 July 1991		Completed: 25 July 1991							
Water Levels (From Ground Surface)		Drilling Rig: #405							
First Encountered:		Date:							
While Drilling:		Date:							
At Boring Completion: 6.3 ft		Date: 25 July 1991							
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning				Approx N. 					

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 DD-04-91		Page: 2 of 3	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1024 hr. Stop: 1102 hr. HNu background: = 0.4 ppm	
0	[Sketch: Dotted pattern]	Slightly sandy, clayey silt soft			Auger to 2 ft to get same elevation as drainage ditch prior to driving split spoon. Top core = Bkg. Base core = Bkg.	
1	[Sketch: Dotted pattern]					
2	[Sketch: Dotted pattern]	Clayey silt soft, moist Calcareous Munsell = 10yr/4/4 in upper 1.5 ft. Lower 0.5 ft. is same as 2.0 ft. - 3.5 ft. color change Munsell = 10yr/3/4	ML			
3	[Sketch: Dotted pattern]		Core # 1 2 ft. - 4 ft.	4/6" 5/6" 4/6" 5/6"		
4	[Sketch: Dotted pattern]		Augerings = sandy, clayey silt			
5	[Sketch: Dotted pattern]					
6	[Sketch: Dotted pattern]	Slightly sandy, clayey silt soft, moist Calcareous Munsell = 2.5y/5/3	ML			
7	[Sketch: Dotted pattern]		Core # 2 6 ft. - 8 ft.	4/6" 7/6" 12/6" 16/6"		
8	[Sketch: Dotted pattern]		Augerings = same as 6.0 ft. to 8.0 ft.			
9	[Sketch: Dotted pattern]					
10	[Sketch: Dotted pattern]				Top core = Bkg. Water at 6.3 ft. with oil (?) sheen Base core = Bkg.	

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 DD-04-91		Page: 3 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">10</div> <div style="margin-top: 10px;">11</div> <div style="margin-top: 10px;">12</div> <div style="margin-top: 10px;">13</div> <div style="margin-top: 10px;">14</div> <div style="margin-top: 10px;">15</div> <div style="margin-top: 10px;">16</div> <div style="margin-top: 10px;">17</div> <div style="margin-top: 10px;">18</div> <div style="margin-top: 10px;">19</div> <div style="margin-top: 10px;">20</div> </div>		<p>Slightly silty sand trace clay soft, wet trace oolites (?) no bedding Calcareous Munsell = 5y/6/3</p>	<p>Core # 3 10 ft.- 12 ft.</p>	<p>5/6" 7/6" 11/6" 15/6"</p>	<p>Top core = Bkg.</p> <p style="text-align: right;">Base core = Bkg.</p>
	T.D. 12 ft.				



Bore Log

Project Site CAMDS TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-DD-05-91 Auger Size 6 5/8" x 4 1/4"

Date/Time Started 25 July 1991 Date/Time Completed 25 July 1991

Surface Elevation (optional) N/A Water Level (from Ground Surface) 4'-10"

Completion Depth 10 ft. Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spun No. of Samples 3

Geologist/Logger & Co. John A. Burger CMES

BORING LOG GENERAL DATA

Project: CAMUS		STEAD		Boring: 13-DD-05-91		Page: 1 of 2 JB			
Driller & Company: Kevin Cross CNES									
Geologist/Logger & Company: John A. Burger CNES Signature: <i>John A. Burger</i>									
Date Boring Started: 25 July 1991				Completed: 25 July 1991					
Water Levels (From Ground Surface)				Drilling Rig: #405					
First Encountered:				Date:					
While Drilling:				Date:					
At Boring Completion: 4'-10"				Date: 25 July 1991					
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations: Abbr Meaning					Location Sketch:				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 DD-05-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
0		Clayey silt dry, soft Calcareous Munsell = 2.5y/6/3	ML	Core # 1 0 ft.- 2 ft.	8/6"	Top core = Bkg.	
1					8/6"	Base core = Bkg.	
2		Clayey silt moist, soft Calcareous Munsell = 10yr/4/4	ML		4/6"		
3					5/6"		
4		Augerings = same as 1 ft. - 2 ft.	CL		2/6"	Top core = Bkg.	
5					2/6"	Water at 4 ft.-10" at end of drilling. Oil sheen on water	
6		Silty clay slightly moist, hard slightly mottled trace roots Calcareous Munsell = 2.5y/6/3	CL	Core # 2 4 ft.- 6 ft.	5/6"		
7					12/6"	Base core = Bkg.	
8		Augerings = silty clay and clayey silt moist, soft	SM		4/6"	Top core = Bkg.	
9					5/6"	Split spoon is wet. Diesel smell on drill augers when pulled out of hole at 8 ft.	
10		Slightly silty, slightly clayey sand soft fine-grained mostly quartzose Calcareous	SM	Core # 3 8 ft.- 10 ft.	9/6"		
10					19/6"	Base core = Bkg.	
		T.D. 10 ft.					



Bore Log

Project Site CAMDS TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-DD-06-91 Auger Size 6 5/8" * 4 1/4"

Date/Time Started 25 July 1991 1330hr Date/Time Completed 25 July 1991 1418hr

Surface Elevation (optional) N/A Water Level (from Ground Surface) 6.5ft

Completion Depth _____ Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spm No. of Samples 3

Geologist/Logger & Co. JOHN A. BURGER John A. Burger CNES

25 July 1991

BORING LOG GENERAL DATA

Project: CAMDS		STEAD Boring: ¹³ DD-06-91		Page: 1 of 3					
Driller & Company: Kevin Cross Layne									
Geologist/Logger & Company: John A Burger CNES			Signature: <i>John A Burger</i>						
Date Boring Started: 25 July 1991			Completed: 25 July 1991						
Water Levels (From Ground Surface)				Drilling Rig: #405					
First Encountered:				Date:					
While Drilling:				Date:					
At Boring Completion: 6.5 ft				Date: 25 July 1991					
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:									
Abbr		Meaning							
<div style="float: right; text-align: center;"> APPROX ↑ </div>									
Location Sketch:									
<p>The sketch shows a rectangular area representing the SW corner of CAMDS. A double fence runs along the top and right sides. A building labeled 'ETF BLDG' is located to the right of the fence. Two borings are marked: 13-DD-05-91 and 13-DD-06-91. The distance from the SW corner to 13-DD-05-91 is 35.4 ft N 90° W. The distance from 13-DD-05-91 to 13-DD-06-91 is 50.0 ft N. The distance from the SW corner to 13-DD-06-91 is 52.0 ft E.</p>									

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 DD-06-91		Page: 2 of 3	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1330 hr. Stop: 1418 hr. HNu background: = 0.4 ppm		
0		Clayey silt soft, dry	ML				
1							
2		Clayey, slightly sandy silt soft, moist Calcareous Munsell = 01yr/5/4	ML				
3					Core # 1 2 ft. - 4 ft.	1/6" 2/6" 1/6" 2/6"	Top core = Bkg. Soft! Base core = Bkg.
4		Color change Laminations from 4.5 ft. - 4.0 ft. Munsell = 10yr/3/3					
5		Augerings = same as 2 ft. - 4 ft.					
6		Clayey, sandy silt soft, moist trace rootlets Calcareous Munsell = 5y/5/3	ML				
7					Core # 2 6 ft. - 8 ft.	4/6" 11/6" 17/6" 19/6"	Top core = Bkg. Wter at end of drilling = 6.5 ft. Base core = Bkg.
8		Augerings = same as 6 ft. - 8 ft.					
9							
10							

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 00-06-91		Page: 3 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
<div style="display: flex; align-items: center;"> <div style="flex: 1;"> <p>10</p> <p>11</p> <p>12</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> </div> <div style="flex: 2; border-left: 1px solid black; border-right: 1px solid black; padding: 0 5px;"> </div> </div>	<p style="text-align: center; margin-top: 5px;">T.D. 12 ft.</p>	<p>Slightly silty sand SP trace clay trace snail shells soft saturated with water Calcareous Munsell = 5y/6/3</p>	<p>Core # 3 10 ft.- 12 ft.</p>	<p>6/6" 6/6" 7/6" 11/6"</p>	<p>Top core = Bkg.</p> <p style="text-align: right;">Base core = Bkg.</p>



Bore Log

Project Site CAMDS

Site ID 13-FS-01 Auger Size 8" ^{JOB} * 4 1/4"

Date/Time Started 5 MAY 1991 1630 Date/Time Completed 5 MAY 1991 1648 hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 4

Geologist/Logger & Co. John A. Burger QNES

BORING LOG GENERAL DATA

Project: CAMDS Boring: 13-FS-01 Page: 1 of 2

Driller & Company: Layne ↔ Kevin Cross

Geologist/Logger & Company: John A Burger CNE Signature: *John A Burger*

Date Boring Started: 5 May 1991 Completed: 5 May 1991

Water Levels (From Ground Surface) N/A Drilling Rig: # 405

First Encountered: Date:

While Drilling: Date:

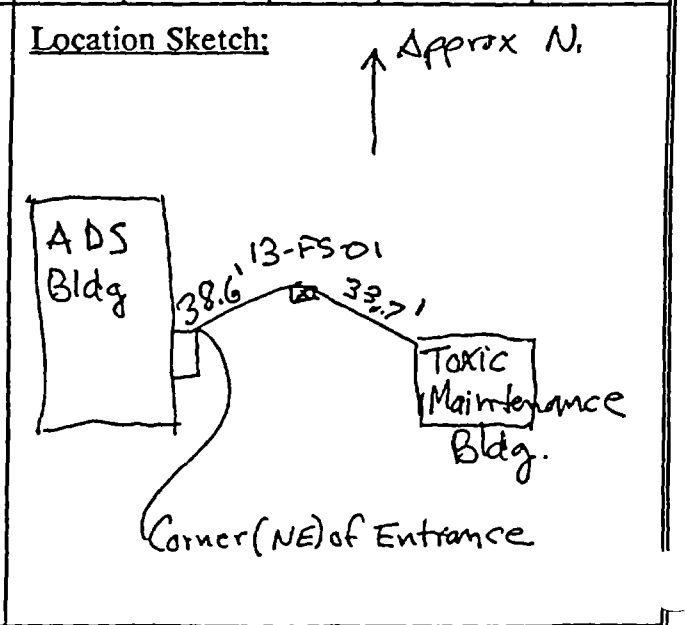
At Boring Completion: Date:

Drilling Shifts:




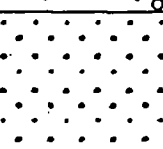
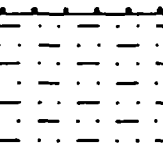
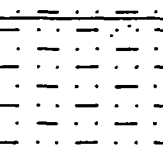
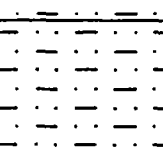
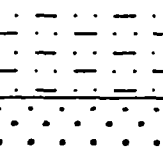
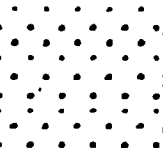
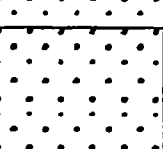
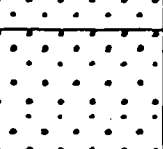
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End

Abbreviations:

Abbr	Meaning



BORING LOG

Project: CAMDS		TEAD-5	Boring: 13 FS-01-91		Page: 2 of 2
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1630 hr. Stop: 1648 hr. HNu background: = 0.4 ppm
0		Asphalt			
		Road Base			
1		Rubble			
2		Silty sand Calcareous Munsell = 2.5y/5/3	Core #1 2 ft. - 3 ft.	2/6"	Top = bkg.
3		Augerings = clayey silty sand		2/6"	Base = bkg.
4		Clayey sandy silt	Core #2 4 ft. - 5 ft.	2/6"	Top = bkg.
5		Calcareous Munsell = 2.5y/5/3 Augerings = clayey sandy silt		2/6"	Base = bkg.
6					
7					
8		Silty sand fine-grained, dry quartzose Calcareous Munsell = 5y/6/3	Core #3 8 ft. - 9 ft.	9/6"	Top = bkg.
9		#4 same as #3		22/6"	Base = bkg.
			Core #4 9 ft. - 10 ft.	28/6"	Top = bkg.
		T.D. 10 ft.		32/6"	Base = bkg.



Bore Log

Project Site CAMDS

Site ID B-FS-02 Auger Size 8" * 8 1/4"

Date/Time Started 5 May 1991 1504 hr Date/Time Completed 5 May 1991 1550 hr

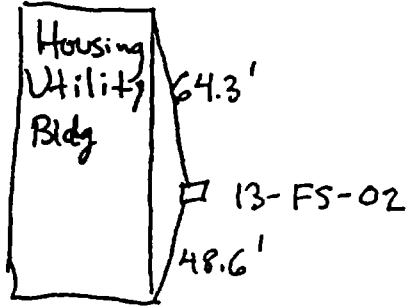
Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. Layne Driller Kevin Cross


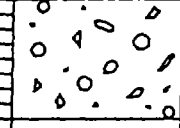
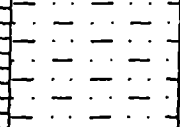
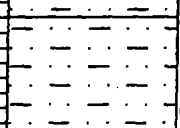
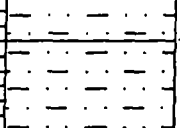
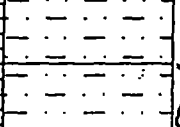
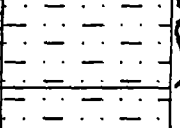
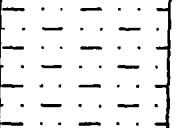
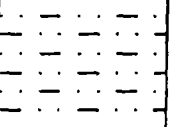
Drilling Type Auger Sample Type Split Spoon No. of Samples 4

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS		Boring: 13-FS-02		Page: 1 of 2									
Driller & Company: Kevin Cross		CNES											
Geologist/Logger & Company: John A. Burger		CNES Signature: John A. Burger											
Date Boring Started: 5 MAY 1991		Completed: 5 MAY 1991											
Water Levels (From Ground Surface)		N/A		Drilling Rig: #405									
First Encountered:		Date:											
While Drilling:		Date:											
At Boring Completion:				Date:									
Drilling Shifts:													
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift					
	Start	End	Start	End		Start	End	Start	End				
<u>Abbreviations:</u> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 50%;">Abbr</th> <th style="text-align: left;">Meaning</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> </tr> </tbody> </table>					Abbr	Meaning			<u>Location Sketch:</u> 				
Abbr	Meaning												

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 FS-02-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1504 hr. Stop: 1550 hr. HNu background: = 0.4 ppm		
0		Asphalt Construction rubble and road base			Stopped drilling at 1507 hr. on account of hard object at depth. Resume at 1512 hr. HNu at 1 ft. = 0.4 ppm		
1							
2		Silt Calcareous Munsell = 2.5/4/3	Core #1 2 ft.- 3 ft.	2/6"	HNu = Bkg. M-43 meter set off at 1517 hr. while waiting for core tube		
3				2/6" 50% recovery			
4		Augerings = silt			Top core = Bkg. Resume drilling at 1527 hr. Base core = Bkg.		
5							
6		Silt calcareous Munsell = 2.5y/5/3	Core #2 4 ft.- 5 ft.	2/6"			
7				4/6"			
8		Augerings = clayey silt					
9							
8		Silt slightly clayey white veinlets Calcareous Munsell = 2.5y/5/2	Core #3 8 ft.- 9 ft.	5/6"	Top core = 6.0 ppm Base core = Bkg. Top core = Bkg. Smells like a sewer in lower 0.4 ft. HNu base of core = N/A		
9				9/6"			
10		Silty sand Color change Calcareous Munsell = 2.5y/5/0	Core #4 9 ft.- 10 ft.	9/6"			
10		T.D. 10 ft.		14/6"			



Bore Log

Project Site CAMDS

Site ID 13-FS-03 Auger Size 8" * 4 1/4'

Date/Time Started 5 May 1991 1220hr Date/Time Completed 5 May 1991 1308hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. Layne Driller Kevin Cross

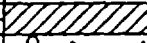

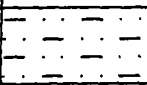
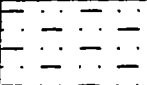
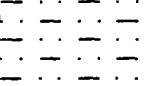
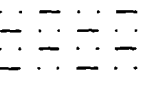
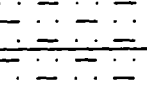
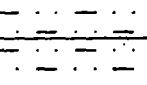

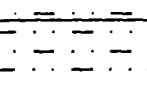

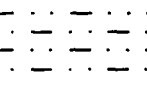
Drilling Type Auger Sample Type Split Spoon No. of Samples 4

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: <u>CAMDS</u>		Boring: <u>13-FS-03</u>		Page: <u>1 of 2</u>					
Driller & Company: <u>Kevin Cross</u>		Layne							
Geologist/Logger & Company: <u>John A. Burger CNES</u>		Signature: <u>John A. Burger</u>							
Date Boring Started: <u>5 May 1991</u>		Completed: <u>5 May 1991</u>							
Water Levels (From Ground Surface)		<u>N/A</u>		Drilling Rig: # <u>405</u>					
First Encountered:		Date:							
While Drilling:		Date:							
At Boring Completion:		Date:							
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:					Location Sketch:				
Abbr Meaning					<p>A hand-drawn location sketch showing the relative positions of buildings and a boring. On the left is a rectangular box labeled 'Housing Utility Bldg'. On the right is a larger, more complex rectangular shape labeled 'Metal Parts Furnace Bldg'. A small 'X' marks the location of boring '13-FS-03'. A line connects the boring to the Housing Utility Bldg, with a dimension of '54.5'' written along it. Another line connects the boring to the Metal Parts Furnace Bldg, with a dimension of '33.5'' written along it. A third dimension, '14.5'', is written near the boring location. An arrow points upwards from the top right, labeled 'APPROX N.'.</p>				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 FS-03-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1220 hr. Stop: 1308 HNU background: = 0.4 ppm		
0		Asphalt Road base and rubble			Tyvek and masks		
1							
2		Sandy silt, trace clay Calcareous Munsell = 2.5y/5/3	Core #1 1.5 ft.- 3.5 ft.	3/6"	Top = bkg. 2 ft. core taken		
3				4/6"			
4				3/6"			
5		Augerings = Clayey silt					
6		Sandy silt Calcareous Munsell = 2.5/4/3	Core #2 4 ft.- 5 ft.	2/6"	M-43 set off at 4 ft. Resumed drilling at 1236 hr. Core HNU = 1.4 ppm		
7				3/6"			
8		Augerings = change to silty clayey sand Color change to gray			M-43 set off while coring at 1243 hr. Resumed drilling at 1255 hr. HNU = bkg. in hole Top = bkg. No recovery on first core try. Pushed core second time 8 ft. to 10 ft. successfully		
9		Sand quartzose, very fine- grained Calcareous Munsell = 2.5y/6/2	Core #3 8 ft.- 9 ft.	10/6"			
10		Sand quartzose, very fine- grained Calcareous Munsell = 2.5y/6/2	Core #4 9 ft.- 10 ft. T.D. 10 ft.	22/6"	Base = bkg.		
10				23/6"			



Bore Log

Project Site CAMOS

Site ID 13-FS-04 Auger Size 8" x 4 1/4"

Date/Time Started 5 MAY 1991 0927hr Date/Time Completed 5 May 1991 1014hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10 Drilling Co. Layne Driller Kevin Cross


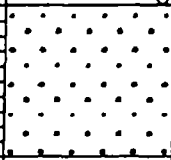
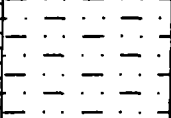
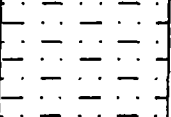
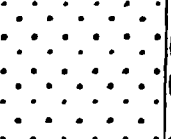
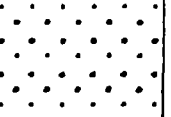
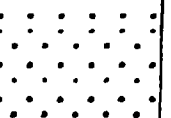
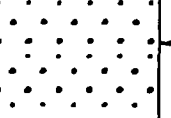
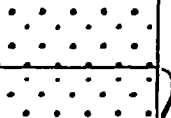
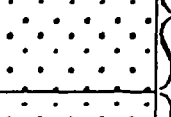
Drilling Type Auger Sample Type Split Spun No. of Samples 4

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS		Boring: 13-FS-04		Page: 1 of 2								
Driller & Company: LAYNE → Kevin Cross												
Geologist/Logger & Company: John A. Burger CNES Signature: <i>John A. Burger</i>												
Date Boring Started: 5 MAY 1991			Completed: 5 MAY 1991									
Water Levels (From Ground Surface)		N/A		Drilling Rig: #405								
First Encountered:			Date:									
While Drilling:			Date:									
At Boring Completion:			Date:									
Drilling Shifts:												
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift				
	Start	End	Start	End		Start	End	Start	End			
Abbreviations:			Location Sketch:									
<table border="0" style="width: 100%;"> <tr> <td style="text-align: left;">Abbr</td> <td style="text-align: left;">Meaning</td> </tr> <tr> <td>CAMDS</td> <td></td> </tr> </table>			Abbr	Meaning	CAMDS		<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Metal Parts Furnace Bldg</div>			<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Metal Parts Furnace Bldg</div>		
Abbr	Meaning											
CAMDS												

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 FS-04-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0927 hr. Stop: 1014 hr. HNu background: = 0.4 ppm.		
0		Asphalt Road base			Wearing tyvek suits and masks		
1		Silty sand SM Quartzose feldspathic, trace limon. stain Calcareous Munsell = 2.5/5/3	Core #1 1 ft.- 2 ft.	4/6" 4/6"			Top core = Bkg. Base core = bkg.
2		Augerings = clayey silt			Drilled to 4 ft. and set off M-43 alarm at 0940 hr. Resumed drilling at 0956 hr.		
3							
4		Sand SM mesium-to fine- grained Munsell = 2.5y/4/3 and Munsell = 2.5y/5/3	Core #2 4 ft.- 5 ft.	1/6" 3/6"			
5		Augerings = clayey silty sand					
6					HNu = 3 ppm in hole HNu = 13 ppm at top of core barrel		
7		Color change to light gray Augerings = clayey silty sand					
8		Silty sand SM fine-grained, quartzose Calcareous Munsell = 2.5/6/2	Core #3 8 ft.- 9 ft.	8/6" 16/6"			
9		Silty sand SM fine-grained, quartzose Calcareous Munsell = 2.5/6/2	Core #4 9 ft.- 10 ft.	20/6" 26/6"			
10		T.D. 10 ft.					



Bore Log

Project Site CAMDS

Site ID B-FS-05 Auger Size 8" x 4 1/4"

Date/Time Started 4 MAY 1991 1137hr Date/Time Completed 4 MAY 1991 1201 hr

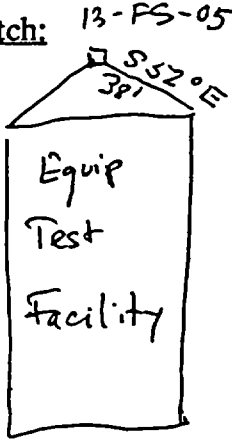
Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10 Drilling Co. LAYNE Driller Kevin Cross

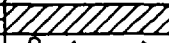

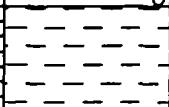
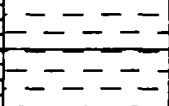


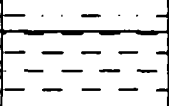

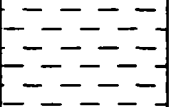
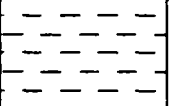

Drilling Type Auger Sample Type Split Spoon No. of Samples 4

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS			Boring: 13-FS-05			Page: 1 of 2					
Driller & Company: Kevin Cross			Layne								
Geologist/Logger & Company: John A. Burger CNE			Signature: John A. Burger								
Date Boring Started: 4 May 1991			Completed: 4 May 1991								
Water Levels (From Ground Surface)			N/A			Drilling Rig: 405					
First Encountered:			Date:								
While Drilling:			Date:								
At Boring Completion:			Date:								
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning						<u>Location Sketch:</u> 13-FS-05 					

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 FS-05-91		Page: 2 of 2		
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1137 hr. Stop: 1201 hr. HNU background: = 0.4 ppm.			
0		Asphalt Roadbase			Working with gas mask on!			
1		Silty clay Very dry Calcareous Munsell = 2.5y/5/3	CL					HNU = Background
2		Same as 1 ft. to 2 ft.		Core #1 1 ft.- 3 ft.	5/6"	No HNU recorded.		
3		Augerings = clayey silt			5/6"			
4		Silty clay Calcareous Munsell = 2.5y/5/4	CL	Core #2 4 ft.- 5 ft.	4/6"	No HNU recorded.		
5		Augerings = silty clay			3/6"			
6					3/6"	No HNU recorded.		
7		Augerings = clay at approximately 7 ft.						
8		Silty clay Trace organic matter snail shells Calcareous	CL	Core #3 8 ft.- 9 ft.	4/6"	HNU = 19.5 ppm on end of core		
9		Silty clay Calcareous trace of stems and roots Munsell = 5y/6/1	CL	Core #4 9 ft.- 10 ft.	14/6"			
10		T.D. 10 ft.			15/6"	HNU = 19.5 ppm on end of core		



Bore Log

Project Site CAMDS

Site ID 13-FS-06 Auger Size 8" * 4 1/4"

Date/Time Started 3 MAY 1991 1627hr Date/Time Completed 3 May 1991 1654 hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth _____ Drilling Co. Layne Driller Kevin Cross


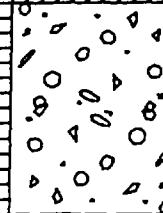
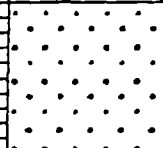
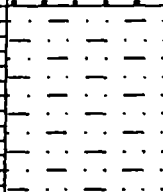
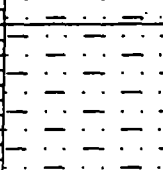
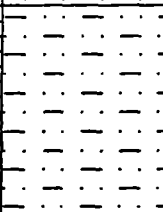
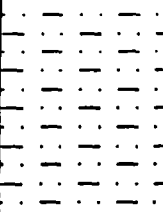
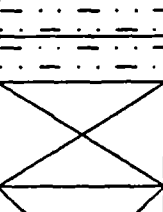



Drilling Type Auger Sample Type Split Spoon No. of Samples 3

Geologist/Logger & Co. John A. Burger

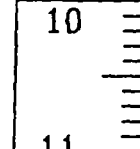
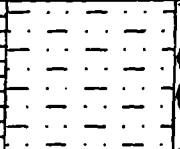
BORING LOG GENERAL DATA

Project: <u>CAMDS</u>		Boring: <u>13-FS-06</u>		Page: <u>1 of 2</u>									
Driller & Company: <u>Kevin Cross</u>		<u>Layne</u>											
Geologist/Logger & Company: <u>John A. Burger</u>		Signature: <u>John A. Burger</u>		<u>CAVES</u>									
Date Boring Started:		Completed:											
Water Levels (From Ground Surface) <u>N/A</u>		Drilling Rig:											
First Encountered:		Date:											
While Drilling:		Date:											
At Boring Completion:		Date:											
Drilling Shifts:													
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift					
	Start	End	Start	End		Start	End	Start	End				
<u>Abbreviations:</u> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Abbr</u></th> <th style="text-align: left;"><u>Meaning</u></th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> </tr> </tbody> </table>					<u>Abbr</u>	<u>Meaning</u>			<u>Location Sketch:</u> <div style="text-align: center; margin-top: 20px;"> </div>				
<u>Abbr</u>	<u>Meaning</u>												

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 FS-06-91		Page: 2 of 3	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1627 hr. Stop: 1654 hr. HNu background: = 0.4 ppm.	
0		Asphalt Road base material			HNu = bkg.	
1		Silty clayey sand SM Calcareous Munsell = 2.5y/5/3	Core #1	9/6"		
2			1.6 ft. 2.6 ft.	8/6"		
3		Augerings = clayey silt				
4		Wet core barrel ML Clayey silt Calcareous Munsell = 2.5y/4/3	Core #2	2/6"		HNu = bkg.
5		4 ft.- 5 ft.	1/6"			
6		Augerings = wet clayey silt				HNu = bkg.
7						
8		Wet core barrel ML Clayey silt Calcareous Munsell = 5y/6/1 No recovery below 8.3 ft.	Core #3	5/6"		HNu = 3.8 ppm. in hole HNu = 20 ppm in core barrel at the surface in both samples #3 and #4 even with minor core recovery.
9			8.0 ft.- 8.3 ft.	9/6"		
10		Core #4 No recovery	11/6"	17/6"		

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 FS-06-91		Page: 3 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
10  11 12 13 14 15 16 17 18 19 20		Silt, slightly clayey ML Calcareous Snail shells Diesel odors and other odors Munsell = 2.5y/6/2 T.D. 11 ft.	Core # 5 10 ft.- 11 ft.	No blows	Pushed core tube with rig. No HNu reading



Bore Log

Project Site CAMDS

Site ID 13-FS-07 Auger Size 8" x 4 1/4"

Date/Time Started 4 May 1991 1245 hr Date/Time Completed 4 MAY 1991 1355 hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. Layne Driller Kevin Cross



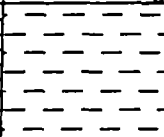

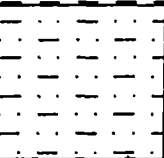
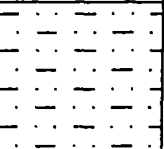
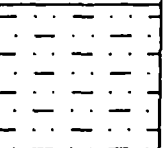
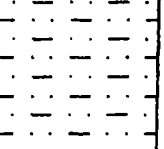
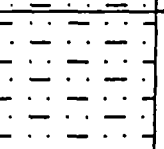
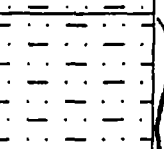
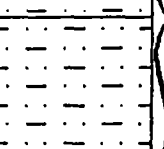
Drilling Type Auger Sample Type Split Spm No. of Samples 4
JABurge

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS		Boring: 13-FS-07		Page: 1 of 2					
Driller & Company: Kevin Cross		Layne							
Geologist/Logger & Company: John A. Burger CVES		Signature: <i>John A. Burger</i>							
Date Boring Started: 4 May 1991		Completed: 4 May 1991							
Water Levels (From Ground Surface) N/A		Drilling Rig: #405							
First Encountered:		Date:							
While Drilling:		Date:							
At Boring Completion:		Date:							
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr <u>Meaning</u>					<u>Location Sketch:</u> 13-FS-07 				

BORING LOG


Project: CAMDS		TEAD-S		Boring: 13 FS-07-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
						Start: 1245 hr. Stop: 1355 hr. HNu background: = 0.4 ppm.	
0		Asphalt Road base			HNu = bkg. M-43 reading = alarm at 2 ft. 25 minute stoppage Resume drilling at 1320		
1		Silty clay trace rootlets Calcareous Munsell = 5y/6/1	Core #1 1 ft.- 3 ft.	3/6"			
2		Augerings = silty clay		5/6"			
3				6/6"			
4		Silt Calcareous Munsell = 2.5y/5/3	Core #2 4 ft.- 5 ft.	7/6"	Core HNu = 1.2 ppm		
5		Augerings = clayey silt and silty clay		2/6"			
6			2/6"				
7		Color change to gray					
8		Composite sample	Core #3 8 ft.- 9 ft.	5/6"	HNu = 9.9 ppm No recovery from 8 ft. to 10 ft. on first try. Pushed second core 8 ft. to 10 ft. HNu second time on core = 5 ppm.		
9		Second coring = silt, trace clay Calcareous Munsell = 5y/6/2		6/6"			
10		T.D. 10 ft.	Core #4 9 ft.- 10 ft.	10/6"			
				11/6"			



Bore Log

Project Site CAMDS

Site ID 13-FS-08 630hr Auger Size 8" * 4 1/4"

Date/Time Started 3 MAY 1991  Date/Time Completed 3 MAY 1991 1550hr

Surface Elevation (optional) N/A Water Level (from Ground Surface) N/A

Completion Depth 10 ft Drilling Co. Layne Driller Kevin Cross



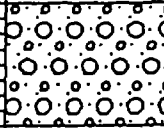
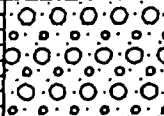
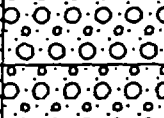
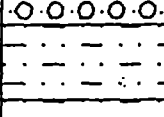
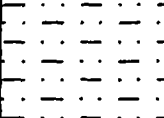
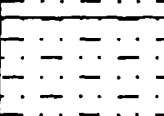
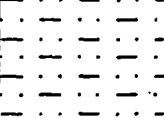
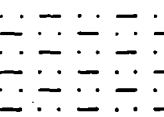
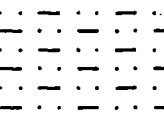
Drilling Type Auger Sample Type Split Spoon No. of Samples _____

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS			Boring: 13-FS-08			Page: 1 of 2			
Driller & Company: Kevin Cross			Layne						
Geologist/Logger & Company: John A. Burger CNES			Signature: John A. Burger						
Date Boring Started: 3 MAY 1991			Completed: 3 MAY 1991						
Water Levels (From Ground Surface)			N/A			Drilling Rig: 405			
First Encountered:			Date:						
While Drilling:			Date:						
At Boring Completion:			Date:						
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u> 				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 FS-08-91		Page: 2 of 2		
Depth/ Feet.	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1530 hr. Stop: 1550 hr. HNu background: = 0.4 ppm.			
0		Asphalt			HNu = bkg.			
1		Road base gravel						
2		Calcareous at 1.8 ft. Silty gravel; limestone clasts, and quartzite clasts, angular to rounded Munsell = 2.5/5/3	Core #1 1.8 ft.- 3 ft.	3/6" 4/6"				
3		Augerings = same as 2 ft. to 3 ft.						
4		Clayey silt moist	Core #2 4 ft.- 5 ft.	2/6" 2/6"				HNu = bkg.
5		Augerings = clayey silt						
6								
7								
8		Wet core barrel Clayey silt to slightly silty clay Slight brown mottling Calcareous Munsell = 2.5y/5/3	Core #3 8 ft.- 9 ft.	1/6" 2/6"				HNu = bkg.
9		Clayey silt to slightly silty clay Slight brown mottling Calcareous Munsell = 2.5y/5/3	Core #4 9 ft.- 10 ft.	3/6" 5/6"				HNu = bkg.
10		T.O. 10 ft						



Bore Log

Project Site CAMOS

Site ID 13-FS-09 Auger Size 8" * 4 1/4"

Date/Time Started 5 MAY 1991 0809 hr Date/Time Completed 5 May 1991 0836 hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) NA

Completion Depth 10' Drilling Co. Layne Driller Kevin Cross

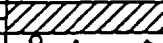

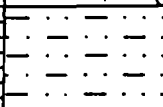
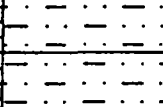
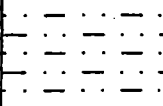

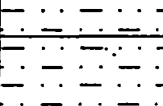
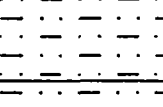
Drilling Type Auger Sample Type Split Spoon No. of Samples 4

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS			Boring: 13-FS-09			Page: 1 of 2					
Driller & Company: Kevin Cross			Layne								
Geologist/Logger & Company: John A. Burger			CNESSignature: <i>John A. Burger</i>								
Date Boring Started: 5 May 1991			Completed: 5 MAY 1991								
Water Levels (From Ground Surface)			<i>NA</i>			Drilling Rig: # 405-					
First Encountered:						Date:					
While Drilling:						Date:					
At Boring Completion:						Date:					
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning						<u>Location Sketch:</u> 					

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 FS-09-91		Page: 2 of 2		
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0809 hr. Stop: 0836 hr. HNu background: = 0.4 ppm.			
0		Asphalt Road base			HNu = Bkg.			
1		Silt slightly clayey Calcareous Munsell = 2.5y/5/3	Core #1 1 ft.- 2 ft.	ML				6/6"
2				6/6"				
3		Augerings = clayey silt						
4		Silty clay and clayey silt Calcareous Munsell = 2.5y/5/3	Core #2 4 ft.- 5 ft.	ML				3/6"
5				5/6"				
6		Augerings = clayey silt						
7		Augerings = soft clay						
8		Sample #3 same as Sample #4 Fine-grained sand, slightly clayey 2 large ls. pebbles ~2 in. dia., Calcareous Munsell = 2.5/5/3 T.O. 10 ft.	Core #3 8 ft.- 9 ft.	SM				4/6"
9				7/6"				
10			Core #4 9 ft.- 10 ft.	SM	9/6"			
					13/6"			



Bore Log

Project Site CAMDS TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-FS-10-91 Auger Size 6 5/8" x 4 1/4"

Date/Time Started 14 July 1991 09:58 hr Date/Time Completed 14 July 1991 10:41 hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) 7.5 ft

Completion Depth 10 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spore No. of Samples 4

Geologist/Logger & Co. John A. Burger QNES

BORING LOG GENERAL DATA

Project: CAMDS		STEAD		Boring: 13-FS-10-91		Page: 1 of 2					
Driller & Company: Kevin Cross Layne											
Geologist/Logger & Company: John A. Burger CNES				Signature: <i>John A. Burger</i>							
Date Boring Started: 14 July 1991				Completed: 14 July 1991							
Water Levels (From Ground Surface)				Drilling Rig: # 405							
First Encountered:				Date:							
While Drilling: 7.5 feet				Date: 14 July 1991							
At Boring Completion: —				Date: —							
Drilling Shifts:											
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift			
	Start	End	Start	End		Start	End	Start	End		
<u>Abbreviations:</u> <table style="width: 100%; border: none;"> <tr> <td style="border: none;"><u>Abbr</u></td> <td style="border: none;"><u>Meaning</u></td> </tr> </table>					<u>Abbr</u>	<u>Meaning</u>	<u>Location Sketch:</u> <p style="text-align: center;">Approx. \uparrow N</p>				
<u>Abbr</u>	<u>Meaning</u>										

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 FS-10-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
0		Road base and rubble			Start: 0958 hr. Stop: 1041 hr. HNU background: = 0.6 ppm		
1							
2		Clayey silt soft slightly moist Calcareous Munsell = 10yr/5/4	Core # 1 1.5 ft.- 2.5 ft.	4 / 6"	Top core = Bkg. Base core = Bkg.		
3				4 / 6"			
4				3 / 6"			
5		Clayey, sandy silt soft, wet Calcareous Munsell = 10yr/4/4	Core # 2 4 ft.- 6 ft.	2 / 6"	Top core = Bkg.		
6				4 / 6"			
7		Clayey, silty sand soft, wet Calcareous Munsell = 10yr/4/4		6 / 6"	Base core = Bkg.		
8				3 / 6"			
9		Augerings = soft, wet, clayey, silty sand			Easy drilling Water while drilling at 7.5 ft.		
10							
		Slightly clayey, slightly silty sand wet Calcareous Munsell = 5y/6/2	Core # 3 8 ft.- 9 ft.	3 / 6"	Top core = 6.0 ppm Sewer smell on core		
				4 / 6"			
		T.D. 10 ft.	Core # 4 9 ft.- 10 ft.	4 / 6"	Base core = 15.4 ppm		
				4 / 6"			



Bore Log

Project Site CAMDS

Site ID 13-F5-12 Auger Size 8" * 4 1/4

Date/Time Started 7 MAY 1991 1452 hr Date/Time Completed 7 MAY 1991 1511 hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. Layne Driller Kevin Cross

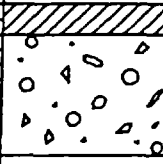
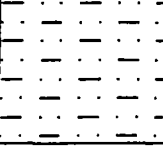
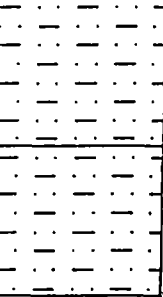
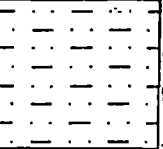
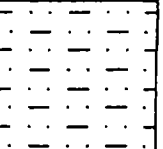
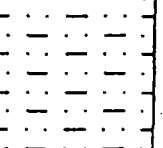
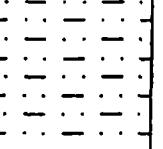
Drilling Type Auger Sample Type Split Spoon No. of Samples 4

Geologist/Logger & Co. John A. Burger QNES

BORING LOG GENERAL DATA

Project: CAMOS		Boring: 13-FS-12		Page: 1 of 2					
Driller & Company: Kevin Cross			Layne						
Geologist/Logger & Company: John A. Burger			Signature: <i>John A. Burger</i>						
Date Boring Started: 7 May 1991		Completed: 7 MAY 1991							
Water Levels (From Ground Surface)		N/A		Drilling Rig: 405					
First Encountered:			Date:						
While Drilling:			Date:						
At Boring Completion:			Date:						
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:					Location Sketch:				
Abbr Meaning					<div style="text-align: right;">Approx ↑ N</div>				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 FS-12-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1452 hr. Stop: 1511 hr. HNu background: = 0.4 ppm.		
0		Asphalt Road base			Open hole at 2ft. = background HNu at top of core = 6.5 ppm. HNu at base of core = 1.5 ppm. HNu at top of core = 1.6 ppm.		
1							
2		Sandy silt Calcareous Trace rootlets Munsell = 2.5y/5/3	ML	Core #1 2 ft.- 4 ft.	3/6"	Base core = Bkg.	
3					6/6"		
4					6/6"		
5					6/6"		
6		Sandy silt Calcareous Munsell = 2.5y/4/3	ML	Core #2 4 ft.- 5 ft.	5/6"	HNu = background in hole at 10'	
7					5/6"		
8		Augerings = sandy silt					
9							
8		Sandy silt Calcareous Trace white flecks Munsell = 2.5y/5/3	ML	Core #3 8 ft.- 9 ft.	5/6"	HNu at top of core = 0.8 ppm.	
9					5/6"		
9		Silty sand Calcareous White flecks abundant Munsell = 2.5y/5/2 T.D. 10 ft.	SM	Core #4 9 ft.- 10 ft.	6/6"	Diesel smell HNu at base of core = 12.4 ppm.	
10					10/6"		



Bore Log

Project Site CAMDS

Site ID 13-FS-13 Auger Size 8" x 4 1/4"

Date/Time Started 7 MAY 1991 1404 hr Date/Time Completed 7 MAY 1991 1422 hr

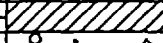
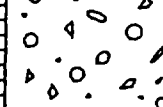

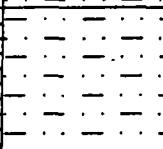
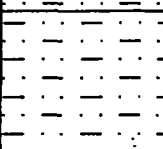
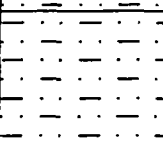
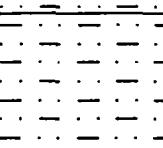
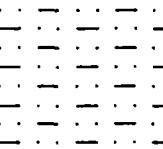
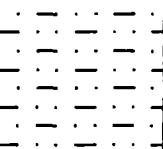
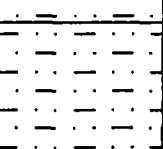
Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 4

Geologist/Logger & Co. John A. Burger CNES

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 FS-13-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1404 hr. Stop: 1422 hr. HNu background: = 0.4 ppm.		
0		Asphalt					
1		Road base					
2		Sandy silt, dry White calcareous stringers; trace brown roots Calcareous Munsell = 2.5y/4/3	ML Core #1 2 ft.- 3 ft.	7/6" 9/6"	HNu = background in hole Top core = Bkg.		
3		Sandy silt, dry Calcareous Munsell = 2.5y/4/3	ML Core #2 3 ft.- 5 ft.	3/6" 5/6" 5/6" 5/6"			
4					Base core = Bkg.		
5		Augerings = sandy silt					
6					HNu = 0.8 ppm at top of hole while coring Top core = Bkg.		
7							
8		Sandy silt Calcareous Munsell = 2.5y/5/3	ML Core #3 8 ft.- 9 ft.	2/6" 5/6"	Diesel smell HNu = 1.6 ppm at base pf core		
9		Sandy silt Calcareous Munsell = 2.5y/5/2	ML Core #4 9 ft.- 10 ft.	5/6" 6/6"			
10		T.O. 10 ft.					

BORING LOG GENERAL DATA

Project: CAMOS		Boring: 13-PS-13		Page: 1 of 2					
Driller & Company: Kevin Cross		Layne							
Geologist/Logger & Company: John A. Burger CNES		Signature: <i>John A. Burger</i>							
Date Boring Started: 7 MAY 1991		Completed: 7 MAY 1991							
Water Levels (From Ground Surface)		N/A		Drilling Rig: 405					
First Encountered:		Date:							
While Drilling:		Date:							
At Boring Completion:		Date:							
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:					Location Sketch: 13PS-13				
Abbr Meaning					<p>The sketch shows a site layout with a 'Double Fence' on the left. To the right of the fence are 'Oil Tanks' (three circles) with a horizontal dimension of 22.5'. Further right is a 'Housing Utility Bldg' with a vertical dimension of 25.9'. A note indicates 'concrete bulkheads about one foot higher than the road'. A north arrow points upwards.</p>				

one foot higher than the road



Bore Log

Project Site CAMDS

Site ID 13-FS-14 Auger Size 8" x 4 1/4"

Date/Time Started 7 MAY 1991 1100hr Date/Time Completed 7 MAY 1991 1140hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. Kevin Cross Driller LAYNE

Drilling Type Auger Sample Type Split Spoon No. of Samples 4

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: <u>CAMISS</u>			Boring: <u>13-FS-14</u> Page: 1 of 2						
Driller & Company: <u>Kevin Cross</u>			<u>Layne</u>						
Geologist/Logger & Company: <u>John A. Burger CNES</u>			Signature: <u>John A. Burger</u>						
Date Boring Started: <u>7 MAY 1991</u>			Completed: <u>7 MAY 1991</u>						
Water Levels (From Ground Surface) <u>N/A</u>			Drilling Rig: <u>405</u>						
First Encountered:			Date:						
While Drilling:			Date:						
At Boring Completion:			Date:						
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:					Location Sketch:				
Abbr Meaning					<div style="text-align: right;">Approx N ↑</div> <p>The sketch shows a site layout. On the left is a 'Double Fence'. To its right is a 'Road'. Further right is a large area containing 'Fuel Oil Tanks' (three circles) and a 'Concrete Bulkhead' (a vertical line). To the right of the bulkhead is a 'Utility Housing Bldg'. Dimensions are given as 35.4' for the tank area and 9.2' for the bulkhead. An arrow points North.</p>				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 FS-14-91		Page: 2 of 2	
Depth/ Feet.	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1100 hr. Stop: 1140 hr. HNU background. = 0.4 ppm		
0		Gravel to 1.8 ft. This gravel is construction fill.	Core #1 0 ft- 1.8 ft. not sampled	6/6"	Top core = 11.2 ppm Hole drilled 8 ft. west of concrete bulkhead on side of road.		
1				6/6"			
2		Sandy silt Calcareous Munsell = 2.5y/5/3	Core #2 1.8 ft.- 2.8 ft.	3/6"	Base core = Bkg. Top core = 1.8 ppm HNU downhole at 2 ft. = 2.1 ppm.		
3				4/6"			
4		Sandy silt Calcareous Munsell = 10yr/3/2	Core #3 4 ft.- 5 ft.	1/6"	Top core = Bkg.		
5				1/6"			
6		Color change Munsell = 2.5y/5/4					
7							
8		Silty sand Calcareous White flecks Munsell = 2.5yr/3/0	Core #4 8 ft.- 9 ft.	3/6"	Top core = 11 ppm		
9				5/6"			
10		Silty sand Calcareous Munsell = 5yr/5/0	Core #5 9 ft.- 10 ft.	11/6"	Diesel smell		
10				18/6"			
		T.D. 10 ft.					



Bore Log

Project Site CAMDS

Site ID 13-FS-15 Auger Size 8" x 4 1/4"

Date/Time Started 7 MAY 1991 0957 Date/Time Completed 7 MAY 1991 1027

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spun No. of Samples 4

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

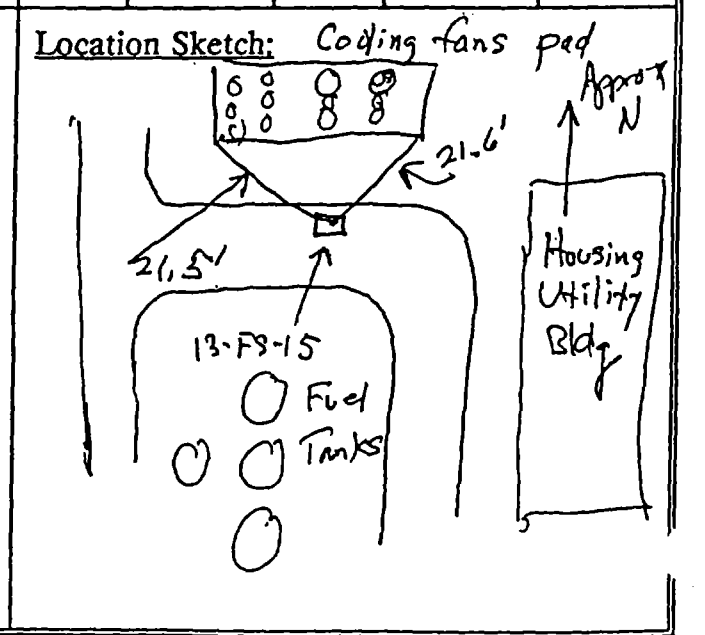
Project: CAMDS	Boring: 13-FS-15 Page: 1 of 2
Driller & Company: Kevin Cross	Layne
Geologist/Logger & Company: John A. Burger CNES	Signature: John A. Burger
Date Boring Started: 7 MAY 1991	Completed: 7 MAY 1991
Water Levels (From Ground Surface)	N/A
Drilling Rig:	405
First Encountered:	Date:
While Drilling:	Date:
At Boring Completion:	Date:

Drilling Shifts:



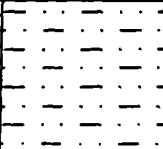
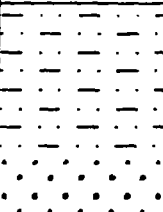
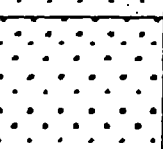
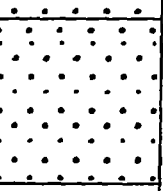
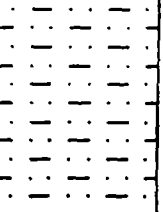
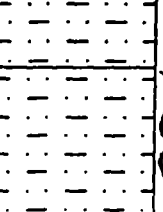
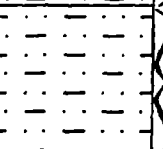
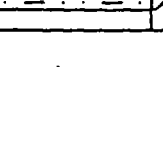
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End

Abbreviations:

<u>Abbr</u>	<u>Meaning</u>



BORING LOG

Project: CAMDS		TEAD-S		Boring: FS-15-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0957 hr. Stop: 1027 hr HNu background: = 0.4 ppm.		
0		Asphalt Road base			HNu = 0.8 ppm in the hole at 1.5 ft.		
1							
2		Slightly sandy silt Calcareous Munsell = 2.5y/5/3	Core #1 1.5 ft. - 2.5 ft.	5/6" 4/6"	HNu = Bkg.		
3		Augerings = sandy silt			HNu = 0.8 ppm in the hole at 2.5 ft.		
4		Silty sand Calcareous Munsell = 2.5y/4/3	Core #2 4 ft. - 5 ft.	0/6" 1/6"	Top core = Bkg.		
5		Augerings = silt Wet Easy augering			Base core = Bkg.		
6					HNu = 6 ppm at top of hole at 8 ft.		
7							
8		Sandy silt Calcareous Munsell = 2.5y/5/3	Core #3 8 ft. - 9 ft.	4/6" 5/6"	Top core = 11.5 ppm		
9		Sandy silt Calcareous Munsell = 2.5y/6/3	Core #4 9 ft. - 10 ft.	5/6" 4/6"	Base core = 9.0 ppm		
10		T.D. 10 ft.					



Bore Log

Project Site CAMDS

Site ID 13-FS-18 Auger Size 8" x 4 1/4

Date/Time Started 6 MAY 1991 12148 hr Date/Time Completed 6 MAY 1991 1512 hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. LAYNE Driller Kevin Cross


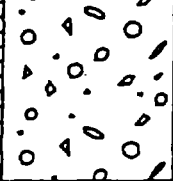
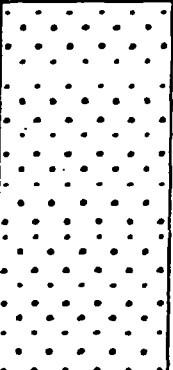
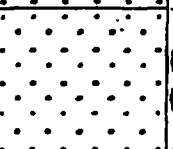
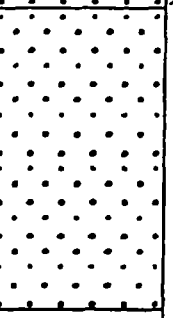
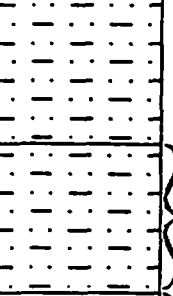
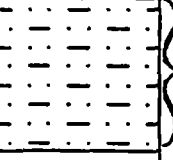
Drilling Type Auger Sample Type Split Spoon No. of Samples 4

Geologist/Logger & Co. John A. Burger QNES

BORING LOG GENERAL DATA

Project: <u>CAMDS</u>		Boring: <u>13-FS-18</u>		Page: 1 of 2					
Driller & Company: <u>Kevin Cross</u>									
Geologist/Logger & Company: <u>John A. Burger CNES</u> Signature: <u>John A. Burger</u>									
Date Boring Started: <u>6 MAY 1991</u>			Completed: <u>6 MAY 1991</u>						
Water Levels (From Ground Surface)		<u>N/A</u>		Drilling Rig: <u>405</u>					
First Encountered:			Date:						
While Drilling:			Date:						
At Boring Completion:			Date:						
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:					Location Sketch:				
Abbr Meaning					<div style="display: flex; align-items: center;"> <div style="flex: 1;"> </div> <div style="flex: 1; border: 1px solid black; padding: 5px; margin-left: 10px;"> <p>Tanks are due north of the Maintenance Shop</p> <p>Tanks ○ ○ ○</p> </div> </div>				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 FS-18-91		Page: 2 of 2	
Depth/ Feet.	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1448 hr. Stop: 1512 hr. HNu background: = 0.4 ppm		
0		Asphalt Road base			Also monitor with M-43 HNu = Bkg. Top core = Bkg.		
1							
2		Silty sand with trace of clay Calcareous Munsell = 10yr/5/2 Augerings = silty sand with trace of clay	SM	Core #1 1.5 ft.- 2.5 ft.	4/6" 3/6"	Base core = Bkg.	
3							
4		Silty sand with trace of clay Calcareous Munsell = 2.5y/4/3 Augerings = silty sand	SM	Core #2 4 ft.- 5 ft.	0/6" 3/6"	Top core = Bkg. Base core = Bkg.	
5							
6					HNu = 5.0 ppm in hole at 8 ft. Top core = Bkg.		
7							
8		Sandy clayey silt Calcareous Munsell = 2.5y/5/2	ML	Core #3 8 ft.- 9 ft.	2/6" 5/6"	Diesel smell	
9							
10		Sandy clayey silt Calcareous Munsell = 2.5y/5/2 T.D. 10 ft.	ML	Core #4 9 ft.- 10 ft.	5/6" 10/6"	HNu in core = 15.0 ppm Base core = 5.0 ppm	



Bore Log

Project Site CAMDS

Site ID 13-FS-19 Auger Size 8" * 4 1/4"

Date/Time Started 6 MAY 1991 1326hr Date/Time Completed 6 MAY 1992 1412hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. LAYNE Driller Kevin Cross

Drilling Type Auger Sample Type Split Spun No. of Samples 4

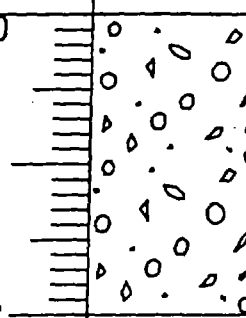
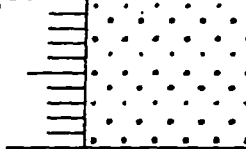
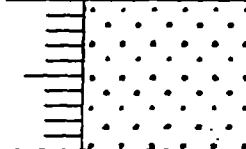
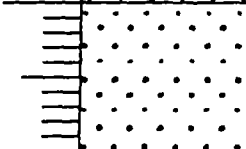
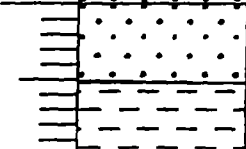
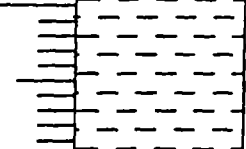
Geologist/Logger & Co. John A. Burgier CNES

Note collar is 1 ft lower than elevation of the road.
Lost 10 minutes with drill stuck in the hole

BORING LOG GENERAL DATA

Project: <u>CAMDS</u>		Boring: <u>13-FS-19</u>		Page: <u>1 of 2</u>					
Driller & Company: <u>Kevin Cross</u>		LAYNE							
Geologist/Logger & Company: <u>John A. Burger</u>		CNES Signature: <u>John A. Burger</u>							
Date Boring Started: <u>6 MAY 1991</u>		Completed: <u>6 MAY 1991</u>							
Water Levels (From Ground Surface)			Drilling Rig: <u>N/A</u>						
First Encountered:			Date:						
While Drilling:			Date:						
At Boring Completion:			Date:						
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:					Location Sketch:				
Abbr Meaning					<p>Hole 13-FS-19 is 7' west of TANK A</p> <p>Tanks are due north of Maintenance Shop</p> <p>Collar is below road surface Hole is in spill pit</p>				

BORING LOG

Project: CAMDS		TEAD-5		Boring: 13 FS-19-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1326 hr. Stop: 1412 hr. HNu background: = 0.4 ppm.		
0		Side of pit Gravel to 2 ft.			Note - Collar is 1 ft. below road surface Monitoring with M-43		
1							
2		Sand Trace silt and clay Slightly calcareous Munsell = 2.5y/4/3	Core #1 2 ft.- 4 ft.	1/6"	Could have been pushed, so soft is the material. HNu = Bkg.		
3		Cored 2 ft., took upper 1 ft. for sample.		1/6"			
4		Sand Slightly clayey and silty Calcareous Munsell = 2.5y/5/3	Core #2 4 ft.- 5 ft.	1/6"	HNu = Bkg.		
5		Augerings = silty sandy clay		2/6"			
6							
7							
8		Clayey, sandy silt Calcareous Munsell = 2.5y/5/3	Core #3 8 ft.- 9 ft.	3/6"	HNu on core = 10 ppm		
9		Clayey, sandy silt Calcareous Munsell = 2.5y/5/2		4/6"			
10		T.D. 10 ft.	Core #4 9 ft.- 10 ft.	3/6"			



Bore Log

Project Site CAMDS

Site ID 13-FS-20 Auger Size 8" * 4 1/4"

Date/Time Started 8 MAY 1991 1317hr Date/Time Completed 8 MAY 1991 1335

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. LAYNE Driller Kevin Cross


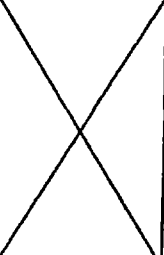

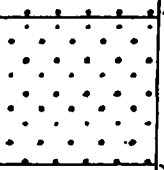
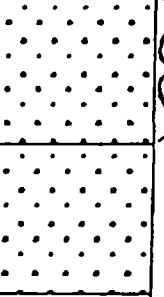
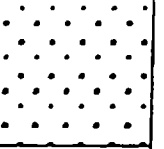
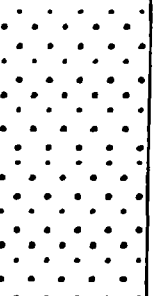
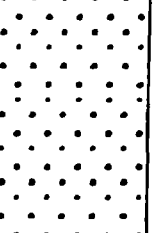
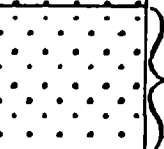

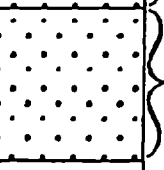
Drilling Type Auger Sample Type Split Spoon No. of Samples 4

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMOS		Boring: 13-FS-20		Page: 1 of 2					
Driller & Company: Kevin Cross		Layne							
Geologist/Logger & Company: John A. Burger		CNES Signature: John A. Burger							
Date Boring Started: 7 MAY 1991		Completed: 7 May 1991							
Water Levels (From Ground Surface) <i>M/A</i>		Drilling Rig: 405							
First Encountered:		Date:							
While Drilling:		Date:							
At Boring Completion:		Date:							
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:					Location Sketch:				
Abbr <u>Meaning</u>					<div style="text-align: right;">Approx. N. ↑</div>				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 FS-20-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1317 hr. Stop: 1335 hr. HNu background: = 0.4 ppm		
0		Asphalt					
1		Road base and rubble					
2		Silty sand Calcareous Munsell = 2.5y/5/3	SM Core #1 2 ft.- 4 ft.	3/6"	Top core = Bkg.		
3		2 ft. core.		6/6"			
4		Silty sand Calcareous Munsell = 2.5y/5/3	SM Core #2 4 ft.- 5 ft.	4/6"	Base core = Bkg. Top core = Bkg.		
5		2 ft. core.		3/6"			
6		Augerings = wet, silty sand		4/6"	Base core = Bkg.		
7				4/6"			
8		Silty, clayey sand Calcareous Munsell = 2.5y/4/3	SM Core #3 8 ft.- 9 ft.	3/6"	Top core = 1.8 ppm Diesel smell		
9				3/6"			
10		Silty, clayey sand Calcareous White calcareous flecks Munsell = 2.5y/5/2 T.D. 10 ft.	SM Core #4 9 ft.- 10 ft.	3/6"	Diesel smell Base core = 8.6 ppm		
				4/6"			



Bore Log

Project Site CAMDS

Site ID 13-FS-21 0930 Auger Size 8" x 4 1/4" 0953

Date/Time Started 6 MAY 1991 0930 Date/Time Completed 6 MAY 1991 0953

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. LAYNE Driller Kevin Cross


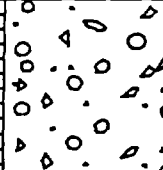
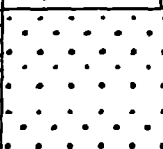
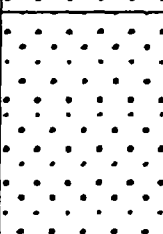
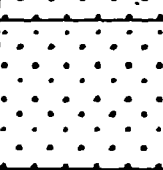
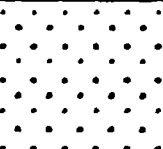
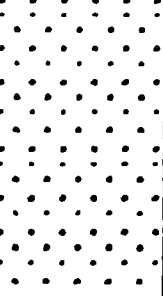
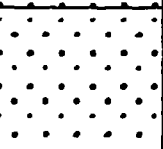
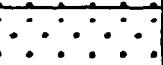
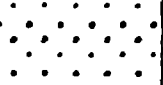

Drilling Type Auger Sample Type Split Spoon No. of Samples 4

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS			Boring: 13-FS-21			Page: 1 of 2					
Driller & Company: Kevin Cross			LAYNE								
Geologist/Logger & Company: John A. Burger CNES			Signature: John A. Burger								
Date Boring Started: 6 MAY 1991			Completed: 6 MAY 1991								
Water Levels (From Ground Surface)			N/A			Drilling Rig: #405					
First Encountered:			Date:								
While Drilling:			Date:								
At Boring Completion:			Date:								
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
		Start	End	Start	End			Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning						<u>Location Sketch:</u> Approx. North 					

BORING LOG

Project: CAMDS		TEAD-S		Boring: B FS-21-91		Page: 2 of 2		
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0930 hr. Stop: 0953 hr. HNu background: = 0.4 ppm			
0		Asphalt Road base			HNu = Bkg.			
1		Silty sand Calcareous Munsell = 10yr/4/4	SM	Core #1 1.4 ft.- 2.4 ft.				3/6"
2								4/6"
3		Augerings = silty sand						
4		Silty sand Calcareous Quartzose Munsell = 10yr/4/2	SM	Core #2 4 ft.- 5 ft.				2/6"
5								2/6"
6		Augerings = wet silty sand						
7								
8		Clayey, silty sand Calcareous Munsell = 2.5y/5/3	SM	Core #3 8 ft.- 9 ft.				2/6"
9								3/6"
10		Clayey silty sand Calcareous Munsell = 2.5y/5/3 T.O. 10 ft.	SM	Core #4 9 ft.- 10 ft.	4/6"	HNu on core = 6.0 ppm		
					6/6"	Diesel smell		



Bore Log

Project Site CAMDS

Site ID 13-FS-22 Auger Size 8' x 1 1/4'

Date/Time Started 6 MAY 1991 1028 hr Date/Time Completed 6 MAY 1991 1052 hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. LAYNE Driller Kevin Cross



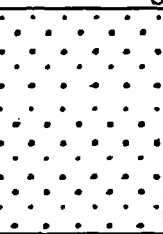
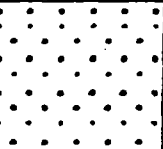
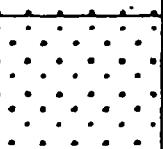
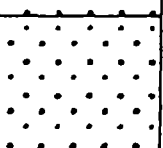
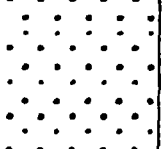
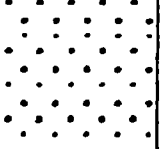
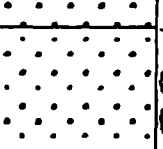
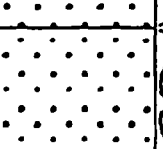

Drilling Type Auger Sample Type Split Spoon No. of Samples 4

Geologist/Logger & Co. John A. Burger CNE

BORING LOG GENERAL DATA

Project: CAMDS		Boring: 13-FS-22		Page: 1 of 2					
Driller & Company: Kevin Cross		LAYNE							
Geologist/Logger & Company: John A Burger		Signature: <i>John A Burger</i>							
Date Boring Started: 6 MAY 1991		Completed: 6 MAY 1991							
Water Levels (From Ground Surface)		Drilling Rig: # 405							
First Encountered:		Date:							
While Drilling:		Date:							
At Boring Completion:		Date:							
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:					Location Sketch:				
Abbr Meaning					<p style="text-align: right;">Approx ↑ N</p> <p style="text-align: right;">Oil tanks are due north of the Maintenance Shop Bldg</p> <p style="text-align: right;">13-FS-22</p>				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 FS-22-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1028 hr. Stop: 1052 hr. HNu background: = 0.4 ppm		
0		Asphalt Road base			18" core sample interval as shown HNu = Bkg. HNu = Bkg. Diesel smell HNu on core at 10 ft. = 6.0 ppm		
1							
2		Slightly silty sand silty sand Calcareous Munsell = 2.5y/5/3	Core #1 1.4 ft.- 2.9 ft.	3/6" 5/6" 4/6"			
3		Augerings = slightly silty clayey sand					
4		Silty clayey sand clayey sand stems Calcareous Munsell = 10yr/5/3	Core #2 4 ft.- 5 ft.	1/6" 3/6"			
5		Augerings = clayey silty sand					
6							
7							
8		Slightly clayey silty sand Calcareous Munsell = 2.5y/5/3	Core #3 8 ft.- 9 ft.	3/6" 2/6"			
9		Core #4 same as #3 except color is Munsell = 2.5y/5/2	Core #4 9 ft.- 10 ft.	3/6" 4/6"			
10		T.D. 10 ft.					



Bore Log

Project Site Tooele Army Depot - South Area CAMDS Facility

Site ID 13-FS-23 Auger Size 8 (7 5/8) x 4 1/4 "

Date/Time Started 13 May 1991 / 0900 Date/Time Completed 13 May 1991 / 0922


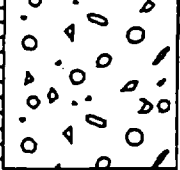
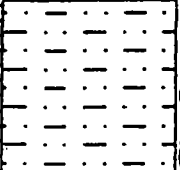
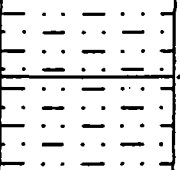
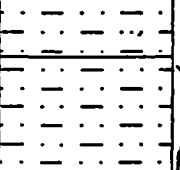
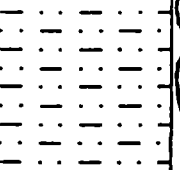
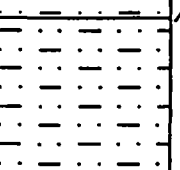
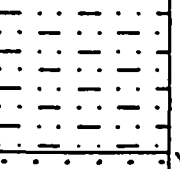
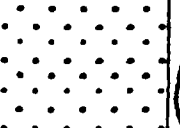
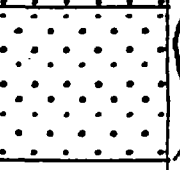
Surface Elevation (optional) N/A Water Level (from Ground Surface) N/A

Completion Depth 10 ft Drilling Co. Layne Envir Driller Kevin Cross

Drilling Type Auger Sample Type SPLIT SPOON No. of Samples 4

Geologist/Logger & Co. John Ludlam CNES

BORING LOG

Project: CAMDS TEAD-S		Boring: 13 FS-23-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0900 hr. Stop: 0922 hr. HNu background: = 0.2 ppm
0		Asphalt road base gravel			
1		Sandy silt with minor clay Calcareous Munsell = 2.5y/4/4	Core #1 1.4 ft - 3 ft.	2/6"	Top core = Bkg.
2				2/6"	
3				6/6"	Base core = Bkg.
4		Same as 1.4 ft. to 3.0 ft.	Core #2 4 ft - 6 ft.	3/6"	Top core = Bkg.
5				3/6"	
6		Trace smell of diesel fuel Munsell = 2.5y/4/3		3/6"	Base core = Bkg.
7				6/6"	
8		Sandy silt grading to a fine-grained silty sand near bottom Contains organic debris Munsell 8 ft. - 9 ft. = 2.5y/4/3 Munsell 9 ft. - 10 ft = 5y/4/1 T.D. 10 ft.	Core #3 8 ft - 9 ft.	3/6"	Top core = 1.4 ppm
9				4/6"	
10			Core #4 9 ft - 10 ft.	5/6"	Base core = 7 ppm
				16/6"	



Bore Log

Project Site CAMDS TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-FS-24 Auger Size 6 5/8" * 4 1/4"

Date/Time Started 1 JUNE 1991 1057 hr Date/Time Completed 1 JUNE 1991 1125 hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) NONE

Completion Depth 10 ft Drilling Co. LAYNE Driller Kevin Cross



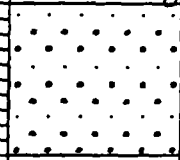
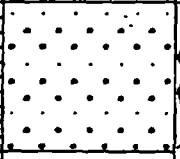
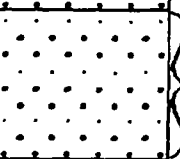
Drilling Type Auger Sample Type Split Spun No. of Samples 4

Geologist/Logger & Co. John A. Burger CNES.

BORING LOG GENERAL DATA

Project: CAMDS			Boring: 13-FS-24			Page: 1 of 1			
Driller & Company: Kevin Cross			LAYNE						
Geologist/Logger & Company: John A. Burger			CNES			Signature: <i>John A. Burger</i>			
Date Boring Started: 1 June 1991			Completed: 1 June 1991						
Water Levels (From Ground Surface)			Drilling Rig: 405						
First Encountered:			Date:						
While Drilling: NONE			Date:						
At Boring Completion:			Date:						
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u> 				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 FS-24-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1057 hr. Stop: 1125 hr. HNu background: = 0.1 ppm		
0		Asphalt					
		Road base					
1		Silty sand moist fine-grained Calcareous Munsell = 2.5y/5/4	SM	Core # 1 1 ft.- 2 ft.	2/6"	Top core = Bkg.	
2						Base core = Bkg.	
3		Augerings = silty sand wet					
4		Same as 1 ft. 2 ft.	SM	Core # 2 4 ft.- 5 ft.	1/6"	Top core = Bkg.	
5						Base core = Bkg.	
6		Augerings = silty sand					
7							
8		Slightly silty sand soft, to dense dry, fine-to medium-grained Munsell = 2.5y/5/2	SM	Core # 3 8 ft.- 9 ft.	7/6"	Top core = Bkg.	
9						Base core = Bkg.	
		Same as 8 ft - 9 ft.			31/6"	Hard pounding for core tube	
10		T.D. 10 ft.				33/6"	Base core = Bkg.



Bore Log

Project Site CAMDS TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-FS-25 Auger Size 6 5/8" x 4 1/4"

Date/Time Started 1 June 1991 1315^{hr} Date/Time Completed 1 June 1991 1358^{hr}

Surface Elevation (optional) _____ Water Level (from Ground Surface) NONE

Completion Depth 10' Drilling Co. LAYNE Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 4

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

JAB

Project: CAMDS	Boring: 13-FS- ²⁵ 24 Page: 1 of 2
Driller & Company: Kevin Cross	Layne
Geologist/Logger & Company: John A. Burger	Signature: <i>John A. Burger</i> <small>CNES</small>
Date Boring Started: June 1991	Completed: June 1991
Water Levels (From Ground Surface) NONE	Drilling Rig: #405
First Encountered:	Date:
While Drilling: None while drilling -	Date:
(Should have had water according to nearby wells!)	

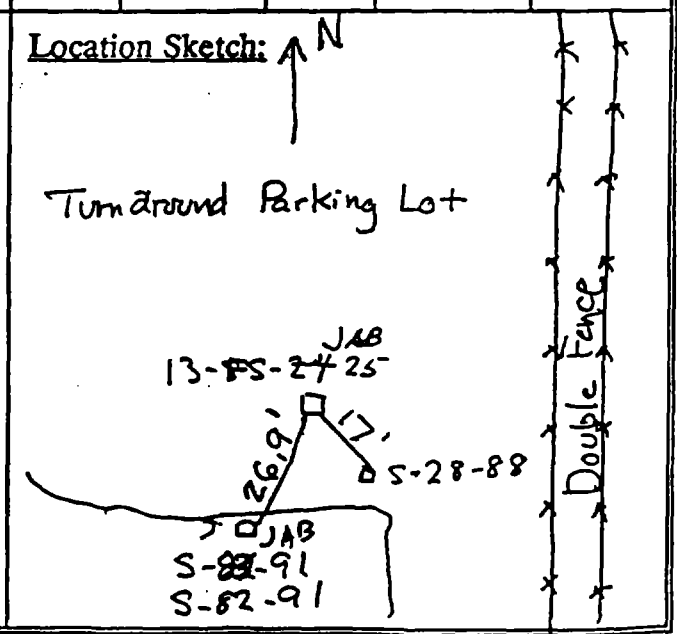
At Boring Completion:	Date:
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Drilling Shifts:


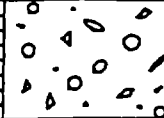
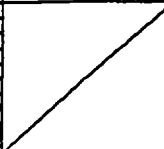
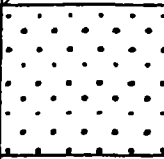
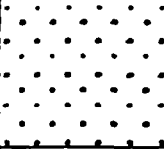
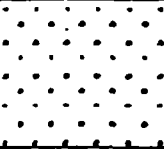
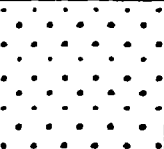
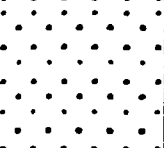
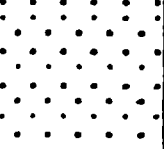
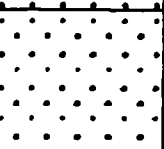
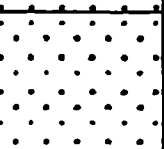
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End

Abbreviations:

Abbr	Meaning



BORING LOG

Project: CAMDS		TEAD-5	Boring: 13-FS-25 -91		Page: 2 of 2
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count. & Recovery	Drilling Data Start: 1315 hr. Stop: 1356 hr. H _{Nu} background: = 0.2 ppm.
0		Asphalt			
		Road base			
1		No recovery	Core #1 1'-2'	7/6" 6/6"	
2		Silty sand SM Fine-to medium-grained	Core #1 2'-3'	3/6" 5/6"	Top core = Bkg.
3		Calcareous Munsell = 2.5y/4/3 Augerings = silty sand wet, soft			Base core = Bkg.
4		Augerings = silty sand; fine-to medium- grained, soft, SM Calcareous	Core #2 4 ft.- 5 ft.	1/6" 1/6"	Top core = Bkg.
5		Spotty darker brown stain Slight H ₂ S odor Munsell = 2.5/4/3			Base core = Bkg.
6		Augerings = silty sand, fine-to medium-grained			
7					No water in hole at 10 ft.
8		Slightly silty sand SM Fine-to medium-grained Munsell = 2.5y/5/3	Core #3 8 ft.- 9 ft.	4/6" 4/6"	H _{Nu} top of core = 1.4 ppm
9		Slightly silty sand SM Fine-to medium-grained Darker than 8'-9' Calc. Munsell = 5y/5/2 T.O. 10 ft.	Core #4 9 ft.- 10 ft.	5/6" 3/6"	Core has diesel odor. No water in hole at 10".
10					H _{Nu} base of core = 1.6 ppm



Bore Log

Project Site CAMDS TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-FS-26-91 Auger Size 6 5/8" x 4 1/4"

Date/Time Started 13 July 1991 1605hr Date/Time Completed 13 July 1991 1638hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) NONE (?)
(while drilling)

Completion Depth 10 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spore No. of Samples 4

Geologist/Logger & Co. JOHN A. BURGER CNES

13 July 1991

BORING LOG GENERAL DATA

Project: CAMDS		STEAD		Boring: V3-FS-26-91		Page: 1 of 2			
Driller & Company: Kevin Cross				Layne					
Geologist/Logger & Company: John A. Burger				Signature: <i>John A. Burger</i>					
Date Boring Started: 13 July 1991				Completed: 13 July 1991					
Water Levels (From Ground Surface)				Drilling Rig: # 405					
First Encountered:				Date:					
While Drilling: NONE				Date: 13 July 1991					
At Boring Completion: NONE				Date: 13 July 1991					
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:					Location Sketch:				
Abbr Meaning									

BORING LOG

Project: CAMDS		TEAD-5		Boring: 13 FS-26-91		Page: 2 of 2		
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data			
0		Clayey, sandy silt soft, dry Calcareous Munsell = 2.5/7/3 Color change	ML	7/6"	Start: 1605 hr. Stop: 1638 hr. HNU background: = 0.6 ppm			
1								Core # 1 0 ft. - 2 ft.
2		Clayey, sandy silt soft, slightly moist Calcareous Munsell = 10yr/5/6	ML	8/6"	Base core = Bkg.			
3								Augering = same as 1 ft. - 2 ft.
4		Clayey, sandy silt fine-grained moist diesel smell; roots and trace iron staining trace white veinlets and blebs Calcareous Munsell = 2.5yr/4/3	ML	Core # 2 4 ft. - 6 ft.	Top core = 1.0 ppm diesel smell in core Base core = 3.5 ppm No water in hole while augering HNU = 4.0 ppm in hole while auger is at 8 ft.			
5								3/6"
6								2/6"
7								4/6"
8		Sandy silt soft Calcareous Munsell = 2.5y/4/3	ML	Core # 3 8 ft. - 9 ft.	Top core = 11.8 ppm String diesel smell on core and in the hole.			
9								3/6"
10		Silty sand medium-grained, soft Calcareous Munsell = 2.5y/4/3 T. D. 10 ft.	SM	Core # 4 9 ft. - 10 ft.	3/6"	Base core = 28 ppm		



Bore Log

Project Site CAMDS TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-^{LF-JAB}~~BB-84~~-91 Auger Size 6 5/8" x 4 1/4"

Date/Time Started 23 July 1991 0920hrs Date/Time Completed 23 July 1991 0953hrs

Surface Elevation (optional) NA Water Level (from Ground Surface) 5.3 ft

Completion Depth 11 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 3

Geologist/Logger & Co. John A. Burger CMES

BORING LOG GENERAL DATA

JB

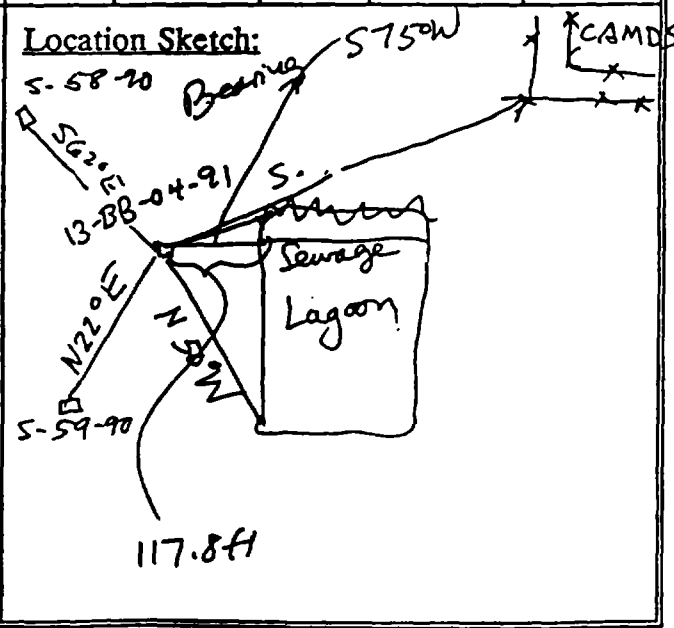
Project: CAMDS	STEAD	Boring: 13- BB-04-91 ^{LP-01}	Page: 1 of 2
Driller & Company: Kevin Cross Layne			
Geologist/Logger & Company: John A. Burger <i>AVES</i> Signature: <i>John A. Burger</i>			
Date Boring Started: 23 July 1991		Completed: 23 July 1991	
Water Levels (From Ground Surface)		Drilling Rig: #405	
First Encountered:		Date:	
While Drilling:		Date:	
At Boring Completion:		5.3 ft Date: 23 July	

Drilling Shifts:

Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End

Abbreviations:
 Abbr Meaning

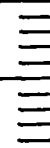
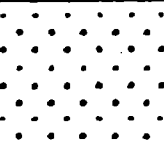
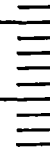
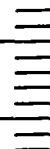
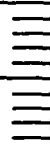
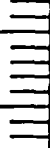
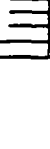
Approx N
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BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 LF-01-91		Page: 2 of 3	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
						Start: 0920 hr. Stop: 0953 hr. HNu background: = 0.2 ppm	
0		Slightly sandy, clayey silt soft Calcareous Munsell = 10yr/5/4	ML	Core # 1 0 ft.- 2 ft.	8/6"	Top core = Bkg.	
1					9/6"	Base core = Bkg.	
2					7/6"		
3					7/6"		
		Augerings = same as 0 ft. - 2 ft. but grades to sandier material by 4 ft. deep.					
4		Clayey sandy silt soft, moist Calcareous Munsell = 10yr/5/6	ML	Core # 2 4 ft.- 6 ft.	4/6"	Top core = Bkg.	
5					4/6"	Water at 5.3 ft. after hole was drilled.	
6		Silty, clayey sand soft, moist Calcareous Munsell = 5y/6/2	SM		3/6"	Base core = Bkg.	
7					8/6"		
8					Augerings = same as 5.2 ft. - 6 ft.		
9		Slightly silty sand trace clay, soft, wet sand is fine-grained Moderately calcareous Munsell = 5y/6/2	SM	Core # 3 9 ft.- 11 ft.	4/6"	Top core = Bkg.	
10					8/6"	Base core = Bkg.	

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 LF-01-91		Page: 3 of 3
Depth/ Eval. (Ft.)	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
10  11	 T.D. 11 ft.		Core # 3 9 ft.- 11 ft.	7/6" 14/6"	Base core = 8kg.
12  13  14  15  16  17 18 19 20					



Bore Log

Project Site CAMDS TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-LF02-91 Auger Size 6 5/8" * 4 1/4

Date/Time Started 23 July 1991 1108 Date/Time Completed 23 July 1991 1136

Surface Elevation (optional) NA Water Level (from Ground Surface) 6.1 ft

Completion Depth 11 ft Drilling Co. Layne Driller Kevin Cross

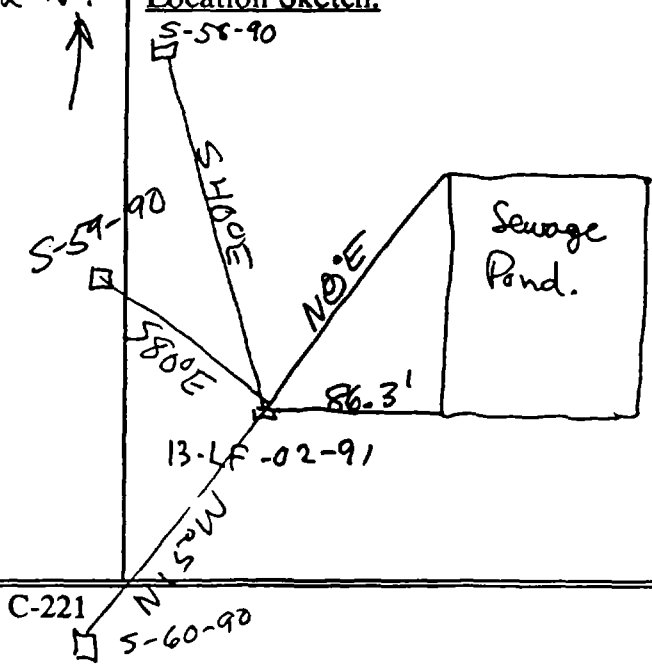
Drilling Type Auger Sample Type Split Spun No. of Samples 3

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS		STEAD Boring: 13-LF-02-91 Page: 1 of 2									
Driller & Company: Kevin Cross Layne											
Geologist/Logger & Company: John A. Burger CVES Signature: <i>John A. Burger</i>											
Date Boring Started: 23 July 1991					Completed: 23 July 1991						
Water Levels (From Ground Surface)						Drilling Rig: #405					
First Encountered:						Date:					
While Drilling:						Date:					
At Boring Completion: 6.1 ft						Date: 23 July 1991					
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
		Start	End	Start	End			Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning						<u>Location Sketch:</u> 					

Approx. N. ↑





Bore Log

Project Site Tooele Army Depot- South Area CAMDS Facility

Site ID 13 PP-01 Auger Size 7 5/8 x 4 1/4 "

Date/Time Started 13 May 1991/1330 Date/Time Completed 13 May 1991/1405

Surface Elevation (optional) N/A Water Level (from Ground Surface) N/A

Completion Depth 10 ft. Drilling Co. Layne Envir. Driller Kevin Cross

Drilling Type Hollow-stem Auger Sample Type SPLIT-SPOON No. of Samples 3

Geologist/Logger & Co. John Ludlam CNES

BORING LOG GENERAL DATA

Project: <u>STEAD - CAMDS Facility Boring: 13PP-01</u> Page: 1 of 2															
Driller & Company: <u>Kevin Cross Layne Environmental</u>															
Geologist/Logger & Company: <u>John Ludlam</u> Signature: <u>[Signature]</u>															
Date Boring Started: <u>13 May 1991 1330</u> Completed: <u>13 May 1991 1405</u>															
Water Levels (From Ground Surface)					Drilling Rig: <u>405</u>										
First Encountered:					Date:										
While Drilling:					Date:										
At Boring Completion:					Date:										
Drilling Shifts:															
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift					
		Start	End	Start	End			Start	End	Start	End				
<u>Abbreviations:</u> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Abbr</th> <th style="text-align: left;">Meaning</th> </tr> </thead> <tbody> <tr> <td colspan="2" style="height: 100px;"></td> </tr> </tbody> </table>						Abbr	Meaning			<u>Location Sketch:</u> 					
Abbr	Meaning														

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 PP-01		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
						Start: 1330 hr. Stop: 1405 hr. HNU background: =0.2 ppm	
0	△ ○ ● □ ○ ○	Gravel - surface (0 - 2 in.) ML	#1 Composite 0 ft. - 2 ft.	5/6"	Top core = Bkg.		
1		Clayey silt grading to a sandy silt with minor clay. Calcareous Munsell = 2.5y/5/3		8/6"			
2				10/6"	Base core = Bkg.		
3				17/6"			
4			#2 Composite 4 ft. - 6 ft.	10/6"	Top core = Bkg.		
5		Increasing clay content Munsell = 5y/6/3		12/6"			
6		Green clay with high plasticity. Iron stained at top. Contains pockets of calcite and gypsum with some well-formed crystals. Bottom contains fossil fragments.	CL	16/6"	Base core = Bkg.		
7			20/6"				
8		Clay, plastic Sand stringer at 8.5 ft. Munsell = 5y/6/3	#3 Composite 8 ft. - 10 ft.	10/6"	Top core = Bkg.		
9				10/6"			
10		Total depth 10 ft.		10/6"	Base core = Bkg.		



Bore Log

Project Site STEAD - CAMDS Facility

Site ID 13 PP-02 Auger Size 7 5/8 x 4 1/4 "

Date/Time Started 13 May 1991/1420 Date/Time Completed 13 May 1991/ 1518

Surface Elevation (optional) N/A Water Level (from Ground Surface) N/A

Completion Depth 10 ft. Drilling Co. Layne Env. Driller Kevin Cross

Drilling Type Hollow-Stem Auger Sample Type Split-Spoon No. of Samples 3

Geologist/Logger & Co. John Ludlam CNES

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 PP-02		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1420 hr. Stop: 1518 hr. HNu background: = 0.2 ppm		
0		Gravel - surface (0-2 in.) only ML Clayey silt with minor organic material Calcareous Munsell = 2.5y/5/3	Core #1 0 ft.- 2 ft.	4/6"	Top core = Bkg. VOA from 0 - 5 ft. Base core = Bkg.		
1						8/6"	
2						10/6"	
3		increasing clay content					
4							
5							
6		Clayey silt Calcareous Green clay with high plasticity CL only slightly calcareous	Core #2 4 ft.- 6 ft.	4/6"	Top core = Bkg. VOA from 8 ft - 9 ft. Base core = Bkg.		
7						4/6"	
8						7/6"	
9		Note: Pieces of angular gravel in bottom of core at 6 ft. Clay CL Vertical fracture from 8 ft. to 10 ft. with black staining and gypsum filling. only slightly calcareous Munsell = 5y/6/3	Core #3 8 ft.- 10 ft.	8/6"			
10					6/6"		
10					11/6"		
10		14/6"					
10		20/6"					
10		T.D. 10 ft.					



Bore Log

Project Site STEAD - CAMDS Facility

Site ID 13 PP-03 Auger Size 7 5/8 x 4 1/4 "

Date/Time Started 13 May 1991 / 1000 Date/Time Completed 13 May 1991/1035

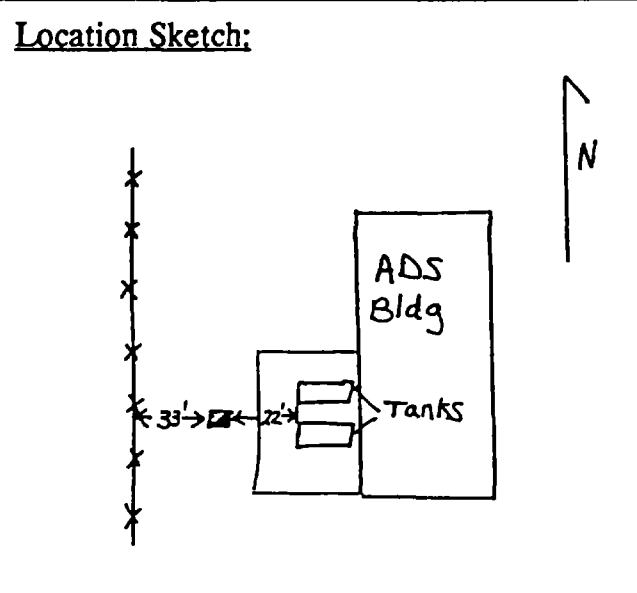
Surface Elevation (optional) N/A Water Level (from Ground Surface) N/A

Completion Depth 10 ft. Drilling Co. Layne Env. Driller Kevin Cross



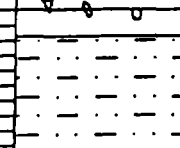
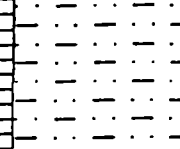
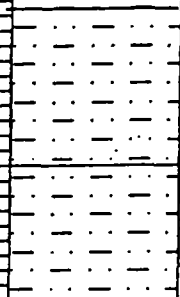
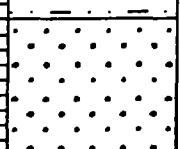
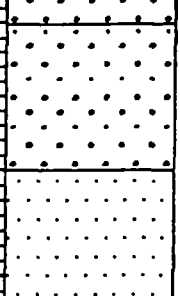
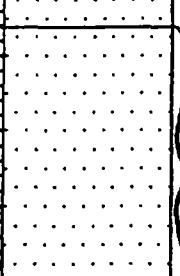
Drilling Type Hollow-Stem Auger Sample Type SPLIT-SPOON No. of Samples 3

Geologist/Logger & Co. John Ludlam CNES

BORING LOG GENERAL DATA

Project: <i>STEAD - CAMDS Facility</i> Boring: <i>13 PP-03</i> Page: <i>1 of 2</i>									
Driller & Company: <i>Kevin Cross</i> <i>Layne Environmental</i>									
Geologist/Logger & Company: <i>John Ludlam</i> CNES Signature: <i>John Ludlam</i>									
Date Boring Started: <i>13 May 1991 1000</i> Completed: <i>13 May 1991 1035</i>									
Water Levels (From Ground Surface)					Drilling Rig:				
First Encountered:					Date:				
While Drilling:					Date:				
At Boring Completion:					Date:				
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u> 				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 PP-03		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1000 hr. Stop: 1035 hr. HNU background: = 0.2 ppm		
0		Asphalt					
		Road base					
1		Clayey silt with minor organic debris Calcareous Munsell = 10yr/10/3	ML	Core #1	4/6"	Top core = Bkg.	
					3/6"		
2		Grades to a sandy silt with minor clay Calcareous Munsell = 10yr/3/2		1 ft.- 3 ft.	4/6"	Base core = Bkg.	
					4/6"		
3		Fine-grained, silty sand. Calcareous Munsell = 2.5y/6/3	SM	Core #2	2/6"	Top core = Bkg.	
4					3/6"		
5		Grades to a sand with fewer fines		4 ft.- 6 ft.	3/6"	Base core = Bkg.	
					4/6"		
6		Clean, fine-grained sand Munsell 2.5y/6/2	SW	Core #3	12/6"	Top core = Bkg.	
7					22/6"		
8		Clean, fine-grained sand Munsell 2.5y/6/2	SW	8 ft.- 10 ft.	26/6"	Base core = Bkg.	
9					31/6"		
10		T.D. 10 ft.					



Bore Log

Project Site CAMDS TOOELE ARMY DEPOT SOUTH AREA

Site ID 13 US-03-91 Auger Size 6 5/8" x 4 1/4"

Date/Time Started 31 MAY 1991 1515 Date/Time Completed 31 MAY 1991 1500

Surface Elevation (optional) _____ Water Level (from Ground Surface) NONE

Completion Depth 10 ft Drilling Co. LAYNE Driller KEVIN CROSS

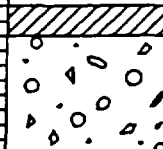
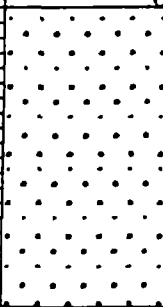
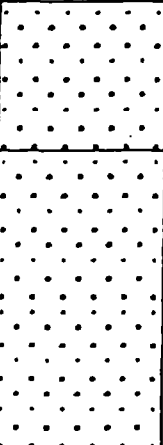
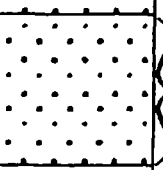
Drilling Type AUGER Sample Type SPLIT SPON No. of Samples 3

Geologist/Logger & Co. JOHN A. BURGER CNES.

BORING LOG GENERAL DATA

Project: CAMDS		Boring: ¹³⁻ US-03-		Page: 1 of 2							
Driller & Company: Kevin Cross				LAYNE							
Geologist/Logger & Company: JOHN A. BURGER				Signature: <i>John A. Burger</i>							
Date Boring Started: 31 MAY 1991			Completed: 13 MAY 1991								
Water Levels (From Ground Surface)		NONE		Drilling Rig: 405							
First Encountered:			Date:								
While Drilling:			Date:								
At Boring Completion:				Date:							
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning						<u>Location Sketch:</u> <div style="text-align: right; margin-right: 20px;">Approx N ↑</div> <p style="text-align: center;">13-US-03</p> <p style="text-align: center;">Double Fence</p>					

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 US-03-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1515 hr. Stop: 1544 hr. H _{Nu} background: = .02 ppm		
0		Asphalt Road base					
1		Silty sand, fine-to medium- grained Calcareous Munsell = 2.5y/5/3	SM		Top core = Bkg.		
				Core #1 1 ft.- 3 ft.	4/6" 6/6" 4/6" 5/6"		
2						Base core = Bkg.	
3							
4		Silty sand, fine-to medium- grained White calcite blebs trace organic matter Calcareous Munsell 2.5y/6/3	SM		Top core = Bkg.		
				Core #2 4 ft.- 6 ft.	3/6" 6/6" 7/6" 10/6"		
5						Base core = Bkg.	
6							
7		Augerings = silty sand					
8							
9		Sand, slightly silty, soft, fine to medium-grained Calcareous Munsell = 5y/5/2 T.D. 10 ft.	SM		Top core = Bkg.		
				Core #3 9 ft.- 10 ft.	5/6" 9/6"	Base core = Bkg.	
10							



Bore Log

Project Site CAMDS T88ELE ARMY DEPOT SOUTH AREA

Site ID ¹³⁻US-04-91 Auger Size 6 5/8" *4 1/4"

Date/Time Started 31 MAY 1991 1015hr Date/Time Completed 31 MAY 1991 1036hr

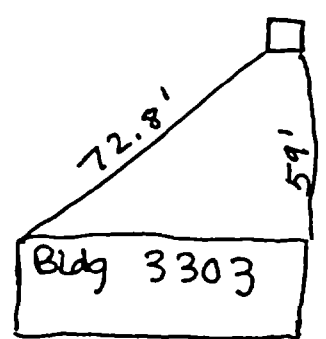
Surface Elevation (optional) _____ Water Level (from Ground Surface) NONE

Completion Depth 10' Drilling Co. LAYNE Driller Kevin Cross



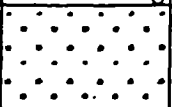
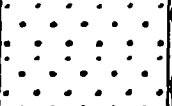


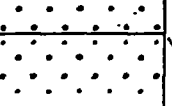
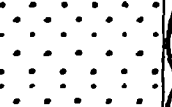
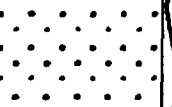
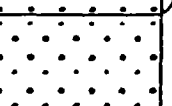
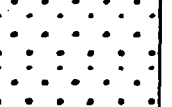
Drilling Type Auger Sample Type Split Spun No. of Samples 3

Geologist/Logger & Co. John A. Burger CNE

BORING LOG GENERAL DATA

Project: <u>CAMDS</u>		Boring: <u>13-US-04</u> Page: 1 of 2							
Driller & Company: <u>Kevin Cross</u>		<u>Layne</u>							
Geologist/Logger & Company: <u>John A. Burger</u>		Signature: <u>John A. Burger</u>							
Date Boring Started: <u>31 May 1991</u>		Completed: <u>31 May 1991</u>							
Water Levels (From Ground Surface) <u>NONE</u>		Drilling Rig: <u>405</u>							
First Encountered:		Date:							
While Drilling:		Date:							
At Boring Completion:		Date:							
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u> <u>Approx N</u> ↑ 13-US-04 				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 US-04-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1015 hr. Stop: 1036 hr. H _{Nu} background: = 0.4 ppm		
0		Asphalt Road base			Auger 0 ft. - 1 ft.		
1		Silty sand, dry, soft fine-to medium-grained Calcareous White calcite blebs Munsell = 2.5y/5/3	SM		Top core = Bkg.		
2					Core #1 1 ft.- 3 ft.	4/6" 5/6"	90% Recovery
3		Augerings = none					
4		Silty sand, dry, soft fine-to medium-grained Calcareous White calcite blebs Munsell = 2.5y/5/3	SM		Top core = Bkg.		
5					Core #2 4 ft.- 6 ft.	2/6" 4/6" 3/6" 4/6"	Geotechnical samples taken
6		Augerings = silty sand, dry, soft fine-to medium-grained Calcareous White calcite blebs Munsell = 2.5y/5/3					
7		Silty sand, trace calcite filled 0.5 in. dia vugs. fine grained Calcareous. hard, dry. Munsell = 2.5y/5/2 T.D. 10 ft.	SM		Very soft drilling		
8					Core #3 9 ft.- 10 ft.	6/6" 13/6"	Top core = Bkg.
9							
10							



Bore Log

Project Site STEAD CAMPS TOOLE ARMY DEPOT SOUTH AREA

Site ID B-US-05-91 Auger Size 6-5/8" X 4-1/4"

Date/Time Started 13 July 1991 1449 Date/Time Completed 13 July 1991 1505


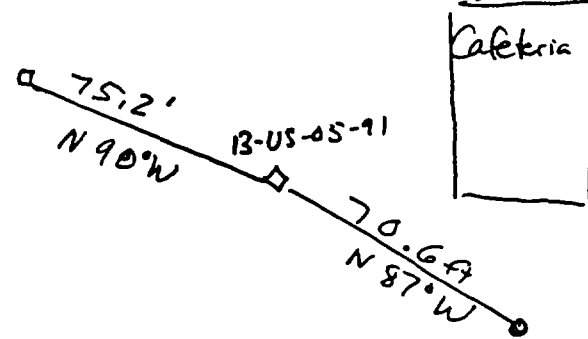
Surface Elevation (optional) _____ Water Level (from Ground Surface) MNE

Completion Depth 4 ft Drilling Co. Layne Driller Kevin Cross

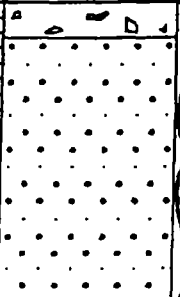
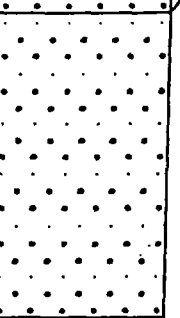
Drilling Type Auger Sample Type Split Spun No. of Samples 1

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS		STEAD Boring: 13-US-05-91		Page: 1 of 2					
Driller & Company: Kevin Cross		Layne							
Geologist/Logger & Company: John A. Burger		CVES Signature: <i>John A. Burger</i>							
Date Boring Started: 13 July 1991		Completed: 13 July 1991							
Water Levels (From Ground Surface)		N/A		Drilling Rig:					
First Encountered:		Date:							
While Drilling:		Date:							
At Boring Completion:		NONE		Date:					
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:									
Abbr		Meaning							
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Approx N</p>  </div> <div style="width: 50%;"> <p>Location Sketch:</p>  </div> </div>									

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 US-05-91		Page: 2 of 2
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1449 hr. Stop: 1505 hr. HNu background: = 0.6 ppm
0		Rubble at 0 ft. - 0.2 ft.	Core # 1 0 ft.- 2 ft.	16/6"	Top core = Bkg.
1		Sand fine-grained Calcareous Munsell = 2.5/5/3		8/6"	
2		Augerings = same as 0 ft. - 2 ft.		7/6"	Base core = Bkg.
3				4/6"	
4		T.D. 4 ft.	Could not be cleared below 4 ft.		
5		No place in this crowded area is suitable for an offset boring.			
6					
7					
8					
9					
10					



Bore Log

Project Site CAMDS TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-US-06-91 Auger Size 6 5/8" x 4 1/4"

Date/Time Started 31 MAY 1991 1410 Date/Time Completed 31 MAY 1991 1430

Surface Elevation (optional) _____ Water Level (from Ground Surface) NONE

Completion Depth 10 Drilling Co. LAYNE Driller KEVIN CROSS


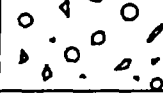
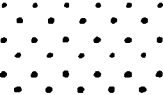
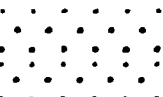

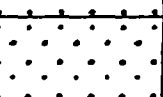
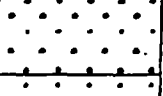
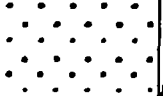
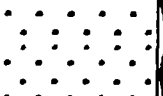



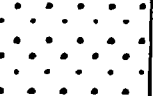
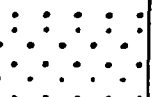
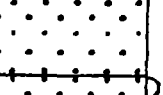
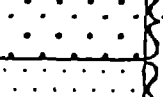
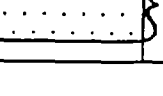
Drilling Type AUGER Sample Type SPLIT SPOON No. of Samples 3

Geologist/Logger & Co. JOHN A. BURGETT CNES

BORING LOG GENERAL DATA

Project: <u>CAMDS</u>				Boring: <u>13-US-06</u> Page: 1 of 2							
Driller & Company: <u>KEVIN CROSS</u>				<u>LAYNE</u>							
Geologist/Logger & Company: <u>JOHN A. BURGER</u>				Signature: <u>John A. Burger</u>							
Date Boring Started: <u>31 MAY 1981</u>				Completed: <u>31 MAY 1981</u>							
Water Levels (From Ground Surface) <u>NONE</u>				Drilling Rig: <u>405</u>							
First Encountered:				Date:							
While Drilling:				Date:							
At Boring Completion:				Date:							
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End		End
Abbreviations:						Location Sketch:					
Abbr Meaning						<div style="text-align: right;"> <u>APPROX N.</u> </div>					

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 US-06-91		Page: 2 of 2
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1410 hr. Stop: 1430 hr. HNu background: =0.2 ppm
0		Asphalt Road base			
1		Slightly silty sand, SM fine-to medium-grained, dry, soft, Calcareous Munsell = 2.5y/6/3	Core #1 1 ft.- 3 ft.	4/6"	Top core = Bkg.
2				6/6"	
3				6/6"	
4		Same as 1 ft. to 3 ft.		3/6"	Base core = Bkg.
5				3/6"	
6		Slightly silty sand, SM fine-to medium-grained, dry, soft, trace roots, trace calcareous blebs Calcareous Munsell = 2.5y/5/3	Core #2 4 ft.- 6 ft.	3/6"	Top core = Bkg.
7				3/6"	
8				3/6"	
9		Same as 4 ft. - 5 ft.		3/6"	Base core = Bkg.
10				3/6"	
11					Very soft drilling
12					
13		Silty sand, fine-grained Calcareous Munsell = 5y/4/2	Core #3 9 ft.- 10 ft.	6/6"	Top core = Bkg.
14				12/6"	
15		Sand, fine-grained with 2 in. angular clasts Calcareous SM Munsell = 2.5y/6/4 SP T.D. 10 ft.			Base core = Bkg.
16					



Bore Log

Project Site Tooele Army Depot- South Area - CAMDS

Site ID 13 US-07-91 Auger Size 6 ⁵/₈ x 4 ¹/₄ inch

Date/Time Started 31 May 1991 0920 Date/Time Completed _____

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10 ft. Drilling Co. Layne Env Driller Kevin Cross


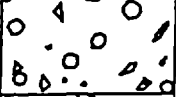
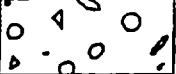
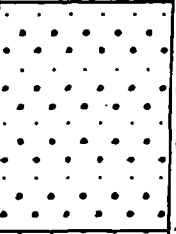
Drilling Type Hollow-Stem Sample Type SPLIT-SPOON No. of Samples 3

Geologist/Logger & Co. John Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS			Boring: 13US-07-91 Page: 1 of 2						
Driller & Company: Kevin Cross			Layne						
Geologist/Logger & Company: John A. Burger			CNES Signature: <i>John A. Burger</i>						
Date Boring Started: 31 May 1991			Completed: 31 May 1991						
Water Levels (From Ground Surface) None			Drilling Rig: 405						
First Encountered:			Date:						
While Drilling:			Date:						
At Boring Completion:			Date:						
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u>				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 US-07-91		Page: 2 of 3	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0920 hr. Stop: 0946 hr. HNU background: = 0.2 ppm		
0		Asphalt			Top core = Bkg.		
0.5		Road base					
1		Road base		4/6"	Base core = Bkg.		
1.5		Silty sand fine-to medium- grained proto-caliche veins Slightly calcareous Munsell = 2.5y/5/3	Core # 1 1 ft.- 3 ft.	5/6"			
2				6/6"			
2.5				6/6"			
3				75% recovery	Top core = Bkg.		
3.5		Augering = same as 1.5 ft. - 3 ft.					
4		Same as 1.5 ft.-3 ft. dry, moderately hard More calcareous Munsell = 2.5y/5/3	Core # 2 4 ft.- 6 ft.	4/6"	Base core = Bkg.		
4.5				4/6"			
5				3/6"			
5.5				6/6"	Top core = Bkg.		
6		Augering = silty sand, moist					
7					Top core = Bkg.		
8							
9		Clayey silty sand dry, relatively hard, trace calcite filled vugs Calcareous Munsell = 2.5y/5/2	Core # 3 9 ft.- 11 ft.	4/6"			
10				13/6"			

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 US-07-91		Page: 3 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
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Bore Log

Project Site CAMPS TOOELE ARMY DEPOT SOUTH AREA

Site ID 13-US-08-91 1102 Auger Size 6 5/8" x 4 1/4" 1136

Date/Time Started 31 MAY 1991 1102hr Date/Time Completed 31 MAY 1991 1130hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) NONE

Completion Depth 10 ft. Drilling Co. LAYNE Driller KEVIN CROSS




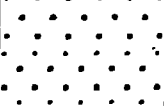
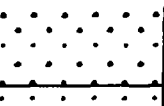
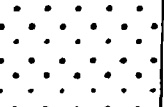
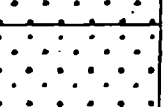

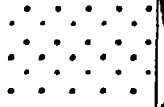

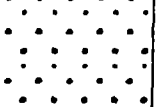
Drilling Type Auger Sample Type Split Sp. n No. of Samples 3

Geologist/Logger & Co. JOHN A. BURGER CNES

BORING LOG GENERAL DATA

Project: CAMDS		Boring: 13-US-08		Page: 1 of 2					
Driller & Company: Kevin Cross		LAYNE							
Geologist/Logger & Company: JOHN A. BURGETZ ^{CNES}		Signature: John A. Burger							
Date Boring Started: 31 MAY 1991		Completed: 31 MAY 1991							
Water Levels (From Ground Surface) NONE		Drilling Rig: 405							
First Encountered:		Date:							
While Drilling:		Date:							
At Boring Completion:		Date:							
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u> Approx N ↑ 				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 US-08-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1102 hr. Stop: 1130 hr. H _{Nu} background: = 0.2 ppm		
0		Asphalt Road base			Top core = Bkg.		
1		No recovery					
2		Silty sand SM fine-to medium-grained soft, dry, trace calcite blebs Calcareous Munsell = 2.5y/5/3	Core #1 1.5 ft.- to 3 ft.	4/6" 6/6" 75% Recovery	Base core = Bkg.		
3							
4					Top core = Bkg.		
5		Silty sand SM fine-to medium-grained, white calcite veins soft Calcareous Munsell = 5y/5/2	Core #2 4 ft.- 6 ft	2/6" 5/6" 4/6" 6/6"			
6					Base core = Bkg.		
7							
8					Top core = Bkg.		
9							
10		Clayey, silty sand, SM trace organic matter trace roots, white calcite blebs. Calcareous Munsell = 2.5y/4/2 T.D. 10 ft.	Core #3 9 ft.- 10 ft.	8/6" 20/6"	Base core = Bkg.		



Bore Log

Project Site CAMDS

Site ID 13-US-09-91 Auger Size 7 3/4" x 4 1/4"

Date/Time Started 30 APRIL 1991 1345^{hrs} Date/Time Completed 30 APRIL 1991 1458^{hrs}

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. LAYNE Driller KEVIN CROSS


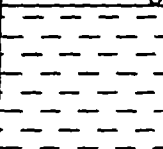
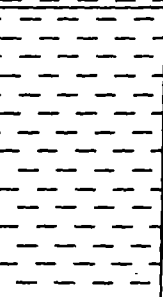
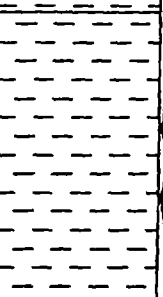
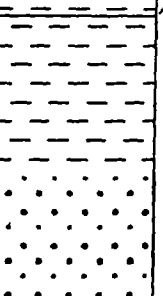

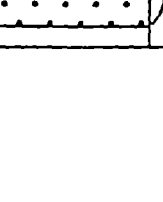
Drilling Type AUGER Sample Type SPLIT SPOON No. of Samples 3

Geologist/Logger & Co. LAYNE - JOHN A BURGER

BORING LOG GENERAL DATA

Project: <u>CAMDS</u>		Boring: <u>13-US-09</u>		Page: 1 of 2					
Driller & Company: <u>Layne Envir.</u>		Kevin Cross (Driller)							
Geologist/Logger & Company: <u>J. Burger CNES</u>		Signature: <u>John A. Burger</u>							
Date Boring Started: <u>30 April 91</u>		1345 Hrs		Completed: <u>30 April 91</u>					
				1458 Hrs					
Water Levels (From Ground Surface)		<u>None (N/A)</u>		Drilling Rig: # <u>405</u>					
First Encountered:		Date:							
While Drilling:		Date:							
At Boring Completion:		<u>NONE</u>		Date:					
<u>Drilling Shifts:</u>									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u>					<u>Location Sketch:</u>				
Abbr Meaning					<p>The sketch shows a rectangular building labeled 'Guard House' at the top. A fence line runs from the bottom right towards the top right. A 'Tank control' is indicated near the fence. A boring location '13-US-09' is marked with a small square. A distance of '29.0\'' is shown from the top left corner to the boring. A distance of '41.4\'' is shown from the bottom left corner to the boring. A distance of '700 FT' is shown from the top left corner to the 'Tank control' area.</p>				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 US-09-91		Page: 2 of 2		
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1345 hr. Stop: 1458 hr. HNu background: = 0.6 ppm			
0		Asphalt Road base			HNu = Bkg.			
1		Silty clay, moist Munsell = 2.5y/4/3	CL	Core #1 1 ft.- 2 ft.				3/6" 5/6"
2		Augerings = silty clay, moist, semi plastic						
3								
4		Clay, moist, trace silt Munsell = 2.5y/5/3	CL	Core #2 4 ft.- 6 ft.				4/6" 4/6" 9/6" 17/6"
5								
6								
7								
8			SM	Core #3 8 ft.- 10 ft.				6/6" 17/6" 20/6" 24/6"
9		Sand medium-grained, silty Calcareous Munsell = 2.5y/4/2						
10		T.D. 10 ft.			HNu = Bkg.			



Bore Log

Project Site CAMPS

Site ID 13-US-10-91 Auger Size 8" x 4 1/4"

Date/Time Started 30 APRIL 1991 1540hr Date/Time Completed 30 APRIL 1991 1640hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) NA ^{JAB.} 1640

Completion Depth 10' Drilling Co. LAYNE Driller Kevin Cross


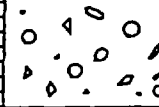
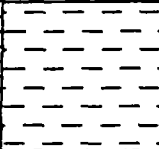
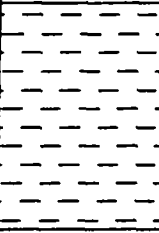
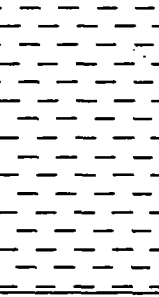
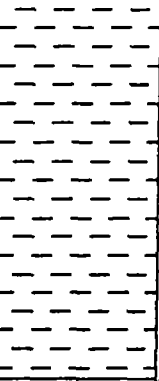
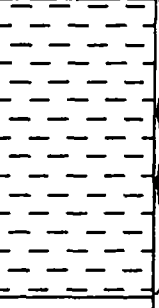
Drilling Type Auger Sample Type Split Spore No. of Samples 3

Geologist/Logger & Co. J. A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS		Boring: 13US-10		Page: 1 of 2									
Driller & Company: Kevin Cross Layne													
Geologist/Logger & Company: J.A. Burger CNES				Signature: <i>John A. Burger</i>									
Date Boring Started: 30 April 91		1540hr		Completed: 30 APRIL 1640hr									
Water Levels (From Ground Surface)			N/A		Drilling Rig:								
First Encountered:			Date:										
While Drilling:			Date:										
At Boring Completion:			Date:										
Drilling Shifts:													
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift					
	Start	End	Start	End		Start	End	Start	End				
<u>Abbreviations:</u> <table style="width: 100%; border: none;"> <tr> <td style="border: none;"><u>Abbr</u></td> <td style="border: none;"><u>Meaning</u></td> </tr> <tr> <td style="border: none;"> </td> <td style="border: none;"> </td> </tr> </table>					<u>Abbr</u>	<u>Meaning</u>			<u>Location Sketch:</u> <p>The sketch shows a 'Guard House' in the upper left. A 'Fence Corner' is marked with a dot. A line representing a fence extends from the corner, with a '44'' distance marked to the boring location '13-US-10'. A bearing of 'S67°E' is written below this line. Another line extends from the corner at a different angle, with a '4th fence post' marked. A north arrow is drawn in the upper right, and a distance of '29.1'' is marked near the boring location.</p>				
<u>Abbr</u>	<u>Meaning</u>												

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 US-10-91		Page: 2 of 2
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1540 hr. Stop: 1640 hr. HNU background: = 0.6 ppm
0		Asphalt Road base			
1		Silty clay to sandy clay plastic, moist Munsell = 2.5y/5/3	CL	Core #1 1 ft.- 2 ft.	2/6" 3/6"
2		Augerings = soft, plastic, moist clay to 3.5 ft.			Top = bkg. Base core = Bkg.
3		Silty clay slightly moist Calcareous Munsell = 2.5y/5/3	CL	Core #2 3.5 ft.- 5.5 ft.	3/6" 4/6" 25/6" 45/6"
4		Augerings = silty clay			Top = bkg. Base core = Bkg.
5		Clay, sandy, silty with 2.5 in limestone pebbles trace of caliche Very calcareous Munsell = 2.5y/4/2	CL	Core #3 8 ft.- 10 ft.	2/6" 6/6" 10/6" 1/6"
6		T.D. 10 ft.			Top core = Bkg. Base core = Bkg.
7					
8					
9					
10					



Bore Log

Project Site CAMDS

Site ID 13 US-11-91 Auger Size 8" x 4 1/4"

Date/Time Started 1 May 91 0915 Date/Time Completed 1 May 91 0945

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. LAYNE Driller Kevin Cross

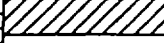

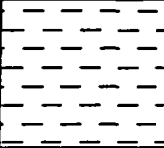
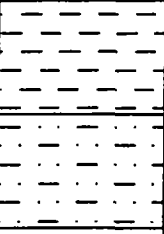
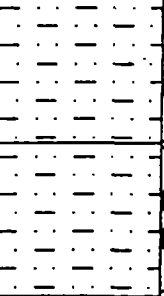
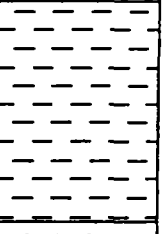
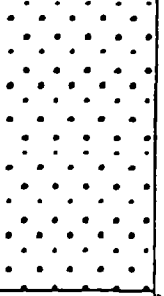
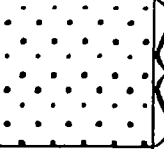
Drilling Type Auger Sample Type Split Spm No. of Samples 3

Geologist/Logger & Co. J & Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS		Boring: US-11 ¹³		Page: 1 of 2					
Driller & Company: Kevin Cross Layne									
Geologist/Logger & Company: J. A. Burger CNES Signature: <i>John A. Burger</i>									
Date Boring Started: 1 MAY 1991			Completed: 1 MAY 1991						
Water Levels (From Ground Surface) N/A				Drilling Rig: 405					
First Encountered: N/A			Date:						
While Drilling: N/A			Date:						
At Boring Completion:				Date:					
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u> 				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 US-11-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0915 hr. Stop: 0945 hr. HNu background: = 0.4 ppm		
0		Asphalt			HNu = Bkg.		
		Road base					
1		Silty clay, plastic, Calcareous Munsell = 2.5y/5/4	Core #1 1 ft.- 2 ft.	3/6"			
2				3/6"			
3		Not sampled	Core #2 3.5 ft.- 5.5 ft.	3/6"			
4				3/6"			
5		Clayey silt, slightly plastic Calcareous Munsell = 2.5y/5/3	12/6"	21/6"			
6		Augerings = silty clay with 0.5 in. pebbles					
7		Augerings = silty clay sand No pebbles					
8		Sand very fine-grained Munsell = 2.5y/5/3	Core #3 9 ft.- 10 ft.	4/6"			
9				18/6"			
10		T.D. 10 ft.			HNu = Bkg.		



Bore Log

Project Site CAMDS

Site ID 13US-12-91 Auger Size 8" X 4 1/4"

Date/Time Started 1 MAY 1991 1010 Hrs Date/Time Completed 1 MAY 1991 1040 Hrs

Surface Elevation (optional) 1' Water Level (from Ground Surface) NA

Completion Depth 10' Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 3

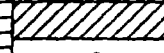
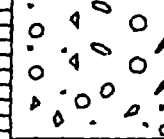
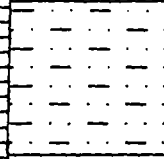
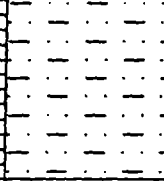

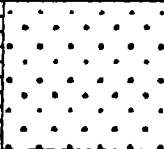
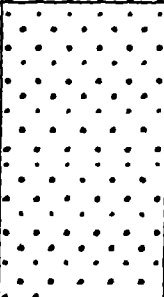
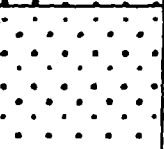
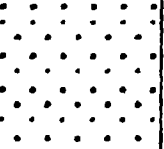
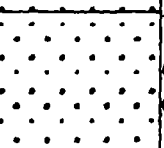
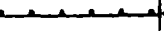
Geologist/Logger & Co. J.A. Burger CNES

Had to auger out hole prior to placing grout

BORING LOG GENERAL DATA

Project: CAMDS		Boring: 13US-12		Page: 1 of 2					
Driller & Company: Kevin Cross Layne									
Geologist/Logger & Company: J.A. Burger CNES Signature: <i>John A. Burger</i>									
Date Boring Started: 1 MAY 1991			Completed: 1 MAY 1991						
Water Levels (From Ground Surface)		N/A		Drilling Rig:					
First Encountered:			Date:						
While Drilling:			Date:						
At Boring Completion:			Date:						
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u> <p> The sketch shows a layout of the site. At the top is a 'Guard House'. Below it is a 'Concrete storage pad'. To the left of the pad is a 'Bearing Stone'. Below the bearing stone is a 'Filter Sand' area. A distance of 31.7' is marked between the bearing stone and the concrete pad. Another distance of 20.1' is marked between the concrete pad and the boring location. The boring is labeled 'US-13-12'. A signature 'Burger' is written at the bottom right of the sketch. </p>				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 US-12-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1010 hr. Stop: 1040 hr. HNu background: = 0.4 ppm		
0		Asphalt Road base			HNu = Bkg.		
1		Silt slightly clayey Calcareous Munsell = 2.5y/5/3	Core #1 1.3 ft.- 2.3 ft.	3/6"			
2				3/6"			
3		Augerings = clayey silt with trace of ash fragments.					
4		Silty sand very fine-grained Calcareous Munsell = 2.5y/5/3	Core #2 4 ft.- 5 ft.	6/6"			
5				12/6"			
6		Augerings = pebbly silty sand					
7							
8							
9		Silty sand trace 0.75 in. ls. pebbles, angular: quartz and feldspar Munsell = 2.5y/5/3 T.D. 10 ft.	Core #3 9 ft.- 10 ft.	14/6" 23/6"			
10							



Bore Log

Project Site CAMDS

Site ID B-US-13-91 Auger Size 8" x 4 1/4"

Date/Time Started 1 MAY 1991 1235 Hr Date/Time Completed 1 MAY 1991 1253 hr

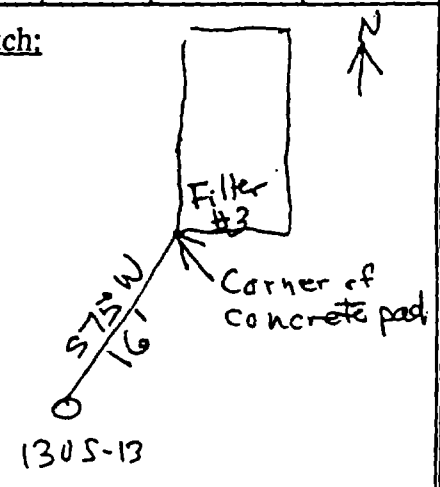
Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. Layne Driller Kevin Cross


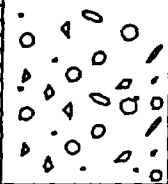
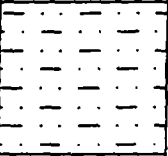
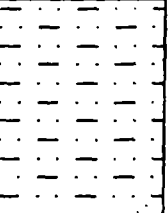
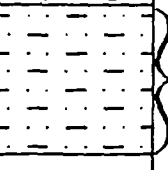
Drilling Type Auger Sample Type Split Spoon No. of Samples 3

Geologist/Logger & Co. John A. Burger John A. Burger CNES.

BORING LOG GENERAL DATA

Project: CAMDS		Boring: 13US-13		Page: 1 of 2									
Driller & Company: K. Cross		Layne											
Geologist/Logger & Company: John A. Burger		Signature: <i>John A. Burger</i>											
Date Boring Started: 1 MAY 1991		Completed: 1 May 1991											
Water Levels (From Ground Surface)		N/A		Drilling Rig:									
First Encountered:		Date:											
While Drilling:		Date:											
At Boring Completion:		Date:											
Drilling Shifts:													
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift					
	Start	End	Start	End		Start	End	Start	End				
<u>Abbreviations:</u> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 50%;">Abbr</th> <th style="text-align: left; width: 50%;">Meaning</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> </tr> </tbody> </table>					Abbr	Meaning			<u>Location Sketch:</u> 				
Abbr	Meaning												

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 [#] US-13-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1235 hr. Stop: 1253 hr. HNu background: = 0.4ppm	
0		Asphalt			HNu = Bkg.	
0.5		Road base				
1						
2		Clayey silt slightly plastic Calcareous Munsell = 2.5y/5/3	ML	Core #1 1.5 ft.- 2.5 ft.		HNu = Bkg.
3		Augerings = clayey silt				
4		Silt trace sand Calcareous Munsell = 2.5y/5/3	ML	Core #2 4 ft.- 5 ft.		HNu = Bkg.
5		Augerings = clayey silt				
6						
7						
8						
9		Trace of black fragments				
9.5		Silt clay, trace sand, Calcareous Munsell = 2/5y/5/4 T.D. 10 ft.	ML	Core #3 9 ft.- 10 ft.	HNu = Bkg.	
10						



Bore Log

Project Site CAMDS

Site ID 13 US-14-91 Auger Size 8" * 4 1/4"

Date/Time Started 1 MAY 1991 1350hrs Date/Time Completed 1 MAY 1991 1414 hrs

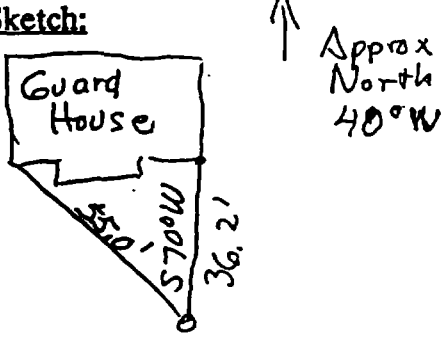
Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A (NOT SEEN)

Completion Depth 10' Drilling Co. LAYNE Driller Kevin Cross


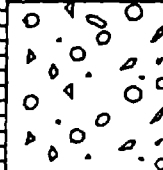
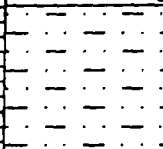
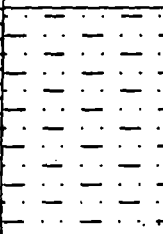
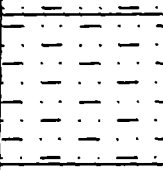
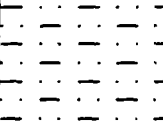
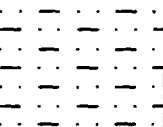
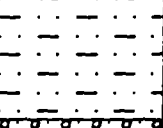
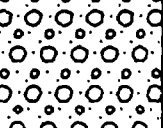
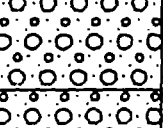
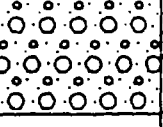
Drilling Type Auger Sample Type Split Spoc No. of Samples 3

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS		Boring: 13US-14		Page: 1 of 2					
Driller & Company: Kevin Cross		LAYNE							
Geologist/Logger & Company: John A Burger		Signature: <i>John A Burger</i>							
Date Boring Started: 1 MAY 1991		Completed: 1 MAY 1991							
Water Levels (From Ground Surface) N/A		Drilling Rig: # 405							
First Encountered:		Date:							
While Drilling:		Date:							
At Boring Completion:		Date:							
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u> 				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 US-74-91		Page: 2 of 2		
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1350 hr. Stop: 1414 hr. HNu background: = 0.4ppm			
0		Asphalt			HNu = Bkg.			
1		Road base						
2		Silt trace very fine sand Calcareous Munsell = 2.5y/5/3	ML	Core #1 1.4 ft.- 2.4 ft.				5/6" 6/6"
3		Augerings = slightly clayey silt						
4		Silt trace very fine sand trace angular limestone pebbles Munsell = 2.5y/5/3	ML	Core #2 4 ft.- 5 ft.				3/6" 5/6"
5								
6								
7								
8								
9								
10		Silt and very fine sand with black limestone pebbles up to 0.75 in. dia. and trace angular pebbles and trace caliche. Not plastic Calcareous Munsell = 2.5y/5/3 T.D. 10 ft.	GM	Core #3 9 ft.- 10 ft.	9/6" 25/6"	HNu = Bkg.		



Bore Log

Project Site CAMDS

Site ID 13 US - 15 - 91 1515 hrs Auger Size 8" x 4 1/4" 1556 hrs

Date/Time Started 1 MAY 91 Date/Time Completed 1 MAY 91

Surface Elevation (optional) _____ Water Level (from Ground Surface) N/A

Completion Depth 10' Drilling Co. LAYNE Driller Kevin Cross

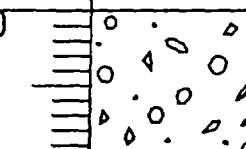
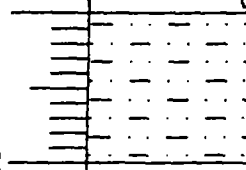
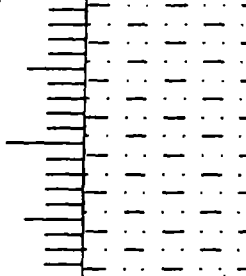
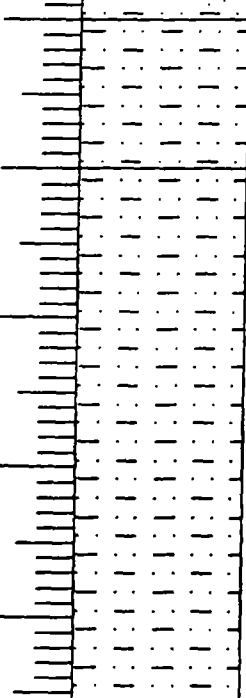
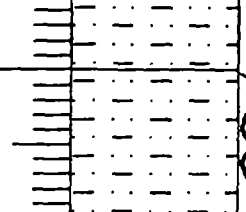
Drilling Type Auger Sample Type Split Spoon No. of Samples 3

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS		Boring: 13US-15		Page: 1 of 2							
Driller & Company: Kevin Cross Layne											
Geologist/Logger & Company: JABurger CNE				Signature: <i>John A. Burger</i>							
Date Boring Started: 1 MAY 1991			Completed: 1 MAY 1991								
Water Levels (From Ground Surface) <i>NA</i>				Drilling Rig: #405							
First Encountered:			Date:								
While Drilling:			Date:								
At Boring Completion:				Date:							
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
		Start	End	Start	End			Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning						<u>Location Sketch:</u> 					

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 US-15-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1515 hr. Stop: 1556 hr. HNu background: = 0.4ppm	
0		Construction rubble			HNu = Bkg.	
1		Silt slightly clayey slightly plastic Calcareous Munsell = 2.5y/5/3	ML	Core #1 1 ft.- 2 ft.		4/12"
2			4/12"			
3		Dry silt nonplastic Quartzose? Calcareous Munsell = 2.5y/5/3	ML	Core #2 4 ft.- 5 ft.		4/6"
4			8/6"			
5			8/6"			
6		Augerings = silt, wet, slightly plastic				HNu = Bkg.
7						
8						
9						
9		Caliche veins; white Clayey silt, dry Calcareous Munsell = 2.5y/5/2 T.D. 10 ft.	ML	Core #3 9 ft.- 10 ft.	5/6"	
10			14/6"		HNu = Bkg.	



Bore Log

Project Site DEAC FURNACE TOUELE ARMY DEPT SOUTH AREA

Site ID 17-BG-01-91 Auger Size 6 5/8" * 4 1/4"

Date/Time Started 13 July 1991 0858 hr Date/Time Completed 13 July 1991 0912 hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) NONE

Completion Depth 5 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spm No. of Samples 2

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: STEAD DEAC FURNACE Boring: 17-BG-01-9 Page: 1 of 2									
Driller & Company: Kevin Cross Layne									
Geologist/Logger & Company: John A. Burger CES Signature: <i>John A. Burger</i>									
Date Boring Started: 13 July 1991					Completed: 13 July 1991				
Water Levels (From Ground Surface)					Drilling Rig: # 405				
First Encountered:					Date:				
While Drilling:					Date:				
At Boring Completion: NONE					Date: 13 July 1991				
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations: Abbr Meaning					Location Sketch: 				


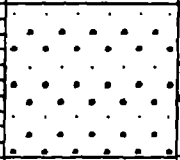
BORING LOG

Project: DEAC FURNACE STEAD		Boring: 17 BG-01-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0858 hr. Stop: 0912 hr. H _{Nu} background: = 0.6 ppm
0	- - -	Clayey, slightly sandy ML silt soft, dry abundant roots Calcareous Munsell = 10yr/6/4	Core # 1 0 ft.- 2 ft.	5/6"	Top core = Bkg. Base core = Bkg.
1	- - -			8/6"	
2	- - -			8/6"	
3	- - -			9/6"	
4	- - -	Augerings = same as 0 ft. - 2 ft.			
5	- - - T.D. 5 ft.	Clayey, slightly sandy ML silt no roots Calcareous Munsell = 10yr/6/6	Core # 3 4 ft.- 5 ft.	5/6"	Top core = Bkg. Base core = Bkg.
6	- - -			7/6"	
7	- - -				
8	- - -				
9	- - -				
10	- - -				

BORING LOG

Project: CAMDS		TEAD-S		Boring: 13 LF-02-91		Page: 2 of 3	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
0		Silty clay and clayey silt with trace sand soft, slightly moist Calcareous Munsell = 10yr/5/4	Core # 1 0 ft. - 2 ft.	6/6"	Top core = Bkg.		
1				11/6"			
2				10/6"			
3				7/6"			
4		Augerings = clayey silt			Base core = Bkg.		
5							
6							
4		Clayey silt hard, slightly moist Calcareous Munsell = 10yr/5/4	Core # 2 4 ft. - 6 ft.	4/6"	Top core = Bkg.		
5				11/6"			
5		Silty sand fine-grained trace roots hard, slightly moist Munsell = 5y/6/3		15/6"	Base core = Bkg.		
6				20/6"			
7							
8		Augerings = same as 4.5 ft. - 6 ft.			Water in hole at end of drilling is at 6.1 ft.		
9							
9		Slightly clayey slightly silty sand soft, moist Calcareous	Core # 3 9 ft. - 11 ft.	6/6"	Top core = Bkg.		
10				8/6"			

BORING LOG

Project: CAMDS		TEAD-S	Boring: 13 LF-02-91		Page: 3 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
	 <p style="text-align: center;">T.D. 11 ft.</p>	<p>0.25 mm diam. spheres white oolites (?) Munsell = 2.5y/5/4</p>	<p>Core # 3 9 ft.- 11 ft.</p>	<p>14/6" 21/6"</p>	<p>Base core = Bkg.</p>



Bore Log

Project Site DEAC FURNACE TOOLE ARMY DEPOT SOUTH AREA

Site ID 17- DS-01 Auger Size 6 5/8" x 4 1/4"

Date/Time Started 25 June 1991 0846^{hr} Date/Time Completed 25 June 1991 1007hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) _____

Completion Depth 21 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 5

Geologist/Logger & Co. John A Burger CNES

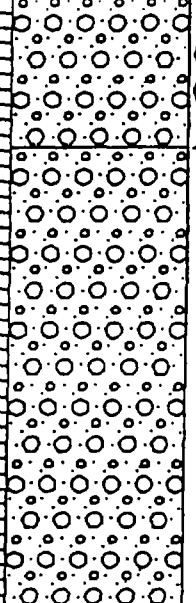
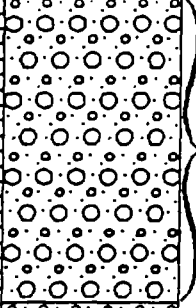
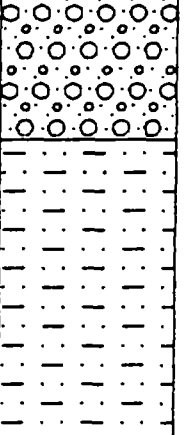
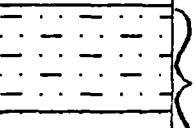
BORING LOG GENERAL DATA

Project: DEAC FURNACE STEAD Boring: 17-DS-01-91 Page: 1 of 3											
Driller & Company: Kevin Cross Layne											
Geologist/Logger & Company: John A Burger CNES Signature: <i>John A Burger</i>											
Date Boring Started: 25 June 1991					Completed: 25 June 1991						
Water Levels (From Ground Surface) NONE Drilling Rig: # 405											
First Encountered:					Date:						
While Drilling:					Date:						
At Boring Completion:					Date:						
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
	Start	End			Start	End			Start	End	
<u>Abbreviations:</u> Abbr Meaning						<u>Location Sketch:</u>					

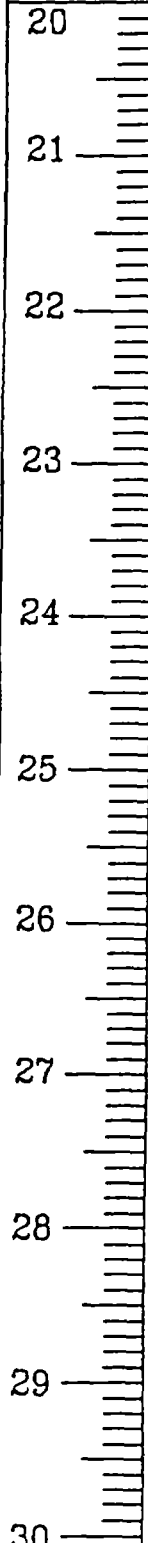

BORING LOG

Project: DEAC FURNACE TEAD-S		Boring: 17 DS-01-91		Page: 2 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0846 hr. Stop: 1007 hr. HNu background: = 0.1 ppm
0		Upper 0.5 ft = rubble		5/6"	Top core = Bkg.
1		Slightly clayey, sandy silt soft, dry trace roots Calcareous Munsell = 10yr/4/4	Core # 1 0 ft. - 2 ft.	6/6" 4/6" d/6"	Base core = Bkg.
2					
3					
4		Silt, trace sand and clay soft, dry Calcareous Munsell = 10yr/6/4	Core # 2 4 ft. - 6 ft.	6/6" 7/6" 10/6" 15/6"	Top core = Bkg.
5					Base core = Bkg.
6					
7		Cobbles at 7 ft. while drilling			
8					Top core = Bkg.
9			Core # 3 9 ft. - 11 ft.	4/6" 20/6"	
10		Sandy, silty gravel dry, soft matrix Calcareous			

BORING LOG

Project: DEAC FURNACE TEAD-5		Boring: 17 DS-01-91		Page: 3 of 4			
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
10		Clasts are angular to subangular quartzite and limestone, (a few rounded clasts) up to 2 in. diam. Sediment is ~30% clasts larger than sand size.		23/6"	Hard driving Base core = 8kg.		
11						42/6"	
12							
13							
14		Sandy silty gravel GM Clasts are ~ 50% of sediment. Clasts are rounded to angular, up to 2 in. diam. Calcareous matrix Munsell = 10yr/6/2	Core # 4 14 ft. - 16 ft.	20/6"	Top core = Bkg. Base core = 8kg.		
15						43/6"	
16						32/6"	
17						41/6"	
17		Large cobbles to 17 ft.; Drilled out of gravel at 17 ft. into softer material.			Rough augering		
18							
19							
19		Sandy silt, soft ML Calcareous Munsell = 10yr/5/4	Core # 5 19 ft. - 20.5 ft.	6/6"	Top core = Bkg.		
20				SP		16/6"	

BORING LOG

Project: DEAC FURNACE TEAO-S		Boring: 17 DS-01-91		Page: 4 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 5px;">20</div>  <div style="margin-top: 5px;">30</div> </div>	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">  </div> <div style="border: 1px solid black; padding: 2px;"> T.D. 20.5 ft. </div>	Local layers of fine-grained sand		14/6"	Base core = Bkg.



Bore Log

Project Site DEAC FURNASE JOBLE ARMY DEPOT SOUTH AREA

Site ID 17-DS-02-91 Auger Size 6 5/8" * 4 1/4"

Date/Time Started 25 JUNE 1991 1120 hr Date/Time Completed 25 JUNE 1991 1245 hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) _____

Completion Depth 21 ft Drilling Co. LAYNE Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoo No. of Samples 5

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: DEAC FURNACE STEAD Boring: 17-DS-02-91 Page: 1 of 3											
Driller & Company: Kevin Cross Layne											
Geologist/Logger & Company: John A Berger GUES Signature: <i>John A Berger</i>											
Date Boring Started: 25 June 1991					Completed: 25 June 1991						
Water Levels (From Ground Surface)					Drilling Rig: #405						
First Encountered:					Date:						
While Drilling:					Date:						
At Boring Completion:					Date:						
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
		Start	End	Start	End			Start	End	Start	End
Abbreviations:						Location Sketch:					
Abbr Meaning						<div style="text-align: right;">North ↑</div>					

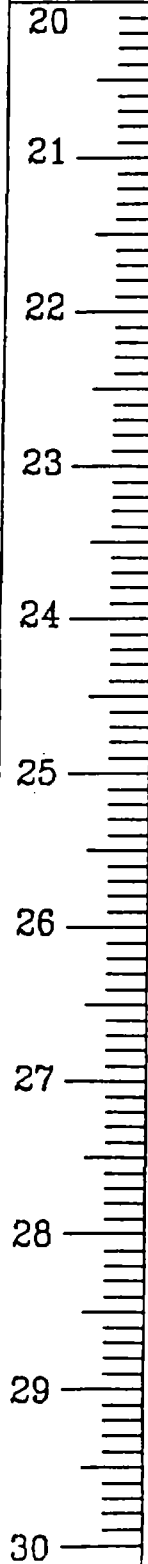
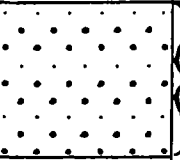
BORING LOG

Project: DEAC FURNACE TEAD-S		Boring: 17 DS-02-91		Page: 2 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1120 hr. Stop: 1245 hr. HNU background: = 0.2 ppm
0 1 2	ML	Slightly sandy, clayey silt soft, dry trace roots Calcareous Munsell = 10yr/5/6	Core # 1 0 ft.- 2 ft.	6/6" 6/6" 5/6" 4/6"	Top core = Bkg. Base core = Bkg.
2 3 4	ML	Augerings = same as 0 ft. - 2 ft.			Top core = Bkg.
4 5 6	ML	Same as 0 ft.-2 ft. Calcareous Munsell - 10yr/6/5 Color change at 4.6 ft. Sandy silt with clay Calcaeous Munsell = 10yr/6/6	Core # 2 4 ft.- 6 ft.	9/6" 17/6" 18/6" 31/6"	Took sample for physical parameters Base core = Bkg.
6 7 8	GM	Sandy, clayey, silty gravel. dry, friable Calcareous with small pebbles of quartzite and limestone. Loose packing Munsell = 10yr/5/4	Core # 3 9 ft.- 11 ft.	9/6" 17/6"	Gravel while drilling at 7 ft. Top core = Bkg.
8 9 10					

BORING LOG

Project: DEAC FURNACE TEAD-S		Boring: 17 DS-02-91		Page: 3 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
10 11 12 13 14 15 16 17 18 19 20		<p>Silty, sandy gravel and cobbles. Clasts of limestone and quartzite up to 2 in. Angular to rounded Munsell = 10yr/5/4</p> <p>Augerings are 50% or more of cobbles; rounded to angular, quartzite and limestone; up to 3 inches long.</p> <p>Silty, sandy gravel 50% or more clasts of limestone and quartzite; angular to subangular, up to 2 in. in diameter Matrix is calcareous Munsell = 10yr/7/2</p> <p>Color means very little in gravel because of heterogeneous color of various clasts.</p> <p>Slightly clayey, silty sand dry, soft, trace mottling Calcareous Munsell = 2.5y.6.6</p>	<p style="text-align: center;">GM</p> <p style="text-align: center;">GM</p> <p style="text-align: center;">Core # 4 14 ft. - 16 ft.</p> <p style="text-align: center;">Core # 5 19 ft. - 21 ft.</p>	<p style="text-align: center;">24/6"</p> <p style="text-align: center;">34/6"</p> <p style="text-align: center;">18/6"</p> <p style="text-align: center;">18/6"</p> <p style="text-align: center;">18/6"</p> <p style="text-align: center;">12/6"</p> <p style="text-align: center;">31/6"</p>	<p>Base core = Bkg.</p> <p>Noisy, rough drilling probably large clasts.</p> <p>Had to pull out of hole for ordinance probe; hole caved and must be augered again to get core tube to bottom of hole.</p> <p>Top core = Bkg.</p> <p>No drive for last 5 in. Base core = Bkg. Drilling break at 16 ft. into softer material</p> <p>Top core = Bkg.</p>

BORING LOG

Project: DEAC FURNACE TEAD-5		Boring: 17 DS-02-91		Page: 4 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
20  21 22 23 24 25 26 27 28 29 30	 T.D. 21 ft.	limonite stain Munsell from 20 ft. -21 ft. = 2.5y/6/3	Core # 5 19 ft.- 21 ft.	26/6" 24/6"	Base core = 8kg.



Bore Log

Project Site DEAC FURNACE TOOELE ARMY DEPOT SOUTH AR

Site ID 17-DS-03-91 Auger Size 6 5/8 * 4 1/4

Date/Time Started 8 JULY 1991 1123hr Date/Time Completed 8 JULY 1991 1245hr

Surface Elevation (optional) Water Level (from Ground Surface) NONE

Completion Depth 21 ft Drilling Co. LAYNE Driller Kevin Cross

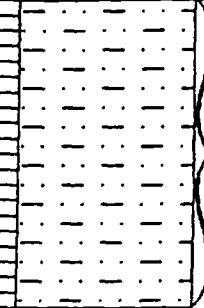
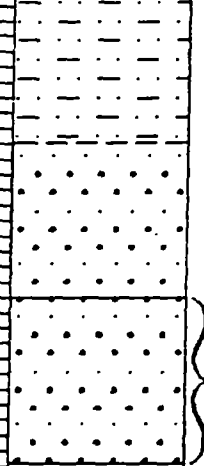
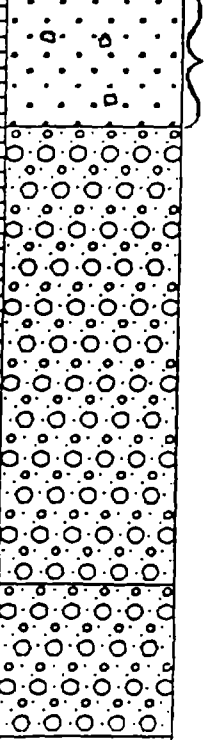
Drilling Type Auger Sample Type Split Spun No. of Samples 4

Geologist/Logger & Co. John & Burger CNES

BORING LOG GENERAL DATA

Project: <u>STEAD</u>		DEAC Furnace Boring: <u>17-05-03-91</u>		Page: <u>1 of 3</u>					
Driller & Company: <u>Kevin Cross</u>		<u>Layne</u>							
Geologist/Logger & Company: <u>John A. Burger</u>		CVES		Signature: <u>John A. Burger</u>					
Date Boring Started: <u>8 July 1991</u>		Completed: <u>8 July 1991</u>							
Water Levels (From Ground Surface)		Drilling Rig: <u>405</u>							
First Encountered:		Date:							
While Drilling:		Date:							
At Boring Completion:		Date:							
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:					Location Sketch:				
Abbr Meaning					<p style="text-align: center;"> Approx N ↑ Paved Road </p> <p style="text-align: center;"> 42.4 ft 17-05-03 </p> <p style="text-align: center;"> 57.5 ft Power Pole </p>				

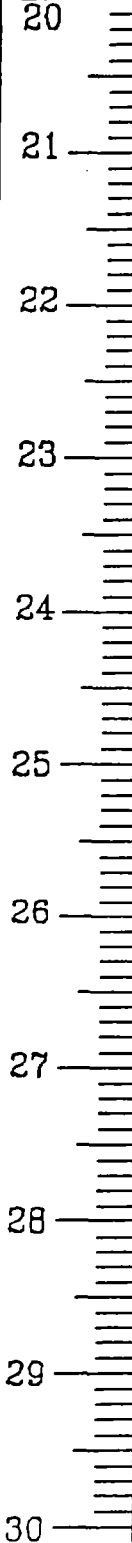

BORING LOG

Project: DEAC FURNACE TEAD-5		Boring: 17 DS-03-91		Page: 2 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1123 hr. Stop: 1245 hr. HNu background: = 0.1 ppm
0 1 2		Clayey silt trace sand rootlets Calcareous Munsell = 10yr/5/4	ML Core # 1 0 ft. - 2 ft.	4/6" 12/6" 10/6" 9/6"	Top core = Bkg. Base core = Bkg.
3 4 5		Silty, clayey sand fine-grained Calcareous Munsell = 10yr/6/3	SM Core # 2 4 ft. - 6 ft.	2/6" 10/6" 12/6" 21/6"	Top core = Bkg. Base core = Bkg.
6 7 8 9 10		As above but with 1 in. - 2 in. limestone cobbles Augerings = as in Core #2 to 6.5 ft., then less sand.	SM GM Core # 3 No recovery	 27/6"	Gravel at ~ 6 ft. - 6.5 ft. while drilling. Refusal at 9.5 ft.

BORING LOG

Project: DEAC FURNACE TEAD-S		Boring: 17 DS-03-91		Page: 3 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
10 11 12 13 14 15 16 17 18 19 20		<p>Augerings = gravel, rounded to angular clasts up to 3 in. diam. Quartzite and limestone with fine sand, silt and clay matrix, typical alluvial fan mud flow.</p> <p>Silty, clayey sandy gravel rounded to subangular clasts of quartzite and limestone Calcareous Munsell = 5y/7/1</p> <p>Sand, medium-grained, angular, quartzose, feldspathic iron stained trace dark minerals.</p>	<p>Core # 3 14 ft. - 16 ft.</p> <p>Core # 4 19 ft. - 21 ft.</p>	<p>21/6"</p> <p>40/6"</p> <p>38/6"</p> <p>26/6"</p> <p>9/6"</p> <p>9/6"</p>	<p>Auger ahead from 9.5 ft.</p> <p>Broke off carbide tooth on auger.</p> <p>Alternately hard and soft drilling. Base of gravel at approx 16.5 ft.</p>

BORING LOG

Project: DEAC FURNACE TEAD-S		Boring: 17 DS-03-91		Page: 4 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
20  21 22 23 24 25 26 27 28 29 30	 T.D. 21 ft.	Calcareous Munsell = 10 yr/5/6 SP	Core # 4 19 ft.- 21 ft.	9/6" 9/6"	



Bore Log

Project Site DEAC FURNACE TOOELE ARMY DEPOT SOUTH AREA

Site ID 17-DS-04-91 Auger Size 6 5/8 x 4 1/4"
JAB

Date/Time Started 8 JULY 1991 1423 hrs Date/Time Completed 8 JULY 1991 1119 hrs
9

Surface Elevation (optional) _____ Water Level (from Ground Surface) NONE

Completion Depth 21 ft Drilling Co. LAYNE Driller Kevin Cross

Drilling Type Auger Sample Type Split spoon No. of Samples 4

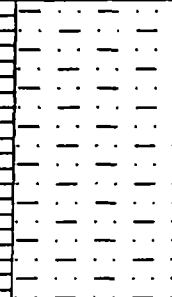
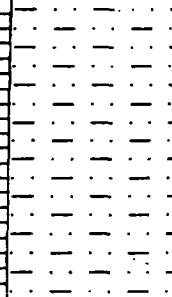
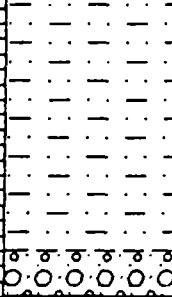
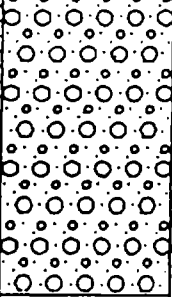
Geologist/Logger & Co. JOHN A. BURGER CNES

BORING LOG GENERAL DATA

JAB

Project: STEAD DEAC FURNACE Boring: 17- ^{DS} DS-04-91 Page: 1 of 3											
Driller & Company: Kevin Cross Layne											
Geologist/Logger & Company: John A Burger CVESignature: John A Burger											
Date Boring Started: 8 July 1991 Completed: 9 July 1991											
Water Levels (From Ground Surface)					Drilling Rig: # 405						
First Encountered:					Date:						
While Drilling: NONE					Date:						
At Boring Completion:					Date:						
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning						<u>Location Sketch:</u>					

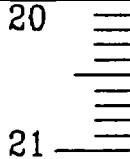

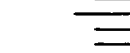
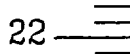

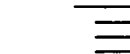
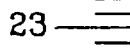


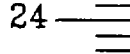
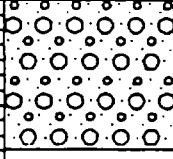
BORING LOG

Project: DEAC FURNACE TEAD-S		Boring: 17 DS-04-91		Page: 2 of 4		
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
0 1 2		Clayey silt soft, dry Calcareous Munsell = 2.5y/6/4 Augerings = same as 0 ft. - 2 ft.	ML Core # 1 0 ft.- 2 ft.	4/6" 20/6" 20/6" 25/6"	Start: 1423 hr. Stop: 1119 hr. HNu background: = 0.1 ppm Note: Raining Top core = Bkg. Base core = Bkg. Rain Resume drilling 1511 hr.	
3 4 5		Slightly sandy, clayey silt Calcareous Munsell = 2.5y/6/4	ML	Core # 2 4 ft.- 6 ft.	6/6" 13/6" 35/6"	Top core = Bkg.
6 7 8		Gravel, with silt and sand. Quartzite and limestone pebbles up to 1 in. in diameter Augerings = gravel	GM	65/6"	Base core = Bkg. Stop for storm to pass over. 1530 hr. Began drilling next day. 9 July 1991 at 0855 hr.	
9 10		9.0 ft. - 9.4 ft. same as 5.8 to 6.0 ft. No core sample for interval 9.4 ft. - 11 ft. Augerings show gravel	Core # 3 9 ft.- 9.4 ft.	30/6" X/6"	Began at 1032 hr. Top core = Bkg. Refusal on split spoon drive.	

BORING LOG

Project: DEAC FURNACE TEAD-S		Boring: 17 DS-04-91		Page: 3 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
10 11 12 13 14 15 16 17 18 19 20		<p>Augerings = gravel, up to 2 in. diameter, clasts of quartzite and limestone; matrix of sand, silt and clay. These are mud flow deposits.</p>			Scraping sounds very slow drilling
		<p>Silty, sandy gravel GM Clasts of quartzite and limestone; angular to rounded, up to 2 in. diameter Calcareous Munsell = 5y/7/2</p>	<p>Core # 3 14 ft. - 16 ft.</p>	<p>27/6" 30/6" 46/6" 47/6"</p>	No HNu available on account of instrument breakdown.
		<p>Sandy, silty gravel GM angular clasts up to 3 in. diameter clasts of quartzite, limestone, calcite!</p>	<p>Core # 4 19 ft. - 21 ft.</p>	<p>32/6" 48/6"</p>	<p>Drilling break at 17.5 ft., but no sand</p> <p>Hard driving</p>

BORING LOG

Project: DEAC FURNACE TEAD-S		Boring: 17 DS-04-91		Page: 4 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Complete: 1119 hr. 9 July, 1991
20  21  22  23  24  25  26  27  28  29  30	 T.D. 21 ft.	sandy matrix, locally iron stained. Calcareous	Core # 3 8 ft. - 10 ft.	42/6" 48/6"	



Bore Log

Project Site DEAC FURNACE TOOLE ARMY DEPOT SOUTH AREA

Site ID 17-DS-05-91 Auger Size 6 5/8" #4 1/4"

Date/Time Started 10 JULY 1991 0808 hr Date/Time Completed 0931 hrs.

Surface Elevation (optional) _____ Water Level (from Ground Surface) NONE

Completion Depth 21 ft Drilling Co. LAYNE Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 5

Geologist/Logger & Co. John A. Burger CNES.

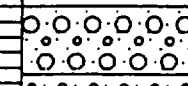

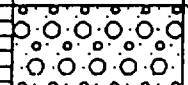
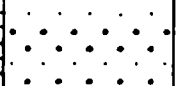
BORING LOG GENERAL DATA

Project: STEAD DEAC FURNACE		Boring: 17-DS-05-91		Page: 1 of 3									
Driller & Company: Kevin Cross Layne													
Geologist/Logger & Company: John B. Burger CMES Signature: <i>John B. Burger</i>													
Date Boring Started: 10 July 1991			Completed: 10 July 1991										
Water Levels (From Ground Surface)				Drilling Rig: 405									
First Encountered:			Date:										
While Drilling: NONE			Date: 10 July 1991										
At Boring Completion:				Date:									
Drilling Shifts:													
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift					
	Start	End	Start	End		Start	End	Start	End				
Abbreviations:					Location Sketch:								
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<u>Abbr</u>	<u>Meaning</u>												

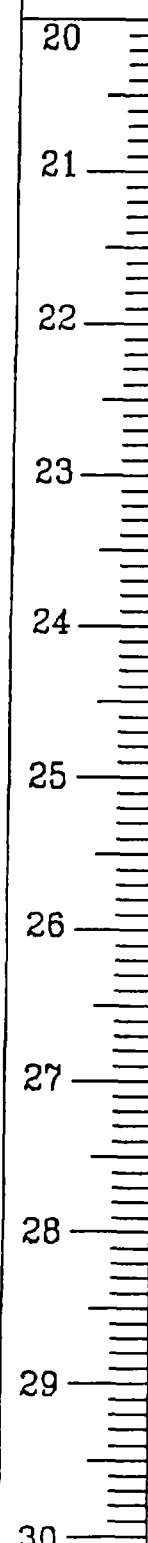
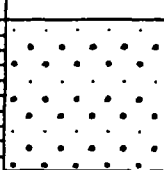
BORING LOG

Project: DEAC FURNACE TEAD-S		Boring: 17 DS-05-91		Page: 2 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0808 hr. Stop: 0939 hr. HNU Not functioning; In masks for safety
0		Rubble			
1		Sandy, silty gravel up to 1 in. clasts angular to rounded Calcareous Munsell = 10yr/5/3	GM	4/6"	
2				6/6"	
3		Sandy silt Calcareous Munsell = 10yr/4/3	ML	7/6"	
4				6/6"	
5		Sandy silt slightly moist soft Calcareous Munsell = 10yr/5/6	ML	2/6"	
6				2/6"	
7		Augerings = sandy silt		3/6"	
8				4/6"	
9		Clayey, silty, gravelly sand Clasts to 0.5 in. dia. Calcareous Munsell = 10/yr/7/1 See following page	SM	9/6"	Gravel at 9 ft. while drilling
10				26/6"	

BORING LOG

Project: DEAC FURNACE TEAD-5		Boring: 17 DS-05-91		Page: 3 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
10		Silty gravel GM 2 in. clasts of limestone and quartzite; rounded to angular Calcareous Munsell = 10yr/5/6 Augerings = gravel	Core #3	X/6"	Split spoon refused at 10.5 ft Slow drilling
11					
12					
13		Augerings = silt and sand mixed with 0.5 in. diam. pebbles	Core # 4 14 ft. - 16 ft.	21/6" 56/6" 49/6" 46/6"	
14					
15					
16		Silty sandy gravel; GM mostly angular clasts of quartzite and limestone up to 2 in. diameter. Calcareous Munsell = 10yr/5/6 Augerings = gravel			
17					
18					
19		Silty sand quartzose, slightly iron-stained, feldspathic soft Calcareous Munsell = 2.5y/6/4 SM	Core # 5 19 ft. - 21 ft.	17/6" 26/6"	Drilling break to softer sediment at 17.5 ft.
20					

BORING LOG

Project: DEAC FURNACE TEAD-S		Boring: 17 DS-05-91		Page: 4 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
20  21 22 23 24 25 26 27 28 29 30	 T.D. 21 ft.	Same as 19 ft. - 20 ft. <div style="float: right; border: 1px solid black; padding: 2px; margin-top: 5px;">SM</div>	Core # 5 19 ft. - 21 ft.	20/6" 23/6"	



Bore Log

Project Site DEAC FURNACE TOOLE ARMY DEPOT SOUTH AREA

Site ID DS-~~DS~~-06-91 ^{DS-~~DS~~} Auger Size 6 5/8" x 4 1/4"

Date/Time Started 10 JULY 1991 1018hrs Date/Time Completed 10 July 1991 1125hrs

Surface Elevation (optional) _____ Water Level (from Ground Surface) NONE

Completion Depth 4ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 1

Geologist/Logger & Co. John A. Burger CNES.

BORING LOG GENERAL DATA

JAB

Project: STEAD DEAC FURNACE Boring: 17- DS-06-91 Page: 1 of 2											
Driller & Company: Kevin Cross Layne											
Geologist/Logger & Company: John A. Burger CES Signature: <i>John A. Burger</i>											
Date Boring Started: 10 July 1991					Completed: 10 July 1991						
Water Levels (From Ground Surface)					Drilling Rig: #405						
First Encountered:					Date:						
While Drilling: NONE					Date: 10 July 1991						
At Boring Completion:					Date:						
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning						<u>Location Sketch:</u>					
N Approx Power Pole						<p>PAVED ROAD</p> <p>87.0 ft</p> <p>99 ft</p> <p>DEAC BLDG</p> <p>17-FS-06-91</p> <p>17-FS-05-91</p>					

BORING LOG

Project: DEAC FURNACE TEAD-5		Boring: 17 DS-06-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
					Start: 1018 hr. Stop: 1125 hr. HNU not working Wearing gas masks
0		Rubble			
1		Rubble		2/6"	
2		Silty sand very fine-grained Calcareous Munsell = 10yr/3/4	Core # 1 1 ft. - 3 ft.	2/6"	
3				3/6"	
4	T.D. 4 ft.			3/6" 50% recovery	
5					Tried to clear ordnance ahead for next 5 ft. of drilling. Would not clear. Offset 5 ft. to east. Drilled to 4 ft. could not be cleared
6					
7					
8					
9					
10					



Bore Log

Project Site STEAD DEAC FURNACE TOOLE ARMY DEPOT SOUTH AREA

Site ID 17-DS-07-91 Auger Size 6 5/8" x 4 1/4"

Date/Time Started 10 July 91 1440 Date/Time Completed 10 July 1991 1450

Surface Elevation (optional) _____ Water Level (from Ground Surface) NONE

Completion Depth 4 3/8 JAB Drilling Co. Layne Driller Kennison

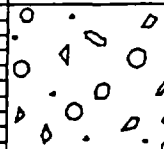
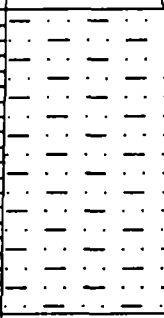
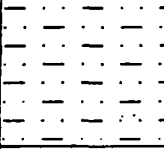
Drilling Type Auger Sample Type Split Spoon No. of Samples 1

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: DEAC FURNACE STEAD Boring: 17-DS-07-91 Page: 1 of 2																
Driller & Company: Kevin Cross Layne																
Geologist/Logger & Company: John A. Burger CUES Signature: <i>John A. Burger</i>																
Date Boring Started: 10 July 1991					Completed: 10 July 1991											
Water Levels (From Ground Surface)					Drilling Rig:											
First Encountered:					Date:											
While Drilling: NONE					Date:											
At Boring Completion:					Date:											
Drilling Shifts:																
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift						
	Start	End	Start	End		Start	End	Start	End		Start	End				
<u>Abbreviations:</u> <table style="width: 100%; border: none;"> <tr> <td style="border: none;"><u>Abbr</u></td> <td style="border: none;"><u>Meaning</u></td> </tr> </table>					<u>Abbr</u>	<u>Meaning</u>	~ N. ↑					<u>Location Sketch:</u> <p style="text-align: center;">Paved Road</p> <p>Power Pole Power Pole</p> <p style="text-align: center;">DS-07 DS-06 DS-05</p> <p style="text-align: center;">□ □ □</p> <p style="text-align: right;">DEAC BLDG</p> <p style="text-align: center;">RR.</p>				
<u>Abbr</u>	<u>Meaning</u>															
Location Approximate All traces of hole vanished prior to surveying the location - <i>Burger</i>																

BORING LOG

Project: DEAC FURNACE TEAD-S		Boring: 17 DS-07-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1440 hr. Stop: 1450 hr. HNu not working
0		Rubble			
1		Clayey, sandy silt soft Calcareous Munsell = 10yr/5/4	Core #1 1 ft.- 3 ft.	2/6"	
2				5/6"	
3		Augerings = slightly pebbly silt		3/6"	
4				4/6"	
5	T.D. 4 ft.				Could not clear ordnance to drill ahead
6					
7					
8					
9					
10					



Bore Log

Project Site DEAC SITE TOOELE ARMY DEPOT SOUTH AREA

Site ID 17-DS-08-91 Auger Size 6 5/8" x 4 1/4"

Date/Time Started 10 July 1991 1515 hrs Date/Time Completed 10 July 1991 1535 hrs

Surface Elevation (optional) — Water Level (from Ground Surface) NONE

Completion Depth 4 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Split Spoon Sample Type Auger No. of Samples 1

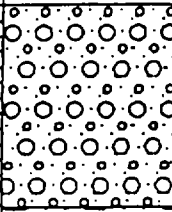
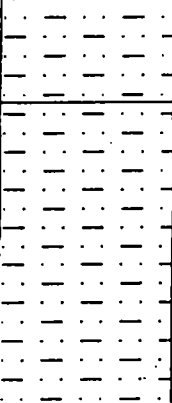
Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

DSB

Project: DEAC FURNACE STEAD Boring: 17-PS-08-91 Page: 1 of 2									
Driller & Company: Kevin Cross Layne									
Geologist/Logger & Company: John A. Burger CNES Signature: <i>John A. Burger</i>									
Date Boring Started: 10 July 1991					Completed: 10 July 1991				
Water Levels (From Ground Surface)							Drilling Rig: # 405		
First Encountered:					Date:				
While Drilling: NONE					Date:				
At Boring Completion:							Date:		
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:					Location Sketch:				
Abbr Meaning					<div style="border: 1px solid black; padding: 5px;"> PAVED ROAD </div>				

BORING LOG

Project: DEAC FURNACE TEAD-S		Boring: 17 DS-08-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: ~1515 hr. Stop: ~1535 hr. HNu not working Using masks
0		Sandy, silty gravel and rubble; quartzite and limestone clasts—up to 2" in dia. Calcareous Munsell = 10yr/5/4	Core # 1 0 ft.— 2 ft.	17/6"	
1				GM	
2		Sandy silt soft Calcareous Munsell = 10yr/7/2 Augerings = silt and small pebbles		17/6"	
3				ML	
4	T.D. 4 ft.				Unable to clear hole for further drilling.
5					
6					
7					
8					
9					
10					



Bore Log

Project Site STEAD TOOELE ARMY DEPOT SOUTH AREA

Site ID 17-DS-09-91 Auger Size 6 5/8" x 4 1/4"

Date/Time Started 10 July 1991 1603hr Date/Time Completed 10 July 1991 1630hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) None

Completion Depth 4ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spun No. of Samples 1

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: <u>STEAD DEAC FURNACE Boring: 17-09-91</u> Page: 1 of 2													
Driller & Company: <u>Kevin Cross Layne</u>													
Geologist/Logger & Company: <u>John A. Burger</u>					Signature: <u>John A. Burger</u>								
Date Boring Started: <u>10 June 1991</u> Completed: <u>10 June 1991</u>													
Water Levels (From Ground Surface)					Drilling Rig: <u>405</u>								
First Encountered:					Date:								
While Drilling: <u>NONE</u>					Date: <u>10 June 1991</u>								
At Boring Completion:					Date:								
Drilling Shifts:													
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift			
		Start	End	Start	End			Start	End	Start	End		
<u>Abbreviations:</u> <table style="width: 100%; border: none;"> <tr> <td style="border: none;"><u>Abbr</u></td> <td style="border: none;"><u>Meaning</u></td> </tr> </table>						<u>Abbr</u>	<u>Meaning</u>	<u>Location Sketch:</u> 					
<u>Abbr</u>	<u>Meaning</u>												

BORING LOG

Project: DEAC FURNACE TEAD-S		Boring: 17-DS-09-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
0		Rubble			Start: 1603 hr. Stop: 1630 hr. HNu not working using masks Auger 1 ft. 0 ft. - 1 ft.
1		Sandy, silty, pebbly, gravel; soft Clasts rounded to subangular Calcareous Munsell = 10yr/6/4	Core # 1 1 ft. - 3 ft.	3/6"	
2				3/6"	
3		Sandy silt soft Calcareous Munsell = 10yr/5/4		3/6"	
4	T.D. 4 ft.				3/6"
5					Unable to clear the hole for further drilling.
6					
7					
8					
9					
10					



Bore Log

Project Site STEAD YOUELE ARMY DEPOT SOUTH AREA

Site ID 17-FS-01-91 Auger Size 6 5/8" * 4 1/4"

Date/Time Started 11 July 1991 1256 hr Date/Time Completed 11 July 1991 1320 hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) _____

Completion Depth 4 ft. Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spun No. of Samples 1

Geologist/Logger & Co. John A Burger CNES

BORING LOG GENERAL DATA

Project: <u>STEAD DEAC FURNACE</u> Boring: <u>17-FS-01-91</u> Page: 1 of 2									
Driller & Company: <u>Kevin Cross Layne</u>									
Geologist/Logger & Company: <u>John A. Burger CVES</u> Signature: <u>John A. Burger</u>									
Date Boring Started: <u>11 July 1991</u>					Completed: <u>11 July 1991</u>				
Water Levels (From Ground Surface)					Drilling Rig: # <u>405</u>				
First Encountered:					Date:				
While Drilling:					Date:				
At Boring Completion: <u>NONE</u> Date:									
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations: Abbr Meaning					Location Sketch: 				

BORING LOG

Project: DEAC FURNACE TEAD-S		Boring: 17 FS-01-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
0		Clayey, sandy silt ML Calcareous soft dry, abundant roots Munsell = 10yr/5/3	Core # 1 0 ft. - 2 ft.	7/6"	Start: 1256 hr. Stop: 1320 hr. HNu background: = 1.0 ppm!
1				7/6"	
2		Augerings = same as 0 ft - 2 ft.		6/6"	Top core = 8kg. Base core = 8kg.
3				6/6"	
4	T.D. 4 ft.				Unable to clear the hole for further drilling.
5					
6					
7					
8					
9					
10					



Reconstructed because original
was misplaced as of 2 Aug 1991

J. Burger

Bore Log

Project Site DEAC FURNACE TOOLE ARMY DEPOT SOUTH AREA

Site ID 17- FS-02 -91 Auger Size 6 5/8" x 4 1/4"

Date/Time Started 11 July 1991 1334 Date/Time Completed 11 July 1991 1504

Surface Elevation (optional) N/A Water Level (from Ground Surface) NONE


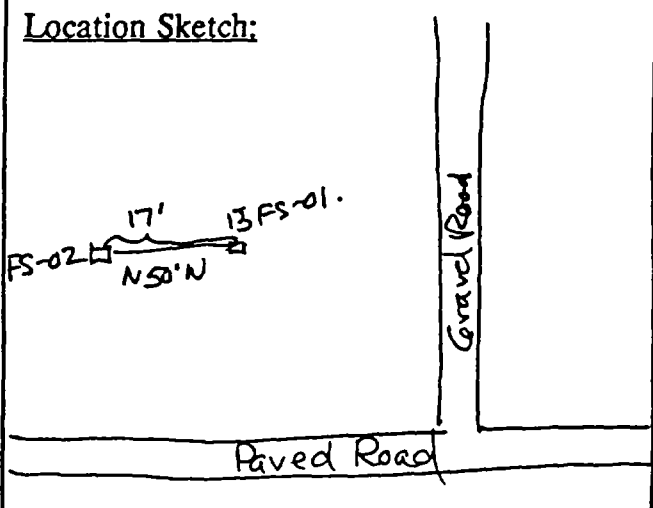
Completion Depth 6 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spun No. of Samples 4

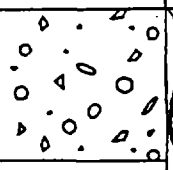
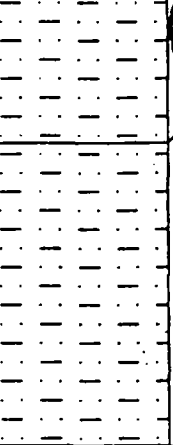
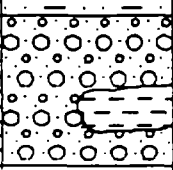
Geologist/Logger & Co. John A. Burger CNES.

BORING LOG GENERAL DATA

Reconstructed because original was misplaced as of 9 Aug 1991 *Burger*

Project: <i>DEAC FURNACE STEAD</i> Boring: <i>17-FS-02-91</i> Page: 1 of 3											
Driller & Company: <i>Kevin Cross Layne</i>											
Geologist/Logger & Company: <i>John A. Burger</i> <i>CVES</i> Signature: <i>John A. Burger</i>											
Date Boring Started: <i>11 July 1991</i>					Completed: <i>11 July 1991</i>						
Water Levels (From Ground Surface)					Drilling Rig: <i># 405</i>						
First Encountered:					Date:						
While Drilling: <i>NONE</i>					Date:						
At Boring Completion:					<i>NONE</i> Date:						
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End		
<u>Abbreviations:</u> Abbr Meaning						<u>Location Sketch:</u>					
<i>Approx N</i> 											
						DEAC BLDG					

BORING LOG

Project: DEAC FURNACE TEAD-5		Boring: 17 FS-02-91		Page: 2 of 3					
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1334 hr. Stop: 1504 hr. HNu background: = 1.0 ppm!				
0		Gravel and rubble quartzite and limestone pebbles Calcareous sand and silt Munsell = 10yr/8/3 Sandy silt soft, fine-grained sand Calcareous Munsell = 10yr/4/4	Core # 1 0 ft. - 2 ft.	20/6"	Top core = Bkg.				
1				20/6"					
2		ML		9/6"	Base core = Bkg.				
3				6/6"					
4				Sandy, clayey silt fairly soft Calcareous Munsell = 10yr/5/5		ML	Core # 2 4 ft. - 6 ft.	5/6"	Top core = Bkg.
5								5/6"	
6	Augerings = same as 4 ft. - 6 ft.			5/6"	Base core = Bkg.				
7				6/6"					
8				Sandy silty gravel Quartzite and limestone clasts up to 2.5 in dia. Calcareous matrix; trace of mottled purple clay Munsell = 2.5y/6/2		GM	Core # 3 9 ft. - 10.5 ft.	42/6"	Gravel at ~ 9 ft. Scraping sound while augering.
9	54/6"								
10									

BORING LOG

Project: DEAC FURNACE STEAD		Boring: 17 FS-02-91		Page: 3 of 3	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
10		Gravel, sandy, silty, calcareous matrix, limestone and quartzite clasts. rounded to angular Munsell = 2.5y/6/2 Sandy silt Calcareous Munsell = 10yr/5/4	Core #2	33/6"	Top core = Bkg. Base core = Bkg.
11			Core #3 10.5 ft. - 12.7 ft.	6/6" 4/6"	
12			18/6" 19/6"		
13			ML		
14		Sandy silt, trace clay fairly soft trace iron staining Munsell = 2.5y/5/4	Core #4 14 ft. - 16 ft.	6/6" 9/6"	Top core = Bkg. Base core = Bkg.
15			9/6" 10/6"		
16			ML		
17					
18					
19					
20					



Bore Log

Project Site STEAD TOOELE ARMY DEPT SOUTH AREA

Site ID 17-FS-03-21 Auger Size 6 5/8" X 4 1/4"

Date/Time Started 11 July 1991 1545 Date/Time Completed 11 July 1991 1555

Surface Elevation (optional) _____ Water Level (from Ground Surface) NONE

Completion Depth 4 ft Drilling Co. Layne Driller Kevin Cross

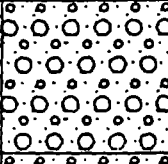
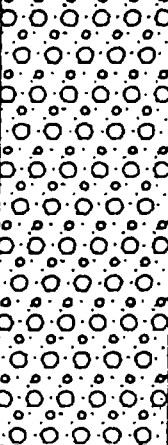
Drilling Type Auger Sample Type Split Spun No. of Samples 1

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: <u>STEAD DEAC FURNACE</u> Boring: <u>17-FS-03-91</u> Page: 1 of 2													
Driller & Company: <u>Kevin Cross Layne</u>													
Geologist/Logger & Company: <u>John A. Burger CVES</u> Signature: <u>John A. Burger</u>													
Date Boring Started: <u>11 July 1991</u>					Completed:								
Water Levels (From Ground Surface)					Drilling Rig: <u># 405</u>								
First Encountered:					Date:								
While Drilling: <u>NONE</u>					Date:								
At Boring Completion:					Date:								
Drilling Shifts:													
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift			
	Start	End	Start	End		Start	End	Start	End		Start	End	
<u>Abbreviations:</u> <table style="width: 100%; border: none;"> <tr> <td style="border: none;"><u>Abbr</u></td> <td style="border: none;"><u>Meaning</u></td> </tr> </table>						<u>Abbr</u>	<u>Meaning</u>	<u>Location Sketch:</u> 					
<u>Abbr</u>	<u>Meaning</u>												

BORING LOG

Project: DEAC FURNACE TEAD-S		Boring: 17 FS-03-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1545 hr. Stop: 1555 hr. HNu background: = 0.1 ppm
0		Sandy, silty gravel; GM limestone and quartzite; angular to rounded, up to 1 in. dia. Calcareous color is heterogeneous Augerings = same as 0 ft. - 1 ft.	Core # 1	20/6"	Top core = Bkg. Base core = Bkg.
1			0 ft.- 1 ft.	25/6"	
2					Unable to clear the hole for further drilling.
3					
4			T.D. 4 ft.		
5					
6					
7					
8					
9					
10					



Bore Log

Project Site DEAC FURNACE TOWLE ARMY DEPOT SOUTH AREA

Site ID 17-FS-04-91 Auger Size 6 5/8" * 4 1/4"

Date/Time Started 12 July 1991 0825 Date/Time Completed 12 July 1991 0938

Surface Elevation (optional) _____ Water Level (from Ground Surface) NONE

Completion Depth 16 ft Drilling Co. LAYNE Driller Kevrn Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 5

Geologist/Logger & Co. John A. Burger CNES.

BORING LOG GENERAL DATA

Project: <u>STEAD</u> <u>DEAC FURNACE</u> Boring: <u>17-FS-04-91</u> Page: 1 of 3									
Driller & Company: <u>Kevin Cross</u> <u>Layne</u>									
Geologist/Logger & Company: <u>John A. Burger</u>					Signature: <u>John A. Burger</u>				
Date Boring Started: <u>12 July 1991</u>					Completed: <u>12 July 1991</u>				
Water Levels (From Ground Surface)					Drilling Rig: <u>#405</u>				
First Encountered:					Date:				
While Drilling: <u>NONE</u>					Date:				
At Boring Completion: <u>NONE</u>					Date:				
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
Abbreviations:					Location Sketch:				
Abbr		Meaning							
<p>Approx N ↑</p>									

BORING LOG

Project: DEAC FURNACE TEAD-S		Boring: 17 FS-04-91		Page: 2 of 3	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0825 hr. Stop: 0938 hr. HNu background: = 0.6 ppm
0	[Sketch: Dotted pattern]	Sandy, slightly clayey silt soft trace rootlets 10yr/5/4	Core # 1 0 ft. - 2 ft.	6/6"	Top core = Bkg.
1				8/6"	
2	[Sketch: Dotted pattern]	Augerings = same as 0 ft. - 2 ft.		7/6"	Base core = Bkg.
3				5/6"	
4	[Sketch: Dotted pattern]	Slightly sandy, clayey silt soft, slightly powdery, dry trace rootlets Calcareous Munsell = 10yr/5/4	Core # 2 4 ft. - 6 ft.	6/6"	Top core = Bkg.
5				10/6"	
6	[Sketch: Dotted pattern]	Augerings = same as 4 ft. - 6 ft.		9/6"	Base core = Bkg.
7				9/6"	
8	[Sketch: Dotted pattern with small circles]	Trace gravel up to 1 in. at 8 ft.			
9					
10	[Sketch: Dotted pattern with larger circles]	Sandy silt hard, dry Calcareous 2 inch angular pebbles Munsell = 10yr/5/4	Core # 3 9 ft. - 11 ft.	12/6" 25/6"	Top core = Bkg.

BORING LOG

Project: DEAC FURNACE TEAD-S		Boring: 17 FS-04-91		Page: 3 of 3	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
10	[Dotted pattern]	Same as 9 ft. - 10 ft.	Core #3 9 ft.- 10 ft.	21/6"	Base core = Bkg. Top core = Bkg.
11				[Dotted pattern]	
12	[Dotted pattern]	Augerings = same as 11 ft. - 13 ft.	Core #4 11 ft.- 13 ft.		
13			[Dotted pattern]	Silty sand fine-to medium- grained quartz plus feldspar, dry Calcareous Munsell = 10yr/5/6	
14	[Dotted pattern]	Augerings = same as 11 ft. - 13 ft.			
15			[Dotted pattern]	Silty sand fine-to medium- grained quartz plus feldspar, dry Calcareous Munsell = 10yr/5/6	
16	[Dotted pattern]	Augerings = same as 11 ft. - 13 ft.			Core #5 14 ft.- 16 ft.
17			[Dotted pattern]	T.D. 16 ft.	6/6"
18	[Dotted pattern]	T.D. 16 ft.			8/6"
19			[Dotted pattern]	T.D. 16 ft.	11/6"
20	[Dotted pattern]	T.D. 16 ft.			13/6"



Bore Log

Project Site DEAC FURNACE TOOELE ARMY DEPOT SOUTH AREA

Site ID 17-FS-05-91 Auger Size 6 5/8" x 4 1/4"

Date/Time Started 12 July 1991 1122 hrs Date/Time Completed 12 July 1991 1211 hrs

Surface Elevation (optional) _____ Water Level (from Ground Surface) NONE

Completion Depth 16 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type _____ Sample Type Split Spun No. of Samples 5

Geologist/Logger & Co. John A. Burger CUES

BORING LOG GENERAL DATA

Project: <u>STEAD DEAC Furnace Boring: 17-FS-05-91</u> Page: 1 of 3													
Driller & Company: <u>Kevin Cross Layne</u>													
Geologist/Logger & Company: <u>John A. Burger</u>						Signature: <u>John A. Burger</u>							
Date Boring Started: <u>12 July 1991</u>					Completed: <u>12 July 1991</u>								
Water Levels (From Ground Surface)						Drilling Rig: <u># 405</u>							
First Encountered:						Date:							
While Drilling: <u>NONE</u>						Date:							
At Boring Completion: <u>NONE</u>						Date: <u>12 July 1991</u>							
Drilling Shifts:													
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift			
	Start	End	Start	End		Start	End	Start	End				
<u>Abbreviations:</u> <table style="width: 100%; border: none;"> <tr> <td style="border: none;"><u>Abbr</u></td> <td style="border: none;"><u>Meaning</u></td> </tr> </table>						<u>Abbr</u>	<u>Meaning</u>	<u>Location Sketch:</u> <p style="text-align: center;"> $560' \text{ E}$ $17.5' \text{ f}$ </p> <p style="text-align: right; border-left: 1px solid black; padding-left: 5px;">GRAVEL N 30° E ROAD</p> <p style="text-align: center;">Paved Road</p>					
<u>Abbr</u>	<u>Meaning</u>												

BORING LOG

Project: DEAC FURNACE TEAD-S		Boring: 17 FS-05-91		Page: 2 of 3	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1122 hr. Stop: 1211 hr. HNU background: = 0.6 ppm
0		Slightly sandy silt soft, dry Calcareous Munsell = 10yr/5/3	ML Core # 1 0 ft. - 2 ft.	8/6"	Top core = Bkg.
1				10/6"	
2		Augerings = same as 0 ft. - 2 ft.		11/6"	Base core = Bkg.
3				7/6"	
4		Slightly sandy silt soft Calcareous Munsell = 10yr/6/4	ML Core # 2 4 ft. - 6 ft.	8/6"	Top core = Bkg.
5				10/6"	
6		Same only color is different Munsell = 10yr/5/6		13/6"	Base core = Bkg.
7				11/6"	
8		Augerings = same as 4 ft. - 6 ft.			Base core = Bkg.
9					
10		Sandy silt fine-grained soft Calcareous Munsell = 2.5y/5/6	ML Core # 3 9 ft. - 11 ft.	3/6"	Top core = Bkg.
				10/6"	

BORING LOG

Project: DEAC FURNACE TEAD-S		Boring: 17FS-05-91		Page: 3 of 3	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
10	[Sketch: Dotted pattern]	Some as 9 ft - 10 ft.	Core # 3 9 ft. - 11 ft.	7/6"	
11				10/6"	
12	[Sketch: Dotted pattern]	Sandy silt ML soft, slightly clayey sand is fine-grained Calcareous Munsell = 2.5y/5/6	Core # 4 11 ft. - 13 ft.	9/6"	Top core = Bkg.
13				11/6"	
		Augerings = same as 11 ft. - 13 ft.		10/6"	Base core = Bkg.
				13/6"	
14	[Sketch: Dotted pattern]	Same as 11 ft. - 13 ft. ML Munsell = 2.5y/5/6	Core # 5 14 ft. - 16 ft.	5/6"	Top core = Bkg.
15				11/6"	
16	T.O. 16 ft.			10/6"	Base core = Bkg.
				14/6"	
17					
18					
19					
20					



Bore Log

Project Site STEAD - DEAC FURNACE YDDELE ARMY DEPOT - SOUTH AREA

Site ID 17-FS-06.91 Auger Size 6 5/8 x 4 1/4"

Date/Time Started 12 July 1991 1503hr Date/Time Completed 12 July 1991 1515hr

Surface Elevation (optional) _____ Water Level (from Ground Surface) NONE

Completion Depth 4 ft. Drilling Co. Layne Driller Kevin Cross

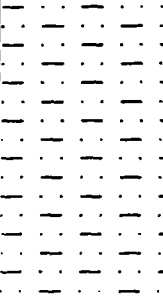
Drilling Type Auger Sample Type Split Spun No. of Samples 1

Geologist/Logger & Co. John A. Burger CNES

BORING LOG GENERAL DATA

Project: STEAD DEAC FURNACE Boring: V7-FS-06-91 Page: 1 of 2												
Driller & Company: Kevin Cross Layne												
Geologist/Logger & Company: John A. Burger ^{CNES} Signature: <i>John A. Burger</i>												
Date Boring Started: 12 July 1991					Completed:							
Water Levels (From Ground Surface)					Drilling Rig: #405							
First Encountered:					Date:							
While Drilling:					Date:							
At Boring Completion:					Date:							
Drilling Shifts:												
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift		
	Start	End	Start	End		Start	End	Start	End		Start	End
<u>Abbreviations:</u> Abbr Meaning						<u>Location Sketch:</u>						
Approx ^N 												

BORING LOG

Project: DEAC FURNACE TEAD-S		Boring: 17 FS-06-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1503 hr. Stop: 1515 hr. HNU background: = 0.6 ppm
0		Clayey, sandy silt ML Calcareous soft, dry Munsell = 10yr/6/4	Core # 1 0 ft. - 2 ft.	12/6"	Top core = 8kg. Base core = 8kg.
1				12/6"	
2				11/6"	
3				13/6"	
4	T.D. 4 ft.	Augerings = same as 0 ft. - 2 ft.			Unable to clear the hole for further drilling.
5					
6					
7					
8					
9					
10					



Bore Log

Project Site STEAD DEAC FURNACE TOOLEE ARMY DEPOT SOUTH AREA

Site ID 17-FS-07-91 Auger Size 6 5/8" x 4 1/4"

Date/Time Started 12 July 1991 1535hr JB Date/Time Completed 12 July 1991 1545hr JAB
~~1533hr~~ ~~1515hr~~

Surface Elevation (optional) N/A Water Level (from Ground Surface) NONE

Completion Depth 4 ft Drilling Co. Layne Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 1

Geologist/Logger & Co. John A. Burger CNES.

BORING LOG GENERAL DATA

Project: <u>STEAD IAC FURNACE</u>			Boring: <u>17-FS-07-91</u> Page: 1 of 2										
Driller & Company: <u>Kevin Cross</u>			<u>Layne</u>										
Geologist/Logger & Company: <u>John A. Burger</u>			Signature: <u>John A. Burger</u>										
Date Boring Started: <u>12 July 1991</u>			Completed: <u>12 July 1991</u>										
Water Levels (From Ground Surface)			Drilling Rig: <u>#45</u>										
First Encountered:			Date:										
While Drilling: <u>NONE</u>			Date:										
At Boring Completion: <u>NONE</u>			Date: <u>12 July 1991</u>										
Drilling Shifts:													
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift			
	Start	End	Start	End		Start	End	Start	End	Start	End		
<u>Abbreviations:</u> <table style="width: 100%; border: none;"> <tr> <td style="border: none;"><u>Abbr</u></td> <td style="border: none;"><u>Meaning</u></td> </tr> </table>						<u>Abbr</u>	<u>Meaning</u>	<u>Location Sketch:</u> <p style="text-align: center;">Approx N ↑</p> <p style="text-align: center;">17-FS-04 17-FS-06</p> <p style="text-align: center;">17-FS-02 17-FS-05</p> <p style="text-align: center;">17-FS-03 17-FS-07 17-FS-08</p> <p style="text-align: center;">S37°W 16.0'</p> <p style="text-align: center;">Paved Road</p>					
<u>Abbr</u>	<u>Meaning</u>												

BORING LOG

Project: DEAC FURNACE TEAD-S		Boring: 17 FS-07-91		Page: 2 of 2	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1535 hr. Stop: 1545 hr. HNu background: = 0.6 ppm
0		Clayey, sandy silt ML Calcareous soft dry, abundant roots Munsell = 10yr/5/3	Core # 1 0 ft. - 2 ft.	10/6"	Top core = Bkg. Base core = Bkg.
1				13/6"	
2				14/6"	
3				11/6"	
4	T.D. 4 ft.	Augerings = same as 0 ft - 2 ft.			Unable to clear the hole for further drilling.
5					
6					
7					
8					
9					
10					



Bore Log

Project Site DEAC. TOOELE ARMY DEPOT SOUTH AREA

Site ID 17-FS-08-91 Auger Size 6 5/8" * 4 1/4"

Date/Time Started 12 July 1991 1628 hr Date/Time Completed 12 July 1991 1634 hrs

Surface Elevation (optional) N/A Water Level (from Ground Surface) NONE

Completion Depth 4 ft Drilling Co. LAYNE Driller Kevin Cross

Drilling Type Auger Sample Type Split Spoon No. of Samples 1

Geologist/Logger & Co. John A. Burger CNES X

BORING LOG GENERAL DATA

Project: <u>STEAD</u> <u>DEXC FURNACE</u> Boring: <u>17-FS-08-91</u> Page: 1 of 2											
Driller & Company: <u>Kevin Cross, Layne</u>											
Geologist/Logger & Company: <u>John A. Burger CUES</u> Signature: <u>John A. Burger</u>											
Date Boring Started: <u>12 July 1991</u>					Completed: <u>12 July 1991</u>						
Water Levels (From Ground Surface)					Drilling Rig: <u># 405</u>						
First Encountered:					Date:						
While Drilling:					Date:						
At Boring Completion: <u>NONE</u>					Date:						
Drilling Shifts:											
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift			
	Start	End	Start	End		Start	End	Start	End		
<u>Abbreviations:</u> <table style="width: 100%; border: none;"> <tr> <td style="border: none;"><u>Abbr</u></td> <td style="border: none;"><u>Meaning</u></td> </tr> </table>					<u>Abbr</u>	<u>Meaning</u>	<u>Location Sketch:</u> 				
<u>Abbr</u>	<u>Meaning</u>										

BORE LOG

PROJECT SITE:	CAMDS Tooele Army Depot - South area
SITE IDENTIFICATION:	S - 76 - 91
AUGER SIZE:	9-5/8 inch O.D. X 6-1/4 inch I.D.
DATE/TIME STARTED:	June 18, 1991 - 0846 hrs
DATE/TIME COMPLETED:	June 18, 1991 - 1030 hrs
SURFACE ELEVATION:	N/A
WATER LEVEL:	9.3 feet
COMPLETION DEPTH:	24 feet
DRILLING COMPANY:	Layne Environmental Services, Inc.
DRILLER:	Kevin Cross
DRILLING TYPE:	Auger
SAMPLE TYPE:	Split Spoon
NUMBER OF SAMPLES:	6
GEOLOGIST/LOGGER & COMPANY:	John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS			Boring: 135-76-91 Page: 1 of 4						
Driller & Company: Kevin Cross			Layne						
Geologist/Logger & Company: John A Burger			CVES Signature: <i>John A Burger</i>						
Date Boring Started: 18 MA JUNE 1991			Completed: 18 JUNE 1991						
Water Levels (From Ground Surface)			Drilling Rig: # 405						
First Encountered:			Date:						
While Drilling: 9.3 ft.			Date: 18 June 1991						
At Boring Completion:			Date:						
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u> 				

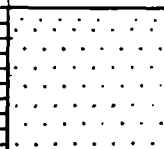
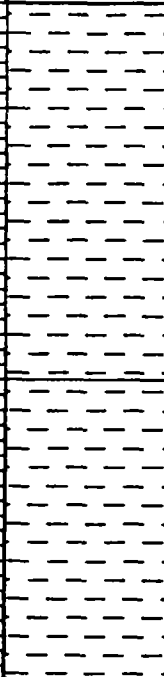
BORING LOG

Project: CAMDS		STEAD		Boring: S-76-91		Page: 2 of 4				
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0846 hr. Stop: 1030 hr. HNu background: = 0.2 ppm					
0		Silty sand SM fine-to medium- grained trace white flecks dry Calcareous Munsell = 10yr/4/4	Core # 1 0 ft.- 2 ft. 75% Recovery	5/6"	Top core = Bkg. Base core = Bkg.					
1								5/6"		
2								4/6"		
3	3/6"	Augerings = same as 0 ft. - 2 ft.			Base core = Bkg.					
4		Same as 0 ft. - 2 ft. SM Munsell = 10 yr/4/4	Core # 2 4 ft.- 6 ft.	2/6"				Top core = Bkg.		
5				3/6"						
6				3/6"						
7	7/6"	Augerings = slightly silty sand, dry at top Moist at 9 ft.			Base core = Bkg.					
8				Water at 9 ft. while drilling						
9								Sand, very slightly SM silty, fine-to medium grained, wet slightly calcareous Munsell = 2.5y/5/3		
10	9/6"	Top core = Bkg.								
	16/6"									

BORING LOG

Project: CAMDS		STEAD	Boring: S-76-91	Page: 3 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
10		Same as 9 ft - 10 ft.	Core # 3 9 ft. - 11 ft.	18/6"	Base core = Bkg.
11				37/6"	
12		Augerings = Sand, medium-to fine-grained wet			
13					
14					
15		Sand, medium- grained, wet, trace silt; trace yellow stain Munsell = 2.5y/5/3	Core # 4 14 ft. - 16 ft.	5/6"	Top core = Bkg.
16				10/6"	
17		Lower 6 inches are coarse-grained, well bedded sand		13/6"	Base core = Bkg.
18				22/6"	
19					
20		Augerings = no returns			
19					
20		Sand, medium-to coarse grained, well bedded, quartzose, feldspathic, trace dark minerals Slightly calcareous Munsell = 2.5y/5/3	Core # 5 19 ft. - 21 ft.	10/6"	Top core = Bkg.
20				6/6"	

BORING LOG

Project: CAMDS		STEAD	Boring: S-76-91		Page: 4 of 4		
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
20		Same as 19 ft. - 21 ft. SP	Core # 5 19 ft. - 21 ft.	9/6"	Base core = Bkg. Clay at 21.5 ft. called by driller, but center bit showed only sand. Top core = Bkg. Base core = Bkg.		
21				Augerings = no returns CL			21/6"
22		Center bit has fine-grained sand CL					
23							
24				Clay, trace organic matter, trace iron stain, very hard, dense, dry Contact at 24 ft.? No bedding or laminae visible Slightly calcareous Munsell = 5y/5/2 CL		Core # 6 24 ft. - 26 ft.	6/6"
25							12/6"
26	T.D. 26 ft.			22/6"			
27				27/6"			
28							
29							
30							

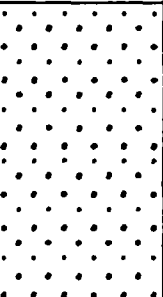

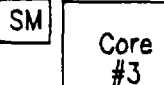
BORE LOG

PROJECT SITE:	CAMDS Tooele Army Depot - South area
SITE IDENTIFICATION:	S - 77 - 91
AUGER SIZE:	9-5/8 inch O.D. X 6-1/4 inch I.D.
DATE/TIME STARTED:	June 22, 1991 - 1538 hrs
DATE/TIME COMPLETED:	June 22, 1991 - 1703 hrs
SURFACE ELEVATION:	N/A
WATER LEVEL:	3.5 feet
COMPLETION DEPTH:	21 feet
DRILLING COMPANY:	Layne Environmental Services, Inc.
DRILLER:	Kevin Cross
DRILLING TYPE:	Auger
SAMPLE TYPE:	Split Spoon
NUMBER OF SAMPLES:	9
GEOLOGIST/LOGGER & COMPANY:	John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS		Boring: S-77-99		Page: 1 of 3					
Driller & Company: Kevin Cross Layne									
Geologist/Logger & Company: John A. Burger ^{CNES}				Signature: <i>John A. Burger</i>					
Date Boring Started: 22 June 1991			Completed:						
Water Levels (From Ground Surface)				Drilling Rig: 405					
First Encountered:			Date:						
While Drilling:			Date:						
At Boring Completion:				Date:					
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr <u>Meaning</u>					<u>Location Sketch:</u>				

BORING LOG

Project: CAMDS		STEAD		Boring: S-77-91		Page: 2 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
0		Silty sand slightly clayey fine-grained dry Calcareous Munsell = 10yr/5/3	Core #1 0 ft.- 2 ft.	6/6"	Start: 0938 hr. Stop: 1020 hr. HNU background: = 0.2 ppm		
1				9/6"			
2				9/6"	Top core = Bkg.		
3				8/6"			
		Augerings = clayey, silty sand					
4		Silty, clayey sand medium-to fine- grained in stringers plus sandy silt dry Calcareous Munsell = 2.5y/5/3	Core #2 4 ft.- 5 ft.	2/6"	Top core = Bkg.		
5				3/6"			
6				7/6"	Note: Sedimentation test shows little clay! Also very little sand!		
7				12/6"			
		Augerings = slightly silty sand, moist			Water while drilling at 4.5 ft.! metal detected! Stopped drilling at 0925 hr. Resumed drilling at 0955 hr. Offset 5 ft. to west Water at 3.8 ft. while drilling the offset.		
9		Silty sand Medium-to coarse- grained Quartzose, feldspathic	Core #3 9 ft.- 11 ft.	5/6"			
10				12/6"			

BORING LOG

Project: CAMDS		STEAD	Boring: s-77-91		Page: 3 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
10		wet Calcareous Munsell = 2.5y/5/3	SM	18/6"	Base core = Bkg.	
11				No returns while augering		19/6"
12		Sand slightly silty, iron stain (local) trace organic matter Slightly calcareous Munsell = 2.5y/6/3	SM	3/6"	Top core = Bkg.	
13				Core #3 14 ft.- 16 ft.		7/6"
14				12/6"		Base core = Bkg.
15				11/6"		
16		washing sands at 17 ft. - 19 ft. coarse-grained	CL	3/6"	Drilling break at 19 ft.	
17				6 in. of recovery in in the core barrel = clay, hard, slightly moist. Munsell = 5y/6/2		3/6"
18				19 ft.- 21 ft.		3/6"
19			CL	3/6"	Top core = Bkg.	
20				6 in. of recovery in in the core barrel = clay, hard, slightly moist. Munsell = 5y/6/2		3/6"

BORING LOG

Project: CAMDS		STEAD	Boring: S-77-91		Page: 4 of 4
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
20		Slightly calcareous	<div style="border: 1px solid black; display: inline-block; padding: 2px;">CL</div> Core #4 19 ft.- 21 ft.	5/6"	Base core = Bkg.
21		Center bit has clay, hard dense, only slightly moist 5y/5/5		5/6"	
22					Add auger
23					
24					
25					
26					
27					
28					
29					
30					
T.D. 26 FT.					

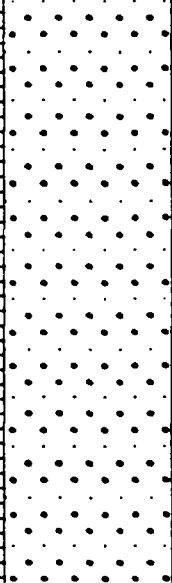

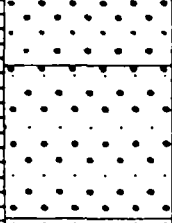
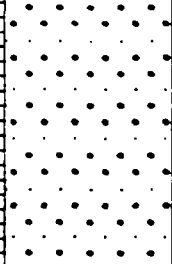
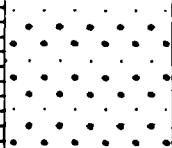
BORE LOG

PROJECT SITE:	CAMDS Tooele Army Depot - South area
SITE IDENTIFICATION:	S - 78 - 91
AUGER SIZE:	9-5/8 inch O.D. X 6-1/4 inch I.D.
DATE/TIME STARTED:	May 29, 1991 - 1007 hrs
DATE/TIME COMPLETED:	May 29, 1991 - 1120 hrs
SURFACE ELEVATION:	N/A
WATER LEVEL:	8.3 feet while drilling
COMPLETION DEPTH:	22 feet
DRILLING COMPANY:	Layne Environmental Services, Inc.
DRILLER:	Kevin Cross
DRILLING TYPE:	Auger
SAMPLE TYPE:	Split Spoon
NUMBER OF SAMPLES:	4
GEOLOGIST/LOGGER & COMPANY:	John A. Burger CNES

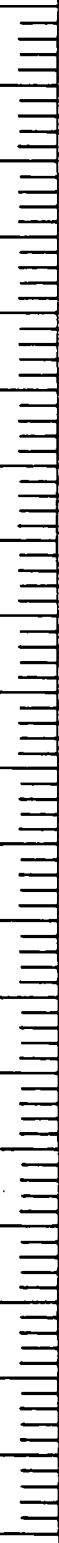
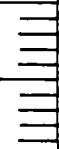
BORING LOG GENERAL DATA

Project: CAMDS				Boring: 13-S-78-91 Page: 1 of 4							
Driller & Company: Kevin Cross				Layne							
Geologist/Logger & Company: John A. Burger				CVES Signature: <i>John A. Burger</i>							
Date Boring Started: 29 MAY 1991				Completed: 29 MAY 1991							
Water Levels (From Ground Surface)				Drilling Rig: 405							
First Encountered:				Date:							
While Drilling: 8.3 ft				Date: 29 MAY 1991 1026 hr							
At Boring Completion:				Date:							
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End		
Abbreviations:						Location Sketch:					
Abbr Meaning						<p>The sketch shows a 'Sewage Lagoon' and 'Canal Road' intersecting. A 'Water Tower' is marked with a circle and 'S200W' nearby. A 'CAMDS ALARM TOWER' is marked with a square and 'S700W' nearby. The boring location '13-S-78-91' is marked with a square and 'S302E' nearby. A north arrow is also present.</p>					

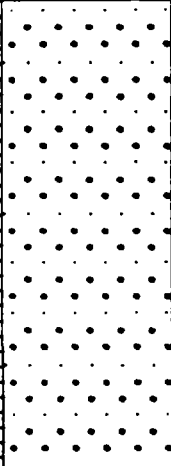
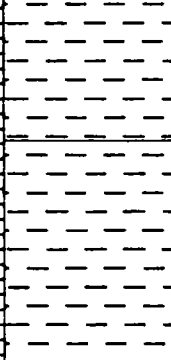
BORING LOG

Project: CAMDS		STEAD		Boring: 5-78-91		Page: 2 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1007 hr. Stop: 1120 hr. H _{Nu} background: = 0.1 ppm		
0		Augerings = silty sand soft Calcareous			Auger to 4 ft.		
1							
2							
3							
4		SM	Core #1 4 ft. -6 ft.	3/6"	Top core = Bkg.		
5		Silty sand fine-to medium-grained Calcareous Munsell = 10yr/4/4		3/6"			
6				3/6"			
7				3/6"			
8		Augerings = silty sand fine-to medium-grained Calcareous Munsell = 10yr/4/4	75% recovery				
9			Cuttings wetter at ~8 ft.		Water at 8.3 ft. with augers out of hole at 1026 hr.		
10		SM					
		Silty sand Quartzose, fine-to medium-grained Calcareous Munsell = 5y/6/2		9/6"	Base core = Bkg.		

BORING LOG

Project: CAMDS		STEAD	Boring: S-78-91		Page: 3 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
10		No returns on augerings			Augering to 14 ft.	
11						
12						Softer sand at ~12 ft.
13		<div style="border: 1px solid black; display: inline-block; padding: 2px;">SP</div>	Fine-to medium-grained sand			
14			Slightly silty sand well sorted, fine to medium-grained Calcareous Munsell = 2.5y/5/3	Core #3 14 ft.	10/6"	Top core = Bkg.
15				-15 ft.	19'6"	Base core = Bkg.
16						
17			Augering to 19' No returns.			
18						
19						—Add auger
20						

BORING LOG

Project: CAMDS		STEAD	Boring: S-78-91		Page: 4 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
20		Augerings = silty sand	SM			
21						
22						
23		Hard dry clay Slightly calcareous Munsell = 5gy/5/1 Trace pyrite	CL		Driller - harder at 23 ft.	
24			CL	Core #3 24 ft. - 25.5 ft.		5/6"
25				5/6"		5/6"
26	Total depth 25.5 ft.					
27						
28						
29						
30						

BORE LOG

PROJECT SITE:	CAMDS Tooele Army Depot - South area
SITE IDENTIFICATION:	S - 79 - 91
AUGER SIZE:	9-5/8 inch O.D. X 6-1/4 inch I.D.
DATE/TIME STARTED:	June 17, 1991 - 0938 hrs
DATE/TIME COMPLETED:	June 17, 1991 - 1020 hrs
SURFACE ELEVATION:	N/A
WATER LEVEL:	4.0 feet
COMPLETION DEPTH:	18 feet
DRILLING COMPANY:	Layne Environmental Services, Inc.
DRILLER:	Kevin Cross
DRILLING TYPE:	Auger
SAMPLE TYPE:	Split Spoon
NUMBER OF SAMPLES:	6
GEOLOGIST/LOGGER & COMPANY:	John A. Burger CNES

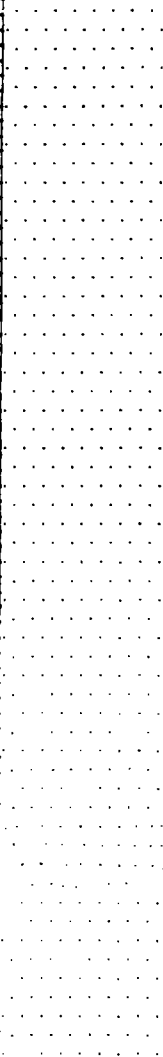
BORING LOG GENERAL DATA

Project: CAMDS			Boring: 13-795-91 Page: 1 of 3						
Driller & Company: Kevin Cross			LAYNE						
Geologist/Logger & Company: JOHN A. BURGETZ ^{CNES}			Signature: <i>John A. Burgetz</i>						
Date Boring Started: 17 JUNE 1991			Completed: 17 JUNE 1991						
Water Levels (From Ground Surface)			Drilling Rig: # 405						
First Encountered:			Date:						
While Drilling: 4'-0"			Date: 17 JUNE 1991						
At Boring Completion:			Date:						
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u>				

BORING LOG

Project: CAMDS		STEAD		Boring: S-79-91		Page: 2 of 3	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	SM	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
0		Silty sand medium-to fine- grained soft Calcareous Munsell = 2/5y/5/4	SM	Core #1 Sample 1 0 ft.- 2 ft.		Start: 1523	
1						Stop: 1703	
2		Silty sand soft Calcareous	SM			HNU background: = 0.2 ppm	
3						Pushed core from 0 ft. - 5 ft.	
4		Silty sand, fine-to medium-grained Calcareous relatively hard Munsell = 5y/6/2	SM	Core #1 Sample 2 4 ft.- 5 ft.	90% recovery	HNU top core = 0.2 ppm	
5						Water in hole at 2.7 ft. at 1111 hr.	
6		Slightly silty sand Trace of roots, fossil snails, burrows 1-2 mm laminations in lower portion Calcareous Munsell = 5y/6/2	SP	Core #2 Sample 3 5 ft.- 6 ft.		Base core = Bkg. Top core = Bkg.	
7						Pushed core from 5 ft. - 8 ft.	
8		Slightly silty sand, fairly hard, dry Calcareous Munsell = 2.5y/6/3	SM	Core #2 Sample 4 7 ft.- 8 ft.		Pushed core to depth of 8 ft.	
9						Base core = Bkg. Top core = Bkg.	
10		Sand, medium-to coarse coarse grained. Laminated 1-2 mm. Dark minerals show the laminations Calcareous Munsell = 2.5y/5/3	SP	Core #3 Sample 4 8 ft.- 10 ft.	0/6" 2/6" 4/6" 9/6"	Base core = Bkg.	

BORING LOG

Project: CAMDS		STEAD	Boring: S-79-91		Page: 3 of 3	
Depth/	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
10		Augerings = wet and sloppy at outset				
11						
12						
13			Sample from center bit	SP		
14			Sand, fine-to medium-grained Calcareous			
15			Augering = sloppy sand and mud			
16						
17				CL		Clay at 17 ft., determined by drilling break
18		T.D. 18 FT.				
19						
20						

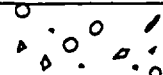
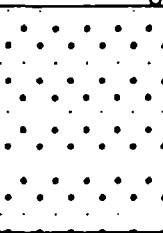

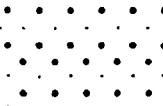
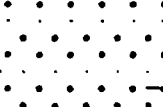
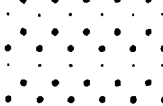
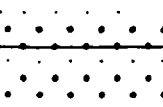
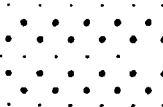
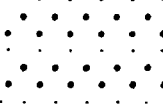
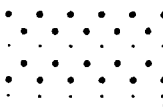
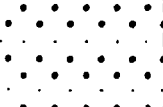
BORE LOG

PROJECT SITE:	CAMDS Tooele Army Depot - South area
SITE IDENTIFICATION:	S - 80 - 91
AUGER SIZE:	9-5/8 inch O.D. X 6-1/4 inch I.D.
DATE/TIME STARTED:	May 28, 1991 - 1425 hrs
DATE/TIME COMPLETED:	May 28, 1991 - 1526 hrs
SURFACE ELEVATION:	N/A
WATER LEVEL:	12.0 feet
COMPLETION DEPTH:	24 feet
DRILLING COMPANY:	Layne Environmental Services, Inc.
DRILLER:	Kevin Cross
DRILLING TYPE:	Auger
SAMPLE TYPE:	Split Spoon
NUMBER OF SAMPLES:	3
GEOLOGIST/LOGGER & COMPANY:	John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS			Boring: 13-S80-91			Page: 1 of 4					
Driller & Company: Kevin Cross Layne											
Geologist/Logger & Company: John A. Burger CNES Signature: <i>John A. Burger</i>											
Date Boring Started: 28 MAY 1991			Completed: 28 MAY 1991								
Water Levels (From Ground Surface)						Drilling Rig: 405					
First Encountered:						Date:					
While Drilling: 12 ft			Date: 28 MAY 1991								
At Boring Completion:						Date:					
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning						<u>Location Sketch:</u> 					

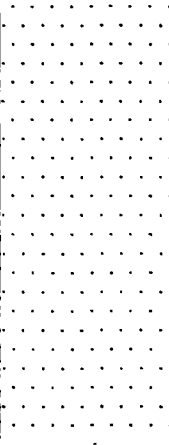
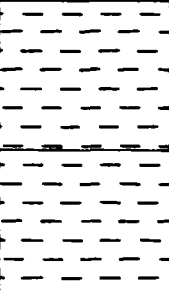
BORING LOG

Project: CAMDS		STEAD	Boring: S-80-91		Page: 2 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1425 hr. Stop: 1526 hr. HNu background: 0.1 ppm	
0		Rubble, soil		6/6"	Base core = Bkg.	
1		Silty sand SM Trace calcite crystals Trace roots Calcareous Munsell = 10yr/5/3	#1 0 ft. - 2 ft. 75% recovery	8/6" 9/6" 7/6"		
2		Augerings = same as 1 ft. - 2 ft.				
3						
4		Augerings = silty sand SM Calcareous slightly moist				Add auger
5						
6						
7						
8						
9		No recovery				Dry at 9 ft.
10		Silty sand SM fine-to medium-grained Calcareous Munsell = 2.5y/6/2	Core #2 9 ft. - 11 ft	3/6" 24/6"	Top core = Bkg.	

BORING LOG

Project: CAMDS 1 STEAD		Boring: S-80-91		Page: 3 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
10		Same as 9 ft. - 10 ft. Augerings = silty sand, medium-to fine-grained	Core #2 9 ft. - 11 ft.	40/6" 41/6"	Base core = Bkg. Add auger Softer drilling at 11 ft. (driller)
11					
12		Augerings = no returns			Add auger
13					Add auger
14					
15					
16					
17					
18					
19					Add auger
20					

BORING LOG

Project: CAMDS		STEAD	Boring: S-80-91		Page: 4 of 4
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
20		Augerings = wet soupy sandy returns. Fine-to medium-grained sand. Quartzose, feldspathic			
21					
22					
23		Hard, dense clay CL Core dry Trace brownish black organic matter Calcareous Munsell - 5y/5/3	Core #3 24 ft. - 25 ft.	8/6" 21/6"	Stiffer drilling at 23 ft. Clay on center bit on lower 0.8 ft.
24					Total depth = 25 ft.
25					Base core = Bkg.
26					
27					
28					
29					
30					

BORE LOG

PROJECT SITE:	CAMDS Tooele Army Depot - South area
SITE IDENTIFICATION:	S - 82 - 91
AUGER SIZE:	9-5/8 inch O.D. X 6-1/4 inch I.D.
DATE/TIME STARTED:	May 16, 1991 - 1027 hrs
DATE/TIME COMPLETED:	May 16, 1991 - 1213 hrs
SURFACE ELEVATION:	N/A
WATER LEVEL:	11.0 feet
COMPLETION DEPTH:	26 feet
DRILLING COMPANY:	Layne Environmental Services, Inc.
DRILLER:	Kevin Cross
DRILLING TYPE:	Auger
SAMPLE TYPE:	Split Spoon
NUMBER OF SAMPLES:	6
GEOLOGIST/LOGGER & COMPANY:	John A. Burger CNES

Bore Log

Project Site: CAMDS Tooele Army Depot South Area
Site ID: S-81-91
Auger Size: 9-5/8" * 6-1/4"
Date/Time Started: 28 May 1991 0840 hr.
Date/Time Completed: 28 May 1991 1003 hr.
Surface Elevation: N/A
Water Level: 12.7'
Completion Depth: 24'
Drilling Co.: Layne
Driller: Kevin Cross
Drilling Type: Auger
Sample Type: Split Spoon
No. Samples: 5
Geologist/ Logger & Co.: John A. Burger CNES



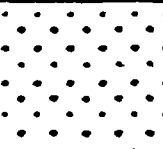
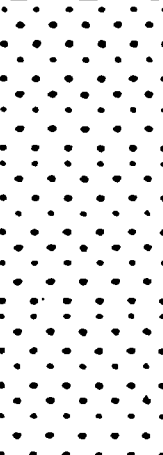
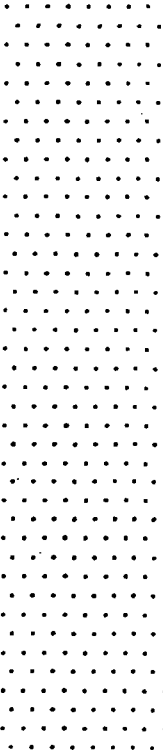
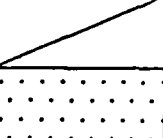
BORING LOG GENERAL DATA

Project: CAMDS			Boring: 13-S-81-91 Page: 1 of 4									
Driller & Company: Kevin Cross			Layne									
Geologist/Logger & Company: John D. Burger			CNES Signature: John D. Burger									
Date Boring Started: 28 MAY 1991			Completed: 28 MAY 1991									
Water Levels (From Ground Surface)			Drilling Rig: 465									
First Encountered:			Date:									
While Drilling: 12.7 ft. w. augers			Date: 28 MAY 1991									
			out of the hole									
At Boring Completion:			Date:									
Drilling Shifts:												
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift		
	Start	End	Start	End		Start	End	Start	End		Start	End
<u>Abbreviations:</u> Abbr Meaning						<u>Location Sketch:</u> Bearing = N20W 72.4 ft FAB 13-S-81-91 Turnaround Parking.						
												S 25° W Water Tower

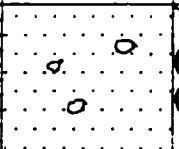
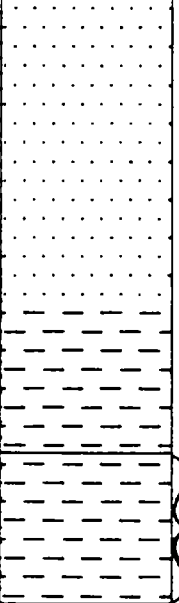
BORING LOG

Project: CAMDS		TEAD-5		Boring: S-81-91		Page: 2 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0840 hr. Stop: 1003 hr. HNu background: = 0.2 ppm		
0		Rubble and soil, gravel	Core #1	4/6"	Top core = Bkg.		
1		Slightly silty sand, fine-to medium-grained trace calcite crystals Calcareous Munsell = 10yr/4/3	1 ft.- 2 ft. was sampled	4/6" 6/6"			
2		Augerings = silty sand, fine-to medium- grained Calcareous			Base core = Bkg. While augering, HNu = background		
3							
4		Silty sand, trace calcite grains fine-grained Calcareous Munsell = 10yr/5/3	Core #2	3/6"	Top core = Bkg.		
5			4 ft. to 6 ft.	3/6" 4/6" 6/6"			
6		Augerings = slightly clayey, silty, sand fine-grained Calcareous			Base core = Bkg.		
7							
8		8 ft. to 9 ft. has more clay. Munsell = 5y/5/3			Hole is dry at 9 ft. while drilling Top core = Bkg.		
9							
10		Silty sand, fine- grained Munsell = 5y/6/2	Core #3 9 ft. - 10 ft. 25% recovery	7/6" 30/6"			

BORING LOG

Project: CAMDS		TEAD-S		Boring: S-81-91		Page: 3 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
10		Same as 9 ft - 10 ft.	<div style="border: 1px solid black; padding: 2px; display: inline-block;">SM</div>	10 ft. to 11 ft.	35/6" 44/6"	Core barrel is dry. probably pushing a rock. Found a 2 in. rock in the core barrel. Base core = Bkg.	
11							
12						While augering, HNu = background Water at about 13 ft. while drilling. Measured water at 12.7 ft. with augers out of hole Add auger at 14 ft.	
13							
14							
15							
16							
17							
18							
19		No recovery	<div style="border: 1px solid black; padding: 2px; display: inline-block;">SP</div>	Core #4 19 ft.- 21 ft. 75% recovery	4/6" 6/6"	Top core = Bkg.	
20							

BORING LOG

Project: CAMDS		STEAD	Boring: S-81-91		Page: 4 of 4		
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
20		Same as 19 ft.-20 ft. Rock fragments Munsell = 5y/6/2	Core #4 19 ft. to 21 ft.	8/6"	Base core = Bkg. Hard drilling at 23 ft. Top core = Bkg. Base core = Bkg.		
21				Augerings = no returns probably medium-to coarse-grained sand.			X/6"
22		Center bit has clay, semi-plastic, hard, fairly dry.					
23				CL			
24				CL		Clay, hard, dry, trace organic material Calcareous Munsell = 5y/5/2	Core #5 24 ft. to 25 ft.
25	Total depth = 25 ft.			17/6"			
26							
27							
28							
29							
30							

BORING LOG GENERAL DATA

Project: CAMDS				Boring: 13-S82-91				Page: 1 of 7	
Driller & Company: Kevin Cross				Layne					
Geologist/Logger & Company: John A. Burger				CN/ES		Signature: John A. Burger			
Date Boring Started: 16 MAY 1991				Completed: 16 MAY 1991					
Water Levels (From Ground Surface) 11 ft at 1220h				Drilling Rig: 405					
First Encountered:				Date: 16 MAY 1991					
While Drilling: 11 ft at 1220hr				Date: 16 MAY 1991					
At Boring Completion: 9.8 ft				1347hr		Date: 16 MAY 1991			
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u>				

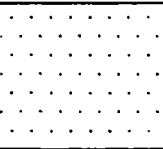

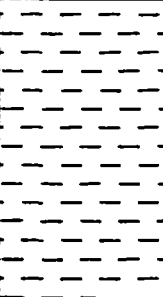
BORING LOG

Project: CAMDS		STEAD		Boring: S-82-91		Page: 2 of 4				
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1027 hr. Stop: 1215 hr. HNu background: = 0.2 ppm					
0	Vegetation and soil	Natural, (?) non-asphalt surface Sandy silt Calcareous Munsell = 10yr/4/4	Core #1 0 ft.- 2 ft.	3/6"	Top core = Bkg. Sample for archive purposes only	}				
1				2/6"						
2				4/6"						
3				2/6"						
4		Augerings = sandy silt Calcareous Munsell = 10yr/4/4			Base core = Bkg.	}				
5		Sandy silt Calcareous Munsell = 10yr/4/3	Core #2 4 ft.- 5 ft.	3 blows for 2 ft.				Top core = Bkg. 4 ft ordnance reading Wet at base of auger at 4 ft.	}	
6		Clayey silt calcareous Munsell = 10yr/4/4								
7		Augerings = silty clay wet, plastic						Base core = Bkg.	}	
8										
9		Silty clay, hard, dry Munsell = 2.5y/3/2	Core #3 9 ft. to 11 ft.	3/6"	No water at 9 ft. Top core = Bkg.	}				
10				8/6"						

BORING LOG

Project: CAMDS		STEAD		Boring: S-82-91		Page: 3 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
10		Silty clay Calcareous Munsell = 2.5y/5/2	CL	Core #3 9 ft to 11 ft.	20/6"	Diesel smell	H ₂ O base of core = 0.8 ppm
11					50/6"		
12		Augerings = silty clay Moderately calcareous Munsell = 2.5y/4/3				Water first encountered at 12'	
13							
14							
15		Slightly silty sand Slightly calcareous Munsell = 2.5y/5/2				Top core = Bkg.	
16							
17		Sand fine-to medium- grained, quartzose feldspathic Munsell = 2.5y/5/3	SM	Core #4 14 ft. to 16 ft.	7/6"	Base core = Bkg.	
18					9/6"		
19					15/6"		
20		Augerings = silty sand few returns			23/6"		
21		Sand fine-to medium- grained quartzose, feldspathic, black grains	SM	Core #5 19 ft.- 21 ft.	6/6"	Top core = Bkg.	
22					6/6"		

BORING LOG

Project: CAMDS		STEAD	Boring: S-82-91		Page: 4 of 4
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
20		Same as 19 ft.-20 ft. Munsell = 2.5y/5/3 Augerings = silty sand	Core #5 19 ft. to 21 ft.	13/6" 14/6"	Very wet sand Base core = 8kg.
21			21 ft.		
22		Probably clay according to drilling break			Harder drilling began at about 23 ft.
23					
24					
25		Clay, dry Slightly calcareous Munsell = 5y/5/1	Core #6 24 ft. to 26 ft.	7/6" 14/6" 20/6"	Top core = Bkg. Base core = Bkg.
26			85% recovery	42/6"	
27	Total depth = 26 ft.	CL			Water in hole is 11 ft. below ground surface at 1220 hr. At 1347 hr. water is 9.8 ft. below surface.
28					
29					
30					

BORE LOG

PROJECT SITE:	CAMDS Tooele Army Depot - South area
SITE IDENTIFICATION:	S - 83 - 91
AUGER SIZE:	9-5/8 inch O.D. X 6-1/4 inch I.D.
DATE/TIME STARTED:	May 17, 1991 - 0935 hrs
DATE/TIME COMPLETED:	May 17, 1991 - 1120 hrs
SURFACE ELEVATION:	N/A
WATER LEVEL:	7.5 feet
COMPLETION DEPTH:	26 feet
DRILLING COMPANY:	Layne Environmental Services, Inc.
DRILLER:	Kevin Cross
DRILLING TYPE:	Auger
SAMPLE TYPE:	Split Spoon
NUMBER OF SAMPLES:	6
GEOLOGIST/LOGGER & COMPANY:	John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS			Boring: 13-S-83-91			Page: 1 of 4					
Driller & Company: Kevin Cross			Layne								
Geologist/Logger & Company: John A. Burger			CNES			Signature: <i>John A. Burger</i>					
Date Boring Started: 17 MAY 1991			Completed: 17 MAY 1991								
Water Levels (From Ground Surface)			Drilling Rig: 405								
First Encountered:			Date:								
While Drilling: 7.5'			Date: 17 MAY 1991								
At Boring Completion:			Date:								
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
		Start	End	Start	End			Start	End	Start	End
Abbreviations:						Location Sketch:					
Abbr Meaning						<div style="text-align: right;">Approx ↑ N</div> <p>The sketch shows a rectangular area labeled 'CAMDS FACILITY' enclosed by a 'DOUBLE FENCE'. Inside the facility, three borings are marked with small squares: 13-S-83-91, 13-S-29-88, and 13-S-29-89. Distances are indicated: 97.6' between 13-S-83-91 and 13-S-29-88, and 92.4' between 13-S-29-88 and 13-S-29-89. A north arrow points upwards, labeled 'Approx ↑ N'.</p>					

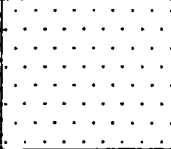
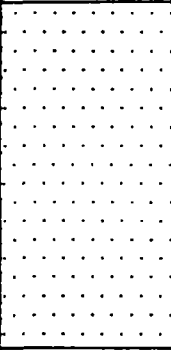
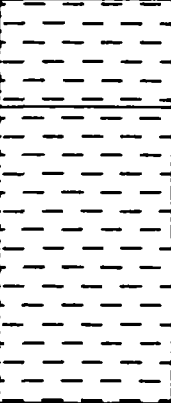
BORING LOG

Project: CAMDS		STEAD	Boring: S-83-91		Page: 2 of 4
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0935 hr. Stop: 1120 hr. HNu background: = 0.2 ppm
0	Surface soil and vegetation.	Sandy silt	ML		Top core = Bkg.
1	-----	Calcareous Munsell = 10yr/5/4	Core #1 0 ft to 2 ft	3/6" 3/6" 4/6" 4/6"	
2	-----				Base core = 3kg.
3	-----	Augerings = sandy silt, wet Calcareous Munsell = 10yr/5/4			
4	-----				
5	•••••	Silty sand Calcareous top 6 in. Munsell = 10yr/6/3	SM	Core #2 3/6" 4/6"	Top core = Bkg.
6	•••••	bottom 18 in. Munsell = 2.5y/6/3	5 ft. to 7 ft.	6/6" ?/6"	
7	•••••				Base core = Bkg.
8	•••••	Augerings = silty, slightly clayey sand			← Water table at 7.5 ft. while drilling
9	•••••	Silty clayey sand Munsell = 5y/6/2	SM	Core #3 4/6" 8/6"	Top core = Bkg.
10	•••••		9 ft. to 11 ft.		

BORING LOG

Project: CAMDS		Boring: S-83-91		Page: 3 of 4		
Depth/	USCS Symbol/ Core Sketch	Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
10		Clayey, silty sand Calcareous Munsell = 5y/6/2	SM	Core #3 9 ft. to 11 ft.	9/6" 10/6"	Top core = Bkg. Core wet Base core = Bkg.
11						
12		Wet sloppy cuttings	SM			
13						
14		Slightly silty sand fine-to medium- grained Calcareous	SM	Core #4 14 ft. to 16 ft.	7/6" 9/6" 15/6" 29/6"	Top core = Bkg. Base core = Bkg.
15						
16		Augerings = sand Very sloppy cuttings Poor return on cuttings.				
17						
18		Fine-to medium- grained sand Calcareous Munsell = 2.5y/6/2	SP	Core #5 19 ft. to 21 ft.	4/6" 4/6"	Top core = Bkg.
19						
20						

BORING LOG

Project: CAMDS		STEAD	Boring: S-83-91	Page: 4 of 4		
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
20		Medium to fine grained sand Calcareous Munsell = 2.5y./6/2	Core #5 19 ft. to 21 ft.	6/6" 7/6"	Base core = Bkg.	
21						Augerings = No recovery Probably sand
22		Bottom 0.8 ft. of center bit has clay.				
23						
24		Hard, dry, clay Slightly calcareous Munsell = 5y/5/1	Core #6 24 ft. to 26 ft.	7/6" 11/6" 13/6" 27/6"	Top core = Bkg.	
25						CL
26						Total depth 26 feet
27					Base core = Bkg. No smell of diesel fuel in hole	
28						
29						
30						


BORE LOG

PROJECT SITE:	CAMDS Tooele Army Depot - South area
SITE IDENTIFICATION:	S - 84 - 91
AUGER SIZE:	9-5/8 inch O.D. X 6-1/4 inch I.D.
DATE/TIME STARTED:	May 18, 1991 - 0915 hrs
DATE/TIME COMPLETED:	May 18, 1991 - 1115 hrs
SURFACE ELEVATION:	N/A
WATER LEVEL:	6.0 feet
COMPLETION DEPTH:	28.5 feet
DRILLING COMPANY:	Layne Environmental Services, Inc.
DRILLER:	Kevin Cross
DRILLING TYPE:	Auger
SAMPLE TYPE:	Split Spoon
NUMBER OF SAMPLES:	6
GEOLOGIST/LOGGER & COMPANY:	John A. Burger CNES

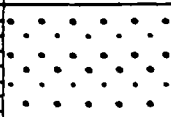
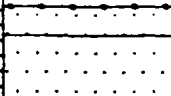


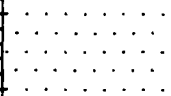
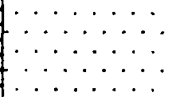
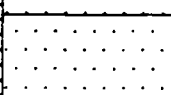
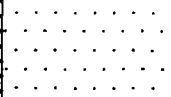
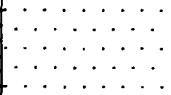
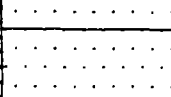
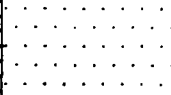
BORING LOG GENERAL DATA

Project: CAMDS			Boring: 13-S 84-91 Page: 1 of 4										
Driller & Company: Kevin Cross			Layne										
Geologist/Logger & Company: John A Burger			CNES Signature: <i>John A Burger</i>										
Date Boring Started: 18 May 1991			Completed: 18 MAY 1991										
Water Levels (From Ground Surface)					Drilling Rig: 405								
First Encountered: @ 6'					Date: 18 MAY 1991								
While Drilling: 6'					Date: 18 MAY 1991								
At Boring Completion:					Date:								
Drilling Shifts:													
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift			
		Start	End	Start	End			Start	End	Start	End		
<u>Abbreviations:</u> <table style="width: 100%; border: none;"> <tr> <td style="border: none;"><u>Abbr</u></td> <td style="border: none;"><u>Meaning</u></td> </tr> </table>						<u>Abbr</u>	<u>Meaning</u>	<u>Location Sketch:</u> 					
<u>Abbr</u>	<u>Meaning</u>												

BORING LOG

Project: CAMDS		STEAD		Boring: S-84-91		Page: 2 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0915 hr. Stop: 1115 hr. HNU background: = 0.2 ppm		
0	Soil and vegetation	Silty sand quartzose, fine-to-medium grained Calcareous roots Munsell = 10yr/5/3	Core #1	3/6"	Top core = Bkg.		
1				75% recovery			
2		Augerings = silty sand		3/6"	Base core = Bkg.		
3				0/6"			
4	Soil and vegetation	Silty sand fine-grained Calcareous Munsell = 10yr/5/3	Core #2	3/6"	Top core = Bkg.		
5				4 ft. to 6 ft.			
6		Augerings = silty clayey sand, fine-grained			Base core = Bkg. Water table at 6 ft. measured soon after augers were pulled for an ordnance locate between 9 and 11 ft.		
7							
8		Medium-grained slightly silty sand					
9		Slightly silty sand fine-grained Calcareous	Core #3	3/6"	Top core = Bkg.		
10			9 ft. to 11 ft.	6/6"			

BORING LOG

Project: CAMDS		STEAD		Boring: S-84-91		Page: 3 of 4		
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data			
10		Silty sand slightly calcareous Munsell = 2.5y/6/3	SM	Core #3 9 ft. to 11 ft.	7/6"	9/6"	Base core = Bkg.	
11								
12		Sand, fine-to coarse- grained, quartzose, feldspar, rock fragments, dark minerals	SP	Slightly calcareous Munsell = 5y/5/3	Core #4 14 ft. to 16 ft..	5/6" 8/6" 10/6" 12/6"		
13								
14		Sand, coarse-to very- coarse, quartz, feldspar rock fragments	SP	Silty clay Munsell = 2.5y/5/3	CL			
15							Silty clay Munsell = 2.5y/5/3	CL
16		Silty clay Munsell = 2.5y/5/3	CL					
17					Silty clay Munsell = 2.5y/5/3	CL		
18		Silty clay Munsell = 2.5y/5/3	CL					
19					Silty clay Munsell = 2.5y/5/3	CL		
20		Silty clay Munsell = 2.5y/5/3	CL					

BORING LOG

Project: CAMDS		STEAD		Boring: S-84-91		Page: 4 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
20		Silty clay Silty sand Sand, very coarse to trace pebbles	Core #5 19 ft. to 21 ft.	41/6"	Munsell = 5y/6/1 2.5y/6/3 2.5y/6/3		
21		Sand, medium-to coarse from 19 ft. to 21 ft. All slightly calcareous Munsell = 5y/6/2		35/6"			
22		Augerings = no surface return Probably sand.					
23							
24		No core was possible here because sand filled center of auger [filled with cuttings (sand?)]					
25							
26		Auger to 26.5 ft. from 21 ft.				Driller indicates clay at 25.5 ft.	
27		Clay, dry, hard Slightly calcareous Trace limenite stain Munsell = 5gy/5/1	Core #6 26.5 ft. to 28.5 ft.	10/6" 15/6"	Auger to 26.5' Top core = Bkg.		
28			21/6" 25/6"	Base core = Bkg.			
29		Total depth 28.5 ft.					
30							

BORE LOG

PROJECT SITE:	CAMDS Tooele Army Depot - South area
SITE IDENTIFICATION:	S - 85 - 91
AUGER SIZE:	9-5/8 inch O.D. X 6-1/4 inch I.D.
DATE/TIME STARTED:	May 20, 1991 - 1323 hrs
DATE/TIME COMPLETED:	May 20, 1991 - 1415 hrs
SURFACE ELEVATION:	N/A
WATER LEVEL:	6.0 feet
COMPLETION DEPTH:	24 feet
DRILLING COMPANY:	Layne Environmental Services, Inc.
DRILLER:	Kevin Cross
DRILLING TYPE:	Auger
SAMPLE TYPE:	1 - 5 foot core
NUMBER OF SAMPLES:	0 Log from augerings and material on pilot or center bit where appropriate. Samples were taken from hole 13BG-02-91 which was drilled 5.5 feet to the southwest.
GEOLOGIST/LOGGER & COMPANY:	John A. Burger CNES

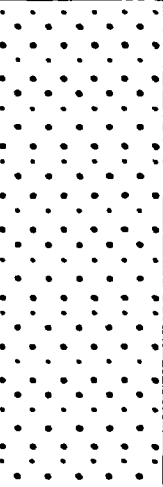
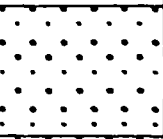
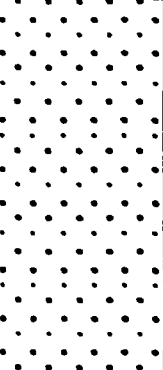
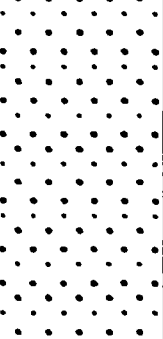
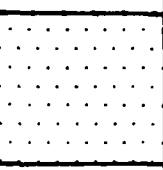
BORING LOG GENERAL DATA

Project: CAMDS			Boring: 13-S-85A-91 Page: 1 of 4						
Driller & Company: Kevin Cross Layne									
Geologist/Logger & Company: John A. Burger CNES			Signature: <i>John A. Burger</i>						
Date Boring Started: 20 MAY 1991			Completed:						
Water Levels (From Ground Surface)			Drilling Rig: 6.0'						
First Encountered:			Date:						
While Drilling: 6.0' @ 1338 hr.			Date: 20 MAY 1991						
At Boring Completion:			Date:						
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u> 				

BORING LOG

Project: CAMDS		STEAD	Boring: S-85-91		Page: 2 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1323 hr. Stop: 1415 hr. HNu background: = 0.2 ppm	
0		Silty sand				
1						
2		Log made from augerings and material from center bit.				
3		Silty sand Calcareous	SM			
4						— Add auger
5						
6						— Water table while drilling at 6.0 ft. 1338 hr.
7		Slightly silty sand Fine-to medium- grained	SM			
8						
9						— Add auger
10						

BORING LOG

Project: CAMDS		STEAD		Boring: S-85-91	Page: 3 of 4
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
10		No returns while augering			
11					
12					
13		Silty, fine-grained sand <div style="float: right; border: 1px solid black; padding: 2px; margin-top: 5px;">SM</div>			Add auger
14					
15		No return while augering			
16					
17					
18		No return while augering			
19					
20					
20		Sand, silty, trace small pebbles; quartz feldspar, black minerals rock fragments See 20 ft to 21 ft. <div style="float: right; border: 1px solid black; padding: 2px; margin-top: 5px;">SP</div>			Add auger with 5 ft. core tube

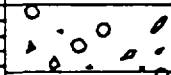
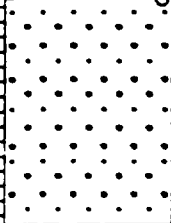
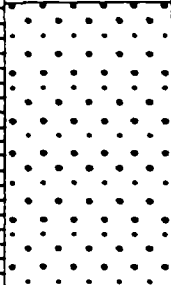
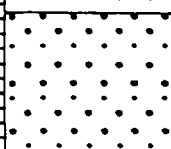
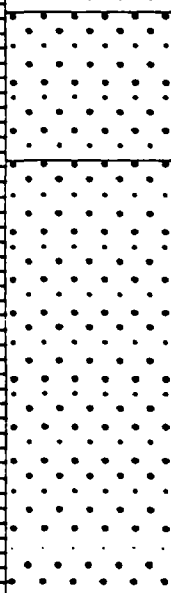
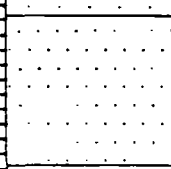
BORE LOG

PROJECT SITE:	CAMDS Tooele Army Depot - South area
SITE IDENTIFICATION:	S - 86 - 91
AUGER SIZE:	9-5/8 inch O.D. X 6-1/4 inch I.D.
DATE/TIME STARTED:	June 21, 1991 - 1005 hrs
DATE/TIME COMPLETED:	June 20, 1991 - 1110 hrs
SURFACE ELEVATION:	N/A
WATER LEVEL:	15.5 feet
COMPLETION DEPTH:	18 feet
DRILLING COMPANY:	Layne Environmental Services, Inc.
DRILLER:	Kevin Cross
DRILLING TYPE:	Auger
SAMPLE TYPE:	Split Spoon
NUMBER OF SAMPLES:	5
GEOLOGIST/LOGGER & COMPANY:	John A. Burger CNES


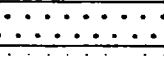
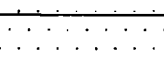

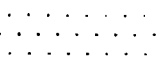
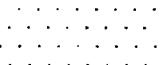

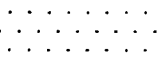

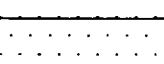
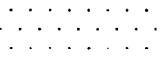
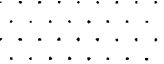
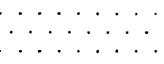
BORING LOG GENERAL DATA

Project: CAMDS			Boring: S-86-91			Page: 1 of 3					
Driller & Company: Kevin Cross Layne											
Geologist/Logger & Company: John Burger CNES Signature: <i>John A. Burger</i>											
Date Boring Started: 20 th June 1991			Completed: 21 June 1991								
Water Levels (From Ground Surface)					Drilling Rig:						
First Encountered:					Date:						
While Drilling: 16.5 ft			1050 hrs		Date: 21 June 1991						
At Boring Completion:					Date:						
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End		End
Abbreviations:						Location Sketch:					
Abbr Meaning											

BORING LOG

Project: CAMDS		STEAD	Boring: S-86-91		Page: 2 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 1005 hr. Stop: 1110 hr. HNU background: = 0.2 ppm
0		Rubble and fill		5/6"	Top core = Bkg. Base core = Bkg.
1		Silty sand fine-to medium-grained Calcareous Munsell = 2.5y/6/4	Core # 1 0 ft.- 2 ft.	4/6"	
2				6/6"	
3				5/6"	
4		Silty sand dry, fine-grained Calcareous Munsell = 10yr/4/4		Core # 2 4 ft.- 6 ft.	3/6"
5		Silty sand fine-to medium-grained Calcareous Munsell = 2.5y/6/3 dry	3/6"		
6			6/6"		
7			6/6"		
8		Center bit has sand, gray, fine-to medium-grained, hard			
9		Slightly silty sand soft Calcareous Munsell = 5y/5/2	Core # 3 9 ft.- 11 ft.	3/6"	Top core = Bkg.
10				9/6"	


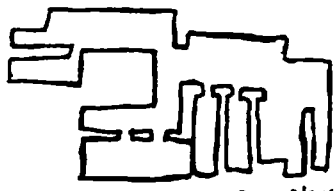
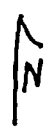
BORING LOG

Project: CAMDS		STEAD		Boring: S-86-91		Page: 3 of 3	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
10		Same as 9 ft. - 10 ft. Sand lenses coarser-grained	Core # 3 9 ft.- 11 ft.	9/6"	Base core = Bkg.		
11				12/6"			
12		Augerings = same as 9 ft. - 11 ft.			Water at 12.5 ft. according to drilling break, but hole shows no water at 14 ft.		
13		Center bit has silty sand, fine-to medium-grained					
14							
15		Slightly silty sand SP fine-to medium grained wet, soft Calcareous Munsell = 2.5y/5/3	Core # 4 14 ft.- 16 ft.	4/6"	Top core = Bkg.		
16				10/6"			
17		Clay on center bit		15/6"	Base core = Bkg.		
18				9/6"			
18		Clay, mottled, trace organic matter CL Very slightly calcareous Yug fillings (0.5 in dia) of calcite and gypsum in lower 4 in. Munsell = (light) 5y/6/2 (dark) 2.5y/6/4	Core # 5 18 ft.- 18 ft.	8/6"	Drilling break at 17 ft.		
18				18/6"			
19							
20							




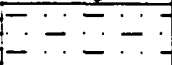
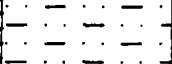
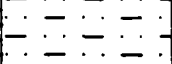
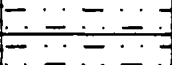
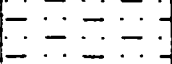
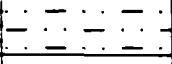
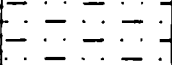
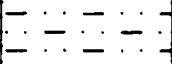

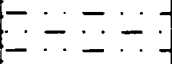
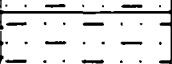
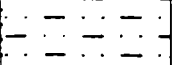
BORE LOG

PROJECT SITE:	CAMDS Tooele Army Depot - South area
SITE IDENTIFICATION:	S - 87 - 91
AUGER SIZE:	9-5/8 inch O.D. X 6-1/4 inch I.D.
DATE/TIME STARTED:	May 14, 1991 - 0900 hrs
DATE/TIME COMPLETED:	May 14, 1991 - 1030 hrs
SURFACE ELEVATION:	N/A
WATER LEVEL:	12 feet
COMPLETION DEPTH:	20 feet
DRILLING COMPANY:	Layne Environmental Services, Inc.
DRILLER:	Kevin Cross
DRILLING TYPE:	Auger
SAMPLE TYPE:	Split Spoon
NUMBER OF SAMPLES:	3
GEOLOGIST/LOGGER & COMPANY:	John A. Burger CNES

BORING LOG GENERAL DATA

Project: STEAD - CAMDS Facility Boring: S-87-91 Page: 1 of 3									
Driller & Company: Kevin Cross Layne Environmental									
Geologist/Logger & Company: John Ludlam CNES Signature: <i>John Ludlam</i>									
Date Boring Started: 14 May 1991					Completed:				
Water Levels (From Ground Surface)					Drilling Rig: CME 75				
First Encountered: 12 ft					Date: 14 May 1991				
While Drilling: 8.5 ft					Date: 14 May 1991				
At Boring Completion: 8.5 ft.					Date: 14 May 1991				
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
5/14/91	0900	1030	0	20 ft.					
Abbreviations:					Location Sketch:				
Abbr Meaning					<div style="text-align: right;">Guard Shack </div> <div style="text-align: center;">  Personnel Support Complex ☒ S-87-91 </div> <div style="text-align: center;">  </div>				

BORING LOG

Project: CAMDS		STEAD	Boring: S-87-91		Page: 2 of 3
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0855 hr. Stop: 1020 hr. HNu background: = 0.2 ppm
0		Asphalt			
		Road base			
1		Sandy silt with minor clay Calcareous Munsell = 2.5y/5/3	Core # 1 1 ft. - 3 ft.	7/6"	Top core = Bkg.
2				9/6"	VOA from 2 ft.
3				7/6"	Base core = Bkg.
4				7/6"	
4		Same as 1.5 ft. - 3 ft.	Core # 2 4 ft. - 6 ft.	4/6"	Top core = Bkg.
5				6/6"	VOA from 4 ft - 5 ft. interval
6		Munsell = 2.5y/5/3 Increasing clay near bottom of core (5.5 ft. - 6 ft.)		7/6"	Base core = Bkg.
7				15/6"	
8					
9		Sand and cobble size gravel Calcareous Munsell = 2.5y/8/2	Core # 3 8 ft. - 10 ft.	6/6"	Top core = Bkg.
10				12/6"	Water level after 1 hr.
				32/6"	
				40/6"	

BORING LOG

Project: DEAC FURNACE STEAD		Boring: S-87-91		Page: 3 of 3	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">10</div> <div style="margin-bottom: 10px;">11</div> <div style="margin-bottom: 10px;">12</div> <div style="margin-bottom: 10px;">13</div> <div style="margin-bottom: 10px;">14</div> <div style="margin-bottom: 10px;">15</div> <div style="margin-bottom: 10px;">16</div> <div style="margin-bottom: 10px;">17</div> <div style="margin-bottom: 10px;">18</div> <div style="margin-bottom: 10px;">19</div> <div style="margin-bottom: 10px;">20</div> </div>		<p style="text-align: right; margin-right: 20px;">GP</p> <p style="text-align: center;">1 ft of clayey silt separating gravel at approx. 10.5 ft. - 11.5 ft.</p> <p style="text-align: center;">Silty sand</p> <p style="text-align: right; margin-right: 20px;">SM</p> <p style="text-align: right; margin-right: 20px;">Total Depth = 20 ft</p>			<p style="text-align: right; margin-right: 20px;">Water at 12 ft. 1000 hr.</p>


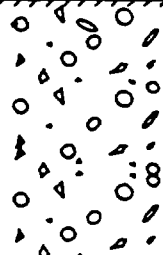
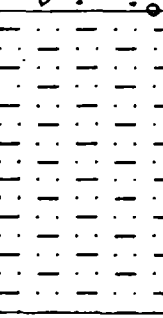
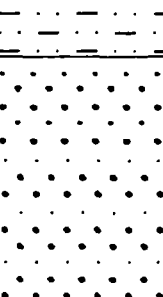
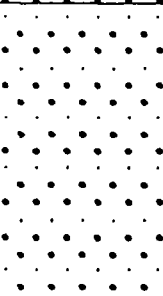
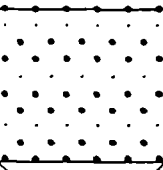
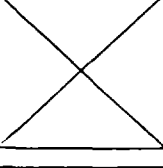
BORE LOG

PROJECT SITE:	CAMDS Tooele Army Depot - South area
SITE IDENTIFICATION:	S - 88 - 91
AUGER SIZE:	9-5/8 inch O.D. X 6-1/4 inch I.D.
DATE/TIME STARTED:	May 15, 1991 - 0900 hrs
DATE/TIME COMPLETED:	May 15, 1991 - 1400 hrs
SURFACE ELEVATION:	N/A
WATER LEVEL:	26 feet Well plugged and abandoned because of poor aquifer (clay).
COMPLETION DEPTH:	44 feet
DRILLING COMPANY:	Layne Environmental Services, Inc.
DRILLER:	Kevin Cross
DRILLING TYPE:	Auger
SAMPLE TYPE:	Split Spoon
NUMBER OF SAMPLES:	4
GEOLOGIST/LOGGER & COMPANY:	John A. Burger CNES

BORING LOG GENERAL DATA

Project: <u>CAMDS</u>			Boring: <u>13-S88-91</u> Page: 1 of 6										
Driller & Company: <u>Kevin Cross</u>			<u>Layne</u>										
Geologist/Logger & Company: <u>John A. Burger</u>			CNES Signature: <u>John A. Burger</u>										
Date Boring Started: <u>15 May 1991</u>			Completed: <u>15 MAY 1991</u>										
Water Levels (From Ground Surface)			Drilling Rig: <u>405</u>										
First Encountered: <u>~ 19' deep</u>			Date: <u>15 MAY 1991</u>										
While Drilling: <u>could not tell</u>			Date: <u>15 MAY 1991</u>										
At Boring Completion:			Date:										
Drilling Shifts:													
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift					
	Start	End	Start	End		Start	End	Start	End				
<u>15 MAY 91</u>													
<u>Abbreviations:</u> <table border="0" style="width:100%;"> <tr> <td style="width:100px;"><u>Abbr</u></td> <td><u>Meaning</u></td> </tr> <tr> <td><u>Bkg</u></td> <td><u>Background</u></td> </tr> </table>					<u>Abbr</u>	<u>Meaning</u>	<u>Bkg</u>	<u>Background</u>	<u>Location Sketch:</u> 				
<u>Abbr</u>	<u>Meaning</u>												
<u>Bkg</u>	<u>Background</u>												

BORING LOG

Project: CAMDS		STEAD	Boring: S-88-91		Page: 2 of 6
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0900 hr. Stop: 1400 hr. HNU background: =0.2 ppm
0		Augerings = asphalt			
1		Augerings = road base and fill			
2		Dry, sandy silt Calcareous	ML		Top core = Bkg.
3			Core#1 2 ft.- 4 ft.	3/6" 8/6" 6/6" 6/6"	
4			70% recovery		Base core = Bkg. Top core = Bkg.
5		Darker Munsell = 2.5y/4/3 Silty sand Traces of protocaliche Calcareous Munsell = 2.5y/6/3	SM		
6			Core#2 4 ft.- 6 ft.	3/6" 5/6" 6/6" 7/6"	
7					Base core = Bkg.
8		Augerings = silty, slightly clayey sand; cuttings not wet			
9		Silty sand Calcareous Munsell = 2.5y/6/3	SM		Top core = Bkg.
10		No recovery	Core#3 8 ft.- 10 ft.	7/6" 11/6" 13/6" 18/6"	
			50% recovery		Base core = Bkg.

BORING LOG

Project: CAMDS		STEAD		Boring: S-88-91	Page: 3 of 6	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
10		Augerings 10 ft to 14 ft. = Silty sand SM			<p>HNu while drilling = background</p> <p>Augered from 10 ft. to 19 ft.</p> <p>No gravel at all to depth of 19 ft.</p> <p>Water in bottom of hole - rising slowly Allowed well to stand 1 hour, and water rose 1 ft.</p>	
11						
12		Silty sand	none			
13						
14		Slightly clayey silty sand SM	Augerings 14 ft. to 19 ft. = slightly clayey, silty sand	none		
15						
16		Clayey silt ML				
17		Silty clay Munsell = 2.5y/7/2				
18		Silty clay Only slightly calcareous CL Munsell = 2.5y/7/2				
19		Dense clay Slightly calcareous trace iron staining Munsell = 2.5y/7/2	Core #4 19 ft. - 21 ft. No sample taken	7/6" 14/6"		
20						

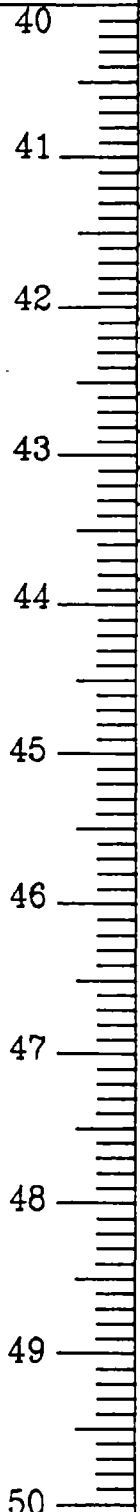
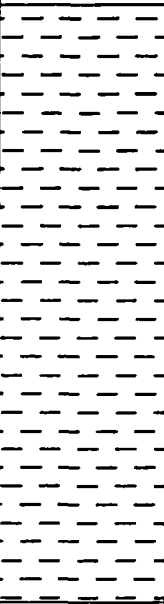
BORING LOG

Project: CAMDS		STEAD	Boring: S-88-91		Page: 4 of 6
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
20	[Hatched pattern]	Augerings = wet, soft plastic clay Munseil = 2.5y/7/2 Trace of limestone and quartz. Clasts up to 1 inch in diameter	None	21/6"	Cored 19 ft to 21 ft. Core barrel is wet Top core = Bkg. Base core = Bkg.
21	[Hatched pattern]			29/6"	
22	[Hatched pattern]				
23	[Hatched pattern]				
24	[Hatched pattern]				
25	[Hatched pattern]	Augerings = wet, soft, plastic clay	[CL]		
26	[Hatched pattern]				
27	[Hatched pattern]				
28	[Hatched pattern]				
29	[Hatched pattern]				Water rose to 26 ft. in hole during 1 hr. lunch break.
30	[Hatched pattern]				

BORING LOG

Project: CAMDS		STEAD	Boring: S-88-91		Page: 5 of 6
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
30	[CL]				
31					
32		Augerings = Wet plastic clay Sloppy cuttings from auger Non-calcareous Munsell = 5y/6/2			Drilling hard at about 32 ft. for several inches.
33					
34					
35					Hard drilling at about 35 ft. for about 6 in.
36					
37		Augerings = Wet, plastic clay Non-calcareous			
38					
39					
40		Continue augering			

BORING LOG

Project: CAMDS		STEAD	Boring: S-88-91		Page: 6 of 6
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
40 		<div style="text-align: right; margin-right: 20px;"> CL </div> Augerings = Wet plastic clay Slightly calcareous Munsell = 5y/6/2			Easy augering No readings on HNu above background on entire hole
44 Total depth 44 ft.		Stopped augering			NOTE: Since no water was located, this boring was grouted closed with an approved neat cement grout slurry, and abandoned.
45 46 47 48 49 50					

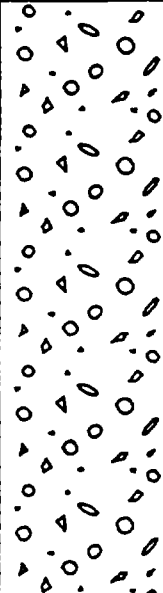
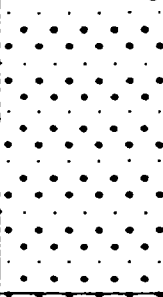
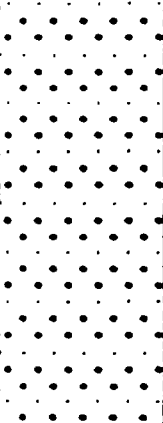
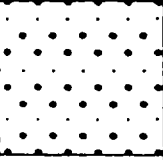
BORE LOG

PROJECT SITE:	CAMDS Tooele Army Depot - South area
SITE IDENTIFICATION:	S - 89 - 91
AUGER SIZE:	9-5/8 inch O.D. X 6-1/4 inch I.D.
DATE/TIME STARTED:	May 18, 1991 - 0930 hrs
DATE/TIME COMPLETED:	May 18, 1991 - 1035 hrs
SURFACE ELEVATION:	N/A
WATER LEVEL:	Not determinable (very little, if any)
COMPLETION DEPTH:	31 feet
DRILLING COMPANY:	Layne Environmental Services, Inc.
DRILLER:	Kevin Cross
DRILLING TYPE:	Auger
SAMPLE TYPE:	Split Spoon
NUMBER OF SAMPLES:	6
GEOLOGIST/LOGGER & COMPANY:	John A. Burger CNES

BORING LOG GENERAL DATA

Project: 13-S89-91 CAMDS		Boring:		Page: 1 of 5							
Driller & Company: Kevin Cross		Layne									
Geologist/Logger & Company: John A. Burger ^{CNES}		Signature: <i>John A. Burger</i>									
Date Boring Started: 30 MAY 1991		Completed: 30 MAY 1991									
Water Levels (From Ground Surface) NONE		Drilling Rig: 405									
First Encountered:		Date:									
While Drilling:		Date:									
At Boring Completion:		Date:									
Drilling Shifts:											
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift			
	Start	End	Start	End		Start	End	Start	End		
<u>Abbreviations:</u> <table style="width: 100%; border: none;"> <tr> <td style="border: none;"><u>Abbr</u></td> <td style="border: none;"><u>Meaning</u></td> </tr> </table>					<u>Abbr</u>	<u>Meaning</u>	<u>Location Sketch:</u> <p>The sketch shows a vertical line labeled 'ROAD'. To the left of the road is a 'Water tower'. An arrow points from the tower to a square on the road labeled 'Boring = 13-S89-91'. Below the road is the text 'TO RAMDS'. To the right of the road is a rectangular area labeled 'STORAGE' and 'UNLOAD BUDS'. Further to the right are vertical lines representing 'Railroad Tracks'.</p>				
<u>Abbr</u>	<u>Meaning</u>										

BORING LOG

Project: CAMDS		STEAD	Boring: S-89-91		Page: 2 of 5	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0903 hr. Stop: 1035 hr. HNu background: = 0.1 ppm	
0		Gravel and fill to about 4 ft.				
1						
2						
3						
4		Silty sand fine-grained dry Calcareous Munsell = 2.5y/6/3	SM	Core #1 4 ft. to 6 ft. 80% recovery	4/6"	Top core = Bkg. Sampled for physical properties Base core = Bkg.
5			3/6"			
6			5/6"			
7		Augerings = same as 14 ft. - 16 ft.				
8						
9						
10		Silty sand fine-to medium-grained trace cobbles - may be fill.	SM	Core #2 9 ft. to 11 ft.	4/6"	Top core = Bkg. Sampled for physical properties.
			6/6"			

BORING LOG

Project: CAMDS		STEAD		Boring: S-89-91	Page: 3 of 5
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
10		Calcareous Munsell = 2.5y/5/3	80% recovery	5/6"	Base core = Bkg.
11				4/6"	
12		Augerings = silty sand Calcareous slightly moist			
13					
14					
15		Clayey silty sand dry, medium hard Calcareous Munsell = 5y/4/1	Core #3 14 ft. to 16 ft.	2/6"	Top core = Bkg.
16				9/6"	Sampled for physical properties
17		Clayey, silty sand dry, not hard Calcareous Munsell = 5y/7/2		15/6"	Base core = Bkg.
18				22/6"	
19		Augerings = slightly clayey silty sand			
20					
		Silty clay Iron staining clay lenses 2 - 3 mm thick	Core #4 19 ft. to 21 ft.	6/6"	Top core = Bkg.
				9/6"	

BORING LOG

Project: CAMDS STEAD		Boring: S-89-91		Page: 4 of 5	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
20		Trace stems Calcareous Munsell = 5y/5/2		16/6"	
21				14/6"	
22		Augerings = silty sand? (may not be from this depth)			At 22 ft. driller got stiff drilling
23					
24					
25		Clay dense, fairly hard silt and sand lenses trace borings (trace) calcite crystals in vertical fractures trace partially calcite filled vugs Calcareous Munsell = 5y/6/3	Core #5	4/6"	Top core = Bkg.
26			24 ft. to 26 ft.	8/6"	Archive sample
				12/6"	
				11/6"	
27		Augerings = cuttings indeterminate as to depth			Base core = Bkg. Stiff drilling
28					
29					
30		Center bit has clay the same sa 24 ft. - 26 ft. Clay hard, dry	Core #6 29 ft. to 31 ft.	6/6" 9/6"	Top core = Bkg. Core barrel was wet

BORE LOG

PROJECT SITE:	CAMDS Tooele Army Depot - South area
SITE IDENTIFICATION:	S - 91 - 91
AUGER SIZE:	9-5/8 inch O.D. X 6-1/4 inch I.D.
DATE/TIME STARTED:	May 19, 1991 - 0840 hrs
DATE/TIME COMPLETED:	May 19, 1991 - 0940 hrs
SURFACE ELEVATION:	N/A
WATER LEVEL:	6.2 feet
COMPLETION DEPTH:	25 feet
DRILLING COMPANY:	Layne Environmental Services, Inc.
DRILLER:	Kevin Cross
DRILLING TYPE:	Auger
SAMPLE TYPE:	Cuttings from center bit
NUMBER OF SAMPLES:	6
GEOLOGIST/LOGGER & COMPANY:	John A. Burger CNES

BORING LOG GENERAL DATA

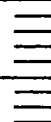
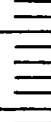
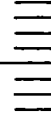
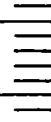
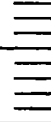
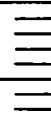
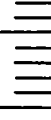
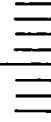
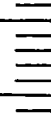
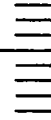
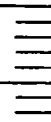
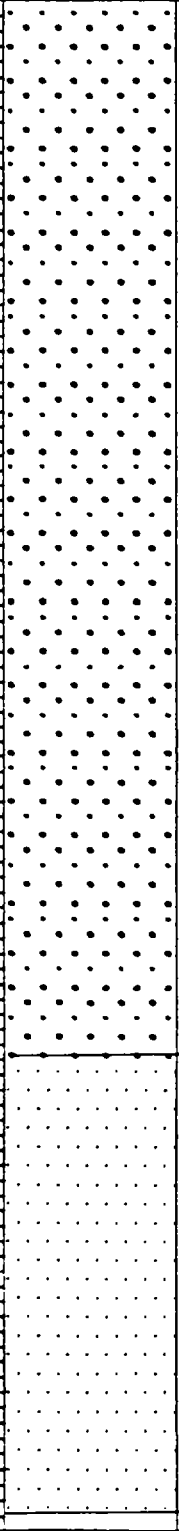
Project: CAMDS			Boring: 13-S-91-91			Page: 1 of 4							
Driller & Company: Kevin Cross Layne													
Geologist/Logger & Company: John A. Burger ^{CNES}						Signature: <i>John A. Burger</i>							
Date Boring Started: 19 MAY 1991				Completed: 19 MAY 1991									
Water Levels (From Ground Surface)						Drilling Rig: 405							
First Encountered: 6.2'			Date: 19 May 1991										
While Drilling: 6.2' w. auger out of the hole.			Date: 19 May 1991										
At Boring Completion:						Date:							
Drilling Shifts:													
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift			
		Start	End	Start	End			Start	End	Start	End		
<u>Abbreviations:</u> <table style="width: 100%; border: none;"> <tr> <td style="border: none;"><u>Abbr</u></td> <td style="border: none;"><u>Meaning</u></td> </tr> </table>						<u>Abbr</u>	<u>Meaning</u>	<u>Location Sketch:</u> 					
<u>Abbr</u>	<u>Meaning</u>												

C-410 Industrial Sewage Lagoon

BORING LOG

Project: CAMDS		STEAD	Boring: S-91-91		Page: 2 of 4	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description		Sample No. & Depth	Blow Count & Recovery	
					Drilling Data Start: 0840 hr. Stop: 0940 hr. H _{Nu} background: =0.2 ppm	
0		Slightly clayey, silty sand Calcareous Munsell = 10y/5/3		SM	No split spoon coring; hole was logged from augerings and center bit samples.	
1						
2						
3						
4		Slightly clayey, silty, fine-grained sand Calcareous Munsell = 2.5y/4/3		SM		— Add auger
5						
6						— Water at 6.2 ft. when auger was out of the hole.
7		Color above 7.5 ft. is Munsell = 2.5y/5/3 Calcareous		SM		
8		Fine grained silty sand Color change at approximtely 7.5 ft. Munsell = 5y/6/2 Slightly calcareous				
9						— Add auger
10						

BORING LOG

Project: CAMDS		STEAD	Boring: S-91-91		Page: 3 of 4
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
10  11  12  13  14  15  16  17  18  19  20 		<p style="margin-left: 40px;"> Fine-grained, slightly silty sand SM Slightly calcareous Munsell = 2.5y/6/3 </p> <p style="margin-left: 40px;"> Medium-to fine-grained sand. SP Sample from center bit. Slightly calcareous Munsell = 2.5y/6/2 </p>			<p style="margin-left: 40px;"> No HNu above background to this depth — Add auger </p> <p style="margin-left: 40px;"> — Add auger </p>

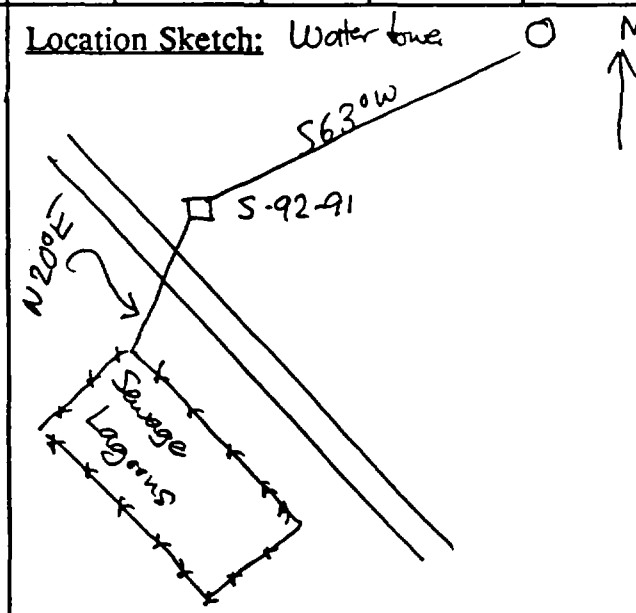
BORING LOG

Project: CAMDS		STEAD	Boring: S-91-91		Page: 4 of 4
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
20 21 22 23 24 25 26 27 28 29 30		<p>Sand, medium-grained SP quartzose Munsell 2.5y/6/3</p> <p>Hard clay CL Slightly calcareous Munsell 5gy/6/1</p>			<p>Drilling as through sand.</p> <p>Drilling change at 23 ft.</p> <p>Drilled 1 ft. more into clay to set base of well</p>
	T.D. 25 ft.				

BORE LOG

PROJECT SITE:	CAMDS Tooele Army Depot - South area
SITE IDENTIFICATION:	S - 92 - 91
AUGER SIZE:	9-5/8 inch O.D. X 6-1/4 inch I.D.
DATE/TIME STARTED:	June 20, 1991 - 0825 hrs
DATE/TIME COMPLETED:	June 20, 1991 - 0901 hrs
SURFACE ELEVATION:	N/A
WATER LEVEL:	9.3 feet
COMPLETION DEPTH:	24 feet
DRILLING COMPANY:	Layne Environmental Services, Inc.
DRILLER:	Kevin Cross
DRILLING TYPE:	Auger
SAMPLE TYPE:	Split Spoon
NUMBER OF SAMPLES:	0 Lithology log determined from 13BG-06-91
GEOLOGIST/LOGGER & COMPANY:	John A. Burger CNES

BORING LOG GENERAL DATA

Project: CAMDS		Boring: S-92-91		Page: 1 of 4							
Driller & Company: Kevin Cross Layne											
Geologist/Logger & Company: John D. Burger CNES Signature: John A. Burger											
Date Boring Started: 20 June 1991			Completed: 20 June 1991								
Water Levels (From Ground Surface)				Drilling Rig: # 405-							
First Encountered:			Date:								
While Drilling:			Date:								
At Boring Completion:				Date:							
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
		Start	End	Start	End			Start	End	Start	End
<u>Abbreviations:</u> Abbr Meaning						<u>Location Sketch:</u> Water tower 					

BORING LOG

Project: CAMDS		STEAD	Boring: S-92-91		Page: 2 of 6
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Start: 0924 hr. Stop: 1228 hr. HNu background: = 0.1 ppm
0		Rubble and fill first ~ 2 ft.			
1					
2		Augerings = dry, silty sand, but poor returns			
3					
4		Silty sand SM fine-grained very calcareous white calcareous flecks and blebs. Munsell = 10 yr/4/3	Core #1 4 ft.- 6 ft. 75% recovery	2/6"	Top core = Bkg.
5				3/6"	
6				4/6"	
7		Augerings = same as 4 ft - 6 ft.		5/6"	Base core = Bkg. dry
8					
9		Slightly clayey, silty SM sand fine-grained, dry, hard trace organic matter and stains	Core #2 9 ft.- 11 ft.	7/6"	Top core = Bkg.
10				15/6"	

BORING LOG

Project: CAMDS		STEAD	Boring: S-92-91		Page: 3 of 6
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
10		Calcareous Munsell = 5y/6/4	Core #2 9 ft.- 11 ft.	24/6"	Base core = Bkg.
11		Augerings = same as 9 ft. - 11 ft. dry		34/6"	
12		Water on end of center bit			Water at 12.5 ft. between adding augers
13					
14		Sand Medium-to fine- grained wet trace organic, dark blebs very little silt Slightly calcareous Munsell = 5y/5/3	Core #3 14 ft.- 16 ft.	5/6"	Top core = Bkg.
15				12/6"	
16				18/6"	
17		Augerings - no returns		24/6"	Base core = Bkg.
18					
19		Center bit has same as 14 ft. - 16 ft.			Top core = Bkg.
20					

BORING LOG

Project: CAMDS		STEAD		Boring: S-92-91		Page: 4 of 6	
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
20		2-3 mm laminae in lower part of core.	Core #4 19 ft.- 21 ft.	16/6"	Base core = Bkg.		
21		wet limonite stains in blebs; trace organic matter, black to yellow Munsell = 5y/5/3		17/6"			
22		No returns while augering		Steady rate of drilling			
23		Slightly silty sand SM medium-to fine- grained wet Calcareous Black stain (MnO ₂ ?) vertical limonite stained-fractures blebs of organic matter Munsell = 5y/5/3	Core #5 24 ft.- 26 ft.	5/6"	Top core = Bkg.		
24				10/6"			
25				11/6"			
26				12/6"		Base core = Bkg.	
27		Clay on center bit			Steady rate if drilling to 27.5 ft. then a drilling break		
28							
29		Clay, hard, dry, chunky, no bedding, mottled gray and brown, trace roots, trace snail shells CL	Core #6 29 ft.- 31 ft.	8/6"	Top core = Bkg.		
30				18/6"			

BORING LOG

Project: CAMDS		STEAD	Boring: S-92-91		Page: 5 of 6
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
30	-----	Calcareous Munsell light part = 5y/5/2 Munsell dark part = 5b/4/1			
31	-----				
32	Center bit has sand fine-grained, wet.			Drilling break at approximately 31 ft. Softer material below 31 ft. Add auger Steady drilling Add auger
33				
34				
35				
36				
37				
38				
39				
40				

SP

BORING LOG

Project: CAMDS		STEAD	Boring: 9-92-91		Page: 6 of 6
Depth/ Feet	USCS Symbol/ Core Sketch	Soil/Sediment/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
40		<p style="margin: 0;">Sand, gravel and cobbles: mostly gravel. GW</p> <p style="margin: 0;">Rock fragments: quartz, quartzite, limestone, chert, trace silt, trace clay</p> <p style="margin: 0;">no uniform color</p> <p style="margin: 0;">Cobbles up to 2 inches long. Clasts are angular to well rounded.</p>	<p style="margin: 0;">Core #7 44 ft. - 46 ft.</p>	<p style="margin: 0;">11/6"</p> <p style="margin: 0;">20/6"</p> <p style="margin: 0;">30/6"</p> <p style="margin: 0;">37/6"</p>	<p style="margin: 0;">Drilling break at 43 ft.</p> <p style="margin: 0;">Top core = Bkg.</p> <p style="margin: 0;">Base core = Bkg.</p>
41					
42					
43					
44					
45					
46	T.D. 46 ft.				
47					
48					
49					
50					

1993 Soil Boring Logs

BORING LOG GENERAL DATA

Project: <i>TEAD-S</i>	Boring: <i>S-103-93</i>	Page: 1 of 7
Driller & Company: <i>WILL SCHNEIDER (DRILLER), BOB MADDOX (HELPER) / BOYLES BROS</i>		
Geologist/Logger & Company: <i>K. PILL / RVST</i>		Signature: <i>K. Pill</i>
Date Boring Started: <i>8/16/93</i>	Completed: <i>8/19/93</i>	
Water Levels (From Ground Surface)		Drilling Rig: <i>MOBIL BB80</i>
First Encountered: <i>~43' BGS</i>	Date: <i>8/17/93</i>	
While Drilling:	Date:	

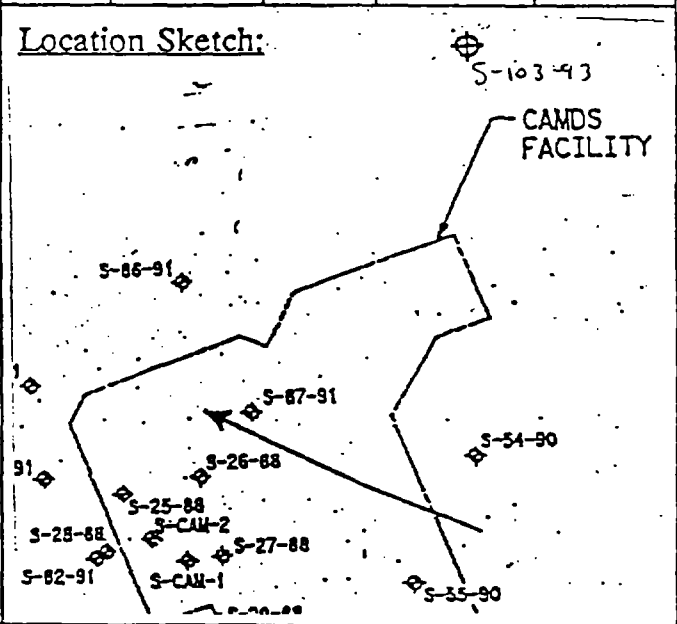
At Boring Completion: *36.46' BTOC* Date: *8/20/93*

Drilling Shifts:

Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<i>8/16</i>	<i>1346</i>	<i>1511</i>	<i>0</i>	<i>8</i>					
<i>8/17</i>	<i>1302</i>	<i>1742</i>	<i>8</i>	<i>49</i>					
<i>8/19</i>	<i>0820</i>	<i>1141</i>	<i>49</i>	<i>52</i>					

Abbreviations:

Abbr	Meaning



Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data Augers: 10 - 4 1/4" 00 - 7 1/4" HNS
1	ML	GROUND COVERED w/ SANDY GRAVEL, SHORT BRUSH, FLAT		15	0.5 / 0.5
2	SM	SILTY SAND, 7.5 YR 7/2, PINKISH GRAY, SAND FINE GRAINED, TRACE MED GRAINED SAND, VERY LOOSE, DRY, CALC.	S-1 0/2	37 50/5	USING SM. AUGERS, THEN WILL REAM OUT w/ LARGER AUGERS ARCHIVED
3		SANDY SILTSTONE, 5YR 7/2, PINKISH GRAY, SAND FINE GRAINED INDURATED, CALC. DRY			
4	ML	SILTY SAND, 7.5 YR 6/3, LIGHT BROWN, SAND FINE TO MED GRAINED, MINOR SUBANGULAR GRAVEL (CALCITE COVERED), LOOSE, CALC, DRY	S-2 A/6	6 20 50/5	0.5 / 0.5 ARCHIVED
5	GC (?)				CUTTINGS SUGGEST HIGHER GRAVEL CONTENT IN THIS ZONE, SLOW DRILLING
6	ML	SILTY SAND, 2.5Y 5/3, LT OLIVE BROWN, SAND FINE GRAINED, TRACE MED GRAINED SAND, TRACE CLAY, DRY, LOOSE, CALC.	S-3	7	-
7	SC	CLAYEY SILT, 1.5Y 5/3, LT OLIVE BROWN, MINOR FINE SAND, TRACE MED SAND, STIFF, DRY, CALC, TRACE	8/10	15 18 27	ARCHIVED

T.M.

1346

15/11
1302

BORING LOG (cont'd.)

Project: TEAO-3 / TASK ORDER 0001		Boring: S-103-93		Page: 3 of 7	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
11					EASY DRILLING.
12					
13					
14					
15	CL	SILTY CLAY, 2.5Y 6/3, LT YELLOWISH BROWN, TRACE CALCITE XLS IN VOIDS, TRACE FINE SAND, ORANGE STAINING AROUND SM. FRAGMENTS, DRY, STIFF.	S-4 14/16	6 18 28 28	ARCHIVED
16					
17					
18					
19	SC	SANDY CLAY, 5Y 7/2, LIGHT BROWN, SAND FINE GRAINED, ABUNDANT ORANGE STAINING, TRACE CALCITE XLS, MINOR SILT. MOIST	S-5 19/21	14 50/4'	POOR RECOVERY,
20					

1340

1908

BORING LOG (cont'd.)

Project: TEAD-J / TASK 02062 0001		Boring: J-103-93		Page: 4 of 7	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
21					HM
22					
23					
24	SC	CLAYEY SILT, S _y 7/2, LT GREY, TRACE FINE SAND, INCLUSIONS OF DK BROWN CLAY, SLTLY CALC, MOIST, STIFF.	S-6 24/26	15 50/6	BK ground Poor recovery ARTIFICAL
25					
26					
27					
28					
29		SILT, 1042 8/2, WHITE, MINOR CLAY, MINOR FINE SAND, SILT THINLY LAMINATED, SLTLY CALC, FRIABLE, SLTLY MOIST,	S-7 29/31	12 20 50/5	BK ground ARTIFICAL
30					

143

1521

BORING LOG (cont'd.)

Project: TEAO-S / TASK ORDER 0001		Boring: S-103-93		Page: 5 of 7	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
31					
32					
33					EASY DRILLING, LITTLE RESISTANCE.
34	CL	CLAY, 5YR 5/1, GRAY, TRACE ORANGE CONCRETIONS + STAINING, VERY STIFF, MOIST	S-3 34/36	6 6 10 12	1.1/0.5 ANNULUS
35					
36					
37					
38					
39					
40	CL	CLAY, 7.0 YR 7/2, LIGHT GRAY, CONTAINS THIN LAMINATIONS OF LT GRAY CLAY, MINDS SILT, VERY STIFF, MOIST, THINLY LAMINATED.	S-9 39/41	7 11 11 22	0.5/0.5 ANNULUS

1556

1625

BORING LOG (cont'd.)

10/2 66

Project: TEAD-S / TAIL ONSE 0001		Boring: S-103-93		Page: 6 of 7	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
41					
42					AT ~ 42, DRUM HIT VERY SOFT ZONE, APPROX ONLY N 2 FT THICK
43					
44	CL	CLAY, 10 YR 5/2, GRAYISH BROWN, TRACE SILT, TRACE CALCITE XLS UP TO 1/4" LONG, VERY STIFF, MOIST	S-10 44/46	6 7 15 18	0.8/0.5 SAMPLER CAME UP WET ON THE OUTSIDE, ACTUAL SAME MOIST. ARRIVED
45					
46					
47					
48					
49	CL	CLAY, 7.5 YR 6/2, PINKISH GREY, MINOR SAND, FINE GRAINED, IN THIN LAYERS, THINLY LAMINATED, MED. STIFF, MOIST.	S-11 49/51	5 7 9 10	SAMPLER UP DAY, LEFT OVERNIGHT, PULLED UP 10', HOLE OPEN 40'-50'. ARRIVED 1742
50					

170

1737

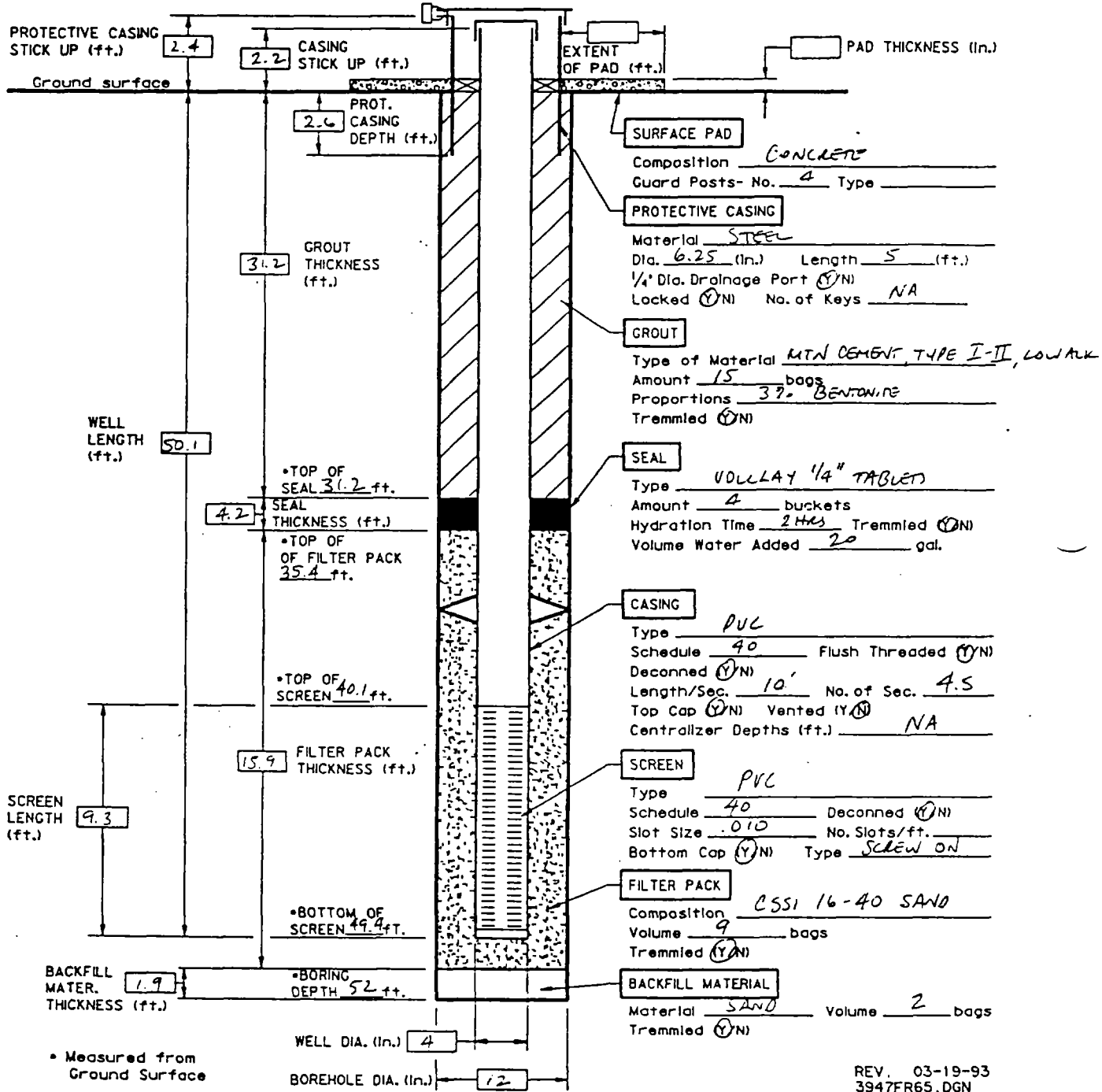
Project:		Boring:			Page: 7 of 7	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
					H ₂ O = 34.8' BGS 09/7. TO = 49.1' BGS	
51	NA	50-52' PUSHED TO REMOVE SLURRY MATERIAL OUT OF BOTTOM OF WELL	NA	NA	H ₂ O IN HOLE, DECIDED TO SET WELL, SCAN 49-39' BGS	
52		EOB, 52' BGS 1141 8/19/93				

CONCRETE PADS - LIKE TRAD-N, EXCEPT FEELIT - 1' UNITS AT 50' BGS.

RUST ENVIRONMENT & INFRASTRUCTURE

WELL CONSTRUCTION FORM (STANDARD WELL)

Well No.: S-103-93 Client/Project: USAEC / TEAO-5 Date: 8/19/93
 Project No.: TD 0001 Site: CAMOS
 Supervised By: K. PILL Contractor/Rig Type: CBC / MOBIL 8880
 Completion Start: 1155 Completion End: 1745
 Water Level Before Installation 34.8' BGS Water Level After Installation _____



BORING LOG GENERAL DATA

Project: TEAD-5 / TASK ORDER 0001 Boring: S-104-93 Page: 1 of 1

Driller & Company: BOB MAHOON / BOYLES BROS

Geologist/Logger & Company: K. PILL / RUST Signature: *K.P. Pill*

Date Boring Started: 8/6/93 Completed:

Water Levels (From Ground Surface) Drilling Rig: MOBILE B-61

First Encountered: ~65' BGS Date: 8/7/93

While Drilling: 55.6' BGS Date: 8/8/93

At Boring Completion: 40.28 BTDC Date: 8/10/93

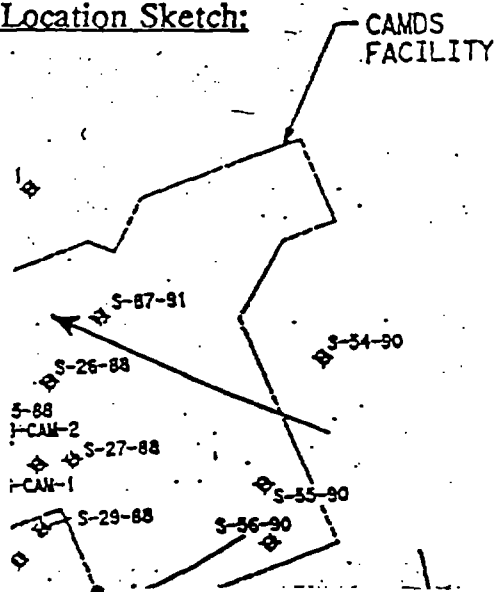
Drilling Shifts:

Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
8/6/93	0956	1721	0	35					
8/7/93	0817	1127	35	50					
8/7/93	1305	1747	50	74					

Abbreviations:

Abbr Meaning

Location Sketch:



BORING LOG (cont. a.)

Project: TEAO-5 / TASIC ORDER 0001		Boring: S-104-93		Page: 2 of 9	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
		FLAT, DRY BRUSH		6	HN U/BKEND COMMENTS + SAMPLES COLLECTED FOR ANALYSIS, GEOTECHNICAL
1	SM	SILTY SAND, 2.5 YR 6/4 LIGHT REDDISH BROWN, SAND FINE GRAINED, MINOR MGS TO COARSE SAND, DRY	S-1 0/2	18	
2	ML	SILTSTONE, 7.5 YR 7/2, PINKISH GRAY, INDURATED, THINLY LAMINATED, DRY		26 50	
4	SM	SANDY SILT, 7.5 YR 7/2, BROWN, SAND FINE TO COARSE GRAINED, AREAS HIGHLY INDURATED, LIMONITE (YELLOW BROWN) STAINING, TRACE GRAVEL ROUNDED (LIMESTONE), P.M.	S-2 4/6	17 10 12 17	.4/3
6	GM	SANDY GRAVEL, ABUNDANT SILT/SAND, ~1' THICK, GRAVEL ROUNDED, UP TO 2.5" ACROSS, DRY			DESCRIBED FROM CUTTINGS, NO SAMPLE COLLECTED, NOTICEABLE CHANGE IN DRILLING RESISTANCE.
8	GM	GRAVELLY SAND, 7.5 YR 5/2 BROWN, SAND FINE TO COARSE GRAINED, GRAVEL ROUNDED, (LIMESTONE), COARSE TO FINE, SILT CLAY, VERY INDURATED, DRY.	S-3 8/10	11 32 50/4	.6/5 POOR RECOVERY, ARCHIVED

1009

1048

1154

Project: TEAD-5 / TASK ORDER 0001		Boring: S-104-93		Page: 3 of 9	
Depth/ Eval	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
					ANU/BUCAW
12	?	GRAVEL ↓			DEVIATIONS NOTED Δ IN RESISTANCE; POSSIBLY OUT OF GRAVEL.
13					
14	CL	CLAYEY SILT, 7.5 YR 6/2 LT BROWN, MINOR FINE SAND, TRACE COARSE SAND, VERY STIFF, MOIST	S-4 14/16	10 15 13 21	.6/5 ARCHIVED
15					
16					
17					
18					
19					
20	CL	SILTY CLAY, 7.5 YR 5/2 BROWN, MINOR FINE SAND, VERY STIFF, MOIST, TRACE YELLOW & BLACK STAINING.	S-5 19/21	5 20 20 30	.8/5 ARCHIVED
21					

1325

1414

BORING LOG (cont'd.)

Project:	TASK ORDER 0001	Boring:	S-104-93		Page:	5 of 9	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data		
32 33 34 35 36 37 38 39 40 41	CL	SILTY CLAY, 7.5YR 6/2 PINKISH GRAY, TRACE FINE SAND, ORANGE STAINING OVER SA. FRACTURES, VERY STIFF, MOIST	S-8 34/36	18 25 25 25	.4.5 ARCHIVED V. HARD DRILLING AT 35', LEFT TO SEE IF H ₂ O IN HOLE OVERNIGHT LEFT OVERNIGHT 34.6' Bgs		
39 40 41	CL	SILTY CLAY, 10YR 6/2, LT BROWNISH GRAY, W/ 10YR 5/2 GRAYISH BROWN MOTTLING, TRACE FINE SAND, ORANGE STAINING, BLACK STAINING, V. STIFF, MOIST, SILTY CALC.	S-9 39/41	10 20 30 50/3	.4.5 ARCHIVED / GEOTECH		

164Y
 1737
 BACK ON SITE
 0800
 P.M.

0943

BORING LOG (cont'd.)

Project: TASK 0202L 0001 / TEAD-S		Boring: S-104-93		Page: 6 of 7	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
42					
43					
44	CL	SILTY CLAY, SAME AS SAMPLE S-9, HIGHER DEGREE OF MOTTLING, SILTY CALC.	S-10 40/46	12 15 20 50	41.5" ARCHIVED. V. SLOW DRILLING.
45					
46					
47					
48					
49	CL	SILTY CLAY, 7.5% 2/12, PINKISH CLAY, W/ 7.5% 2/3 (FINE) MOTTLING, WITH ORANGE & BLACK STAINING, W/ FINE TO MED SAND ALONG THIN FEATURES, HEAVILY ORANGE STAINED, THIN (LT YEL) DEPOSIT, VERY STIFF, MOIST, CALC.	S-11 49/51	15 20 35 50	61.5" ARCHIVED. LEAVING HOLE OPEN, MOVING TO NEXT LOCATION 1127
50					
51					

1015

1109

BORING LOG (cont. d.)

Project: TEAD-5 / TASK ORDER 0001		Boring: S-104-93		Page: 7 of 9	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
52					
53					
54	CL	SILTY CLAY, 7.5YR 6/2 PINKISH GRAY w/ ORANGE STAINING ALONG SM FEATURS, TRACE WHITE NODULES ~ 1/4" DIA, U. STIFF, MOIST, SILTY CLAY.	S-12 54/56	7	.6 / .5 ARCHIVED
55				13	
56				35	
57				50	
58					
59	CL	SILTY CLAY, 7.5YR 6/2 PINKISH GRAY w/ TRACE FINE SAND, HARD, CONTAINS ABUNDANT SM. FEATURS; BLOCKY, VERY TOP OF SAMPLE WET, OTHERWISE MOIST. SILTY CLAY.	S-13 59/61	22	.5 / .5 ARCHIVED
60				35	
61				50/4'	

1337 TO 55

1353 SAND

1414 SAND
DRILLING

1453

Project: TEAD-5 / TASK ORDER 0001		Boring: S-104-93		Page: 8 of 9	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
62					
63					
64	CL	SILTY CLAY 7.5YR 7/2 PINKISH GREY, HARD, MOIST, 1/2 THIN ZONE (3")	S-14 64/66	13 35 50/4"	.6/.5 ARCHIE SAMPLER CAME UP WET ON THE OUTSIDE, THE SAMPLE WAS ONLY MOIST.
65		SILT, 7.5YR 5/2 (BROWN) FRACTURED, V. MOIST. V. STIFF, CALC.			
66					
67					
68					
69	CL/SM	SILTY CLAY, AS S-14 w/ SANDY SILT, 7.5YR 7/2, SAND FINE TO MED GRAINED, LOOSE, WET, CALC	S-15 69/71	25 50/4"	.5/.5 SAMPLER MOSTLY FULL OF H ₂ O, PORTIONS OF SAMPLE WET. LT 1' OF H ₂ O IN HOLE PRIOR TO SENDING DOWN SAMPLER
70					
71					

1555

1632

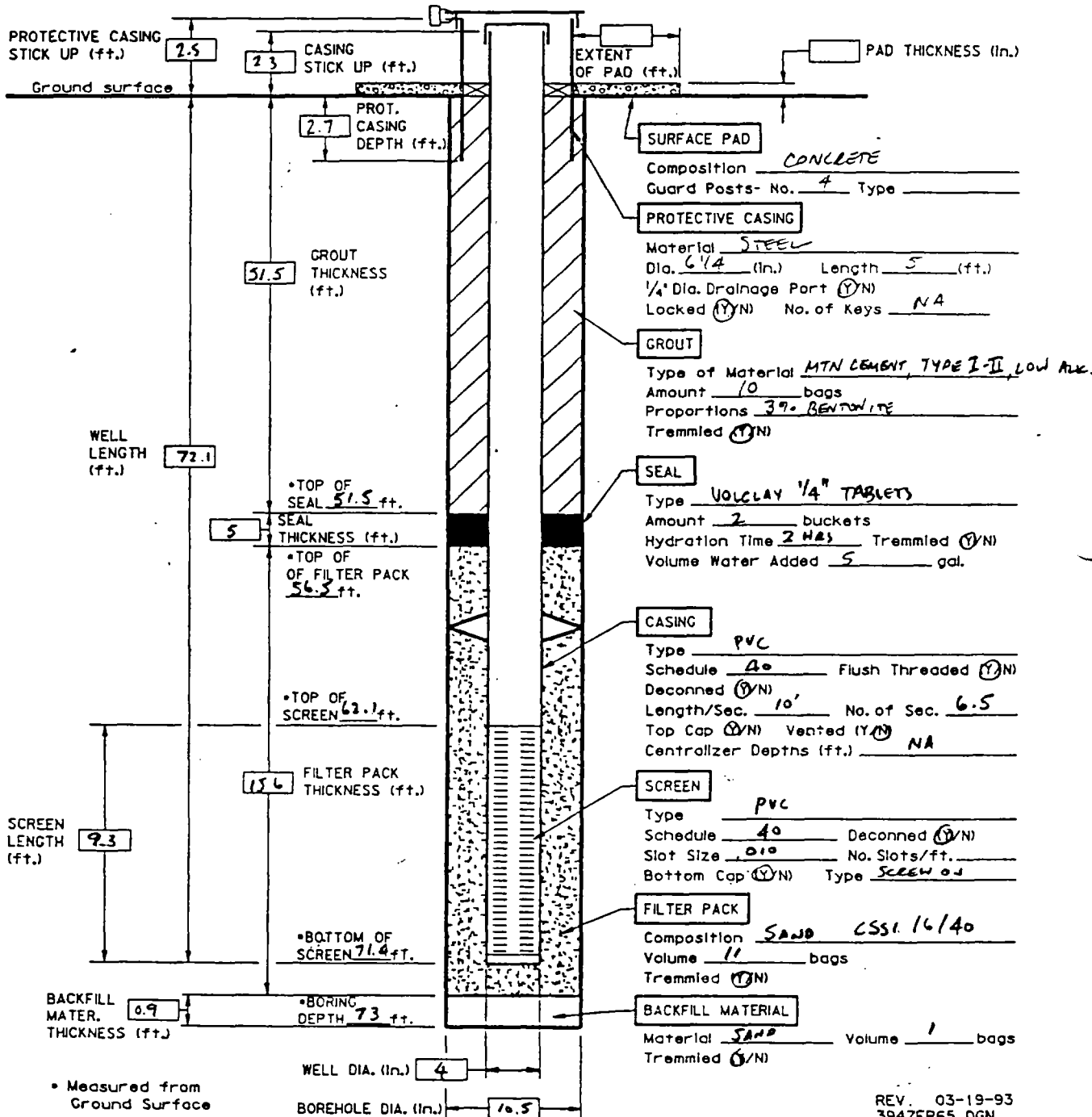
Project: TEAD-5 / TASK ORDER 0001		Boring: S-104-93		Page: 9 of 9	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
72	CL/SC	<p>SILTY CLAY, 7.5 YR 5/1 GRAY, ABUNDANT SAND, FINE TO MED GRAINED, VERY STIFF, MOIST, CAL.</p> <p>EOB 74' BGS. 1747 8/7/93</p>	<p>S-16 74/76</p>	11	<p>NO WATER DOWN HOLE PRIOR TO SAMPLING, SAMPLER ONLY SLIGHTLY WET.</p> <p>HOLE LEFT OPEN OVERNIGHT AFTER PULLING UP AUGER 15'</p> <hr/> <p>W/L 55.6' BGS 3/8 0824</p> <hr/> <p>68.4 OPEN HOLE</p>
73				14	
74				23	
75				28	
76					
77					
78					
79					
80					
81					

1747

RUST ENVIRONMENT & INFRASTRUCTURE

WELL CONSTRUCTION FORM (STANDARD WELL)

Well No.: S-104-73 Client/Project: USAEC I/EA0-5 Date: 8/8/93
 Project No.: TA 0001 Site: CAMOS / UPERADIANT
 Supervised By: K. PILL Contractor/Rig Type: BOYLER BROS / B-61
 Completion Start: 1045 Completion End: 1821
 Water Level Before Installation 55.6 Water Level After Installation 40.28



REV. 03-19-93
3947FR65.DGN

BORING LOG GENERAL DATA

Project: TEAD-S / TASK ORDER 000, Boring: S-105-93 Page: 1 of 3

Driller & Company: CBC (Boyles Bros) BOB MA000X

Geologist/Logger & Company: K PILL RUST Signature: *Ka Pill*

Date Boring Started: 8/4/93 Completed: 8/5/93

Water Levels (From Ground Surface) Drilling Rig: MOBN B61-HDX
MOBIL B80

First Encountered: 9' BGS Date: 8/5/93

While Drilling: Date:

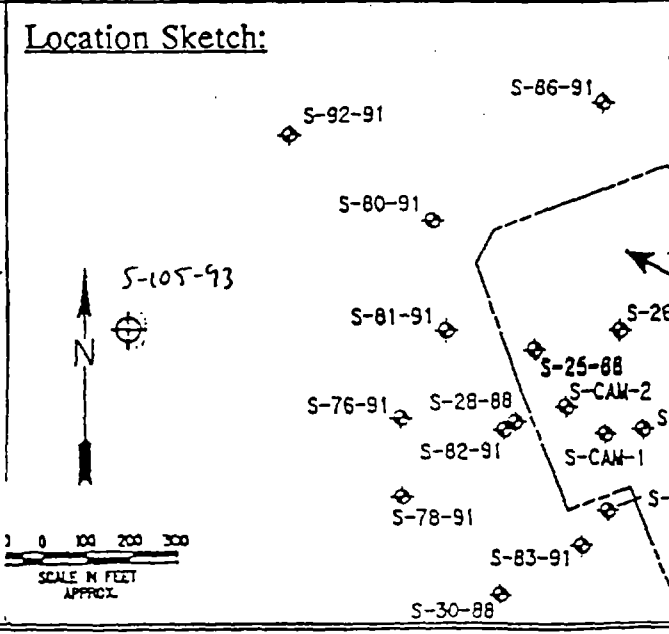
At Boring Completion: 9.66' BTDC Date: 8/6/93

Drilling Shifts:

Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
8/4/93	1057	1125	0	4					
8/5/93	0945	1304	4	19					

Abbreviations:

Abbr	Meaning



BORING LOG (cont'd.)

Project:		Boring:		Page: 2 of 3	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
					HNU
1		(POOR RECOVERY)	S-1 0/2	8 15 13	0.5
2	SM	CLAYEY SILT, 5YR 5/2, REDDISH GREY, FEW FINE SAND, DRY, THINLY LAMINATED, SLTLY INDURATED		9 3 6	
3			S-2 2/4	6 6	0.5
4		CLAYEY SILT, 5YR 6/3 LT REDDISH GREY, FEW FINE SAND, DRY		6 3	
5	ML	SILT, 5YR 4/3, REDDISH BROWN, MINOR CLAY, MINOR FINE SAND. TRACE FINE ANGULAR GRAVEL, MOIST, VERY SOFT	S-3 4/6	7 6 6	0.5 ARCHIVED
6				2	
7	CL	SILTY CLAY, 10YR 5/1, GRAY, MOIST, STIFF, w/ 10YR 7/1 LIGHT GRAY MOTTLING.	S-4 6/8	5 9 12	0.4 (BELOW) GEO TECH, ARCHIVED
8				5	
9	SM	SANDY SILT, 10YR 5/3, BROWN, SAND FINE TO MEDIUM GRAINED, LOOSE, WET, TRACE COARSE WELL ROUNDED SAND, TRACE CLAY.	S-5 8/10	9 9 11	0.5 ARCHIVED GEO TECH
10				8	
11		SILTY SAND, 10YR 5/3. SAND FINE TO MED GRAINED, THINLY LAMINATED, WET.	S-6 10/12	19	0.4

THINLY LAMINATED, WET.

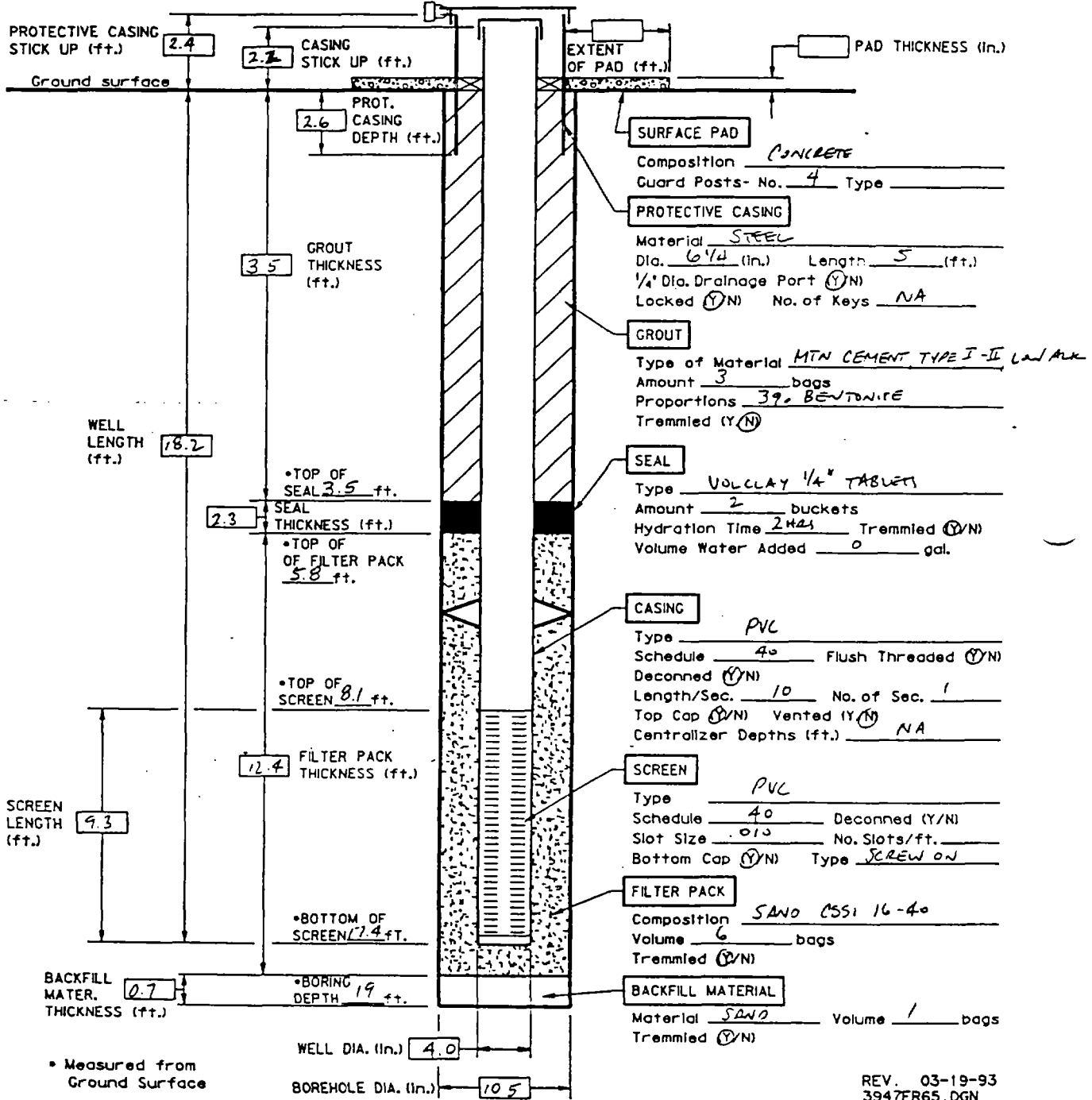
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Project:		Boring:		Page: 3 of 3	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
11	ML	SILT, 10 YR 6/2, LT BROWNISH GRAY, TRACE MINOR THINLY LAMINATED LENSES OF INDURATED SILT, WET		27	
12				31	
13	SM	SILTY SAND, 10 YR 6/3, PALE BROWN, FINE GRAINED, LOOSE, WET	S-7 14/14	4	
14				10	
15				14	
16	ML	SANDY SILT, 10 YR 6/3, PALE BROWN, SAND FINE GRAINED, MINOR CLAY, LOOSE, WET		—	
17				4	
18			S-8 17/19	5 5	RECORDED
19				—	
		EOB 19' BGS 8/5/93 1304 NL = 126 BGS AT 1245.			

RUST ENVIRONMENT & INFRASTRUCTURE

WELL CONSTRUCTION FORM (STANDARD WELL)

Well No.: S-105-93 Client/Project: USAEC / TEAO-5 Date: 8-5-93
 Project No.: _____ Site: CANOS
 Supervised By: K. PILL Contractor/Rig Type: CBC / MOBIL B-60
 Completion Start: 8/5/93 1417 Completion End: 8/5/93 1522
 Water Level Before Installation 12.50 Water Level After Installation 9.66



REV. 03-19-93
3947FR65.DGN

BORING LOG (cont'd.)

Project: DAM GRADIENT WELLS		Boring: S-106-93		Page: 2 of 5		
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data (PPA) HNU READING	8.25 ID HSA 75 on 5' CTR Drilling Comments
0	ML ML	<u>SURFACE</u> SILT 54 8/2 PALE YELLOW MOSTLY SILT				GRAB.
2						
4						
6	ML	SILT 54 7/1 GRAY, MOST MOSTLY SILT, LITTLE TO SOME CLAY, CALCAREOUS AREAS	S-1 5/7	3 7 10 13	.3 gm	SOFT DRILLING GEOTECH SAMPLE TAKEN
8						
10	SM	SILTY SAND 2.54 9/2 LIGHT BROWN + GRAY SATURATED, MOSTLY FINE TO VERY FINE SAND, SOME SILT, TRACE FOSSILS IRON STAINING AREAS	S-2 10/12	11 17 18 20	.1 gm	WD @ 9-10 FT SATURATED ZONE @ 11 FT NOTE: BEGIN DRILLING SOIL SAMPLES
12						
14						
16	SM	SILTY SAND 54 9/3 PALE OLIVE, SATURATED, MOSTLY VERY FINE TO FINE SAND SOME SILT.	S-3 15/17	1 6 7 14	.1 gm	SOFT DRILLING GEOTECH SAMPLE TAKEN
18						
20	SM	SILTY SAND 54 9/3 PALE OLIVE, SATURATED, SAME AS S-3	S-4 20/22	4 5 7 11	0.7 gm	
22						

BORING LOG (cont'd.)

Project: <u>DunCladden</u>		Boring: <u>S-106-93</u>		Page: <u>3</u> of <u>5</u>	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data HALL READING COMMENTS
22	SM	SILTY SAND			POSSIBLE CONTACT w/ CLAY RESISTANT DRILL
24	CL	TIGHT GREEN CLAY			
26	CL	CLAY 54 1/2 OLIVE GRAY, DRY, MOSTLY CLAY. STIFF, SOME BRN/BLACK SPOTS, MN STAINING	S5 25/ 27	6 10 14 16	0.79 - TIGHT STIFF GREEN CLAY
30	CL	CLAY 54 1/2 OLIVE GRAY, DRY, MOSTLY CLAY, STIFF, SOME BRN/BLACK SPOTS, MN STAINING?	S6 30/ 32	7 7 11 30	0.03 - TIGHT CLAY
32					- END OF DRILLING WITH 8.25 ID HSA OVER BRN w/ 12" ID HSA. FOR 12" SURFACE CHISEL 8.843 @ 28 FT
34					
36					
38					
40					
42					
44					

BORING LOG (cont'd.)

Down Gradient

Project: S-106-93 Drill 6		Boring: S-106-93		Page: 4 of 5	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
					HAND READING / DRILL COMMENTS
20					
21					
26					
28					
30					
32					
34					
36	CL	CLAY SILTY SAND,	S- 35/36.4"	30 48 60 /4"	NOTE FAST DRILLING FROM 32'-37'
38		Possibly in clay according to DRILLER.			HARD SLOW DRILLING
40	SM SW SM	NOTE: BROKE OUT OF HARD DRILLING LIGHT YELLOWISH BROWN SATURATED.	S- 40/42	39 41 32 30	BACK INTO SAND? 0.0 NO READINGS LAYERED ALSO LIKE TO TRACE GRAVEL FINE-MED ROUNDED
42					
44		NOTE: DECIDE TO CONTINUE 5 MORE FT & TAKE ANOTHER SPLIT SPAN			SOFT DRILLING

BORING LOG (cont'd.)

Project: Down Gradient Well		Boring: S-106-93		Page: 5 of 5	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data H/W REMARKS / COMMENTS
74		SOFT DRILLING			
76	GW	WELL GRADED GRAVELS MOSTLY FINE TO MEDIUM GRAVEL, SOME MEDIUM TO COARSE SAND.	S- 45/ 47	11 5 110/ 9"	0.07pm HARD TO DRIVE SPIN
78		NOTE LITHO CHANGE OR HARDEN @ 49 FT.			NOTE: WATER LEVEL DROPS INSIDE HSA.
50	CL	CLAY, 54 FT OLIVE GRAY, DRY, MOSTLY CLAY, SOME SILT. VEZY FINE SAND	S- 50/ 51	NO CUTS	0.3pm DID NOT WANT TO PENETRATE CLAY UNIT.
52		Bottom of Split Spore @ 51 FT			
59		INSTALL SCREEN FROM 51 TO 41 GRAVEL TO 39			NOTE: BAIL WATER/CUTTINGS FROM INSIDE HSA PRIOR TO WELL INSTALLATION WITH 4" BAILER 10 FT LONG
56					
58					
60					
62					
64					
66					

BORING LOG GENERAL DATA

Project: Dune GRADIENT DEEP WELLS Boring: S-107-93 Page: 1 of 4

Driller & Company: WILLY FRANKER CBC BOYLES

Geologist/Logger & Company: GILLESPIE (RUST) Signature: SE. GILLESPIE

Date Boring Started: 8.10.93 Completed: 8.20.93

Water Levels (From Ground Surface) N/A Drilling Rig: VB80 MOBILE

First Encountered: N/A Date: N/A

While Drilling: Ⓜ @ ≈ 3-4 FT Date: 8.10.93

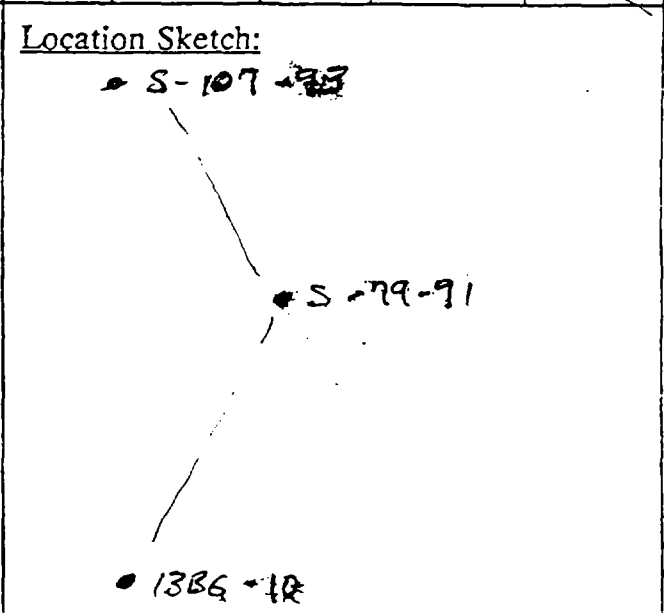
At Boring Completion: _____ Date: _____

Drilling Shifts:

Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>8/10/93</u>	<u>10:15</u>	<u>1300</u>	<u>0</u>	<u>30'</u>	<u>8/20/93</u>	<u>10:15</u>	<u>1300</u>	<u>0</u>	<u>30'</u>
	<u>1300</u>	<u>1430</u>	<u>0</u>	<u>30'</u>					
<u>8/20/93</u>	<u>1300</u>		<u>30'</u>	<u>50'</u>					

Abbreviations:

<u>Abbr</u>	<u>Meaning</u>



BORING LOG (cont'd.)

Project: <u>Lam Graduate DEFQ WELL</u> <u>5-107-93</u>		Boring: <u>5-107-93</u>		Page: <u>2</u> of <u>4</u>	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data 8.25 IN ID HSA (P.L.T.) 12 IN ID HSA OVERCUT HNU DRILL READING COMMENTS
0					
2					RAIN HEAVY NIGHT BEFORE @ 3.4 FT
4		NOTE: E.O.D. Dam Hike SURVEY @ 4 FT			
6	CL	SILTY CLAY 54 7/2 LIGHT GRAY, SATURATED MOSTLY CLAY, SOME SILT AND VERY FINE SAND	S-1 5/7	6 5 12 17	.3 ppm
8		NOTE: FROM 7-9 FT HARD RESISTANT SEAL (POSSIBLE AQUIFARD)			AS INFORMED BY DRILLER.
10	CL	SILTY CLAY 54 7/2 LIGHT GRAY, MOST- SATURATED, MOSTLY CLAY W/ SOME SILT & FINE SAND.	S-2 10/12	8 10 12 17	0.2 ppm NOTE: LIGHT OLIVE CLAY IN BOTTOM OF SPOON.
12	CL	NOTE: MEDIUM SAND LENS BETW/IN SILTY CLAY ≈ 3 INCHES THICK.			SW BEDDING TO FINE SAND IN SHOE.
14					
16	SM	SILTY SAND 54 9/2 LIGHT GRAY, MOSTLY BROWNISH FINE SAND, SOME SILT TRACE CLAY, HEAVING SANDS SFT UP IN HSA - DRILL OUT W/ CENTER BIT.	S-3 15/17	5 10 11 12	.1 ppm HEAVING SANDS
18					
20	SM	SILTY SAND 54 9/2 LIGHT BROWNISH GRAY AS S-3	S-4 20/22	1 2 11 15	.1 ppm CONTACT GREEN CLAY @ 21 FT
22	CL	CLAY 54 9/2 LIGHT OLIVE GRAY, MOIST, MOSTLY CLAY FEW FINE SAND SILT			

26.0
-20.5
5.5

BORING LOG (cont'd.)

Project: <u>DUNE GRADIENT DEEP WELL</u>		Boring: <u>S-107-93</u>		Page: <u>3</u> of <u>4</u>	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data HNU READING / Drilling COMMENTS
22	CL	CLAY			
24					
26	CB	CLAY. 54 1/2 LIGHT OLIVE GRAY, AS BOTTOM S-4	S5	3	1.7pm OUT OF CLAY
	Sm	SILTY SAND 25 LIGHT BROWN GRAY, SATURATED MOSTLY FINE SAND, SOME TO LITTLE SILT.	25/27	5 8 6	3 IN FINE SAND @ 26 FT ENTERED CLAY @ 27.
28		NOTE: CLAY FROM 27 TO 30. SLOW DRILLING NO SPLITSPOON TAKEN			NOTE DRILLER RE-ENTERS CLAY @ 27 FT 30.2 EXIT CLAY @ 31 FT.
30		DRIVE CASING TO 31 FT BOTTOM OF HOLE 30 FT.	S6	7 7	BOTTOM OF 12" ID CASING IS 19-20" HOLE.
32	SM INTERBEDDED 1/2" SILTY CLAY LENS	NOTE: BOTTOM OF 12" ID CASING IS 19-20" HOLE. SILTY SAND, 2.54 1/3 LIGHT YELLOW WITH BROWN MOSTLY VERY FINE SAND, SOME SILT, TRACE CLAY. D. LATERAL HIGH, SATURATED	30/32	15 20	INSTALL CASING 12" ID TO 32 FT. SMALL. SFT WATER BEARING ZONE @ 31 FT FAST SOFT DRILLING
34					
36	CL Sm Sm CL	CLAY, SILTY 54 1/2 OLIVE GRAY SILTY SAND FINE SAND/SILT Laminated thin clays & silty sands.	S7 35/37	10 25 34 44	3pm WATER BEARING ZONE 35'-9" - 36'-2" FINE SAND LENS
38		NOTE: DECIDE TO DRILL DEEPER NOTE: DRILL THROUGH SAME INTERBEDDED MATERIALS			
40	Sm	SILTY SAND, 54 1/2 OLIVE GRAY, MOSTLY VERY FINE SAND, SOME SILT, LITTLE CLAY LENS	S8 40/42	24 44 70/16	
42	CL	CLAY 54 1/2 OLIVE GRAY			
44					

BORING LOG (cont'd.)

Project: DOWN GRADIENT DEEP WELL		Boring: S-107-93		Page: 4 of 4	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
		TIGHT DRILLING UNTIL 45' THEN DRILL ROPS			ANU. READ=0. Comments
47		FALLING DOWN INSIDE HSA WHEN DISCONNECTED			
46		NOT REPRESENTATIVE	S9 45/47	10 12 31 48	NOT VALID SAMPLE (BACK FILL) SLOUGH
48	SM	SILTY SAND 5 1/2 OIL GRAY, SATURATED, MOSTLY FINE TO VERY FINE SAND SOME SILT, LITTLE 1-3mm CLAY STRUNGERS, FAST DRILLING		24 .80 100/6"	Attempt SLEEVED SPLITS FOR PERM TEST. 1 FT SUBMITTER (47 - 48 FT)
50					
52		NOTE: Bottom of Exploration at 50 FT BAIL OUT WATER FROM INSIDE HSA TO SETTING WELL SCREEN FROM 40-50 FT. 8-20-93			
54					
56					

BORING LOG GENERAL DATA

Project: 13 3X YARD Boring: 13-3X-11 Page: 1 of 2

Driller & Company: WILLY FRANKLIN CBC BOYLES

Geologist/Logger & Company: GILLESPIE (RST) Signature: J.E. GILLESPIE

Date Boring Started: 8.6.93 Completed: 8.6.93

Water Levels (From Ground Surface) N/A Drilling Rig: VB 80 MOBILE

First Encountered: N/A Date: N/A

While Drilling: ~ 7 FT Date: 8.6.93

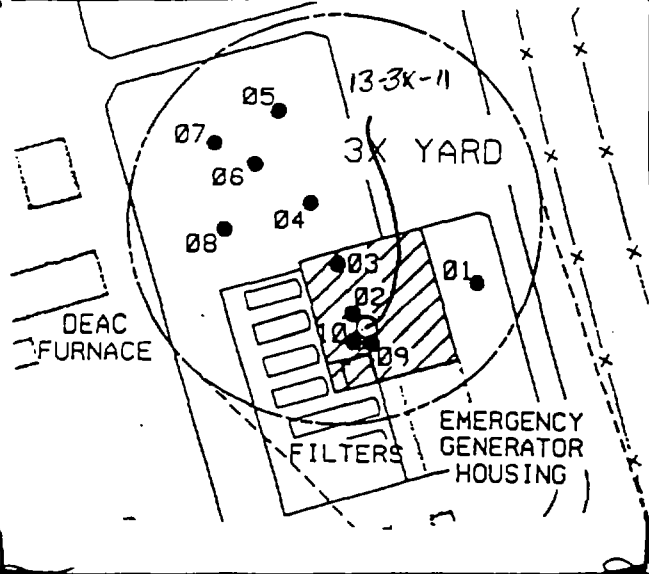
At Boring Completion: N/A Date: N/A

Drilling Shifts:

Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
8.6.93	11:22	12:25	0	10	/				

Abbreviations:
Abbr Meaning

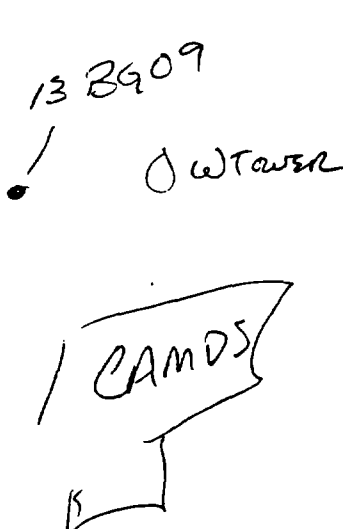
Location Sketch:



BORING LOG (cont'd.)

Project: 3X YARD		Boring: 13-3X-11		Page: 2 of 2		
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
					HNU REARLG	Comments
0		GRAVEL BACKFILL NUTS/BOLTS ETC.				
1						
2	SM	SILTY SAND 205 4/3 LIGHT YELLOWISH BROWN MOSTLY VERY FINE SAND SOME SILT TRACE CLAY 1/3 PEBBLES. STIFF. CALCAREOUS AREAS (WHITE)	S1 2/4	7 11 18 21	.6 ppm	Sample For CHEM 2-5 FT GEOTECH Sample
4	SM	SILTY SAND 205 4/3 LIGHT YELLOWISH BROWN SAME AS S-1	S.2 4/6	6 10 8 5		Sample For Chem.: 5-6 GEOTECH Sample
6		NOTE INCREASE SAND CONTENT @ 6 FT 1/3 MOIST				
7		SOFT DRILLING - SLIGHT GRIND DIFFICULT LENS				POSSIBLE LYT @ 7 FT
8	SM	SILTY SAND 52 5/3 OLIVE, MOIST TO SATURATED, MOSTLY FINE SAND, LITTLE TO SOME SILT, TRACE COARSE SAND/PEBBLES	S3 8/10	5 8 10 12		Sample For CHEM 9-10 GEOTECH Sample
10		Bottom of Exploration @ 10 FT				
11						

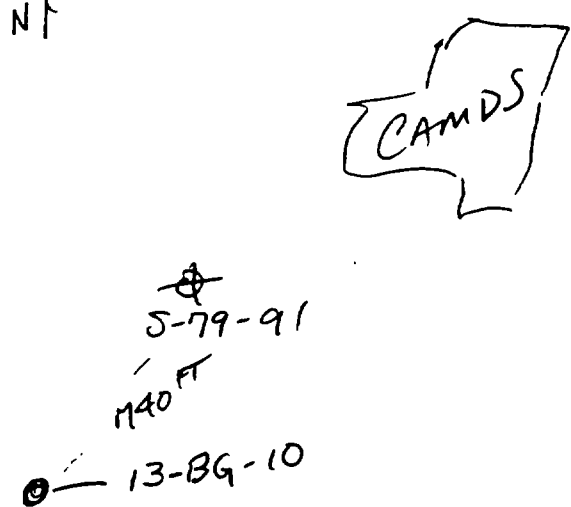
BORING LOG GENERAL DATA

Project: <u>BACK GRAND EXPLORATIONS</u> Boring: <u>133609</u> Page: 1 of 2									
Driller & Company: <u>WILLY FRANKLIN CBC BOULDER</u>									
Geologist/Logger & Company: <u>GILLESPIE (RST)</u> Signature: <u>J.E. GILLESPIE</u>									
Date Boring Started: <u>8.7.93</u> Completed: <u>8.7.93</u>									
Water Levels (From Ground Surface) <u>N/A</u>					Drilling Rig: <u>VB80 MIBICK</u>				
First Encountered: <u>N/A</u>					Date: <u>N/A</u>				
While Drilling: <u>N/A</u>					Date: <u>N/A</u>				
At Boring Completion: <u>N/A</u>					Date: <u>N/A</u>				
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>8.7.93</u>	<u>1340</u>	<u>1420</u>	<u>0</u>	<u>10</u>					
<u>Abbreviations:</u> Abbr Meaning					<u>Location Sketch:</u> NT 133609 ! Tower 				

BORING LOG (cont'd.)

Project: <u>BackGround BORINGS</u>		Boring: <u>13BG09</u>		Page: <u>2</u> of <u>2</u>		
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
					HN V TPM	Comments
0	SL ML	SILT 10YR 6/3 PINK Brown, MOIST TO DRY, MOSTLY SILT, SOME FINE TO VERY FINE SAND LITTLE CLAY AND FINE GRAVEL.	S-1 0/ 2	5 5 9 8	.5 ppm	METALS ANIONS ALKALI PH METALS ANIONS GEOTECHNICAL
4	MB	SILT 10YR 5/6 yellowish Brown SAME AS S-1 MOIST.	S2 4/ 6	4 5 6 7	.3 ppm	ALK. PH METALS ANIONS GEOTECHNICAL
8	CL	SILTY CLAY 10YR 4/2 DARK GRAYISH Brown MOIST, MOSTLY CLAY, LITTLE TO SOME SILT, TRACE WHITE CALCAREOUS SANDS.	S3 8/ 10	5 7 13 13	.1 ppm	ALK PH METALS ANIONS GEOTECHNICAL
10		Bottom of Exploration @ 10 FT B.G.S.				GEOTECHNICAL

BORING LOG GENERAL DATA

Project: <u>Back Ground Borings</u>		Boring: <u>13 BG-10</u>		Page: 1 of <u>2</u>							
Driller & Company: <u>WILLY FRANKLIN CBC BOYLES</u>											
Geologist/Logger & Company: <u>GILLESPIE (RUS)</u> Signature: <u>J.E. GILLESPIE</u>											
Date Boring Started: <u>8-7-93</u>		Completed: <u>8-7-93</u>									
Water Levels (From Ground Surface) <u>N/A</u>			Drilling Rig: <u>VIBRO MOBILE</u>								
First Encountered: <u>N/A</u>		Date: <u>N/A</u>									
While Drilling: <u>N/A</u>		Date: <u>N/A</u>									
At Boring Completion: <u>N/A</u>			Date: <u>N/A</u>								
Drilling Shifts:											
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift			
	Start	End	Start	End		Start	End	Start	End		
<u>8/7/93</u>	<u>1500</u>	<u>1540</u>	<u>0</u>	<u>10</u>	/						
<u>Abbreviations:</u> <table style="width:100%; border: none;"> <tr> <td style="border: none;"><u>Abbr</u></td> <td style="border: none;"><u>Meaning</u></td> </tr> </table>					<u>Abbr</u>	<u>Meaning</u>	<u>Location Sketch:</u> 				
<u>Abbr</u>	<u>Meaning</u>										

BORING LOG (cont'd.)

Project: <u>Background Borings</u>		Boring: <u>13BG 10</u>		Page: <u>2</u> of <u>2</u>		
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
					H ₂ O (PPM)	Comments
0	OL	SILT 10YR 8/2 V.F. CLY PALE BROWN. MOSTLY SILT, LITTLE CLAY, TRACE FINE SAND DRY TO MOIST	S1 0/2	3	1 ppm	ALKALI PH ANIONS METALS
1				4		
2				4		
3				10		
4	SM	SILTY SAND S4 7/2 LIGHT GRAY, SATURATED MOSTLY FINE TO MEDIUM SAND. SOME SILT.	S2 4/6	4	1 ppm	ALKALI PH ANIONS METALS
5				7		
6				16		
7				28		
8	SM	SILTY SAND S4 7/2 SAME AS S-12 BUT FINE GRAN SAND SATURATED	S3 8/10	5	1 ppm	ALKALI PH ANIONS METALS
9				6		
10				10		
10	SC	SANDY CLAY. S4 7/2 MOSTLY CLAY W/SOME VERY FINE SAND		A		
11		Bottom of Exploration 10 FT.				

BORING LOG (cont'd.)

Project: <u>CHEMICAL UNLOAD</u>		Boring: <u>13-CU-02</u>		Page: <u>2</u> of <u>2</u>	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
		<u>18" RR GRAVEL GRADE</u>			<u>Hand</u> <u>READING</u> <u>Comments</u>
0	<u>ML</u>	<u>SILT 1042 4/1</u> <u>DARK GRAY, DRY,</u> <u>MOSTLY SILT, SOME</u> <u>FINE GRAVEL, LITTLE</u> <u>FINE TO COARSE SAND</u> <u>PEBBLES</u>	<u>S1</u> <u>0/2</u>	<u>Hand</u> <u>ADJER.</u>	<u>0.0 ppm</u>
1					
2					
3					
4	<u>ML</u>	<u>SILT 1042 5/3 Bream,</u> <u>DRY, MOSTLY SILT</u> <u>SOME TO LITTLE CLAY,</u> <u>DENSE, STIFF</u>	<u>S2</u> <u>4/6</u>	<u>4</u> <u>5</u> <u>7</u> <u>8</u>	<u>.2 ppm</u>
5					
6					
7					
8	<u>CL</u>	<u>SILTY CLAY 54 5/2</u> <u>OLIVE GRAY, DRY,</u> <u>MOSTLY CLAY, SOME</u> <u>SILT. DENSE, STIFF,</u>	<u>S3</u> <u>8/10</u>	<u>5</u> <u>10</u> <u>17</u> <u>23</u>	<u>.4 ppm</u> <u>Duplicate</u> <u>SAMPLE</u> <u>TAKEN.</u>
9					
10		<u>Bottom of EXPLORATION</u> <u>AT TEN FT.</u>			
11					

BORING LOG GENERAL DATA

Project: <u>CHEMICAL UNLOAD FAC</u> Boring: <u>13-CU-03</u> Page: 1 of <u>2</u>											
Driller & Company: <u>WILLY FRANKLIN CBC BOYLES</u>											
Geologist/Logger & Company: <u>GILLESPIE (RUST)</u> Signature: <u>[Signature]</u>											
Date Boring Started: <u>8.7.93</u> Completed: <u>8.7.93</u>											
Water Levels (From Ground Surface) <u>N/A</u>					Drilling Rig: <u>VB 80 MOBILE</u>						
First Encountered: <u>N/A</u>			Date: <u>N/A</u>			Date: <u>N/A</u>			Date: <u>N/A</u>		
While Drilling: <u>N/A</u>			Date: <u>N/A</u>			Date: <u>N/A</u>			Date: <u>N/A</u>		
At Boring Completion: <u>N/A</u> Date: <u>N/A</u>											
Drilling Shifts:											
Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End	Start	End
<u>8/7/93</u>	<u>1115</u>	<u>1200</u>	<u>0</u>	<u>10</u>							
Abbreviations:						Location Sketch: <u>13 CU-03</u>					
Abbr Meaning											

BORING LOG (cont'd.)

Project: <u>CHEMICAL UNLOAD FAC</u>		Boring: <u>13-CU-03</u>		Page: <u>2</u> of <u>2</u>		
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
					<u>HWL</u> <u>SP</u>	<u>Comments</u>
0	<u>GCE</u>	<u>GRAVEL RR GRADE</u>	<u>S-1</u>	<u>5</u>	<u>4 ppm</u>	<u>UNDER</u> <u>RR TRACK</u> <u>18" OF</u> <u>GRAVEL</u> <u>ON TOP</u> <u>OF SURFACE</u> <u>GEOTECH</u>
1		<u>GRAVELLY CLAY 10YR⁶/₃</u>	<u>8/1</u>	<u>5</u>		
1		<u>PALE BROWN, MOSTLY</u> <u>CLAY, MOIST, SOME</u> <u>FINE GRAVEL, LITTLE</u>	<u>8/2</u>	<u>10</u>		
2		<u>FINE TO COARSE SAND</u>	<u>8/1</u>	<u>11</u>		
4	<u>CL</u>	<u>SILTY CLAY, 10YR⁵/₄</u>	<u>S2</u>	<u>3</u>	<u>.3 ppm</u>	<u>SOFT</u> <u>SPoon</u> <u>TESTING</u> <u>GEOTECH</u>
5		<u>YELLOWISH BROWN,</u> <u>MOIST-SATURATED,</u> <u>MOSTLY CLAY, SOME</u>	<u>4/6</u>	<u>3</u>		
5		<u>SILT, LITTLE FINE TO</u> <u>COARSE SAND.</u>	<u>4/6</u>	<u>5</u>		
6				<u>3</u>		
8	<u>SM</u>	<u>SILTY SAND 5Y⁵/₂</u>	<u>S3</u>	<u>5</u>	<u>.2 ppm</u>	<u>GEOTECH</u>
9		<u>OLIVE GRAY, MOIST</u> <u>MOSTLY FINE TO VERY</u> <u>FINE SAND, SOME</u> <u>TO LITTLE CLAY, STIFF</u> <u>SLIGHTLY PLASTIC</u>	<u>8/10</u>	<u>10</u>		
9			<u>8/10</u>	<u>16</u>		
10			<u>8/10</u>	<u>18</u>		
11		<u>BOTTOM OF EXPLORATION</u> <u>@ 10 FT</u>				

BORING LOG GENERAL DATA

Project: <u>FUEL SPILL AREA</u>	Boring: <u>13FS27</u>	Page: 1 of 2
Driller & Company: <u>WILLY FRANKLIN CIBC BOYLES</u>		
Geologist/Logger & Company: <u>J. GILLESPIE</u>		Signature: <u>J.F. GILLESPIE</u>
Date Boring Started: <u>8.4.93</u>		Completed: <u>8.4.93</u>
Water Levels (From Ground Surface)		Drilling Rig: <u>VB80 (MOBILE)</u>
First Encountered:	<u>N/A</u>	Date: <u>N/A</u>
While Drilling:	<u>N/A</u>	Date: <u>N/A</u>

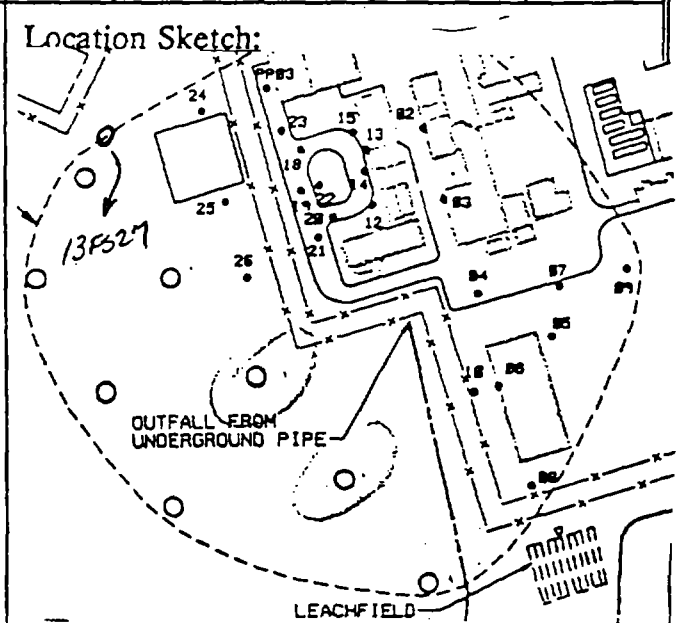
At Boring Completion:	<u>N/A</u>	Date: <u>N/A 8/4/93</u>
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Drilling Shifts:

Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
84.93	11:00	12:00	0	8 FT					
	11:14		04 FT	FOD					

Abbreviations:

<u>Abbr</u>	<u>Meaning</u>



BORING LOG (cont'd.)

Project: FUEL SPILL AREA		Boring: 13FS-27		Page: 2 of 2	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
0					HAUL COMMENTS
1	ML	SANDY SILT 1042 5/8 Bran.			
2					
3		NOTE: F.O.D SURVEY Down HOLE @ 4 FT			
4	ML	SILT, 1042 5/8 Bran, MOIST-DRY, MOSTLY SILT, SOME FINE TO FINE SAND, CLAY, CONSISTENT, SLIGHTLY PLASTIC	S-1 4 6	3 3 4 6	.7 ppm NO ODR
5					
6					
7		NOTE: DRILL CUTTINGS BALLING UP AROUND HSA			
8	ML	SILT, 1042 7/8 LIGHT GRAY, MOSTLY SILT, SOME FINE TO VERY FINE SAND, LITTLE CLAY, STIFF,	S-2 8 10	5 8 22 48	.7 ppm NO ODR TRIP SAMPLE FROM 8-9 FT. WITH DUPLICATE
9					
10		BOTTOM OF EXPLORATION @ 10 FT BGS BACKFILL W/ CUTTINGS			
11					

BORING LOG GENERAL DATA

Project: FUEL SPILL AREA Boring: ¹³PS 28 Page: 1 of 2

Driller & Company: (CBC) WILLY FRANKLE. CBC BOYLES

Geologist/Logger & Company: J. GILLESPIE (FUT) Signature: J.E. GILLESPIE

Date Boring Started: 8/4/93 Completed: 8/4/93

Water Levels (From Ground Surface) N/A Drilling Rig: VB 80 MOBILE

First Encountered: N/A Date: N/A

While Drilling: N/A Date: N/A

At Boring Completion: N/A Date: N/A

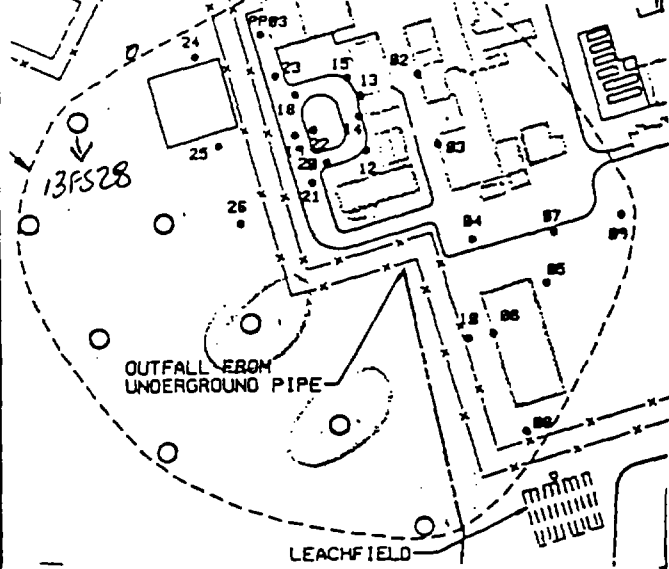
Drilling Shifts:

Date		Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift		
	Start	End	Start	End		Start	End	Start	End	Start	End	
	1330	1430	0	8	EOD							
	1340	1345	@	4 FT								
	1340											

Abbreviations:

Abbr Meaning

Location Sketch:



BORING LOG (cont'd.)

Project: FUEL SPILL AREA		Boring: 13FS28		Page: 2 of 2	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data HALL (p.w.) COMMENTS
0		SURFACE.			
1	ML	SILT 10YR 7/4 YELLOWISH BROWN DRY - MOIST. MOSTLY SILT, LITTLE FINE SAND, TRACE - LITTLE CLAY			
2					
3		INCREASING CLAY CONTENT. ↓			
4	CL	SILTY CLAY 10YR 5/3 BROWN, MOIST-DRY, MOSTLY CLAY, SOME SILT, V. FINE SAND. TRACE WHITE STRINGERS	S-1 4/ 6	2 3 3 2	5' spm SOFT
5					
6					
7					
8	SM	SILTY SAND, 10YR 7/2 LIGHT GRAY, MOIST, MOSTLY FINE TO VERY FINE SAND, SOME SILT	S2 8/ 10	11 32 43 50	DENSE SAMPLE FOR TRPH
9					
10		Bottom of Exploration @ 10 FT w/ Splitspoon			
11					

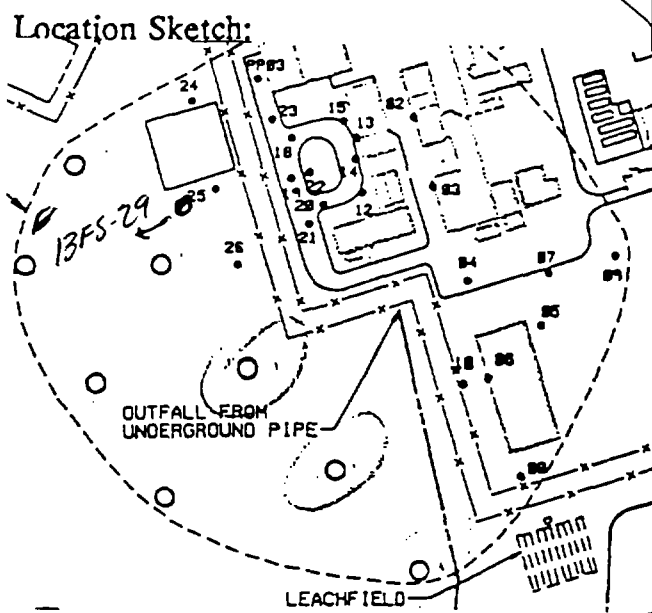
BORING LOG GENERAL DATA

Project: <u>FUEL SPILL AREA</u>	Boring: <u>13-FS-29</u>	Page: 1 of 2
Driller & Company: <u>WILLY FRANKLIN CBC</u>		
Geologist/Logger & Company: <u>J. GILLESPIE (RBT)</u> Signature: <u>J.G. GILLESPIE</u>		
Date Boring Started: <u>8.4.93</u>		Completed: <u>8.4.93</u>
Water Levels (From Ground Surface)		Drilling Rig: <u>VB80 MOBILE</u>
First Encountered: <u>N/A</u>	Date: <u>N/A</u>	
While Drilling: <u>Wth NTA ~9'</u>	Date: <u>~8.4.93</u>	
At Boring Completion: <u>N/A</u>		Date: <u>N/A</u>

Drilling Shifts:

Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>84.93</u>	<u>1500</u>		<u>0</u>						

Abbreviations:
Abbr Meaning



BORING LOG (cont'd.)

Project: FUEL SPILL AREA		Boring: BFS 29		Page: 2 of 2	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
0					HAND COMMENTS
1					
2					
3					
4	ML	SILT, 104R 5/3 Braw.			
5					
6					
7					
8	CL	SILTY CLAY, 104R 5/3 Braw. MOIST, MOSTLY CLAY, SOME SILT, LITTLE FINE SAND. SLIGHTLY PLASTIC ROLL TO < 1/8"	51 4/6	4 5 6 4	4 ppm SOFT
9					
10	CL	SILTY CLAY, 104R 5/3 Braw. MOIST TO SATURATED. MOSTLY CLAY, SOME SILT, LITTLE FINE SAND PLASTIC. VISIBLE SATURATION (BELOW 9 FT. INCREASED TRACE COARSE GRAVEL.	52 8/10	3 4 6 10	WL CK @ 8.5 FT. B.G.S. TRPH SAMPLE TAKEN FROM 8.0 TO 9 FT IN UADOSE ZONE.
11		Bottom of exploration @ 10 FT B.G.S.			

BORING LOG GENERAL DATA

Project: 13-FS-30 FUEL Spill AREA Boring: 13FS30 Page: 1 of 2

Driller & Company: WILLY FRANKLIN CBC BOYLES

Geologist/Logger & Company: GILLESPIE/ROSTI Signature: J.E. GILLESPIE

Date Boring Started: 8.5.93 Completed: 8.5.93

Water Levels (From Ground Surface) n/a Drilling Rig: VB 80 MOBILE

First Encountered: n/a Date: n/a

While Drilling: ~9 FT Date: 8/5/93

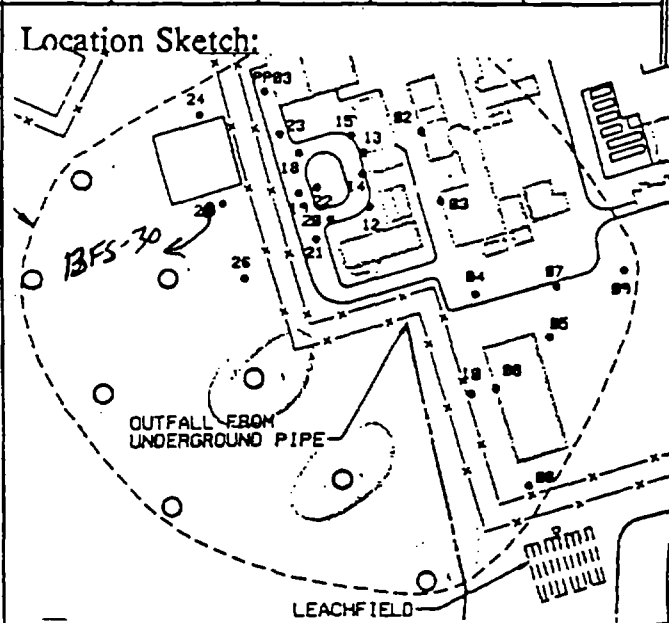
At Boring Completion: n/a Date: n/a

Drilling Shifts:

Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
8.5.93	10:15	11:04	0	8					

Abbreviations:

Abbr	Meaning



BORING LOG (cont'd.)

Project: FUEL SPILL AREA		Boring: 13FS 30		Page: 2 of 2	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data HOLE READING COMMENTS
0					
1	ML	SILT MOSTLY SILT SOME FINE SAND			GRASS SAMPLE
2					
3					
A		NOTE: E.O.D. SURVEY			
4	CL	SILTY CLAY, 2.5% LIGHT OLIVE BROWN MOIST, MOSTLY CLAY, SOME SILT, TRACE FINE SAND, WHITE CALLAGAN STRINGERS?	S-1 4/6 9	5 6 7 9	3 rd SOFT
5					
6					
7					
8	SM	SILTY SAND, 2.5% LIGHT BROWNISH GRAY, SATURATED, MOSTLY FINE SAND, LITTLE - SOME SILT,	S-2 8/10	12 16 15 15	4 th GEOTECH SAMPLE CHEMICAL SAMPLE 8-9 TRPH.
9					
10					
11		Bottom of Exploration @ 10 FT			

BORING LOG GENERAL DATA

Project: FUEL SPILL AREA Boring: 13F331 Page: 1 of 2

Driller & Company: WILLY FRANKLIN - CBC BOYLES

Geologist/Logger & Company: GILLESPIE / RUSTE I Signature: [Signature]

Date Boring Started: 8.5.93 Completed: 8.5.93

Water Levels (From Ground Surface) N/A Drilling Rig: VB 80 MOBILE

First Encountered: N/A Date: N/A

While Drilling: ≈ 5 FT Date: 8.5.93

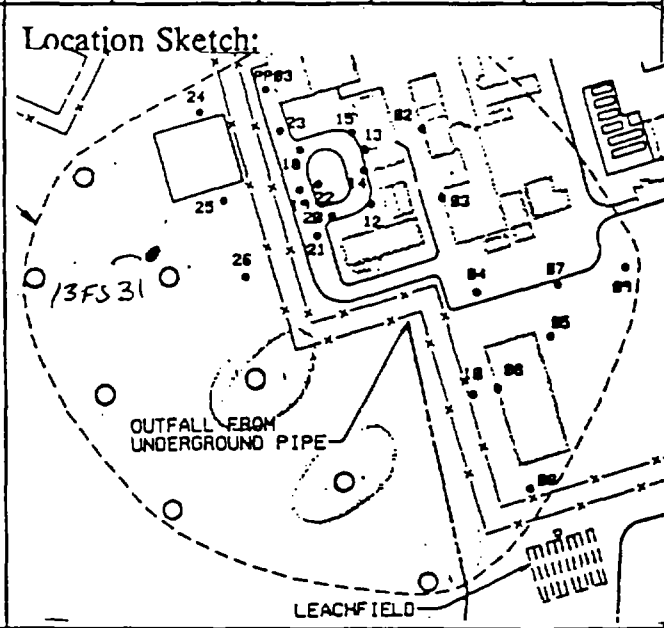
At Boring Completion: Date:

Drilling Shifts:

Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
8.5.93	12:00		0	8					

Abbreviations:

<u>Abbr</u>	<u>Meaning</u>



BORING LOG (cont'd.)

Project: FUEL SPILL AREA		Boring: 13F931		Page: 2 of 2	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data HAND READING / Comments
0	ML	SILTY CLAY LIGHT GRAY			GRASS sample
1					
2					
3					
4	CL	F.O.D. SURVEY @ 4 FT SILTY CLAY, 10YR ⁵ / ₃ BROWN, MOIST TO 5 FT, THEN SATURATED MOSTLY CLAY, SOME SILT, TRACE TO LITTLE VERY FINE SAND. STRINGS OF AND PADS OF CALCAREOUS WHITE.	S-1 4/6	3 4 5 7	.1 gm ▼ WT SOFT @ 25 FT DRILL IN spoon.
5					
6					
7					
8	CL	SILTY CLAY 10YR ⁵ / ₃ BROWN, MOIST TO SATURATED, MOSTLY CLAY SOME SILT, TRACE TO LITTLE FINE TO COARSE SAND.	S-2 8/10	5 7 6 12	.1 gm SOFT DRILLING CHEMICAL ANALYSIS FOR TRPC
9					
10					
11		Bottom of Exploration AT 10 FT B.G.S.			

BORING LOG GENERAL DATA

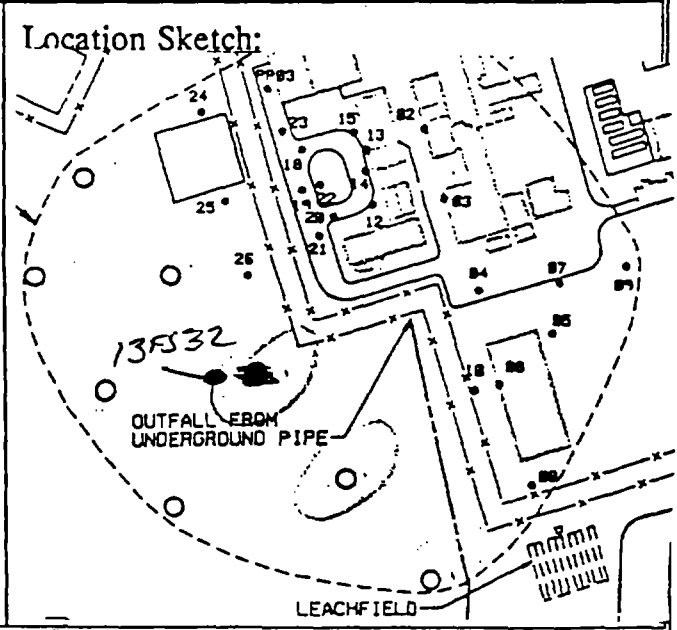
Project: <u>FUEL SPILL AREA</u>	Boring: <u>13FS32</u>	Page: 1 of 2
Driller & Company: <u>WILLY FRANKLIN CBC BOYLES</u>		
Geologist/Logger & Company: <u>G. WESPIE / RVT</u> Signature: <u>J. G. WESPIE</u>		
Date Boring Started: <u>8-5-93</u> Completed: <u>8-5-93</u>		
Water Levels (From Ground Surface) <u>N/A</u>		Drilling Rig: <u>VB 80</u>
First Encountered: <u>N/A</u>		Date: <u>N/A</u>
While Drilling: <u>SATURATED @ 9 FT</u>		Date: <u>8-5-93</u>
At Boring Completion: <u>N/A</u>		Date: <u>N/A</u>

Drilling Shifts:

Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>8-5-93</u>	<u>1500</u>	<u>1600</u>	<u>0</u>	<u>8</u>					

Abbreviations:

<u>Abbr</u>	<u>Meaning</u>



BORING LOG (cont'd.)

Project: FUEL SPILL AREA		Boring: 13FS 32		Page: 2 of 2	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data HNU READING COMMENT
0					
1	ML	SILT, LIGHT GRAY LITTLE FINE TO MED SAND.			GRAB SAMPLE
2					
3					
4	CL	NOTE: F.S.D. SURVEY @ FOUR FEET. SILTY CLAY 104R 5/3 BRN, MOIST TO SATURATED. MOSTLY CLAY, SOME SILT, TRACE FINE TO MEDIUM SAND.	S-1 4/6	2 3 3 4	1 ppm SOFT
5					
6					
7					
8	CL	SILTY CLAY 104R 5/3 104R 7/1 LIGHT GRAY, MOST TO 9 FT THEN SATURATED, MOSTLY CLAY, SOME SILT, LITTLE FINE TO COARSE SAND.	S-2 8/10	5 5 5 9	1 ppm SOFT @ TOP DENSE TO BOTTOM INCREASED SAND CONTENT SAMPLE FOR TRPA
9					
10					
11		B.O.F. @ 10 FT			ALSO FIELD BLANK PERFORMED

BORING LOG GENERAL DATA

Project: FUEL SPILL AREA Boring: 13FS33 Page: 1 of 2

Driller & Company: WILLY FRANKLIN (CBC BOYLE)

Geologist/Logger & Company: GILLESPIE / RUST Signature: [Signature]

Date Boring Started: 8-5-93 Completed: 8-5-93

Water Levels (From Ground Surface) N/A Drilling Rig: VB 80 MOBILE

First Encountered: N/A Date: N/A

While Drilling: N/A Date: N/A

At Boring Completion: N/A Date: N/A

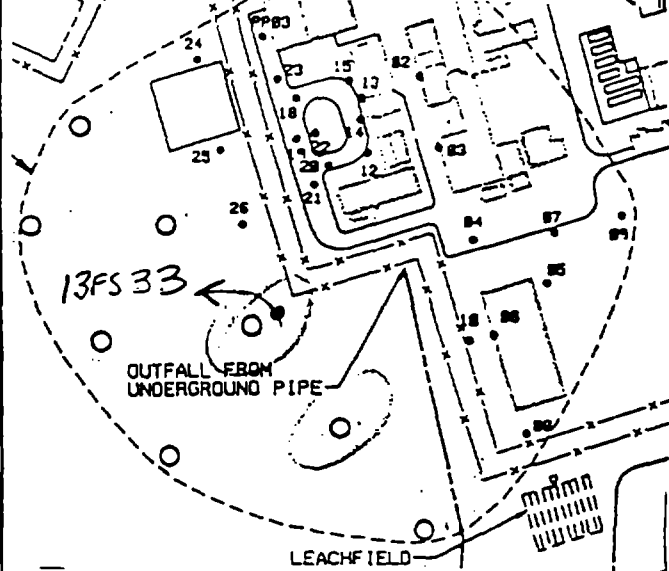
Drilling Shifts:

Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
3.5.93	1627	1645	0	8					

Abbreviations:

<u>Abbr</u>	<u>Meaning</u>
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Location Sketch:



BORING LOG (cont'd)

Project: FUEL SPILL AREA		Boring: 13FS33		Page: 2 of 2		
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
					HNW READING	COMMENTS
0	MC	SILT, LIGHT CLAY SOME FINE SAND				
1						
2						
3						
4	CL	SILTY CLAY, 1042 ⁵ / ₃ Brown, MOIST, MOSTLY CLAY, SOME TO LITTLE SILT, LITTLE FINE TO COARSE SAND CALCAREOUS SPRINGERS? TONES	S-1	3	.2 PA	SOFT DRILLING
5			H/G	4		
6				5		
7						
8	CL	SILTY CLAY 1042 ⁵ / ₃ Brown, MOSTLY MOIST. SATURATED @ Bottom MOSTLY CLAY, SOME SILT, LITTLE FINE SAND,	S-2	5	.3 ppm	SOFT DRILLING
9			E/10	7		
10				8		
10				6		* @ 9.5-10FT CHEMICAL ANALYSIS FOR TPH
11		B.O.F @ 10FT B.G.S.				8

BORING LOG GENERAL DATA

Project: <u>FUEL SPILL AREA</u>		Boring: <u>13FS34</u>		Page: <u>1 of 2</u>	
Driller & Company: <u>WILLY FRANKLIN CBC BOYLES</u>					
Geologist/Logger & Company: <u>GILLESPIE (RUST)</u>				Signature: <u>J.E. GILLESPIE</u>	
Date Boring Started: <u>8.6.93</u>		Completed: <u>8.6.93</u>			
Water Levels (From Ground Surface) <u>N/A</u>			Drilling Rig: <u>V13 80 MOBILE</u>		
First Encountered: <u>N/A</u>			Date: <u>N/A</u>		
While Drilling: <u>± 9 - 9.5 FT</u>			Date: <u>8.6.93</u>		

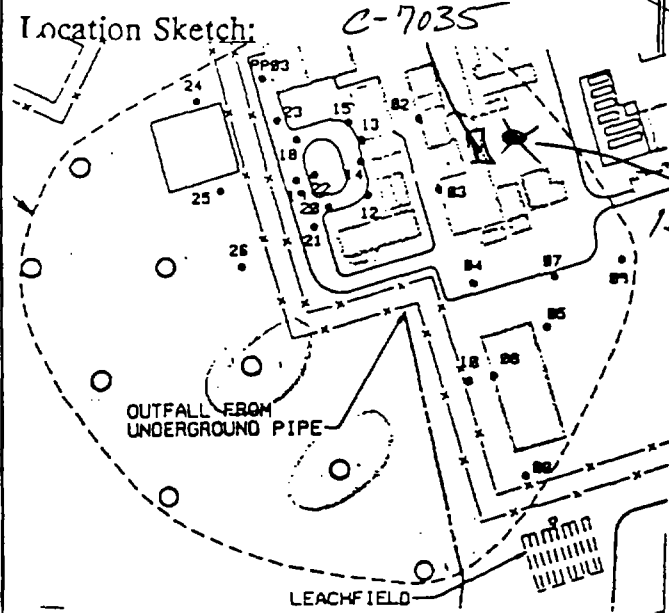
At Boring Completion:	Date:
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Drilling Shifts:

Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>8.6.93</u>	<u>09:30</u>	<u>10:30</u>	<u>0</u>	<u>8</u>	 				

Abbreviations:

<u>Abbr</u>	<u>Meaning</u>



BORING LOG (cont'd)

Project: FUEL SPILL AREA		Boring: BFS 34		Page: 2 of 2		
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
					HNW READING	COMMENTS
0	ES	OVERLAYING ROAD BASE MATERIALS				
1		FILL MATERIAL GRAVELLY SOIL				
2	CL	NOTE NATIVE MATERIAL				
3		SILTY CLAY, DRY Brown			7.9m	
4		NOTE: EODT. RENS DAMHOLE SURVIVOR.				
5	CL	SILTY CLAY 2.54 1/3 LIGHT YELLOWISH BROWN DRY, MOSTLY CLAY, SOME SILT, LITTLE VERY FINE TO FINE SAND. WHITE CALCAREOUS AREAS?	S1	4	1.2 ppm	
6			4/6	6		
7				7		SAMPLE FOR CARBON TEST
8	SM	SILTY SAND 2.54 1/3 LIGHT YELLOWISH BROWN, MOIST TO DRY, SATURATED	S2	6	.6 ppm	
9		≈ 9-9.5 FT, MOSTLY VERY FINE TO FINE SAND, LITTLE TO SOME SILT. TRACE CLA	8/10	13		▼ 9-9.5'
10				13		SAMPLE FOR CARBON TRIPH
11		Bottom of Exploration AT 10 FT, Backfill w/ cuttings				

BORING LOG GENERAL DATA

Project: PERIMETER PAVEMENT Boring: B-PP-04 Page: 1 of 2

Driller & Company: WILLY FRANKLIN CBC BOYLES

Geologist/Logger & Company: GILLESPIE (RST) Signature: J.E. GILLESPIE

Date Boring Started: 8.6.93 Completed: 8.6.93

Water Levels (From Ground Surface) N/A Drilling Rig: VB 80 MOBILE

First Encountered: N/A Date: N/A

While Drilling: N/A Date: N/A

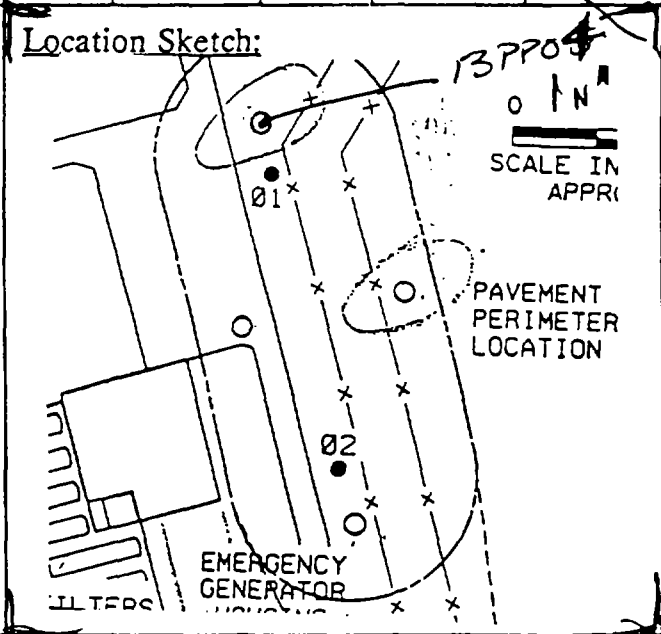
At Boring Completion: N/A Date: N/A

Drilling Shifts:

Date	Time		Depth of Drilling Per Shift		Date		Time		Depth of Drilling Per Shift	
	Start	End	Start	End	Start	End	Start	End	Start	End
<u>8/6/93</u>	<u>1615</u>	<u>1639</u>	<u>0</u>	<u>5</u>	Well Completion Information					

Abbreviations:

<u>Abbr</u>	<u>Meaning</u>
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BORING LOG (cont'd.)

Project: PERIMETER PAVEMENT		Boring: 13-PP-04		Page: 2 of 2		
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
					HNW READING	COMMENTS
0	ML	SILT 25% 1/2 1/3 FINE YELLOW, MOSTLY SILT LITTLE FINE SAND. TRACE PEBBLES.	S1 0/2	9	0.6ppm	FLUORIDE ACID SAMPLE
1				16		
2				11		
3				11		
4	CL	SILTY CLAY 2.5% 1/3 LIGHT YELLOWISH BROWN. DIRTY, MOSTLY CLAY. SOME SILT FINE SAND TRACE PEBBLES	S2 3/5	6	0.2ppm	FLUORIDE ACID SAMPLE + DUPLICATE
5				10		
6				15		
7				18		
8						
9						
10						
11						

Bottom of Exploration
AT FIVE FEET BSS.

BORING LOG GENERAL DATA

Project: <u>PAVEMENT PERIMETER</u>		Boring: <u>13PP05</u>		Page: 1 of 2					
Driller & Company: <u>WILLYFRANKLIN CBC BOYLES</u>									
Geologist/Logger & Company: <u>GILLESPIE (RUST)</u> Signature: <u>JE. GILLESPIE</u>									
Date Boring Started: <u>8.6.93</u>		Completed: <u>8.6.93</u>							
Water Levels (From Ground Surface) <u>N/A</u>			Drilling Rig: <u>VB80 MOBILE</u>						
First Encountered: <u>N/A</u>		Date: <u>N/A</u>							
While Drilling: <u>N/A</u>		Date: <u>N/A</u>							
At Boring Completion: <u>N/A</u>			Date: <u>N/A</u>						
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>8/6/93</u>					/				
Abbreviations:					Location Sketch:				
Abbr Meaning					<p>The sketch shows a site layout with a dashed line representing the 'PAVEMENT PERIMETER LOCATION'. Inside the perimeter, there are two circular features labeled '01' and '02'. An 'EMERGENCY GENERATOR' is located near the bottom center, and 'FILTERS' are indicated at the bottom left. A scale bar and north arrow are shown in the top right corner.</p>				

BORING LOG (cont'd.)

Project: PERIMETER PAVEMENT		Boring: 137705		Page: 2 of 2		
Depth/ Eval	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
					H ₁₀₀	Comments
0	ML	SILT 2.54 7/4 PALE YELLOW, DRY, MOSTLY SILT, LITTLE FINE SAND. DARK, SOME IRON STAINING	S1 0/2	7	.3pp	0-6" FLUORIC ACID SAMPLE
1				11		
2				13		
3				14		
3	CL	SILTY CLAY 2.54 7/4 PALE YELLOW, DRY, MOSTLY CLAY, SOME SILT, FINE SAND CALCAREOUS ZONES	S2 3/5	6		4-5 FT FLUORIC ACID GROFCH SAMPLE
4				11		
5				16		
5		Bottom of Exploration @ 5 FT				
6						
7						
8						
9						
10						
11						

BORING LOG GENERAL DATA

Project: PAVEMENT PERIMETER Boring: 13PP06 Page: 1 of 2

Driller & Company: W. H. FRANKLIN CBC RYLES

Geologist/Logger & Company: GILLESPIE (RUST) Signature: [Signature]

Date Boring Started: 8-6-93 Completed: 8-6-93

Water Levels (From Ground Surface) n/a Drilling Rig: VB80 MOBILE

First Encountered: n/a Date: n/a

While Drilling: n/a Date: n/a

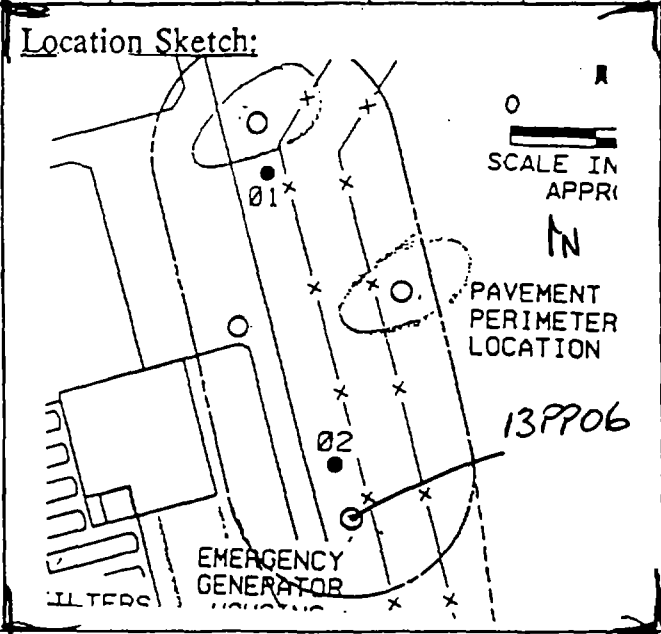
At Boring Completion: n/a Date: n/a

Drilling Shifts:

Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>8-6-93</u>	<u>1430</u>	<u>1445</u>	<u>0</u>	<u>5</u>					

Abbreviations:

<u>Abbr</u>	<u>Meaning</u>



BORING LOG (cont'd.)

Project: PAVEMENT PERIMETER		Boring: 13PP06		Page: 2 of 2	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data HAND READING COMMENTS
0	<u>ML</u> ML	<u>SILT</u> 2.54 7/4 PALE YELLOW.	S1	6	0.6 ppm SAMPLE FOR FLUORIDE ACID 0-6"
1		DRY MOSTLY SILT, TRACE TO LITTLE CLAY DENSE.	0/2	6 10 9	
2					
3	<u>CL</u>	<u>SILTY CLAY</u> 2.54 7/4 PALE YELLOW, DRY MOSTLY CLAY, SOME TO LITTLE SILT, CAL CARREOUS ZONES.	S-2	5 10 11 10	SAMPLE FLUORIDE ACID 4-5'
4					
5		Bottom of Exploration AT FIVE FT B.G.S			
6					
7					
8					
9					
10					
11					

BORING LOG GENERAL DATA

Project: PAVEMENT PERIMETER Boring: 13-PP-07 Page: 1 of 2

Driller & Company: WILLY FRANKLIN CBC BOYLES

Geologist/Logger & Company: GILLESPIE (RUST) Signature: J.E. GILLESPIE

Date Boring Started: 8.7.93 Completed: 8.7.93

Water Levels (From Ground Surface) N/A Drilling Rig: N/A

First Encountered: N/A Date: N/A

While Drilling: N/A Date: N/A

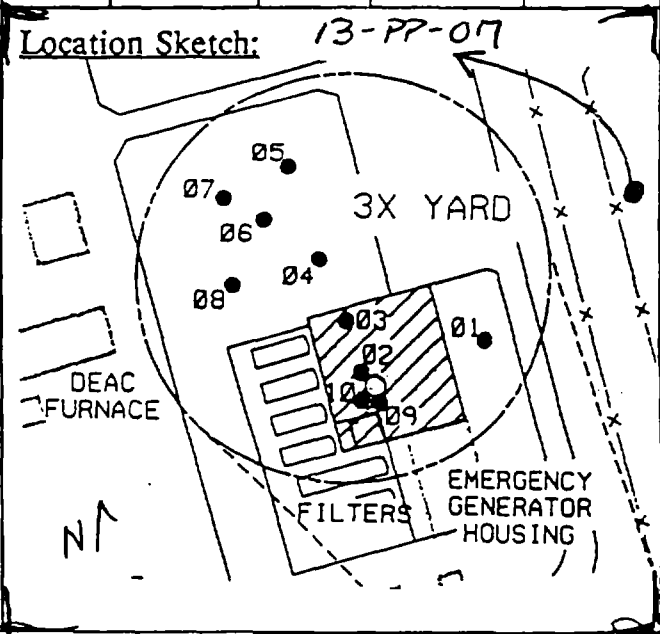
At Boring Completion: N/A Date: N/A

Drilling Shifts:

Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
8.7.93	09:50	10:10	0	5					

Abbreviations:

Abbr	Meaning



BORING LOG (cont'd.)

Project: PAVEMENT PERIMETER		Boring: 13-PP-07		Page: 2 of 2	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
		.5' ROAD BASE			HAN READING COMMENTS
0	ML	SILT 254 2/3 LIGHT OLIVE BROWN, DRY MOSTLY SILT, LITTLE FINE - COARSE SAND/ PEBBLES	S-1 0/ 2	13 10 7 13	0.3 PPM FLUORACETIC ACID SAMPLE
1					
2					
3	CL	CLAY 51 1/2 LIGHT OLIVE GRAY, MOIST TO DRY, MOSTLY CLAY WHITE CALCAREOUS OR GIPSUM DEPOSITS ALONG FRACTURES	S-2 3/ 5	9 13 22 37	.2ppm DRY STIFF CLAY FLUORACETIC ACID SAMPLE
4					
5					
6		Bottom of Exploratory @ FIVE FEET.			
7					
8					
9					
10					
11					

BORING LOG GENERAL DATA

Project: <u>Sodium Hydroxide</u>	Boring: <u>13-SH-01</u>	Page: <u>1 of 2</u>
Driller & Company: <u>HINO BORER, K. PILL, T. RICHARDS, C. HOLBERT /RUST</u>		
Geologist/Logger & Company: <u>K. PILL /RUST</u>		Signature: <u>K. Pill</u>
Date Boring Started: <u>8/9/93</u>		Completed: <u>8/9/93</u>
Water Levels (From Ground Surface)		Drilling Rig: <u>NA</u>
First Encountered: <u>8' 8"</u>		Date: <u>8/9/93</u>
While Drilling:		Date:

At Boring Completion:	Date:
-----------------------	-------

Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>8/9/93</u>	<u>1020</u>	<u>1125</u>	<u>0</u>	<u>9</u>					

<p><u>Abbreviations:</u></p> <table style="width:100%;"> <tr> <th style="text-align: left;"><u>Abbr</u></th> <th style="text-align: left;"><u>Meaning</u></th> </tr> <tr> <td> </td> <td> </td> </tr> </table>	<u>Abbr</u>	<u>Meaning</u>			<p><u>Location Sketch:</u></p>
<u>Abbr</u>	<u>Meaning</u>				

BORING LOG (cont'd.)

Project: TEAD-3 / TASK 0001		Boring: 13-SH-01		Page: 2 of 2	
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data
1	CL	GRAVELLY SAND, NO VEG. <u>CLAYEY SILT</u> , 10 YR 4/3, DK BROWN, MINOR FINE SAND, TRACE MED. SAND, MEDIUM STIFF, MOIST	S-1 0/2	NA	COLLECTED FOR ANALYTICAL
2					
3					
4	ML	<u>SILT</u> , 7.5 YR 5/3, BROWN, MINOR FINE SAND, MINOR CLAY, SOFT, MOIST	S-2 4/5	NA	COLLECTED FOR ANALYTICAL
5					
6	SM	<u>SANDY SILT</u> , 10 YR 5/2, GRAYISH BROWN, SAND FINE GRAINED, MINOR CLAY, SOFT, MOIST.			
7					
8	SM	<u>SILTY SAND</u> , 10 YR 6/2, SAND FINE GRAINED, TRACE CLAY, WET	S-3 3/9	NA	ANALYTICAL
9					
10		EOB 9' BGS 1125 8/9/93			

BORING LOG GENERAL DATA

Project: Sodium Hydroxide Spill Boring: 135H-02 Page: 1 of 2

Driller & Company: Bob Maddox CBC Bores Pro.

Geologist/Logger & Company: Gillespie Rust Signature: J.E. Gillespie

Date Boring Started: 8.9.93 Completed: 8.9.93

Water Levels (From Ground Surface) n/a Drilling Rig: 1380 Mobile

First Encountered: n/a Date: n/a

While Drilling: n/a Date: n/a

At Boring Completion: n/a Date: n/a

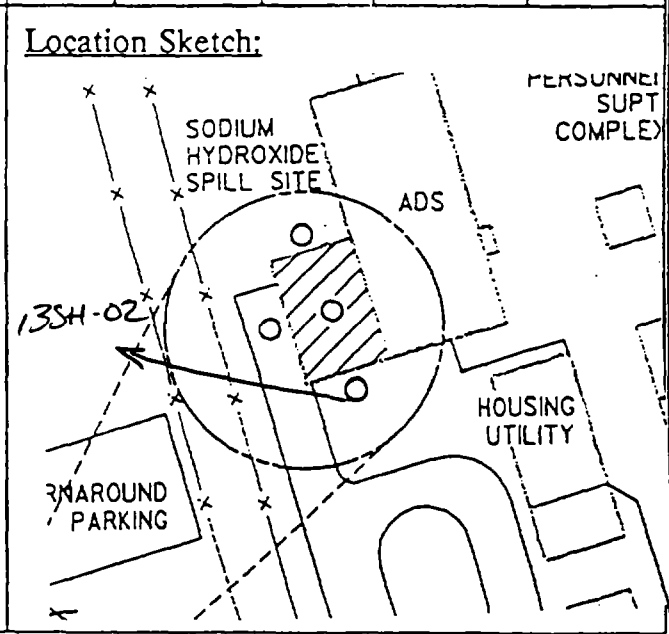
Drilling Shifts:

Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
8.9.93	10:30	11:20	0	10					

Abbreviations:

Abbr	Meaning

Ken has 135H-01



BORING LOG (cont'd.)

Project: <i>Sodium Hypochloride Spill</i>		Boring: <i>B5H 02</i>		Page: <i>2</i> of <i>2</i>		
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
					<i>6" ID HSA</i>	<i>Drilled Comments</i>
		<i>GRAVEL ROAD BASE - 5 FT</i>			<i>HSA READY</i>	
0	<i>CL</i>	<i>0 - 2 ft</i>	<i>S1</i>	<i>13</i>	<i>0.0 ppm</i>	<i>DRIVE</i>
1	<i>CL</i>	<i>CLAY, 2.54 GA LIGHT YELLOWISH BROWN, MOIST, MOSTLY CLAY. SOME TO LITTLE SILT, TRACE FINE GRAVEL</i>	<i>0/ 2</i>	<i>11 9 10</i>		<i>SPIN PULL TO DEPT</i>
2					<i>Sample For</i>	
3						
4	<i>CL</i>	<i>NOTE E.O.D CKING w/ Down HOLE SURVEY</i>	<i>S2</i>	<i>4</i>	<i>3ppm</i>	
5		<i>SILTY CLAY 10425/A YELLOWISH BROWN, MOSTLY CLAY. SOME SILT, TRACE WHITE CALCAREOUS ZONES</i>	<i>4/ 6</i>	<i>3 3 4</i>	<i>VAPOUR ZONE</i>	
6					<i>3ppm in HEADSPACE OF HSA</i>	
7						
8	<i>CL</i>	<i>SANDY CLAY 10425/2 LIGHT BROWNISH GRAY, MOSTLY CLAY, SOME FINE SAND, LITTLE SILT, TRACE COARSE SAND & CLAY NODULES</i>	<i>S3</i>	<i>4 5 15 32</i>	<i>200ppm</i>	<i>STRONG HYDROCARBON ODOR AT HSA ANNULUS AND SPLITS, DOWN</i>
9						
10		<i>Bottom of EXPLORATION AT TEN FT BGS</i>				
11						

BORING LOG (cont'd.)

Project: SODIUM HYDROXIDE SPILL		Boring: 135403		Page: 2 of 2		
Depth/ Eval.	USCS Symbol/ Core Sketch	Soil/Rock Description	Sample No. & Depth	Blow Count & Recovery	Drilling Data	
					ANU READINGS	Comments 6.25" ID HSA
0	ES	SURFACE ROAD BASE ≈ 1.5' THICK				
0 1 2	CL	CLAY 1042 5/3 BRN, MOSTLY CLAY, MOST, LITTLE SILT, VERY FINE SAND.	S1 0/2	4 4 4 3	.3 ppm	SOFT DRILL ALK/PH
4 5 6	CL	CLAY 254 5/2 OLIVE BRN, DRY, MOSTLY CLAY, LITTLE VERY FINE SAND.	S2 4/6	3 4 8 17	.2 ppm	STIFF ALK/PH
8 9	SM	SILTY SAND 254 5/2 OLIVE GRN, MOIST, MOSTLY VERY FINE SAND, LITTLE TO SOME SILT, FEW CLAY NOTE: B.O.F. @ 10 FT.	S3 8/10	12 23 24 25	0.2 ppm	ALK /PH DENSE

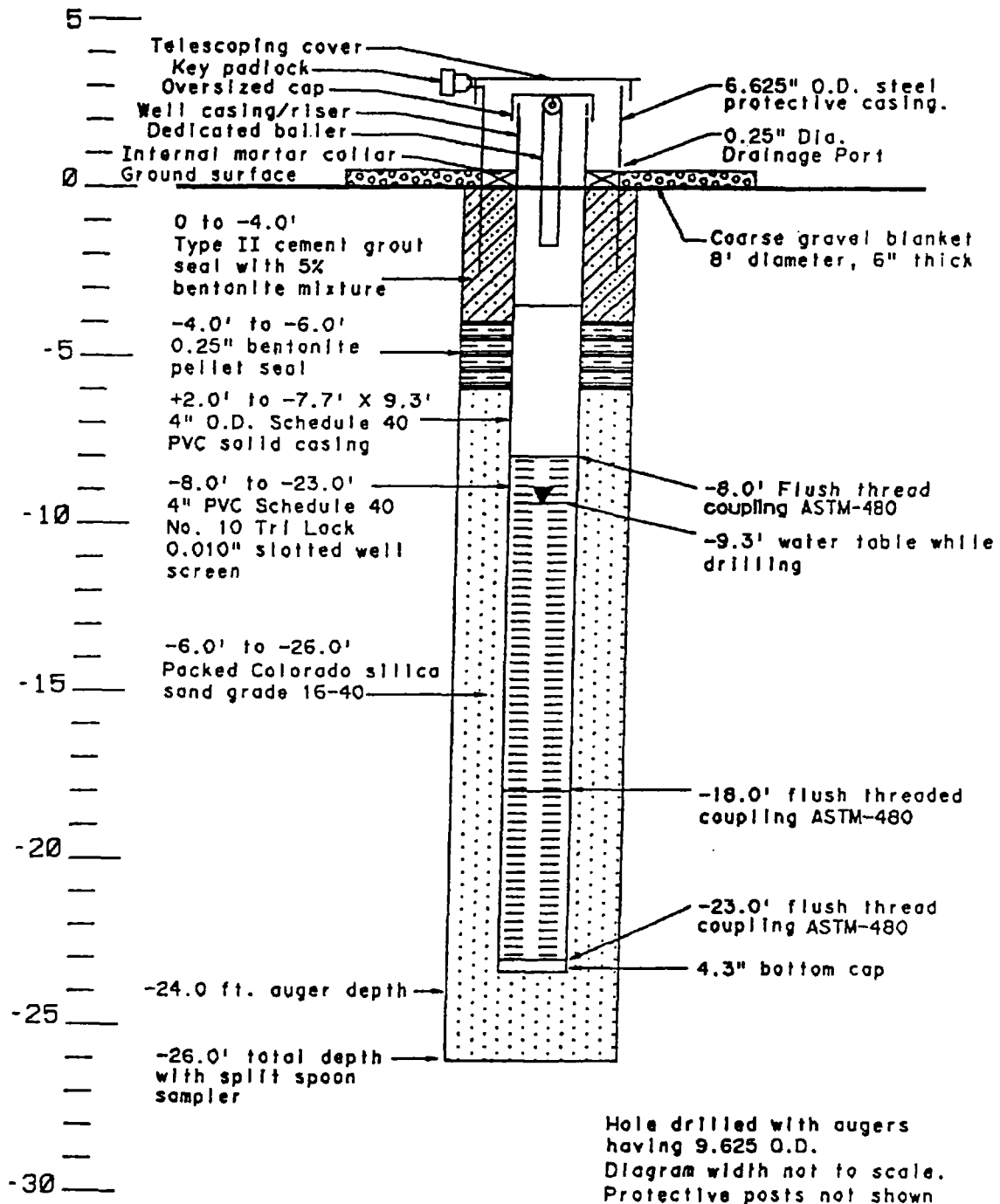
^

BORING LOG GENERAL DATA

Project: <u>SODIUM HYDROXIDE FUEL</u>		Boring: <u>135404</u>		Page: 1 of <u>2</u>					
Driller & Company: <u>WILL SCHNIEDER CBC BOYLES</u>									
Geologist/Logger & Company: <u>GILLSSPIE (RUST)</u>				Signature: <u>J.E. GILLSSPIE</u>					
Date Boring Started: <u>8.9.93</u>		Completed: <u>8.9.93</u>							
Water Levels (From Ground Surface) <u>N/A</u>			Drilling Rig: <u>VB 80 MOBILE</u>						
First Encountered: <u>N/A</u>		Date: <u>N/A</u>							
While Drilling: <u>N/A</u>		Date: <u>N/A</u>							
At Boring Completion: <u>N/A</u>			Date: <u>N/A</u>						
Drilling Shifts:									
Date	Time		Depth of Drilling Per Shift		Date	Time		Depth of Drilling Per Shift	
	Start	End	Start	End		Start	End	Start	End
<u>8.9.93</u>	<u>15</u>		<u>0</u>	<u>10</u>	/				
Abbreviations:					Location Sketch:				
Abbr Meaning					<p>The sketch shows a vertical road on the left. To its right is a rectangular building with a central dot. An arrow points from the label '135404' to the dot. A north arrow is on the right side of the sketch.</p>				

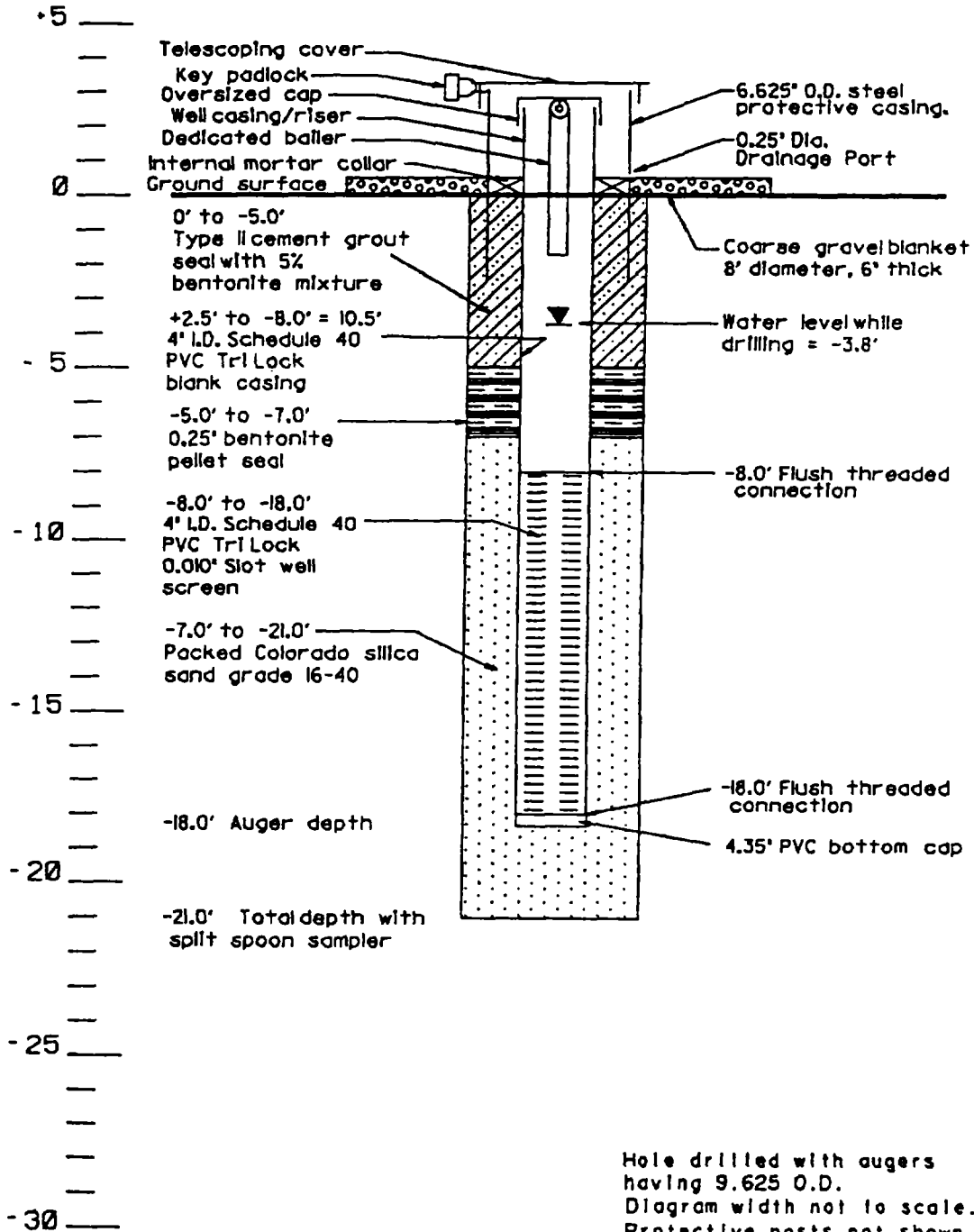
Well Completion Information

CAMDS FACILITY, TOOELE ARMY DEPOT UTAH, SOUTH AREA
 CONSTRUCTION DIAGRAM OF WELL NO S-76-91
 18 JUNE 1991



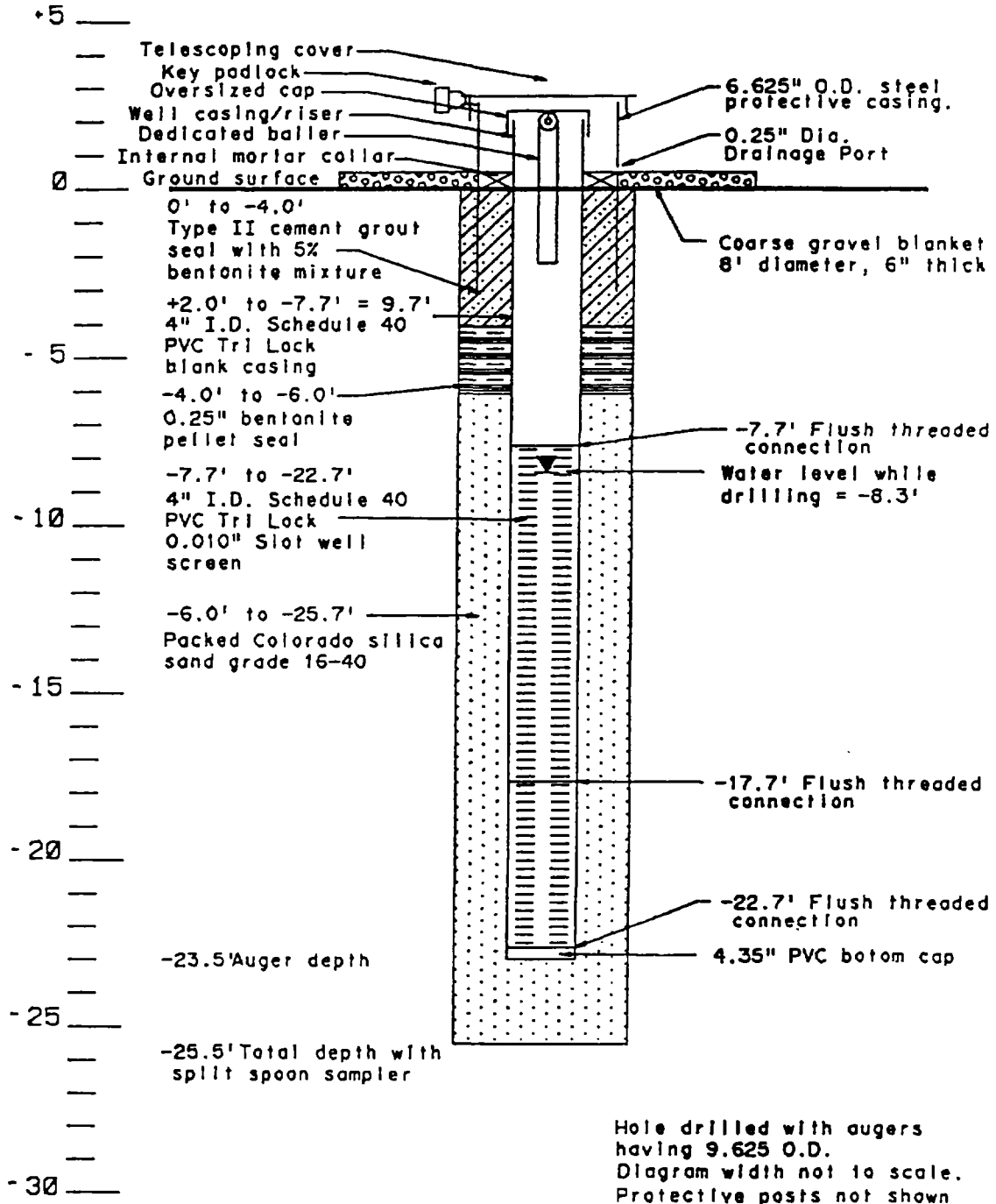
CAMDS FACILITY, TOOELE ARMY DEPOT UTAH, SOUTH AREA

CONSTRUCTION DIAGRAM OF WELL NO. S-77-91
23 JUNE 1991



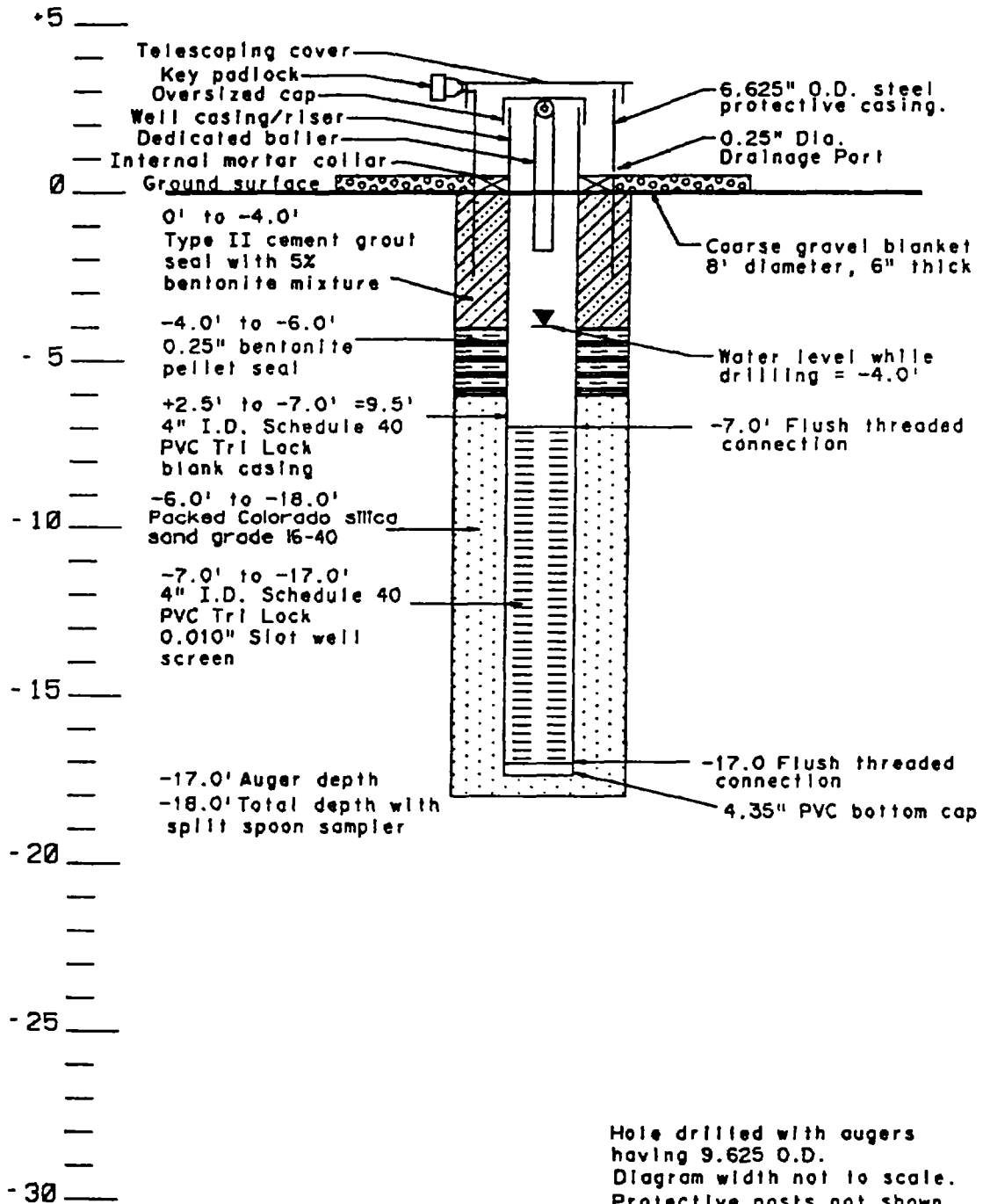
CAMDS FACILITY, TOOELE ARMY DEPOT UTAH, SOUTH AREA

CONSTRUCTION DIAGRAM OF WELL NO. S-78-91
29 MAY 1991



CAMDS FACILITY, TOOELE ARMY DEPOT UTAH, SOUTH AREA

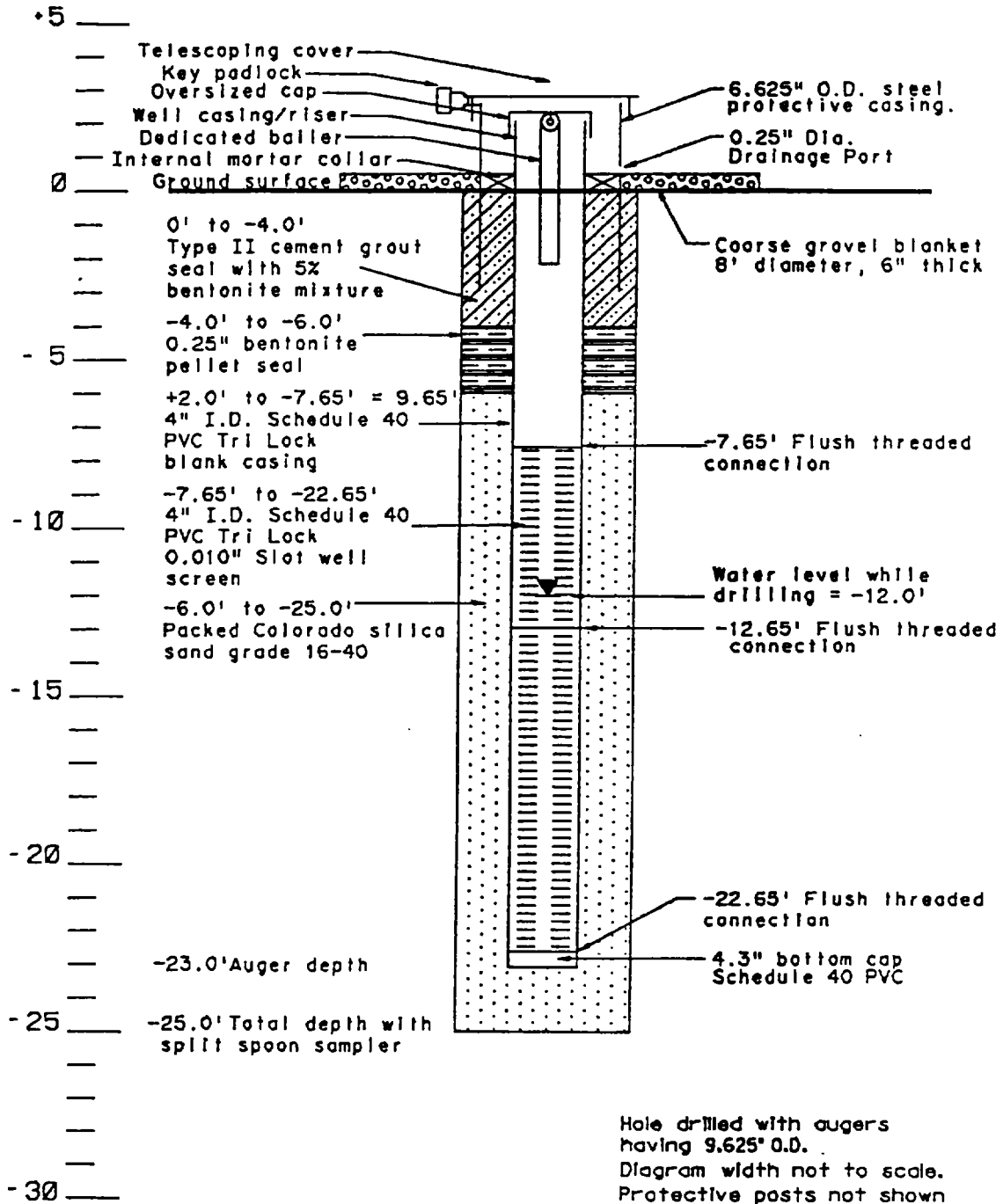
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17 JUNE 1991



CAMDS FACILITY, TOOELE ARMY DEPOT UTAH, SOUTH AREA

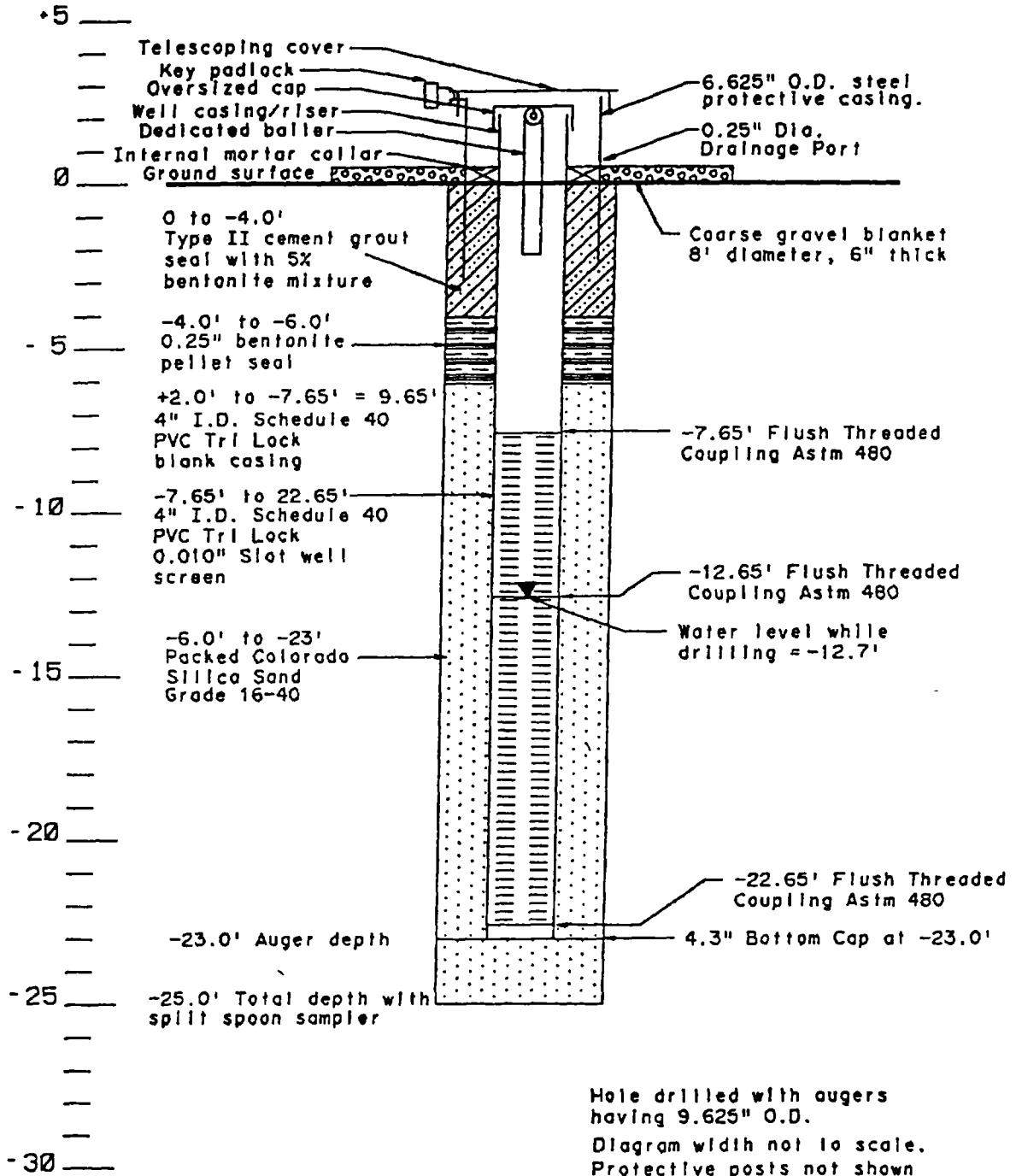
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28 MAY 1991

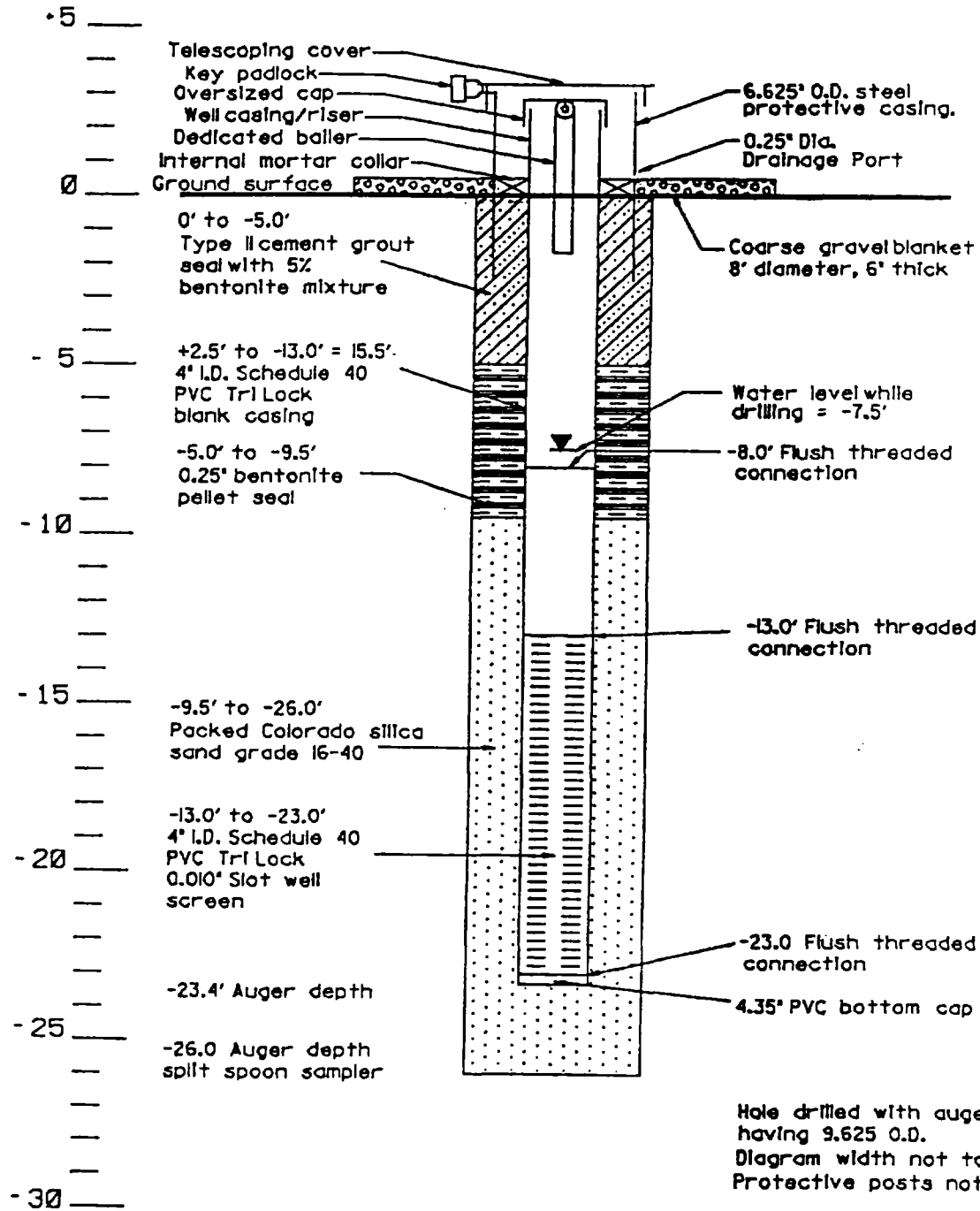


CAMDS FACILITY, TOOELE ARMY DEPOT UTAH, SOUTH AREA

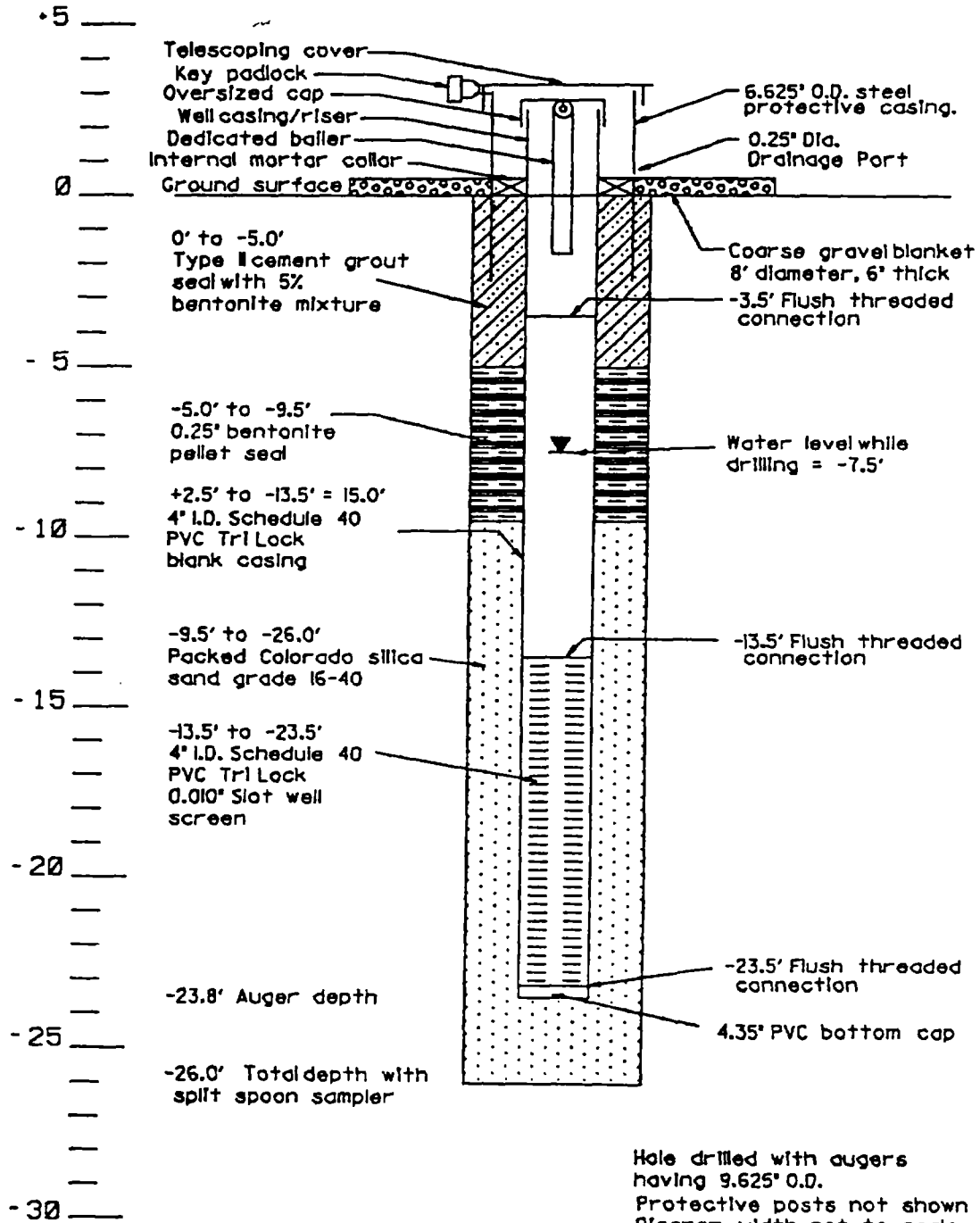
CONSTRUCTION DIAGRAM OF WELL NO. S-81-91
28 MAY 1991



CAMDS FACILITY, TOOELE ARMY DEPOT UTAH, SOUTH AREA
 CONSTRUCTION DIAGRAM OF WELL NO. 13 S-82-91
 16 MAY 1991



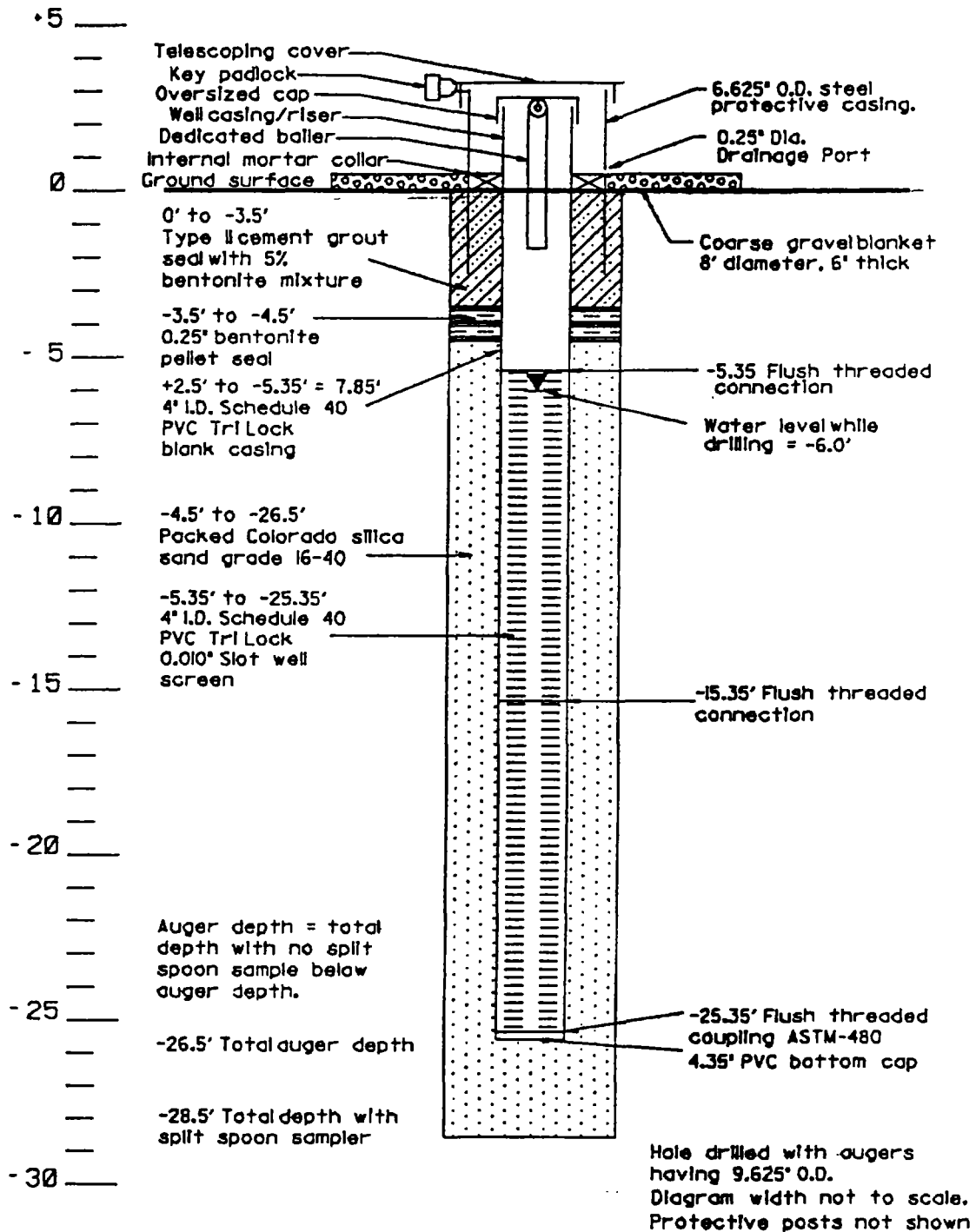
CAMDS FACILITY, TOOELE ARMY DEPOT UTAH, SOUTH AREA
 CONSTRUCTION DIAGRAM OF WELL NO. 13 S-83-91
 17 MAY 1991



CAMDS FACILITY, TOOLE ARMY DEPOT UTAH, SOUTH AREA

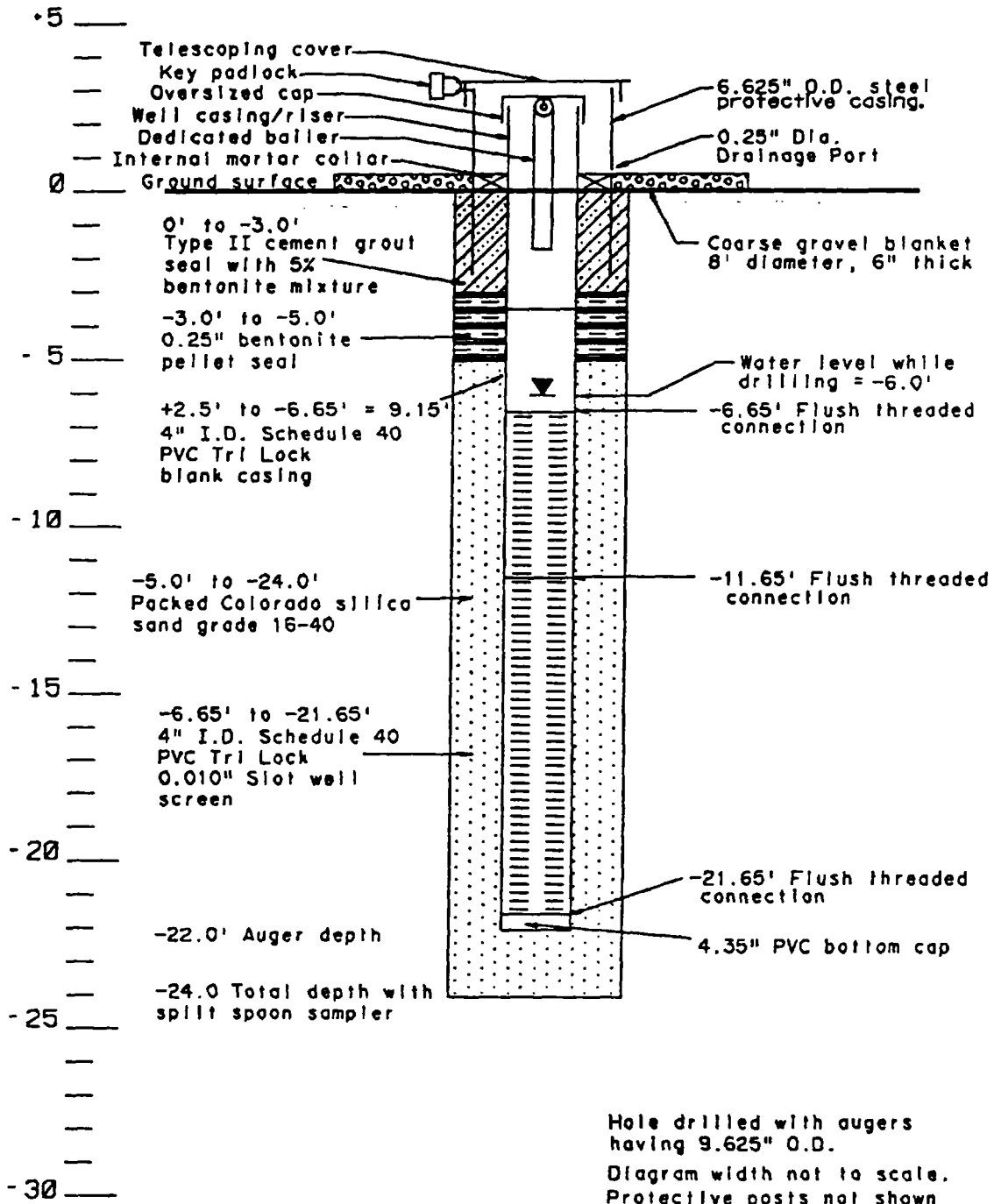
COMPLETION DIAGRAM OF WELL NO. S-84-91

18 MAY 1991



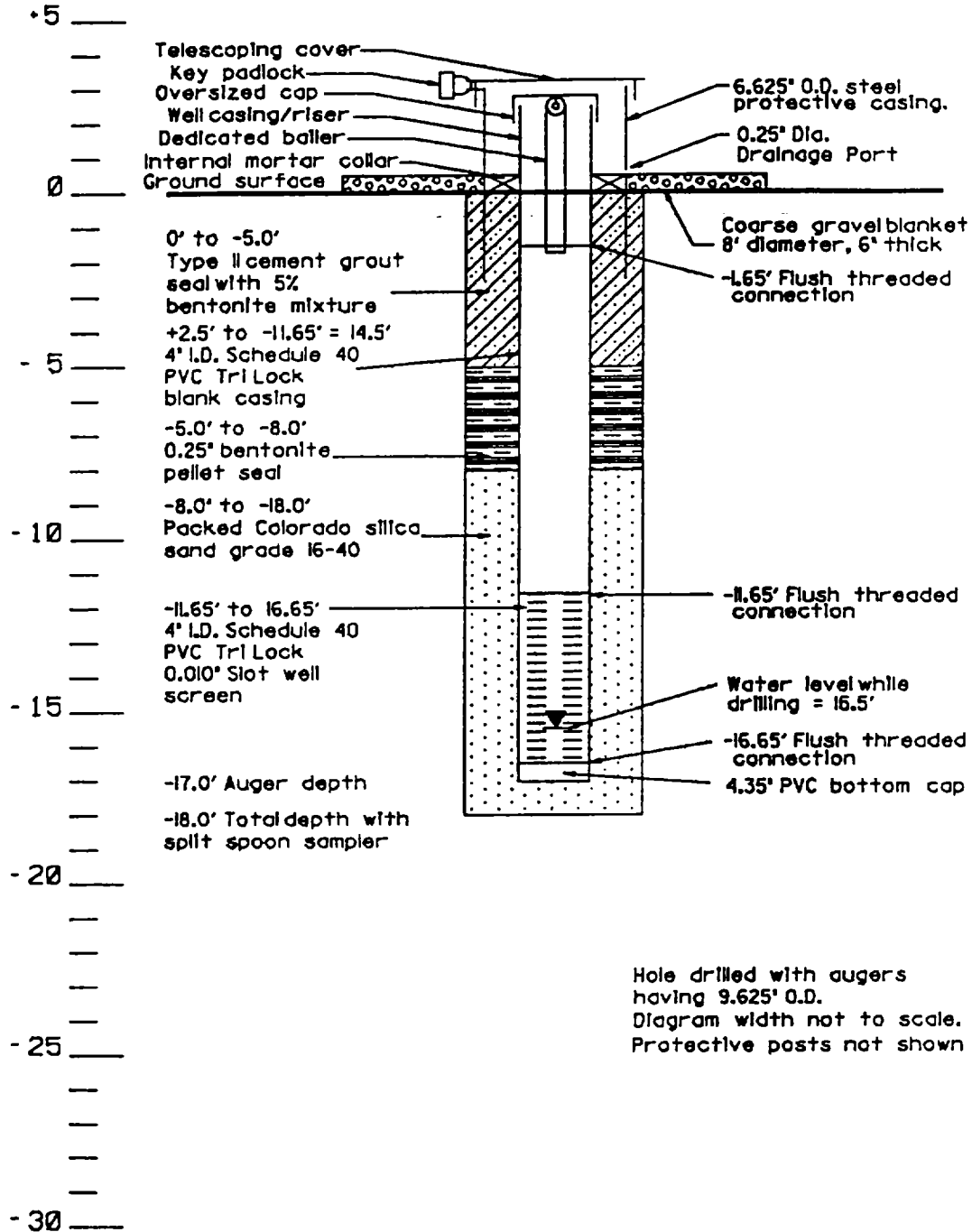
CAMDS FACILITY, TOOELE ARMY DEPOT UTAH, SOUTH AREA

CONSTRUCTION DIAGRAM OF WELL NO. S-85-91
20 MAY 1991

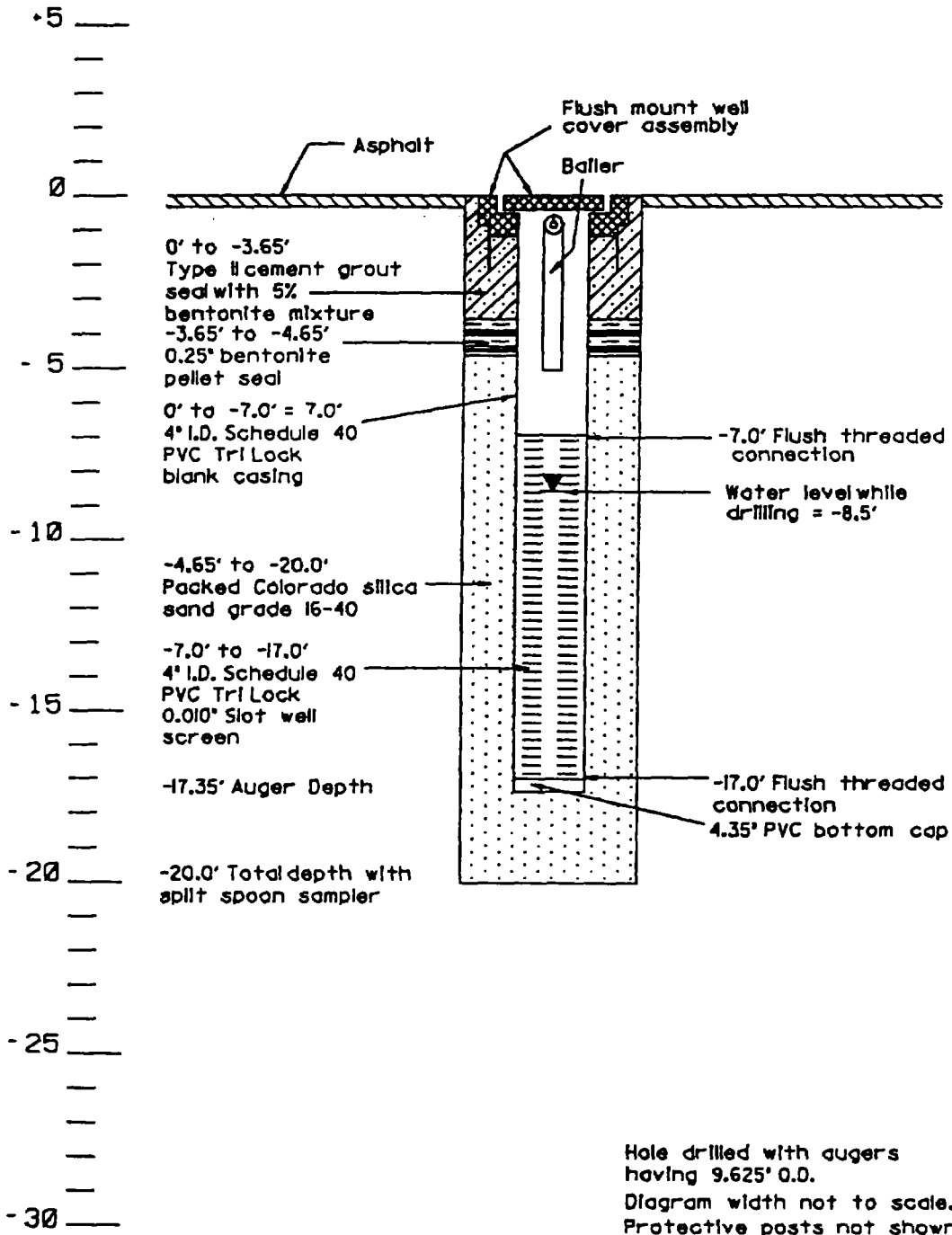


CAMDS FACILITY, TOOLE ARMY DEPOT UTAH, SOUTH AREA

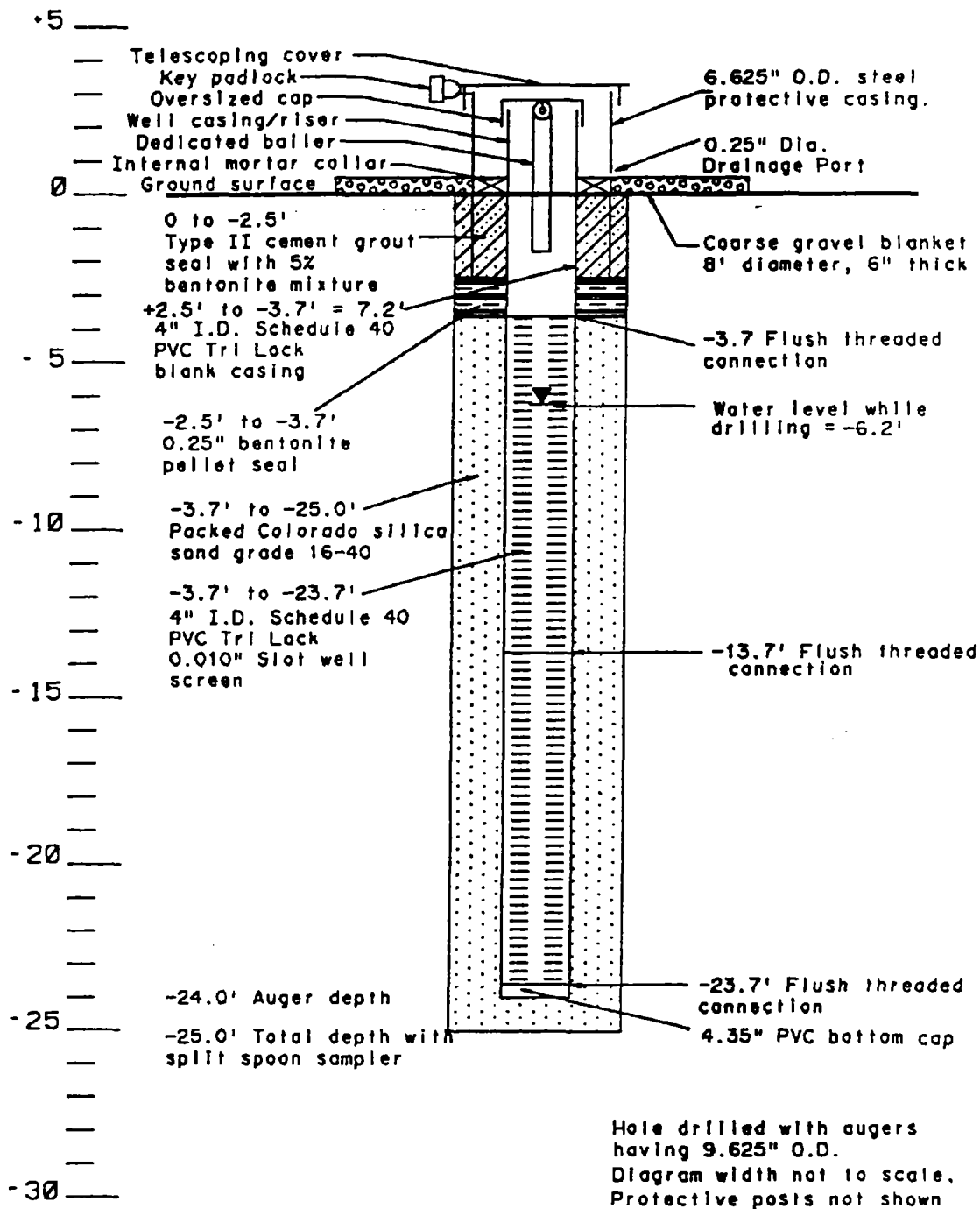
CONSTRUCTION DIAGRAM OF WELL NO. S-86-91
21 JUNE 1991



CAMDS FACILITY, TOOELE ARMY DEPOT UTAH, SOUTH AREA
 CONSTRUCTION DIAGRAM OF WELL NO. S-87-91
 14 MAY 1991

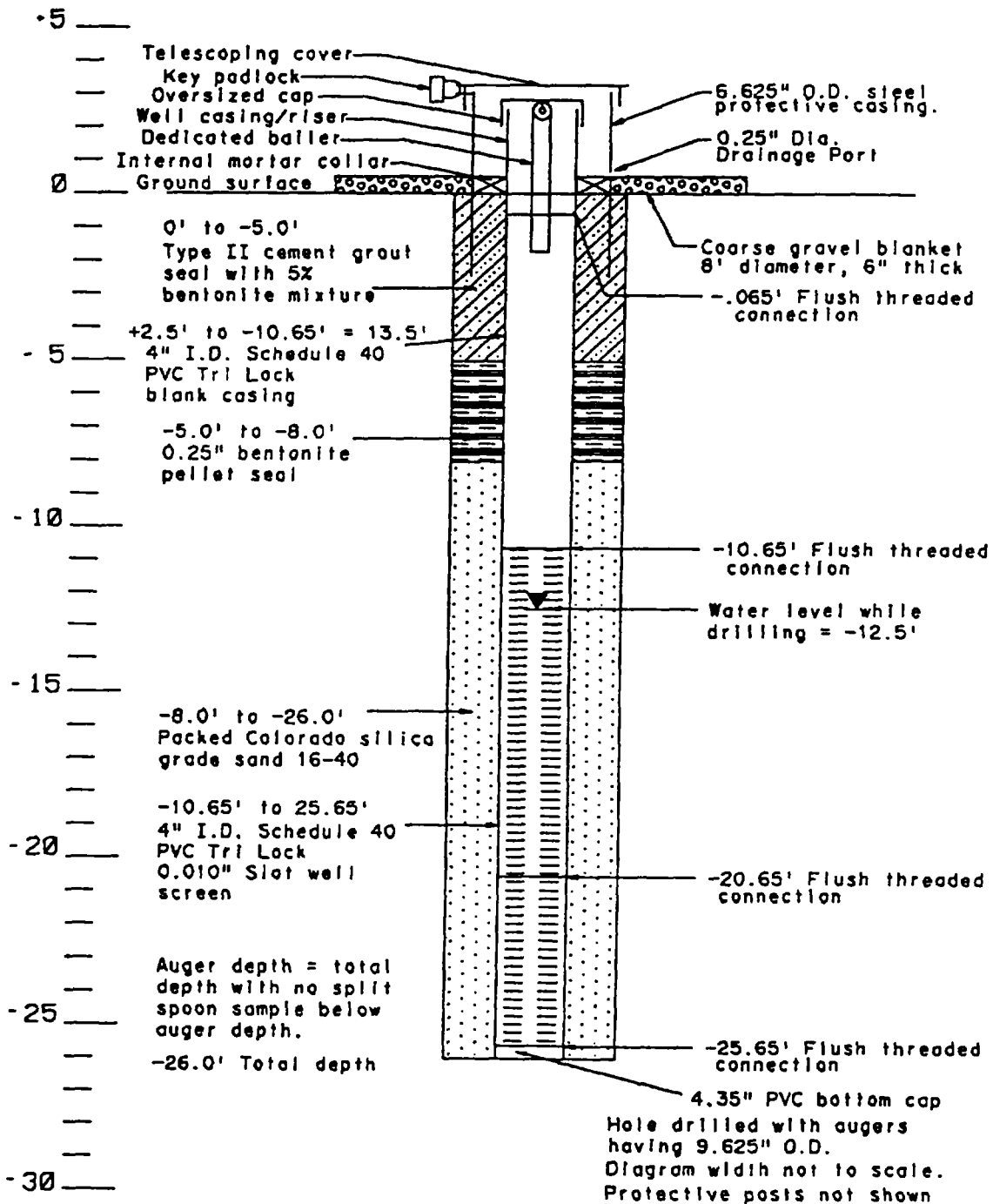


CAMDS FACILITY, TOOELE ARMY DEPOT UTAH, SOUTH AREA
 CONSTRUCTION DIAGRAM OF WELL NO. S-91-91
 19 MAY 1991



CAMDS FACILITY, TOOELE ARMY DEPOT UTAH, SOUTH AREA

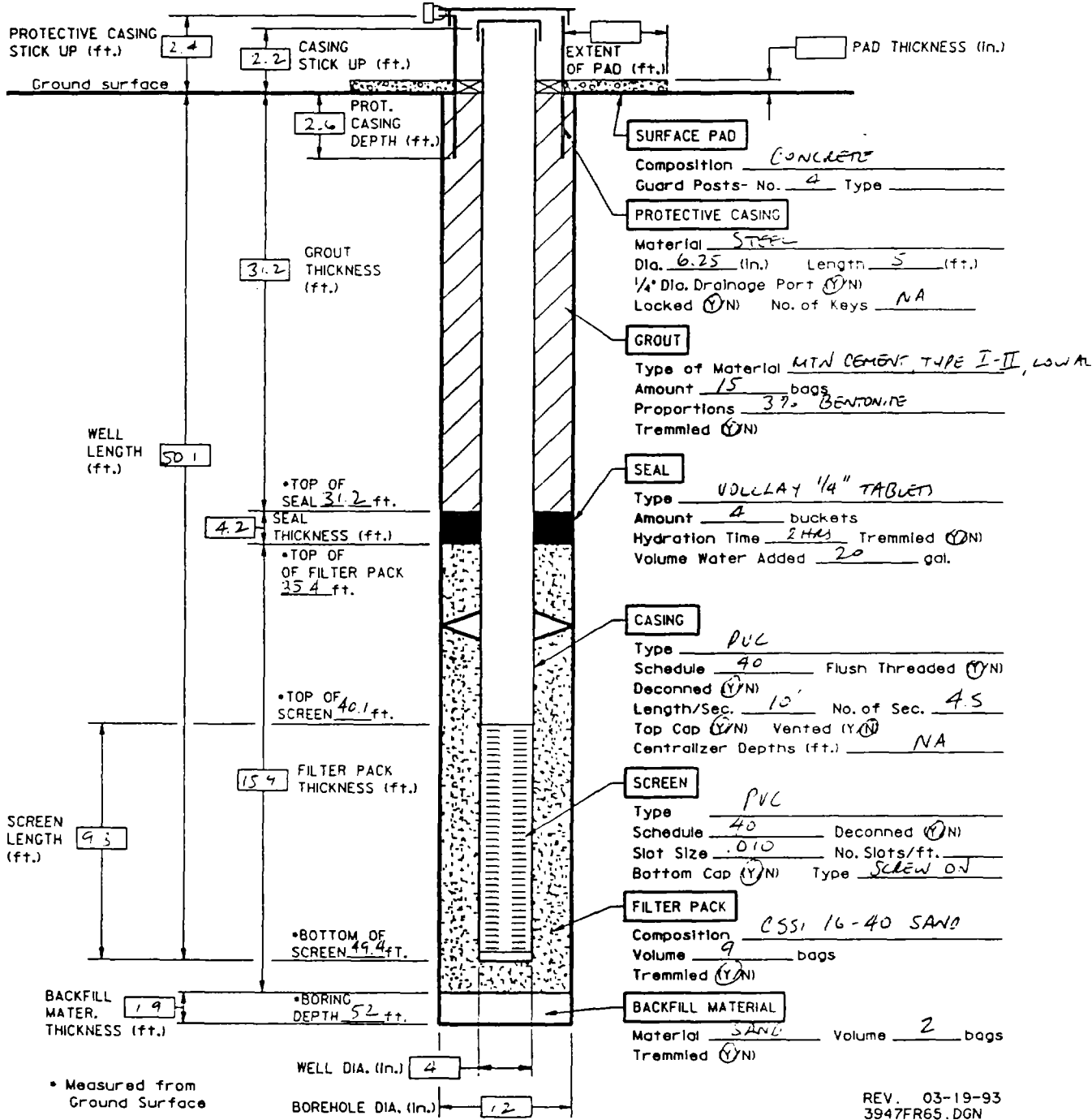
CONSTRUCTION DIAGRAM OF WELL NO. S-92-91
20 JUNE 1991



RUST ENVIRONMENT & INFRASTRUCTURE

WELL CONSTRUCTION FORM (STANDARD WELL)

Well No.: S-103-93 Client/Project: USAEC / TEAO-S Date: 8/19/93
 Project No.: TD 0001 Site: CAMOS
 Supervised By: K Pill Contractor/Rig Type: CBL / MOBILE 8880
 Completion Start: 1155 Completion End: 1745
 Water Level Before Installation 34.8' BGS Water Level After Installation _____

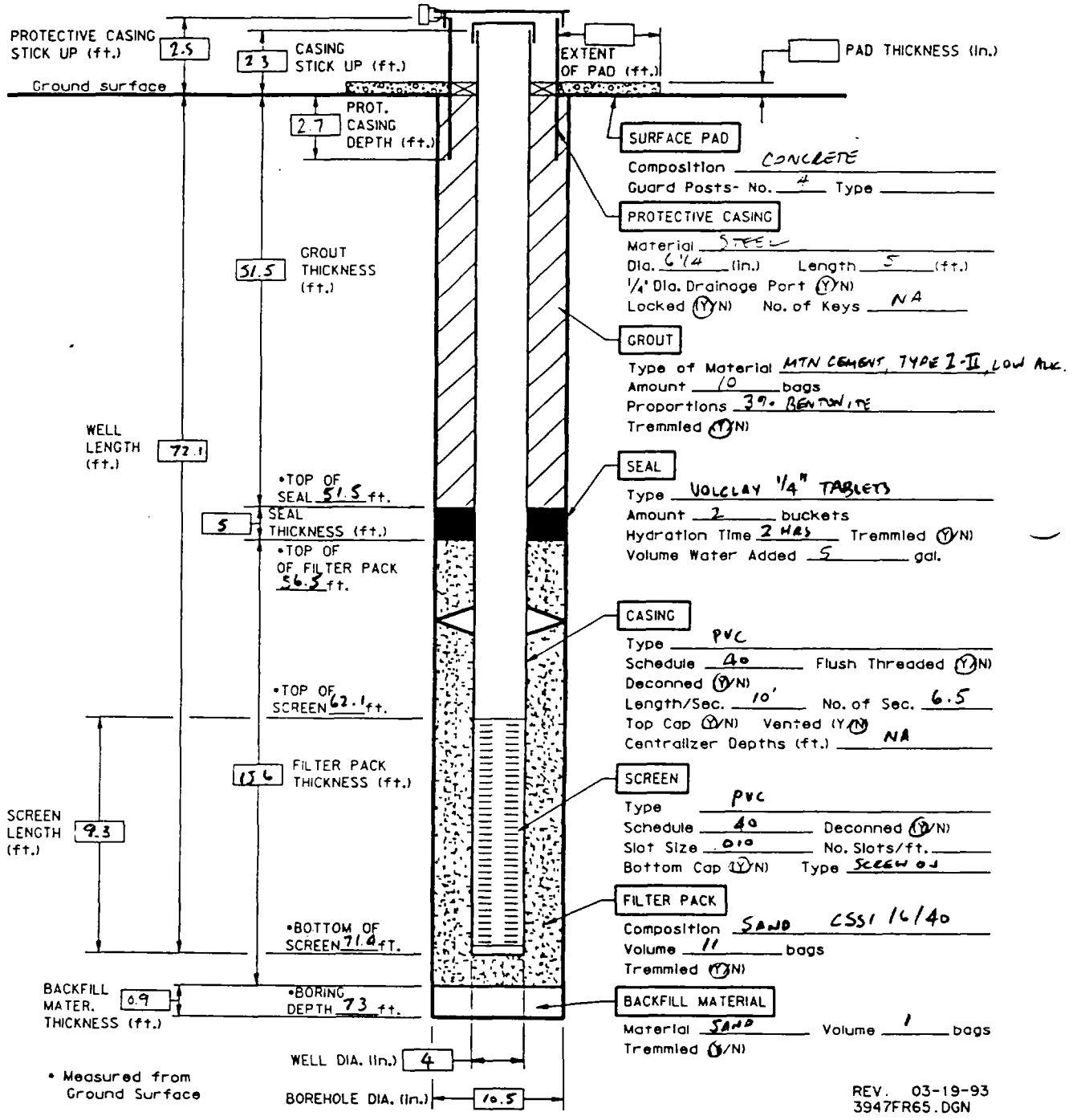


REV. 03-19-93
3947FR65.DGN

RUST ENVIRONMENT & INFRASTRUCTURE

WELL CONSTRUCTION FORM (STANDARD WELL)

Well No.: S-104-93 Client/Project: USAEC ITEAO-5 Date: 8/8/93
 Project No.: Ta 0001 Site: CAMOS / UPGRADE
 Supervised By: K. PILL Contractor/Rig Type: BOYLES BROS / B-61
 Completion Start: 1045 Completion End: 1821
 Water Level Before Installation 55.6 Water Level After Installation 40.28

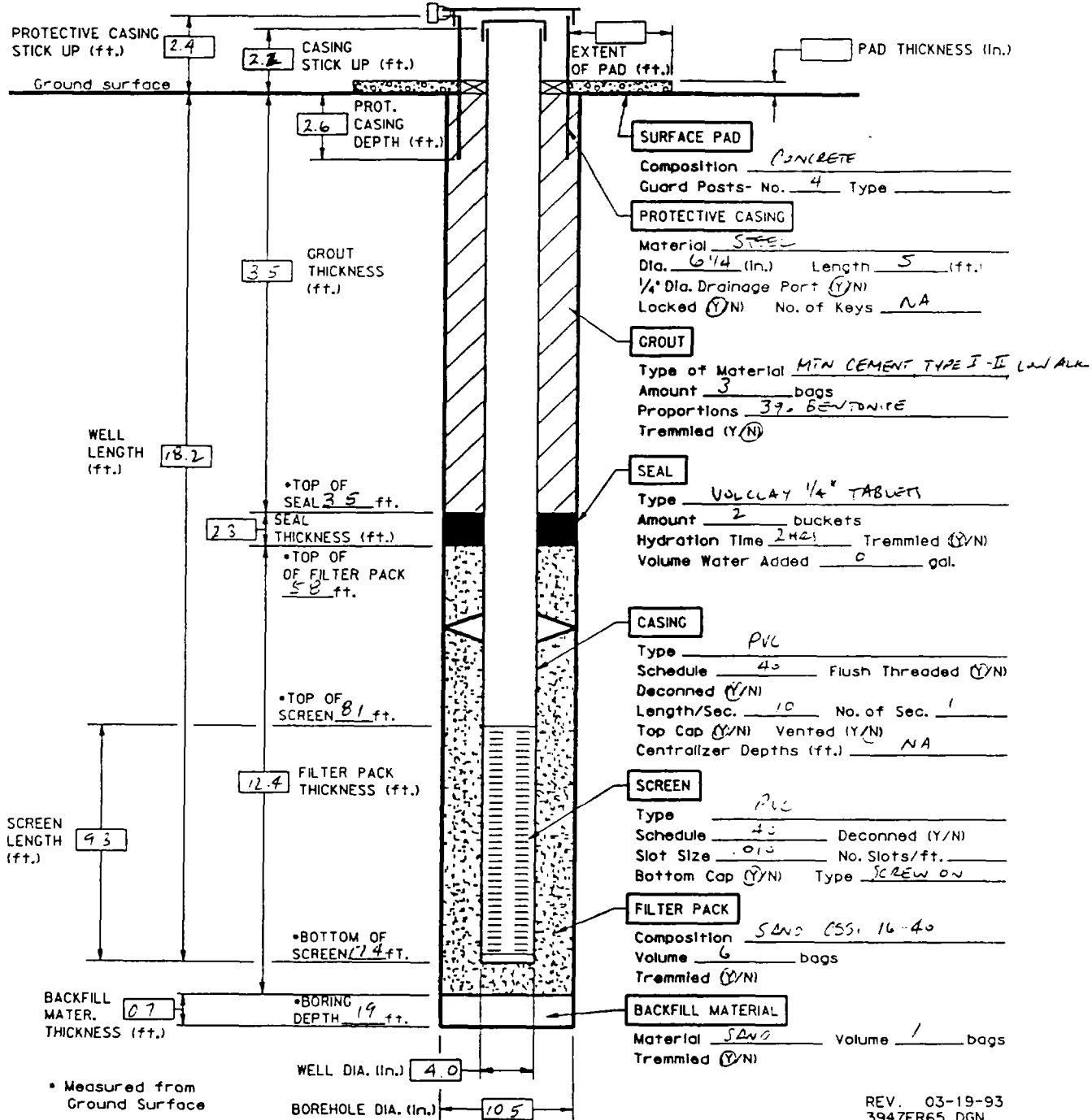


REV. 03-19-93
3947FR65.DGN

RUST ENVIRONMENT & INFRASTRUCTURE

WELL CONSTRUCTION FORM (STANDARD WELL)

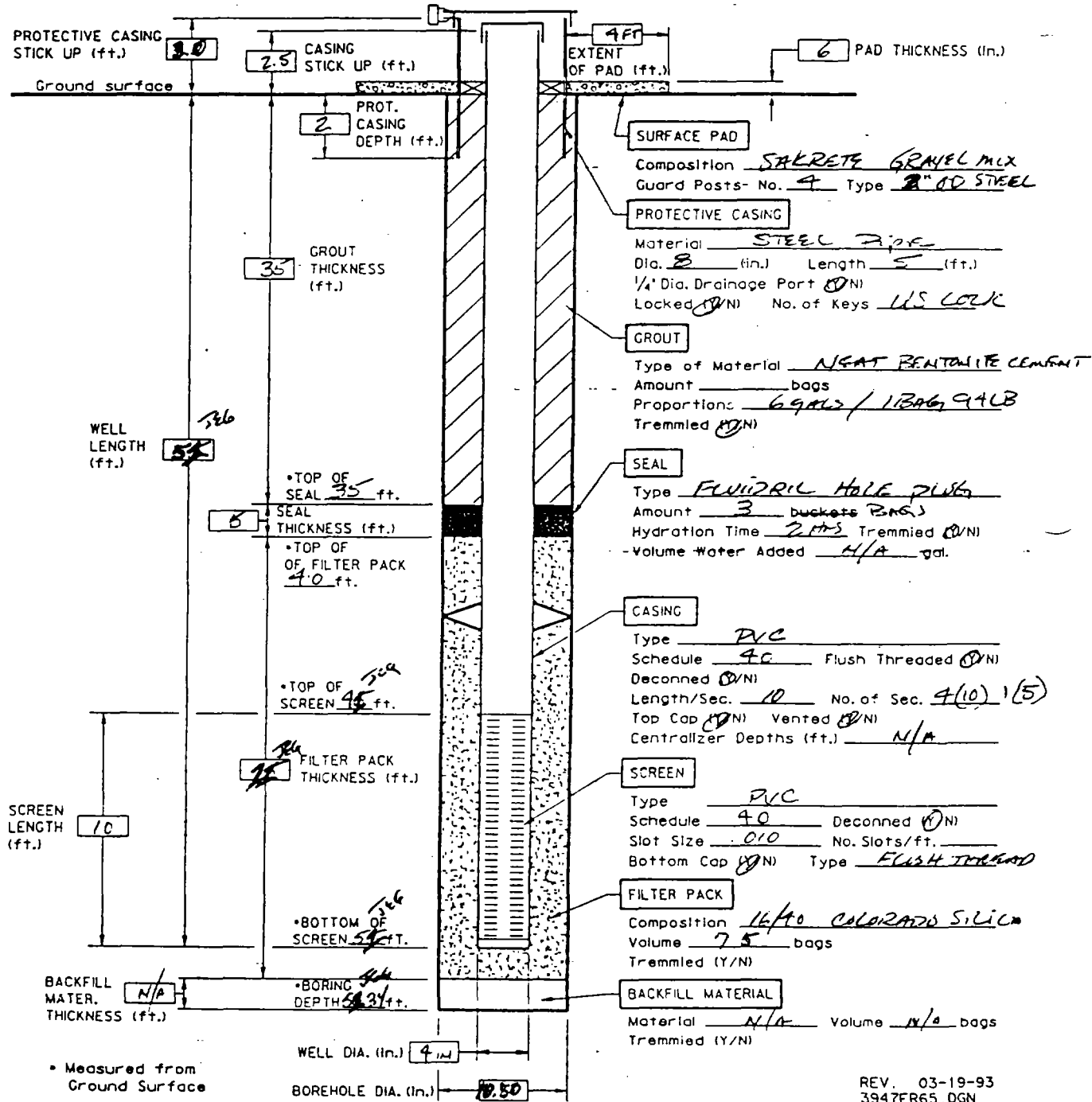
Well No.: S-105-93 Client/Project: USAEC / TEAO-5 Date: 8-5-93
 Project No.: _____ Site: CAMO
 Supervised By: K. PILL Contractor/Rig Type: CBC / MOBIL B-60
 Completion Start: 8/5/93 1417 Completion End: 5/5/93 1522
 Water Level Before Installation 12.50 Water Level After Installation 9.66



RUST ENVIRONMENT & INFRASTRUCTURE

WELL CONSTRUCTION FORM (STANDARD WELL)

Well No.: S-106-93 Client/Project: USAF TASK PCD Date: 8/20/93
 Project No.: 82A68.030 Site: TEAM SOUTH
 Supervised By: J. GILLISPIE Contractor/Rig Type: MOBILE VIB 80
 Completion Start: 8/20/93 Completion End: 8/20/93
 Water Level Before Installation: ± 10 FT Water Level After Installation: _____

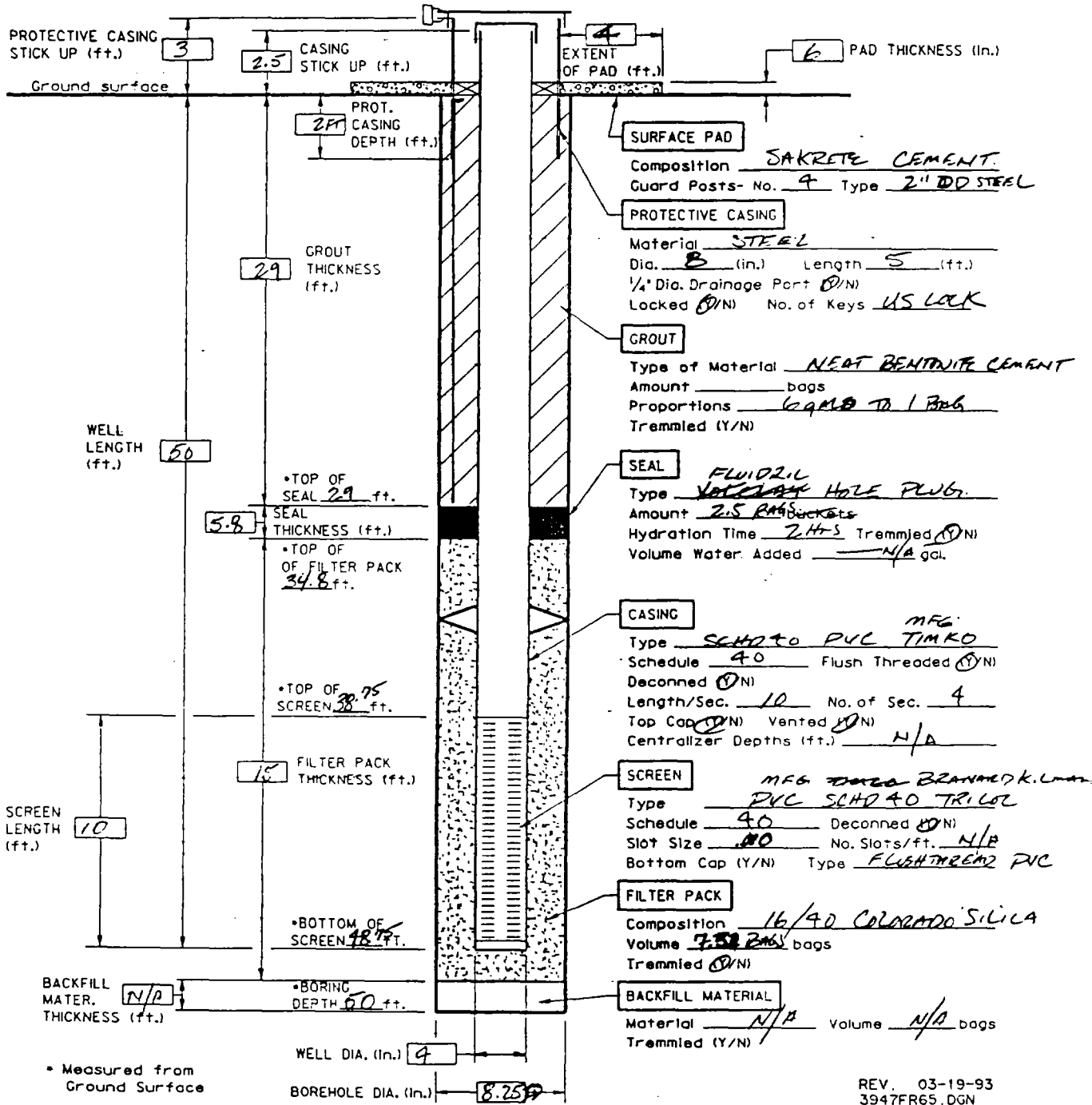


SFT @ 51 FT.

RUST ENVIRONMENT & INFRASTRUCTURE

WELL CONSTRUCTION FORM (STANDARD WELL)

Well No.: S-107-93 Client/Project: USACE TRK 0001 Date: 8-21-93
 Project No.: 82968030 Site: TEAD SOUTH
 Supervised By: J.R. GUNSON Contractor/Rig Type: MOBILE
 Completion Start: 8/21/93 Completion End: 8/21/93
 Water Level Before Installation: ≈ 10 FT Water Level After Installation: _____



REV. 03-19-93
3947FR65.DGN

Geotechnical Data

Name: STEAD Sample Number NO. 01 (17DS-02-2(4-6 ft))

Date: 16 Sept. 1991 Sheet Number 1

LIQUID AND PLASTIC LIMIT
DETERMINATIONS
DATA AND COMPUTATION SHEET

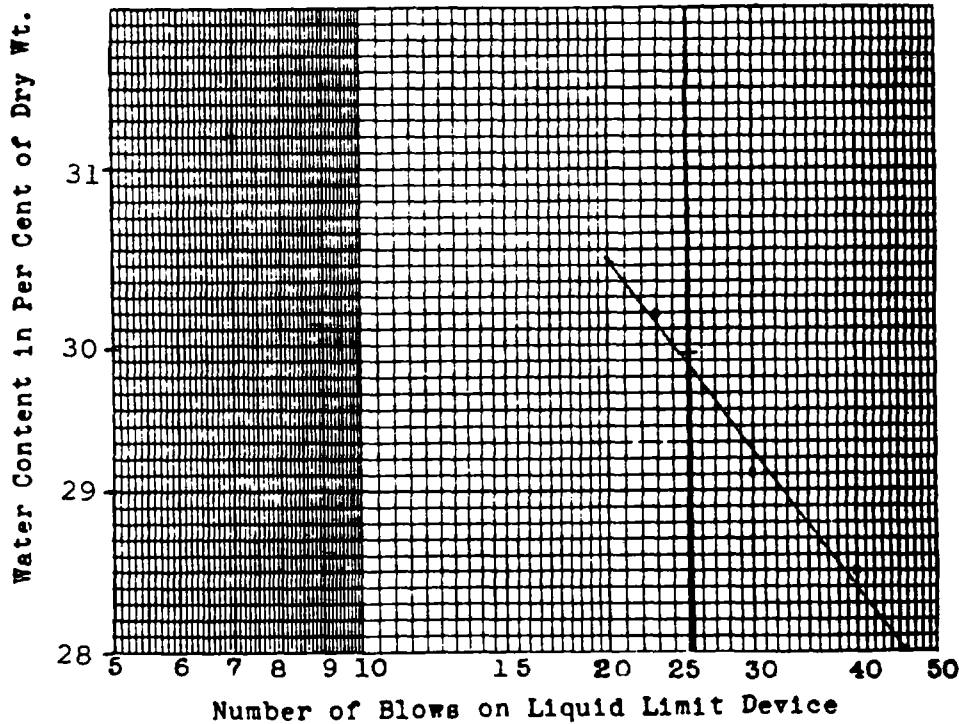
LL = Liquid Limit Test

PL = Plastic Limit Test

Type of Test		LL	LL	LL	LL	LL
Container Number		01-A	01-B	01-C	01-D	
Number of Blows	XXXX	8	23	35	40	
Wt. Sample + Tare Wet		29.99gm	27.74gm	30.30gm	30.02gm	
Wt. Sample + Tare Dry		25.55gm	24.89gm	26.96gm	26.80gm	
Wt. of Water		4.44gm	2.85gm	3.34gm	3.22gm	
Tare		15.22g	15.43g	15.50g	15.50g	
Wt. of Dry Soil		10.33gm	9.46gm	11.46gm	11.30gm	
Water Content		42.98%	30.13%	29.14%	28.50%	

Type of Test			PL	PL	PL	
Container Number			01-E			
Number of Blows			XXXX	XXXX	XXXX	
Wt. Sample + Tare Wet			19.30gm			
Wt. Sample + Tare Dry			18.70gm			
Wt. of Water			.60gm			
Tare			15.37g			
Wt. of Dry Soil			3.33gm			
Water Content			18.02%			

FLOW CURVE



RESULTS

Liquid Limit = 28.85 %

Plastic Limit = 18.02 %

Plasticity Index = 10.83 %

Flow Index = _____ %

Toughness Index = _____ %

Remarks: _____

Name: STEAD Sample Number NO.2 (17FS-01-1(0-2ft))
 Date: 16 Sept. 1991 Sheet Number 2

LIQUID AND PLASTIC LIMIT
 DETERMINATIONS
 DATA AND COMPUTATION SHEET

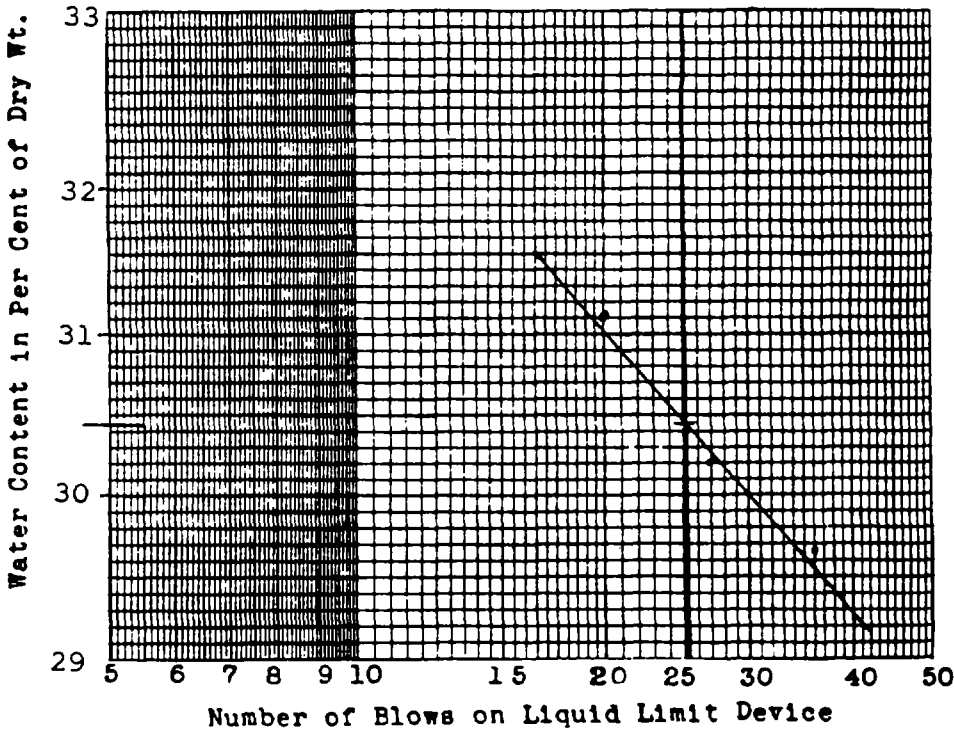
LL = Liquid Limit Test

PL = Plastic Limit Test

Type of Test		LL	LL	LL	LL	LL
Container Number		02-A	02-B	02-C		
Number of Blows	XXXX	27	20	36		
Wt. Sample + Tare Wet		30.37gm	29.29gm	29.18gm		
Wt. Sample + Tare Dry		26.85gm	26.09gm	26.50gm		
Wt. of Water		3.52gm	3.20gm	3.13gm		
Tare		15.20g	15.79g	15.47g		
Wt. of Dry Soil		11.65gm	10.30gm	10.58gm		
Water Content		30.21%	31.07%	29.58%		

Type of Test			PL	PL	PL	
Container Number			02-D	02-E		
Number of Blows			XXXX	XXXX	XXXX	
Wt. Sample + Tare Wet			22.03gm	18.41gm		
Wt. Sample + Tare Dry			20.89gm	17.88gm		
Wt. of Water			1.19gm	.53gm		
Tare			15.41g	15.31g		
Wt. of Dry Soil			5.43gm	2.57gm		
Water Content			21.92%	20.62%		

FLOW CURVE



RESULTS

Liquid Limit = 30.45 %
 Plastic Limit = 21.27 %
 Plasticity Index = 9.18 %
 Flow Index = _____ %
 Toughness Index = _____ %

Remarks: _____

Name: CAMDS STEAD Sample Number NO. 03 (13s-89-91(4-5ft))

Date: 17 Sept. 1991 Sheet Number 3

LIQUID AND PLASTIC LIMIT
DETERMINATIONS
DATA AND COMPUTATION SHEET

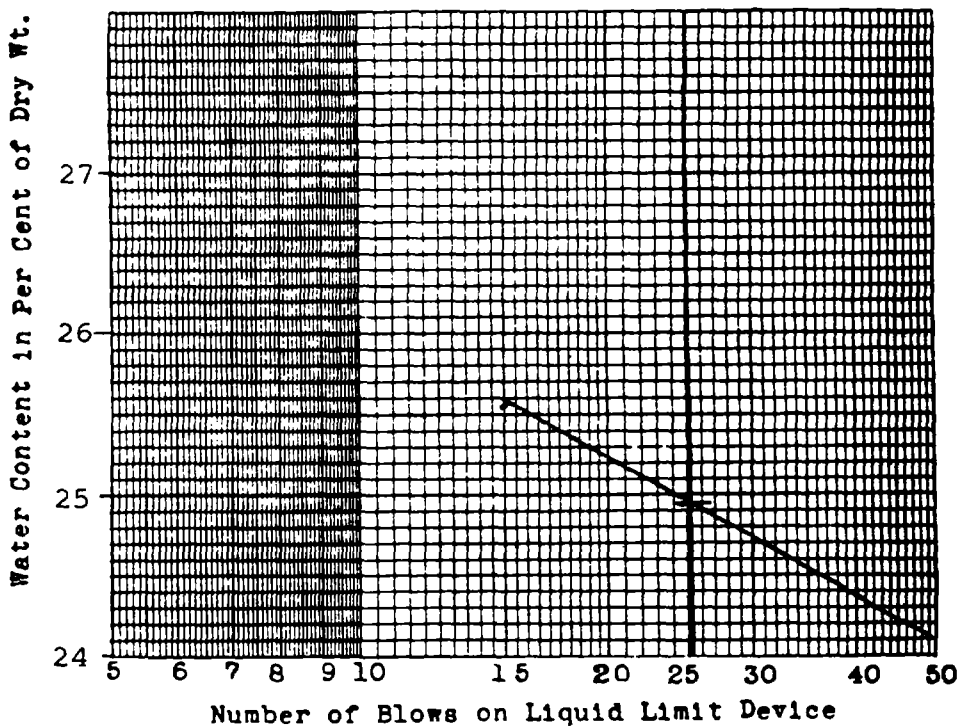
LL = Liquid Limit Test

PL = Plastic Limit Test

Type of Test		LL	LL	LL	LL	LL
Container Number		03-A	03-B	03-c		
Number of Blows	X	15	24	46		
Wt. Sample + Tare Wet		28.58gm	26.69gm	27.17gm		
Wt. Sample + Tare Dry		25.94gm	23.98gm	24.88gm		
Wt. of Water		2.64gm	2.31gm	2.29gm		
Tare		15.61g	15.28g	15.44g		
Wt. of Dry Soil		10.33gm	8.70gm	9.88gm		
Water Content		25.56%	26.55%	24.26%		

Type of Test			PL	PL	PL	
Container Number			03-D	03-E		
Number of Blows			X	X	X	
Wt. Sample + Tare Wet			21.04gm	20.09gm		
Wt. Sample + Tare Dry			20.19gm	19.39gm		
Wt. of Water			0.85gm	0.70gm		
Tare			15.64g	15.45g		
Wt. of Dry Soil			4.55gm	3.94gm		
Water Content			18.68%	17.77%		

FLOW CURVE



RESULTS

Liquid Limit = 24.95 %

Plastic Limit = 18.22 %

Plasticity Index = 6.73 %

Flow Index = %

Toughness Index = %

Remarks: Something is in error in Sample 03-B.

Data from 03-B was not used and a 2 point graphical solution was obtained.

Name: STEAD Sample Number NO. 04 (13-S-91-91 (14-19 ft))
 Date: 17 Sept 1991 Sheet Number 4

LIQUID AND PLASTIC LIMIT
 DETERMINATIONS
 DATA AND COMPUTATION SHEET

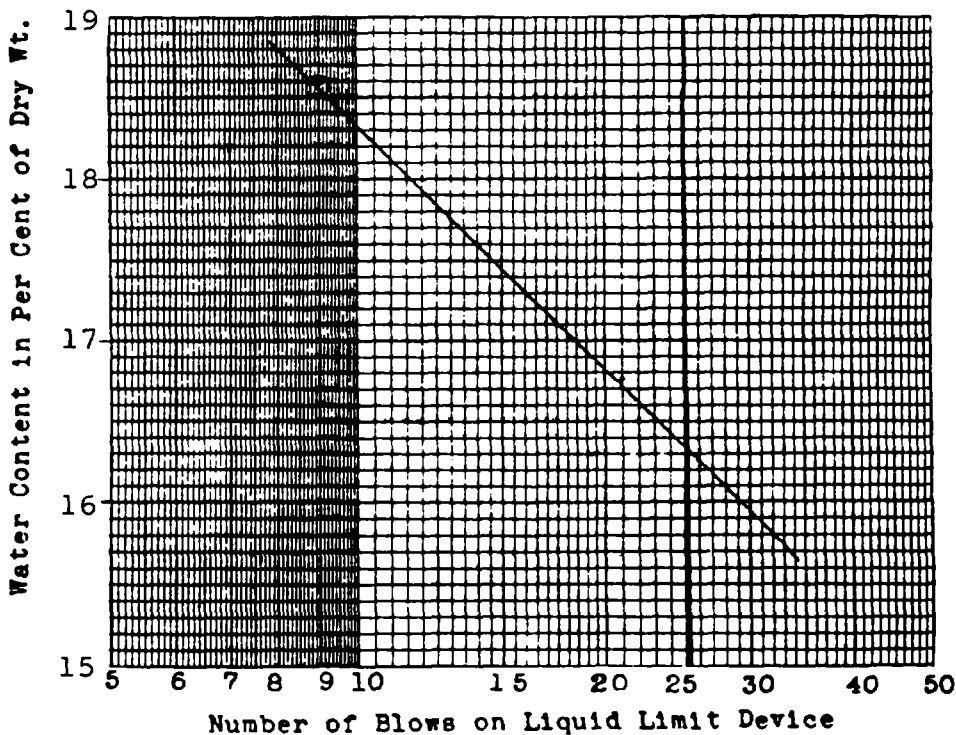
LL = Liquid Limit Test

PL = Plastic Limit Test

Type of Test		LL	LL	LL	LL	LL
Container Number		04-A	04-B	04-C		
Number of Blows	X	9	21	Not Obtained, Sample		
Wt. Sample + Tare Wet		31.25gm	30.52gm	Crumbled		
Wt. Sample + Tare Dry		28.80gm	28.41gm			
Wt. of Water		2.45gm	2.11gm			
Tare		15.63g	15.82g	15.50g		
Wt. of Dry Soil		13.17gm	12.59gm			
Water Content		18.60%	16.76%			

Type of Test			PL	PL	PL	
Container Number			04-D	04-E		
Number of Blows			X	X	X	
Wt. Sample + Tare Wet			15.34gm	15.61gm		
Wt. Sample + Tare Dry			Not Obtainable			
Wt. of Water						
Tare						
Wt. of Dry Soil						
Water Content						

FLOW CURVE



RESULTS

Liquid Limit = 16.35 %
 Plastic Limit = _____ %
 Plasticity Index = _____ %
 Flow Index = _____ %
 Toughness Index = _____ %

Remarks: _____

Name: STEAD Sample Number NO. 05 (13S-89-91(4-10ft))
 Date: 17 Sept. 1991 Sheet Number 5

LIQUID AND PLASTIC LIMIT
 DETERMINATIONS
 DATA AND COMPUTATION SHEET

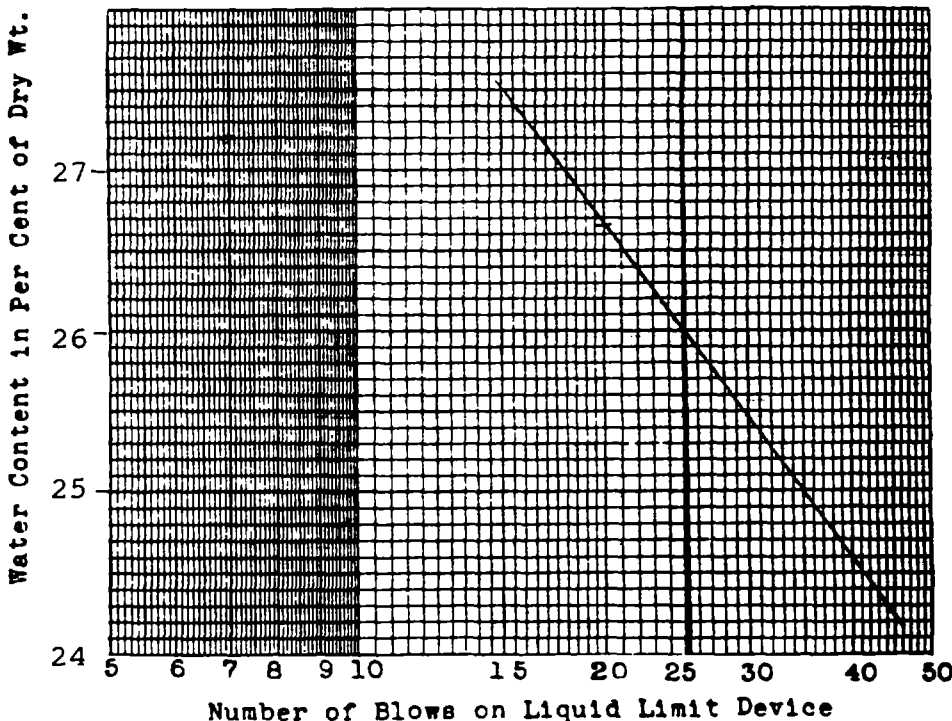
LL = Liquid Limit Test

PL = Plastic Limit Test

Type of Test		LL	LL	LL	LL	LL
Container Number		05-A	05-B	05-C		
Number of Blows	X	13	35	20		
Wt. Sample + Tare Wet		31.44gm	29.50gm	29.01gm		
Wt. Sample + Tare Dry		28.08gm	26.69gm	26.15gm		
Wt. of Water		3.36gm	2.81gm	2.92gm		
Tare		15.36g	15.47g	15.20g		
Wt. of Dry Soil		12.72gm	11.22gm	10.95gm		
Water Content		26.42%	25.04%	26.67%		

Type of Test			PL	PL	PL	
Container Number			05-D	05-E		
Number of Blows			X	X	X	
Wt. Sample + Tare Wet			20.81gm	22.61gm		
Wt. Sample + Tare Dry			20.02gm	21.49gm		
Wt. of Water			0.79gm	1.12gm		
Tare			15.58g	15.04g		
Wt. of Dry Soil			4.44gm	6.45gm		
Water Content			17.79%	17.36%		

FLOW CURVE



RESULTS

Liquid Limit = 25.97 %
 Plastic Limit = 17.58 %
 Plasticity Index = 8.39 %
 Flow Index = _____ %
 Toughness Index = _____ %

Remarks: 05-A appears to be in error. Used 2 point solution.

Name: STEAD Sample Number NO. 06 (13BG-04-1(9-10ft))
 Date: 17 Sept. 1991 Sheet Number 6

LIQUID AND PLASTIC LIMIT
 DETERMINATIONS
 DATA AND COMPUTATION SHEET

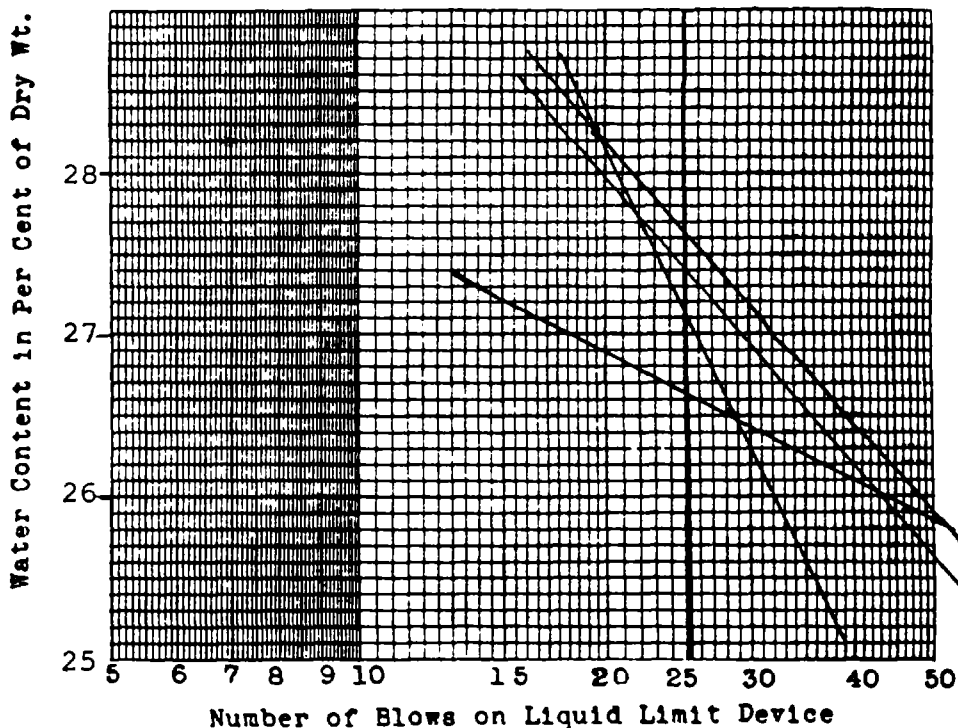
LL = Liquid Limit Test

PL = Plastic Limit Test

Type of Test		LL	LL	LL	LL	LL
Container Number		06-A	06-B	06-C	06-F	
Number of Blows	X	19	30	28	50	
Wt. Sample + Tare Wet		27.61gm	Did Not Record	27.13gm	30.86	
Wt. Sample + Tare Dry		24.96gm	-	24.68gm	27.70gm	
Wt. of Water		2.65gm	-	2.45gm	3.16gm	
Tare		15.59g	15.26g	15.44g	15.48g	
Wt. of Dry Soil		9.37gm	-	9.24gm	12.22gm	
Water Content		28.28%	-	26.52gm	25.86gm	

Type of Test			PL	PL	PL	
Container Number			06-D	06-E		
Number of Blows	X	X	X	X	X	
Wt. Sample + Tare Wet			22.97gm	23.68gm		
Wt. Sample + Tare Dry			21.84gm	22.43gm		
Wt. of Water			1.13gm	1.25gm		
Tare			15.58g	15.32g		
Wt. of Dry Soil			6.26gm	7.11gm		
Water Content			18.05%	17.58%		

FLOW CURVE



RESULTS

Liquid Limit = 27.40 %
 Plastic Limit = 17.82 %
 Plasticity Index = 9.58 %
 Flow Index = _____ %
 Toughness Index = _____ %

Remarks: Anyone of the 3 weighings and blows could be anomalous. Best fit curve rule applies.

Name: STEAD Sample Number NO. 07 (13S-89-91(19-21ft))
 Date: 18 Sept. 1991 Sheet Number 7

LIQUID AND PLASTIC LIMIT
 DETERMINATIONS
 DATA AND COMPUTATION SHEET

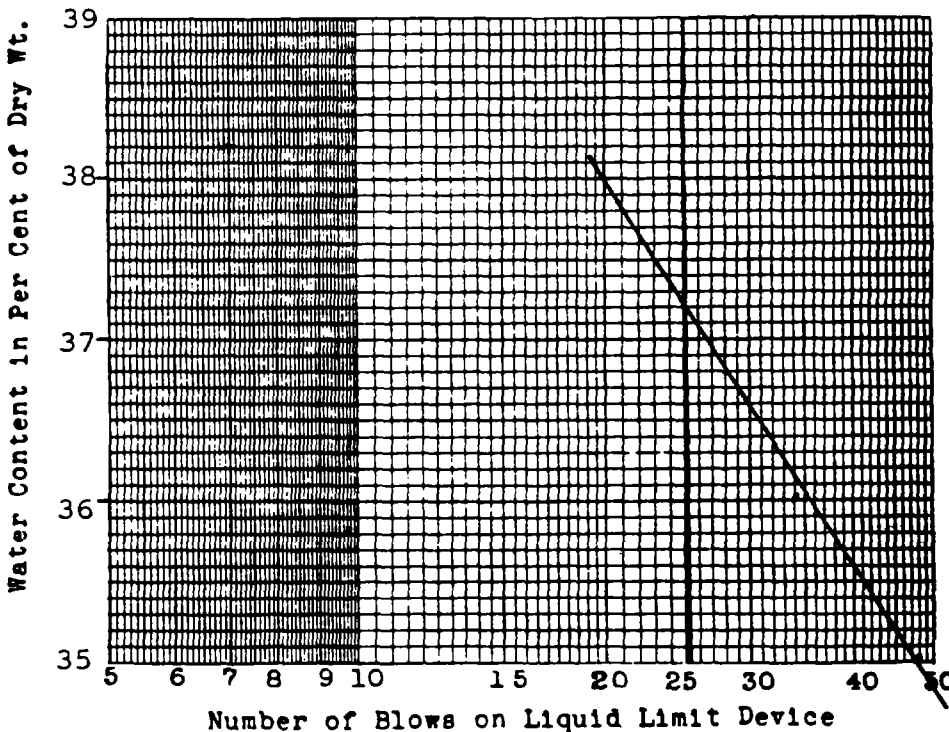
LL = Liquid Limit Test

PL = Plastic Limit Test

Type of Test		LL	LL	LL	LL	LL
Container Number		07-A	07-B	07-C	07-F	
Number of Blows	XXXX	48	34	22	18	
Wt. Sample + Tare Wet		30.02gm	27.71gm	29.43gm	29.07gm	
Wt. Sample + Tare Dry		26.19gm	24.47gm	25.36gm	25.30gm	
Wt. of Water		3.83gm	3.24gm	4.07gm	3.77gm	
Tare		15.29g	15.47g	15.32g	15.42g	
Wt. of Dry Soil		10.90gm	9.00gm	10.04gm	9.88gm	
Water Content		35.14%	36.00%	40.54%	38.16%	

Type of Test			PL	PL	PL	
Container Number			07-D	07-E		
Number of Blows			XXXX	XXXX	XXXX	
Wt. Sample + Tare Wet			19.30gm	19.17gm		
Wt. Sample + Tare Dry			18.64gm	18.54gm		
Wt. of Water			0.66gm	0.63gm		
Tare			15.41g	15.48g		
Wt. of Dry Soil			3.23gm	3.06gm		
Water Content			20.43%	20.59%		

FLOW CURVE



RESULTS

Liquid Limit = 37.17 %

Plastic Limit = 20.51 %

Plasticity Index = 6.66 %

Flow Index = %

Toughness Index = %

Remarks: Sample 07-C is
apparently anomalous

and was not used to
calculate the liquid
limit.

Name: CAMDS STEAD Sample Number NO. 08 (13-S-91-91(4ft))
 Date: 18 Sept. 1991 Sheet Number 8

LIQUID AND PLASTIC LIMIT
 DETERMINATIONS
 DATA AND COMPUTATION SHEET

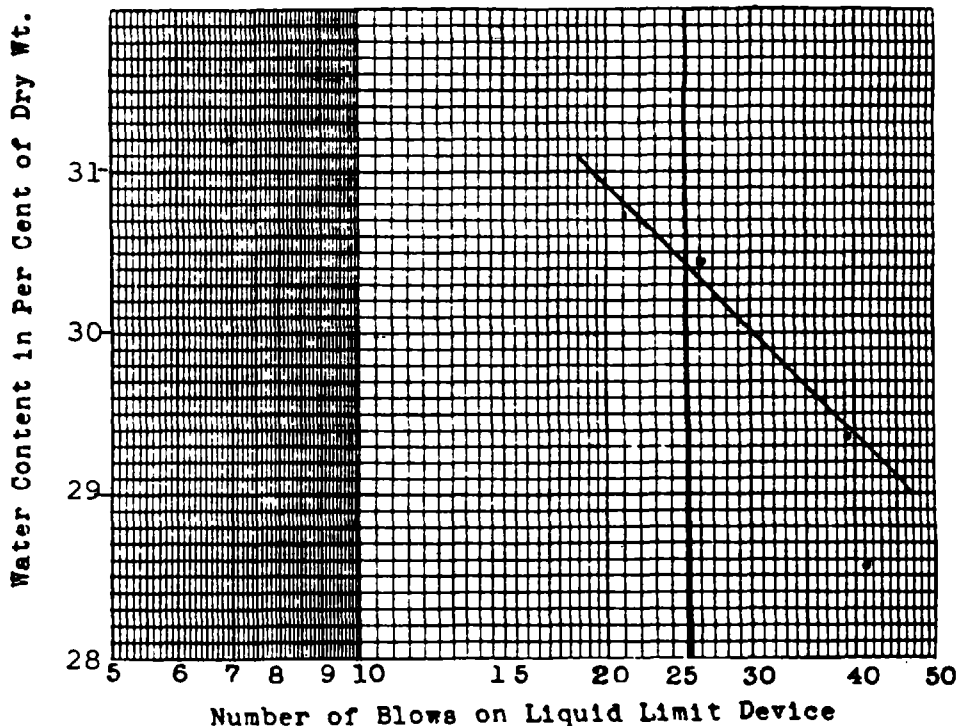
LL = Liquid Limit Test

PL = Plastic Limit Test

Type of Test		LL	LL	LL	LL	LL
Container Number		08-A	08-B	08-C	08-F	
Number of Blows	X	41	39	26	21	
Wt. Sample + Tare Wet		26.37gm	26.30gm	29.61gm	26.84gm	
Wt. Sample + Tare Dry		23.92gm	23.80gm	26.32gm	24.23gm	
Wt. of Water		2.45gm	2.50gm	3.29gm	2.61gm	
Tare		15.33g	15.27g	15.52g	15.73g	
Wt. of Dry Soil		8.59gm	8.53gm	10.80gm	8.50gm	
Water Content		28.52%	29.31%	30.46%	30.71%	

Type of Test		PL	PL	PL
Container Number		08-D	08-E	
Number of Blows	X	X	X	X
Wt. Sample + Tare Wet		22.63gm	21.36gm	
Wt. Sample + Tare Dry		21.57gm	20.54gm	
Wt. of Water		1.06gm	.82gm	
Tare		15.33g	15.41g	
Wt. of Dry Soil		6.24gm	5.13gm	
Water Content		16.99%	15.98%	

FLOW CURVE



RESULTS

Liquid Limit = 30.30 %
 Plastic Limit = 16.49 %
 Plasticity Index = 13.91 %
 Flow Index = _____ %
 Toughness Index = _____ %

Remarks: _____

Name: CAMDS STEAD Sample Number NO. 09 (13-S-91-91(4-9ft))
 Date: 18 Sept. 1991 Sheet Number 09

LIQUID AND PLASTIC LIMIT
 DETERMINATIONS
 DATA AND COMPUTATION SHEET

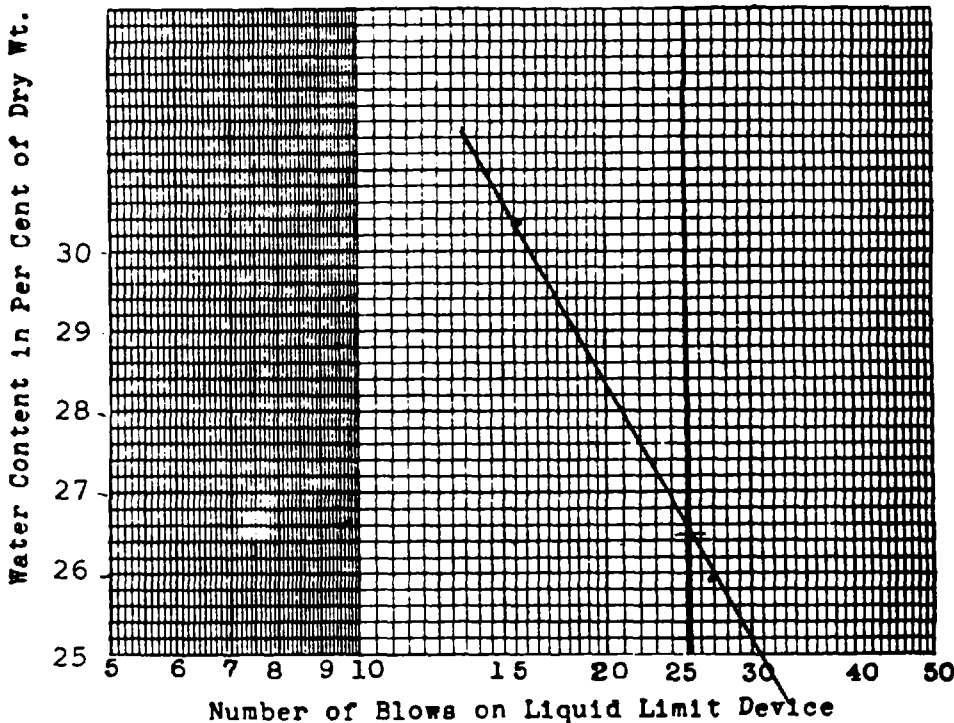
LL = Liquid Limit Test

PL = Plastic Limit Test

Type of Test		LL	LL	LL	LL	LL
Container Number		09-A	09-B	09-C	09-F	
Number of Blows	XXXX	42	27	20	15	
Wt. Sample + Tare Wet		27.75gm	27.96gm	31.19gm	28.66gm	
Wt. Sample + Tare Dry		24.99gm	25.37gm	28.00gm	25.56gm	
Wt. of Water		2.76gm	2.59gm	3.19gm	3.10gm	
Tare		15.68g	15.43g	15.41g	15.41g	
Wt. of Dry Soil		9.31gm	9.94gm	12.59gm	10.15gm	
Water Content		29.65%	26.06%	25.34%	30.54%	

Type of Test			PL	PL	PL	
Container Number			09-D	09-E		
Number of Blows			XXXX	XXXX	XXXX	
Wt. Sample + Tare Wet			21.90gm	28.64gm		
Wt. Sample + Tare Dry			20.92gm	22.45gm		
Wt. of Water			0.98gm	6.19gm		
Tare			15.59g	15.78g		
Wt. of Dry Soil			5.33gm	6.67gm		
Water Content			18.39%	92.80%?		

FLOW CURVE



RESULTS

Liquid Limit = 26.50 %

Plastic Limit = 18.39 %

Plasticity Index = 8.11 %

Flow Index = %

Toughness Index = %

Remarks: Two or three
anomalous readings
which I do not under-
stand.

Stopped drying apprx.
2010.

Name: TEST Sample Number TEST

Date: _____ Sheet Number 10

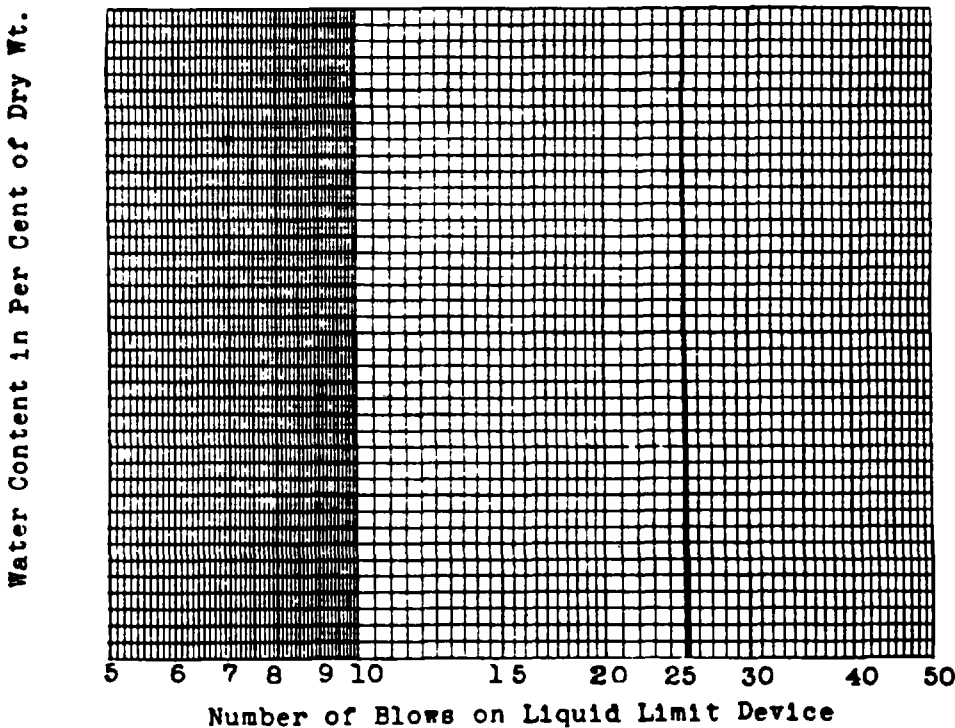
LIQUID AND PLASTIC LIMIT
DETERMINATIONS
DATA AND COMPUTATION SHEET

LL = Liquid Limit Test PL = Plastic Limit Test

Type of Test		LL	LL	LL	LL	LL
Container Number						
Number of Blows	X					
Wt. Sample + Tare Wet						
Wt. Sample + Tare Dry						
Wt. of Water						
Tare						
Wt. of Dry Soil						
Water Content						

Type of Test			PL	PL	PL	
Container Number						
Number of Blows			X	X	X	
Wt. Sample + Tare Wet						
Wt. Sample + Tare Dry						
Wt. of Water						
Tare						
Wt. of Dry Soil						
Water Content						

FLOW CURVE



RESULTS

Liquid Limit = _____ %

Plastic Limit = _____ %

Plasticity Index = _____ %

Flow Index = _____ %

Toughness Index = _____ %

Remarks: Sample had too much organic matter to make a Plastic Limit Test.

Name: CAMDS STEAD Sample Number NO. 11 (13-DD-06-1(2'-4'))

Date: 18 Sept. 1991 Sheet Number 11

LIQUID AND PLASTIC LIMIT
DETERMINATIONS
DATA AND COMPUTATION SHEET

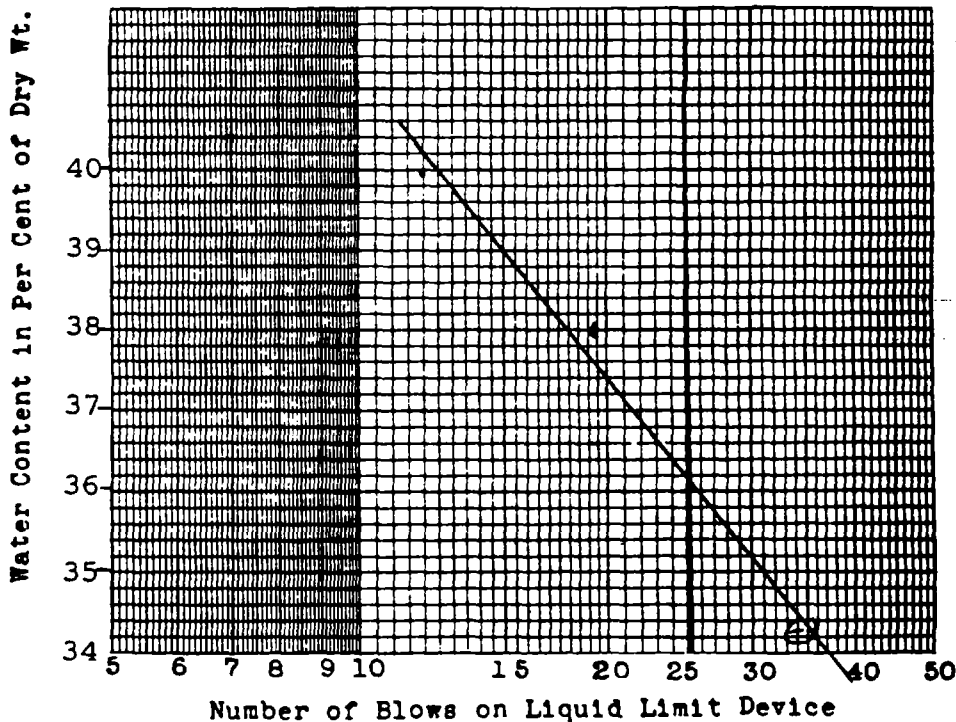
LL = Liquid Limit Test

PL = Plastic Limit Test

Type of Test		LL	LL	LL	LL	LL
Container Number		11-A	11-B	11-C	11-F	
Number of Blows	XXXX	32	19	15	12	
Wt. Sample + Tare Wet		27.42gm	27.35gm	29.69gm	27.02gm	
Wt. Sample + Tare Dry		24.40gm	24.09gm	25.73gm	23.70gm	
Wt. of Water		3.02gm	3.26gm	3.96gm	3.32gm	
Tare		15.56g	15.52g	15.16g	15.42g	
Wt. of Dry Soil		8.84gm	8.57gm	10.57gm	8.28gm	
Water Content		34.16%	38.04%	37.46%	40.01%	

Type of Test			PL	PL	PL	
Container Number			11-D	11-E		
Number of Blows			XXXX	XXXX	XXXX	
Wt. Sample + Tare Wet			20.30gm	21.70gm		
Wt. Sample + Tare Dry			19.50gm	20.63gm		
Wt. of Water			0.80gm	1.07gm		
Tare			15.52g	15.38g		
Wt. of Dry Soil			3.98gm	5.25gm		
Water Content			20.01%	20.38%		

FLOW CURVE



RESULTS

Liquid Limit = 36.10 %

Plastic Limit = 20.20 %

Plasticity Index = 15.90 %

Flow Index = _____ %

Toughness Index = _____ %

Remarks: _____

Name: CAMDS STEAD Sample Number NO.12 (13-S-91-3(14-16ft))
 Date: 18 Sept. 1991 Sheet Number 12

LIQUID AND PLASTIC LIMIT
 DETERMINATIONS
 DATA AND COMPUTATION SHEET

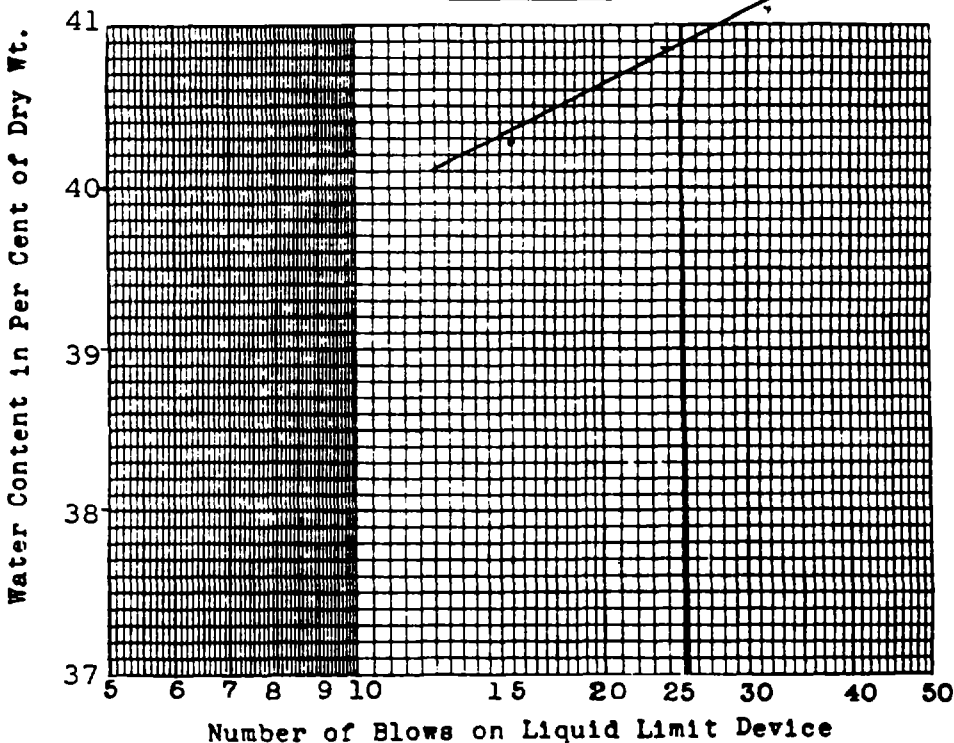
LL = Liquid Limit Test

PL = Plastic Limit Test

Type of Test		LL	LL	LL	LL	LL
Container Number		12-A	12-B	12-C	12-F	
Number of Blows	XXXX	42	32	24	16	
Wt. Sample + Tare Wet		27.37gm	27.92gm	28.72gm	29.59gm	
Wt. Sample + Tare Dry		24.08gm	24.33gm	24.89gm	25.42gm	
Wt. of Water		3.29gm	3.59gm	3.83gm	4.17gm	
Tare		15.22g	15.60g	15.52g	15.07g	
Wt. of Dry Soil		8.86gm	8.73gm	9.37gm	10.35gm	
Water Content		37.13%	41.12%	40.88%	40.29%	

Type of Test			PL	PL	PL	
Container Number			12-D	12-E		
Number of Blows			XXXX	XXXX	XXXX	
Wt. Sample + Tare Wet			20.11gm	20.29gm		
Wt. Sample + Tare Dry			19.26gm	19.47gm		
Wt. of Water			0.85gm	0.82gm		
Tare			15.29g	15.64g		
Wt. of Dry Soil			3.97gm	3.83gm		
Water Content			21.41%	21.41%		

FLOW CURVE



RESULTS

Liquid Limit = 40.88 %
 Plastic Limit = 21.41 %
 Plasticity Index = 19.47 %
 Flow Index = _____ %
 Toughness Index = _____ %

Remarks: The % moisture vs blows is reversed.

Stopped drying 2023 hr
Stopped drying 2255 hr

TABLE 1



SUMMARY OF LABORATORY TEST RESULTS

T.A.D. Task Order 001
Project No. 26593

September 1, 1993

SAMPLE IDENTIFICATION		ATTERBERG LIMITS		UNIFIED SOIL CLASSIFICATION
		LIQUID LIMIT (%)	PLASTICITY INDEX (%)	
1	13-CU-03-1 @ 0-2'	35	17	Clayey Gravel w/Sand (GC)
2	13CU-03-2 @ 4-6'	29	11	Lean Clay (CL)
3	13CU-03-3 @ 8-10'	35	18	Lean Clay (CL)
4	13BG-09-1 @ 0-2'	33	13	Lean Clay (CL)
5	13BG-09-2 @ 4-6'	27	10	Lean Clay (CL)
6	13BG-09-3 @ 8-10'	38	19	Lean Clay (CL)
7	13DD-07-2 @ 2.5-3'	44	27	Clayey Gravel (GC)
8	13FS-30 @ 8-10'	25	8	Lean Clay (CL)
9	13PP-05-2 @ 4-5'	40	19	Lean Clay w/Sand (CL)
10	133X-11-1 @ 2-3'	41	23	Lean Clay (CL)
11	133X-11-2 @ 5-6'	35	14	Lean Clay w/Sand (CL)
12	133X-11-3 @ 8-10'	29	10	Lean Clay w/Sand (CL)
13	S-103-93-3 @ 8-10'	28	13	Clayey Gravel w/Sand (GC)
14	S-104-93-1 @ 0-2'	37	18	Lean Clay w/Sand (CL)
15	S-104-93-2 @ 4-6'	27	12	Clayey Sand w/Gravel (SC)
16	S-104-93 @ 31'	70	47	Fat Clay (CH)
17	S-104-93-511 @ 49-51'	85	56	Fat Clay (CH)
18	S-104-93-515 @ 69-71'	100	63	Fat Clay (CL)
19	S-105-93 @ 5-7'	37	21	Lean Clay (CL)
20	S-105-93 @ 7-9'	57	25	Fat Clay w/Sand (CH)
21	S-106-93-51 @ 5-7'	32	14	Lean Clay (CL)
22	S-106-93-53 @ 15-17'	28	8	Lean Clay (CL)
23	S-106-93-55 @ 25-27'	66	43	Fat Clay (CH)

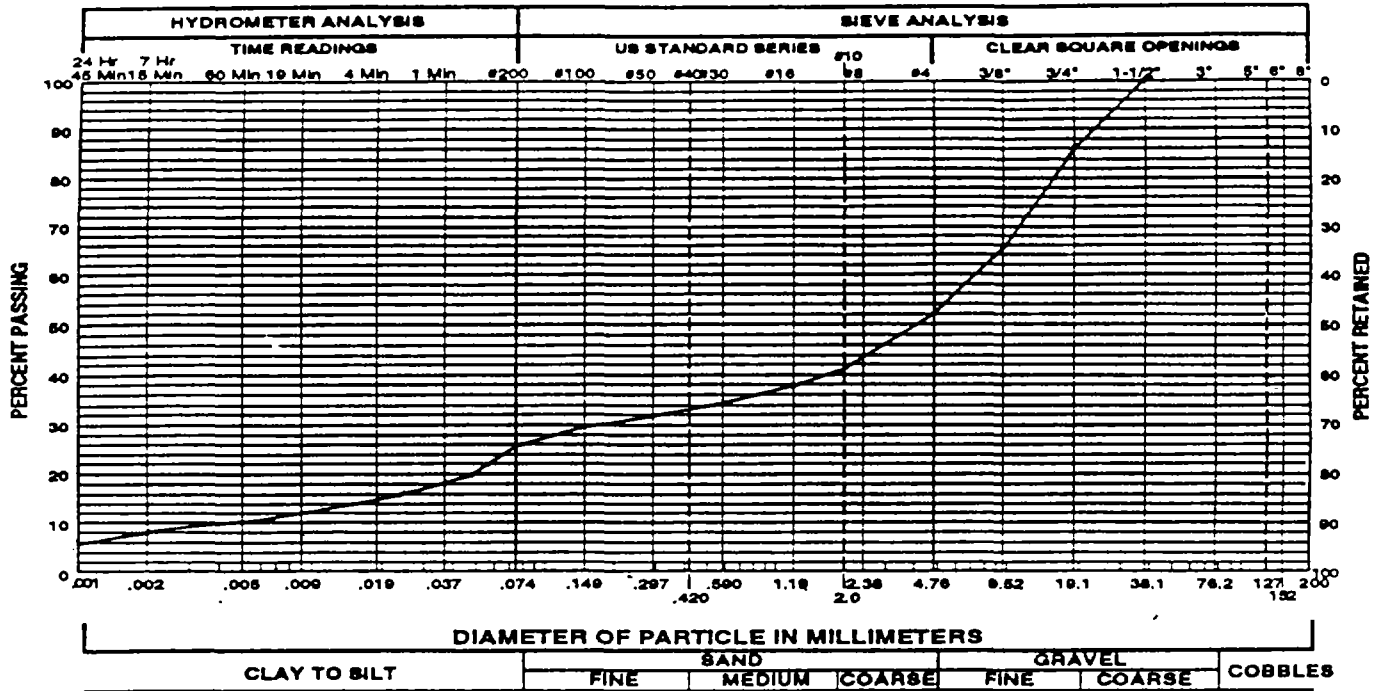
HYDRAULIC CONDUCTIVITY TEST RESULTS

Sample No. S-105-93 @ 5-7' $k = 4.6 \times 10^{-8}$ cm/sec

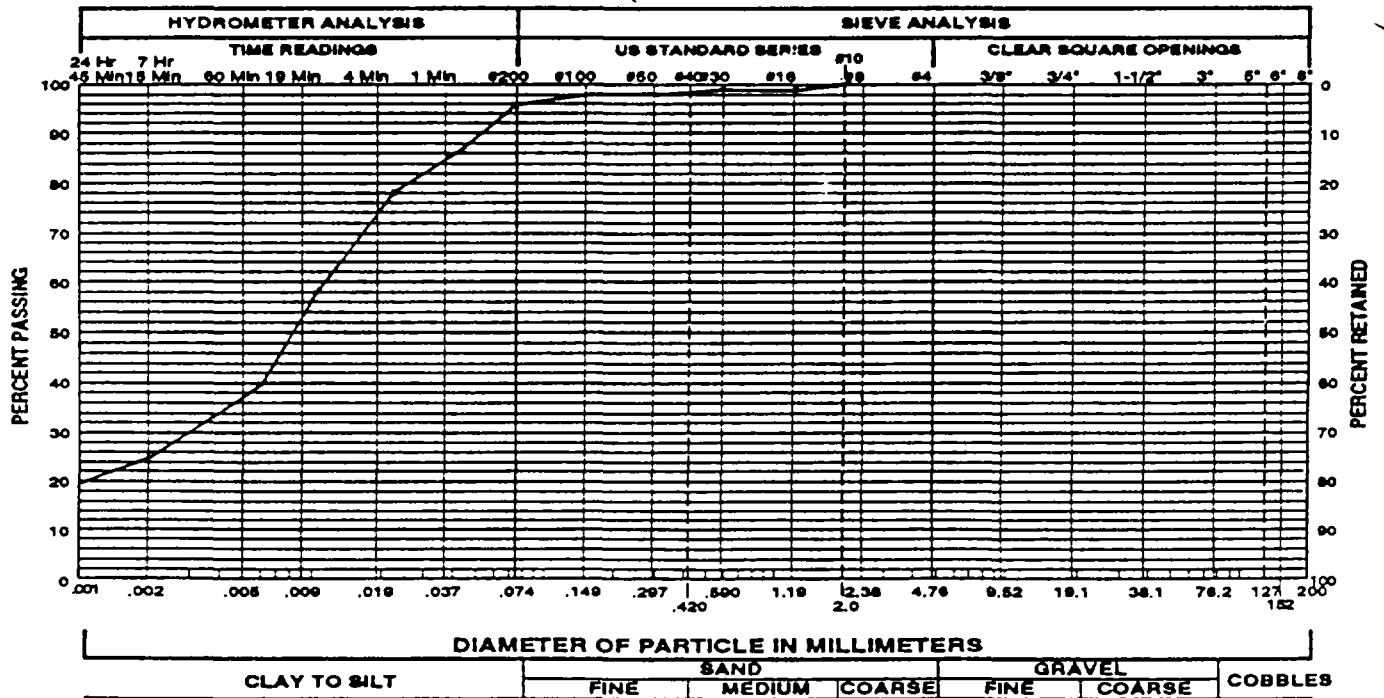
Sample No. S-105-93 @ 7-9' $k = 1.7 \times 10^{-5}$ cm/sec - Note:

Sample was slightly disturbed and contained cemented piec which both could result in faster permeability.

Applied Geotechnical Engineering Consultants, Inc.



Gravel 48 % Sand 26 % Silt and Clay 26 %
 Liquid Limit 35 % Plasticity Index 17 %
 Sample of Clayey Gravel w/Sand (GC) From 13Cu-03-1 @ 0-2'



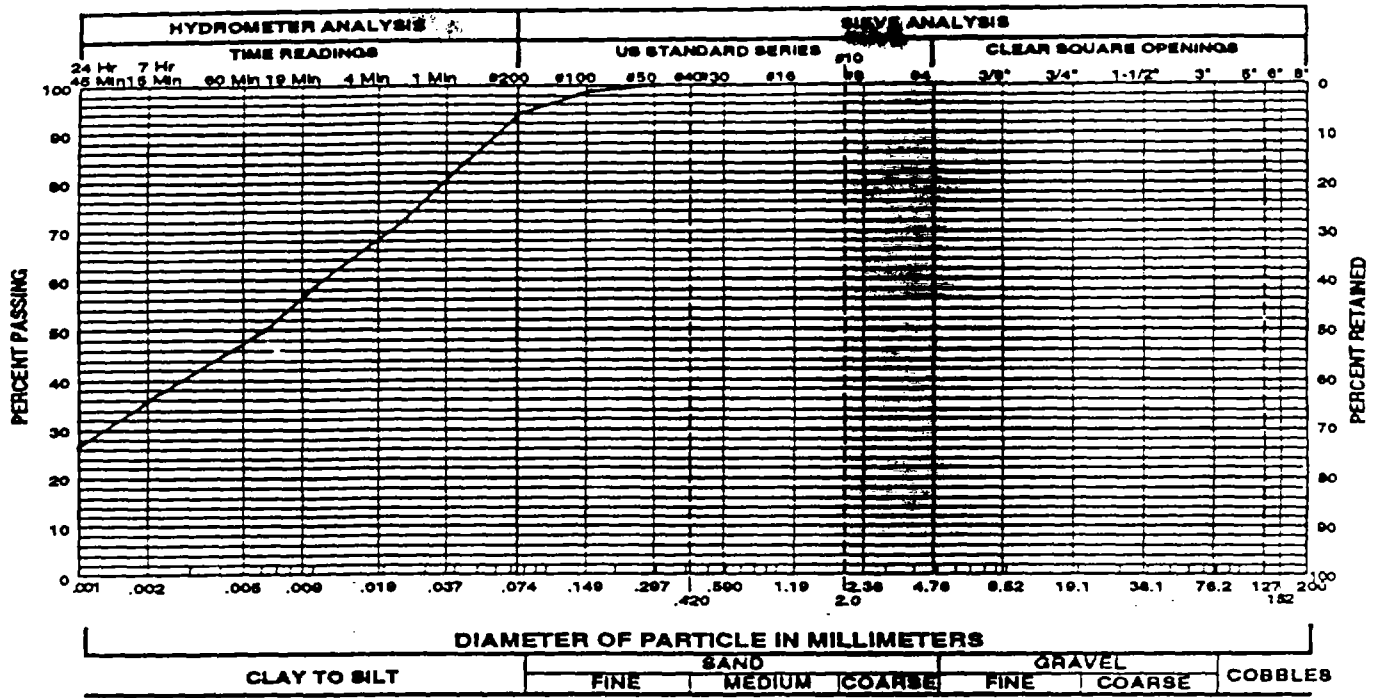
Gravel 0 % Sand 4 % Silt and Clay 96 %
 Liquid Limit 29 % Plasticity Index 11 %
 Sample of Lean Clay (CL) From 13CU-03-2 @ 4-6'

Project No. 26593

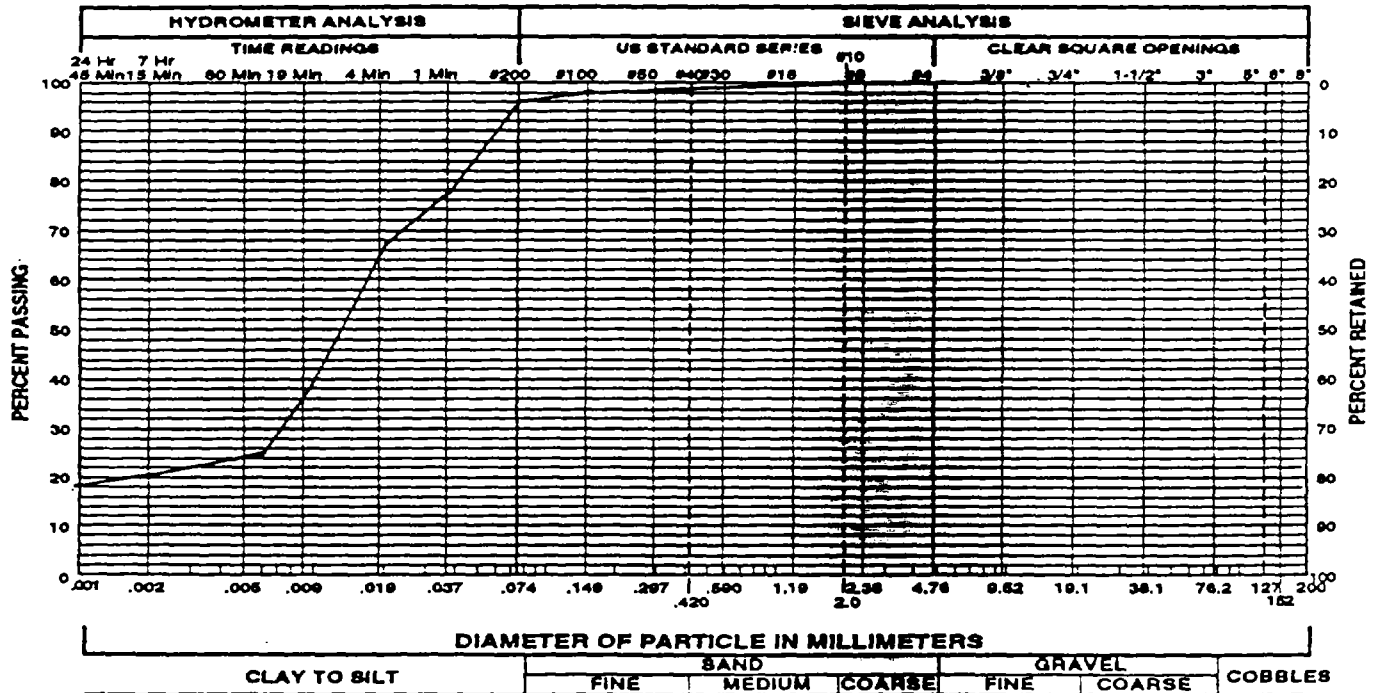
GRADATION TEST RESULTS

Figure 1

Applied Geotechnical Engineering Consultants, Inc.



Gravel 0 % Sand 6 % Silt and Clay 94 %
 Liquid Limit 35 % Plasticity Index 18 %
 Sample of Lean Clay (CL) From 13CU-03-3 @ 8-10'



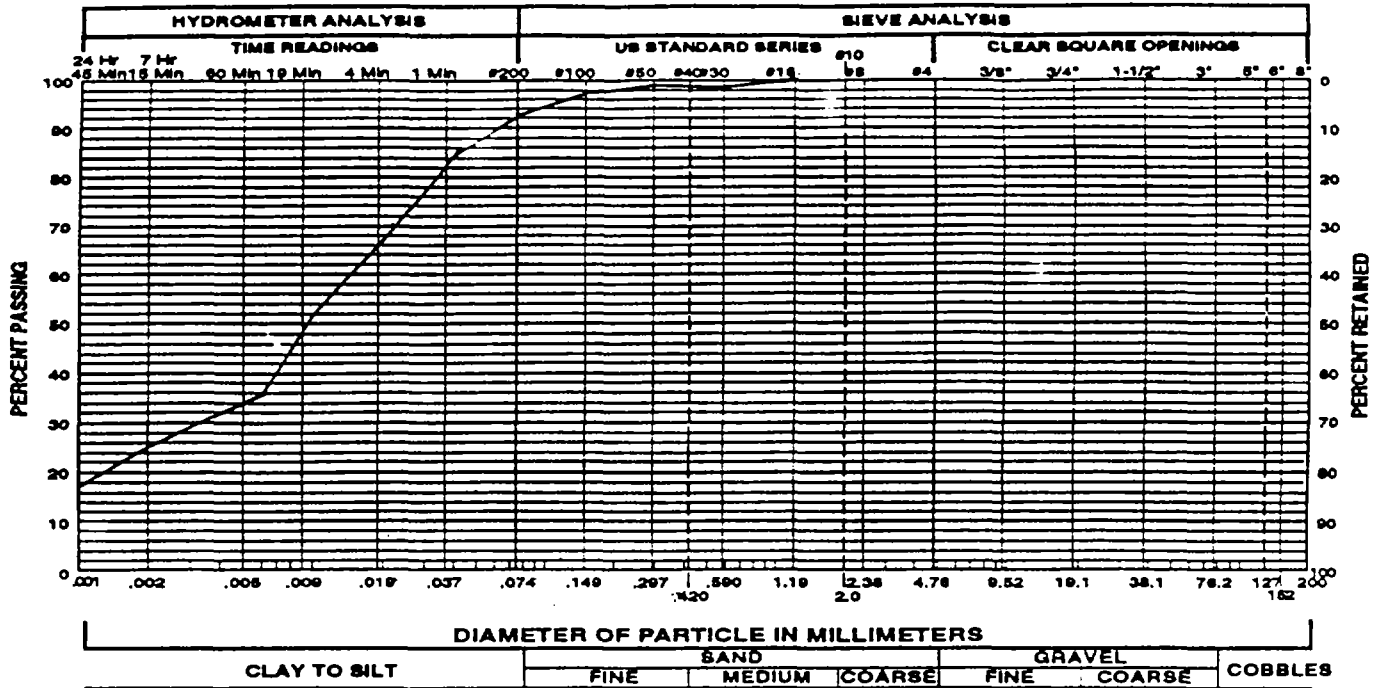
Gravel 0 % Sand 4 % Silt and Clay 96 %
 Liquid Limit 33 % Plasticity Index 13 %
 Sample of Lean Clay (CL) From 13BG-09-1 @ 0-2'

Project No. 26593

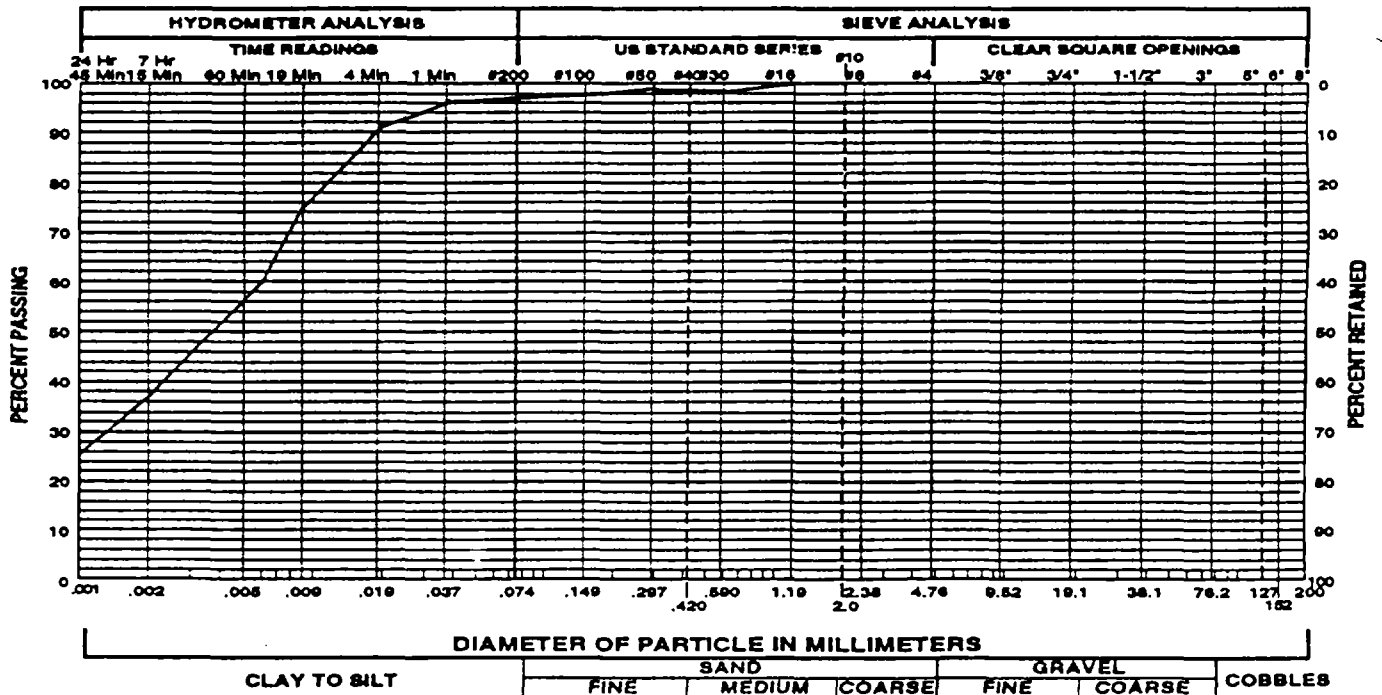
GRADATION TEST RESULTS

Figure 2

Applied Geotechnical Engineering Consultants, Inc.



Gravel 0 % Sand 7 % Silt and Clay 93 %
 Liquid Limit 27 % Plasticity Index 10 %
 Sample of Lean Clay (CL) From 13BG-09-02 @ 4-6'



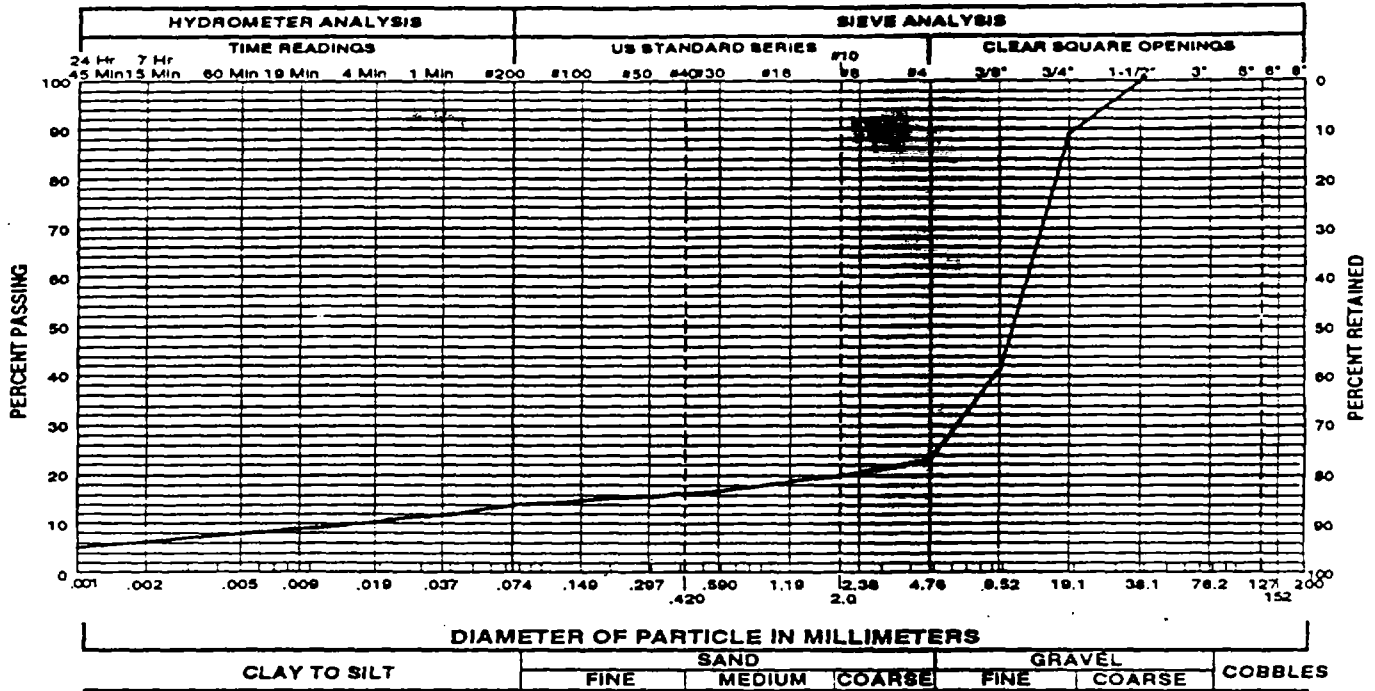
Gravel 0 % Sand 3 % Silt and Clay 97 %
 Liquid Limit 38 % Plasticity Index 19 %
 Sample of Lean Clay (CL) From 13BG-09-03 @ 8-10'

Project No. 26593

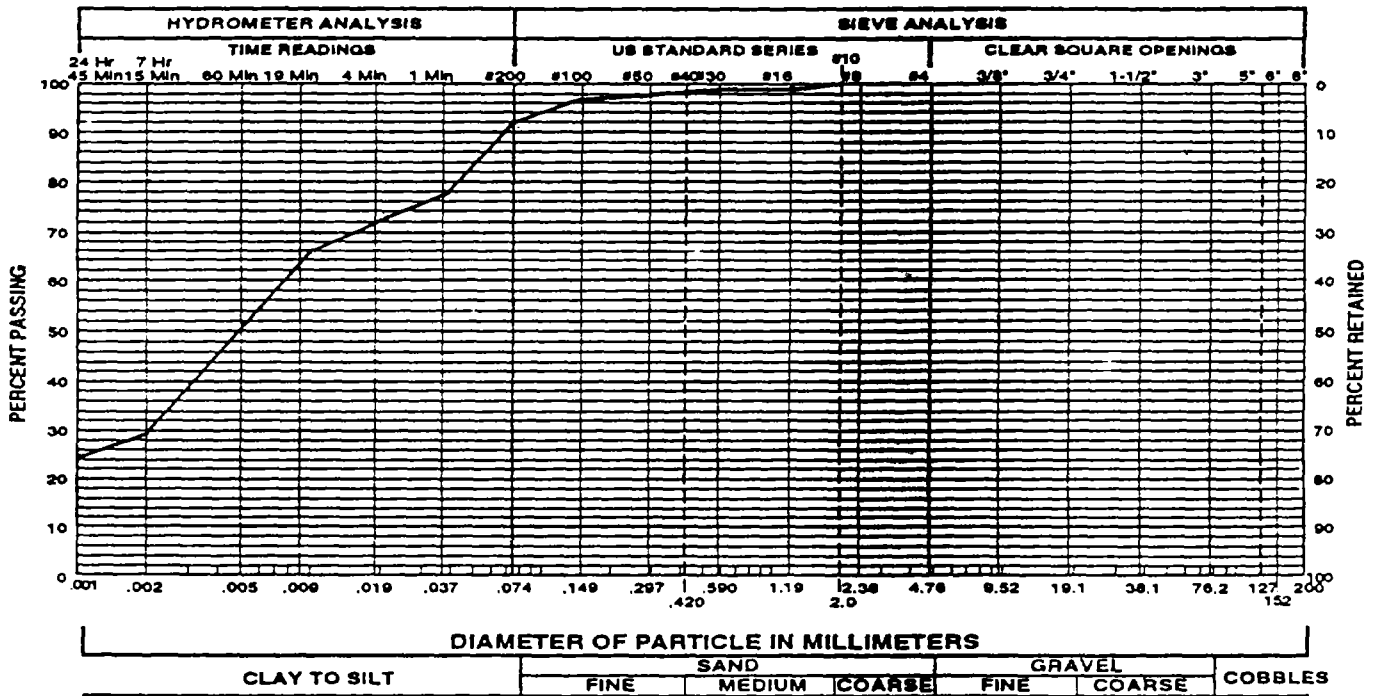
GRADATION TEST RESULTS

Figure 3

Applied Geotechnical Engineering Consultants, Inc.



Gravel 76 % Sand 10 % Silt and Clay 14 %
 Liquid Limit 44 % Plasticity Index 27 %
 Sample of Clayey Gravel (GC) From 13DD-07-2 @ 2.5-3'



Gravel 0 % Sand 8 % Silt and Clay 92 %
 Liquid Limit 25 % Plasticity Index 8 %
 Sample of Lean Clay (CL) From 13FS-30 @ 8-10'

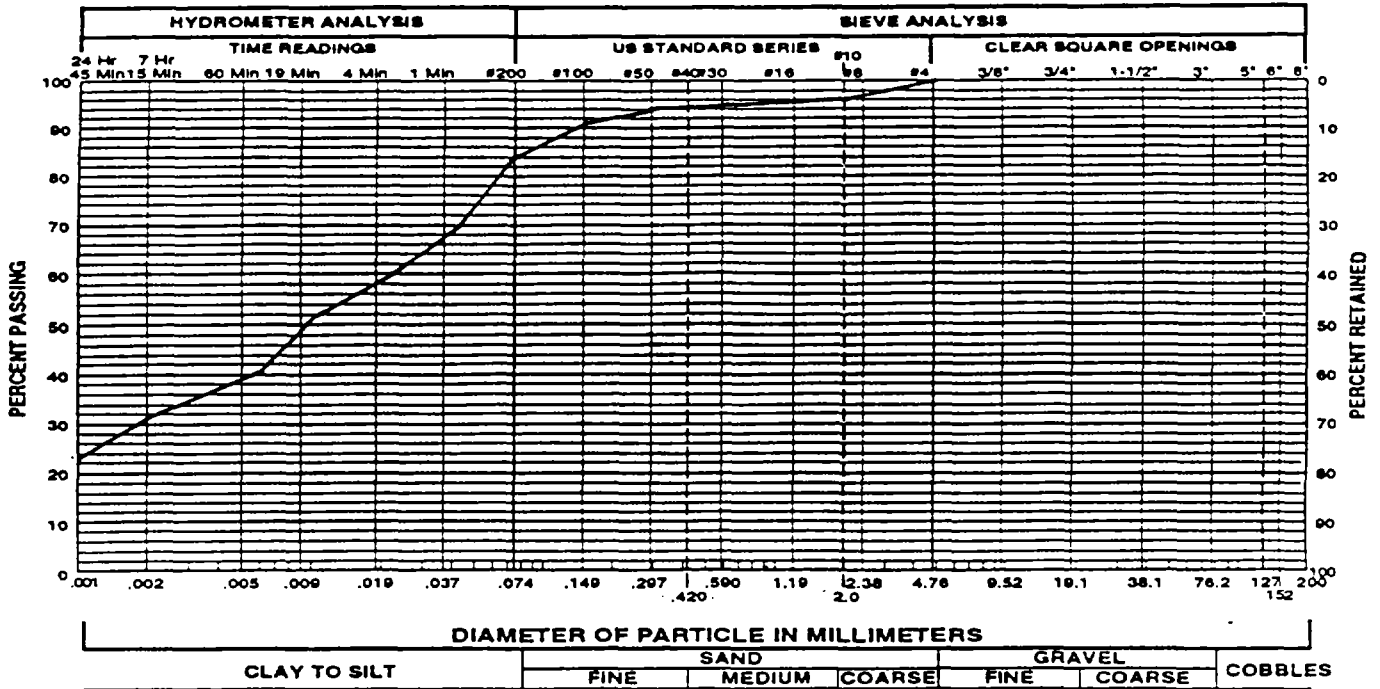
Project No. 26593

GRADATION TEST RESULTS

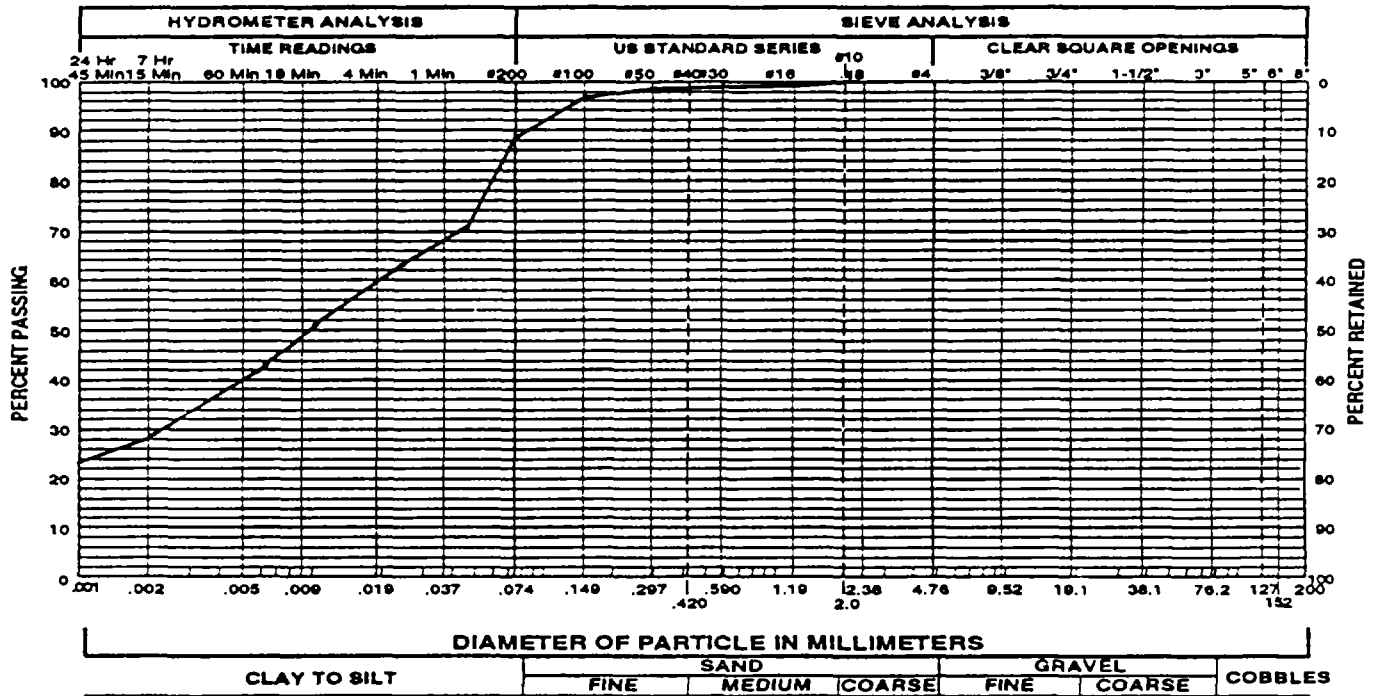
C-537

Figure 4

Applied Geotechnical Engineering Consultants, Inc.



Gravel 0 % Sand 16 % Silt and Clay 84 %
 Liquid Limit 40 % Plasticity Index 19 %
 Sample of Lean Clay w/Sand (CL) From 13PP-05-2 @ 4-5'



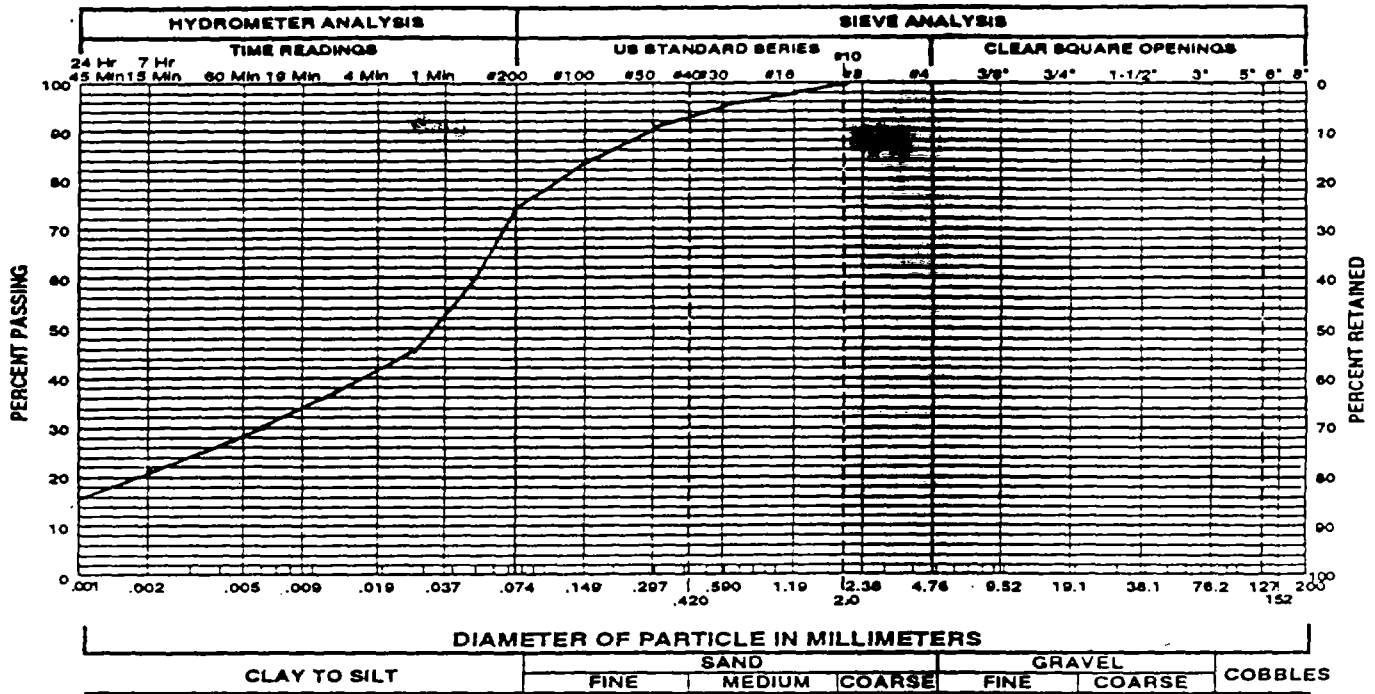
Gravel 0 % Sand 11 % Silt and Clay 89 %
 Liquid Limit 41 % Plasticity Index 23 %
 Sample of Lean Clay (CL) From 133x-11-1 @ 2-3'

Project No. 26593

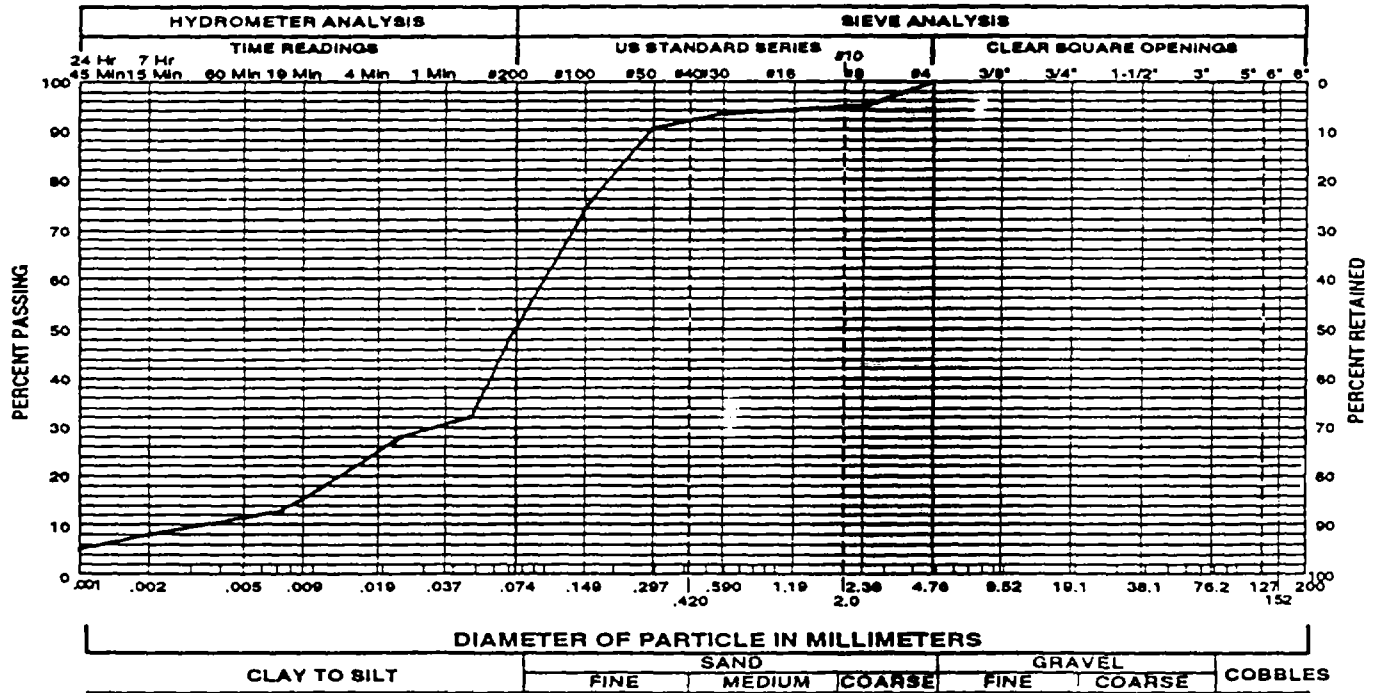
GRADATION TEST RESULTS
C-538

Figure 5

Applied Geotechnical Engineering Consultants, Inc.



Gravel 0 % Sand 26 % Silt and Clay 74 %
 Liquid Limit 35 % Plasticity Index 14 %
 Sample of Lean Clay w/Sand (CL) From 133x-11-2 @ 5-6'



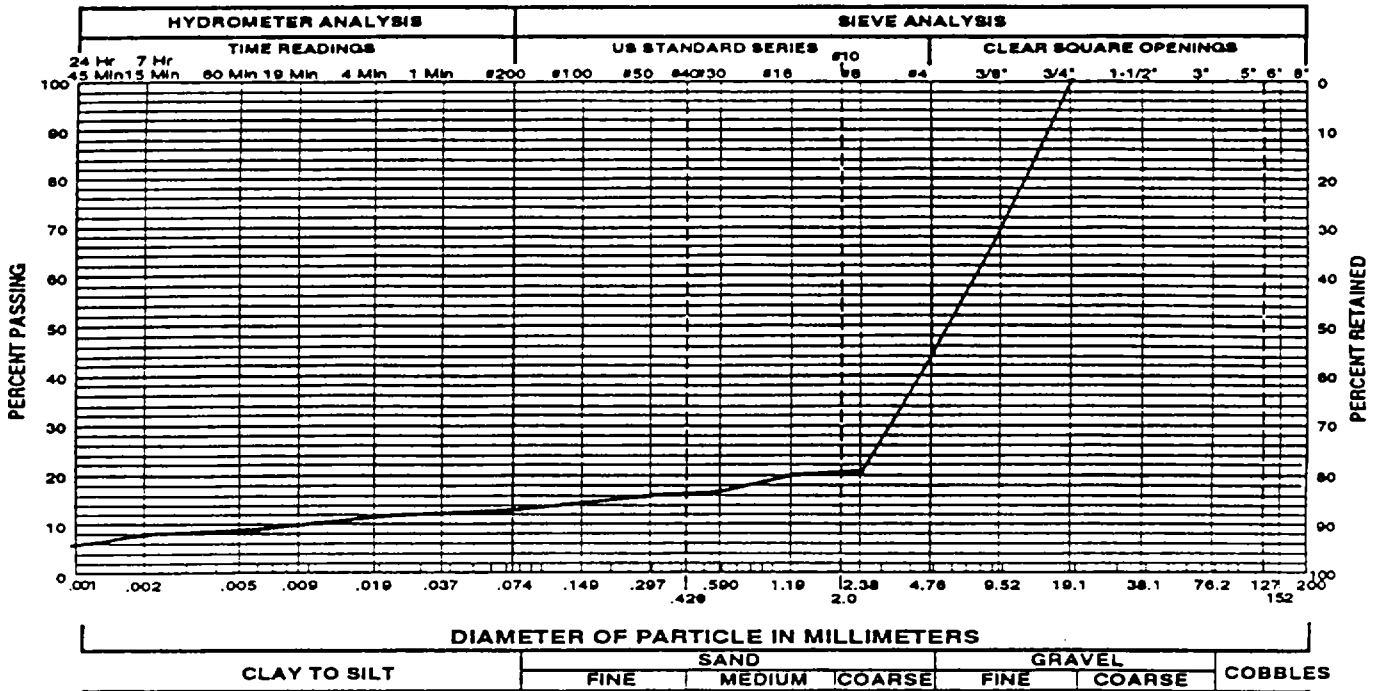
Gravel 0 % Sand 50 % Silt and Clay 50 %
 Liquid Limit 29 % Plasticity Index 10 %
 Sample of Lean Clay w/Sand (CL) From 133x-11-3 @ 8-10'

Project No. 26593

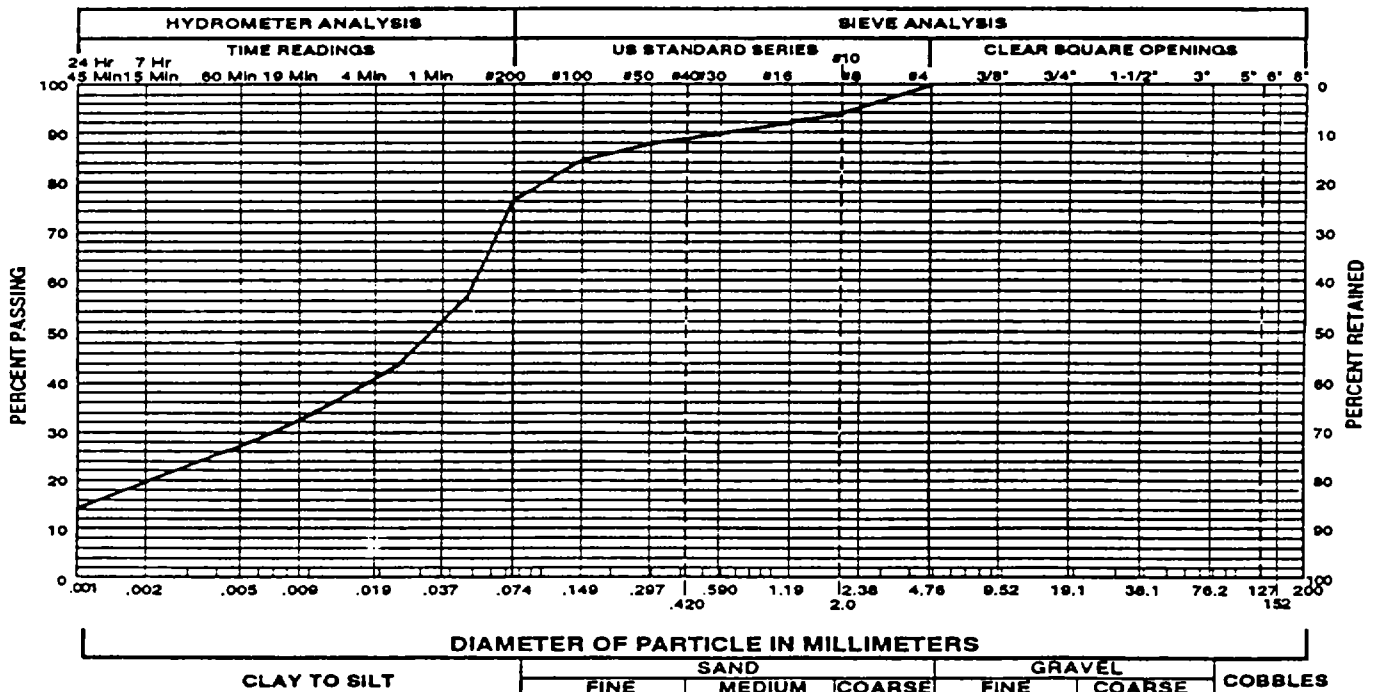
GRADATION TEST RESULTS

Figure 6

Applied Geotechnical Engineering Consultants, Inc.

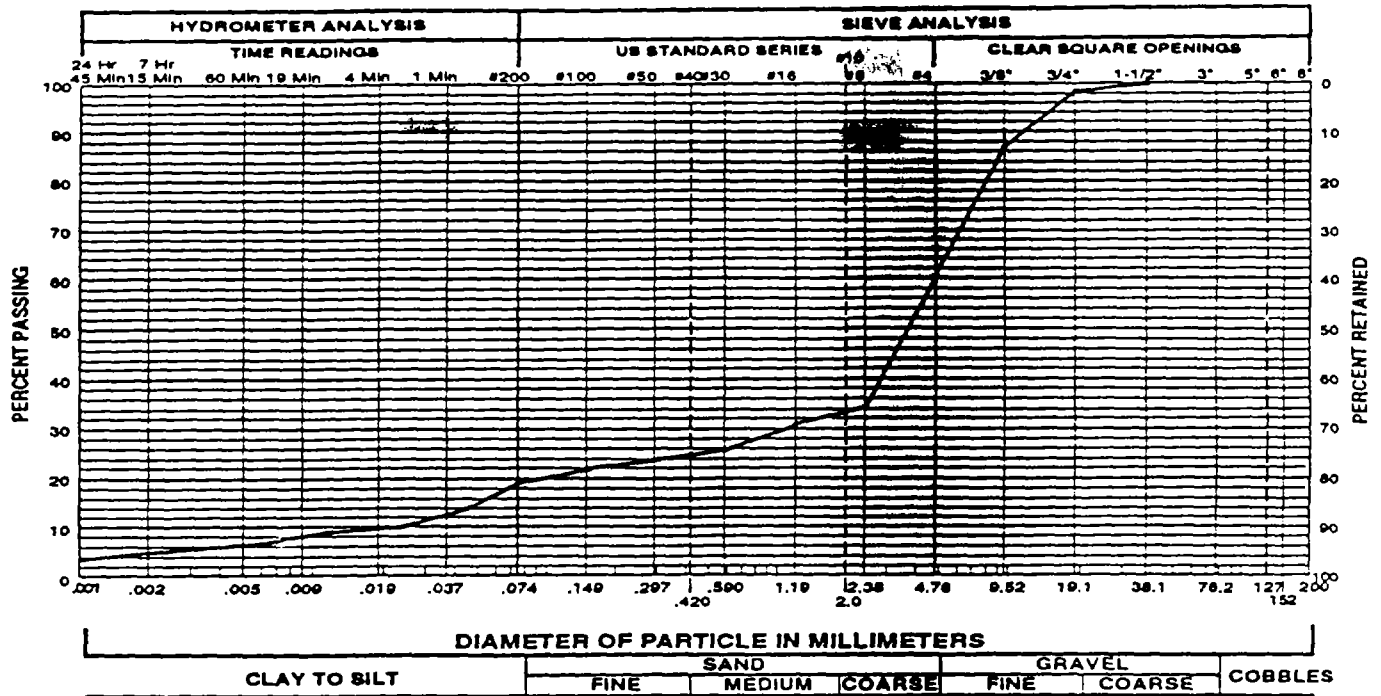


Gravel 56 % Sand 31 % Silt and Clay 13 %
 Liquid Limit 28 % Plasticity Index 13 %
 Sample of Clayey Gravel w/Sand (GC) From S-103-93-3 @ 8-10'

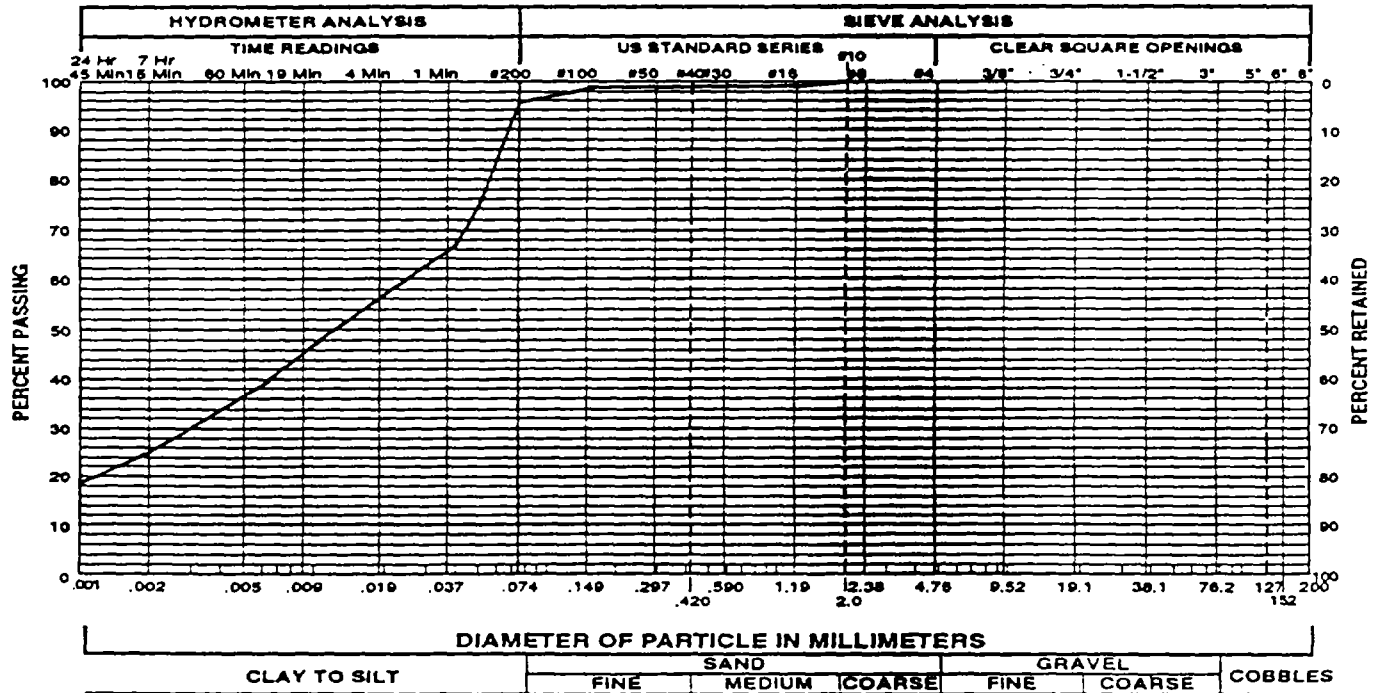


Gravel 0 % Sand 24 % Silt and Clay 76 %
 Liquid Limit 37 % Plasticity Index 18 %
 Sample of Lean Clay w/Sand (CL) From S-104-93-1 @ 0-2'

Applied Geotechnical Engineering Consultants, Inc.



Gravel 40 % Sand 41 % Silt and Clay 19 %
 Liquid Limit 27 % Plasticity Index 12 %
 Sample of Clayey Sand w/Gravel (SC) From S-104-93-2 @ 4-6'



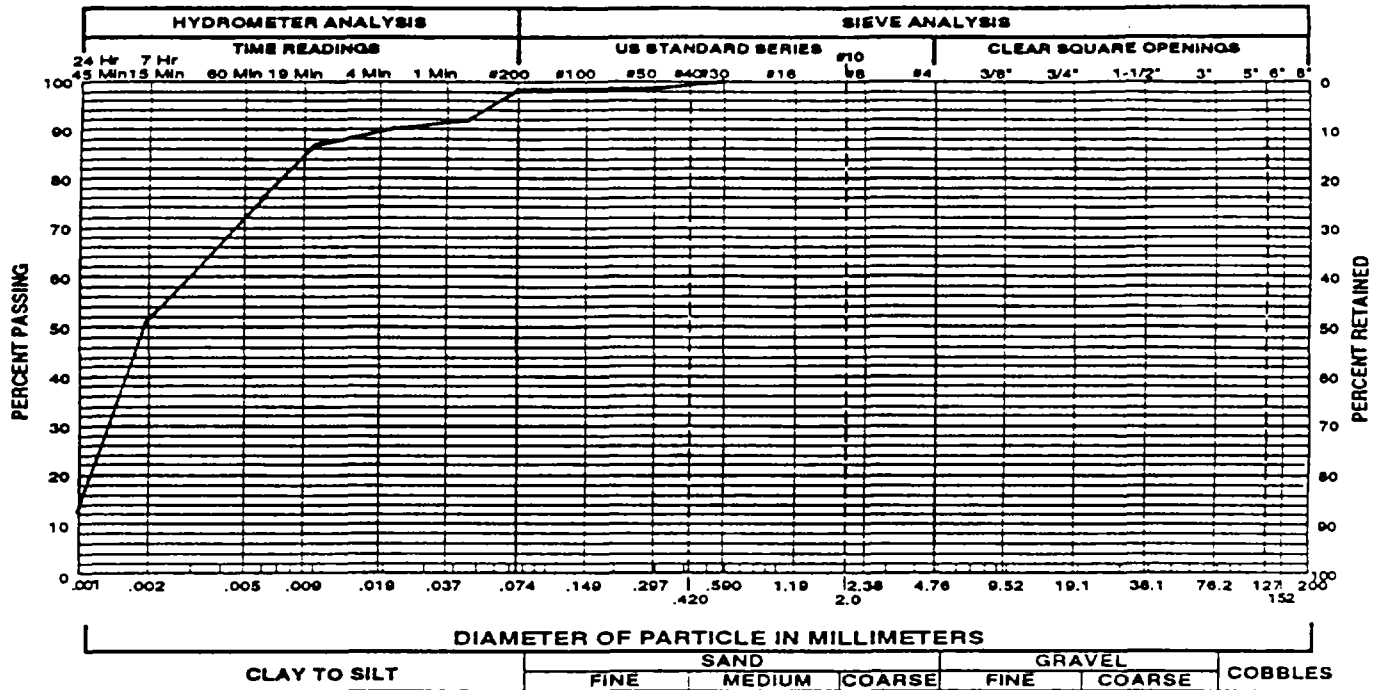
Gravel 0 % Sand 4 % Silt and Clay 96 %
 Liquid Limit 70 % Plasticity Index 47 %
 Sample of Fat Clay (CH) From S-104-93 @ 31'

Project No. 26593

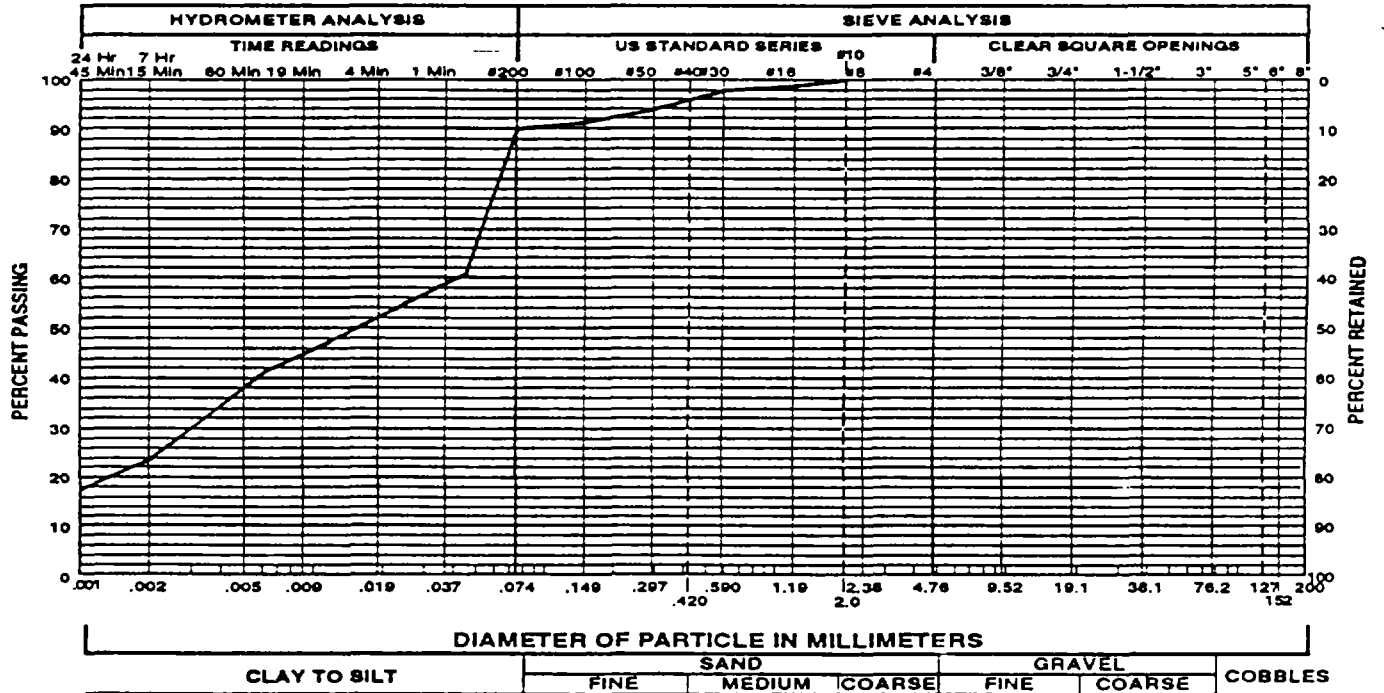
GRADATION TEST RESULTS

Figure 8

Applied Geotechnical Engineering Consultants, Inc.



Gravel 0 % Sand 1 % Silt and Clay 99 %
 Liquid Limit 85 % Plasticity Index 56 %
 Sample of Fat Clay (CH) From S-104-93-511 @ 49-51'



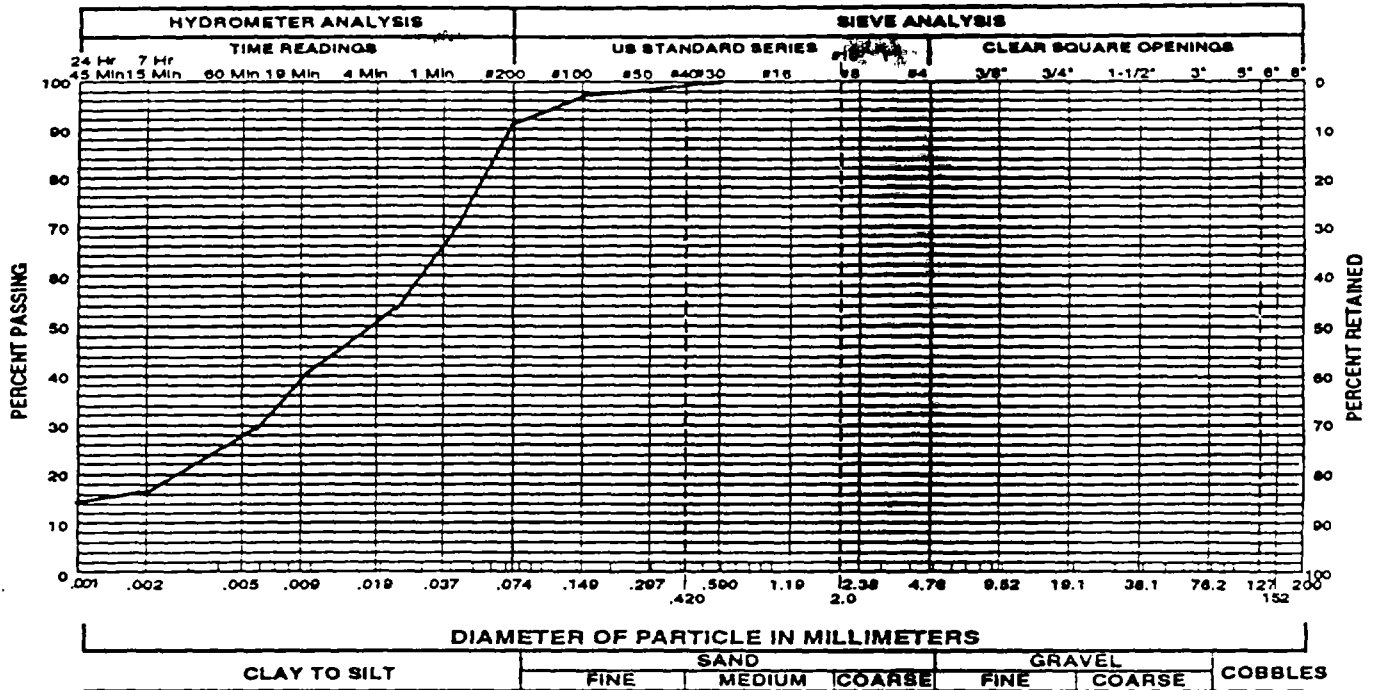
Gravel 0 % Sand 10 % Silt and Clay 90 %
 Liquid Limit 100 % Plasticity Index 63 %
 Sample of Fat Clay (CH) From S-104-93-515 @ 69-71'

Project No. 26593

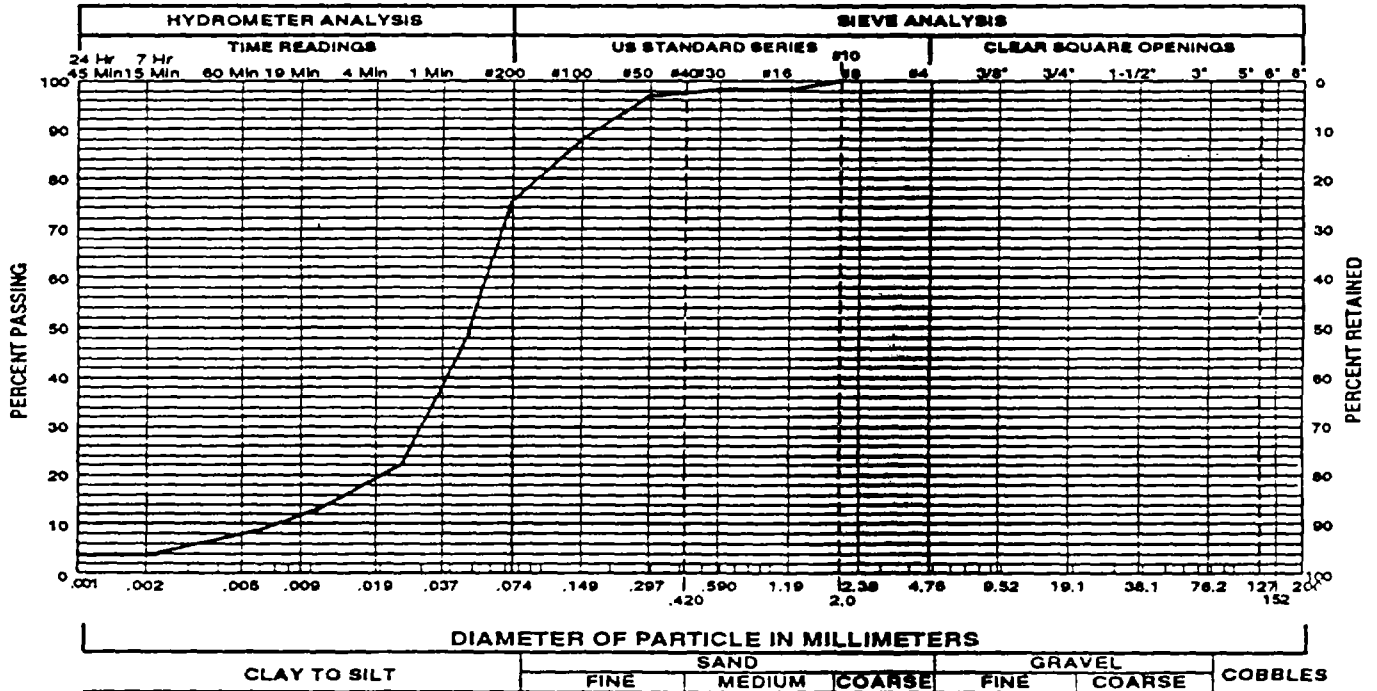
GRADATION TEST RESULTS

Figure 9

Applied Geotechnical Engineering Consultants, Inc.



Gravel 0 % Sand 9 % Silt and Clay 91 %
 Liquid Limit 37 % Plasticity Index 21 %
 Sample of Lean Clay (CL) From S-105-93 @ 5-7'



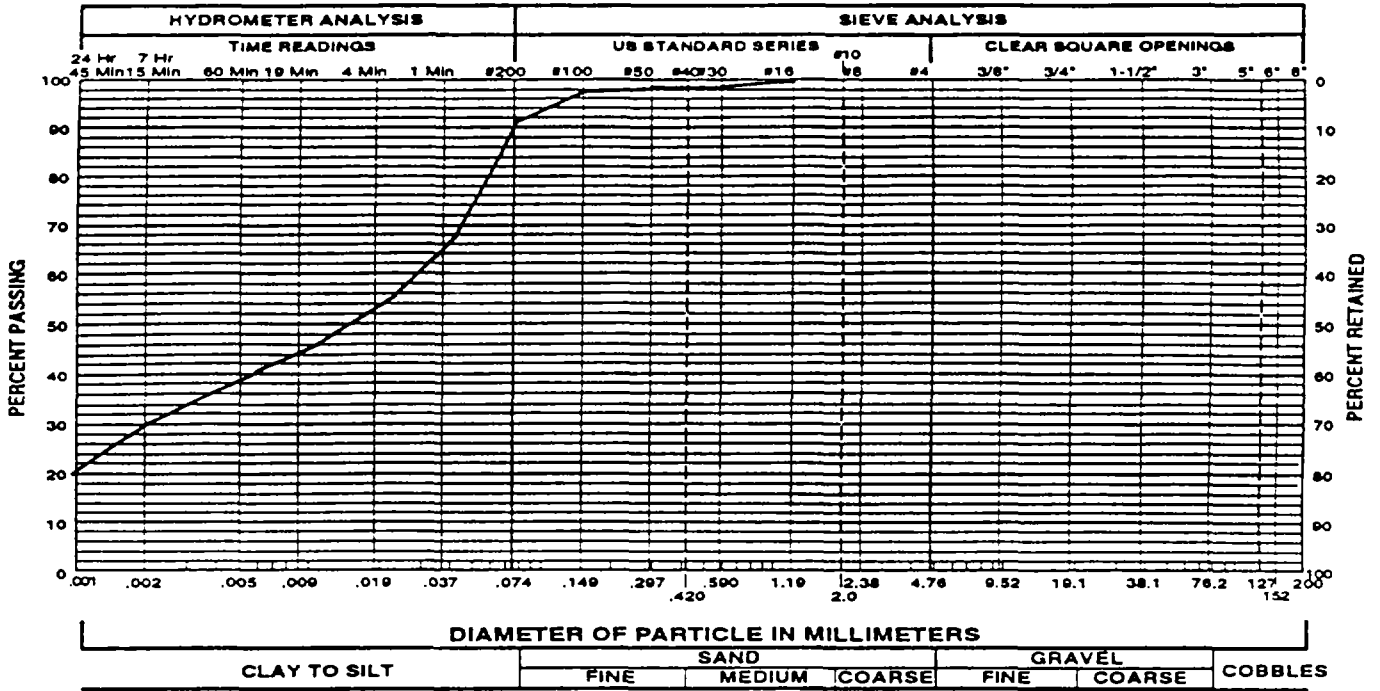
Gravel 0 % Sand 25 % Silt and Clay 75 %
 Liquid Limit 57 % Plasticity Index 25 %
 Sample of Fat Clay w/Sand (CH) From S-105-93 @ 7-9'

Project No. 26593

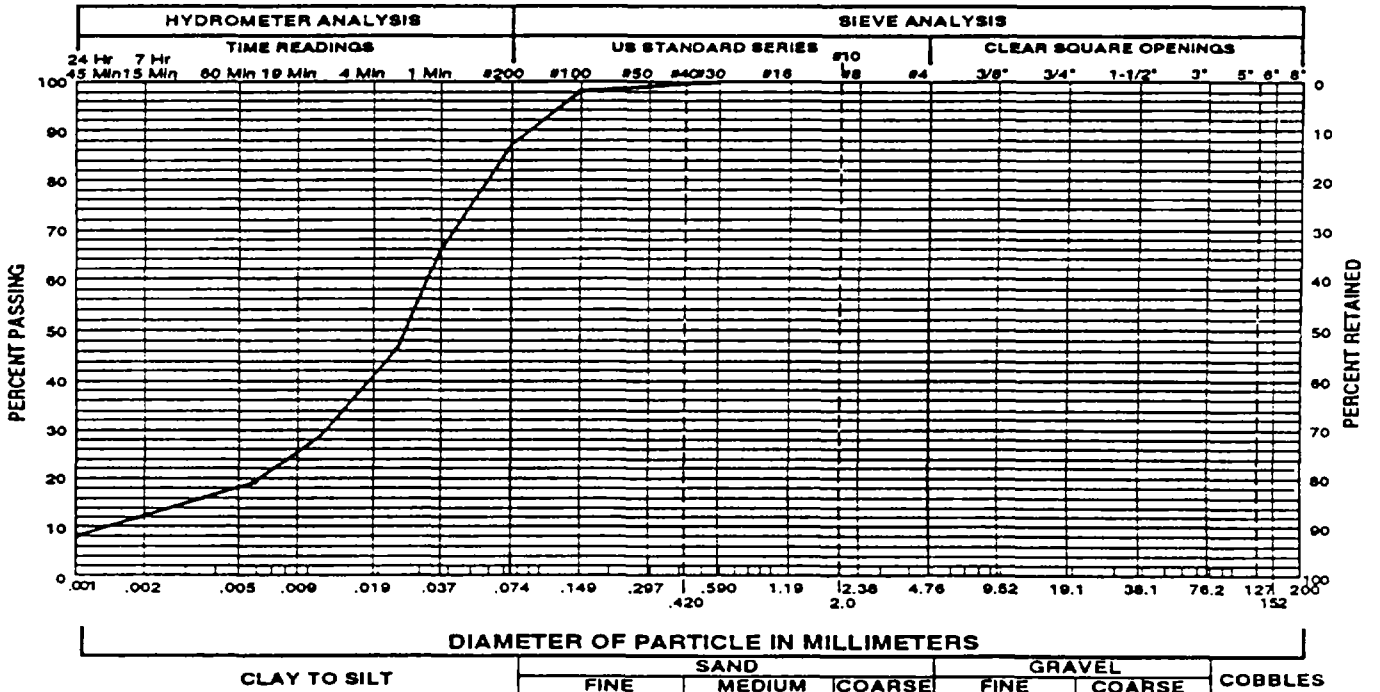
GRADATION TEST RESULTS

Figure 10

Applied Geotechnical Engineering Consultants, Inc.

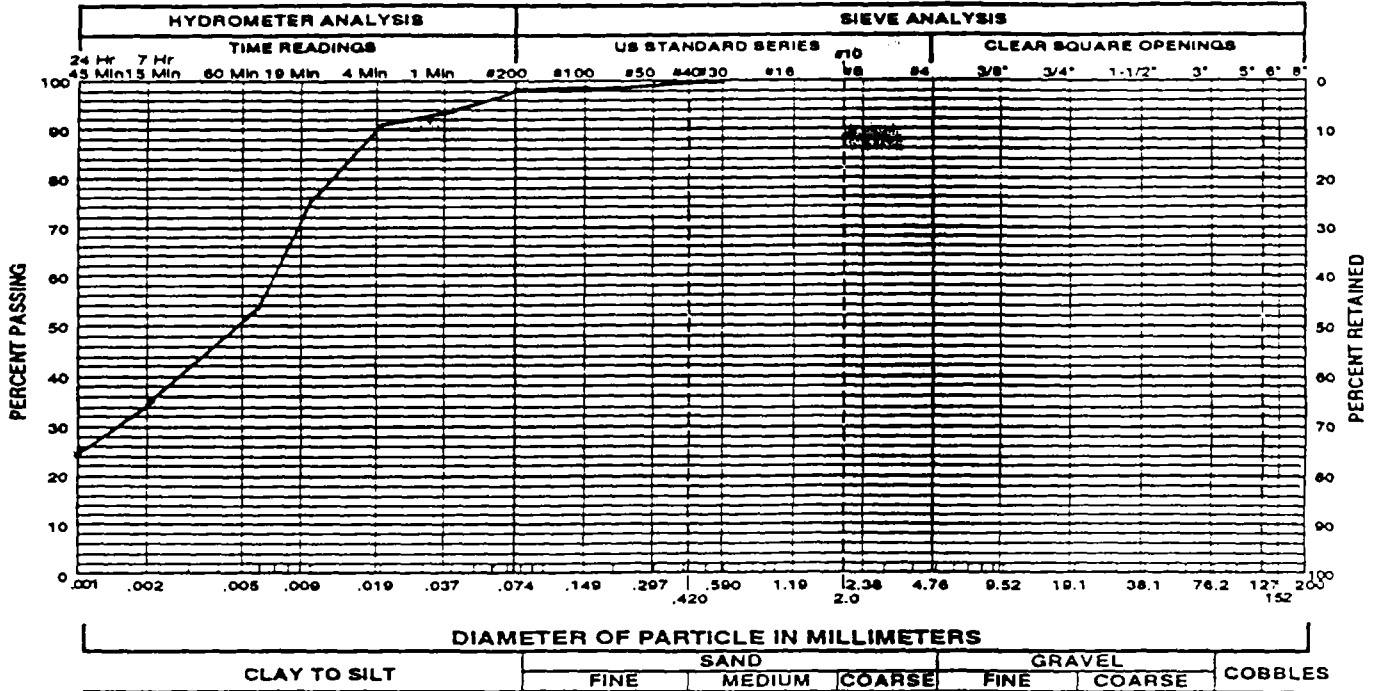


Gravel 0 % Sand 9 % Silt and Clay 91 %
 Liquid Limit 32 % Plasticity Index 14 %
 Sample of Lean Clay (CL) From S-106-93-51 @ 5-7'

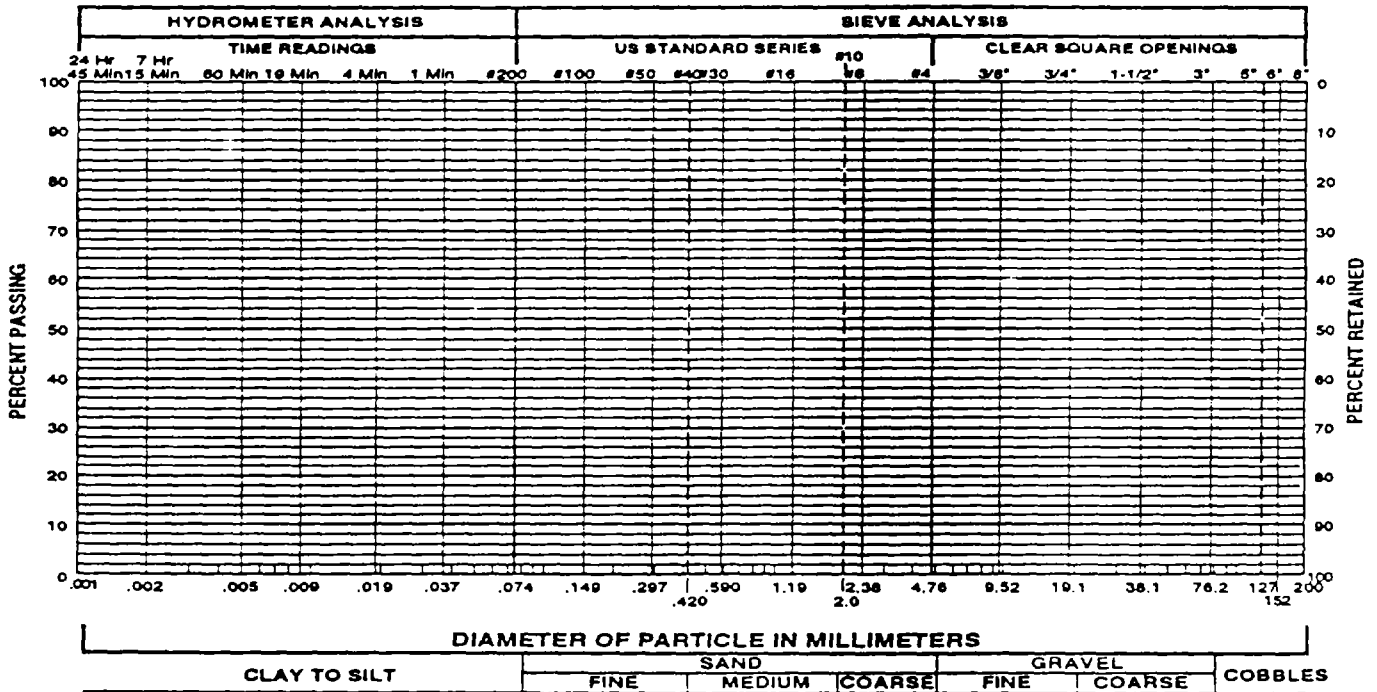


Gravel 0 % Sand 13 % Silt and Clay 87 %
 Liquid Limit 28 % Plasticity Index 8 %
 Sample of Lean Clay (CL) From S-106-93-53 @ 15-17'

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Gravel 0 % Sand 2 % Silt and Clay 98 %
 Liquid Limit 66 % Plasticity Index 43 %
 Sample of Fat Clay (CH) From S-106-93-55 @ 25-27'



Gravel _____ % Sand _____ % Silt and Clay _____ %
 Liquid Limit _____ % Plasticity Index _____ %
 Sample of _____ From _____

Project No. 26593

GRADATION TEST RESULTS
C-545

Figure 12



TABLE 1

SUMMARY OF LABORATORY TEST RESULTS

T.A.D. Task Order 001

Project No. 26593

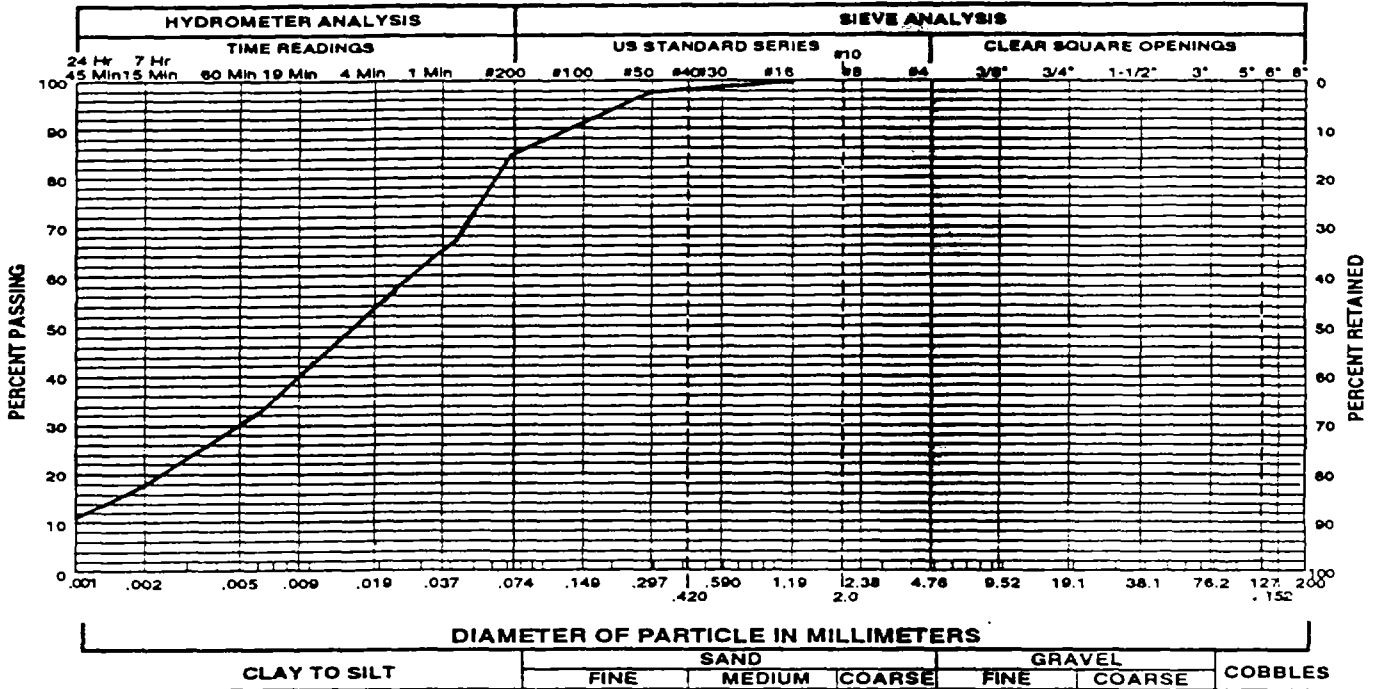
October 21, 1993

SAMPLE IDENTIFICATION		ATTERBERG LIMITS		UNIFIED SOIL CLASSIFICATION
		LIQUID LIMIT (%)	PLASTICITY INDEX (%)	
24	S-107-93,S-2 @10-12'	35	17	Lean Clay w/Sand (CL)
25	S-107-93,S-3 @15-17'	27	6	Silty-Clay w/Sand (CL-ML)
26	S-107-93,S-5 @25-27'	32	7	Silty-Clay (CL-ML)
27*	S-107-93, @47-48'	-	-	-
28	S-106-93,S-1 @5-7'	39	17	Lean Clay (CL)
29	S-106-93,S-7 @35-36.5'	36	18	Lean Clay (CL)
30	S-106-93,S-9 @45-47'	23	8	Poorly Graded Gravel w/Clay & Sand (GP-GC)

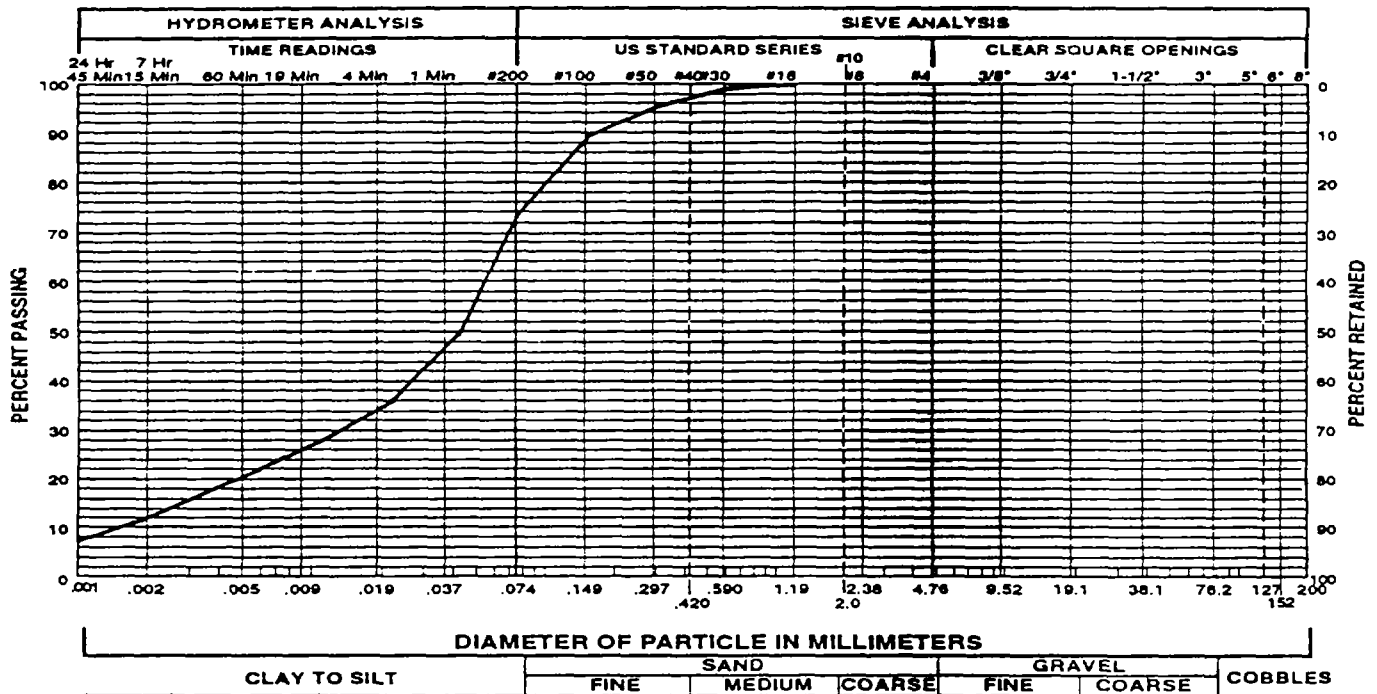
HYDRAULIC CONDUCTIVITY TEST RESULTS

*Sample No. S-107-93 @ 47-48' $k = 4.5 \times 10^{-6}$ cm/sec

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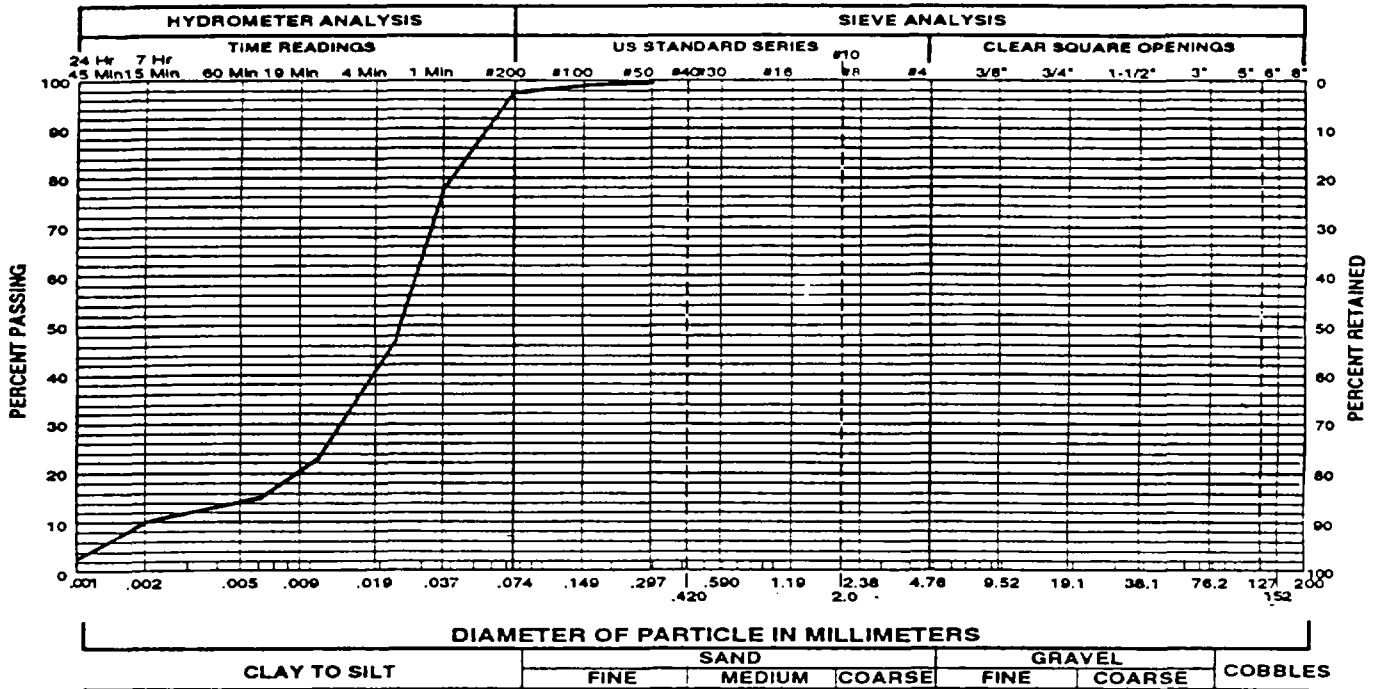


Gravel 0 % Sand 15 % Silt and Clay 85 %
 Liquid Limit 35 % Plasticity Index 17 %
 Sample of Lean Clay w/Sand (CL) From S-107-93, S-2 @ 10-12'

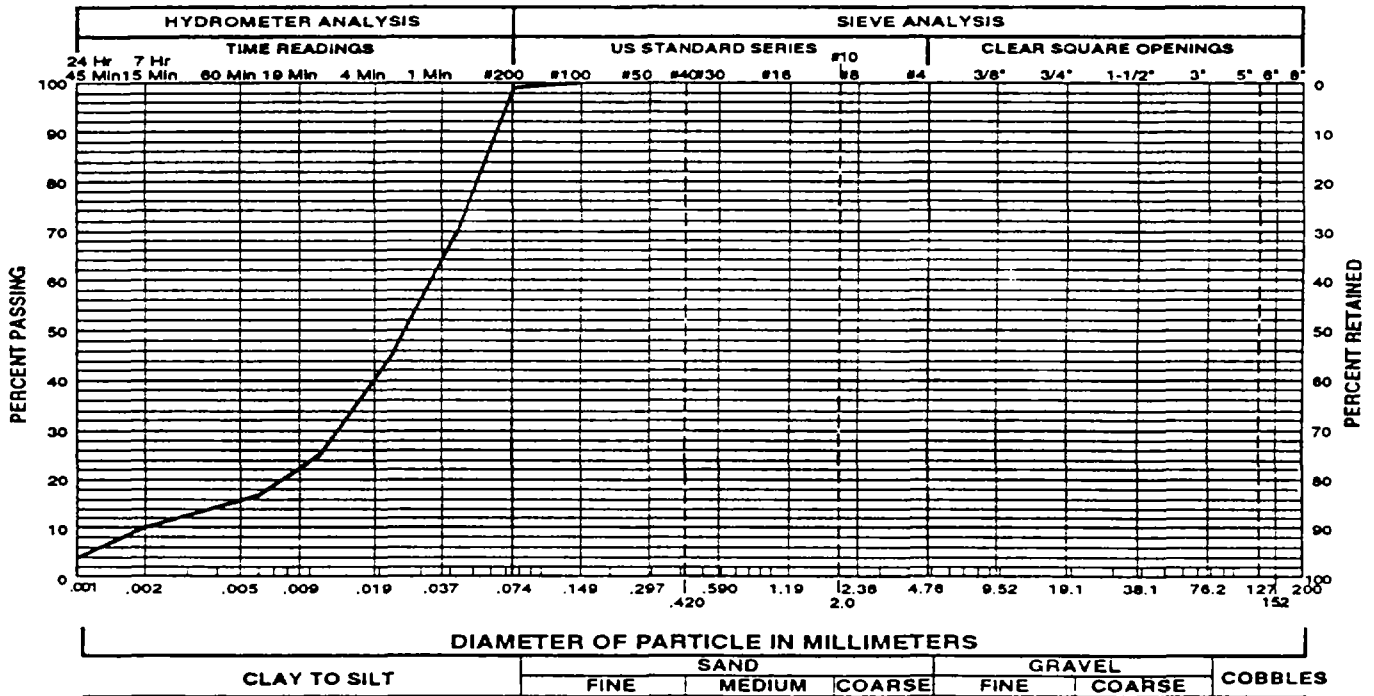


Gravel 0 % Sand 27 % Silt and Clay 73 %
 Liquid Limit 27 % Plasticity Index 6 %
 Sample of Silty Clay w/Sand (CI-ML) From S-107-93, S-3 @ 15-17'

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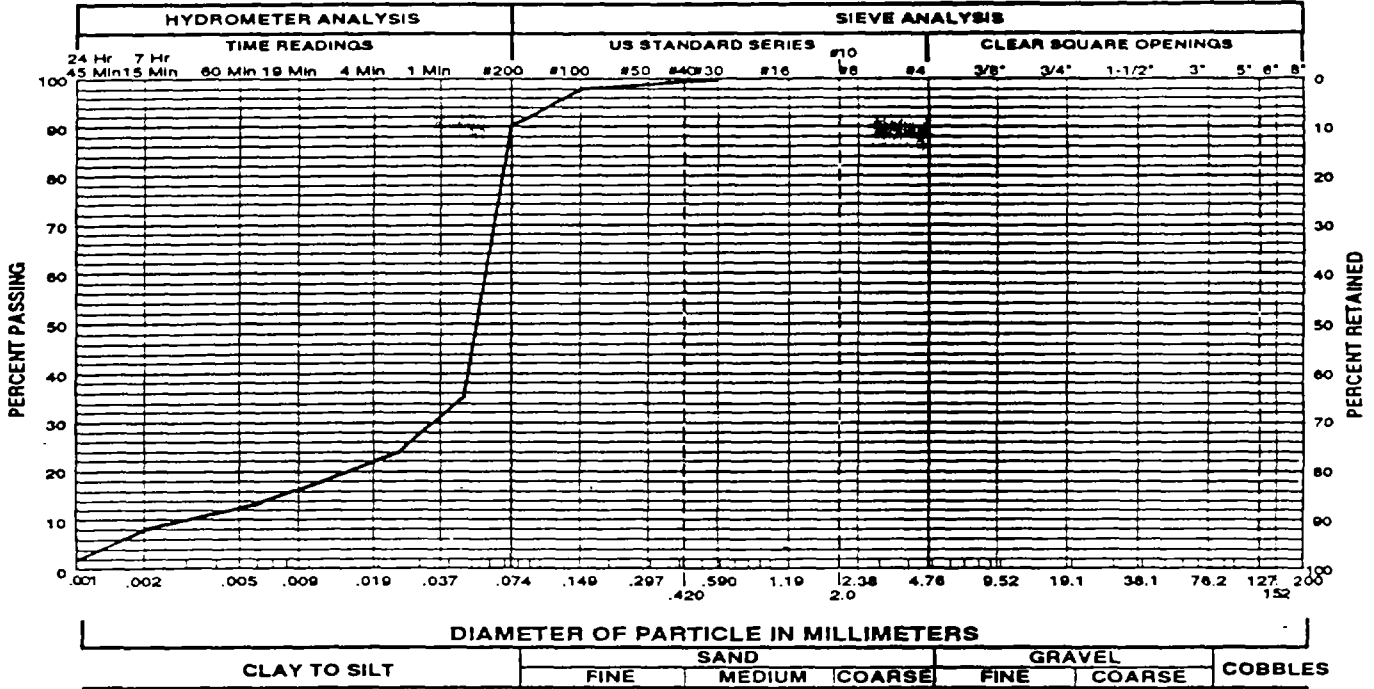


Gravel 0 % Sand 2 % Silt and Clay 98 %
 Liquid Limit 32 % Plasticity Index 7 %
 Sample of Silty Clay (CL-ML) From S-107-93, S-5 @ 25-27'

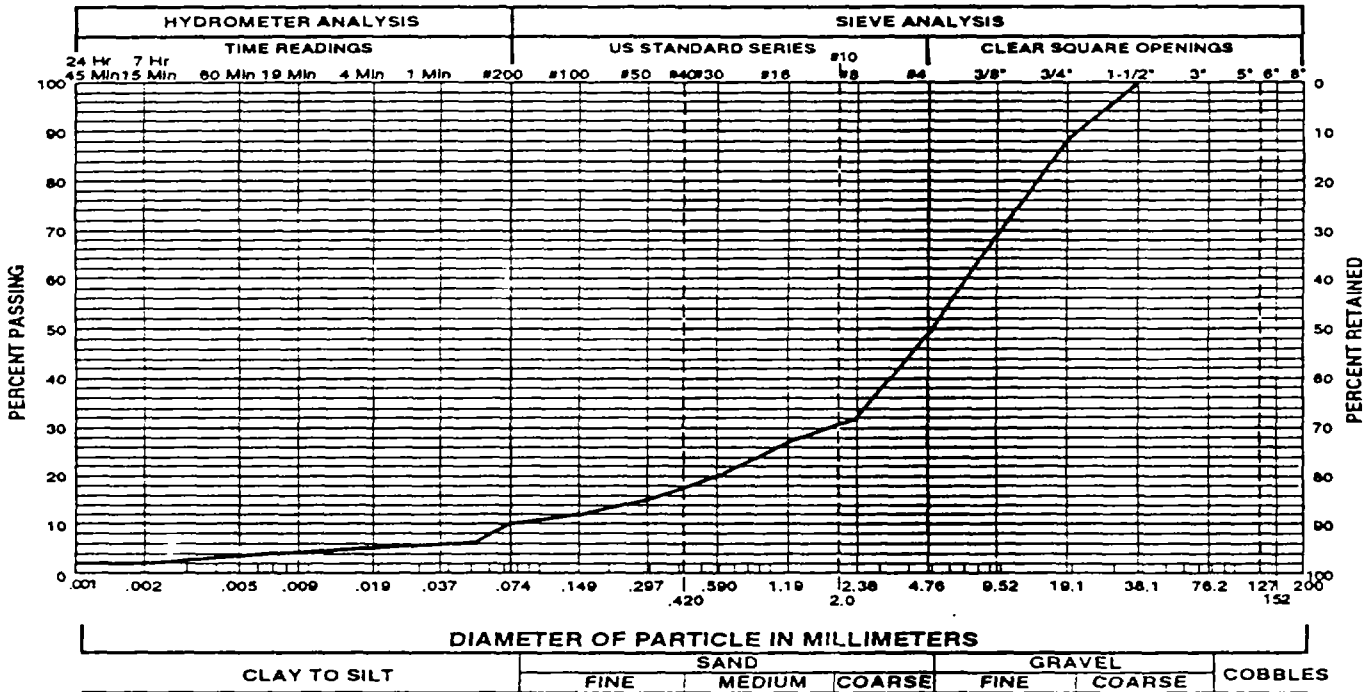


Gravel 0 % Sand 1 % Silt and Clay 99 %
 Liquid Limit 39 % Plasticity Index 17 %
 Sample of Lean Clay (CL) From S-106-93, S-1 @ 5-7'

Applied Geotechnical Engineering Consultants, Inc.



Gravel 0 % Sand 10 % Silt and Clay 90 %
 Liquid Limit 36 % Plasticity Index 18 %
 Sample of Lean Clay (CL) From S-106-93, S-7 @ 35-36.5'



Gravel 51 % Sand 39 % Silt and Clay 10 %
 Liquid Limit 23 % Plasticity Index 8 %
 Sample of Poorly Graded Gravel w/Clay and Sand (GP-GC) From S-106-93, S-9 @ 45-47'

Project No. 26593

GRADATION TEST RESULTS

C-549

Figure 15

Glossary of Abbreviations and Acronyms

Bkg.	Background
CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
E	East
ft.	Feet
g	grams
GM	Silty gravels, poorly graded gravel-sand-silt mixtures.
GP	Poorly graded gravels, gravel-sand mixtures; little or no fines.
GW	Well graded gravels, gravel-sand mixtures; little or no fines.
HNu	Brand name of Photoionization Detector
hr.	Hour
I.D.	Inner diameter
in.	Inch
LL	Liquid Limit Test
ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with low plasticity.
N	North
N/A	Not applicable
NE	Northeast
No.	Number
NW	Northwest
O.D.	Outer diameter
PL	Plastic Limit Test
ppm	Parts per million
PTS	Physical Test Soils
S	South
SE	Southeast
SM	Silty sands, poorly graded sand-silt mixtures.
SP	Poorly graded sands, gravelly sands; little or no fines.
STEAD	Tooele Army Depot-South Area (as referenced on Physical Test Data Sheets)
SW	Well graded sands, gravelly sands; little or no fines.
SW	Southwest
T.D.	Total Depth
TEAD-S	Tooele Army Depot-South Area (as referenced on Boring Logs)
W	West
Wt.	Weight

Soil Fluorescence Data

Tooele Army Depot-South Area Fuel Spill Samples Fluorescence Tests

Sample Number	Depth	Without Solvent	With Solvent
13-FS-01	1'-2'	None	None
	4'-5'	None	None
	8'-9'	None	Very pale yellow
	9'-10'	None	None
13-FS-02	1'-2'	None	Pale yellow
	4'-5'	None	None
	8'-9'	None, except calcite grains	None
	9'-10'	Purple	Pale purple
13-FS-03	1'-2'	None	None
	4'-5'	None	None
	8'-9'	Pale yellow and purple	Yellowish-purple
	9'-10'	Pale yellow and purple	Yellowish-purple
13-FS-04	1'-2'	None	Pale yellow
	4'-5'	None	None
	8'-9'	Light spotty yellow and purple	Pale yellow
	9'-10'	Light purple	Pale bluish yellow
13-FS-05	1'-2'	None	Bright yellow
	4'-5'	None	Moderately yellow
	8'-9'	Light purple	Pale yellow-purple
	9'-10'	Light purple	Pale yellow-purple
13-FS-06	1'-2'	None	None
	4'-5'	None	None
	8'-8.3'	Slight purple	Pale yellow
	10'-11'	None	Pale bluish-purple
13-FS-07	1'-2'	None	Pale yellow
	4'-5'	None	Very pale yellow
	8'-10'	Very light purple	Pale yellow-blue

Tooele Army Depot-South Area Fuel Spill Samples Fluorescence Tests (continued)

Sample Number	Depth	Without Solvent	With Solvent
13-FS-08	1'-2'	None	Yellow
	4'-5'	None	None
	8'-9'	None	None
	9'-10'	None	None
13-FS-09	1'-2'	None	None
	4'-5'	None, except calcite grains	Pale yellow
	8'-9'	None	None
	9'-10'	Very pale purple	Trace yellow-purple
13-FS-10	0-1'	None	None
	4'-5'	None	Very pale yellow
	8'-9'	None	Very pale yellow
	9'-10'	Trace yellow, spotty fluorescence	
13-FS-11	Omitted		
13-FS-12	2'-3'	None	Pale yellow
	4'-5'	None	Very pale yellow
	8'-9'	None	Yellow blue
	9'-10'	None	Light purple
13-FS-13	2'-3'	None	Pale yellow
	4'-5'	None	None
	8'-9'	None	Yellow
	9'-10'	Very slight purple	Pale yellow blue
13-FS-14	2'-3'	None	None
	4'-5'	None	None
	8'-9'	None	Yellow
	9'-10'	Slight purple	Yellow purple
13-FS-15	1'-2'	None	None
	4'-5'	None	None
	8'-9'	None	Yellow

Tooele Army Depot-South Area Fuel Spill Samples Fluorescence Tests (continued)

Sample Number	Depth	Without Solvent	With Solvent
13-FS-15	9'-10'	Slight purple	Yellow-purple
13-FS-17	Omitted		
13-FS-18	1'-2'	None	None
	4'-5'	None	None
	8'-9'	Moderate purple	Yellow
	9'-10'	Moderate purple	Yellow
13-FS-19	1'-2'	None	Slight yellow
	4'-5'	None	None
	8'-10'	None	Moderately yellow
13-FS-20	1'-2'	None	Slight yellow
	4'-5'	None	None
	8'-9'	Purple	Moderately purple and yellow
	9'-10'	Purple	Moderately purple and yellow
13-FS-21	2'-3'	--	--
	4'-6'	None	None
	8'-9'	Purple	Slight yellow
	9'-10'	Purple	Slight yellow
13-FS-22	1'-2'	None	Pale yellow
	4'-5'	None	Pale yellow
	8'-9'	Slightly purple	Pale yellow
	9'-10'	Purple-yellow	Bright yellow-blue
13-FS-23	2'-3'	None	Slight yellow
	4'-6'	None	None
	8'-9'	Purple	Purple-yellow
	9'-10'	Purple	Purple-yellow

Tooele Army Depot-South Area Fuel Spill Samples Fluorescence Tests (continued)

Sample Number	Depth	Without Solvent	With Solvent
13-FS-24	1'-2'	None	None
	4'-5'	None	None
	8'-9'	None	None (trace of calcite)
	9'-10'	None	None
13FS-25	1'-2'	None	Slight yellow
	4'-5'	None	None
	8'-9'	None	None
	9'-10'	None	None
13-PP-01	0'-2'	None	None
	4'-6'	None	None
	8'-10'	None	Very slight yellow
13-PP-02	0'-2'	None	None
	4'-6'	None	None
	8'-10'	None	None
13-PP-03	1'-2'	None	None
	4'-6'	None	None
	8'-10'	None	None
S-87-91	2'-4'	None	Yellow
	4'-6'	None	None
	8'-10'	None	None
S-88-91	2'-4'	Trace calcite, otherwise none	Very pale yellow
	4'-6'	Trace calcite, otherwise none	Bright yellow
Motor Oil	10W-30W	Bright-yellow blue	Pale yellow

