

Appendix A Boring Logs



18912 North Creek Parkway, Suite 101
Bothell, WA 98011

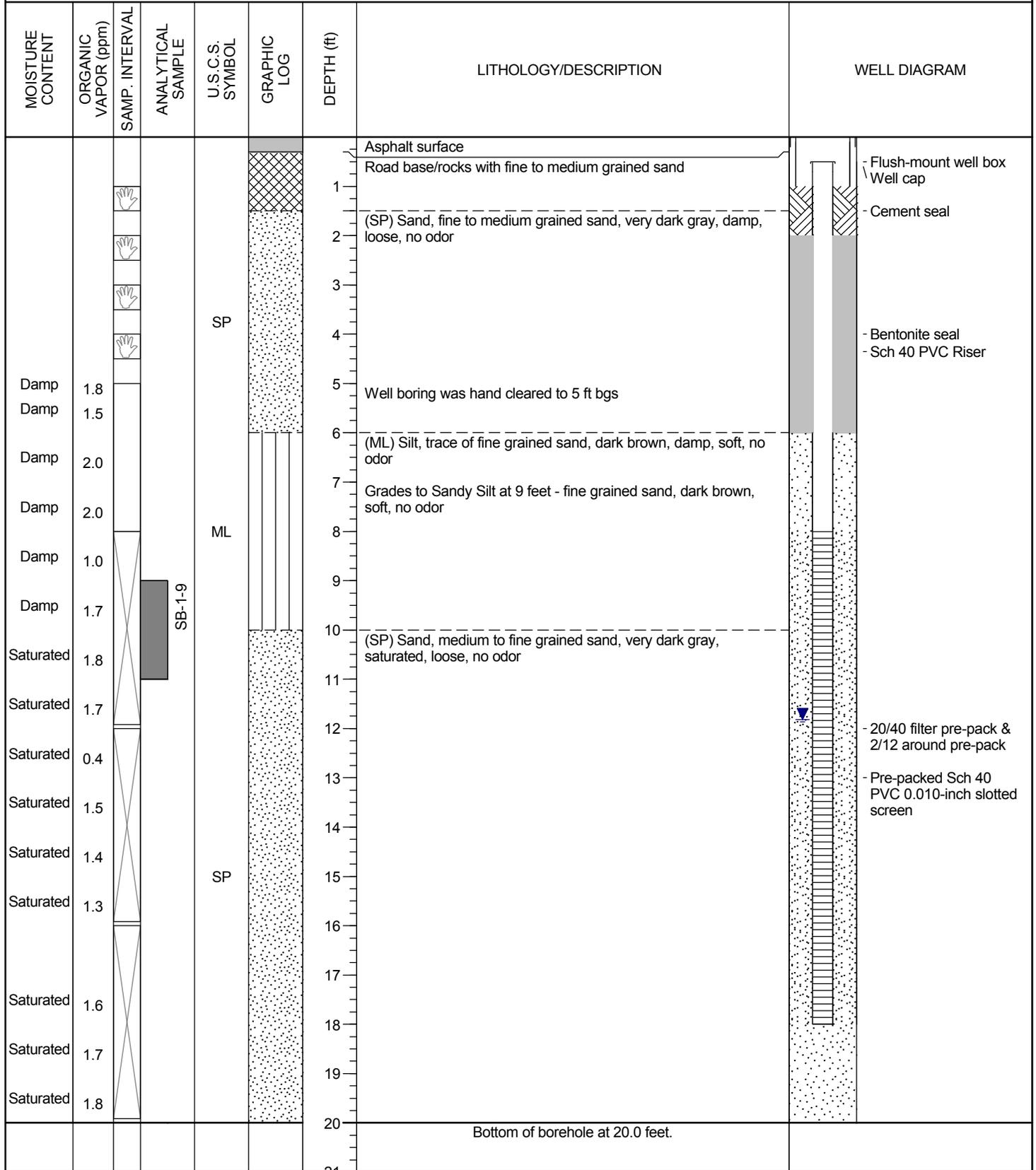
Monitoring Well: MW-1

Project: South Park Marina
Client: Washington State Dept of Ecology
Location: Seattle, Washington
Logged By: S Bloom

Date Started: 9/26/2007
Date Completed: 9/27/2007
Driller: Cascade Drilling, Inc.
Drill Method: Hand Auger/Geoprobe

Total Boring Depth: 20 ft
Hole Diameter: 3 in.
Well Depth: 18 ft
TOC Elevation: 15.43 (msl) ft

Well Diameter: 0.75 in
Well Screen: 8-18 ft
Filter Pack: 2/12 & 20/40
Well Casing: Sch 40 PVC





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Monitoring Well: MW-2

Project: South Park Marina
Client: Washington State Dept of Ecology
Location: Seattle, Washington
Logged By: S Bloom

Date Started: 9/26/2007
Date Completed: 9/28/2007
Driller: Cascade Drilling, Inc.
Drill Method: Hand Auger/Geoprobe

Total Boring Depth: 21 ft
Hole Diameter: 3 in.
Well Depth: 17 ft
TOC Elevation: 14.84 (msl) ft

Well Diameter: 0.75 in
Well Screen: 12-17 ft
Filter Pack: 2/12 & 20/40
Well Casing: Sch 40 PVC

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION	WELL DIAGRAM
Damp	1.7			SP		1	Road base/rocks with fine to medium grained sand (SP) Sand, fine to medium grained, very dark gray, damp, no odor	
Damp	2.7		2					
Damp	2.6		3					
Damp	2.4		4					
Damp	3.3		5			Well boring hand cleared to 5 ft bgs		
Damp	0.6			ML		6		- Bentonite seal - Sch 40PVC Riser
Damp	0.9		7			(ML) Sandy Silt, fine grained sand, very dark gray to very dark brown, damp, very soft/loose, no odor		
Saturated	0.9		8			Encountered water table at 8 ft bgs		
Saturated	0.4		9					
Saturated	0.6		10					
Saturated	0.6		11			(ML) Silt, very dark gray, soft, no odor, some pieces of organic material (roots/wood)		
Saturated	0.5		12					
Saturated	0.3		13			(ML) Sandy Silt, very fine to fine grained sand, very dark brown to dark gray, loose/soft, no odor		
Saturated	0.4		14					
Saturated	0.2		15					
Saturated	0.5			SM		16	(SM) Silty Sand, fine to medium grained sand, very dark gray, no odor	- 20/40 filter pre-pack & 2/12 around pre-pack - Pre-packed Sch 40 PVC 0.010-inch slotted screen
Saturated	0.1		17			(ML) Sandy Silt, fine grained sand, very dark gray, no odor		
Saturated	0.0			ML		18		
Saturated	0.0		19					
Saturated	0.1		20					
Saturated	0.1		21					
						21	Bottom of borehole at 21.0 feet.	
						22		



18912 North Creek Parkway, Suite 101
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Monitoring Well: MW-3

Project: South Park Marina
Client: Washington State Dept of Ecology
Location: Seattle, Washington
Logged By: S Bloom

Date Started: 9/26/2007
Date Completed: 9/27/2007
Driller: Cascade Drilling, Inc.
Drill Method: Hand Auger/Geoprobe

Total Boring Depth: 20 ft
Hole Diameter: 3 in.
Well Depth: 17.25 ft
TOC Elevation: 14.91 (msl) ft

Well Diameter: 0.75 in
Well Screen: 12.25-17.25 ft
Filter Pack: 2/12/ & 20/40
Well Casing: Sch 40 PVC

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION	WELL DIAGRAM
Dry	0.8					1	Road base/rocks with fine to medium grained sand	<ul style="list-style-type: none"> - Flush-mount well box - Well cap - Cement seal - Bentonite seal - 20/40 filter pre-pack & 2/12 around pre-pack - Pre-packed Sch 40 PVC 0.010-inch slotted screen
Damp	0.7					2	(SP) Sand, fine to medium grained, very dark gray, damp, loose, no odor	
Damp	0.9					3		
Damp	0.4					4	Grades to medium grained sand	
Damp	0.5			SP		5	Well Boring hand cleared to 5 ft bgs	
Saturated	2.0					6	Encountered water table at 6.5 ft bgs	
Saturated	1.9		SB-3-7			7		
Saturated	1.6					8		
Saturated	2.1					9		
Wet	1.7			ML		10	(ML) Sandy Silt, fine grained sand, very dark gray, soft, no odor	
Wet	2.2			ML		11	(ML) Silt, very dark gray, stiff, no odor, some organics (wood pieces)	
Wet	1.8					12		
Wet	2.2			ML		13	(ML) Sandy Silt, fine to very fine grained sand, dark brown, loose, no odor	
Wet	2.0		SB-3-13.5			14	(SM) Silty Sand, fine grained sand, very dark gray, loose, no odor	
Wet	2.2					15	Grain size changes to medium grained. Becomes medium dense at 15 ft bgs	
Wet	0.9			SM		17		
Wet	1.0					19		
						20	Bottom of borehole at 20.0 feet.	



18912 North Creek Parkway, Suite 101
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Boring: SB-4

Project: South Park Marina
Client: Washington State Dept of Ecology
Location: Seattle, Washington

Logged By: S Bloom
Date Started: 9/27/2007
Date Completed: 9/27/2007

Driller: Cascade Drilling, Inc.
Drill Method: Hand Auger/Geoprobe
Total Boring Depth: 20 ft

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
						0	Asphalt
						0.5	Road base/rocks, with fine to medium grained sand
						1	(SP) Sand, fine to medium grained, very dark gray, damp, loose, no odor
						2	
						3	
						4	
Damp	1.2			SP		5	Boring was hand cleared to 5 ft bgs
Damp	1.0					6	
Damp	1.6					7	
Damp	2.3					8	
Damp	2.5		SB-4-8			8.5	
						9	Encountered water table at 9 ft bgs
Saturated	2.5			ML		10	(ML) Sandy Silt, fine grained sand, olive gray, saturated, very soft, no odor
Saturated	2.7			ML		11	(ML) Silt, olive gray, grades from soft to firm, no odor
Saturated	0.7					12	(ML) Sandy Silt, fine to very fine grained sand, dark brown, very soft, no odor
Saturated	1.2			ML		13	Color changes to dark gray
Saturated	2.0					14	(SP) Sand, fine to medium grained sand, dark brown to dark gray, soft, no odor
Saturated	2.3			SP		15	
Saturated	1.3					16	
Saturated	2.2					17	(SM) Silty Sand, fine to medium grained sand, very dark brown, loose, no odor
Saturated	2.0			SM		18	
Saturated	2.0					19	(SP) Sand, fine to medium grained sand, very dark gray, loose, no odor.
Saturated	1.5			SP		20	
						20	Bottom of borehole at 20.0 feet.



18912 North Creek Parkway, Suite 101
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Boring: SB-5

Project: South Park Marina
Client: Washington State Dept of Ecology
Location: Seattle, Washington

Logged By: S Bloom
Date Started: 9/27/2007
Date Completed: 9/27/2007

Driller: Cascade Drilling, Inc.
Drill Method: Hand Auger/Geoprobe
Total Boring Depth: 16 ft

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
						0	Asphalt
						0.5	Road base/rocks, fine to medium grained SAND, damp, loose, no odor
						1	(SP) Sand, fine to medium grained, damp, loose, no odor
						2	
						3	
						4	
Damp	1.4			SP		5	Boring was hand cleared to 5 ft bgs
						6	
Damp	0.7					7	
						8	Encountered water table at 8 ft bgs
Saturated	1.8		SB-5-8			9	
Saturated	1.8					10	(ML) Silt, very dark gray, very soft, no odor; saturated
Saturated	1.7			ML		11	Becomes firm
						12	(SM) Silty Sand, fine to medium grained sand, dark brown, loose, no odor
Saturated	2.0					13	
Saturated	1.1			SM		14	
						15	
Saturated	1.9					16	
Saturated	1.5					17	
						18	Bottom of borehole at 16.0 feet.



18912 North Creek Parkway, Suite 101
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Boring: SB-6

Project: South Park Marina
Client: Washington State Dept of Ecology
Location: Seattle, Washington

Logged By: S Bloom
Date Started: 9/26/2007
Date Completed: 9/28/2007

Driller: Cascade Drilling, Inc.
Drill Method: Hand Auger/Geoprobe
Total Boring Depth: 17 ft

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
					Asphalt		Asphalt
					Road base/rocks with fine to medium grained sand, very dark gray		Road base/rocks with fine to medium grained sand, very dark gray
Damp	1.2	[Hand icon]			(SP) Sand, fine to medium grained, very dark gray, damp, very loose, no odor	1	(SP) Sand, fine to medium grained, very dark gray, damp, very loose, no odor
Damp	0.4	[Hand icon]			[Dotted pattern]	2	
Damp	1.1	[Hand icon]			[Dotted pattern]	3	
Damp	1.2	[Hand icon]			[Dotted pattern]	4	Density increases to loose
Damp	1.7	[X pattern]		SP	[Dotted pattern]	5	Boring was hand cleared to 5 ft bgs
Damp	0.6	[X pattern]			[Dotted pattern]	6	
Damp	0.8	[X pattern]			[Dotted pattern]	7	
Damp	0.7	[X pattern]			[Dotted pattern]	8	
			SB-6-8		[Dotted pattern]	9	
Saturated	1.0	[X pattern]		ML	[Vertical lines]	9	(ML) Sandy Silt, fine to very fine grained sand, very dark gray, damp, no odor
Saturated	1.0	[X pattern]			[Vertical lines]	10	(ML) Silt, very dark gray, soft to medium stiff (density increases with depth), no odor, some organic material (wood pieces)
Saturated	1.2	[X pattern]		ML	[Vertical lines]	11	
Saturated	1.2	[X pattern]			[Vertical lines]	12	
Saturated	1.2	[X pattern]			[Vertical lines]	13	(ML) Sandy Silt, fine to very fine grained sand, very dark gray
Saturated	1.5	[X pattern]		ML	[Vertical lines]	14	
Saturated	1.1	[X pattern]			[Vertical lines]	15	Color changes to very dark brown
Saturated	1.1	[X pattern]			[Vertical lines]	16	
					[Vertical lines]	17	Bottom of borehole at 17.0 feet.
					[Vertical lines]	18	
					[Vertical lines]	19	



18912 North Creek Parkway, Suite 101
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Boring: SB-9

Project: South Park Marina
Client: Washington State Dept of Ecology
Location: Seattle, Washington

Logged By: S Bloom
Date Started: 9/26/2007
Date Completed: 9/27/2007

Driller: Cascade Drilling, Inc.
Drill Method: Hand Auger/Geoprobe
Total Boring Depth: 20 ft

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
						0	Asphalt
						0.5	Road base/rocks, fine to medium grained sand
	0.0					1	(SP) Sand, fine to medium grained, very dark gray, damp, very loose, no odor
Damp	0.0					2	
						3	
Damp	0.0					4	Becomes loose
Damp	0.0					5	Boring was hand cleared to 5 ft bgs
Damp	0.2			SP		6	
						7	Color changes to dark olive gray
						8	
Damp	0.5					9	
Damp	0.6		SB-9-10			10	
Saturated	0.4					11	Color changes to dark olive brown
Saturated	0.8					12	(ML) Sandy Silt, very fine grained sand, dark gray, saturated, no odor
Saturated	0.5			ML		13	
Saturated	0.8					14	
Wet	0.7			ML		15	(ML) Silt, dark gray, no odor, some organic material (wood pieces)
						16	(ML) Sandy Silt, very fine grained sand, dark gray, saturated, no odor
Wet	1.1			ML		17	
Wet	1.0					18	
Wet	1.0			ML		19	(ML) Silt, light brown, saturated, soft, no odor, some organic material (wood pieces)
						20	Color changes to dark gray
						20	Bottom of borehole at 20.0 feet.



18912 North Creek Parkway, Suite 101
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Boring: SB-10

Project: South Park Marina
Client: Washington State Dept of Ecology
Location: Seattle, Washington

Logged By: S Bloom
Date Started: 9/26/2007
Date Completed: 9/28/2007

Driller: Cascade Drilling, Inc.
Drill Method: Hand Auger/Geoprobe
Total Boring Depth: 20 ft

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
							Asphalt
Damp	0.3	Hand icon				1	Road base/rocks, fine to medium graind sand, very dark gray (SP) Sand, fine to medium grained, very dark gray, very loose, no odor
Damp	0.2	Hand icon				2	
Damp	0.6	Hand icon		SP		3	
Damp	1.6	Hand icon				4	Becomes loose
Damp	1.4					5	Boring was hand cleared to 5 ft bgs
Damp	1.3			SM		6	(SM) Silty Sand, fine grained sand, very dark gray, loose, no odor
Damp	1.3			ML		7	(ML) Silt, very dark brown
Damp	1.1			SM		8	(SM) Sandy Silt, very dark gray
						9	(ML) Silt, very dark gray, soft, grades to medium stiff, no odor
Damp	1.0					10	
Saturated	1.1					11	Encountered water table at 11 ft bgs
Saturated	1.0					12	
Saturated	1.8			ML		13	Color changes to brown
Saturated	1.7		SB-10-14			14	
Wet	1.7					15	
Wet	1.5					16	
Wet	1.4					17	
Wet	1.5					18	(ML) Sandy Silt, fine to very fine grained sand, very dark gray, loose/soft, no odor
Wet	1.6			ML		19	
						20	Color changes to very dark brown
						21	Bottom of borehole at 20.0 feet.



18912 North Creek Parkway, Suite 101
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Boring: SB-15

Project: South Park Marina
Client: Washington State Dept of Ecology
Location: Seattle, Washington

Logged By: T Dube
Date Started: 10/1/2007
Date Completed: 10/1/2007

Driller: --
Drill Method: Hand Auger
Total Boring Depth: 4 ft

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
				GP		0 to 0.5	(GP) Sandy Gravel, gravel up to 3/4" big, gray-brown, damp, no odor. FILL
				ML		0.5 to 2.0	(ML) Gravelly Silt, gravel up to 6", some medium grained sand, gray-brown, very moist, stiff, no odor, some waste debris. FILL
Very Moist	1.0			SP		2.0 to 3.0	(SP) Sand, fine to medium grained, minor silt and gravel (up to 1"), gray-brown, very moist to wet, loose, slight solvent/petroleum odor
Very Moist	2.2					3.0 to 3.25	Encountered water table at 3.25 ft bgs (after completion water level measured at 2.8 ft); dense below 3.5 ft
Saturated	36					3.25 to 3.5	Solvent/petroleum odor observed
Saturated	42		SB-15-3-5			3.5 to 4.0	
						4.0 to 7.0	Bottom of borehole at 4.0 feet.

