

# LEGEND FOR BORING LOGS

## SAMPLE LOCATION / TYPE

Sampled Interval  Sample Recovery



Standard Penetration Test (SPT) sample (1.4-inch I.D.)



Shelby tube sample (thin wall, 3-inch I.D.)



Bulk drill cuttings sample (> 3 ft. interval)



California Modified split spoon sample (2.5-inch I.D.)



Continuous core barrel sample (3-inch I.D., 5 feet long)



Grab drill cuttings sample (< 3 ft. interval)

## BLOW COUNTS

Refers to number of blows by standard 140 pound hammer (unless otherwise indicated on log) per 6 inches of driven depth.

## UNIFIED SOIL CLASSIFICATION SYSTEM (USCS) DESCRIPTION (common terms used)

### MOISTURE CONDITION

Dry - apparent absence of moisture, dry to the touch  
Damp - slight moisture but does not adhere to hand  
Moist - optimum water content but no visible water  
Wet - visible free water

### CONSISTENCY

Very Soft - thumb will penetrate more than 1 inch  
Soft - thumb will penetrate about 1 inch  
Firm or Stiff - thumb will indent soil about 1/4 inch  
Hard or Very Stiff - thumb will not indent soil but readily indented by thumbnail  
Very Hard - thumbnail will not indent soil

### PLASTICITY

Non-plastic - an 1/8-inch thread cannot be rolled at any water content  
Low - a thread can barely be rolled  
Medium - a thread is easy to roll but can't be rerolled below the plastic limit  
High - considerable rolling effort to reach the plastic limit; thread can be rerolled below the plastic limit

### DENSITY (SANDY SOIL)

Sand consistency described using terms ranging from Very Loose to Very Dense

### OTHER TERMS

Standard terms (as per ASTM D2488) are used to describe the size range, sorting, angularity, and shape of particles making up the soil  
Standard terms may be used to describe such soil properties as dilatancy and toughness if called for by the project

### OTHER SYMBOLS

WATER - First depth at which free water (wet soil conditions) encountered ( $\nabla$ ), static water level ( $\blacktriangledown$ ).

### CONTACTS:



Contact between different lithologies directly observed.  
Horizontal line indicates sharp contact; slant line indicates gradational contact.



Inferred contact (contact between different lithologies not observed).

## UNIFIED SOIL CLASSIFICATION SYSTEM CHART

MAJOR DIVISIONS			GROUP/GRAPHIC SYMBOL	TYPICAL DESCRIPTION			
<b>COARSE-GRAINED SOILS</b> <i>(more than 50% retained on No. 200 sieve)</i>	Gravels <i>(more than 50% of coarse fraction retained on No. 4 sieve)</i>	Clean Gravels <i>(less than 5% fines)</i>	GW		Well-graded gravels, gravels, gravel/sand mixtures, little or no fines.		
			GP		Poorly graded gravels, gravel-sand mixtures, little or no fines		
		Gravels with Fines <i>(more than 12% fines)</i>	GM		Silty gravels, gravel-sand-silt mixtures		
			GC		Clayey gravels, gravel-sand-clay mixtures		
	Sands <i>(50% or more of coarse fraction passes the No. 4 sieve)</i>	Clean Sands <i>(less than 5% fines)</i>	SW		Well-graded sands, gravelly sands, little or no fines		
			SP		Poorly graded sand, gravelly sands, little or no fines		
		Sands with Fines <i>(more than 12% fines)</i>	SM		Silty sands, sand-silt mixtures		
			SC		Clayey sands, sand-clay mixtures		
		<b>FINE-GRAINED SOILS</b> <i>(50% or more passes the No. 200 sieve)</i>	Silts and Clays <i>(liquid limit less than 50)</i>	Inorganic	ML		Inorganic silts of low to medium plasticity, rock flour, sandy silts, gravelly silts, or clayey silts with slight plasticity
					CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
OL				Organic silts and organic silty clays of low plasticity			
Silts and Clays <i>(liquid limit 50 or more)</i>	Inorganic		MH		Inorganic silts, micaceous or diatomaceous fine sands or silty soils, elastic silt		
			CH		Inorganic clays of medium to high plasticity, sandy fat clay, or gravelly fat clay		
	OH			Organic clays of medium to high plasticity, organic silts			
<b>HIGHLY-ORGANIC SOILS</b>	Primarily organic matter, dark in color, and organic odor		PT		Peat, humus, swamp soils with high organic content (see ASTM D 4427)		

NOTES: No. 4 size = 5mm (0.25 in); No. 200 size = 0.0075 mm (0.0003 in)  
 Dual symbols are used to indicate borderline soil classifications

14945 SW Sequoia Parkway, Suite 180  
Portland, OR 97224

**BORING NUMBER: MW-22A**

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**Riverbend Landfill Company**  
**Riverbend Landfill**  
**McMinnville, Oregon**

**JOB NUMBER: 04210010.00**

REMARKS:  
Mobile B-53 drill rig with automatic hammer (140 lb. hammer, 30-inch drop)

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
0	0						Surface: natural ground surface (grass)		
1	5		22A-1	2 2 1		ML	CLAYEY SILT (ML), dark yellowish brown (10YR 4/4), damp, soft, clay 10-20 percent, few rootlets, few small (less than 1/4-inch) carbonized (black) wood fragments		
2	10		22A-2	---		ML	At bottom of Shelby tube sample, FINE SANDY SILT (ML), dark yellowish brown (10YR 4/6), moist, sand 10-20 percent, slightly micaceous		
3	15		22A-3	---		CL/ML	At bottom of Shelby tube sample, SILTY CLAY / CLAYEY SILT (CL/ML), dark yellowish brown (10RY 4/6), moist to wet, slight orange brown oxide (iron) mottling, trace fine sand		
4	20		22A-4	---		CL	At bottom of Shelby tube sample, SILTY CLAY (CL), dark yellowish brown (10YR 4/6) with some orange brown oxide (iron) mottling and light olive brown mottling, moist to wet, medium plasticity		
5	25						Total Depth = 22.5 feet		
6	30						Sampled to 22.5 feet; drilled out borehole to 21.0 feet for well installation.		
7	35						Groundwater level initially measured at 12 feet below ground surface (bgs) after well installation on September 23, 2010. The water level was at 18.5 feet bgs on September 28, 2010, and no water was present on October 4, 2010, during the fourth quarter semiannual monitoring event.		
8	40						Aboveground construction includes 8-inch protective steel monument and three bollard posts.		

STANDARD\_LOG\_RLF\_HSC\_MONITORING\_WELL\_LOGS.GPJ STD\_LOG\_GDT\_2/23/11

Drilling Company: **Major Drilling Environmental, LLC**

Drilling Method: **Hollow Stem Auger**

Logged By: **David Lamadrid**

Sampling Method: **See legend for explanation of sample types**

Date Started: **9/23/10**

Date Ended: **9/23/10**

Boring Diameter: **10-inch**

Elevation: **123.5 ft.**

Total Depth: **22.5 ft.**

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**BORING NUMBER: MW-22B**

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**Riverbend Landfill Company**  
**Riverbend Landfill**  
**McMinnville, Oregon**

**JOB NUMBER: 04210010.00**

REMARKS:  
Mobile B-53 drill rig with automatic hammer (140 lb. hammer, 30-inch drop)

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
0	0		22B-1	---		CL/ML	Surface: natural ground surface (grass)	0	
1	5		22B-2	---		ML	SILTY CLAY / CLAYEY SILT (CL/ML), dark yellowish brown (10YR 4/4), damp to moist, roots and rootlets - At 2.0 feet, damp, minor rootlets, rare carbonized (black) wood fragments - At 3.0 feet, grades to CLAYEY SILT (ML), same appearance as above, damp, clay 10-20 percent - At 6.5 feet, grades to CLAYEY SILT (ML) with fine sand, dark yellowish brown (10YR 4/6), moist, clay 20-30%, faintly micaceous, medium plasticity - At 8.0 feet, grades to moist to wet	5	
3	10		22B-3	---		ML	- At 10.0 feet, same as above, but with slight orange brown oxide (iron) mottling - At 11.0 feet, quickly grades to FINE SANDY SILT (ML), dark yellowish brown (10YR 4/6), moist to wet, sand 20-30 percent, slightly micaceous	10	
5	15		22B-4	---		CL/ML	SILTY CLAY / CLAYEY SILT (CL/ML), dark yellowish brown (10YR 4/6), moist to wet, slight orange brown oxide (iron) and light olive brown (2.5Y 5/4) mottling, trace fine sand, medium plasticity	15	
6	20		22B-5	---		CL	SILTY CLAY (CL), same appearance as above, more oxide and light olive brown mottling with depth, apparent soft consistency	20	
8	25		22B-6	---		SW	Quickly grades to FINE TO MEDIUM SAND (SW) with clay, dark yellowish brown (10YR 4/4), wet, predominantly fine grained, rare small carbonized (black) wood fragments	25	
9	30		22B-7	0		SC	CLAYEY FINE SAND (SC) lens, dark gray (5Y 4/1), wet, clay 30-40 percent	30	
			22B-8	2		SC	- At 27.9 feet, same FINE TO MEDIUM SAND (SW) as at 24.5 feet, but with lenses that contain abundant orange brown oxide (iron) mottling		
				2		GW	- At 29.3 feet, CLAYEY FINE TO MEDIUM SAND (SC), similar in appearance to lens at 27.5 to 27.9 feet		
10				16		GC	- At 30.2 feet, SANDY GRAVEL (GW) with trace to some fines, olive gray (5Y 4/2), wet, loose, fine to coarse sand (f:m:c = 50:25:25) 30-40 percent, fine to coarse subrounded gravel to 1-inch diameter, predominantly fine gravel		
				26			- At 31.5 feet, becomes medium dense		
11	35		22B-9	8			- At 32.8 feet, CLAYEY SANDY GRAVEL (GC), dark olive gray (5Y 3/2), damp to moist, medium dense, clay 10-20 percent, fine to coarse sand 30-40%, fine to coarse subrounded gravel to 2-inch diameter (2-inch diameter gravel in sample shoe)	35	
				19			- At 35.0 feet, same as above but dark yellowish brown (10YR 4/4), dense, gravel to 2.5-inch diameter		
				34					
12	40		22B-10	50/4"		BASALT		40	

STANDARD\_LOG\_RLF\_HSC\_MONITORING\_WELL\_LOGS.GPJ STD\_LOG\_GDT 2/23/11

Drilling Company: **Major Drilling Environmental, LLC**

Drilling Method: **Hollow Stem Auger**

Logged By: **David Lamadrid**

Sampling Method: **See legend for explanation of sample types**

Date Started: **9/22/10**

Date Ended: **9/23/10**

Boring Diameter: **10-inch**

Elevation: **123.5 ft.**

Depth to Water: **21.6 ft.**

Total Depth: **38.3 ft.**



14945 SW Sequoia Parkway, Suite 180  
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**BORING NUMBER: MW-23A**

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**Riverbend Landfill Company**  
**Riverbend Landfill**  
**McMinnville, Oregon**

**JOB NUMBER: 04210010.00**

REMARKS:  
Mobile B-53 drill rig with automatic hammer (140 lb. hammer, 30-inch drop)

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
0	0						Surface: natural ground surface (grass)	0	
1	5		23A-1	5 9 13		CL	CLAY (CL), very dark gray (5Y 3/1), moist, very stiff, abundant orange brown oxide (iron) mottling, few roots throughout, low to medium plasticity	5	
2	10		23A-2	3 4 4		CL/ML	SILTY CLAY / CLAYEY SILT (CL/ML), mottled olive gray (5Y 4/2) and gray (2.5Y N5), moist, firm, pieces of carbonaceous (black) wood fragments, low to medium plasticity	10	
3	15		23A-3	---		CL/ML	Same as above	15	
4	20		23A-4	---		CL	- At 20.0 feet, SILTY CLAY (CL), dark brown (10YR 4/3), moist to wet, firm, abundant orange brown oxide (iron) mottling, low to medium plasticity	20	
5	25		23A-5	5 7 8		ML	- At 24.0 feet, grades to CLAYEY SILT (ML) with trace to some very fine sand, mottled olive brown (2.5Y 4/3) and dark brown (7.5Y 4/4), moist to wet, stiff, abundant orange brown oxide (iron) staining, low to medium plasticity	25	
6	26.3		23A-6	8 5 6		SM	- At 25.7 feet, SILTY SAND (SM), fine to medium sand [f:m = 90:10], silt 20-30 percent, same color and appearance as above, moist to wet, medium dense	26.3	
7	26.5		23A-7	9 9		CL	- At 26.3 feet, CLAY (CL), dark olive gray (5Y 3/2), damp becoming moist with depth, very stiff, rare remnant carbonaceous (black) wood fragments, low to medium plasticity, few fine gravels, small scattered orange brown oxidized nodules	26.5	
8	28.0		23A-8	11 13 10 10 14		CL		28.0	
9	30						Total Depth = 28.0 feet Sampled to 28.0 feet; drilled out borehole to 26.5 feet for well installation.	30	
10	35						Aboveground construction includes 8-inch protective steel monument and three bollard posts. Static groundwater level measured on Aug. 31, 2010.	35	
11	40							40	

STANDARD\_LOG\_RLF\_HSC\_MONITORING\_WELL\_LOGS.GPJ STD\_LOG\_GDT\_2/23/11

Drilling Company: **Major Drilling Environmental, LLC**  
 Drilling Method: **Hollow Stem Auger**  
 Logged By: **David Lamadrid**  
 Sampling Method: **See legend for explanation of sample types**

Date Started: **8/17/10**      Elevation: **129.0 ft.**  
 Date Ended: **8/18/10**      Depth to Water: **18.3 ft.**  
 Boring Diameter: **10-inch**      Total Depth: **28.0 ft.**

14945 SW Sequoia Parkway, Suite 180  
Portland, OR 97224

**BORING NUMBER: MW-23B**

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**Riverbend Landfill Company**  
**Riverbend Landfill**  
**McMinnville, Oregon**

**JOB NUMBER: 04210010.00**

REMARKS:  
Mobile B-53 drill rig with automatic hammer (140 lb. hammer, 30-inch drop)

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
0	0		23B-1	---		CL	Surface: natural ground surface	0	
1	5		23B-2	---		CL	CLAY (CL), olive brown (2.5Y 4/4), damp, some very dark grayish brown (10YR3/2) mottling, moderate roots to 3 feet, low plasticity - At 3.0 feet, becomes moist	5	
2	10		23B-3	---		CL	- At 5.0 feet, gradational color change to dark olive gray (5Y 3/2), approximately 1 foot zone at contact with abundant orange brown oxide (iron) staining and slightly to moderately indurated - At 6.0 feet, becomes moist to wet, low to medium plasticity	10	
3	15		23B-4	---		CL	- At 8.5 feet, gradational color change to mottled olive gray (5Y 4/2) and gray (2.5Y N5), some black flecks, rare micropores	15	
4	20		23B-5	---		CL	At 12.5 feet, SILTY CLAY (CL), dark brown (10YR 4/3), moist to wet, silt 20-30 percent, slight orange and gray mottling, trace very fine sand, low plasticity	20	
5	25		23B-6	---		ML	At 17.5 feet, CLAY, same appearance and moisture as above, trace silt and more moisture with depth, medium to high plasticity	25	
6	30		23B-7	---		SM	CLAYEY SILT (ML), mottled olive brown (2.5Y 4/3) and dark brown (7.5Y 4/4), moist to wet, abundant orange brown oxide (iron) mottling, medium plasticity	30	
7	35		23B-8	22		CL	SILTY SAND (SM), mottled olive brown (2.5Y 4/3) and dark brown (7.5Y 4/4) with oxide mottling, moist, fine to medium sand [f:m = 90:10], silt 10-20 percent, some moderately indurated zones from oxide	35	
8	38		23B-9	35		CL/GC	- At 27.5 feet, CLAY (CL), olive (5Y 4/4), damp to moist, apparent hard consistency, rare fine gravel, medium plasticity	38	
9	40		23B-10	14		CL	- At 28.0 feet, attempt shelly tube sample but can only push it 24 inches	40	
10				7		SW	- At 30.0 feet, GRAVELLY CLAY / CLAYEY GRAVEL (CL/GC) with fine to medium sand, dark brown (10YR 3/6), wet, medium dense, rounded gravel to 2-inch diameter		
11				11		GW	- At 31.5 feet, CLAY (CL), light brownish gray (2.5Y 6/2), damp, very stiff, abundant orange brown oxide (iron) flecks and nodules, trace silt		
12				14		SW	- At 34.5 feet, driller reports gravel encountered		
						SW	- At 35.0 feet, GRAVELLY SAND (SW), grayish brown (2.5Y 5/2), wet, fine to coarse sand [f:m:c = 20:50:30], fine to coarse subangular gravel 10-20 percent		
						SW	- At 35.9 feet, SANDY GRAVEL (GW) with fines, reddish brown (5YR 4/4) from oxidation, wet, fine to		

STANDARD\_LOG\_RLF\_HSC\_MONITORING\_WELL\_LOGS.GPJ STD\_LOG\_GDT\_2/23/11

Drilling Company: **Major Drilling Environmental, LLC**

Drilling Method: **Hollow Stem Auger**

Logged By: **David Lamadrid**

Sampling Method: **See legend for explanation of sample types**

Date Started: **8/16/10**

Date Ended: **8/17/10**

Boring Diameter: **10-inch**

Elevation: **129.0 ft.**

Depth to Water: **30.8 ft.**

Total Depth: **42.3 ft.**

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**BORING NUMBER: MW-23B**

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**Riverbend Landfill Company**

**JOB NUMBER: 04210010.00**

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
40	40		23B-11	7 33					
13	13		23B-12	50/3" 50/4"		SLTST			
45	45	Total Depth = 42.3 feet Aboveground construction includes 8-inch protective steel monument and three bollard posts. Static groundwater level measured on Aug. 31, 2010.							
14	14								
15	15								
50	50								
16	16								
55	55								
17	17								
18	18								
60	60								
19	19								
65	65								
20	20								
70	70								
21	21								
75	75								
22	22								
80	80								
23	23								
85	85								

STANDARD\_LOG\_RLF\_HSC\_MONITORING\_WELL\_LOGS.GPJ STD\_LOG.GDT 2/23/11

14945 SW Sequoia Parkway, Suite 180  
Portland, OR 97224

**BORING NUMBER: MW-24(Pilot)** Page 1 of 2

**Riverbend Landfill Company**  
**Riverbend Landfill**  
**McMinnville, Oregon**

**JOB NUMBER: 04210010.00**

REMARKS:  
Mobile B-53 drill rig with automatic hammer (140 lb. hammer, 30-inch drop)

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
0	0		24(P)-1	---		CL	Surface: natural ground surface (harvested wheat field) CLAY (CL) with silt, dark yellowish brown, dry, platy partings, medium plasticity with water added	0	
1	5		24(P)-2	---		ML	CLAYEY SILT (ML), olive brown (2.5Y 4/3), damp to moist, clay 20-30%, faintly micaceous, scattered 1/8-inch to 1/4-inch diameter dark brown clay nodules, low plasticity - At 6.5 feet, grades to SILT (ML) with trace clay, same appearance as above - At 8.5 feet, grades to CLAYEY SILT (ML), same appearance as above, moist to wet	5	
2	10		24(P)-3	---		ML		10	
3	15		24(P)-4	4		CL	Grades to SILTY CLAY (CL), brown (10YR 4/3), moist to wet, firm to stiff, less silt with depth to trace, faint varve texture	15	
4	15		24(P)-5	4		CL		15	
5	15		24(P)-6	5		CL		15	
6	20		24(P)-7	---		ML	CLAYEY SILT (ML), light olive brown (2.5Y 5/4), moist to wet, with yellowish brown marbled appearance, few filled micropores, low to medium plasticity - At 19.0 feet, wet	20	
7	20		24(P)-8	---		CL	CLAY (CL) with trace to no silt, same appearance as above, wet, low to medium plasticity	20	
8	25		24(P)-9	---		ML	SILT (ML) with trace to some clay, same appearance as above, damp to moist, blocky texture, no micropores, faintly micaceous	25	
9	25		24(P)-10	---		ML		25	
10	30		24(P)-11	---		ML	- At 28.5 feet, SILT (ML), dark gray (5Y 4/1), damp, apparent firm consistency, massive, medium to high plasticity	30	
11	30		24(P)-12	---		ML	- Becomes moist with depth, less apparent firmness	30	
12	35		24(P)-13	---		CL/ML	SILTY CLAY / CLAYEY SILT (CL/ML), same appearance as above	35	
12	40			---		CL	CLAY (CL), greenish gray, damp to moist, apparent very firm consistency (harder than above at 29.5 feet), massive, trace mica(?) particles, medium to high plasticity	40	

← Bentonite seal (chips, hydrated)

STANDARD\_LOG\_RLF\_HSC\_MONITORING\_WELL\_LOGS.GPJ STD\_LOG\_GDT\_2/23/11

Drilling Company: **Major Drilling Environmental, LLC**

Drilling Method: **Hollow Stem Auger**

Logged By: **David Lamadrid**

Sampling Method: **See legend for explanation of sample types**

Date Started: **8/18/10**

Date Ended: **8/20/10**

Boring Diameter: **8-inch**

Elevation: **147.3 ft.**

Total Depth: **55.3 ft.**

14945 SW Sequoia Parkway, Suite 180  
Portland, OR 97224

**BORING NUMBER: MW-24(Pilot)**

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**Riverbend Landfill Company**

**JOB NUMBER: 04210010.00**

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
	40		24(P)-14	---		CL			
	13		24(P)-15	---					
			24(P)-16	---		GW			
	45		24(P)-17	4		ML			
	14		24(P)-18	14					
			24(P)-19	24		SM			
			24(P)-20	34					
	15		24(P)-20	42					
			24(P)-20	50/5"					
			24(P)-20	48					
	50		24(P)-20	50/3"					
			24(P)-20	50/4"					
			24(P)-20	50/5"					
	16		24(P)-21	28					
			24(P)-21	50/3"		SLTST			
	55		24(P)-22	50/3"					
	17		24(P)-22	50/3"					
	18								
	60								
	19								
	65								
	20								
	70								
	21								
	75								
	22								
	80								
	23								
	85								
	24								
	25								
	26								

- At 41.0 feet, trace scattered sand particles, rare fine gravel, continued trace fine mica(?) particles, slight orange brown oxide (iron) mottling with depth

SANDY GRAVEL (GW) with clay, dark reddish brown (5YR 3/4), moist, fine to coarse subangular gravel, fine to coarse sand [f:m:c = 10:40:50]

- At 44.7 feet, SANDY SILT (ML) with gravel, light yellowish brown (2.5Y 6/3) with orange brown oxide (iron) staining, moist, medium dense, fine sand 10-20 percent, trace coarser sand, scattered fine gravel, trace to some clay in small scattered zones

- At 47.0 feet, SILTY SAND (SM), dark yellowish brown (10YR 3/6) with abundant orange brown oxide (iron) staining, moist, very dense, fine to medium sand [f:m = 80:20], few fine gravels, black manganese(?) filled thin veins (to 1/8 inch thick)  
Slow drill rate

At 53.5 feet, driller reports very hard drilling SILTSTONE (SLTST), dark gray (2.5Y N4), dry, cemented, single 1/4-inch thick yard calcium vein

Total Depth = 55.3 feet

Monitoring Well MW-24A drilled approximately 10 feet south of MW-24 (Pilot) borehole.

← Bentonite seal (chips, hydrated)

STANDARD\_LOG\_RLF\_HSC\_MONITORING\_WELL\_LOGS.GPJ STD\_LOG\_GDT\_2/23/11

14945 SW Sequoia Parkway, Suite 180  
Portland, OR 97224

**BORING NUMBER: MW-24A**

Page 1 of 1

**Riverbend Landfill Company**  
**Riverbend Landfill**  
**McMinnville, Oregon**

**JOB NUMBER: 04210010.00**

REMARKS:  
Mobile B-53 drill rig with automatic hammer (140 lb. hammer, 30-inch drop)

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
0	0						Surface: natural ground surface (harvested wheat field)		
1	5		24A-1	3 3 3		ML	CLAYEY SILT (ML), olive brown (2.5YR 4/3), damp to moist, firm, faintly micaceous, low plasticity		
2	10		24A-2	1 2 2		CL/ML	SILTY CLAY / CLAYEY SILT (CL/ML), same appearance as above, moist, soft to firm		
3	15		24A-3	0 1 2		CL	SILTY CLAY (CL), dark yellowish brown (10YR 4/4), moist to wet, soft, some olive gray mottling, concave partings		
4	20		24A-4	0 1 2		CL/ML	SILTY CLAY / CLAYEY SILT (CL/ML), light olive brown (2.5Y 4/4), wet, soft, some orange brown oxide (iron) flecks (less than 1/8 inch), low to medium plasticity		
5	25		23A-5	2 4 4		ML	SILT (ML), olive brown (2.5Y 4/3), damp to moist, soft, trace clay, faintly micaceous, blocky texture		
6	30						Total Depth = 26.5 feet Sampled to 26.5 feet; drilled out borehole to 26.0 feet for well installation. Aboveground construction includes 8-inch protective steel monument and three bollard posts. Static groundwater level measured on Sept. 1, 2010.		
7	35								
8	40								

STANDARD\_LOG\_RLF\_HSC\_MONITORING\_WELL\_LOGS.GPJ STD\_LOG\_GDT 2/23/11

Drilling Company: **Major Drilling Environmental, LLC**  
 Drilling Method: **Hollow Stem Auger**  
 Logged By: **David Lamadrid**  
 Sampling Method: **See legend for explanation of sample types**

Date Started: **8/20/10**      Elevation: **147.3 ft.**  
 Date Ended: **8/20/10**      Depth to Water: **15.5 ft.**  
 Boring Diameter: **10-inch**      Total Depth: **26.5 ft.**

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**BORING NUMBER: GT10-01**

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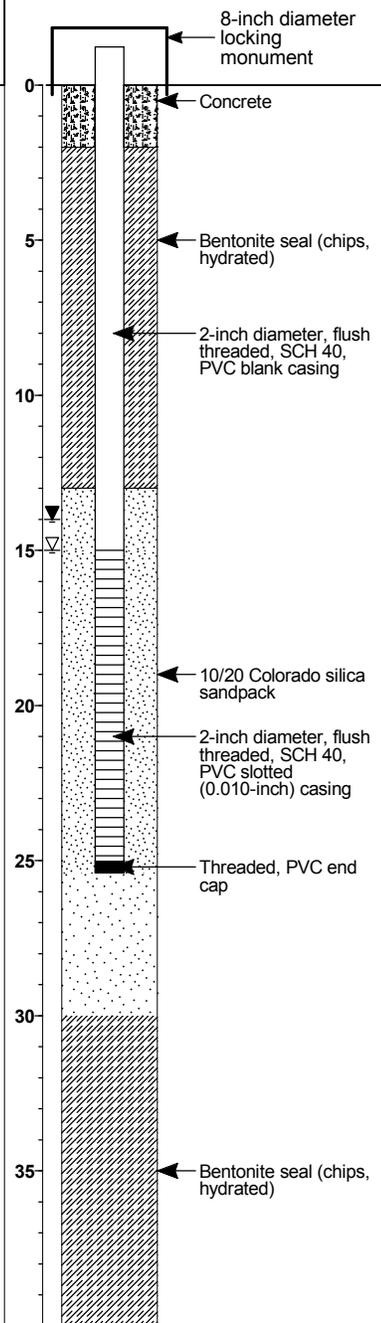
**Riverbend Landfill Company**  
**Riverbend Landfill**  
**McMinnville, Oregon**

**JOB NUMBER: 04210010.00**

REMARKS:  
Mobile B-54 drill rig with automatic hammer (140 lb. and 300 lb. hammers used, see notes at end of log; 30-inch drop). NWJ rods used.

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
0	0		1-1	--		ML	Surface: natural ground surface (grass)	0	
1	5		1-2	3	0.5		SILT (ML), light olive brown (2.5Y 5/3) with some orange brown oxide (iron) mottling, moist to wet, firm, trace clay, low plasticity	5	
2			1-3	--					
3	10				0.75		At 10.0 feet (bottom of Shelby tube sample), FINE SANDY SILT (ML), dark yellowish brown (10YR 4/6), moist, sand 10-20 percent, slightly micaceous	10	
4	15		1-4	3	0.25	CL	- At 15 feet, same as above but wet	15	
5				2		ML	At 15.8 feet, 2-inch thick CLAY (CL) seam, very dark gray (5Y 3/1), wet, apparent soft consistency, high plasticity		
6	20		1-5	--			At 16.0 feet, SILT (ML), very dark gray (5Y 3/1), wet, firm, faintly micaceous, low to medium plasticity		
7					0.75		- At 20.0 feet (bottom of Shelby tube sample), same silt at above	20	
8	25		1-6	5	0.25	ML	Thinly bedded SILT (ML) and CLAYEY SILT (ML), very dark gray (5Y 3/1), moist, stiff, 2- to 4-inch thick beds with varying clay content from 0 to 10-20 percent, moist, stiff, with two clay lenses (1.5 inch thick)	25	
9			1-7	--		CL			
10	30		1-8	0	1.5		At 27.5 feet (bottom of Shelby tube sample), SILTY CLAY (CL), very dark gray (5Y 3/1), moist, medium to high plasticity	30	
11	35						CLAY (CL), dark gray (5Y 4/1), moist, very soft, massive		
			1-9	0	1.0		- At 30.7 feet, sharp color change to very dark gray (5Y 3/1) with greenish tint, damp to moist, stiff, faintly micaceous, more apparent firmness than above, medium to high plasticity	35	
							- Same as above but greenish gray, firm, faint oxide (iron) mottling		
12	40		1-10	--			Driller reports harder push last approximately 4 inches of Shelby tube sample No. 1-10	40	

STANDARD\_LOG\_RLF\_HSC GEOTECHNICAL BOREHOLE LOGS\_V0.3.GPJ STD\_LOG.GDT 2/23/11



Drilling Company: **Major Drilling Environmental, LLC**

Drilling Method: **Mud Rotary**

Logged By: **David Lamadrid**

Sampling Method: **See legend for explanation of sample types**

Date Started: **9/9/10** Elevation: **143.8 ft.**  
 Date Ended: **9/10/10** Depth to Water: **14.0 ft.**  
 Boring Diameter: **5.9" (to 26.0 ft.), 4.9" (from 26.0 to 66.5 ft.)**

Riverbend Landfill Company

JOB NUMBER: 04210010.00

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
	40		1-11	12 15 22	1.0	CL			
13	45		1-12	15 28 32		GC			
	50		1-13	15 21 33		SW/GW			
15	55		1-14	13 20 22					
	60		1-15	3 4 4		SP			
18	65		1-16	9 14 17		SW/GW			
	70						<p>Total Depth = 66.5 feet</p> <p>NOTES:</p> <ol style="list-style-type: none"> <li>1. Drilled adjacent borehole with hollow stem augers to collect bulk soil cuttings sample from 0 to 5.0 feet.</li> <li>2. Initially used 140 lb. hammer for sample collection; switched to 300 lb. hammer before collecting sample 1-12 at 45 feet and for remainder of borehole. Hammers not used for Shelby tube samples.</li> <li>3. Pushed 36-inch Shelby tube sample 30 inches only.</li> <li>4. Static groundwater level measured on September 13, 2010.</li> </ol>		
17	75								
	80								
19	85								
20									
26									

STANDARD\_LOG\_RLF\_HSC\_GEOTECHNICAL\_BOREHOLE\_LOGS\_V0.3.GPJ STD\_LOG.GDT 2/23/11

14945 SW Sequoia Parkway, Suite 180  
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**BORING NUMBER: GT10-11**

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**Riverbend Landfill Company**  
**Riverbend Landfill**  
**McMinnville, Oregon**

**JOB NUMBER: 04210010.00**

REMARKS:  
Mobile B-54 drill rig with automatic hammer (140 lb. and 300 lb. hammers used, see notes at end of log; 30-inch drop). NWJ rods used.

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
0	0		11-1	--		CL	Surface: natural ground surface (grass)	8-inch diameter locking monument	
1	5		11-2	2		ML	At 5.0 feet, SILTY CLAY (CL), yellowish brown (10YR 5/4), moist, firm, silt 30-40 percent, low to medium plasticity	Concrete	
2			11-3	3				Bentonite seal (chips, hydrated)	
3	10						At 10.0 feet (bottom of Shelby tube sample), CLAYEY SILT (ML), yellowish brown (10YR 5/4), moist to wet, clay 20-30 percent	2-inch diameter, flush threaded, SCH 40, PVC blank casing	
4	15		11-4	1		ML	Same as above, but wet, firm, with some visibly wet silt lenses up to 1.5-inch thick	10/20 Colorado silica sandpack	
5				2					2-inch diameter, flush threaded, SCH 40, PVC slotted (0.010-inch) casing
6	20		11-5	1		ML	SILT (ML) with clay, light yellowish brown (2.5Y 6/4), moist to wet, firm, clay content quickly increases with depth to 30-40 percent, faintly micaceous	Threaded, PVC end cap	
7			11-6	2					
8	25					CL	At 25 feet (bottom of Shelby tube sample), CLAY (CL), dark olive gray (5Y 3/2), moist to wet, massive, very faintly micaceous, medium to high plasticity	Bentonite seal (chips, hydrated)	
9	30		11-7	2					
10			11-8	3		CL	CLAY (CL) with silt (5-15 percent), same appearance as above, with silt lenses up to 1.5-inch thick		
11	35								
12	40						At 35 feet (bottom of Shelby tube sample), CLAY (CL), same appearance as at 25 feet		

STANDARD\_LOG\_RLF\_HSC GEOTECHNICAL BOREHOLE LOGS\_V0.3.GPJ STD\_LOG.GDT 2/23/11

Drilling Company: **Major Drilling Environmental, LLC**  
 Drilling Method: **Mud Rotary**  
 Logged By: **David Lamadrid**  
 Sampling Method: **See legend for explanation of sample types**

Date Started: **9/8/10** Elevation: **149.3 ft.**  
 Date Ended: **9/9/10** Depth to Water: **14.7 ft.**  
 Boring Diameter: **5.9" (to 26.0 ft.), 4.9" (from 26.0 to 60.9 ft.)**

**Riverbend Landfill Company**

**JOB NUMBER: 04210010.00**

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
40	40		11-9	4 5 6				CLAY (CL), dark olive gray (5Y 3/2) with greenish tint, moist to wet, stiff, massive, scattered white (calcium?) grains (medium grain size), medium plasticity	← Bentonite seal (chips, hydrated)
13	45		11-10	6 6 7		CL		At 45 feet, same as above but with trace fine sand, minor orange brown oxide (iron) mottling, increasing sand with depth to 10-20 percent - At 46 feet, sharp contact with FINE SANDY CLAY (CL), mottled olive (5Y 4/4) and light olive brown (2.5Y 5/6), moist to wet, stiff, few fine gravels at contact, low to medium plasticity - At bottom 0.5 inch in sample 11-10, SLIGHTLY CLAYEY FINE SAND (SC) - Shelby tube sample 11-11 damaged at bottom, only able to push tube 24 inches - At 50 feet, CLAY (CL), dark olive gray (5Y 3/2), damp, hard, moderately indurated, some orange brown oxide (iron) mottling from 50.0 to 50.5 feet, weak fracture structure (crumbly), low plasticity	
14	50		11-11	---					
15	50		11-12	11 14 23					
16	55		11-13	32 48 50/2"				CLAY (CL) with sand, very dark gray (5Y 3/1), damp, hard, trace scattered fine to medium sand (f:m = 80:20), two hairline calcium (?) filled veins, low plasticity	
17	60		1-14	28 50/5"			Same as above, but fine to coarse scattered sand 10-20 percent		
18	60						Total Depth = 60.9 feet		
19	65						NOTES:		
20	65						1. Drilled adjacent borehole with hollow stem augers to collect bulk soil cuttings sample from 0 to 5.0 feet.		
21	70						2. Hammer energy calibration performed for GT10-11. Used 140 lb. hammer for SPT samplers and 300 lb. hammer for California Modified samplers.		
22	70						3. Pushed 36-inch long Shelby tube sample 30 inches only.		
23	75						4. Static groundwater level measured on September 13, 2010.		
24	80								
25	85								
26	85								

STANDARD\_LOG\_RLF\_HSC\_GEOTECHNICAL\_BOREHOLE\_LOGS\_V0.3.GPJ STD\_LOG.GDT 2/23/11

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**BORING NUMBER: GT10-12**

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**Riverbend Landfill Company**  
**Riverbend Landfill**  
**McMinnville, Oregon**

**JOB NUMBER: 04210010.00**

REMARKS:  
Mobile B-54 drill rig with automatic hammer (140 lb. and 300 lb. hammers used, see notes at end of log; 30-inch drop). NWJ rods used.

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
0	0		12-1	---		CL/ML	Surface: natural ground surface (grass)	0	8-inch diameter locking monument
1	5		12-2	1 2 3	0.75		SILTY CLAY / CLAYEY SILT (CL/ML), yellowish brown (10YR 5/4), moist, firm, few micropores, medium plasticity	5	Concrete
2			12-3	---					Bentonite seal (chips, hydrated)
3	10					ML	At 10.0 feet (bottom of Shelby tube sample), SILT (ML), yellowish brown (10YR 5/4), moist to wet, slight orange brown oxide (iron) mottling	10	2-inch diameter, flush threaded, SCH 40, PVC blank casing
4	15		12-4	3 3 4	0.5		Same as above, but wet, firm, trace to some clay (less than 15 percent), low to medium plasticity	15	
5			12-5	2 2 2	0.25		Same as at 10.0 feet, but with thin beds up to 4 inches thick with varying clay content (trace up to 20-30 percent)	20	10/20 Colorado silica sandpack
6	20		12-6 (N.R.)	---			No recovery in Shelby tube sample 12-6	20	2-inch diameter, flush threaded, SCH 40, PVC slotted (0.010-inch) casing
7			12-7	4 4 7	1.0		SILT (ML), dark gray (5Y 4/1), moist, stiff, trace clay at top of sample, faintly micaceous, low plasticity	25	Threaded, PVC end cap
8	25		12-8	2 4 7	1.75		Same as above, but with 2-inch lens of clayey (20-30 percent) silt	30	
9	30		12-9	---			At 22.5 feet (bottom of Shelby tube sample), same as 22.5 feet but with trace clay	35	Bentonite seal (chips, hydrated)
10									
11	35		12-10	4 5 5	1.0	CL	CLAY (CL), very dark gray (5Y 3/1) with slight greenish tint, moist, stiff, medium to high plasticity		
12	40								

STANDARD\_LOG\_RLF\_HSC GEOTECHNICAL BOREHOLE LOGS\_V0.3.GPJ STD\_LOG.GDT 2/23/11

Drilling Company: **Major Drilling Environmental, LLC**

Drilling Method: **Mud Rotary**

Logged By: **David Lamadrid**

Sampling Method: **See legend for explanation of sample types**

Date Started: **9/14/10** Elevation: **150.6 ft.**  
 Date Ended: **9/14/10** Depth to Water: **14.7 ft.**  
 Boring Diameter: **5.9" (to 26.0 ft.), 4.9" (from 26.0 to 66.5 ft.)**

Total Depth: **55.7 ft.**

**Riverbend Landfill Company**

**JOB NUMBER: 04210010.00**

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
	40		12-11	--					
	13				0.5			At 42.5 feet (bottom of Shelby tube sample), CLAY (CL), very dark gray (5Y 3/1) with slight greenish tint, moist, medium to high plasticity	
	45		12-12	14 9 9	1.25	CL		At 45 feet, SANDY, GRAVELLY CLAY (CL), dark olive gray (5Y 3/2), moist, very stiff, medium to coarse sand 10-20 percent, fine to coarse subrounded gravel 30-40 percent to 1-inch diameter, some orange brown oxide (iron) mottling	
	14							- At 45.7 feet, sharp contact with SANDY CLAY (CL) with fine gravels, dark yellowish brown (10YR 4/6), moist, very stiff, fine to coarse sand (f:m:c = 50:40:40) 20-30 percent, weathered appearance	
	15		12-13	27 50/3"		CL/GC SLTST		- At 50 feet, SANDY GRAVELLY CLAY / CLAYEY GRAVEL (CL/GC), dark yellowish brown (10YR 4/6) with orange brown oxide (iron) mottling, wet, fine to coarse sand (f:m:c = 50:40:40), fine to coarse subrounded gravel to 1-inch diameter (predominantly fine), weathered appearance	
	16							- At 50.5 feet, SILTSTONE (SLTST), dark gray (2.5Y N4/), damp, hard, moderately indurated, slightly friable, scattered white (calcium?) flecks and nodules	
	17		12-14	25 50/2"		SLTST		- At 55 feet, same as above	
	18							Total Depth = 55.7 feet	
	19							NOTES:	
	20							1. Drilled adjacent borehole with hollow stem augers to collect bulk soil cuttings sample from 0 to 5.0 feet.	
	21							2. Initially used 140 lb. hammer for sample collection; switched to 300 lb. hammer before collecting sample 12-14 at 55 feet.	
	22							3. Pushed 36-inch Shelby tube sample 30 inches only.	
	23							4. Static groundwater level measured on September 15, 2010.	
	24								
	25								
	26								
								Bentonite seal (chips, hydrated)	

STANDARD\_LOG\_RLF\_HSC\_GEOTECHNICAL\_BOREHOLE\_LOGS\_V0.3.GPJ STD\_LOG.GDT 2/23/11

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**BORING NUMBER: SA-BH-1**

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**Riverbend Landfill Company**  
**Riverbend Landfill**  
**McMinnville, Oregon**

**JOB NUMBER: 04210010.00**

REMARKS:  
Mobile B-53 drill rig with automatic hammer (140 lb. hammer, 30-inch drop)

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
0	0						Surface: natural ground surface (harvested wheat field)		
			BH-1-1	2 4 4		ML	SILT (ML), yellowish brown (10YR 5/4), dry to damp, firm, soom rootlets	8-inch diameter locking monument	
	5		BH-1-2	4 7 8		CL	CLAY (CL) with silt, dark yellowish brown (10YR 4/6), moist, stiff, rare fine gravel, faintly micaceous, slightly blocky texture, few filled micropores, medium plasticity	Concrete	
	10		BH-1-3	1 1 3		CL	- At 11.0 feet, silt increases to 20 to 30 percent, moist to wet, 1-inch thick hard brown clay lens (slightly crumbly) at contact	Bentonite seal (chips, hydrated)	
	15		BH-1-4	1 2 3		ML	CLAYEY SILT (ML), yellowish brown (10YR 5/4), wet, trace to some clay up to 20 percent, faintly micaceous, low plasticity	2-inch diameter, flush threaded, SCH 40, PVC blank casing	
	20		BH-1-5	0 2 3		CL	CLAY (CL) with silt, light olive brown (2.5Y 5/3), moist to wet, slight orange brown oxide (iron) mottling - At 17.6 feet, 4-inch thick silt lens, wet - At 19.2 feet, CLAY (CL) with silt, very dark gray (5Y 3/1) with greenish tint, firm, massive, medium to high plasticity	10/20 Colorado silica sandpack	
	25						Total Depth = 23.0 feet	2-inch diameter, flush threaded, SCH 40, PVC slotted (0.010-inch) casing	
	30						Aboveground construction includes 8-inch protective steel monument and three bollard posts.	Threaded, PVC end cap	
	35						Stabilized groundwater level measured on Sept. 1, 2010.		
	40								

STANDARD\_LOG\_RLF\_STREAM\_ALIGNMENT\_BOREHOLE\_LOGS.GPJ STD\_LOG.GDT 3/8/11

Drilling Company: **Major Drilling Environmental, LLC**  
 Drilling Method: **Hollow Stem Auger**  
 Logged By: **David Lamadrid**  
 Sampling Method: **See legend for explanation of sample types**

Date Started: **8/24/10**      Elevation: **152.5 ft.**  
 Date Ended: **8/24/10**      Depth to Water: **11.9 ft.**  
 Boring Diameter: **10-inch**      Total Depth: **23.0 ft.**

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**BORING NUMBER: SA-BH-3**

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**Riverbend Landfill Company**  
**Riverbend Landfill**  
**McMinnville, Oregon**

**JOB NUMBER: 04210010.00**

REMARKS:  
Mobile B-53 drill rig with automatic hammer (140 lb. hammer, 30-inch drop)

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
0	0						Surface: natural ground surface (harvested wheat field) CLAYEY SILT (ML), dark brown (10YR 4/3), dry to damp, firm, clay 10-20 percent, some rootlets	<p>8-inch diameter locking monument Concrete Bentonite seal (chips, hydrated) 2-inch diameter, flush threaded, SCH 40, PVC blank casing 10/20 Colorado silica sandpack 2-inch diameter, flush threaded, SCH 40, PVC slotted (0.010-inch) casing Threaded, PVC end cap Bentonite (chips, hydrated) Native soil with sample corehole backfilled with bentonite</p>	
0.5	1.5		BH-3-1	3 4 5		ML			
1.5	5		BH-3-2	2 3 5		CL	CLAY (CL) with silt, olive brown (2.5Y 4/3), moist, firm, slight orange brown oxide (iron) mottling, faintly micaceous, faint blocky texture, few filled micropores		
2.5	10		BH-3-3	3 3 4		CL/ML	Bedded CLAY (CL) with silt and SILT (ML), olive brown (2.5Y 4/3), moist to wet, firm, beds 4 to 8 inches thick, contacts are moderately sharp  At 12.5 feet, wet (visible water in silt beds)		
4.5	15		BH-3-4	1 2 4			Same as above		
6.5	20		BH-3-5	3 5 9		CL	Same as above CLAY (CL), very dark gray (5Y 3/1) with greenish tint, moist to wet, stiff, massive, medium to high plasticity  Grades to clay with trace to some silt in thin zones  Grades to moist		
8.5	25		BH-3-6	2 4 8			Total Depth = 26.5 feet  Sampled to 26.5 feet; drilled out borehole to 25.0 feet for piezometer installation.  Aboveground construction includes 8-inch protective steel monument and three bollard posts.  Stabilized groundwater level measured on Sept. 2, 2010.		
9.5	30								
10.5	35								
11.5	40								

STANDARD\_LOG\_RLF\_STREAM\_ALIGNMENT\_BOREHOLE\_LOGS.GPJ STD\_LOG.GDT 3/8/11

Drilling Company: **Major Drilling Environmental, LLC**  
 Drilling Method: **Hollow Stem Auger**  
 Logged By: **David Lamadrid**  
 Sampling Method: **See legend for explanation of sample types**

Date Started: **8/24/10**      Elevation: **152.4 ft.**  
 Date Ended: **8/24/10**      Depth to Water: **11.7 ft.**  
 Boring Diameter: **10-inch**      Total Depth: **26.5 ft.**

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**BORING NUMBER: SA-BH-5**

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**Riverbend Landfill Company**  
**Riverbend Landfill**  
**McMinnville, Oregon**

**JOB NUMBER: 04210010.00**

REMARKS:  
Mobile B-53 drill rig with automatic hammer (140 lb. hammer, 30-inch drop)

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
0	0						Surface: natural ground surface (harvested wheat field)	<p>8-inch diameter locking monument</p> <p>Concrete</p> <p>Bentonite seal (chips, hydrated)</p> <p>2-inch diameter, flush threaded, SCH 40, PVC blank casing</p> <p>10/20 Colorado silica sandpack</p> <p>2-inch diameter, flush threaded, SCH 40, PVC slotted (0.010-inch) casing</p> <p>Threaded, PVC end cap</p>	
			BH-5-1	3 5 5		ML	CLAYEY SILT (ML), dark brown (10YR 4/3), dry todamp, stiff, some roots and rootlets		
1	5		BH-5-2	4 6 7			CLAYEY SILT (ML), yellowish brown (10YR 5/4), damp to moist, stiff, clay 30-40 percent, slight dark brown mottling, faintly micaceous, low to medium plasticity		
2	10		BH-5-3	2 2 3			- Grades to 20-30 percent clay, moist - CLAYEY SILT (ML) as above but bedded, beds 1 to 2 feet thick with varying clay content (10 to 40 percent), firm, few clay-filled micropores		
3	15		BH-5-4	1 2 3			- At 14.0 feet, becomes moist to wet - Same as at 10 feet.		
4	20		BH-5-5	1 2 2			- At 17.0 feet, becomes wet  - Same as at 10 feet.		
5	25		BH-5-6	1 2 4		CL	SILTY CLAY / CLAYEY SILT (CL/ML), mottled light olive brown (2.5Y 5/3) and dark yellowish brown (10YR 4/6), wet, firm, few filled micropores, faintly micaceous, medium to high plasticity		
6	30						Total Depth = 28.5 feet		
7	35						Aboveground construction includes 8-inch protective steel monument and three bollard posts.		
8	40						Stabilized groundwater level measured on Sept. 1, 2010.		

STANDARD\_LOG\_RLF\_STREAM\_ALIGNMENT\_BOREHOLE\_LOGS.GPJ STD\_LOG.GDT 3/8/11

Drilling Company: **Major Drilling Environmental, LLC**  
 Drilling Method: **Hollow Stem Auger**  
 Logged By: **David Lamadrid**  
 Sampling Method: **See legend for explanation of sample types**

Date Started: **8/23/10**      Elevation: **148.1 ft.**  
 Date Ended: **8/23/10**      Depth to Water: **19.7 ft.**  
 Boring Diameter: **10-inch**      Total Depth: **28.5 ft.**

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**BORING NUMBER: SA-BH-6**

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**Riverbend Landfill Company**  
**Riverbend Landfill**  
**McMinnville, Oregon**

**JOB NUMBER: 04210010.00**

REMARKS:  
Mobile B-53 drill rig with automatic hammer (140 lb. hammer, 30-inch drop)

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
0	0						Surface: natural ground surface (harvested wheat field)	8-inch diameter locking monument	
			BH-6-1	3 4 4		CL	CLAY (CL), dark yellowish brown (10YR 4/4), damp, firm, few small black (carbonized?) soft nodules to 1/8-inch diameter, roots and rootlets to 2.0 feet, medium plasticity when wet	Concrete	
1	5		BH-6-2	2 4 4			- At 7.0 feet, becomes moist	Bentonite seal (chips, hydrated)	
2								2-inch diameter, flush threaded, SCH 40, PVC blank casing	
3	10		BH-6-3	2 3 2		CL	At 9.0 feet, grades to SILTY CLAY (CL), dark yellowish brown as above but with slight light olive brown (2.5Y 5/3) and orange brown oxide (iron) mottling, moist, firm, silt 10-20%, faintly micaceous, slight blocky texture, medium plasticity		
4									
5	15		BH-6-4	1 1 1			- At 14.0 feet, becomes moist to wet - At 15.0 feet, gradationally becomes medium to high plasticity, very soft		
6									
7	20		BH-6-5	0 0 1		CL	SILTY CLAY (CL), dark olive gray (5Y 3/2) with some orange brown oxide (iron) mottling, moist to wet, very soft, silt 20-30%, medium to high plasticity - At 21.0 feet, grades to clay as above but no silt	10/20 Colorado silica sandpack	
8								2-inch diameter, flush threaded, SCH 40, PVC slotted (0.010-inch) casing	
9								Threaded, PVC end cap	
10	25						Total Depth = 25.0 feet		
11							Aboveground construction includes 8-inch protective steel monument and three bollard posts.		
12							Stabilized groundwater level measured on Oct. 5, 2010.		

STANDARD\_LOG\_RLF\_STREAM\_ALIGNMENT\_BOREHOLE\_LOGS.GPJ STD\_LOG.GDT 3/8/11

Drilling Company: **Major Drilling Environmental, LLC**

Drilling Method: **Hollow Stem Auger**

Logged By: **David Lamadrid**

Sampling Method: **See legend for explanation of sample types**

Date Started: **9/28/10**

Date Ended: **9/29/10**

Boring Diameter: **10-inch**

Elevation: **123.8 ft.**

Depth to Water: **14.2 ft.**

Total Depth: **25.0 ft.**