Appendix 4

Applied Science & Technology, Inc. 9404 Maltby Drive Brighton, MI 48116

State County Town/Range Section	Michigan Jackson T2S, R3E	Site Address Aggregate Industries Loveland Road Waterloo Township, MI	Boring # Well # Project # Date:	MW-1 5095 8/19/02
Drilled by Tech/Geol Method Grout Developed	Cook Drilling Allison Jerris Drill Rig	CASING DATA Diameter Length Type	WELL LOCAT	ION
Well Yield Miss Dig # Weather WATER 1: From G L From TOC	EVELS	SCREEN DATA	DISPOSAL MET	HOD

			Split Spoon Date						
Dept From	h To	Description	Depth	96	OVAPED	Blow Cats Per 2 Feet			
9.5'	11.5'	sand, brown, coarse, w/gravel,		40		7,14,13,13			
		saturated	•						
14.5'	16.5'	sand, brown, medium to coarse,		80		11,12,17,12			
		w/rocks, saturated							
19.5'	20.5'	sand with silt, gray, moist		80		3,3,3,5			
24.5'	26.5'	sand, brown, coarse, w/silt, brown		20					
		saturated							
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^{* =} lab samples

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Applied Science & Technology, Inc.

9404 Maltby Drive Brighton, MI 48116

State County Town/Range Section	Michigan Jackson T2S, R2E	Aggregate Industries Loveland Road Waterloo Township, MI	iess	Boring # Well # Project # Date:	MW-2 5095 8/20/02
Drilled by Tech/Geol Method Grout	Cook Drilling Allison Jerris 4.25" HSA	Diameter Length Type	ING DATPA	WELL BOO	ATION
Developed Well Yield Miss Dig # Weather			SCREEN DATA Mfgr Slot Mtri	DISPOSALA	METHOD
WATER From G L From TOC	ÎEVAUS	Ground Of TOC	ength From		

				Spli	espoonibale.	
Dept	h	Description		%	OVA:PID	Elewichis
From			Depth	Recid	Voes(BBM)	Parz Feet
, 0	8	Sand, fine, It brown, few pebbles				
9.5'	11.5'	sandy clay, moist, w/pebbles		30		2,1,1,1
14.5'	16.5'	sand, brown, coarse, saturated		100		3,3,6,5
19.5'	21.5'	sand, coarse, saturated, w/gravel		100		
24.5'	26.5'	sand with silt, pebbles, saturated		100		5,6,6,7
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* = lab samples

Applied Science & Technology, Inc. 9404 Maltby Drive Brighton, MI 48116



State County Town/Range Section	Michigan Jackson T2S, R2E 12	Aggregate Industries Loveland Road Waterloo Township, MI	Boring # _ Well # _ Project # _ Date: _	MW-3 5095 8/21/02
Drilled by Tech/Geol Method Grout Developed	Cook Drilling Tracy Johns 4.25" HSA	CASINGDATA Diameter Length Type	WELLOC	AGION
Well Yield Miss Dig # Weather WATER: From G L From TOC	EVELS :	SCREENDATA Mfgr Slot Mtrl ELEVATIONS Length Ground From Of TOC To	DISPOSALI	METHOD

			Split Spoon Data						
Dep		Description		%		Blow Chis			
- Flori			Depth	1766.0	VOSS (PPM)				
4.5'	6.5'	sand, lt brown, w/gravel				7,6,4,3			
	<u> </u>	sand, gray, fine at top							
9.5'	11.5'	sand, brown, fine, w/pebbles				8,8,6,4			
13.5'	15.5'	sand, it brown, coarse,		· ·		3,4,3,2			
		w/pebbles, saturated							
18.5'	20.5'	sand, very coarse, pebbles, cobbles				5,3,4,3			
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r						<u> </u>			
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* = lab samples

Applied Science & Technology, Inc.

9404 Maltby Drive Brighton, MI 48116

From TOC

Michigan	Sife	Address:	Boring#	
	processor (1997)		Well#	MW-4
			Project#	5095
		1		8/19/02
12	Waterloo Township, M			
Cook Drilling		CASING DATA	WELLLOC	ATION
Allison Jerris				
4.25" HSA				
	Type			
	·····			
		SCREEN DATA	DISPOSALI	VETHOD
		Mtrl		
LEVELS	ELEVATIONS	Length		
	Ground	From		
·····	Of TOC	То		
	Allison Jerris	Jackson T2S, R2E Loveland Road Waterloo Township, M Cook Drilling Allison Jerris 4.25" HSA Length Type EVELS EVELS Aggregate Industries Loveland Road Waterloo Township, M Table Parallel P	Aggregate Industries	SCREEN DATA DISPOSAL

			Split Spoon Data					
Dept		Description	Depth	% Rec'd	OVA-PID VOC's (PPM)	Blow-Crits Per 2 Feet		
From	To 5.5'	sand, brown, fine, w/pebbles		80		3,2,3,2		
4.5'	6.5'	sand, reddish brown, medium to						
5.5'	0.5	coarse, w/pebbles						
	11.5'	sand, light brown w/black mineral chips,		20		3,3,4,3		
	11.5	coarse, w/gravel						
4 4 171	40.51	sand, brown and black, coarse		20		3,4,4,3		
14.5'	16.5'	sand, brown and black, coarse, moist				4,5,6,5		
19.5'	21.5'	sand, brown and black, coarse, moist				11,11,10,9		
24.5'	26.5'	sand, light brown, coarse, w/rocks		5		3,4,11,7		
29.5'	31.5'	w/sand, ltight brown, medium						
				·				
·		lenses, some clay				11,47,18,19		
34.5'	36.5'	sand, black and brown, coarse,						
	10.51	dry, w/cobbles		80		6,6,10,11		
39.5'	40.5'	sand, coarse, saturated						
40.5'	41'	sandy clay, brown, w/sand, reddish						
		brown lenses, moist						
41'	41.5'	silty clay, gray, dry, w/pebbles		100				
44.5'	47'	sand, gray, fine, w/sand, coarse		100				
		lenses, saturated						
		,						
					-			
						 		
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* = lab samples

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Applied Science & Technology, Inc. 9404 Maltby Drive Brighton, MI 48116



State County Town/Range Section	Michigan Jackson T2S, R2E 12	Aggregate Industries Loveland Road Waterloo Township, MI	Boring # Well #_ Project #_ Date:	MW-5 5095 8/20/02
Drilled by Tech/Geol Method Grout Developed	Cook Drilling Allison Jerris 4.25" HSA	Diameter Length Type	WELL10	CATION
Well Yield Miss Dig # Weather WATER From G L From TOC	SEVELS	SCREEN DATA Mfgr Slot Mtrl ELEVATIONS Length Ground From Of TOC To	DISPOSAL	METHOD :

				Spilit	Spoon Data	
Dep	oth	Description		% -	OVA-PID -	Elow Cints
Frem			Depin	Recd	Vogerenn	Per 2 Feet
1 0	14	Sand and gravel, coarse, dry				10.0.44.40
14.5'	16.5'	sand, coarse, rocks		15		10,9,11,12
24.5'	26.5'	sand, light brown, fine, dry		90		9,16,20,19
34.5'	36.5'	sand, multicolored, medium,		50		8,9,10,6
		wet, w/rocks				7.0.40.00
39.5'	40.5'	sand, brown, medium, saturated		100		7,8,18,22
40.5'	41.5'	sand, gray, fine, saturated				
1.5.5						
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* = lab samples

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BORING No.	C-11-05
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SHEET 1 OF 3

BORING LOG

CLIENT	Aggregate Industries Chelsea, Michigan	
PROJECT	Sand and Gravel Exploration in Chelsea, MI	JOB No. 133873
		LOCATION OF BORING : As Directed
GROUND EL	EV. METHOD SONIC	
DRILLING C	OMMENTS	DATE STARTED 3/21/2005
***************************************		DATE ENDED 3/21/2005
		Dell Eps JK TW SW

						, ,		
_				DI OLUG OLI		S	CLASSIFICATION OF MATERIAL Major Component Torm	≿
DEPTH, FT	SAMPLE NO.	DEPT	'H	BLOWS ON SAMPLER	DEPTH OF STRATUM, FT	GRAPHICS	Major Component: Minor Component Term Gravel Trace 1-10%	SPT "N" OR RECOVERY
🛱	₽S	OF		PER 6"	記る品	다 다	Sand Some 11-35%	SPT "N" OR ECOVER
	SS	SAMPLE	E, FT	INTERVAL	0 \$	S.P.	Silt And 36-50%	S S
		FROM	то		ςς		Clay	
						٠.٠.	Brown Sand and gravel	
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2-					1	Ç		
3-]			
3-								
4-			-		4.0	:0.	Brown Sand and gravel with cobbles	
-					1	V	Drown Janu draver with coopies	
5-				***************************************]	39		
6-]	. p		
-						0,00		
7-					-	:0:.		-
-								
8-]			
9-					9.0			
-			-		-	0	Brown Sand and gravel, some cobbles	
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					1	'C'		
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GROUND WATER OBSERVATIONS

INITIAL AT COMPLETION

OTHER

DATE ▼ 3/21/2005 C-SHELBY TUBE

DEPTH

A-SPLIT SPOON E-AUGER CUTTINGS

 $\mathsf{D}\!-\!\mathsf{SONIC}$



BORING No. C-1-05

REPORT No. 133873 SHEET 2 OF **CLASSIFICATION OF MATERIAL** DEPTH OF STRATUM, FT SPT "N" OR RECOVERY GRAPHICS DEPTH, FT BLOWS ON Major Component: Minor Component Term SAMPLE NO. DEPTH SAMPLER Gravel Trace 1-10% OF Some 11-35% Sand PER 6 IN SAMPLE, FT Silt And 36-50% INTERVAL Clay FROM TO 22 23 24 25 26 27-28 29 30 31 32 33 34 35 36 37.0 37 Brown, gravel 38 39.0 39 Brown Sand, traces of cobbles 40 41 42 43 44 45 46 47 48 49 50 A-SPLIT SPOON E-AUGER CUTTINGS DATE DEPTH BOWSER MORNER $\sqrt{3/21/2005}$ B-ROCK CORE GROUND INITIAL ¥ 3/21/2005 C-SHELBY TUBE WATER AT COMPLETION OBSERVATIONS OTHER D-SONIC

C-1-05

REPORT No. 133873

SHEET <u>3</u> OF <u>3</u>

51	ОЕРТН, FT	SAMPLE NO.	DEF O SAMP FROM	F	BLOWS ON SAMPLER PER 6 IN INTERVAL	DEPTH OF STRATUM, FT	GRAPHICS	CLASSIFICATION OF MATERIAL Major Component: Minor Component Term Gravel Trace 1-10% Sand Some 11-35% Silt And 36-50% Clay	SPT "N" OR RECOVERY
56 Gray silty Clay, some sand, trace cobbles	52 – 53 – 54 –								
59.0 BOB 59.0'	56 - 57 - 57 -								

GROUND WATER

OBSERVATIONS

INITIAL AT COMPLETION

OTHER

A — SPLIT SPOON E — AUGER CUTTINGS B — ROCK CORE

▼ 3/21/2005 B - ROCK CORE

▼ 3/21/2005 C—SHELBY TUBE ▼ D—SONIC



BORING No	C-	2-05	
SHEET	_1_	OF	3_

CLIENT	Aggregate Industries Chelsea, Michigan	
PROJECT	Sand and Gravel Exploration in Chelsea, MI	JOB No. <u>133873</u>
		LOCATION OF BORING : As Directed
GROUND E	LEV. METHOD SONIC	
DRILLING C	COMMENTS	DATE STARTED 3/21/2005
		DATE ENDED 3/21/2005
		DRILLERS JK. TW. SW

DEPTH, FT	SAMPLE NO.	DEF O SAMP FROM	E, FT	BLOWS ON SAMPLER PER 6" INTERVAL	DEPTH OF STRATUM, FT		CLASSIFICATION OF MATERIAL Major Component: Minor Component Term Gravel Trace 1-10% Sand Some 11-35% Silt And 36-50% Clay	SPT "N" OR RECOVERY
1- 2- 3- 4- 5- 6- 7- 8- 10- 11- 12- 13- 14- 15- 16- 17- 18- 19- 20-					9.0		(Cobbles in Bit) Brown Sand and gravel w/cobbles	
GROU WATE OBSE	R		AT COM	DE INITIAL IPLETION OTHER	PTH	<u>*</u>	3/21/2005 C-SHELBY TUBE MOF	VSER RNER



C-2-05

REPORT No. 133873 CLASSIFICATION OF MATERIAL

SHEET 2 OF 3 Minor Component Term

DEPTH, FT	SAMPLE NO.	DEPTH OF SAMPLE, FT FROM TO	BLOWS ON SAMPLER PER 6 IN INTERVAL	DEPTH OF STRATUM, F	GRAPHICS	Major Component: Gravel Sand Silt Clay	Minor Component Term Trace 1-10% Some 11-35% And 36-50%	SPT "N" OR RECOVERY
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WATER

INITIAL

GROUND AT COMPLETION _____ OTHER OBSERVATIONS

▼ 3/21/2005 C—SHELBY TUBE D—SONIC D-SONIC



C-2-05

REPORT No. 133873

SHEET <u>3</u> OF <u>3</u>

DEPTH OF SAMPLER PER 6 IN SAMPLE, FT FROM TO TO SAMPLER To To Sand Some 11-35% Sand Some 11-35% And 36-50% Silt Clay Sand Some 11-35% Some 11-35% Silt Clay Sand Some 11-35%					 -		CLASSIFICATION		
51	ᇤ	Щ	DEPTH		1 2 E	8		Minor Component Term	ER N
51	王	₽ŏ	OF		면유 달	됩		Some 11-35%	F 8.9
51	ם	SAI	SAMPLE, FT	1	<u>a</u> ₹	25		And 36-50%	R C
51				MILITORE	ST			7110 00 00 70	I LE
51						6.59			
53 - 54.0 54.0 Gray silty Clay, some sand 55 - 56 - 57 - 57.0 Brown gray Sandy silt 58 - 59.0 59.0	51-	ļ			-	1000			<u> </u>
53	-				1)			
54	52-								
54	53-					0			
55	-	-			54.0	9.0			
55 56 57.0 57.0 Brown gray Sandy silt 58 59.0	54-				54.0		Grav silty Clav. some sand		
56 57 57.0 Brown gray Sandy silt 58 59.0 59.0	EE								
57 57.0 Brown gray Sandy silt 58 59.0 59.0	55-								
58 Brown gray Sandy silt 58 59.0	56-				-				
58 Brown gray Sandy silt 58 59.0					57.0				
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GROUND WATER OBSERVATIONS

INITIAL AT COMPLETION OTHER

DATE A — SPLIT SPOON

▼ 3/21/2005 B — ROCK CORE ▼ 3/21/2005 C-SHELBY TUBE

DEPTH

A-SPLIT SPOON E-AUGER CUTTINGS

D-SONIC



BORING No	C-3	-05	
SHEET	1	OF	2

CLIENT	Aggregate Industries Chelsea, Michigan	
PROJECT	Sand and Gravel Exploration in Chelsea, MI	JOB No. <u>133873</u>
		LOCATION OF BORING : As Directed
GROUND E	ELEV. METHOD SONIC COMMENTS	DATE STARTED 3/21/2005 DATE ENDED 3/21/2005
		- DRILEDS JK TW SW

						DRILLERS DIG 177, OTT	
						CLASSIFICATION OF MATERIAL	1
DEPTH, FT	щ	DEPTH	BLOWS ON	DEPTH OF STRATUM, FT	GRAPHICS	Major Component: Minor Componer Gravel Trace 1-10	nt Term 9% 5% 9%
Ę	SAMPLE NO.	OF	SAMPLER	DEPTH OF RATUM,	프	Sand Some 11-35	0% 5%
H	AN N	SAMPLE, FT	PER 6"	₩ ₹	Æ	Silt And 36-50	50%
۵	0,		INTERVAL	ST	ဖ	Clay	,,,,
		FROM TO		+		Brown Sand & Gravel	
				1.0	000	Brown Sand & Gravei	
1 -			-	1.0	0, 0	Brown Sand & gravel w/cobbles	
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20-	-	+		20.0		Gray Sandy Silt, some gravel and trace of cobbles	
	-			-		Gray Sandy Silt, Some graver and trace of couples	Association in the second
			1	EPTH	<u> </u>	DATE A-SPLIT SPOON E-AUGER CUTTINGS	Bows

GROUND WATER **OBSERVATIONS**

INITIAL AT COMPLETION _ OTHER _

DATE ▼ 3/21/2005 B - ROCK CORE
▼ 3/21/2005 C - SHELBY TUBE

▼ D--SONIC



C-3-05 BORING No.

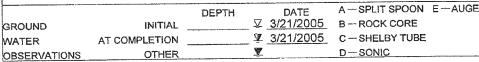
REPORT No. 133873

SHEET 2 OF 2

						CLASSIFICATION OF MATERIAL	
ļ.	10	DEPTH	BLOWS ON	DEPTH OF STRATUM, FT	GRAPHICS	Major Component: Minor Component Term Gravel Trace 1-10%	SPT "N" OR RECOVERY
ОЕРТН, FT	SAMPLE NO.	OF	SAMPLER	DEPTH OF RATUM,	Ī	Gravel Trace 1-10%	SPT "N" OR SCOVER
Ы	ŞΣ	1	PER 6 IN	Aoe	\$	Sand Some 11-35%	g 2
씸	Ŝ	SAMPLE, FT	INTERVAL	I K	Ö	Silt And 36-50%	8
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A-SPLIT SPOON E-AUGER CUTTINGS







BORING No.	Ç-	4-05	
SHEET	1_	OF	_3_

CLIENT	Aggregate Industries Chelsea, Michigan	
PROJECT	Sand and Gravel Exploration in Chelsea, MI	JOB No. 133873
		LOCATION OF BORING : As Directed
GROUND EL		DATE STARTED 3/22/2005
		DATE ENDED 3/23/2005
****		DRILLERS JK, TW, SW

				Τ,	T	CLASSIFICATION OF MATERIAL	
рертн, ғт	SAMPLE NO.	DEPTH OF	BLOWS ON SAMPLER	DEPTH OF STRATUM, FT	GRAPHICS	Major Component: Minor Component Term Gravel Trace 1-10% Sand Some 11-35%	SPT "N" OR
Ë	SAI	SAMPLE, FT	PER 6" INTERVAL	IRA TRA	GRA	Silt And 36-50%	Ry .
		FROM TO		Ω,		Clay	
_				4	Ġ.	Sand and gravel	
1-					.5.		
2-				2.0	.80°	Brown Sand and gravel, trace of cobbles	
3-					.0.	Didwir Gaild and graver, hade or cossics	
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GROUND WATER OBSERVATIONS

<u>▼ 3/23/2005</u> C—SHELBY TUBE D-SONIC



C=4-05

REPORT No. 133873

___ SHEET 2 OF 3

				<u> </u>	CLASSIFICATION OF MATERIAL	T
БЕРТН, FT	ш	DEPTH	BLOWS ON	DEPTH OF STRATUM, FT GRAPHICS	Major Component: Minor Component Term Gravel Trace 1-10% Sand Some 11-35% Silt And 36-50%	SPT "N" OR
Ĭ	SAMPLE NO.	OF	SAMPLER	DEPTH OF RATUM,	Gravel Trace 1-10%	SPT "N" OR
ΡŢ	₹ž		PER 6 IN	A A Sil	Sand Some 11-35%	g o
DE	Ś	SAMPLE, F		F F F	Silt And 36-50%	"
		FROM TO)		Clay	
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50-				- 1	o 	<u> </u>
		<u> </u>		DEPTH	DATE A SPLIT SPOON E AUGER CUTTINGS	
ROU	IND			16.0 ∑	2 3/22/2005 B-ROCK CORE BOW	VSE
ATE		AT (COMPLETION		2 3/23/2005 C SHELBY TUBE MOR	₹ÑĒ
	RVATI		OTHER	T ¥		

BORING No. C-4-05

						REPORT No. 133873 SHEET 3	OF <u>3</u>
рертн, гт	SAMPLE NO.	DEPTH OF SAMPLE, FT FROM TO	BLOWS ON SAMPLER PER 6 IN INTERVAL	DEPTH OF STRATUM, FT		CLASSIFICATION OF MATERIAL Major Component: Minor Component Term Gravel Trace 1-10% Sand Some 11-35% Silt And 36-50% Clay	SPT "N" OR RECOVERY
51-					0.59		
52-]			
+					Ċ		
53				1	0		
54-					0.		
55					0.		
56					, p.		-
57					0		
58-				1			
59				59.0			
60						Brown gray silty Sand	
61				-			
-							
62							
63				1			
64-							
65 -	****						
66							
67-							
68 -							
69-				-			
70-]			
4				71.0			
71 -						Gray silty Clay, some sand	
72				-			
73-				1			
74				-			
7 5-				1			
76-				1			
77 -				1			
78-							
-				79.0			
79-			DE	PTH		BOB 79.0 DATE A—SPLIT SPOON E—AUGER CUTTINGS	
ROU			INITIAL16	3.0			WSER RNER
ATE	R RVATIO		OTHER	Γ	蒸 ⊼ ~	3/23/2005 C—SHELBY TUBE MOI	RNER

ORING No.	C-5-05
	777-07-17-18-18-18-18-18-18-18-18-18-18-18-18-18-

енест	1	OF	2
SHEET		OΓ	

CLIENT	Aggregate Industries Chelsea, Michigan	
PROJECT	Sand and Gravel Exploration in Chelsea, MI	JOB No. <u>133873</u>
		LOCATION OF BORING : As Directed
GROUND EL	EV. METHOD SONIC	
DRILLING C	OMMENTS	DATE STARTED 3/23/2005
		DATE ENDED 3/23/2005
		DRILLERS JK, TW, SW

Т				T .		CLASSIFICATION OF MATERIAL	
-		DEPTH	BLOWS ON	DEPTH OF STRATUM, FT	ιχ	Major Component: Minor Component Term Gravel Trace 1-10%	SPT "N" OR DECOVERY
ОЕРТН, FT	SAMPLE NO.		SAMPLER	DEPTH OF RATUM,	GRAPHICS	Gravel Trace 1-10%	SPT "N" OR
Ė	₹2	OF	PER 6"	呼る氏	AP	Sand Some 11-35%	1508
Ď.	S.	SAMPLE, I	T INTERVAL		쯢	Silt And 36-50%	S
L	- 1	FROM TO		E		Clay	_
		1 ICOM			۶.۰	Sand and Gravel	
_ †				1.0	8.		
1-					٠.٠ <u>٠</u>	Brown Sand and gravel, trace of cobbles	ļ
2-				_	,0,		-
-				-			
3-				-	Ċ		
				-			
4-]	200		
5-				_	0.		
"]				4	0		
6-				4	8.		-
-)		
7-				7	.0		
					0		
8-]	.0.		
9-				_	0.00		
-			·	10.0			
10-				10.0	800	Brown sandy Gravel	
-				7			
11-	-						
12-					0.0		
12				12.5	0,	D	
13-		 		13.5		Brown sand Silt	-
-				13.5		Brown fine Sand (wet)	
14-		 		1			
15-							
15-							
16-				_			-
		1		-			
17-	ļ			\dashv			
-		+		-			
18-	-	 		1	:::		
19-							
19-				_			
20-		1		_		i e	
		+		-		•	
L	<u> </u>			EPTH	0 0	DATE A - SPLIT SPOON E - AUGER CUTTINGS	

GROUND WATER **OBSERVATIONS**

AT COMPLETION

OTHER

DATE A—SPLIT SPOON

□ 3/23/2005 B—ROCK CORE
□ 3/23/2005 C—SHELBY TUBE
□ N D—SONIC



C-5-05

REPORT No. 133873 SHEET 2 OF CLASSIFICATION OF MATERIAL STRATUM, FT SPT "N" OR RECOVERY GRAPHICS Minor Component Term Major Component: BLOWS ON **DEPTH**, FT DEPTH SAMPLE NO. Trace 1-10% Some 11-35% Gravel SAMPLER OF Sand PER 6 IN SAMPLE, FT And 36-50% Silt INTERVAL Clay FROM TO 22 23 24 25 26 27 28 29 30 31 32 33.0 33-Gray Sand and gravel with silty 34 35 36 37.0 37 Gray sandy Clay with gravel 38

BOB 39.0'

D-SONIC

39.0

39-

OBSERVATIONS

OTHER

