12.6.3

ANCHOR
ENVIRONMENTAL, L.L.C.

1423 3rd Avenue, Suite 300
Seattle, WA 98101
Phone 206.287.9130
Fax 206.287.9131
www.anchorenv.com

Letter of Transmittal

To:	Lynda Priddy U.S. Environmental Protection Agency 1200 Sixth Avenue (ECL-113) Seattle, WA 98101	**From:**	Dan Hennessy DPH
		Date:	December 16, 2005
Re:	Port Quendall Terminals - Compilation of Boring Logs	**Project:**	020059-02

We are sending the following items:

Copies	Description
3	Comprehensive Compilation of Boring Logs for the Port Quendall Terminals Site

These are transmitted:

☐ For your information ☐ For action specified below ☐ For review and comment ☒ For your use ☐ As requested

Comments:

Lynda –

Please find enclosed three (3) binders, each containing a comprehensive compilation of boring logs for the Port Quendall Terminals Site. Do not hesitate to call me at (206) 287-9130 if you have any questions or further requests.

Best regards, Dan Hennessy

USEPA SF
1236349

ASPECT 2003

Well Logs

RW-NS-1
RW-QP-1

Soil Boring Logs

SP1 to SP8

Geologic & Monitoring Well Construction Log

Aspect consulting — IN-DEPTH PERSPECTIVE

Project Number	Well Number	Sheet
020027	RW-NS-1	1 of 1

Project Name	Quendall Terminals	Top of Casing Elev. (ft mllw)	27.20'
Location	Renton, Washington	Depth to Water (ft bgs)	
Drilling Method	10" HSA ; Holt	Start Date	November 14, 2003
Sampling Method	18" SS	Finish Date	November 14, 2003

Depth feet	Well Construction	Tests\Remarks	ST	Blows/ 6"	PID	Sample ID	Mtl. Graphic	Description
								NOTE: FOR DETAILED SOIL LOG, SEE SP-5.
1		*Concrete surface seal*						
2								
3		*Bentonite*						
4		Riser: 4-inch diameter, stainless steel, schedule 0.5S.						
5		10/20 Silica sand						
6								
7		Well screen: 4-inch diameter, stainless steel, 50-slot.						
8		No recovery - 2" rock in shoe.	O	18/12/7		S-1		
9								
10		Pea gravel filter pack.	X	9/8/16	65	S-2		Wood debris.
11		Strong sheen, odor, yellow-brown oil.	X					Medium dense, wet, grey SAND.
12								
13			X	4/3/2	33	S-3		Finer SAND.
14		*In area of coarser sand, no product.*						Coarser SAND.
15			X	4/4/3	549	S-4		
16		*Dark yellow-brown oil.*	X					Peaty SILT (Sampled from cuttings. Depth based on drill action).
17								
18		Sump: 4-inch diameter, stainless steel.	X	5/4/3		S-5		
19		(Slough)						
20		(Slough)	X	6/5/3		S-6		
21		*Bentonite*						
22								Bottom of boring: 21.5'.
23								
24								
25								
26								
27								
28								
29								

Sampler Type (ST):

- 3.25" OD D & M Split-Spoon Ring Sampler
- No Recovery
- 2" OD Split-Spoon Sampler

PID - Photoionization Detector

Water Level (ATD)

Static Water Level

Logged by: JJP

Approved by: JJP

Figure No. 1- 1

MW_GEOLG-QUENDALL QUENDALL.GPJ May 25, 2004

Aspect consulting
IN-DEPTH PERSPECTIVE

Geologic & Monitoring Well Construction Log

Project Number	Well Number	Sheet
020027	RW-QP-1	1 of 1

Project Name	Quendall Terminals	Top of Casing Elev. (ft mllw)	19.71
Location	Renton, Washington	Depth to Water (ft bgs)	
Drilling Method	10" HSA ; Holt	Start Date	November 13, 2003
Sampling Method	18" SS	Finish Date	November 13, 2003

Depth feet	Well Construction	Tests\Remarks	ST	Blows/ 6"	PID	Sample ID	Mtl. Graphic	Description
								NOTE: FOR DETAILED SOIL LOG, SEE SP-3.
1		Concrete						
2		Riser: 4-inch diameter, stainless steel, schedule 05S.						
3		Bentonite						
4								
5		10/20 Silica sand						
6								
7		Screen: 4-inch diameter, stainless steel, 50-slot.						
8			X	9/11/6	26.6	S-1		Medium dense, wet, brown, very silty fine SAND with abundant organics.
9		Hydrocarbon odor.						Loose, wet, grey, slightly silty fine-to-medium SAND.
10		Creosote odor.	X	3/2/1	32.2	S-2		
11								Mostly fine SAND.
12		Pea gravel filter pack						
13			X	2/1/1	16.3	S-3		
14		Creosote odor.			383			Soft, brown, slightly sandy organic SILT.
15								Loose, wet, grey, fine-to-medium SAND with silty SAND layers.
16		Creosote odor. Sheen.	X	3/4/6	88	S-4		
17		Slightly stiffer drilling at 16'.						Soft, wet, dark brown, slightly sandy SILT with interbedded very silty SAND layers.
18		Bentonite Sump: 4-inch diameter, stainless steel.	X	5/5/6		S-5		
19								Bottom of boring: 19'.
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								

Sampler Type (ST):
- 3.25" OD D & M Split-Spoon Ring Sampler
- No Recovery
- 2" OD Split-Spoon Sampler

PID - Photoionization Detector
- Water Level (ATD)
- Static Water Level

Logged by: JJP
Approved by: JJP
Figure No. 1- 2

MW_GEOLG-QUENDALL QUENDALL.GPJ May 25, 2004

Aspect consulting
IN-DEPTH PERSPECTIVE

Geologic & Boring Log

Project Number	Well Number	Sheet
020027	SP-1	1 of 1

Project Name: Quendall Terminals
Location: Renton, Washington
Drilling Method: GeoProbe

Top of Casing Elev. (ft mllw):
Depth to Water (ft bgs):
Start Date: November 6, 2003
Finish Date: November 6, 2003

Depth feet	Tests\Remarks	ST	Blows/ 6"	PID	Sample ID	Description
1	No sheen/odor.				S-1	(Loose) moist dark brown, silty SAND with gravel, abundant wood debris, few coal pieces.
2					S-2	
3						
4						
5	No sheen/odor.					(Medium dense) moist, brown to grey, sandy silty GRAVEL, some organic material.
6					S-3	(Medium dense) moist, brown, silty SAND, abundant organics.
7						
8						
9						(Medium stiff) moist, grey, sandy SILT with wood and organics.
10	Sheen; black, viscous oil, stain, yields oil material when squeezed (9.2' to 9.8').				S-4	(Medium dense) moist to wet, dark grey, slightly gravelly silty SAND.
11	Sheen/odor.					(Medium dense) wet, grey, medium SAND. Coarse SAND with gravel, 11.7-12.2'.
12	Sheen/odor.					
13						(Medium dense) wet, brown, silty SAND with silt layer 12.5-12.7'
14						(Medium stiff) wet, brown, slightly sandy organic SILT.
15	Sheen/odor.				S-5	(Medium dense) wet, grey fine-to-medium SAND.
16						
17						
18					S-6	
19						(Soft) wet, brown, organic SILT.
20						
21						Becomes medium stiff, light brown.
22					S-7	
23						1" wood and 2" fine-to-medium SAND layer at 22.8'.
24	Very slight sheen.					(Medium dense) wet, grey, slightly silty fine-to-medium SAND with interbedded 0.5" SILT laters.
25						
26						Bottom of boring: 26'.
27						
28						
29						

Sampler Type (ST):
- 3.25" OD D & M Split-Spoon Ring Sampler
- No Recovery
- 2" OD Split-Spoon Sampler
- 1.3" O.D. Dual-Tube

PID - Photoionization Detector
- Water Level (ATD)
- Static Water Level

Logged by: JJP
Approved by: JJP
Figure No. 1- 3

MW_GEOLG_QUENDALL QUENDALL-SP.GPJ May 25, 2004

Aspect consulting
IN-DEPTH PERSPECTIVE

Geologic & Boring Log

Project Number	Well Number	Sheet
020027	SP-2	1 of 1

Project Name	Quendall Terminals	Top of Casing Elev. (ft mllw)	
Location	Renton, Washington	Depth to Water (ft bgs)	
Drilling Method	GeoProbe	Start Date	November 7, 2003
Sampling Method	4' Dual Tube	Finish Date	November 7, 2003

Depth feet	Tests\Remarks	ST	Blows/ 6"	PID	Sample ID	Mtl. Graphic	Description
					S-1		(Loose) moist, brown, silty SAND with abundant organics.
1							(Loose) moist, brown to black, slightly silty sandy GRAVEL with occasional coal chips.
2					S-2		(Medium dense) moist, brown to grey, slightly silty fine-to-medium SAND.
3							
4							Very silty SAND layer 3.9-4.0'
5							Very silty SAND layer 4.8-5.0'.
6					S-3		Dark brown organics and wood 5.8'-5.9'.
7							(Medium dense) moist, brown, silty SAND with trace gravel, abundant organics.
8							
9							9-9.3' sandy SILT layer.
10	no odor, no sheen.				S-4		(Medium dense) moist to wet, grey, medium-to-fine SAND.
11							Wood layer 10.7-10.9'.
12							Coarsens with depth 11' to 12' to primarily medium SAND. Slightly silty medium-to-fine SAND, abundant organics 12-13'.
13							(Medium stiff) wet, brown, slightly sandy organic SILT.
14					S-5		
15							(Medium dense) wet, grey, slightly silty medium-to-fine SAND with some wood debris.
16							Becoming clean SAND at 16'.
17							(Medium dense) wet, grey, fine-to-medium SAND.
18	Heaving SAND.				S-6		
19							
20	Product staining, free oil, odor 21.8'-22'						
21							
22							Bottom of boring: 22'. Refusal.
23							
24							
25							
26							
27							
28							
29							

Sampler Type (ST):
- 3.25" OD D & M Split-Spoon Ring Sampler
- No Recovery
- 2" OD Split-Spoon Sampler
- 1.3" O.D. Dual-Tube

PID - Photoionization Detector
- Water Level (ATD)
- Static Water Level

Logged by: JJP
Approved by: JJP
Figure No. 1- 4

MW_GEOLG_QUENDALL QUENDALL-SP.GPJ May 25, 2004

Aspect consulting
IN-DEPTH PERSPECTIVE

Geologic & Boring Log

Project Number	Well Number	Sheet
020027	SP-3	1 of 1

Project Name	Quendall Terminals	Top of Casing Elev. (ft mllw)	
Location	Renton, Washington	Depth to Water (ft bgs)	
Drilling Method	GeoProbe	Start Date	November 7, 2003
Sampling Method	4' Dual Tube	Finish Date	November 7, 2003

Depth feet	Tests\Remarks	ST	Blows/ 6"	PID	Sample ID	Mtl. Graphic	Description
					S-1		(Loose) moist, brown silty SAND, abundant organics.
1	Iron oxide staining 0.9'-1.7', no odor.						(Loose) wet, grey, fine-to-medium SAND.
2					S-2		
3							Becomes silty at 3'.
4							Very silty 3.5'-4' organics and wood at 4'-4.3'.
5							(Soft) wet, brown, sandy SILT with organics.
6					S-3		
7	No sheen/no odor.						(Loose) wet, grey, slightly silty fine-to-medium SAND.
8							Interbedded 1-2" organic silty, wood layers 8'-10.5'.
9							
10					S-4		
11							(Soft) wet, brown, organic SILT (peaty layers 13'-13.6').
12							
13							
14	Dark brown product 14'-16'.				S-5		(Medium dense) wet, brown, medium SAND (interbedded layers of medium-to-fine SAND).
15							
16	No product.						(Medium stiff) wet, brown, organic SILT.
17							
18							Becomes light brown to grey 17.5'.
					S-6		(Medium dense) wet, grey and brown, interbedded SAND and silty SAND (1"-2" layers).
19							18.1'-19.2' interbedded 2"-3" layers slightly sandy SILT and silty fine SAND.
20	Slight sheen.						(Medium dense) wet, grey, SAND (coarser than usual).
21							Becomes slightly silty medium-to-fine SAND.
							(Medium stiff) wet, light brown slightly sandy SILT.
22					S-7		(Medium dense) wet, grey, fine-to-medium SAND.
23	Heaving SAND.						
24	No sheen, odor.						
25							(Medium stiff) wet, brown, SILT with organics.
26							Dark brown peat at 25.3'-25.4'. Grey, wet, SAND layer 25.6'-25.7'.
27							Bottom of boring: 26'.
28							
29							

Sampler Type (ST):
- 3.25" OD D & M Split-Spoon Ring Sampler
- No Recovery
- 2" OD Split-Spoon Sampler
- 1.3" O.D. Dual-Tube

PID - Photoionization Detector
- Water Level (ATD)
- Static Water Level

Logged by: JJP
Approved by: JJP
Figure No. 1- 5

MW_GEOLG_QUENDALL_QUENDALL-SP.GPJ May 25, 2004

Aspect consulting
IN-DEPTH PERSPECTIVE

Geologic & Boring Log

Project Number	Well Number	Sheet
020027	SP-4	1 of 1

Project Name	Quendall Terminals	Top of Casing Elev. (ft mllw)	
Location	Renton, Washington	Depth to Water (ft bgs)	5.5
Drilling Method	GeoProbe	Start Date	November 7, 2003
Sampling Method	4' Dual Tube	Finish Date	November 7, 2003

Depth feet	Tests\Remarks	ST	Blows/ 6"	PID	Sample ID	Mtl. Graphic	Description
					S-1		(Soft) moist, dark brown, sandy SILT with organics.
1	No odor.						
2					S-2		(Loose) moist, dark brown, silty SAND with trace gravel, some organics.
							Abundant coal chips 1.8'-2'.
3							(Loose) wet, dark grey to black, silty, gravelly SAND.
4							
5							Becomes dark brown, very silty SAND.
6					S-3		(Medium dense) wet, grey, fine-to-medium SAND.
7	Strong sheen, creosote odor.						Becomes medium-to-fine SAND.
8	Few areas of yellow-brown product staining; 6.8'-7' and 8.3'-9.0' (at contacts with finer SAND).						
9							Silty sand with wood 8.7'-9'.
10					S-4		
11							Becomes fine-to-medium sand at 10.5'.
12	Yellow-brown product at 11.5'-12.5'. Dark brown 11.6'-11.8'.						Silty medium-to-fine SAND at 12'.
13	Sheen, odor.						(Medium stiff) wet, brown, sandy organic SILT. Becomes slightly sandy at 13'.
14					S-5		Slightly clayey, SILT at 14'.
15							
16							Fine sandy SILT at 15.5'.
17							
18							Mottled with dark brown peat.
	No sheen/odor				S-6		(Medium dense) wet, brown to grey, silty SAND with organics.
19							
20							
21							(Medium stiff) wet, brown, slightly sandy SILT.
							(Medium dense) wet, grey silty fine-to-medium SAND.
22	No sheen/odor						Bottom of boring: 22'.
23							
24							
25							
26							
27							
28							
29							

Sampler Type (ST):
- 3.25" OD D & M Split-Spoon Ring Sampler
- No Recovery
- 2" OD Split-Spoon Sampler
- 1.3" O.D. Dual-Tube

PID - Photoionization Detector
- Water Level (ATD)
- Static Water Level

Logged by: JJP
Approved by: JJP
Figure No. 1- 6

MW_GEOLG_QUENDALL QUENDALL-SP.GPJ May 25, 2004

Aspect consulting
IN-DEPTH PERSPECTIVE

Geologic & Boring Log

Project Number	Well Number	Sheet
020027	SP-5	1 of 1

Project Name: Quendall Terminals
Location: Renton, Washington
Drilling Method: GeoProbe

Top of Casing Elev. (ft mllw):
Depth to Water (ft bgs):
Start Date: November 6, 2003
Finish Date: November 6, 2003

Depth feet	Tests\Remarks	ST	Blows/ 6"	PID	Sample ID	Mtl. Graphic	Description
					S-1		(Loose) moist, dark brown, silty SAND with gravel, abundant organic materials.
1	No odor.						
2					S-2		
3							
4							
5							(Loose) moist-to-wet, grey and tan, slightly silty, slightly gravelly SAND.
6	Slight creosote odor, no sheen.				S-3		(Loose) moist, grey, silty SAND.
7							
8	No recovery 6'-10'.						
9							
10					S-4		(Medium dense) wet, grey, fine-to-medium SAND.
11							
12	Dark brown free product 10'-16'.						
13							
14					S-5		
15							(Medium dense) wet, brown, silty medium-to-fine SAND.
16	Odor, sheen.						(Soft) wet, brown, organic SILT to slightly sandy SILT.
17							
18					S-6		
19							
20							
21							
22							Bottom of boring: 22'.
23							
24							
25							
26							
27							
28							
29							

Sampler Type (ST):
- 3.25" OD D & M Split-Spoon Ring Sampler
- No Recovery
- 2" OD Split-Spoon Sampler
- 1.3" O.D. Dual-Tube

PID - Photoionization Detector
- Water Level (ATD)
- Static Water Level

Logged by: JJP
Approved by: JJP
Figure No. 1- 7

MW_GEOLG_QUENDALL QUENDALL-SP.GPJ May 25, 2004

Aspect consulting
IN-DEPTH PERSPECTIVE

Geologic & Boring Log

Project Number	Well Number	Sheet
020027	SP-6	1 of 1

Project Name: Quendall Terminals
Location: Renton, Washington
Drilling Method: GeoProbe

Top of Casing Elev. (ft mllw):
Depth to Water (ft bgs):
Start Date: November 6, 2003
Finish Date: November 6, 2003

Depth feet	Tests\Remarks	ST	Blows/ 6"	PID	Sample ID	Mtl. Graphic	Description
1					S-1		(Loose) moist, brown to dark brown, silty SAND with wood debris and organics.
2	Slight creosote odor.				S-2		(Loose) moist, grey and tan, very gravelly SAND.
3							
4							
5							(Loose) wet, grey and tan, silty gravelly SAND 5'-5.5'
6					S-3		Wood debris 5.8'-6.0'.
7	Sheen test negative; no creosote odor.						
8							Wood debris.
9	Strong odor, brown oil. Free product at 9.5'-13'.						(Medium dense) wet, grey, medium-to-fine SAND.
10					S-4		
11							
12							SAND becomes coarser at 12' primarily medium.
13							(Medium stiff) wet, brown organic SILT.
14					S-5		
15							
16	No sheen/odor.						Interbedded (medium dense) wet, brown to grey, very silty SAND and wet, grey, slightly silty medium-to-fine SAND.
17							
18							(Medium stiff) wet, dark brown, slightly sandy organic SILT.
19							Bottom of boring: 18'.
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							

Sampler Type (ST):
- 3.25" OD D & M Split-Spoon Ring Sampler
- No Recovery
- 2" OD Split-Spoon Sampler
- 1.3" O.D. Dual-Tube

PID - Photoionization Detector
- Water Level (ATD)
- Static Water Level

Logged by: JJP
Approved by: JJP
Figure No. 1- 8

MW_GEOLG_QUENDALL QUENDALL-SP.GPJ May 25, 2004

Aspect consulting
IN-DEPTH PERSPECTIVE

Geologic & Boring Log

Project Number	Well Number	Sheet
020027	SP-7	1 of 1

Project Name	Quendall Terminals	Top of Casing Elev. (ft mllw)	
Location	Renton, Washington	Depth to Water (ft bgs)	
Drilling Method	GeoProbe	Start Date	November 6, 2003
Sampling Method	4' Dual Tube	Finish Date	November 6, 2003

Depth feet	Tests\Remarks	ST	Blows/ 6"	PID	Sample ID	Mtl. Graphic	Description
					S-1		(Loose) moist-to-wet, dark brown, silty, gravelly SAND with abundant wood debris and organics.
1							
2					S-2		
3							Wood debris.
4							2" loose, moist, grey, SAND.
							(Soft) moist, brown to grey sandy SILT with occasional coal chips.
5	Strong sheen, creosote odor.						Coal chips 4'-4.3'.
							(Medium stiff) wet, black, slightly sandy SILT.
	Becomes less sheen, dark grey at 5'.						5.2' (Medium dense) wet, grey, fine-to-medium SAND.
6	Strong creosote odor.				S-3		
7	Sheen at 6.5'						
8							
9							
10	Becomes oily, dark brown product 10'-13'.				S-4		
11							
12							
13	Sheen 13'-13.2'.						(Medium stiff) wet, brown to dark brown, SILT to slightly clayey SILT.
14					S-5		
15	Slight odor at 15'.						Becomes sandy SILT at 15.2'.
16							Wood (slightly decomposed).
17							(Medium stiff) wet, dark brown, organic SILT.
18	Brown oil in sand layer 17.6'-17.8'.				S-6		17.6'-17.8' (Medium dense) wet, grey-brown, fine-to-medium SAND.
19							
20							(Medium stiff) wet, grey, fine sandy SILT.
21							Grey to light brown slightly sandy SILT.
22							
23							Bottom of boring: 22' Sampler fractured.
24							
25							
26							
27							
28							
29							

Sampler Type (ST):
- 3.25" OD D & M Split-Spoon Ring Sampler
- No Recovery
- 2" OD Split-Spoon Sampler
- 1.3" O.D. Dual-Tube

PID - Photoionization Detector
- Water Level (ATD)
- Static Water Level

Logged by: JJP
Approved by: JJP
Figure No. 1- 9

MW_GEOLG_QUENDALL QUENDALL-SP.GPJ May 25, 2004

Aspect consulting
IN-DEPTH PERSPECTIVE

Geologic & Boring Log

Project Number	Well Number	Sheet
020027	SP-8	1 of 1

Project Name: Quendall Terminals
Location: Renton, Washington
Drilling Method: GeoProbe

Top of Casing Elev. (ft mllw):
Depth to Water (ft bgs):
Start Date: November 7, 2003
Finish Date: November 7, 2003

Depth feet	Tests\Remarks	ST	Blows/ 6"	PID	Sample ID	Mtl. Graphic	Description
1					S-1		(Soft) moist, dark brown, very sandy SILT, abundant organics.
2					S-2		(Soft) moist, dark brown, organic SILT.
4							(Loose) wet, grey, fine-to-medium SAND.
6					S-3		
9	Yellow-brown product stain 9.2'-10'.						
10					S-4		(Medium dense) wet, brown, silty SAND with wood and peat layers.
11							(Soft) wet, brown, peaty SILT.
14					S-5		
16	Brown product 16.6'-18'.						(Medium dense) wet, brown, fine-to-medium SAND with wood and peat layers 17.5'-18'.
18							Bottom of boring: 18'.

Sampler Type (ST):
- 3.25" OD D & M Split-Spoon Ring Sampler
- No Recovery
- 2" OD Split-Spoon Sampler
- 1.3" O.D. Dual-Tube

PID - Photoionization Detector
- Water Level (ATD)
- Static Water Level

Logged by: JJP
Approved by: JJP
Figure No. 1- 10

MW_GEOLG_QUENDALL QUENDALL-SP.GPJ May 25, 2004

RETEC 2001

RETEC 2001

Soil Boring Logs

RB1 to RB23

Boring Log

RETEC

Boring #: RB-1
Sheet 1 of 2

roject: QUENDALL	Operator: Eric Nassau	Location: 50' S of BH-21
Project #: JAGCO-02438-770	Drill Rig Type: Strataprobe	Northing: 196945.05 Easting: 1301882.15
Client: Vulcan	Method: Direct Push	Ground Elevation: 25.24
Contractor: ESN	Casing ID: NA	Total Depth: 21'
Start Date & Time: 4/09/01 0925	Bit Type: NA	Seal: 3/8 In Bentonite Chips
Finish Date & Time: 4/09/01 1020	Boring ID: 2"	Logged By: Aaron Waggoner

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
GP-1	0-4		87.5	0.0		0	(0 - 3.5) SILT w/ some Clay, trace Sand, ML; Dark brown, damp, soft, predominantly wood waste, no odor or visible contamination (o.v.c.).	25	
						1		24	
						2		23	
						3		22	
GP-2	4-8		87.5	0.0		4	(3.5 - 5.5) GRAVEL, some Sand, GP; Grey to grey green, dry to damp, some lenses of same as above, med to coarse, angular gravel, no o.v.c.	21	
						5		20	
						6	(5.5 - 6.0) Weathered crystalline rock (till?) Gravelly SAND, SP; Green, gravel crumbles under hand pressure, damp, no o.v.c	19	Water @ 6.5'
						7	(6.0 - 8.0) Weathered granitic rock, reduces to Silty, Clayey SAND, w/ trace fine Gravel, SP; Light grey/white w/ grey and pink phenocrysts of clay minerals, soft to very soft, no o.v.c.	18	
GP-3	8-12		50	9.1		8	(8.0 - 12) SAND w/ some Silt, trace Clay, SM; Brown to green, soft, moist, fine to medium sand, rootlets, trace wood waste, no o.v.c.	17	
						9		16	

Remarks and Datum Used:

Horizontal Datum: NAD 84

Vertical Datum: NAVD 88

ne RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
04/09/01	0940	6.5

RETEC

Boring Log

Boring #: RB-1
Sheet 2 of 2

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
						10		15	
						11		14	
GP-4	12-15		50	9.7		12	(12 - 15) SAND, SP; Grey green, wet, dense, fine to medium sand, slight odor, no o.v.c.	13	Switched to 3' sampler
						13		12	
						14		11	
GP-5	15-18		66.7	8.6		15	(15 - 15.5) SAND, SP; Grey green, wet, dense, fine to medium sand, odor, slight sheen at bottom of sand.	10	Soil sample
						16	(15.5 - 18) Silty CLAY, CL; Light brown, damp, soft to very soft, slight odor in top 0.3' gradually fades towards 18', no o.v.c.	9	
						17		8	
GP-6	18-21		83.3	0.0		18	(18 - 21) Silty CLAY, CL; Light brown, damp, soft to very soft, organic matter present, no o.v.c	7	Backfilled w/ bentonite chips
						19		6	
						20		5	
						21			BOH @ 21'

Remarks and Datum Used:

Horizontal Datum: NAD 84

Vertical Datum: NAVD 88

ie RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type

N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
04/09/01	0940	6.5

RETEC

Boring Log

Boring #: RB-2
Sheet 1 of 2

Project: QUENDALL	Operator: Eric Nassau	Location: 50' E of Madden Dock
Project #: JAGCO-02438-770	Drill Rig Type: Stratoprobe	Northing: 196945.05 Easting: 1301882.15
Client: Vulcan	Method: Direct Push	Ground Elevation: 24.32 ft NAVD88
Contractor: ESN	Casing ID: NA	Total Depth: 21'
Start Date & Time: 4/09/01 1135	Bit Type: NA	Seal: 3/8 in Bentonite Chips
Finish Date & Time: 4/09/01 1240	Boring ID: 2"	Logged By: Aaron Waggoner

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
GP-1	0-4		80			0	(0 - 1.0) GRAVEL w/ some Sand, trace Silt, SP; Light grey, dry,dense, no odor or visible contamination (o.v.c.).	24	
						1	(1.0 - 4.0) SILT w/ some Sand, trace Clay, trace Gravel, ML; Dark brown, damp, soft wood waste throughout, no o.v.c.	23	
						2		22	
						3		21	
GP-2	4-8		80			4	(4.0 - 8.0) Sandy SILT w/ some Clay, trace Gravel, ML; Dark brown to grey brown, damp to moist, soft, 0.6' of solid wood @ ~6.5', no o.v.c.	20	
						5		19	
						6		18	Water @ 6.5'
						7		17	
GP-3	8-12		35			8	(8.0 - 9.0) Clayey SILT w/ some Sand, trace Gravel, ML; Dark brown to brown grey, wet, very soft, fine Gravel, wood debris throughout, no o.v.c.	16	Poor recovery (8-12'), probably encountered wood
						9	(9.0 - 12) WOOD	15	

Remarks and Datum Used:

RB-3, direct push to 21' to take a water sample

RB-3-0401 Shallow from 1340-1359.

Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type

N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
04/09/01	1145	6.5

RETEC

Boring Log

Boring #: RB-2
Sheet 2 of 2

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
						10		14	
						11		13	
GP-4	12-15		50			12	(12 - 19) SAND w/ trace Gravel, SP; Greenish-grey, wet, loose, fine subrounded gravel, fine to medium subrounded sand, no o.v.c.	12	Switched to 3' sampler
						13		11	
						14		10	
GP-5	15-18		50			15		9	
						16		8	
						17		7	Taking shallow aquifer water sample @ 19.5' - 1'above aquitard, started purging at 1240.
GP-6	18-21		50			18		6	
						19	(19 - 21) Interbedded medium SAND w/ fine Sandy SILT, SM; Green grey to brown grey, damp, dense, trace subrounded gravel, no o.v.c.	5	
						20		4	
						21			BOH @ 21'

Remarks and Datum Used:

RB-3, direct push to 21' to take a water sample

RB-3-0401 Shallow from 1340-1359.

Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type

N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
04/09/01	1145	6.5

per Katie Hendrickson (Retec)
12/9/02

"No log for RB-3.
Direct push to 21' then
Sample - no soil logging
∴ no log."

RETEC

Boring Log

Boring #: RB-4
Sheet 1 of 2

roject: QUENDALL	Operator: Eric Nassau	Location: 30' NW of BH-21
Project #: JAGCO-02438-770	Drill Rig Type: Stratoprobe	Northing: 197053.03 Easting: 1301919.39
Client: Vulcan	Method: Direct Push	Ground Elevation: 25.18 ft NAVD88
Contractor: ESN	Casing ID: NA	Total Depth: 33'
Start Date & Time: 4/09/01 1500	Bit Type: NA	Seal: 3/8 in Bentonite Chips
Finish Date & Time: 4/09/01 1730	Boring ID: 2"	Logged By: Aaron Waggoner

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
GP-1	0-4		90			0	(0 - 0.2) Sandy SILT w/ trace Clay, some Gravel, ML; Brown, damp, medium stiff, no odor or visible contamination (o.v.c.).	25	
						1		24	
						2	(0.2 - 2.0) Coarse GRAVEL w/ some Sand, trace Silt, GP; Grey, dry to damp, dense, angular fractured up gravel (due to probe), no o.v.c.	23	
						3	(2.0 - 3.0) Fine SAND w/ some Silt, trace Clay, SP; Dark grey, damp, stiff, no o.v.c., carbonized wood.	22	
GP-2	4-8		100			4	(3.0 - 4.0) Wood, Weathered Granitic Rock, reduces to Silt and Clay.	21	
						5	(4.0 - 11) Alternating Weathered Rock of varing lithologies. Damp to moist, reduces to Silty SAND w/ some Gravel and trace Clay, SM; no o.v.c.	20	
						6		19	Water @ 6'
						7		18	
GP-3	8-12		75			8		17	
						9		16	
						10		15	
						11	(11 - 12) SAND, w/ trace interbeds of fine Sandy Silt. One 0.2' thick Peat layer @ 11', SP; Greenish-grey, trace carbonized wood, no o.v.c.	14	0.2' thick Peat layer @ 11'
GP-4	12-15		100	5		12	(12 -15.5) Medium SAND, SP; Greenish-grey, wet, loose, no o.v.c. until bottom (slight odor towards 15').	13	
						13		12	
						14		11	
GP-5	15-18		85			15		10	
						16	(15.5 - 21) SILT w/ some Clay, trace Sand, ML; Mottled orange-brown, damp, soft to medium	9	Top of aquitard @

Remarks and Datum Used: Water Sample B-4-0401 sampled from 30'

Horizontal Datum: NAD 84

ie RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
04/09/01	1515	6.0

RETEC

Boring Log

Boring #: RB-4
Sheet 2 of 2

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
							stiff, organic matter (leaves, branches, etc.) no o.v.c.		15.5'
GP-6	18-21		75	8		17, 18, 19, 20		8, 7, 6, 5	
GP-7	21-24		100	0		21, 22	(21 - 23) Medium SAND, SP; Greenish-grey, wet, loose, no o.v.c.	4, 3	Sharp sand contact @ 21'
GP-8	24-27		70	0		23, 24, 25	(23 - 25.5) SILT w/ some Clay, trace Sand, ML; Mottled orange-brown, damp, soft to medium stiff, organic matter (leaves, branches, etc.) no o.v.c.	2, 1, 0	
						26	(25.5 - 27) Medium SAND, SP; Greenisg-gray, wet, loose, no o.v.c.	1	
GP-9	27-30		65	11.3		27	(27 - 27.5) Fine subrounded Gravel, GW; Green -gray, wet, loose, varying lithologies, no o.v.c.	2	
						28	(27.5 - 28.5) Fine Silty SAND, SM; Dense, wet, green- gray, no o.v.c.	3	
						29	(28.5 - 30) Medium to coarse SAND, SW; Green-grey, wet, loose, slight odor, no o.v.c.	4	Water Sample B-4-0401 Deep taken from 30'
GP-10	30-33		85			30, 31, 32, 33	(30 - 33) Interbedded, medium SAND and Sandy SILT, SW/ML; Green-gray, wet, loose to stiff, slight naphthalene odor from 28.5-32' no v.c.	5, 6, 7	BOH @ 33'

Remarks and Datum Used: Water Sample B-4-0401 sampled from 30'

Horizontal Datum: NAD 84

ne RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
04/09/01	1515	6.0

RETEC

Boring Log

Boring #: RB-5
Sheet 1 of 1

roject: **QUENDALL**	Operator: **Eric Nassau**	Location: **50ft N. of RB-4**
Project #: **JAGCO-02438-770**	Drill Rig Type: **Stratoprobe**	Northing: **197106.6** Easting: **1301974.1**
Client: **Vulcan**	Method: **Direct Push**	Ground Elevation: **26.36 ft. NAVD 88**
Contractor: **ESN**	Casing ID: **-**	Total Depth: **16'**
Start Date & Time: **4/10/01 0820**	Bit Type: **-**	Seal: **3/8 in Bentonite Chips**
Finish Date & Time: **4/10/01 0855**	Boring ID: **2"**	Logged By: **Aaron Waggoner**

Sample Type & #	Sample Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
GP-1	0-4		100			0	(0 - 4) SILT w/ some Sand, trace Clay, ML; Brown, damp to moist, medium stiff, wood waste, no o.v.c.	26	
						1		25	
						2		24	
						3		23	
						4		22	
						5		21	
						6		20	
						7		19	
						8		18	
						9		17	
						10		16	
						11		15	
						12		14	
						13		13	
						14		12	Took water sample B-5-0401S @ 15.5'
						15		11	BOH @ 16'
						16			

Remarks and Datum Used: Took 1-4' soil boring from 0-4'

Horizontal Datum: NAD 84

ie RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)

RETEC

Boring Log

Boring #: RB-6
Sheet 1 of 3

Project: QUENDALL	Operator: Eric Nassau	Location: 40' S of BH-20
Project #: JAGCO-02438-770	Drill Rig Type: Stratoprobe	Northing: 197286.97 Easting: 1302087.94
Client: Vulcan	Method: Direct Push	Ground Elevation: 24.72 ft in NAVD88
Contractor: ESN	Casing ID: NA	Total Depth: 47'
Start Date & Time: 4/10/01 0920	Bit Type: NA	Seal: 3/8 in Bentonite Chips
Finish Date & Time: 4/10/01 1500	Boring ID: 2"	Logged By: Aaron Waggoner

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Soil and Rock Description (Classification Scheme: USCS)	Comments & Samples
GP-1	0-4		75		(0 - 0.3) Gravelly Silty SAND, SP; Brown, damp, loose, no odor or visible contamination (o.v.c.).	
					(0.3 - 4.0) SAND w/ trace Silt, trace Gravel, SP; Light brown, moist, grades from fine to medium coarse, darker zone (0.3"thick) @ 3.5' w/ some fine rounded gravel, no o.v.c.	
GP-2	4-8		60		(4.0 - 8.0) SAND w/ trace Silt, trace Gravel, SP; Light brown, moist, grades from fine sand to coarse over length of run, some fine rounded gravel, no o.v.c.	
GP-3	8-12		100	5.9	(8.0 - 10) SAND w/ trace Silt, trace Gravel, SP; Light brown, wet to saturated, grades from fine sand to coarse over length of run, some fine rounded gravel, no o.v.c.	
					(10 - 12) SAND w/ interbeds of Silt and Sand, SW; Grey sand, brown silt, loose sand, medium stiff silt, wet, HC odor starting at 10' persists thru 12', wood debris in sample.	Beginnning of odor @ 10'.
GP-4	12-15		75	5.3	(12 - 14) SAND w/ interbeds of Silt and Sand, SW; Grey sand, brown silt, loose sand, medium stiff silt, wet, wood debris in sample, no o.v.c.	
					(14 - 14.8) SILT, ML; Brown w/ organic matter, moist to wet, soft, slight odor.	
GP-5	15-18		65		(14.8 - 19.6) SAND w/ interbeds of Silt and Sand, SW; Grey sand, brown silt, loose sand, medium stiff silt, wet, wood debris in sample, no	

Graphic / Depth (ft.): 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16

Elevation (ft.): 24, 23, 22, 21, 20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9

Remarks and Datum Used: Horizontal Datum: NAD 84

ne RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
04/10/01		~7

RETEC

Boring Log

Boring #: RB-6
Sheet 2 of 3

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
					17	o.v.c.	8	
GP-6	18-21				18		7	
					19		6	
					20	(19.6 - 20.6) Sandy SILT, some Clay, ML; Brown to dark brown, moist, soft, trace organic matter, no o.v.c.	5	
GP-7	21-24				21	(20.6 - 22.5) SAND w/ interbeds of Silt and Sand, SW; Grey sand, brown silt, loose sand, medium stiff silt, wet, wood debris in sample, no o.v.c.	4	
					22		3	
					23	(22.5 - 23) SILT, some Sand, trace Clay, ML; Brown, moist, soft, no o.v.c.	2	
GP-8	24-27		78.7	78.7	24	(23 - 24) Medium SAND, SP; Greenish grey, odor but no v.c.	1	
					25	(24 - 25) Clayey SILT w/ trace fine Sand, slightly micaceous, ML/MH; Grey to green-grey, soft, slightly elastic, moist, slight odor.	0	
					26	(25 - 26.5) SAND w trace Silt, SP; Grey to green-grey, wet, loose, medium to coarse grained, HC odor.	1	Sample dropped out, redrove GP-9 and got poor recovery.
GP-9	27-30		50	93.2	27		2	
					28	(26.5 - 27) Silty SAND w/ some Clay, SM; Green-grey, moist to wet, soft, medium stiff to loose, odor but no v.c.	3	
					29	(27 - 28.5) SAND, slough.	4	GW sample RB-6-0401S time :1140 @ 28'.
GP-10	30-33		100	73.1	30	(28.5 - 30) Clayey SILT w/ Sand, ML/MH; Grey-brown, soft, moist to wet, HC odor.	5	
					31	(30 - 31.5) Well graded sequence. Clayey SILT w/ increasing Sand w/ depth, MH/ML; Green-grey to grey, wet, slightly elastic, soft to medium stiff, HC odor throughout.	6	
					32		7	
GP-11	33-36		50	52	33	(31.5 - 33) Silty SAND grading to SAND, SM-SW; Grey, wet, medium dense to loose, HC odor throughout.	8	
					34	(33 - 35) SAND, SP; Loose, high HC odor, no sheen.	9	
					35		10	

Remarks and Datum Used: Horizontal Datum: NAD 84

he RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
04/10/01		-7

RETEC

Boring Log

Boring #: RB-6
Sheet 3 of 3

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
GP-12	36-38		100	101.4		36	(35 - 36) Gravelly Sandy SILT w/ trace Clay, ML; Grey, moist, dense, subrounded to rounded gravel up to 1" diameter, HC odor.	11	Took a short run in case silt layer isn't contaminated
						37	(36 - 38) SAND & GRAVEL, Well graded fining upward, gravel to 1", strong HC odor, no sheen.	12	
GP-13	38-41		50	39.1		38	(38 - 44) SAND & GRAVEL, Well graded fining upward, gravel to 1", strong HC odor, no sheen.	13	
						39		14	
						40		15	
GP-14	41-44		50			41		16	Rock in shoe @ 41'.
						42		17	
						43		18	
						44		19	
GP-15	44-47					45	(44 - 47) Medium to Coarse SAND.	20	Soil and water sampled from 44-47'.
						46		21	
						47		22	BOH @ 47'

Remarks and Datum Used: Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type	Groundwater		
	Date	Time	Depth (ft.)
N = SPT			
DP = Direct Push	04/10/01		~7
GS = Grab Sample			
C = Core			

Boring Log

RETEC

Boring #: RB-7
Sheet 1 of 1

Project: QUENDALL	Operator: Eric Nassau	Location: 70' SE of BH-20
Project #: JAGCO-02438-770	Drill Rig Type: Stratoprobe	Northing: 197269.00 Easting: 1302172.38
Client: Vulcan	Method: Direct Push	Ground Elevation: 25.34 ft NAVD88
Contractor: ESN	Casing ID: NA	Total Depth: 12'
Start Date & Time: 4/10/01 1620	Bit Type: NA	Seal: 3/8 in Bentonite Chips
Finish Date & Time: 4/10/01 1650	Boring ID: 2"	Logged By: Aaron Waggoner

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
GP-1	0-4		62.5			0	(0 - 0.8) SILT w/ some Sand, trace Clay, trace Gravel, ML; Dark brown to brown, moist to wet, wood debris and grass on top, soft, no odor or visible contamination.	25	
						1	(0.8 - 1.6) Sandy GRAVEL w/ some Silt, trace Clay, GP; Brown, moist, medium dense, no o.v.c.	24	
						2	(1.6 - 3.9) Silty SAND w/ some Gravel, trace Clay, SM; Brown to light brown, wet, medium stiff, no HC odor.	23	
						3		22	
GP-2	4-8		65			4	(3.9 - 4) Gravel, GP; Angular, probably broken by probe.	21	
						5	(4 - 6.5) SAND, SP; Orange-brown, wet, loose, no o.v.c.	20	Water @ 5.5'
						6		19	
						7	(6.5 - 8) SAND, SP; Grey, wet,l oose, HC odor (below water table).	18	
GP-3	8-12		75			8	(8 - 10) SAND, SP; Grey, wet,l oose, HC odor.	17	
						9		16	
						10	(10 - 12) Clayey SILT w/ trace Sand, ML/MH; Brown,soft, slight odor	15	Took soil samples @10' 1640
						11		14	
						12			BOH @ 12'

Remarks and Datum Used: Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
04/10/01	1625	5.5

Boring Log

RETEC

Boring #: RB-8
Sheet 1 of 1

Project: QUENDALL	Operator: Eric Nassau	Location: 60' S of BH-5
Project #: JAGCO-02438-770	Drill Rig Type: Stratoprobe	Northing: 197363.93 Easting: 1302227.24
Client: Vulcan NW	Method: Direct Push	Ground Elevation: 27.19 ft NAVD88
Contractor: ESN	Casing ID: -	Total Depth: 15'
Start Date & Time: 4/10/01 1705	Bit Type: -	Seal: 3/8 in Bentonite Chips
Finish Date & Time: 4/10/01 1730	Boring ID: 2"	Logged By: Aaron Waggoner

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
GP-1	0-4		80			0	(0 - 0.4) SILT w/ >50% Wood Debris; Dark brown, moist, no odor or visible contamination (o.v.c.)	27	
						1	(0.4 - 6.5) Clayey SILT, trace Sand, trace Gravel, ML; Grey, damp, stiff, no o.v.c.	26	
						2		25	
						3		24	
GP-2	4-8		85			4		23	
						5		22	
						6		21	
						7	(6.5 - 7) FILL Material.	20	
				8			(7 - 8) SAND, SP; Black with staining, pieces of tar pitch, wet, loose, no o.v.c.		
GP-3	8-12		100			8	(8 - 9) SAND, SP; Black with staining, pieces of tar pitch, wet, loose, no o.v.c.	19	
						9	(9 - 10) Clayey SILT, ML; Brown, moist, soft, HC odor.	18	
						10	(10 - 12) SAND, SP; Grey, wet, loose, medium-fine grained, HC odor, no apparent staining	17	
						11		16	
GP-4	12-15		100	103.5		12	(12 - 15) SAND, SP; Grey, wet, loose, medium-fine grained, HC odor, sheen in lower 1'.	15	
						13		14	soil sample B-8-0401 @14-15'
						14		13	BOH @ 15'
						15			

Remarks and Datum Used: Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
4/10/01	1715	7.1

Boring Log

RETEC

Boring #: RB-9
Sheet 1 of 2

Project: QUENDALL	Operator: Eric Nassau	Location: 50' SE of BH-5
Project #: JAGCO-02438-770	Drill Rig Type: Stratoprobe	Northing: 197391.43 Easting: 1302324.2
Client: Vulcan NW	Method: Direct Push	Ground Elevation: 27.06ft NAVD88
Contractor: ESN	Casing ID: -	Total Depth: 21'
Start Date & Time: 4/11/01 0830	Bit Type: -	Seal: 3/8 in Bentonite Chips
Finish Date & Time: 4/11/01 0920	Boring ID: 2"	Logged By: Aaron Waggoner

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
GP-1	0-4		100			0	(0 - 0.8) Sandy GRAVEL w/ some Silt, GP; Brown, moist to wet, dense to medium dense, no odor or visible contamination (o.v.c), some wood waste.	27	Gravel up to 2"
						1	(0.8- 1.2) Silty SAND w/ some Gravel, SM; Brown, damp, medium dense, trace wood waste, no o.v.c.	26	
						2	(1.2 - 3.3) Clayey SILT w/ some fine Sand, ML; Grey, dry to damp, stiff, some groundwater mottling in lower 0.5', no o.v.c.	25	
						3		24	
							(3.3 - 3.5) Brick.		
GP-2	4-8		75	19.9		4	(3.5 - 4) Clayey SILT w/ some fine SAND, ML; Grey, dry to damp, stiff.	23	
						5	(4 - 7) Silty SAND w/ trace Gravel, SM; Grey brown, moderately loose, damp to moist, odor but no staining.	22	
						6		21	
						7	(7 - 7.5) Gravelly SAND w/ trace Silt, SP/SW; Grey, moist, loose to medium dense, HC odor, medium Sand, fine grained.	20	Water @ 7'
GP-3	8-12		95			8	(7.5 - 8) Same as above, Black, brick fragment.	19	
							(8 - 9) Sandy SILT w/ trace Clay, ML; Grey, wet, medium stiff to soft, HC odor.		
						9	(9 - 10.5) Silty fine SAND w/ trace Clay, SM; Grey, soft, HC odor, no staining.	18	

Remarks and Datum Used: Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
4/11/01	0840	7

RETEC

Boring Log

Boring #: RB-9
Sheet 2 of 2

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
					10		17	
				28.1	11	(10.5 - 11.3) Clayey SILT w/ trace Sand, ML; Grey-brown, wet, very soft, medium plasticity, slight HC odor.	16	
						(11.3 - 11.8) Medium SAND, SP; Grey, wet, loose, HC odor, no staining.		
GP-4	12-15		50	81.9	12	(11.8 - 12) Clayey micaceous SILT, ML/MH; Brown- orange/brown, moist to wet, leaf matter throughout, very soft, strong HC odor.	15	
					13	(12 - 15) Medium SAND, SP, Grey, loose, strong creosote odor.	14	
					14		13	
GP-5	15-18		65	867	15	(15 - 18) Medium SAND, SP, grey, loose, strong creosote odor, visible sheen on sample and sand grains, stains green nitrile gloves yellow.	12	Beginning of visible contaminatio
					16		11	
					17		10	
GP-6	18-21		65	1743	18	(18 - 20.2) Medium SAND, SP, Grey, loose, strong creosote odor, heavy contamination increasing with depth, creosote on sand grains.	9	
					19		8	
				619	20		7	
						(20.2 - 21) Clayey micaceous SILT, MH; medium brown, damp to moist, HC odor but no v.c.		BOH @ 21'
					21			

Remarks and Datum Used: Horizontal Datum: NAD 84

he RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
4/11/01	0840	7

RETEC

Boring Log

Boring #: RB-10
Sheet 1 of 1

Project: QUENDALL	Operator: Eric N.	Location: ~75' SE of BH-19
Project #: JAGCO-02438-730	Drill Rig Type: P/U Truck Stratoprobe	Northing: 197488.4 Easting: 1302306
Client: Vulcan NW	Method: Direct Push	Ground Elevation: 24.54 ft NAVD88
Contractor: ESN	Casing ID:	Total Depth: 15'
Start Date & Time: 4/11/01 0945	Bit Type:	Seal: 3/8 in Betonite Chips
Finish Date & Time: 4/11/01 1030	Boring ID: 2"	Logged By: Aaron Waggoner

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
GP-1	0-4		50			0	(0 - 1.6) Silty SAND with trace Clay, trace Gravel, SM; Brown, moist, moderately loose, wood debris and roots throughout, no odor or visbile contamination (o.v.c.).	24	
						1		23	
						2	(1.6 - 3.2) Medium SAND with some Silt, trace Gravel, SP; Light brown, loose, moist, no o.v.c.	22	
				176		3	(3.2 - 4) Black coal, HC odor, loose, dry to damp.	21	Water @ 3.5'
GP-2	4-8		80	24.2		4	(4 - 5) Sandy Gravel FILL, consisting of Coal, Slag, Bricks with trace Silt, black to brick red, wet, loose, HC odor.	20	
						5		19	
						6	(5 - 8) SAND, SP; Grey, wet, loose, little to no fines, medium to fine grained, HC odor, no staining.	18	
						7		17	
GP-3	8-12		75	12.2		8	(8 - 8.5) Slough from above FILL zone.	16	
						9	(8.5 - 12) SAND with some Gravel, SW; Grey, wet, loose, well graded, fine gravel, medium-fine sand, HC odor.	15	
						10		14	
						11		13	Composite soil sample B-10-0401 @ 11-13'
GP-4	12-15		65	19.4		12	(12 - 15) Micaceous Clayey SILT, MH; Light brown, soft, odor tapers off after 1' of sample, organic leaf matter throughout.	12	
						13		11	
						14		10	BOH @ 15'
						15			

Remarks and Datum Used: Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
4/11/01	1000	3.5

Boring Log

RETEC

Boring #: RB-11
Sheet 1 of 2

Project: **QUENDALL**	Operator: **Eric N**	Location: **35-40' N of BH-19**
Project #: **JAGCO-02438-730**	Drill Rig Type: **truck stratoprobe**	Northing: **197632.04** Easting: **1302266.01**
Client: **Vulcan NW**	Method: **direct push**	Ground Elevation: **24.41 ft NAVD88**
Contractor: **ESN**	Casing ID: **-**	Total Depth: **18**
Start Date & Time: **4/11/01 1045**	Bit Type: **-**	Seal: **3/8 In Betonite Chips**
Finish Date & Time: **4/11/01 1120**	Boring ID: **2"**	Logged By: **Aaron Waggoner**

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
GP-1	0-4		65			0	(0 - 0.8) Wood Waste (bark mostly), some Silt, trace Gravel, damp, no odor or visible contamination (o.v.c.).	24	
						1	(0.8 - 1.5) Silty SAND w/ trace Gravel, SM; Grey, damp, moderately stiff/dense, woodwaste throughout, no o.v.c.	23	
						2	(1.5 - 1.9) Coal and Gravel/Sand FILL; Black, wet, slight residual odor, loose.		
							(1.9 - 4) Silty SAND w/ some Gravel, SM; Grey, damp, moderately dense, Gravel to 1", no o.v.c.	22	
						3		21	
GP-2	4-8		80			4	(4 - 5) Silty SAND w/ some Gravel, SM; Grey, wet, loose, Gravel to 1", no o.v.c.	20	
						5	(5 - 5.5) SAND w/ Gravel (fine), SP; Black, wet, some residual odor, loose, medium to coarse Sand.	19	
						6	(5.5 - 6.5) Gravelly SAND w/ some Silt, SP; Grey, moderately dense to loose, wet to moist, slight HC odor.	18	
				25.8		7	(6.5 - 6.7) Micaceous SILT w/ some Clay, trace Sand, MH; Brown, moist, soft, rootlets throughout, slight odor.	17	
							(6.7 - 8) SAND, SP; Medium gray, wet, loose, medium to fine grained, HC odor.		
GP-3	8-12		90	31.2		8	(8 - 12) SAND, SW; Medium grayy to gray, wet, loose, grades very coarse to fine to medium over length of run, HC odor.	16	
						9		15	

Remarks and Datum Used: Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
4/11/01		5

RETEC

Boring Log

Boring #: RB-11
Sheet 2 of 2

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
						10		14	
						11		13	
GP-4	12-15		50	27.5		12	(12 - 13) Sandy micaceous SILT w/ rootlets and sticks of wood, ML; Gray-brown, soft, moist, HC odor.	12	
						13	(13 - 15) SAND, SW; Medium gray, wet, loose, grades to medium to coarse grained, HC odor, no staining.	11	
						14		10	
GP-5	15-18		85	689		15	(15 - 18) SAND, SP; Medium gray, heavily stained w/ PRODUCT, loose, wet, PRODUCT displacing groundwater in sample.	9	
						16		8	Product starts at 16'
						17		7	
						18			BOH @ 18'

Remarks and Datum Used: Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
4/11/01		5

Boring Log

RETEC

Boring #: RB-12
Sheet 1 of 2

Project: **QUENDALL**	Operator: **Eric N.**	Location: **40' SE of BH-19**
Project #: **JAGCO-02438-730**	Drill Rig Type: **P/U Truck Stratoprobe**	Northing: **197533.55** Easting: **1302258.12**
Client: **Vulcan NW**	Method: **Direct Push**	Ground Elevation: **25.74 ft NAVD88**
Contractor: **ESN**	Casing ID: **-**	Total Depth: **18**
Start Date & Time: **4/11/01 1300**	Bit Type: **-**	Seal: **3/8 in Betonite Chips**
Finish Date & Time: **4/11/01 1425**	Boring ID: **2"**	Logged By: **Aaron Waggoner**

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
GP-1	0-4		85			0	(0 - 0.5) Woodwaste, rotten		
						1	(0.5 - 0.7) Silty SAND w/ Gravel and trace Clay, SM; Light brown- grey, dense, no odor or visible contamination (o.v.c.).	25	
						2	(0.7 - 2) SAND w/ Silt and Gravel, SW; Light, damp, brown-grey to light grey, well graded, 1 piece of asphalt in top (0.7"), no o.v.c.	24	
						3	(2 - 4) Gravelly SILT w/ Sand, ML; Black, damp to dry, slight odor.	23	
						4	(3.5 - 4) Coal powder, Black, damp, slight odor.	22	
GP-2	4-8		75				(4 - 4.2) Coal powder, Black, damp, slight odor.		
							(4.2 - 4.4) Brick and grouting FILL.	21	
						5	(4.4 - 7.5) Clayey Micaceous SILT w/ trace Sand, MH; Grey, moist, soft to medium stiff organic matter throughout, no o.v.c.	20	
						6			Water @ 6'
						7		19	
						8	(7.5 - 8) Fine SAND w/ little fines, SP; Grey, wet, loose to medium dense, no o.v.c.	18	
GP-3	8-12			31.3			(8 - 12) Medium SAND, SP; Grey, wet, loose, increasing from none to slight HC odor over length of run.		core tube split and got stuck in sampling tubes
						9		17	
								16	

Remarks and Datum Used: Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
4/11/01	1340	6.0

RETEC

Boring Log

Boring #: RB-12
Sheet 2 of 2

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
						10		15	
						11		14	
GP-4	12-15			27.5		12	(12 - 12.4) Medium SAND, SP; Grey, wet, loose, thin interbeds of woody debris, HC odor, no v.c.		
						13	(12.4 - 17.6) Clayey Micaceous SILT, MH; Apparent lamination (color changes) mostly light grey-brown w/ thin light brown-grey laminae, damp, soft, organic leafy matter throughout, slight HC odor, no v.c.	13	
						14		12	
GP-5	15-18		80	1637		15		11	
						16		10	
						17		9	Product @ 17.6'. BOH @ 18'
						18	(17.6 - 18) SAND, SP; Grey,wet, saturated w/ PRODUCT, loose, medium grained, heavily stained w/ PRODUCT filling pore spaces, very strong odor, creosote.	8	

Remarks and Datum Used: Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
4/11/01	1340	6.0

Boring Log

RETEC

Boring #: RB-13
Sheet 1 of 2

Project: QUENDALL	Operator: Eric Nassau	Location: 50' East of BH-19
Project #: JAGCO-02438-730	Drill Rig Type: P/U Truck Stratoprobe	Northing: 197563.4 Easting: 1302318
Client: Vulcan NW	Method: Direct Push	Ground Elevation: 24.21 ft NAVD88
Contractor: ESN	Casing ID: -	Total Depth: 18'
Start Date & Time: 4/11/01 1500	Bit Type: -	Seal: Betonite Chips
Finish Date & Time: 4/11/01 1550	Boring ID: 2"	Logged By: Aaron Waggoner

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
GP-1	0-4					0	(0 - 4) No sample	24	0'-4' not sampled for speed purposes.
						1		23	
						2		22	
						3		21	Water @ 3'
GP-2	4-8		70			4	(4 - 7) Sandy Micaceous SILT w/ trace Clay, ML; Gray, wet, very fine, slightly clastic, no odor or visible contamination (o.v.c.).	20	
						5		19	
						6		18	
						7	(7 - 8) SAND, SP; Gray, wet, loose, very faint odor.	17	
GP-3	8-12		80			8	(8 - 12) Medium SAND, SP; Gray to medium gray, wet, loose, no o.v.c.	16	
						9		15	

Remarks and Datum Used: Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
4/11/01	1505	3

RETEC

Boring Log

Boring #: RB-13
Sheet 2 of 2

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
						10		14	
						11		13	
GP-4	12-15		65			12	(12 - 12.5) Micaceous Clayey SILT, MH; Gray-brown, moist to wet, soft, faint odor.	12	
						13	(12.5 - 15) SAND, SP; Gray, wet, loose, HC odor.	11	
						14		10	
GP-5	15-18		70			15	(15 - 16) SAND, SP; Gray, wet, loose, thin interbeds of silt, HC odor.	9	
						16	(16 - 18) Micaceous SILT with Clay, MH; Dark brown to gray-brown, moist, soft, HC-odor, interbeds of medium sand, no o.v.c.	8	
						17		7	
GP-6	18-21					18	(18 - 21) Organic CLAY/SILT, CL/OL; Brown to dark brown, moist, soft, high amount of organic leaf matter throughout run, no o.v.c.	6	
						19		5	
						20		4	
						21			BOH @ 21'

Remarks and Datum Used: Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
4/11/01	1505	3

Boring Log

RETEC

Boring #: RB-14
Sheet 1 of 2

Project: QUENDALL	Operator: Eric N	Location: Between RB-11 and BH-18
Project #: JAGCO-02438-730	Drill Rig Type: P/U Truck Stratoprobe	Northing: 197629.94 Easting: 1302327.27
Client: Vulcan NW	Method: Direct Push	Ground Elevation: 26.66 ft NAVD88
Contractor: ESN	Casing ID: -	Total Depth: 22'
Start Date & Time: 4/11/01 1625	Bit Type: -	Seal: 3/8 in Betonite Chips
Finish Date & Time: 4/11/01 1730	Boring ID: 2"	Logged By: Aaron Waggoner

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
						0	(0 - 10) No Sample.	26	Burned down to 7 ft. and got refusal. Moved RB-14 to the East and burned down to 10 ft.
						1			
						2		25	
						3		24	
						4		23	
						5		22	
						6		21	
						7		20	Water @ 6.2'
						8		19	
						9		18	
						10		17	
GP-1	10-13		80			11	(10 - 10.3) Silty CLAY w/ trace Sand and rootlets, CL; Gray-brown, moist, very soft, no odor or visible contamination (o.v.c.).	16	Switched to a 3 ft. Sampler
						12	(10.3 - 11.3) Medium SAND grading to Fine Sand, SW; Gray, moist to wet, loose to medium dense, slight HC-odor.	15	
						13	(11.3 - 13) Clayey Micaceous SILT, MH; Light orange- brown, moist, soft, slight HC odor, high amount of organic leafy matter throughout.	14	

Remarks and Datum Used: Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
4/11/01	1700	6.2

RETEC

Boring Log

Boring #: RB-14
Sheet 2 of 2

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
GP-2	13-16		60	675		14, 15	(13 - 16) SAND, SP; Gray, wet, loose medium-fine grained, slight HC odor.	13, 12, 11	
GP-3	16-19		60	1223		16, 17, 18	(16 - 19) SAND, SP; Gray, wet, loose medium-fine grained, thin zones of sheen on sand grains, slight HC odor.	10, 9, 8	
GP-4	19-22		75	122.9		19, 20	(19 - 21) SAND, SP; Gray, wet, loose medium-fine grained, thin zones of sheen on sand grains, HC odor, saturated with PRODUCT.	7, 6	Product @ 19'
						21, 22	(21 -22) Silty Micaceous CLAY, CH; Brown, moist, soft, stinks of product but no v.c.	5	BOH @ 22'

Remarks and Datum Used: Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
4/11/01	1700	6.2

RETEC

Boring Log

Boring #: RB-15
Sheet 1 of 1

Project: Geoprobe Investigation	Operator: Kevin	Location: 75' East of RB-1
Project #: JAGCO-02438-730	Drill Rig Type: KubotaTractor Stratoprobe	Northing: 196928.27 Easting: 1301948.57
Client: Vulcan NW	Method: Direct Push	Ground Elevation: 25.05 ft NAVD88
Contractor: ESN	Casing ID: -	Total Depth: 13'
Start Date & Time: 4/12/01 0910	Bit Type: -	Seal: 3/8 in Betonite Chips
Finish Date & Time: 4/12/01 0935	Boring ID: 2"	Logged By: Aaron Waggoner

Sample Type & #	Sample Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
						0	(0 - 10) No Sample.	25	
						1		24	Water @ 0.8'
						2		23	Direct push to 10', no soil sampled
						3		22	
						4		21	
						5		20	
						6		19	
						7		18	
						8		17	
						9		16	
GP-1	10-13					10	(10 - 12.8) Clayey SILT, MH; Brown, soft, moist, rootlets and leafy matter thoughout, no odor or visible contamination (o.v.c.)	15	
						11		14	
						12		13	
						13	(12.8 - 12.9) Medium SAND, SP; Grey, wet, loose, no o.v.c.		BOH @ 13'
							(12.9 - 13) Clayey SILT, MH; Brown, soft,moist, rootlets and leafy matter throughout, no o.v.c.		

Remarks and Datum Used: Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
4/12/01	1000	0.8'

Boring Log

RETEC

Boring #: RB-16
Sheet 1 of 1

Project: **QUENDALL**	Operator: **Kevin**	Location: **50' NE of RB-15**
Project #: **JAGCO-02438-730**	Drill Rig Type: **Kubota Tractor Stratoprobe**	Northing: **196928.27** Easting: **1301948.57**
Client: **Vulcan NW**	Method: **Direct Push**	Ground Elevation: **25.10 ft NAVD88**
Contractor: **ESN**	Casing ID: **-**	Total Depth: **8'**
Start Date & Time: **4/12/01 0945**	Bit Type: **-**	Seal: **3/8 in Betonite Chips**
Finish Date & Time: **4/12/01 1050**	Boring ID: **2"**	Logged By: **Aaron Waggoner**

Sample Type & #	Sample Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
						0	(0 - 4) No sample taken	25	
						1		24	
						2		23	
						3		22	
GP-1	4-8		95			4	(4 - 5) Sandy SILT with trace Clay, ML; Dark brown, damp to moist, soft to medium stiff, woody debris throughout, wood odor, no odor or visible contamination (o.v.c)	21	
						5	(5 - 8) Silty SAND with trace Gravel and Clay, SM; Dark brown to gray, damp, loose to medium dense, no o.v.c.	20	
						6		19	
						7		18	Water @ 7'
						8			

Remarks and Datum Used: Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
4/12/01	1100	7'

RETEC

Boring Log

Boring #: RB-17
Sheet 1 of 1

roject: QUENDALL	Operator: Kevin	Location: - 60' NE of BH-21
Project #: JAGCO-02438-730	Drill Rig Type: Kubota Tractor Strataprobe	Northing: 196987.5 Easting: 1302013.4
Client: Vulcan NW	Method: Direct Push	Ground Elevation: 24.2 ft NAVD88
Contractor: ESN	Casing ID: -	Total Depth: 4'
Start Date & Time: 4/12/01 1135	Bit Type: -	Seal: 3/8 in Betonite Chips
Finish Date & Time: 4/12/01 1210	Boring ID: 2"	Logged By: Aaron Waggoner

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
GP-1	0-4		90			0	(0 - 1.2) Clayey SILT w/ some Sand, MH; Dark brown, moist to wet, soft, rootlet and wood debris throughout, no odor or visible contamination (no o.v.c.).	24	
						1	(1.2 - 1.4) Broken up Rock.	23	
							(1.4 - 2) Medium to Fine SAND w/ 1 large broken Gravel > 2 inches, SP; Moist, wood debris, no o.v.c.		
						2	(2 - 3.3) Gravelly SILT w/ Sand, trace Clay, ML; Dark brown to brown, moist, gravel to 1 inch, wood debris, dense, no o.v.c.	22	
						3		21	Refusal and BOH @ 4'
							(3.3 - 4) Silty Gravelly SAND, SP; Gray, moist, dense to loose, no o.v.c.		
						4			

Remarks and Datum Used: Did not encounter the water table.

Horizontal Datum: NAD 84

he RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type	Groundwater		
N = SPT	Date	Time	Depth (ft.)
DP = Direct Push			
GS = Grab Sample			
C = Core			

RETEC

Boring Log

Boring #: RB-18
Sheet 1 of 1

Project: **QUENDALL**	Operator: **Kevin**	Location: **NE of Quendall Pond**
Project #: **JAGCO-02438-730**	Drill Rig Type: **Kubota Tractor Strataprobe**	Northing: **197611.32** Easting: **1302529.2**
Client: **Vulcan NW**	Method: **Direct Push**	Ground Elevation: **24.83 ft. NAVD 88**
Contractor: **ESN**	Casing ID: **-**	Total Depth: **6'**
Start Date & Time: **4/12/01 1235**	Bit Type: **-**	Seal: **3/8 in Betonite Chips**
Finish Date & Time: **4/12/01 1300**	Boring ID: **2"**	Logged By: **Aaron Waggoner**

Sample Type & #	Sample Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
						0	(0 - 0.8) Rock (1/4 - 1" diameter) and Wood Waste with Sand.		
						1	(0.8 - 1.5) Coarse Multi-colored SAND, SP.	24	
							(1.5 - 1.9) Medium light brown SAND w/ Gravel, SW.	23	
						2	(1.9 - 3) Dark brown to black SAND w/ Organic Silt interbeds, SP; Slight petroleum odor.	22	
						3			
						4		21	
								20	
						5			Refusal and BOH @ 6'
								19	
						6			

Remarks and Datum Used: Did not encounter the water table.

Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type	Groundwater		
N = SPT	Date	Time	Depth (ft.)
DP = Direct Push			
GS = Grab Sample			
C = Core			

Boring Log

RETEC

Boring #: RB-19
Sheet 1 of 2

Project: QUENDALL	Operator: Eric N	Location: 30' SW of RB-18
Project #: JAGCO-02438-730	Drill Rig Type: P/U Truck Stratoprobe	Northing: 197603.92 Easting: 1302480.53
Client: Vulcan NW	Method: Direct Push	Ground Elevation: 24.57 ft NAVD88
Contractor: ESN	Casing ID: -	Total Depth: 15
Start Date & Time: 4/12/01 1340	Bit Type: -	Seal: 3/8 in Betonite Chips
Finish Date & Time: 4/12/01 1430	Boring ID: 2"	Logged By: Aaron Waggoner

Sample Type & #	Sample Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
GP-1	0-4		100			0	(0 - 0.2) Silty Gravelly SAND, SM; Light brown, moist, loose to moderately dense, clasts up to 1/2 inch, no o.v.c.	24	Refusal 1 @ 3', refusal 2 @ 3', refusal 3 @ 4'.
						1	(0.2 - 0.8) Medium SAND w/ some Gravel, SP; Gray to light brown, loose, moist, no o.v.c.		
							(0.8 - 1.5) Gravelly, Sandy, Wood Debris, dense, no o.v.c.	23	
						2	(1.5 - 3) Fine Sandy SILT w/ some Clay, trace Gravel, ML; Dark brown, moist, medium stiff to stiff, slight HC odor (petroleum).	22	
						3	(3 - 4) Fine Sandy SILT w/ some Clay, trace Gravel, ML; Dark brown, moist, medium stiff to stiff, slight HC odor (petroleum), wood odor stronger than HC odor.	21	
GP-2	4-8		75			4	(4 - 7) Fine Sandy SILT w/ some Clay, trace Gravel, ML; Dark brown, moist, medium stiff to stiff, slight HC odor (petroleum), wood odor stronger than HC odor.	20	
						5			
						6		19	
						7	WOOD	18	Water @ ~ 7'
							(7.2 - 8) Medium SAND, SP; Gray, wet, loose, HC odor same as all other sand odors from previous borings.	17	
GP-3	8-12		60			8	(8 - 12) Gravelly SAND grading to Medium SAND, SW; Gray to dark gray, wet, loose, HC odor increasing w/ depth, PRODUCT IN LOWER 1' OF RUN.	16	
						9		15	

Remarks and Datum Used: Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
4/12/01		~7

RETEC

Boring Log

Boring #: RB-19
Sheet 2 of 2

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
GP-4	12-15		75			10		14	
						11		13	PRODUCT @ 11'
						12	(12 - 12.5) Gravelly SAND grading to Medium SAND, SW; Gray to dark gray, wet, loose, HC odor increasing w/ depth, sand pore space filled w/ PRODUCT (black to dark brn), heavy sheen, very strong odor.	12	
						13	(12.5 - 15) Clayey Micaceous SILT w/ >25% organics, MH; Light brown, soft, moist, no product around plant matter, HC odor, no v.c.	11	
						14			
						15		10	BOH @ 15'

Remarks and Datum Used: Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type	Groundwater		
N = SPT	Date	Time	Depth (ft.)
DP = Direct Push	4/12/01		~7
GS = Grab Sample			
C = Core			

Boring Log

RETEC

Boring #: RB-20
Sheet 1 of 1

Project: QUENDALL	Operator: Eric N	Location: 100' N of RB-19
Project #: JAGCO-02438-730	Drill Rig Type: P/U Truck Stratoprobe	Northing: 197696.30 Easting: 1302557.96
Client: Vulcan NW	Method: Direct Push	Ground Elevation: 23.66 ft NAVD88
Contractor: ESN	Casing ID: -	Total Depth: 5.5
Start Date & Time: 4/12/01	Bit Type: -	Seal: 3/8 in Betonite Chips
Finish Date & Time: 4/12/01 1650	Boring ID: 2"	Logged By: Aaron Waggoner

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
GP-1	0-4		100			0	(0 - 1) Wood waste with some Silt, Sand, and Gravel; Dark brown, moist, loose, no odor or visible contamination (no o.v.c)	23	Refusal at 5.5 ft, wood in shoe. Made several attempts and still got refusal
						1	(1 - 3) Gravelly SAND, SP; Gray, moist, loose, fine gravel up to 1 1/2 inch rounded, no o.v.c.	22	
						2		21	
						3	(3 - 3.3) Fine to Very Fine SAND, trace Silt, SP; Brown, damp, loose, no o.v.c		
							(3.3 - 4) Gravelly SAND with some Silt, SP; Dark gray, moist, moderately loose, no o.v.c.	20	
GP-2	4-5.5					4	(4 -4.2) Weathered Granite Cobble, reduces to Clay and Sand.		
							(4.2 - 4.8) Wood chips, dry to damp.	19	
						5	(4.8 - 5.5) Clayey SILT with some Sand, trace Gravel, ML; Gray, moist, soft to moderately stiff, wood debris thoughout, no o.v.c.		BOH @ 5.5'

Remarks and Datum Used:

Had a total of 6 refusals reaching a max depth of 5.5 ft.

Did not encounter the water table.

Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)

RETEC

Boring Log

Boring #: RB-21
Sheet 1 of 3

Project: QUENDALL	Operator: Eric N	Location: NW of BH-28 (~80')
Project #: JAGCO-02438-730	Drill Rig Type: P/U Truck Stratoprobe	Northing: 197253.41 Easting: 1302036.45
Client: Vulcan NW	Method: Direct Push	Ground Elevation: 24.05 ft NAVD88
Contractor: ESN	Casing ID: -	Total Depth: 45'
Start Date & Time: 4/13/01 820	Bit Type: -	Seal: 3/8 in Betonite Chips
Finish Date & Time: 4/13/01 1150	Boring ID: 2"	Logged By: Damon Morris

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
GP-1	0-4		95			0	(0 - 0.8) Dark brown to black organic SILT, OL, with roots, moist, moderately loose, no odor or visible contamination (o.v.c.)	24	
						1	(0.8 - 1.1) GRAVEL 1/4" to 1/2" with Sand, GP, Sand well graded, medium brown.	23	
						2	(1.1 - 2.8) Fine brown SAND, SP, loose, moist, no o.v.c.	22	
						3	(2.8 - 4.5) Grey SAND, SP, moist, well graded medium to coarse, no o.v.c.	21	
GP-2	4-8		50			4	(4.5 - 5.8) Organic SILT, OL, medium brown, compressible, soft, no o.v.c.	20	
						5	(5.8 - 8) Well graded medium to coarse grey SAND, SP, loose, wet, no o.v.c.	19	Water @ 5.5'
						6		18	
						7		17	
GP-3	8-12		95			8	(8 - 14.2) Well graded medium to coarse grey SAND, SP, loose, wet, no o.v.c.	16	
						9		15	
						10		14	
						11		13	
SS-4	12-15		100			12		12	Soil and water sample @ 12-14' clear
						13		11	
						14	(14.2 - 18) Dark brown organic SILT, OL, with leaf matter, compressible, medium stiff, no o.v.c.	10	
SS-5	15-18		60			15		9	
						16		8	

Remarks and Datum Used: Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
4/13/01		5.5

RETEC

Boring Log

Boring #: RB-21
Sheet 2 of 3

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
					17		7	
SS-6	18-21		70		18	(18 - 18.5) Grey wet SAND, SP, loose, no o.v.c.	6	
					19	(18.5 - 21) Dark brown organic SILT, OL, with leaf matter, trace sand, medium stiff, moist, no o.v.c.	5	
					20		4	
SS-7	21-24		80		21	(21 - 22) Brown organic SILT, OL, with grey, medium, moist Sand lenses, slight naphthalene odor, no v.c.	3	
				25	22		2	
					23	(22 - 22.5) PEAT, dark brown, naphthalene odor, no v.c.	1	Soil sample for archive (B-21-0401-S-22) @ 22'
SS-8	24-27		60		24	(22.5 - 23.2) Grey SILT with Clay, OL, trace of fibrous brown organic matter throughout, moderate naphthalene odor, no v.c.	0	
					25	(23.2 - 24) Grey medium to coarse SAND, SP, loose, wet, no o.v.c.	1	
					26	(24 - 24.6) GRAVEL, GW, grey and white, up to 1/4" diameter, wet, loose, no o.v.c.	2	
SS-9	27-30		60		27	(24.6 - 26.5) Grey medium to coarse SAND, SP, wet, loose, slight odor.	3	
					28	(26.5 - 31.1) Organic SILT, OL, medium brown, moderately stiff with striations of grey medium sand, slight odor, no v.c.	4	
					29		5	
SS-10	30-33		80	36	30		6	
					31	(31.1 - 32.5) Grey, loose, wet SAND, SP, slight odor, no v.c.	7	
					32		8	
SS-11	33-36				33	(32.5 - 33) Organic SILT and CLAY, OL/CL, grey, sticky, stiff, moist.	9	
					34	(33 - 34.4) Grey organic SILT and CLAY, OL/CL, sticky, wet, stiff, slight odor, no v.c.	10	
					35	(34.4 - 40.2) Multicolored medium to coarse SAND with multicolored gravel up to 1" in	11	

Remarks and Datum Used: Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
4/13/01		5.5

RETEC

Boring Log

Boring #: RB-21
Sheet 3 of 3

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
SS-12	36-39			5		36	SAND with multicolored gravel up to 1" in diameter, SW, wet, loose, slight naphthalene	12	
						37		13	
						38		14	
SS-13	39-42			9		39		15	Soil sample composite (B-21-0401-S-42-44) 1150 @ 42-44'. Water screen @ 42-44' (B-21-0401-W-42-44) 1210 BOH @ 45'.
						40		16	
						41	(40.2 - 42) No sample recovered, bit rock with geoprobe.	17	
SS-14	42-45			8		42	(42 - 45) Grey, inorganic, Silty SAND, SM, with fibrous leaf matter, moderately stiff, slight odor, no v.c.	18	
						43		19	
						44		20	
						45			

Remarks and Datum Used: Horizontal Datum: NAD 84

he RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
4/13/01		5.5

Boring Log

RETEC

Boring #: RB-22
Sheet 1 of 2

Project: QUENDALL	Operator: Eric N	Location: S of road near BAX-9
Project #: JAGCO-02438-730	Drill Rig Type: P/U Truck Stratoprobe	Northing: 197673.91 Easting: 1302609.55
Client: Vulcan NW	Method: Direct Push	Ground Elevation: 25.11 ft NAVD88
Contractor: ESN	Casing ID: -	Total Depth: 18
Start Date & Time: 4/13/01 1315	Bit Type: -	Seal: 3/8 in Betonite Chips
Finish Date & Time: 4/13/01 1358	Boring ID: 2"	Logged By: Damon Morris

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
GP-1	0-4		85			0	(0 - 1) WOOD waste and organic SILT w/ some rounded gravel, no ov.c.	25	Refusal at 3' so move point ~ 3'
						1	(1 - 1.4) Crushed GRAVEL, GP; Light gray, angular, no sand or fines, dry.	24	
						2	(1.4 - 3.9) Medium to Coarse SAND, SP; Gray, dry to damp, loose.	23	
						3		22	
GP-2	4-8		90			4	(3.9 - 9.4) Fine SAND, SP; Moist, compact, gray, no odor until 6', at 6-8' moderate naphthalene odor, 8-9.4' no odor, no v.c.	21	
						5		20	
						6		19	
						7		18	
GP-3	8-12		100	2		8		17	Water @ 8'
						9		16	
							(9.4 - 10) Fine SAND, SP; Gray, wet, compact.		

Remarks and Datum Used: First attempt got refusal @ 3', moved West 3'.

Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
4/13/01		~8

RETEC

Boring Log

Boring #: RB-22
Sheet 2 of 2

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
						10	(10 - 11.6) Organic SILT, OL; Medium brown, moist, stiff, no o.v.c.	15	
						11		14	
SS-4	12-15		100	7		12	(11.6 - 15.1) Medium to Fine SAND, SP; Gray, moist, loose, odor to 12', 12-15' slight odor, no v.c.	13	
						13		12	Soil sample composite (B-22-0401-S)
						14		11	
SS-5	15-18		70			15	(15.1 - 18) Organic SILT, OL; Brown, damp, moderately stiff, no o.v.c.	10	
						16		9	
						17		8	
						18			BOH @ 18'

Remarks and Datum Used: First attempt got refusal @ 3', moved West 3'.

Horizontal Datum: NAD 84

he RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type	Groundwater		
N = SPT	Date	Time	Depth (ft.)
DP = Direct Push	4/13/01		~8
GS = Grab Sample			
C = Core			

Boring Log

RETEC

Boring #: RB-23
Sheet 1 of 1

Project: QUENDALL	Operator: Eric N	Location: NE of Quendall Pond
Project #: JAGCO-02438-730	Drill Rig Type: P/U Truck Stratoprobe	Northing: 197611.31 Easting: 1302526.2
Client: Vulcan NW	Method: Direct Push	Ground Elevation: 24.82 ft NAVD88
Contractor: ESN	Casing ID: -	Total Depth: 12'
Start Date & Time: 4/13/01 1415	Bit Type: -	Seal: 3/8 in Betonite Chips
Finish Date & Time: 4/13/01 1430	Boring ID: 2"	Logged By: Damon Morris

Sample Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS)	Elevation (ft.)	Comments & Samples
GP-1	0-4		80			0	(0 - 1.5) Gravel, organic matter, wood debris, moist, loose.	24	
						1			
						2	(1.5 - 3.1) Coarse SAND w/ gravel, SW; Loose, wet, medium brown w/ some colored grains, no o.v.c.	23	Water @ 1.5'
						3		22	
						4	(3.1 - 4.2) Fine SAND, SP; Dark brown, wet, loose to medium stiff, no o.v.c.	21	
GP-2	4-8		90			5	(4.2 - 5.4) Medium grading to Coarse SAND, SP; Loose, wet, mulitcolored grains.	20	
						6	(5.4 - 7.7) Fine SAND, SP; Gray to brown, no v.c.	19	
						7		18	
						8	(7.7 - 8) WOOD Debris, wood chip fibers, disturbed by geoprobe, no sand or fines.	17	
GP-3	8-12		10			9	(8 - 12) Fine to Medium SAND w/ Gravel, SW; Brown, wet, loose, well rounded, multicolored, up to 1/2", wood in shoe, very little recovery, heavy staining, PRODUCT, strong odor.	16	PRODUCT flowing from pore spaces, extensive sheening @ 8'.
						10		15	
						11		14	
						12		13	BOH @ 12'

Remarks and Datum Used: Horizontal Datum: NAD 84

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
4/13/01		1.5

RETEC 2001 – SED.

Sediment Core Logs
VC-180 to VC-17A

Well Point Logs
WP-18A to WP-28B

Sediment Core Log

Core: VC-18D

Project: QUENDALL	Water Body Type: Lacustrine	Tube Length: 8 ft.
Project #: JAGCO-02438-780	SW Elevation (ft)/Tide: ~~20.00~~ 15.15	Penetration Depth: 7 ft
Client:	Water Depth (ft): 15.6	Sample Quality: Good
Collection Date: 01/03/01	Mudline Elevation (ft): 4.4	Recovery in ft (%): 5.6 (80%)
Contractor: MSS	N./LAT: 47 32.0545' N E./LONG: 122 12.1907' W	Process Date: 01/03/01
Vessel: Nancy Anne	Horiz. Datum: NAD 83 Vert. Datum: COE	Process Method: Split
Operator: Bill Jaworski	Method/Tube ID: Vibracore/4"	Logged By: KC, DB, AF

Depth (ft) Below Mudline	Sample #	Sample & Interval (ft)	Analysis	Headspace PID	Sediment Description (Classification Scheme: ASTM; (Actual recovered depth interval in feet))	Comments	Calc Insitu Depths (ft) & Graphic Log	Mudline Elevation (ft)
0					WOOD WASTE & SAND: (0.0-1.5): (loose) wet, shredded dark brown WOOD WASTE with lenses of gray sand interbeds	60-70% wood	0-1.9	4
1				0.0 ppm		PID @ 1.25'		3
2					SAND & WOOD WASTE: (1.5-2.8): (loose) wet, multi colored grained SAND with interbeds of wood waste		1.9-3.5	2
3						PID @ 3.0'		1
4				0.0 ppm	SAND: (2.8-3.4): brown to gray fine SAND		3.5-4.3	
					CLAY: (3.4-3.7): blue gray CLAY lense		4.3-4.6	0
					CLAYEY SAND: (3.7-4.1): (stiff) wet, blue gray CLAYEY SAND		4.6-5	
5	S-1	4.4-6.25	PW Chem		CLAY: (4.1-4.4): (stiff) blue gray CLAY		5-5.5	-1
6					CLAYEY SAND: (4.4-5.0): blue gray CLAYEY SAND		5.5-6.25	
					SAND: (5.0-5.6): interbedded gradational sequence of coarse to medium to fine SAND with lenses of plant fibers		6.25-7	-2
7				1.1 ppm		PID @ 6.9' BOC @ 7.0'		

ThermoRetec
011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Remarks: 87% of 4-6' inverval = 3.5-5'

Calculated Recovery
Sample Length/Penetration Length:
5.6 / 7.0 = 80 %

Sediment Core Log

Core: VC-19C

ThermoRetec

Project: QUENDALL	Water Body Type: Lacustrine	Tube Length: 8 ft.
Project #: JAGCO-02438-780	SW Elevation (ft)/Tide: 20.00	Penetration Depth: 7.1 ft
Client:	Water Depth (ft): 3.2	Sample Quality: Good
Collection Date: 01/03/01	Mudline Elevation (ft): 16.8 ft	Recovery in ft (%): 6.1 (87%)
Contractor: MSS	N./LAT: 47 32.0222' N E./LONG: 122 12.1848' W	Process Date: 01/03/01
Vessel: Nancy Anne	Horiz. Datum: NAD 83 Vert. Datum: COE	Process Method: Split
Operator: Bill Jaworski	Method/Tube ID: Vibracore/4"	Logged By: KC, DB, AF

Depth (ft) Below Mudline	Sample #	Sample & Interval (ft)	Analysis	Headspace PID	Sediment Description (Classification Scheme: ASTM; (Actual recovered depth interval in feet))	Comments	Calc. Insitu Depths (ft) & Graphic Log	Mudline Elevation (ft)
0					WOODWASTE: (0-0.4): Wood waste		0-0.46	
1					SILTY SAND: (0.4-1.7): (loose) wet, slightly compressible, slightly silty medium SAND with traces of small gravel		0.46-2.0	16
2					SILTY SAND: (1.7-2.2): grading from medium SAND to coarse SAND with more frequent small gravel		2.0-2.5	15
					PEAT: (2.2-2.6): PEAT lense with large bark and plant material	3" stick	2.5-3.0	14
3					SAND: (2.6-3.3): medium gray SAND		3.0-3.8	
4					PEAT: (3.3-5.5): compressible, brown PEAT, strong moth ball odor grading to a trace odor at bottom of interval; 4" slightly sandy PEAT at 4.5' grading to 30% sand at bottom of interval.			13
5	S-1	4.0-5.75	PW Chem				3.8-6.3	12
6								11
					SAND: (5.5-6.7): (loose) wet, dark gray fine to medium SAND with traces of small gravel; 1" lense of plant fibers at 6.8'		6.3-7.1	10
7						BOC @ 7.1'		

ermoRetec
011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Remarks: 87% of 4-6' = 3.5-5' sampled in field.

Calculated Recovery
Sample Length/Penetration Length:
6.1 / 7.1 = 87 %

Sediment Core Log

Core: VC-20A

Project: QUENDALL	Water Body Type: Lacustrine	Tube Length: 8 ft.
oject #: JAGCO-02438-780	SW Elevation (ft)/Tide: 20.00	Penetration Depth: 7 ft
Client:	Water Depth (ft): 3.8	Sample Quality: Good
Collection Date: 01/03/01	Mudline Elevation (ft): 16.2	Recovery in ft (%): 5.9 (84%)
Contractor: MSS	N./LAT: 47 31.9756' N E./LONG: 122 12.1948' W	Process Date: 01/03/01
Vessel: Nancy Anne	Horiz. Datum: NAD 83 Vert. Datum: COE	Process Method: Split
Operator: Bill Jaworski	Method/Tube ID: Vibracore/4"	Logged By: KC, DB, AF

Depth (ft) Below Mudline	Sample #	Sample & Interval (ft)	Analysis	Headspace PID	Sediment Description (Classification Scheme: ASTM; (Actual recovered depth interval in feet))	Comments	Calc. Insitu Depths (ft) & Graphic Log	Mudline Elevation (ft)
0					SANDY SILT: (0-2.5): (very soft) wet, very dark brown SANDY SILT, homogeneous, compressible, substantial shredded wood fibers, two scattered, small traces of sheen, TPH odor like magic marker throughout core, decreasing with depth.			16
1				0.0 ppm		TPH odor absent after 5 minutes PID @ 1.2'	0-3.0	15
2								14
3					SILTY SAND: (2.5-3.0): (dense) wet, very SILTY SAND, fine to medium grains, scattered wood fibers		3.0-3.6	13
					PEAT: (3.0-4.9): wet, gray PEAT top 0.6' grading to light brown PEAT, scattered plant fibers 0.5-0.75 cm diameter just above lower contact			
4				0.0 ppm		PID @ 4.2'	3.6-5.8	12
5	S-1	4.0-7.0	PW Chem					11
6					PEAT: (4.9-5.9): dark brown PEAT, becoming more dense with depth, embedded gray sandy lenses (0.25-0.5") in top 6", substantial wood fibers throughout		5.8-7.0	10
7				4.3 ppm		PID @ 7.0' BOC @ 7.0'		

ermoRetec
11 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Remarks: 84% of 4-6' = 3.4-5' sampled in field.

Calculated Recovery
Sample Length/Penetration Length:
5.9 / 7.0 = 84 %

Sediment Core Log

Core: VC-21D

Project: QUENDALL	Water Body Type: Lacustrine	Tube Length: 8 ft.
Project #: JAGCO-02438-780	SW Elevation (ft)/Tide: 20.00	Penetration Depth: 7 ft
Client:	Water Depth (ft): 15.2	Sample Quality: Good
Collection Date: 01/03/01	Mudline Elevation (ft): 4.8	Recovery in ft (%): 4.6 (66%)
Contractor: MSS	N./LAT: 47 31.9326' N E./LONG: 122 12.3089' W	Process Date: 01/03/01
Vessel: Nancy Anne	Horiz. Datum: NAD 83 Vert. Datum: COE	Process Method: Split
Operator: Bill Jaworski	Method/Tube ID: Vibracore/4"	Logged By: KC, DB, AF

Depth (ft) Below Mudline	Sample #	Sample & Interval (ft)	Analysis	Headspace PID	Sediment Description (Classification Scheme: ASTM; (Actual recovered depth interval in feet))	Comments	Calc. Insitu Depths (ft) & Graphic Log	Mudline Elevation (ft)
0	S-1	1.36-6.0	PW Chem	0.0 ppm	SAND: (0.0-0.6): (very loose) wet, greyish brown, slightly silty medium SAND, scattered wood fibers (20%) with hint of rusty/oxidized color; scattered 4" by 2" bark and 0.5" to 1" long pieces of fibrous wood chips with creamy center and rind of black, no odor, no sheen	PID @ 0.76'	0-0.9	4
1					WOOD: (0.6-0.9): (loose) wet, dark brown fibrous shredded WOOD, partially decayed, lumbered, 1 piece 6" long, scattered pieces 1-2" long	No odor, no sheen	0.9-1.4	
2					CLAY AND SAND: (0.9-2.4): (loose) rust stained SAND (2" thick) over wet, soft interbeds of clay and medium to fine sand, bluish gray matrix	Clay Sandy Clay Sand Clay with plant fibers Medium to fine sand Clay with plant fibers Distinct twigs	0.4-3.6	3 2
3								
4				0.0 ppm	SAND & WOOD WASTE: (2.4-3.3): wet, blue gray, medium to fine SAND, scattered organics in peaty 0.5" interbeds; 2" above lower contact contains scattered coarse grains to coarse grain SAND with approximately three depositional sequences grading from fine to medium coarse with plant fibers at bottom.	PID @ 4.1'	3.6-5.0	1
5					SAND: (3.3-4.0): wet, gray fine SAND grading to medium SAND with scattered coarse grains 1" above lower contact		5.0-6.0	0 -1
6				0.0 ppm	PEAT: (4.0-4.4): wet, compressed dark brown wood pulp PEAT, grading to grayish brown with depth, slightly sandy, fine grains, scattered distinct hollow twigs and plant fibers	PID @ 6.4'	6.0-6.7	
7					PEAT: (4.4-4.6): (dense) wet, grayish brown, slightly sandy, fine grains silty PEAT w/ scattered sm. gravel	BOC @ 7.0'	6.7-7	-2

ermoRetec
11 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Remarks:

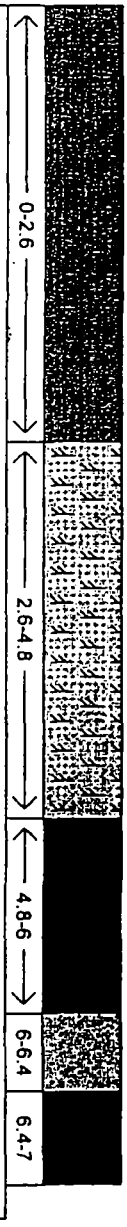
Calculated Recovery
Sample Length/Penetration Length:
4.9 / 7.0 = 66 %

Sediment Core Log

Core: VC-28A

Project: QUENDALL	Water Body Type: Lacustrine	Tube Length: 8 ft.
Project #: JAGCO-02438-780	SW Elevation (ft)/Tide: 20.00	Penetration Depth: 7 ft
Client:	Water Depth (ft): 3.4	Sample Quality: Good
Collection Date: 01/03/01	Mudline Elevation (ft): 16.6	Recovery in ft (%): 6.1 (87%)
Contractor: MSS	N./LAT: 47 31.9508' N E./LONG: 122 12.2133' W	Process Date: 01/03/01
Vessel: Nancy Anne	Horiz. Datum: NAD 83 Vert. Datum: COE	Process Method: Split
Operator: Bill Jaworski	Method/Tube ID: Vibracore/4"	Logged By: KC, DB, AF

Depth (ft) Below Mudline	Sample #	Sample & Interval (ft)	Analysis	Headspace PID	Sediment Description (Classification Scheme: ASTM; (Actual recovered depth interval in feet))	Comments	Calc. Insitu Depths (ft) & Graphic Log	Mudline Elevation (ft)
0	S-1	4.25-5.75	PW Chem	1.0 ppm	WOOD WASTE & SAND: (0.0-2.25): (loose) wet, blackish brown, fibrous peaty, SILTY SAND with 50% shredded, small wood fragments, cellulose like wood chips and strands with black rinds and creamy centers (<0.5") and 20% large wood fragments unlumbered with bark fallen from logs(<2"), very compressible	PID @ 0.5'	0-2.6	16
1								15
2								14
3				0.0 ppm	SAND & WOOD WASTE: (2.25-4.2): wet, highly compressible, gray medium to fine SAND with a trace of silt, scattered roots with interbeds of twigs, peat, undecayed brown wood fibers with bark, and roots	PID @ 3.0'	2.6-4.8	13
4						No odor or sheen		12
5					SILTY PEAT: (4.2-5.2): (soft) moist, highly compressible, slightly grayish, medium brown organic silty PEAT with substantial plant fibers and roots, no odor or sheen	Native peat	4.8-6	11
6					SAND: (5.2-5.6): gray, medium to fine SAND with 0.5" peat lens interbeds		6-6.4	
					SILTY PEAT: (5.6-6.1): (soft) moist, highly compressible, medium brown organic silty PEAT	Native peat	6.4-7	10
7				0.0 ppm		PID @ 7.0' BOC @ 7.0'		



ermoRetec
011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Remarks:

Calculated Recovery
Sample Length/Penetration Length:
6.1 / 7.0 = 87 %

Sediment Core Drive Log

ThermoRetec

Job: Quendell

Job No: JAGCO-02438-780

Field Reps: DCW, KH, AGF

Contractor: MSS

Core Location: VC-21D

Date: 1/3/00 Time: 1105

Attempt #: 1 Accept/Reject

Sample Method: VIBRACORE

Proposed Coordinates NAD 83 Geo	Actual Coordinates
N: LAT 47 31.93308 E: LONG 122 12.30718	N: LAT 47 31.9320 N E: LONG 122 12.3093 W
Mudline:	Mudline: 15.1'
Core Drive:	Core Drive: 7.0' Core Recovery: 3.5'

DTS Boat:

DTS Lead Line: 15.1

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height:

Time/Height:

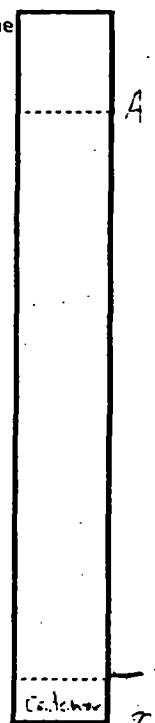
Description:

(free fall, fingers inverted, vibration needed to drive/extract, estimation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

3.5 Freefall
Vibration used to drive to 7.0 feet, easy penetration
No hammer on retraction.

Measurement (to nearest 0.1 foot):

Core Tube Length:



Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =	3.5' Section	Top primarily sand
B =		Sandy silt with wood waste
C =		
D =		

Total Drive: 7.0 Length Recovered: 3.5'

Silty sand 8.0' core

Notes: Slight sheen on foam material at surface

f:/fieldforms/sedimentcoredrivelog

Sediment Core Drive Log

ThermoRetec

): JAGCO Quentell	Core Location: VC-21C
Job No: JAGCO-02438.780	Date: 1/3/00 Time:
Field Reps: DCM KH AGF	Attempt #: Accept/Reject
Contractor:	Sample Method:

Proposed Coordinates	Actual Coordinates	
N: LAT 47 11.9286 E2 ANG 122 12.2598	N:	E:
Mudline:	Mudline:	
Core Drive:	Core Drive:	Core Recovery:

DTS Boat: DTS Lead Line:

Mudline Elevation:

Tide Measurements (Datum:)

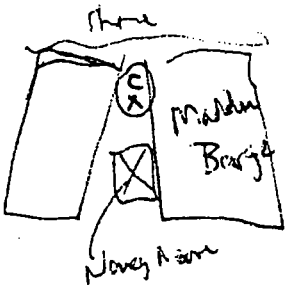
Time/Height:

Time/Height:

Description:

'free fall, fingers inverted, vibration needed to drive/extract, ..mation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

Core only get ~50' from station



Measurement (to nearest 0.1 foot):

Core Tube Length:

Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: Length Recovered:

tes:

f:/fieldforms/sedimentcoredrivelog

Attachment C

Well Point Installation Logs

Sediment Core Drive Log

ThermoRetec

Drive A reject
Drive B

: Crandall

Job No: JAGCO-02438.780

Field Reps: AGF, DCM, KTH

Contractor: MSS

Core Location: WP-18A

Date: 1/4/01 Time: 1120

Attempt #: 2 Accept/Reject

Sample Method:

Proposed Coordinates	Actual Coordinates
N: 47° 32.0450 E: 122 12.1370	N: E:
Mudline:	Mudline:
Core Drive: 6'	Core Drive: Core Recovery:

DTS Boat: 8'

DTS Lead Line: 1.8'

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height:

Time/Height:

Description:

(free fall, fingers inverted, vibration needed to drive/extract, ation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

Start 1115 maneuv
app station approx ~~30'~~ 25' from shore

Free fall entire distance
vibrate out. But came up w/
outer sheath.

move to 18 B instead

Core Tube Length: 8'

Measurement (to nearest 0.1 foot):

Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: Length Recovered:

Notes:

f:/fieldforms/sedimentcoredrivelog

Sediment Core Drive Log

ThermoRetec

: Ovendall

Job No: JAGCO-02438-780

Field Reps: DCM BTF

Contractor: MSS (BJ/DD)

Core Location: WP-18A

Date: 1/8/00 Time: 1155

Attempt #: 1 Accept/Reject

Sample Method: Handheld vibratory hammer (in water w/ waders)

Proposed Coordinates	Actual Coordinates
N: 47 32.0450 E: 122 12.1370	N: 47°32'02.65" E: 122°12'08.260"
Mudline:	Mudline:
Core Drive:	Core Drive: Core Recovery:

DTS Boat:

DTS Lead Line: 2.5'

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height:

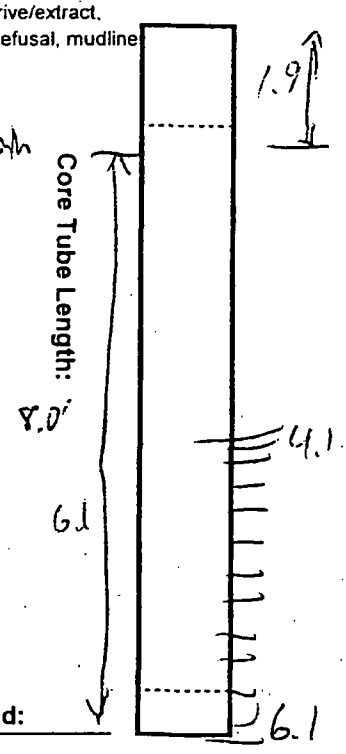
Time/Height:

Description:

(free fall, fingers inverted, vibration needed to drive/extract, variation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

Drove by hand and re depth Used vibrator on pull to ensure well point would stick.

Measurement (to nearest 0.1 foot):



Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: 6.1 Length Recovered:

Notes:

f:/fieldforms/sedimentcoredrivelog

Sediment Core Drive Log

ThermoRetec

: Grundall	Core Location: WP-18B
Job No: JAGCn-02438-780	Date: 1/4/01 Time: 1145
Field Reps: AGF, DCM, KTH	Attempt #: 1 Accept/Reject
Contractor: MSS	Sample Method: vibracore

Proposed Coordinates	Actual Coordinates
N: 47° 32.0500 E: 122° 12.1439	N: 47° 32.0502 W E: 122 12.1453 W
Mudline:	Mudline: 7' from proposed
Core Drive: 6'	Core Drive: Core Recovery:

DTS Boat: ≈ 6.5'

DTS Lead Line: 6.5'

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height: —

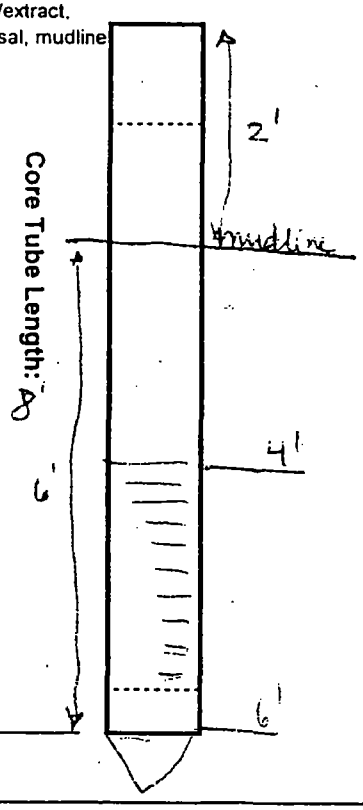
Time/Height: —

Description:

(free fall, fingers inverted, vibration needed to drive/extract, ...ation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

Start 1145. out of water.
Free fall 6'
Confirmed stickup 2'
30' of tubing w/ red/white float attached.

Measurement (to nearest 0.1 foot):



Avg. % Recovery: —

Avg. % Compaction: —

Section:	Length:	Description at Cuts:
A =		
B =	—	
C =		
D =		

Total Drive: 6'

Length Recovered:

Notes: no push probe

f:/fieldforms/sedimentcoredrivelog

Well Point Install

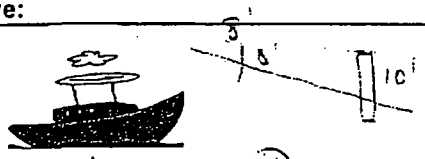
Drive 2 = accept

Sediment Core Drive Log

ThermoRetec

): Quendell		Core Location:	WP-18C
ob No: JAGCO-02438-780		Date: 1/4/01	Time: 0945
Field Reps: AGF, KTH, DCM		Attempt #: 2	Accept/Reject
Contractor: MSS		Sample Method:	Vibracore install w/ adapter

Proposed Coordinates	Actual Coordinates
N: 47° 32.0562 E: 122 12.1543	N: 47 32.0567 E: 122° 12.1514 Drive #2 5' from proposed
Mudline:	Mudline: 3 Ft from proposed
Core Drive:	Core Drive: Core Recovery:



Tide Measurements (Datum:)

Time/Height:

Time/Height:

DTS Boat: 10.6'

DTS Lead Line: ① 10.1 / ② 10.4'

Mudline Elevation:

Description:

(free fall, fingers inverted, vibration needed to drive/extract, ...ation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

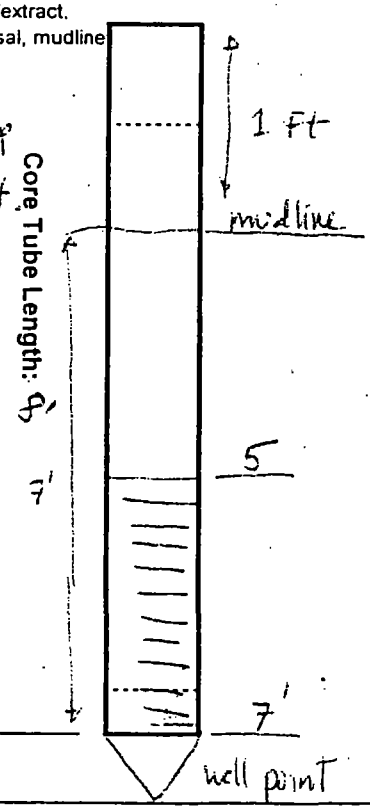
- measured about 2 Ft of stickup
- confirmed.

no resistence - V soft

+5 but pulled out during core device retrieval. Need to modify core assembly

10 2nd drive
stickup 1 Ft
Free fall, no resistence
base went in too.

Measurement (to nearest 0.1 foot):



Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: Length Recovered:

...tes:

3/4" Ø O.D. steel push probe with pointed tip → hand push 8 Ft w/o resistance at bottom

f:/fieldforms/sedimentcoredrivelog

Well Point Install

Sediment Core Drive Log

ThermoRetec

): Quendall		Core Location:	WP-18d
Job No:	JA6C0-02438-780	Date: 1/4/01	Time: 1210
Field Reps:	AWF, DLM, KTH	Attempt #: 1	Accept/Reject
Contractor:	M33 - DataBill	Sample Method:	Vibracore

Proposed Coordinates	Actual Coordinates
N: 47° 32.0541 E: 122° 12.1904'	N: 47° 32.0535 E: 122° 12.1894
Mudline:	Mudline: 4 ft from proposed
Core Drive:	Core Drive: Core Recovery:

DTS Boat: ~~4.6'~~ ~ 10' Screwy

DTS Lead Line: 12.1'

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height:

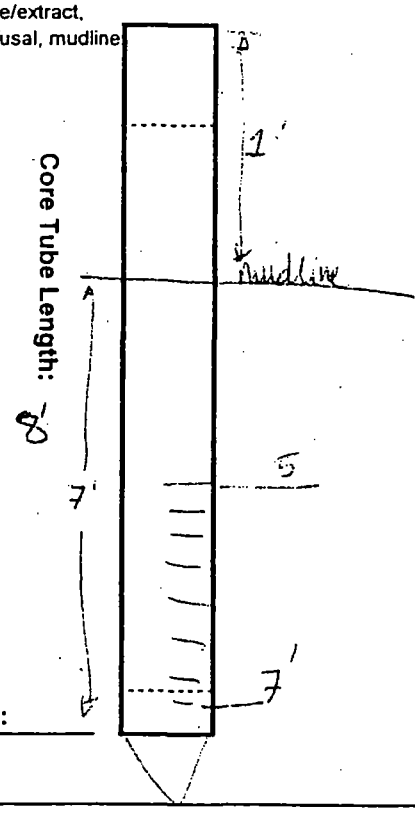
Time/Height:

Description:

'ree fall, fingers inverted, vibration needed to drive/extract, nation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

start 1210
start drive 1215
stop 1222
Free fall entire depth
30' tubing + labeled R/W float
stick up ~ 1'
25' of tubing above casing

Measurement (to nearest 0.1 foot):



Avg. % Recovery: —

Avg. % Compaction: —

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: Length Recovered:

es:

f:/fieldforms/sedimentcoredrivelog

Sediment Core Drive Log

ThermoRetec

: Quendall

Job No: JACCO-02438-700

Field Reps: Dam BTP

Contractor: MSS (BJ/DD)

Core Location: WP-19A

Date: 1/8/07 Time: 1020

Attempt #: 1 Accept/Reject

Sample Method: Handheld vibrating hammer

Proposed Coordinates		Actual Coordinates	
N:	E:	N:	E:
Mudline:		Mudline:	
Core Drive:		Core Drive:	Core Recovery:

DTS Boat: DTS Lead Line:

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height:

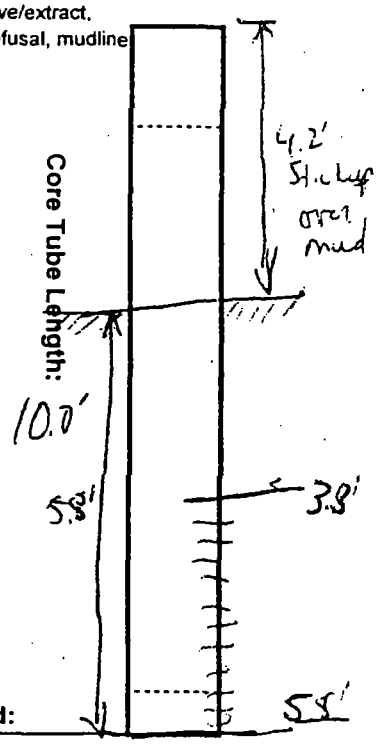
Time/Height:

Description:

ree fall, fingers inverted, vibration needed to drive/extract, .nation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

Difficult to drive at first (2') then easy to 5.8' then refusal

Measurement (to nearest 0.1 foot):



Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: Length Recovered:

es: Used 10' core → Rejected, will try with 8' core (supposed to be 8' core and see if we get more penetration

f:/fieldforms/sedimentcoredrivelog

Sediment Core Drive Log

ThermoRetec

: Quendall

Job No: JACCO 02438.780

Field Reps: Dean BTF

Contractor: MSS/BJ/DD

Core Location: WP 19A

Date: 1/8/08 Time: 1040

Attempt #: 2 Accept/Reject

Sample Method: Handheld vibrating hammer

Proposed Coordinates		Actual Coordinates	
N:	E:	N: 47 32 00 724	E: 122 12 09.921
Mudline:		Mudline:	
Core Drive:		Core Drive:	Core Recovery:

DTS Boat:

DTS Lead Line: 0.8'

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height:

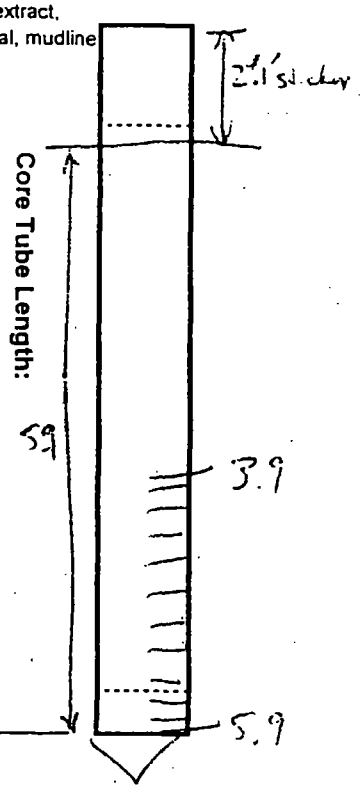
Time/Height:

Description:

free fall, fingers inverted, vibration needed to drive/extract, nation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

Drove with handheld vibrating hammer using waders to access location. Driving difficult at first ~2' then relatively easy. At 5.9' met refusal.

Measurement (to nearest 0.1 foot):



Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive:

Length Recovered:

'es:

f:/fieldforms/sedimentcoredrivelog

WELL POINT INSTALL

Sediment Core Drive Log

ThermoRetec

: Quendall

Job No: JAGCD-02435-780

Field Reps: DCM BTF

Contractor: MSS (BJ, DD)

Core Location: WD-319B

Date: 1/8/04 Time: 935

Attempt #: 1 Accept/Reject

Sample Method: 1/GRAVITY

Proposed Coordinates WG:84	Actual Coordinates Six feet south of C207
LAT N: 47 32.0183 E: 122 12.1750	N: 47° 32.0197 N E: 122 12.1763 W
Mudline:	Mudline:
Core Drive:	Core Drive: Core Recovery:

DTS Boat:

DTS Lead Line: 1.8'

Mudline Elevation:

Tide Measurements (Datum:)

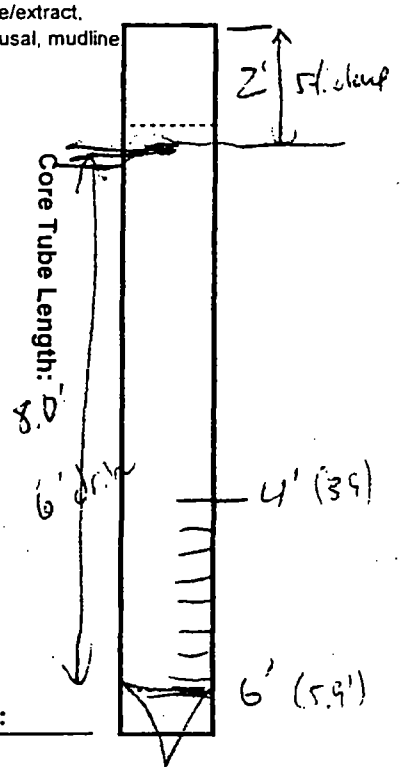
Time/Height:

Time/Height:

Description:

free fall, fingers inverted, vibration needed to drive/extract, ..nation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

Measurement (to nearest 0.1 foot):



Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: 5.9'

Length Recovered:

'es:

f:/fieldforms/sedimentcoredrivelog

Well Point Install

Sediment Core Drive Log

ThermoRetec

:: Quendall

Job No: JA600 - 02438 - 780

Field Reps: AGF, DCM, KTH

Contractor: MSS

Core Location: WP- 19C

Date: 1/4/01 Time:

Attempt #: Accept/Reject

Sample Method:

Proposed Coordinates	Actual Coordinates
N: E:	N: E:
Mudline:	Mudline:
Core Drive:	Core Drive: Core Recovery:

DTS Boat: DTS Lead Line:

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height:

Time/Height:

Description:

(free fall, fingers inverted, vibration needed to drive/extract, mation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

Check water depth at 19C - only 4 Ft of water depth.
30 Ft to shore (end of water)
In 4 Ft of water, station A is likely on ~~the~~ the beach
We are 50' SW of 19A but there is a shallow sand bar ~ 1 Ft of water on our port side.

Measurement (to nearest 0.1 foot):

Core Tube Length:

Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: Length Recovered:

tes:

f:/fieldforms/sedimentcoredrivelog

WELL POINT INSTALL

Sediment Core Drive Log

ThermoRetec

:: Quendall	Core Location: WP-19C
Job No: JACCO-02438-780	Date: 1/8/00 Time: 1110
Field Reps: DCM BTF	Attempt #: 1 Accept/Reject
Contractor: MSS (BJ/DD)	Sample Method: Handheld vibratory hammer from boat

Proposed Coordinates	Actual Coordinates 6' south of listed.
N: 4732.0206 E: 122. 12.1829	N: 4732.0213 E: 122°12.1842W east
Mudline:	Mudline:
Core Drive:	Core Drive: Core Recovery:

DTS Boat:

DTS Lead Line: 2.1'

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height:

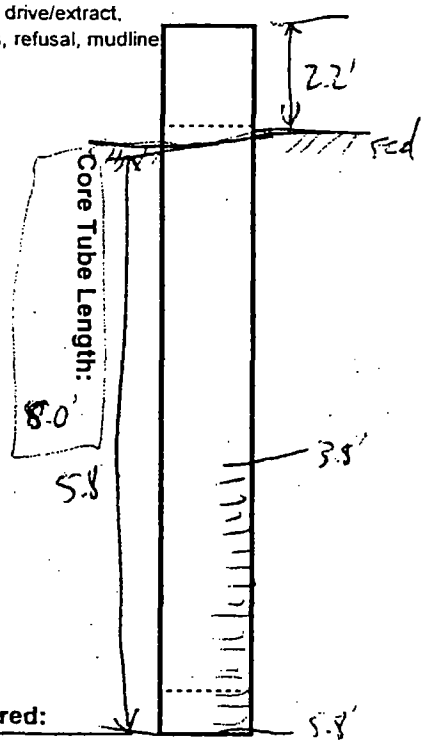
Time/Height:

Description:

'ree fall, fingers inverted, vibration needed to drive/extract, .nation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

Difficult to drive 1-3'
3-5.8' very difficult
Easy to pull

Measurement (to nearest 0.1 foot):



Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: 5.8'

Length Recovered:

es:

f:/fieldforms/sedimentcoredrivelog

WELL-POINT INSTALL

Sediment Core Drive Log

ThermoRetec

: Quendall	Core Location: WP-19D
Job No: JA660-02438-780	Date: 1/4/00 Time: 1404
Field Reps: DCM KTH	Attempt #: 1 Accept/Reject
Contractor: MSS (BJ/DD)	Sample Method: VIBRACORE

Proposed Coordinates NAD83	Actual Coordinates
N: LAT 47 32.0316 E: LONG 122 12.2127	N: LAT 47 32.0321 E: LONG 122 12.2124
Mudline:	Mudline: 3' off proposed
Core Drive:	Core Drive: Core Recovery:

DTS Boat: 16.0' (moving around a lot)

DTS Lead Line: ~~16.3'~~ 15.2' redo

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height:

Time/Height:

Description:

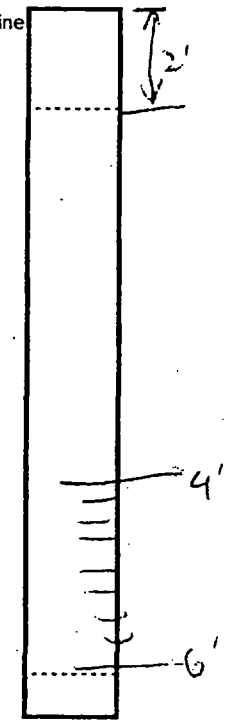
ree fall, fingers inverted, vibration needed to drive/extract, nation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

1404 Start Drive
Free fall most except
last 0.5' Vibracore

measured 13' tubing
Stickup of 2'

Core Tube Length: 8.0'

Measurement (to nearest 0.1 foot):



Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: 6'

Length Recovered:

es: no push profile

f:/fieldforms/sedimentcoredrivelog

WELL POINT INSTALL

Sediment Core Drive Log

ThermoRetec

...: Quendell	Core Location: WP-19E
Job No: JACCO-02438-780	Date: 1/4/00 Time: 1350
Field Reps: Dom KTH	Attempt #: 1 Accept/Reject
Contractor: MSS BJ/DD	Sample Method: Vibracor

Proposed Coordinates	Actual Coordinates
N: 47 32.0370 E: 122 12.2244	N: 47°32.0378'N E: 122°12.2243'W
Mudline: 19.3	Mudline: 5' from proposed
Core Drive:	Core Drive: Core Recovery:

DTS Boat: 19.8'

DTS Lead Line: 19.3'

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height:

Time/Height:

Description:

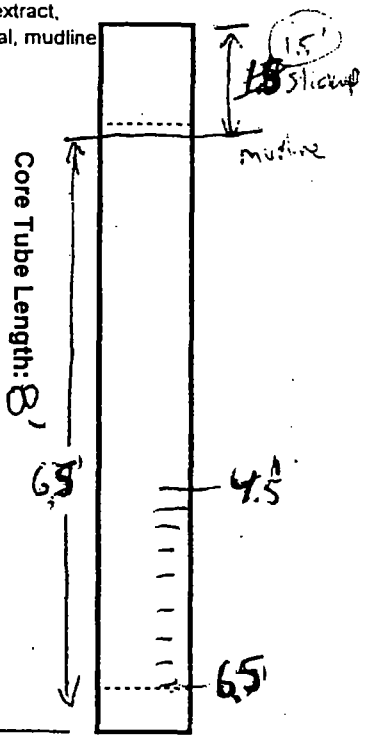
...ree fall, fingers inverted, vibration needed to drive/extract, ...imation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

Free fall and no depth

No vibracore

17.8' tubing at water surface
1.5' stickup
24.0' tubing over top of casing

Measurement (to nearest 0.1 foot):



Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: 6.5' Length Recovered:

...es: no push profile

f:/fieldforms/sedimentcoredrivelog

Well Point Install

Sediment Core Drive Log

ThermoRetec

...: Quendall	Core Location: WP-19F
Job No: JA6CO-02438-780	Date: 1/4/00 Time: 1332
Field Reps: DCM KTR	Attempt #: 1 Accept/Reject
Contractor: MSS (BS & DD)	Sample Method: Well Point by Vibracore

Proposed Coordinates	Actual Coordinates
N: LAT 47 32.0401 N E: 122 12.2355 W	N: LAT 47 32.0403 E: 122° 12.2346' W
Mudline:	Mudline: ~6' off station
Core Drive:	Core Drive: Core Recovery:

DTS Boat: 21.4'

DTS Lead Line: 21.0'

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height:

Time/Height:

Description:

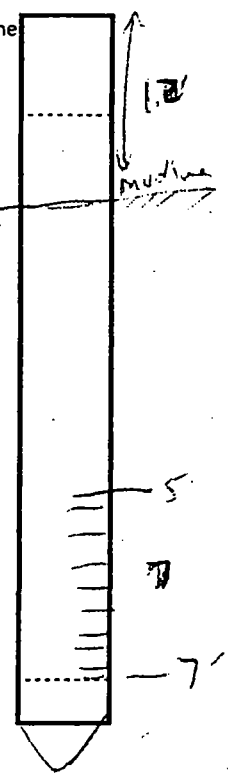
(free fall, fingers inverted, vibration needed to drive/extract, ...mation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

1332 Start
1333 Pull
Free fall entire depth
labled WP-19F with float and TAPE

Stickup 1.2' (use 1.0)
24.8' tubing over casing

Measurement (to nearest 0.1 foot):

Core Tube Length: 8'



Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: 7'

Length Recovered:

...es: no push profile

f:/fieldforms/sedimentcoredrivelog

WELL POINT INSTALL

Sediment Core Drive Log

ThermoRetec

o: Quendall	Core Location: WP-20A
Job No: JEXCO-02438-780	Date: 1/4/00 Time: 1440
Field Reps: DCM KTH	Attempt #: 1 Accept/Reject
Contractor: MSS (BJ/DD)	Sample Method: VIBRACORE

Proposed Coordinates	Actual Coordinates
N: 47 31.9728 E: 122 12.1891	N: 47 31.9766 E: 122 12.1949
Mudline:	Mudline: 6' from core location
Core Drive:	Core Drive: Core Recovery:

DTS Boat: variable

DTS Lead Line: 3.8'

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height:

Time/Height:

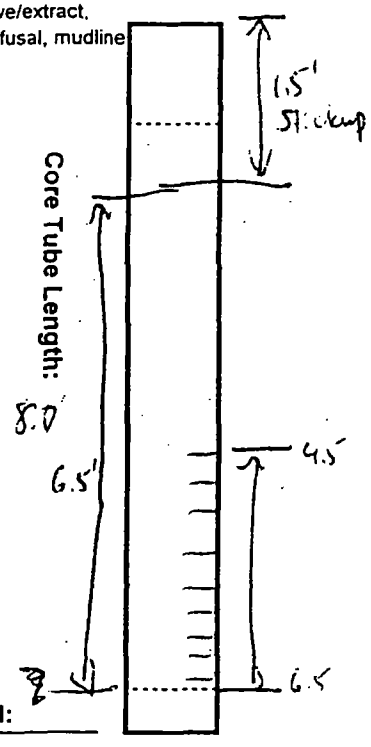
Description:

ree fall, fingers inverted, vibration needed to drive/extract, umation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

Free fall entire drive

Even easy pull

Measurement (to nearest 0.1 foot):



Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: 6.5' Length Recovered:

s: Colocated with core rather than proposed. Two rafts in way (see photo)
Probe - Soft for ~4' then firm to ~8'

f:/fieldforms/sedimentcoredrivelog

WELL POINT INSTALL

Sediment Core Drive Log

ThermoRetec

ɔ: Quendall	Core Location: WP-20B
Job No: JRGCO 02548-750	Date: 1/4/10 Time: 1425
Field Reps: DCM KTH	Attempt #: 1 Accept/Reject
Contractor: MSS (BJ/DD)	Sample Method: VIBRACORE

Proposed Coordinates	Actual Coordinates
N: 47 31.9866 E: 122 12.2356	N: 47°31.9866'N E: 122°12.2345 W
Mudline:	Mudline: 4.5' off proposed
Core Drive:	Core Drive: Core Recovery:

DTS Boat: 15.1

DTS Lead Line: 15.3

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height:

Time/Height:

Description:

free fall, fingers inverted, vibration needed to drive/extract, ..mation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

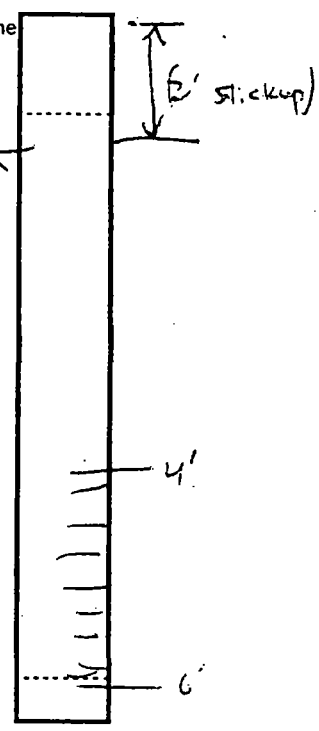
free fall ~1.0'
hit debris @ ~1' and ~5'

pulled with vibracore
some resistance (slight in places)

13.2 feet tubing to top of water
15.3 feet bedline

~2' stickup

Measurement (to nearest 0.1 foot):



Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: 6'

Length Recovered:

es: no push profile

f:/fieldforms/sedimentcoredrivelog

Sediment Core Drive Log

ThermoRetec

.o: Quendall

Core Location: WP-21A

Job No: JAGCO-02438-780

Date: 1/8/00 Time: 1225

Field Reps: DCM BTF

Attempt #: 1 Accept/Reject

Contractor: MKS (BJ/DD)

Sample Method: Handheld vibracore hammer from boat

Proposed Coordinates	Actual Coordinates
N: 47 31.9237 E: 122 12.2504	N: 47° 31' 55.384" E: 122° 12' 19.115"
Mudline:	Mudline:
Core Drive:	Core Drive: Core Recovery:

DTS Boat:

DTS Lead Line: 1.0

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height:

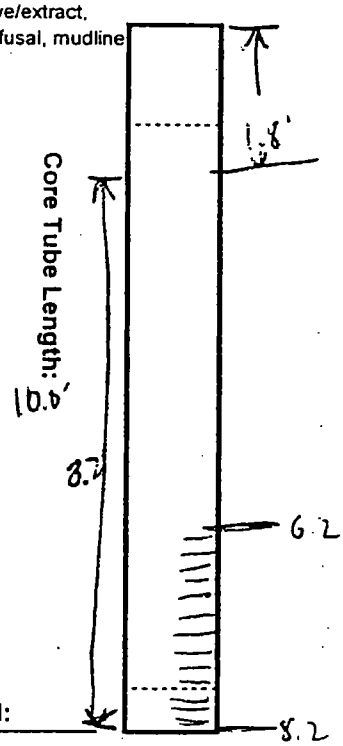
Time/Height:

Description:

free fall, fingers inverted, vibration needed to drive/extract, ...imation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

Even drive, no free fall
Sand below depth?

Measurement (to nearest 0.1 foot):



Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: 8.2 Length Recovered:

es: Probing → primarily sand/gravel(?) to 9' then refusal

f:/fieldforms/sedimentcoredrivelog

WELL POINT INSTALL

Sediment Core Drive Log

ThermoRetec

: Quendall

Job No: JAGCU-02438-780

Field Reps: DCM

Contractor: MSS (BJ / DD)

Core Location: WP-21-B

Date: 1/5/01 Time: 1120

Attempt #: 1 Accept/Reject

Sample Method: VIBRACORE

Proposed Coordinates	Actual Coordinates
N: 47° 9263 E: 122 12.2552	N: 47° 31.9252 E: 122° 12.2556
Mudline:	Mudline:
Core Drive:	Core Drive: Core Recovery:

DTS Boat:

DTS Lead Line: 3.8'

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height:

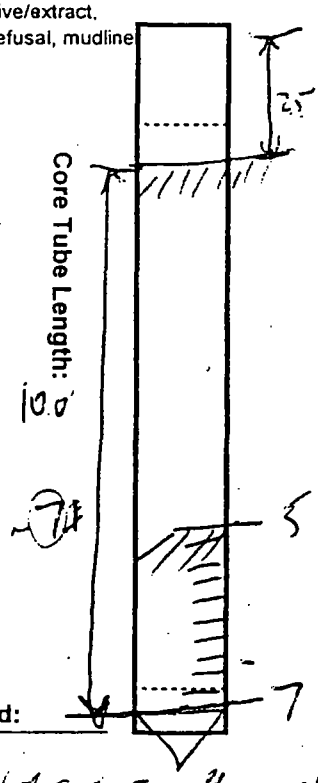
Time/Height:

Description:

free fall, fingers inverted, vibration needed to drive/extract, nation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

Stickup was 2.5'
Could not drive further
due to shallow depth
Free fall ~2 feet
Then vibracore rest of way
Moderately difficult and in
6 feet then easy

Measurement (to nearest 0.1 foud):



Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: 7.1' Length Recovered:

es: Wood debris @ surface, lot of gas, small gravel to ~6' then sandy with gravel ~~only peat~~ and peat interbeds at 8' only peat and below

f:/fieldforms/sedimentcoredrivelog

WELL PO NT INSTALL

Sediment Core Drive Log

ThermoRetec

: Rendall

Job No: JAGCO-02438-280

Field Reps: DCM

Contractor: MSS (BJ/DD)

Core Location: WP-21-C

Date: 1/5/00 Time: 1140

Attempt #: 1 Accept/Reject

Sample Method: VIBRACORE

Proposed Coordinates	Actual Coordinates
N: LAT 47°31.9286' E: LONG 122°12.2598'	N: LAT 47°31.9290 E: LONG 122 12.2585
Mudline:	Mudline:
Core Drive:	Core Drive: Core Recovery:

DTS Boat:

DTS Lead Line: 5.6

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height:

Time/Height:

Description:

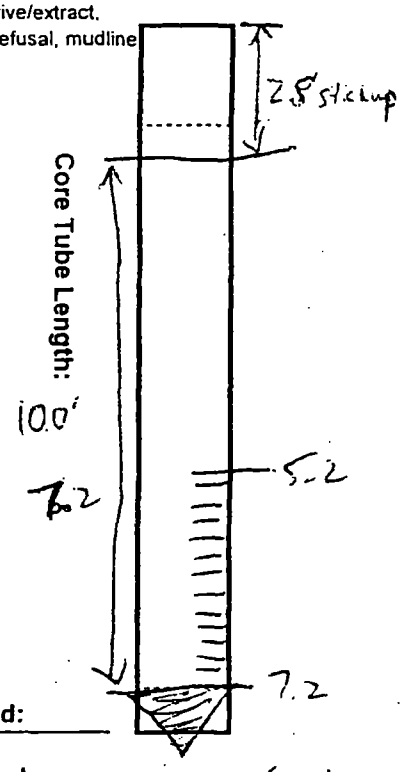
free fall, fingers inverted, vibration needed to drive/extract, nation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

2' drive with hammer

Sticky 5.6-3.8=2.8' stickup
~2.5' stickup

~2.5' stickup

Measurement (to nearest 0.1 foot):



Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: 7.2 Length Recovered:

tes: Well points installed between 2 barges (Madden Const.) actual location under barge to south

f:/fieldforms/sedimentcoredrivelog

Sediment Core Drive Log

ThermoRetec

...: Overdell	Core Location: WP-21D
Job No: SRGCO-02438-780	Date: 1/5/01 Time: 930
Field Reps: DCM	Attempt #: 1 Accept/Reject
Contractor: MSS (BJ/DD)	Sample Method: VIBRACORE

Proposed Coordinates	Actual Coordinates
N: 47 31.9331 E: 122 12.3080	N: 47° 31.9328 E: 122° 12.3071
Mudline:	Mudline:
Core Drive:	Core Drive: Core Recovery:

DTS Boat:

DTS Lead Line: 14.5'

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height:

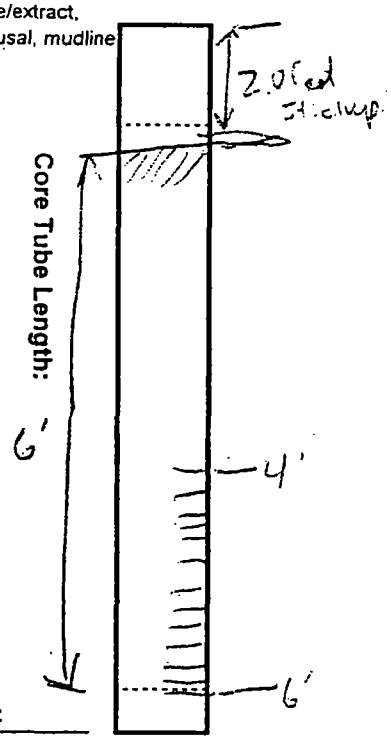
Time/Height:

Description:

'ree fall, fingers inverted, vibration needed to drive/extract, ..nation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

24.4' of tubing
free fall ~4.5'
drove ~1.5' with Vibracore
~~DX~~. 12.5' tubing
(2' stickup)

Measurement (to nearest 0.1 foot):



Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: 6'

Length Recovered:

es:

f:/fieldforms/sedimentcoredrivelog

WELL POINT INSTALL

Sediment Core Drive Log

ThermoRetec

: Quendall

Job No: JAGCO-02438-780

Field Reps: DCM

Contractor: MSS (BJ/DP)

Core Location: WP-21E

Date: 1/5/09 Time: 850

Attempt #: 1 Accept/Reject

Sample Method: 1" BRACORE

Proposed Coordinates	Actual Coordinates
N: 47 31.9358 E: 122 12.3222	N: 47° 31.9359 E: 122° 12.3227
Mudline:	Mudline: 1.3' off station
Core Drive:	Core Drive: Core Recovery:

DTS Boat: 16.6

DTS Lead Line: 16.5'

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height:

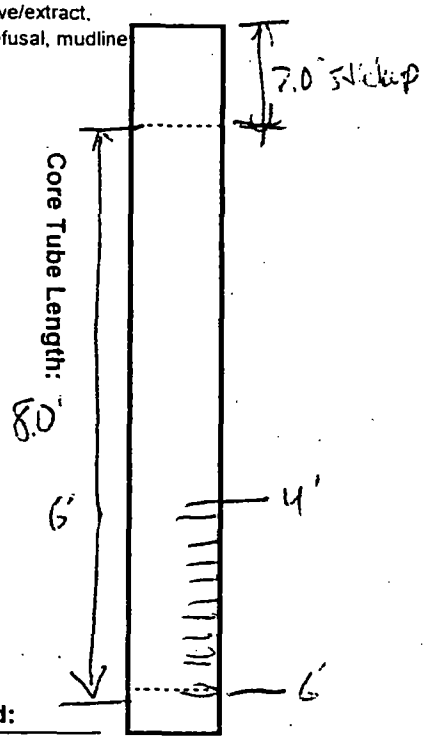
Time/Height:

Description:

free fall, fingers inverted, vibration needed to drive/extract, nation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

Drived @ 850 free fall
tubing 24.8'
Free fall entire depth
14.8 [illegible] 2.0' stickup

Measurement (to nearest 0.1 foot):



Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: 6'

Length Recovered:

es:

f:/fieldforms/sedimentcoredrivelog

Sediment Core Drive Log

ThermoRetec

ɔ: Quendall	Core Location: WP 21F
Job No: JAGCO 02438	Date: 1/5/01 Time: 915
Field Reps: DCM	Attempt #: 1 Accept/Reject
Contractor: MSS (DD/BJ)	Sample Method: VIBRACORE

Proposed Coordinates	Actual Coordinates
N: 4731.9407 E: 122 12.3372	N: 4731.9397 E: 122 12.3380
Mudline:	Mudline: Wind ~28 MPH hard to Control
Core Drive:	Core Drive: ~8 off DD Core Recovery:

DTS Boat: DTS Lead Line: 16.8'

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height:

Time/Height:

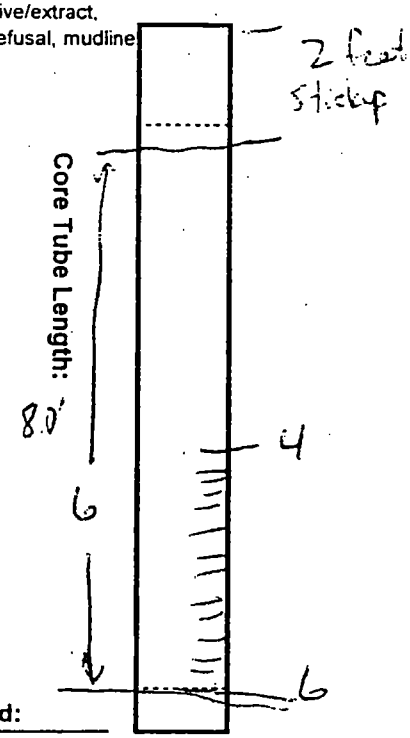
Description:

'free fall, fingers inverted, vibration needed to drive/extract, ..mation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

Free fall and re depth

Tubing total length 25.3'
~15.5' tubing
Stickup of 2 feet

Measurement (to nearest 0.1 foot):



Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: 6 Length Recovered:

'es: Very windy up to 28 mph

f:/fieldforms/sedimentcoredrivelog

WELL POINT INSTALL

Sediment Core Drive Log

ThermoRetec

...: Overdall	Core Location: WP 28A
Job No: JAGRO-02438 780	Date: 1/4/01 Time: 1505
Field Reps: DCM KSH	Attempt #: 1 Accept/Reject
Contractor: MSS (BJ/DD)	Sample Method: U BRACORE

Proposed Coordinates	Actual Coordinates
N: 47 31.9485 E: 122 12.2115	N: LAT 47°31.9498' E: 122°12.2131'W
Mudline:	Mudline:
Core Drive:	Core Drive: Core Recovery:

DTS Boat: unstable

DTS Lead Line: 3.6'

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height:

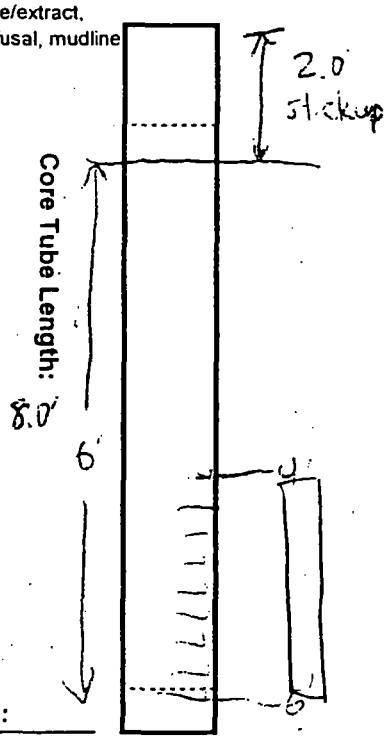
Time/Height:

Description:

(Free fall, fingers inverted, vibration needed to drive/extract, estimation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

Free fall entire drive

Measurement (to nearest 0.1 foot):



Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: 6'

Length Recovered:

es: Located at former core location (Perm 1/8/01)
Was proposed as longer core tube (10.0') but unable to used/substitutes 8.0' well point

f:/fieldforms/sedimentcoredrivelog

Sediment Core Drive Log

ThermoRetec

Job: Quentell

Job No: JAGCO 02438-780

Field Reps: DLM AGF KTH

Contractor: MJS (DD BJ)

Core Location: WP-28B

Date: 1/4/01 Time: 0845

Attempt #: 1 Accept/Reject

Sample Method: push w/ vibracore assembly

Proposed Coordinates	Actual Coordinates
N: 47°31.9612' E: 122°12.2602'	N: 47° 31.9619' E: 122° 12.2609' W
Mudline:	Mudline: 6' Ft from proposed
Core Drive:	Core Drive: Core Recovery: NA

DTS Boat:

DTS Lead Line: 15.5' water depth.

Mudline Elevation:

Tide Measurements (Datum:)

Time/Height:

Time/Height:

Description:

(free fall, fingers inverted, vibration needed to drive/extract, estimation of density, debris encountered, slopes, refusal, mudline conditions, drive action, etc.)

5 feet freefall

1' drive with vibracore

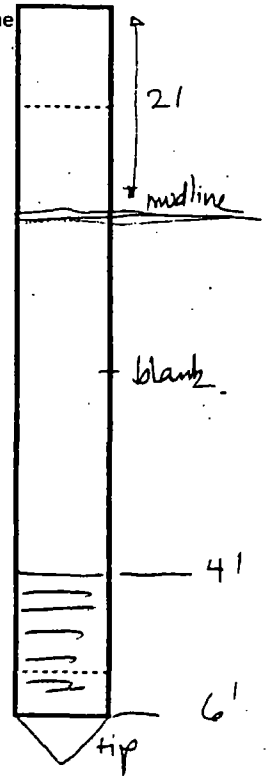
installed screen 4-6'

2 Ft stickup above mud.

40' of tubing w/ buoy

Core Tube Length: 8'

Measurement (to nearest 0.1 foot):



Avg. % Recovery:

Avg. % Compaction:

Section:	Length:	Description at Cuts:
A =		
B =		
C =		
D =		

Total Drive: Length Recovered:

Notes:

f:/fieldforms/sedimentcoredrivelog

RETEC 2000

Well Logs

BH-19B
BH-28B

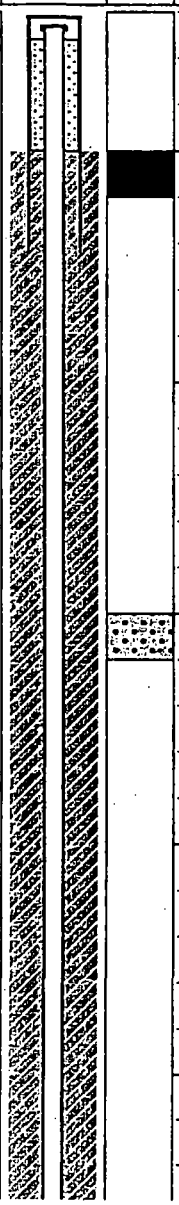
ThermoRetec
Smart Solutions. Positive Outcomes

Boring/Well Log

Boring #: BH-19B
Sheet 1 of 2

Project: **Quendall**	Monument: **Stick-up**	Stick Up: **2.7'**
Project #: **JAGCO-02438-700**	Northing: **197589.0** Easting: **1302247.6**	Ground Elevation: **24.6'**
Location: **~10' East of BH-19**	Drill Rig Type: **CME 55LA on Nodwell**	MP Elevation: **27.3'**
Client: **Vulcan**	Method: **HSA**	Total Depth: **54'**
Start Date & Time: **12/04/00 1422**	Casing ID: **4 1/4"**	Filter Pack: **2x12 Silica Sand (38-54')**
Finish Date & Time: **12/04/00 1450**	Boring ID: **10"**	Seal: **Portland Cement (36-0')**
Contractor: **Cascade Drilling**	Bit Type:	Grout: **Bentonite Slurry (38-36')**
Operator: **Scott**	Logged By: **Cliff Baines**	Screen: **2" 10 Slot Stainless (40-50')**

Sample Type & #	Depth Range	% Rec	Blows per 6"	PID (ppm)	Soil and Rock Description	Elevation (ft.)	Comments
					(0 - 1) Surface: Vegetation and Wood Chips.		Dames and Moore Sampler (3"x1.5')
							Water @ 8' ATD
SS-1	10-11	70			(10 - 11) SAND, Fine w/ trace Gravel, SP; Olive green, wet, no odor.		1-1L Jar
							Easy drilling cannot tell when drillers hit sand.



Remarks and Datum Used: EOB at 54 feet at 1450

Well Installed at 50'

ThermoRetec
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
SS = Split Spoon
GP = Geoprobe
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
12/04/00		8

ThermoRetec
Smart Solutions. Positive Outcomes

Boring Log

Sample Type & #	Sample Depth Range	Sample % Rec	Sample Blows per 6"	Sample PID (ppm)	Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description	Elevation (ft.)	Comments
							25		0	Added water to borehole to control heaving sands.
							30		5	
							35		10	
							40		15	Out of soft flowing sand at 38'. Sample smells like moth balls.
SS-2	45-46	80					45	(45 -45.3) Sand, Fine to Coarse, w/ Gravel, SP; Olive green, odor, rusty product staining.	20	1-1L Jar
								(45.3 -45.5) SILT w/ trace Sand, ML; Olive grey, wet, odor, no product.		
								(45.5 - 46) SAND, Fine, trace Silt (5%), SP; Wet, moderate odor.		
							50		25	BOW @ 50'
										BOH @ 54'

Remarks and Datum Used: EOB at 54 feet at 1450

Well installed at 50'

ThermoRetec
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
SS = Split Spoon
GP = Geoprobe
GS = Grab Sample
C = Core

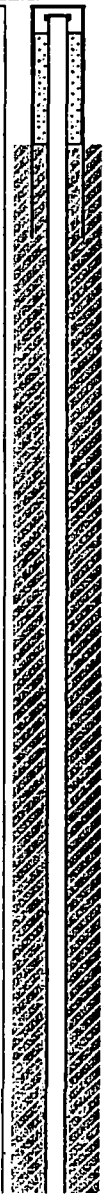
Groundwater		
Date	Time	Depth (ft.)
12/04/00		8

ThermoRetec
Smart Solutions. Positive Outcomes

Boring/Well Log

Boring #: BH-28B
Sheet 1 of 2

Project: **Quendall**	Monument: **Stick-up**	Stick Up: **2.8'**
Project #: **JAGCO-02438-700**	Northing: **196793.6** Easting: **1302151.7**	Ground Elevation: **23.85'**
Location: **~8' West of BH-28**	Drill Rig Type: **CME 55LA on Nodwell**	MP Elevation: **26.65'**
Client: **Vulcan**	Method: **HSA**	Total Depth: **54'**
Start Date & Time: **12/04/00 0930**	Casing ID: **4 1/4"**	Filter Pack: **2x12 Silica Sand (38-54')**
Finish Date & Time: **12/04/00 1330**	Boring ID: **10"**	Seal: **Portland Cement (36-0')**
Contractor: **Cascade Drilling**	Bit Type:	Grout: **Bentonite Slurry (38-36')**
Operator: **Scott**	Logged By: **Cliff Baines**	Screen: **2" 10 Slot Stainless (40-50')**

Sample: Type & #	Depth Range	% Rec	Blows per 6"	PID (ppm)	Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description	Elevation (ft.)	Comments
				0.0			0 5 10 15 20	No soil boring log kept.	25 20 15 10 5	Water @ 8' ATD.

Remarks and Datum Used: EOB at 54 feet at 1003

Well Installed at 50'

ThermoRetec
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
SS = Split Spoon
GP = Geoprobe
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
12/04/00		8

ThermoRetec
Smart Solutions. Positive Outcomes

Boring Log

Boring #: BH-28B

Sample					Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description	Elevation (ft.)	Comments
Type & #	Depth Range	% Rec	Blows per 6"	PID (ppm)						
				0.0			25, 30, 35, 40, 45, 50		0, 5, 10, 15, 20, 25, 30	BOW @ 50' BOH @ 54'

Remarks and Datum Used:	EOB at 54 feet at 1003
	Well Installed at 50'

ThermoRetec
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
SS = Split Spoon
GP = Geoprobe
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)
12/04/00		8

CORING LOG
VS-1

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Confidential*
LOCATION: *Renton, Washington;*		RIG TYPE:
START DATE: *01/27/97* TIME: *09:01*	RECOVERY LENGTH: *15.3 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/27/97* TIME: *09:05*	DRIVE LENGTH: *17.0 feet*	FIELD LOG BY: *Gene Reveles*
DEPTH TO MUD: *7.7 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.0	NM	PT		VEGETATION: Black; with 10% silt.			0
							SILTY PEAT/PEATY SILT: Tan.		PT	
5					PT		Grades with slightly more clay.			5
					SP					
					CL		SILTY PEAT: Black; 10% silt.		PT	
					PT					
					ML		SAND: Gray; medium-grained.		SP	
							SILTY CLAY: Gray; with 5% wood.		CL	
									PT	
10					SP		SILTY PEAT: Brown.		ML	10
	ARCH		0.8		SP		CLAYEY SILT: Gray; with 5% wood.		SP	
							SAND: Gray; fine-grained; well sorted.			
					CL					
					SM		GRAVELLY SAND: Gray; with moderate odor.		SP	
					CL		SILTY CLAY: Gray.		CL	
					SM		SILTY SAND: Gray; fine-grained.		SM	
15							SILTY CLAY: Gray/brown.		CL	15
							SILTY SAND: Gray; fine-grained.		SM	
							Total depth = 17.0 feet bgs.			
20										20

REMARKS: ARCH - Archived Sample
SAMP - Laboratory Sample

RETEC 1997

RETEC 1997

Sediment Core Logs

VS-1 to VS-41
VT-1 to VT-5
VB-1 to VB-8
VL-1 to VL-2
VR-3 to VR-4
VW-1 to VW-7

CORING LOG
VS-2

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Confidential*
LOCATION: *Renton, Washington;*		RIG TYPE:
START DATE: *01/27/97* TIME: *10:29*	RECOVERY LENGTH: *11.8 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/27/97* TIME: *10:33*	DRIVE LENGTH: *17.0 feet*	FIELD LOG BY: *G. Reveles*
DEPTH TO MUD: *8.0 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.0	NM	ML		SILT; Dark brown; with 5% wood.		PT	0
					SM					
					PT					
							SILTY SAND; Gray; fine-grained.		SM	
					SM		SILTY PEAT; Brown.		PT	
					PT					
5										5
	ARCH		2.0		SM					
							SILTY SAND; Gray; fine-grained; with 10% wood.		SM	
							SILTY PEAT; Gray.		PT	
					SP					
10										10
	SAMP		>250		SP					
	ARCH		27		ML					
							SILTY CLAYEY SAND; Gray; fine-grained; with creosote odor.		SM	
15							SAND; Gray; fine- to medium-grained.		SP	15
							SAND; Yellow-stained; medium-grained; sheen; odor.		SP	
							CLAYEY SILT; Brown/gray.		ML	
							Total depth = 17.0 feet bgs.			
20										20

REMARKS: ARCH - Archived Sample
SAMP - Laboratory Sample

CORING LOG
VS-3

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Confidential*
LOCATION: *Renton, Washington;*		RIG TYPE:
START DATE: *01/27/97* TIME: *11:08*	RECOVERY LENGTH: *11.2 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/27/97* TIME: *11:12*	DRIVE LENGTH: *17.0 feet*	FIELD LOG BY: *G. Reveles/ D. Turner*
DEPTH TO MUD: *8.8 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.0	0.0	PT		SILTY PEAT; Tan/brown.		PT	0
					SP					
					SM					
					ML					
					SP					
					PT					
5										5
					SP:CL					
	ARCH		1.1				SAND; Gray; fine- to medium-grained.		SP	
					SP:CL		SILTY SAND; Gray; fine- to medium-grained.		SM	
							SILT; Brown/gray; with sand and wood chips.		ML	
					CL					
				0.3	PT		SILTY PEAT; Tan; with some clay.		PT	
				1.0					PT	
10	ARCH		2.7	4.5	SP		SILTY PEAT; Dark brown; with thin lenses of black fine-grained sand.			10
				2.4	PT					
							INTERBEDDED SAND AND SILTY CLAY; Dark gray.		SP CL	
							WOOD		SP CL	
							INTERBEDDED SAND AND SILTY CLAY; Dark gray.			
							SILTY CLAY; Tan; 50% wood.		CL	
							SILTY PEAT; Black.		PT	
15							SILTY SAND; Gray; fine-grained.		SM	15
							SILTY PEAT; Black.		PT	
							Total depth = 17.0 feet bgs.			
20										20

REMARKS: ARCH - Archived Sample
SAMP - Laboratory Sample

RETEC

CORING LOG
VS-4

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Confidential*
LOCATION: *Renton, Washington;*		RIG TYPE:
START DATE: *01/27/97* TIME: *12:17*	RECOVERY LENGTH: *8.5 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/27/97* TIME: *12:24*	DRIVE LENGTH: *17.0 feet*	FIELD LOG BY: *GR/DT*
DEPTH TO MUD: *8.5 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		12.1		OL		ORGANIC MUD; Black; with strong sheen and odor.		OL	0
				0.3	SP					
				0.3						
				0.0	SP:ML					
					PT		SAND; Black; fine- to medium-grained; well sorted; no sheen; no odor.		SP	
				0.0						
5	ARCH		13.6	0.0	SP:ML					5
	ARCH		11.3	1.7	PT					
	ARCH		2.7	4.8	SP:ML		INTERBEDDED SAND WITH SILT; Black, fine- to medium-grained, well sorted sand; and black silt.		SP ML	
				1.3			SILTY PEAT; Tan; with woody layers.		PT	
10										10
							INTERBEDDED SAND WITH CLAYEY SILT; Gray, fine- to medium-grained sand; and clayey silt; odor.		SP ML	
							SILTY PEAT; Dark gray to black; no odor.		PT	
15										15
							INTERBEDDED SAND WITH CLAYEY SILT; Gray, fine- to medium-grained sand; and clayey silt; odor.		SP ML	
							Total depth = 17.0 feet bgs.			
20										20

VS-28 VS-4 VS-26
0-3 si & 0-3.5 si
3-7 sd & 3.5-7 sd
7-11 spt & 7-17 pt. cl. si
11-12 cl
12-13 sd

REMARKS: ARCH - Archived Sample
SAMP - Laboratory Sample

REN

RETEC

CORING LOG
VS-4D

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Confidential*
LOCATION: *Renton, Washington;*		RIG TYPE:
START DATE: *01/30/97* TIME: *09:54*	RECOVERY LENGTH: *4.75 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/30/97* TIME: *09:59*	DRIVE LENGTH: *12.2 feet*	FIELD LOG BY: *GR/DT*
DEPTH TO MUD: *9.5 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP ARCH		NM	0.0 0.0 0.0 0.0 0.0	ML SP SP SP:PT ML SM		SILTY MUD; Black; no sheen; no odor.		ML	0
							SAND; Yellowish; fine- to medium-grained.		SP	
							SAND; Gray; fine- to medium-grained; well sorted.		SP	
5							INTERBEDDED SAND WITH SILTY PEAT; Gray, fine-grained; and silty peat lenses.		SP/PT	5
							SANDY SILT; Dark brown; with small twigs and woody debris.		ML	
10										10
							SILTY SAND; Gray; fine-grained.		SM	
							Total depth = 12.2 feet bgs.			
15										15
20										20

REMARKS: ARCH - Archived Sample
SAMP - Laboratory Sample

RETEC

CORING LOG
VS-5

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Confidential*
LOCATION: *Renton, Washington;*		RIG TYPE:
START DATE: *01/27/97* TIME: *13:14*	RECOVERY LENGTH: *5.5 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/27/97* TIME: *13:20*	DRIVE LENGTH: *10.3 feet*	FIELD LOG BY: *GR/DT*
DEPTH TO MUD: *9.5 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.0	0.0	SP		SANDY MUD: Dark brown; with wood debris.		SP	0
	SAMP		3.4	6.4	SP					
	SAMP		2.7	10.5	PT					
	SAMP		6.9	14.5						
	SAMP		2.1	10.0	SP:CL		SAND: Gray; fine- to medium-grained; grading to coarse-grained.		SP	
5				0.3			SILTY PEAT: Dark brown.		PT	5
10							INTERBEDDED SAND WITH SILTY CLAY: Dark gray, fine-grained sand; and dark gray silty clay.		SP/CL	10
							Total depth = 10.3 feet bgs.			
15										15
20										20

REMARKS: SAMP - Laboratory Sample

RETEC

CORING LOG
VS-8

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Confidential*
LOCATION: *Renton, Washington;*		RIG TYPE:
START DATE: *01/28/97* TIME: *09:47*	RECOVERY LENGTH: *3.7 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/28/97* TIME: *09:53*	DRIVE LENGTH: *16.0 feet*	FIELD LOG BY: *GR/DT*
DEPTH TO MUD: *7.8 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY:

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.0	0.0			SILTY WOOD WASTE: Black; with wood up to 1" diameter; live red worms; no sheen; no odor.			0
	SAMP		0.0							
				0.0						
	SAMP		0.0		SP					
				0.0	ML					
					SP					
5										5
10										10
							SAND: Gray; fine- to medium-grained; with thin (<1") silt lenses.		SP	
							SANDY SILT: Gray-brown; with wood; slight spotty sheen; slight creosote odor.		ML	
15							SAND: Gray; medium-grained.		SP	15
							Total depth = 16.0 feet bgs.			
20										20

REMARKS: SAMP - Laboratory Sample

CORING LOG
VS-9

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Confidential*
LOCATION: *Renton, Washington;*		RIG TYPE:
START DATE: *01/28/97* TIME: *10:40*	RECOVERY LENGTH: *9.2 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/28/97* TIME: *10:45*	DRIVE LENGTH: *15.0 feet*	FIELD LOG BY: *GR*
DEPTH TO MUD: *8.8 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY:

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.0	0.0			SANDY WOOD WASTE: Black; with oil odor.			0
	SAMP		0.0							
				0.0	SP					
					SM					
				0.3	PT					
					ML					
				0.0	SP		SAND: Gray; medium-grained; with 50% wood debris.		SP	
				0.0	CL					
					SP					
5				1.7	SP					5
							SILTY SAND: Gray; fine-grained.		SM	
					SM		SANDY SILTY PEAT: Tan.		PT	
							CLAYEY SILT: Gray; with 5% wood.		ML	
10							SAND: Gray; fine- to medium-grained.		SP	10
							SILTY CLAY: Gray-black; with vegetation.		CL	
							SAND: Gray; medium- to coarse-grained; with 5% gravel.		SP	
							SILTY SAND: Gray; fine-grained.		SM	
							ASH: Tan.			
							SILTY SAND: Gray; fine-grained.		SM	
15							Total depth = 15.0 feet bgs.			15
20										20

REMARKS: SAMP - Laboratory Sample

RETEC

CORING LOG
VS-10

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Confidential*
LOCATION: *Renton, Washington;*		RIG TYPE:
START DATE: *01/28/97* TIME: *11:35*	RECOVERY LENGTH: *7.0 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/28/97* TIME: *11:40*	DRIVE LENGTH: *16.3 feet*	FIELD LOG BY: *GR*
DEPTH TO MUD: *8.8 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY:

LAB (AS-RECEIVED) PROFILE						SOIL DESCRIPTION	INTERPRETED *IN-SITU* PROFILE	
DEPTH (in feet)	TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.		LITHOLOGY	U.S.C.S.
0	SAMP		0.0	NM		SILTY WOOD WASTE: Black; 90% wood.		
	SAMP		0.0		SP			
					SP			
	ARCH		0.0		SM			
					GP			
5					CL			
					SM			
						SAND: Gray; fine-grained; with 40% wood; no sheen; no odor.		SP
10						SAND: Gray; fine- to medium-grained; well sorted.		SP
						SILTY WOOD: Brown; 80% wood fiber.		
						SANDY GRAVEL: Gray.		GP
						SILTY SANDY CLAY: Gray; with 1" yellow ash layer.		CL
15						SILTY SAND: Gray; fine-grained.		SM
						Total depth = 16.3 feet bgs.		
20								

REMARKS: ARCH - Archived Sample
SAMP - Laboratory Sample

RETEC

CORING LOG
VS-11

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Confidential*
LOCATION: *Renton, Washington;*		RIG TYPE:
START DATE: *01/28/97* TIME: *12:20*	RECOVERY LENGTH: *11.3 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/28/97* TIME: *12:27*	DRIVE LENGTH: *17.0 feet*	FIELD LOG BY: *GR/DT*
DEPTH TO MUD: *9.8 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY:

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.0	0.0			WOOD WASTE: 90% wood; sheen and odor.			0
	SAMP		0.0	0.0	SM					
	ARCH		0.0	0.0	SP					
				0.0	ML					
				0.0	SM					
5				0.0						5
				0.0			SILTY SAND: Tan/gray; with 30% wood.		SM	
				0.0	CL					
				0.0	SM		SAND: Gray; fine- to medium-grained; with occasional gravel.		SP	
				0.0			GRAVELLY SANDY SILT: Gray; with some vegetation.		ML	
				0.0						
10				0.0	SP		SILTY SAND: Gray; fine- to medium-grained; occasional gravel.		SM	10
					SM					
							SILTY CLAY: Green-gray; over ½" yellow ash layer.		CL	
							SILTY SAND: Very dark gray; fine-grained; color lightens with depth.		SM	
15										15
							SAND: Gray; fine- to medium-grained; with occasional gravel and twigs.		SP / SM	
							SILTY SAND: Gray; fine-grained.			
							Total depth = 17.0 feet bgs.			
20										20

REMARKS: ARCH - Archived Sample
SAMP - Laboratory Sample

RETEC

CORING LOG
VS-15

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Confidential*
LOCATION: *Renton, Washington;*		RIG TYPE:
START DATE: *01/29/97* TIME: *12:50*	RECOVERY LENGTH: *10.75 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/29/97* TIME: *12:55*	DRIVE LENGTH: *17.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *18.0 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.0	NM	SM		SILTY WOOD WASTE; 70% wood.			0
	ARCH		0.4		SP					
					SM					
					PT		SILTY SAND; Gray-brown; fine-grained.		SM	
					ML					
					SP					
					ML					
					SP		INTERBEDDED SAND WITH SANDY SILT; Gray, fine- to medium-grained sand; and sandy silt; each lense ~3".		SP	
5	ARCH		0.3		CL				ML	5
					ML		SANDY SILTY PEAT; Brown.		PT	
					SC		SANDY SILT; Gray; with wood.		ML	
					GP		SAND; Gray; medium-grained.		SP	
					SM		SANDY SILT; Gray.		ML	
							SAND; Gray; medium-grained; with silt.		SP	
							CLAY; Gray; with silt.		CL	
10					SP				ML	10
					SM		CLAYEY SILT; Dark gray/black; grading into gray fine-grained sand with silt and clay.			
					SP		ASH		SC	
							DISCOLORATION; Black.		GP	
							CLAYEY SAND; Fine-grained.		SM	
							SANDY GRAVEL; Gray; coarse-grained; with pebbles.			
15							SILTY SAND; Gray; fine-grained.		SP	15
							SAND; Gray; fine- to medium-grained.		SM	
							SILTY SAND; Gray; fine-grained.		SP	
							SAND; Gray; fine- to medium-grained.			
							Total depth = 17.0 feet bgs.			
20										20

REMARKS: ARCH - Archived Sample
SAMP - Laboratory Sample

CORING LOG
VS-17

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/29/97* TIME: *13:42*	RECOVERY LENGTH: *6.75 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/29/97* TIME: *13:50*	DRIVE LENGTH: *12.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *15.3 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.0		ML		MUD/SILT; Dark brown, 20% wood.		ML	0
	SAMP		2.2		SM					
	ARCH		1.3		PT					
	ARCH		1.3	0.3	CL ML SP		SILTY SAND; Gray-brown; fine-grained.		SM	
5	ARCH		1.9		PT		SILTY PEAT; Tan to dark brown; pencil size wood pieces.		PT	5
	ARCH			1.0 0.3	SW		SILTY CLAY; Tan-gray; with wood.		CL	
							WOOD;		ML	
							CLAYEY SILT; Gray.		SP	
							SAND; Gray; medium-grained.		PT	
10							PEAT; Dark Brown; thin (<1 inch) silt layers and up to 4 inch pieces of wood.			10
							SAND; Gray; fine-to medium-grained; occassional gravel.		SW	
							Total depth = 12.0 feet bgs.			
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

RETEC

CORING LOG
VS-18

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/28/97* TIME: *13:57*	RECOVERY LENGTH: *11.0 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/28/97* TIME: *13:04*	DRIVE LENGTH: *16.5 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *14.5 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		1.3	2.4			SILTY WOOD WASTE; Dark brown, 90% wood.			0
	SAMP		5.5	0.7	SM					
	ARCH		27	0	SP					
					SM		SILTY SAND; Gray; fine-grained.		SM	
	ARCH		5.1	1.7						
				4.5	SP		SILTY PEAT; Tan/brown.		PT	
				72	SP:ML					
5	ARCH		33							5
	ARCH		49	46	PT		SILTY SAND; Gray; fine-grained;some vegetation.		SM	
					SP:ML		SAND; Gray; fine- to medium-grained.		SP	
	ARCH		56	6			SILTY SAND; Gray; fine-grained.		SM	
					SW		SAND; Gray; medium-grained.		SP	
	ARCH		18.9	14			SILTY PEAT; Brown.		PT	
									SM	
10				18	ML				PT	10
	ARCH		6.2	23	SW		SILTY SAND; Gray; fine-grained.		ML	
							SILTY PEAT; Brown; ½ inch black ash layer.			
							CLAYEY SILT; Gray; occassional dropstone of ½ inch gravel and thin (<½ inch) fine sand lense at bottom.		SP	
							SAND; Gray; very dense; fine-grained; well sorted.			
							GRAVELLY SILTY SAND; Gray; coarse-grained.		SM	
15							SANDY GRAVEL; Gray; (pea gravel).		GP	15
							Total depth = 15.0 feet bgs.			
20										20

REMARKS: SAMP - Laboratory Sample

RETEC

CORING LOG
VS-19

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/28/97* TIME: *13:22*	RECOVERY LENGTH: *13.0 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/28/97* TIME: *13:33*	DRIVE LENGTH: *17.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *16.8 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	ARCH		0	0	ML SP		SILTY MUD; Black.		ML	0
				L1	SM		SANDY SILT; Gray; fine-grained; <½ inch silt lenses.		SP	
	SAMP		0	0.6						
	ARCH		0	0	SP SP		SANDY SILT; Tan/brown; several 1 inch sand lenses; very slight odor.		SM	
5				0	ML					5
				0	ML CL		WOOD DEBRIS; Black/brown; silty at bottom.			
				0	SP SM					
				0	ML		SAND; Gray; medium-grained.		SP	
				0			SANDY SILT; Gray/brown; fine-grained.		ML	
	SAMP		0				SILTu Black; with vegetation.			
10				0	SP		SILTY CLAY; Gray; with yellow ash.		CL	10
				0	SP ML		SAND; Gray; medium-grained.		SP SM	
				0			SILTY SAND; Gray; fine-grained. SANDY SILTu Gray; fine-grained; occassional wood debris.		ML	
							SANDu Gray; fine- to medium-grained. CLAYEY SILTu Gray. SANDY SILTu Gray; occassional gravel dropstone.			
15									SP ML	15
							Total depth = 17.0 feet bgs.			
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

CORING LOG
VS-19 (Duplicate)

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/28/97* TIME: *13:01*	RECOVERY LENGTH: *feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/28/97* TIME: *13:07*	DRIVE LENGTH: *feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *18.5 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	ARCH		0		SP		SILTY WOOD WASTE; Dark brown; 50% wood.		SP	0
				0	ML		SAND; Yellowish; medium/coarse-grained.		ML	
				0	SP		SANDY SILT; Gray; with vegetation.		SP	
	SAMP		0.3	0.8			SAND; Gray; fine- to medium-grained; gray silt lenses <1 inch thick.			
				0.3			SAND; Gray; fine- to medium-grained.			
							Total depth = 4 feet bgs.			
5										5
10										10
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

RETEC

CORING LOG
VS-20

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/27/97* TIME: *15:58*	RECOVERY LENGTH: *14.7 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/27/97* TIME: *16:03*	DRIVE LENGTH: *17.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *18.8 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	ARCH		1.7	0	ML		SANDY MUD; Dark brown, strong odor and sheen.		ML	0
	SAMP		0.6	0	CL					
					CL:SP		SILT; Dark brown; with wood.			
	ARCH		0.6	0						
				0	CL		SILTY CLAY; Dark gray.		CL	
				0	SP		INTERBEDDED SILTY CLAY AND FINE-GRAINED SAND;		CL/SP	
				0			SILTY CLAY; Dark gray.		CL	
5				0			SAND; Gray; fine- to medium-grained; 5% woody debris.		SP	5
					PT					
				1.2	SP					
				0.6	ML		SAND; Gray; fine- to medium-grained.			
							SILTY PEAT; Brown.		PT	
									SP	
					CL		SAND; Gray; fine- to medium-grained.			
					ML		WOODY FIBER/DEBRIS; Black.			
10							SANDY CLAYEY SILT; Gray; with 1 inch thick gray ash.		ML	10
	ARCH		2.4				CLAY; Gray; with 1 inch brown vegetation layer.		CL	
	ARCH		2.4		SP		SANDY SILT; Gray; fine-grained; glob of mud with creosote odor and faint (petroleum?) odor.		ML	
					CL					
	ARCH		15		ML					
15							SAND; Gray; fine-grained.		SP	15
							SILTY CLAY; Gray.		CL	
							SANDY SILT; Gray; with some (<5%) gravel.		ML	
							Total depth = 17.0 feet bgs.			
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

RETEC

CORING LOG
VS-21

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/27/97* TIME: *14:03*	RECOVERY LENGTH: *13.5 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/27/97* TIME:	DRIVE LENGTH: *17.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *8.5 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	ARCH		0.3	0	ML		SILTY MUD; Black; with 10% wood; odor and sheen.		ML	0
					SP					
	SAMP		0.3	1.4	ML					
					SM		SAND; Black; strong odor, sheen and stain.		SP	
	ARCH		0.3	0	PT		CLAYEY SILT; Dark brown; with 20% wood.		ML	
							SILTY SAND; Gray; fine-grained; very slight odor.		SM	
				0			SILTY PEAT; Tan to brown; no sheen or odor.		PT	
				0	SP					
					PT					
5										5
				0.3			SAND; Gray; fine-grained; interbedded with 50% wood debris.		SP	
				0			SILTY PEAT; Tan to brown.		PT	
					SP					
				0	CL					
					ML					
				0						
				0.3	SP		SAND; Gray; fine-grained.		SP	
10							SILTY CLAY; Gray.		CL	10
				0			SANDY SILT; Gray.		ML	
	SAMP		39		PT					
				0.6	CL					
	ARCH		10.1	10			SAND; Gray; fine-grained; interbedded with silty wood debris (50%).		SP	
					SP					
				14.4						
							SILTY PEAT; Dark brown.		PT	
				0.6						
15							SILTY CLAY; Gray.		CL	15
				37			ASH; Yellow/tan.			
				14			SAND; Gray; fine-grained.		SP	
							Total depth = 17.0 feet bgs.			
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

RETEC

CORING LOG
VS-22

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/27/97* TIME: *14:35*	RECOVERY LENGTH: *11.6 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/27/97* TIME: *14:42*	DRIVE LENGTH: *16.5 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *9.6 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	ARCH		0.3	2	ML		SILTY MUD: Black; with 40% wood in top 3 inches; odor and sheen.		ML	0
	SAMP		1.0	5						
	ARCH		0.3	1						
				1			SANDY SILT: Dark brown; with 10% wood debris; sheen and odor on wood.			
5				1						5
	ARCH		0.0	2.8						
	SAMP		0.3	6.4			SANDY SILT: Tan; with 5% wood.			
					SM		SILTY SAND: Tan; 5% wood debris; no sheen, no odor.		SM	
10	ARCH		0.3		SP		SAND: Gray; fine- to medium-grain; grading to coarse; odor.		SP	10
					GP		SANDY GRAVEL: Gray; odor		GP	
					SP		SAND: Gray; fine-to medium-grain.		SP	
15					GP		SANDY GRAVEL: Gray; with cobbles up to 3 inches.		GP	15
							Total depth = 16.5 feet bgs.			
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

CORING LOG
VS-23

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/29/97* TIME: *14:19*	RECOVERY LENGTH: *11.5 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/29/97* TIME: *14:24*	DRIVE LENGTH: *17.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *14.7 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0	1.3	SM		SILTY SANDY MUD: Gray/tan; odor.		SM	0
	SAMP		0	8.2	ML					
	SAMP		0	1.7	SM					
	ARCH		0	0.3						
	ARCH		0	0	ML					
				0	SP					
5				0	ML					5
				0	SP					
				0	ML		CLAYEY SILT; Gray; odor.		ML	
				0	SP		SILTY SAND; Gray; fine-grained; with medium-grained sand lenses (<1 inch); odor.		SM	
				0	ML		CLAYEY SILT; Gray/brown; odor.		ML	
					SP		SAND; Gray; medium-grained; no odor.		SP	
					PT				ML	
					ML		SANDY SILT; Gray; fine-grained; no odor.		SP	
10							SAND; Gray; medium-grained; no odor.		ML	10
					SP		SILT; Alternating layers of brown, black and gray; no odor.		SP	
					ML		SAND; Gray; fine- to medium-grained, coarser at bottom; slight odor.		ML	
							CLAYEY SILT; Gray; no odor.		SP	
							SAND; Gray; medium-grained; no odor.		ML	
							SANDY SILT; Tan; no odor.		PT	
15							PEAT; Dark brown; no odor.		ML	15
							SANDY SILT; Gray; fine-grained; micaceous; no odor.		SP	
							SAND; Gray; medium-grained; no odor.		ML	
							CLAYEY SILT; Brown; no odor.			
							ASH; White; no odor.			
							Total depth = 17.0 feet bgs.			
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

CORING LOG
VS-24

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/29/97* TIME: *15:02*	RECOVERY LENGTH: *12.5 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/29/97* TIME: *15:05*	DRIVE LENGTH: *16.5 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *15.8 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

LAB (AS-RECEIVED) PROFILE

DEPTH (in feet)	TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY
0	SAMP		0	0	PT	
	ARCH		0	0		
				0		
				0	SP	
					CL	
				0	SP	
5				0	ML:SP	
				0		
					ML	
				0	PT	
					ML	
				0	SP	
				0	ML	
					SM	
10				0	ML	
					PT	
				0	SP:ML	
				0	SP	
					ML	
					SP	
					ML	
15						
20						
25						

SOIL DESCRIPTION

WOOD CHIPS; With some coarse grain sand; 50% wood.

PEATY SILT; Brown.

SAND; Gray; medium-grained.

CLAY; Gray; with silt.

SAND; Gray; fine- to medium-grained.

SANDY SILT/SAND; Gray; fine-grained sandy silt interbedded with medium grained sand; 2 inch layers.

CLAYEY SILT; Tan.

PEAT; Dark brown.

CLAYEY SILT; Tan.

SAND; Gray; medium-grained.

CLAYEY SILT; Gray.

SILTY SAND; Gray.

CLAYEY SILT; Gray; with sand lense.

SILTY PEAT; Dark brown.

SAND/CLAYEY SILT; Gray; fine- to medium-grained sand and clayey silt in 1 inch layers.

SAND; Gray; medium- to coarse-grained; occassional wood fragments.

SANDY CLAYEY SILT; Gray/brown

SAND; Gray; medium-grained; wood fragments.

SANDY SILT; Brown.

Total depth = 16.5 feet bgs.

INTERPRETED *IN-SITU* PROFILE

LITHOLOGY	U.S.C.S.	DEPTH (in feet)
		0
	PT	
	SP	
	CL	
	SP	
		5
	ML	
	SP	
	CL	
	SP	
	ML	
	SP	
	ML	10
	PT	
	ML	
	SP	
	ML	
	SM	
	ML	
	PT	
	SP	15
	ML	
	SP	
	ML	
	SP	
	ML	
		20
		25

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

CORING LOG
VS-25

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/29/97* TIME: *16:26*	RECOVERY LENGTH: *6.75 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/29/97* TIME: *16:32*	DRIVE LENGTH: *17 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *9 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0	0	SP		WOOD WASTE; Dark brown; 100% wood.			0
				0						
				0						
				0						
				0	PT					
5				0	ML					5
				0	SP					
				0	ML					
10							SAND; Gray; fine-grained.		SP	10
							SAND; Gray; fine- to medium-grained; no odor.			
							SAND; Dark gray; fine-grained; with wood.			
							SAND; Medium-grained.			
							SAND; Gray; fine-grained.		PT	
15							SILTY PEAT; Dark brown.		ML	15
							SANDY SILT; Brown/gray; fine-grained; with scattered woody debris.		SP	
									ML	
							SAND; Gray; fine-grained; with gray sandy silt lenses.			
							CLAYEY SILT; Brown.			
20							Total depth = 17.0 feet bgs.			20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

RETEC

CORING LOG
VS-26

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/30/97* TIME: *10:41*	RECOVERY LENGTH: *10.3 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/30/97* TIME: *10:46*	DRIVE LENGTH: *16.5 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *11 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

LAB (AS-RECEIVED) PROFILE						SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE	
DEPTH (in feet)	TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	LITHOLOGY	U.S.C.S.
0	SAMP		4.5	0	ML	SILTY MUD; Black; 5% wood; odor.		ML
	SAMP		7.6	0	SP			
	ARCH		0.3	0	SP			
				0	SP:ML	SILTY MUD; Dark brown; 5% wood; odor.		
				0	SM			
5				0	ML			
	SAMP		22.8		CL	AND: Gray; fine- to medium-grained sand.		SP
	ARCH		15.5	0	SP	SANDY WOOD DEBRIS; Black.		SP
					CL	SAND; Gray; fine-to medium-grained.		SP ML
	ARCH		2.7	0	PT	SAND/SILT; Sequence of: gray, fine-grained sand; brown silt; black silt. 1" each.		SM
	SAMP		7.2	0	SM	SILTY SAND; Gray; fine-grained.		ML
10				0	GP	CLAYEY SILT/SILTY CLAY; Gray.		CL
					SM	PEATY SILT; Dark brown; with clay (3").		SP
				0		SILTY CLAY; Gray.		CL PT
				0		SAND; Gray; medium-grained; slight odor.		SM
				0		SILTY CLAY; Gray.		
						SILTY PEAT; Brown; interbedded with gray clay layers; odor.		GP SM
15						SILTY SAND; Gray; fine-grained; odor.		
						SANDY GRAVEL; Gray; medium/coarse-sand; odor.		
						SILTY SAND; Gray; fine-grained; odor.		
20						Total depth = 14.7 feet bgs.		

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

REMEDIATION TECHNOLOGIES, INC.
A Thermo Electron Company

CORING LOG
VS-27

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/30/97* TIME: *11:40*	RECOVERY LENGTH: *14.5 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/30/97* TIME: *11:45*	DRIVE LENGTH: *17.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *20.5 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0							0
	ARCH		0	0	SM		WOOD CHIPS;			
				0	CL					
					SP					
				0	CL:ML		SILTY SAND; Dark gray to gray; fine-grained; creosote odor and discontinuous seem of product 2" down.		SM	
				0	CL		SILTY CLAY; Gray.		CL	
				0	ML		SAND; Medium-to coarse-grained.		SP	
5				0			SILTY CLAY/PEATY SILT; Gray silty clay grades into brown peaty silt with clay.		CL ML	5
	SAMP		0	0	CL		SILTY CLAY; Gray; with 1" band of medium-coarse sand between 38.5" and 40.5".		CL	
	ARCH		0	0	SP					
					CL					
				0	SP					
				0			PEATY SILT; Grades into almost pure peat.		ML	
10	ARCH		16.6				SILTY CLAY; Gray.		CL	10
				0.6			SAND; Medium-grained; odor.		SP	
	ARCH		0.6		CL:PT		SILTY CLAY; Gray; with 1" layer volcanic ash.		CL	
	SAMP		0	0	GP					
				0	SP					
					CL					
				0	SP		SAND; Gray; medium-coarse-grained; no odor.		SP	
				0			INTERBEDDED SILTY CLAY AND SILTY PEAT; Gray silty clay and brown silty peat; odor.		CL PT GP	
15							SANDY GRAVEL; Gray; odor.		SP	15
							SAND; Gray; compact; fine- to medium-grained; odor.		CL SP	
							SILTY CLAY; Gray (dark at bottom).			
							SAND; Fine-grained grading into medium-grained; no odor.			
							Total depth = 16.8 feet bgs.			
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

RETEC

CORING LOG
VS-28

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/30/97* TIME: *12:35*	RECOVERY LENGTH: *11.5 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/30/97* TIME: *12:42*	DRIVE LENGTH: *14.5 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *8.4 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0	0	ML		SANDY SILT: Brown; with 5-10% wood; odor and no sheen.		ML	0
	SAMP		0.3	0	SP					
				0						
	ARCH		0	0						
				0			SAND: Gray; fine- to medium-grained. Interbedded brown organic layers; twig at 1 ft. Odor		SP	
5				0	PT		SAND: Gray; medium- to coarse-grained. Interbedded brown organic layers.			5
				0						
				0			SILTY PEAT: Brown; uniform; with some clay.			
				5.0			SILTY PEAT: Brown; odor.		PT	
	SAMP		21.4							
	SAMP		30.4	2.0	CL					
10	SAMP		1.0	4.5	SP					10
							SILTY CLAY: Gray; odor.			
							SAND: Gray; medium-grained grading to coarse-grained; odor.		CL	
							Total depth = 13.2 feet bgs.		SP	
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

RETEC

CORING LOG
VS-29

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *02/03/97* TIME: *11:59*	RECOVERY LENGTH: *6.1 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/03/97* TIME: *12:02*	DRIVE LENGTH: *9.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *1.8 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		82	63	SP		INTERBEDDED SAND AND WOODY SILT: Dark gray; fine- to medium-grained sand; high sheen and strong odor.		SP	0
	SAMP		>250	111						
	ARCH		118	230						
					PT		SILTY PEAT: Brown; occassional thin sand lenses; fairly strong odor.		PT	
5	ARCH		37							5
							Total depth = 9.0 feet bgs.			
10										10
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

RETEC

CORING LOG
VS-30

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *02/03/97* TIME: *12:36*	RECOVERY LENGTH: *5.5 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/03/97* TIME:	DRIVE LENGTH: *9.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *1.5 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		>250	21	SP		SAND; Gray; fine- to medium-grained; with 1% wood; /R inch layer with strong sheen.		SP	0
	ARCH		>250	54			SAND; Gray; fine- to medium-grained; with some brown silt.			
	ARCH		>250	>250			SAND; Gray; fine- to medium-grained; saturated.			
	ARCH		>250	>250						
	ARCH		>250	>250	ML		SILT; Brown.		ML	
	ARCH		>250	>250	SP		SAND; Gray; fine- to medium-grained; saturated with red/yellow product.		SP	
5										5
10							Total depth = 9.0 feet bgs.			10
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

CORING LOG
VS-31

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *02/03/97* TIME: *13:10*	RECOVERY LENGTH: *6 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/03/97* TIME: *13:14*	DRIVE LENGTH: *9 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *2.3 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		14	10	SP		SAND: Gray; fine- to medium-grained.		SP	0
	ARCH		3.8	20	ML		SANDY SILT: Brown; some black wood debris; strong odor.		ML	
				14						
				25	SP		SAND Gray; fine- to medium-grained.		SP	
5	ARCH		10.3	37						5
				14						
							SAND: Gray; coarse-grained.			
							SAND: Gray; fine- to medium-grained.			
					SP		SILTY WOOD: Black.		SP	
							SAND: Gray; fine- to medium-grained.			
10							Total depth = 9.0 feet bgs.			10
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

REMEDIATION TECHNOLOGIES, INC.
A Thermo Electron Company

RETEC

CORING LOG
VS-32

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *02/03/97* TIME: *13:46*	RECOVERY LENGTH: *6.0 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/03/97* TIME: *13:51*	DRIVE LENGTH: *9.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *2.0 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.3	0	ML		SILTY MUD; Black; with wood debris up to 4 inches long; no sheen, no odor.		ML	0
	SAMP		0.8	0						
				0						
	ARCH		1.7	3	SM		SILTY SAND; Gray; 10% wood.		SM	
				0	ML		SANDY SILT; Brown; no sheen, no odor.		ML	
5				1	SP		SAND; Gray; fine- to medium-grained; no sheen, no odor. Slightly coarser sand and slight odor at bottom of layer.		SP	5
					SP:ML		INTERBEDDED SAND AND SILT (1 inch layers); Gray; fine- to medium-grained sand. Brown silt with wood. No sheen, no odor.		SP ML	
10							Total depth = 9.0 feet bgs.			10
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

RETEC

CORING LOG
VS-33

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *02/03/97* TIME: *14:37*	RECOVERY LENGTH: *5.2 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/03/97* TIME:	DRIVE LENGTH: *9 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *1.1 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		1.3	2.4	ML		SILT: Black; with wood and medium-grained sand; moderate odor.		ML	0
	SAMP		0.7	1.3						
				1.0						
	ARCH		0.6	0.3						
				0.3	SP		SAND: Gray; fine- to medium-grained; very well sorted; moderate odor.		SP	
5										5
							SAND WITH WOOD: Small fragments of wood debris interlayered with sand.			
							Total depth = 9.0 feet bgs.			
10										10
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

CORING LOG
VS-34

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *02/03/97* TIME: *15:32*	RECOVERY LENGTH: *4.75 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/03/97* TIME: *15:33*	DRIVE LENGTH: *9.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0	0.3	ML		SILT; Black; with 85% wood; no odor, no sheen.		ML	0
					SP					
	ARCH		0	0						
					PT					
							SAND INTERBEDDED WITH SILT; Gray; fine-grained sand. Brown silt.		SP	
5							SILTY PEAT; Tan; no odor, no sheen.		PT	5
							Total depth = 9.0 feet bgs.			
10										10
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

CORING LOG
VS-35

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *02/03/97* TIME: *16:19*	RECOVERY LENGTH: *1.3 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/03/97* TIME:	DRIVE LENGTH: *feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *4.3 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	ARCH		0	0	ML		SILTY MUD; Black; no odor, no sheen.		ML	0
							WOOD WASTE/BARK/CHIPS; (1 piece millfoil)			
							Total depth = 4.0 feet bgs.			
5										5
10										10
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

RETEC

CORING LOG
VS-36

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *02/03/97* TIME: *17:08*	RECOVERY LENGTH: *5.3 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/03/97* TIME: *17:11*	DRIVE LENGTH: *9.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *1.1 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0	0	SP		SAND; Gray; fine- to medium-grained; with black wood debris (50%) and silt.		SP	0
	ARCH		0	0						
				0						
	ARCH		0.3							
5							SAND; Gray; fine- to medium-grained; with brown wood debris (20%).			5
							SAND; Gray; fine- to medium-grained; well sorted; very slight odor.			
10							Total depth = 9.0 feet bgs.			10
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

CORING LOG
VS-37

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *02/04/97* TIME: *16:15*	RECOVERY LENGTH: *7.75 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/04/97* TIME:	DRIVE LENGTH: *11.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *0.8 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0	0	ML		SILT; Dark brown with some gray sand and wood debris (25% wood).		ML	0
	ARCH		0		SP		SAND; Gray; fine- to medium-grained.		SP	
				0	PT		SILTY PEAT; Bown.		PT	
					SP					
				0	PT					
				0						
				0						
5				0			SAND; Gray; fine- to medium-grained; some vegetation.		SP	5
				0			SILTY PEAT; Brown.		PT	
				0						
				0						
10				0						10
							Total depth = 11.0 feet bgs.			
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample
No sheen and no odor throughout core.

REMEDIATION TECHNOLOGIES, INC.
A Thermo Electron Company

RETEC

CORING LOG
VS-38

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *02/04/97* TIME: *16:35*	RECOVERY LENGTH: *7.8 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/04/97* TIME: *16:40*	DRIVE LENGTH: *11.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *0.7 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0	NM	SP:ML		SAND/SILT; Gray sand. Brown silt. 10% wood; no sheen, no odor.		SP ML	0
	ARCH		0		SM					
					SP					
							SILTY SAND; Gray; fine-grained.		SM	
5							SAND; Gray; medium-grained.		SP	5
					SP:ML					
10							SAND/SILT/WOOD; Interbedded. Gray; medium-grained sand. Brown silt. Wood (twigs).		SP ML	10
							Total depth = 11.0 feet bgs.			
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample
No sheen and no odor throughout core

CORING LOG
VS-39

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *02/05/97* TIME: *10:17*	RECOVERY LENGTH: *1.8 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/05/97* TIME: *10:18*	DRIVE LENGTH: *9.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *1.7 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	ARCH		0.3	0	ML		MUD: Brown; watery; some wood debris (<10% wood); slight creosote odor, no sheen.		ML	0
5										5
10							Total depth = 9.0 feet bgs.			10
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

RETEC

CORING LOG
VS-40

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *02/05/97* TIME: *10:44*	RECOVERY LENGTH: *1.8 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/05/97* TIME: *10:45*	DRIVE LENGTH: *9.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *1.7 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.3	0	SW		SAND: Dark gray; with <10% wood chips; pebbles, clam shell; very slight petroleum odor.		SW	0
	ARCH		0.3	0	ML		PEATY SILT: Dark brown; 1 inch layer of coarse sand; no odor, no sheen.		ML	
5										5
							Total depth = 9.0 feet bgs.			
10										10
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

CORING LOG
VS-41

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *02/05/97* TIME: *12:30*	RECOVERY LENGTH: *8.1 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/05/97* TIME: *12:32*	DRIVE LENGTH: *12.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *6.0 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0	0	PT		SILTY WOOD DEBRIS; Black; no sheen, no odor.			0
	ARCH		0.3	0						
				0			SILTY PEAT; Brown; no sheen, no odor.		PT	
				0						
				0						
5				0.3						5
				0	SM					
	ARCH		0		SP					
					SM					
					PT					
					ML					
10							SILTY SAND; Gray; fine-grained; slight odor.		SM	10
							SAND; Gray; medium-grained; slight odor.		SP	
							SILTY SAND; Gray; slight odor.		SM	
							SILTY PEAT; Brown; no odor.		PT	
							SANDY CLAYEY SILT; Gray.		ML	
							Total depth = 12.0 feet bgs.			
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

RETEC

CORING LOG
VT-1

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/24/97* TIME: *10:50*	RECOVERY LENGTH: *9.5 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/24/97* TIME: *10:55*	DRIVE LENGTH: *10.5 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *28 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	ARCH		0	NM	SP		OIL: Black; (product sludge).			0
	SAMP		1.2				SAND: Gray; fine-grained; some silt and clay.		SP	
	SAMP		0.3		ML		SAND: Gray; fine-grained; some silt and clay; with layers of black woody debris.			
	ARCH		0.3		SM		CLAYEY SILT: Gray.		ML / SM	
	ARCH		0		SP:ML		SILTY SAND: Dark brown; 50% wood; tree up to 3 inches diameter.		SP / ML	
5	ARCH		0				SAND/CLAYEY SILT: Gray; fine- to medium-grained sand. Gray clayey silt with <10% vegetation. Each lense 3 to 4 inches thick.			5
	ARCH		0							
	ARCH		0.0							
	ARCH		0							
10										10
							Total depth = 10.5 feet bgs.			
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

RETEC

CORING LOG
VT-2

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *02/04/97* TIME: *13:52*	RECOVERY LENGTH: *10.0 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/04/97* TIME: *13:56*	DRIVE LENGTH: *11.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *25.0 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0	0	SP		SAND; Gray; fine- to medium-grained; <1 inch thick lenses of brown sandy silt; no sheen, no odor.		SP	0
	ARCH		0							
				0	PT		SAND; Gray; coarse-grained; no odor.			
				0			SILTY PEAT; Brown; with wood fragments.		PT	
				0						
				0	SP					
5				0	ML		SAND; Gray; medium-grained.		SP	5
				0			SLIGHTLY SANDY SILT; Gray.		ML	
				0	SM		ASH; Yellow/white.		SM	
				0	CL		SILTY SAND; Gray; fine-grained.			
					SM		SILTY CLAY; Gray.		CL	
							SILTY SAND; Gray.		SM	
10					SP					10
					ML		SAND; Gray; coarse-grained.		SP	
							SANDY SILT; Gray/brown; with vegetation.		ML	
							Total depth = 11.0 feet bgs.			
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample
No sheen and no odor throughout core.

CORING LOG
VT-3

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *02/05/97* TIME: *15:45*	RECOVERY LENGTH: *13.0 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/05/97* TIME: *15:48*	DRIVE LENGTH: *16.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *28.5 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	ARCH		0.6	0	ML		SILTY MUD; Gray/brown; some wood; slight sheen and odor.		ML	0
	SAMP		0		SP					
					ML:SP		SAND; Yellowish; fine-grained; with silt.		SP	
				0	PT		INTERBEDDED SAND AND SILT; Gray; fine- to medium-grained sand. Brown silt. 1 inch lenses. Some wood.		ML	
				1						
				0			SILTY PEAT; Brown; no sheen, no odor.		SM	
					SM					
					PT					
5										5
					SP		SILTY SAND; Gray; no sheen, no odor.		PT	
							SILTY PEAT; Brown.		SP	
					ML		SAND; Gray; fine- to medium-grained; no sheen, no odor.		PT	
					PT					
					SP		SLIGHTLY SANDY CLAYEY SILT; Gray; no sheen, no odor.		SP	
10							SILTY PEAT; Brown; 5" by 4" pieces of wood.		CL	10
							SAND; Gray; medium-grained.		SP	
							SILTY SAND; Gray; fine- to medium-grained.			
15										15
							Total depth = 16.0 feet bgs.			
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

CORING LOG
VT-4

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *02/05/97* TIME: *15:14*	RECOVERY LENGTH: *13.3 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/05/97* TIME:	DRIVE LENGTH: *16.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *32.0 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		1.3	0	ML		SILTY SANDY MUD; Gray/brown; <2% wood; visible drops of product and strong odor.		ML	0
	ARCH		0							
				0	PT					
				0						
				0	ML		SILTY MUD; Gray; with 20% wood debris.			
					SP		CLAYEY SILT; Gray; no odor.		PT	
				0	ML		SILTY PEAT; Brown; no odor.			
5					SP					5
				0	ML		CLAYEY SILT; Gray.		ML	
				0			ASH; White/yellow; no odor.		SP	
	ARCH		0		SP		SAND; Gray; medium-grained; no odor.		ML	
				0	ML		CLAYEY SILT; Gray; no odor.		SP	
									ML	
				0	SP		SAND; Gray; medium- to fine-grained; no odor.			
				0	SM		CLAYEY SILT; Gray; with thin brown clayey silt lenses.		SP	
10					CL		SAND; Gray; medium-grained; slight odor.		ML	10
				0	SP		CLAYEY SILT; Gray; no odor.		SP	
				0	CL		CLAYEY SILT; Brown; no odor.		SM	
				0			CLAYEY SILT; Black; with pebbles; no odor.		CL	
					ML		SAND; Gray; fine- to coarse; no odor.		SP	
							SILTY SAND; Gray; fine-grained; no odor.		CL	
							SILTY CLAY; Gray; no odor.			
15							SAND; Gray; medium-grain; <1" silty lenses; no odor.			15
							SILTY CLAY; Gray; with small vegetation; no odor.		SM	
							SANDY SILT; Gray; fine-grained; with vegetation; no odor.			
							Total depth = 15.75 feet bgs.			
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

RETEC

CORING LOG
VT-5

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *02/05/97* TIME: *16:18*	RECOVERY LENGTH: *13.75 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/05/97* TIME: *16:21*	DRIVE LENGTH: *16.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *28.9 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		L3	0	ML		SANDY SILTY MUD; Gray; odor and sheen.		ML	0
	ARCH		0		SP					
				0	PT					
				0			SAND; Gray/yellow; fine- to medium-grained; no odor.		SP	
				0			SILTY PEAT; Brown; no sheen, no odor.		PT	
					SP					
					CL					
5					SP					5
					ML					
					ML					
					SP		SAND; Gray; fine- to medium-grained.		SP	
					ML		SILTY SANDY CLAY; Gray/brown; with vegetation.		CL	
							SAND; Gray; medium- to coarse-grained; no odor.		SP	
							CLAYEY SILT; Gray; with vegetation.		ML	
							ASH; White/yellow; no odor.		ML	
					SM		CLAYEY SILT; Gray; no odor.		SP	
10							SILTY SAND; Gray; fine-grained; no odor.		ML	10
							CLAYEY SILT; Gray; no odor.		SM	
							CLAYEY SILT; Dark brown; no odor.			
					ML		SILTY SAND; Dark gray; with gravel.			
					SM		SILTY SAND; Gray; fine-grained.			
							CLAYEY SILT; Gray.		ML	
15							SILTY SAND; Gray; fine-grained; no sheen, no odor.		SM	15
							Total depth = 15.7 feet bgs.			
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

CORING LOG
VB-1

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/24/97* TIME: *12:57*	RECOVERY LENGTH: *4.0 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/24/97* TIME: *13:02*	DRIVE LENGTH: *8.8 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *14.25 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.3	2.0	ML		SLIGHTLY SANDY SILT: Dark brown; with 20% wood.		ML	0
	SAMP		0.3	2.0	ML					
				0.3						
	ARCH		0.3		SP					
				0.3						
5							CLAYEY SILT: Dark brown; with 5% to 10% wood fibers.			5
							WOOD:			
							SAND: Gray; fine-grained; eith interbedded thin (0.5" to 1") silt with wood.		SP	
							Total depth = 8.8 feet bgs.			
10										10
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample
No sheen or odor throughout core.

REMEDIATION TECHNOLOGIES, INC.
A Thermo Electron Company

RETEC

CORING LOG
VB-2

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/24/97* TIME: *11:59*	RECOVERY LENGTH: *8 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/24/97* TIME: *12:04*	DRIVE LENGTH: *10 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *19 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.3		ML		SLIGHTLY SANDY SILT: Dark brown; with 50% wood (up to 2" fragments)		ML	0
	SAMP		0.3	0.3	SP					
				0.3			SAND: Gray; well sorted; medium-grained.		SP	
				0.3						
	ARCH		0.3	0.3	CL		SILTY SAND: Gray; fine-grained with thin silty wood layer (<1").			
				0.3	SP		SAND: Gray; medium-grained; with interbedded gray silt lenses.		CL	5
5				0.6	CL		SILTY CLAY: Grayish-black; with yellowish-brown vegetation (5%).		SP	
				0.3			SILTY CLAY: Gray.			
				0.3	ML		SAND: Gray; fine to medium-grained; well sorted.		CL	
							SILTY CLAY: Gray; very stiff.			
10							SANDY CLAYEY SILT: Dark gray to black.		ML	10
							Total depth = 10.0 feet bgs.			
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample
No sheen or odor throughout core.

REMEDIATION TECHNOLOGIES, INC.
A Thermo Electron Company

CORING LOG
VB-3

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/24/97* TIME: *14:43*	RECOVERY LENGTH: *4.0 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/24/97* TIME: *14:46*	DRIVE LENGTH: *9.5 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *7.3 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.3				WOOD WASTE: Black-brown; with some silt.			0
	SAMP		0.3							
					SP					
	ARCH		0.3							
5										5
							SAND: Gray; fine- to medium-grained; thin interbedded layers of brown-black silt with vegetation.		SP	
10							Total depth = 9.5 feet bgs.			10
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample
Freefall of vibracore observed during sampling. Thickness of wood waste layer is estimated.

REMEDIATION TECHNOLOGIES, INC.
A Thermo Electron Company

RETEC

CORING LOG
V8-4

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/24/97* TIME: *15:37*	RECOVERY LENGTH: *7.3 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/24/97* TIME: *15:45*	DRIVE LENGTH: *9 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *9.8 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.2				WOOD WASTE: Dark-brown silt with 70% wood.			0
	SAMP		0.3	NM						
	ARCH		0.3							
					ML		CLAYEY SILT: Dark brown; with 10% wood.		ML	
5					SP		SAND: Gray; fine- to medium-grained.		SP	5
							SAND: Gray; medium- to coarse-grained; with gravel lense (from 29 to 35" by lab measurement.			
							Total depth = 9.0 feet bgs.			
10										10
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample
No sheen or odor throughout core.

REMEDIATION TECHNOLOGIES, INC.
A Thermo Electron Company

RETEC

CORING LOG
VB-5

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/24/97* TIME: *17:13*	RECOVERY LENGTH: *6.3 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/24/97* TIME: *17:13*	DRIVE LENGTH: *11 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *18.7 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.3		SP		SILTY SAND: Gray-brown; fine-grained; with 5% wood.		SP	0
					SW		SAND: Yellow; fine-grained; well sorted.			
	ARCH		0.3				SAND: Gray; coarse-grained with gravel.		SW	
					CL		SILTY CLAY: Gray.		CL	
					GP		COBBLES: Up to 3".		GP	
					SW					
5					GP					5
							SAND: Gray; fine- to medium-grained; with gravel.		SW	
10							SANDY GRAVEL: Gray.		GP	10
							Total depth = 11.0 feet bgs.			
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample
No sheen or odor throughout core.

RETEC

CORING LOG
VB-8

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/24/97* TIME: *16:38*	RECOVERY LENGTH: *1.5 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/24/97* TIME: *16:40*	DRIVE LENGTH: *11.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *5.8 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.3				WOOD WASTE: Brown; with 5% fine-grained sand.			0
5										5
10							Total depth = 11.0 feet bgs.			10
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

CORING LOG
VB-8 Duplicate

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/24/97* TIME: *16:54*	RECOVERY LENGTH: *1.0 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/24/97* TIME: *16:56*	DRIVE LENGTH: *11.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *5.8 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.3	2.0			WOOD WASTE: Brown; with 5% sand and one piece metal debris.			0
5										5
10							Total depth = 11.0 feet bgs.			10
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

CORING LOG
VC-1

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Confidential*
LOCATION: *Renton, Washington*		RIG TYPE:
START DATE: *02/04/97* TIME: *14:45*	RECOVERY LENGTH: *4.0 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/04/97* TIME: *14:50*	DRIVE LENGTH: *11.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *1.1 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.0	NM	ML		SILTY MUD: Brown; with 10% wood debris; very slight odor.		ML	0
	ARCH		0.0		SP					
					PT					
				NM			SAND: Gray; fine- to coarse-grained; with intermixed silt and wood.		SP	
5										5
				NM			SILTY PEAT: Brown.		PT	
10										10
							Total Depth = 11.0 feet bgs.			
15										15
20										20

REMARKS: ARCH - Archived Sample
SAMP - Laboratory Sample

CORING LOG
VC-2

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Confidential*
LOCATION: *Renton, Washington;*		RIG TYPE:
START DATE: *02/04/97* TIME: *15:15*	RECOVERY LENGTH: *4.0 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/04/97* TIME: *15:19*	DRIVE LENGTH: *11.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *1.25 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.0	0.0	SP		SAND: Gray; fine- to medium-grained; with brown silt, some wood.		SP	0
	ARCH		0.0							
				0.0	PT					
				0.0						
				0.0						
5										5
							SILTY PEAT: Brown.		PT	
10										10
							Total depth = 11.0 feet bgs.			
15										15
20										20

REMARKS: ARCH - Archived Sample
SAMP - Laboratory Sample

RETEC

CORING LOG
VL-1

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Confidential*
LOCATION: *Renton, Washington;*		RIG TYPE:
START DATE: *01/30/97* TIME: *15:03*	RECOVERY LENGTH: *12.5 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/30/97* TIME: *15:13*	DRIVE LENGTH: *17.0 feet*	FIELD LOG BY: *GR/DT*
DEPTH TO MUD: *feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		NM		PT		SILTY PEAT; Brown; soft.		PT	0
				0.0	SP					
					SM					
				0.0	SP					
				0.0						
				0.0			SAND; Gray; fine-grained; with 50% wood.		SP	
5				0.0			SILTY SAND; Gray; fine-grained.		SM	5
				0.0			SAND; Gray; medium-grained; well sorted; dense; occasional thin (<1") silty sand or slightly coarser sand layers.		SP	
				0.0						
					SC					
				0.0						
				0.0	PT					
10				0.0						10
				0.0						
					SP					
				0.0	PT		CLAYEY SILTY SAND; Gray/brown; fine-grained.		SC	
					SP		SILTY PEAT; Tan.		PT	
							SAND; Gray; medium-grained.		SP	
15							SILTY PEAT; Tan.		PT	15
							Total depth = 17.0 feet bgs.			
20										20

REMARKS: SAMP - Laboratory Sample

RETEC

CORING LOG
VL-2

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Confidential*
LOCATION: *Renton, Washington;*		RIG TYPE:
START DATE: *01/30/97* TIME: *13:30*	RECOVERY LENGTH: *12.5 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/30/97* TIME: *13:59*	DRIVE LENGTH: *16.0 feet*	FIELD LOG BY: *GR/DT*
DEPTH TO MUD: *23.5 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *SB/JG*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		NM	0.0	SM		SILTY SANDY WOODY MUD; 80% wood.		SM	0
				0.0	SM					
				0.0	PT		SILTY SAND; Gray; fine- to medium-grained; with occasional thin (<1") silt lenses.		SM	
				0.0						
				0.0						
5				0.0						5
				0.0			SILTY PEAT; Brown; with occasional pencil-sized stick or twig; top 12" silty, then little or no silt.		PT	
					ML					
				0.0	SP					
					ML					
				0.0	ML					
					SP					
				0.0	SM					
					SP					
					SP					
10				0.0			CLAYEY SILT; Tan; with thin peat interbeds.		ML	10
							SAND; Gray; fine- to medium-grained.		SP	
				0.0					ML	
					SM		ASH; Yellow.		SM	
				0.0			SANDY SILT; Gray.		SP	
							ASH; Yellow; fingered with sandy silt.			
							SILTY SAND; Gray; fine- to medium-grained.		SP	
							SAND; Gray; medium-grained.			
15							WOOD; Solid; from tree.		SM	15
							GRAVELLY SAND; Gray; medium- to coarse-grained.			
							SILTY GRAVELLY SAND; Gray.			
							Total depth = 16.0 feet bgs.			
20										20

REMARKS: SAMP - Laboratory Sample

CORING LOG
VR-3

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Confidential*
LOCATION: *Renton, Washington;*		RIG TYPE:
START DATE: *02/05/97* TIME: *11:13*	RECOVERY LENGTH: *5.0 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/05/97* TIME: *11:14*	DRIVE LENGTH: *9.0 feet*	FIELD LOG BY: *DT/GR*
DEPTH TO MUD: *0.3 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.0	NM	ML		SILTY MUD: Dark brown; with 10% wood.		ML	0
	ARCH		0.0		PT					
					SP		SILTY PEAT: Brown; very soft.		PT	
					ML					
					SP					
					ML					
					SP					
5										5
							SAND: Gray; medium-grained.		SP	
							CLAYEY SILT: Gray.		ML	
							SAND: Gray; fine- to medium-grained.		SP	
							CLAYEY SILT: Gray.		ML	
							SAND: Gray; fine- to medium-grained.		SP	
10							Total depth = 9.0 feet bgs.			10
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

CORING LOG
VR-4

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Confidential*
LOCATION: *Renton, Washington;*		RIG TYPE:
START DATE: *02/05/97* TIME: *11:30*	RECOVERY LENGTH: *5.5 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/05/97* TIME: *11:33*	DRIVE LENGTH: *9.0 feet*	FIELD LOG BY: *DT/GR*
DEPTH TO MUD: *0.95 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.0	NM	SP		SAND: Yellowish; fine-grained; with few pieces of bark; garlic odor.		SP	0
	ARCH		0.0		SP					
5							SAND: Gray; fine- to medium-grained; with occasional silty sand lense and wood bark; occasional pea gravel; no odor.		SP	5
							Total depth = 9.0 feet bgs.			
10										10
15										15
20										20

REMARKS: ARCH - Archived Sample
SAMP - Laboratory Sample

CORING LOG

VW-1

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *02/04/97* TIME: *12:15*	RECOVERY LENGTH: *6.5 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/04/97* TIME: *12:20*	DRIVE LENGTH: *11.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *19.1 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

LAB (AS-RECEIVED) PROFILE

DEPTH (in feet)	TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY
0	SAMP		0	0	SM SP	
	ARCH		0	0	SM	
					ML	
				0	PT	
				0		
				0	SP:ML	
5				0		
				0		
				0		
10						
15						
20						

SOIL DESCRIPTION

SAND WITH SILT; Gray; very fine-grained; muddy.

SILTY SAND; Gray; very fine-grained; no sheen, no odor.

SAND; Gray; coarse-grained.

SILTY SAND; Gray; fine-grained.

CLAYEY SILT; Gray; wood fragments.

SILTY PEAT; Brown.

INTERBEDDED SAND AND CLAYEY SILT; Gray; medium-grained sand. Gray; clayey silt. 1" layers.

Total depth = 11.0 feet bgs.

INTERPRETED *IN-SITU* PROFILE

LITHOLOGY	U.S.C.S.	DEPTH (in feet)
	SM	0
	SP	
	SM	5
	ML	
	PT	
	SP ML	10
		15
		20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

CORING LOG
VW-2

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *02/04/97* TIME: *11:35*	RECOVERY LENGTH: *9.75 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/04/97* TIME: *11:41*	DRIVE LENGTH: *11.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *19.1 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

LAB (AS-RECEIVED) PROFILE						SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE	
DEPTH (in feet)	TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.		LITHOLOGY	U.S.C.S.
0	ARCH		0	0	ML	CLAYEY MUD; Gray.		ML
					CL			
				0	ML			
					SP	SILTY CLAY; Gray/brown; wood debris in layers.		CL
				0	ML	CLAYEY SILT; Gray; no sheen, no odor.		ML
				0		SAND; Gray; medium- to coarse-grained.		SP
						CLAYEY SILT; Gray; occassional twig and medium-grained sand lense (<1").		ML
5								
					SP			
					ML			
					SP	SAND; Gray; medium- to coarse-grained.		SP
						CLAYEY SILT; Gray/brown.		ML
						ASH; White/Gray.		SP
					ML	SAND; Gray; fine- to coarse-grained; some silt lenses (<½"); occassional twig.		
10					GP			
						SAND; Gray; fine- to coarse-grained.		ML
						SANDY SILT; Gray/brown.		GP
						SANDY GRAVEL; Gray.		
						Total depth = 10.95 feet bgs.		
15								
20								

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample
No odor and no sheen throughout core.

REMEDIATION TECHNOLOGIES, INC.
A Thermo Electron Company

RETEC

CORING LOG
VW-3

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *02/04/97* TIME: *11:05*	RECOVERY LENGTH: *9.0 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/04/97* TIME: *11:09*	DRIVE LENGTH: *12.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *16.9 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0	0	SP		SAND; Brown; coarse-grained with some silt; wood chips on surface.		SP	0
				0	CL					
				0	ML					
				0						
				0	CL					
					SP		CLAY WITH SILT; Gray.		CL	
5					SP:ML		CLAYEY SILT; Dark gray; with fine-grained sand.		ML	5
					ML		CLAY; Gray.		CL	
					ML				SP	
					SP		SAND; Gray; coarse-grained.		SP	
							INTERBEDDED SAND AND CLAYEY SILT; Gray; medium- to coarse-grained sand. Gray/brown clayey silt. Each lense 2" to 3".		ML	
10							SANDY SILT; Black.		ML	10
							ASH; White/yellow.		ML	
							SANDY SILT; Black.		SP	
							CLAYEY SILT; Gray.			
							SAND; Gray; medium-grained; well sorted.			
							Total depth = 11.0 feet bgs.			
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample
No sheen and no odor throughout core.

REMEDIATION TECHNOLOGIES, INC.
A Thermo Electron Company

CORING LOG
VW-4

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *02/04/97* TIME: *10:35*	RECOVERY LENGTH: *7.8 feet*	METHOD: *Vibracore*
COMPLETION DATE: *02/04/97* TIME: *10:40*	DRIVE LENGTH: *11.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *18.2 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0	0	SP		SAND; Tan; with silt and occassional wood.		SP	0
	ARCH		0	0	SM					
				0	CL					
				0	SP		SAND; Gray; medium- to coarse-grained; some gravel.			
				0						
5				0	ML		SILTY SAND; Gray; fine-grained.		SM	5
				0	ML		SILTY CLAY; Gray.		CL	
				0	SM		SAND; Gray; fine- to medium-grained.		SP	
				0	GP					
							CLAYEY SILT; Gray/brown.		ML	
							SILT; Dark brown; with wood (twigs).		ML	
10							ASH; White/yellow.		SM	10
							CLAYEY SILT; Black.		GP	
							SILTY SAND; Gray; fine-grained.			
							SANDY GRAVEL; Gray; with pebbles up to 1" diameter.			
							Total depth = 11.1 feet bgs.			
15										15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

RETEC

CORING LOG
VW-5

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/27/97* TIME: *11:33*	RECOVERY LENGTH: *11.25 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/27/97* TIME: *11:38*	DRIVE LENGTH: *17.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *13.5 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0	NM	ML		SILTY WOOD WASTE: Dark brown; with 85% wood.			0
	ARCH		L0		SP					
					SP:ML					
					PT					
					ML					
5					SW					5
					SM					
					CL		SILTY MUD: Gray/black; with 5% wood.		ML	
							SAND: Gray; fine-grained; well sorted.		SP	
					CL		INTERBEDDED SAND AND CLAYEY SILT: Fine- to medium-grained sand. Gray clayey silt. Each bed 1" thick.		SP ML	
					SW				PT	
					SM		SILTY PEAT: Brown.		ML	
					SP		CLAYEY SILT: Gray.		SW	
10					SM		GRAVELLY SAND: Gray; coarse-gravel and medium-grained sand.		SM	10
					SP		SILTY SAND: Gray; fine-grained.		CL	
							SILTY CLAY: Gray.		CL	
							ASH: Yellow.		SW	
15							SILTY CLAY: Gray; with some vegetation.		SM	15
							SAND: Gray; coarse-grained; with gravel. Grading to a fine- to medium- grained sand.		SP	
							GRAVELLY SAND: Gray; coarse-grained sand.		SM	
							SILTY SAND: Gray; fine-grained.		SP	
20							SAND: Gray; medium-grained; well sorted.			20
							SILTY SAND: Gray; fine-grained.			
							SAND: Gray; fine- to medium-grained; occasional golf ball size cobble.			
							Total depth = 16.8 feet bgs.			
25										25

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

RETEC

CORING LOG
VW-6

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/29/97* TIME: *10:40*	RECOVERY LENGTH: *5.0 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/29/97* TIME: *10:45*	DRIVE LENGTH: *14.2 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *11.0 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0	NM			SILTY WOOD WASTE; 99% wood.			0
	SAMP		0		SM					
					GW					
5										5
10							SILTY SAND; Gray; fine-grained.		SM	10
							SILTY SANDY GRAVEL; Gray; coarse gravel with cobbles up to 3" diameter.		GW	
15							Total depth = 14.2 feet bgs.			15
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

REMEDIATION TECHNOLOGIES, INC.
A Thermo Electron Company

CORING LOG
VW-7

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO.: *3-2438-424 JAG*		CLIENT: *Port Quendall*
LOCATION: *Renton, Washington;*		RIG TYPE: *4 in. ID 12 ft. Tubes*
START DATE: *01/29/97* TIME: *10:00*	RECOVERY LENGTH: *7.1 feet*	METHOD: *Vibracore*
COMPLETION DATE: *01/29/97* TIME: *10:05*	DRIVE LENGTH: *17.0 feet*	FIELD LOG BY: *DT*
DEPTH TO MUD: *11.5 feet*	SURFACE ELEVATION: *feet (MSL)*	LAB LOG BY: *JG/SB*

DEPTH (in feet)	LAB (AS-RECEIVED) PROFILE: TYPE	DEPTH	HS PID (ppm)	CORE PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION	INTERPRETED IN-SITU PROFILE: LITHOLOGY	U.S.C.S.	DEPTH (in feet)
0	SAMP		0.7	NM	SM		SILTY WOOD WASTE; 99% wood.			0
	ARCH		0		SP					
					SM					
					ML					
5					SP					5
10										10
							SILTY SAND; Gray; fine-grained.		SM	
							SAND; Coarse-grained.		SP	
							SILTY SAND; Gray; fine-grained.		SM	
							SILTY SAND; Dark gray; medium- to coarse-grained.			
15							SILTY SAND; Gray; fine-grained; with few 1" layers of clayey silt.		ML	15
							SANDY SILT; Dark gray; with cobbles up to 3" diameter.		SP	
							SAND; Gray; fine- to medium-grained; with occasional cobbles up to 2" dia.			
							Total depth = 17.0 feet bgs.			
20										20

REMARKS: SAMP - Laboratory Sample
ARCH - Archived Sample

SHANNON &
WILSONS 1997

SHANNON AND WILSON 1997

Boring Logs

SWB-1 to 4B1
SWB-7
SWB-8
SWB-10

Boring Location: B-3 (SW) — 60' — 250' — Entrance N. — shoreline — 2100 line — RR

Elevation: Datum:

Obs. Well Install. [Yes] [No]

HARTCROWSER

Boring B-3 Date 11-5-96 Sheet 1 of 4

Job Overdall Properties Job No. 4042-016

Logged By Shannon Wilson / ACE Weather Overcast, threaten rain 40's

Drilled By Gregory Drilling

Drill Type/Method CME 55 Mobile HSA drill rig

Sampling Method SPT: 140lb H, 1½" ⌀ SS, 18" long, 30" drop. Freefall automatic hammer w/

Bottom of Boring 10' ATD Water Level Depth 12' [No]

SIZE (%) G Max.	S Range	F Att. Limits	PID or other	DEPTH From	To	SAMPLE Type	Number	SAMPLE RECOVERY	Penetration Resistance	DESCRIPTION: Den., moist., color, minor, MAJOR CONSTITUENT: NON-SOIL SUBSTANCES: odor, staining, sheen, scrap, slag, etc.	REMARKS: Drill action, drill and sample procedures, water conditions, heave,...etc...	SUMMARY LOG (Water & Date)
	Microtip = 11.7 ev lamp Background = 0.0 ppm to 1 Calibrated 11/5/96 PID moved over split spoon							0		surface: scattered wood chips + tire ruts	1430 drill start	
								1				WOOD CHIPS
								2			easy drilling	
WOOD			—	2.5	4	SS 1410	S-1	3	4 4	brown, untreated, cored wood chips		
	5	95						4	19 23	black, med dense, damp, cindery SILT w/ coal frags, slight odor + sheen	sheen test: 1" of sample placed in tin tray ~500 ml of water added. make slurry inspect water surface 4 oz water added.	silt + coal frags
	5-10	90						5	5	↓ same		
	98	tr	0	5	6.5	SS 1445	S-2	6	2 5	orange, ~~pumicy layer~~ not decomposed sandstone rock gravel 1½" ⌀		
								7	7	gray, damp, loose, non silty M-F SAND. No sheen.		gray SAND
	98	tr						8	1 12'	very loose, moist gray M-F sand interbedded w/ brown, moist organic SILT - 1-2" thick layers	take the finest grain material for sheen test. good decon.	
		100	1.8	7.5	9	SS 1450	S-3	9	1	Very slight sheen. No odor. shoe: PEAT		
HSA downhole = 0.0								0	0	brown SILT	cuttings - clean, No sheen	brown SILT
		100	.7	10	11.5	SS 1500	SS S-4	1	0 1 1	cored wood - 1" thick; gray sl. clayey to clayey SILT w/ trace organics. very soft, moist	No sheen/odor	gray-br. clayey SILT
								2	1	← wet rods	Ching Pee - Ecology arrived onsite for 15 min	ATD
	tr	100	.8	12.5	14	SS 1510	SS S-5	3	0 0 0	very soft, moist, brown SILT w/ subst orgs, peat layers, + gray sand stringers; dk brown sl. clayey SILT w/ peat		
								4	0	No sheen/odor		
	SILT		—	15	17	shelb 1515	S-6 push shelby	5				silt ?
								6				
								7		↓ No sheen/odor	At 17.5' - W.L. inside auger is 1.5'	
	WOOD		0	17.5	19	SS 1528	S-7	8	1 1 1	very soft, wet, orange "fresh" cored wood + wood frags, untreated w/ orgs	HC002700	WOOD
								9	2	shoe: brown sl. clayey silt w/ orgs: 2" layer interbedded layers of V. soft		interbeds
						SS	S-8	0			drill stop 1535	

Boring Location:

See pag 1

ution: Datum:

Obs. Well Install. Yes ~~No~~

HARTCROWSER

Boring SW B-3 Date 11-6-96 Sheet 2 of 4

Job Quendall Properties Job No. 4042-06

Logged By S+Wilson, AGF Weather Rainy cold

Drilled By Gregory drilling

Drill Type/Method mud rotary 4" ø casing

Sampling Method

Bottom of Boring 120' ATD Water Level Depth No

SIZE (%) G Max.	S Range	F Att. Limits	PID or other	DEPTH From	DEPTH To	SAMPLE Type	SAMPLE Number	SAMPLE RECOVERY	Penetration Resistance	DESCRIPTION: Den., moist., color, minor, MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	REMARKS: Drill action, drill and sample procedures, water conditions, heave,...etc...	SUMMARY LOG (Water & Date)
	50	50	0	20	21.5	SS 1534	S-8	20	1	brown, wet, very soft, interbedded		gray SAND w/ interbedd
								21	1	layers of gray sand, brown silt,		
									1	PEAT + cored wood.		
Switch to mud rotary											drill stop for day 1535	
No sheen observed on water surface in box during heave removal								22	2	Shoe: brown, sl. clayey SILT w/ orgs 3" layer	8' of heave inside borehole next morning. Instead of 1 more HSA-SS sample, switch to mud rotary. Use 20' auger as casing, seal surface with chips, set up mud box, bentonite slurry.	
			-	22.5	24	SS 9.35	S-9	23	0	No sheen/odor		
									Sh			
								24	1	NR. S+W retained the brown silt in shoe. HC called it slough material		
								25	5			
	96	4	0	25	26.5	SS 9.45	S-10	26	7	med dense, wet, gray F-M-SAND w/ trace silt + multicolored grains (green, white, gray, bk)	~35 viscosity	gray SAND
									6			
								27	8	No sheen/odor	hit 1 Ft gravel layer ~26 Ft	Organic SILT
		100						28	4	very soft, wet, dk br organic SILT w/ trace day, subst. organic frags.		
	98	8	0	27.5	29	SS 1000	S-11		4			
								29	4	loose, wet, gray, sl. silty V.F SAND No sheen/odor	decon - tap rinse, soap scrub, tap rinse, DI spray	F-SAND
									3			
	92	8						30	8	same gray sand		
55	40	5	0	30	31.5	SS 1011	S-12	31	16			
									15	med dense, wet, gray, sl. silty, very sandy GRAVEL (well rounded, sub ∡, <1" ø) - outwash?	No sheen/odor	sandy GRAVEL
								32	31			
	92	8	0	32.5	34	SS 1020	S-13	33	7	slough - washed gravels		sl. silty sand w/ silt layers
									1			
								34	2	very loose, wet, gray, sl. silty V.F. SAND. No sheen/odor	At 34' - gravel rolled into hole, try to clear it out 1030	
	85	15	0	35	36.5	SS 1100	S-14	35	2	slough - washed gravels		
								36	5			
									8	shoe: sl. silty F-SAND, gray, wet w/ layer of gray SILT (← possible slough) 1 pc gravel	No sheen/odor	
								37	13			
		20						38	2	V. loose, wet, gray sl. silty F-SAND w/ gr-br silt w/ sub orgs. layers	good sample!	
			0	37.5	39	SS 1120	S-15		1			
								39	2	brown, wet cored wood - untreated and decomposed peaty wood layers		WOOD
									3			
								40		No sheen/odor		

V.F SAND, B SILT, M-SAND, CORED WOOD, PEATY WOOD

HC002701

Boring Location:

see page 1

Elevation: Datum:

Well Install. Yes / No

HARTCROWSER

Boring SW B-3 Date 11-6-96 Sheet 3 of 4

Job Quendall Properties Job No. 4042-06

Logged By AGF Weather overcast, windy 40's

Drilled By

Drill Type/Method see page 2 Mud Rotary

Sampling Method

Bottom of Boring 120' ATD Water Level Depth No

SIZE (%) G Max.	S Range	F	PID or other	DEPTH From	DEPTH To	SAMPLE Type	SAMPLE Number	SAMPLE RECOVERY	Penetration Resistance	DESCRIPTION: Den., moist., color, minor. MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	REMARKS: Drill action, drill and sample procedures, water conditions, heave,...etc...	SUMMARY LOG (Water & Date)
	80	20	0	40	41.5	SS 1136	S-16	40	1	layer 2" of brown peaty wood	continue mud Rotary ↓	
								41	1	gr-br, wet, v. loose, ± silty, F = SAND sl. compressible	good drive	silty F-SAND w/wood
									1	wet, loose, classic gray, silty F SAND No layering, gradational	No X-contamination issues at present	
								42	2	No sheen odor		
	93	7	0	42.5	44	SS 1150	S-17	43	7	gravel - slough med dense, wet, gray sl silty F-M SAND		
									7			
								44	6	(more coarse than upper units)	At 44.5' - hit gravel	sl. F-M SAND ↓
									13	No sheen/odor.		
								45		↓ sand		scatt. gravel
tr	93	7	0	45	46.5	SS 1200	S-18	46	10	med dense, wet, greenish-gray, sl silty F-M SAND w/ tr. gravel		
									7			
									8	<1/2" diam No sheen/odor		
								47	15		1200 - 15 min lunch break	
	90	<5	0	47.5	49	SS 1300	S-19	48	15	↓ same med dense, wet, greenish-gray sl gravelly F-M SAND w/ trace	Gravel fell inside borehole - try + spin it out, break it up ~1½ ft. Thicken up mud to keep gravel out	
									9			
								49	11	SAND. Gravel <1/2" ϕ, rounded	driller - feels more gravelly than it looks.	
									20	No sheen		
								50		slough rounded gravel		F-M SAND sc. gravel
5	90	5	0	50	51.5	SS 1320	S-20	51	15	~~med~~ dense, wet, gray, F-M SAND		
									19	w/ trace gravel + silt		
									12	No sheen.		
								52	31			
	No more PID Reading							53		switch to 5' intervals	some gravels entered borehole - worked out	
								54				
55	45	tr		55	56.5	SS 1350	S-21	55	16	~~med~~ dense, wet, yellowish-brown, sl. sandy GRAVEL	smooth hard driving	
								56	17	(well rounded, <1" ϕ), Trace		sandy GRAVEL
									18	silt.	Sitter will continue sheen test on all samples	
								57	35	No sheen/odor		
								58				
								59			10 min break from torrential downpour of rain	
								60				

HC002702

Boring Location:

...ation: Datum:

Obs. Well Install. Yes ~~No~~

HARTCROWSER

Boring SW B-3 Date 11-6-96 Sheet 4 of 4

Job Quendall Properties Job No. 4042-06

Logged By Shannon + Wilson Weather

Drilled By AGF

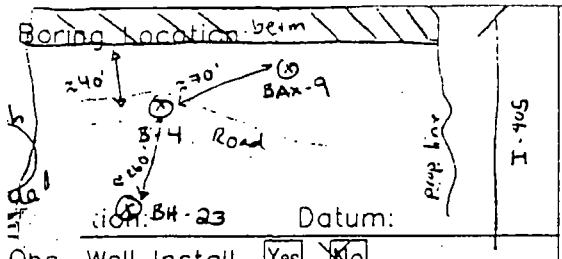
Drill Type/Method see page 2

Sampling Method

Bottom of Boring 120' ATD Water Level Depth No

SIZE (%) G Max.	S Range	F Att. Limits	PID or other	DEPTH From	DEPTH To	SAMPLE Type	SAMPLE Number	SAMPLE RECOVERY	Penetration Resistance	DESCRIPTION: Den., moist., color, minor, MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	REMARKS: Drill action, drill and sample procedures, water conditions, heave,...etc...	SUMMARY LOG (Water & Date)
								60			Mud rotary	
			—	60	61.5	SS 1415	S-22	61	24 21 22	No Recovery - all slough washed gravels	No Recovery in first drive, hole caved-in to 60 Ft Redrive sampler	Sandy Gravel
								62	43			
								63			According to driller - out of gravels at 58'	
								64			Rounded pea gravel - hole collapsed 2 or 3 times around 58' from gravel	F-M SAND
								65	10	slough - washed gravels		
	100		—	65	66.5	SS 1438	S-23	66	11 11	med dense, wet, greenish - brown non silty F-M SAND		
								67	22	No layering. No sheen/odor		
								68				
								69		borehole cont'd to 100' depth w/o HC presence	HC leave site 1500	
								70				
				Sheen Test No sheen				1		med dense F-M SAND	80'	
								2		dense F-M SAND w/ trace gravel	80-90'	
								3		med dense F-M SAND trace gravel	90-110'	
								4		very soft, gray sl. clayey SILT	At 120'	
								5		BOB at 120'		
								6		Drilled to 120'. Generally sand. Last sample 121.5'		
								7		Thicken up drill mud for backfill. ~~Cu~~		
								8		Bentonite Chips from 0-20 Ft.		
								9		Generated 3 soil drums 3 water drums	] labeled, sealed	
								0				

HC002703



Datum:

Obs. Well Install. Yes ~~No~~

SW-B-4

HARTCROWSER

Boring B-4 Date 11-18-96 Sheet 1 of 1

Job Quendall Properties Job No. 4042-06

Logged By Shannon + Wilson | AGF Weather heavy rain, 40°s

Drilled By Gregory Drilling

Drill Type/Method 0-20' - HSA CME 85 6" ϕ

Sampling Method SPT - 18" ss, 1½" ϕ, 30" drop

Bottom of Boring 14 ATD Water Level Depth 12 No

SIZE (%) G Max.	S Range	F Att. Limits	PID or other	DEPTH From	DEPTH To	SAMPLE Type	SAMPLE Number	SAMPLE RECOVERY	Penetration Resistance	DESCRIPTION: Den., moist., color, minor, MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	REMARKS: Drill action, drill and sample procedures, water conditions, heave,...etc...	SUMMARY LOG (Water & Date)
		11.7 eV BG = 0.0 ppm						0		surface: dirt road upper 6" - muck. moved location to avoid standing H_2O	drill start 0945 area covered w/plastic Berm set up around borehole for containment	
								1				
								2				Fill
5	SS	40	0 (headspace w/o foil)	2.5	4.0	SS 0950	SS1	3	10, 14, 12, 26	mod dense, damp, blue-green-gray mottled sl. gravelly, sl. clayey silty SAND (Fill) No sheen/odor	cuttings: steaming gr-brown sand silt substantial wood	
5	SS	40	0	5.0	6.5	SS 1000	S-2	5	5, 10, 7, 17	same mod dense, gray br, moist silty SAND 8" cored wood - moderate odor, no sheen untreated, lt brown		WOOD
5	SS	35	0	7.5	9.0	SS 1015	S-3	8	4, 4, 1	same gray/brown sl. grav. silty SAND moist slough?	hard driving - wood out of wood	organic SILT + gray SAND interbedds
		100	<1	10	11.5	SS 1017	S-4	10	1/12, 1, 1	very soft, moist, brown organic silt, slightly compressible slightly clayey, trace petrol shoe-gray sand odor, no sheen	heavy rain - PID not working well	
	98	tr	<1	12.5	14	SS 1025 1130	S-5	13	2, 5, 2	NR Redrive 3" sampler: Gray, wet, F-M SAND w/ moderate odor + light to moderate sheen	Heavy sheen to ATD At 12.5' - product observed on plug. Drill stop. clean up area. Strict bootwash protocol. Discuss options. Use D+M sampler at 12.5' to improve recovery	gray SAND
								14				
								15				
								16		BOB @ 14' Backfill w/ 5 bags bentonite chips		
								17				
								18		As augers were pulled from borehole, moderate odor observed, possible sheen on groundwater, and yell-brown foamy sheen observed on auger @ 12' depth. Forowing decision protocol outlined in SAP. Contractor pulled out + backfilled ~~based~~ as soon as heavy sheen observed (Although not observed in sample observed on rods). Decision to move location north (just		
								19				
								0				

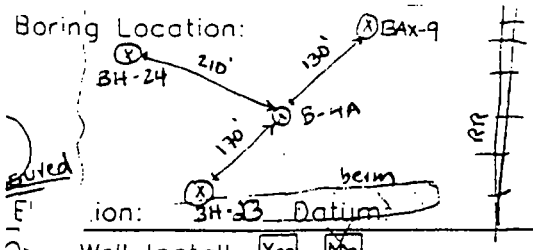
Wait until later + dry to PID test

Generate: 1 soil, 1 water, 1 plastic drum

on otherside berm) also based on difficulty containing contaminated soil + cuttings at present

HC002704

Boring Location:



Elevation: Datum:

Obs. Well Install. Yes No

2nd attempt

HARTCROWSER

Boring SWB-4A Date 11-22-96 Sheet 1 of 1

Job Quendall Properties Job No. 4042-06

Logged By Shannon + Wilson / AGF Weather cold (snowed Tues), 30-40° cloudy

Drilled By Gregory Drilling - Larry

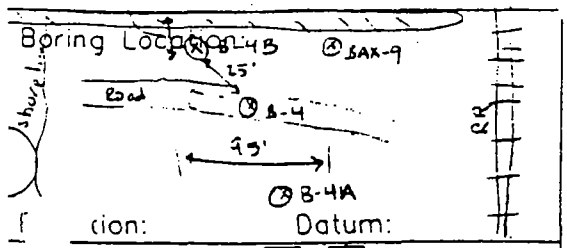
Drill Type/Method CME 850 HSA - 0-20' ~~mud rotary 20'~~ track rig

Sampling Method SPT = 18" SS 140 lb H 30" drop

Bottom of Boring 11.0' ATD Water Level Depth 10' No

SIZE (%) G Max.	S Range	F Att. Limits	PID or other	DEPTH From	DEPTH To	SAMPLE Type	SAMPLE Number	SAMPLE RECOVERY	Penetration Resistance	DESCRIPTION: Den., moist., color, minor, MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	REMARKS: Drill action, drill and sample procedures, water conditions, heave,...etc...	SUMMARY LOG (Water & Date)
	PID-B.G. = 0.6 ppm		MicroTip 11.7 eV lamp					0		surface: dirt / wood surface	drill start 10:15/10:50	
								1			plastic + berm around borehole	G
			headspace					2			hit gravel at 2' tough gravelly drilling feels angular	Gravel Fill
60	30	20	30.3	2.5	2.8	SS 1020	S-1	3	50/3"	NR - drive on rock. Slough - brown silty SAND. No sheen. Faint odor solvent-like	hit refusal at 3' Abandon hole + move N-5' drill start 10:50	
% LEL in drum ppm PID in drum 30 pm								4			cuttings: dk brown silty sand. moderate solvent odor in drum. HC requested sheen test slight sheen.	
10	88	12	0.9	5	6.5	SS 1110	S-2	5	8	slough: same as above		
								6	5 6	med dense, moist, blue-gray, sl. grav, sl silty F-SAND w/ subst. unticated shredded wood moderate odor (solvent, creosote) NO sheen	smooth drilling	
cuttings jar = 59 ppm → slight sheen								7	11		cuttings: 2 ppm	
	75	25	1.1	7.5	9	SS 1120	S-3	8	P 1	dk brown, moist, sl. silty SAND w/ subst organics faint odor		organic SILT + SAND layers
		100						9	P 1	v. soft, moist, "organic" SILT. compressible faint odor → slight sheen		
	98	tr	13	9	11	Shelby 1130	S-4	10		→ notice heavy sheen/ free product on outside of samplers - and in the shoe. DK brown globules on the outside + yellow sheen	last 4" - got stiffer shoe - gray Fine SAND shelby not retained	ATD SAND
			airspace					11		poured out sample from shelby gray, M-F SAND w/ heavy sheen, heavy creosote - odor and free product.	Abandoned borehole	
PID inside auger = 8 ppm								12				
								13				
								14		BOB @ 11.0'	drill stop 1145	
								15		Abandon borehole w/ 5 bags of bentonite chips		
								16		Move to N end of site B-4B.		
								17		Appeared that entire fill unit had some kind of contamination		
								18				
								19		Generated: 1 soil 1 decon water 1 plastic		
								20				

HC002705



Location: Datum:

Obs. Well Install. Yes / No

HARTCROWSER

Boring SWB-4B Date 11-22-96 Sheet 1 of 4

Job Quendall Properties Job No. 4042-06

Logged By Shannon + Wilson / AGF Weather

Drilled By Gregory Drilling

Drill Type/Method CME 850 Mud Rotary track rig

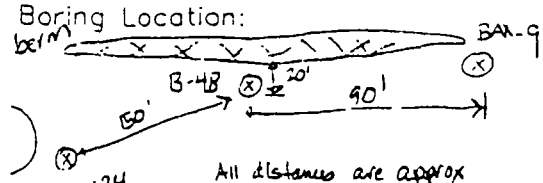
Sampling Method SPT

Bottom of Boring ≈ 120' projected ATD Water Level Depth 12' No

SIZE (%) G Max.	S Range	F Att. Limits	PID or other	DEPTH From	DEPTH To	SAMPLE Type	SAMPLE Number	SAMPLE RECOVERY	Penetration Resistance	DESCRIPTION: Den., moist., color, minor, MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	REMARKS: Drill action, drill and sample procedures, water conditions, heave,...etc...	SUMMARY LOG (Water & Date)
	PID = Micro Tip = 11.7 eV. B.G. = 0.0 ppm							0		surface: dirt + wood chips - higher than road	drill start 1345 build berm + plastic around borehole on ground. Immediately drum cuttings	
								1			Hit - cobble fill at 1' drum - hard drilling 1-2' - large cobbles (8") 2' - smaller gravel	
			headspace					2				GRAVEL FILL
90	10		0	2.5	4.0	SS 1415	S-1	3	19 24	dense, damp, green-gray sl. sandy Gravel - junky gr cobbles w/ trace black staining		
tr	70	30						4	13 37	shoe: dk br. silty SAND Faint odor, slight sheen		
tr	70	30	0.6	5	6.5	SS 1420	S-2	5 6	3 3 5	all slough - pushing rock dk brown sl silty SAND w/ 1 cobble in shoe slight odor → slight sheen	easy drilling cuttings: blue-gray sl. clayey silty sand w/ shredded wood + moderate odor	
PID in borehole = 13 ppm breath zone = 0.5 ppm drum = 2 ppm								7	8			bl-gray silty SAND (Fill)
tr	60	35	8	7.5	9.0	SS 1430	S-3	8 9	2 3 3 6	loose, moist, blue-gray (sl. mottled), sl. clayey, silty SAND w/ wood fibers (Fill) + trace gravel. Moderate moth-ball like odor. → No sheen		
		100	1.9	10	11.5	SS 1440	S-4	0 1	1 1 1	soft, moist, brown, organic SILT w/ wood fibers, organics + peat layers. Trace odor. Very compressible → No sheen	dry sampler	brown organic SILT
						Push Shelby		2	2	2 shelby push unsuccessful - hit gravel	ATD	
	98	tr	0	12.5	14	SS 1510	S-5	13 14	1 2 2 4	loose, wet, gray w/ multicolored grains F-M SAND. No odor / Faint → No sheen	No sheen on plug, only Foam on rods 2' of heave - spinned out	Gray SAND
	10	90	0	15	16.5	SS 1520	S-6	15 16	0 1 1	slough: M - SAND very soft, moist, med brown organic SILT (no obvious Peat or wood fibers) w/ 1/2" interbedds of gray F SAND → no sheen / odor		SILT / PEAT w/ SAND
		100	—	17	18	Shelby 1540	S-7	17	2		2' of heave - got it out	
								8		Shoe: brown SILT w/ subst wood No odor / No sheen (possible sand interbedds)		
								9				
		100		20	21.5	SS 1555	S-8	20	0 1	very soft, moist, brown SILT / Peat w/ subst → No sheen / odor		

HC002706

Boring Location:



All distances are approx

F ...ion: — Datum: —

Obs. Well Install. Yes No

HARTCROWSER

Boring SWB-4B Date 11-25-96 Sheet 2 of 4

Job Quendall Properties Job No. 4042-06

Logged By Shannon + Wilson / AGF Weather overcast 45°

Drilled By Gregory Drilling Paul VanHorne

Drill Type/Method mud Rotary CME 850 Track rig

Sampling Method SPT

Bottom of Boring _____ ATD Water Level Depth 12' No

SIZE (%) G Max.	S Range	F Att. Limits	PID or other	DEPTH From	DEPTH To	SAMPLE Type	SAMPLE Number	SAMPLE RECOVERY	Penetration Resistance	DESCRIPTION; Den., moist., color, minor, MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	REMARKS; Drill action, drill and sample procedures, water conditions, heave,...etc...	SUMMARY LOG (Water & Date)
		100	0.8 (3 days later)	20	21.5	SS 1555	S-8	20 / 21	0 / 1 / 1	very soft, moist, brown silt and peat w/ subst organics + wood fibers. Very compressible → No sheen/odor.	Monday morning - mud box still full. Standing water in augers. Begin mud rotary at 20'	brown SILT
Continue mud rotary on 11-25-96 Background Reading 1.8 to 2 ppm 11.7 ev lamp								22	2		drill start 8:45 11/25/96	
	60	40 / 100	23' ↑ Headspace w/o foil ↓	22.5	24	SS 11-25-96 0850	S-9	23 / 24	2 / 1 / 1 / 2	v. silty SAND / clay SILT 6" / sand; very soft, wet, gray clayey SILT - (homogeneous) w/ interbedded sl. silty F. SAND → No sheen/odor (2-3")	easy drilling	gray clayey SILT w/ SAND
	10	90	2.4	25	26.5	SS 0910	S-10	25 / 26 / 27	0 / 0 / 2 / 2	very soft, wet, gray sl clayey SILT w/ trace sand w/ V.F. silty sand interbeds (1/2") and trace organics → No sheen/odor; shoe: M-SAND	easy soft drilling; hit gravel @ 27'	
16	85	5	2.7	27.5	29	SS 0925	S-11	28 / 29	4 / 7 / 8 / 15	F-M / C / F-M / C; med. dense, wet, gray M-C SAND (good layering). w/ trace gravel + silt. sl. gravelly small well rounded → No sheen/odor		M-C sl. grav. SAND
13	82	5	2.6	30	31.5	SS 0935	S-12	30 / 31 / 32	6 / 7 / 3 / 10	↓ same; med dense, wet, gray sl. gravelly M-C SAND w/ 1 silty sand interbed. <1" ϕ → No sheen/odor	↓ more gravel cuttings: small well rounded gravel <1" ϕ	
	95	5	2.6	32.5	34	SS 1000	S-13	33 / 34	5 / 3 / 4 / 7	↓ No gravel; loose, wet, gray F-M SAND non silty w/ 1 - 1" layer of silt → No sheen/odor	gravelly grinding drilling - out of it at 32.5'	F-M SAND
	10	90	2.3	35	36.5	SS 1015	S-14	35 / 36 / 37	1 / 1 / 1 / 2	SILT / org silt / SAND / SILT / org; very soft, moist - wet grayish-brown to brown SILT w/ subst. organics and M-F SAND 1/2" interbeds → No sheen/odor	Paul was giving me PID reading above BG. Asked him to give me actual reading.	gr-br SILT w/ orgs
Background - 1.3 ppm to 1.8												
	18	90 / tr	2.8	37.5	39	SS 1030	S-15	38 / 39 / 40	0 / 2 / 2 / 4	SILT / SAND / SILT / SAND; Interbedded, soft, wet gr-br sl. sandy SILT + gray M-SAND + dk brown org. SILT well layered → No sheen/odor; shoe: organic SILT / Peat		SAND

HC002707

↓ almost dry silt

drill stop 1045 Equipment Repair. Down for day.

Boring Location:

See page 1

E' ation: Datum:

Well Install. Yes ~~No~~

Boring B-4B Date 11-25-96 Sheet 3 of 4
Job Quendall Job No. 4042-06
Logged By _____ Weather _____
Drilled By _____
Drill Type/Method see page 1
Sampling Method _____
Bottom of Boring _____ ATD Water Level Depth 12' No

SIZE (%) G Max.	S Range	F Att. Limits	PID or other	DEPTH From	To	SAMPLE Type	Number	SAMPLE RECOVERY	Penetration Resistance	DESCRIPTION; Den., moist., color, minor, MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	REMARKS; Drill action, drill and sample procedures, water conditions, heave,...etc...	SUMMARY LOG (Water & Date)
PID Range				Sheen Test				40				
1.2 - 18.7 e 52				No sheen				41		At 42' - med to dense interbedded gravelly F-M-C SAND		
								42		At 57' - med dense F-M-SAND		
3.3 - 31.2'								43				
								44		At 73' - Gravelly sand to sand gravel - dense low recovery		
8.6'								45				
								46				
								47		HC Rep stopped by while drilling at 80 Ft depth 1645 11/26/96		
								48				
								49				
								50			At 75' - switched to 5' intervals	
								51				
								2				
								3				
								4		To retrieve drill bit - augered down to 45' w/o plug. Allowed cuttings to come up inside auger ~ acted as soil plug. Pulled all the HSA augers and drill bit was lodged inside. Placed augers back down to 20 Ft - filled borehole w/ mud, tried to create seal around augers, ran + drilled 4" casing down to 45', started sampling.		
								5				
								6				
								7				
								8				
								9				
								60				

Boring Location:

see page 1

E .ion: Datum:

Obs. Well Install. Yes ~~No~~

HARTCROWSER

Boring B-4B Date 11-25-96 Sheet 4 of 4

Job Qwendall Properties Job No. 4042-06

Logged By _____ Weather _____

Drilled By _____

Drill Type/Method _____

Sampling Method _____

Bottom of Boring _____ ATD Water Level Depth _____ No

SIZE (%) G Max.	S Range	F Att. Limits	PID or other	DEPTH From	DEPTH To	SAMPLE Type	SAMPLE Number	SAMPLE RECOVERY	Penetration Resistance	DESCRIPTION; Den., moist., color, minor, MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	REMARKS; Drill action, drill and sample procedures, water conditions, heave,...etc...	SUMMARY LOG (Water & Date)
								60			HC Rep not present	
								61				
								62				
								63				
								4				
								5		Each Drum label:		
								6		boring #		
								7		depth		
								8		material		
								9		generation date		
								70		field classification - A, B, C, other based on sheen/odor.		
								71		unique sequential drum #		
								72		At 80' - have generated 9 drums so far.		
								73		3 soil		
								74		6 mud		
								75				
								76				
								77		2> At 80' - used up 1200 gallons of water. ~~[illegible]~~ Losing circulation in the gravels. 3 Ft of heave.		
								78				
								79				
10	90		57	30	81.5	SS		80		med dense, gray, wet, sl. gravelly non silty		
						1705			12	M-C SAND No sheen/odor		

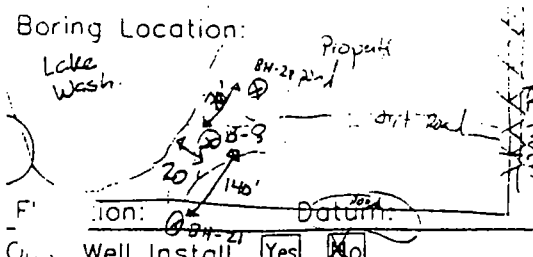
suspect false high PID Reading

smells like dirt.

11/26/96

HC002709

Boring Location:



Elevation: Datum:

Obs. Well Install. Yes No

HARTCROWSER

Boring 3-8 Date 11-12-96 Sheet 1 of 4

Job Quendall Site Job No. 4042-06

Logged By Shannon + Wilson / Kot Weather Heavy intermit. Rain 50's

Drilled By Gregory Drilling - Larry CME 85

Drill Type/Method HSA - 20 Ft Mud Rotary > 20'

Sampling Method SPT: 140 lb hydraulic hammer, 18" SS 1½" Ø

Bottom of Boring 120' ATD Water Level Depth 8.0' No

SIZE (%) G Max.	S Range	F Att. Limits	PID or other	DEPTH From	DEPTH To	SAMPLE Type	SAMPLE Number	SAMPLE RECOVERY	Penetration Resistance	DESCRIPTION: Den., moist., color, minor, MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	REMARKS, Drill action, drill and sample procedures, water conditions, heave,...etc...	SUMMARY LOG (Water & Date)
PID= Photovac MICROTIP Background = 0.0 ppm					11.7 eV			0		surface: dirt road. SW corner of property	1440 - drill start	
								1			hard scraping near surface. lay plastic on ground around borehole	top soil
10	45	55						2		dk brown, silty sand w/roots - top soil	hit ash looking stuff at 2' depth	
	5	95	0	2.5	4.0	SS 1450	S-1	3	3, 5, 9	med dense, moist, gray ASH-like material w/ thin F-SAND layers (<1" thick) + trace gravel. soft, smooth consistency	→ No sheen No odor	gray ASH-like stuff
								4	14	old bentonite? chalky odor, soft concrete? Fly ash?		
5		95	0	5	6.5	SS 1455	S-2	5	1, 3, 4	same med stiff, moist, lt gray SILT/ASH w/ trace gravel. No layering	cutting: gray, soft concrete - looking smell like wet concrete. → No sheen/odor	Fill?
								7	7			
+	50	50	0	7.5	9.0	SS 1510	S-3	8	2, 4, 3	mix zone - jumbled ash-like material + sand w/ tr. gravel wet, ~~med~~ loose gray-brown	→ No sheen/odor	ATD ▽ MIX ZONE
tr	80	20						9	7	green-gray silty SAND w/ trace ash + gravel	At 9' - hit something hard change in lithology	
		100	0	10	11.5	SS 1515	S-4	10	1	2" layer of med stiff gr-gray CLAY		Brown SAND w/ wood
	95	5						11	1, 1	Very loose, moist, dk brown, M-F SAND w/ trace SILT + peat layers	No sheen/odor observed in cuttings	
								12	2	→ No sheen/odor		
	97	tr	0	12.5	14	SS 1520	S-5	13	0, 2, 2	Very loose, wet, med-gray F-M SAND w/ multicolored grains 1" layer of pulpy wood + silty sand stringers	Very soft drilling PID Readings taken immediately upon in several opening places	gray F-M SAND w/ wood
	85	15						14	4	→ No sheen/odor		
		100	0	15	16.5	SS 1530	S-6	15	0	gr SAND Br. clayey SILT w/ orgs - peaty gr SAND	Very soft, moist, dk brown clayey SILT w/ mod. organics + gr SAND layers → No sheen/odor	
	98	tr						16				
								17	1			Br clayey SILT w/ peat + sand
		100	0	17.5	19.0	SS 1545	S-7	18	P, S, H	Very soft, moist, massive, brown clayey SILT w/ subst organics + peat layers. No layering	No sheen/odor since we are still in the clayey SILT HC	
								19	0	→ No sheen/odor	OK'd one more drive → then switch to mud rotary	
								20				

Boring Location:

see page 1

...ation: Datum:

Obs. Well Install. Yes No

HARTCROWSER

Boring B-8 Date 11-12-96 Sheet 2 of 4

Job Quendall Properties Job No. 4042-06

Logged By Shannon + Wilson / AGF Weather

Drilled By

Drill Type/Method See page 1

Sampling Method

Bottom of Boring 120' ATD Water Level Depth 8' No

SIZE (%) G Max.	S Range	F Att. Limits	PID or other	DEPTH From	DEPTH To	SAMPLE Type	SAMPLE Number	SAMPLE RECOVERY	Penetration Resistance	DESCRIPTION: Den., moist., color, minor, MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	REMARKS: Drill action, drill and sample procedures, water conditions, heave,...etc...	SUMMARY LOG (Water & Date)
		100	0	20	21.5	SS 1550	S-8	20	0	very soft, moist, dk brown, clayey SILT w/ subst organics, pulpy wood + peaty layers	PID + MSA monitoring down borehole = 0.0	Br clayey SILT w/ wood
								21	0		→ No sheen	
									1	Shoe: chunk of wood		
								22	1	odor: natural organic wood	At 21.5' - switch to mud rotary. Seal casing w/ bentonite around surface	
										continue w/ mud on 11/13/96		
								23	2			
									4	No Recovery	↓ Switch to mud. Run casing - 4" Flush threaded to prevent hole caving	
								24	1	slough saved - gray clayey SILT		
									2			
								25	0	v. loose, wet, gray F-M SAND		gray SAND
	98	tr	0	25	26.5	SS 0905	S-10		2			
		100						26	3	v. soft, moist, dk brown clayey SILT w/ subst orgs + wood pulpy stringers	easy / smooth.	T brown SILT layers
								27	5	→ No sheen / odor		
								28	0	med stiff, moist, gray silty CLAY - to clayey SILT	mud: thin bentonite powder + Wyo-VIS polymer - sodium acrylate + acrylamide in mineral oil base. Slight petroleum odor on MSDS. Not concerned only using 8 oz.	gray CLAY
		100	0	27.5	29.0	SS 0920	S-11		3			
	98	tr						29	5	loose, wet, gray F-M SAND ~6"		gray SAND F-M
									8	→ No sheen / odor		
								30	2	slough = sand flowy		
	98	tr	0	30	31.5	SS 0945	S-12		1	F-M v. loose, wet, F-M gray SAND w/ C-SAND layer. grading to	Casing at 30' - water is flowing to surface. Driller thinks water is coming in at 25' depth. Drill stop to discuss. Artesian - only a trickle. S+W will continue.	
	8	92						31	2	soft, wet, gray sl. sandy, sl. clayey SILT		
								32	3	→ No sheen / odor		
	10	90	0	32.5	34	SS 1000	S-13	33	2	SILT 1" / SAND 2" F-M / SILT 2" / yell-orang ASH - 1" thick	Inspected mud surface for sheen - perhaps slight, not significant.	gray SILT with sand interbeds
									1	very soft, moist, gray clayey SILT w/ sand + ash layers		
								34	2	SILT clayey w/ brown orgs - 4"		
									3	→ No sheen / odor		
	98	tr	headspace					35	4	med dense gray, wet, F-M SAND	Talk w/ Lori about the odd Fill and the artesian conds.	
60	40		0.8	35	36.5	SS 1015	S-14	36	12			
									16	Shoe: gray, dense, sandy GRAVEL	→ PID = 0 and no sheen test but sniff jar - slight creosote odor, cont'd ahead.	
								37	28	subrounded. No sheen.		
			headspace					38	13		→ 37' - while not pumping lost water into gravels	Sandy GRAVEL
			5.2	37.5	39	SS 1030	S-15		17	med dense, gray, wet, sandy Gravel w/ slight creosote-like odor. No sheen	Gravelly drilling.	
								39	17			
									34			
								40			No sheen on mud surface	

HC002711

Boring Location: see page 1

F ion: Datum:

Obs. Well Install. Yes No

HARTCROWSER

Boring B-8 Date 11/13/96 Sheet 3 of 4

Job Quendall Properties Job No. 4042-02

Logged By Weather

Drilled By

Drill Type/Method see page 1

Sampling Method

Bottom of Boring 120' ATD Water Level Depth ∅ No

SIZE (%) G Max.	S Range	F Att. Limits	PID or other	DEPTH From	To	SAMPLE Type	Number	SAMPLE RECOVERY	Penetration Resistance	DESCRIPTION: Den., moist., color, minor, MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	REMARKS; Drill action, drill and sample procedures, water conditions, heave,...etc...	SUMMARY LOG (Water & Date)
								40			thickened the mud. Added more polymer. HC rep asked where MSA was - not put out on this hole. Now placed around borehole	
			(–)	40	41.5	SS 1100	S-16	41	9, 11, 12	N.R. Gravel ~ driller observ.		sandy GRAVEL
			wait 20 minutes then PID inside jar w/ tin foil headspace					42	(83)		At 42.5' - lost water downhole again. No circulation loss. Total H_2O loss so far - 140 gallons	
	96	4	(6.5)	42.5	44	SS 1120	S-17	43	1, 0	very loose, wet, gray F-M SAND w/ trace creosote-like odor	To 43' Very hard/gravelly drilling	
								44	2, (2)	→ No sheen	No gravel below 42'	
10	85	5	headspace (9.3)	45	46.5'	SS 1145	S-18	45	4	loose, wet, gray, sl. silty, sl. gravelly F-M SAND w/ trace layering - 2 pcs gravel <1½" ∅. Very Faint creosote-like odor to moderate → No sheen	At 45' - 14' of heave Spun + drove out	gray SAND w/ gravelly + silty layers
								46	2, 4			
								47	(6)			
	.00		headspace (12.9)	47.5	49	SS 1200	S-19	48	0, 1	loose, wet, gray, non-silty F-M SAND no layering, homogenous grading to		
tr	80	20						49	3, (9)	loose, wet, rusty-brown silty SAND w/ trace gravel → No sheen. Trace creosote-like odor		rusty-brown SAND
			headspace (0.0)	50	51.5	SS 1220	S-20	50	5			
								51	3, 4	loose, wet, mottled gray + rusty brown (oxidized) F-m SAND to silty V.F. SAND w/ clayey SILT stringers (1/4")		
								52	(7)	→ No sheen/Odor.		
tr	94	5	headspace (0.0)	52.5	54	SS 1250	S-21	53	1, 3	loose, wet, tan, non-silty to sl. silty F-M SAND w/ 1" layer of C-SAND trace small gravel	water level continuously dropping, keep adding water to mud box	C-SAND
								54	6, (9)	→ No sheen/odor	At 54.5' - driller hit gravel	
			-	-	55	56.5	SS 1300	55	6	N.R. - suspect sand washed out	1.5' - heave	
							S-22	56	6, 8		calibrated PID	F-M SAND
								57				
tr	.0	-	headspace (0.0)	57.5	59	SS	S-23	58	1, 12	VF SAND, F-M SAND, C SAND, GRAV. SAND		
			2 days later (4.7)					59	6, (6)	loose, wet, gray-br F-m SAND grading to a clean sl gravelly SAND → No sheen/odor	Adding alot of water	GRAV. SAND
								60				

HC002712

Boring Location:

see page 1

F[illegible]ion: Datum:

Obs. Well Install. Yes No

HARTCROWSER

Boring B-8 Date 11-13-96 Sheet 4 of 4

Job Quendall Properties Job No. 4042-06

Logged By AGF Weather

Drilled By

Drill Type/Method see pag 1.

Sampling Method

Bottom of Boring 120' ATD Water Level Depth No

SIZE (%) G Max.	S Range	F Att. Limits	PID or other	DEPTH From	DEPTH To	SAMPLE Type	SAMPLE Number	SAMPLE RECOVERY	Penetration Resistance	DESCRIPTION: Den., moist., color, minor, MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	REMARKS: Drill action, drill and sample procedures, water conditions, heave,...etc...	SUMMARY LOG (Water & Date)
				60	61.5	SS	S-24	60		END OF DAY 11/13/96	At 1400 + 60' - drill rig breaks down, tri-cone bit locking mechanism broke, "overshot" FedEx part for morning repair. Must Flush bore hole w/ clean water to remove sand + prevent lock up.	
								61				
								62				
								63				
								64				
			Sheen/Odor (Sheen test) None							Continued drilling on 11/15/96		
								65				
				Sheen test				66		med dense sandy gravel / stratified Gravelly SAND	60-83' interbedded	
								67		Med dense, silty F-M SAND	~ 65-72'	
								68				
								69		very dense, gray, sand Gravel gravelly SAND grading to sl. gravelly SAND. (stratified within samples)	83' - 110'	
								70				
								71		dense F-M SAND	110 - 120'	
								72				
								73		BOB @ 120'		
								74		Backfilled with very thick mud. Advanced casing to 80 Ft. Drilled ahead and hole caved in at 75 Ft - advanced caving. Bentonite chips 0-20 Ft		
								75				
								76		1.6 to 18.5 ppm PID Reading from 60-83'.	Re-calibrated PID. Went back to old samples and rechecked PID - similar reading. PID was working correctly.	
								77				
								78		PID Reading back to 0.0 at very dense material.		
								79		Generated: 4 soil drums 8 water drums 2 plastic		
								80				

1 drum for ash material

HC002713

APPENDIX A

FIELD EXPLORATIONS

This appendix presents the results of the logs of the field explorations that were drilled at the site for this study. A key for these boring logs if presented in Figure A-1 while the logs for the seven explorations in this site are presented in Figures A-2 through A-9. The locations of the borings are shown on Figure 1 of the main text. While initial program consisting of ten explorations was planned, time constraints and access restrictions limited to the actual field exploration program to only seven borings. Borings 5, 6, 9 from the original exploration program were not drilled.

The field explorations at the site were drilled between November 6 and December 5, 1996. All explorations were drilled under subcontract to Gregory Drilling. The subsurface drilling program used a hollow-stem auger to advance the borings to a depth of approximately 20 feet below the existing ground surface. At this depth, the drilling technique used was a mud rotary method to the base of all explorations. This dual drilling technique was used to minimize the potential for transporting contaminated materials to underlying aquifers during the drilling operations. Steel casing was used to maintain the stability of all boreholes during the mud rotary operations at the site. Upon completion of all borings, each hole was backfilled and grouted in accordance with state regulations.

As much as possible, the borings were drilled at locations to avoid known plumes of contaminated materials. If contaminated materials were encountered during the drilling operations, the hole was abandoned and grouted and moved to a new location.

Water levels observed in the borings at the time of drilling are noted on the individual boring logs. These water levels, however, may not accurately reflect the actual location of the groundwater surface.

Shannon & Wilson, Inc. (S&W), uses a soil classification system modified from the Unified Soil Classification (USC) System. Elements of the USC and other definitions are provided on this and the following page. Soil descriptions are based on visual-manual procedures (ASTM D 2488-93) unless otherwise noted.

S&W CLASSIFICATION OF SOIL CONSTITUENTS

- MAJOR constituents compose more than 50 percent, by weight, of the soil. Major constituents are capitalized (SAND).
- Minor constituents compose 12 to 50 percent of the soil and precede the major constituents (silty SAND). Minor constituents preceded by "slightly" compose 5 to 12 percent of the soil (slightly silty SAND).
- Trace constituents compose 0 to 5 percent of the soil (slightly silty SAND, trace of gravel).

MOISTURE CONTENT DEFINITIONS

Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, from below water table

ABBREVIATIONS

ATD	*At Time of Drilling*
Elev.	Elevation
ft	feet
HSA	Hollow Stem Auger
ID	Inside Diameter
in	inches
lbs	pounds
Mon.	Monument cover
N	Blows for last two 6-inch increments
NA	Not Applicable or Not Available
OD	Outside Diameter
OVA	Organic Vapor Analyzer
PID	Photoionization Detector
ppm	parts per million
PVC	Polyvinyl Chloride
SS	Split Spoon sampler
SPT	Standard Penetration Test
USC	Unified Soil Classification
WLI	Water Level Indicator

GRAIN SIZE DEFINITIONS

DESCRIPTION	SIEVE SIZE
FINES	< #200 (0.08 mm)
SAND*	
• Fine	• #200 - #40 (0.4 mm)
• Medium	• #40 - #10 (2 mm)
• Coarse	• #10 - #4 (5 mm)
GRAVEL*	
• Fine	• #4 - 3/4 inch
• Coarse	• 3/4 - 3 inches
COBBLES	3 - 12 inches
BOULDERS	> 12 inches

* Unless otherwise noted, sand and gravel, when present, range from fine to coarse in grain size.

RELATIVE DENSITY / CONSISTENCY

COARSE-GRAINED SOILS		FINE-GRAINED/COHESIVE SOILS	
N, SPT, BLOWS/FT.	RELATIVE DENSITY	N, SPT, BLOWS/FT.	RELATIVE CONSISTENCY
0 - 4	Very loose	<2	Very soft
4 - 10	Loose	2 - 4	Soft
10 - 30	Medium dense	4 - 8	Medium stiff
30 - 50	Dense	8 - 15	Stiff
Over 50	Very dense	15 - 30	Very stiff
		Over 30	Hard

WELL AND OTHER SYMBOLS

Cement/Concrete	Asphalt or PVC Cap
Bentonite Grout	Cobbles
Bentonite Seal	Fill
Slough	Ash
Silica Sand	Bedrock
2" I.D. PVC Screen (0.010-inch Slot)	

JAG Development
Renton, Washington

SOIL CLASSIFICATION AND LOG KEY

February 1997 W-7443-04

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-1
Sheet 1 of 2

UNIFIED SOIL CLASSIFICATION SYSTEM
(From ASTM D 2488-93 & 2487-93)

MAJOR DIVISIONS			GROUP/GRAPHIC SYMBOL②	TYPICAL DESCRIPTION
Coarse-Grained Soils *(more than 50% retained on No. 200 sieve)* *[Use Dual Symbols for 5 - 12% Fines (i.e. GP-GM)]*①	Gravels *(more than 50% of coarse fraction retained on No. 4 sieve)*	Clean Gravels① *(less than 5% fines)*	GW	Well-Graded Gravels, Gravel-Sand Mixtures, Little or No Fines
			GP	Poorly Graded Gravels, Gravel-Sand Mixtures, Little or No Fines
		Gravels with① Fines *(more than 12% fines)*	GM	Silty Gravels, Gravel-Sand-Silt Mixtures
			GC	Clayey Gravels, Gravel-Sand-Clay Mixtures
	Sands *(50% or more of coarse fraction passes the No. 4 sieve)*	Clean Sands① *(less than 5% fines)*	SW	Well-Graded Sands, Gravelly Sands, Little or No Fines
			SP	Poorly Graded Sand, Gravelly Sands, Little or No Fines
		Sands with① Fines *(more than 12% fines)*	SM	Silty Sands, Sand-Silt Mixtures
			SC	Clayey Sands, Sand-Clay Mixtures
Fine-Grained Soils *(50% or more passes the No. 200 sieve)*	Silts and Clays *(liquid limit less than 50)*	Inorganic	ML	Inorganic Silts of Low to Medium Plasticity, Rock Flour, or Clayey Silts with Slight Plasticity
			CL	Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays
		Organic	OL	Organic Silts and Organic Silty Clays of Low Plasticity
	Silts and Clays *(liquid limit 50 or more)*	Inorganic	CH	Inorganic Clays of Medium to High Plasticity, Sandy Fat Clay, Gravelly Fat Clay
			MH	Inorganic Silts, Micaceous or Diatomaceous Fine Sands or Silty Soils, Elastic Silt
		Organic	OH	Organic Clays of Medium to High Plasticity, Organic Silts
Highly Organic Soils	Primarily organic matter, dark in color, and organic odor		PT	Peat, Humus, Swamp Soils with High Organic Content (See D 4427-92)

NOTES

1. Dual symbols (symbols separated by a hyphen, i.e., SP-SM, slightly silty fine SAND) are used for soils with between 5% and 12% fines or when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart.

2. Borderline symbols (symbols separated by a slash, i.e., CL/ML, silty CLAY/clayey SILT; GW/SW, sandy GRAVEL/gravelly SAND) indicated that the soil may fall into one of two possible basic groups.

JAG Development
Renton, Washington

SOIL CLASSIFICATION AND LOG KEY

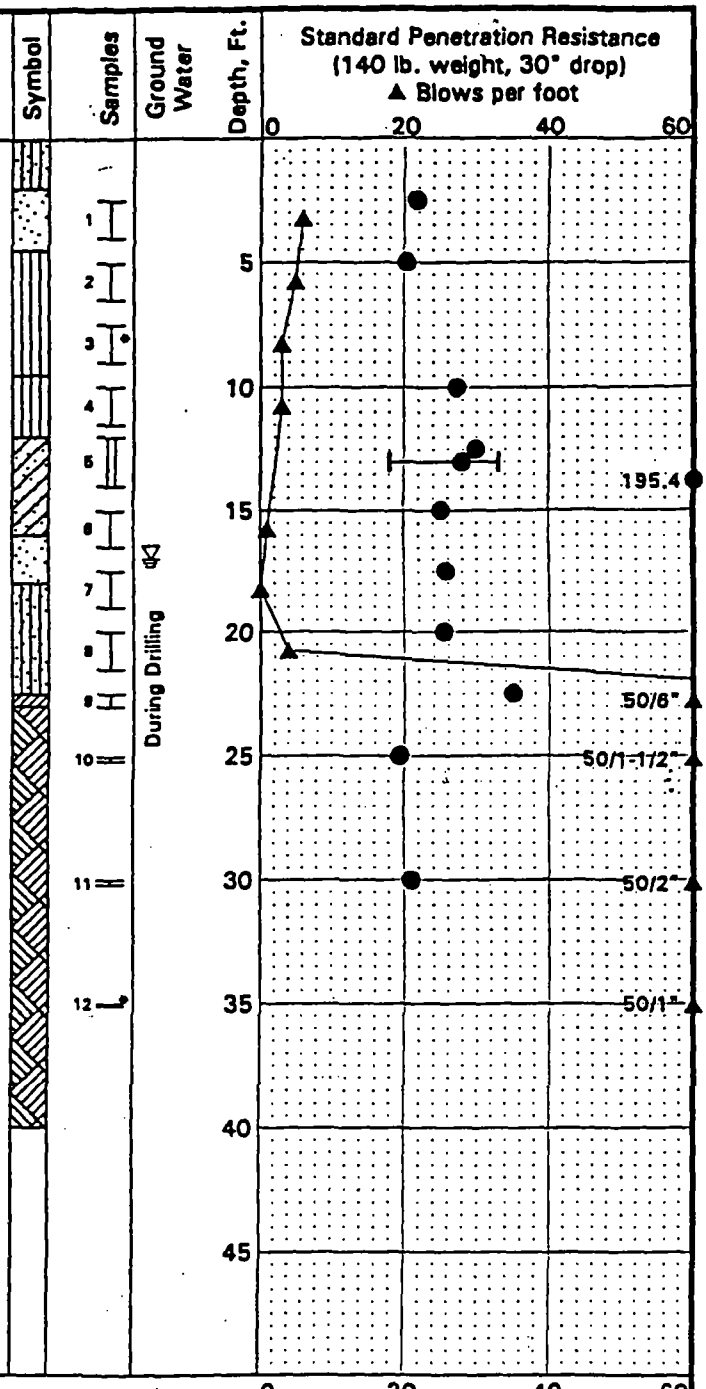
February 1997 W-7443-04

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-1
Sheet 2 of 2

MASTERLG 2/7/97

MATERIAL DESCRIPTION Surface Elevation: Approx. 21 Feet	Depth, Ft.
Brown, slightly gravelly, silty SAND; moist; (Fill) SM.	2.0
Loose, gray, silty fine SAND, trace of gravel and organics; moist; (Fill) SP.	4.5
Soft, clayey, fine sandy SILT, trace of coarse sand and gravel; moist; occasional wood fibers; (Fill) ML.	9.5
Soft, gray, clayey SILT; moist; (Fill) ML.	12.0
Very soft, gray, gravelly, silty, clayey SAND and organic SILT, trace of fine sand; wet; trace of organics (Depression Filling) SC/OH.	16.0
Very loose, gray, fine SAND; moist to wet; brown silt lens at 17.5 feet; (Fine Alluvium) SP.	18.0
Very loose to loose, gray, silty, fine to medium SAND; wet; scattered wood pieces; wood at 21.5 feet; (Coarse Alluvium) SM.	22.5
Very dense, gray, slightly fine sandy, gravelly, silty CLAY; (Till) CL.	23.0
Possible Bedrock (Andesite).	
BOTTOM OF BORING COMPLETED 12/3/96	40.0



LEGEND

- • Sample Not Recovered
- 2" O.D. Split Spoon Sample
- 3" O.D. Shelby Tube Sample
- Surface Seal
- Annular Sealant
- Piezometer Screen
- Grout
- Water Level

0 20 40 60

● % Water Content

Plastic Limit ├─●─┤ Liquid Limit

Natural Water Content

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. Refer to KEY for explanation of "Symbols" and definitions.
5. USC letter symbol based on visual classification.

JAG Development
Renton, Washington

LOG OF BORING SWB-1

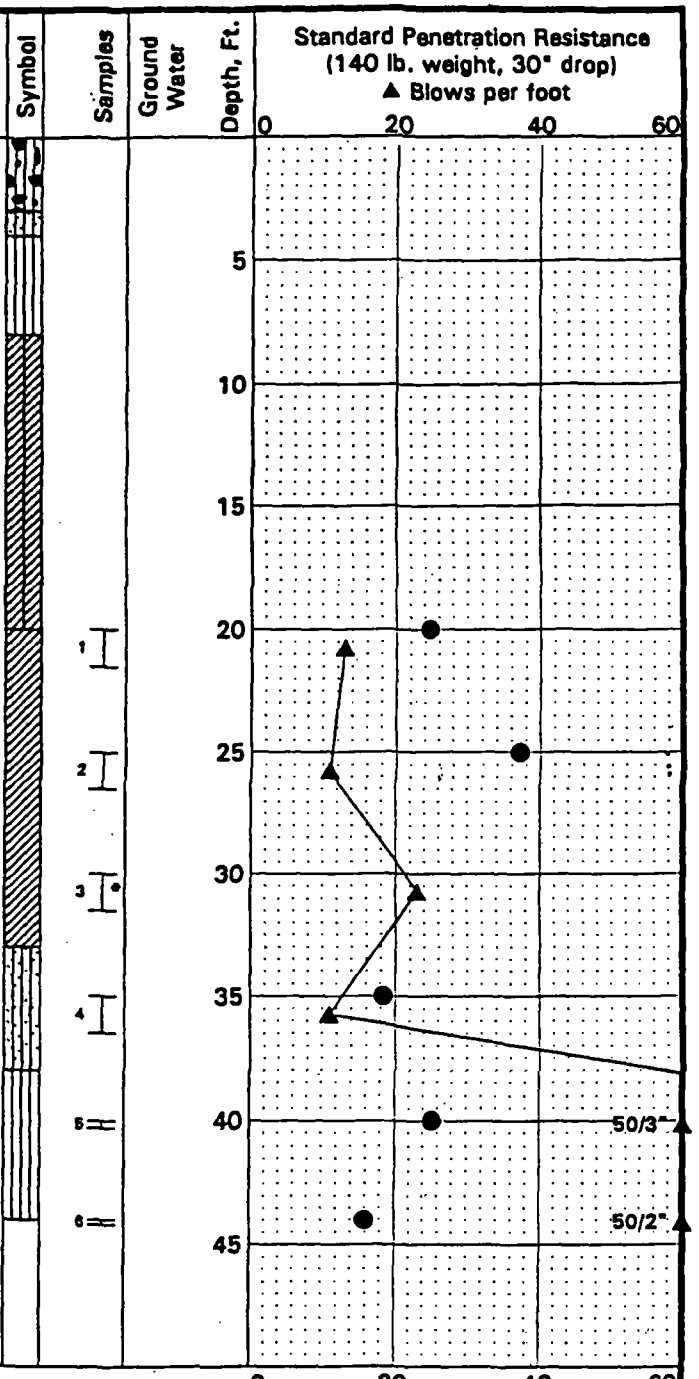
December 1996 W-7443-03

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-2

MASTERLG 2/7/97

MATERIAL DESCRIPTION Surface Elevation: Approx. 21 Feet	Depth, Ft.
Brown, silty, gravelly SAND; moist; GM.	
Brown, silty sand with wood; moist; SM.	3.0
Brown, sandy SILT; moist; ML.	4.0
Stiff, brown, clayey SILT; wet to moist; plastic; trace of sand and gravel; (Depression Filling) CL-ML.	8.0
Stiff, gray, silty CLAY and clayey SILT; moist; trace of gravel and shell fragments; very stiff below 30 feet; (Glaciomarine Drift) CL.	20.0
Medium dense, gray, slightly gravelly (subround), silty, fine to medium SAND; wet; local trace of clay; (Recessional Outwash) SM.	33.0
Very dense, gray, gravelly, clayey, fine sandy SILT; (Ice-Contact Deposit?) ML.	38.0
Possible tuffaceous SANDSTONE. .	44.0
BOTTOM OF BORING COMPLETED 12/5/96	44.2



LEGEND

- • Sample Not Recovered
- 2" O.D. Split Spoon Sample
- 3" O.D. Shelby Tube Sample
- Surface Seal
- Annular Sealant
- Piezometer Screen
- Grout
- Water Level

● % Water Content

Plastic Limit |—●—| Liquid Limit

Natural Water Content

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. Refer to KEY for explanation of "Symbols" and definitions.
5. USC letter symbol based on visual classification.

JAG Development
Renton, Washington

LOG OF BORING SWB-1A

December 1996 W-7443-03

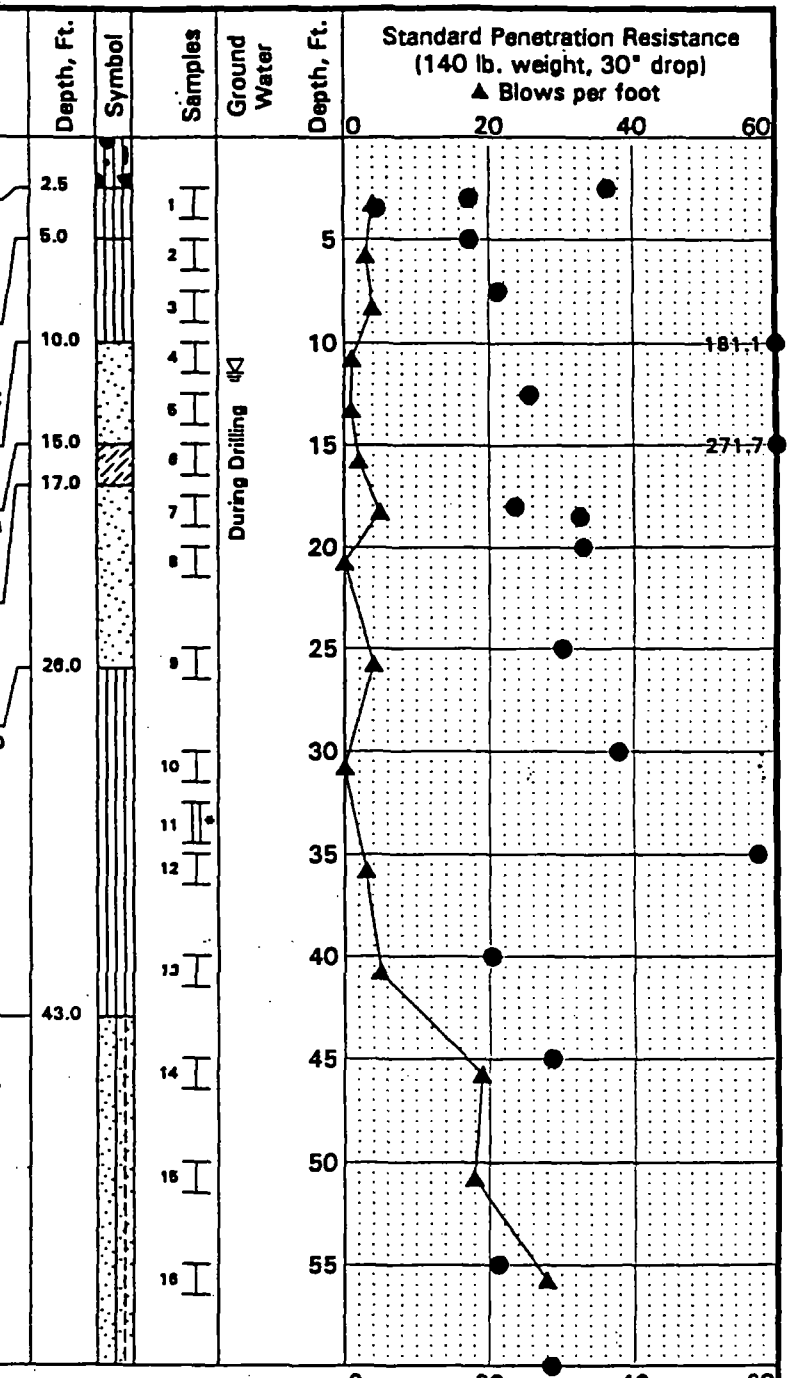
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-3
Sheet 1 of 1

MASTERLG 2/7/97

MATERIAL DESCRIPTION Surface Elevation: Approx. 22 Feet	Depth, Ft.
Brownish-gray, silty, sandy GRAVEL; moist; (Fill) GM.	2.5
Very loose, brown and gray, fine sandy SILT and fine gravelly, fine to coarse SAND; moist; scattered wood fragments; ML/SP.	5.0
Very loose, brown, sandy SILT, locally slightly clayey; moist; with scattered wood, gravel, gray, fine sand interbedded; (Fill) ML.	10.0
Very loose, black, fine to medium SAND; wet; (Medium Alluvium) SP.	15.0
Very soft, brown peaty, organic SILT with wood fibers; moist; slight organic color at 16.5 feet; (Depression Filling) OH.	17.0
Loose to very loose, gray, fine to medium SAND, trace of silt, brown, slightly clayey SILT interbeds; wet; (Medium Alluvium) SP.	26.0
Very soft to soft, brownish-gray, sandy to clayey SILT; wet; occasional wood fibers, sand interbed 33.5 to 34.5 feet; medium stiff below 40 feet; (Depression Filling) ML/CL-ML.	
Medium dense to dense, gray, fine to medium SAND, trace of silt; wet; with slightly silty to silty, fine SAND and sandy SILT interbeds at 45 and 60 feet; scattered wood fibers at 61 feet; clayey SILT interbed at 65 feet; gravelly at 68 to 69 feet; (Medium Alluvium) SP-SM.	43.0

CONTINUED NEXT PAGE



LEGEND

- • Sample Not Recovered
- 2" O.D. Split Spoon Sample
- 3" O.D. Shelby Tube Sample
- Surface Seal
- Annular Sealant
- Piezometer Screen
- Grout
- Water Level

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. Refer to KEY for explanation of "Symbols" and definitions.
5. USC letter symbol based on visual classification.

JAG Development
Renton, Washington

LOG OF BORING SWB-2

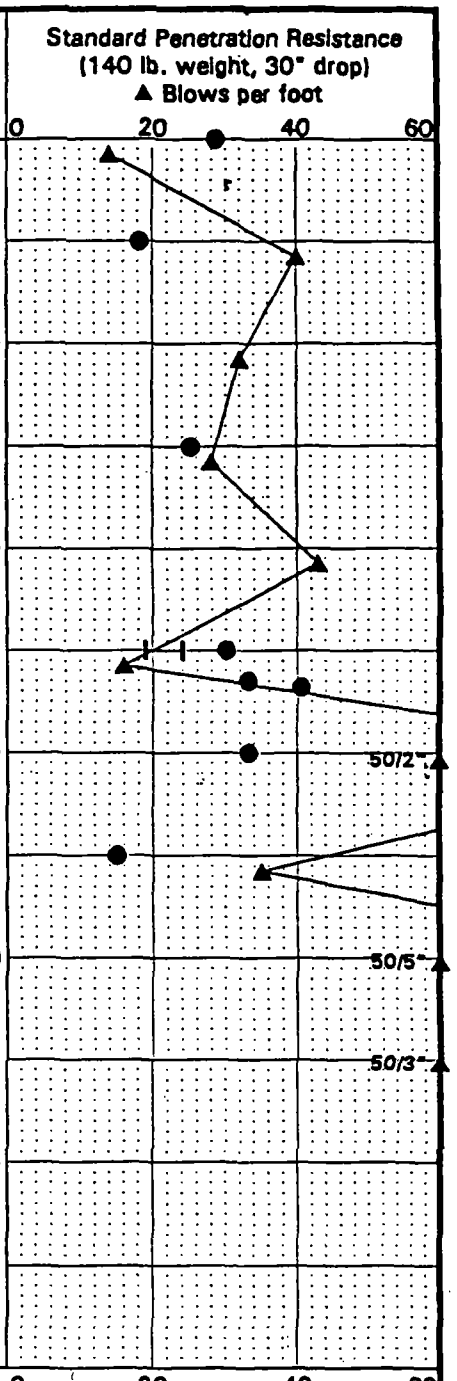
December 1996 W-7443-03

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-4
Sheet 1 of 2

MASTERLG 2/7/97

MATERIAL DESCRIPTION Surface Elevation: Approx. 22 Feet	Depth, Ft.	Symbol	Samples	Ground Water	Depth, Ft.
			17, 18, 19, 20, 21		65, 70, 75, 80
Very stiff, gray, sandy, clayey SILT and silty CLAY, trace of gravel; wet; (Lacustrine Deposit) CL-ML.	83.0		22, 23		85
Very dense to dense, greenish-gray, gravelly, silty, fine to medium SAND and hard, gray, slightly sandy, clayey SILT; wet; (Glaciomarine Drift) SM.	90.5		24, 25		90, 95
Very dense; moist; very weathered tuffaceous SANDSTONE.	98.0		26		100
BOTTOM OF BORING COMPLETED 12/4/96	105.3		27		105, 110, 115



LEGEND

- • Sample Not Recovered
- 2" O.D. Split Spoon Sample
- 3" O.D. Shelby Tube Sample
- Surface Seal
- Annular Sealant
- Piezometer Screen
- Grout
- Water Level

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. Refer to KEY for explanation of "Symbols" and definitions.
5. USC letter symbol based on visual classification.

JAG Development
Renton, Washington

LOG OF BORING SWB-2

December 1996 W-7443-03

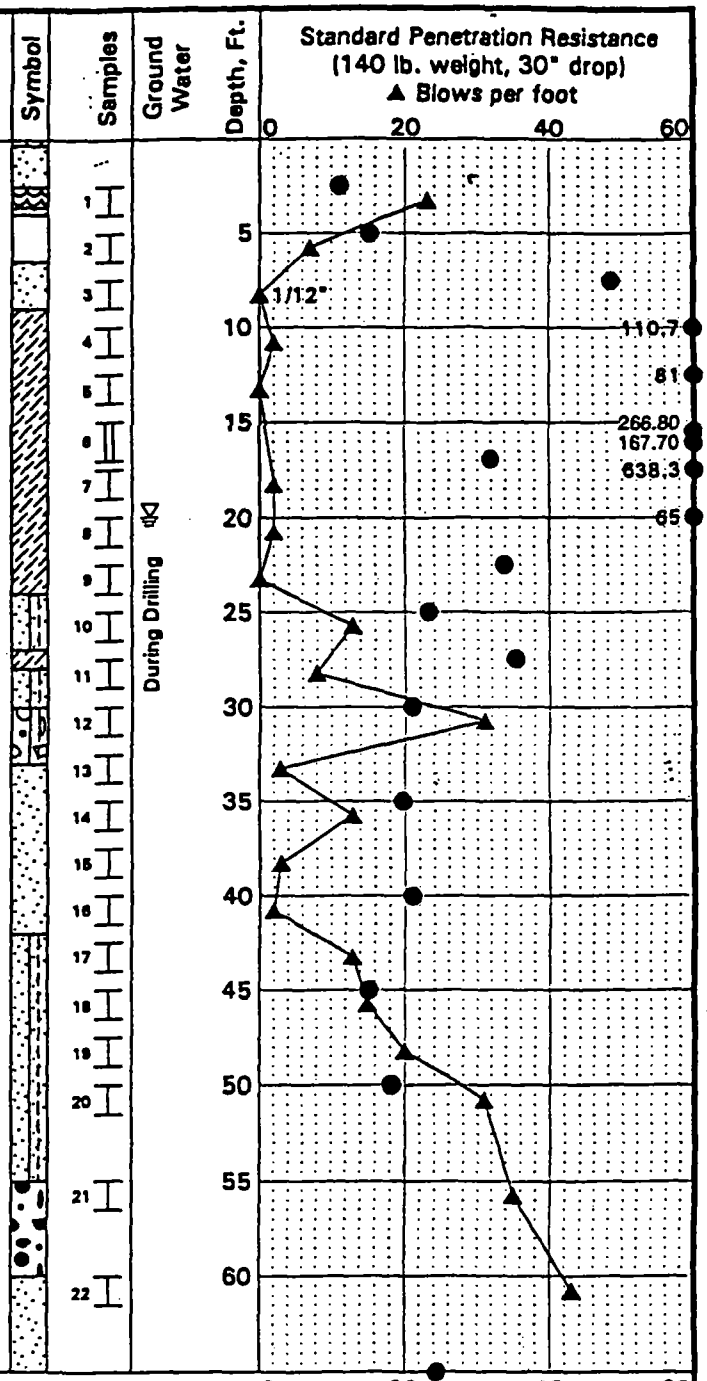
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-4
Sheet 2 of 2

MASTERLG 2/7/87

MATERIAL DESCRIPTION Surface Elevation: Approx. 27 Feet	Depth, Ft.
Wood chips; (Fill).	0.3
Dark gray SAND; moist; (Fill) SP.	2.5
Wood chips; (Fill).	3.6
Medium dense, gray, fine SAND; moist; (Fill) SP.	4.0
Loose, gray, fine to medium SAND and COAL FRAGMENTS.	6.5
Interbedded, very loose and very soft, gray, fine to medium SAND and brown, slightly clayey, peaty, organic SILT; moist; scattered roots; SP/OH.	9.0
Very soft, dark brown, slightly clayey, peaty, organic SILT; moist; scattered root hairs; untreated wood at 17.8 feet; occasional layers of loose, gray, fine to medium SAND; wet at 20 feet; (Depression Filling) OH.	24.0
Stratified, medium dense, gray, slightly silty, fine to medium SAND, trace gravel; wet; SP-SM.	27.0 28.0 30.0
Medium stiff, brown, slightly clayey, peaty, organic SILT; wet; organics; (Depression Filling) OH.	33.0
Loose, gray, slightly silty, fine to medium SAND; wet; (Depression Filling) SP-SM.	
Dense, silty, gravelly SAND; wet; (Coarse Alluvium) SM.	42.0
Stratified, very loose to medium dense, slightly silty to silty, fine to medium SAND and SILT; wet; interbedded organic and wood layers at 37 feet; (Medium Alluvium/Depression Filling) SP-SM.	
Medium dense to dense, gray, clean to slightly silty, fine to medium SAND, trace of gravel; wet; (Medium Alluvium) SP-SM.	55.0
Interbedded, dense, light brown to gray, sandy, fine, rounded GRAVEL; wet; (Coarse Alluvium) GP.	60.0

CONTINUED NEXT PAGE



LEGEND

- • Sample Not Recovered
- 2" O.D. Split Spoon Sample
- 3" O.D. Shelby Tube Sample
- Surface Seal
- Annular Sealant
- Piezometer Screen
- Grout
- Water Level

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. Refer to KEY for explanation of "Symbols" and definitions.
5. USC letter symbol based on visual classification.

JAG Development
Renton, Washington

LOG OF BORING SWB-3

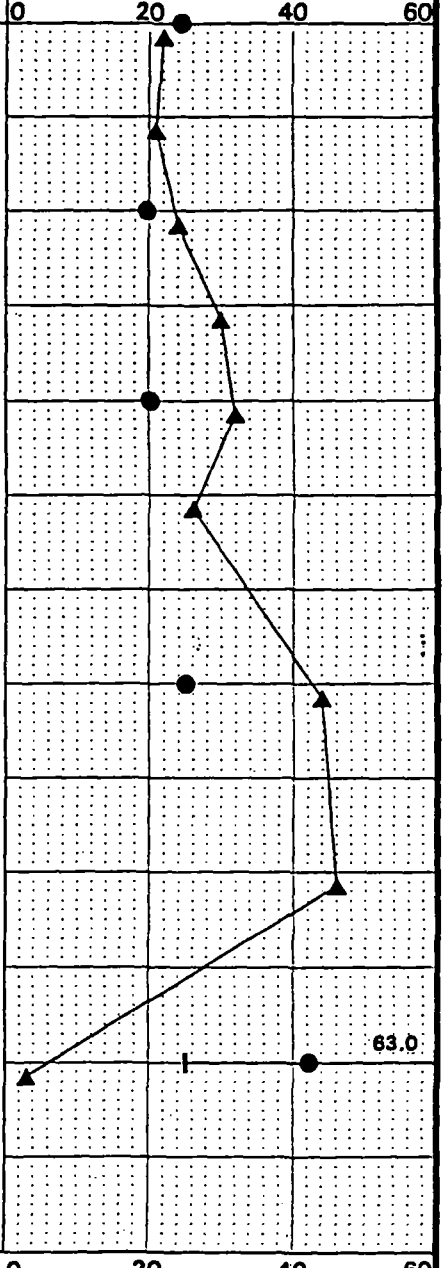
December 1996 W-7443-03

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-5
Sheet 1 of 2

MASTERLG 2/7/97

MATERIAL DESCRIPTION Surface Elevation: Approx. 27 Feet	Depth, Ft.	Symbol	Samples	Ground Water	Depth, Ft.
Medium dense to dense, brown, fine to medium SAND, trace of gravel, scattered layers of rounded fine gravel; wet; (Medium Alluvium) SP.			23, 24, 25, 26, 27, 28		70, 75, 80, 85, 90
Dense, gray, silty fine SAND, trace of fine gravel; wet; (Fine Alluvium) SM.	95.0		29, 30, 31		95, 100, 105, 110, 115, 120, 125
Very soft, gray, silty CLAY, trace sand; moist; ML.	121.0 121.5				
BOTTOM OF BORING COMPLETED 11/6/96					



LEGEND

- • Sample Not Recovered
- 2" O.D. Split Spoon Sample
- 3" O.D. Shelby Tube Sample
- Surface Seal
- Annular Sealant
- Piezometer Screen
- Grout
- Water Level

● % Water Content

Plastic Limit ├─●─┤ Liquid Limit
Natural Water Content

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. Refer to KEY for explanation of "Symbols" and definitions.
5. USC letter symbol based on visual classification.

JAG Development
Renton, Washington

LOG OF BORING SWB-3

December 1996 W-7443-03

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-5
Sheet 2 of 2

MASTERLG 2/7/97

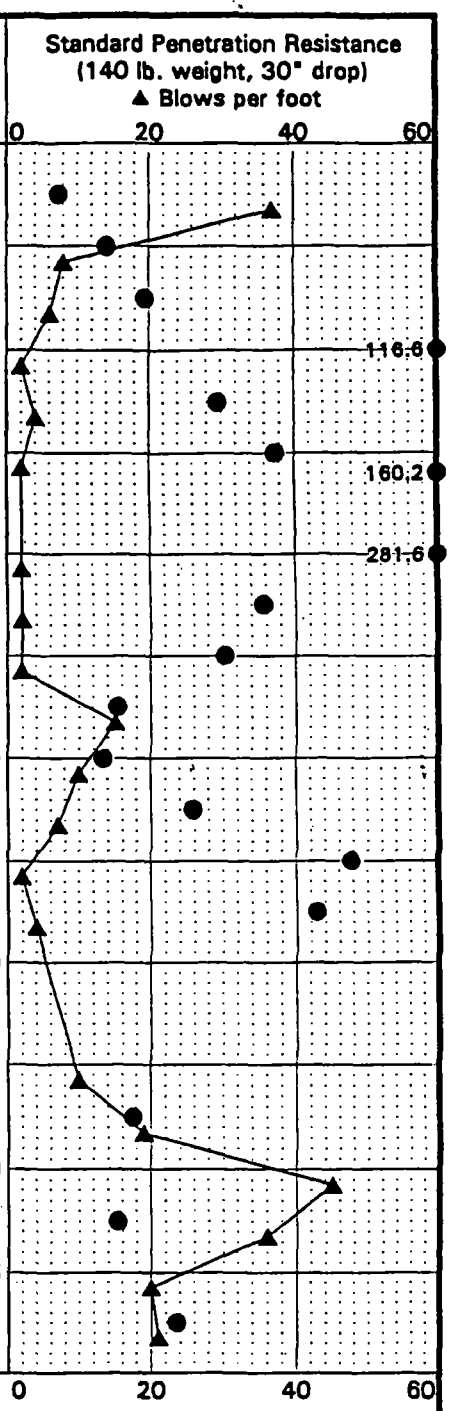
MATERIAL DESCRIPTION Surface Elevation: Approx. 25 Feet	Depth, Ft.
Gray, sandy GRAVEL; moist; (Fill) GW.	2.5
Dense, gray, gravelly, fine to medium SAND; dry; slight sheen and odor; (Fill) SP.	4.0
Loose, gray, slightly clayey, slightly silty to silty SAND; moist; scattered to numerous wood fibers; slight odor; (Fill) SP-SM.	8.5
Soft and very loose, brown, slightly clayey, sandy SILT, slightly clayey, peaty, organic SILT, and gray, fine to medium SAND; moist; numerous wood fibers; (Depression Filling/Medium Alluvium) SM/SP.	16.0
Very soft, brown, slightly clayey, peaty, organic SILT; moist; numerous wood fibers; (Depression Filling) OH.	22.0
Gray, interbedded, soft and very loose, silty CLAY and silty, fine SAND; wet; scattered organics; (Lacustrine Deposit) CL/SM.	26.5
Medium dense, gray, gravelly, fine and fine to medium SAND, trace of silt; wet; (Coarse Alluvium) SW.	32.0
Loose, gray, fine to medium SAND, trace of silt; wet; (Medium Alluvium) SP.	33.5
Very loose, brownish-gray, fine sandy SILT with fine to medium SAND lenses, trace of organic silt and fine organics; wet; (Fine Alluvium) ML/SP.	39.0
Medium dense to dense, greenish-gray, fine gravelly, fine to coarse SAND, local trace of silt; (Coarse Alluvium) SP.	42.0
Interbedded, medium dense to dense, greenish-gray, gravelly, fine to medium, fine to coarse SAND, trace of silt; wet; gravel lens at 47 to 48 feet; SP/SW.	57.0
Medium dense, gray-brown, fine to medium SAND, trace of silt, locally fine	

CONTINUED NEXT PAGE

Symbol

Samples: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21

Ground Water: During Drilling



LEGEND

- • Sample Not Recovered
- 2" O.D. Split Spoon Sample
- 3" O.D. Shelby Tube Sample
- Surface Seal
- Annular Sealant
- Piezometer Screen
- Grout
- Water Level

● % Water Content

Plastic Limit ├─●─┤ Liquid Limit
Natural Water Content

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. Refer to KEY for explanation of "Symbols" and definitions.
5. USC letter symbol based on visual classification.

JAG Development
Renton, Washington

LOG OF BORING SWB-4B

December 1996 W-7443-03

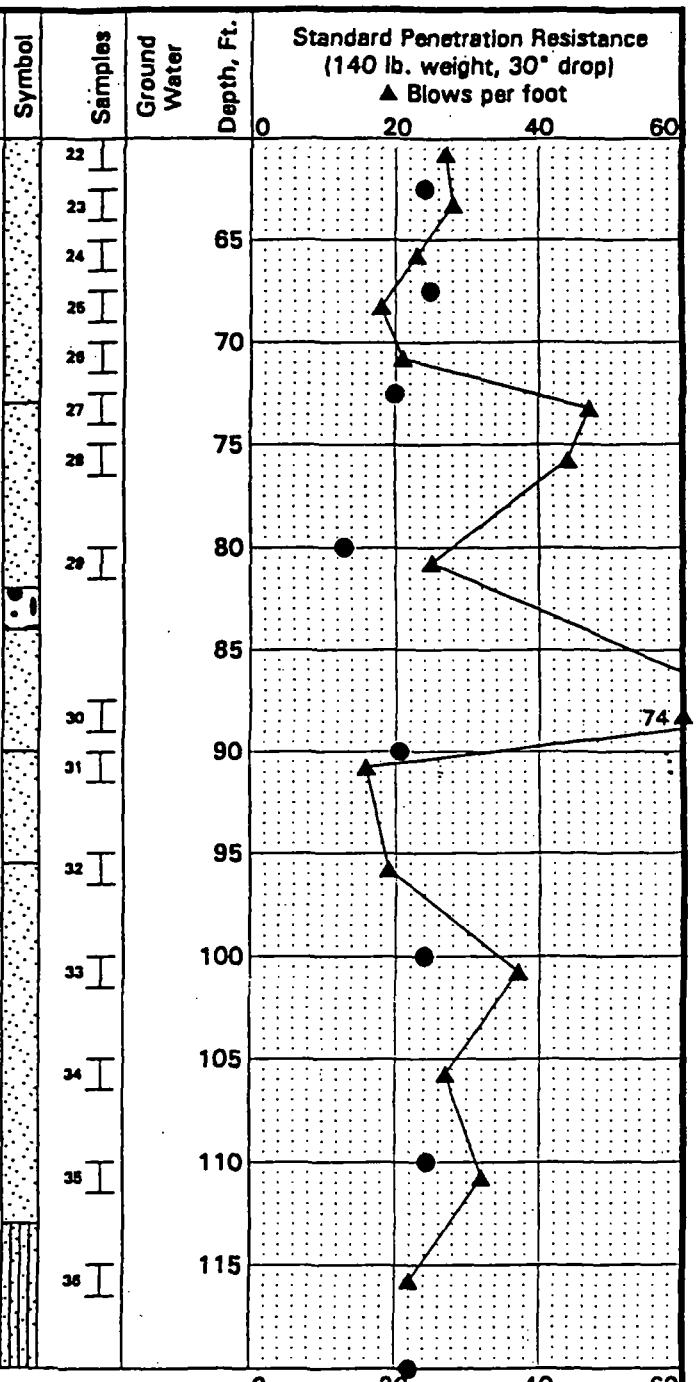
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-6
Sheet 1 of 3

MASTERLG 2/7/97

MATERIAL DESCRIPTION Surface Elevation: Approx. 25 Feet	Depth, Ft.
sand; wet; (Medium Alluvium) SP.	
Medium dense to dense, gray, gravelly, fine to coarse SAND and sandy GRAVEL, trace of silt; wet; (Coarse Alluvium) GP/SW.	73.0
Medium dense, gray, fine to medium SAND, trace of silt; wet; SP.	82.0 84.0
Very dense to medium dense, gray, fine to medium SAND, trace of silt; wet; silt lense at 88 feet and scattered trace of wood fragments; (Medium Alluvium) SP.	90.0
Medium dense to dense, gray, slightly silty to silty fine SAND, scattered organics and silt lenses; wet; (Fine Alluvium) SM.	95.5
Medium dense to dense, gray, trace to slightly silty, fine SAND; wet; scattered fine wood and organics; (Fine Alluvium) SP/SP-SM.	
Medium dense to dense, gray, slightly silty to silty, fine SAND; wet; scattered fine organics and 1/4-inch silt layers; (Fine Alluvium) SP-SM/SM.	113.0

CONTINUED NEXT PAGE



LEGEND

- • Sample Not Recovered
- 2" O.D. Split Spoon Sample
- 3" O.D. Shelby Tube Sample
- Surface Seal
- Annular Sealant
- Piezometer Screen
- Grout
- Water Level

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. Refer to KEY for explanation of "Symbols" and definitions.
5. USC letter symbol based on visual classification.

JAG Development
Renton, Washington

LOG OF BORING SWB-4B

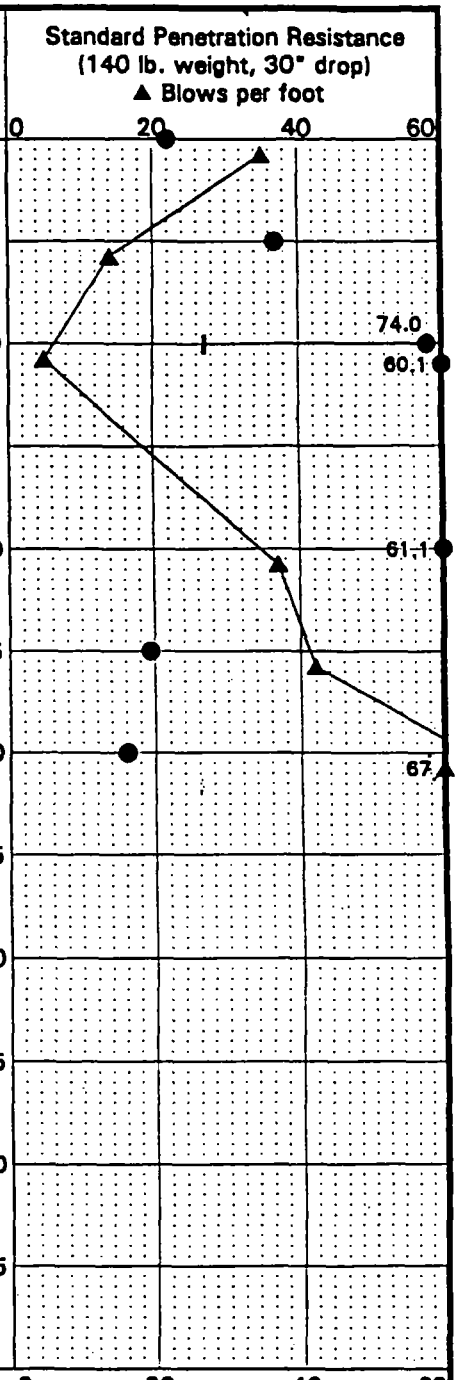
December 1996 W-7443-03

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-6
Sheet 2 of 3

MASTERLG 2/7/97

MATERIAL DESCRIPTION Surface Elevation: Approx. 25 Feet	Depth, Ft.	Symbol	Samples	Ground Water
Medium stiff to stiff, gray, silty CLAY, laminated, locally distorted and slickensided, fine sandy silt lenses locally; wet; (Lacustrine Deposit) CL.	123.0		37	
Stiff to medium stiff, gray, silty CLAY; wet; (Lacustrine Deposit) CH.	126.0		38, 39	
Dense to very dense, gray, silty fine SAND, trace of organics and gravel and silty fine sandy GRAVEL (angular and partially weathered); wet; (Landslide or Mudflow Deposit) SM/GM.	141.0		40, 41, 42	
BOTTOM OF BORING COMPLETED 11/27/96	151.5			



LEGEND

- • Sample Not Recovered
- 2" O.D. Split Spoon Sample
- 3" O.D. Shelby Tube Sample
- Surface Seal
- Annular Sealant
- Piezometer Screen
- Grout
- Water Level

● % Water Content

Plastic Limit ├─●─┤ Liquid Limit
Natural Water Content

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. Refer to KEY for explanation of "Symbols" and definitions.
5. USC letter symbol based on visual classification.

JAG Development
Renton, Washington

LOG OF BORING SWB-4B

December 1996 W-7443-03

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

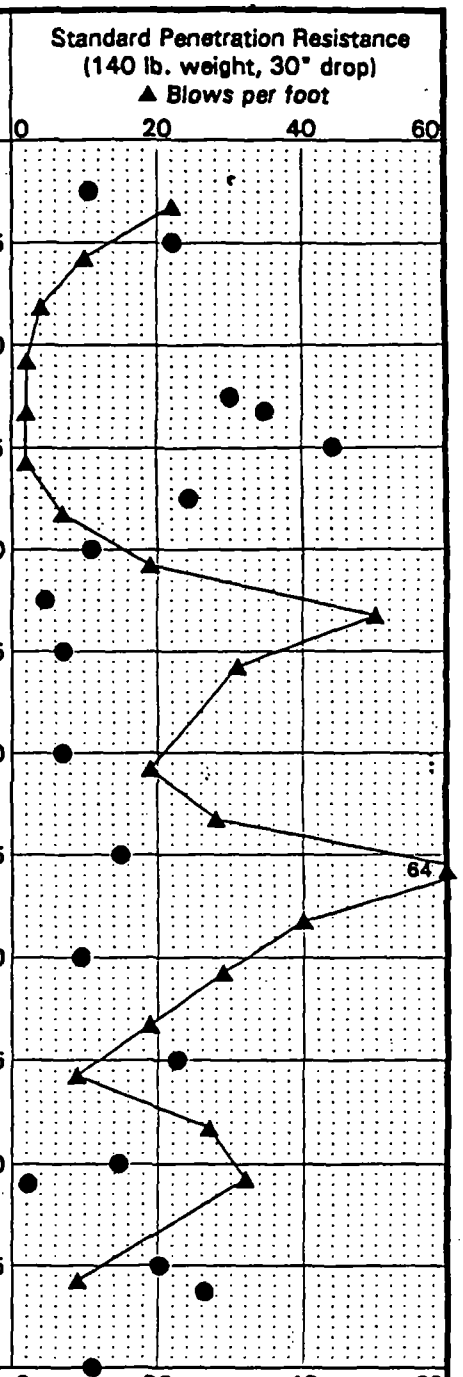
FIG. A-6
Sheet 3 of 3

MASTERLG 2/7/97

MATERIAL DESCRIPTION Surface Elevation: Approx. 25 Feet	Depth, Ft.
Asphalt and base.	0.3
Gray SAND; moist; SP.	2.5
Loose, gray, fine to medium sandy GRAVEL; moist; trace of wood fragments; (Fill) GW.	4.0
Loose, gray, silty, fine SAND; wet at 5 feet; (Fill?) SM.	7.0
Stratified, loose, gray, fine to medium SAND and very soft, brown, slightly sandy SILT and silty fine SAND; wet; (Fine Alluvium) SP/ML.	13.5
Very loose to loose, gray, slightly clayey, organic silty, fine SAND and fine sandy SILT; wet; lenses of coarse sand and clayey silt; trace of organics; (Fine Alluvium/Depression Filling) SM/ML.	20.0
Medium dense to dense, gray, trace silt to silty, sandy GRAVEL, locally gravelly sand; wet; (Coarse Alluvium) GM-GW.	34.0
Very dense to medium dense, gray, clean to silty, fine to coarse SAND grading to slightly silty to silty, sandy GRAVEL; wet; (Medium to Coarse Alluvium) SP-SM/GP-GM.	42.0
Medium dense, gray, slightly silty, sandy GRAVEL, grading to gray, silty, sandy GRAVEL; wet; layers of gray, fine to medium sand; (Medium to Coarse Alluvium) GP-GM.	52.0
Loose, brown, fine to medium SAND, trace of gravel, grading to silty SAND; wet to moist; lenses of gray, slightly clayey silt and gray, slightly clayey, sandy silt; (Medium Alluvium) SP-SM/ML.	56.0

CONTINUED NEXT PAGE

Symbol | Samples | Ground Water: During Drilling | Depth, Ft.



LEGEND

- • Sample Not Recovered
- 2" O.D. Split Spoon Sample
- 3" O.D. Shelby Tube Sample
- Surface Seal
- Annular Sealant
- Piezometer Screen
- Grout
- Water Level

● % Water Content

Plastic Limit |—●—| Liquid Limit
Natural Water Content

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. Refer to KEY for explanation of "Symbols" and definitions.
5. USC letter symbol based on visual classification.

JAG Development
Renton, Washington

LOG OF BORING SWB-7

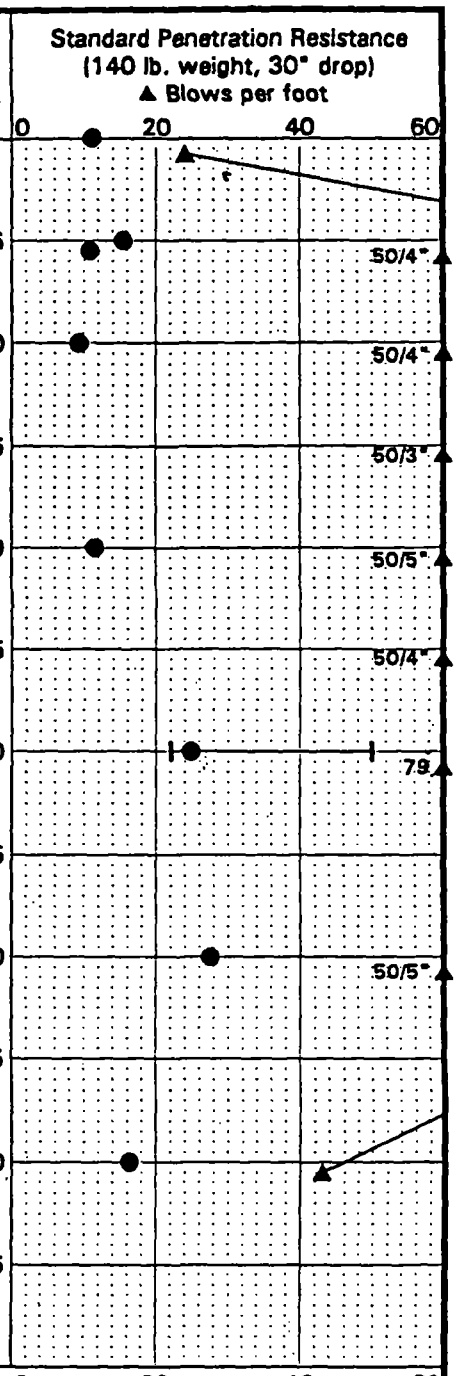
December 1996 W-7443-03

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-7
Sheet 1 of 2

MASTERLG 2/7/97

MATERIAL DESCRIPTION Surface Elevation: Approx. 25 Feet	Depth, Ft.	Symbol	Samples	Ground Water
Gray, slightly clayey, sandy SILT; wet; (Lacustrine Deposit) ML.	60.0		23	
Medium dense to dense, gray, slightly silty to silty, fine to coarse SAND, trace of gravel; moist; (Ablation Till) SP-SM.	63.0		24	
Very dense, slightly silty, coarse SAND, trace of gravel; wet; (Till) SP-SM.	68.0		25	
Very dense, silty, fine SAND, trace of gravel; moist; increasing gravel at 85 feet; (Till) SP-SM.			26 27 28	
Hard, gray, silty CLAY; moist; locally laminated (Glaciolacustrine Deposit)) CL-CH.	89.0		29 30	
Very dense, silty, sandy GRAVEL grading to slightly silty, sandy GRAVEL; wet; fractured rock at 110.5 feet; wood at 111 feet; artesian conditions at 110 feet; (Ice-Contact Deposit) GP-GM.	106.0 111.0		31	
BOTTOM OF BORING COMPLETED 11/20/96				



LEGEND

- • Sample Not Recovered
- 2" O.D. Split Spoon Sample
- 3" O.D. Shelby Tube Sample
- Surface Seal
- Annular Sealant
- Piezometer Screen
- Grout
- Water Level

● % Water Content

Plastic Limit ├─●─┤ Liquid Limit
Natural Water Content

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. Refer to KEY for explanation of "Symbols" and definitions.
5. USC letter symbol based on visual classification.

JAG Development
Renton, Washington

LOG OF BORING SWB-7

December 1996 W-7443-03

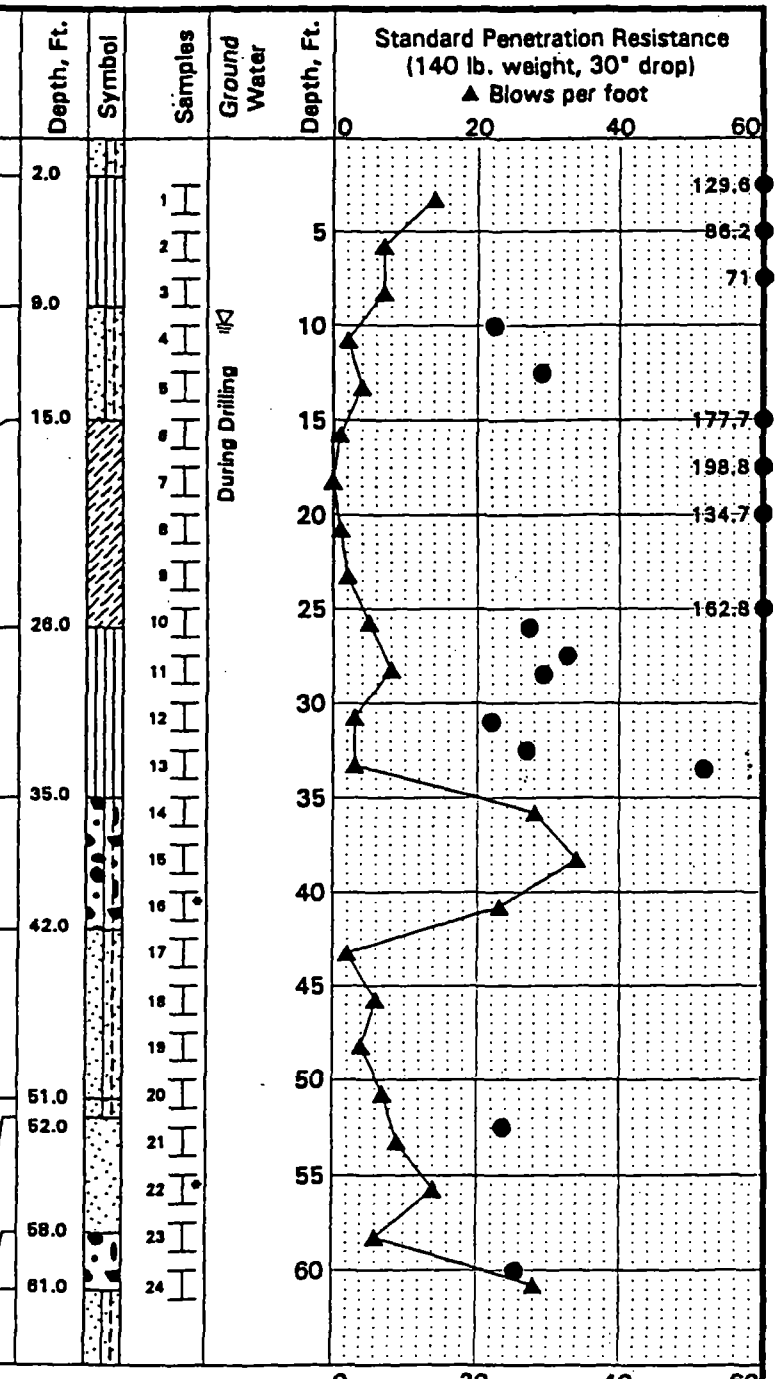
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-7
Sheet 2 of 2

MASTERLG 2/7/97

MATERIAL DESCRIPTION Surface Elevation: Approx. 25 Feet	Depth, Ft.
Brown, slightly silty SAND; moist; SP-SM.	2.0
Medium stiff, light gray, slightly sandy, gravelly, clayey SILT; moist; chalky odor; (Fill - Kiln Dust?) ML.	9.0
Very loose to loose, gray, slightly silty, fine to medium SAND; wet at 10 feet; lenses and pieces of slightly silty, clayey silt; wood fiber at 12.5 feet; (Fill?) SP-SM.	15.0
Very soft, brown, slightly clayey, peaty, organic SILT, lenses of gray, fine to medium SAND and fine sandy silt; wet; (Depression Filling) OH.	26.0
Interbedded, soft to medium stiff, gray, clayey, and fine sandy SILT and loose to very loose, gray, slightly silty, fine to medium SAND; wet; (Depression Filling/Medium Alluvium) ML/SM.	35.0
Medium dense to dense, gray, slightly silty, sandy, fine to coarse GRAVEL; wet; creosote odor; cobbles at 39 feet; (Coarse Alluvium) GP-GM.	42.0
Very loose, gray, clean to slightly silty, fine to medium SAND; wet; slightly gravelly at 45 feet; faint creosote odor; oxidized soil at 47.5 feet; (Medium Alluvium) SP-SM.	51.0
Loose, slightly clayey, silty, fine SAND; oxidized; no creosote odor; (Fine Alluvium) SP-SM.	52.0
Loose to medium dense, gray, fine to medium SAND, trace silt; wet; (Medium Alluvium) SP.	58.0
Loose to medium dense, gray, sandy, fine to coarse GRAVEL; wet; (Coarse Alluvium)	61.0

CONTINUED NEXT PAGE



LEGEND

- • Sample Not Recovered
- 2" O.D. Split Spoon Sample
- 3" O.D. Shelby Tube Sample
- Surface Seal
- Annular Sealant
- Piezometer Screen
- Grout
- Water Level

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. Refer to KEY for explanation of "Symbols" and definitions.
5. USC letter symbol based on visual classification.

JAG Development
Renton, Washington

LOG OF BORING SWB-8

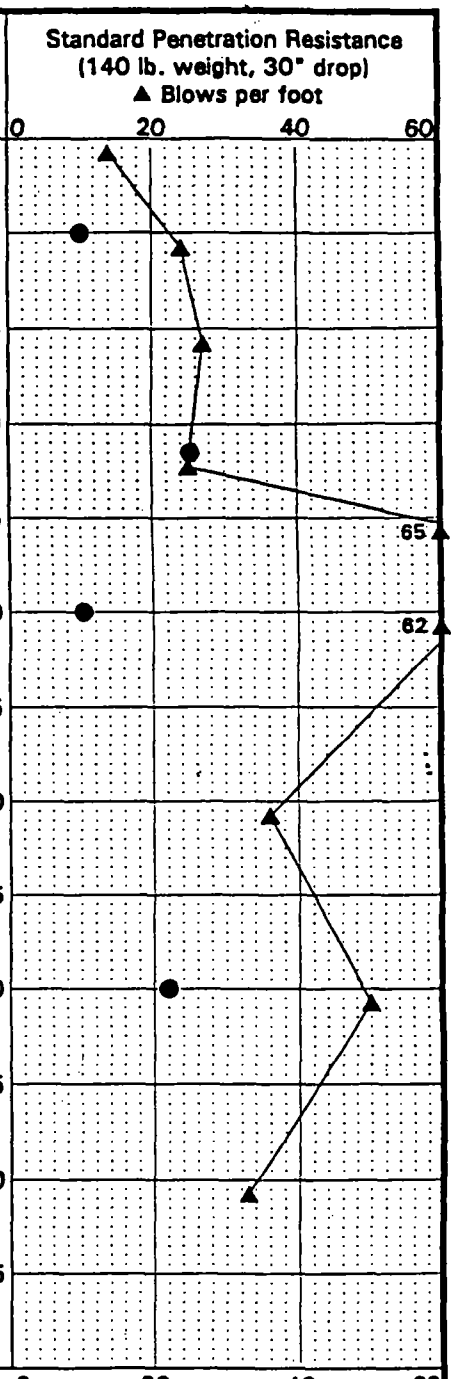
December 1996 W-7443-03

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-8
Sheet 1 of 2

MASTERLG 2/7/97

MATERIAL DESCRIPTION Surface Elevation: Approx. 25 Feet	Depth, Ft.	Symbol	Samples	Ground Water	Depth, Ft.
GP. Stratified, medium dense, gray and brown, trace of silt to silty, fine to medium SAND and silty, sandy GRAVEL; wet; (Medium and Coarse Alluvium) SP-SM/GM.			25, 26, 27, 28		70, 75, 80
Stratified, very dense to dense, gray, gravelly, fine to medium SAND, trace of silt, and gray, sandy GRAVEL; wet; (Coarse Alluvium) SP/GP.	83.0		29, 30		85, 90, 95
Dense, gray, fine to medium SAND; wet; (Medium Alluvium) SP.	101.0		31, 32		100, 105, 110, 115
BOTTOM OF BORING COMPLETED 11/15/96	121.5		33		120, 125



LEGEND

- • Sample Not Recovered
- 2" O.D. Split Spoon Sample
- 3" O.D. Shelby Tube Sample
- Surface Seal
- Annular Sealant
- Piezometer Screen
- Grout
- Water Level

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. Refer to KEY for explanation of "Symbols" and definitions.
5. USC letter symbol based on visual classification.

JAG Development
Renton, Washington

LOG OF BORING SWB-8

December 1996 W-7443-03

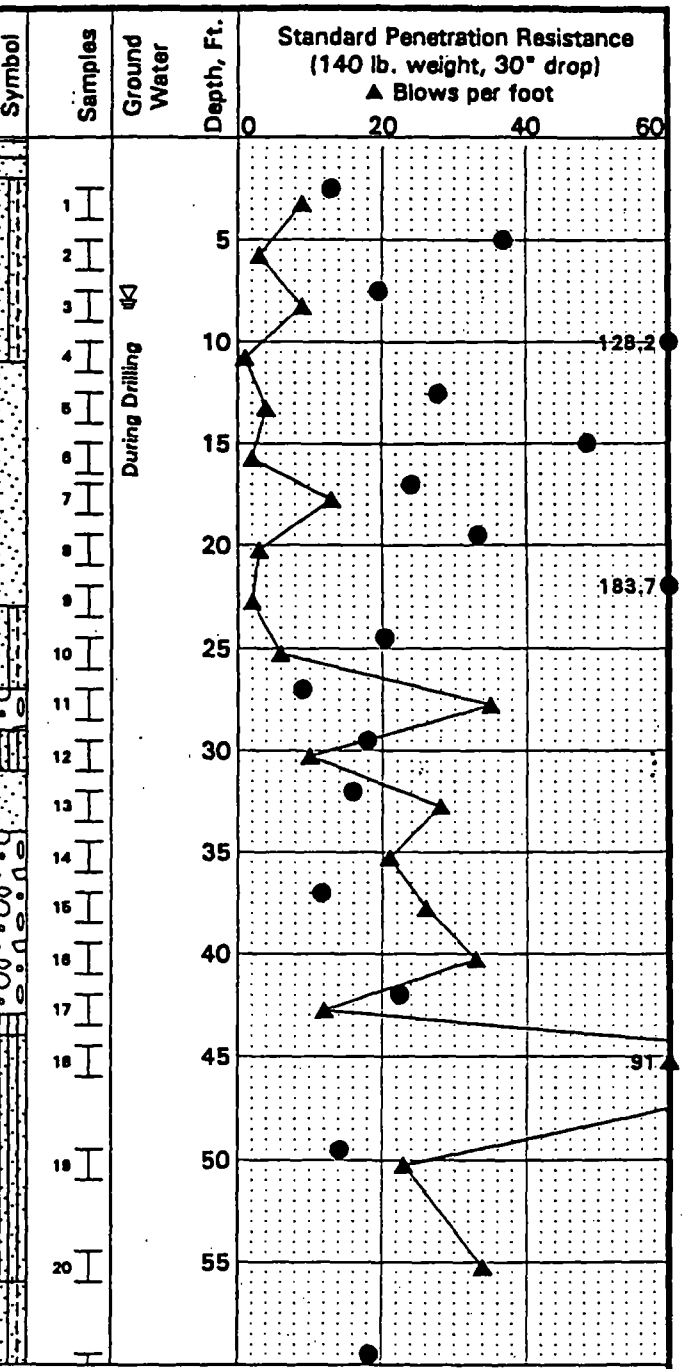
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-8
Sheet 2 of 2

MASTERLG 2/7/97

MATERIAL DESCRIPTION Surface Elevation: Approx. 22 Feet	Depth, Ft.
Asphalt and base.	0.2
Dark brown SAND; moist; SP.	1.0
Gray SAND and GRAVEL; moist; SP/GP.	2.0
Very loose to loose, gray, slightly silty, gravelly SAND; moist; wet at 8 feet; scattered wood pieces; organics soils and silt chunks; locally trace of clay; (Fill) SP-SM/GP.	11.0
Interbedded, loose to medium dense, gray, fine to medium SAND and brown, slightly sandy, peaty, organic SILT; wet; lenses of wood fibers and peat; gravels noted at 17.5 feet; (Medium Alluvium/Depression Filling) SP/OH.	23.0
Loose, gray, silty, fine to medium SAND; wet; organic lenses and partings; (Medium Alluvium) SP-SM/ML.	27.0
Dense, gray, sandy, fine GRAVEL; wet; angular to subrounded; (Coarse Alluvium) GW.	29.0 31.0
Medium dense, gray, slightly gravelly, slightly clayey, silty SAND; wet; organics; (Fine Alluvium) SM.	34.0
Medium dense, gray, fine to medium SAND, trace of gravel; wet; (Medium Alluvium) SP.	
Medium dense to dense, gray, sandy, fine to coarse GRAVEL, local trace of; silt; wet; mud bubbling at 37 feet; (Coarse Alluvium) GW.	43.0 44.0
Stiff, brown, slightly clayey SILT; wet; (Lacustrine Deposit) ML.	
Very dense to medium dense, gray, slightly clayey, trace to gravelly, silty SAND; moist; (Ice-Contact Deposits/Ablation Till) SM.	56.0
Dense to very dense, gray, slightly silty to silty, fine to medium SAND; wet; gravelly	

CONTINUED NEXT PAGE



LEGEND

- • Sample Not Recovered
- 2" O.D. Split Spoon Sample
- 3" O.D. Shelby Tube Sample
- Surface Seal
- Annular Sealant
- Piezometer Screen
- Grout
- Water Level

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. Refer to KEY for explanation of "Symbols" and definitions.
5. USC letter symbol based on visual classification.

JAG Development
Renton, Washington

LOG OF BORING SWB-10

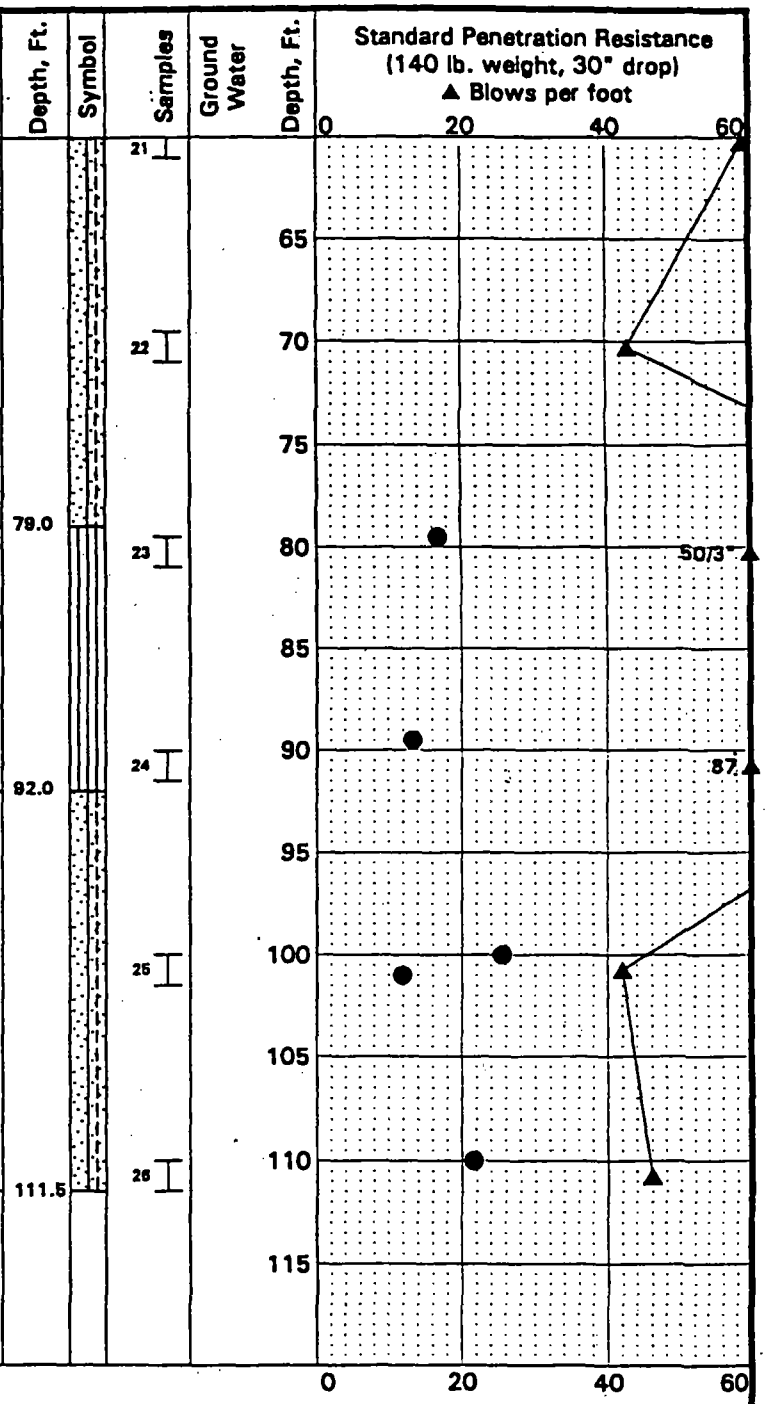
December 1996 W-7443-03

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-9
Sheet 1 of 2

MASTERLG 2/7/97

MATERIAL DESCRIPTION Surface Elevation: Approx. 22 Feet	Depth, Ft.
at 64 to 66 feet, 75 to 77 feet, and 79 feet; (Glacial Outwash) SP-SM.	
Very dense, gray, fine sandy SILT; moist; scattered layers of gravel; artesian conditions at 85 feet; (Till) ML.	79.0
Dense, gray, slightly silty, fine to medium SAND; moist; layer of silt with trace of gravel; gravel at 97 feet; strong artesian conditions at 111 feet; (Glacial Outwash) SP-SM.	92.0
BOTTOM OF BORING COMPLETED 11/11/96	111.5



LEGEND

- • Sample Not Recovered
- 2" O.D. Split Spoon Sample
- 3" O.D. Shelby Tube Sample
- Surface Seal
- Annular Sealant
- Piezometer Screen
- Grout
- Water Level

● % Water Content

Plastic Limit ├─●─┤ Liquid Limit
Natural Water Content

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. Refer to KEY for explanation of "Symbols" and definitions.
5. USC letter symbol based on visual classification.

JAG Development
Renton, Washington

LOG OF BORING SWB-10

December 1996 W-7443-03

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-9
Sheet 2 of 2

B

APPENDIX B

LABORATORY TESTING

APPENDIX B

LABORATORY TESTING

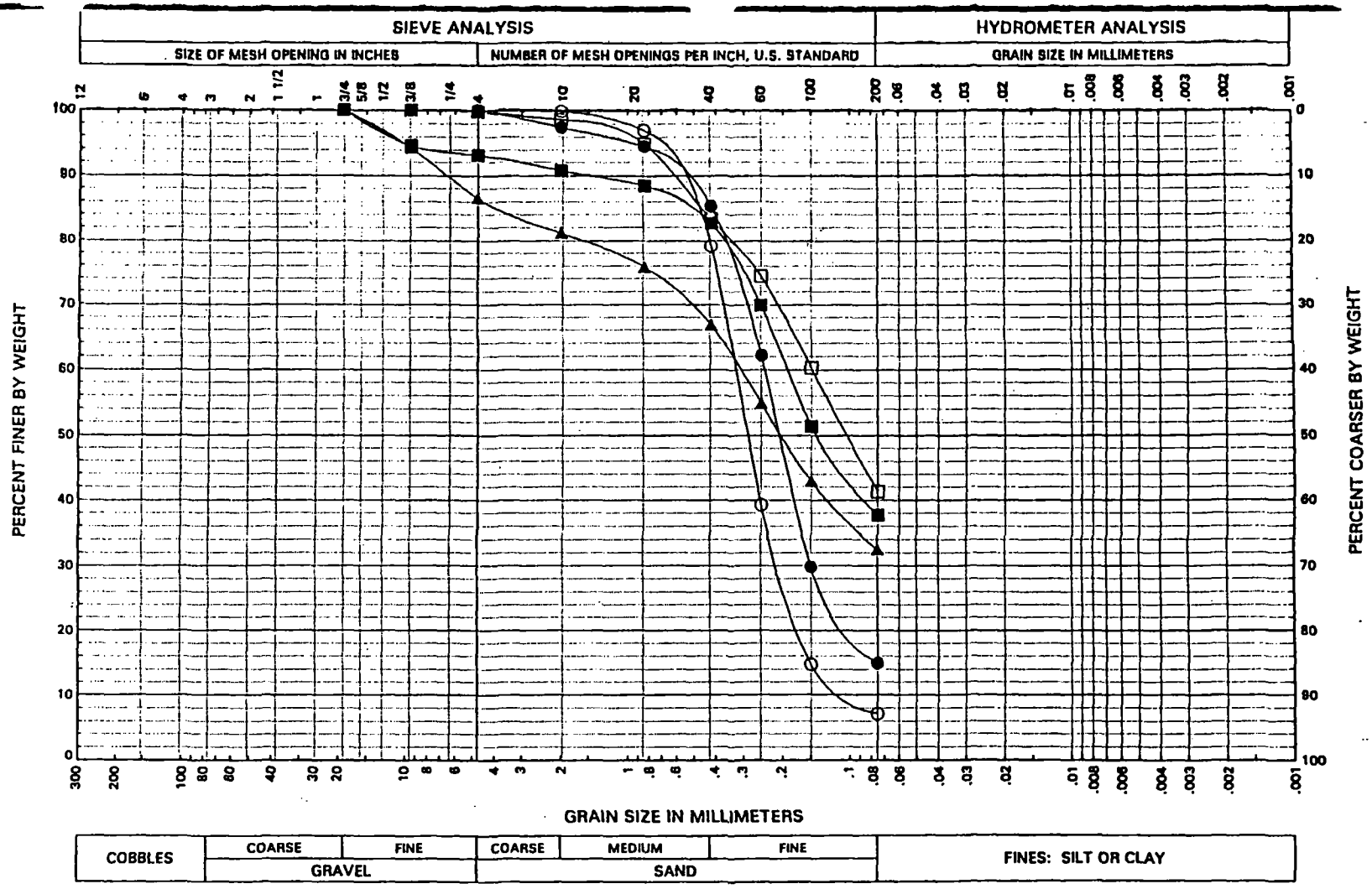
LIST OF FIGURES

Figure No.	
B-1	Grain Size Distribution
B-2	Grain Size Distribution
B-3	Plasticity Chart
B-4	One-Dimensional Consolidation Test

APPENDIX B

LABORATORY TESTING

Selected samples retrieved from the site explorations were returned to Shannon & Wilson's laboratory for limited geotechnical testing to determine index properties and consolidation characteristics of the underlying soils. Index property testing conducted on the samples includes water content determinations, grain size distributions, and Atterberg limit determinations. Laboratory testing was also conducted on a sample of the organic (peaty) silts which were encountered in the depression fillings at the site. This consolidation test provides information on the settlement potential of the underlying soils to applied surface loads, such as aerial fills. Results of the water content determinations are presented on the individual borings logs that are presented in Appendix A. The results from the grain size distribution analyses are presented in Figures B-1 and B-2 and results from the Atterberg limits determinations are presented in Figure B-3. The results from the consolidation tests are presented in Figure B-4.



BORING AND SAMPLE NO.	DEPTH, FT.	U.S.C.	CLASSIFICATION	% FINES	NAT. W.C. %	LL	PL	PI
● B-1, S-7	17.5	SM	Gray, silty SAND.	14.9	25.7			
■ B-10, S-12	29.5	SM	Gray, slightly gravelly, slightly clayey, silty SAND.	37.7	17.9			
▲ B-10, S-19	49.5	SM	Gray, slightly clayey, gravelly, silty SAND.	32.4	14.1			
□ B-2, S-17	60.0	SM	Gray, silty SAND.	41.2	28.6			
○ B-2, S-20	75.0	SP-SM	Gray, slightly silty SAND.	7.1	25.2			

JAG Development
Renton, Washington

GRAIN SIZE DISTRIBUTION

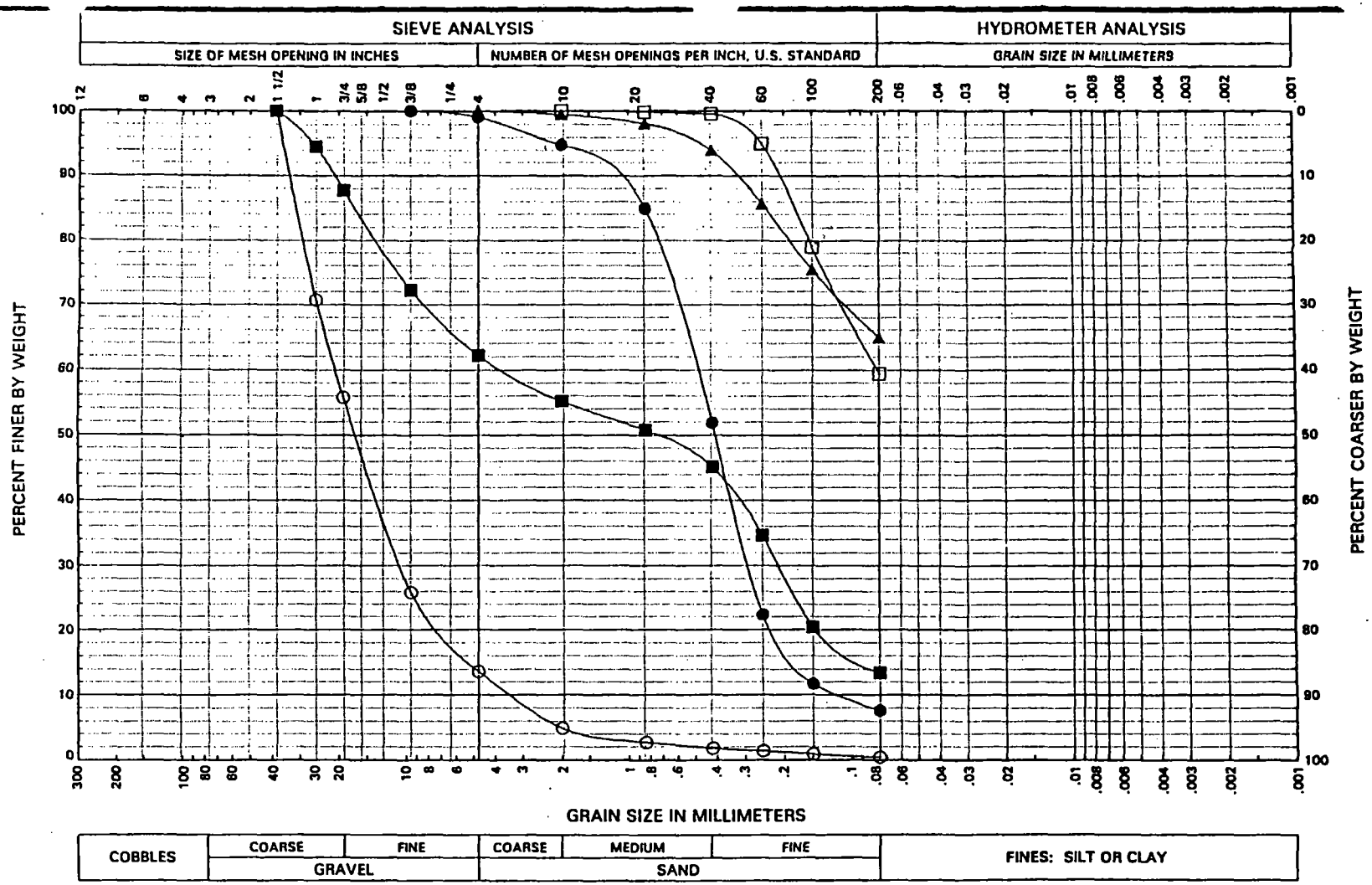
January 1997 W-7443-03

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. B-1

FIG. B-1

RAIN 2/6/97



BORING AND SAMPLE NO.	DEPTH, FT.	U.S.C.	CLASSIFICATION	% FINES	NAT. W.C. %	LL	PL	PI
● B-3, S-10	25.0	SP-SM	Gray, slightly silty SAND; trace of gravel.	7.6	23.2			
■ B-3, S-12	30.0	SM	Gray, silty, gravelly SAND.	13.4	20.9			
▲ B-4B, S-14	35.0	ML	Gray-brown, sandy SILT; numerous organics.	64.8	47.7			
□ B-7, S-7	17.5	ML	Gray, sandy SILT.	59.4	24.3			
○ B-7, S-9	22.5	GW	Dark gray, sandy GRAVEL; trace of silt.	0.4	4.6			

JAG Development
Renton, Washington

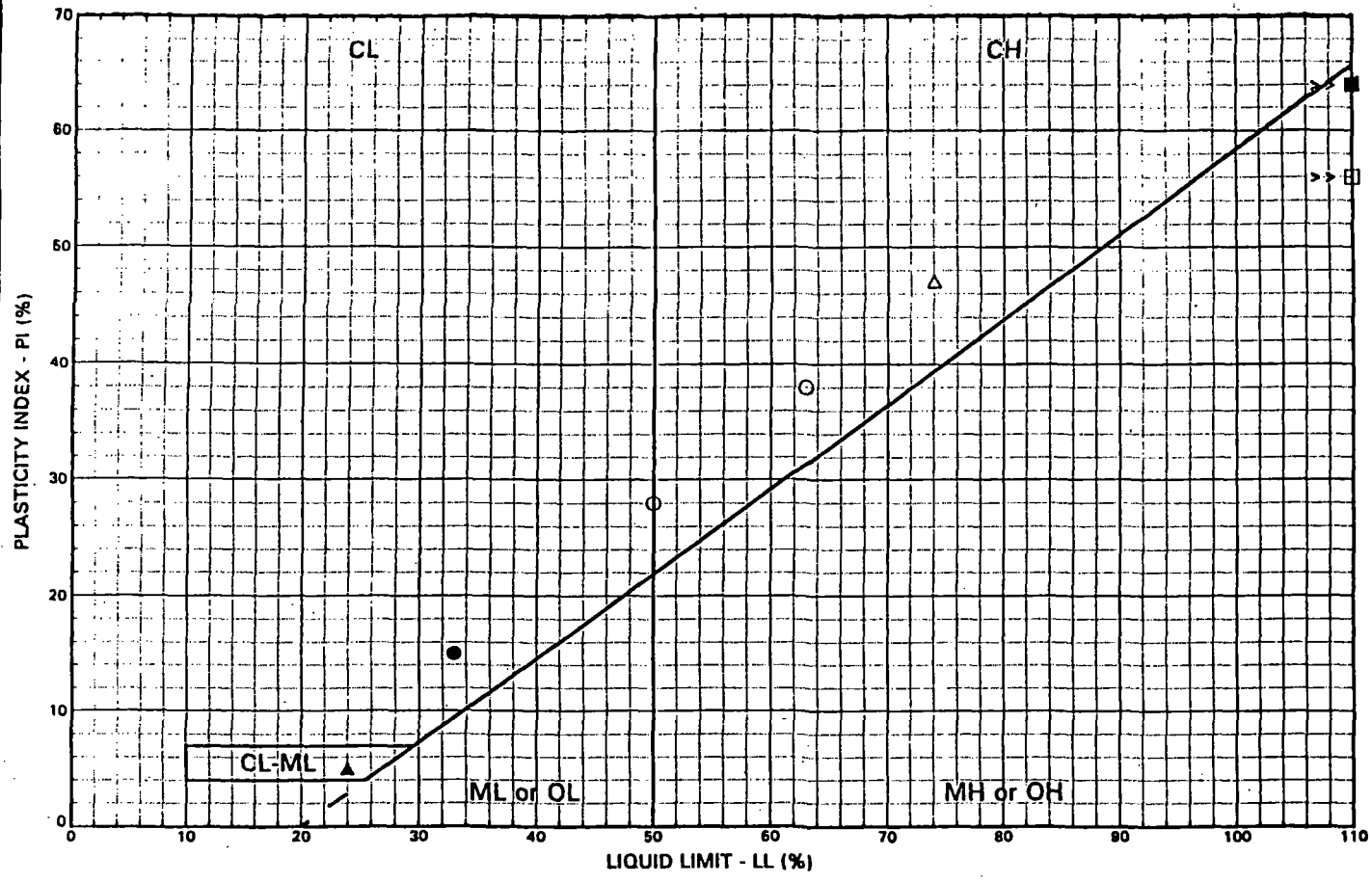
GRAIN SIZE DISTRIBUTION

January 1997 W-7443-03

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. B-2

FIG. B-2



LEGEND

CL: Low plasticity inorganic clays; sandy and silty clays

CH: High plasticity inorganic clays

ML or OL: Inorganic and organic silts and clayey silts of low plasticity

MH or OH: Inorganic and organic silts and clayey silts of high plasticity

CL-ML: Silty clays and clayey silts

BORING AND SAMPLE NO.	DEPTH, FT.	U.S.C.	CLASSIFICATION	LL, %	PL, %	PI, %	NAT. W.C. %	PASS. #200, %
● B-1, S-5	13.0	SC	Gray, gravelly, silty, clayey SAND.	33	18	15	27.9	
■ B-1, S-5	13.8	OH	Dark brown, organic SILT.	188	124	64	195.4	
▲ B-2, S-22	85.0	CL-ML	Gray, sandy, silty CLAY and clayey SILT.	24	19	5	30.1	
□ B-3, S-6	16.1	OH	Dark brown, organic SILT.	172	116	56	167.7	
○ B-3, S-31	120.0	CH	Gray, silty CLAY; trace of sand.	63	25	38	42.2	
△ B-4B, S-39	130.0	CH	Gray, silty CLAY.	74	27	47	57.9	
○ B-7, S-29	90.0	CL-CH	Gray, silty CLAY.	50	22	28	24.8	

JAG Development
Renton, Washington

PLASTICITY CHART

January 1997 W-7443-03

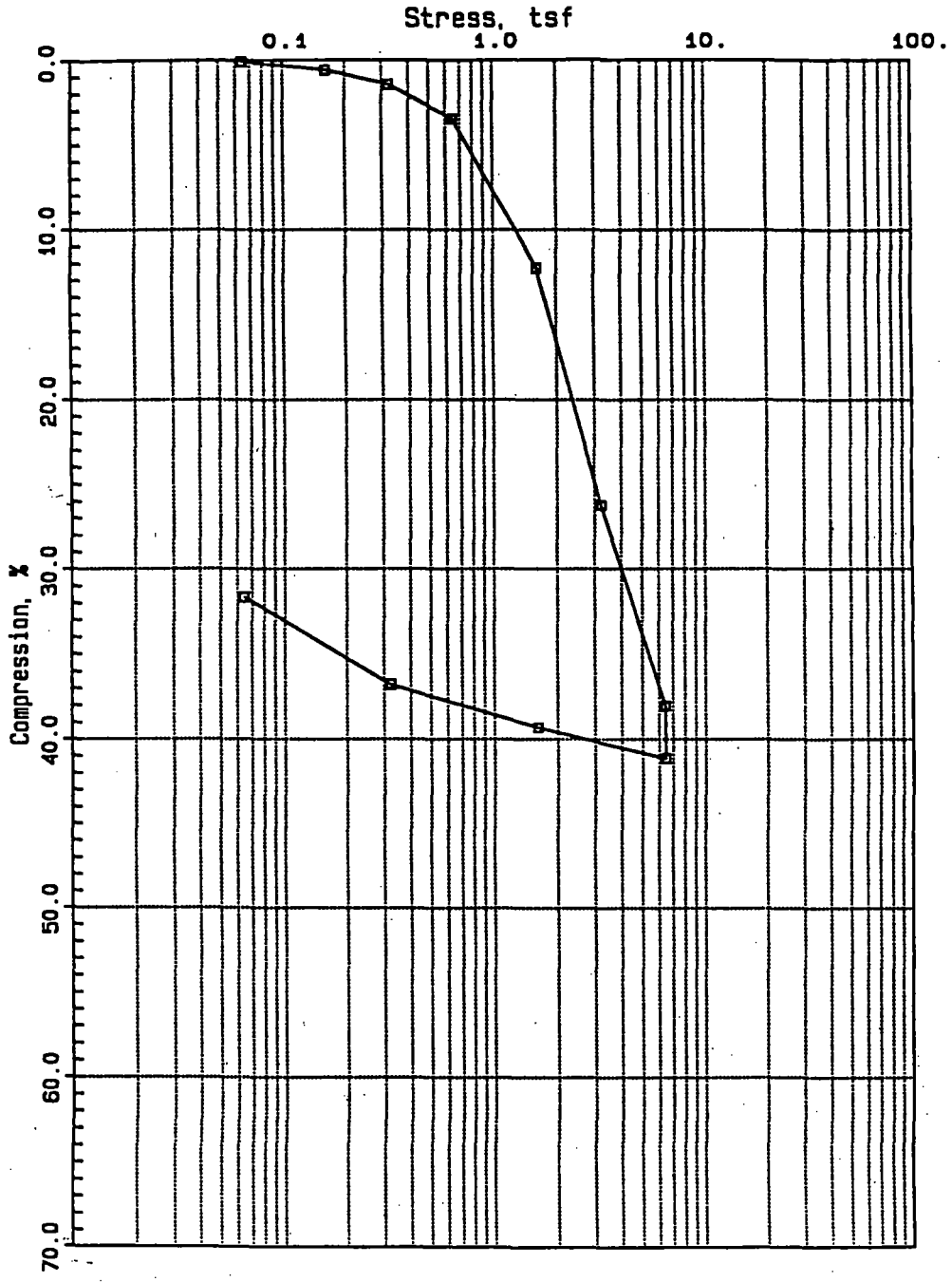
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. B-3

FIG. B-3

ONE DIMENSIONAL CONSOLIDATION (ASTM D2435-80) TEST NO. C-1

Boring B-3
Sample S-6
Depth, ft 15.6-15.9



W-7443-03 Shannon & Wilson, Inc. Geotechnical Consultants	JAG Development Renton, Washington	January 1997 FIG. B-4

HART CROWSER
1995

HART CROWSER 1995

Boring Logs

HC-1 to HC-8

Well Logs

BH-28

Test Pit Logs

TP-1 to TP-9

Boring Log HC-1

Soil Descriptions

Ground Surface Elevation in Feet: 22.85

Very dense, moist, dark brown, slightly silty, gravelly SAND with chemical-like odor.

Stiff, moist, gray-brown, slightly gravelly, sandy SILT.

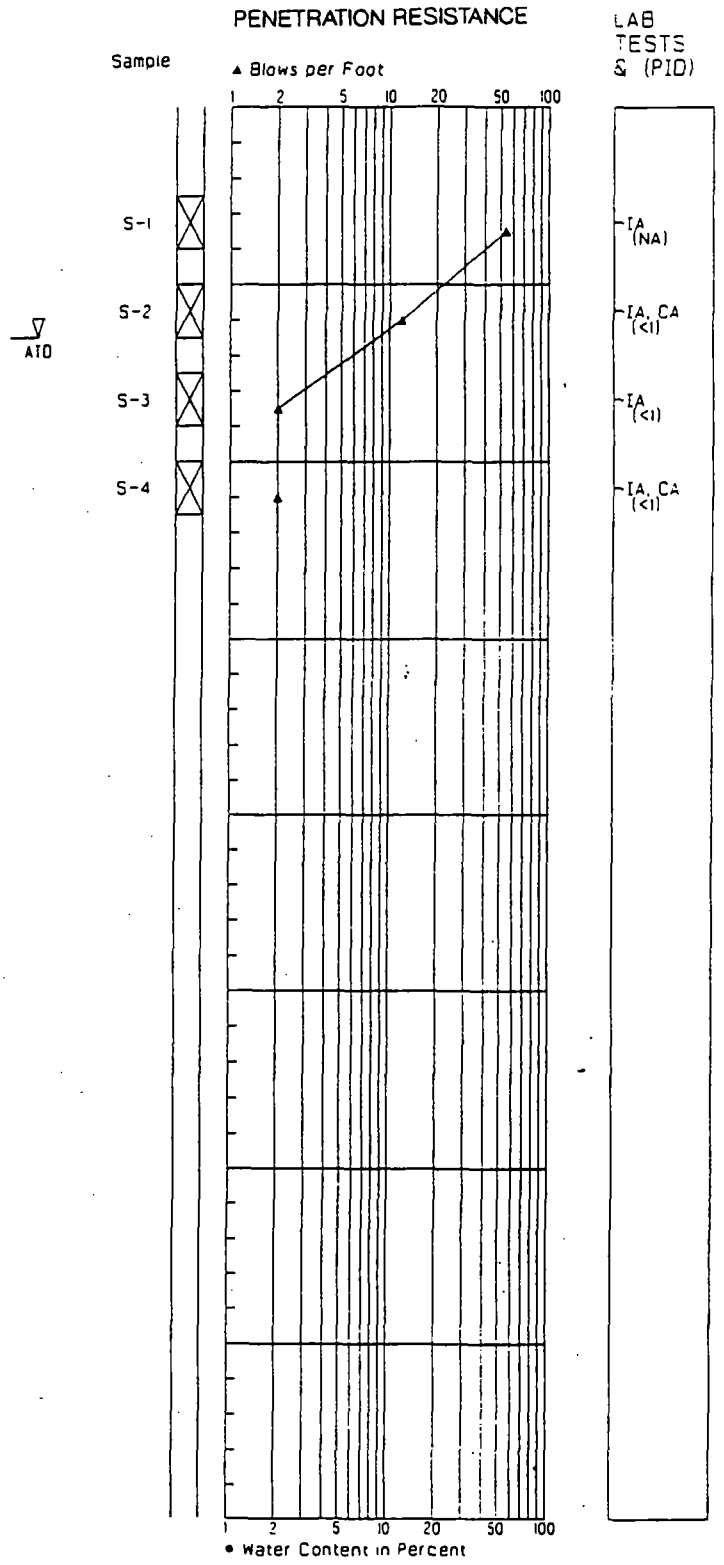
Very loose, wet, gray, slightly silty SAND.

Soft, wet, brown organic material and debris.

Very soft, wet, brown SILT with chemical-like odor, and piece of coal-like material.

Very loose, wet, gray SAND with chemical-like odor.

Bottom of Boring at 11.5 Feet. Completed 6/14/95.



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

HARTCROWSER

J-4042-04 8/95

Figure A-2

Boring Log HC-2

Soil Descriptions

Ground Surface Elevation in Feet: 23.33

Very dense, damp, gray-brown, silty, very sandy GRAVEL with cobbles.

Loose, damp, dark brown, silty, very gravelly SAND with rotted wood debris and coal-like particles with slight chemical-like odor.

Loose, moist, tan-brown, very silty, fine SAND with wood debris.

Loose, wet, gray, coarse SAND with coal-like bits and strong chemical-like odor.

Soft, wet, dark brown, slightly sandy SILT with organic debris.

Loose, wet, gray, medium to fine SAND, saturated with yellowish viscous product.

Very soft, wet, brown, sandy SILT with wood debris and debris.

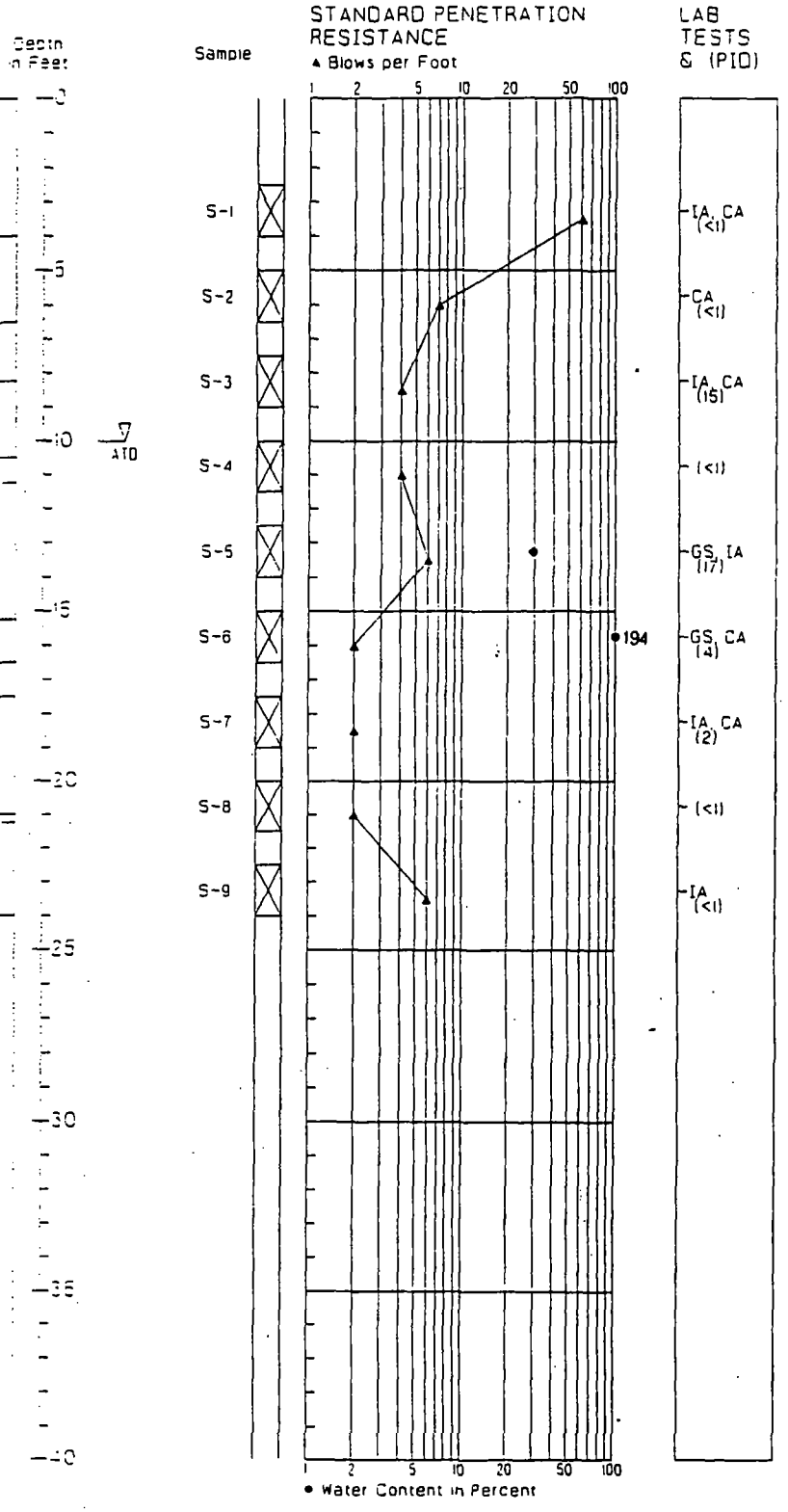
Loose, wet, gray, coarse SAND.

Soft to very soft, wet, brown SILT with wood and organic debris.

Very soft, wet, gray SILT.

Very loose to loose, wet, gray, slightly silty SAND.

Bottom of Boring at 24.0 Feet.
Completed 6/14/95.



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

HARTCROWSER

J-4042-04 6/95

Figure A-3

Boring Log HC-3

Soil Descriptions

Ground Surface Elevation in Feet: 22.72

Medium dense to loose, moist, gray, very silty to silty SAND with some chemical-like odor.

Soft, wet, brown SILT.

Very soft to soft, wet, gray SILT with a sand stringer.

Medium dense to very loose, wet, gray, silty to slightly silty SAND with a chemical-like odor.

Very soft, wet, brown, slightly sandy SILT with a slight chemical-like odor.

Very loose, wet, gray, slightly silty SAND with chemical-like odor.

Very soft to medium stiff, wet, brown SILT with organic debris and chemical-like odor.

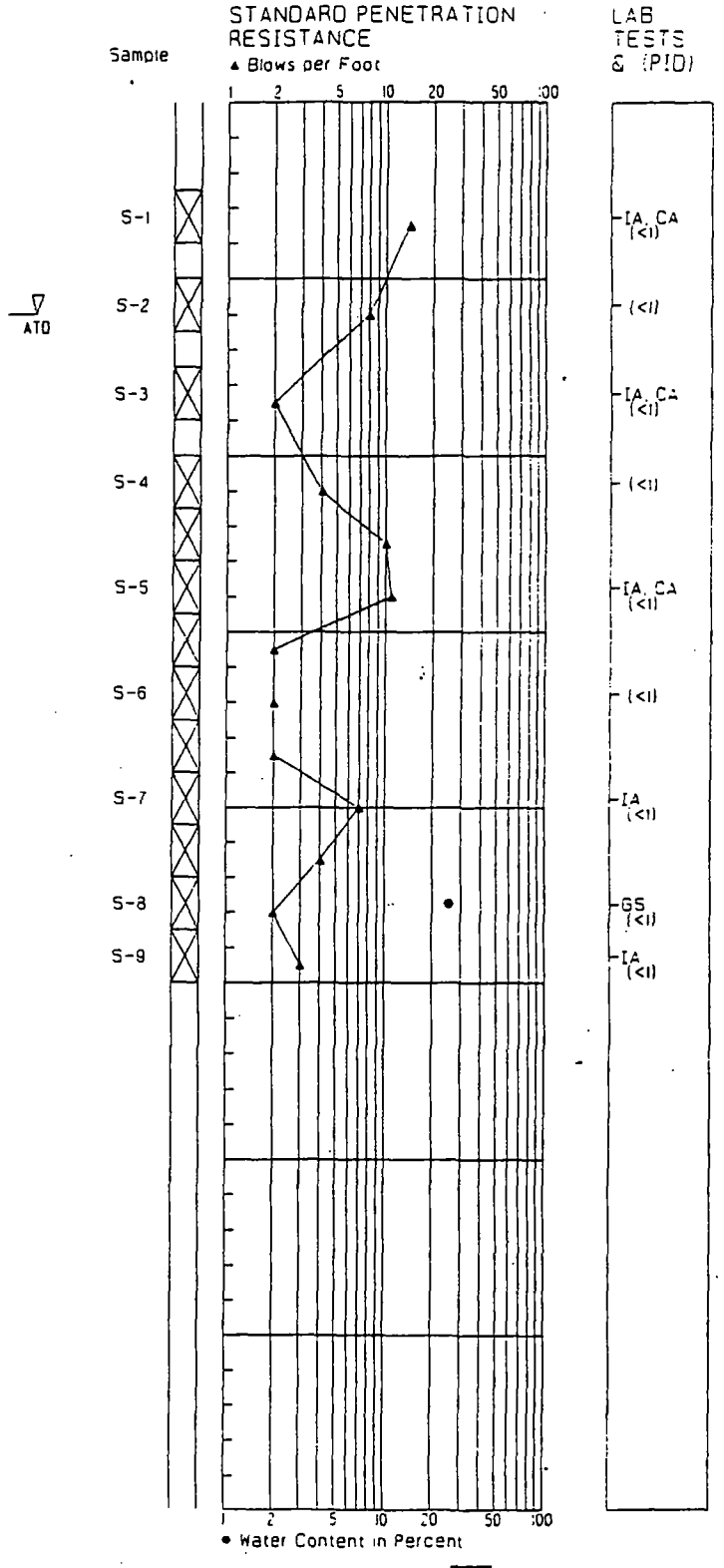
Soft, wet, gray SILT with chemical-like odor.

Very loose, wet, gray, slightly silty, medium to fine SAND with chemical-like odor.

Very soft, wet, brown SILT with organic debris.

Very loose, wet, gray, slightly silty, fine SAND.

Bottom of Boring at 25.0 Feet.
Completed 6/14/95.



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. *Soil descriptions and stratum lines are interpretive* and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

HARTCROWSER

J-4042-04 6/95

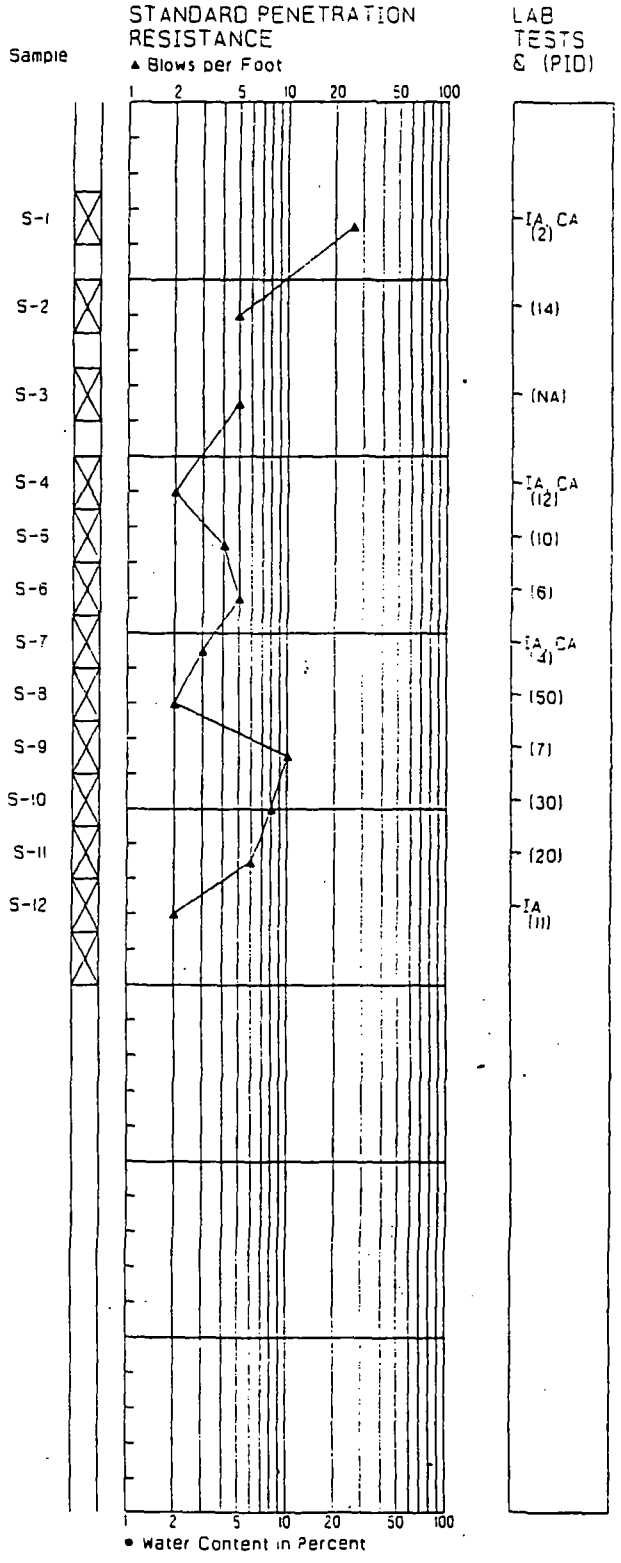
Figure A-4

Boring Log HC-4

Soil Descriptions

Ground Surface Elevation in Feet: 24.57

Soil Description	Depth in Feet
Medium dense, damp, gray, slightly silty, slightly gravelly SAND with chemical-like odor.	0
Loose, wet, gray, silty, fine SAND with chemical-like odor.	5
Loose, wet, brown, silty, fine SAND with staining and chemical odor.	
Loose, wet, gray SAND saturated with product.	10 ATD
Very soft, wet, brown SILT with organic debris and chemical-like odor.	
Soft, wet, gray, sandy SILT with chemical-like odor.	
Loose, wet, gray to gray-brown, very silty to silty SAND with chemical-like odor.	15
Very soft, wet, brown SILT with organic odors.	
Medium dense to loose, wet, gray, silty to slightly silty SAND with slight chemical-like odor.	20
Soft, wet, gray, very sandy SILT with chemical-like odor.	
Very loose, wet, gray, slightly silty SAND with chemical-like odor.	
Soft, wet, gray SILT.	25
Bottom of Boring at 25.0 Feet. Completed 6/14/95.	



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

HARTCROWSER

J-4042-04 6/95

Figure A-5

Boring Log HC-5

Soil Descriptions

Ground Surface Elevation in Feet: 26.47

Medium dense to loose, damp, gray-brown to dark brown, slightly gravelly to gravelly, very silty to silty, fine SAND with organic debris and chemical-like odor.

Soft, moist to wet, gray SILT with strong chemical-like odor and staining/sheen.

Loose, wet, black SAND saturated with yellow-black viscous product, with a stringer of soft, wet, brown, slightly sandy SILT.

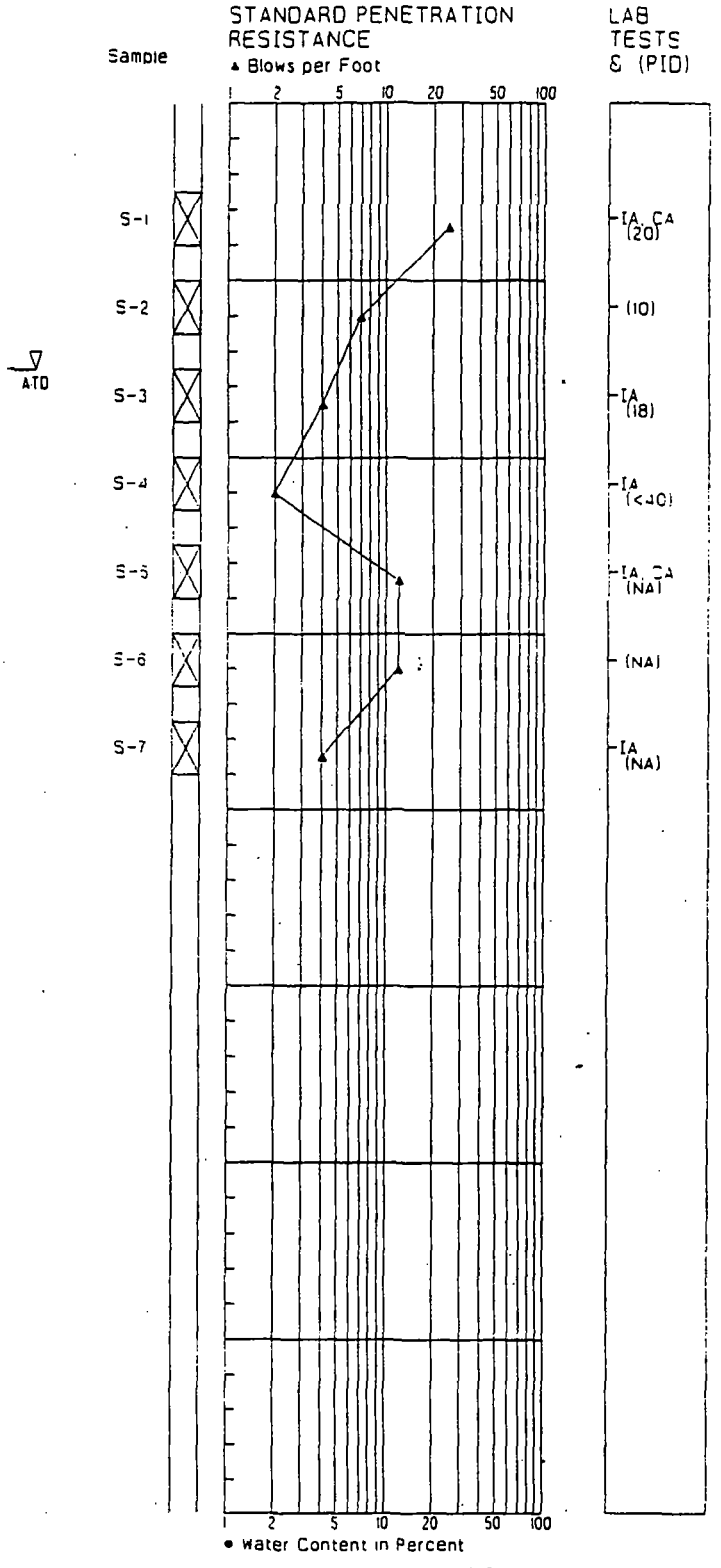
Very soft, wet, brown SILT with organic debris.

Medium dense, wet, gray SAND.

Soft, wet, brown SILT with organic debris.

Loose, wet, gray SAND with wood debris and chemical-like odor.

Bottom of Boring at 19.0 Feet.
Completed 6/15/95.



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

HARTCROWSER

J-4042-04 8/95

Figure A-6

Boring Log HC-6

Soil Descriptions

Ground Surface Elevation in Feet: 21.19

Stiff, moist, brown, very sandy SILT with wood debris.

Medium dense to loose, damp to moist, gray, very silty, very gravelly to gravelly, fine SAND.

Organic debris, topsoil layer.

Very soft, wet, tan-brown to brown SILT with some wood and organic debris.

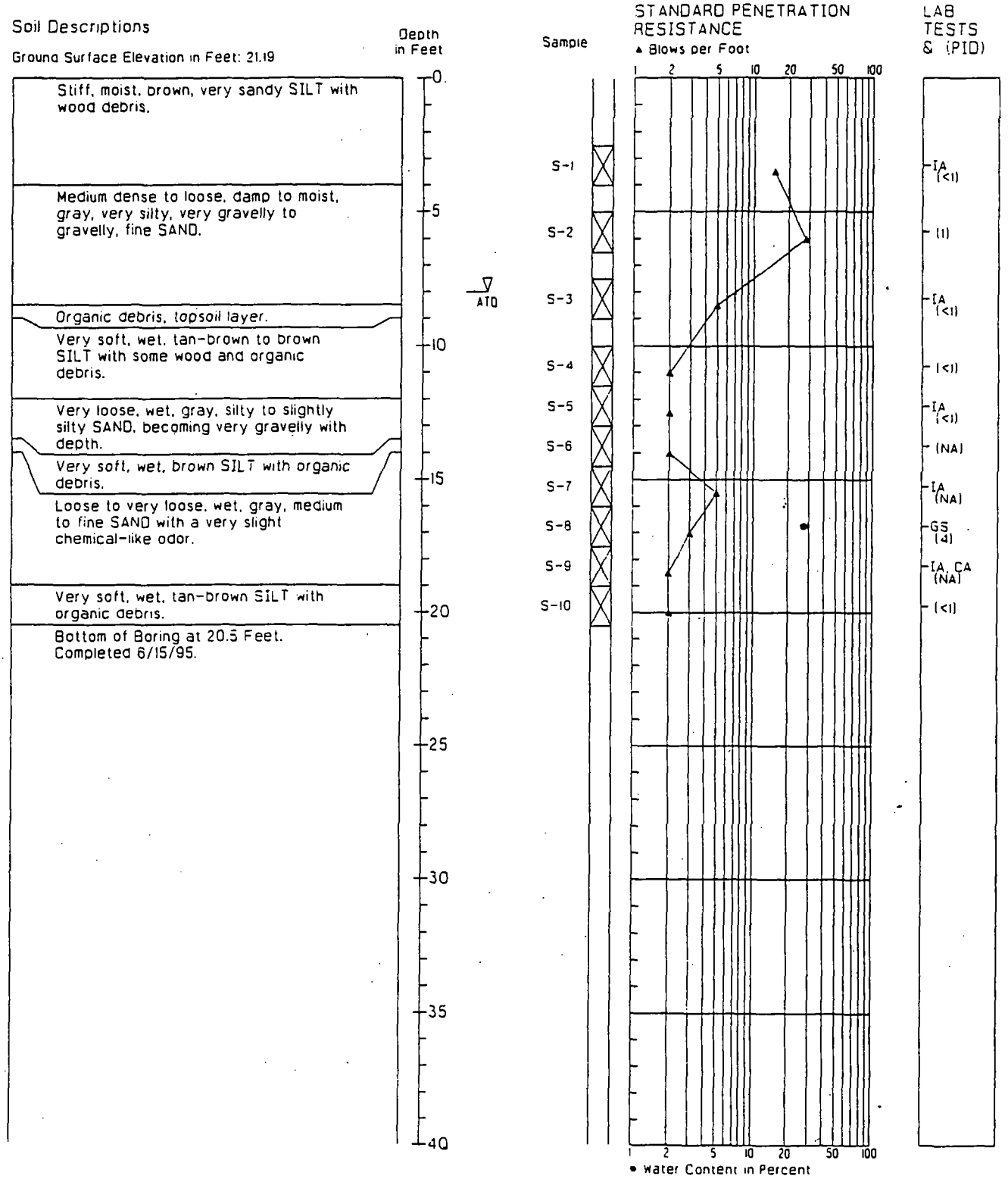
Very loose, wet, gray, silty to slightly silty SAND, becoming very gravelly with depth.

Very soft, wet, brown SILT with organic debris.

Loose to very loose, wet, gray, medium to fine SAND with a very slight chemical-like odor.

Very soft, wet, tan-brown SILT with organic debris.

Bottom of Boring at 20.5 Feet.
Completed 6/15/95.



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

HARTCROWSER

J-4042-04 8/95

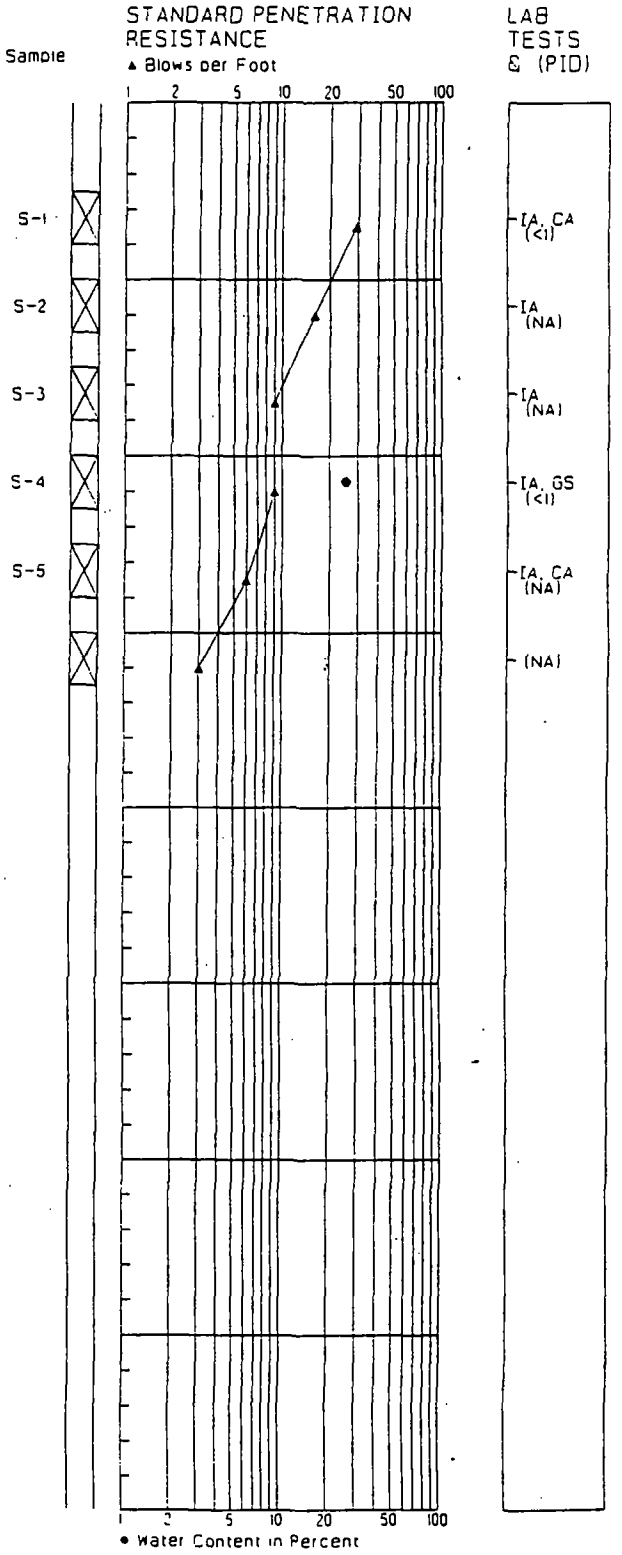
Figure A-7

Boring Log HC-7

Soil Descriptions

Ground Surface Elevation in Feet: 20.83

Soil Descriptions	Depth in Feet
Medium dense, moist, gray, slightly silty, slightly gravelly SAND.	0
Medium dense, wet, dark brown, very silty, gravelly SAND with wood debris and product sheen.	5 (ATD)
Loose, wet, medium to fine SAND *saturated with black viscous product.*	10
Very soft, wet, brown SILT with organic debris.	15
Bottom of Boring at 16.5 Feet. Completed 6/14/95.	20, 25, 30, 35, 40



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

HARTCROWSER

J-4042-04 6/95

Figure A-8

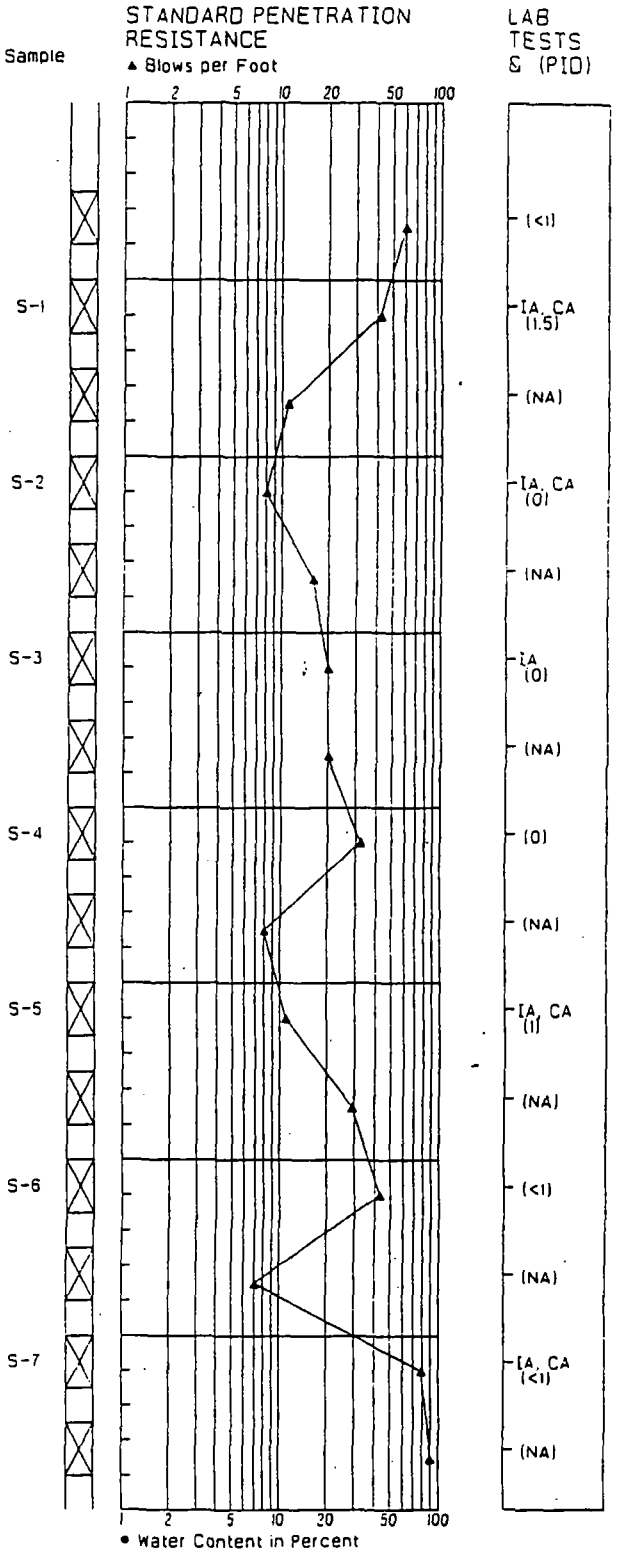
Boring Log HC-8

Soil Descriptions

Ground Surface Elevation in Feet: 27.51

Soil Description	Depth in Feet
Dense, damp, BALLAST with wood debris and chemical-like odor.	0
Medium dense, moist, brown-black, gravelly SAND with chemical-like odor.	5
Medium dense, moist to wet, gray, very silty, fine SAND.	
Loose, wet, gray, very silty, fine SAND with product sheen/staining.	10
Medium stiff, wet, gray, sandy SILT with chemical-like odor.	
Medium dense, wet, gray SAND with chemical-like odor.	15
Stiff, wet, tan-brown SILT.	
Medium dense, wet, gray, slightly silty, coarse SAND with interbedded layers of gray, silty, fine SAND and SILT.	20
Soft, wet, brown SILT with organic debris.	
Loose, wet, gray, slightly silty SAND.	25
Medium stiff, wet, gray SILT.	
Medium stiff, wet, brown SILT.	
Loose to medium dense, wet, gray, very silty, fine SAND grading to soft, wet, gray, very sandy SILT, with a stringer of tan SILT.	30
Dense, wet, gray, very silty SAND grading to dense, wet, gray, fine SAND.	35
Bottom of Boring at 39.0 Feet. Completed 6/15/95.	40

ATD



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

HARTCROWSER

J-4042-04 6/95

Figure A-9

Boring Log and Construction Data for Monitoring Well BH-28"A"

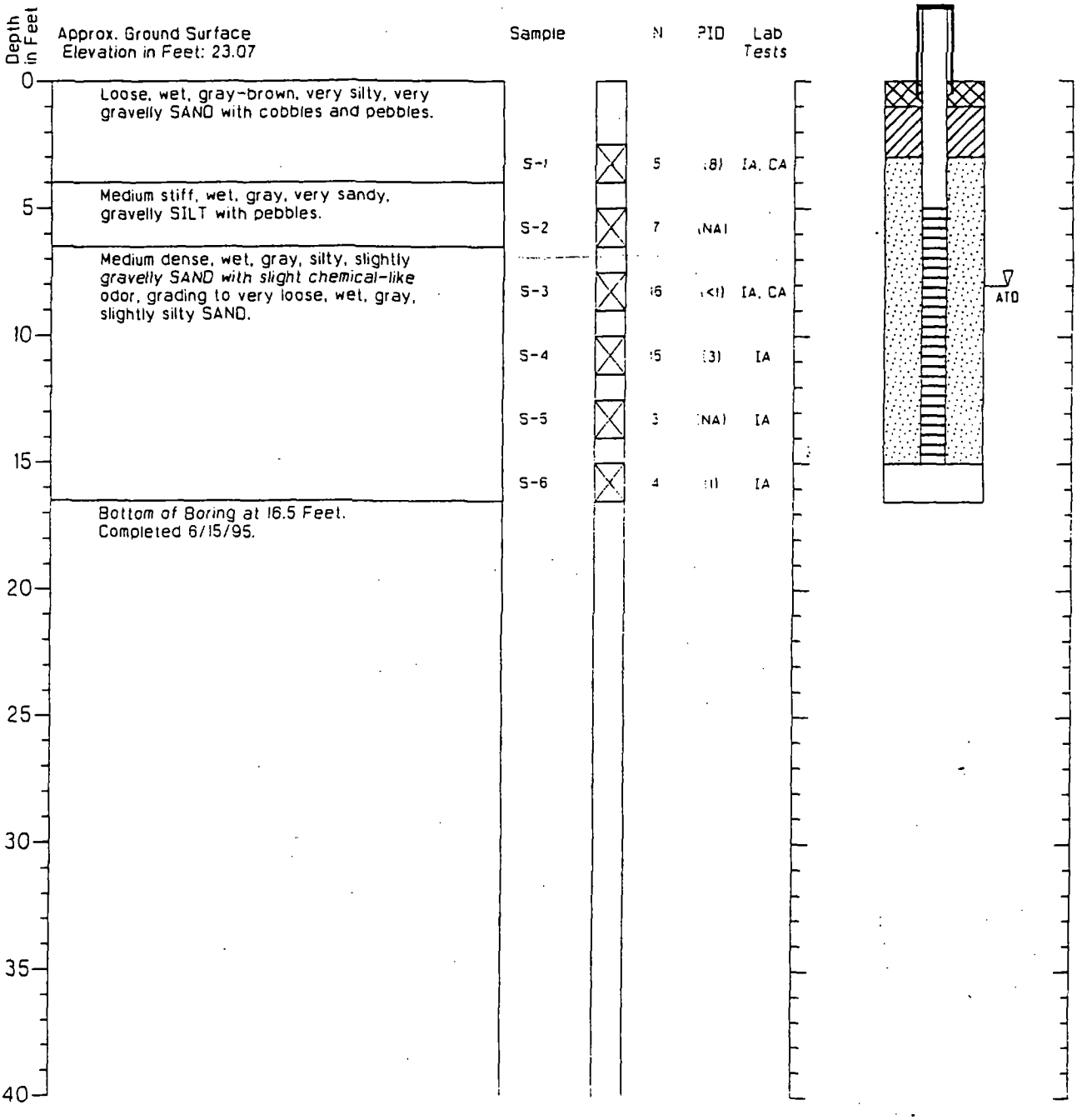
Geologic Log

Monitoring Well Design

Casing Stickup in Feet: 2.93
Top of PVC in Feet 26

Approx. Ground Surface Elevation in Feet: 23.07

Depth in Feet	Geologic Log	Sample	N	PID	Lab Tests
0	Loose, wet, gray-brown, very silty, very gravelly SAND with cobbles and pebbles.	S-1	5	(8)	IA, CA
5	Medium stiff, wet, gray, very sandy, gravelly SILT with pebbles.	S-2	7	(NA)	
	Medium dense, wet, gray, silty, slightly gravelly SAND with slight chemical-like odor, grading to very loose, wet, gray, slightly silty SAND.	S-3	16	(<1)	IA, CA
10		S-4	15	(3)	IA
		S-5	3	(NA)	IA
15		S-6	4	(1)	IA
	Bottom of Boring at 16.5 Feet. Completed 6/15/95.				
20					
25					
30					
35					
40					



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

HARTCROWSER

J-4042-04 6/95

Figure A-10

Test Pit Log TP-1

Sample	Lab Tests	Depth in Feet	SOIL DESCRIPTIONS Ground Surface Elevation in Feet: 19.71
		0	(Medium dense), damp, tan, slightly gravelly SAND. (FILL)
S-1	CA	1	
		2	(Loose), damp, brown, gravelly SAND.
		3	
		4	(Medium stiff), wet, gray SILT.
S-2	CA	5	
S-3		6	(Loose), wet, brown SAND with creosote-like odor.
S-4	CA	7 ▽	Bottom of Test Pit at 7 Feet. Completed 6/12/95.
		8	
		9	Groundwater table observed at 7 feet.

Test Pit Log TP-2

Sample	Lab Tests	Depth in Feet	SOIL DESCRIPTIONS Ground Surface Elevation in Feet: 24.51
		0	Bark and topsoil.
		1	
S-1		2	(Loose), damp, gray, fine SAND.
S-2		3	
S-3	CA	4	Coal-like material, black, sandy granules.
S-4		5	(Loose), damp, gray, coarse SAND.
		6	Bottom of Test Pit at 5½ Feet. Completed 6/12/95.
		7	
		8	
		9	

Test Pit Log TP-3

Sample	Depth in Feet	SOIL DESCRIPTIONS Ground Surface Elevation in Feet: 24.21
	0	Bark and topsoil.
	1	Large gravel with SAND. (FILL)
S-1	2	(Very dense), moist, gray-green, sandy COBBLES and PEBBLES. (FILL)
	3	
S-2	4	(Dense), damp, gray, very gravelly SAND with some bark, topsoil, and some bricks. (FILL)
	5	(Medium dense), damp, dark brown, gravelly SAND with strong chemical- like odor.
S-3	6	(Medium dense), damp, gray SAND.
	7	
S-4	8	Bottom of Test Pit at 8 Feet. Completed 6/12/95.
	9	

1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Groundwater conditions, if indicated, are at the time of excavation. Conditions may vary with time.

HARTCROWSER

J-4042-04 6/95

Figure A-11

Test Pit Log TP-4

Sample	Lab Tests	Depth in Feet	SOIL DESCRIPTIONS Ground Surface Elevation in Feet: 23.87
		0	Moist, brown topsoil and bark.
		1	Chunks of concrete.
		2	(Stiff), damp, gray, slightly sandy, slightly gravelly SILT.
		3	
		4	
		5	
		6	(Dense), damp, brown, silty SAND with wood and brick fragments and chemical-like odor.
		7	
S-1+S-3	CA	8	(Dense to stiff), moist, dark brown, silty SAND grading to sandy SILT with stronger odor.
TP-4	CA	9	
BS-1		10	Pieces of obsidian-like material and pumice-like black, hard material.
		11	
		12	(Very stiff), wet, gray, sandy SILT.
		13	Bottom of Test Pit at 10 Feet. Completed 6/13/95.
		14	
		15	
		16	
		17	
		18	
		19	
		20	

Test Pit Log TP-5

Sample	Depth in Feet	SOIL DESCRIPTIONS Ground Surface Elevation in Feet: 25.05
	0	(Dense), moist, dark brown, sandy BALLAST.
	1	
S-1	2	Topsoil layer.
	3	(Dense), damp, gray, silty SAND.
S-2	4	
	5	(Stiff), moist, brown, sandy SILT.
	6	(Medium dense), moist, gray SAND.
S-3	7	Organic material, brown, silty with leaves and debris.
	8	
S-4	9	(Medium dense), wet, gray, silty SAND and strong chemical-like odor.
	10	(Medium stiff), wet, gray SILT.
	11	(Loose), wet, brown, organic material with wood and organic debris.
	12	Bottom of Test Pit at 10½ Feet. Completed 6/13/95.
	13	
	14	Groundwater seepage observed at 6½ feet.
	15	
	16	
	17	
	18	
	19	
	20	

1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Groundwater conditions, if indicated, are at the time of excavation. Conditions may vary with time.

HARTCROWSER

J-4042-04 6/95

Figure A-12

Test Pit Log TP-5A

Sample	Water Content	Lab Tests	Depth in Feet	SOIL DESCRIPTIONS Ground Surface Elevation in Feet: 25.05
			0–1	(Dense), moist, dark brown, sandy BALLAST.
			1–2	Topsoil layer with wood chips and bark.
			2–3	(Dense), damp, gray, silty SAND.
			3–4	
			4–5	(Dense), moist, brown, slightly sandy SILT.
			5–6	
			6–7	(Loose), wet, brown, organic material with leaves and organic debris.
BS-1	26	GS, CA	7–8	(Loose), wet, slightly silty, gray, medium to fine SAND.
			8–9	

Bottom of Test Pit at 9 Feet.
Completed 6/13/95.

Groundwater seepage observed at 7 feet.

Test Pit Log TP-6

Sample	Depth in Feet	SOIL DESCRIPTIONS Ground Surface Elevation in Feet: 21.85
	0–1	Topsoil and bark.
	1–2	(Loose), damp, blue-gray, slightly gravelly SAND.
S-1, S-2	2–5	(Loose), damp, brown SAND grading to (medium stiff), damp, gray SILT.
S-3, S-4	5–6	
	6–7	(Loose), wet, gray, medium SAND.
	7–9	Bottom of Test Pit at 8½ Feet. Completed 6/12/95. Groundwater table observed at 6 feet.

Test Pit Log TP-7

Sample	Depth in Feet	SOIL DESCRIPTIONS Ground Surface Elevation in Feet: 22.11
	0–1	Brown topsoil with bark.
	1–3	(Loose), damp, gray, gravelly SAND with cobbles.
	3–5	(Medium dense), damp, very sandy GRAVEL with cobbles.
	5–6	(Loose), wet, gray, coarse SAND with creosote-like odor.
	6–9	Bottom of Test Pit at 6 Feet. Completed 6/12/95. Groundwater table observed at 6 feet.

1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Groundwater conditions, if indicated, are at the time of excavation. Conditions may vary with time.

HARTCROWSER
J-4042-04 6/95
Figure A-13

Test Pit Log TP-8

Sample	Depth in Feet	SOIL DESCRIPTIONS Ground Surface Elevation in Feet: 23.66
	0	Bark and topsoil.
	1	(Medium dense), damp, gray, slightly gravelly SAND.
	2	
	3	Thin brown, topsoil layer.
	4	(Medium dense), damp, very gravelly SAND with cobbles and strong chemical-like odor.
	5	(Loose), damp, gray-brown, slightly gravelly SAND.
	6	
	7 ▽	
	8	Bottom of Test Pit at 7½ Feet. Completed 6/12/95.
	9	

Groundwater table observed at 7 feet.

Test Pit Log TP-9

Sample	Depth in Feet	SOIL DESCRIPTIONS Ground Surface Elevation in Feet: 24.27
	0	Bark, topsoil, and fill debris. (concrete and asphalt)
	1	Concrete slab.
	2	(Medium dense), damp, gray, gravelly SAND.
	3	(Medium stiff), damp, gray SILT.
	4	
	5	
	6	(Medium dense), damp, dark brown, fine SAND with pieces of brick and strong chemical-like odor.
	7	
	8	
S-1 ⊠	9 ▽	

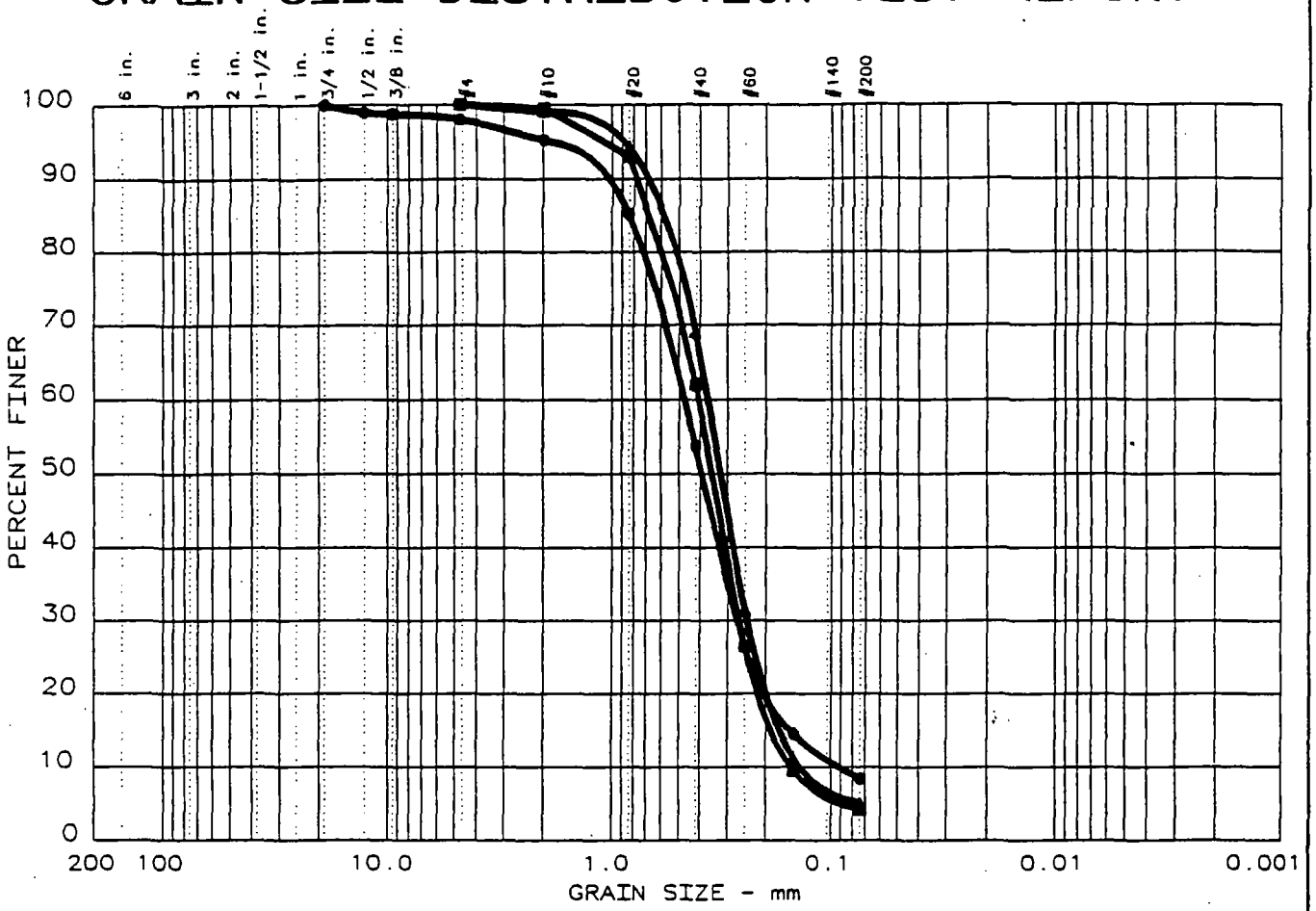
Bottom of Test Pit at 9 Feet.
Completed 6/12/95.

Groundwater table observed at 9 feet.

1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Groundwater conditions, if indicated, are at the time of excavation. Conditions may vary with time.

HARTCROWSER
J-4042-04 6/95
Figure A-14

GRAIN SIZE DISTRIBUTION TEST REPORT



	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	2.0	89.6	8.4	
▲	0.0	0.0	94.9	5.1	
■	0.0	0.0	95.8	4.2	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.83	0.47	0.39	0.272	0.1531	0.0923	1.71	5.1
▲			0.58	0.37	0.32	0.244	0.1728	0.1388	1.16	2.7
■			0.68	0.41	0.35	0.265	0.1899	0.1526	1.14	2.7

MATERIAL DESCRIPTION	USCS	NAT. MOIST.
● Slightly silty SAND	SP	26%
▲ Slightly silty SAND	SP	25%
■ SAND	SP	29%

Remarks:

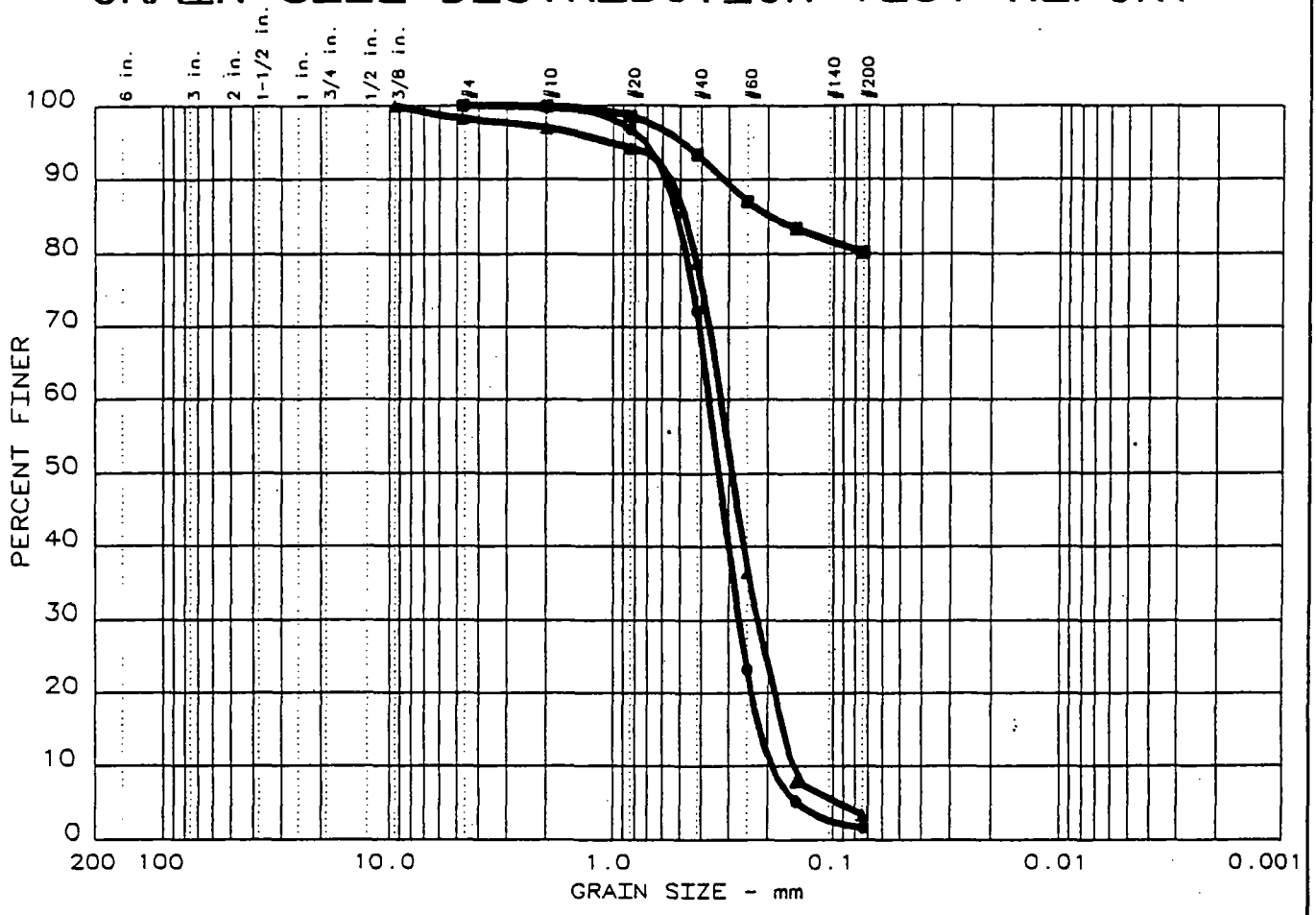
Project: Quendall Terminals
● Location: TP-5, Bulk, Depth: 7.0'-8.5'
▲ Location: HC-3, S-8, Depth: 22.0'-23.5'
■ Location: HC-2, S-5, Depth: 15.0'-16.5'

HARTCROWSER

J-4042-04 08/19/96

Figure A-15

GRAIN SIZE DISTRIBUTION TEST REPORT



	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.0	98.3	1.7	
▲	0.0	1.8	94.8	3.4	
■	0.0	0.0	19.8	80.2	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.51	0.37	0.33	0.271	0.2180	0.1914	1.05	1.9
▲			0.47	0.32	0.29	0.222	0.1690	0.1542	0.99	2.1
■			0.19							

MATERIAL DESCRIPTION	USCS	NAT. MOIST.
● SAND	SP	27%
▲ SAND	SP	25%
■ Sandy SILT	ML	194%

Remarks:

Project: Quendall Terminals
● Location: HC-6, S-8, Depth: 16.0'-17.5'
▲ Location: HC-7, S-4, Depth: 10.0'-11.5'
■ Location: HC-2, S-6, Depth: 15.0' - 16.5'

HARTCROWSER

J-4042-04 08/19/96

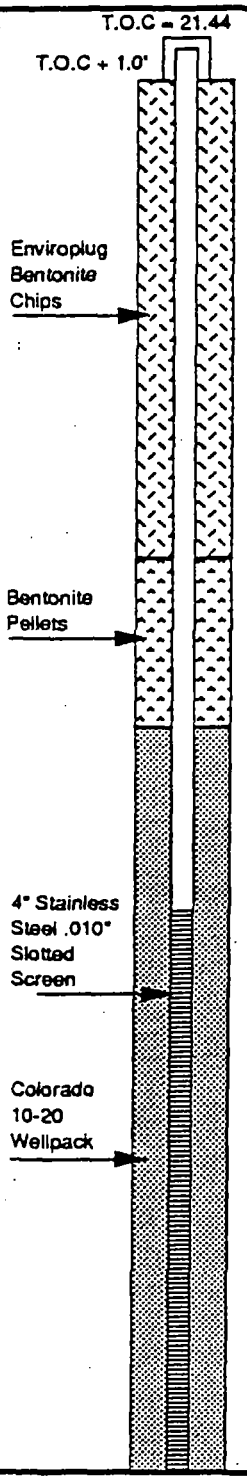
Figure A-16

WOODWARD-
CLYDE 1990

WOODWARD-CLYDE CONSULTANTS
1990

Well and Boring Logs
BH-24 to BH-27

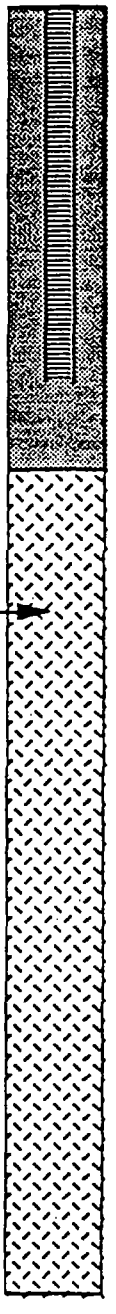
DRILLING LOG	PROJECT: QUENDALL	PROJECT NO. 86004S	SHEET 1 of 2
LOCATION:	N 197,848 E 1,662,383	TOTAL NO. SAMPLES:	8
DRILLING AGENCY:	SOIL SAMPLING SERVICE	DEPTH TO WATER BELOW GRD SURFACE:	3.5 FT
HOLE NO.	BH-24	DATE STARTED: 7/31/90	DATE COMPLETED: 7/31/90
NAME OF DRILLER:	WAYNE GUY	DRILLING METHOD:	HOLLOW STEM AUGER
TOTAL DEPTH OF HOLE:	29 FT	INSPECTOR:	DAVE WALKER



DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
1					Brown silty gravely sand (SM).	OVA = 17 ppm
2						OVA = 120 ppm
3	X	53		100		▽ 3.5'
4						
5	NR	7		0	Fibrous organics (probably woodwaste)	
6	X	7		25		OVA = 1000+ppm
7						
8	X	0		25		OVA = 120 ppm
9						
10						
11						
12	NR	3		0		OVA = 300 ppm @Borehole = 0.5 in B.Z.
13						
14	X	4		25		
15					Intermixed organic silt (OL) and peat (PT) soft, saturated.	

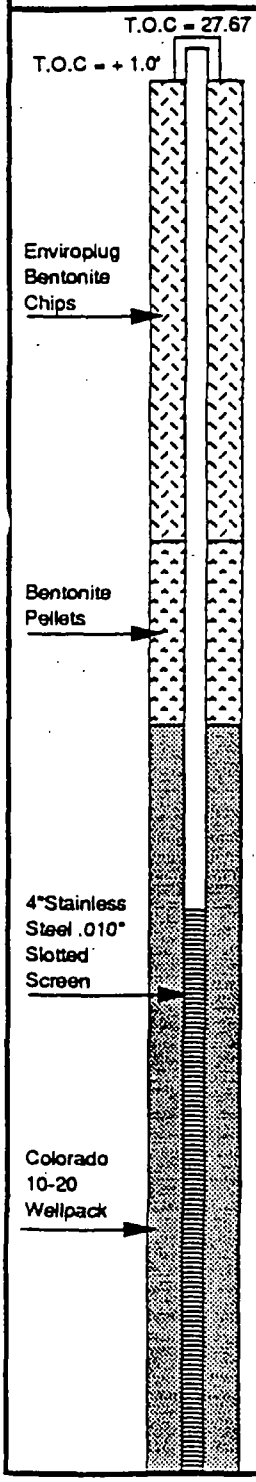
Woodward-Clyde Consultants

DRILLING LOG (CON'T)	HOLE NO. BH-24	SHEET 2 of 2



DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
					Intermixed organic silt (OL) and peat (PT) soft, saturated	
16						OVA > 1000ppm (in peat)
17					Brown organic silt (OL) trace wood fibers @ 17.0'.	
18		5		100		
19					Dark brown peat (PT) with fibers @ 19.5'.	OVA = 150ppm
20						
21						
22					Brown organic silt (OL) @ 22.0' becomes gray clayey silt (ML) @ 22.5'.	
23		19		100	Gray fine sand (SP) medium dense, saturated with trace silt with seam of organic silt @ 23.0'.	
24						
25						
26						
27		3		50	Gray fine sand (SP) and silty sand (SM) with silt layers.	
28						
29						

DRILLING LOG	PROJECT: QUENDALL	PROJECT NO. 86004S	SHEET 1 of 2
LOCATION:	N 197,115 E 1,662,272	TOTAL NO. SAMPLES:	0
DRILLING AGENCY:	SOIL SAMPLING SERVICE	DEPTH TO WATER BELOW GRD SURFACE:	- - - -
HOLE NO.	BH-25A	DATE STARTED: 8/6/90	DATE COMPLETED: 8/6/90
NAME OF DRILLER:	WAYNE GUY	DRILLING METHOD:	HOLLOW STEM AUGER
TOTAL DEPTH OF HOLE:	19 FT	INSPECTOR:	DAVE WALKER



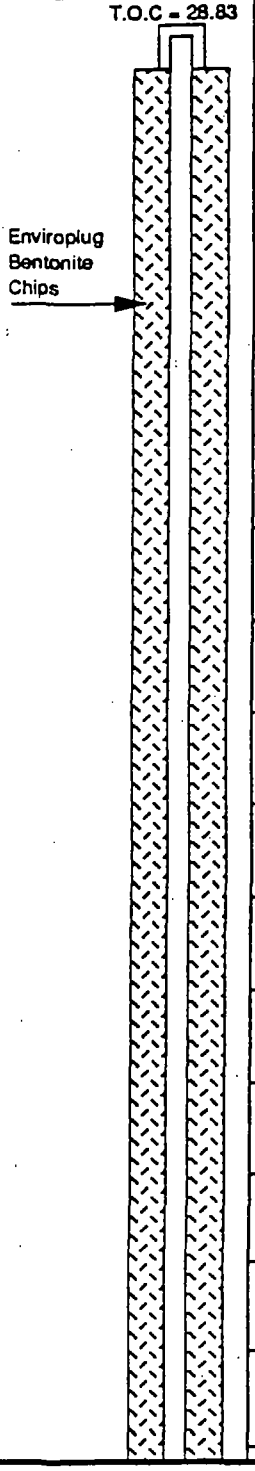
DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
					Silty sandy gravel (GM) with wood chips.	No Samples, stratigraphy from BH-25B
1						
2					70% wood chips (FILL)	
3						
4					Gray silty sand (SM) with seams of clean fine sand and sandy silt, trace organics.	
5						
6					Gray fine sand (SP), medium dense wet.	
7						
8						
9					Gray silt layer, soft, saturated, trace organics 8.5'-9.5'.	
					Gray fine sand @ 9.5', saturated.	
10						
11						
12						Sheen on soil cuttings.
13					Gray silty sand (SM) saturated, with seams of sandy silt (~40% of sample).	
14					Fine sand (SP), dense, below 14.0'.	
15						

Woodward-Clyde Consultants

DRILLING LOG (CON'T)	HOLE NO. BH-25A	SHEET 2 of 2

DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
16					Gray fine sand (SP)	
17					Brown silt (ML), soft, with organic material.	
18						
19						

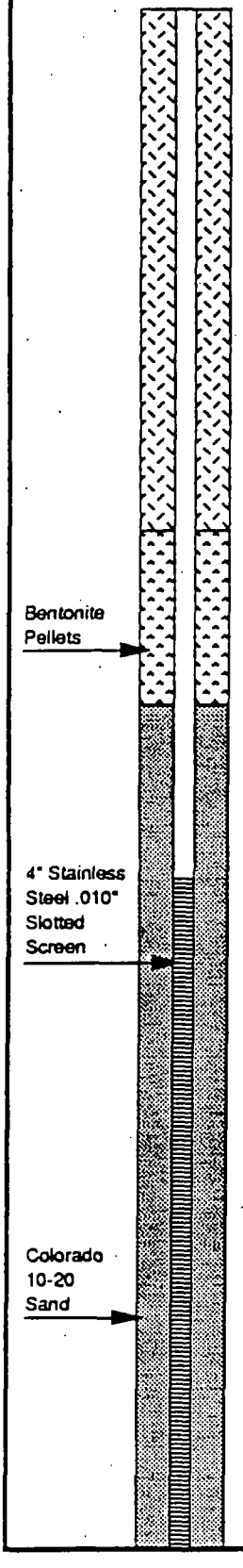
DRILLING LOG	PROJECT: QUENDALL	PROJECT NO. 86004S	SHEET 1 of 3
LOCATION:	N 197,109 E 1,662,265	TOTAL NO. SAMPLES:	12
DRILLING AGENCY:	SOIL SAMPLING SERVICE	DEPTH TO WATER BELOW GRD SURFACE:	8 FT
HOLE NO.	BH-25B	DATE STARTED: 8/2/90	DATE COMPLETED: 8/3/90
NAME OF DRILLER:	WAYNE GUY	DRILLING METHOD:	HOLLOW STEM AUGER
TOTAL DEPTH OF HOLE:	47.5 FT	INSPECTOR:	DAVE WALKER



DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
1					Silty sand, gravel with wood chips	
2	X	15		50	70% wood chips (FILL)	OVA = 130 ppm
3						
4	X	28		100	Gray silty sand (SM) with seams of clean fine sand and sandy silt, trace organics.	OVA = 40 ppm
5						
6	X	17		75	Gray fine sand (SP), medium dense, wet.	OVA = 10 ppm
7						
8	X	24		100	Gray silt layer, soft, saturated, trace organics 8.5'-9.5'.	OVA = 10 ppm @ sampler in silt sample
9					Gray fine sand @ 9.5', saturated.	
10						OVA = 60 ppm
11						
12	X	12		100	Gray silty sand, saturated, with seams of sandy silt (~40% of sample).	OVA = 30 ppm
13						
14					Fine sand (SP), dense, below 14.0'.	
15						

Woodward-Clyde Consultants

DRILLING LOG (CON'T)	HOLE NO. BH-25B	SHEET 2 of 3



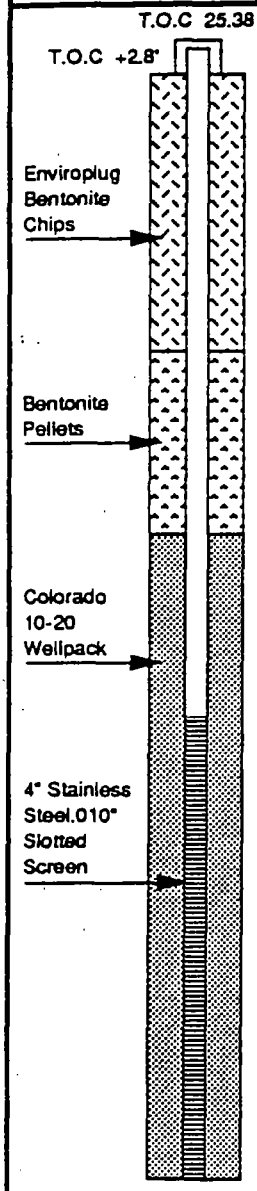
DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
16					Gray fine sand (SP)	
17						OVA = 170 ppm @interface
18		4		100	Brown silt (ML), soft, saturated with organic material.	OVA= 100 ppm in borehole OVA = 1 ppm in B.Z.
19						
20						
21						
22						
23		11		100	Interlayered 2-5" seams of fine sand and silt.	OVA = 50 ppm
24						
25						
26						
27						
28		11		100	Gray silt (ML) with seams of sandy silt, fine sand and brown silt.	OVA = 54 ppm
29						
30						
31						
32					Gray sand (SP) @ 32.0'.	

DRILLING LOG (CON'T)	HOLE NO. BH-25B	SHEET 3 of 3

DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
33	X	10		100	Brown gray silt (ML) 32.5' - 33.5'. Brown gray sandy silt with clay and gravel @ 33.5'.	OVA = 30 ppm
37	X	50/1"		10	Gray sandy gravel (GP) very dense with pockets of silt. Gravel to 1/4" diameter.	OVA = 20 ppm
42		41		25		
47		50/3"		20		

CAVE IN

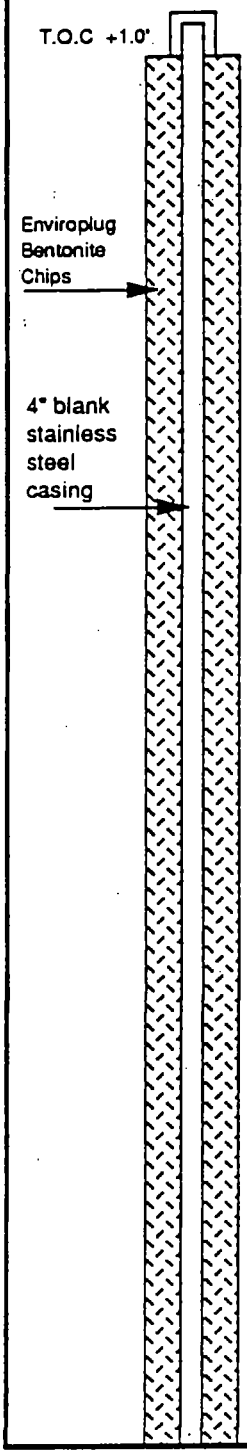
DRILLING LOG	PROJECT: QUENDALL	PROJECT NO. 86004S	SHEET 1 of 1
LOCATION:	N 196,846 E 1,662,027	TOTAL NO. SAMPLES:	0
DRILLING AGENCY:	SOIL SAMPLING SERVICE	DEPTH TO WATER BELOW GRD SURFACE:	- - -
HOLE NO.	BH-26A	DATE STARTED: 8/9/90	DATE COMPLETED: 8/9/90
NAME OF DRILLER:	WAYNE GUY	DRILLING METHOD:	HOLLOW STEM AUGER
TOTAL DEPTH OF HOLE:	12 FT	INSPECTOR:	DAVE WALKER



DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
1, 2					Brown sandy gravel (GP) — FILL	No Samples stratigraphy from BH-26B.
3					Gray sandy silt (ML), wet.	
4, 5, 6					Gray silty fine sand (SM), medium dense, wet - seams of sandy silt @ 4.0'-4.5'. - saturated @ 5.0'. - silt seam @ 6.5'.	
7, 8, 9, 10, 11, 12					Gray fine to coarse sand (SP),dense, saturated, trace gravel, some wood chunks. Fine sand below 8.0'.	

Woodward-Clyde Consultants

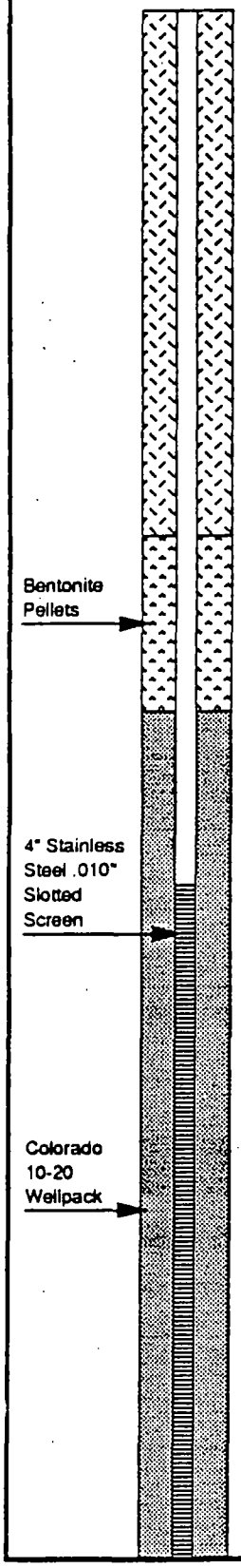
DRILLING LOG	PROJECT: QUENDALL	PROJECT NO. 86004S	SHEET 1 of 3
LOCATION:	N 196,847 E 1,662,032	TOTAL NO. SAMPLES:	11
DRILLING AGENCY:	SOIL SAMPLING SERVICE	DEPTH TO WATER BELOW GRD SURFACE:	5 FT
HOLE NO.	BH-26B	DATE STARTED: 8/6/90	DATE COMPLETED: 8/6/90
NAME OF DRILLER:	WAYNE GUY	DRILLING METHOD:	HOLLOW STEM AUGER
TOTAL DEPTH OF HOLE:	48.5 FT	INSPECTOR:	DAVE WALKER



DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
1					Brown sandy gravel (GP). FILL	**NOTE:** Stratigraphy from 48.5 ft borehole (abandoned). Well installed in 36 ft borehole 4 ft west of abandoned borehole.
2						
3		18		100	Gray sandy silt (ML), wet.	
4						OVA = 45 ppm
5		10		75	Gray silty fine sand (SM), medium dense, wet - seams of sandy silt @ 4.0'-4.5'. - saturated @ 5.0'.	OVA = 9 ppm
6						
7		22		100	- silt seam @ 6.5'.	
8					Gray fine to coarse sand (SP), dense, saturated, trace gravel, some wood chunks.	OVA = 9 ppm(B.G.)
9		31		100	Fine sand below 8.0'.	
10						OVA = 12 ppm
11						
12						
13						OVA = 75 ppm
14		7		100	Brown organic silt (OL) soft, saturated with wood fibers.	
15						

Woodward-Clyde Consultants

DRILLING LOG (CON'T)	HOLE NO. BH-26B	SHEET 2 of 3

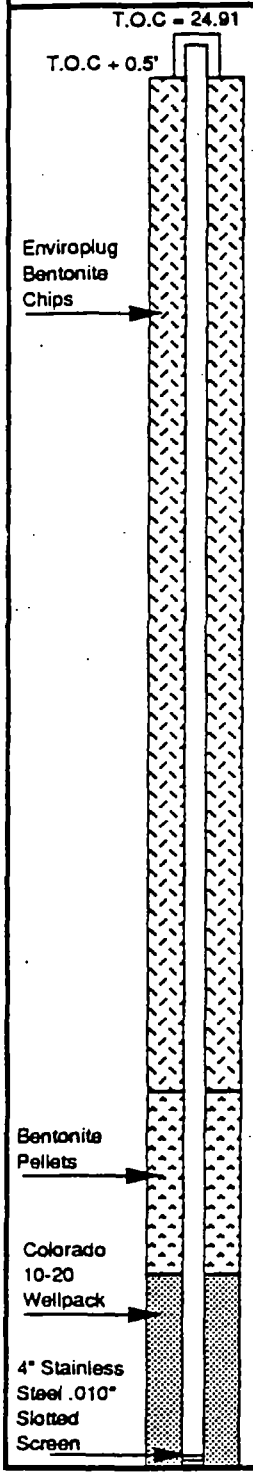


DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
					Brown organic silt (OL)	
16						
17					Contact between silt and sand is uncertain.	
18	X	4		50	Gray fine sand (SP), loose, saturated.	OVA = 14 ppm **NOTE:** OVA was out of fuel at completion of drilling- OVA readings could be in error.
19						
20						
21						
22						
23	X	53		50	Dense below 23.5'. Silt seam @ 23.5'.	OVA = 45 ppm
24						
25						
26						
27						
28	X	39		50	Peat and silt seams 28.0'-29.0'.	OVA = 45 ppm
29					Gray fine sand below 29.0' silt seam (1") @ 29.5'.	
30						
31						
32						

DRILLING LOG (CON'T)	HOLE NO. BH-26B	SHEET 3 of 3

DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
33–34	X	37		50	Gray silt (ML) 33.2'-33.7' with 2" brown organic silt seam. Wood 33.7' - 34.2'. Gray silty fine sand (SM) with trace gravel becomes fine sand (SP) with gravel @ 33.5'.	
35					Gray sandy gravel (GP), very dense, saturated, gravel to 1½" diameter.	OVA = 5 ppm (B.G.)
38–39	X	52		50		OVA = 5 ppm
43–44	X	59		50		OVA = 5 ppm
48	NR	50/4"		0		

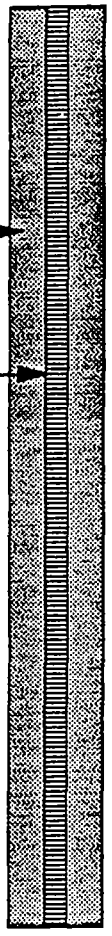
DRILLING LOG	PROJECT: QUENDALL	PROJECT NO. 86004S	SHEET 1 of 2
LOCATION:	N 197,376 E 1,662,640	TOTAL NO. SAMPLES:	7
DRILLING AGENCY:	SOIL SAMPLING SERVICE	DEPTH TO WATER BELOW GRD SURFACE:	8 FT
HOLE NO.	BH-27	DATE STARTED: 8/1/90	DATE COMPLETED: 8/1/90
NAME OF DRILLER:	WAYNE GUY	DRILLING METHOD:	HOLLOW STEM AUGER
TOTAL DEPTH OF HOLE:	25 FT	INSPECTOR:	DAVE WALKER



DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
1					Dark brown cobbles (GP) with sand.	OVA = 17 ppm
3	X	12/6		100	Dark brown silty sand 3.0'-3.5'. (FILL)	OVA = 60 ppm HC odor
5	X	23		75	Black sandy gravel @ 5.0'. (resembles pieces of coal).	OVA = 180 ppm
8	X	10		100	Gravely silty sand (SM), medium dense, wet, trace organics.	OVA = 30 ppm
10	X	7		100	Brown peat (PT), fibrous, some silt.	
11	X				Gray clayey silt (ML), soft, saturated. 2" Gray sand@ 11.0'.	OVA = 52 ppm
13	X	6		100	Brown peat (PT).	OVA = 125ppm
15						

Woodward-Clyde Consultants

DRILLING LOG (CON'T)	HOLE NO. BH-27	SHEET 2 of 2



DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
16					Brown peat (PT)	
17						
18		6		100	Brown organic silt (OL) with wood fibers at 17.5' 4" peat layer @ 18.0'.	OVA = 15 ppm
19					Interlayered clayey silt (ML), fine sand (SP), and sandy silt (ML) Gray clayey silt 18.5'-19.0'. Gray fine sand 19.0'-19.5'. Driller thinks sand 19.5' to 22.5'	
20						
21						
22						
23		7		100	Gray sandy silt (ML) soft, saturated, with seams of clayey silt and silty sand, trace organics below 22.5'.	OVA = 30 ppm
24						
25						

WOODWARD-
CLYDE 1988

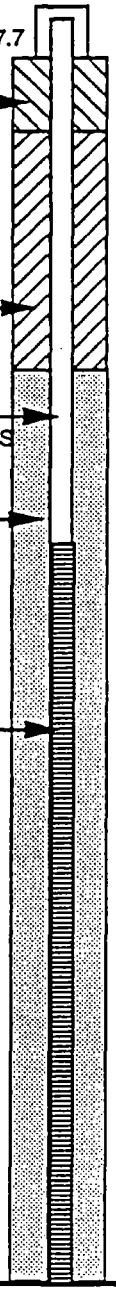
WOODWARD-CLYDE CONSULTANTS
1988

Well Logs

BH-17A to BH-23
BAX-9

DRILLING LOG	PROJECT QUENDALL	PROJECT NUMBER 86004S	SHEET 1 OF 2 SHEETS
LOCATION	N196837 E1662516	TOTAL NUMBER SAMPLES 8	
DRILLING AGENCY	SOIL SAMPLING SERVICE	DEPTH TO WATER BELOW GRD SURFACE	
HOLE NO.	BH-17A	DATE HOLE	STARTED 12/22/88 / COMPLETED 12/22/88
NAME OF DRILLER	Terry Asberry	DRILLING METHOD	HOLLOW STEM AUGER
TOTAL DEPTH OF HOLE	16FT	INSPECTOR	WARREN PERKINS

ELEV. T. O. C. 29.21
GRND ELEV: 27.7



DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
					4" - loose, gray-brown, sandy, gravelly SILT. (ML)	Topsoil FILL
1						
2						NO SAMPLES STRATIGRAPHY FROM BH-17B
3						
					4	
4					Medium dense, damp, brown, medium SAND, (10% silt). (SP)	
5						
6						
7					...wet and gravelly SAND...	
8						
9						
10						
					11	
11					Loose, saturated, gray, silty SAND (30-40% silt). (SM)	
12						
13						
14						
					14.8	
15					Very stiff, saturated, gray SILT. (ML)	

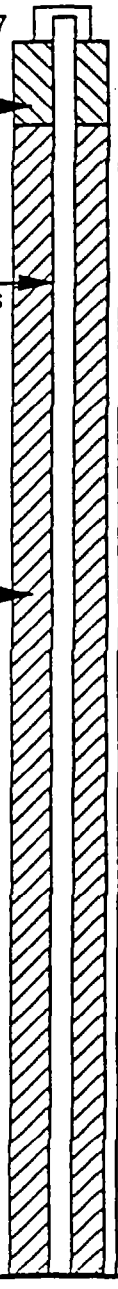
Woodward-Clyde Consultants

DRILLING LOG (Cont. Sheet)	HOLE NO. BH-17A
	SHEET 2 OF 2 SHEETS

	DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
SAND SCREEN						Very stiff, saturated, gray SILT with trace fine sand (10%). (ML)	
	16					TOTAL DEPTH = 16 FT	
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						

DRILLING LOG	PROJECT QUENDALL	PROJECT NUMBER 86004S	SHEET 1 OF 4 SHEETS
LOCATION N196831 E1662512		TOTAL NUMBER SAMPLES 15	
DRILLING AGENCY	SOIL SAMPLING SERVICE	DEPTH TO WATER BELOW GRD SURFACE	
HOLE NO.	BH-17B	DATE HOLE	STARTED 12/21/88 / COMPLETED 12/22/88
NAME OF DRILLER	Terry Asberry	DRILLING METHOD	HOLLOW STEM AUGER
TOTAL DEPTH OF HOLE	50'	INSPECTOR	WARREN PERKINS

ELEV. T. O. C: 29.16
GRND ELEV: 27.7



DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
1	X	48	000	40	4" - loose, topsoil, gray-brown, sand, gravelly SILT. (ML)	... Bouncing on stones... FILL
2	X	41	015	10		
3	X	18	030	40		
					4' — Medium dense, damp, brown, medium SAND, (10% silt). (SW)	
5	X	16	045	60		
6	X	34	060	80		▽ 12/21
7	X				... wet and gravelly SAND...	
8	X	30	075	90		▽ 8.1 ft on 12/22
9	X					
10	X	35	090	80		
					11' — Loose, saturated, gray, silty SAND (30-40% silt). (SM)	
12						
13						
14	X					
					14.8' — Very stiff, saturated, gray SILT. (ML)	
15						

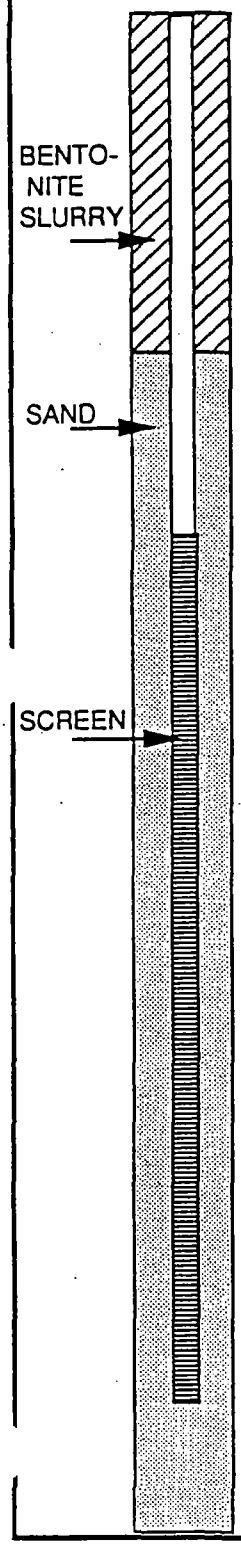
Woodward-Clyde Consultants

DRILLING LOG (Cont. Sheet)	HOLE NO. BH-17B
	SHEET 2 OF 4 SHEETS

	DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
	16						
	17						
	18						
	19	X	21	185	90	Very stiff, saturated, gray SILT with trace fine sand (10%). (ML)	
	20						
BENTO-NITE SLURRY	21						
	22						
	23						
	24	X	20	235	70		
	25						
	26					26'	
	27						
	28					Gray, dense, saturated GRAVEL with trace sand. (GW)	
	29	X	56/6"	285	10		
	30						
	31						
	32						

Woodward-Clyde Consultants

DRILLING LOG (Cont. Sheet)	HOLE NO. BH-17B	SHEET 3 OF 4 SHEETS



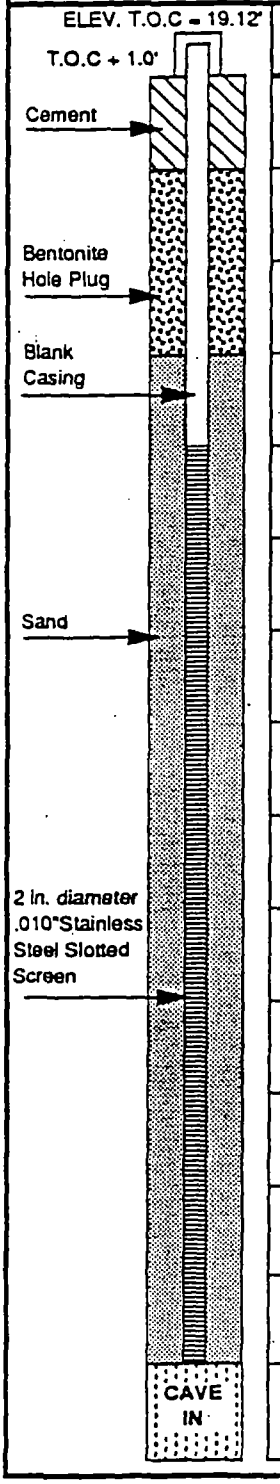
DPT (FT)	ST	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
33						
34	X	60/6"	335	10		
35						
36						
37						
38						
39	X	45-55/6"	385	15	Very dense, saturated, gray sandy GRAVELS. (GW)	
40						
41						
42						
43						
44	X	40-55/6"	435	5		
45						
46						
47						
48						
49						

DRILLING LOG (Cont. Sheet)	HOLE NO. BH-17B	SHEET 4 OF 4 SHEETS

	DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
SAND	50	X	55/6"	485	10	Very dense, saturated, gray sandy GRAVELS. (GW)	
						TOTAL DEPTH = 50 FT	
	51						
	52						
	53						
	54						
	55						
	56						
	57						
	58						
	59						
	60						

Woodward-Clyde Consultants

DRILLING LOG	PROJECT: QUENDALL	PROJECT NO. 86004S	SHEET 1 of 1
LOCATION:	N 197,706 E 1,662,284	TOTAL NO. SAMPLES:	0
DRILLING AGENCY:	SOIL SAMPLING SERVICE	DEPTH TO WATER BELOW GRD SURFACE:	----
HOLE NO.	BH-18A	DATE STARTED: 12/14/88	DATE COMPLETED: 12/14/88
NAME OF DRILLER:	TERRY ASBERRY	DRILLING METHOD:	HOLLOW STEM AUGER
TOTAL DEPTH OF HOLE:	15 FT	INSPECTOR:	WARREN PERKINS

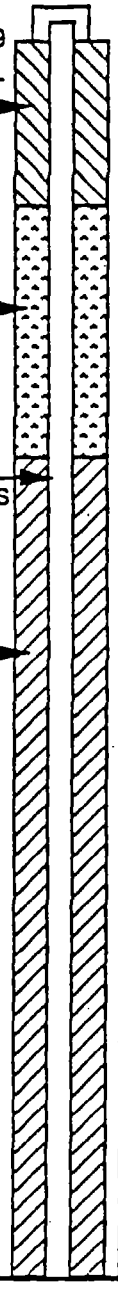


DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
1					Firm, damp, gray SILT with gravels (ML)	No Samples, stratigraphy from BH-18B
2						
3						
4						
5						
6						
7					Very soft, saturated, brown SILT with oil sheen and some organics (ML)	
8						
9						
10						
11						
12						
13						
14						
15						

Woodward-Clyde Consultants

DRILLING LOG	PROJECT QUENDALL	PROJECT NUMBER 86004S	SHEET 1 OF 4 SHEETS
LOCATION	N197707 E1662291	TOTAL NUMBER SAMPLES	14
DRILLING AGENCY	SOIL SAMPLING SERVICE	DEPTH TO WATER BELOW GRD SURFACE	
HOLE NO.	BH-18B	DATE HOLE	STARTED 12/14/88 / COMPLETED 12/14/88
NAME OF DRILLER	Terry Asberry	DRILLING METHOD	HOLLOW STEM AUGER
TOTAL DEPTH OF HOLE	54'	INSPECTOR	WARREN PERKINS

ELEV. T. O. C. 19.44
GRND ELEV:17.9



DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
1	X	16/3"	000	30	Firm, damp, gray SILT with gravels. (ML)	FILL
2–3					LOOSE RUBBLE NO SAMPLES	
4–5	X	5	040	0		
6					6.0'	
7	X	1	060	20	Very soft, saturated, brown SILT with oil sheen and some organics. (ML)	Napthalene odor OVA > 100 ppm at sample
8	X	1	075	30		OVA 2-3 ppm at borehole
9–10	X	5	090	50		
11–14	X	2	125	50		
15						

Woodward-Clyde Consultants

DRILLING LOG (Cont. Sheet)

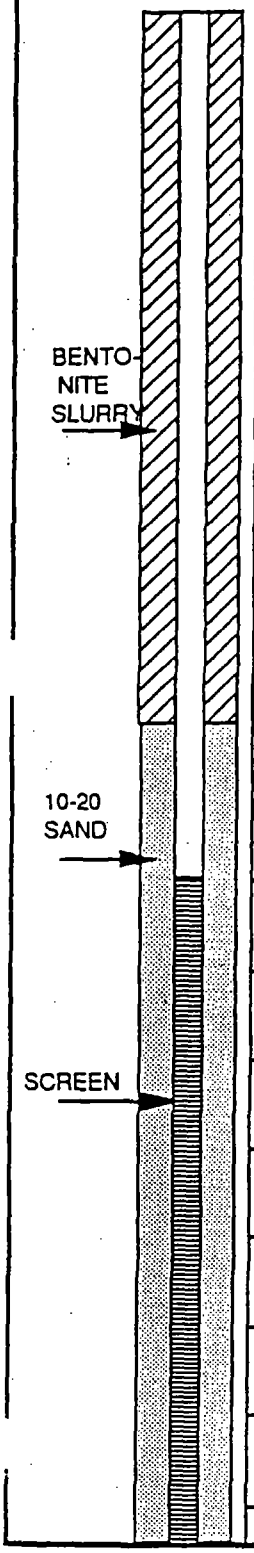
HOLE NO. BH-18B

SHEET 2 OF 4 SHEETS

	DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
BENTO-NITE SLURRY	16						
	17						odor off samples
	18	X	8	175	40		
	19					18.5' Loose to dense, saturated, gray, fine to medium silty SAND (20-40% silt). (SM)	
	20						
	21						
	22						
	23	X	6	225	70		OVA < 1 ppm Breathing Zone (B.Z.)
	24						
	25						
	26						
	27						
	28	X	16	275	50	... medium dense ...	
	29						
	30						
	31						
	32						

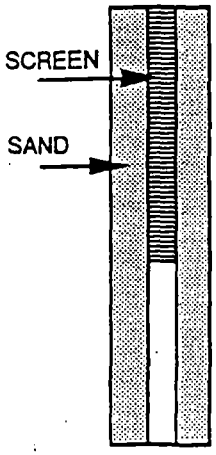
DRILLING LOG (Cont. Sheet)

HOLE NO. BH-18B



DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
33–34	X	38	325	75	Dense, saturated, gray fine SAND and silt with trace gravel (20 - 40% silt). (SM)	
35						
36						
37						
38–39	X	34	375	40		
40						
41						
42						
43–44	X	24	425	40	... Trace well-rounded gravel ...	
45					45'	
46						
47						
48–49	X	95	475	25	Very dense, saturated gray, sandy GRAVEL. (GW)	

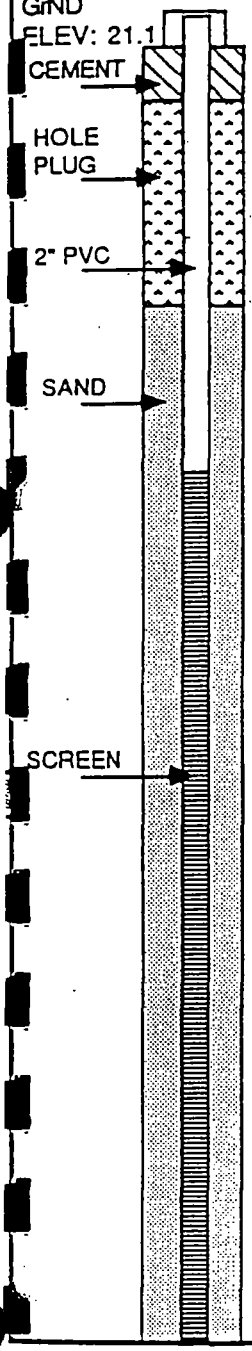
DRILLING LOG (Cont. Sheet)	HOLE NO. BH-18B
	SHEET 4 OF 4 SHEETS



DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
50					Very dense, saturated, gray , sandy GRAVEL. (GW)	
51						
52						
53	X	45	525	0	A few gravel bits in spoon	
54					TOTAL DEPTH = 54 FT	
55						
56						
57						
58						
59						
60						

DRILLING LOG	PROJECT QUENDALL	PROJECT NUMBER 86004S	SHEET 1 OF 2 SHEETS
TION	N197639 E1662123	TOTAL NUMBER SAMPLES 8	
DRILLING AGENCY	SOIL SAMPLING SERVICE	DEPTH TO WATER BELOW GRD SURFACE	
HOLE NO.	BH-19	DATE HOLE STARTED 12/19/88	COMPLETED 12/19/88
NAME OF DRILLER	Terry Asberry	DRILLING METHOD	HOLLOW STEM AUGER
TOTAL DEPTH OF HOLE	19 ft	INSPECTOR	KELLY SUSEWIND

ELEV. T.O.C: 22.63
GrND ELEV: 21.1



DPT (FT)	S T	B/FT	SAMP NO.	% REC	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
		17	000	75	Medium dense, moist, brown, gravelly, silty SAND. (SM)	FILL
1						
		15	015	100	2.0' Medium stiff, moist, gray SILT with some sand and trace of gravel. (ML)	VOA = 0-3 ppm in breathing zone (B.Z.)
2						
3		6	030	75		OVA 0.5 ppm in B.Z. 500 ppm in auger FILL
4						
5		8	050	75		Coal like inclusions in silt
6					6.0' Loose, saturated, gray, medium to coarse SAND. (SP)	.8 ppm on sample
7		16	065	75		
8						
9		11	080	100		0.5 ppm in B.Z. 100 ppm @ sample >1000 ppm in auger
10						
11						
12						
13		18	130	100		
14						
15						

Woodward-Clyde Consultants

DRILLING LOG (Cont. Sheet)

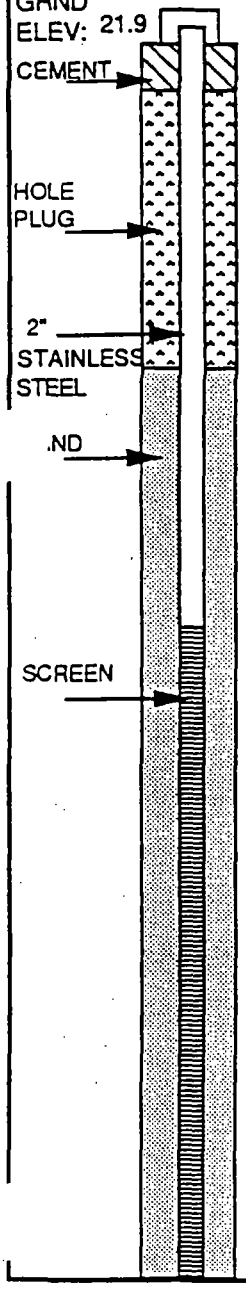
HOLE NO. BH-19

SHEET 2 OF 2 SHEETS

	DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
SAND (10-20)	16					Loose, saturated, gray, medium to coarse SAND. (SP)	
	17						4.5 ppm in B.Z. Drager shows 0 Benzene
CAVE N	18	X	10	175	100	18' Stiff, wet, tan to brown SILT with organics. (ML)	
	19					TOTAL DEPTH = 19 FT	
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						

DRILLING LOG	PROJECT QUENDALL	PROJECT NUMBER 86004S	SHEET 1 OF 2 SHEETS
LOCATION	N197383 E1662038	TOTAL NUMBER SAMPLES	9
DRILLING AGENCY	SOIL SAMPLING SERVICE	DEPTH TO WATER BELOW GRD SURFACE	
HOLE NO.	BH-20A	DATE HOLE STARTED 12/19/88	COMPLETED 12/20/88
NAME OF DRILLER	Terry Asberry	DRILLING METHOD	Hollow Stem Auger
TOTAL DEPTH OF HOLE	23'	SIGNATURE OF INSPECTOR	

ELEV. T. O. C. 23.4
GRND ELEV: 21.9

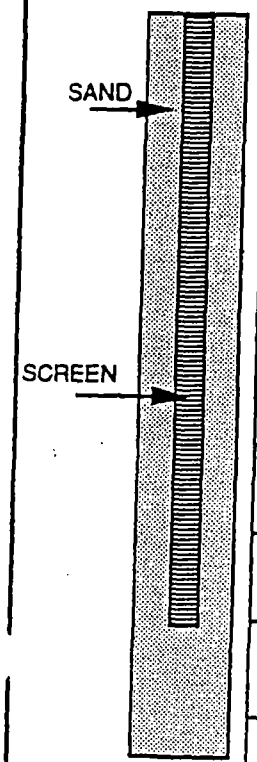


DPT (FT)	ST	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
					Very loose, tan brown, fine sand with trace of some silt and trace organics as wood, dry. (SP/SM)	NO SAMPLES TAKEN STRATIGRAPHY FROM BH-20B
3.0'					Very stiff gray/black, sandy SILT. (ML)	
					Green/gray, wet, loose medium SAND. (SW)	12/20
5.5'					Loose, wet, green, gray medium SAND. (SW)	
9.0'					Medium stiff, wet, brown SILT with trace sand (ML)	
13.5'					Very loose, wet, gray, medium SAND with silt and trace organics. (SW)	0.5 ppm in B.Z. 1.5 ppm in auger

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Woodward-Clyde Consultants

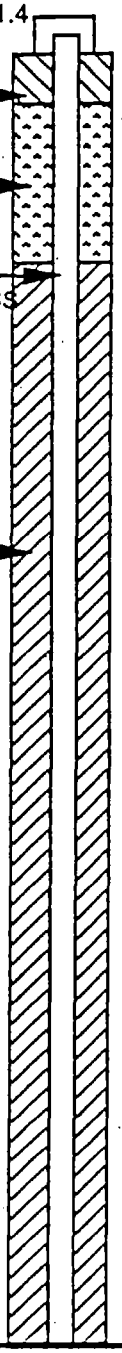
DRILLING LOG (Cont. Sheet)	HOLE NO. BH-20A
	SHEET 2 OF 2 SHEETS



DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
16						
17						
18					Brown/Black, wet, medium stiff peaty SILT. (ML/OL)	
19					Gray, loose, medium SAND with trace silt. (SP) end of sampler could be lense or change in unit	
20						
21						
22					Green/gray, stiff, silty CLAY. (CL)	
23						
24					TOTAL DEPTH = 23.5 FT	
25						
26						
27						
28						
29						
30						
31						
32						

DRILLING LOG	PROJECT QUENDALL	PROJECT NUMBER 86004S	SHEET 1 OF 4 SHEETS
LOCATION	N197389 E1662038	TOTAL NUMBER SAMPLES	14
DRILLING AGENCY	SOIL SAMPLING SERVICE	DEPTH TO WATER BELOW GRD SURFACE	
HOLE NO.	BH-20B	DATE HOLE	STARTED 12/19/88 / COMPLETED 12/20/88
NAME OF DRILLER	Terry Asberry	DRILLING METHOD	HOLLOW STEM AUGER
TOTAL DEPTH OF HOLE	54'	INSPECTOR	KELLY SUSEWIND

ELEV. T.O. C.22.88
GRND 21.4
ELEV:



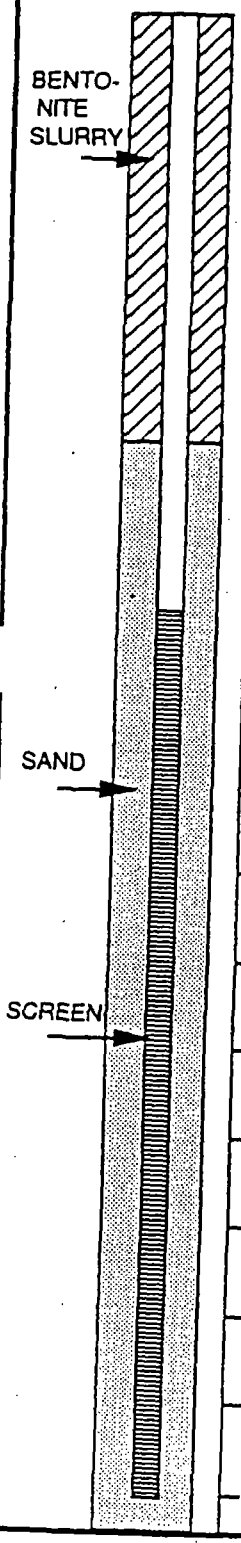
DPT (FT)	ST	B/FT	SAMP NO.	% REC	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
1	X	4	000	100	Very loose , tan brown, fine sand with trace of some silt and trace organics as wood, dry. (SP/SM)	FILL
2	X	5	015	100		
3	X				3.0' Very stiff gray/black, sandy SILT. (ML)	
4	X	36	030	100		
5	X				Green/gray,wet, loose medium SAND. (SW)	▽ 12/20
6	X	12	050	70	5.5' Loose, wet, green, gray medium SAND. (SW)	
7	X	8	065	60		
8	X					
9	X	6	080	100	9.0' Medium stiff, wet, brown SILT with trace sand (ML)	
10						
11						
12	X	5	125	100		0.5 ppm in Breathing Zone (B.Z.) 1.5 ppm in auger
13					13.5' Very loose, wet, gray, medium SAND with silt and trace organics. (SW)	
14						
15						

DRILLING LOG (Cont. Sheet)	HOLE NO. BH-20B	
		SHEET 2 OF 4 SHEETS

	DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
	16						
	17						
	18	X	7	175	100	Loose, wet, gray, medium SAND with peaty silt layers. (SM)	
	19					... stiff, peaty SILT...	
BENTO-NITE SLURRY	20						
	21						
	22						
	23	X	7	225	100	... stiff, silty CLAY ...	
	24						
	25						
	26						
	27						
	28	X	10	275	100		3 ppm in auger B.G. in B.Z.
	29						
	30						
	31						
	32						

DRILLING LOG (Cont. Sheet)

HOLE NO. BH-20B



DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
33–34	X	25	325	100	Medium dense,wet. gray, medium to fine SAND with silt (SM)	
35					35'	
36–37						
38–39	X	28	375	40	Medium dense,gray, wet,gravelly sub-rounded , fine to medium SAND. (SW)	
40–41						
42–43	X	25	425	30	... Increasing gravel size...	
44–45						
46–47						
48–49						

DRILLING LOG (Cont. Sheet)

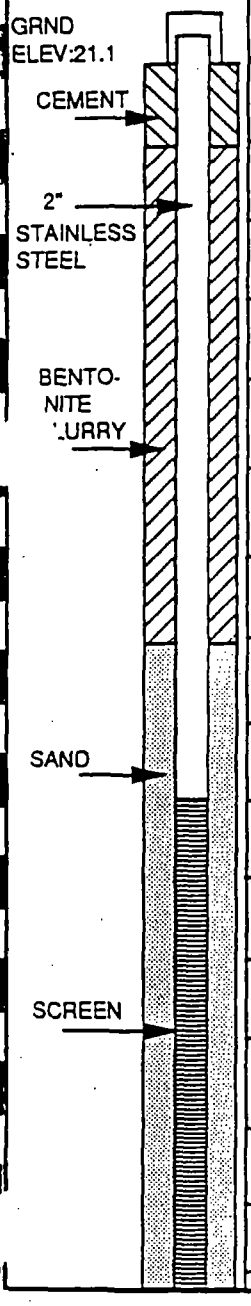
HOLE NO. BH-20B

SHEET 4 OF 4 SHEETS

	DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
SAND	50					Medium dense to very dense, saturated, gray, gravally, fine to medium SAND. (SW)	
	51						
	52						
CAVE-IN	53	X	62	525	0		
	54					TOTAL DEPTH = 54 FT	
	55						
	56						
	57						
	58						
	59						
	60						

RILLING LOG	PROJECT QUENDALL	PROJECT NUMBER 86004S	SHEET 1 OF 2 SHEETS
LOCATION	N197049 E1661797	TOTAL NUMBER SAMPLES	0
DRILLING AGENCY	SOIL SAMPLING SERVICE	DEPTH TO WATER BELOW GRD SURFACE	
HOLE NO.	BH-21A	DATE HOLE	STARTED 12/27/88 / COMPLETED 12/27/88
NAME OF DRILLER	Terry Asberry	DRILLING METHOD	HOLLOW STEM AUGER
TOTAL DEPTH OF HOLE	20'	INSPECTOR	WARREN PERKINS

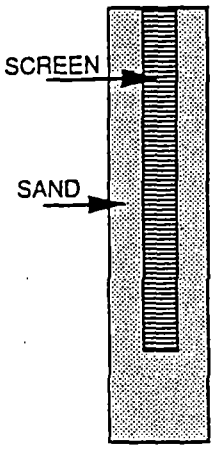
ELEV. T. O. C: 22.56
GRND ELEV:21.1



DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
					Loose-dense, wet, brown silt and gravel with wood chips	NO SAMPLES STRATIGRAPHY FROM BH-21B
1						
2						
3					Very stiff, gray-white, wet silty clay	fill, decomposed gypsum? ash?
4						
5						
6						
7						
8						
					8.5'	
9					Very dense, saturated, gray, medium to fine sand (10-20% silt).	
10						
11						
12						
13					sand and silt	creosote odor and sheen
14						
15						

Woodward-Clyde Consultants

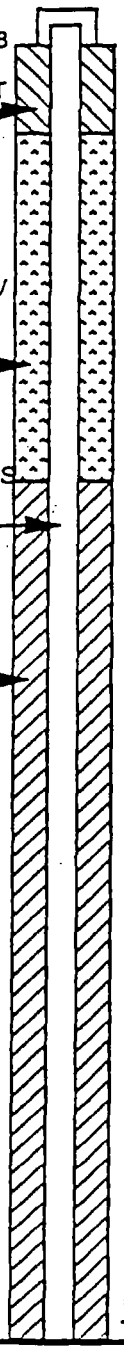
DRILLING LOG (Cont. Sheet)	HOLE NO. BH-21A	SHEET 2 OF 2 SHEETS



DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
16						
17						
18						
19					Stiff, saturated, gray-brown sandy SILT.	
20					TOTAL DEPTH = 20 FT	
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						

DRILLING LOG	PROJECT QUENDALL	PROJECT NUMBER 86004S	SHEET 1 OF 4 SHEETS
LOCATION	N197050. E1661792	TOTAL NUMBER SAMPLES	16
DRILLING AGENCY	SOIL SAMPLING SERVICE	DEPTH TO WATER BELOW GRD SURFACE	
HOLE NO.	BH-21B	DATE HOLE	STARTED 12/23/88 / COMPLETED 12/27/88
NAME OF DRILLER	Terry Asberry	DRILLING METHOD	HOLLOW STEM AUGER
TOTAL DEPTH OF HOLE	54.5 ft	INSPECTOR	WARREN PERKINS

ELEV T. O.C. 22.28
GRND ELEV: 20.8



DPT (FT)	ST	B/FT	SAMP NO.	% REC	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
1	X	59	000	60	Loose-dense, wet, brown SILT and gravel with wood chips	FILL
2	X	55	015	60		
					2.5'	
3	X	45	030	80	Very stiff, wet gray-white, silty CLAY	FILL, Decomposed gypsum?
4	X					
5	X	50	045	70	FILL	
6	X	36	060	40		
7	X					
8	X	53	075	0		
9	X	68	090	40		
					9.0'	
10	X				Very dense, saturated, gray, medium to fine SAND (10-20% silt)	
11						
12						
13	X	67	130	5	sand and silt, gradational contact from sand above to silt below	creosote odor and sheen
14	X					
15						

Woodward-Clyde Consultants

DRILLING LOG (Cont. Sheet)

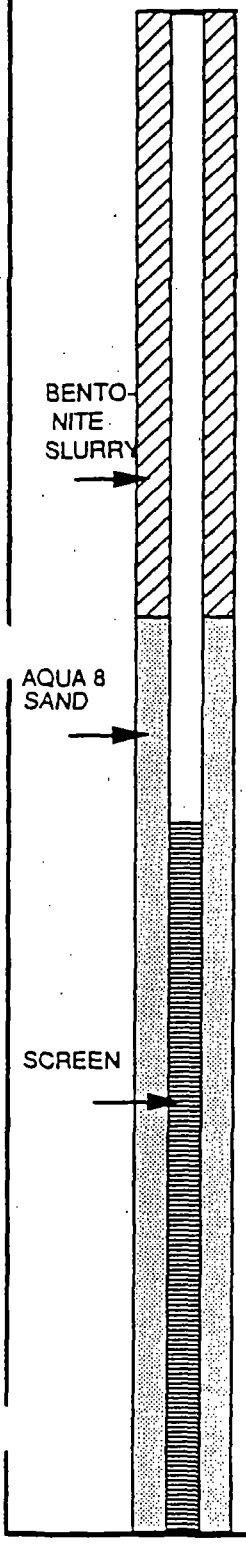
HOLE NO. BH-21B

	DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
BENTO-NITE SLURRY	16						
	17						
	18	X					
	19	X	12	180	5	Stiff, saturated, gray-brown sandy SILT.	
	20						
	21						
	22						
	23	X					
	24	X	16	230	80	24'	
						Very stiff, saturated, gray-brown, peaty SILT.	
	25						
	26					26'	
	27						
	28	X					
	29	X	28	280	70	very stiff, saturated, gray sandy SILT to silty SAND (20-30% silt).	
	30						
	31						
	32						

DRILLING LOG (Cont. Sheet)

HOLE NO. BH-21B

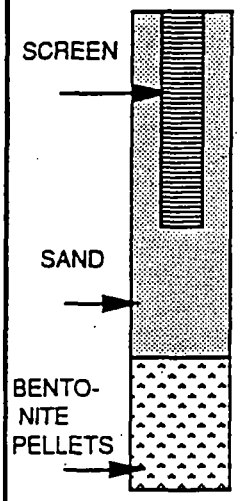
SHEET 3 OF 4 SHEETS



DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
33	X	48	330	1		trace of gravelly silt in sand trap
34						
35						
36						
37						
38	X	35	380	60	Very stiff, saturated, gray sandy SILT	silty gravel sluff at top of sample
39						
40						
41						
42					42 ?	
43	X	44	430	70	Medium dense, saturated gray to yellow-brown, silty SAND.	
44						
45						
46						
47						
48	X	8	480	40		
49						

Woodward-Clyde Consultants

DRILLING LOG (Cont. Sheet)	HOLE NO. BH-21B
	SHEET 4 OF 4 SHEETS

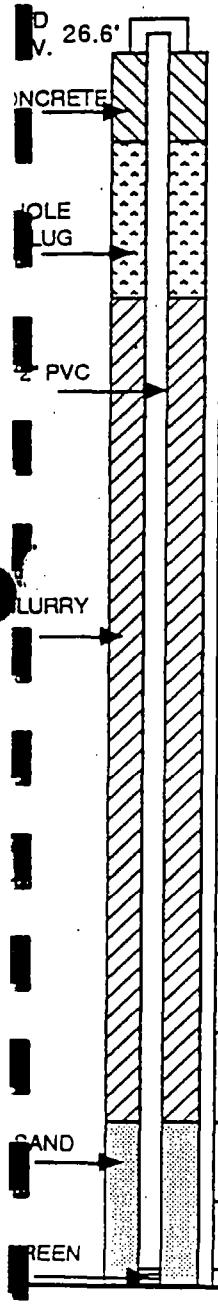


DPT (FT)	ST	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
					Medium dense, saturated, gray to yellow-brown silty SAND.	
50						
51						
52						
53						
	X	17	530	45		
54					54' sandy GRAVEL	
					TOTAL DEPTH = 54.5 FT	
55						
56						
57						
58						
59						
60						

Woodward-Clyde Consultants

DRILLING LOG	PROJECT QUENDALL	PROJECT NUMBER 86004S	SHEET 1 OF 2 SHEETS
CATION	N197560 E1663171	TOTAL NUMBER SAMPLES 11	
AGENCY	SOIL SAMPLING SERVICE	DEPTH TO WATER BELOW GRD SURFACE	
LE NO.	BH-22	DATE HOLE — STARTED 12/06/88	COMPLETED 12/06/88
AME OF DRILLER	Terry Asberry	DRILLING METHOD HOLLOW STEM AUGER	
TAL DEPTH OF HOLE	28.5'	INSPECTOR KELLY SUSEWIND	

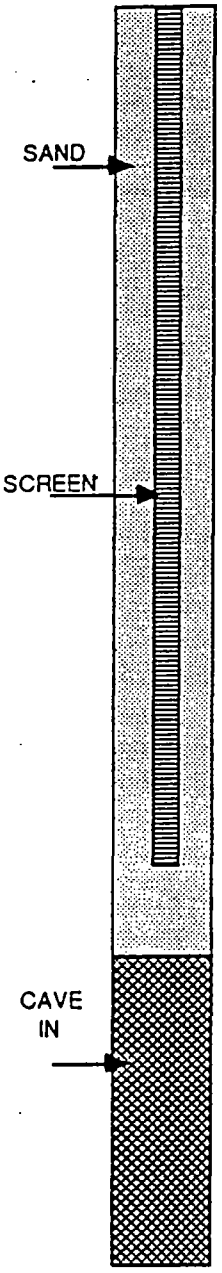
EV. T. O.C. 28.09'
D V. 26.6'



DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
1		4	000	100	Soft, brown, moist SILTwith trace sand and organics as roots	OVA at Background in Breathing Zone (B.Z.) and at borehole
					1.5'	
2		4	015	100	Tan/brown medium interbedded SAND and SILT.	generally interbedded gray silt and red sand
3		1	030	100		
4						OVA at Back Ground in Breathing Zone (B.Z.) and in borehole
5		4	045	100		
					6.0'	
6		4	060	100	Very soft , saturated, gray, SILTwith trace sand and organics.	
7						OVA = 0 ppm in auger.
8		1	075	100	... 6" gray, medium sand lense ...	
9						
10		1	095	100		
11						
12						
13					... Medium stiff ...	
14		8	130	100	...6" organic (wood chips) layer...	OVA = 0 ppm in auger.
15						

Woodward-Clyde Consultants

DRILLING LOG (Cont. Sheet)	HOLE NO. BH-22
	SHEET 2 OF 2 SHEETS

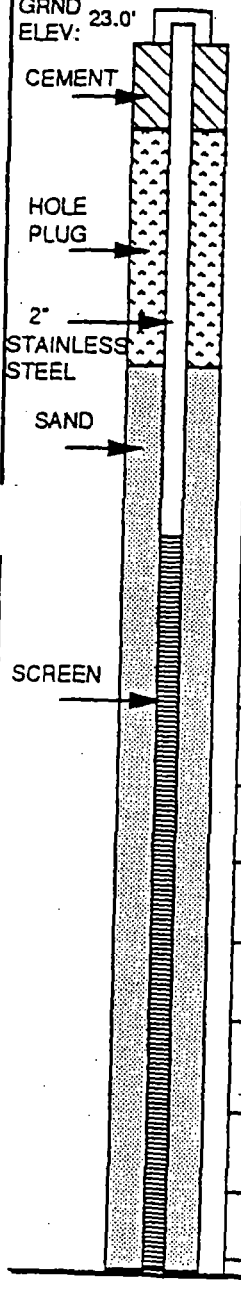


DPT (FT)	ST	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
16					16.0'	
17					Medium dense, wet, gray medium SAND with trace silt. Small silt stringers at +1" at 19 ft.	
18	X	11	180	100		OVA = 0 ppm in B.Z.
19	X					
20						
21						
22						
23	X	14	230	100	... 1 foot medium stiff, wet, gray clayey SILT to silt with some clay lense	OVA = 0 ppm in B.Z.
24	X					
25					(washed material is clayey silt 25-30)	
26						
27						
28	X	45	280	70		OVA = 0 ppm in B.Z.
29	X					
30					TOTAL DEPTH = 29.5 FT	
31						
32						

Woodward-Clyde Consultants

DRILLING LOG	PROJECT QUENDALL	PROJECT NUMBER 86004S	SHEET 1 OF 2 SHEETS
LOCATION	N197551 E1662352	TOTAL NUMBER SAMPLES	9
DRILLING AGENCY	SOIL SAMPLING SERVICE	DEPTH TO WATER BELOW GRD SURFACE	
HOLE NO.	BH-23	DATE HOLE STARTED 12/28/88	COMPLETED 12/28/88
NAME OF DRILLER	Terry Asberry	DRILLING METHOD	HOLLOW STEM AUGER
TOTAL DEPTH OF HOLE	24.5'	INSPECTOR	WARREN PERKINS

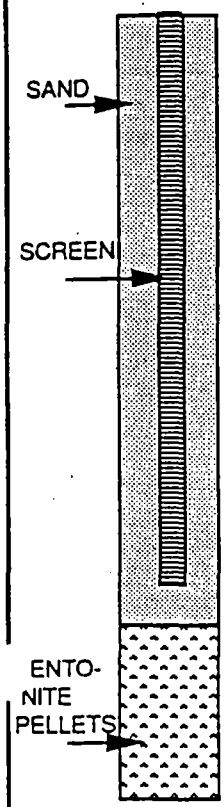
ELEV. T. O. C. 24.51'
GRND ELEV: 23.0'



DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
					6" - loose, silt and wood chips	FILL
1		36	000	70	rock, gravel FILL	
2		15	015	75	Stiff to very stiff, gray SILTwith gravel	
3						
4		17	030	60		
					4.0'	
5					Very stiff, black to gray banded silt to siltstone	wood debris and slough (no sample)
6		21	050	5	wood debris	
7		8	065	5	FILL	
8					8.0'	
9		17	080	70	Medium dense, saturated, silty SAND with gravel	strong odor, oil sheen OVA => 1000 ppm at borehole
10						
11					11 ?	
12						
13						
14		5	130	80	Firm, saturated, brown SILT	oil sheen
15						

Woodward-Clyde Consultants

DRILLING LOG (Cont. Sheet)	HOLE NO. BH-23
	SHEET 2 OF 2 SHEETS

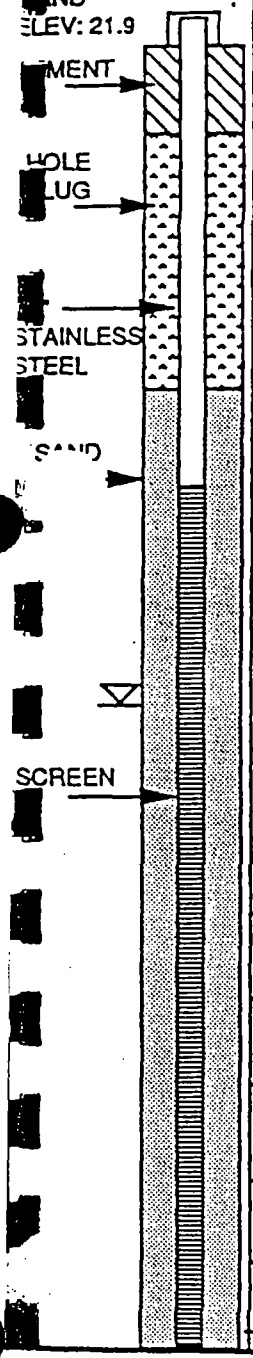


DPT (FT)	ST	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
16						
17						
18	X	10	180	100	Stiff, saturated, brown SILT with wood debris. Sand at tip of spoon	Oil sheen
19						
20						
21					Sand Lense?	
22						
23	X	7	230	100	Firm, saturated gray SILT	Oil sheen
					23.5'	
					Brown silty peat	Oil sheen
24					24'	
					Stiff, saturated, gray SILT	Oil Sheen much less
25					TOTAL DEPTH = 24.5 FT	
26						
27						
28						
29						
30						
31						
32						

Woodward-Clyde Consultants

DRILLING LOG	PROJECT BAXTER	PROJECT NUMBER 86006S	SHEET 1 OF 2 SHEETS
LOCATION N197759.1941 E1662593.3168		TOTAL NUMBER SAMPLES 8	
DRILLING AGENCY Soil Sampling Service		DEPTH TO WATER BELOW GRD SURFACE 7.5 ft.	
HOLE NO. BAX-9		DATE HOLE STARTED 12/13/88	COMPLETED 12/14/88
NAME OF DRILLER T. Asberry		DRILLING METHOD Hollow Stem Auger	
TOTAL DEPTH OF HOLE 18.4 FT		INSPECTOR W. Perkins	

ELEV. T.O.C.: 23.40
GROUND ELEV: 21.9



DPT (FT)	ST	B/FT	SAMP NO.	% REC	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
1					Fill Coarse, trap rock, gravels - NO SAMPLES	FILL
2	X	42	023	67	Hard, damp, dark gray silty CLAY, trace well rounded gravels. (CL - ML)	
3	X					
4	X	32	038	67		
5	X	31	053	50		
6	X					
7	X	9	068	50		
					7.5	
					Brown organic SILT	
8	X	18	083	85	8.0	
9	X				Medium dense, saturated gray silty SAND (10-20% silt). (SM)	
10	X	30	098			
11	X					
12	X	9	124			
13	X					
14					14.0	
15					PEAT with high silt content and wood fragments. (OL/OH)	

Woodward-Clyde Consultants

HC004596

DRILLING LOG (Cont. Sheet)	HOLE NO. BAX-9	SHEET 2 OF 2 SHEETS

	DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
SAND	16					PEAT with high silt content and wood fragments. (OL/OH)	
	17	X	11	154			
	18						
	19					TOTAL DEPTH = 18.4 FT	
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						

Woodward-Clyde Consultants

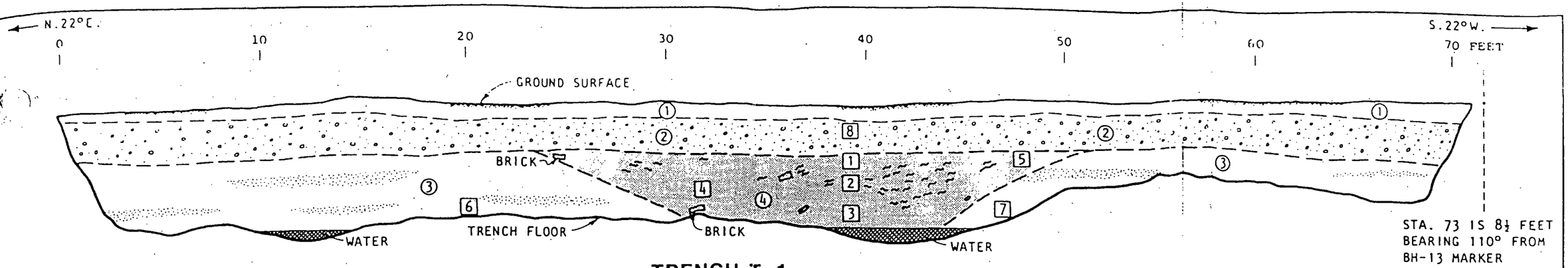
HC004597

WOODWARD-
CLYDE 1983

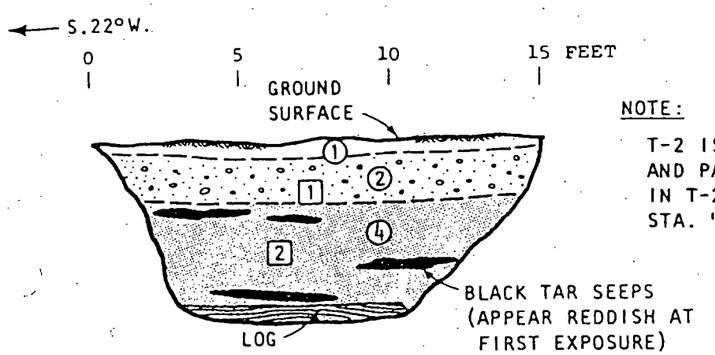
WOODWARD-CLYDE CONSULTANTS
1983

Boring and Well Logs
BH-1 to BH-16

Trench
T-1 to T-4



TRENCH T-1



TRENCH T-2

NOTE:

T-2 IS 25 FEET E.S.E. OF AND PARALLEL TO T-1. STA. "0" IN T-2 IS CORRELABLE WITH STA. "38" IN T-1.

UNIT DESCRIPTIONS FOR T-1 & T-2

① ORGANIC SILT (MH): Dark brown to black, highly plastic with abundant fibre debris (wood).

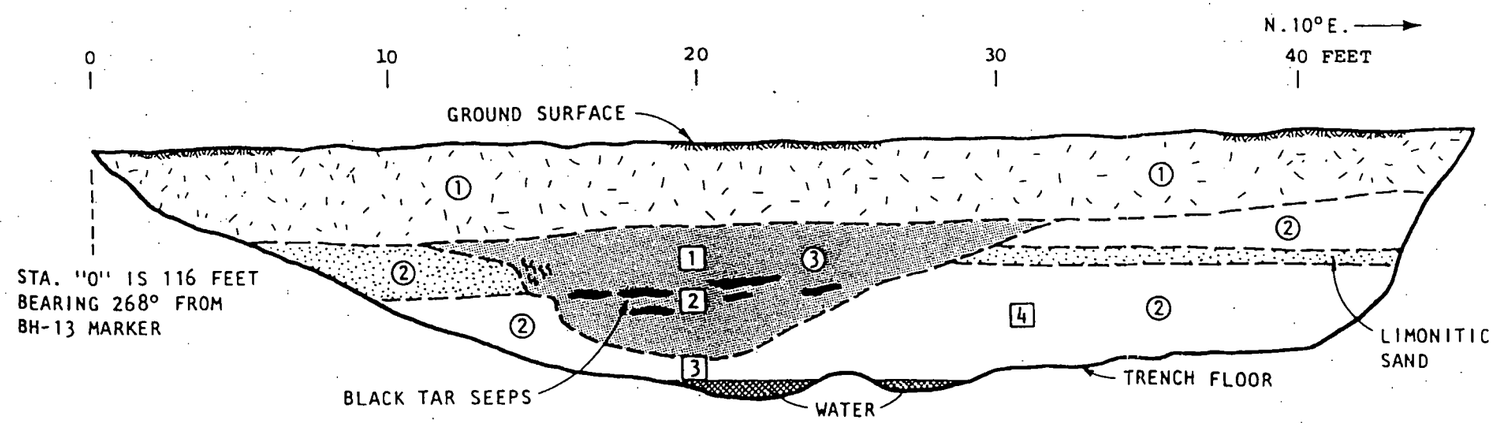
② SANDY GRAVEL (GP): Light brown to buff; 1" minus rounded gravel & sand aggregate fill. Wood fibre along lower contact.

③ SILTY SAND TO SANDY SILT (SM-ML): Gray to brown, damp, medium to fine sand, occasional coarse lenses.

④ CHANNEL DEPOSITS: Mottled clay, sand and gravel lenses interspersed with cultural debris including tar, bricks & wood.

TAR FRAGMENTS

[4] SAMPLE LOCATION AND NUMBER



TRENCH T-3

UNIT DESCRIPTIONS FOR T-3

① FILL: Clayey organic silt, black, abundant wood fibre and rootlets.

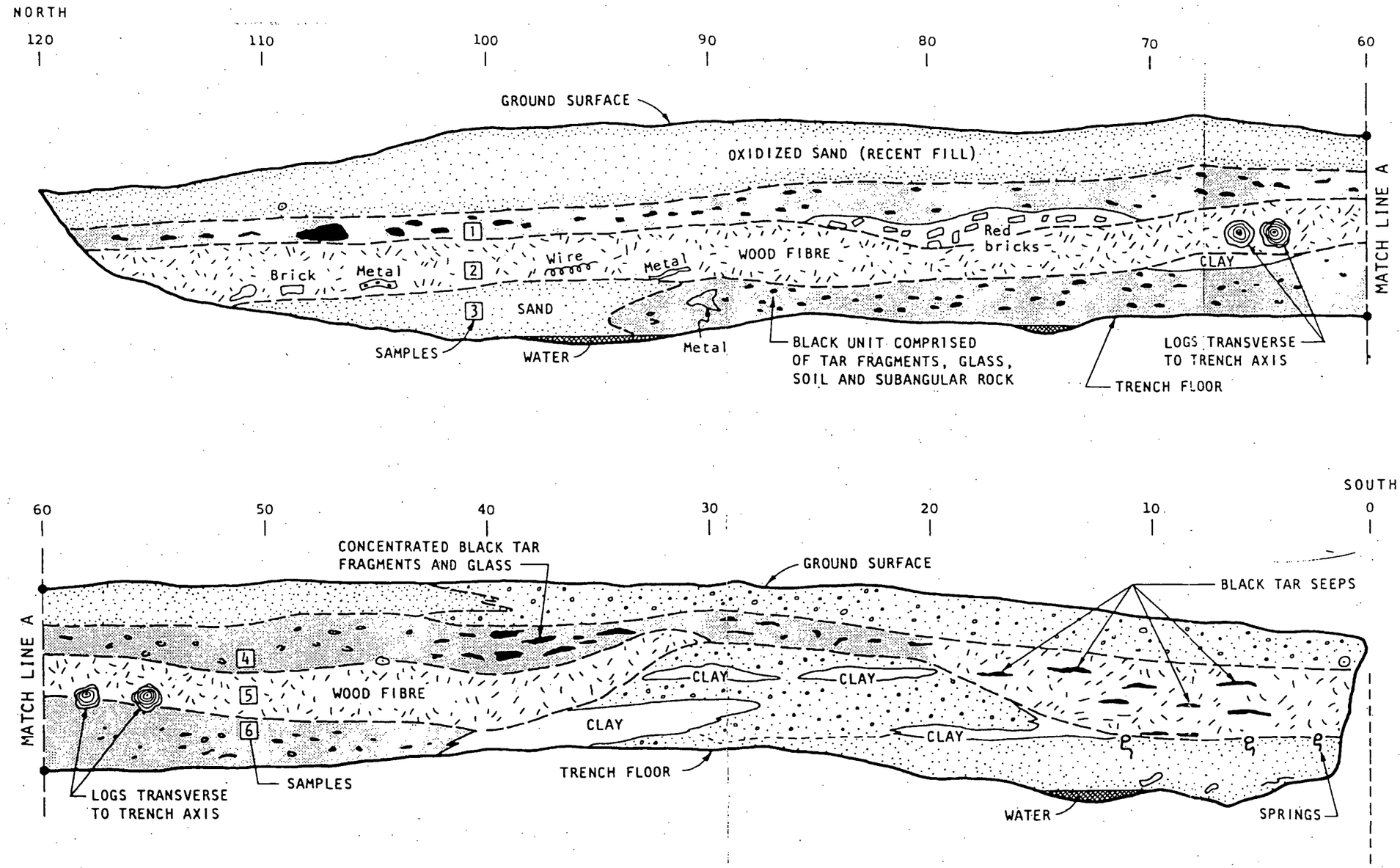
② SILTY SAND TO CLAYEY SAND (SM-SP): Olive brown to gray, occasional continuous thin sand beds.

③ CHANNEL DEPOSITS: Abundant cultural debris including metal & tar fragments, wood, and tar seeps. Pronounced offensive odor with iridescent sheen on groundwater surface.

[4] SAMPLE LOCATION AND NUMBER

Project No. 90029A	PORT QUENDALL Renton, Washington	CROSS-SECTIONS OF TRENCHES T-1, T-2, AND T-3	Figure 3
	Woodward-Clyde Consultants		

HC001015



TRENCH T-4

HC001016

Project No. 90029A	PORT QUENDALL Renton, Washington	CROSS–SECTION OF TRENCH T–4	Figure 4
Woodward-Clyde Consultants			

Project: PORT QUENDALL
Renton, Washington

Log of Boring No. BH-1

Date Drilled: May 17, 1983
Type of Boring: 4" Hollow Stem Auger
Hammer Weight:
Remarks:

Surface Elevation: 23.4

Depth, Ft	Samples	Blows/Ft	PAH concentration (%)	MATERIAL DESCRIPTION
	1		0.002	FILL Woodchips and Aggregate
	2	56	0.93	SANDY SILT (ML) Olive-gray, occasional gravel lenses, distinctive HC odor throughout
5	3	24	4.8	Becomes less sandy
	4	8	0.002	Water With some organic debris
	5	14	0.001	SILTY SAND (SM) Medium to fine, 20% silt, frequent peat lenses, some distinctive odor
10				Peat lens
	6	27	0.004	Peat lens
15				
	7	25	0.009	Peat lens
20				BOTTOM OF BORING @ 19.5'

LITHOLOGY

WELL DETAIL

2-inch I.D. PVC blank

2-inch I.D. PVC Slotted

DRAFT

HC004701

Project: PORT QUENDALL
Renton, Washington

Log of Boring No. BH-2

Date Drilled: May 17, 1983
Type of Boring: 4" Hollow Stem Auger
Hammer Weight:
Remarks:

Depth, Ft	Samples	Blows/Ft	PAH concentration (%)	MATERIAL DESCRIPTION
				Surface Elevation 20.8
	1	52	<	FILL Silt, Gravel and black organic debris
	2	33	0.002	SILTY SAND (SM) Olive-gray, damp, occasional lenticular gravels and peat interbeds
5	3	8	0.003	Water
	4	44	<	
	5	27	<	
10				Peat
	6	10	0.001	Peat
15				
	7	34	<	Peat
20				BOTTOM OF BORING @ 19.5'

LITHOLOGY

WELL DETAIL

2-inch I.D. PVC blank

2-inch I.D. PVC slotted

DRAFT

HC004702

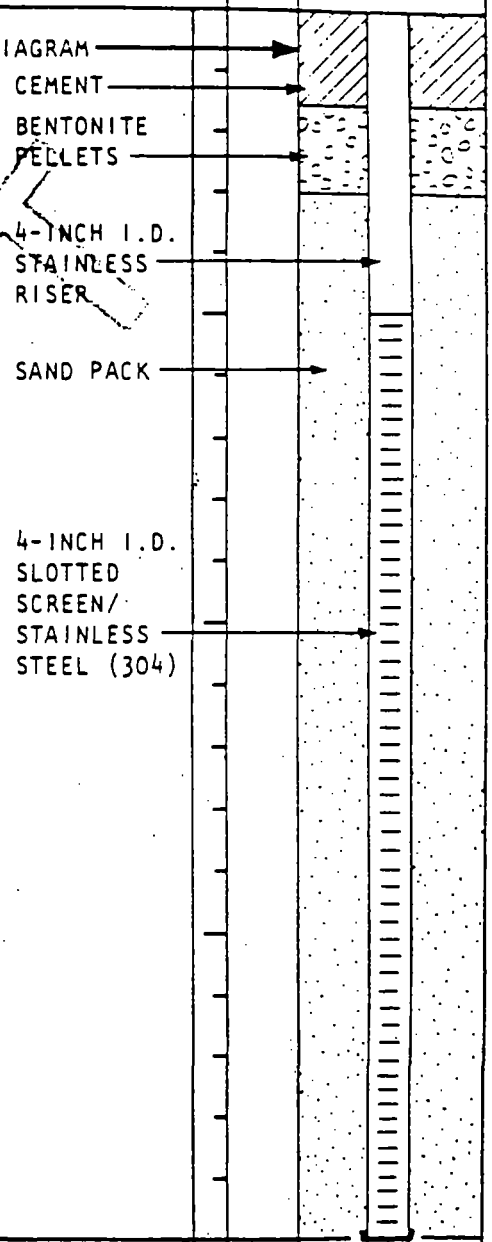
Project: PORT QUENDALL
Renton, Washington

Log of Boring No. BH-2A

Date Drilled: June 2, 1983
Type of Boring: 6" Hollow Stem Auger
Hammer Weight:

Remarks:

Depth, Ft	Samples	Blows/Ft	PAH concentration (%)	MATERIAL DESCRIPTION	LITHOLOGY	WELL DETAIL
				Surface Elevation		
				MONITORING WELL 2A "AS BUILT" DIAGRAM No lithologic log or sampling Installation is monitoring well location 5.7 feet west-southwest of Boring 2		
5						
10						
15						
20				BOTTOM OF BORING @ 20'		



DRAFT

Proj. No. 90029A | Woodward-Clyde Consultants | Appendix A-3

HC004703

Project: PORT QUENDALL
Renton, Washington

Log of Boring No. BH-4

Date Drilled: May 18, 1983
Type of Boring: 4" Hollow Stem Auger
Hammer Weight:
Remarks:

Depth, Ft	Samples	Blows/Ft	PAH concentration (%)	MATERIAL DESCRIPTION	LITHOLOGY	WELL DETAIL
				Surface Elevation		
	1	26	<	FILL Silt with aggregate		
5	2			SANDY SILT (ML) Dark brown, occasional peat lenses } Log FILL		
10	3	2	0.056	CLAYEY SILT (MH) Black, medium-highly plastic, noticeable HC odor and iridescent sheen, some peat		Bentonite plug 0-23'
	4	18	0.44			
15	5	4	3.4	Iridescent throughout		
20	6	7	0.75	CLAY (CH) Brown, with occasional peat lenses		
	7	2	0.041	BOTTOM OF BORING @ 23'		

DRAFT

Proj. No. 90029A | Woodward-Clyde Consultants | Appendix A-4

HC004704

Project: PORT QUENDALL
Renton, Washington

Log of Boring No. BH-5

Date Drilled: May 20, 1983
Type of Boring: 6" Hollow Stem Auger
Hammer Weight:
Remarks:

Depth, Ft	Samples	Blows/Ft	PAH concentration (%)	MATERIAL DESCRIPTION
				Surface Elevation:
	1	10	0.73	FILL Silty Sand (SM), brown, dry, some organic debris/rootlets
	2	10	1.0	
	3	16	0.90	
5	4	20	0.89	Water Becomes damp, pitch fragments and black fibres, with noticeable HC odor
	5	24	0.89	SILTY CLAY (CH-CL) Olive-gray, medium to high plasticity, occasional black fibres & brick fragments
	6	34	0.006	SILTY SAND (SM) Gray, medium to coarse, distinctive HC odor and iridescent sheen
10				
	7	29	0.006	
15				Concentrated contamination Noticeable HC odor and iridescent sheen; some rapid corporation of lighter fractions noted
	8	28	1.9	Concentrated contamination
20				CLAYEY SILT to SANDY SILT (MH-ML) Brown, some odor
	9	12	0.71	BOTTOM OF BORING @ 23'

LITHOLOGY

WELL DETAIL

4-inch I.D. PVC blank (sched 40)

4-inch I.D. PVC slotted

[redacted]

DRAFT

Project: PORT QUENDALL
Renton, Washington

Log of Boring No. BH-5A

Date Drilled: May 20, 1983
Type of Boring: 4" Hollow Stem Auger
Hammer Weight:

Remarks:

Depth, Ft	Samples	Blows/Ft	PAH concentration (%)	MATERIAL DESCRIPTION	LITHOLOGY	WELL DETAIL
				Surface Elevation		
				MONITORING WELL 5A "AS BUILT" DIAGRAM		
				No lithologic log or sampling		BENTONITE SEAL
				Installation is a shallow monitoring well 4.5 feet north of Boring 5		4-INCH I.D. PVC BLANK
5						SAND PACK
						4-INCH I.D. PVC SLOTTED
10				BOTTOM OF BORING @ 10'		
15						
20						

DRAFT

Proj. No. 90029A | Woodward-Clyde Consultants | Appendix A-6

HC004706

Project: PORT QUENDALL
Renton, Washington

Log of Boring No. BH-6

Date Drilled: May 20, 1983
Type of Boring: 6" Hollow Stem Auger
Hammer Weight:
Remarks:

Depth, Ft	Samples	Blows/Ft	PAH concentration (%)	MATERIAL DESCRIPTION
				Surface Elevation
	1	6	1.0	FILL Silt and aggregate push for drill pad } Black HC zone, distinctive odor
5	2	48	0.023	SILTY SAND (SM) Gray, medium to coarse, occasional clay lenses, noticeable HC odor
	3	7	0.94	
	4	16	0.01	
10				
	5	8	0.002	SILTY CLAY (CH-CL) Brown, occasional peat lenses
15				
	6	3	0.001	
20				BOTTOM OF BORING @ 19.5'

LITHOLOGY

WELL DETAIL

4-inch I.D. PVC blank

4-inch I.D. PVC slotted

DRAFT

Proj. No. 90029A

Woodward-Clyde Consultants

Appendix A-7

HC004707

Project: PORT QUENDALL
Renton, Washington

Log of Boring No. BH-7

Date Drilled: May 17, 1983
Type of Boring: 4" Hollow Stem Auger
Hammer Weight:

Remarks:

Depth, Ft	Samples	Blows/Ft	PAH concentration (%)	MATERIAL DESCRIPTION
				Surface Elevation
				FILL Silt with gravel, silt pushed for drill pad With gravel
	1	11	0.91	CLAY (CH) Olive-gray, highly plastic, damp
5	2	2	0.081	SANDY SILT (ML) Dark gray, noticeable HC odor and iridescence
	3	3	0.74	
	4	1.5	0.97	
10	5	16	0.88	PEAT: With clay, brown, highly plastic, noticeable HC odor
				SILTY SAND (SM) Dark gray, medium to coarse, noticeable HC odor, occasional peat lenses
	6	34	0.001	
15				
				Peat interbed
	7	44	0.008	With HC odor
20				BOTTOM OF BORING @ 19.5'

LITHOLOGY

WELL DETAIL

Bentonite plug 0-19.5'

DRAFT

HC004708

Project: PORT QUENDALL
Renton, Washington

Log of Boring No. BH-8

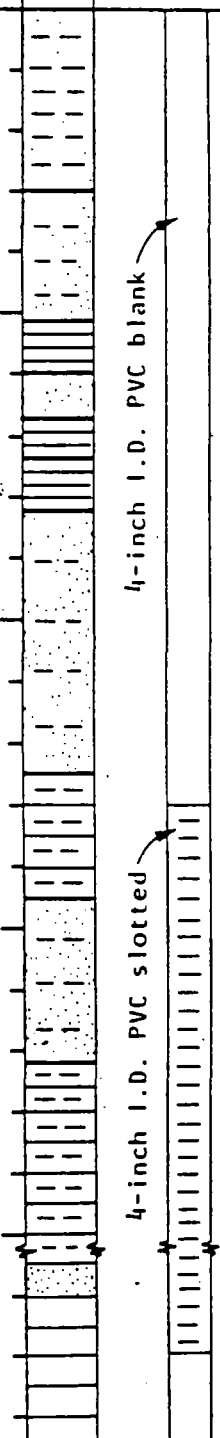
Date Drilled: May 19, 1983
Type of Boring: 6" Hollow Stem Auger
Hammer Weight:

Remarks:

Depth, Ft	Samples	Blows/Ft	PAH concentration (%)	MATERIAL DESCRIPTION
				Surface Elevation
	1	36	0.86	FILL Sandy Silt (ML), dark brown, damp
	2	53	0.054	
	3		0.013	SILTY SAND (SM) Olive-gray, medium grained, distinctive HC odor and iridescent sheen
5	4	19	0.94	CLAY (CH): Light gray, highly plastic
				SAND (SW): Black, HC odor and sheen
	5	44	1.2	CLAY (CH): Light gray
				CLAY (CH): Brown
	6	30	1.1	SILTY SAND (SM) Water Gray, 30% silt, noticeable HC odor and abundant brown fluid and iridescent sheen
10				
	7	12	1.8	SILTY CLAY (CH-CL) Light brown, highly plastic, some organic debris (wood)
15				SILTY SAND (SM) Brownish gray, 30% sand
	8	19	1.3	SILTY CLAY (CH-CL) Dark brown, occasional sand lenses
20				
22				Becomes gray
24	9	27	0.042	BOTTOM OF BORING @ 24.5'

LITHOLOGY

WELL DETAIL



Proj. No. 90029A | Woodward-Clyde Consultants | Appendix A-9

HC004709

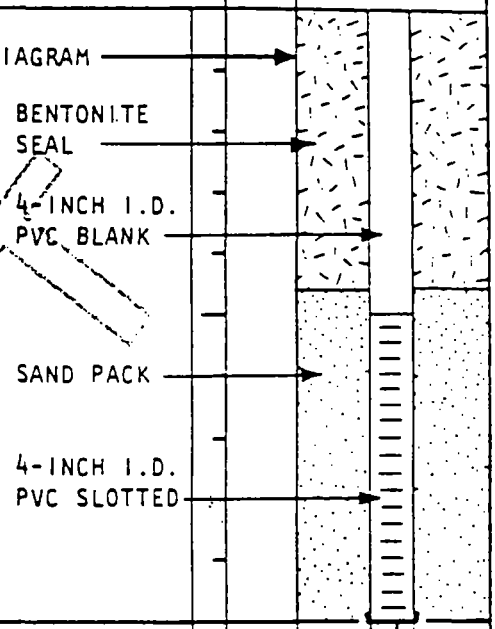
Project: PORT QUENDALL
Renton, Washington

Log of Boring No. BH-8A

Date Drilled: May 19, 1983
Type of Boring: 6" Hollow Stem Auger
Hammer Weight:

Remarks:

Depth, Ft	Samples	Blows/Ft	PAH concentration (%)	MATERIAL DESCRIPTION	LITHOLOGY	WELL DETAIL
				Surface Elevation:		
				MONITORING WELL 8A "AS BUILT" DIAGRAM		
				No lithologic log or sampling		
				Installation is shallow monitoring well 6 feet south of Boring 8		
5						
10				BOTTOM OF BORING @ 10'		
15						
20						



DRAFT

HC004710

Project: PORT QUENDALL
Renton, Washington

Log of Boring No. BH-9

Date Drilled: May 16, 1983
Type of Boring: 4" Hollow Stem Auger
Hammer Weight:
Remarks:

Depth, Ft	Samples	Blows/Ft	PAH concentration (%)	MATERIAL DESCRIPTION
				Surface Elevation
	1		0.005	FILL Silt, with some gravels
	2		1.7	TAR: Black, distinctive HC odor, with occasional cement fragments
	3		2.2	SAND: Black stain with odor Wood
5	4	10	1.3	
	5	4	0.014	CLAYEY SILT (MH) Olive-gray, damp, soft, distinctive odor
10	6	9	1.0	Brown peat
	7	25	0.03	SILTY SAND (SM) Medium to fine, poorly sorted, distinctive iridescent sheen and odor in sand
15	8	28	<	CLAYEY SILT (MH) Olive-gray, slight odor
20				BOTTOM OF BORING @ 19.5

LITHOLOGY

WELL DETAIL

Bentonite plug 0-19.5'

DRAFT

Proj. No. 90029A

Woodward-Clyde Consultants

Appendix A-11

HC004711

Project: PORT QUENDALL
Renton, Washington

Log of Boring No. BH-10

Date Drilled: May 18, 1983
Type of Boring: 6" Hollow Stem Auger
Hammer Weight:
Remarks:

Depth, Ft	Samples	Blows/Ft	PAH concentration (%)	MATERIAL DESCRIPTION	LITHOLOGY	WELL DETAIL
				Surface Elevation		
	1	20	0.63	FILL Silty Sand (SM), olive-brown, 10% silt, occasional organic debris and gravels		4-inch I.D. PVC blank
	2	28	0.009			
	3	19	0.002			
				Water		
5	4	22	0.002	Becomes gray, with slight HC odor		
	5	11	0.002			
10						4-inch I.D. PVC slotted
	6	9	<	CLAYEY SILT (MH) Brown, 20-30% clay, highly plastic, damp		
15						
	7	15	<	SILTY SAND (SM)		
20				BOTTOM OF BORING @ 19.5'		

DRAFT

Proj. No. 90029A | Woodward-Clyde Consultants | Appendix A-12

HC004712

Project: PORT QUENDALL
Renton, Washington

Log of Boring No. B4-11

Date Drilled: May 18, 1983
Type of Boring: 4" Hollow Stem Auger
Hammer Weight:
Remarks:

Depth, Ft	Samples	Blows/Ft	PAH concentration (%)	MATERIAL DESCRIPTION	LITHOLOGY	WELL DETAIL
				Surface Elevation		
	1	14	0.007	FILL Gravel and Sand		
	2	66	0.017	SANDY SILT (ML) Dark brown, 20-40% sand, some clay, occasional lenticular gravels and peat		
	3	36	0.002			
5	4	6	0.002	→ Brown peat		
	5	13	0.003	CLAYEY SILT (MH) Gray, soft, dry, some organic debris, and peat interbeds		
	6	25	0.003	SILTY SAND (SM) Dark gray, 30% silt, no odor (occasional peat lenses)		Bentonite plug 0-19.5'
10				→ Thin (0.2') peat lens		
	7	16	<	→ Thin (0.2') peat lens		
15				→ Thin (0.2') peat lens		
	8	27	0.01			
20				BOTTOM OF BORING @ 19.5'		

DRAFT

Proj. No. 90029A | Woodward-Clyde Consultants | Appendix A-13

HC004713

Project: PORT QUENDALL
Renton, Washington

Log of Boring No. BH-12

Date Drilled: May 17, 1983
Type of Boring: 4" Hollow Stem Auger
Hammer Weight:

Remarks:

Depth, Ft	Samples	Blows/Ft	PAH concentration (%)	MATERIAL DESCRIPTION
				Surface Elevation
				FILL: Silt, dark brown
	1	29	0.004	FILL: Silt, with organics
	2	20	<	SILTY SAND (SM) Gray, medium to fine, occasional gravel lenses, and organic
5	3	53	0.001	Water
	4	40	0.003	
10				
	5	19	0.001	SANDY SILT / CLAYEY SILT (ML-MH) Brown, damp, soft, abundant organic debris
15				
	6	4	0.003	SILTY SAND (SM) Gray, 40% silt, abundant organic debris
20				
	7	2	<	SILTY CLAY (CH-CL) Brown, damp, medium to highly plastic BOTTOM OF BORING @ 23'

LITHOLOGY

WELL DETAIL

4-inch I.D. PVC blank, with seal

4-inch I.D. PVC slotted, with sand

DRAFT

Proj. No. 90029A

Woodward-Clyde Consultants

Appendix A-14

HC004714

Project: PORT QUENDALL
Renton, Washington

Log of Boring No. BH12A

Date Drilled _____ Remarks _____

Type of Boring 6" Hollow Stem Auger

Hammer Weight _____

Depth, Ft	Samples	Blows/Ft	PAH concentration (%)	MATERIAL DESCRIPTION	LITHOLOGY	WELL DETAIL
				Surface Elevation.		

MONITORING WELL 12A "AS BUILT" DIAGRAM

No lithologic log
or sampling

Installation is
shallow monitoring well
6.5 feet west of
Boring 12

BENTONITE SEAL

4-INCH I.D. PVC BLANK

SAND PACK

4-INCH I.D. PVC SLOTTED

5

10

BOTTOM OF BORING @ 10'

15

20

DRAFT

Project: PORT QUENDALL
Renton, Washington

Log of Boring No. BH-14

Date Drilled: May 18, 1983
Type of Boring: 4" Hollow Stem Auger
Hammer Weight:

Remarks:

Depth, Ft	Samples	Blows/Ft	PAH concentration (%)	MATERIAL DESCRIPTION	LITHOLOGY	WELL DETAIL
				Surface Elevation:		
	1		0.022	FILL Silt and Gravel Aggregate, slight odor, occasional pitch fragments and wood		
	2	43	0.007	Pitch fragments		
5	3	26	0.007	Water		
	4	28	<	SILTY SAND (SM) Dark gray, medium, saturated, occasional thin gravel interbeds		
	5	20	0.009	Grades to finer sand		
10						Bentonite plug 0-19.5'
	6	7	<	Becomes fine sand		
15				Coarse		
	7	24	<	PEAT With clay, brown, highly plastic		
20				BOTTOM OF BORING @ 19.5'		

DRAFT

Proj. No. 90029A | Woodward-Clyde Consultants | Appendix A-16

HC004716

Project: PORT QUENDALL
Renton, Washington

Log of Boring No. B4-15

Date Drilled: May 17, 1983
Type of Boring: 4" Hollow Stem Auger
Hammer Weight:

Remarks

Depth, Ft	Samples	Blows/Ft	PAH concentration (%)	MATERIAL DESCRIPTION	LITHOLOGY	WELL DETAIL
				Surface Elevation		
	1	58	0.004	FILL: Silt, dark brown		
	2	32	0.008	SAND (SW) Medium to fine, occasional gravel and clay lenses, slight HC odor		2-inch I.D. PVC blank, with bentonite seal
5	3	22	0.002	SANDY SILT (ML) Greenish gray, some clay (co-20%) occasional organics/peat fragments		
	4	44	<	SILTY SAND (SP-SM) 30% silt, medium to coarse sand, some HC odor throughout		2-inch I.D. PVC slotted, with sand pack
	5	43	<			
10						
	6	19	0.002	PEAT: With clay, brown, highly plastic		
15				SILTY SAND (SP-SM) Slight odor		
	7	9	0.001			
20				BOTTOM OF BORING @ 19.5'		

DRAFT

HC004717

Project: PORT QUENDALL
Renton, Washington

Log of Boring No. BH-16

Date Drilled: May 16, 1983
Type of Boring: 4" Hollow Stem Auger
Hammer Weight:

Remarks

Surface Elevation:

Depth, Ft	Samples	Blows/Ft	PAH concentration (%)	MATERIAL DESCRIPTION
	1	79	0.004	FILL
	2	54	1.1	SAND (SW) Medium, occasional gravel lenses, noticeable HC odor and black stain
	3	19	0.001	SAND (SP) Medium to coarse, occasional gravel lenses, no stain or odor
5	4	8	<	Water
	5	32	<	CLAYEY SILT (MH) Olive-gray, medium plasticity, occasional organics, (brownish peat lenses)
	6	19	<	
10	7	32	<	Peat lens
	8	29	<	Clayey silt lens
15				SAND (SW) Dark gray, some silt
	9	18	<	CLAY (CH): Stiff
20				BOTTOM OF BORING @ 19.5'

LITHOLOGY

WELL DETAIL

Bentonite plug 0-19.5'

DRAFT

Proj. No. 90029A

Woodward-Clyde Consultants

HC004718

TWELKER 1971

TWELKER 1971

Boring Logs

A to O
B-1 to B-15
(labeled DH-1 to DH-15, provided on cross-sections only)

Twelker, N.H., 1971. Subsurface Exploration Geologic Sections and Site Plan, Quendall Terminals: 12 figures.

HC004662

Offshore Boring A-0

76.66 (Rev. 5-67)

WASHINGTON
STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS

Original to Materials Engineer
Copy to Bridge Engineer
Copy to District Engineer
Copy to

LOG OF TEST BORING

S.H. S.R. Section Baxter Creosote Plant - Renton Job No. Riley
Hole No. A Sub Section Cont. Sec.
Station Equip. - B-61 Mobile Drill Offset Ground El.
Type of Boring Casing W.T. El. 11'
Inspector Jerry Cooper Date 6-1-71 Sheet 1 of 2

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
5				
			S-1	4.0' - 5.6' 13/6" 14/6" 20/6"
				Sand and gravel.
				Bottom 6" slightly silty.
10				
			S-2	9.0' - 10.5' 20/6" 8/6" 6/6"
				No recovery of woods. 1½" recovery of clean sand.
				Believed to be driving on wood, top 6".
15				
			S-3	14.0' - 15.5' 6/6" 8/6" 14/6"
				Top 3" silty sand.
		No		Middle 12" gray silt.
		creo-		Bottom 3" clean gray sand.
20		sote		

HC004663

H. F. 26.6b-A (Rev. 6-67)

No. A Sub Section Sheet 2 of 2

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
			S-4	19.0' - 20.5' 12/6" 18/6" 19/6"
				Fine to medium gray sand and gravel.
25				
		END	S-5	24.0' - 25.6' 21/6" 23/6" 24/6"
				Fine dense slightly silty sand.

HC004664

26.66 (Rev. 5-67)

WASHINGTON
STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS

Original to Materials Engineer
Copy to Bridge Engineer
Copy to District Engineer
Copy to

LOG OF TEST BORING

S.H. S.R. Section Baxter Creosote Plant - Renton Job No. Riley
Hole No. B Sub Section Cont. Sec.
~~Stanton~~ Equip. - B-61 Mobile Drill Offset Ground El.
Type of Boring Casing W.T. El. 10' 6"
Inspector Jerry Cooper Date 6-1-71 Sheet 1 of 2

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
5			S-1	5.0' - 6.5' 1/18"
				Gray sand with pieces of wood. Very soft.
10			S-2	10.0' - 11.5' 5/6" 5/6" 7/6"
		No creo-sote		Fine to medium gray silty sand. One piece gravel - 1".
15			S-3	15.0' - 16.5' 10/6" 10/6" 6/6"
				Fine to medium gray sand, with occasional gravel.
20				

HC004665

H. F. 26.66-A (Rev. 5-67)

No. B Sub Section Sheet 2 of 2

	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
			S-4	20.0' - 21.5' 9/6" 7/6" 15/6"
				Fine and medium gray sand. Occasional gravel.
				Driller remarked: soft zone 23' to 24'
				gravel 24' to 25'
25				
			S-5	25.0' - 26.5' 11/6" 14/6" 15/6"
				Gray sand and gravel.

HC004666

H 66 (Rev. 5-67)

WASHINGTON
STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS

Original to Materials Engineer
Copy to Bridge Engineer
Copy to District Engineer
Copy to

LOG OF TEST BORING

S.H. S.R. Section Baxter Creosote Plant - Renton Job No. Riley
Hole No. C Sub Section Cont. Sec.
~~Station~~ Equip. - B-61 Mobile Drill Offset Ground El.
Type of Boring Casing W.T. El. 10'
Inspector Jerry Cooper Date 6-1-71 Sheet 1 of 1

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
			S-1	1.0' - 2.5' 1/12" 1/6"
				Gray sand with wood.
		No		
5				
		creo-	S-2	6.0' - 7.5' 1/18"
				Gray sand top 1'9", Bottom 3" silt
		sote		
10				
			S-3	9.0' - 10.5' 2/6" 2/6" 5/6"
				Gray fine slightly silty sand.
15				
			S-4	16.0' - 17.5' 10/6" 14/6" 11/6"
				Gray slightly silty sand and gravel.
		END		Driller says gravel at 15'.

HC004667

H. 5 (Rev. 5-67)

WASHINGTON
STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS

Original to Materials Engineer
Copy to Bridge Engineer
Copy to District Engineer
Copy to _____

LOG OF TEST BORING

S.H. _____ S.R. _____ Section Baxter Creosote Plant - Renton Job No. Riley
Hole No. D Sub Section _____ Cont. Sec. _____
Station Equip. - B-61 Mobile Drill Offset _____ Ground El. _____
Type of Boring _____ Casing _____ W.T. El. 10'
Inspector Jerry Cooper Date 6-1-71 Sheet 1 of 1

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
5				
			S-1	6.0' - 7.5' 1/18"
				Top 6" gray clean sand. Bottom 12" brown organic silt.
		No		
		creo-		
		sote		
10				
			S-2	11.0' - 12.5' 10/6" 11/6" 11/6"
				Fine to medium gray sand and gravel.
15				
			S-3	16.0' - 17.5' 6/6" 9/6" 11/6"
				Gray slightly silty sandy gravel.
		END		
20				

HC004668

26.66 (Rev. 5-67)

WASHINGTON
STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS

Original to Materials Engineer
Copy to Bridge Engineer
Copy to District Engineer
Copy to

LOG OF TEST BORING

S.H. S.R. Section Baxter Creosote Plant - Renton Job No. Riley
Hole No. E Sub Section Cont. Sec.
Station Equip. B61 Mobile Drill Offset Ground El.
Type of Boring Casing W.T. El. Water level - 10'
Inspector Jerry Cooper Date 6-2-71 Sheet 1 of 2

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
		Strong	S-1	1.0' - 2.6' 0/18"
		creo-		Light brown peat and organic with creosote odor
		sote		
		odor		
5				
			S-2	6.0' - 7.5' 1/18"
		[redacted]		Gray sand top 12"
		creo-		Gray silt bottom 6"
		sote		
		odor		
10				
			S-3	11.0' - 12.5' 1/12" 1/6" Top 12" brown organic silt
		No		Bottom 6" Gray and brown organic sandy silt
		odor		
15				
			S-4	16.0' - 17.5' 2/6" 5/6" 6/6"
		Creo-		Top sand and peat mixed [redacted] odor.
		sote		
		odor		Bottom slightly silty sand.
				Gravel at 18' to 21'

HC004669

H. F. 26.66-A (Rev. 5-67)

ole No. E Sub Section Sheet 2 of 2

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
			S-5	21.0' - 22.5' 26/6" 23/6" 24/6"
		[illegible]		Cemented sand and gravel.
		[illegible]		
		[illegible]		
		odor		
25				
		Very Hard	S-6	26.0' - 27.5' 12/6" 20/6" 24/6"
				Sand and gravel, slightly cemented.
		[illegible] creo- [illegible] odor		
30				
			S-7	31.0' - 32.5' 26/6" 55/6"
		100 blows per foot refus- al		Sandy gravel. No creosote odor.
35				
		[illegible]	[illegible]	36.0' - 37.5' 27/6" 44/6" 30/6"
				Gravelly sand with creosote odor
40				
			S-9	41.0' - 42.5' 36/6" 65/6"
				Sandy gravel
		END		

HC004670

5.66 (Rev. 5-67)

WASHINGTON
STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS

Original to Materials Engineer
Copy to Bridge Engineer
Copy to District Engineer
Copy to

LOG OF TEST BORING

S.H. S.R. Section Baxter Creosote Plant - Renton Job No. Riley
Hole No. F Sub Section Cont. Sec.
~~Station~~ Equip. - B-61 Mobile Drill Offset Ground El.
Type of Boring Casing W.T. El. 17' Water Depth
Inspector Jerry Cooper Date 6-2-71 Sheet 1 of 2

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
5				
			S-1	4.0' - 5.5' 2/6" 1/6" 1/6"
		Creo-		Sandy silt with creosote odor
		sote		
10				
		odor	S-2	9.0' - 10.5' 4/6" 7/6" 9/6" Top 6" silty sand.
				Middle 6" sandy organic
		Gravel started at 13'		Bottom sandy gravel
15				
			S-3	14.0' - 15.5' 19/6" 30/6" 24/6"
				Cemented sand and gravel; gravel drills very hard.
20				

HC004671

H. F. 26.44 A (Rev. 5-67)

No. F Sub Section Sheet 2 of 2

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
			S-4	19.0' - 20.5' 15/6" 19/6" 22/6"
				Gray and brown gravelly sand.
		Creo-sote odor		
25				
			S-5	24.0' - 25.5' 5/6" 7/6" 9/6"
		Little creo-sote odor		Brown fine sand with occasional gravel
30				
			S-6	29.0' - 30.5' 20/6" 21/6" 27/6"
				Brown sandy gravel, very little creosote odor.
35				
			S-7	34.0' - 35.5' 10/6" 17/6" 54/6"
		No odor		Gray and brown sandy gravel.
40				
			S-8	39.0' - 40.5' 32/6" 57/6"
				Sandy gravel. No creosote.
				End of Hole

HC004672

56 (Rev. 5-67)

WASHINGTON
STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS

Original to Materials Engineer
Copy to Bridge Engineer
Copy to District Engineer
Copy to

LOG OF TEST BORING

S.H. S.R. Section Baxter Creosote Plant - Renton Job No. Riley
Hole No. G Sub Section Cont. Sec.
Station Equip - B61 Mobile Drill Offset Ground El.
Type of Boring Casing W.T. El. 4' 6" Water depth
Inspector Jerry Cooper Date 6-2-71 Sheet 1 of 2

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
			S-1	1.5' - 3.0' 0/18"
				Fine sandy silt with creosote odor
5				
			S-2	6.5' - 8.0' 0/18"
				Top 3" fine silty sand. Bottom brown peat.
				Creosote odor
10				
			S-3	11.5' - 13.0' 0/18"
				Brown peat with gray sand seams. Little creosote odor.
15				
			S-4	16.5' - 18.0' 0/12" 3/6"
				Top 15" peat and brown organic silt.
				Bottom 3" gray sand.
				No resistance for the 1st 12". Very little creosote odor.
20				

HC004673

I. F. 24-06-A (Rev. 5-67)

No. G Sub Section Sheet 2 of 2

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
			S-5	21.5' - 23.0' 2/6" 7/6" 10/6"
				Top 3" brown peat.
				Middle 3" gray sand.
				Bottom 12" sandy gravel
25				Gravel 22'. Very slight creosote odor.
			S-6	26.5' - 28.0' 60/6"
				Gray clean sand. Very hard.

HC004674

i.66 (Rev. 5-67)

WASHINGTON
STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS

Original to Materials Engineer
Copy to Bridge Engineer
Copy to District Engineer
Copy to

LOG OF TEST BORING

S.H. S.R. Section Baxter Creosote Plant - Renton Job No. Riley
Hole No. H Sub Section Cont. Sec.
~~Station~~ Equip. - B 61 Mobile Drill Offset Ground El.
Type of Boring Casing W.T. El. Water Depth 10'
Inspector Jerry Cooper Date 6-2-71 Sheet 1 of 2

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
				No creosote on bottom of lake in this boring.
5				
			S-1	6.0' - 7.5' 1/18"
				Brown, silty organic peat-like material. Very little sand.
				No odor.
10				
			S-2	11.0' - 12.5' 1/12" 1/6"
				3" Brown peat
				12" gray silt.
				3" gray silty sand. No odor.
15				
			S-3	16.0' - 17.5' 2/6" 5/6" 2/6"
				Gray sandy silt. No creosote.
20				Some clean gray sand.

HC004675

t. B-28.66-A (Rev. 5-67)

No. H Sub Section Sheet 2 of 2

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
			S-4	21.0' - 22.5' 11/6" 15/6" 12/6"
				Gray silty (slightly); sand and gravel.
		END		
25				

HC004676

.66 (Rev. 5-67)

WASHINGTON
STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS

Original to Materials Engineer
Copy to Bridge Engineer
Copy to District Engineer
Copy to

LOG OF TEST BORING

S.H. S.R. Section Baxter Creosote Plant - Renton Job No. Riley
Hole No. I Sub Section Cont. Sec.
~~Station~~ Equip. - B-61 Mobile Drill Offset Ground El.
Type of Boring Casing W.T. El. 3.5' water depth
Inspector Jerry Cooper Date 6-2-71 Sheet 1 of 2

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
			S-1	3.0' - 4.5' 2/6" 4/6" 5/6"
		No		Gray sand with occasional organic
		creo-		
		sote		
		odor		
5				
			S-2	8.0' - 9.5' 8/6" 10/6" 14/6"
				Gray clean sand. Little odor of creosote.
10				
			S-3	13.0' - 14.5' 1/6" 1/6" 1/6"
		No		Top 6" silty sand.
		creo-		Bottom 12" brown organic silt. Peat-like.
		sote		
		odor		
15				
			S-4	18.0' - 19.5' 2/6" 2/6" 3/6"
		No		Gray silt in bottom. Gray sand in top.
		creo-		
		sote		
		odor		
20				

HC004677

H. F. 26.66-A (Rev. 5-67)

e No. I Sub Section Sheet 2 of 2

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
			S-5	23.0' - 24.5' 3/6" 5/6" 6/6"
		No		Very fine gray sand. Dense.
		creo-		
		sote		
		odor		
25				End of Hole

HC004678

.66 (Rev. 5-67)

WASHINGTON
STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS

Original to Materials Engineer
Copy to Bridge Engineer
Copy to District Engineer
Copy to

LOG OF TEST BORING

S.H. S.R. Section Baxter Creosote Plant - Renton Job No. Riley
Hole No. J Sub Section Cont. Sec.
~~Station~~ Equip. - B61 Mobile Drill Offset Ground El.
Type of Boring Casing W.T. El. Water Depth 10'
Inspector Jerry Cooper Date 6-3-71 Sheet 1 of 2

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
5				
			S-1	6.0' - 7.6' 2/6" 3/6" 3/6"
				Gray sand with pieces of wood. No creosote odor.
10				
			S-2	11.0' - 12.6' 1/6" 2/6" 2/6"
				Top 6" gray sand
				Bottom 12" gray sandy silt
				No creosote odor.
15				
			S-3	16.0' - 17.6' 1/6" 1/6" 3/6"
				Top 12" light brown organic silt.
				Bottom 6" gray clean sand.
				No creosote odor.
20				

HC004679

F. 26.66-A (Rev. 5-67)

No. J Sub Section _____ Sheet 2 of 2

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
			S-4	21.0' - 22.6' 1/6" 1/6" 2/6"
				Top 12" slightly silty sand and gray silt.
				Bottom 6" brown peat. No odor.
				Gravel at 24'.
25				
			S-5	26.0' - 27.6' 8/6" 12/6" 10/6"
				Gray sandy gravel. No odor.
		END		

HC004680

66 (Rev. 5-67)

WASHINGTON
STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS

Original to Materials Engineer
Copy to Bridge Engineer
Copy to District Engineer
Copy to

LOG OF TEST BORING

S.H. S.R. Section Baxter Creosote Plant - Renton Job No. Riley
Hole No. K Sub Section Cont. Sec.
Station Equip. - B61 Mobile Drill Offset Ground El.
Type of Boring Casing W.T. El. Water Depth 3'
Inspector Jerry Cooper Date 6-3-71 Sheet 1 of 2

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
5				
			S-1	4.0' - 5.6' 1/6" 1/6" 2/6"
				Gray sand with wood fragments. No creosote odor.
10				
			S-2	9.0' - 10.6' 1/18"
				Light brown organic silt. No creosote odor.
15				
			S-3	14.0' - 15.6' 1/18"
				Light brown organic. Silt top 6".
				Bottom 12", brown peat.
20				

HC004681

H. F. 26,60A (Rev. 6-67)

: No. K Sub Section Sheet 2 of 2

Depth	Blows per ft.	Profile	Sample Tube Nos.	Description of Material
			S-4	19.0' - 20.6' 1/6" 1/6" 5/6"
				Top 12" slightly sandy gray silt.
				Bottom 6" gray fine sand. No creosote.
25				
		END	S-5	24.0' - 25.6' 3/6" 1/6" 1/6"
				Gray silty sand with silt seams. No creosote odor.

HC004682

6.66 (Rev. 5-67)

WASHINGTON
STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS

Original to Materials Engineer
Copy to Bridge Engineer
Copy to District Engineer
Copy to

LOG OF TEST BORING

S.H. S.R. Section Baxter Creosote Plant - Renton Job No. Riley
Hole No. L Sub Section Cont. Sec.
Station Equip. - B61 Mobile Drill Offset Ground El.
Type of Boring Casing W.T. El. Water Depth 11'
Inspector Jerry Cooper Date 6-3-71 Sheet 1 of 2

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
				From 0' - 3' very soft.
5				
			S-1	5.0' - 6.6' 1/18"
				Light brown organic silt. Bottom 2" gray sandy silt.
				No creosote odor.
10				
			S-2	10.0' - 11.5' 1/6" 1/6" 8/6"
				Top 3" brown organic silt.
				Middle 12" gray silty sand.
				Bottom 3" gray fine sand.
15				
			S-3	15.0' - 16.5' 5/6" 2/6" 2/6"
				Gray fine to coarse sand.
20				

HC004683

H. 26.66-A (Rev. 5-67)

: No. L Sub Section Sheet 2 of 2

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
			S-4	20.0' - 21.6' 3/6" 3/6" 4/6"
		END		Gray slightly silty sand, with one chunk wood - 3" thick.
				No creosote odor.

HC004684

.66 (Rev. 5-67)

WASHINGTON
STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS

Original to Materials Engineer
Copy to Bridge Engineer
Copy to District Engineer
Copy to

LOG OF TEST BORING

S.H. S.R. Section Baxter Creosote Plant - Renton Job No. Riley
Hole No. M Sub Section Cont. Sec.
Station Equip. - B61 Mobile Drill Offset Ground El.
Type of Boring Casing W.T. El. Water Depth 19'
Inspector Jerry Cooper Date 6-3-71 Sheet 1 of 2

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
			S-1	2.0' - 3.5' 1/18"
				Top brown silty sand. Bottom gray silt.
5				
			S-2	7.0' - 8.5' 1/18"
				Top 6" sandy silt with creosote odor.
				Middle brown peat.
				Bottom 12" silty sand - gray, no odor.
10				
			S-3	12.0' - 13.5' 5/6" 5/6" 6/6"
				Gray slightly silty sand and gravel. No creosote odor.
15				
			S-4	17.0' - 18.5' 10/6" 18/6" 5/6"
				Gray sand and gravel. No odor.
20				

HC004685

H. F. 26.66-A (Rev. 6-67)

No. M Sub Section Sheet 2 of 2

Depth	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
			S-5	22.0' - 23.5' End of Boring.

HC004686

.66 (Rev. 5-67)

WASHINGTON
STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS

Original to Materials Engineer
Copy to Bridge Engineer
Copy to District Engineer
Copy to

LOG OF TEST BORING

S.H. S.R. Section Baxter Creosote Plant - Renton Job No. Riley
Hole No. N Sub Section Cont. Sec.
Station Equip. - B61 Mobile Drill Offset Ground El.
Type of Boring Casing W.T. El. Water Depth 19'
Inspector Jerry Cooper Date 6-3-71 Sheet 1 of 1

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
			S-1	2.0' - 3.5' 1/12" 1/6"
				Top 6" very soft organic sandy silt. Bottom 12"
				gray silty sand. Top 6" - creosote odor,
				Bottom 12" - very little or no odor.
5				
			S-2	7.0' - 8.5' 2/6" 2/6" 3/6"
				Gray silty sand with 1" organic seam in bottom
				part of sample. Creosote odor slight, if any. What little
				odor there is could come from the water in the casing.
10				
			S-3	12.0' - 13.5' 2/6" 4/6" 5/6"
				Top 6" gray silt.
				Middle 6" sandy silt.
				Bottom 6" gray clean sand.
15				
			S-4	17.0' - 18.5'
		END		

HC004687

6.66 (Rev. 5-67)

WASHINGTON
STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS

Original to Materials Engineer
Copy to Bridge Engineer
Copy to District Engineer
Copy to _____

LOG OF TEST BORING

S.H. _____ S.R. _____ Section Baxter Creosote Plant - Renton Job No. Riley
Hole No. 0 Sub Section _____ Cont. Sec. _____
~~Station~~ Equip. - B61 Mobile Drill Offset _____ Ground El. _____
Type of Boring _____ Casing _____ W.T. El. Water depth 18'
Inspector Jerry Cooper Date 6-3-71 Sheet 1 of 1

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
			S-1	3.0' - 4.5' 3/6" 2/6" 3/6"
				Gray sandy gravel. ~~Creosote odor not strong.~~
5				
			S-2	8.0' - 9.5' 2/6" 4/6" 4/6"
				Gray silty sand. Little creosote odor.
10				
			S-3	13.0' - 14.5' 9/6" 14/6" 14/6"
				Gray sand with gravel. No creosote odor.
15		END		

HC004688

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 SIXTH AVENUE
SEATTLE, WA 98101

TARGET SHEET

The following document was not imaged.
This is due to the Original being:

XX Oversized
____ CD Rom
____ Computer Disk
____ Video Tape
Other:

**A copy of the document may be requested from the Superfund Records Center.

Document Information

Document ID #: 1236349
File #: 12.6.3
Site Name: Quendall Terminals (QTXCF)

Subsurface Exploration - 6 maps