

Appendix A  
Boring, Well, and Test Pit Logs

JOHN SPILMAN  
Governor



DONALD W. WYSE  
Director

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

272 Cleanwater Lane LU-11 • Olympia, Washington 98504 • (206) 753-2353

M E M O R A N D U M

TO: File

FROM: Jim Oberlander *J.O.*

SUBJECT: "Lilyblad Pond" and Related Fill, Tacoma

DATE: March 5, 1982

This property, once a tidal wet land, has been filled with a mix of waste from local industrial activity. The general location is centered between 11th and Lincoln Avenue, Taylor Way and Alexander Avenue; near Chemical Processors, Poligen and behind the Washington Educators factory.

Mr. Glenn Tegen of Lilyblad Petroleum, also part owner of the Poligen Petroleum Tank Farm, wishes to develop a ten-acre site, southeast of the Poligen area. Fill removal and site grading exposed the present pond and revealed an unusual waste.

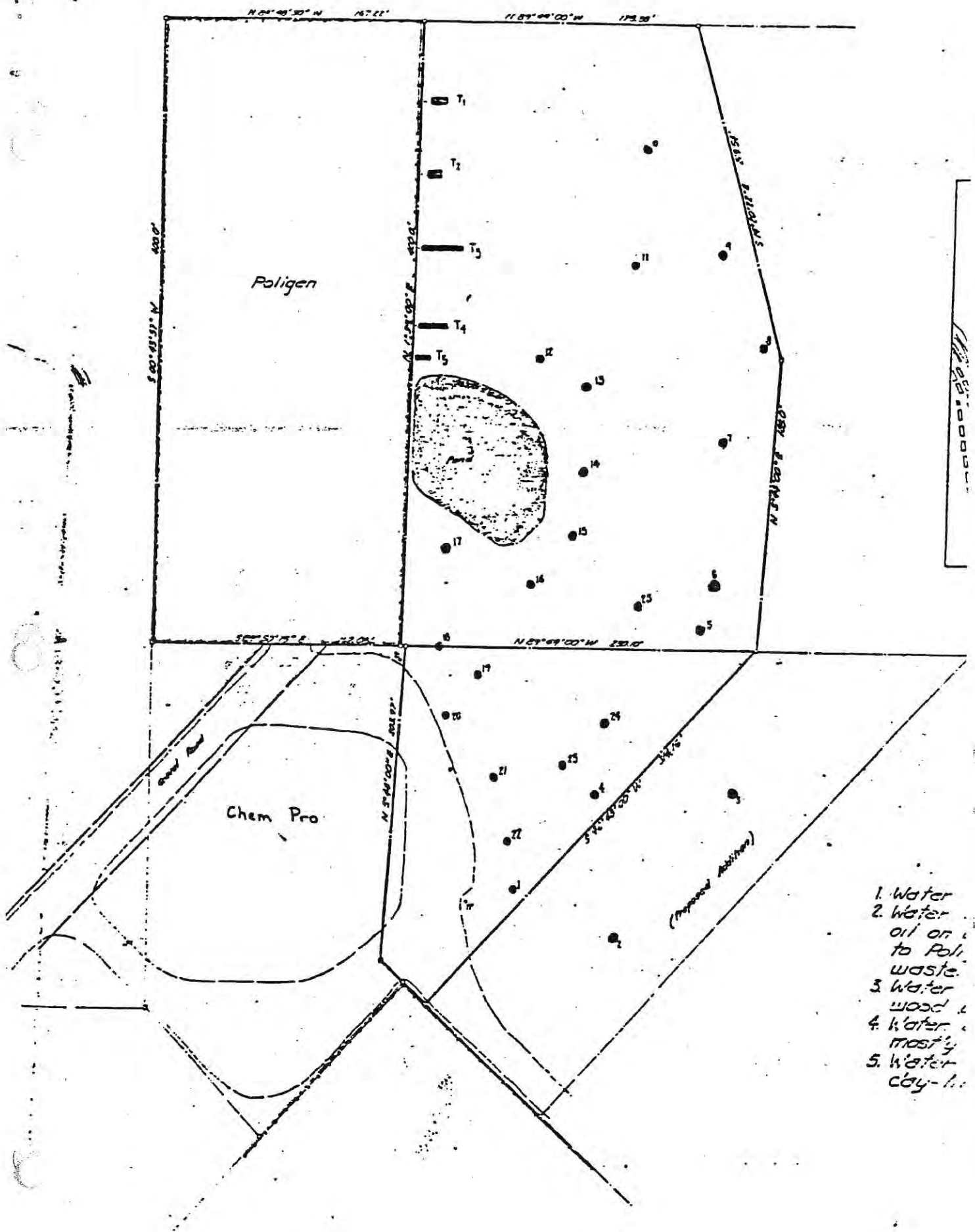
Working closely with Mr. Tegen, 23 test (backhoe) pits and several trenches were dug on the proposed site for observation and necessary reviews.

The following comments were recorded while reviewing each recently dug pit. A map with pit station location and property layout is attached. An area photo was taken as well as 35 mm photo of some of the pits. Some samples were also taken.

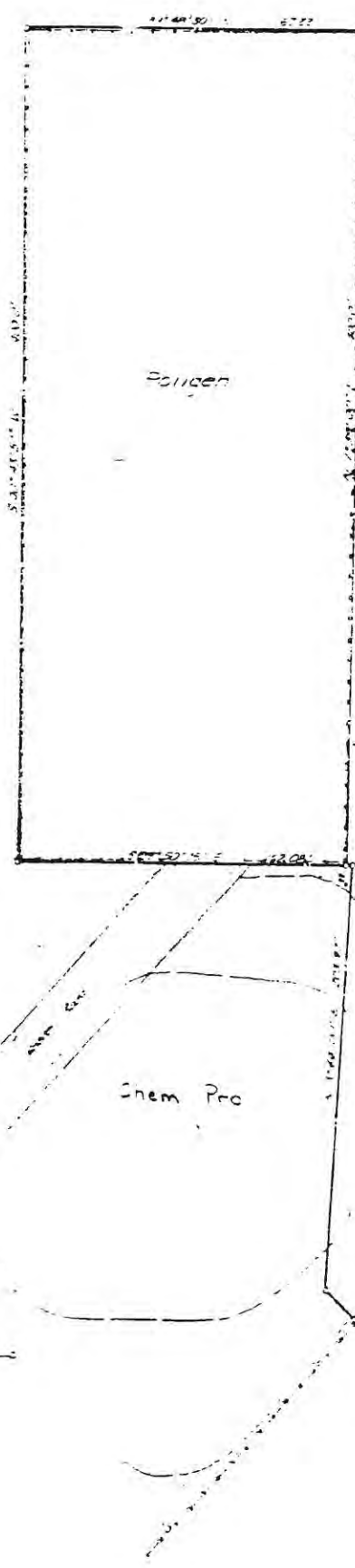
The field inspections February 18, and February 22, 1982, were conducted after a period of very heavy rains.

JO:c1

Attachment



1. Water
2. Water  
oil on  
to Poligen  
waste.
3. Water  
wood
4. Water  
mostly
5. Water  
clay-l.



Test holes

- T<sub>1</sub> Water, no odor or oil, dredge spoils.
- T<sub>2</sub> Water, no odor or oil, dredge spoils.
- T<sub>3</sub> Water, no odor or oil, dredge spoils.
- T<sub>4</sub> Water, no odor or oil, dredge spoils.
- T<sub>5</sub> Water, no odor or oil, dredge spoils, a type garbage.
- T<sub>6</sub> Water, no odor, domestic type dirt run.
- T<sub>7</sub> Water, water level lowered 3 waste mixture of lime.
- T<sub>8</sub> Water, water level 3 feet below grade, no waste, a small amount of iron.
- T<sub>9</sub> Water, water 4 1/2 feet below grade, wood waste, concrete, H/D hose below grade, wood waste, concrete.
- T<sub>10</sub> Water, water 4 feet grade wood waste, surface soil appear to be a white material.
- T<sub>11</sub> Water, water 3 feet below grade waste concrete, top of clay-like.
- T<sub>12</sub> Water, water 3 feet below grade, concrete, dirt run with clay below grade, wood waste, sand.
- T<sub>13</sub> below grade, flakes on water, white clay material appears to be mixed material along fence line.
- T<sub>14</sub> below grade, white clay like north side, brown flakes on water.
- T<sub>15</sub> Water, water 6 inches below grade, rocks and dirt.
- T<sub>16</sub> Water, water 1 1/2 feet below grade, sand dirt.
- T<sub>17</sub> Water, water 2 feet below grade, sand blasting sand.
- T<sub>18</sub> Water, water 1 1/2 feet below grade dredge sand.
- T<sub>19</sub> Water, water 1 foot below grade sand.
- T<sub>20</sub> Water, water 1 1/2 feet below grade sand, rocks.
- T<sub>21</sub> Water, water 1 foot below grade dirt.

Poligen  
 LILYBLAD PETROLEUM  
 TEST HOLES

FEBRUARY 18, 1982

PIT NO.

1. Clear Water  
No Oil  
No Odor  
All Dredge Soil Sand  
Ground Water at Surface
2. Clear Water  
No Oil  
No Odor  
Dredge Sand Spoils  
Ground Water at Surface
3. Clear Water  
No Oil  
Dredge Spoils  
Ground Water near Surface
4. Clear Water  
No Odor  
Dredge Spoil  
Ground Water near Surface
5. Clear Water  
No Odor  
Dredge Spoils and Some Old Domestic Garbage  
Ground Water near Surface
6. Clear Water  
No Odor  
Pit Run and Some Domestic Garbage  
Ground Water at Surface
7. Clear Water  
Mix of Wood and a Little White Lime  
Ground Water 3' Below Grade
8. Clear Water  
No Oil  
No Odor  
Woodwaste and a Little Concrete  
Ground Water 3' Below Grade
9. Minor Unknown Sheen on Water  
Woodwaste and Concrete  
Ground Water 4½' Below Grade
10. Clear Water  
Woodwaste and Concrete  
Ground Water 4' Below Grade

FEBRUARY 18, 1982

Page 2

11. Woodwaste and Concrete  
Surface Soil Cap of Clay Like/White unknown Material  
Ground Water 4' Below Grade  
Sample Taken of Clay Material
12. Clear Water  
Woodwaste and Concrete  
Lots of a Clay Like White Unknown Material Cap
13. Clear Water  
Woodwaste, Concrete, Pit Run and Clay Like White Unknown Material  
Ground Water 3' Below Grade

FEBRUARY 22, 1982

14. Clear Water  
Woodwaste and Concrete  
Ground Water 3' Below Grade
15. "Flakes on Water"  
Concrete and Clay Like, White Unknown Material  
Ground Water 2' Below Grade
16. Brown Flakes on Water  
Concrete Blocks and N.E. Side of Hole Clay Like White Unknown  
Material  
Ground Water 18" Below Grade
17. Clear Water  
Concrete Blocks and Dirt  
Ground Water 6" Below Grade
18. Clear Water  
Dirt and Stone Blocks  
Ground Water 18" Below Grade
19. Clear (muddy) Water  
Dirt, Stone Blocks and Sand Blasting Sand  
Ground Water 2' Below Grade
20. Clear (muddy) Water  
Stone Blocks, Dirt and Dredge Sand  
Ground Water 18" Below Grade
21. Clear (muddy) Water  
Stone Blocks and Dredge Sand  
Ground Water 12" Below Grade
22. Clear (muddy) Water  
Stone Blocks and Mostly Dredge Sand  
Ground Water 18" Below Grade
23. Clear (muddy) Water  
Stone Blocks and Dirt  
Ground Water 12" Below Grade

TRENCHES

Along Poligen Fence

T-1 All woodwaste with a little clay like, white unknown material on top.

Ground Water 3' Below Grade

T-2 A little oil on water (from Poligen Tank Farm drain)  
Mostly woodwaste with a little white clay  
Ground Water 3' Below Grade

T-3 Water appeared to be woodwaste leachate  
Woodwaste with "white clay" material below

T-4 Woodwaste but mostly white clay material  
Ground Water 2½' Below Grade

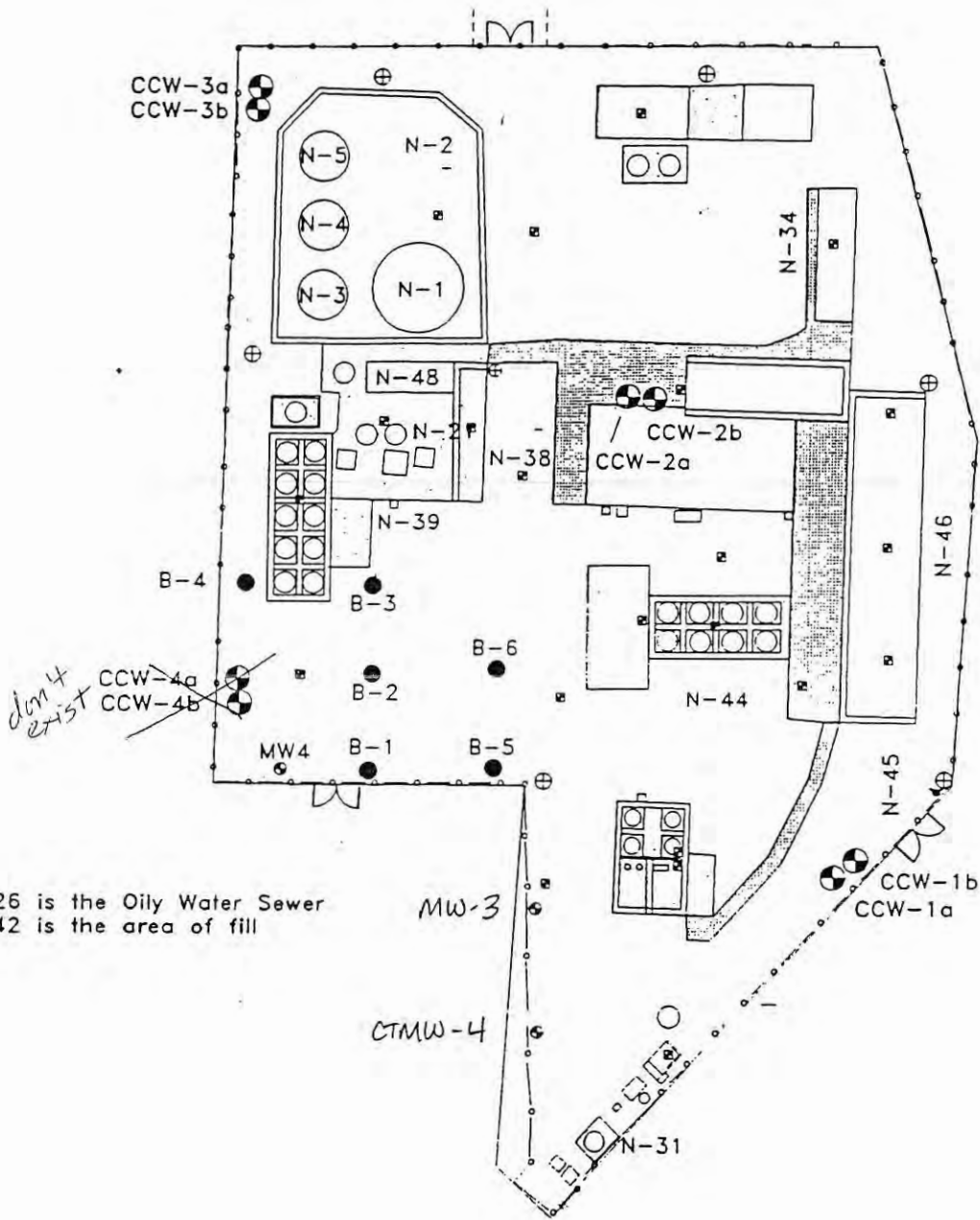
T-5 Mostly "white clay"  
Ground Water 3' Below Grade

This field data was gathered working with Greg Allen of Lilyblad.

J0:cl

cc: Greg Allen  
Will Abercrombie, DOE

Doug Pierce, Pierce Cty. Health



N-26 is the Oily Water Sewer  
 N-42 is the area of fill

*don't exist*

MW-3

CTMW-4

- ☒ Drain Sump
- ⊙ Pre-existing Monitoring Well
- ⊕ Abandoned Monitoring Well
- ⊗ Task 1A Well (a=shallow, b=deep)
- Task 1B Soil Boring

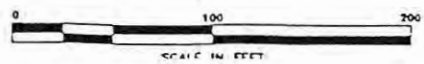


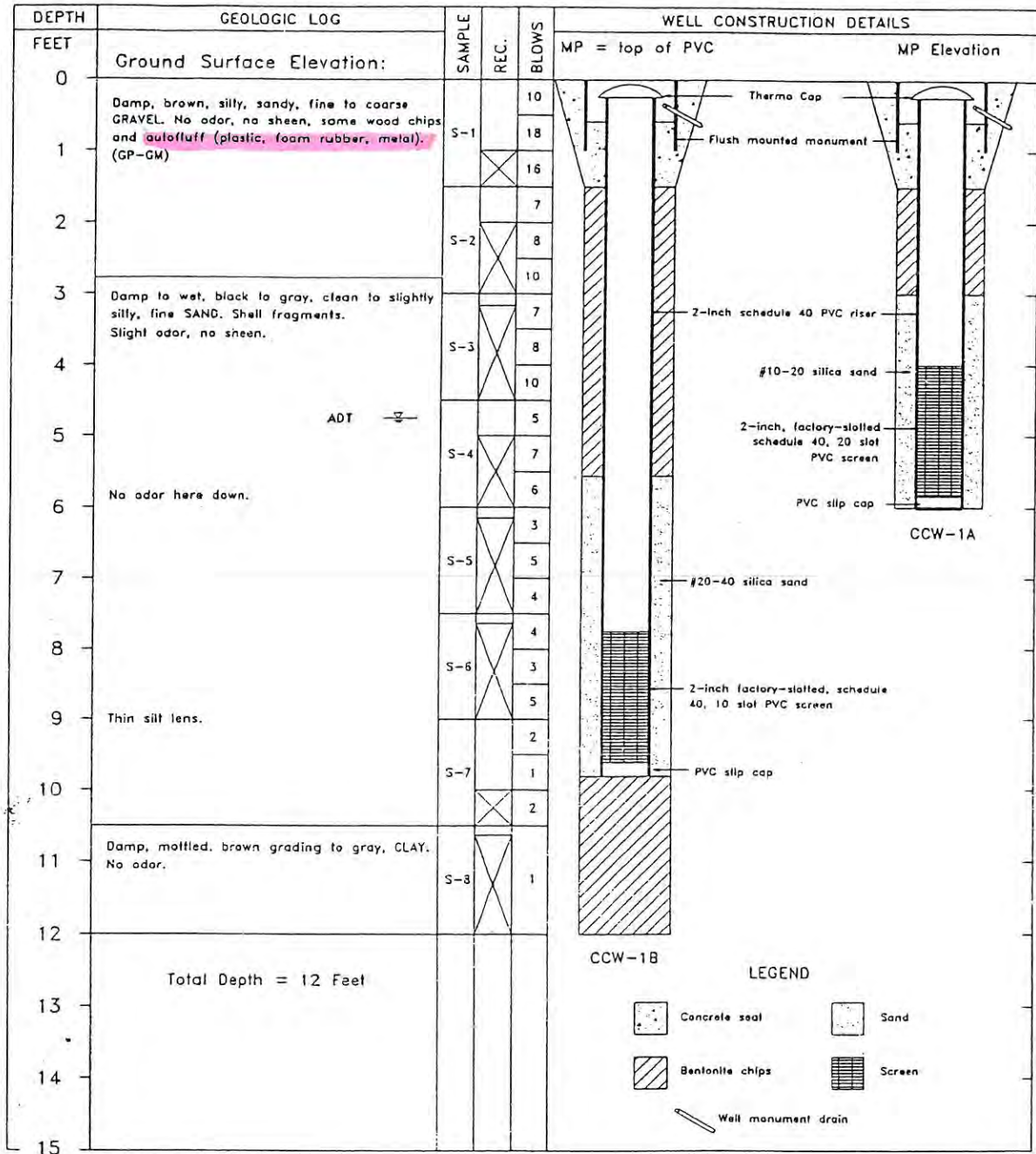
FIGURE 1  
 SITE PLAN

CLEANCARE CORP.






GEOLOGIC LOG AND WELL AS-BUILT, MONITORING WELLS CCW-1A AND CCW-1B



NOTE: Descriptions of odors and sheens are included on this log where noted in the field.  
No references to odors or sheens generally indicates the absence of odors or sheens.

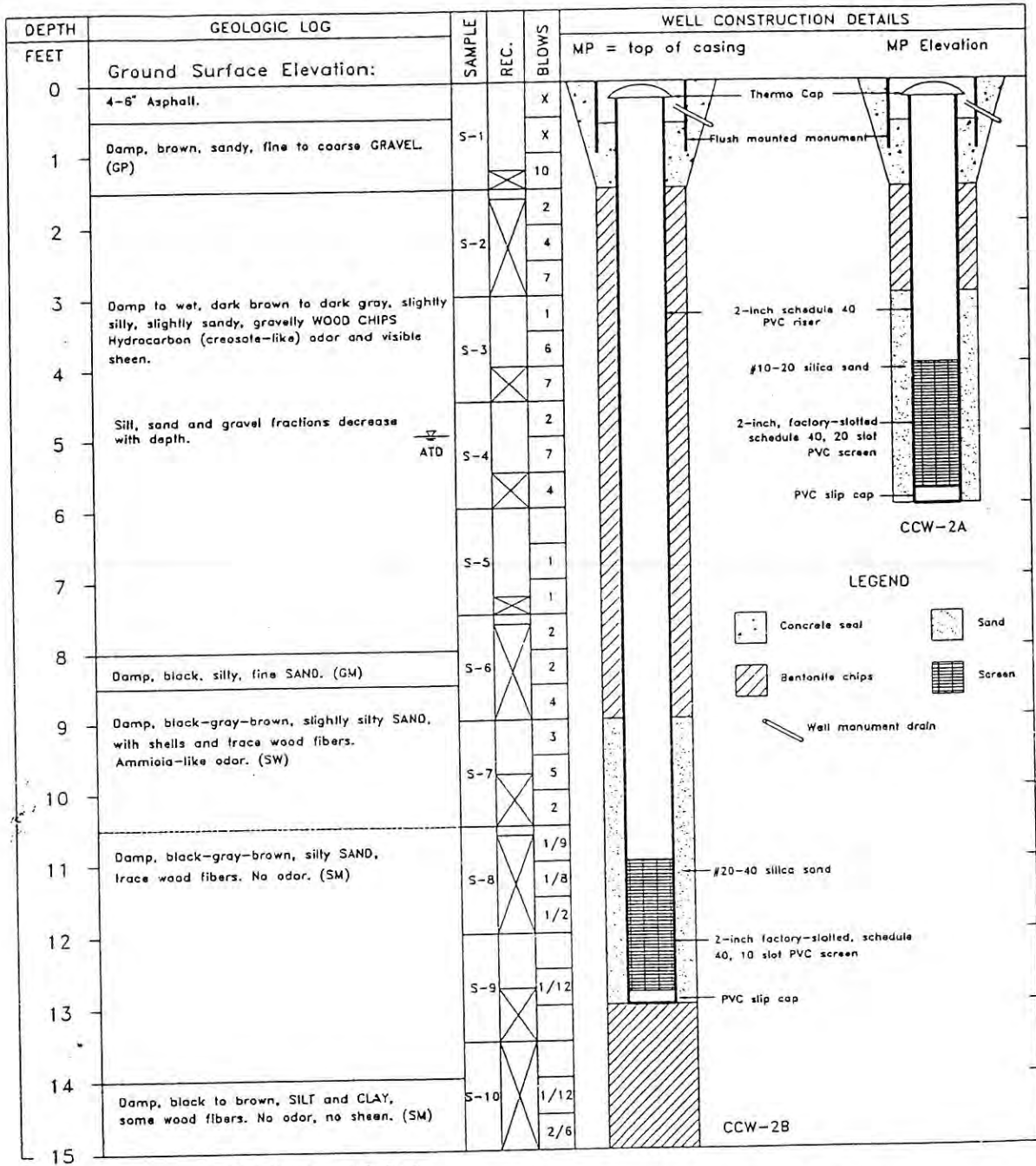
FIGURE ##, GEOLOGIC LOG AND WELL AS-BUILTS  
MONITORING WELLS CCW-1A & CCW-1B

 **PACIFIC GROUNDWATER GROUP**  
JE9205.03

PROJECT NAME: Clean Care  
WELL IDENTIFICATION NUMBERS: CCW-1A, CCW-1B  
DRILLING METHOD: Hollow Stem Auger  
DRILLER: Charles Richard  
FIRM: Holt Drilling  
CONSULTING FIRM: Pacific Groundwater Group  
REPRESENTATIVE: Chad Bring

LOCATION: NW 1/4 SW 1/4 Sec.  
DATUM: NGVD  
WATER LEVEL ELEVATION:  
INSTALLED: February 1-2, 1994  
DEVELOPED: February 14, 1993  
START CARD NO.: 06851

GEOLOGIC LOG AND WELL AS-BUILTS, MONITORINGS WELL CCW-2A AND CCW-2B



Total Depth = 15 Feet

NOTE: Descriptions of odors and sheens are included on this log where noted in the field.  
No references to odors or sheens generally indicates the absence of odors or sheens.

FIGURE ##, GEOLOGIC LOG AND WELL AS-BUILTS  
MONITORING WELLS CCW-2A & CCW-2B

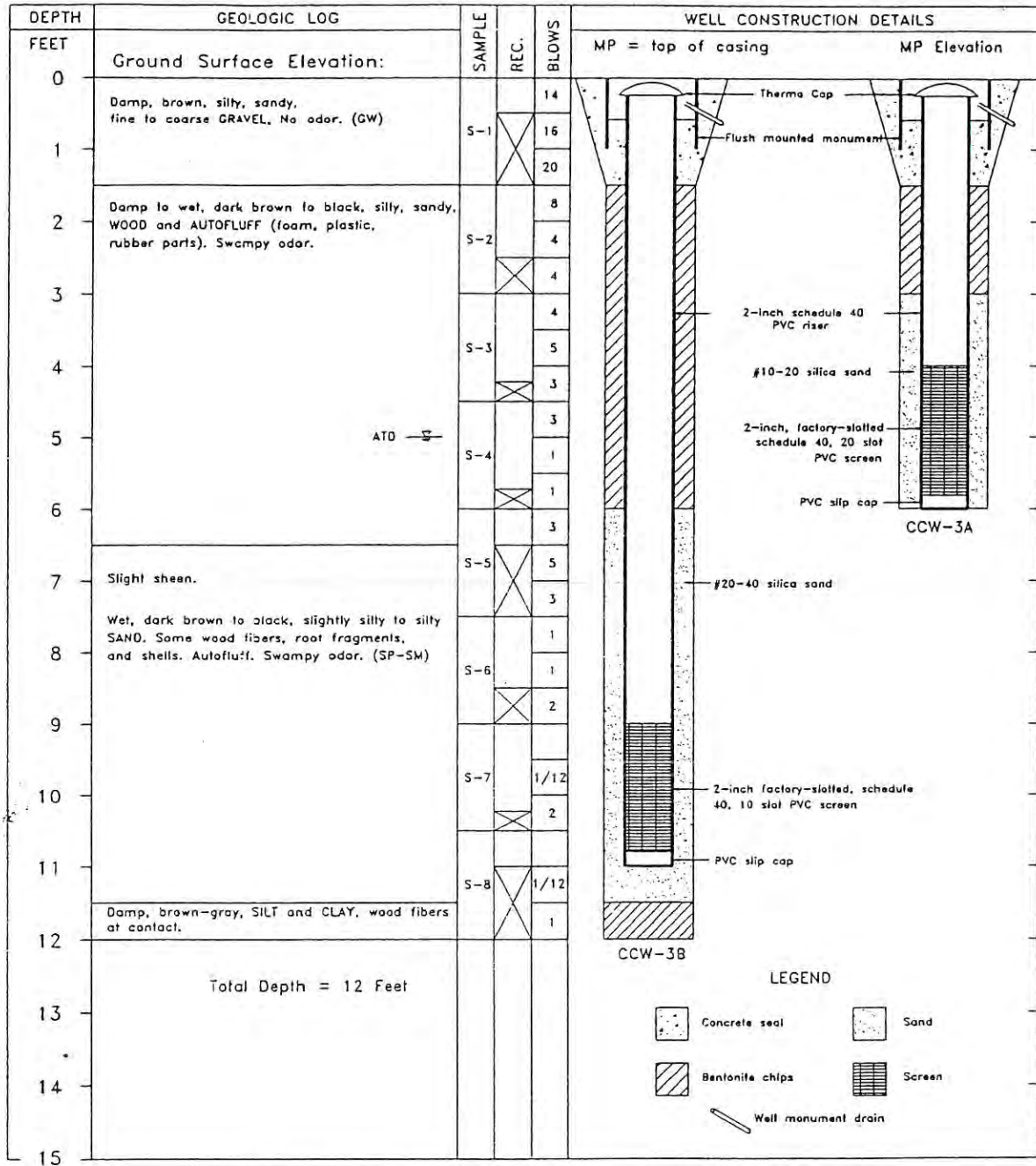


PACIFIC GROUNDWATER GROUP  
JE9205.03

PROJECT NAME: Clean Care  
WELL IDENTIFICATION NUMBERS: CCW-2A, CCW-2B  
DRILLING METHOD: Hollow Stem Auger  
DRILLER: Charles Richard  
FIRM: Holt Drilling  
CONSULTING FIRM: Pacific Groundwater Group  
REPRESENTATIVE: Chad Bring


LOCATION: NW 1/4 SW 1/4 Sec.  
DATUM: NGVD  
WATER LEVEL ELEVATION:  
INSTALLED: February 1-2, 1994  
DEVELOPED: February 14, 1993  
START CARD NO.: 06851

GEOLOGIC LOG AND WELL AS-BUILTS, MONITORING WELLS CCW-3A AND CCW-3B



NOTE: Descriptions of odors and sheens are included on this log where noted in the field. No references to odors or sheens generally indicates the absence of odors or sheens.

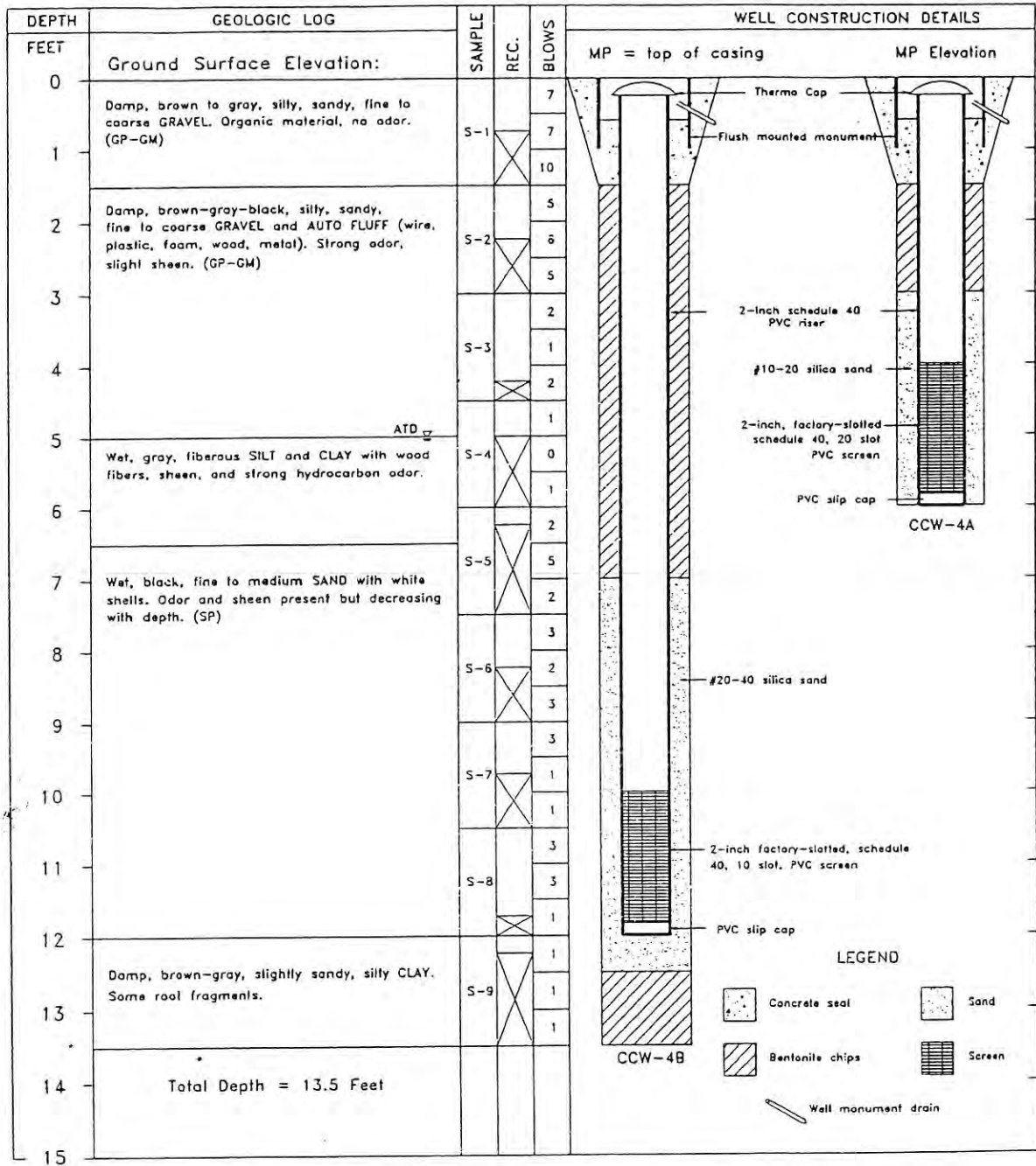
FIGURE ##, GEOLOGIC LOG AND WELL AS-BUILTS  
MONITORING WELLS CCW-3A & CCW-3B

 **PACIFIC GROUNDWATER GROUP**  
JE9205.03

PROJECT NAME: Clean Care  
WELL IDENTIFICATION NUMBERS: CCW-3A, CCW-3B  
DRILLING METHOD: Hollow Stem Auger  
DRILLER: Charles Richard  
FIRM: Holt Drilling  
CONSULTING FIRM: Pacific Groundwater Group  
REPRESENTATIVE: Chad Bring

LOCATION: NW 1/4 SW 1/4 Sec.  
DATUM: NGVD  
WATER LEVEL ELEVATION:  
INSTALLED: February 1-2, 1994  
DEVELOPED: February 14, 1994  
START CARD NO.: 06851

GEOLOGIC LOG AND WELL AS-BUILTS, MONITORING WELLS CCW-4A AND CCW-4B



NOTE: Descriptions of odors and sheens are included on this log where noted in the field. No references to odors or sheens generally indicates the absence of odors or sheens.

FIGURE ##, GEOLOGIC LOG AND WELL AS-BUILTS  
MONITORING WELLS CCW-4A & CCW-4B

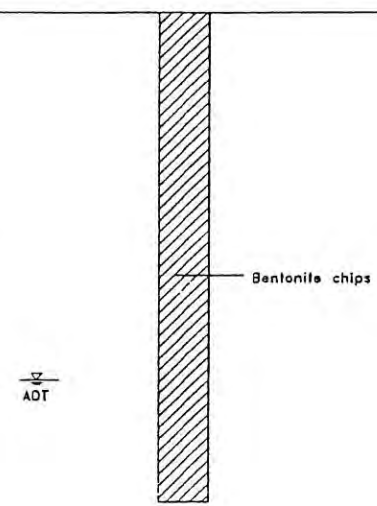


PACIFIC GROUNDWATER GROUP  
JE9205.03

PROJECT NAME: Clean Care  
WELL IDENTIFICATION NUMBERS: CCW-4A, CCW-4B  
DRILLING METHOD: Hollow Stem Auger  
DRILLER: Charles Richard  
FIRM: Holf Drilling  
CONSULTING FIRM: Pacific Groundwater Group  
REPRESENTATIVE: Chad Bring

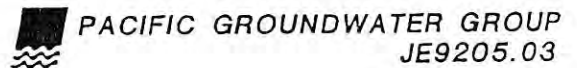
LOCATION: NW  $\frac{1}{4}$  SW  $\frac{1}{4}$  Sec.  
DATUM: NGVD  
WATER LEVEL ELEVATION:  
INSTALLED: February 1-2, 1994  
DEVELOPED: February 14, 1994  
START CARD NO.: 06851

# GEOLOGIC LOG, BORING B-1

DEPTH	GEOLOGIC LOG	SAMPLE	REC.	BLOWS	WELL CONSTRUCTION DETAILS
FEET					Elevation
0	Ground Surface Elevation:				
1	Damp, brown, slightly silty, sandy, fine to coarse GRAVEL. No odor. (GP-GW)	S-1	X	28	
				39	
				13	
2	Damp, dark brown to black, WOOD FIBERS and FOAM RUBBER.	S-2	X	8	
				50 2	
3	Damp, black, fine to medium SAND with root fragments, shells, and roof materials. Hydrocarbon odor and sheen at top. (SP)	S-3	X	5	
				4	
4				6	
				2	
5		S-4	X	6	
				6	
6	Total Depth = 6 Feet				
7					
8					
9					
10					
11					
12					
13					
14					
15					

NOTE: Descriptions of odors and sheens are included on this log where noted in the field.  
No references to odors or sheens generally indicates the absence of odors or sheens.

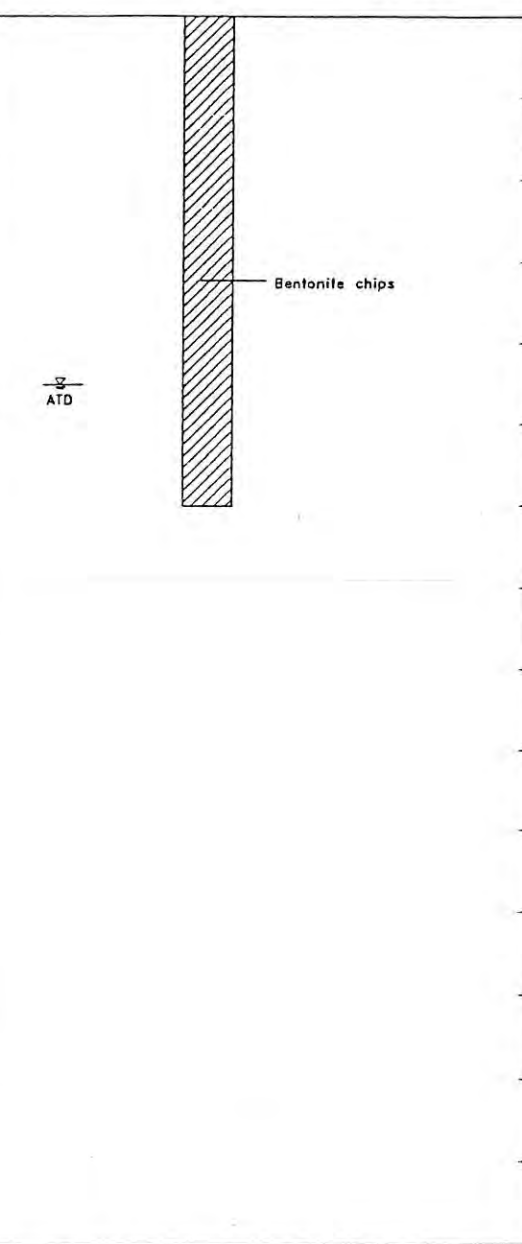
FIGURE ##, GEOLOGIC LOG, BORING B-1



PROJECT NAME: Clean Care  
 WELL IDENTIFICATION NUMBERS: NA  
 DRILLING METHOD: Hollow Stem Auger  
 DRILLER: Charles Richard  
 FIRM: Holt Drilling  
 CONSULTING FIRM: Pacific Groundwater Group  
 REPRESENTATIVE: Chad Bring


LOCATION: NW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> Sec.  
 DATUM: NGVD  
 WATER LEVEL ELEVATION:  
 INSTALLED: NA  
 DEVELOPED: NA  
 START CARD NO.: NA

## GEOLOGIC LOG, BORING B-2

DEPTH FEET	GEOLOGIC LOG	SAMPLE	REC.	BLOWS	WELL CONSTRUCTION DETAILS	
0	Ground Surface Elevation:				Elevation	
1	Dry to damp, brown to gray, slightly silty, sandy, fine to coarse GRAVEL. No odor. (GP)	S-1	X	15		
				20		
				25		
2		S-2	X	11		
				10		
				8		
3	Damp to wet, dark brown to black, slightly sandy, gravelly AUTO FLUFF (foam, wire, plastic). Swampy, garbage-like odor.	S-3	X	5		
4				5		
				5		
5	Wet, black, fine to medium SAND. Root fragments, no odor, no sheen.	S-4	X	3		
				4		
				4		
6	Total Depth = 6 Feet					
7						
8						
9						
10						
11						
12						
13						
14						
15						

NOTE: Descriptions of odors and sheens are included on this log where noted in the field.  
No references to odors or sheens generally indicates the absence of odors or sheens.

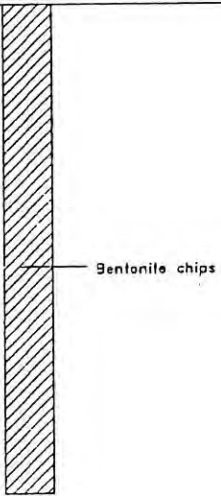
FIGURE ##, GEOLOGIC LOG, BORING B-2


**PACIFIC GROUNDWATER GROUP**  
 JE9205.03

PROJECT NAME: Clean Care  
 WELL IDENTIFICATION NUMBERS: NA  
 DRILLING METHOD: Hollow Stem Auger  
 DRILLER: Charles Richard  
 FIRM: Holt Drilling  
 CONSULTING FIRM: Pacific Groundwater Group  
 REPRESENTATIVE: Chad Bring

LOCATION: NW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> Sec.  
 DATUM: NGVD  
 WATER LEVEL ELEVATION:  
 INSTALLED: NA  
 DEVELOPED: NA  
 START CARD NO.: NA

# GEOLOGIC LOG, BORING B-3

DEPTH	GEOLOGIC LOG	SAMPLE	REC.	BLOWS	WELL CONSTRUCTION DETAILS
FEET	Ground Surface Elevation:				Elevation
0	Damp, brown to green-gray, slightly silty to silty, sandy, fine to coarse GRAVEL. No odor. (GW)	S-1	X	16	
1				19	
				14	
2		S-2	X	11	
				23	
3		S-3	X	33	
				13	
4		Wood fill and fibers, no odor.	X	7	
				5	
5		Wet, black, fine to medium SAND. Root fragments, shells. No odor, no sheen. (SP)	X	5	
	5				
6	Total Depth = 6 Feet	X	5		
			5		
7					
8					
9					
10					
11					
12					
13					
14					
15					

NOTE: Descriptions of odors and sheens are included on this log where noted in the field.  
No references to odors or sheens generally indicates the absence of odors or sheens.

FIGURE ##, GEOLOGIC LOG, BORING B-3

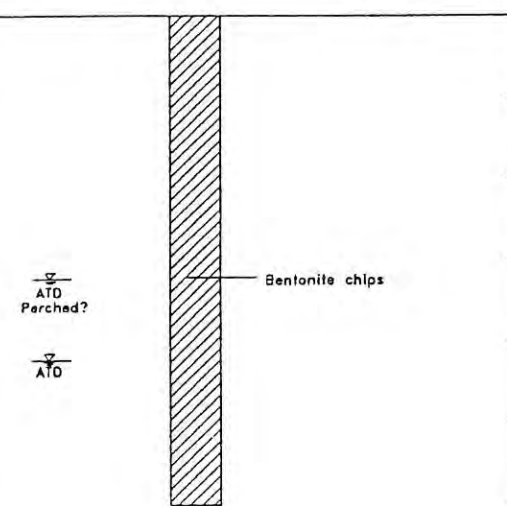


**PACIFIC GROUNDWATER GROUP**  
JE9205.03

PROJECT NAME: Clean Care  
 WELL IDENTIFICATION NUMBERS: NA  
 DRILLING METHOD: Hollow Stem Auger  
 DRILLER: Charles Richard  
 FIRM: Holt Drilling  
 CONSULTING FIRM: Pacific Groundwater Group  
 REPRESENTATIVE: Chad Bring

LOCATION: NW $\frac{1}{4}$  SW $\frac{1}{4}$  Sec.  
 DATUM: NGVD  
 WATER LEVEL ELEVATION:  
 INSTALLED: NA  
 DEVELOPED: NA  
 START CARD NO.: NA

## GEOLOGIC LOG, BORING B-4

DEPTH	GEOLOGIC LOG	SAMPLE	REC.	BLOWS	WELL CONSTRUCTION DETAILS
0	Ground Surface Elevation:				Elevation
1	Damp to wet, brown to green-gray, silty, sandy, fine to coarse GRAVEL. No odor. (GM)	S-1	X	8	
1				12	
2	As above with sheen, and hydrocarbon and ammonia odors.	S-2	X	7	
2				5	
3	Damp, green-gray, silty SAND. No odor. (SP)	S-3	X	5	
3				3	
4	Damp to wet, dark brown, silty, slightly sandy AUTO FLUFF (glass, rubber hose, wood, and wire). Swampy odor.	S-4	X	2	
4				3	
5	Total Depth = 6 Feet			2	
5				1	
6				4	
6				14	
7					
8					
9					
10					
11					
12					
13					
14					
15					

NOTE: Descriptions of odors and sheens are included on this log where noted in the field.  
No references to odors or sheens generally indicates the absence of odors or sheens.

FIGURE ##, GEOLOGIC LOG, BORING B-4



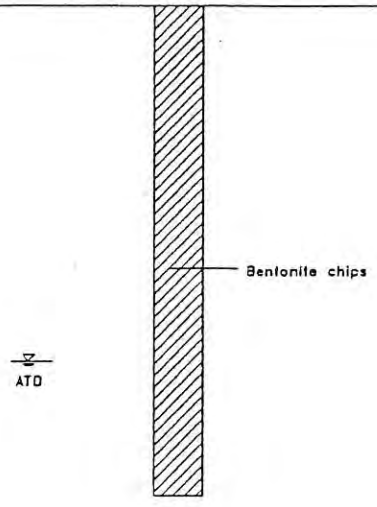
**PACIFIC GROUNDWATER GROUP**  
JE9205.03

PROJECT NAME: Clean Care  
 WELL IDENTIFICATION NUMBERS: NA  
 DRILLING METHOD: Hollow Stem Auger  
 DRILLER: Charles Richard  
 FIRM: Holt Drilling  
 CONSULTING FIRM: Pacific Groundwater Group  
 REPRESENTATIVE: Chad Bring

LOCATION: NW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> Sec.  
 DATUM: NGVD  
 WATER LEVEL ELEVATION:  
 INSTALLED: NA  
 DEVELOPED: NA  
 START CARD NO.: NA



## GEOLOGIC LOG, BORING B-5

DEPTH	GEOLOGIC LOG	SAMPLE	REC.	BLOWS	WELL CONSTRUCTION DETAILS
0	Ground Surface Elevation:				Elevation
0	Damp, brown to dark brown, slightly silty to silty, sandy, fine to coarse GRAVEL. No odor. (GP-GM)	S-1	X	4	
1				5	
				3	
2				2	
2	S-2	X	1		
3			1		
3	Damp, dark brown, silty, slightly sandy WOOD and AUTO FLUFF.			1	
4	Damp to wet, dark brown, silty, slightly sandy AUTO FLUFF (glass, rubber hose, wood, and wire).	S-3	X	1	
4				1	
5	Wet, black, fine to medium SAND. No odor.	S-4	X	5	
5				5	
6	Total Depth = 6 Feet			4	
7					
8					
9					
10					
11					
12					
13					
14					
15					

NOTE: Descriptions of odors and sheens are included on this log where noted in the field.  
No references to odors or sheens generally indicates the absence of odors or sheens.

FIGURE ##, GEOLOGIC LOG, BORING B-5

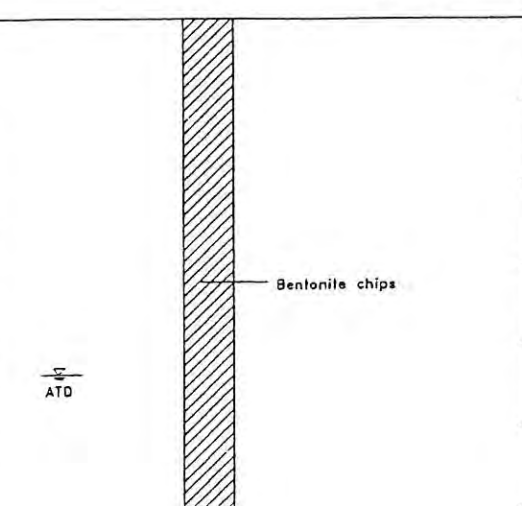


**PACIFIC GROUNDWATER GROUP**  
JE9205.03

PROJECT NAME: Clean Care  
 WELL IDENTIFICATION NUMBERS: NA  
 DRILLING METHOD: Hollow Stem Auger  
 DRILLER: Charles Richard  
 FIRM: Holt Drilling  
 CONSULTING FIRM: Pacific Groundwater Group  
 REPRESENTATIVE: Chad Bring

LOCATION: NW $\frac{1}{4}$  SW $\frac{1}{4}$  Sec.  
 DATUM: NGVD  
 WATER LEVEL ELEVATION:  
 INSTALLED: NA  
 DEVELOPED: NA  
 START CARD NO.: NA

GEOLOGIC LOG, BORING B-6

DEPTH FEET	GEOLOGIC LOG	SAMPLE	REC.	BLOWS	WELL CONSTRUCTION DETAILS		
					Elevation		
0	Ground Surface Elevation:						
1	Damp, brown to green-gray, slightly silty to silty, sandy, fine to coarse GRAVEL with Autofluff (plastic, metal, rubber hose). No odor, no sheen. (GF-GW)  Very slight hydrocarbon odor in one spot.	S-1	X	25			
21							
2		S-2	X	19			
19							
3		S-3	X	14			
9							
4		S-4	X	8			
6							
5		Damp to wet, light brown, gritty, SILT and CLAY. No odor, no sheen. (Bottom of boring in fine to medium SAND.)	S-4	X			8
2							
6	Total Depth = 6 Feet			3			
7							
8							
9							
10							
11							
12							
13							
14							
15							

NOTE: Descriptions of odors and sheens are included on this log where noted in the field.  
No references to odors or sheens generally indicates the absence of odors or sheens.

FIGURE ##, GEOLOGIC LOG, BORING B-6



PACIFIC GROUNDWATER GROUP  
JE9205.03

PROJECT NAME: Clean Care  
WELL IDENTIFICATION NUMBERS: NA  
DRILLING METHOD: Hollow Stem Auger  
DRILLER: Charles Richard  
FIRM: Holt Drilling  
CONSULTING FIRM: Pacific Groundwater Group  
REPRESENTATIVE: Chad Bring

LOCATION: NW 1/4 SW 1/4 Sec.  
DATUM: NGVD  
WATER LEVEL ELEVATION:  
INSTALLED: NA  
DEVELOPED: NA  
START CARD NO.: NA



Figure 1  
Site Plan Sketch

existing  
paddy?

approx locn.  
B-3

area likely  
to contain  
slaggy sand  
Volume est =  
35 Ft x 60 Ft x 4.5 Ft  
= 9450 FT<sup>3</sup>  
= 350 yds<sup>3</sup>  
(Soil Volume From  
bottom of Sig Fill  
to 6 Ft depth)

TP-4

3.5	2.5
0	

TP-3

2	4
0	

TP-1

1.5	4.5
3	

TP-2

2	4
2	

NOT TO SCALE



thickness  
of slaggy  
sand

depth to top of auto falls  
← thickness of  
auto falls  
plus slaggy  
sand  
(to 6 Ft depth)

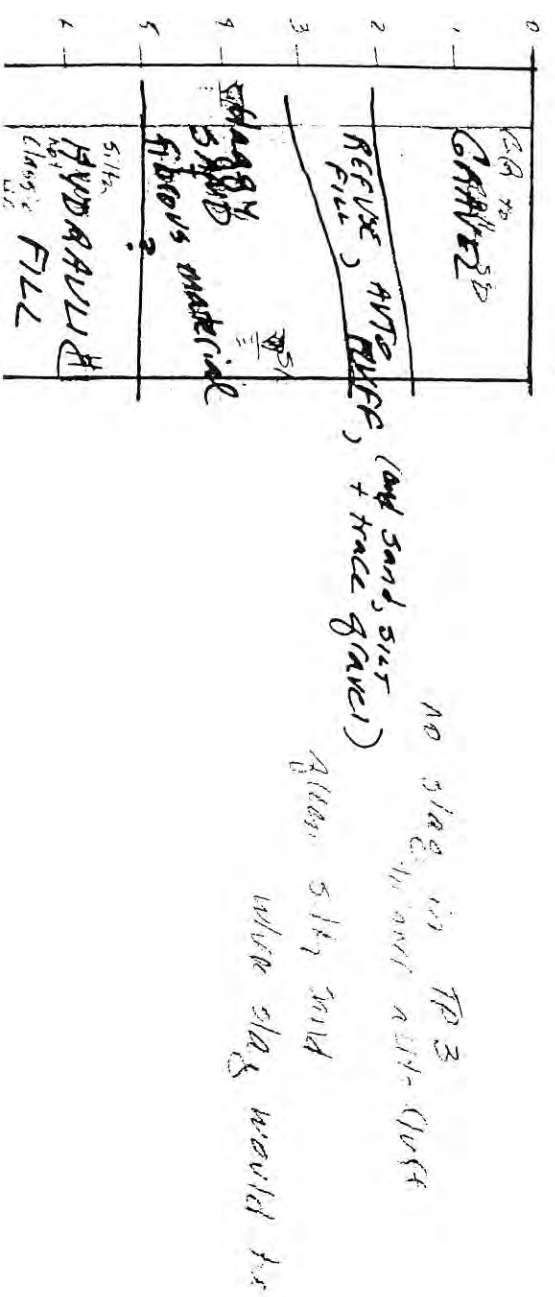
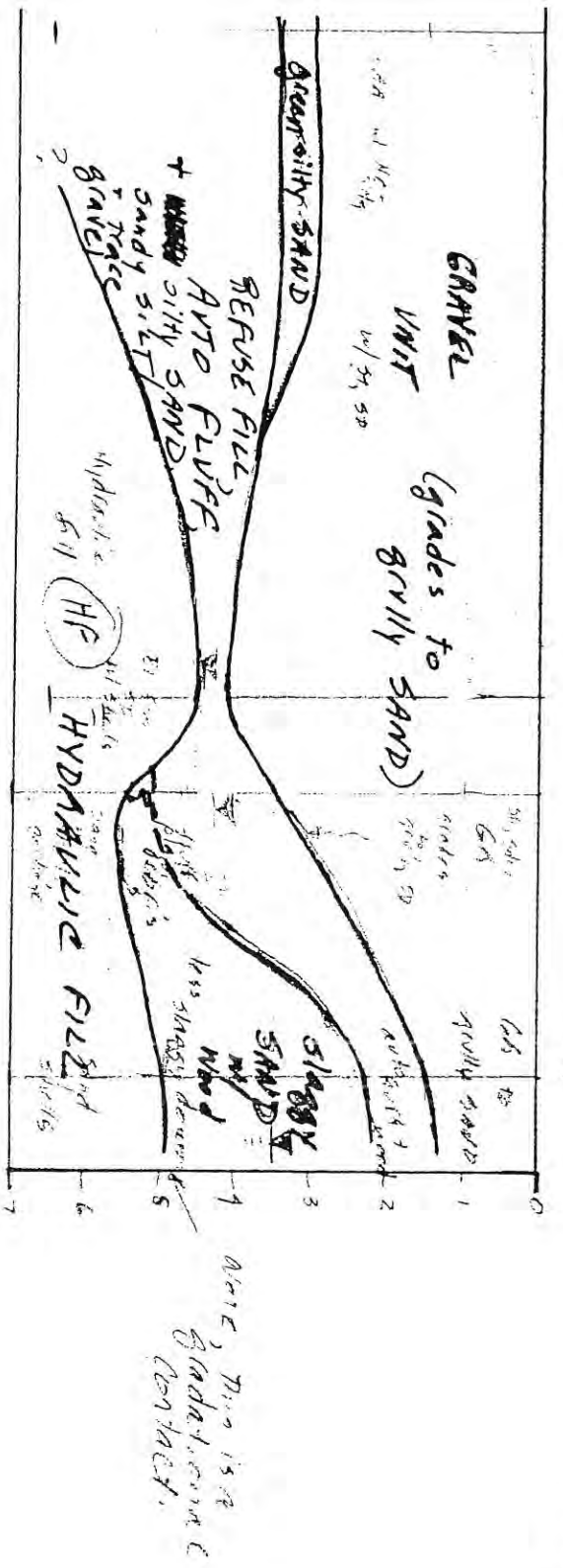
1.5	5
3	

3-22-95

(92)

CLEAN CARE JEQ 205  
Figure 2 - X SECTIONS Granite Red Hill

B-3 TP4 TP1  
 HORIZ SCALE 1" = 20'  
 VERTICAL SCALE 1" = 2.5'  
 8X VERT EXAGG.



NO slag in TP3  
 Allow slag sand  
 where slag would be

# TEST PIT LOG TP-1

Sample Number	PID Headspace Reading	Depth (feet)	SOIL DESCRIPTIONS
		0.0	
TP1-1	0.0	0.5	Damp, brown, slightly sandy, slightly silty GRAVEL with organics and garbage-like odor.
TP1-2	0.0	1.0	Damp, green-gray, silty, gravelly, medium SAND. Thin rust-colored zone at 1.0 feet.
TP1-3	0.4	1.5	AUTO FLUFF (hoses, wires, metallic debris) with abundant branches and fibers in a silty SAND matrix
		2.0	
		2.5	
TP1-4	0.0	3.0	Damp to wet, black, silty fine SAND with wood debris. SAND consists of fine particles of SLAG. SLAG particles have an oily, slightly metallic luster.
		3.5	
		4.0	
TP1-5	0.1	4.5	
		5.0	
TP1-6	1.0	5.5	Wet, black, fine to medium SAND with shells. Some orange-brown grains, some fibrous organic material.
		6.0	
TP1-7	0.0	6.5	
		7.0	
		7.5	Bottom of pit at 7.0 feet 3/17/95
		8.0	
		8.5	
		9.0	

PROJECT NAME: Clean Care New Pad  
 DRILLING METHOD: Excavator  
 OPERATOR:  
 FIRM:  
 DATE: 03/17/95

CONSULTING FIRM: Pacific Groundwater Group  
 REPRESENTATIVE: Nancy Riccio



Soil Descriptions and Stratum lines are interpretive  
 and actual changes may be gradual

# TEST PIT LOG TP-2

Sample Number	PID Headspace Reading	Depth (feet)	SOIL DESCRIPTIONS
		0.0	
TP2-1	0.0	0.5	Damp, brown-gray, slightly sandy, slightly silty GRAVEL
		1.0	
TP2-2	0.0	1.5	Damp, tan, slightly silty, gravelly, fine SAND with occasional clay clumps and refuse
		2.0	
TP2-3	0.0	2.5	Damp, dark brown, slightly gravelly, very silty SAND with abundant wood refuse, some auto fluff, and occasional clay clumps
		3.0	
TP2-4	0.0	3.5	Moist, black SAND with cardboard-like and fibrous organic waste material; SAND consists of slag-like granules
		4.0	
		4.5	Less fibrous organic material; some rock fragments
TP2-5	0.0	5.0	Gradational contact
		5.5	
TP2-6	0.0	6.0	Wet, dark brown, silty SAND with wood & other debris
		6.5	
TP2-7	0.0	7.0	
		7.5	Bottom of pit at 7.0 feet 3/17/95
		8.0	
		8.5	
		9.0	



PROJECT NAME: Clean Care New Pad  
 DRILLING METHOD: Excavator  
 OPERATOR:  
 FIRM:  
 DATE: 03/17/95

CONSULTING FIRM: Pacific Groundwater Group  
 REPRESENTATIVE: Nancy Riccio



Soil Descriptions and Stratum lines are interpretive  
 and actual changes may be gradual

# TEST PIT LOG TP-3

Sample Number	PID Headspace Reading	Depth (feet)	SOIL DESCRIPTIONS
		0.0	
TP3-1	0.0	0.5	Damp, brown-gray, slightly sandy, slightly silty GRAVEL
		1.0	
TP3-2	0.0	1.5	Damp, gray-tan, silty, sandy GRAVEL
		2.0	
		2.5	AUTO FLUFF, SILT, WOOD, & PAPER DEBRIS
TP3-3	0.3	3.0	Damp, brown, slightly silty SAND with some gravel, refuse
		3.5	----- Gradational contact -----
TP3-4	0.0	4.0	Moist, brown & green, silty SAND & GRAVEL with some wood debris
		4.5	
		5.0	grading to
TP3-5	0.3	5.5	
		6.0	
TP3-6	0.0	6.5	Wet, salt & pepper, slightly gravelly, silty SAND with roots & wood debris
		7.0	
TP3-7	0.0	7.0	
		7.5	Bottom of pit at 7.0 feet 3/17/95
		8.0	
		8.5	
		9.0	




PROJECT NAME: Clean Care New Pad  
 DRILLING METHOD: Excavator  
 OPERATOR:  
 FIRM:  
 DATE: 03/17/95

CONSULTING FIRM: Pacific Groundwater Group  
 REPRESENTATIVE: Nancy Riccio



Soil Descriptions and Stratum lines are interpretive  
 and actual changes may be gradual

# TEST PIT LOG TP-4

Sample Number	PID Headspace Reading	Depth (feet)	SOIL DESCRIPTIONS
		0.0	
TP4-1	176	0.5	Damp, red-brown, slightly silty, slightly sandy GRAVEL; some gray layers
		1.0	
TP4-2	5.5	1.5	Damp, brown, slightly silty, very gravelly, fine to medium SAND; some cobbles. More gravel in bottom 6 inches
		2.0	
TP4-3	0.0	2.5	Damp, dark brown, gravelly, fine SAND with plant fibers; some cobbles
		3.0	
TP4-4	0.0	3.5	
		4.0	Damp to moist, black, SILT, SAND, & REFUSE; abundant plant debris; mixed with auto fluff in lower foot
		4.5	
 TP4-5	0.0	5.0	
		5.5	
TP4-6		6.0	Wet, black, slightly silty, fine SAND with shells; some refuse
		6.5	
TP4-7	0.0	7.0	
		7.5	Bottom of pit at 7.0 feet 3/17/95
		8.0	
		8.5	
		9.0	

PROJECT NAME: Clean Care New Pad  
 DRILLING METHOD: Excavator  
 OPERATOR:  
 FIRM:  
 DATE: 03/17/95

CONSULTING FIRM: Pacific Groundwater Group  
 REPRESENTATIVE: Nancy Riccio



Soil Descriptions and Stratum lines are interpretive and actual changes may be gradual



7/18/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0101-~~A~~  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: PLUMBITE SAND  
 WATER ENCOUNTERED? Yes

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: COURT HARBS  
 GEOLOGIST: BRIAN WITTECHURCH  
Ryan

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0101-00-02 09:45  
 SAMPLE2 ID: SC0101-02-04 09:50

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 300 ppm J  
 SAMPLE2 RESULT: 7700 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SP	95 FID 5 PID	0945	
0-2	SP	F-IN SAND W/ ANGULAR MEDIUM <sup>TO COARSE</sup> GRAVEL; BROWN LOSSE SAND		
2-3 1/2	SP/PT Fill	95- FID } DARK BROWN; PEATTY 5 PID } SAND; LARGE FRAG ORGANIC MATTER INCL. WOOD CHIPS; AND FLUFF		
3 1/4	SP/PT SLUDGE	LIME WASTE (LIME SOLVENT SLUDGE); SOFT SILTY TO CLAY CONSISTENCY;		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits  
 J = estimated value (value falls below quantitative limit of 1000 ppm for test kit).

7/11/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0102  
 STARTCARD NO: R 049151  
 GROUND ELEV: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUDED: BENTONITE SAND  
 WATER ENCOUNTERED? Yes

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: AL JENSEN  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: B. WHITCHURCH  
R. (P)

GPS NORTH: \_\_\_\_\_ GPS EAST: \_\_\_\_\_  
 SAMPLE1 ID: SC0102-00-02 1005 SAMPLE1 RESULT: 1150 ppm  
 SAMPLE2 ID: SC0102-02-04 1010 SAMPLE2 RESULT: 2710 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-2 <input checked="" type="checkbox"/>	SP	GRAVELLY SAND (DREDGE FILL); BEN; FINE TO MEDIUM SAND W/ MED. TO COARSE LOOSE DRY GRAVEL	10:00	✓ SC0102-00-02
<del>1-2</del> <input checked="" type="checkbox"/>	SP	FID=9; PID=H		↓
2-3	SP	DREDGE FILL; DRK BEN; SILTY TO GRAVELLY SAND; MOIST; MED. DENSE; SAND AND GRAVEL PIECES	10:05	SC0102-02-04
3-4	SP	DRK  (50% RECOVERY -2'-4')		↓

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits

2/18/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0103  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE SAND  
 WATER ENCOUNTERED? Yes

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: R. Whitehead

GPS NORTH: \_\_\_\_\_

GPS EAST: \_\_\_\_\_

SAMPLE1 ID: SC0103-00-02

1020 SAMPLE1 RESULT: 500 ppm J

SAMPLE2 ID: SC0103-00-01

1025 SAMPLE2 RESULT: 6530 ppm

-24

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SP/GW	DREDGE FILL; BRN. F-M SAND; LOOSE; DRY; W/ F-COARSE GRAVEL; SOME ROOTS	1018	SC0103-00-02
1-2		[FID=4; PID=1]		
2-3	GP	2-2.25- LAYER OF COARSE GRAVEL;	↓	
	SLUDGE	2.25 - 3.5 - LIME WASTE; SILTY SAND CONSISTENCY: GRN-GRAY TO PINK; SOME		
3-4	SLUDGE	[FID=420; PID=36] AUTO FLUFF		
	FILL	3.5-4: WOOD WASTE; FIBER PRODUCT (OIL) PRESENT; WOOD MIXED W/ SAND		

Ecology & Environment, Inc. 2000  
 CONSISTENCY, DLK, BRN - BLK;  
 HIGHER HIGHER OVA / ODOR  
 BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits

J = estimated value

2/18/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0104  
 STARTCARD NO: R 049151  
 GROUND ELEV: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE SAND  
 WATER ENCOUNTERED? Yes

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. Morris  
 GEOLOGIST: R. Whitchurch

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0104-02 1225  
 SAMPLE2 ID: SC0104-24 1227

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 2710 ppm  
 SAMPLE2 RESULT: 3020

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SP/GP	<u>FID=24 PID=15</u> 0-1.5 - GRAVELLY SAND	1220	
1-2	SP/GP FILL	1.5-3 → WOOD WASTE & DEBRIS	↓	
2-3	FILL	<u>FID=29 PID=12</u> <del>SAME</del>		
3-4	SLUDGE	WASTE SOLVENT ODOOR (NO FID/PID) LIME WASTE		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits

7/19/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0105  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: YES; BENTONITE POWDER  
 WATER ENCOUNTERED?  Yes  no

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: P. HARRIS  
 GEOLOGIST: R. Witchurch

GPS NORTH: SC0105-02 <sup>1205</sup> GPS EAST: \_\_\_\_\_  
 SAMPLE1 ID: SC0105-24 1210 SAMPLE1 RESULT: 3320 ppm  
 SAMPLE2 ID: T21 SAMPLE2 RESULT: 10190 ppm

UNDER 10-IN CONC SLAB

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SM	0-2: FID > PID > 500 SILTY SAND; GEN GRAY TO ORANGE BRN; DEFINITE ODOR; 2" FREE PRODUCT ZONE @ 2.0 ft; ALL MOIST; TRACE FINE GRAVEL	1200	
1-2	SM			
2-3	SLUDGE	2-3 FID > PID > 500! LIME WASTE PRODUCT; BEN GRAY; DRY		
3-4	NA	NO RECOVERY (REFUSAL)		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits

2/18/02

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0106  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE SAND  
 WATER ENCOUNTERED? (Yes) no

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: R. Whitcomb

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0106-02 1140  
 SAMPLE2 ID: SC0106-24 1142

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 3440 ppm  
 SAMPLE2 RESULT: 21040 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SP/GS	<u>FID ≥ 500, PID = 39</u> 0-1.5 - GRAVELY SAND 1.5-2.0 - LARGE GRAVEL (VERY COARSE)	11:31	
1-2	SP/GP		↓	
	GP			
2-3	SLUDGE	<u>FID ≥ 500, PID ≥ 500</u> 2-3: SUSPECTED LIME WASTE LAYER		
3-4	SLUDGE	3.0 - PRODUCT ON SKIN 3-4 LIME WASTE (20)	↓	

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits

me

7/18/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0107  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE SAND  
 WATER ENCOUNTERED? Yes no

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: R. Whitchurch

GPS NORTH: \_\_\_\_\_ GPS EAST: \_\_\_\_\_  
 SAMPLE1 ID: SC0107-02 1115 SAMPLE1 RESULT: 10580 ppm  
 SAMPLE2 ID: SC0107-24 1120 SAMPLE2 RESULT: 14180 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
<del>0</del> 0-1	SM	(1/2' OVERBUIDEN; 9" IN CONC SLAB) BELOW SLAB: SILTY SAND; GRN-GRAY. F-M SAND W/ 20%-30% SILT; MOIST; SOME FREE PRODUCT VISIBLE; ODOR; SOME	1110	
1-2	SM	FID + PID > 500 GRAVEL		
2-3	FILL	2-3 1/2: VARIOUS RUBBLE + WOOD DEBRIS; RUBBLE APPEARS TO BE BRICK		
3-4	FILL	FID > 500 PID > 500		
	Dredge FILL	3 1/2 - 4 = SAND + SHELL FILL; BLACK STAINING; POSSIBLE PRODUCT		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits

2/18/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0108  
 STARTCARD NO: R 049151  
 GROUND ELEV: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE SAND  
 WATER ENCOUNTERED? Yes

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: R. Whitchurch

GPS NORTH: \_\_\_\_\_ 1042 GPS EAST: \_\_\_\_\_  
 SAMPLE1 ID: SC0108-02 ~~1040~~ SAMPLE1 RESULT: 14730 ppm  
 SAMPLE2 ID: SC0108-24 1045 SAMPLE2 RESULT: 15980 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SP	DREDGE FILL; GRAVELLY SAND; BRN; LOOSE; ↑ 0-2	1042	
0-2	SP	[FID=13; PID=13]		
2-3	SP/GW	2-3.5: GRAVELLY SAND, GREEN GRAY; F-11A SAND W/ FINE-COARSE GRAVEL; MEDIUM DENSE		
3-4	SP/GW Fill	[FID > 500 P > 500] 3.5-4: WOOD WASTE; BEN TO BLACK; OILY <del>REAR</del> PRODUCT; MIXED WOOD W/ SAND		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits



2/18/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0109  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: VERY BENTONITE SAND  
 WATER ENCOUNTERED? Yes no

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. Hodels  
 GEOLOGIST: R. Whitcomb

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0109-02 1417  
 SAMPLE2 ID: SC0109-24 1419

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: PH 4.17 2800 ppm  
 SAMPLE2 RESULT: PH 4.19 3800 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SP	FID: 392 PID: 7500	1425	
	SLUDGE	0-0.5 GRAVELLY SAND		
1-2		0.5-3.9 LIME ASH; SILT CLAY SIZE PARTICLE RANGE; WOOD FRAGMENTS		
2-3		FID: 52 PID: 56		
3-4		3.9-4.0 - STAINED; ROOTS; FREE PRODUCT VERY SATURATED; WOOD FRAGMENTS SAND		
	Fill			

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits

7/18/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0110  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE SAND  
 WATER ENCOUNTERED?  Yes  no

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: \_\_\_\_\_  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: R. Whitehurst

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0110-02 1241  
 SAMPLE2 ID: SC0110-24 1243

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 1820 ppm  
 SAMPLE2 RESULT: 12310 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SP/6P	FID = 31 PID: 20 0-3 GRAVELLY SAND; ORANGE BROWN; DRY; <del>NO</del> GRAVEL	1238	
1-2	SP/6P			
2-3	SP/6P	FID + PID > 500		
3-4	SWD6E	3-3.75 - LIME WASTE LAYER		
	FILL	3.75-4.0 - WOOD DEBRIS MIXED W/ SAND STAINED BLACK; MUST; PRES PRODUCT		

2/18/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0111

DRILL METHOD: Geoprobe

STARTCARD NO.: R 049151

DRILL FIRM: Ecology & Environment, Inc.

GROUND ELEV.: \_\_\_\_\_

DRILLER: \_\_\_\_\_

INSTALLED: \_\_\_\_\_

CONSULTING FIRM: Ecology & Environment, Inc.

GROUTED: YES GRANULAR BENTONITE

PROF. ENGINEER: C. HARRIS

WATER ENCOUNTERED? Yes  No

GEOLOGIST: R. Whitechurch

GPS NORTH: \_\_\_\_\_

GPS EAST: \_\_\_\_\_

SAMPLE1 ID: SC0111-02 1435

SAMPLE1 RESULT: 14440 ppm

SAMPLE2 ID: SC0111-24 1440

SAMPLE2 RESULT: over range

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SP/CP	FID: 7500 PID: 7500	1427	
	FLL	0.5 GRANULAR SAND 0.5-1.0 WOOD DEBRIS	↓	
1-2	SLUDGE	1-2 LIME WASTE SILTY SIZE DRY		
2-3	SM	FID: 7500 PID: 7500 2-4 BLACK SILTY SAND STEE W/ WOOD CHIPS; SMALL		
3-4	SM	BRICK PARTICLES; <del>W/</del> SLIGHTLY MOISTURE FREE PRODUCT		

# CLEAN CARE SOIL BORING REPORT

7/18/00

BORING ID NO.: SC0112  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE SAND  
 WATER ENCOUNTERED? Yes

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: \_\_\_\_\_  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: R. Whitchurch

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0112-02 1455  
 SAMPLE2 ID: SC0112-24 1459

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 17090 ppm  
 SAMPLE2 RESULT: 10640 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SP	FID > PID 7500 <del>MED</del> 0-2 MED GRN SAND; MOIST; GRN GRAY; FREE PRODUCT; STAINED	1455	
1-2	SP			
2-3	SLUDGE	FID + PID 7500		
	sm/Fill	2-2.5: SANDY SILT SIZED LIME WASTE 2.5-4 BLACK SILTY SAND w/ INTERBEDDED		
3-4	sm/Fill	PLANT MATTER; SLIGHTLY MOIST; STAINING; STRONG ODOR		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits

2/18/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0113  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: GRANULAR BENTONITE SAND  
 WATER ENCOUNTERED? Yes  (no)

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: \_\_\_\_\_  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: \_\_\_\_\_

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0113-02 1510  
 SAMPLE2 ID: SC0113-24 1514

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 16720 ppm  
 SAMPLE2 RESULT: 4810 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE	
0-1	SP	FID: 7500 PID: 7500 0-0.5 - BROWN SAND, F-M GRAIN: MOIST 0.5-1.0 - GRN GRAY SAND; F-M GRAIN: MOIST	1504		
	SP				
1-2	FILL	1.0-1.5 WOOD DEBRIS, <del>PA</del> PRODUCT			
2-3	SLUDGE	FID: 7500 PID: 7500 2.0-3.5 LIME WASTE, HEAVY FREE PRODUCT			
3-4	SLUDGE	3.5-4.0 SILTY SAND w/ WOOD DEBRIS MOIST; ODOROUS; STAINED			
	SM/FILL				

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits

# CLEAN CARE SOIL BORING REPORT

2/18/00

BORING ID NO.: SC0114  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE SAND  
 WATER ENCOUNTERED? Yes

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: \_\_\_\_\_  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: R. Whitehead

GPS NORTH: \_\_\_\_\_

GPS EAST: \_\_\_\_\_

SAMPLE1 ID: SC0114-02      16:26

SAMPLE1 RESULT: Over range

SAMPLE2 ID: SC0114-24      16:29

SAMPLE2 RESULT: 5600

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SP/GP	<u>FID: 78 PID: 36]</u> 1-2.0 GRAVELLY SAND; F-M SAND w/ F-M GRAVEL; BROWN; DRY	16:22	
1-2	SP/GP			
2-3	SLUDGE	<u>FID: 370 PID: 214]</u> 2.0-4.0 LIME WASTE LAYER; SILTY TO FINE SAND CONSISTENCY		
3-4	SLUDGE			

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits

# CLEAN CARE SOIL BORING REPORT

2/18/00

BORING ID NO.: SC0115  
 STARTCARD NO: R 049151  
 GROUND ELEV: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: SEANTONITE SAND  
 WATER ENCOUNTERED?  yes  no

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: \_\_\_\_\_  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: R. Whitchurch

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0115-02 1657  
 SAMPLE2 ID: SC0115-24 1701

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 2660 ppm  
 SAMPLE2 RESULT: 2580 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SM/GP	<u>FID: 386 PID: 125</u> 0-2 SILTY F-C SAND w/ SILTY TO COARSE PEBBLES; STAINING	1648	
1-2	SM/GP			
2-3	SLUDGE	<u>FID = PID: 2500</u>		
	Fill	2-2.5 LIME WASTE; PRODUCT		
3-4	Fill	2.5-4.0 (C25, WOOD WASTE) SILTY SAND; F-M; FREE PRODUCT SOME B PEBBLES		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits

# CLEAN CARE SOIL BORING REPORT

2/18/00

BORING ID NO.: SC0116  
 STARTCARD NO: R 049151  
 GROUND ELEV: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: YES; BENTONITE SAND  
 WATER ENCOUNTERED? Yes

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: \_\_\_\_\_  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: R. Whitchurch

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0116-02 1711  
 SAMPLE2 ID: ~~SC0116-04~~ NOT COLLECTED

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 20640  
 SAMPLE2 RESULT: NA

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SM/GP	FID: 7500 PID: 7500 0-1.5 GRAVELLY SILTY SAND;	1707 ↓	
1-2	SM/GP SWD6	1.5-2.0 ZIME WASTE LAYER SILTY-FINE SAND CONSISTENCY. (BRICK FRGMENTS @ 2.0)		
2-3	NA	REFUSAL 2-4 SUSPECTED CONC @ 2.0		
3-4	NA			

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits



7/18/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0117

DRILL METHOD: Geoprobe

STARTCARD NO: R 049151

DRILL FIRM: Ecology & Environment, Inc.

GROUND ELEV: \_\_\_\_\_

DRILLER: \_\_\_\_\_

INSTALLED: 8' 7/18/00

CONSULTING FIRM: Ecology & Environment, Inc.

GROUTED: BENTONITE SAND 7/18/00

PROF. ENGINEER: C. HARRIS

WATER ENCOUNTERED? Yes NO

GEOLOGIST: R. Whitcomb

GPS NORTH: \_\_\_\_\_

GPS EAST: \_\_\_\_\_

SAMPLE1 ID: SC0117-02 1613

SAMPLE1 RESULT: 5970 ppm

SAMPLE2 ID: SC0117-2A 1618

SAMPLE2 RESULT: Over range

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SP/GP	FID=214 PID=37 0-2 GOBBLES + SAND; GRAY; DRY;	1607	
1-2	SP/GP			
2-3	SLUDGE	FID > 500; PID > 500 2-3 LIME ASH LAYER		
3-4	FILL	3-4 COBBLY SILTY SAND W/ INDUSTRIAL + WOOD DEBRIS; MUDFLUFF; BLACK SLIGHTLY MOIST.		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
USCS = Unified Soil Classification System  
Sample 1 and 2 to be field screened using TPH Test Kits

7/18/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0118

DRILL METHOD: Geoprobe

STARTCARD NO.: R 049151

DRILL FIRM: Ecology & Environment, Inc.

GROUND ELEV.: \_\_\_\_\_

DRILLER: \_\_\_\_\_

INSTALLED: SC0118

CONSULTING FIRM: Ecology & Environment, Inc.

GROUTED: SC0118 BENTONITE SAND

PROF. ENGINEER: C. HARRIS

WATER ENCOUNTERED?  yes  no

GEOLOGIST: R. Whitechurch

GPS NORTH: \_\_\_\_\_

GPS EAST: \_\_\_\_\_

SAMPLE1 ID: SC0118-02 1530

SAMPLE1 RESULT: 6500 ppm

SAMPLE2 ID: SC0118-24 1534

SAMPLE2 RESULT: 16990 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1		FID: >500 PID: >500	1520	
0-1.5	sm/6r	0-1.5 GRAYLY SILTY SAND; DARK GRAY SLIGHTLY MOIST; ODOR; STRONGER THAN OTHER PARTS OF SITE		
1-2	sm/6r SP	1.5-3.0 F-M SAND; GREENISH GRAY SOME WOOD MAT'L DOWN @ 3.0 SLIGHTLY MOIST; STAINING IS VISIBLE		
2-3	SP	FID: >500 PID: >500		
3-4	SP	F-M BLACK SAND (w/ <sup>RED</sup> SAND SIZE (BRICK?) FRAGMENTS?) SATURATED (PRODUCT IN LAYER ABOVE)		

7/18/07

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0119  
 STARTCARD NO: R 049151  
 GROUND ELEV: \_\_\_\_\_  
 INSTALLED: 5  
 GROUTED: BENTONITE SAND  
 WATER ENCOUNTERED?  Yes  no

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: \_\_\_\_\_  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARLIS  
 GEOLOGIST: R. WITTECHURCH

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0119-02 1115  
 SAMPLE2 ID: SC0119-24 1135

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 2650 ppm  
 SAMPLE2 RESULT: 3480 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SP/GP	FID 23 PID 36 GRAVELLY SAND; DRY BROWN	1106	
1-2	SP/SP	V	↓	
2-3	SLUDGE	PID > 500 FID > 500 2-4.0 LIME WASTE INTERMIXED W/ ALYD FLUFF, WOOD FRAGMENTS, DEBRIS	1132	
3-4	SLUDGE		↓	
4-5.5	FILL	@ 5.5 → WOOD WASTE IN SAND W/ FREE PRODUCT	↓	

Ecology & Environment, Inc. 2000

FREE PRODUCT

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits

# CLEAN CARE SOIL BORING REPORT

2/19/00

BORING ID NO.: SC0120

DRILL METHOD: Geoprobe

STARTCARD NO: R 049151

DRILL FIRM: Ecology & Environment, Inc.

GROUND ELEV: \_\_\_\_\_

DRILLER: \_\_\_\_\_

INSTALLED: \_\_\_\_\_

CONSULTING FIRM: Ecology & Environment, Inc.

GROUTED: BENTONITE SAND (BOTH

PROF. ENGINEER: C HARPER

WATER ENCOUNTERED? Yes  (NO HOLES)

GEOLOGIST: R WITCHER

*ATTEMPTED INITIAL BORING; HIT REBAR @ 0.5' MOVED 4" NORTH*

GPS NORTH: \_\_\_\_\_

GPS EAST: \_\_\_\_\_

SAMPLE1 ID: SC0120-02      101A

SAMPLE1 RESULT: 400 ppm J

SAMPLE2 ID: SC0120-24      1017

SAMPLE2 RESULT: 1690 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SP	FID: >500 PID: >500 0-2 F-M SAND; DEV: W/PEBBLES; <del>STAY</del> SLIGHT ODOR	1010	
1-2	SP		↓	
2-3	FILL	FID: <del>7000</del> PID: <del>7000</del> 92                      64 2-4; SOME SILT; SAND; AUTOFLUFF; RUBBER WIRE, RUBBLE	↓	
3-4	FILL		↓	

Ecology & Environment, Inc. 2000

BGS = below ground surface  
USCS = Unified Soil Classification System  
Sample 1 and 2 to be field screened using TPH Test Kits  
J = estimated value

# CLEAN CARE SOIL BORING REPORT

7/19/00

BORING ID NO.: SC0121  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE SAND  
 WATER ENCOUNTERED?  Yes  no

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: \_\_\_\_\_  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: R. WHITCHURCH

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0121-02    0912  
 SAMPLE2 ID: SC0121-24    0916

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 7210 ppm  
 SAMPLE2 RESULT: 13590 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1		FID + PID > 500	0904	
	SM/6P	0-2 GRABBY SILTY SAND; MOIST; NOTICEABLE ODOR; NO STAINING		
1-2	SM/6P			
2-3	Fill	FID + PID > 500 2-4: VARIOUS LAYERS OF AUTOCLAVE, WOOD, BRICK, FIRE BRICK. SLIGHTLY MOIST		
3-4	Fill			

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits

# CLEAN CARE SOIL BORING REPORT

7/15/00

BORING ID NO.: SC0122  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE SAND  
 WATER ENCOUNTERED? Yes

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: \_\_\_\_\_  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: R. WITTEKURTH

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0122-02 0853  
 SAMPLE2 ID: SC0122-24 0857

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 600 ppm J  
 SAMPLE2 RESULT: 1303 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SM/GP	FID: <del>7500</del> PID: 7500 460	0849	
0-2	SM/GP	GRAVELLY SILTY SAND GRN TO BROWN; SOME COBBLES;	↓	
1-2	SM/GP			
2-3	SLUDGE FILL	FID: 7500 PID: 7500 2-2.5: LIME WASTE LAYER 2.5-4: VARIOUS SILTY SAND BASED		
3-4	FILL	FILL; BRICK; WIRE; WOOD DEBRIS		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits

J = estimated value

7/19/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0123  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE SAND  
 WATER ENCOUNTERED? Yes  No

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: B. WITCHURCH

GPS NORTH: \_\_\_\_\_

GPS EAST: \_\_\_\_\_

SAMPLE1 ID: SC0123-02 0800

SAMPLE1 RESULT: 5080 ppm

SAMPLE2 ID: SC0123-24 0804

SAMPLE2 RESULT: 690 ppm J

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SM	FID: 7500 PID: 7500 0-1.5 - F-M SILTY SAND; MOIST; W/SOME PEBBLES;	0751	
1-2	SM SM	1.5-2 VERY SILTY SAND W/ ORG. MATTER (IE WOOD FRAGMENTS)		
2-3	SLUDGE	FID: 7500 PID: 7500 2-3 LIME WASTE LAYER; SILT TO VF SAND CONSISTENCY		
3-4	NK	(NO RECOVERY)		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits  
 J = estimated value

# CLEAN CARE SOIL BORING REPORT

2/19/00

BORING ID NO.: SC0124  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BEAUMONT SAND 1049  
 WATER ENCOUNTERED? Yes  No

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: R. WHITEHURCH

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0124-02      1055  
 SAMPLE2 ID: SC0124-24      1057

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 2420 ppm  
 SAMPLE2 RESULT: 1910 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SP/GP	FID: 74 PID: 6 0-1 - GRAVELLY SAND TO COBBLY FINE TO MED SAND; SOME ACROFLUFF, SOME WOOD DEBRIS 1.0-1.25 GRAVEL	1048	
1-2	SP/GP  FILL	1.25-2.0 WOOD WASTE; MOIST;		
2-3	FILL	FID: 7500 PID: 7500  		
3-4	FILL	@ 4.0 WOOD WASTE W/ FREE PRODUCT		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits



# CLEAN CARE SOIL BORING REPORT

2/19/00

BORING ID NO.: SCO125  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE SAND 1033  
 WATER ENCOUNTERED? Yes  No

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: R. WITCHURCH

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SCO125-02 1035  
 SAMPLE2 ID: SCO125-24 1039

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 2170ppm  
 SAMPLE2 RESULT: 23880ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SP/GP	FID: >500 PID: 81 0-1.5: GRAVELLY SAND; FINE SAND SOME LARGE PEBBLES	1031	
1-2	SP/GP FILL	1.5-4.0 WASTE DEBRIS; STAINED; WEED; AND FLUFF; (HEAVY CHAIN HC's)	↓	
2-3	FILL	FID: >500 PID: >500		
3-4	FILL			

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits

# CLEAN CARE SOIL BORING REPORT

2/19/00

BORING ID NO.: SC0126  
 STARTCARD NO: R 049151  
 GROUND ELEV: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE SAND  
 WATER ENCOUNTERED? Yes  No

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: R. WHITCHERLH

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0126-02 0938  
 SAMPLE2 ID: SC0126-24 0934

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 23580ppm  
 SAMPLE2 RESULT: Over range

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	GP/SM	FID: 170 PID: 59 0-1 : ODOROUS; CLAYEY SILTY SANDY SAND; VERY SLIGHTLY MOIST BRN + GRAY	0930	
1-2	GP/SM	1-4 SILTY SAND TO GRAVEL, AUTOCUFF, RUBBLE, PLANT DEBRIS; POSSIBLE FREE PRODUCT IN FORM OF HEAVY CHAIN ALKYLENE CARBONS		
2-3	GP/SM	FID: 7500 PID: 9503		
3-4	SP/SM		↓	

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits

2/14/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0127  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUDED: BENTONITE SAND  
 WATER ENCOUNTERED? Yes  No

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C HARRIS  
 GEOLOGIST: B. WATTCHELDH

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0127-02 0835  
 SAMPLE2 ID: SC0127-24 0840

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 16590 ppm (RW) 13990 ppm  
 SAMPLE2 RESULT: 16590 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SP	FID: 7500 PID: 7500 0-2 F-m SAND; GREEN TO GRAY; ODOR NO FREE PRODUCT; MUST	0831	
1-2	SP			
2-3	FILL	FID: 7500 PID: 7500 2-4: VARIOUS FILLS; WOOD CHIPS; LIME LAYER; <del>WATER</del> SHELL WASH; FIRE BRICK		
3-4	FILL			

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits

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# CLEAN CARE SOIL BORING REPORT

2/19/00

BORING ID NO.: SC0128  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE SAND  
 WATER ENCOUNTERED? Yes  No

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: B. WHITCHURCH

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0128-02 0819  
 SAMPLE2 ID: SC0128-02.24 0822

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 1850ppm  
 SAMPLE2 RESULT: over range

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SP	FID: 208 PID: 120 0-2: DREDGE FILL MATERIAL; DRY; BRN; F-A SAND W/ GRAVEL	0808	
1-2	SP		↓	
2-3	Fill	FID: 7500 PID: 7500 2-4: SILTY SAND W/ MUDFLUFF; SOME WOOD + BLACK DEBRIS; BLACK		
3-4	Fill			

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits

# CLEAN CARE SOIL BORING REPORT

2/20/07

BORING ID NO.: SC0201

DRILL METHOD: Geoprobe

STARTCARD NO.: R 049151

DRILL FIRM: Ecology & Environment, Inc.

GROUND ELEV.: \_\_\_\_\_

DRILLER: A. Jensen

INSTALLED: \_\_\_\_\_

CONSULTING FIRM: Ecology & Environment, Inc.

GROUTED: BARROUTE SAND 1350

PROF. ENGINEER: MARKS

WATER ENCOUNTERED? Yes  No

GEOLOGIST: R. WHITCHURCH

GPS NORTH: \_\_\_\_\_

GPS EAST: \_\_\_\_\_

SAMPLE1 ID: SC0201-02-1350

SAMPLE1 RESULT: 1420 ppm

SAMPLE2 ID: SC0201-24-1350

SAMPLE2 RESULT: 6250 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-2.5	SP/GP	FID: 7 PID: 20 <del>SAND</del> GRAVELY SAND	1338	
2.5-3.5 3.75-4.0	FILL	SILTY SAND w/ WOOD WASTE SUSPECTED FIRE BRICK (PINK) (3.75) WOOD WASTE;		
		FID: 142 PID: 135		
			↓	

Ecology & Environment, Inc. 2000

BGS = below ground surface  
USCS = Unified Soil Classification System  
Sample 1 and 2 to be field screened using TPH Test Kits

7/20/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0202

DRILL METHOD: Geoprobe

STARTCARD NO.: R 049151

DRILL FIRM: Ecology & Environment, Inc.

GROUND ELEV.: \_\_\_\_\_

DRILLER: A. Jensen

INSTALLED: \_\_\_\_\_

CONSULTING FIRM: Ecology & Environment, Inc.

GROUTED: PORTLAND CEMENT CHIPS - 1359

PROF. ENGINEER: C. HARRIS

WATER ENCOUNTERED? Yes  No

GEOLOGIST: R. WHITCHURCH

GPS NORTH: \_\_\_\_\_

GPS EAST: \_\_\_\_\_

SAMPLE1 ID: SC0202 -02 1407

SAMPLE1 RESULT: 290 ppm J

SAMPLE2 ID: SC0202 -24 1407

SAMPLE2 RESULT: 160 ppm J

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-2	GP/SP SP/GP	FID: 49 PID: 44 GRAVELLY SAND;	<del>1700</del> 1400	
2-3	SM/GP	GRAVELLY SANDY SILT; MOIST		
3-4	FILL	FID: 64 PID: 121 WOOD WASTE; AUTO PUFF; WET @ 3.75		
			↓	

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits  
 J = estimated value

2/20/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SCO203

DRILL METHOD: Geoprobe

STARTCARD NO: R 049151

DRILL FIRM: Ecology & Environment, Inc.

GROUND ELEV: \_\_\_\_\_

DRILLER: A. Jensen

INSTALLED: \_\_\_\_\_

CONSULTING FIRM: Ecology & Environment, Inc.

GROUTED: BENTONITE SAND

PROF. ENGINEER: C. HARRIS

WATER ENCOUNTERED?  Yes  No

GEOLOGIST: R. WHITCHURCH

@ 3.75

GPS NORTH: \_\_\_\_\_

GPS EAST: \_\_\_\_\_

SAMPLE1 ID: SCO203-02 1423

SAMPLE1 RESULT: 160 ppm J

SAMPLE2 ID: SCO203-24 1423

SAMPLE2 RESULT: 480 ppm J

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-2	SP/GP	FID: 2 PIP: 4 GRAVELLY SAND	1416	
2-3.75	SM/GP	GRAVELLY, SILTY, SAND		
		FID: 7500 PIP: 7500		
3.75-4.0	FILL	→ SUSPECTED CREOSOTE IN WOOD MAT @ 3.75-4.0		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
USCS = Unified Soil Classification System  
Sample 1 and 2 to be field screened using TPH Test Kits

J = estimated value

2/20/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0204

DRILL METHOD: Geoprobe

STARTCARD NO: R 049151

DRILL FIRM: Ecology & Environment, Inc.

GROUND ELEV: \_\_\_\_\_

DRILLER: A. Jensen

INSTALLED: \_\_\_\_\_

CONSULTING FIRM: Ecology & Environment, Inc.

GROUTED: BENTONITE SAND : 1237

PROF. ENGINEER: CHNEPIS

WATER ENCOUNTERED? Yes  No

GEOLOGIST: R. WILSON

GPS NORTH: \_\_\_\_\_

GPS EAST: \_\_\_\_\_

SAMPLE1 ID: SC0204-02 1241

SAMPLE1 RESULT: 460 ppm J

SAMPLE2 ID: SC0204-24 1241

SAMPLE2 RESULT: 1000 ppm J

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-2	SP/GP	FID: 6 PID: 17 GRAVELLY SAND; DRY; BRN TO GRAY	1232	
2-2.75	GP	GRAVEL LAYER W/ SOME SAND		
2.75-3.25	SM/GP	FID: 230 PID: 85 SILTY GRAVELLY SAND; BRNISH-BRN; MOIST		
3.25-3.75	ML SAND	<del>SILTY CLAY</del> ORANGE BROWN; DRY. CLAYEY SILT;		
3.75-4.0	SM/GP	SILTY GRAVELLY SAND		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits  
 J = estimated value



# CLEAN CARE SOIL BORING REPORT

2/20/00

BORING ID NO.: SC0205

DRILL METHOD: Geoprobe

STARTCARD NO: R 049151

DRILL FIRM: Ecology & Environment, Inc.

GROUND ELEV: \_\_\_\_\_

DRILLER: A. Jensen

INSTALLED: \_\_\_\_\_

CONSULTING FIRM: Ecology & Environment, Inc.

GROUTED: PERMANENT SAND 125 ft

PROF. ENGINEER: C. HARPLES

WATER ENCOUNTERED? Yes  No

GEOLOGIST: R. WHITCHURCH

GPS NORTH: \_\_\_\_\_

GPS EAST: \_\_\_\_\_

SAMPLE1 ID: SC0205-02 1302

SAMPLE1 RESULT: 4290ppm ~~300~~

SAMPLE2 ID: SC0205-24 1302

SAMPLE2 RESULT: over range

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-2	SM/GP	FID: 114 PID: 81 GRAVELLY SILTY SAND; DRK BAN TO GRAY; DRY	1252	
2-3.5 3.25-3.5	SM/GP	DRK BAN TO BLK; GRAVELLY SILTY SANDS DENSE WOOD WASTE + OTHER WOOD WASTE	↓	
2		FID: 7500 PID: 7500 VARIOUS INT.; MOIST; PRODUCT STAINING 3.25-3.5;		
3.5-4.0	SLUDGE	MOIST; TAN LIME WASTE		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
USCS = Unified Soil Classification System  
Sample 1 and 2 to be field screened using TPH Test Kits

2/20/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0206  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE SAND 1322  
 WATER ENCOUNTERED? Yes  No

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. MORRIS  
 GEOLOGIST: R. WHITCHURCH

GPS NORTH: \_\_\_\_\_  
 SAMPLE 1 ID: SC0206-02 1327  
 SAMPLE 2 ID: SC0206-24 1327

GPS EAST: \_\_\_\_\_  
 SAMPLE 1 RESULT: 1420ppm  
 SAMPLE 2 RESULT: 11140ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-2.5	SP/GP	FID: 26 PID: 4 GRAVELY SAND; SOME COBBLES MOSTLY DRY; SOME	1320	
2.5-4.0	SP/Fill	MOSTLY SAND; SOME GRAVEL; WOOD FRAGMENTS; SOME RUBBLE WOOD FRAG STAKED w/ FREE PRODUCT		
		FID: 120 PID: 40		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits

2/19/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0301

DRILL METHOD: Geoprobe

STARTCARD NO.: R 049151

DRILL FIRM: Ecology & Environment, Inc.

GROUND ELEV.: \_\_\_\_\_

DRILLER: A. Jensen

INSTALLED: \_\_\_\_\_

CONSULTING FIRM: Ecology & Environment, Inc.

GROUTED: BENTONITE SAND 1348

PROF. ENGINEER: CHARRIS

WATER ENCOUNTERED?  yes  no

GEOLOGIST: R. W. THURLEY

W 4.0 (CAPILLARY ZONE - R.W.)  
LOWER

GPS NORTH: 13

GPS EAST: \_\_\_\_\_

SAMPLE1 ID: SC0301-~~13~~-0302 1402

SAMPLE1 RESULT: 2610 ppm

SAMPLE2 ID: SC0301-~~13~~-35 1408

SAMPLE2 RESULT: 2780 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SP/GP	FID: 4. PID: 230 0-1 GRAVELLY SAND FILL	1348	
1-2	SP/GP	1-3.5: VERY GRAVELY (30%) SAND, DRY		
2-3	SP/GP	FID: 109 PID: 51 3.5-4.5 GREENISH GRAVELLY SILTY SAND;		
3-4	SP/GP			
	SM			

Ecology & Environment, Inc. 2000

BGS = below ground surface

USCS = Unified Soil Classification System

Sample 1 and 2 to be field screened using TPH Test Kits

4.5-8

FID: 494 PID: 489

F M  
SATURATED; SAND; BLACK  
SLIGHT SHEEN

2/19/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0302  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: S  
 GROUDED: BENTONITE SAND 1540  
 WATER ENCOUNTERED? Yes no

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: P. HARRIS  
 GEOLOGIST: R. WHITCHEL

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0302 -02 1944  
 SAMPLE2 ID: SC0302 -24 1948

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 5350 ppm  
 SAMPLE2 RESULT: 380 ppm J

~~SEE ADDITIONAL~~ - REMOVED 1.5' OF SANDUST OVERPURE

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1		FID: 32 PID: 6	1539	
1-2	SM/GP	0-1.5 SILTY GRAVELLY SAND	↓	
2-3	SM/GP	1.5 - 2.5 GRAVELLY SILTY SAND; GRN/GRAY		
	SM/GP			
3-4	SM/GP	FID: PID: 2.5 3-4 - FINE / VF BLACK SAND W/ WOOD WASTE + AUTO FLUFF; STAINING		
	FILL			
<del>AVD</del>	FILL			

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits  
 J = estimated value

2/19/02

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0303  
 STARTCARD NO: R 049151  
 GROUND ELEV: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE CHIPS  
 WATER ENCOUNTERED? Yes  No

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: CHARLIS  
 GEOLOGIST: B. WHITCHURCH

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0303 - 03 1426  
 SAMPLE2 ID: SC0303 - 35 1430

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 700 ppm J  
 SAMPLE2 RESULT: 1970 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1		(NO SAMPLE)		
	SP/GP	FID: 1 ; PID. 80 (MAY BE FROM OFFSITE)		
1-3	SP/GP	GRAVELLY SAND (30% GRAVEL), DRY		
3-5	SM/GP	FID: PID: GREENISH GRAVELLY SILTY SAND; DRY		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits  
 J = estimated value

# CLEAN CARE SOIL BORING REPORT

2/19/00

BORING ID NO.: SC0304  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE SAND 1559  
 WATER ENCOUNTERED? Yes  No

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: R. WHITTLURCH

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0304-02 1604  
 SAMPLE2 ID: SC0304-24 1607

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 600 ppm J  
 SAMPLE2 RESULT: 14200 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	GP	FID: 5 PID: 2 0-0.5: GRAVEL	1557	
	SM	0.5-2.0: SILTY SAND W/ SOME FINE TO COARSE GRAVEL		
1-2	SM			
2-3	SM/GW	FID: 120 PID: 500J 2.0-3.0 SILTY SAND W/ HIGH % FINE TO COARSE GRAVEL; SOME		
3-4	Fill	AUTO FLUFF + WOOD WASTE: SLIGHTLY MOIST.		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits  
 J = estimated value

2/19/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0305  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BEAUFORTITE SAND  
 WATER ENCOUNTERED? Yes  No

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: CHARRIS  
 GEOLOGIST: R. W. HENNING

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0305-13 1447  
 SAMPLE2 ID: SC0305-35 1449

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 750 ppm J  
 SAMPLE2 RESULT: 17830 ppm

(0-1' NOT COLLECTED)

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
1-3	SP/GP	FID: 3 PID: 40 GRAVELLY SAND; F-M GRAVEL w/ SOME COARSE GRAVEL; SOME SILT; DRY; NO OIL	1441	
3-5	FLLL	AUTOFLUFF; SILTY SAND, SOME GRAVEL; WOOD DEBRIS		
		FID = PID > 500		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits  
 J = estimated value

2/19/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0306

DRILL METHOD: Geoprobe

STARTCARD NO.: R 049151

DRILL FIRM: Ecology & Environment, Inc.

GROUND ELEV.: \_\_\_\_\_

DRILLER: A. Jensen

INSTALLED: \_\_\_\_\_

CONSULTING FIRM: Ecology & Environment, Inc.

GROUTED: BENTONITE SAND 16:16

PROF. ENGINEER: C. HARRIS

WATER ENCOUNTERED? Yes no

GEOLOGIST: R. WHITCHURCH

GPS NORTH: \_\_\_\_\_

GPS EAST: \_\_\_\_\_

SAMPLE1 ID: SC0306-02 1619

SAMPLE1 RESULT: +2000 ppm<sup>ew</sup> 5960 ppm

SAMPLE2 ID: SC0306-24 1623

SAMPLE2 RESULT: 12000 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SM/GP	FID: 16 PID: 2.8 0-2: GRAVELLY SAND W/ SILT;	1613	
1-2	sm/GP	2.0-2.5: <del>GRAVELLY SAND</del> GRAVELLY SAND; GREENISH GREY; OILY	↓	
2-3	SP/GS	FID: >500 PID: 6.0		
	FILL	2.5-4: MUD FLUFF; WOOD DEBRIS; GRAVELLY SAND; STAINED		
3-4	FILL			

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits



7/20/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0307

DRILL METHOD: Geoprobe

STARTCARD NO.: R 049151

DRILL FIRM: Ecology & Environment, Inc.

GROUND ELEV.: \_\_\_\_\_

DRILLER: A. Tenser

INSTALLED: \_\_\_\_\_

CONSULTING FIRM: Ecology & Environment, Inc.

GROUTED: BENTONITE SAND 0909

PROF. ENGINEER: C. HARRIS

WATER ENCOUNTERED?  Yes  no

GEOLOGIST: R. WHITCHURCH

*BOTH LOCATIONS*

GPS NORTH: \_\_\_\_\_

GPS EAST: \_\_\_\_\_

SAMPLE1 ID: SC0307-02 0914

SAMPLE1 RESULT: 2370 ppm

SAMPLE2 ID: SC0307-24 0914

SAMPLE2 RESULT: 3920 ppm

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
<del>1.75</del> 0-1.75	SP/ GW	FID: 30 PID-NR GRAVELLY SAND; BRN; F-C GRAVEL; F-M SAND; GRANS SUB ANGULAR; MOIST	0907	
1.75- <del>2.5</del> 2.5	SP/ GP	VERY GRAVELLY SICCY SAND; GRNISH COLOR		
<del>2.5</del> 2.5-3.0	FILL	AUTO FLUFF		
<del>3.0</del> 3.0-3.5	SP	FID: 102 PID-NR GRN FINE SAND; SLIGHTLY MOIST		
3.5-3.75	FILL	AUTO FLUFF; MOIST		
3.75-4.0	<del>SP</del> SP	BLACK SAND; MOIST		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
USCS = Unified Soil Classification System  
Sample 1 and 2 to be field screened using TPH Test Kits

1/20/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0308  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE SAND 0851  
 WATER ENCOUNTERED? Yes

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: R. WHITCHELCH

GPS NORTH: ②  
 SAMPLE1 ID: SC0308-13 0857  
 SAMPLE2 ID: SC0308-35 0857

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 250ppm J  
 SAMPLE2 RESULT: 3840ppm

0-1 NOT COLLECTED

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
1-1.5	SP/GP	FID: 13 PID - NR GRAVEL + SAND FILL; DRY	0949	
1.5-3.5	SP/GP	GRAVELLY SAND; GREEN; MOIST		
3.5-4.5		FILL AUTO FLUFF, DEBRIS; BLACK		
4.5-5	SW	SAND; FC; BLACK		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits  
 J = estimated value

2/14/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0309

DRILL METHOD: Geoprobe

STARTCARD NO: R 049151

DRILL FIRM: Ecology & Environment, Inc.

GROUND ELEV: \_\_\_\_\_

DRILLER: A. Jensen

INSTALLED: \_\_\_\_\_

CONSULTING FIRM: Ecology & Environment, Inc.

GROUTED: BENTONITE CHIPS 1502

PROF. ENGINEER: CHARLIS

WATER ENCOUNTERED? Yes  No

GEOLOGIST: R. WHITCHURCH

GPS NORTH: \_\_\_\_\_

GPS EAST: \_\_\_\_\_

SAMPLE1 ID: SC0309-13 1507

SAMPLE1 RESULT: 2150 ppm

SAMPLE2 ID: SC0309-35 1909

SAMPLE2 RESULT: no result

0-1 NOT COLLECTED

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
1-2	SP/GW	FID: 32 PID: 20 1-3 VERY GRAVELLY COBBLY SAND MED GRAVEL TO MED COBBLES B.N: DRY; NO WOPRS	1500	
2-3	SP/GW			
3-4	SM	FID: 45 PID: 7 3-4 SILTY SAND; BLACK; STAINED W PRODUCT; @~4.0		
4-5	SLUDGE	4-5 LIME WASTE LAYER		

2/19/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0310  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE CHIPS 1657  
 WATER ENCOUNTERED?  Yes  no

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: R. WHITCHURCH

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0310-13 1656  
 SAMPLE2 ID: SC0310-35 1700

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: No result (est) 0ppm J  
 SAMPLE2 RESULT: 20100 ppm

(0-1' NOT SAMPLED)

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
1-2	SP/GP	PID: 9 FID (NO H <sub>2</sub> ) 1-1.5 GRAVELLY TO COBBLY SAND	1653	
	SP/GP		↓	
2-3	SP/GP	1.5-3: GRAVELY SAND; DRK BEN;		
3-4	FILL	PID: 5 (NO H <sub>2</sub> FOR PID) 3.0-4.5: AUTOFLUFF; WOOD DEBRIS		
4-5	FILL NR			

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits  
 J = estimated value

2/20/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0311  
 STARTCARD NO: R 049151  
 GROUND ELEV: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE SAND 0953  
 WATER ENCOUNTERED?  Yes  No

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: R. WHITEHEAD

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0311 - 13 0958  
 SAMPLE2 ID: SC0311 - 35 0958

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 2960 ppm  
 SAMPLE2 RESULT: 2830 ppm

NO SAMPLE 0-1'

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1.5	SP/GW	FID: 36 PID: 40 GRAVELLY SAND; FC GRAVEL; DRY LOOSE	0951	
1.5-3.0	SP	GREEN SAND; SOME GRAVEL; SLIGHTLY MOIST		
3.0-4.0	FILL	FID: > 500 PID: 19 AUTO FINE + F.M SAND; WET		
4-5	SP	BLACK SAND; F.M; WET		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits

2/20/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0312  
 STARTCARD NO: R 049151  
 GROUND ELEV: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE SAND 0939  
 WATER ENCOUNTERED? Yes  No

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: R. WITCHEURCH

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0312 -13 0942  
 SAMPLE2 ID: SC0312 -35 0936

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 3650 ppm  
 SAMPLE2 RESULT: 6000 ppm

0-1' NOT SAMPLED

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
		FID = 65 → <u>3-5</u>	0925	
1-3	SP/6P	GRAVELLY SAND	↓	
3-4.5	SP/6P	GREEN GRAVELLY SAND		
4.5-5	FILL	AUTO FLUFF		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kit

# CLEAN CARE SOIL BORING REPORT

2/19/00

BORING ID NO.: SC0313

DRILL METHOD: Geoprobe

STARTCARD NO: R 049151

DRILL FIRM: Ecology & Environment, Inc.

GROUND ELEV: \_\_\_\_\_

DRILLER: A. Jensen

INSTALLED: \_\_\_\_\_

CONSULTING FIRM: Ecology & Environment, Inc.

GROUTED: BROWN ONITE SAND 1521

PROF. ENGINEER: C. HARRIS

WATER ENCOUNTERED? Yes  No

GEOLOGIST: R. WHITCHURCH

GPS NORTH: \_\_\_\_\_

GPS EAST: \_\_\_\_\_

SAMPLE1 ID: SC0313-13 1527

SAMPLE1 RESULT: 21240 ppm

SAMPLE2 ID: SC0313-35 1529  
SC0313 0-1 NOT COLLECTED

SAMPLE2 RESULT: No result

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
1-2	SP/GW	FID: 84 PID: 14 1-2.5 GRAVELLY SAND; F-C GRAVEL 1.5-2.5 GRAVELLY SILTY SAND; GRAY SLIGHTLY MOISTE	1519	
2-3	GP/SM SLUDGE			
3-4	SLUDGE	FID 7500; PID: 8 2.5- 4.75 : LIME WASTE w/ Vik FIBERS		
4-5	SLUDGE FILL	4.75-5.0 → SATURATED w/ WATER & SOME PEB PRODUCT (NOT INCLUDED IN SAMPLE)		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
USCS = Unified Soil Classification System  
Sample 1 and 2 to be field screened using TPH Test Kits

2/20/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0314

DRILL METHOD: Geoprobe

STARTCARD NO: R 049151

DRILL FIRM: Ecology & Environment, Inc.

GROUND ELEV: \_\_\_\_\_

DRILLER: A. Jensen

INSTALLED: \_\_\_\_\_

CONSULTING FIRM: Ecology & Environment, Inc.

GROUTED: BENTONITE SAND 0803

PROF. ENGINEER: C. HARRIS

WATER ENCOUNTERED? Yes no

GEOLOGIST: R. WHITCHURCH

GPS NORTH: \_\_\_\_\_

GPS EAST: \_\_\_\_\_

SAMPLE1 ID: SC0314-130803

SAMPLE1 RESULT: 2390 ppm

SAMPLE2 ID: SC0314-350806

SAMPLE2 RESULT: 15690 ppm

0-1' NOT SAMPLED

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
0-1	SP/GW	FID: 52 PID: - 0-2 SAND + GRAVEL; F-C GRAVEL DRY	0754	
1-2	SP/GW			
2-3	FILL	FID: 84 PID: - 2-3.5: AUTO TUFF MIXED W/ SOME SAND; MOIST		
3-4	FILL SP	3.5-4.0: SAND; BLACK; WET		

Ecology & Environment, Inc. 2000

BGS = below ground surface

USCS = Unified Soil Classification System

Sample 1 and 2 to be field screened using TPH Test Kits

NOTE: PID READINGS NOT TAKEN; METER NOT RESPONDING TO SAMPLER'S EXPECTATIONS; WILL LET UNIT WARM UP + RESUME PID READINGS ON NEXT PROBE



2/20/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0315  
 STARTCARD NO.: R 049151  
 GROUND ELEV.: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BLANDITE SAND 1034  
 WATER ENCOUNTERED? Yes  No

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: R. WHITCHURCH

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0315 - 13 1040  
 SAMPLE2 ID: SC0315 - 35 1040

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 210 ppm J  
 SAMPLE2 RESULT: 13230ppm

0-1' NOT SAMPLED

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
	?	FID: 6 PID: 200	1033	
		FID: 250 PID: 350		

2/20/00

# CLEAN CARE SOIL BORING REPORT

BORING ID NO.: SC0316  
 STARTCARD NO: R 049151  
 GROUND ELEV: \_\_\_\_\_  
 INSTALLED: \_\_\_\_\_  
 GROUTED: BENTONITE SAND/1012  
 WATER ENCOUNTERED? Yes  No

DRILL METHOD: Geoprobe  
 DRILL FIRM: Ecology & Environment, Inc.  
 DRILLER: A. Jensen  
 CONSULTING FIRM: Ecology & Environment, Inc.  
 PROF. ENGINEER: C. HARRIS  
 GEOLOGIST: R. WHITCHURCH

GPS NORTH: \_\_\_\_\_  
 SAMPLE1 ID: SC0316 -13 1018  
 SAMPLE2 ID: SC0316 -35 1018

GPS EAST: \_\_\_\_\_  
 SAMPLE1 RESULT: 1760 ppm  
 SAMPLE2 RESULT: 2760 ppm

0-1 NOT SAMPLED

DEPTH (FT BGS)	SOIL CLASS (USCS)	SOIL DESCRIPTION	TIME	SAMPLE
1-3.5	SP/GP	FID: 12 PID: A6 GRAVELLY SAND		
3.5-4	SP/GP	GRN GRNL SAND;		
4.0-4.5	Fill	WOOD DEBRIS, SILTY SAND; SLIGHTLY MOIST		
		FID: 12 PID: A		

Ecology & Environment, Inc. 2000

BGS = below ground surface  
 USCS = Unified Soil Classification System  
 Sample 1 and 2 to be field screened using TPH Test Kits  
 J = estimated value

Tacoma-Pierce County Health Department  
Project: Former CleanCare Facility  
1510 Taylor Way  
Tacoma, Washington

Date Started : 5/22/2001  
Date Completed : 5/22/2001  
Hole Diameter : ~1.5-in.  
Drilling Method : Direct Push (Geoprobe)  
Backfill : Bentonite Chip

Surface Seal : None/Gravel  
Drilling Company : Cascade Drilling Co.  
Driller : Lynn Goble  
Logged By : J. Coppernoll

Depth in Feet	USCS	Water Levels	GRAPHIC	DESCRIPTION	Samples	Lab No.	PID (ppm)	% Recovery	Time Sampled	Sampler Type	REMARKS
0				GRAVEL: Well Graded, sandy with silt, brownish-gray, angular, damp							
1					1	B01-S1-03	4.8	42	08:20	SS	
2		GW									
4				WOOD DEBRIS, with silt, dark brown, strong petroleum odor, saturated	2	None	42.8	6	08:55	SS	
5											Groundwater encountered at approx. 5-ft. based on wet down-hole tools.
6				SAND: Well Graded, minor silt, dark brown, with wood debris, sheen and strong odor, saturated	3	None	NA	19	09:00	SS	
8											
10		SW			4	None	NA	22	09:08	SS	
11											Water sample B01-W1-14 collected by inserting temporary well screen from 10-ft. to 14-ft.
12				No recovery. Boring Terminated at 14 feet	5	None	NA	0	09:25	GP	
14		F0									
16											

06-22-2001 C:\docs\WGeo\geocentral\TPC\HDET.BOR

Tacoma-Pierce County Health Department  
Project: Former CleanCare Facility  
1510 Taylor Way  
Tacoma, Washington

Date Started: 5/22/2001  
Date Completed: 5/22/2001  
Hole Diameter: ~1.5-in.  
Drilling Method: Direct Push (Geoprobe)  
Backfill: Bentonite Chip

Surface Seal: None/Gravel  
Drilling Company: Cascade Drilling Co.  
Driller: Lynn Goble  
Logged By: J. Coppernoll

Depth in Feet	USCS	Water Levels	GRAPHIC	DESCRIPTION	Samples	Lab No.	PID (ppm)	% Recovery	Time Sampled	Sampler Type	REMARKS
0	GW			GRAVEL, Well Graded, sandy with silt, brownish-gray, angular, damp							
1				GRAVEL/WOOD DEBRIS, Poorly Graded, sandy with silt, dark brown, sub-rounded, sheen, damp to saturated	1	None	4.5	6	10:45	SS	
2											
4					2	B02-S1-06	4.5	25	10:55	SS	
5											Groundwater encountered at approx. 5-ft. based on wet down-hole tools.
6				WOOD DEBRIS, dark brown, oily, with bits of brick, and some gravel and sand, sheen, saturated							
7					3	None	NA	3	11:06	SS	
8											
10	SM			SILTY SAND, with wood debris and some rounded gravel, dark brown, oily, sheen, saturated							
11					4	None	NA	25	11:12	SS	Water sample B02-W1-11 collected by inserting temporary well screen from 7-ft. to 11-ft.
12	ML			SILT, with roots and plant matter, dark tan, wet							
14											
16											

Tacoma-Pierce County Health Department  
Project: Former CleanCare Facility  
1510 Taylor Way  
Tacoma, Washington

Date Started : 5/22/2001  
Date Completed : 5/22/2001  
Hole Diameter : ~1.5-in.  
Drilling Method : Direct Push (Geoprobe)  
Backfill : Bentonite Chip

Surface Seal : None/Gravel  
Drilling Company : Cascade Drilling Co.  
Driller : Lynn Goble  
Logged By : J. Copperroll

Depth in Feet	USCS	Water Levels	GRAPHIC	DESCRIPTION	Samples	Lab No.	PID (ppm)	% Recovery	Time Sampled	Sampler Type	REMARKS
0	GP			GRAVEL, poorly graded, sandy, orangish-brown, rounded, damp							
2	CL			CLAY (may be lime waste), light gray, with interbeds of fine to coarse brown sand, wet	1	None	0	6	12:08	SS	
4				SAND, Well-Graded, with wood debris and gravel and some silt, dark brown, saturated	2	B03-S1-06	46.7	30	12:32	SS	Groundwater encountered at approx. 5-ft. based on wet down-hole tools.
6	SW										
8					3	None	0	31	13:05	SS	Boring moved a few feet twice due to refusal.
10	SP			SAND, Poorly Graded, fine to medium-grained, well-sorted, dark brown, saturated	4	None	NA	15	13:19	SS	Water sample B03-W1-11 collected by inserting temporary well screen from 7.5-ft. to 11.5-ft.
12	ML			SILT, dark gray, saturated	5	None	NA	15	13:25	GP	
14											
16											

Tacoma-Pierce County Health Department  
Project: Former CleanCare Facility  
1510 Taylor Way

Tacoma, Washington

Date Started : 5/22/2001  
Date Completed : 5/22/2001  
Hole Diameter : ~1.5-in.  
Drilling Method : Direct Push (Geoprobe)  
Backfill : Bentonite Chip

Surface Seal : None/Gravel  
Drilling Company : Cascade Drilling Co.  
Driller : Lynn Goble  
Logged By : J. Coppernoll




Depth in Feet	USCS	Water Levels	GRAPHIC	DESCRIPTION	Samples	Lab No.	PID (ppm)	% Recovery	Time Sampled	Sampler Type	REMARKS
0				No recovery							
1					1	None	NA	0	14:35	SS	
2											Groundwater encountered at approx. 3-ft. based on wet down-hole tools.
3					2	None	NA	0	14:48	SS	
4											
5											
6				WOOD DEBRIS, with some sand and gravel, dark brown/black, saturated.							Boring moved once due to refusal at this level.
7					3	B04-S1-09	0.3	39	15:10	SS	Water sample B04-W1-09 collected by inserting temporary well screen from 4.5-ft. to 8.5-ft.
8											
9				SILT, gray, saturated							
10											
11											
12											
13											
14											
15											
16											

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Tacoma-Pierce County Health Department  
Project: Former CleanCare Facility  
1510 Taylor Way  
Tacoma, Washington

Date Started : 5/22/2001  
Date Completed : 5/22/2001  
Hole Diameter : ~1.5-in.  
Drilling Method : Direct Push (Geoprobe)  
Backfill : Bentonite Chip

Surface Seal : None/Gravel  
Drilling Company : Cascade Drilling Co.  
Driller : Lynn Goble  
Logged By : J. Coppernoll

Depth in Feet	USCS	Water Levels	GRAPHIC	DESCRIPTION	Samples	Lab No.	PID (ppm)	% Recovery	Time Sampled	Sampler Type	REMARKS
0				Not enough recovery to determine lithology, small piece of rubber blocking sampler, solvent (?) odor, sheen on rubber	1	None	0.2	6	16:12	SS	
2	F0										
4	SM			SILTY SAND, fine to coarse, with gravel, dark brown, with wood debris and other organic matter, saturated	2	B05-S1-06	54.7	36	16:45	SS	Groundwater encountered at approx. 4-ft. based on wet down-hole tools.
6				WOOD DEBRIS, dark brown, sheen, odor							
8	SP			SAND, Poorly Graded, coarse, with gravel and some wood and other organic matter, dark brown, oily, saturated	3	None	NA	22	16:55	SS	Water sample B05-W1-09 collected by inserting temporary well screen from 5-ft. to 9-ft.
10	ML			SILT, dark brown to black, saturated							
12											
14											
16											

Tacoma-Pierce County Health Department  
Project: Former CleanCare Facility  
1510 Taylor Way  
Tacoma, Washington

Date Started : 5/22/2001  
Date Completed : 5/22/2001  
Hole Diameter : ~1.5-in.  
Drilling Method : Direct Push (Geoprobe)  
Backfill : Bentonite Chip  
Surface Seal : None/Asphalt  
Drilling Company : Cascade Drilling Co.  
Driller : Lynn Goble  
Logged By : J. Coppernoll

Depth in Feet	USCS	Water Levels	GRAPHIC	DESCRIPTION	Samples	Lab No.	PID (ppm)	% Recovery	Time Sampled	Sampler Type	REMARKS
0				GRAVEL, Well Graded, sub-rounded, with sand and minor silt, some wood debris, damp	1	None	0	19	17:47	SS	
2	GW										
4				Becomes saturated	2	None	0.9	11	17:52	SS	Groundwater encountered at approx. 4-ft. based on wet down-hole tools.
6	GW										
8					3	None	0	6	17:55	SS	Water sample B06-W1-10 collected by inserting temporary well screen from 5.5-ft. to 9.5-ft.
10	ML			SILT, dark brown to black, saturated	4	None	NA	58	18:02	GP	
12											
14											
16											

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Tacoma-Pierce County Health Department  
Project: Former CleanCare Facility  
1510 Taylor Way  
Tacoma, Washington

Date Started : 5/23/2001  
Date Completed : 5/23/2001  
Hole Diameter : ~1.5-in.  
Drilling Method : Direct Push (Geoprobe)  
Backfill : Bentonite Chip

Surface Seal : None/Gravel  
Drilling Company : Cascade Drilling Co.  
Driiter : Lynn Goble  
Logged By : J. Coppemoll

Depth in Feet	USCS	Water Levels	GRAPHIC	DESCRIPTION	Samples	Lab No.	PID (ppm)	% Recovery	Time Sampled	Sampler Type	REMARKS
0				GRAVEL, Well Graded, angular, with wood debris, damp	1	None	6.7	14	08:17	SS	
2	GW										
4	SP			SAND, Poorly Graded, medium-grained, with silt and wood debris, sheen and odor, saturated	2	B07-S1-06	NA	22	08:23	SS	Groundwater encountered at approx. 4-ft. based on wet down-hole tools.
6				WOOD DEBRIS, dark brown to black, oily, saturated	3	None	NA	1	08:30	SS	Water sample B07-W1-09 collected by inserting temporary well screen from 5-ft. to 9-ft.
8											
10	OL			SILT, tan mottled black, with decaying roots and other plant matter, moist	4	None	NA	42	08:38	GP	
12											
14											
16											

Tacoma-Pierce County Health Department  
Project: Former CleanCare Facility  
1510 Taylor Way  
Tacoma, Washington

Date Started: 5/23/2001  
Date Completed: 5/23/2001  
Hole Diameter: ~1.5-in  
Drilling Method: Direct Push (Geoprobe)  
Backfill: Bentonite Chip

Surface Seal: None/Gravel  
Drilling Company: Cascade Drilling Co.  
Driller: Lynn Goble  
Logged By: J. Coppernoll

Depth in Feet	USCS	Water Levels	GRAPHIC	DESCRIPTION	Samples	Lab No.	PID (ppm)	% Recovery	Time Sampled	Sampler Type	REMARKS
0				GRAVEL, Well Graded, sandy, angular to rounded; tannish-brown, with wood debris, strong odor, bits of plastic, damp	1	None	419	36	09:55	SS	
2	GW										
4				SILT, mottled dark brown to black, with organic matter, moist	2	B08-S1-06	543	47	10:07	SS	
6	OL										
6	GW			GRAVEL, Well Graded, sandy, rounded, dark brown, saturated							Groundwater encountered at approx. 6-ft based on wet down-hole tools.
8	PT			PEAT, dark brown, wet	3	B08-S1-09	1804	47	10:19	SS	
8	SP			SAND, Poorly Graded, medium-grained well-sorted, dark brown, minor organic matter, saturated							Water sample B08-W1-09 collected by inserting temporary well screen from 5-ft. to 9-ft.
10											
12											
14											
16											

Tacoma-Pierce County Health Department  
Project: Former CleanCare Facility  
1510 Taylor Way  
Tacoma, Washington

Date Started: 5/23/2001  
Date Completed: 5/23/2001  
Hole Diameter: ~1.5-in.  
Drilling Method: Direct Push (Geoprobe)  
Backfill: Bentonite Chip

Surface Seal: None/Gravel  
Drilling Company: Cascade Drilling Co.  
Driller: Lynn Goble  
Logged By: J. Coppernoll

Depth in Feet	USCS	Water Levels	GRAPHIC	DESCRIPTION	Samples	Lab No.	PID (ppm)	% Recovery	Time Sampled	Sampler Type	REMARKS
0				SILTY SAND, with angular to rounded gravel, mottled tannish-brown, odor, damp	1	B09-S1-03	49	31	11:23	SS	
2	SM			No Recovery	2	None	NA	0	11:30	SS	Groundwater encountered at approx. 4 - 6 ft. based on wet down-hole tools.
4	F0				3	None	1.8	69	11:37	SS	Water sample B09-W1-10 collected by inserting temporary well screen from 6-ft. to 10-ft.
6				SAND, Poorly Graded, medium-grained, well-sorted, dark reddish-brown, with shell fragments, saturated	4	None	0	54	11:48	GP	
8	SP				5	None	NA	100	11:55	GP	
10				SILT, gray with very fine sand, fining downward to gray silt, peat contact at 11.5 feet grading downward into silt at 12 feet							
12	ML										
14											
16											

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Tacoma-Pierce County Health Department  
Project: Former CleanCare Facility  
1510 Taylor Way  
Tacoma, Washington

Date Started: 5/23/2001  
Date Completed: 5/23/2001  
Hole Diameter: ~1.5-in.  
Drilling Method: Direct Push (Geoprobe)  
Backfill: Bentonite Chip

Surface Seal: Asphalt  
Drilling Company: Cascade Drilling Co.  
Driller: Lynn Goble  
Logged By: J. Coppernoll

Depth in Feet	USCS	Water Levels	GRAPHIC	DESCRIPTION	Samples	Lab No.	PID (ppm)	% Recovery	Time Sampled	Sampler Type	REMARKS
0				SAND, with some gravel, gray, stained, damp							
2	SP				1	B11-S1-03	377	63	17:15	GP	
4				WOOD DEBRIS, with lime waste (?) and auto fluff (?), wood is dark brown, lime waste is light gray with red fragments, strong odor moist	2	None	268	75	17:23	GP	Groundwater encountered at approx. 4 - 6 ft. based on wet down-hole tools.
6					3	None	7.9	2	17:35	GP	
8	SP			SAND, Poorly Graded, medium-grained, well-sorted, dark reddish-brown, with shell fragments, saturated	4	None	3.5	38	17:40	GP	Water sample B11-W1-10 collected by inserting temporary well screen from 6.5-ft to 10.5-ft.
10	PT			PEAT, dark brown to black, with wood debris, saturated	5	None	1.6	79	17:46	GP	
12											
14											
16											

Tacoma-Pierce County Health Department  
Project: Former CleanCare Facility  
1510 Taylor Way  
Tacoma, Washington

Date Started : 5/23/2001  
Date Completed : 5/23/2001  
Hole Diameter : ~1.5-in.  
Drilling Method : Direct Push (Geoprobe)  
Backfill : Bentonite Chip

Surface Seal : Asphalt  
Drilling Company : Cascade Drilling Co.  
Driller : Lynn Goble  
Logged By : J. Coppernoll

Depth in Feet	USCS	Water Levels	GRAPHIC	DESCRIPTION	Samples	Lab No.	PID (ppm)	% Recovery	Time Sampled	Sampler Type	REMARKS
0	B			Asphalt over concrete							
2	SP			SAND, Poorly Graded, fine-grained, well-sorted, with minor gravel and silt, some lime sludge, strong odor damp	1	B12-S1-03	411	50	14:46	GP	
4				SAND, interbedded with wood debris, lime sludge, and plastic metal debris, dark brown, wet to saturated, strong odor	2	None	504	17	14:53	GP	Refusal encountered at 3 feet. Boring moved 4 times in same area and refused before accomplishing final boring.
6					3	None	385	29	15:00	GP	Groundwater encountered at approx. 7 ft. based on wet down-hole tools.
8	SP			SAND, Poorly Graded, fine grading downward to medium, with shell fragments, dark reddish-brown, saturated	4	B12-S1-09	NA	63	15:07	GP	Water sample B12-W1-11 collected by inserting temporary well screen from 7-ft. to 11-ft.
10					5	None	NA	92	16:15	GP	
12	SM			SILTY SAND, interbedded with silt and wood debris, dark brown, odor and sheen, saturated	6	None	NA	21	15:21	GP	

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Tacoma-Pierce County Health Department  
Project: Former CleanCare Facility  
1510 Taylor Way  
Tacoma, Washington

Date Started : 5/24/2001  
Date Completed : 5/24/2001  
Hole Diameter : ~1.5-in.  
Drilling Method : Direct Push (Geoprobe)  
Backfill : Bentonite Chip

Surface Seal : Asphalt  
Drilling Company : Cascade Drilling Co.  
Driller : Lynn Goble  
Logged By : J. Coppemoll

Depth in Feet	USCS	Water Levels	GRAPHIC	DESCRIPTION	Samples	Lab No.	PID (ppm)	% Recovery	Time Sampled	Sampler Type	REMARKS
0	FB			Asphalt							
1				WOOD DEBRIS, dark stained wood debris only, moist odor	1	None	5.5	33	07:55	SS	
2											
3											Refusal encountered at 3 feet. Boring moved a few feet away in same area.
4					2	None	85.9	17	08:12	GP	
5											
6				LIME WASTE SLUDGE, light gray, silt-like, odor, effervesces in HCL acid, moist	3	B13-S1-07	420	48	08:21	GP	Groundwater encountered at approx. 7 ft. based on wet down-hole tools.
7											
8	SP			SAND, Poorly Graded, fine, with shell fragments, dark reddish-brown, saturated	4	B13-S1-09	4.8	54	08:25	GP	
9											
10	ML			SILT, gray with organic matter, overlies contact with peat at approx. 10 feet, then grades downward to silt again, moist to wet	5	None	2.3	58	08:35	GP	Water sample B13-W1-10 collected by inserting temporary well screen from 5.5-ft. to 9.5-ft.
11											
12											
13											
14											
15											
16											

Tacoma-Pierce County Health Department  
Project: Former CleanCare Facility  
1510 Taylor Way  
Tacoma, Washington

Date Started : 5/24/2001  
Date Completed : 5/24/2001  
Hole Diameter : ~1.5-in.  
Drilling Method : Direct Push (Geoprobe)  
Backfill : Bentonite Chip

Surface Seal : Asphalt  
Drilling Company : Cascade Drilling Co.  
Driller : Lynn Gobie  
Logged By : J. Goppemoll

Depth in Feet	USCS	Water Levels	GRAPHIC	DESCRIPTION	Samples	Lab No.	PID (ppm)	% Recovery	Time Sampled	Sampler Type	REMARKS
0	FB			Asphalt							
1				GRAVEL AND WOOD DEBRIS, dark stained with sand and silt, odor at 3-5 ft, damp	1	None	1.8	21	09:30	GP	
2											
3											
4					2	None	46	13	09:35	GP	
5											
6				LIME WASTE SLUDGE, light gray, silt-like, odor, effervesces in HCL acid, moist	3	B14-S1-07	96	92	09:40	GP	
7											
8					4	B14-S1-09	112	83	09:47	GP	
9	SP			SAND, Poorly Graded, fine to medium, black, moist (slag ?)							
10	SP			SAND, Poorly Graded, fine, with shell fragments, dark reddish-brown, saturated	5	None	NA	25	09:57	GP	Groundwater encountered at approx. 9 - 11 ft. based on wet down-hole tools.
11											
12	OL			SILT, gray mottled black, with peat interbeds, wet	6	None	NA	83	10:09	GP	Water sample B14-W1-11 collected by inserting temporary well screen from 7-ft. to 11-ft.
13											
14											
15											
16											

06-22-2001 C:\docs\WGeo\p\p\p\TPC\B14 BOR

Tacoma-Pierce County Health Department  
Project: Former CleanCare Facility  
1510 Taylor Way  
Tacoma, Washington

Date Started : 5/24/2001  
Date Completed : 5/24/2001  
Hole Diameter : ~1.5-in.  
Drilling Method : Direct Push (Geoprobe)  
Backfill : Bentonite Chip

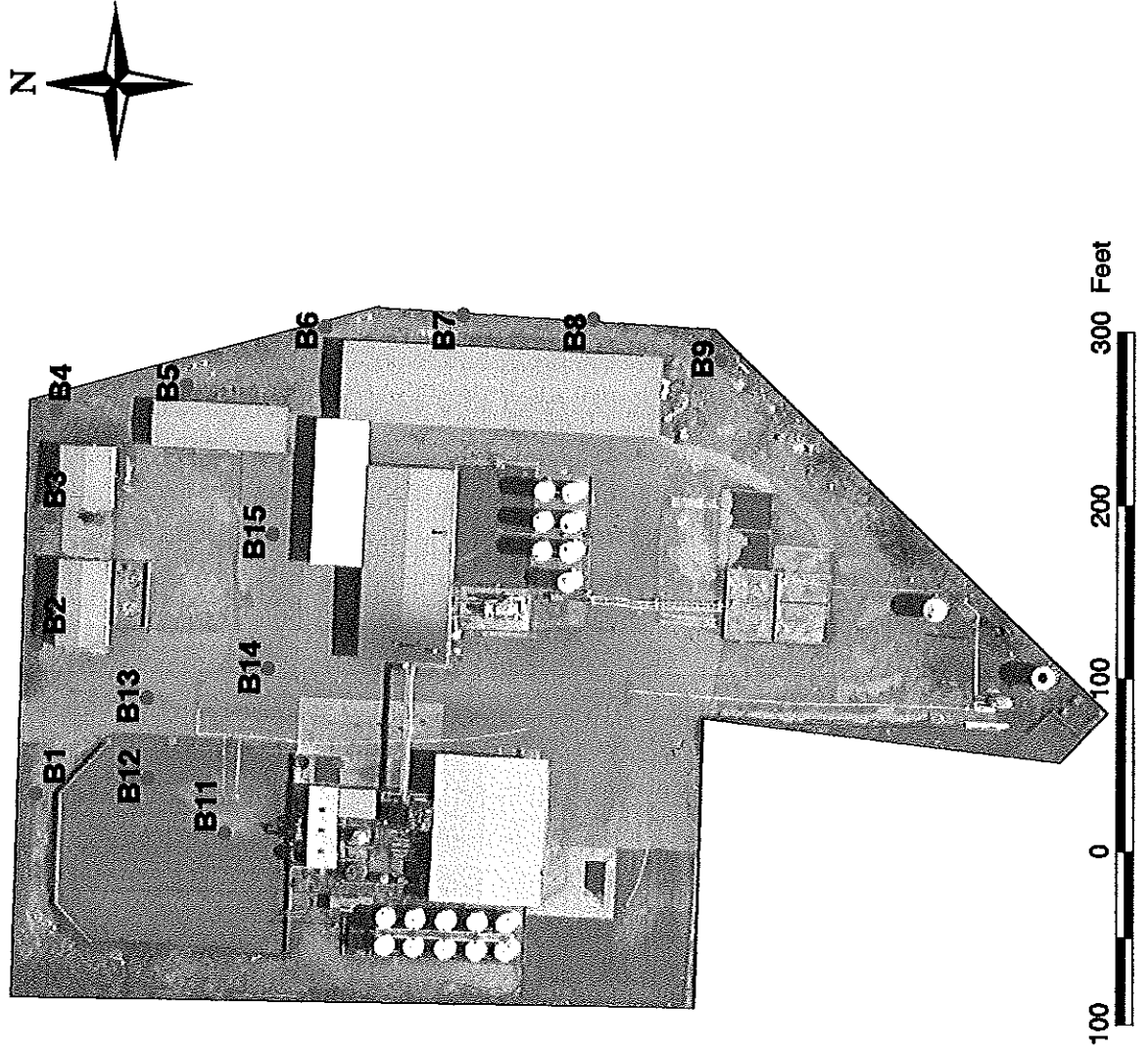
Surface Seal : Asphalt  
Drilling Company : Cascade Drilling Co.  
Driller : Lynn Goble  
Logged By : J. Copperrnoll

Depth in Feet	USCS	Water Levels	GRAPHIC	DESCRIPTION	Samples	Lab No.	PID (ppm)	% Recovery	Time Sampled	Sampler Type	REMARKS
0	FB			Asphalt							
0 - 1				GRAVEL AND WOOD DEBRIS, dark stained with sand and silt, oily, bits of paint, moist to wet, to saturated	1	None	1.9	46	11:34	GP	
2					2	None	1.4	8	11:38	GP	
3					3	B15-S1-07	0.9	29	11:43	GP	
4					4	None	1.7	21	11:49	GP	
5					5	None	0.3	2	11:56	GP	
6 - 10.5											Groundwater encountered at approx. 9 - 11 ft. based on wet down-hole tools. Water sample B15-W1-11 collected by inserting temporary well screen from 6.5-ft. to 10.5-ft.
10.5 - 11	F0			No recovery, silt is visible around edges of sampler tip	6	None	NA	0	12:06	GP	
12											
14											
16											

05-22-2001 C:\docs\WGeo\good\ab\TPC\HDB15.BOR



# CleanCare Groundwater Monitoring Wells

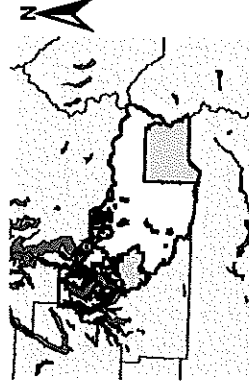


## MAP LEGEND

© Cleancare\_borings.shp

May 2003

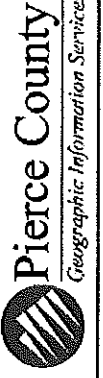
Scale: 1:1300



All geographic information on this map should be confirmed under revision and each user should recognize the limitations on use of this data.



CLEAN WATER. HEALTHY ENVIRONMENT. FOR LIFE.



Notes on CCW-2C  
from phone conversation with Kaia Petersen, Oct. 4, 2001

This well was drilled over two days. The first day the drillers were having so many problems and were screwing up so Ecology had to call Cascade and ask for another crew for the next day. The first crew went to 15.5' and backfilled with Bentonite up to 5' and finished for the day.

3' – 11' Little or no recovery, just wood plugs. Strong smells, pure Cresol a.o.

13'-14' Changed to a Dames and Moore split spoon. The driller dropped it and it went too far.

14' – 15.5' They used the rootlets in the silty sand as an indicator that they were very close to the silt layer and set the seal from here to 5' using 13 bags of bentonite.

18'-20' Sand with a small silt lens.

Helle Gylling

AUG 01 2001

SOIL BORING LOG

TechSolv Consulting Group, Inc.  
12930 NE 178<sup>th</sup> Street, Woodinville, WA 98072  
(425) 402-8277 FAX (425) 402-7917

Tacoma-Pierce County  
Health Dept.

<b>Project Name and Location:</b>  Former CleanCare Site 1510 Taylor Way Tacoma, Washington				<b>Boring Number:</b> CCW-1C		Page: 1 of 1	
				<b>Contractor:</b> Cascade Drilling, Inc.		<b>Drilling Method:</b> HSA	
				<b>Drill Crew:</b> Cody Pulis, Frank Scott, Steve Choate		<b>Drill Rig:</b> CME-75	
				<b>Date Started:</b> July 3, 2001		<b>Date Finished:</b> July 5, 2001	
<b>Surface Elevation:</b> NA			<b>Logged by:</b> R. Honsberger		<b>Protective Cover:</b> 8" water tight manhole		
<b>Top of Casing Elevation:</b> NA							
<b>Well Construction Information:</b>							
<b>Screened Interval (ft bgs):</b> 23 to 18				<b>Screen:</b> 2" dia. 0.010" slot PVC		<b>Water Level While Drilling (ft bgs):</b> ~7	
<b>Filter Pack Interval (ft bgs):</b> 23 to 17				<b>Riser:</b> 2" dia. PVC		<b>Water Level at Completion (ft bgs):</b> 10.92	
<b>Seal Interval (ft bgs):</b> 17 to 2				<b>Seal Type:</b> bentonite			
<b>Grout Interval (ft bgs):</b> 2 to 0				<b>Filter Pack:</b> 2/12 sand			
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVM / PID (ppm)	USCS Symbol	Well Construction	Sample Description
0							6" asphalt
1	2	NR	1-3	286	SP		Moderate brown 5YR 4/4 coarse sand with some gravel and wood waste, moist with strong solvent odor.
2							Same as above with lime solvent sludge.
3	12	NR	3-5	132	SP		Olive black 5Y 2/1 fine to medium sand, wet with no solvent or hydrocarbon odor.
4							Same as above but saturated with water.
5	18	NR	5-7	26	SP		Same as above
6							Olive gray 5Y 4/1 silt with rootlets and reeds.
7	20	NR	7-9	9	SP		Same as above but color is olive black 5Y 2/1 and more plant material.
8							Olive gray 5Y 4/1 silt with rootlets and reeds, no solvent or hydrocarbon odor.
9	24	NR	9-10	7	SP		Olive gray 5Y 4/1 silt with fine sand, no solvent or hydrocarbon odor.
10					ML		Olive black 5Y 2/1 fine to medium sand with silt interbeds.
11	24	NR	11-13	6	OL		Olive black 5Y 2/1 fine to medium sand saturated with water, no solvent or hydrocarbon odor.
12							
13	24	NR	13-15	5	OL		
14							
15	24	NR	15-17	4	ML		
16							
17	24	NR	17-19	3	SP		
18							
19	24	NR	19-21	7	SP		
20							
21							
22							
23							End of Boring at 23 feet.

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SOIL BORING LOG

Project Name and Location:  <b>Former CleanCare Site                  1510 Taylor Way                  Tacoma, Washington</b>				Boring Number: CCW-2C		Page: <u>1</u> of <u>1</u>	
				Contractor: Cascade Drilling, Inc.		Drilling Method: HSA	
				Drill Crew: Yancy White, Charles Chamberger, Steve Choate		Drill Rig: CME-75	
				Date Started: July 2, 2001		Date Finished: July 3, 2001	
Surface Elevation: NA			Logged by: R. Honsberger		Protective Cover: 8" water tight manhole		
Top of Casing Elevation: NA							
Well Construction Information:							
Screened Interval (ft bgs): 24 to 19			Screen: 2" dia. 0.010" slot PVC		Water Level While Drilling (ft bgs): ~4.5		
Filter Pack Interval (ft bgs): 24 to 18			Riser: 2" dia. PVC				
Seal Interval (ft bgs): 18 to 2			Seal Type: bentonite		Water Level at Completion (ft bgs): 9.85		
Grout Interval (ft bgs): 2 to 0			Filter Pack: 2/12 sand				
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVM / PID (ppm)	USCS Symbol	Well Construction	Sample Description
0							6" Asphalt
1	6	5,3,11	1-3	33	NA		Greenish gray 5G 6/1 lime solvent sludge.
2							
3	NR	3,4,7,10	3-5	NR	NA		No recovery. Wood waste and fine sand in the cuttings.
4							▽
5	3	6,8,3,3	5-7	NA	NA		Wood plug, strong hydrocarbon odor, wet.
6							
7	3	1,1,1,1	7-9	270	NA		Same as above.
8							
9	3	7,6,1,1	9-11	283	GP		Moderate brown 5YR 4/4 medium gravel with fine sand and wood waste saturated with water, strong hydrocarbon odor.
10							
11	3	6,4,4,4	11-13	15	SP		Olive black 5Y 2/1 fine to medium sand with coarse gravel, saturated with water and has a slight hydrocarbon odor.
12							
13							
14	12	10,10,10	14-15.5	301	SM		Olive black 5Y 2/1 silty sand with rootlets and wet with hydrocarbon odor.
15	12	3,5,58	15.5-17	13	SM		Moderate brown 5YR 2/1 coarse sand at 15 feet.
16	NR	NA	16-18	NR	NA		No recovery.
17							16' 10" Olive black 5Y 2/1 fine to medium sand moist with no hydrocarbon odor.
18	24	NA	18-20	5	SP		
19							
20	NA	NA	20-22	7	SP		Same as above.
21							
22							
23							
24							End of Boring at 24 feet.

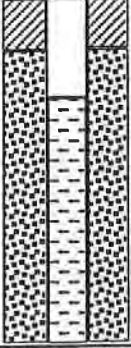
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SOIL BORING LOG

<b>Project Name and Location:</b>  Former CleanCare Site 1510 Taylor Way Tacoma, Washington				<b>Boring Number:</b> CCW-3C			Page: 1 of 2		
				<b>Contractor:</b> Cascade Drilling, Inc.			<b>Drilling Method:</b> HSA		
				<b>Drill Crew:</b> Brian Gose, Frank Scott, Steve Choate			<b>Drill Rig:</b> CME-75		
				<b>Date Started:</b> June 29, 2001			<b>Date Finished:</b> July 2, 2001		
<b>Surface Elevation:</b> NA				<b>Logged by:</b> R. Honsberger			<b>Protective Cover:</b> 6" metal above ground casing with locking cover		
<b>Top of Casing Elevation:</b> NA									
<b>Well Construction Information:</b>									
<b>Screened Interval (ft bgs):</b> 28 to 23				<b>Screen:</b> 2" dia. 0.010" slot PVC		<b>Water Level While Drilling (ft bgs):</b> ~5			
<b>Filter Pack Interval (ft bgs):</b> 28 to 22				<b>Riser:</b> 2" dia. PVC					
<b>Seal Interval (ft bgs):</b> 22 to 2				<b>Seal Type:</b> bentonite		<b>Water Level at Completion (ft bgs):</b> 13.35			
<b>Grout Interval (ft bgs):</b> 2 to 0				<b>Filter Pack:</b> 2/12 sand					
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVM / PID (ppm)	USCS Symbol	Well Construction	Sample Description		
0									
1	12	40,32,15,17	1-3	2	GP		Coarse gravel fill with a fine to medium sand matrix, dry.		
2									
3	1	15,11,12,5	3-5	2	GP		Same as above.		
4									
5	NR	NA	5-7	NR	NA		Miscellaneous automobile debris in the cuttings.		
6									
7	12	3,4,2,2	7-9	14	SP		Olive black 5Y 2/1 fine to medium sand saturated with water. Very slight hydrocarbon odor.		
8									
9	6	2,1,1,1	9-11	18	SP		Same as above with wood waste and silt.		
10									
11	8	1,1,1,1	11-13	2	ML		Olive gray 5Y 4/1 silt with rootlets and reeds, moist with no hydrocarbon odor.		
12									
13	4	2,1,1,1	13-15	2	ML		Olive black 5Y 2/1 silt with rootlets and reeds, moist with no hydrocarbon odor.		
14									
15	24	NA	15-17	2	ML		Olive gray 5Y 4/1 silt with rootlets and reeds, moist with no hydrocarbon odor.		
16							At 16.5 feet Olive black 5y 2/1 fine to medium sand saturated with water, with no hydrocarbon odor.		
17	24	4,4,4,6	17-19	3	SP		Olive black 5Y 2/1 fine to medium sand with silt interbeds, saturated with water with no hydrocarbon odor.		
18									
19	24	3,4,7,11	19-21	2	SP		Same as above.		
20									














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**SOIL BORING LOG**

<b>Project Name and Location:</b>  Former CleanCare Site 1510 Taylor Way Tacoma, Washington				<b>Boring Number:</b> CCW-3C		Page: <u>2</u> of <u>2</u>	
				<b>Contractor:</b> Cascade Drilling, Inc.		<b>Drilling Method:</b> HSA	
				<b>Drill Crew:</b> Brian Gose, Frank Scott, Steve Choate		<b>Drill Rig:</b> CME-75	
				<b>Date Started:</b> June 29, 2001		<b>Date Finished:</b> July 2, 2001	
<b>Surface Elevation:</b> NA			<b>Logged by:</b> R. Honsberger		<b>Protective Cover:</b> 6" metal above ground casing with locking cover		
<b>Top of Casing Elevation:</b> NA							
<b>Well Construction Information:</b>							
<b>Screened Interval (ft bgs):</b> 28 to 23			<b>Screen:</b> 2" dia. 0.010" slot PVC		<b>Water Level While Drilling (ft bgs):</b> ~5		
<b>Filter Pack Interval (ft bgs):</b> 28 to 22			<b>Riser:</b> 2" dia. PVC		<b>Water Level at Completion (ft bgs):</b> 13.35		
<b>Seal Interval (ft bgs):</b> 22 to 2			<b>Seal Type:</b> bentonite				
<b>Grout Interval (ft bgs):</b> 2 to 0			<b>Filter Pack:</b> 2/12 sand				
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVM / PID (ppm)	USCS Symbol	Well Construction	Sample Description
21	24		21-23	2	SP		Olive black 5Y 2/1 fine to medium sand saturated with water. No hydrocarbon odor.
22							
23							
24							
25							
26							
27							
28							End of Boring at 28 feet


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**SOIL BORING LOG**

<b>Project Name and Location:</b>  Former CleanCare Site 1510 Taylor Way Tacoma, Washington					<b>Boring Number:</b> CCW-4C		Page: <u>1</u> of <u>1</u>
					<b>Contractor:</b> Cascade Drilling Inc.		<b>Drilling Method:</b> HSA
					<b>Drill Crew:</b> Brian Gose, Frank Scott, Steve Choate		<b>Drill Rig:</b> CME-75
					<b>Date Started:</b> July 5, 2001		<b>Date Finished:</b> July 5, 2001
<b>Surface Elevation:</b> NA			<b>Logged by:</b> R. Honsberger		<b>Protective Cover:</b> 8" water tight manhole		
<b>Top of Casing Elevation:</b> NA							
<b>Well Construction Information:</b>							
<b>Screened Interval (ft bgs):</b> 24 to 19			<b>Screen:</b> 2" dia. 0.010" slot PVC		<b>Water Level While Drilling (ft bgs):</b> ~5		
<b>Filter Pack Interval (ft bgs):</b> 24 to 18			<b>Riser:</b> 2" dia. PVC				
<b>Seal Interval (ft bgs):</b> 18 to 2			<b>Seal Type:</b> bentonite		<b>Water Level at Completion (ft bgs):</b> 9.93		
<b>Grout Interval (ft bgs):</b> 2 to 0			<b>Filter Pack:</b> 2/12 sand				
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVM / PID (ppm)	USCS Symbol	Well Construction	Sample Description
0					GP		12" Gravel fill.
1	12	16,12,6,3	1-3	3	GM		Grayish brown 5YR 3/2 angular coarse to fine gravel with fine to medium sand, dry with no hydrocarbon odor.
2							
3	8	NA	3-5	3	GM		Same as above with miscellaneous automobile debris.
4							
5	8	1,3,2,3	5-7	4	SP		Moderate brown 5YR 3/4 fine to medium sand with miscellaneous automobile debris, dry with no hydrocarbon odor.
6							
7	16	1,1,2,1	7-9	3	SP		Olive black 5Y 2/1 fine to medium sand with shell fragments. Saturated with water.
8							
9	12	4,5,5	9-10	3	SP		Same as above with auto fluff and few medium gravels.
10	6	4,5	10-11	3	SP		Olive black 5Y 2/1 fine to coarse sand with medium gravel, slight hydrocarbon odor and saturated with water.
11	12	5,1	11-12	3	SP		Same as above.
12	12	3,1	12-13	4	ML		Olive gray 5Y 4/1 silt with rootless and other plant material.
13	1	2,1	13-14	1	OL/OH		Trace amounts of peat and slight hydrocarbon odor.
14	12	0,0,12	14-16	1	ML		Olive gray 5Y 4/1 silt with rootlets and trace fine sand. No hydrocarbon odor.
15							
16	20	NA	16-18	1	ML		Same as above.
17							
18	20	6,2,5,3	18-20	0	SP		Olive black 5Y 2/1 fine to medium sand saturated with water, no hydrocarbon odor.
19							
20							
21							
22							
23							
24							End of Boring at 24 feet.

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# SOIL BORING LOG

<b>Project Name and Location:</b>  Former CleanCare Site 1510 Taylor Way Tacoma, Washington				<b>Boring Number:</b> CCW-5B		<b>Page:</b> 1 of 1	
				<b>Contractor:</b> Cascade Drilling Inc.		<b>Drilling Method:</b> HSA	
				<b>Drill Crew:</b> Brian Gose, Frank Scott, Steve Choate		<b>Drill Rig:</b> CME-75	
				<b>Date Started:</b> June 27, 2001		<b>Date Finished:</b> June 27, 2001	
<b>Surface Elevation:</b> NA				<b>Logged by:</b> R. Honsberger		<b>Protective Cover:</b> 8" water tight manhole	
<b>Top of Casing Elevation:</b> NA							
<b>Well Construction Information:</b>							
<b>Screened Interval (ft bgs):</b> 10 to 5				<b>Screen:</b> 2" dia. 0.010" slot PVC		<b>Water Level While Drilling (ft bgs):</b> ~5	
<b>Filter Pack Interval (ft bgs):</b> 11 to 4				<b>Riser:</b> 2" dia. PVC			
<b>Seal Interval (ft bgs):</b> 4 to 2				<b>Seal Type:</b> bentonite		<b>Water Level at Completion (ft bgs):</b> 4.82	
<b>Grout Interval (ft bgs):</b> 2 to 0				<b>Filter Pack:</b> 2/12 sand			
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVM / PID (ppm)	USCS Symbol	Well Construction	Sample Description
0					GP		6" Coarse angular gravel.
1	14	32,9,12	1-3	3	SP		Moderate brown 5YR 4/4 fine sand with wood waste and lime solvent sludge. Slight solvent odor.
2							
3	5	3,8,6,6	3-5	8	SP		Moderate brown 5YR 4/4 fine to medium sand with wood waste and few fine gravels dry with hydrocarbon odor and no solvent odor.
4							
5	5	3,8,6,6	5-7	NM	SP		 Same as above with a visible sheen on the water in the sampler.
6							
7	10	3,3,2,2	7-9	10	SM		Black to dusky brown fine to medium sand with wood waste and lenses of silty clay. Saturated with product.
8							
9	24	NA	9-11	7	OL		Greenish gray 5Y 4/1 silty clay with rootlets and plant material, moist with no solvent or hydrocarbon odor.
10							
11							End of boring at 11 feet.



SOIL BORING LOG

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<b>Project Name and Location:</b>  Former CleanCare Site 1510 Taylor Way Tacoma, Washington				<b>Boring Number:</b> CCW-5C		<b>Page:</b> 1 of 1	
				<b>Contractor:</b> Cascade Drilling Inc.		<b>Drilling Method:</b> HSA	
				<b>Drill Crew:</b> Brian Gose, Frank Scott, Steve Choate		<b>Drill Rig:</b> CME-75	
				<b>Date Started:</b> June 27, 2001		<b>Date Finished:</b> June 27, 2001	
<b>Surface Elevation:</b> NA			<b>Logged by:</b> R. Honsberger		<b>Protective Cover:</b> 8" water tight manhole		
<b>Top of Casing Elevation:</b> NA							
<b>Well Construction Information:</b>							
<b>Screened Interval (ft bgs):</b> 24 to 19			<b>Screen:</b> 2" dia. 0.010" slot PVC		<b>Water Level While Drilling (ft bgs):</b> ~5		
<b>Filter Pack Interval (ft bgs):</b> 24 to 18			<b>Riser:</b> 2" dia. PVC				
<b>Seal Interval (ft bgs):</b> 18 to 2			<b>Seal Type:</b> bentonite		<b>Water Level at Completion (ft bgs):</b> 9.93		
<b>Grout Interval (ft bgs):</b> 2 to 0			<b>Filter Pack:</b> 2/12 sand				
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVM / PID (ppm)	USCS Symbol	Well Construction	Sample Description
0							Subsurface conditions are the same as Well CCW-5B to 11 feet bgs. No soil samples collected.  
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11	24	1,2,3,4	11-13	0	OL		Olive gray 5Y 4/1 silty clay with rootlets and plant material, no solvent or hydrocarbon odor.
12							
13	24	1,1,1,2	13-15	1	OL		Same as above, but silty sand at 14.5 feet.
14							
15	24	2,5,9,11	15-17	0	SM		Brownish black 5YR 2/1 silty sand with Olive gray 5Y 4/1 silt interbeds, moist to damp with no solvent or hydrocarbon odor.
16							
17	24	2,1,1,2	17-19	0	SP		Brownish black 5YR 2/1 fine to medium sand, saturated with water. No solvent or hydrocarbon odor.
18							
19							
20							
21							
22							
23							
24							End of Boring at 24 feet.




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**SOIL BORING LOG**

<b>Project Name and Location:</b>  Former CleanCare Site 1510 Taylor Way Tacoma, Washington				<b>Boring Number:</b> CCW-6C		<b>Page:</b> 1 of 1	
				<b>Contractor:</b> Cascade Drilling Inc.		<b>Drilling Method:</b> HSA	
				<b>Drill Crew:</b> Brian Gose, Frank Scott, Steve Choate		<b>Drill Rig:</b> CME-75	
				<b>Date Started:</b> June 28, 2001		<b>Date Finished:</b> June 28, 2001	
<b>Surface Elevation:</b> NA			<b>Logged by:</b> R. Honsberger		<b>Protective Cover:</b>		
<b>Top of Casing Elevation:</b> NA					<b>8" water tight manhole</b>		
<b>Well Construction Information:</b>							
<b>Screened Interval (ft bgs):</b> 23 to 18			<b>Screen:</b> 2" dia. 0.010" slot PVC		<b>Water Level While Drilling (ft bgs):</b>		
<b>Filter Pack Interval (ft bgs):</b> 23 to 17			<b>Riser:</b> 2" dia. PVC		~4.5		
<b>Seal Interval (ft bgs):</b> 17 to 2			<b>Seal Type:</b> bentonite		<b>Water Level at Completion (ft bgs):</b>		
<b>Grout Interval (ft bgs):</b> 2 to 0			<b>Filter Pack:</b> 2/12 sand		9.61		
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVM / PID (ppm)	USCS Symbol	Well Construction	Sample Description
0							
1							Subsurface conditions are the same as Well CCW-6B to 9 feet bgs. No soil samples collected.
2							
3							
4							
5							
6							
7							
8							
9	NR	NA	9-11	NR	NA		No recovery.
10	24	1	10-12	1	ML		Olive gray 5Y 4/1 silty clay with rootlets and some wood waste, moist, no hydrocarbon odor.
11							
12	24	1,2,2,1	12-14	2	ML		Same as above with olive black 5Y 2/1 silty sand at 13.5 feet.
13							
14	24	1,2,5,7	14-16	3	ML		Olive gray 5Y 4/1 silt with sand. At 15.5 feet brownish black 5YR 2/1 fine to medium sand saturated with water.
15							
16	20	NA	16-18	0	SP		Brownish black 5YR 2/1 fine to medium sand, saturated with water and no hydrocarbon odor.
17							
18							
19							
20							
21							
22							
23							End of Boring at 23 feet.


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**SOIL BORING LOG**

<b>Project Name and Location:</b>  Former CleanCare Site 1510 Taylor Way Tacoma, Washington				<b>Boring Number:</b> CCW-7B		Page: 1 of 1	
				<b>Contractor:</b> Cascade Drilling Inc.		<b>Drilling Method:</b> HSA	
				<b>Drill Crew:</b> Brian Gose, Frank Scott, Steve Choate		<b>Drill Rig:</b> CME-75	
				<b>Date Started:</b> June 28, 2001		<b>Date Finished:</b> June 28, 2001	
<b>Surface Elevation:</b> NA				<b>Logged by:</b> R. Honsberger		<b>Protective Cover:</b> 8" water tight manhole	
<b>Top of Casing Elevation:</b> NA							
<b>Well Construction Information:</b>							
<b>Screened Interval (ft bgs):</b> 9 to 4				<b>Screen:</b> 2" dia. 0.010" slot PVC		<b>Water Level While Drilling (ft bgs):</b> ~5	
<b>Filter Pack Interval (ft bgs):</b> 11 to 3				<b>Riser:</b> 2" dia. PVC			
<b>Seal Interval (ft bgs):</b> 3 to 1.5				<b>Seal Type:</b> bentonite		<b>Water Level at Completion (ft bgs):</b> 3.95	
<b>Grout Interval (ft bgs):</b> 1.5 to 0				<b>Filter Pack:</b> 2/12 sand			
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVM / PID (ppm)	USCS Symbol	Well Construction	Sample Description
0					GP		6" Coarse angular gravel.
1	20	1,2,3,2	1-3	35	NA		Olive black 5Y 2/1 line solvent sludge and wood waste damp with hydrocarbon odor.
2							
3	12	1,2,3,2	3-5	12	NA		Olive black 5Y 2/1 wood waste.
4							
5	12	1,4,7,14	5-7	31	NA		 Olive black 5Y 2/1 wood waste saturated with water and product, hydrocarbon odor and sheen.
6							
7	6	27,3,3,3	7-8	25	NA		Same as above
8	6		8-9	11	NA		Same as above.
9	2	1,2	9-10	3	ML		Same as above with trace of olive black 5Y 2/1 silty clay
10	12	2	10-11	3	ML		Olive gray 5Y 4/1 silt with plant material, saturated with water and no hydrocarbon odor.
11							End of boring at 11 feet

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**SOIL BORING LOG**

<b>Project Name and Location:</b>  Former CleanCare Site 1510 Taylor Way Tacoma, Washington				Boring Number: CCW-7C		Page: <u>1</u> of <u>1</u>	
				Contractor: Cascade Drilling Inc.		Drilling Method: HSA	
				Drill Crew: Brian Gose, Hank Monroe, Steve Choate		Drill Rig: CME-75	
				Date Started: June 28, 2001		Date Finished: June 28, 2001	
Surface Elevation: NA			Logged by: R. Honsberger		Protective Cover:		
Top of Casing Elevation: NA					8" water tight manhole		
<b>Well Construction Information:</b>							
Screened Interval (ft bgs): 26 to 21			Screen: 2" dia. 0.010" slot PVC		Water Level While Drilling (ft bgs):		
Filter Pack Interval (ft bgs): 26 to 20			Riser: 2" dia. PVC		~5		
Seal Interval (ft bgs): 20 to 2			Seal Type: bentonite		Water Level at Completion (ft bgs):		
Grout Interval (ft bgs): 2 to 0			Filter Pack: 2/12 sand		9.84		
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVM / PID (ppm)	USCS Symbol	Well Construction	Sample Description
0							
1							Subsurface conditions are the same as Well CCW-7B to 11 Feet bgs. No soil samples collected.  
2							
3							
4							
5							
6							
7							
8							
9							
10							
11	24	0,0,2,4	11-13	3	ML		Olive gray 5Y 4/1 silt with rootlets and plant material, no hydrocarbon odor.
12							
13	24	1,2,4,5	13-15	3	ML		Same as above.
14							
15	24	2,2	15-17	3	ML		Olive gray 5Y 4/1 silt with rootlets interbedded with olive black 5Y 2/1 fine to medium sand, saturated with water.
16							
17	20	5,3,4,6	17-19	3	ML		Same as above.
18							
19	18	5,7,10,12	19-21	2	SP		Olive black 5Y 2/1 fine to medium sand saturated with water with few silt interbeds.
20							
21	24	5,7,10,12	21-23	NA	SP		Olive black 5Y 2/1 fine to medium sand saturated with water and no hydrocarbon odor.
22							
23							
24							
25							
26							End of Boring at 26 feet.

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**SOIL BORING LOG**

<b>Project Name and Location:</b>  Former CleanCare Site 1510 Taylor Way Tacoma, Washington				<b>Boring Number:</b> CCW-8B		<b>Page:</b> 1 of 1	
				<b>Contractor:</b> Cascade Drilling Inc.		<b>Drilling Method:</b> HSA	
				<b>Drill Crew:</b> Drill Crew: Cody Pulis, Frank Scott, Steve Choate		<b>Drill Rig:</b> CME-75	
				<b>Date Started:</b> July 3, 2001		<b>Date Finished:</b> July 3, 2001	
<b>Surface Elevation:</b> NA				<b>Logged by:</b> R. Honsberger		<b>Protective Cover:</b>	
<b>Top of Casing Elevation:</b> NA						8" water tight manhole	
<b>Well Construction Information:</b>							
<b>Screened Interval (ft bgs):</b> 11 to 6				<b>Screen:</b> 2" dia. 0.010" slot PVC		<b>Water Level While Drilling (ft bgs):</b>	
<b>Filter Pack Interval (ft bgs):</b> 11 to 5				<b>Riser:</b> 2" dia. PVC		~7	
<b>Seal Interval (ft bgs):</b> 5 to 2				<b>Seal Type:</b> bentonite		<b>Water Level at Completion (ft bgs):</b>	
<b>Grout Interval (ft bgs):</b> 2 to 0				<b>Filter Pack:</b> 2/12 sand		5.15	
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVM / PID (ppm)	USCS Symbol	Well Construction	Sample Description
0					GP		6" Coarse angular gravel.
1	12	8,12,13,18	1-3	285	SP		Olive black 5Y 2/1 fine to medium sand with few coarse gravels and a strong hydrocarbon odor.
2							
3	20	8,8,9,11	3-5	338	SP		Olive black 5Y 2/1 medium sand with shell fragments, moist with a strong hydrocarbon odor, stains gloves.
4							
5	18	4,6,6,6	5-7	425	SP		Olive black 5Y 2/1 fine to medium sand with shell fragments, damp with a strong hydrocarbon odor, stains gloves.
6							
7	24	3,3,4,4	7-9	214	SP		▽ Same as above but saturated with water slight sheen on water.
8							
9	24	0,0,0,4	9-11	167	SP		Same as above.
10							
11	12	2,3	11-12	9	OL		Olive gray 5Y 4/1 silt with a trace of fine sand plant, saturated with water and slight hydrocarbon odor.
12							
							End of boring at 12 feet.

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AUG 01 2001  
 Tacoma-Pierce County  
 Health Dept.

Project Name and Location:  <b>Former CleanCare Site</b> 1510 Taylor Way Tacoma, Washington				Boring Number: CCW-1C		Page: <u>1</u> of <u>1</u>	
				Contractor: Cascade Drilling, Inc.		Drilling Method: HSA	
				Drill Crew: Cody Pulis, Frank Scott, Steve Choate		Drill Rig: CME-75	
				Date Started: July 3, 2001		Date Finished: July 5, 2001	
Surface Elevation: NA			Logged by: R. Honsberger		Protective Cover: 8" water tight manhole		
Top of Casing Elevation: NA							
Well Construction Information:							
Screened Interval (ft bgs): 23 to 18			Screen: 2" dia. 0.010" slot PVC		Water Level While Drilling (ft bgs): ~7		
Filter Pack Interval (ft bgs): 23 to 17			Riser: 2" dia. PVC		Water Level at Completion (ft bgs): 10.92		
Seal Interval (ft bgs): 17 to 2			Seal Type: bentonite				
Grout Interval (ft bgs): 2 to 0			Filter Pack: 2/12 sand				
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVM / PID (ppm)	USCS Symbol	Well Construction	Sample Description
0							6" asphalt
1	2	NR	1-3	286	SP		Moderate brown 5YR 4/4 coarse sand with some gravel and wood waste, moist with strong solvent odor.
2					SP		Same as above with lime solvent sludge.
3	12	NR	3-5	132	SP		Olive black 5Y 2/1 fine to medium sand, wet with no solvent or hydrocarbon odor.
4					SP		Same as above but saturated with water.
5	18	NR	5-7	26	SP		Same as above
6					SP		Olive gray 5Y 4/1 silt with rootlets and reeds.
7	20	NR	7-9	9	SP		Same as above but color is olive black 5Y 2/1 and more plant material.
8					ML		Olive gray 5Y 4/1 silt with rootlets and reeds, no solvent or hydrocarbon odor.
9	24	NR	9-10	7	OL		Olive gray 5Y 4/1 silt with fine sand, no solvent or hydrocarbon odor.
10					OL		Olive black 5Y 2/1 fine to medium sand with silt interbeds.
11	24	NR	11-13	6	OL		Olive black 5Y 2/1 fine to medium sand saturated with water, no solvent or hydrocarbon odor.
12					OL		
13	24	NR	13-15	5	OL		
14					ML		
15	24	NR	15-17	4	ML		
16					SP		
17	24	NR	17-19	3	SP		
18					SP		
19	24	NR	19-21	7	SP		
20							
21							
22							
23							

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# SOIL BORING LOG

<b>Project Name and Location:</b>  Former CleanCare Site 1510 Taylor Way Tacoma, Washington				Boring Number: CCW-2C			Page: <u>1</u> of <u>1</u>		
				Contractor: Cascade Drilling, Inc.			Drilling Method: HSA		
				Drill Crew: Yancy White, Charles Chambarger, Steve Choate			Drill Rig: CME-75		
				Date Started: July 2, 2001			Date Finished: July 3, 2001		
Surface Elevation: NA				Logged by: R. Honsberger			Protective Cover:		
Top of Casing Elevation: NA							8" water tight manhole		
<b>Well Construction Information:</b>									
Screened Interval (ft bgs): 24 to 19				Screen: 2" dia. 0.010" slot PVC		Water Level While Drilling (ft bgs):			
Filter Pack Interval (ft bgs): 24 to 18				Riser: 2" dia. PVC		-4.5			
Seal Interval (ft bgs): 18 to 2				Seal Type: bentonite		Water Level at Completion (ft bgs):			
Grout Interval (ft bgs): 2 to 0				Filter Pack: 2/12 sand		9.85			
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVM / PID (ppm)	USCS Symbol	Well Construction	Sample Description		
0							6" Asphalt		
1	6	5,3,11	1-3	33	NA		Greenish gray 5G 6/1 lime solvent sludge.		
2									
3	NR	3,4,7,10	3-5	NR	NA		No recovery. Wood waste and fine sand in the cuttings.		
4							▽		
5	3	6,8,3,3	5-7	NA	NA		Wood plug, strong hydrocarbon odor, wet.		
6									
7	3	1,1,1,1	7-9	270	NA		Same as above.		
8									
9	3	7,6,1,1	9-11	283	GP		Moderate brown 5YR 4/4 medium gravel with fine sand and wood waste saturated with water, strong hydrocarbon odor.		
10									
11	3	6,4,4,4	11-13	15	SP		Olive black 5Y 2/1 fine to medium sand with coarse gravel, saturated with water and has a slight hydrocarbon odor.		
12									
13									
14	12	10,10,10	14-15.5	301	SM		Olive black 5Y 2/1 silty sand with rootlets and wet with hydrocarbon odor.		
15	12	3,5,58	15.5-17	13	SM		Moderate brown 5YR 2/1 coarse sand at 15 feet.		
16	NR	NA	16-18	NR	NA		No recovery.		
17							16' 10" Olive black 5Y 2/1 fine to medium sand moist with no hydrocarbon odor.		
18	24	NA	18-20	5	SP				
19									
20	NA	NA	20-22	7	SP		Same as above.		
21									
22									
23									
24							End of Boring at 24 feet.		



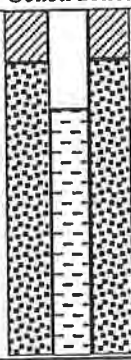
SOIL BORING LOG

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<b>Project Name and Location:</b>  Former CleanCare Site 1510 Taylor Way Tacoma, Washington				Boring Number: CCW-3C		Page: <u>1</u> of <u>2</u>	
				Contractor: Cascade Drilling, Inc.		Drilling Method: HSA	
				Drill Crew: Brian Gose, Frank Scott, Steve Choate		Drill Rig: CME-75	
				Date Started: June 29, 2001		Date Finished: July 2, 2001	
Surface Elevation: NA			Logged by: R. Honsberger		Protective Cover: 6" metal above ground casing with locking cover		
Top of Casing Elevation: NA							
Well Construction Information:							
Screened Interval (ft bgs): 28 to 23				Screen: 2" dia. 0.010" slot PVC		Water Level While Drilling (ft bgs): ~5	
Filter Pack Interval (ft bgs): 28 to 22				Riser: 2" dia. PVC			
Seal Interval (ft bgs): 22 to 2				Seal Type: bentonite		Water Level at Completion (ft bgs): 13.35	
Grout Interval (ft bgs): 2 to 0				Filter Pack: 2/12 sand			
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVM / PID (ppm)	USCS Symbol	Well Construction	Sample Description
0							
1	12	40,32, 15,17	1-3	2	GP		Coarse gravel fill with a fine to medium sand matrix, dry.
2							Same as above.
3	1	15,11,12, 5	3-5	2	GP		Miscellaneous automobile debris in the cuttings.
4							
5	NR	NA	5-7	NR	NA		
6							
7	12	3,4,2,2	7-9	14	SP		Olive black 5Y 2/1 fine to medium sand saturated with water. Very slight hydrocarbon odor.
8							
9	6	2,1,1,1	9-11	18	SP		Same as above with wood waste and silt.
10							
11	8	1,1,1,1	11-13	2	ML		Olive gray 5Y 4/1 silt with rootlets and reeds, moist with no hydrocarbon odor.
12							
13	4	2,1,1,1	13-15	2	ML		Olive black 5Y 2/1 silt with rootlets and reeds, moist with no hydrocarbon odor.
14							
15	24	NA	15-17	2	ML		Olive gray 5Y 4/1 silt with rootlets and reeds, moist with no hydrocarbon odor.
16							At 16.5 feet Olive black 5y 2/1 fine to medium sand saturated with water, with no hydrocarbon odor.
17	24	4,4,4,6	17-19	3	SP		Olive black 5Y 2/1 fine to medium sand with silt interbeds, saturated with water with no hydrocarbon odor.
18							
19	24	3,4,7,11	19-21	2	SP		Same as above.
20							














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<b>Project Name and Location:</b>  Former CleanCare Site 1510 Taylor Way Tacoma, Washington				Boring Number: CCW-3C		Page: 2 of 2	
				Contractor: Cascade Drilling, Inc.		Drilling Method: HSA	
				Drill Crew: Brian Gose, Frank Scott, Steve Choate		Drill Rig: CME-75	
				Date Started: June 29, 2001		Date Finished: July 2, 2001	
Surface Elevation: NA			Logged by: R. Honsberger		Protective Cover: 6" metal above ground casing with locking cover		
Top of Casing Elevation: NA							
Well Construction Information:							
Screened Interval (ft bgs): 28 to 23			Screen: 2" dia. 0.010" slot PVC		Water Level While Drilling (ft bgs): ~5		
Filter Pack Interval (ft bgs): 28 to 22			Riser: 2" dia. PVC		Water Level at Completion (ft bgs): 13.35		
Seal Interval (ft bgs): 22 to 2			Seal Type: bentonite				
Grout Interval (ft bgs): 2 to 0			Filter Pack: 2/12 sand				
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVM / PID (ppm)	USCS Symbol	Well Construction	Sample Description
21	24		21-23	2	SP		Olive black 5Y 2/1 fine to medium sand saturated with water. No hydrocarbon odor.
22							
23							
24							
25							
26							
27							
28							End of Boring at 28 feet

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SOIL BORING LOG

Project Name and Location:  <b>Former CleanCare Site</b> 1510 Taylor Way Tacoma, Washington					Boring Number: CCW-4C		Page: <u>1</u> of <u>1</u>
					Contractor: Cascade Drilling Inc.		Drilling Method: HSA
					Drill Crew: Brian Gose, Frank Scott, Steve Choate		Drill Rig: CME-75
					Date Started: July 5, 2001		Date Finished: July 5, 2001
Surface Elevation: NA			Logged by: R. Honsberger		Protective Cover: 8" water tight manhole		
Top of Casing Elevation: NA							
Well Construction Information:							
Screened Interval (ft bgs): 24 to 19			Screen: 2" dia. 0.010" slot PVC		Water Level While Drilling (ft bgs): ~5		
Filter Pack Interval (ft bgs): 24 to 18			Riser: 2" dia. PVC				
Seal Interval (ft bgs): 18 to 2			Seal Type: bentonite		Water Level at Completion (ft bgs): 9.93		
Grout Interval (ft bgs): 2 to 0			Filter Pack: 2/12 sand				
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVM / PID (ppm)	USCS Symbol	Well Construction	Sample Description
0					GP		12" Gravel fill.
1	12	16,12,6,3	1-3	3	GM		Grayish brown 5YR 3/2 angular coarse to fine gravel with fine to medium sand, dry with no hydrocarbon odor.
2							
3	8	NA	3-5	3	GM		Same as above with miscellaneous automobile debris.
4							
5	8	1,3,2,3	5-7	4	SP		Moderate brown 5YR 3/4 fine to medium sand with miscellaneous automobile debris, dry with no hydrocarbon odor.
6							
7	16	1,1,2,1	7-9	3	SP		Olive black 5Y 2/1 fine to medium sand with shell fragments. Saturated with water.
8							
9	12	4,5,5	9-10	3	SP		Same as above with auto fluff and few medium gravels.
10	6	4,5	10-11	3	SP		Olive black 5Y 2/1 fine to coarse sand with medium gravel, slight hydrocarbon odor and saturated with water.
11	12	5,1	11-12	3	SP		Same as above.
12	12	3,1	12-13	4	ML		Olive gray 5Y 4/1 silt with rootless and other plant material.
13	1	2,1	13-14	1	OL/OH		Trace amounts of peat and slight hydrocarbon odor.
14	12	0,0,12	14-16	1	ML		Olive gray 5Y 4/1 silt with rootlets and trace fine sand. No hydrocarbon odor.
15							
16	20	NA	16-18	1	ML		Same as above.
17							
18	20	6,2,5,3	18-20	0	SP		Olive black 5Y 2/1 fine to medium sand saturated with water, no hydrocarbon odor.
19							
20							
21							
22							
23							
24							End of Boring at 24 feet.


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**SOIL BORING LOG**

<b>Project Name and Location:</b>  Former CleanCare Site 1510 Taylor Way Tacoma, Washington				Boring Number: CCW-5B		Page: <u>1</u> of <u>1</u>	
				Contractor: Cascade Drilling Inc.		Drilling Method: HSA	
				Drill Crew: Brian Gose, Frank Scott, Steve Choate		Drill Rig: CME-75	
				Date Started: June 27, 2001		Date Finished: June 27, 2001	
Surface Elevation: NA			Logged by: R. Honsberger		Protective Cover: 8" water tight manhole		
Top of Casing Elevation: NA							
<b>Well Construction Information:</b>							
Screened Interval (ft bgs): 10 to 5				Screen: 2" dia. 0.010" slot PVC		Water Level While Drilling (ft bgs): ~5	
Filter Pack Interval (ft bgs): 11 to 4				Riser: 2" dia. PVC		Water Level at Completion (ft bgs): 4.82	
Seal Interval (ft bgs): 4 to 2				Seal Type: bentonite			
Grout Interval (ft bgs): 2 to 0				Filter Pack: 2/12 sand			
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVM / PID (ppm)	USCS Symbol	Well Construction	Sample Description
0					GP		6" Coarse angular gravel.
1	14	32,9,12	1-3	3	SP		Moderate brown 5YR 4/4 fine sand with wood waste and lime solvent sludge. Slight solvent odor.
2							
3	5	3,8,6,6	3-5	8	SP		Moderate brown 5YR 4/4 fine to medium sand with wood waste and few fine gravels dry with hydrocarbon odor and no solvent odor.
4							
5	5	3,8,6,6	5-7	NM	SP		Same as above with a visible sheen on the water in the sampler.
6							
7	10	3,3,2,2	7-9	10	SM		Black to dusky brown fine to medium sand with wood waste and lenses of silty clay. Saturated with product.
8							
9	24	NA	9-11	7	OL		Greenish gray 5Y 4/1 silty clay with rootlets and plant material, moist with no solvent or hydrocarbon odor.
10							
11							End of boring at 11 feet.

SOIL BORING LOG


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<b>Project Name and Location:</b>  Former CleanCare Site 1510 Taylor Way Tacoma, Washington				Boring Number: CCW-5C		Page: <u>1</u> of <u>1</u>	
				Contractor: Cascade Drilling Inc.		Drilling Method: HSA	
				Drill Crew: Brian Gose, Frank Scott, Steve Choate		Drill Rig: CME-75	
				Date Started: June 27, 2001		Date Finished: June 27, 2001	
Surface Elevation: NA			Logged by: R. Honsberger		Protective Cover: 8" water tight manhole		
Top of Casing Elevation: NA							
<b>Well Construction Information:</b>							
Screened Interval (ft bgs): 24 to 19				Screen: 2" dia. 0.010" slot PVC		Water Level While Drilling (ft bgs):	
Filter Pack Interval (ft bgs): 24 to 18				Riser: 2" dia. PVC		-5	
Seal Interval (ft bgs): 18 to 2				Seal Type: bentonite		Water Level at Completion (ft bgs):	
Grout Interval (ft bgs): 2 to 0				Filter Pack: 2/12 sand		9.93	
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVN / PID (ppm)	USCS Symbol	Well Construction	Sample Description
0							Subsurface conditions are the same as Well CCW-5B to 11 feet bgs. No soil samples collected.  
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11	24	1,2,3,4	11-13	0	OL		Olive gray 5Y 4/1 silty clay with rootlets and plant material, no solvent or hydrocarbon odor.
12							
13	24	1,1,1,2	13-15	1	OL		Same as above, but silty sand at 14,5 feet.
14							
15	24	2,5,9,11	15-17	0	SM		Brownish black 5YR 2/1 silty sand with Olive gray 5Y 4/1 silt interbeds, moist to damp with no solvent or hydrocarbon odor.
16							
17	24	2,1,1,2	17-19	0	SP		Brownish black 5YR 2/1 fine to medium sand, saturated with water. No solvent or hydrocarbon odor.
18							
19							
20							
21							
22							
23							
24							End of Boring at 24 feet.



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**SOIL BORING LOG**

<b>Project Name and Location:</b>  Former CleanCare Site 1510 Taylor Way Tacoma, Washington				<b>Boring Number:</b> CCW-6C		<b>Page:</b> 1 of 1	
				<b>Contractor:</b> Cascade Drilling Inc.		<b>Drilling Method:</b> HSA	
				<b>Drill Crew:</b> Brian Gose, Frank Scott, Steve Choate		<b>Drill Rig:</b> CME-75	
				<b>Date Started:</b> June 28, 2001		<b>Date Finished:</b> June 28, 2001	
<b>Surface Elevation:</b> NA				<b>Logged by:</b> R. Honsberger		<b>Protective Cover:</b> 8" water tight manhole	
<b>Top of Casing Elevation:</b> NA							
<b>Well Construction Information:</b>							
<b>Screened Interval (ft bgs):</b> 23 to 18				<b>Screen:</b> 2" dia. 0.010" slot PVC		<b>Water Level While Drilling (ft bgs):</b> ~4.5	
<b>Filter Pack Interval (ft bgs):</b> 23 to 17				<b>Riser:</b> 2" dia. PVC			
<b>Seal Interval (ft bgs):</b> 17 to 2				<b>Seal Type:</b> bentonite		<b>Water Level at Completion (ft bgs):</b> 9.61	
<b>Grout Interval (ft bgs):</b> 2 to 0				<b>Filter Pack:</b> 2/12 sand			
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVM / PID (ppm)	USCS Symbol	Well Construction	Sample Description
0							
1							Subsurface conditions are the same as Well CCW-6B to 9 feet bgs. No soil samples collected.  
2							
3							
4							
5							
6							
7							
8							
9	NR	NA	9-11	NR	NA		No recovery.
10	24	1	10-12	1	ML		Olive gray 5Y 4/1 silty clay with rootlets and some wood waste, moist, no hydrocarbon odor.
11							
12	24	1,2,2,1	12-14	2	ML		Same as above with olive black 5Y 2/1 silty sand at 13.5 feet.
13							
14	24	1,2,5,7	14-16	3	ML		Olive gray 5Y 4/1 silt with sand. At 15.5 feet brownish black 5YR 2/1 fine to medium sand saturated with water.
15							
16	20	NA	16-18	0	SP		Brownish black 5YR 2/1 fine to medium sand, saturated with water and no hydrocarbon odor.
17							
18							
19							
20							
21							
22							
23							End of Boring at 23 feet.

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 (425) 402-8277 FAX (425) 402-7917

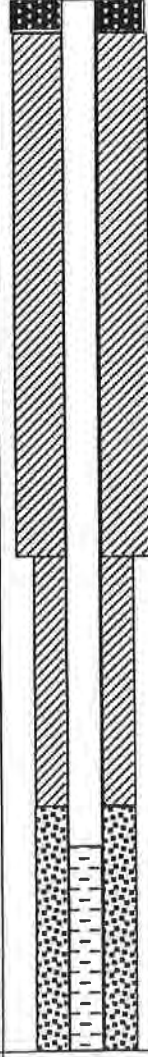
**SOIL BORING LOG**

<b>Project Name and Location:</b>  Former CleanCare Site 1510 Taylor Way Tacoma, Washington		<b>Boring Number:</b> CCW-7B		Page: <u>1</u> of <u>1</u>			
		<b>Contractor:</b> Cascade Drilling Inc.		<b>Drilling Method:</b> HSA			
		<b>Drill Crew:</b> Brian Gose, Frank Scott, Steve Choate		<b>Drill Rig:</b> CME-75			
		<b>Date Started:</b> June 28, 2001		<b>Date Finished:</b> June 28, 2001			
<b>Surface Elevation:</b> NA		<b>Logged by:</b> R. Honsberger		<b>Protective Cover:</b> 8" water tight manhole			
<b>Top of Casing Elevation:</b> NA							
<b>Well Construction Information:</b>							
<b>Screened Interval (ft bgs):</b> 9 to 4			<b>Screen:</b> 2" dia. 0.010" slot PVC		<b>Water Level While Drilling (ft bgs):</b> ~5		
<b>Filter Pack Interval (ft bgs):</b> 11 to 3			<b>Riser:</b> 2" dia. PVC				
<b>Seal Interval (ft bgs):</b> 3 to 1.5			<b>Seal Type:</b> bentonite		<b>Water Level at Completion (ft bgs):</b> 3.95		
<b>Grout Interval (ft bgs):</b> 1.5 to 0			<b>Filter Pack:</b> 2/12 sand				
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVM / PID (ppm)	USCS Symbol	Well Construction	Sample Description
0					GP		6" Coarse angular gravel.
1	20	1,2,3,2	1-3	35	NA		Olive black 5Y 2/1 line solvent sludge and wood waste damp with hydrocarbon odor.
2							
3	12	1,2,3,2	3-5	12	NA		Olive black 5Y 2/1 wood waste.
4							
5	12	1,4,7,14	5-7	31	NA		▽ Olive black 5Y 2/1 wood waste saturated with water and product, hydrocarbon odor and sheen.
6							
7	6	27,3,3,3	7-8	25	NA		Same as above
8	6		8-9	11	NA		Same as above.
9	2	1,2	9-10	3	ML		Same as above with trace of olive black 5Y 2/1 silty clay
10	12	2	10-11	3	ML		Olive gray 5Y 4/1 silt with plant material, saturated with water and no hydrocarbon odor.
11							End of boring at 11 feet



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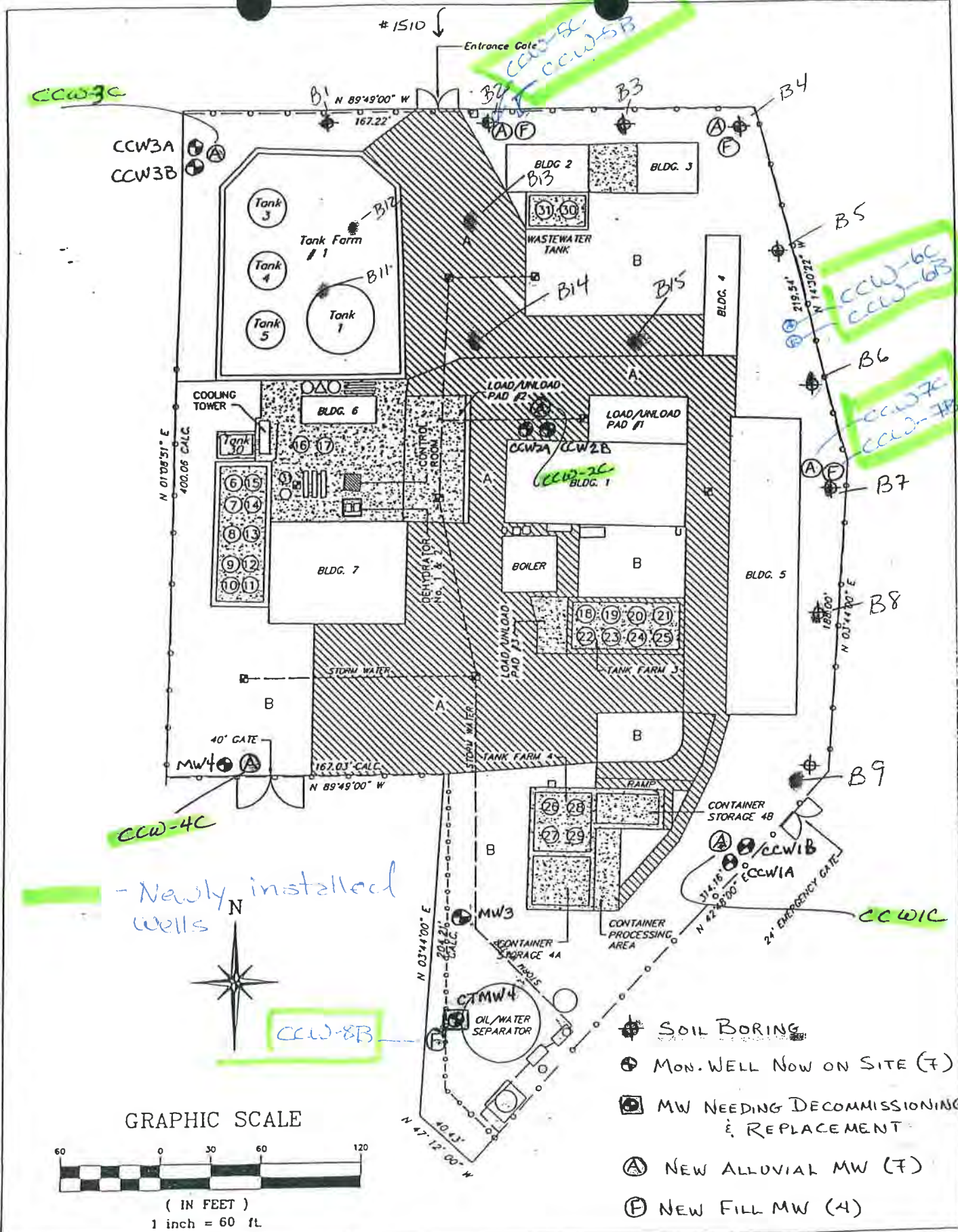
**SOIL BORING LOG**

<b>Project Name and Location:</b>  Former CleanCare Site 1510 Taylor Way Tacoma, Washington				Boring Number: CCW-7C		Page: <u>1</u> of <u>1</u>	
				Contractor: Cascade Drilling Inc.		Drilling Method: HSA	
				Drill Crew: Brian Gose, Hank Monroe, Steve Choate		Drill Rig: CME-75	
				Date Started: June 28, 2001		Date Finished: June 28, 2001	
Surface Elevation: NA			Logged by: R. Honsberger		Protective Cover:		
Top of Casing Elevation: NA					8" water tight manhole		
<b>Well Construction Information:</b>							
Screened Interval (ft bgs): 26 to 21			Screen: 2" dia. 0.010" slot PVC		Water Level While Drilling (ft bgs):		
Filter Pack Interval (ft bgs): 26 to 20			Riser: 2" dia. PVC		~5		
Seal Interval (ft bgs): 20 to 2			Seal Type: bentonite		Water Level at Completion (ft bgs):		
Grout Interval (ft bgs): 2 to 0			Filter Pack: 2/12 sand		9.84		
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVM / PID (ppm)	USCS Symbol	Well Construction	Sample Description
0							
1							Subsurface conditions are the same as Well CCW-7B to 11 Feet bgs. No soil samples collected.  
2							
3							
4							
5							
6							
7							
8							
9							
10							
11	24	0,0,2,4	11-13	3	ML		Olive gray 5Y 4/1 silt with rootlets and plant material, no hydrocarbon odor.
12							
13	24	1,2,4,5	13-15	3	ML		Same as above.
14							
15	24	2,2	15-17	3	ML		Olive gray 5Y 4/1 silt with rootlets interbedded with olive black 5Y 2/1 fine to medium sand, saturated with water.
16							
17	20	5,3,4,6	17-19	3	ML		Same as above.
18							
19	18	5,7,10,12	19-21	2	SP		Olive black 5Y 2/1 fine to medium sand saturated with water with few silt interbeds.
20							
21	24	5,7,10,12	21-23	NA	SP		Olive black 5Y 2/1 fine to medium sand saturated with water and no hydrocarbon odor.
22							
23							
24							
25							
26							End of Boring at 26 feet.

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**SOIL BORING LOG**

<b>Project Name and Location:</b>  Former CleanCare Site 1510 Taylor Way Tacoma, Washington				<b>Boring Number:</b> CCW-8B		Page: <u>1</u> of <u>1</u>	
				<b>Contractor:</b> Cascade Drilling Inc.		<b>Drilling Method:</b> HSA	
				<b>Drill Crew:</b> Drill Crew: Cody Pulis, Frank Scott, Steve Choate		<b>Drill Rig:</b> CME-75	
				<b>Date Started:</b> July 3, 2001		<b>Date Finished:</b> July 3, 2001	
<b>Surface Elevation:</b> NA				<b>Logged by:</b> R. Honsberger		<b>Protective Cover:</b> 8" water tight manhole	
<b>Top of Casing Elevation:</b> NA							
<b>Well Construction Information:</b>							
<b>Screened Interval (ft bgs):</b> 11 to 6				<b>Screen:</b> 2" dia. 0.010" slot PVC		<b>Water Level While Drilling (ft bgs):</b> ~7	
<b>Filter Pack Interval (ft bgs):</b> 11 to 5				<b>Riser:</b> 2" dia. PVC			
<b>Seal Interval (ft bgs):</b> 5 to 2				<b>Seal Type:</b> bentonite		<b>Water Level at Completion (ft bgs):</b> 5.15	
<b>Grout Interval (ft bgs):</b> 2 to 0				<b>Filter Pack:</b> 2/12 sand			
Depth (ft bgs)	Recov. (in.)	Blow Counts	Sample Interval	OVM / PID (ppm)	USCS Symbol	Well Construction	Sample Description
0					GP		6" Coarse angular gravel.
1	12	8,12,13,18	1-3	285	SP		Olive black 5Y 2/1 fine to medium sand with few coarse gravels and a strong hydrocarbon odor.
2							
3	20	8,8,9,11	3-5	338	SP		Olive black 5Y 2/1 medium sand with shell fragments, moist with a strong hydrocarbon odor, stains gloves.
4							
5	18	4,6,6,6	5-7	425	SP		Olive black 5Y 2/1 fine to medium sand with shell fragments, damp with a strong hydrocarbon odor, stains gloves.
6							
7	24	3,3,4,4	7-9	214	SP		Same as above but saturated with water slight sheen on water.
8							
9	24	0,0,0,4	9-11	167	SP		Same as above.
10							
11	12	2,3	11-12	9	OL		Olive gray 5Y 4/1 silt with a trace of fine sand plant, saturated with water and slight hydrocarbon odor.
12							End of boring at 12 feet.



DRAWING TITLE:  
SITE PLAN

- MONITORING WELL
- STORMWATER SUMPS

- LEGEND:
- BENCHMARK
  - SET REBAR & CAP
  - FOUND IRON SURVEY MARKER
  - SET HUB & TACK
  - MAIL
  - FOUND SURFACE MONUMENT AS DESCRIBED
  - RAILROAD SPIKE
  - CHAIN LINK FENCE
  - CONCRETE

DRAWN BY: H.T.L.  
DESIGN BY: CLEANCARE CORP.



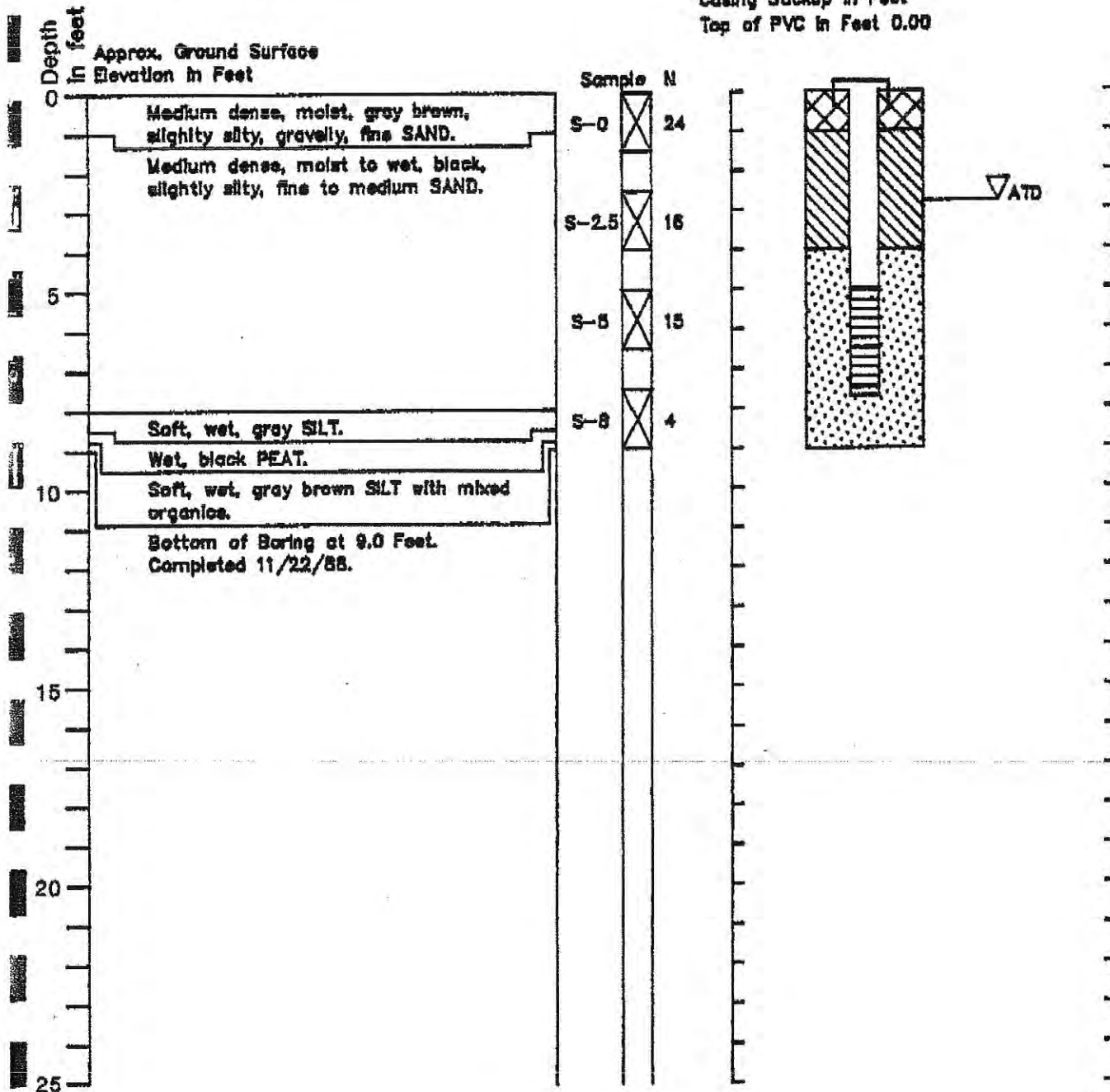
FIGURE 1

# Boring Log and Construction Data for Monitoring Well B-1/MW-1

## Geologic Log

## Monitoring Well Design

Casing Stickup In Feet  
Top of PVC In Feet 0.00



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-2282

11/88

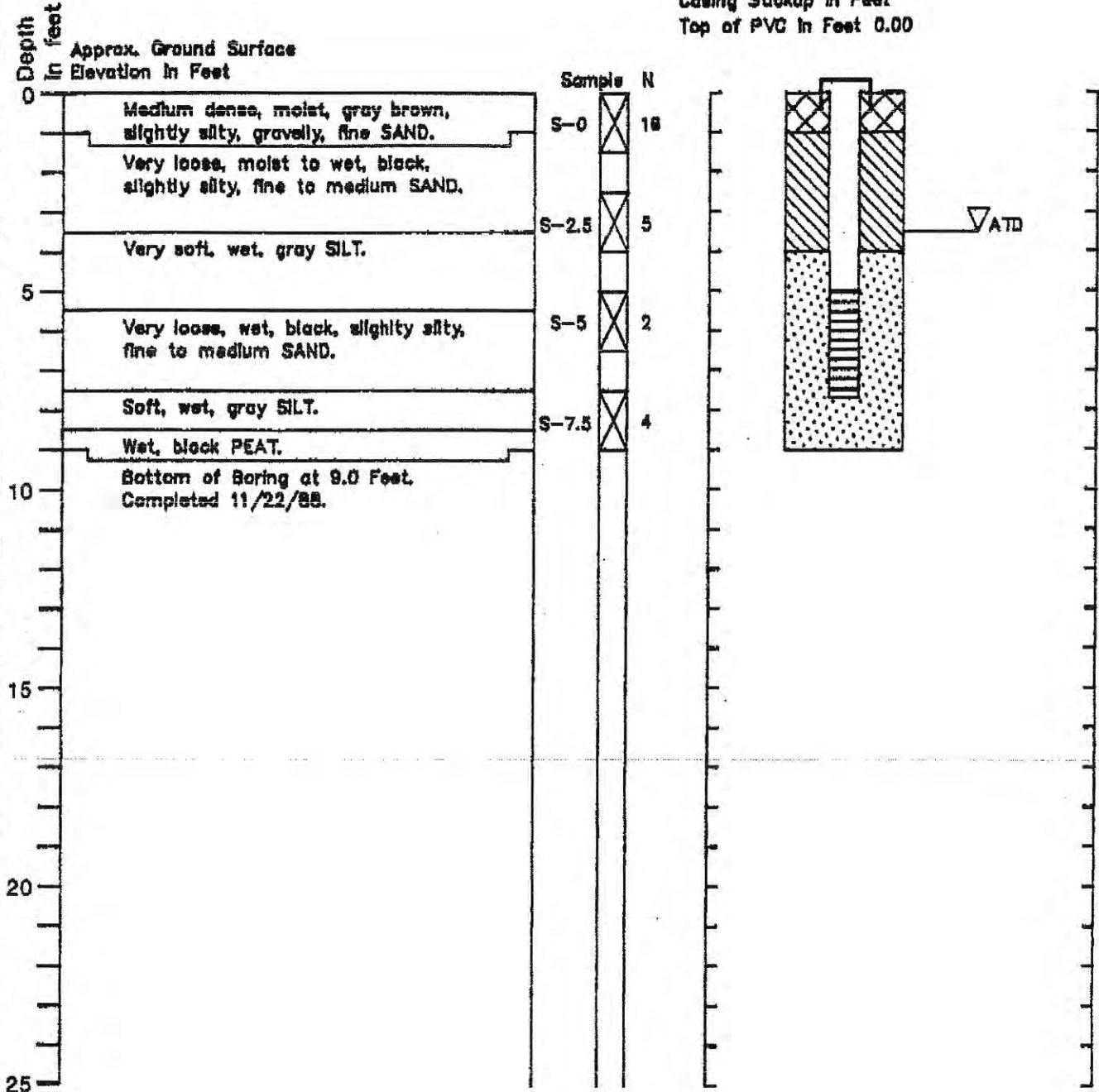
Figure A-2

# Boring Log and Construction Data for Monitoring Well B-2/MW-2

## Geologic Log

## Monitoring Well Design

Casing Stickup In Feet  
Top of PVC In Feet 0.00



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-2252

11/88

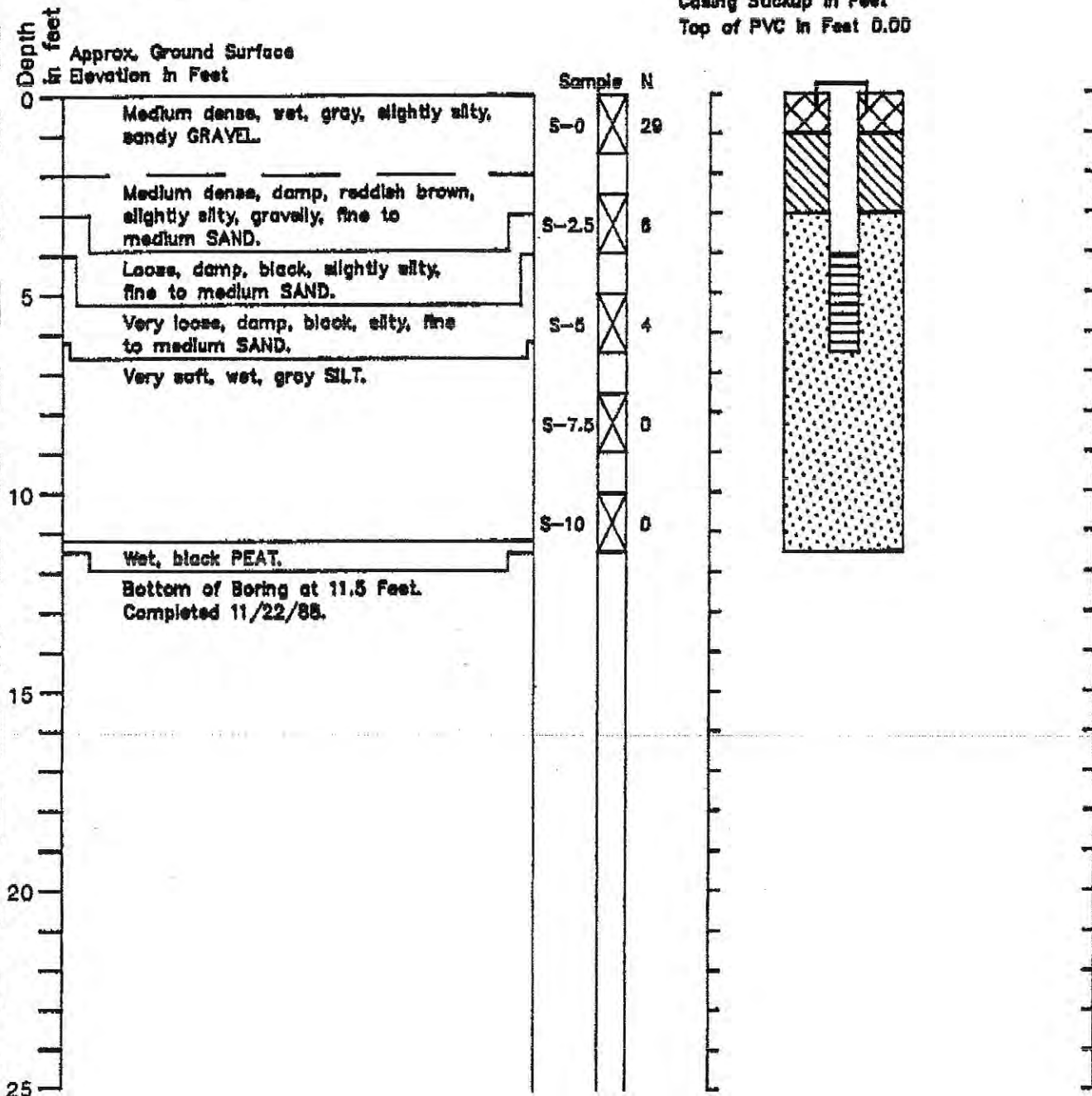
Figure A-3

# Boring Log and Construction Data for Monitoring Well B-3/MW-3

## Geologic Log

## Monitoring Well Design

Casing Stickup in Feet  
Top of PVC in Feet 0.00



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-2252

11/88

Figure A-4

## Boring/Well Designation: MW-4

<p><b>Client:</b> Emerald Services, Inc.</p> <p><b>Logged By:</b> Jerry Sawetz</p> <p><b>Date of Drilling:</b> 9/13/04</p> <p><b>Location:</b> 1825 Alexander Ave., Tacoma, WA</p>	<p><b>Drilling Contractor:</b> Cascade Drilling, Inc.</p> <p><b>Method:</b> Hollow Stem Auger</p> <p><b>Drill Rig:</b> CME-75</p> <p><b>Borehole:</b> 8" nominal diameter</p>
--	---

Depth	SUBSURFACE PROFILE			SAMPLE			PID (ppm)	Sheen	Well Data	Comments
	Log	USCS Code	Description	Interval Recovery	Blows per 6"	Sample				
0			Ground Surface							
0			<b>Asphalt</b>							Flush-mount monument
1			<b>Poorly-Graded Sand</b> Dark brown; moist; mostly fine to medium sand with trace silt; no odor.							Concrete (0' - 2')
2		SP					6.7			Hydrated Bentonite Chips (2' - 3')
3					6,8,9					#2/12 Sand filter pack (3' - 9')
4			Becomes gray with increased moisture.				2.4			0.010 Screen (4' - 9')
5					7,6,5					Water level ATD
6			Becomes saturated.				1.2			
7					7,4,5					
8					2,2,3					
9		SM	<b>Silty Sand</b> Grayish-brown; saturated; mostly fine to medium sand with some light brown silt; no odor.		1		1.1			Flush-threaded PVC end cap
10			End of Borehole							
11										
12										
13										
14										
15										

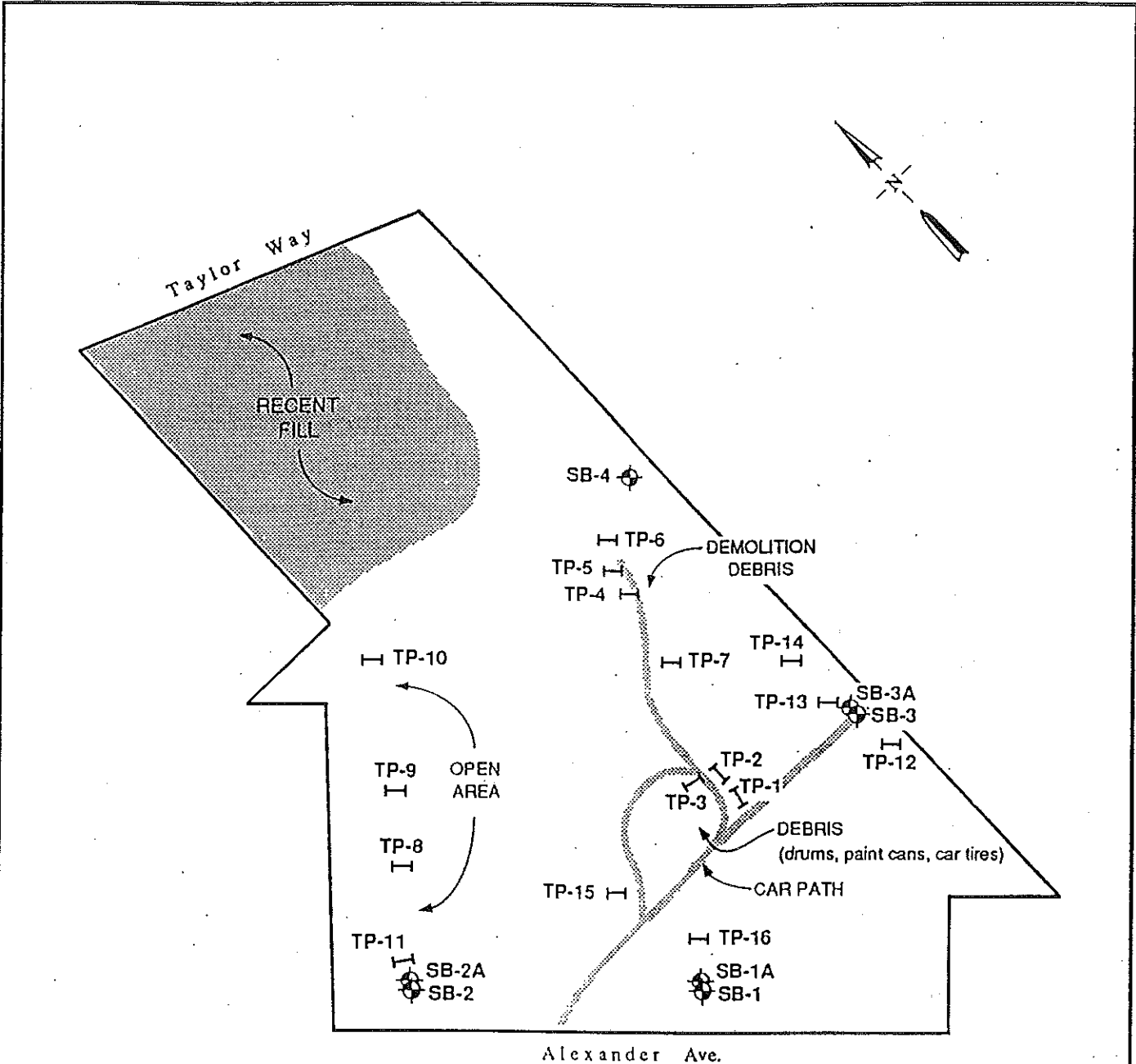


Client: Emerald Services  
Project: MW-3 Well Replacement  
Location: Tacoma, WA  
Project Number: 425942.12.GW

Driller: Boart Longyear  
Drilling Method: HSA  
Sampling Method: STP  
Logged by: Mario Lopez Ramos  
Start/Finish Date: 6/19/2012 - 6/19/2012

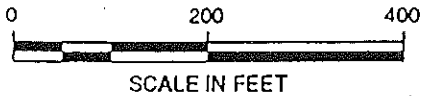
Depth (ft)	Sample Info		Soil Log	Soil Description	Depth / Elev	Well Drawing	Well Construction Notes
	Sample #	STP (6"-6"-6")					
0				Ground Surface	0		Concrete Mix up to 14"
				AC Asphalt Concrete			3/4" Bentonite Chips (1 bag)
		5-5-5		SW Light gray, gravelly, fine to medium SAND with silt and trace woody debris (loose, damp)	2		2" SCH 40 PVC Riser
5	1	1-1-1		SM Dark gray, silty, fine to medium SAND, with silty seams (very loose, moist)	4		Sample Collected at 11:45 (MW-3R-4-5.5)
		0-0-0		SM Dark gray, fine to medium silty SAND, with silty seams (very loose, wet)	7		Depth to Water during Drilling Activities (1145)
							10/20 Colorado Silica Sand (4 bags) 0.010 Slot SCH40 PVC Screen (2" by 2')
				End of Exploration	9		
10							
15							
20							





**KEY TO SYMBOLS**

- Monitoring well location
- Test pit location



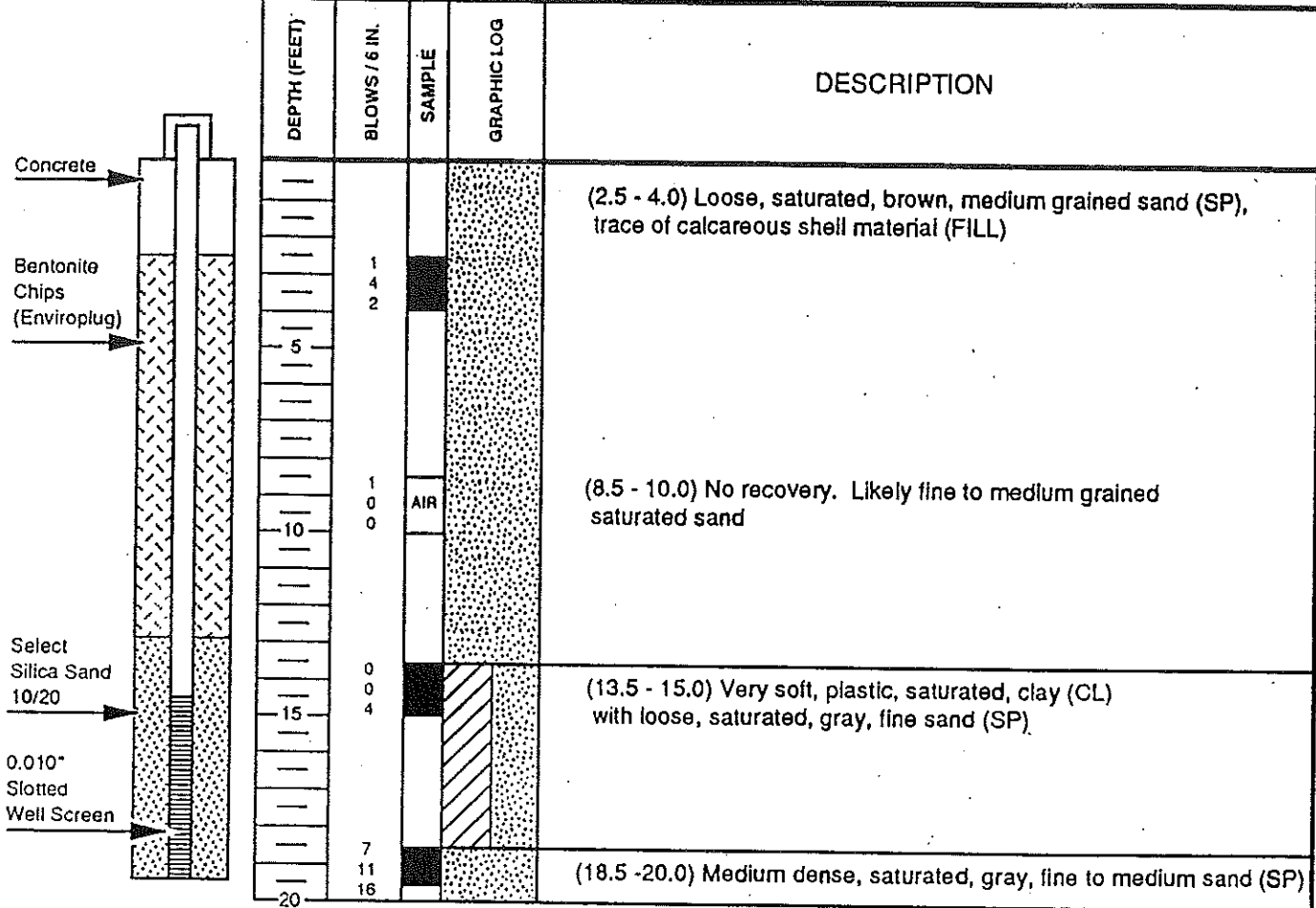
Project No. 91C0191A      Site Energies, U.S.A., Inc.  
Tacoma Cogeneration Project

Woodward-Clyde Consultants

**MONITORING WELL AND TEST PIT LOCATION MAP**

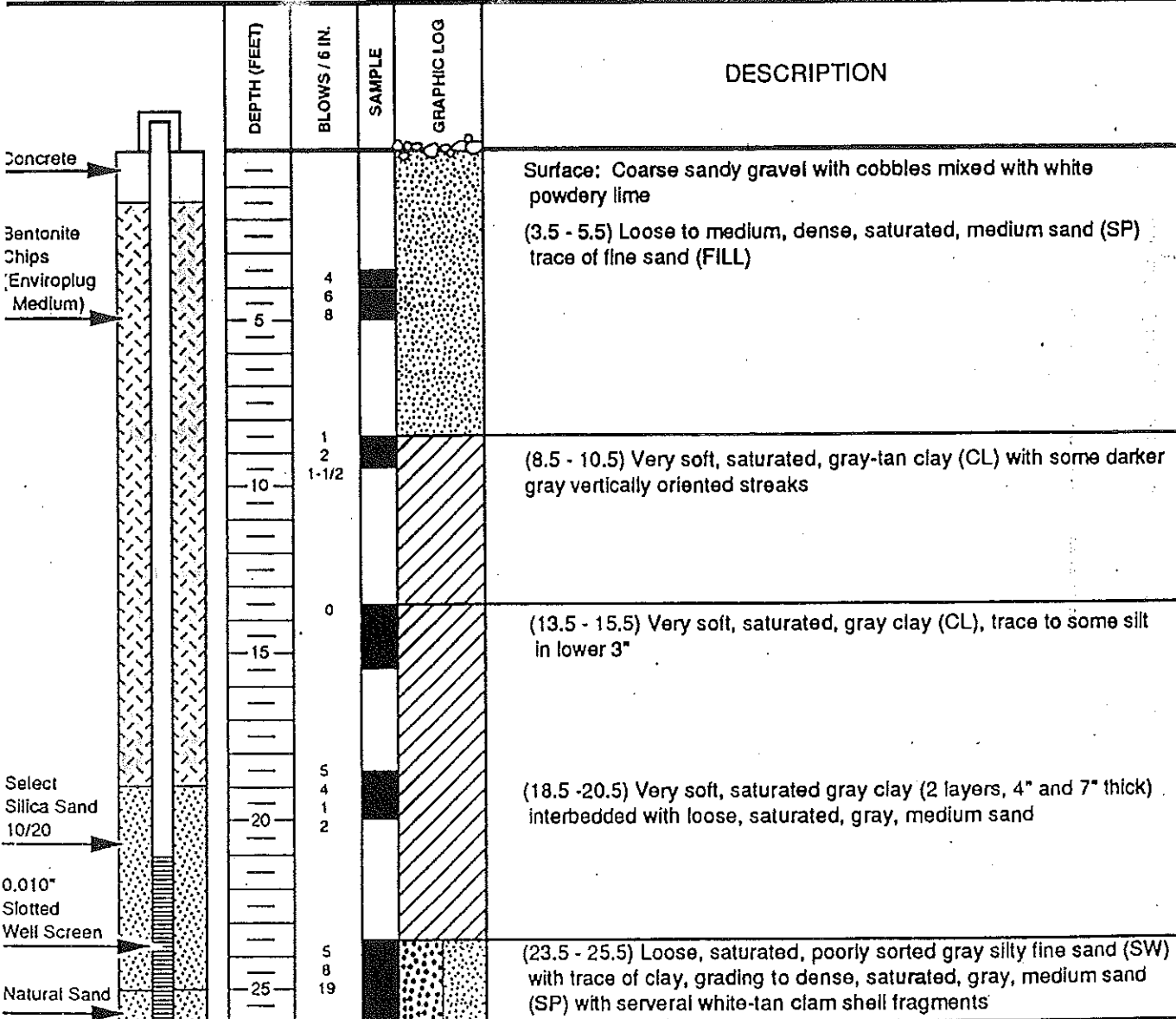
**Figure 2-4**

BORING NO.	SB-1	ELEVATION:	11.32 ft
LOCATION:		DATE STARTED:	3/28/91
DRILLING AGENCY:	Soil Sampling Service	DATE COMPLETED:	3/28/91
DRILLING EQUIPMENT:	All-terrain CME-50	DRILLER:	W. Lindholm
		LOGGED BY:	K. Teague
DRILLING METHOD:	4" ID HSA	SAMPLER:	SPT



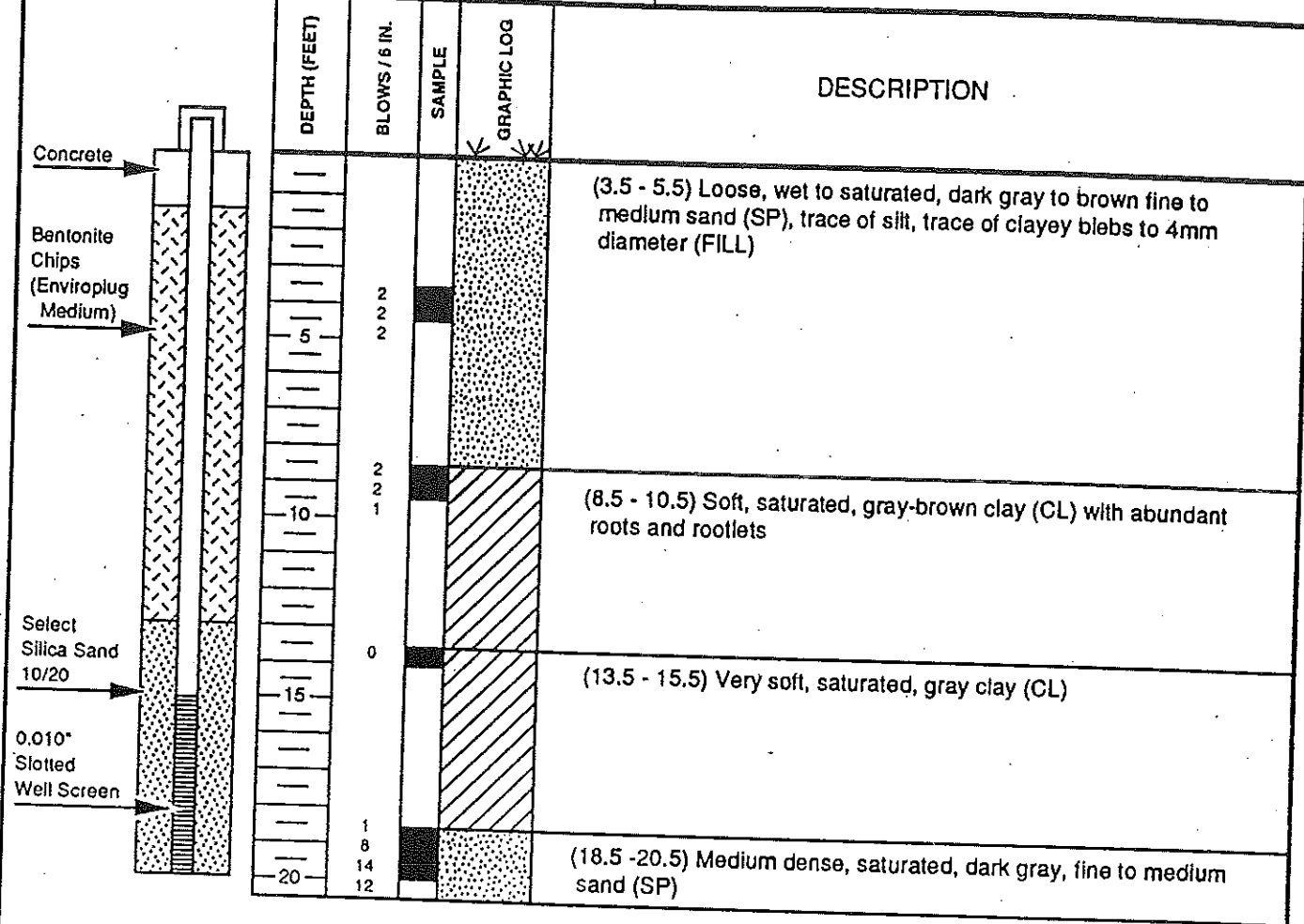
2 Screened in silt?  
15 - 8.5 unknown

BORING NO.	SB-3	ELEVATION:	14.07 ft
LOCATION:		DATE STARTED:	3/29/91
DRILLING AGENCY:	Soil Sampling Service	DATE COMPLETED:	3/29/91
DRILLING EQUIPMENT:	All-terrain CME-50	DRILLER:	W. Lindholm
		LOGGED BY:	K. Teague
DRILLING METHOD:	4" ID HSA	SAMPLER:	SPT



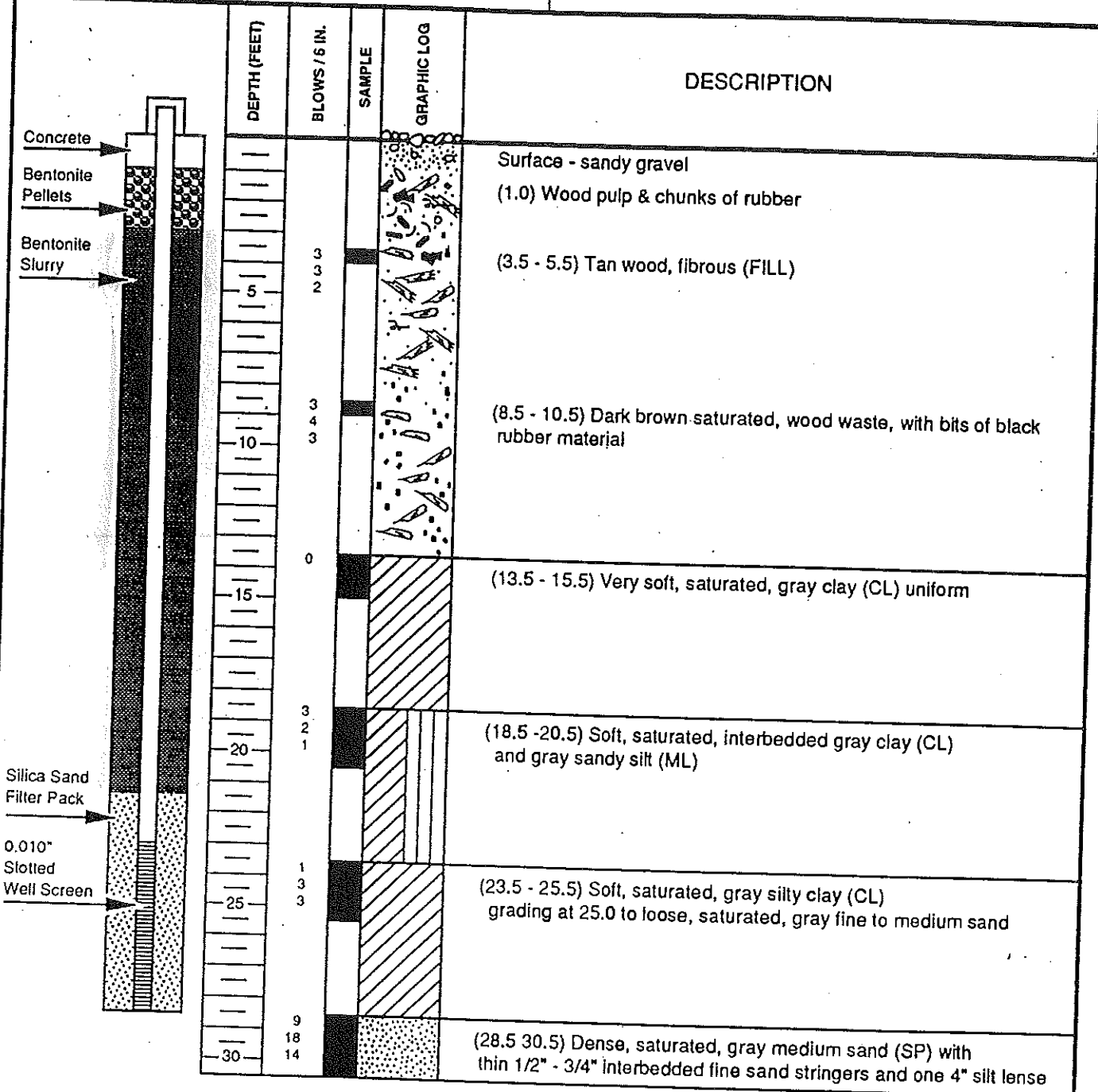
*screen in clay?  
20.5 - 23.5' unknown*

BORING NO.	SB-2	ELEVATION:	10.91 ft
LOCATION:		DATE STARTED:	3/29/91
DRILLING AGENCY:	Soil Sampling Service	DATE COMPLETED:	3/29/91
DRILLING EQUIPMENT:	All-terrain CME-50	DRILLER:	W. Lindholm
DRILLING METHOD:	4" ID HSA	LOGGED BY:	K. Teague
		SAMPLER:	SPT



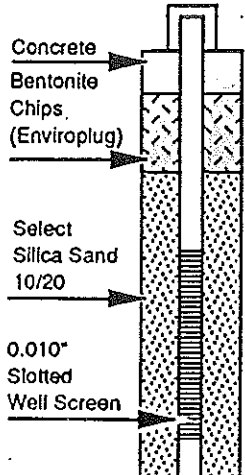
screened in silt/clay?  
15.5 - 18.5 unknown.

BORING NO.	SB-4	ELEVATION:	13.82 ft
LOCATION:		DATE STARTED:	4/1/91
DRILLING AGENCY:	Soil Sampling Service	DATE COMPLETED:	4/1/91
DRILLING EQUIPMENT:	All-terrain CME-50	DRILLER:	W. Lindholm
DRILLING METHOD:	4" ID HSA	LOGGED BY:	K. Teague
		SAMPLER:	SPT



*screened in clay at least 23.5 - 25'*


BORING NO.	SB-1A	ELEVATION:	11.91 ft
LOCATION:		DATE STARTED:	3/28/91
DRILLING AGENCY:	Soil Sampling Service	DATE COMPLETED:	3/28/91
DRILLING EQUIPMENT:	All-terrain CME-50	DRILLER:	W. Lindholm
DRILLING METHOD:	4" ID HSA	LOGGED BY:	K. Teague / D. Walker
		SAMPLER:	

	DEPTH (FEET)	BLOWS / 6 IN.	SAMPLE	GRAPHIC LOG	DESCRIPTION
		—			
	—				
	—				
	—				
	5				
	—				
	—				
	—				
	10				
	—				

BORING NO.	SB-2A	ELEVATION:	11.78 ft
LOCATION:		DATE STARTED:	3/29/91
DRILLING AGENCY:	Soil Sampling Service	DATE COMPLETED:	3/29/91
DRILLING EQUIPMENT:	All-terrain CME-50	DRILLER:	W. Lindholm
DRILLING METHOD:	4" ID HSA	LOGGED BY:	K. Teague / D. Walker
		SAMPLER:	

	DEPTH (FEET)	BLOWS / 6 IN.	SAMPLE	GRAPHIC LOG	DESCRIPTION
Concrete	—				Note: Not Sampled. Stratigraphic information from Well SB-2, except as noted (*)
Bentonite Chips (Enviroplug Medium)	—				
Select Silica Sand 10/20	5				(3.5 - 5.5) Loose, wet to saturated, dark gray to brown fine to medium sand (SP), trace of silt, trace of clayey blebs to 4mm diameter (FILL)
0.010" Slotted Well Screen	10				* (7.0 - 8.5) Refuse encountered
					(8.5 - 10.5) Soft, saturated, gray-brown clay (CL) with abundant roots and rootlets

Screened in day 8.5 - 10.5'

Project No. 91C0191A	Silhe Energies, U.S.A., Inc. Tacoma Cogeneration Project	LOG OF BORING SB-2A	SHEET 6 of 7
Woodward-Clyde Consultants 			

BORING NO.	SB-3A	ELEVATION:	13.26 ft
LOCATION:		DATE STARTED:	3/29/91
DRILLING AGENCY:	Soil Sampling Service	DATE COMPLETED:	3/29/91
DRILLING EQUIPMENT:	All-terrain CME-50	DRILLER:	W. Lindholm
		LOGGED BY:	K. Teague / D. Walker
DRILLING METHOD:	4" ID HSA	SAMPLER:	

		DEPTH (FEET)	BLOWS / 6 IN.	SAMPLE	GRAPHIC LOG	DESCRIPTION
						Note: Not Sampled. Stratigraphic information from Well SB-3
						(3.5 - 5.5) Loose to medium, dense, saturated, medium sand (SP) trace of fine sand (FILL)
		5				
		10				(8.5 - 10.5) Very soft, saturated, gray-tan clay (CL) with some darker gray vertically oriented streaks

*Screen in clay 8.5-10.5' (at least)*



**ProLogis  
Taylor Way Property**

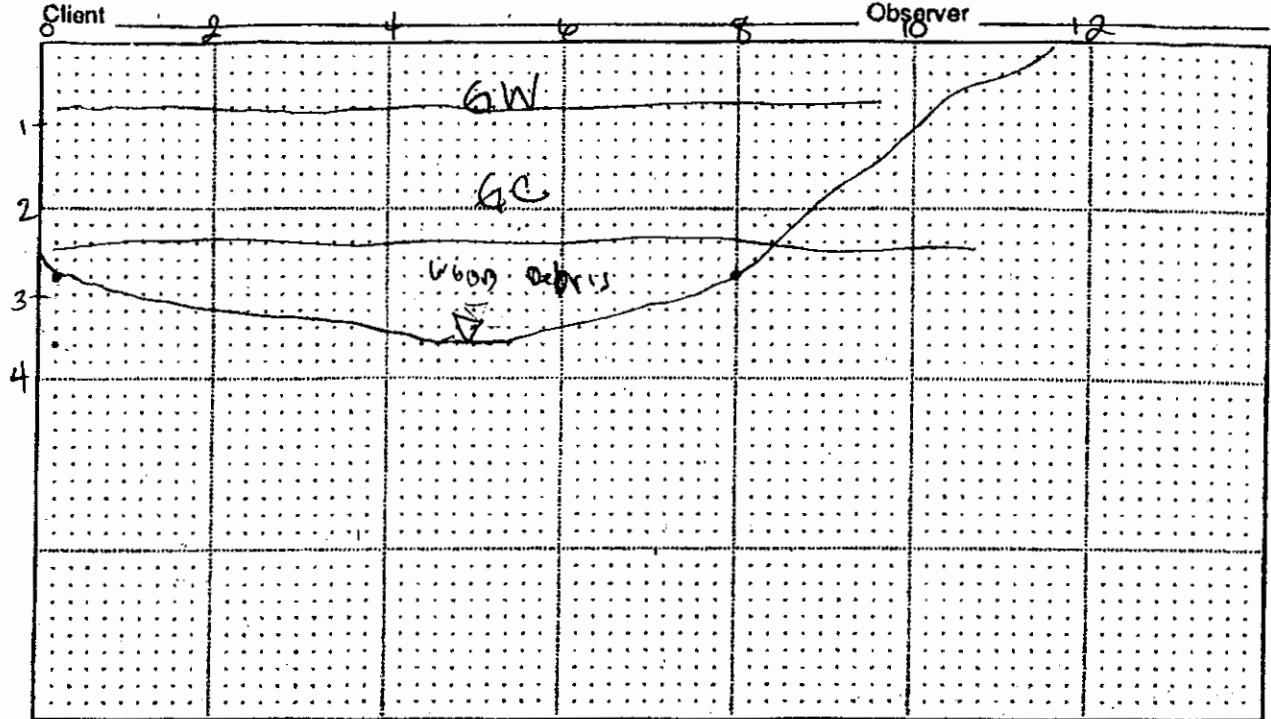
## **Remedial Investigation**

### **Appendix D Test Pit Logs and Soil Boring Logs**

# Log of Test Pit

TEST PIT NO. TP-1  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. Prolog-TWP.T5



Comments/Field Notes: H<sub>2</sub>S odor, possibly reduced, @ 0.8 ft bgs geotextile fabric  
PID reading = 0.0 ppm Photos 3&4

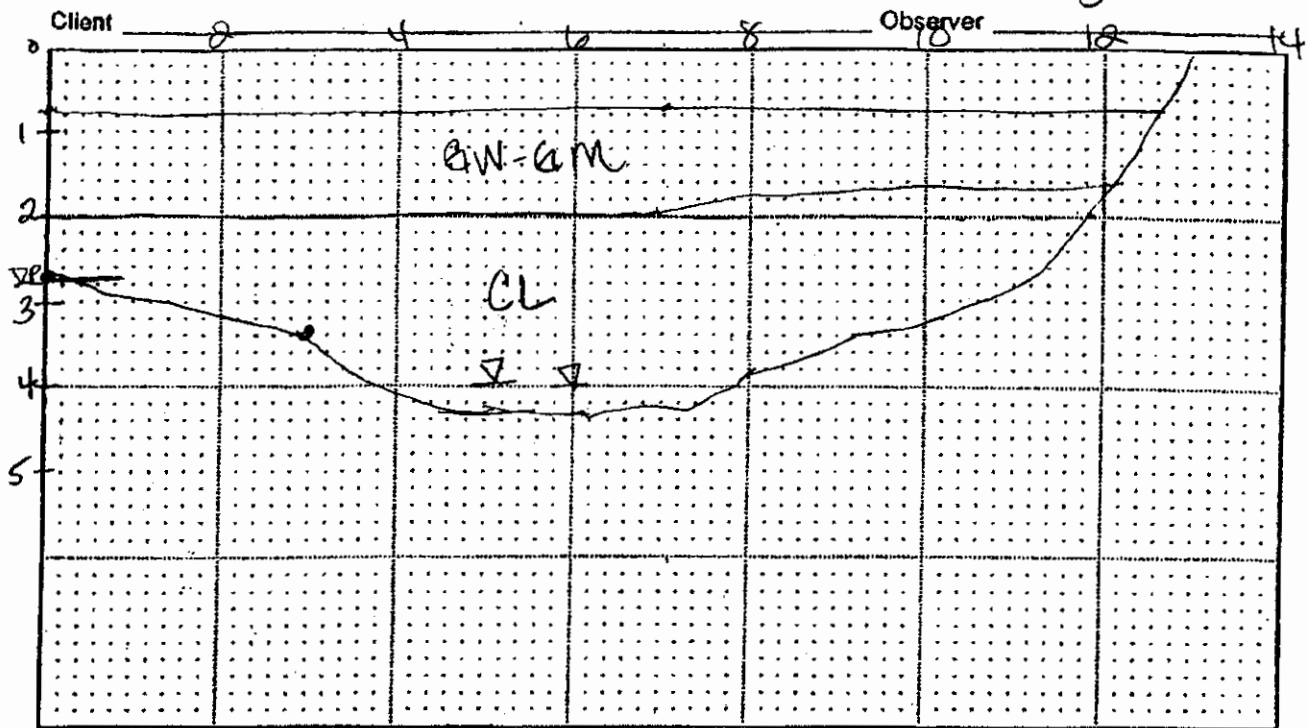
Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Screen Other Tests
0-0.9	GW	lt brown; Dark gray top; SANDY GRAVEL, WELL graded; moist; well graded gravel w/ sand			No screen
0.9-2.25	GC	lt GRAY; clayey clay w/ sand, plastic, COBBLES - c. 1/2" wood/lumber fragments; charcoal			No screen
2.3-3.5		Dark gray; gravelly organic silty; brick, wood, etc. alloy; rounded cobbles, lumber & wood debris → piece of rubber hose			No screen
		→ Dig deeper (3.8 ft) slight screen, no odor - could be due to organics	TWP05-01-04 3.4-3.8 ft 11:55	1 4oz jar - 3 vials capsules	Slight screen @ water table

- Test Pit completed to 3.8 ft. on (date) 1/24/05 11:28
- No ground water seepage encountered
- (Describe/Quantity) AGWLPAM ground water seepage encountered at 3.7 ft.

# Log of Test Pit

TEST PIT NO. TP-2  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. Prolog-TWP.TS



Comments/Field Notes: At 3ft, <sup>contact</sup> fill w/ cooking tube, groundwater @ 2.6ft, water w/ seepage, suds? sheen, decayed or wet wood odor

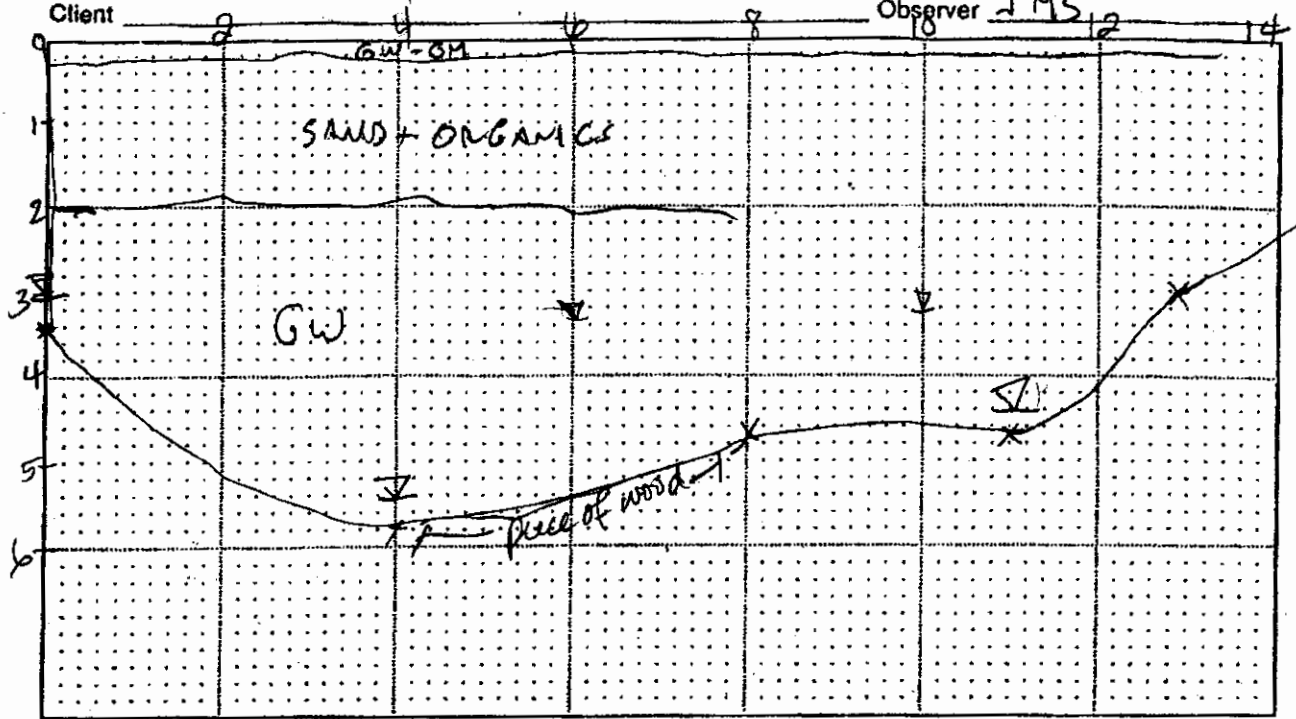
Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-0.7		Lt Brown, SANDY GRAVEL; moist; non-plastic			No sheen
0.7-2.0	GW-GM	dk grey; roots, piece of cable, scraps metal w/ sawdust, fill @ contact cooking tube → well graded gravel w/ silt			No sheen
2.0-4.2	CL	dark grey; light grey; clayey, wood fragments, gypsum? → clayey gravel w/ sand → @ water table wood debris/fragments	TWP05-02-01-2.8ft 12.46	14.02 per 2 capsules	No sheen

• Test Pit completed to 4.2 ft. on (date) 1/24/05 12:51  
 • No ground water seepage encountered  
 or • (Describe/Quantity) Abundant ground water seepage encountered at 4.0 ft.

# Log of Test Pit

TEST PIT NO. TP-3  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. Prologis-TWP-TS  
 Client \_\_\_\_\_ Observer JMS



Comments/Field Notes: FACW @ NW;  
PID reading - 0 ppm

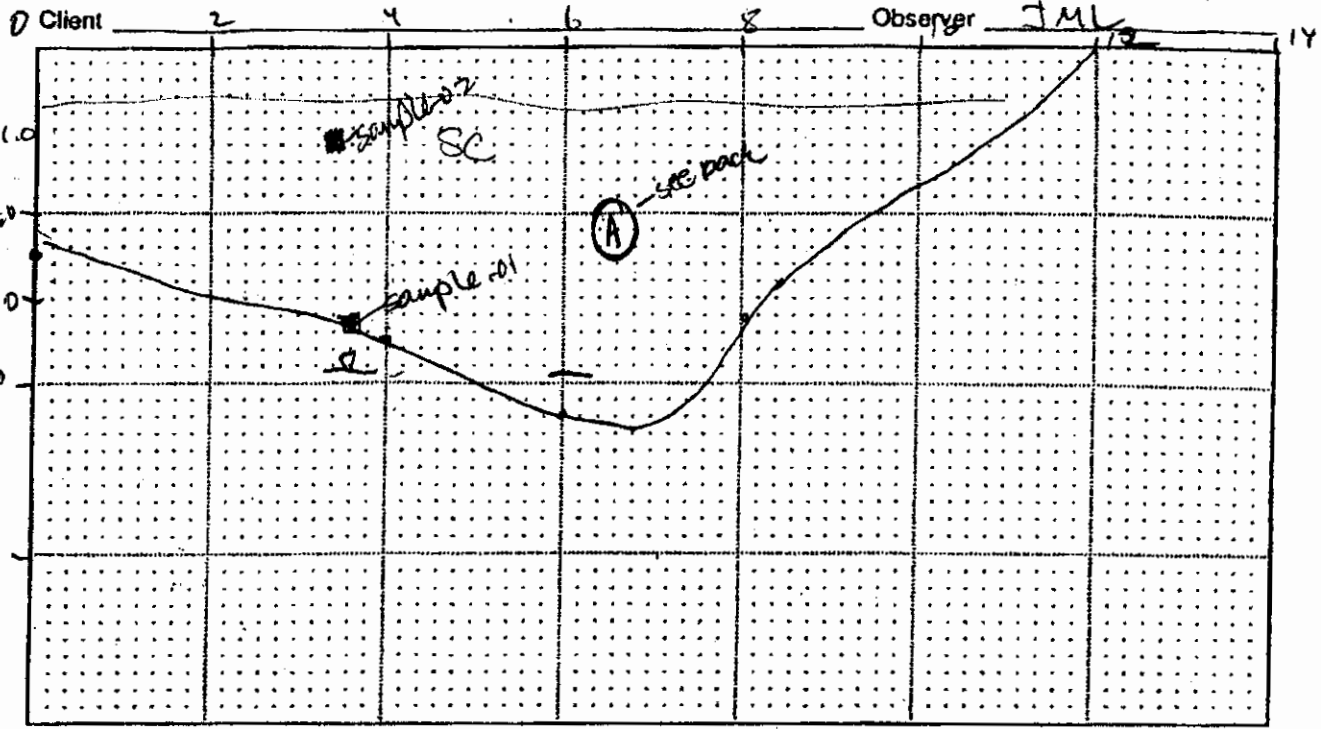
Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	SWEN Moisture Content, %	Other Tests
0-0.2	GW-GM	LT BRN; SANDY GRAVEL; MOIST - FILL TR ROOTS		ND	
0.2-2.0	<del>SP</del> SP 6	DK BRN; POORLY GRAINED FMSA; MOIST TR PLASTIC + METAL STRAPPING, AL GLASS. ROOTS; Possible pockets of white GYPSUM	1.0 @ 1330 3-CAPS	ND	
>2.0	GW	LT OLIVE GRAY; GRAVELLY SAND w/ 5% WOOD FRAGMENTS + POCKETS OF WOOD CHIPS (SANDWICH?) + COBBLES. MOIST - WET	1-4 @ JAC		

• Test Pit completed to 5.8 ft. on (date) 1/27/05 1st: 13:30  
 • No ground water seepage encountered  
 ✖ (Describe/Quantity) Abundant ground water seepage encountered at 5.5 ft.

# Log of Test Pit

TEST PIT NO. TP-4  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. \_\_\_\_\_



Comments/Field Notes: FACING SE: PID reads 0.0 in Test Pit.  
1/25/05: went back to pit to collect sample of light gray layer w/ white gypsum as possible line solvent sludge.

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-0.6		light, moist, gravelly sand, poorly graded, roots trace cobbles (F-m)			
0.6-2.9	SC	light gray, sand w/ clay poorly graded, n. 0.0% gravel size white medium plasticity - clayey sand (moist, fill, plastic, roots, trace gravel, roots)	TP-05-04-02 15:55	14% 3 caps.	NO sheen
2.9-		Debris, wood, cobbles, Fm sand, plastic ↳ gravelly sandy acid debris, lumps	TP-05-04-01 3.16 ft 14:15	14% 3 Vol capsules	NO sheen
		- ground table suds, no sheen			

• Test Pit completed to 4.4 ft. on (date) 1/24/04 14:10  
 • No ground water seepage encountered  
 or • (Describe/Quantity) ABUNDANT ground water seepage encountered at 3.8 ft.

TP-4

(A) Layer Description

White specs  $\approx$  10% - 15%

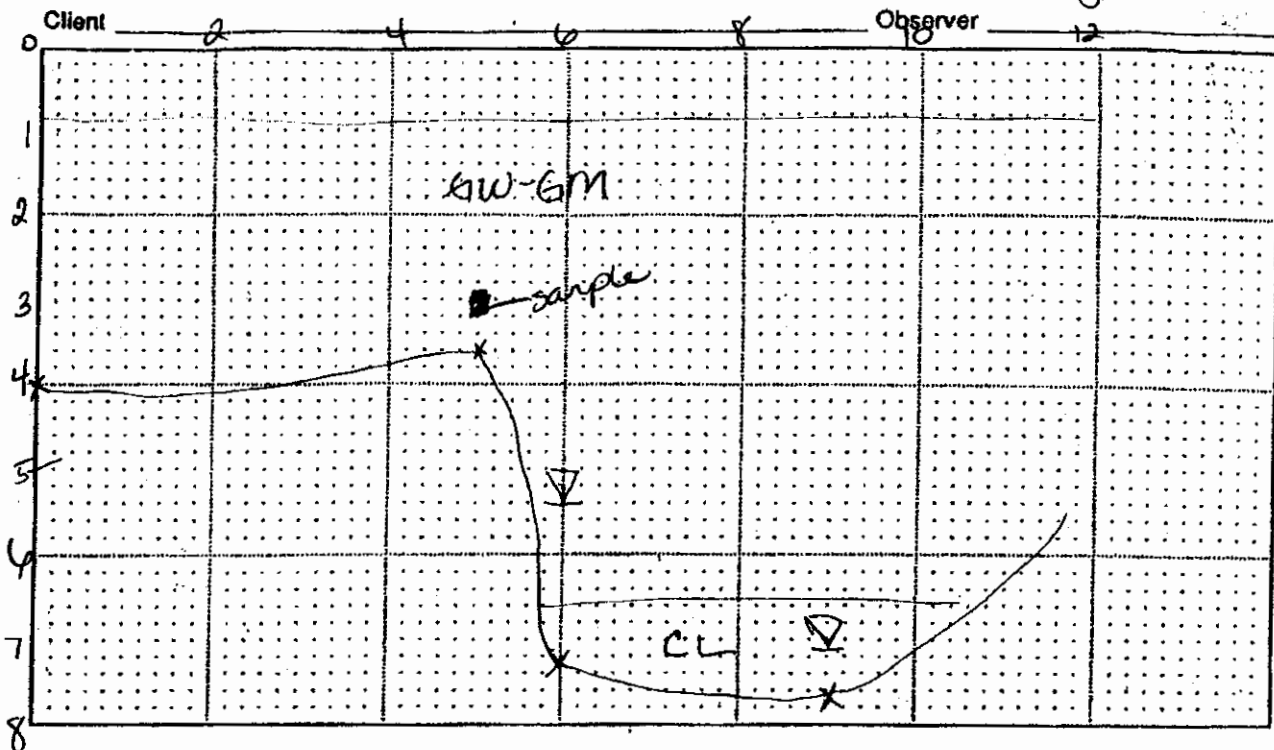
Color: Gray varies from N-4 to N-7  
light to dark

$\Rightarrow$  Intermixed w/ sand w/  $< 5\%$  silt, gray clay lumps  
Low white specs above  
N-4 to N-5

# Log of Test Pit

TEST PIT NO. TP-5  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. Prolog-TWP-T5



Comments/Field Notes: \_\_\_\_\_  
PID reading = 0

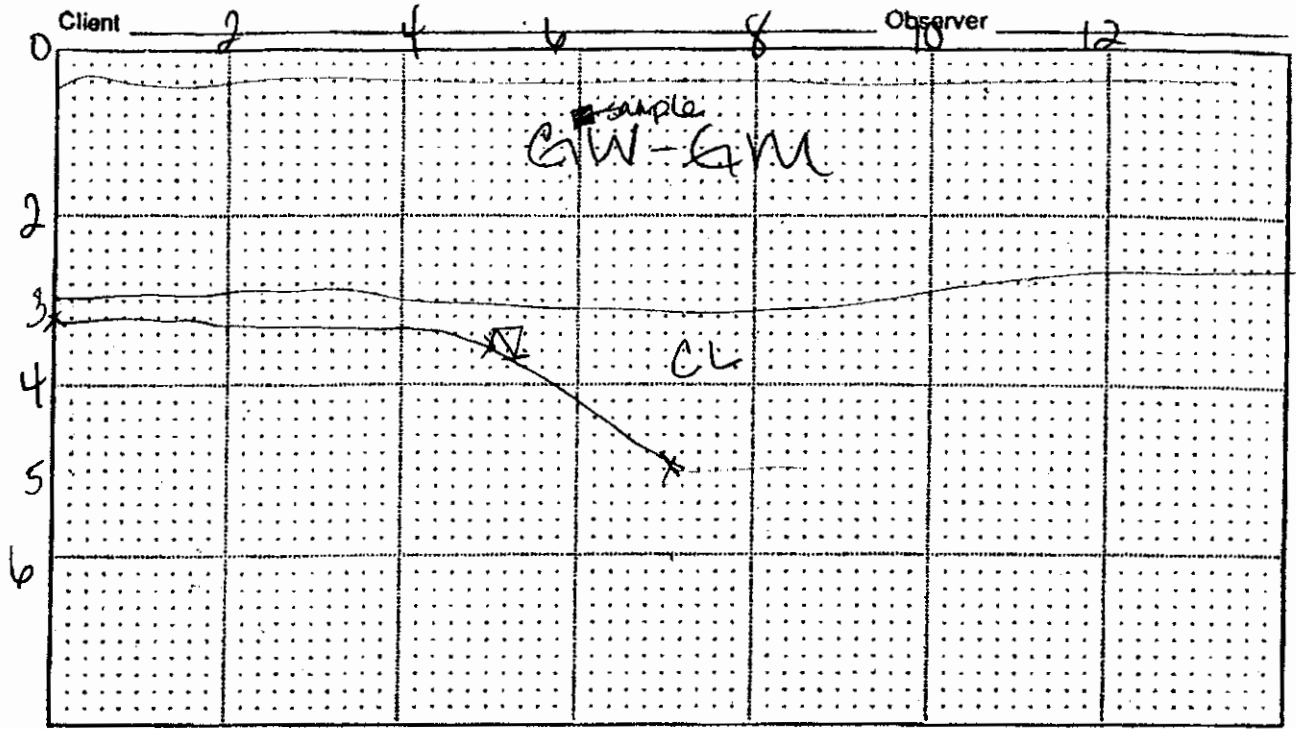
Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-0.9		lt brown, SANDY gravel, well graded moist			No shear
0.9-6.6	SW-GM	Dark grayish brown with mottled gravel and pieces of roots, moist, 2-3% plastic silt - fragments, metal, plastic	TWP05-05-01 3ft DYS 16:15		No shear
6.6-7.6	CH	Brown high plasticity clay, lean clay, thin reddish, full brown roots, decayed wood, peat to reddish, NATIVE, soft - No shear or sudo in groundwater table. Just earthy odor-clean.			

• Test Pit completed to 7.6 ft. on (date) 11/24/05 19:32  
 • No ground water seepage encountered  
 or • (Describe/Quantity) Seepage ground water seepage encountered at 7 ft.

# Log of Test Pit

TEST PIT NO. TR6  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. \_\_\_\_\_



Comments/Field Notes: Ground around pit soft, wet  
PID reading = 0 ppm

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-0.2	<del>GW-GM</del> GW-GM	Dark brown, sandy gravel w/ silt, well graded moist			No Shear
0.2-2.3	<del>GW-GM</del> (1.6-2.3) GW-GM	Dark cream gray, sandy gravel silt cobbles - trace on shell - to shell - NO oclars, just lumpy oclars	TW05-06-01 1 ft bag 8 15:55		No Shear
2.3-3.3	CL	Gray high plasticity lean clay, moist, soft vacuum tubes placed in it			No Shear

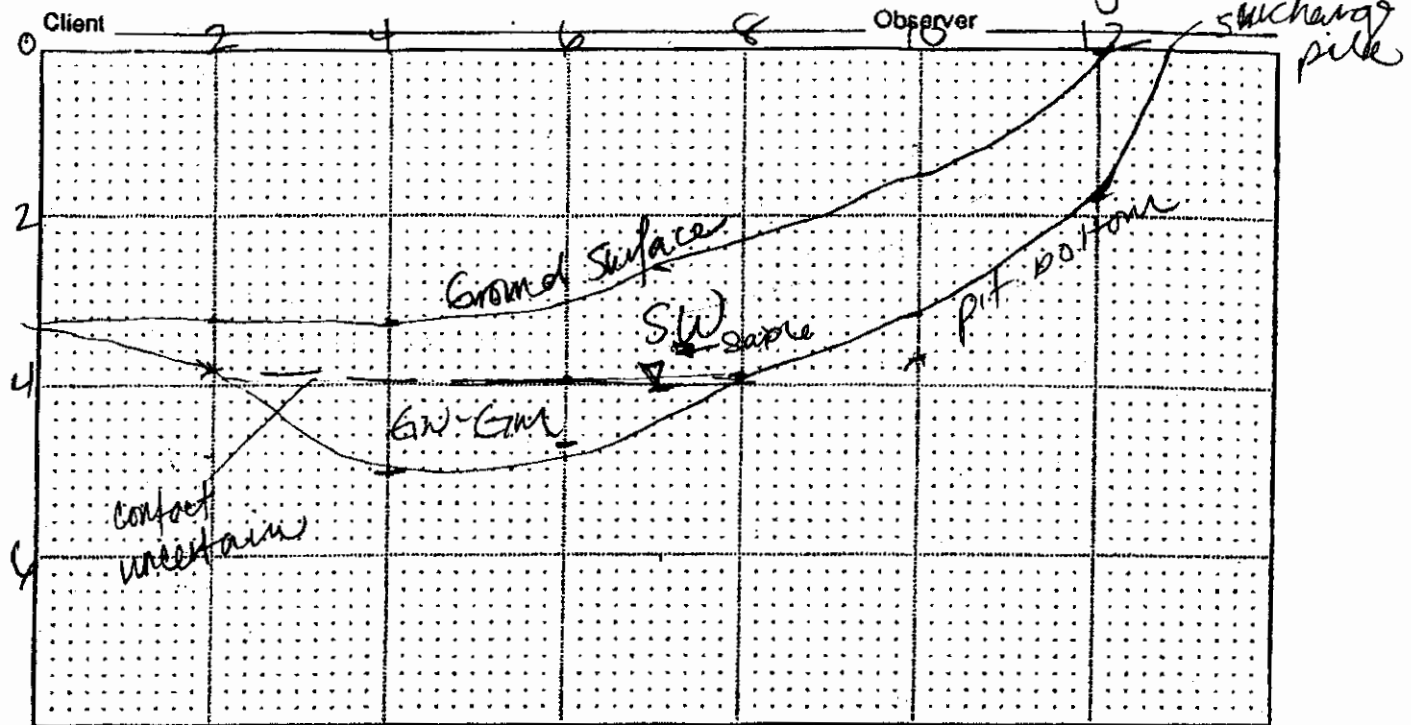
• Test Pit completed to 4.7 ft. on (date) 1/24/05 15:55  
 • No ground water seepage encountered  
 or • (Describe/Quantity) abundant seepage ground water seepage encountered at 1 ft ft.  
 onward on west end near 0 on x axis



# Log of Test Pit

TEST PIT NO. TP-9  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. PROLOG-TWP.TS



Comments/Field Notes: Side of surcharge pile w/ log pieces, scrap metal, concrete, PID = Ø pmu

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-4	SU	Sand well graded w/ 15-20% gravel dark brown & 5% concrete rubble, brown moist, roots, rounded cobbles & angular	TP05-09-4 3.6 ft 9:00	1.40% 2 caps	NO SHEAR
4-	GW-GM	Gravel w/ < 5% silt, sand, 10% white fine pink clay fine			

• Test Pit completed to 5.0 ft. on (date) 1/20/05 8:54  
 • No ground water seepage encountered  
 or • (Describe/Quantity) moderate ground water seepage encountered at 4.0 ft.

# Log of Test Pit

TEST PIT NO. TP-10

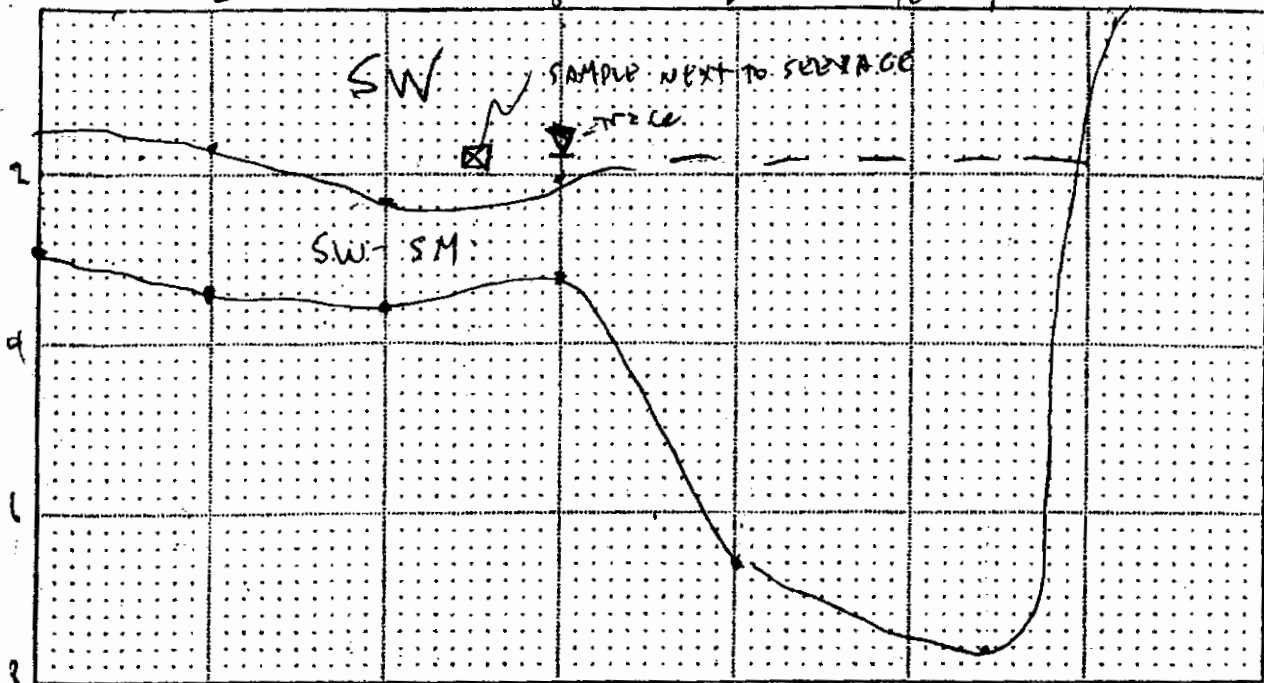
(Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_

Project No. Prolog-TWP JS

Client \_\_\_\_\_

Observer JMS



Comments/Field Notes: FACING NE P10-0  
PID reading = 0 ppm

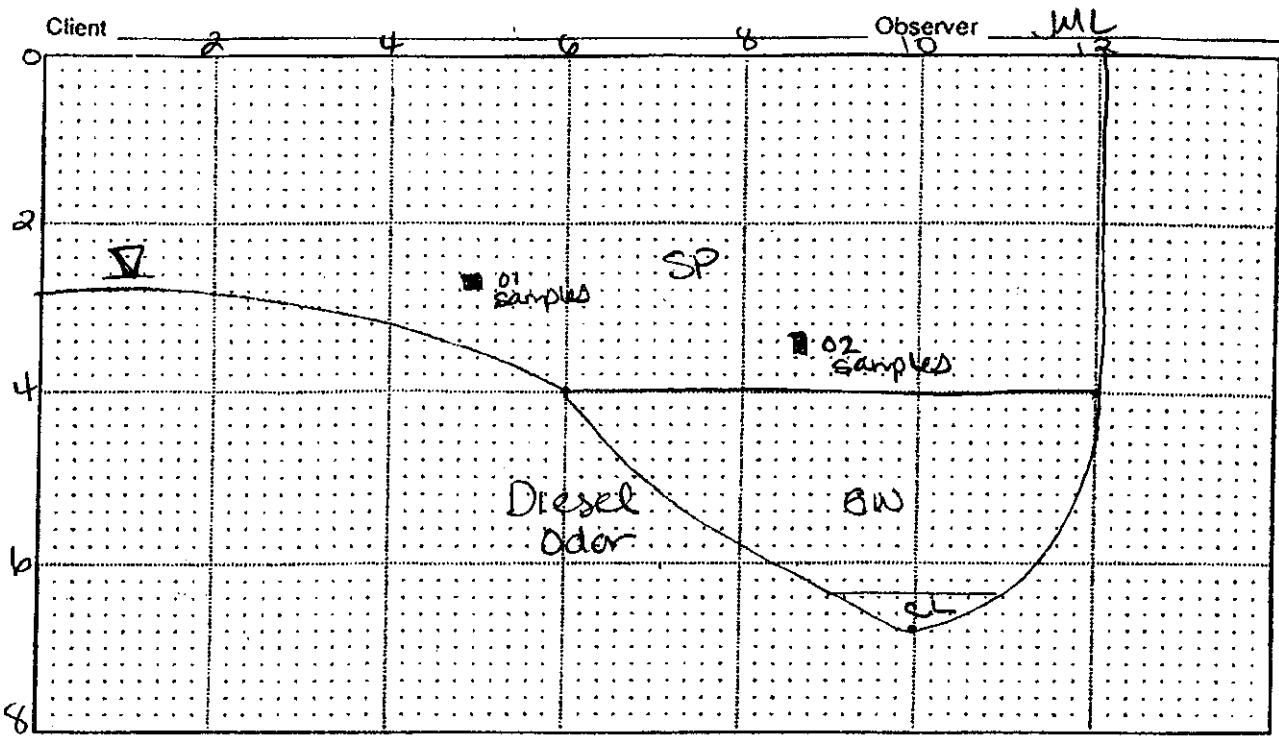
Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-	SW	LT BRN; Poorly Graded SAND (f-m), < 5% root hairs, tr wood fibers; < 10% LT BRN SILT LUMPS; < 1/2" max + ANG OV. MOIST, brick frags, metal pieces, GLASS. METAL STRAP, FLOOR TILE	TW005-10-01 8.50 2.8 ft	14% - 3% caps	NO SHEAR NO PERM odor
~2.0-	SW-SM	DK GRAY; Poorly Graded SAND w/ 20% ANG + FINE OV, TR COBBLES. LOW PLASTICITY 10% FINE SILTY, MOIST - WET; WOOD FRAGS, PLASTIC, LUMBER (about 3-4%) → W/ GRASS SANDW/ SILT + GRAVEL			NO SHEAR NO PERM odor

• Test Pit completed to 7.6 ft. on (date) 1/26/05 8:09  
 • No ground water seepage encountered  
 or • (Describe/Quantity) TRACE ground water seepage encountered at 1.8 ft.

# Log of Test Pit

TEST PIT NO. TP-11  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. \_\_\_\_\_



Comments/Field Notes: \_\_\_\_\_

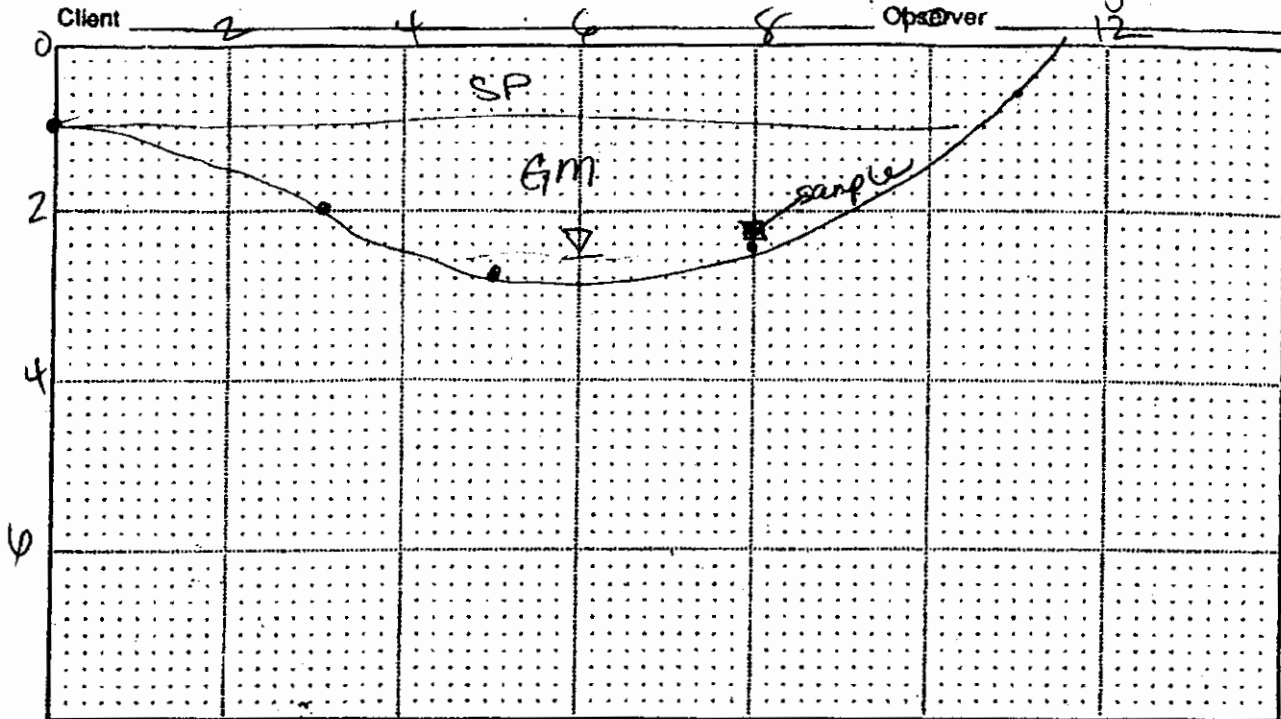
Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-4.0	SP	DK BENV; poorly graded sand, 25% fines 315% gravel moist to wet, roots in upper part, Brick fragments, creosote treated wood, lumber	TWP05-11-01 2.5 ft 16.0	14oz jar 3 caps	No sheen
4.0-6.2	BW	Greenish gray, gravel; well graded sand w/ cobbles 2 3.5 ft odor-fuel, loose, wet, dense sheen 2 water collecting 2 5ft, not 2 water 2 3ft. Geotextile memb,	TWP05-11-02 3.5 ft 16:25 waste pile	14oz 3 caps	Sheen @ 3.5 ft
6.2 -	CL	Native, dark yellowish brown; medium plasticity; clay black - brown, black relief, thin bedded or plant material			

- Test Pit completed to 6.9 ft. on (date) 1/25/05 16:00
- No ground water seepage encountered
- or • (Describe/Quantity) moderate ground water seepage encountered at 3.0 ft.

# Log of Test Pit

TEST PIT NO. TP-12  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. Prolog-TWP.TS  
 Client \_\_\_\_\_ Observer \_\_\_\_\_



Comments/Field Notes: Slight seen on groundwater  
PID = 0.1 ppm  
Faint petroleum fuel odor.

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-1	SP	<u>DRK BROWN; poorly graded sand of gravel</u>			
1-	GM	<u>GREEN GR; well graded gravel, sand &amp; silt</u>	<u>TWP05-12-01-1403</u> <u>13:23</u> <u>2.2 ft</u>	<u>3 caps</u>	<u>Nosheen</u>

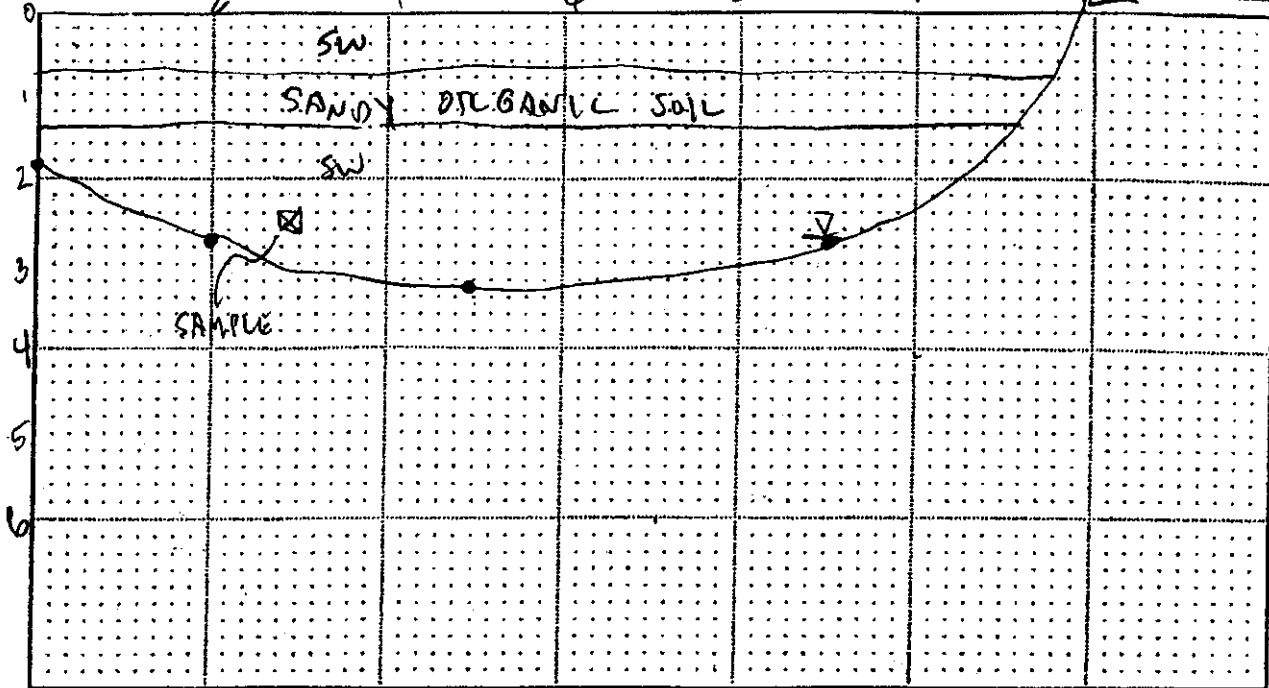
• Test Pit completed to 3.0 ft. on (date) 1/26/05 13:15  
 • No ground water seepage encountered  
 or • (Describe/Quantity) abundant ground water seepage encountered at 2.4 ft.

# Log of Test Pit

TEST PIT NO. TP-13  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. Prolog-TWP.15

Client \_\_\_\_\_ Observer \_\_\_\_\_



Comments/Field Notes: \_\_\_\_\_

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-0.7	SW	DK BRN; W/ WOOD FRAGMENTS & ROOTS, MOIST, PARTLY ORGANIC ROOTS			NO SHEAR
0.7-1.6	L.6	DK BRN; SANDY ORGANIC SOIL; F-M SAND; 1-2% CLAY; MOIST ROOTS, LARGE WOOD DEBRIS, LUMBER AND GUANO; ANG. G.U.			NO SHEAR
>1.6	SW	GRAY; W/ WOOD FRAGMENTS & ROOTS <5% FINES; TR WOOD FRAGMENTS; A FEW WOOD DEBRIS (LUMBER) DEBRIS, PLASTIC TAPE. MOIST-WET	TWP15-13-01-1403 15:30 300g		

• Test Pit completed to 3.3 ft. on (date) 1/25/05 14:37

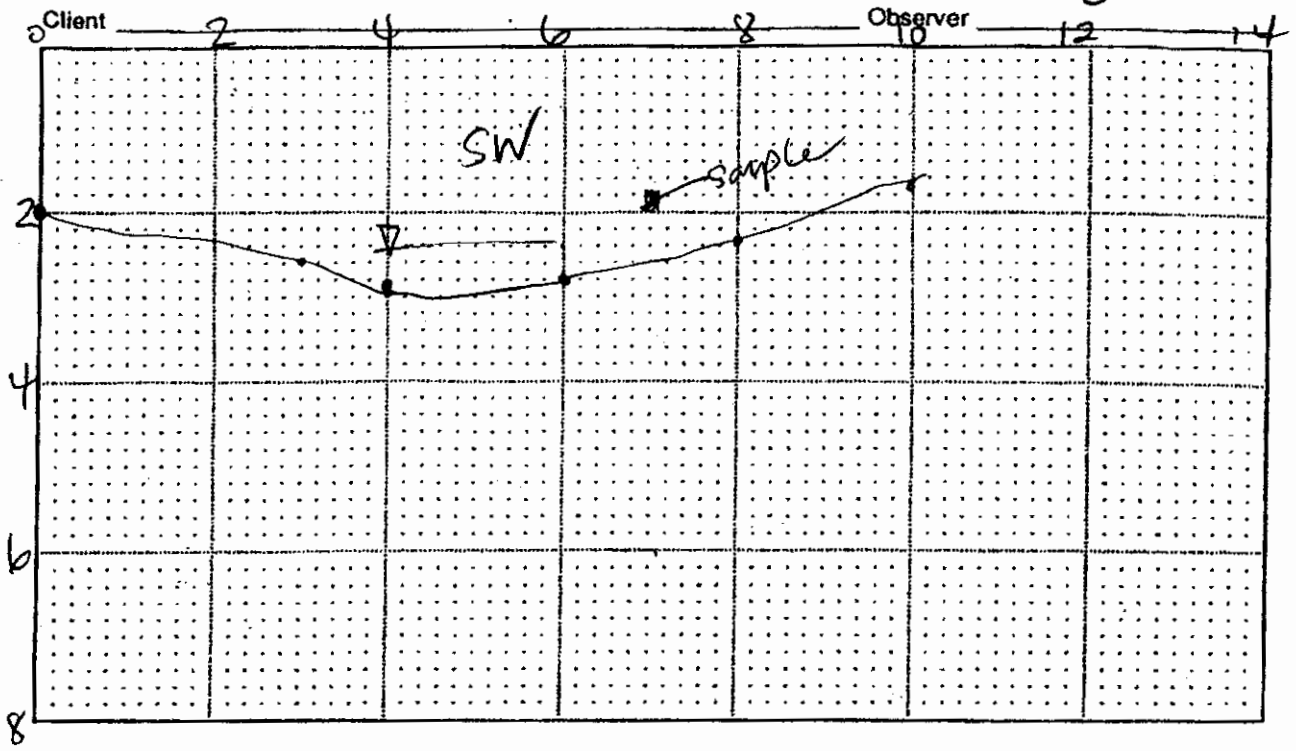
• No ground water seepage encountered

or • (Describe/Quantity) abundant ground water seepage encountered at 2.6 ft.  
seepage

# Log of Test Pit

TEST PIT NO. TP-14  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. Prolog-TWP



Comments/Field Notes: \_\_\_\_\_

Depth (ft.)	USCS Symbol	Description odor, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-2.9	SW	LT BNA, GY MDEL, poorly graded sand (FM) with gravel, 2% sand, moist-wet concrete rubble, cobbles - 34% trace weed, no odor, no sheen on water, trace roots	TW05-14-D1 1.8 ft 10:38	1.4% 1.4% 3 caps	- No Sheen

• Test Pit completed to 2.9 ft. on (date) 1/26/05 10:32  
 • No ground water seepage encountered  
 or • (Describe/Quantity) moderately-fast ground water seepage encountered at 2.9 ft.  
 Seepage @ 1.4 →

# Log of Test Pit

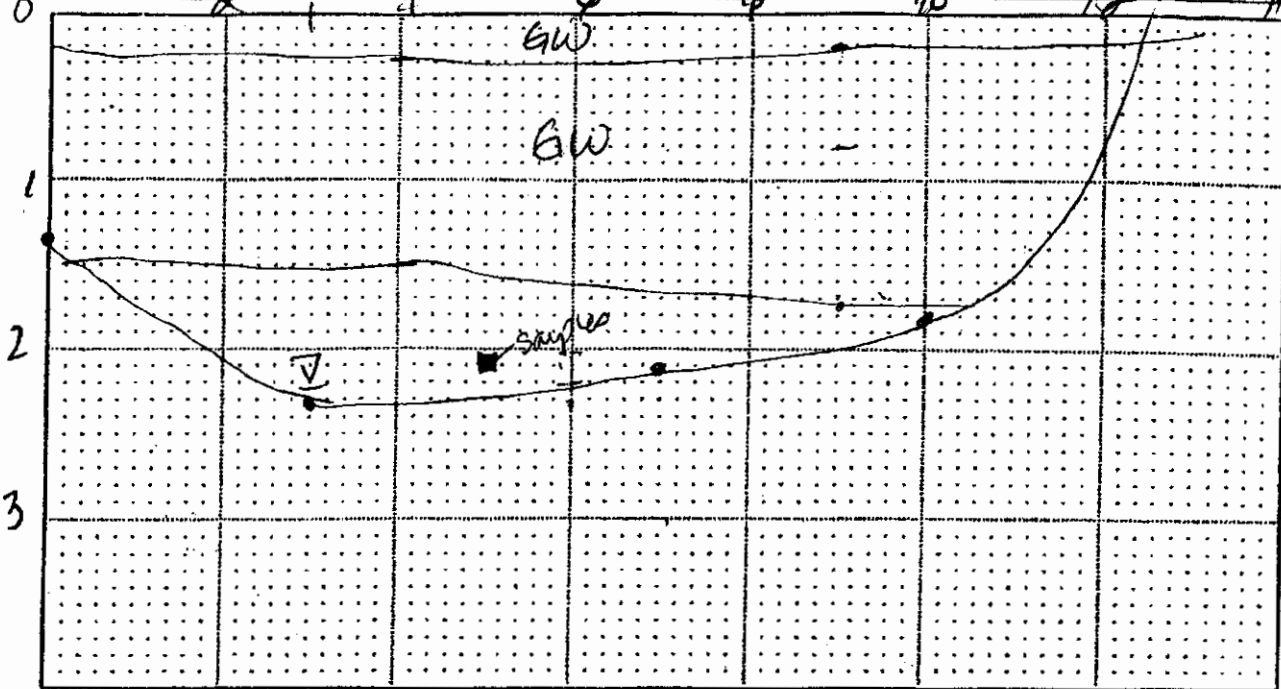
TEST PIT NO. TP-15-mixed  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_

Project No. 110

Client \_\_\_\_\_

Observer \_\_\_\_\_



Comments/Field Notes: Relocated TP-15 ~15 ft N, due to high water table ~ 2 ft  
shds, no sheen. Earthy odor, no TPH odor.  
OR WATER

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-0.3	GW	LT GRN, gravel, well graded w/ sand 25% MOIST			NO SHEEN
0.3-1.0	GW	gray gravel w/ 25% sand, well graded MOIST	TP15-15-01 1.5 ft depth 11:50	1.4% - 3 cap.	NO SHEEN
1.0-1.5		One brown organic matter rock fragments LT moist-wet	TP15-15-02-1403 11:50	3 cap 3-10%	NO SHEEN

• Test Pit completed to 2.3 ft. on (date) 1/25/05 11:29 am

• No ground water seepage encountered

OR • (Describe/Quantity) abundant ground water seepage encountered at 2.2 ft.

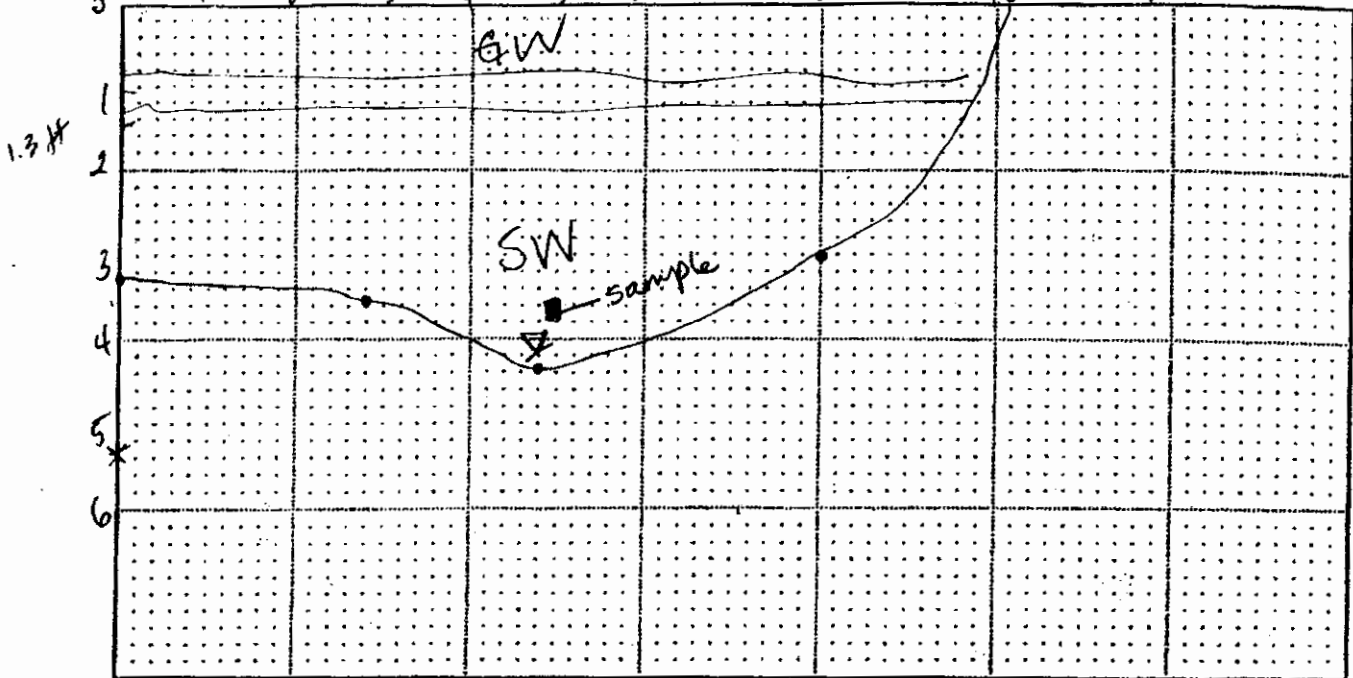
272-8527 → 819-7780  
 ← 277-8527

# Log of Test Pit

TEST PIT NO. TP-16  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. Prolog-TWP. T5

Client \_\_\_\_\_ Observer 12



Comments/Field Notes:

PID reading = 8

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-0.2		Asphaltic concrete pavement			
0.2-0.7	GW	light brown sandy gravel, well graded gravel of sand, moist, non-plastic ↳ no debris			NO sheen
0.7-1.2		gray well graded gravel w/ sand trace of wood, moist, non-plastic			NO sheen
1.2-1.3		dk brown - saw dust, organic, sub horizon wet sand, moist-dry			NO sheen
1.3-	SW	medium gray, debris of 50-70% brick fragments trace metal, dry ↳ gravel w/ sand	TWPOS-16-01 4.3 ft TWPOS 16-500-1 3.9 ft 10:00	1103 3 caps 1403 3 caps	NO sheen

- Test Pit completed to 4.0 ft. on (date) 1/29/05 8:57 am
- No ground water seepage encountered
- or • (Describe/Quantity) abundant ground water seepage encountered at 4.1 ft.  
trace sheen on water

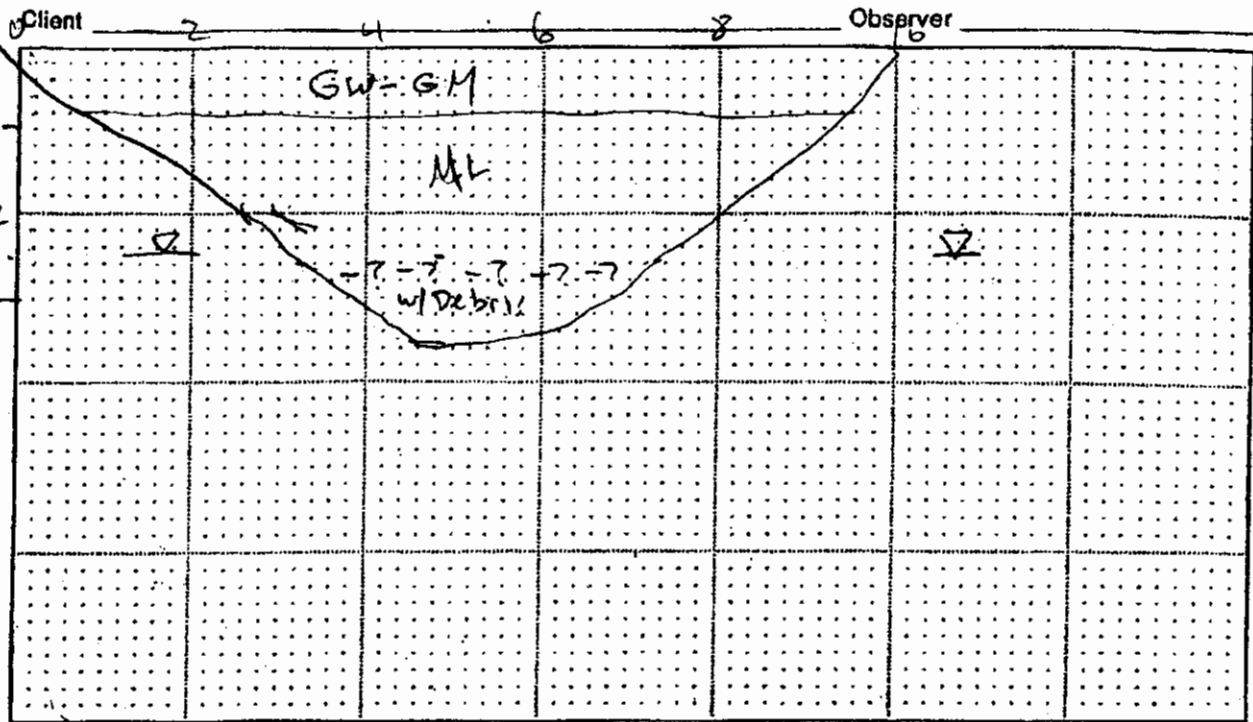


# Log of Test Pit

TEST PIT NO. TP-17  
(Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_

Project No. PROLOG-TWP.15



Comments/Field Notes: FACING NW

P10 lean o.b. creosote odor; water table has traces of sheen; suds  
Photos 1; 2

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	P10 Moisture Content, %	SMERW Other Tests
0-0.8	GW-GM	LT BRN; WEN G.W. D.D. GV W/ SF + SA; CRIBBLE SLIGHTLY OXIDIZED; WET; FILL			No sheen, no odor
0.8-2.5	ML	LT GRAY; CL; LEAN CLAY; DRY; 5-10% rounded coarse fill, soft siltstone, shale, w/ gravel	TWPOS-17-01 1.2-1.8 ft bags 10:55	3 vol caps - 2 for pH - 3 vol vials	No sheen, no odor
2.5-?	?	Fill contains brick fragments; creosote treated timber gravel, coarse	TWPOS-17-02 2.2-2.4 ft bags 10:55	1 4oz jar - 3 vol caps	

• Test Pit completed to 3.5 ft. on (date) 1/27/05 10:25

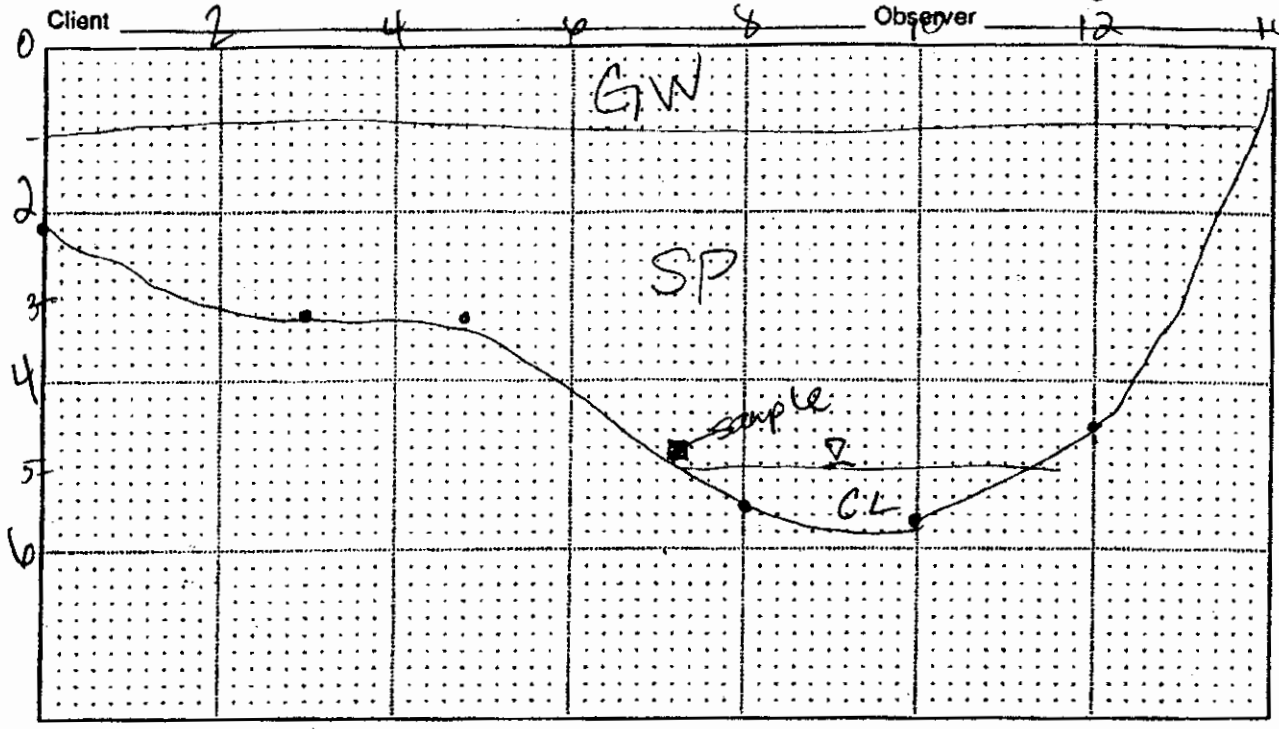
• No ground water seepage encountered

OR • (Describe/Quantity) ABUNDANT ground water seepage encountered at 2.5 ft.

# Log of Test Pit

TEST PIT NO. TP-18  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. Prolog-TWP. TS  
 Client \_\_\_\_\_ Observer \_\_\_\_\_



Comments/Field Notes: No odors

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-1	GN	Brown, <del>very</del> <del>fine</del> <del>grained</del> <del>well</del> <del>sorted</del> <del>gravel</del> <del>with</del> <del>scant</del> <del>moist</del> <del>roots</del>			NO SKIN
1-4.5	SP	Brown, <del>poorly</del> <del>sorted</del> <del>sand</del> <del>fine</del> <del>gravel</del> <del>covered</del> <del>with</del> <del>brack</del> <del>sea</del> <del>holes</del> <del>moist</del>	TP0005-18-01 4.3 ft (2)g 14:17	14.0% - 3 caps.	" "
4.5-	CL	Gray, medium plasticity, < 30% <del>coarse</del> <del>lean</del> <del>clay</del> tree roots, moist, soft			" "
		- At water table hit PVC pipe <sup>water</sup> to top of also hit copper water pipe - old (1ft deep)			

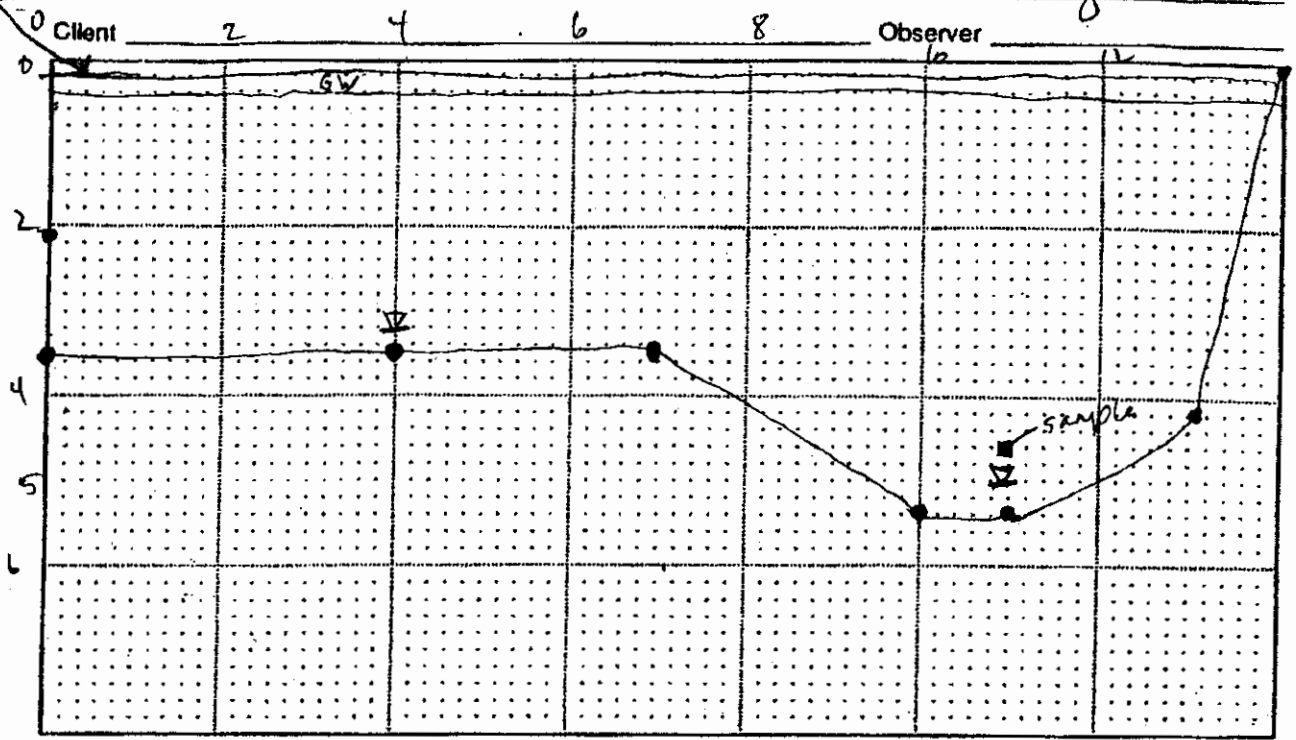
• Test Pit completed to 5.7 ft. on (date) 1/25/05 14:00  
 • No ground water seepage encountered  
 or • (Describe/Quantity) moderate ground water seepage encountered at 4.5 ft.

# Log of Test Pit

asphaltic concrete project

TEST PIT NO. TP-19  
(Approx. Elev. \_\_\_\_\_ ft.)

Project No. Prologis - RWP 15



Comments/Field Notes: \_\_\_\_\_

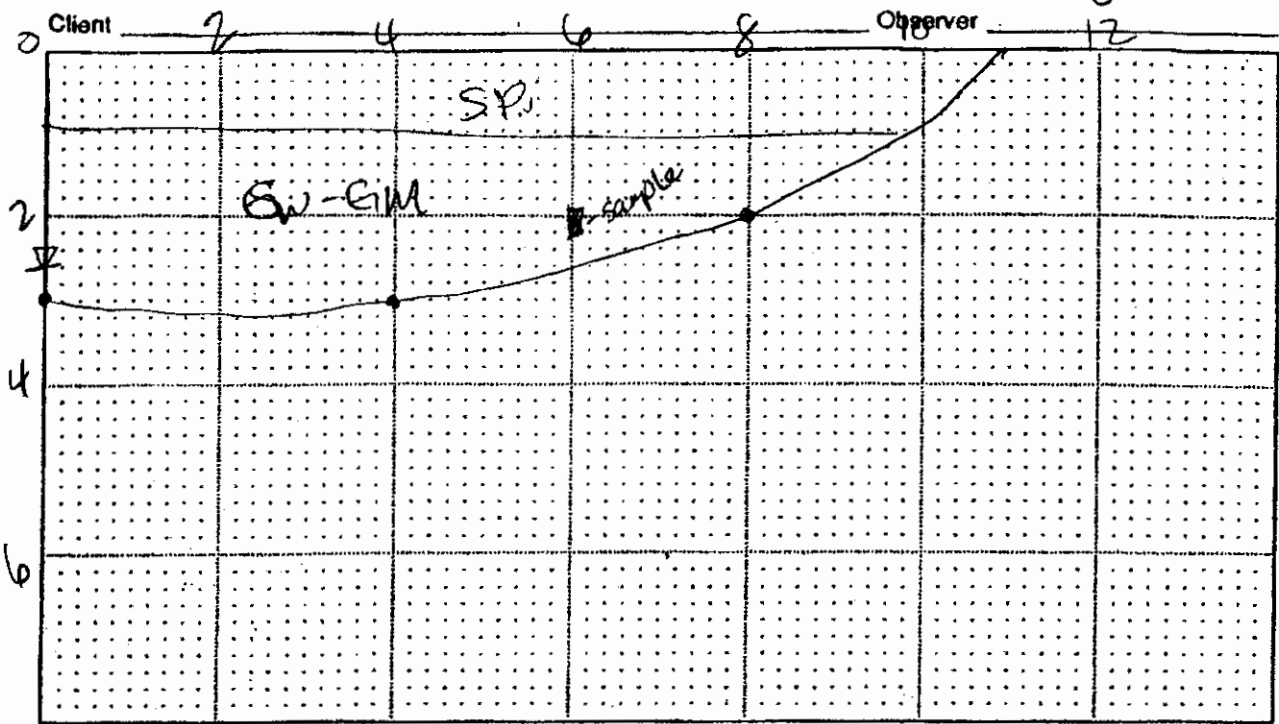
Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-2		Asphaltic concrete			
2-4	GW	light brown; well graded gravel with sand 5% fines moist			no screen
>4		dark olive gray; sand (F-M) with gravel (sand & cobbles) & brick abundant woody debris + 2" moist to wet	TWPOC-19-01 5.3 ft deep 10:38	100% 3 cups	

- Test Pit completed to 5.5 ft. on (date) 1/25/05 10:05 am
- No ground water seepage encountered
- or • (Describe/Quantity) moderate ground water seepage encountered at 5.0 ft.

# Log of Test Pit

TEST PIT NO. TP-20  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. Prolog-TWP-T5



Comments/Field Notes: PD = 0 ppm  
small sheen on water, waste pile, petroleum smell

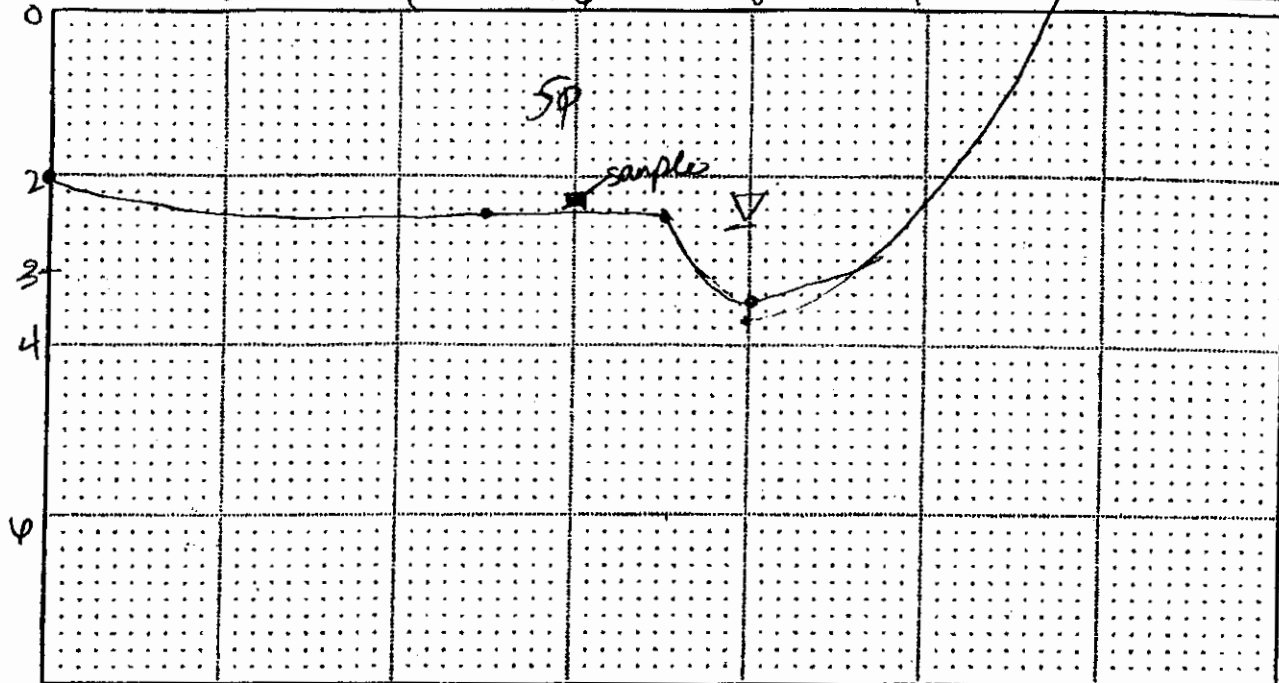
Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-1	SW	BT BR, <del>reddish</del> <u>reddish</u> sand (Fm) w/ gravel - 15% most, roots			NO sheen
1-1.2		black asphalt, concrete			
1.2	GW-GM	gray well sorted, 1/4 sand & 5% fines fairly persistent for - fine out block 10% silt	TWP05-20-01 12:07	1405 30PS	NO sheen
		Discrete Block	TWP05-20-02 12:10	1 1/2 L plastic ITL water	

• Test Pit completed to 3.0 ft. on (date) 1/26/05 11:55  
 • No ground water seepage encountered  
 or • (Describe/Quantity) abundant ground water seepage encountered at 2.2 ft.

# Log of Test Pit

TEST PIT NO. TP-21  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. Prolog-TWP.T5  
 Client 2 4 6 8 Observer \_\_\_\_\_



Comments/Field Notes: \_\_\_\_\_

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-2.8	SP	Dark yellow, sand with poorly graded, vac pink rounded gravel - fill 2.5% fragments poorly graded sand poorly graded sand.	TP-21-01-1403 2.2 ft bags 13:01	3.6%	No shear
			TP-21-500-403 2.2 ft bags 13:01	3.6%	

- Test Pit completed to 2.8 ft. on (date) 1/25/05 12:57
- No ground water seepage encountered
- (Describe/Quantity) abundant ground water seepage encountered at 2.2 ft.

# Log of Test Pit

TEST PIT NO. TP-22  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. Prolog-rwp

Client 2 4 6 8 Observer 12



Comments/Field Notes: No sheen on water table, no TPH color

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-4.5	SP	lt brown, clean sand, poorly sorted sand 5% gravel, poorly sorted (F.M.) poorly	-TP-22- 5.8 ft 13:38	0.1403 36.0%	No sheen
4.5-5		At water table turns gray - same descrip. as above w/ wood debris "lumber", metal conduit @ 4ft			
		-n			

• Test Pit completed to 4.6 ft. on (date) 1/25/05 13:28

• No ground water seepage encountered

or • (Describe/Quantity) abundant ground water seepage encountered at 3.9 ft.

# Log of Test Pit

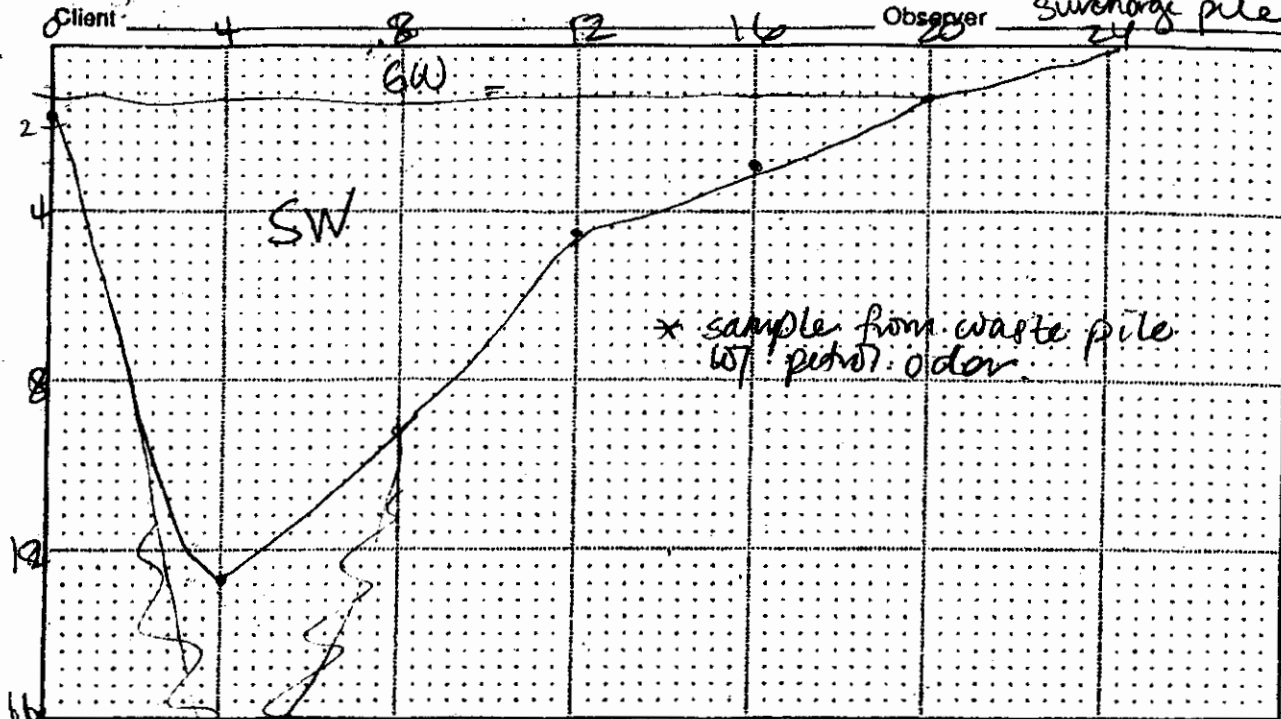
TEST PIT NO. TP-23  
(Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_

Project No. Prolog-TWP

Client \_\_\_\_\_

Observer Surcharge pile NE



#12.5 Comments/Field Notes: Faint fuel, Petroleum odor on waste pile possible  
PID = 0.1 ppm

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tasts
0-10	BW	DK BRN. GRAY, silty sand, well graded, moist brick frag, 5% pieces of wood, tree roots			No s keen
1.0-	SW	DK BRN GRAY; well grad of sand w/ glass & round pieces concrete, metal, bricks 5%, wood wire, moist			
		- sample waste pile odor persists as soil airtakes	TWP05-23-01-19.2 9:41	36%	

- Test Pit completed to 12.5 ft. on (date) 1/26/05 9:26
- No ground water seepage encountered
- or • (Describe/Quantity) slow ground water seepage encountered at 6.5 ft.

# Log of Test Pit

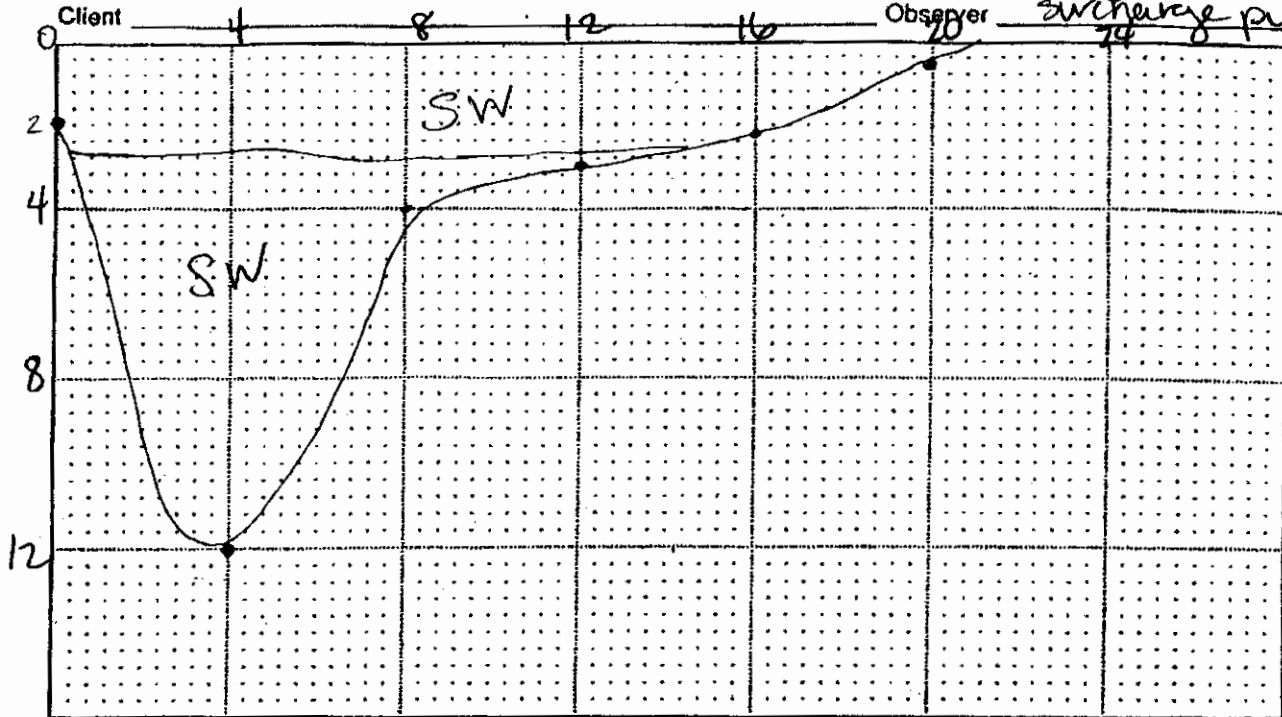
TEST PIT NO. TP-24  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_

Project No. Prolog-TWP

Client \_\_\_\_\_

Observer swcharge pile



Comments/Field Notes:

PID reading = 0.1 ppm in waste pile hole, no reading in pit

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-2.5	SW	DK BRN; SAND 15-20% gravel, < 5% fines, well graded MOIST; NO odor, metal shavings, brick, wood rocks, leather, wire = 2 1/2" x 2" waste			No shear
2.5-	SW	DK BRN clay; SW, cobble, same as above, moist DK BRN shales, banded, brick, metal, plastic			No shear
		→ sampling from waste pile, area of odor	TWP05-24-D1-1403 10-05 (lower layer) 3 caps		NO shear

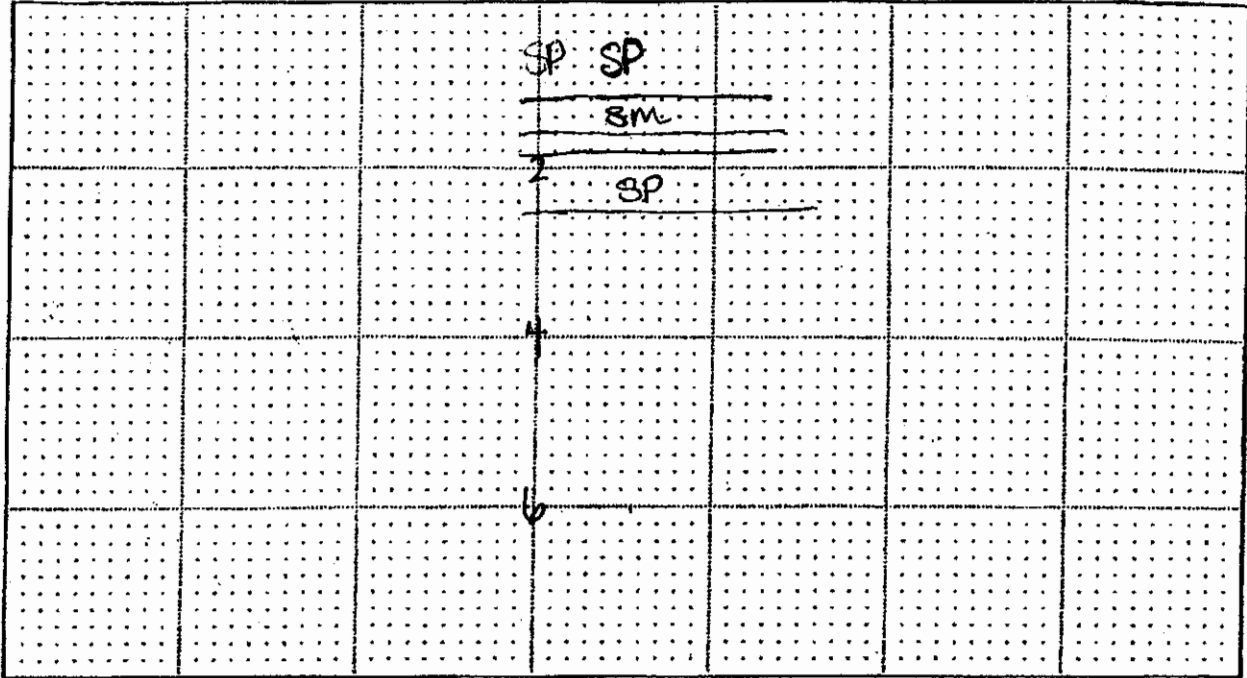
• Test Pit completed to 12 ft. on (date) 1/26/05 9:54 AM  
 • No ground water seepage encountered  
 or • (Describe/Quantity) slow-trace ground water seepage encountered at 6.0 ft.



# Log of Test Pit

TEST PIT NO. TP-041  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. Prolog-TWP.75  
 Client \_\_\_\_\_ Observer \_\_\_\_\_



Comments/Field Notes: \_\_\_\_\_

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-1.2	SP	LT BRN, poorly graded sand w/ gravel moist			
1.2-1.6	SMA	very DK BRN; organics; silty fine sand (SM) 10% wood spongy, gritty feel fibers			
1.6-1.8		DK GRAY, 40% 50%+60% white angular fine sand to fine gravel size, clay lumps (clay, sand, etc.)	TW005-041-01 1.14	1403	
1.8-2.4	SP	woody debris, very dk brn sand w/ gravel also same things but dk gray		3 caps	
				403-observation	

• Test Pit completed to \_\_\_\_\_ ft. on (date) 1/20/05 13:55  
 No ground water seepage encountered  
 or • (Describe/Quantity) NONE ground water seepage encountered at \_\_\_\_\_ ft.

# Log of Test Pit

TEST PIT NO. TP-042

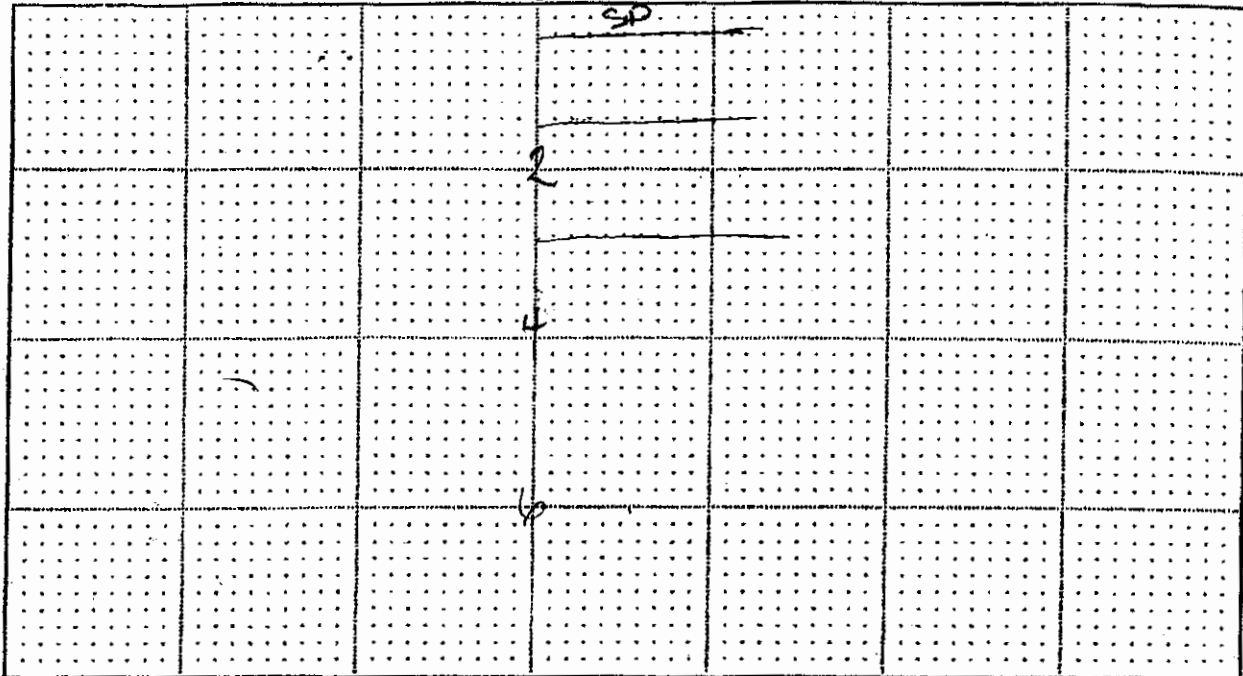
(Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_

Project No. Prolog-TWP. 15

Client \_\_\_\_\_

Observer \_\_\_\_\_



Comments/Field Notes: \_\_\_\_\_

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-0.5	SP	LT BRW, poorly graded sand and gravel			No shear
0.5-1.6		10-15% by vol. white angular clay lumps, sand to gravel 15% gray clay lumps, sand - 20-100% (FMS)	042-01 14:29 1-1.6 ft		14oz 3 caps
1.6-2.7					14oz observation
		- NO shear on groundwater			

• Test Pit completed to 2.7 ft. on (date) 1/20/05 14:24

• No ground water seepage encountered

or • (Describe/Quantity) moderate ground water seepage encountered at 2.9 ft.

# Log of Test Pit

TEST PIT NO. TP-043  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. Prolog-TWP  
 Client \_\_\_\_\_ Observer \_\_\_\_\_

			SP			
			2			

Comments/Field Notes: \_\_\_\_\_

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-0.5	SP	LT BRN			
0.5-1.8		30-40% white lumps, up to cobble size w/ 4" N.S. gray w/ small chunks, white - sand w/ 20-30% in gray matrix, gravel	- 2 logs for observation		
1.8-3.6		Black, woody debris - lumber, gravel, cobbles clay sand chunks of native @ bottom.	↳ 1 white, 1 gray		

• Test Pit completed to 3.6 ft. on (date) 1/26/05 14:38  
 • No ground water seepage encountered  
 or • (Describe/Quantity) \_\_\_\_\_ ground water seepage encountered at \_\_\_\_\_ ft.

# Log of Test Pit

TEST PIT NO. TP-044

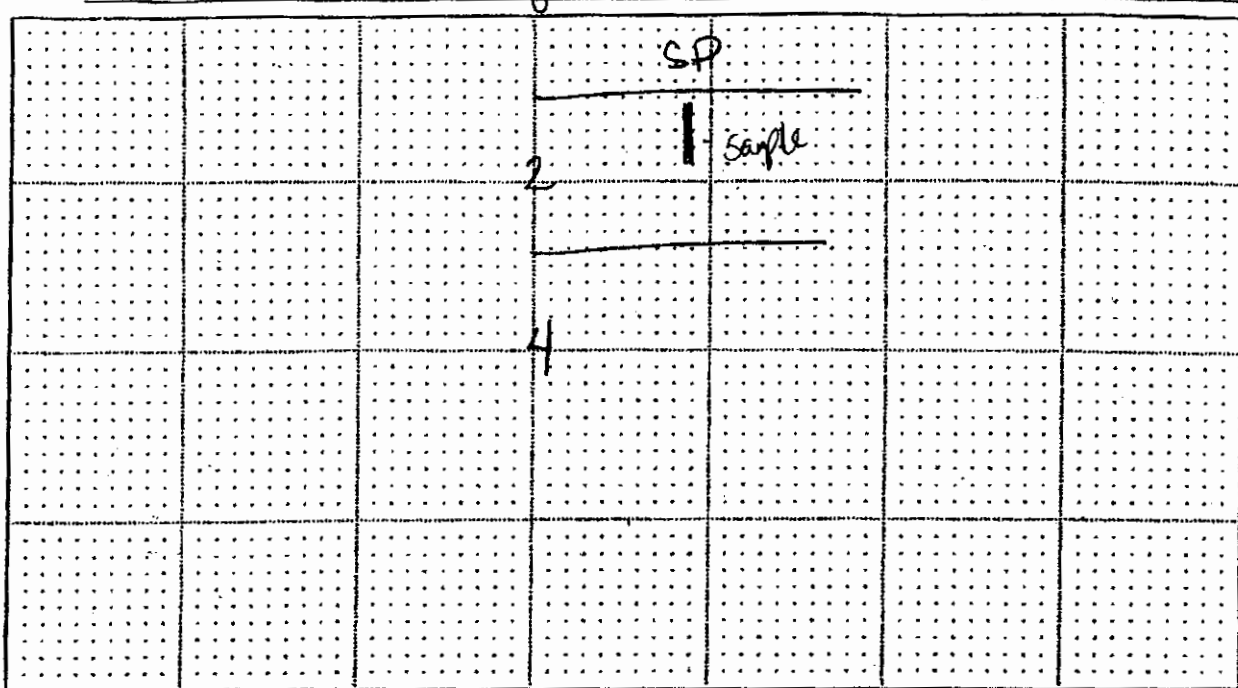
(Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_

Project No. Prologis-TWP

Client \_\_\_\_\_

Observer \_\_\_\_\_



Comments/Field Notes: \_\_\_\_\_

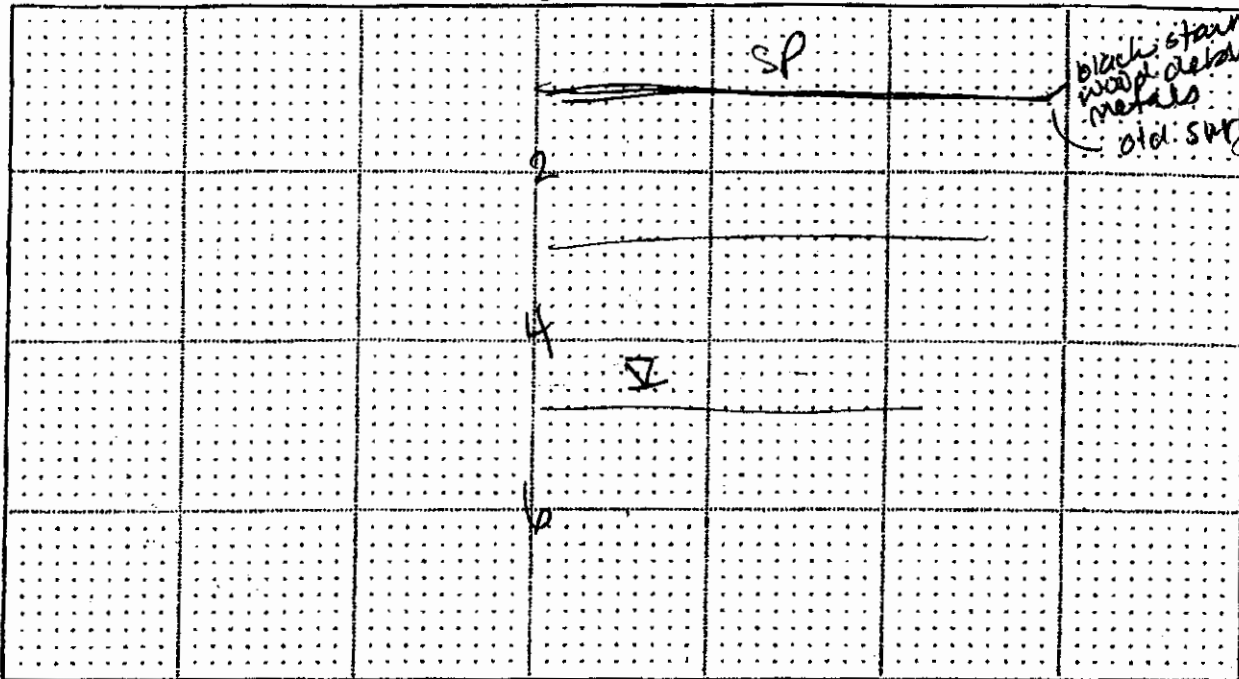
Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-1	SP	LT BRN			
1-2.8		CLAY, white clumps w/ 5-10% sand in clumps w/ depth, fines 5-10%	- 1 4oz for observation 2 ftish		
2.8-3.7		Wood debris			

- Test Pit completed to 3.7 ft. on (date) 1/26/05 12:42
- No ground water seepage encountered
- or • (Describe/Quantity) abundant ground water seepage encountered at 3.2 ft.

# Log of Test Pit

TEST PIT NO. TP-045  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. Prologis-TOP  
 Client \_\_\_\_\_ Observer \_\_\_\_\_



Comments/Field Notes: \_\_\_\_\_

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-1	SP	LT BGN			
1-2.9		gray 10% white clumps, up to 2500 size 2% black staining			
2.9-4.9		very dark, BENEATH, wood debris	- 1	403	observation

• Test Pit completed to 4.9 ft. on (date) 1/26/05 14:48

• No ground water seepage encountered  
 or • (Describe/Quantity) SLW ground water seepage encountered at 3.4 ft.

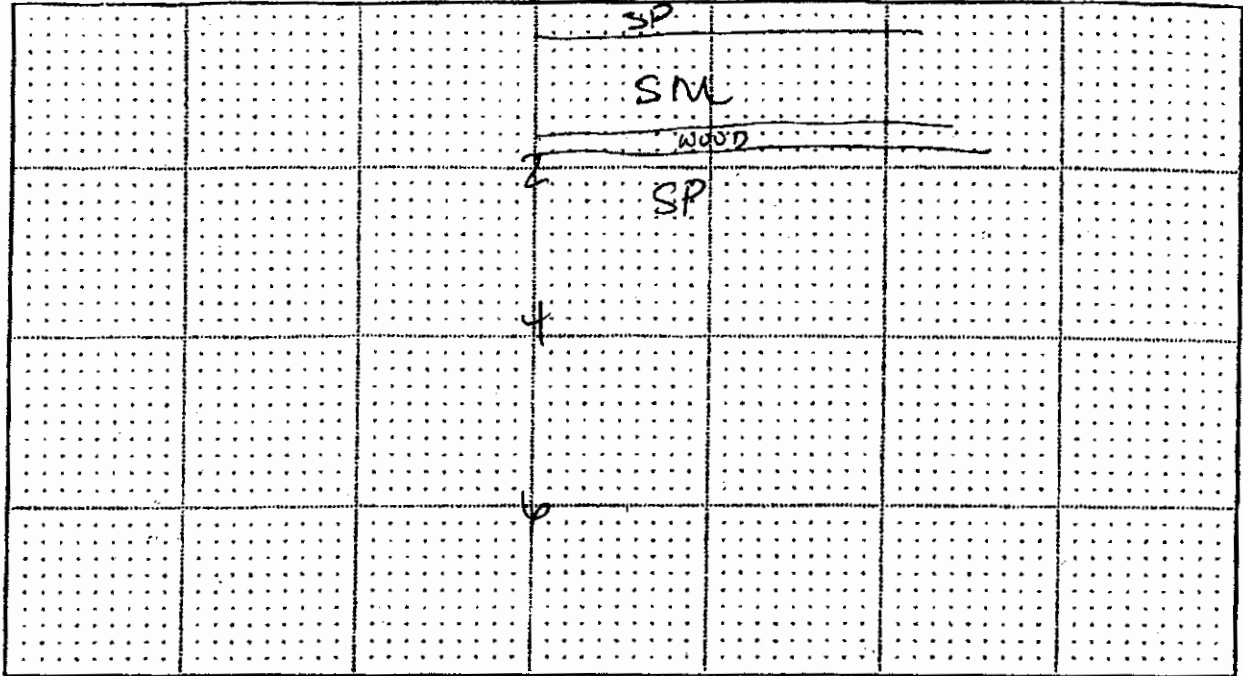
# Log of Test Pit

TEST PIT NO. TP-046  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_

Project No. Prologis-TWP  
 Observer \_\_\_\_\_

Client \_\_\_\_\_



Comments/Field Notes: \_\_\_\_\_

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-0.4	SP	LT brown - same as others			
0.4-1.8	SM	LT gray (N-6); silty sand (10%); gravel coarse at gray, almost white clumps	- 1 4oz observation		
1.8-1.9		woody debris, plywood	- 3 ceps (roots)		
1.9-3.9	SP	dk gray (N-6); FM sand, lumps of med. CL angular pink gray is not sand	15:05		

• Test Pit completed to 3.9 ft. on (date) 1/20/05 14:55  
 • No ground water seepage encountered  
 or • (Describe/Quantity) \_\_\_\_\_ ground water seepage encountered at \_\_\_\_\_ ft.

# Log of Test Pit

TEST PIT NO. TP-047

(Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_

Project No. Dodge-TWP

Client \_\_\_\_\_

Observer \_\_\_\_\_



Comments/Field Notes: \_\_\_\_\_

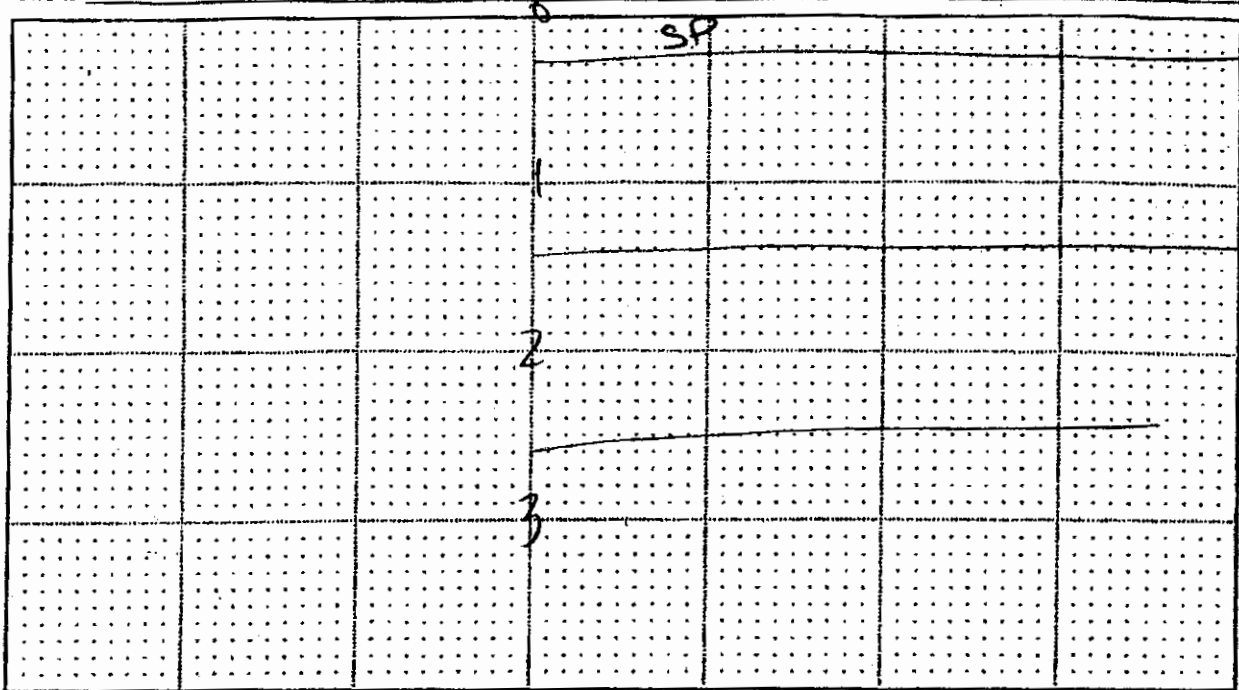
Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-0.5	GW	lighter pale <del>gray</del> <sup>gray</sup> - same txt but w/ well graded gravel w/ sand & gravel			
0.5-1.4	SP	gray N-4, N-5 same, are w/ more sandy w/ >15% <sup>up to 20%</sup> gravel w/ <sup>fine</sup>	- 1403	observation	temp
1.4-1.6		black, wood fibers			
1.6-2.2		gray sand <del>N-4</del>			

Test Pit completed to 2.2 ft. on (date) 1/26/05 15:17  
 No ground water seepage encountered  
 (Describe/Quantity) \_\_\_\_\_ ground water seepage encountered at \_\_\_\_\_ ft.

# Log of Test Pit

TEST PIT NO. TP-048  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. Prologis-TWP  
 Client \_\_\_\_\_ Observer \_\_\_\_\_



Comments/Field Notes: \_\_\_\_\_

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-0.3	SP	LT BRN - same as other			
0.3-1.4		GRAY, gray lumps (LT BRN) -	1 4oz 15:14	observed	
1.4-2.6		DK GRAY - lumps of native			

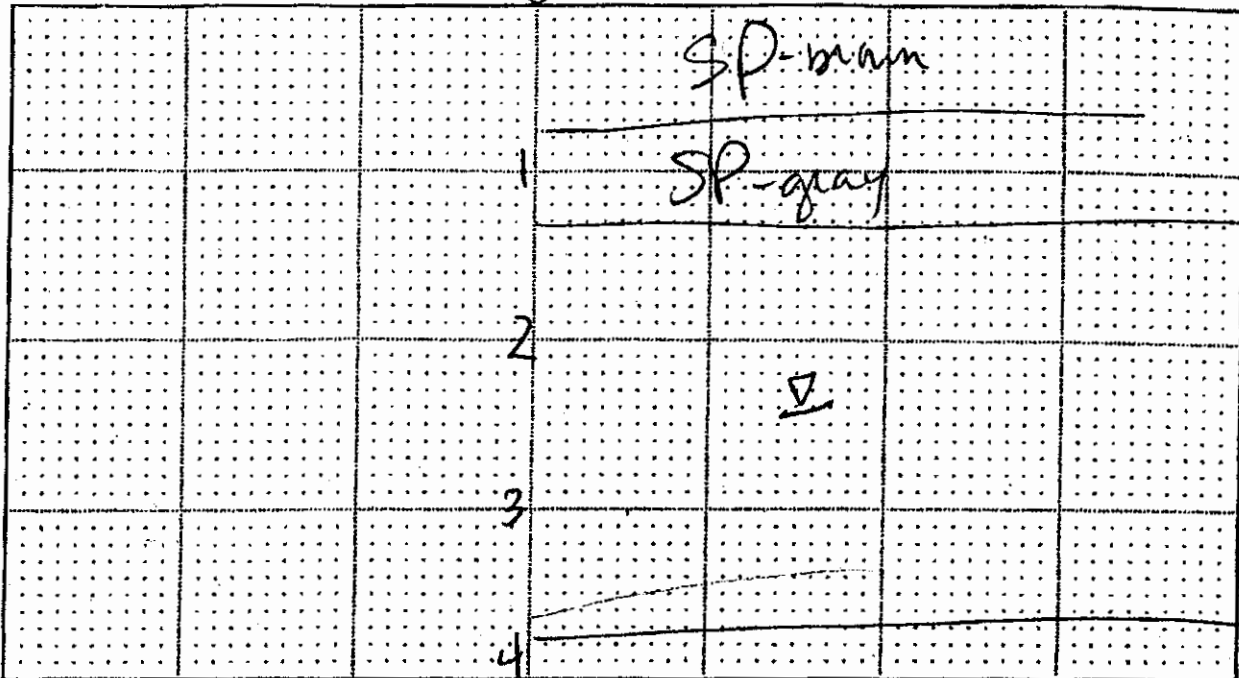
Test Pit completed to 2.6 ft. on (date) 1/20/05 15:14  
 No ground water seepage encountered  
 or (Describe/Quantity) \_\_\_\_\_ ground water seepage encountered at \_\_\_\_\_ ft.



# Log of Test Pit

TEST PIT NO. TP-049  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. Prologis-TWP  
 Client \_\_\_\_\_ Observer \_\_\_\_\_



Comments/Field Notes: Oily smell, PID = 0 ppm, slight sheen on water diesel/petrol. - large pieces <sup>(sheet)</sup> scrap metal, back hoe operator reports seeing tail light  
sheen

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-0.7	SP	LT BROWN, sand			
0.7-1.2	SP	gray w/ gravel like above, no white clay clumps - geotextile rem.			
1.2-3.8		DK gray-olive, debris composed of wood (20-30%), plastic, metal	-TWP05-049-01 -1 403 (RBS) -3 caps	15:25 2.3 ft	sheen

• Test Pit completed to \_\_\_\_\_ ft. on (date) 1/26/05 15:25  
 • No ground water seepage encountered  
 or • (Describe/Quantity) millimeter ground water seepage encountered at 2.3 ft.

# Log of Soil Boring SB-7

**FLOYD | SNIDER**  
strategy • science • engineering

**Floyd Snider**

Boring SB-7 Date January 28, 2005 Sheet 1 of 1

Job Prologis Job No. PROLOG-TWP

Logged By John LaManna Weather Cloudy, 40 Degrees

Drilled By Holt Drilling, Sean Grittner

Drill Type/Method LA-10 Track Mounted

Sampling Method 4-in HSA

Bottom of Boring 19 Feet AFD Water Level Depth 16 Feet

Ground Surface Elevation X

Obs. Well Install. Yes  No

SAMPLE ID	12 Penetration Resistance	DEPTH		SAMPLE RECOVERY (FT)	USCS Symbol	DESCRIPTION: color, texture, moisture MAJOR CONSTITUENT NON-SOL. SUBSTANCES: Odor, staining, seep, scrap, slag, etc.
		From	To			
						<b>SURFACE OF SURCHARGE PILE</b>
						Cuttings, dark gray rounded gravel with sand, driller reports slow drilling. Cuttings appear oily with petroleum hydrocarbon odor.
TWP05-SB7-01	50	10.0	11.5		GM	Very dense, dark gray to light brown GRAVEL with sand, 15% silt, and wood debris (brown decaying roots). Moist. Faint petroleum odor. No sheen. (FILL)
TWP05-SB7-02	61	12.0	13.5		GW	Very dense, dark gray, angular GRAVEL with sand. Moist. No odor. No sheen. (FILL)
TWP05-SB7-03	12	15.0	16.5		GM	Medium dense, dark gray, GRAVEL with sand. Rounded well graded, silty gravel with sand and wood fiber. Moist to wet. (FILL)
	0	17.5	19.0		CL	Dark brown, clay, plastic with decaying, black wood fibers. NATIVE



Recovery

Subsample for Analysis

Driven Interval

Groundwater Observed At Time of Drilling

Inferred Contact

Observed Contact

# Log of Soil Boring SB-8

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**Floyd Snider**

Boring SB-8 Date January 27, 2005 Sheet 1 of 1

Job Prologis Job No. PROLOG-

Logged By John LaManna Weather Cloudy, Rainy, Breezy, 45 Degrees

Drilled By Holt Drilling, Sean Grittner

Drill Type/Method LA-10 Track Mounted

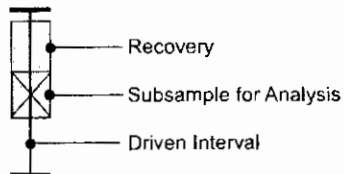
Sampling Method 4-in HSA

Bottom of Boring 19.4 Feet ATD Water Level Depth 18.25 Feet

Ground Surface Elevation X

Obs. Well Install. Yes

SAMPLE ID	12" Penetration Resistance	DEPTH		SAMPLE RECOVERY (FT)	USCS Symbol	DESCRIPTION: color, texture, moisture MAJOR CONSTITUENT, NON-SOIL SUBSTANCES: Odor, staining, sheen, grab, slag, etc.
		From	To			
						ATOP SURCHARGE PILE
						Cuttings, dark gray rounded GRAVEL. Petroleum odor. Easy drilling with cobbles.
	23	10.0	11.5		GM	Medium dense, dark brown, gravel with sand. Roots, wood debris. Moist. (FILL)
TWP05-SB8-01	11	12.5	14.0			Medium dense, dark brown, GRAVEL with sand. Roots, wood debris. Moist. Well graded. No sheen. (FILL)
TWP05-SB8-02	15	15.0	16.5		GM	Dark brown, gravel >15% fines. Silty GRAVEL with sand and wood debris, plastic sheeting. Moist. Asphalt odor. No sheen. (FILL)
TWP05-SB8-03	3	17.5	19.4		ML-CL	Soft to medium stiff, dark brown, silt with roots, plant material, non-plastic. Moist. Poorly graded. NATIVE



∇ Groundwater Observed At Time of Drilling

— Inferred Contact

— Observed Contact

**Clarification Write-up on Test Pit Logs**

**FS-TP1**

Comments/Field Notes: Photo 0-7/ stockpile, Photo 2 same, Photo 3 0-10'. 1 comp sample collected from 4-10' stockpile.

Depth (ft)	Description	Sample Depth	Moisture Content %	Other Tests
0-2	Light brown, dry gravelly sand with 25% med size cobbles			
2-4	Brown, dry gravelly sand 15% med-size cobbles, 1 large (2 ft) piece of concrete, Shovel blade, light brief petro odor, 1 % wood debris			
4-7	Dark brown, dry med grained sand with 10% med size gravel, organic odor			
7-9	Dark brown, dry med-size sand with 10% med. gravel, light mixed wood debris, wood includes 1 small piece of plywood			
9-10	Cable, 3-wire metal cable in hole. Light odor, organic/burnt odor, brief			

**FS-TP2**

Comments/Field Notes: Photo 1 0-4 stockpile, wood debris in bottom 4' has creosote sheen odor. 1 sample collected from 4-8'

Depth (ft)	Description	Sample Depth	Moisture Content %	Other Tests
0-2	Light brown, sand with 15-20% small to med. Gravel, loose			
2-4	Dark brown med grained sand with 10% small to med gravel. 1 small piece of wire, piece of glass at 3.5-4, light brief petro odor , dissipates quickly			
4-6	Dark brown dry med sand 5% small wood debris, organic odor, concrete pieces noted at 5'			

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Depth (ft)	Description	Sample Depth	Moisture Content %	Other Tests
6-8	Dry, dark sand with small gravel, light wood debris and concrete. Concrete came out small chunks larger pieces remain at bottom, unable to go further			

## FS-TP3

Comments/Field Notes: 2'-4' woody debris layer, scattered bricks in upper 5' Photo 1 0-7.5 SP, Photo 2 0-9.5 SP

Depth (ft)	Description	Sample Depth	Moisture Content %	Other Tests
0-2	Lt gray loose med. grained sand with 10-20% med sized gravel, occasional brick chunk found at 2'			
2-7.5	Dark to med brown med size sands with 10-20% small to med size gravel. +5% med size cobble, light odor light wood debris ~ about 50% of wood debris contains creosote odor wood debris is all less than 1 foot long			
7.5-9.5	Getting into concrete, rubble med-size wood debris concrete is > 2', light concrete begins at 5', concrete med size			

## FS-TP4

Comments/Field Notes: Photo 1 0-8.0, Photo 2 0-9.0, Sample collected 3-10.0 composite. 4 grabs

Depth (ft)	Description	Sample Depth	Moisture Content %	Other Tests
0-2	Lt brown loose med grained sand with 15-20% small to med cobbles			
2-3	Dark brown dry med brown sand with small to med gravel			

# FLOYD | SNIDER

Depth (ft)	Description	Sample Depth	Moisture Content %	Other Tests
3.0-4.0	Med size pieces (~1.0) of concrete, 20% wood debris with creosote odor (50%), 1 large layer of concrete at 3.0' (~8' thick, extent unknown)			
4.0-10	Dark brown small to med. grained sand, dry with 10% small to med gravel ~5%. Bricks, metal, wire etc. Slight odor. Roots. Small med size bits of concrete. % debris increases as 8' to 15%			No sheen

## FS-TP5

Comments/Field Notes: Photo 1 0-5, Photo 2-7. Light spots of sheen on water in hole.

Depth (ft)	Description	Sample Depth	Moisture Content %	Other Tests
0-2	Light brown loose, dry, med sand with 15% small to med cobbles			
2-6	Med to dark brown, fine to med grained sand with 10-15% small to med gravel <5%, brick wood glass, pipe at 3.5', 4' small to med sized pieces of concrete, light odor, no sheen			No sheen
6-7	Dark brown med sand, moist 15-20%, small to med gravel			
7	GW encountered, unable to dig further			

## FS-TP6

Comments/Field Notes: Light diesel/creosote odor from spoil pile. Lonnie notes it is becoming harder with depth and gravel. Not due to concrete though. Photo 1 0-10'.

Depth (ft)	Description	Sample Depth	Moisture Content %	Other Tests
0-2	Lt. brown loose dry, med sand with 10-15% Small to med size cobbles			

# FLOYD | SNIDER

Depth (ft)	Description	Sample Depth	Moisture Content %	Other Tests
2-10'	Med to dk brown med grained sand with 10-15% small to med sized gravel <5% brick wood debris metal small concrete light odor small metal odor most prevalent in gravel near wood. At 8' material becomes moist. 2" pipe at 8', more like tow bar slow trickle in hole from side			No sheen

## FS-TP7

Comments/Field Notes: This TP is a lot more gravelly and looser. At 9.5' concrete and wood made us unable to go further.

Depth (ft)	Description	Sample Depth	Moisture Content %	Other Tests
0-1.5	Light grey, dry, loose sand with small to med. gravel at 1.5 one large log 4' long 0.5' diameter and wire found			
1.5-3	Gray, loose dry sand with 20-30% med size cobbles 5-10% to med. wood debris			
3-9.5	Dark brown, slightly moist med grained sand with small to med gravel. Slight odor large 2'+ piece of concrete found at 5'. At 7' 20-25% mixed concrete cobbles < 5% to 8'. 8' mixed small to med concrete and wood debris ~ 20%.			

## FS-TP8

Comments/Field Notes: Loose material, wood debris contains plywood, no odors. Photo 1 0-9'

Depth (ft)	Description	Sample Depth	Moisture Content %	Other Tests
0-4'	Gray, dry, loose sand with med size gravel ~10% small size concrete chunks and 1 large piece 2'+ at 2', ~20% gravel and loose, ~10% concrete from 2.5'			

# FLOYD | SNIDER

Depth (ft)	Description	Sample Depth	Moisture Content %	Other Tests
4-9	Med to dark brown med. grained sand with 15-20% small to med size gravel. At 7' med wood debris and med sized concrete. 4-8' concrete mixed in and med to large cobbles. Large area of concrete at 9', unable to go deeper.			



# Log of Test Pit

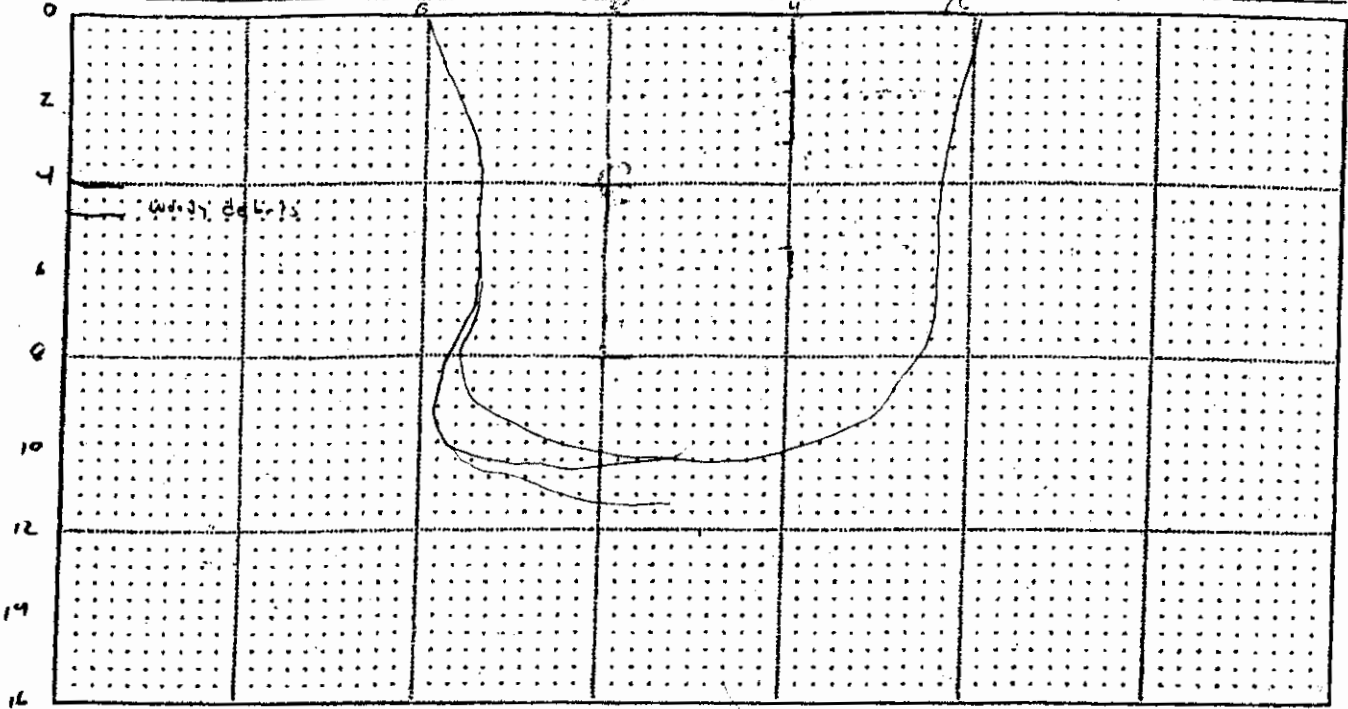
TEST PIT NO. FS-TP1  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project PROLOG TWP

Project No. \_\_\_\_\_

Client \_\_\_\_\_

Observer SB / Lonnie D. Siga.



Comments/Field Notes: Ph. 1 0-7' silt/clay, Ph. 2 sand, Ph. 3 0-10'

1 comp. sample collected from 4-10' silt/clay

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-2		<sup>fine</sup> Brown, dry, gravelly sand with 25% med size gravel cobbles			
2-4		Brown, dry, gravelly sand 15% med size cobbles, 1 large (2") gravel cobble, shell blade, light brick peds, etc.			
		1% med debris			
4-7		dk. brown, dry, med. <sup>fine</sup> sand with 10% med size gravel, organic odor			
7-9		dk. brown, dry med size sand with 10% med. gravel light mixed wood debris			
		wood includes 1 small size plank			
9-10		Coll. 3-4" med. calc. in hole, limestone light <sup>orange/brown</sup> color			

• Test Pit completed to \_\_\_\_\_ ft. on (date) 7-12-06 0511

• No ground water seepage encountered

or • (Describe/Quantity) \_\_\_\_\_ ground water seepage encountered at \_\_\_\_\_ ft.

# Log of Test Pit

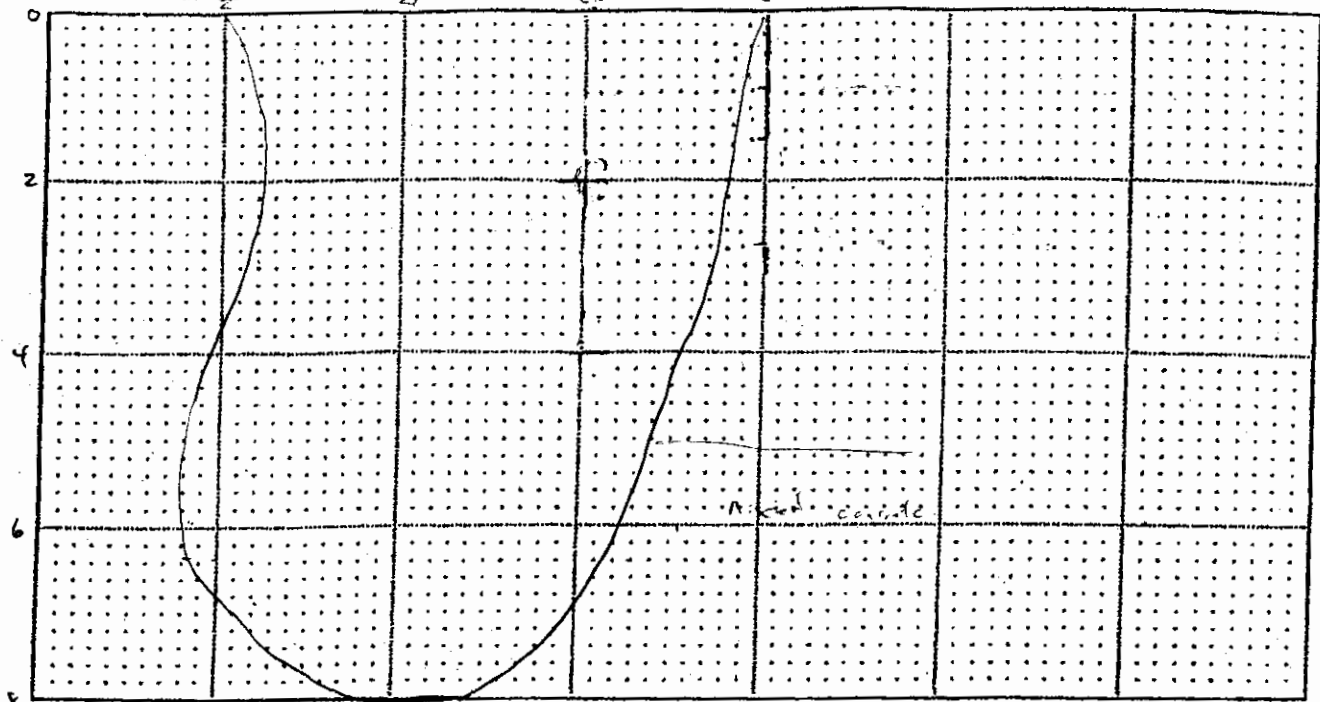
TEST PIT NO. FS-TP2  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project Pro-Logis

Project No. \_\_\_\_\_

Client \_\_\_\_\_

Observer SB



Comments/Field Notes: Photo 1 0-4' strata. wood debris in bottom 4' has concrete  
debris odor. 1 sample collected from 4-8'

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-2		light brown sand with 15-20% small to med sandy loam			
2-4		dk brown med. gravel sand with 10% small to med gravel. 1 small piece of wire piece of glass at 3.5-4 light brown odor. dissects quickly			
4-6		dk brown dry med. sand 5% small and debris organic odor, concrete pieces solid at 5'			
6-8		Dry, dk sand with small gravel, light wood debris & concrete. concrete seen at small chunks large larger pieces remain at bottom unable to see further			

• Test Pit completed to 8 ft. on (date) 7-12-06 CS45

• No ground water seepage encountered

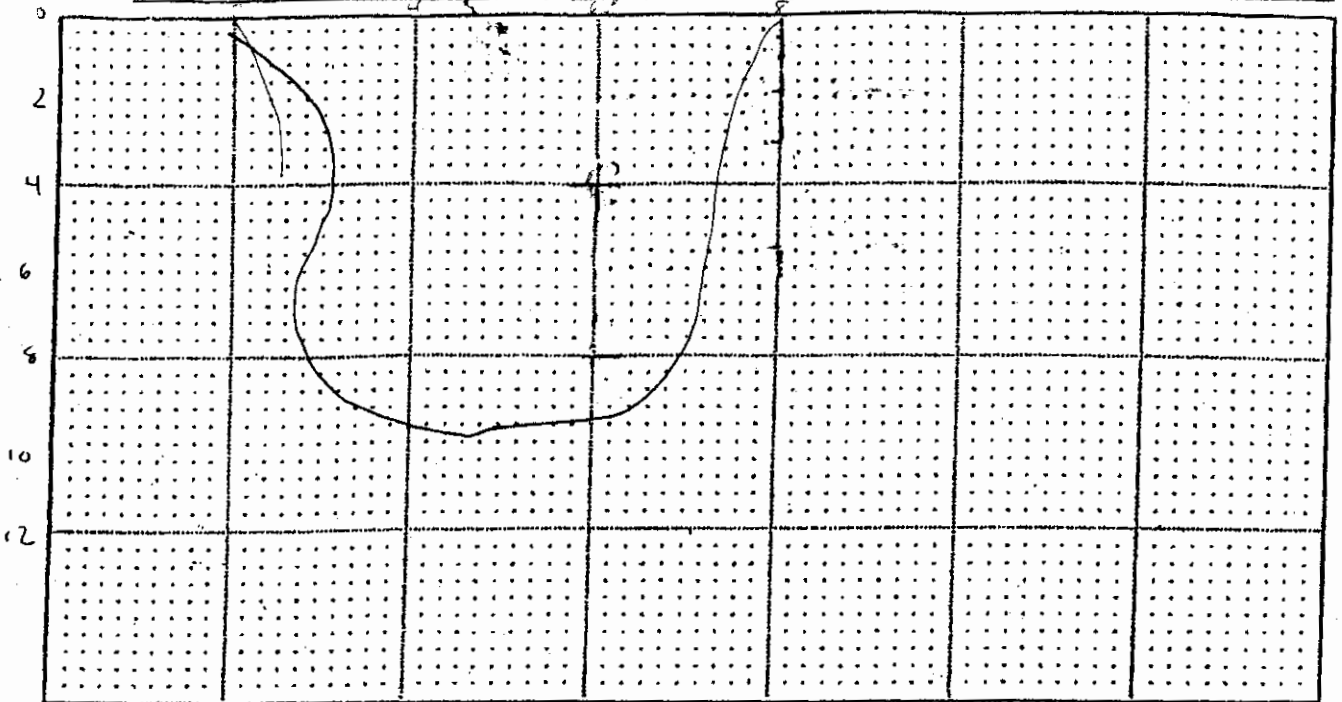
or • (Describe/Quantity) \_\_\_\_\_ ground water seepage encountered at \_\_\_\_\_ ft.

# Log of Test Pit

TEST PIT NO. FS T13  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. \_\_\_\_\_

Client \_\_\_\_\_ Observer \_\_\_\_\_



Comments/Field Notes: 3'-4' woody debris layer, scattered bricks in upper 5'

Ph. 1 0.75 SP Ph. 2 0.75 SP

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-2		Lt. gray loose med. grained sand with 10-20% med. sized gravel, occasional brick chunk found at 2'			
2'- <del>10</del> 7.5'		dk. brown to red brown med. size sands with 10-20% small to med. size gravel + 5% med. size cobble, light odor light wood debris ~ about 50% of wood debris contain coarse odor wood debris is all less than 1" long			
7.5'-		Getting into concrete rubble med. size wood debris concrete is > 2'			
9.5		- light concrete begins at 5' - concrete med. size			

• Test Pit completed to 9.5 ft. on (date) 10/20

• No ground water seepage encountered

• (Describe/Quantity) \_\_\_\_\_ ground water seepage encountered at \_\_\_\_\_ ft.

# Log of Test Pit

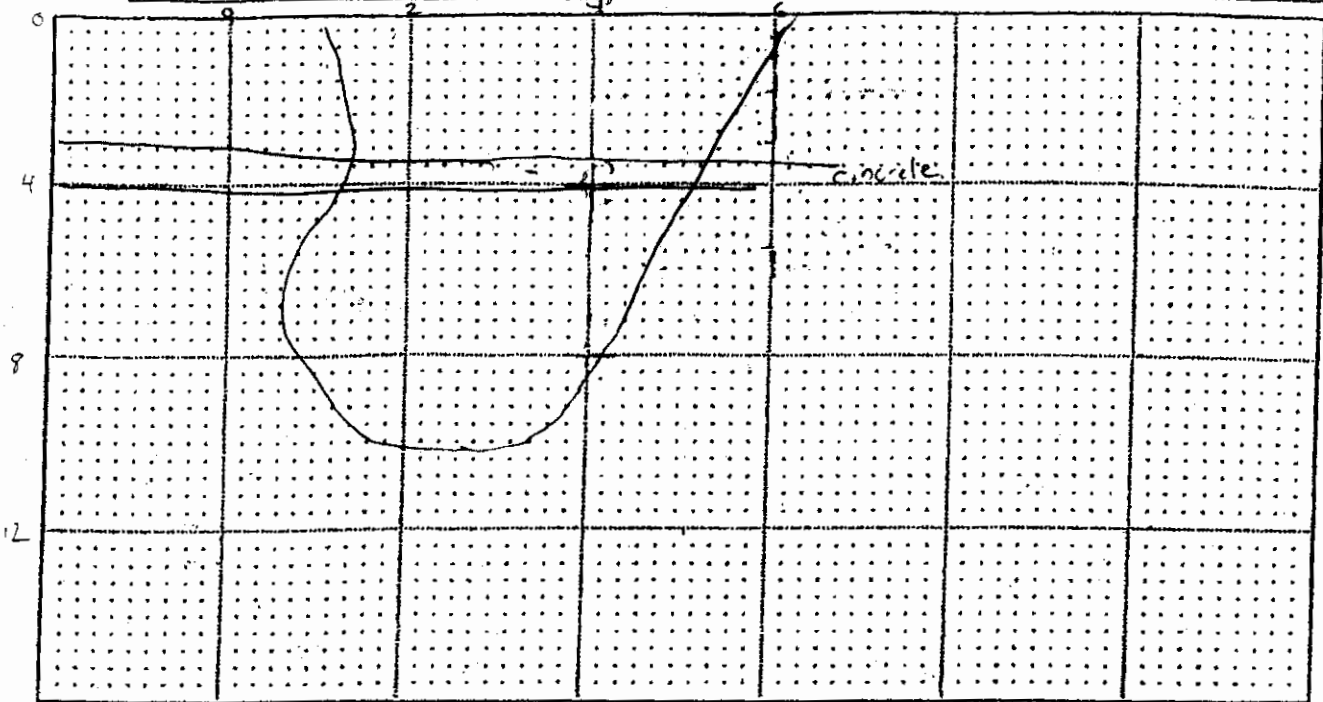
TEST PIT NO. FS-714  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project Flat Pro. Logs

Project No. \_\_\_\_\_

Client \_\_\_\_\_

Observer SB



Comments/Field Notes: Photo 1 0-8.0, Photo 2 0-9.0

sample collected 3-10.0 composite 4 grabs

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-2.0		lt. brown loose med. graind sand with 15-20% small to med. cobbles			
2-3.0		dk. brown dry med brown sand with small to med gravel			
3.0-4.0		Med. size pieces (~1.0') of concrete 20% wood debris with concrete adm. (50%) 1 large layer of concrete at 3.0' (~8" thick, extends westward)			
4.0-10		dk brown, small to med. graind sand dry with 10% small to med gravel (57% heavy metal wire etc slight odor, roots, small to med size bits of concrete % debris increases as layer 8' to 15%			no sheen

• Test Pit completed to \_\_\_\_\_ ft. on (date) 7/2/06

• No ground water seepage encountered

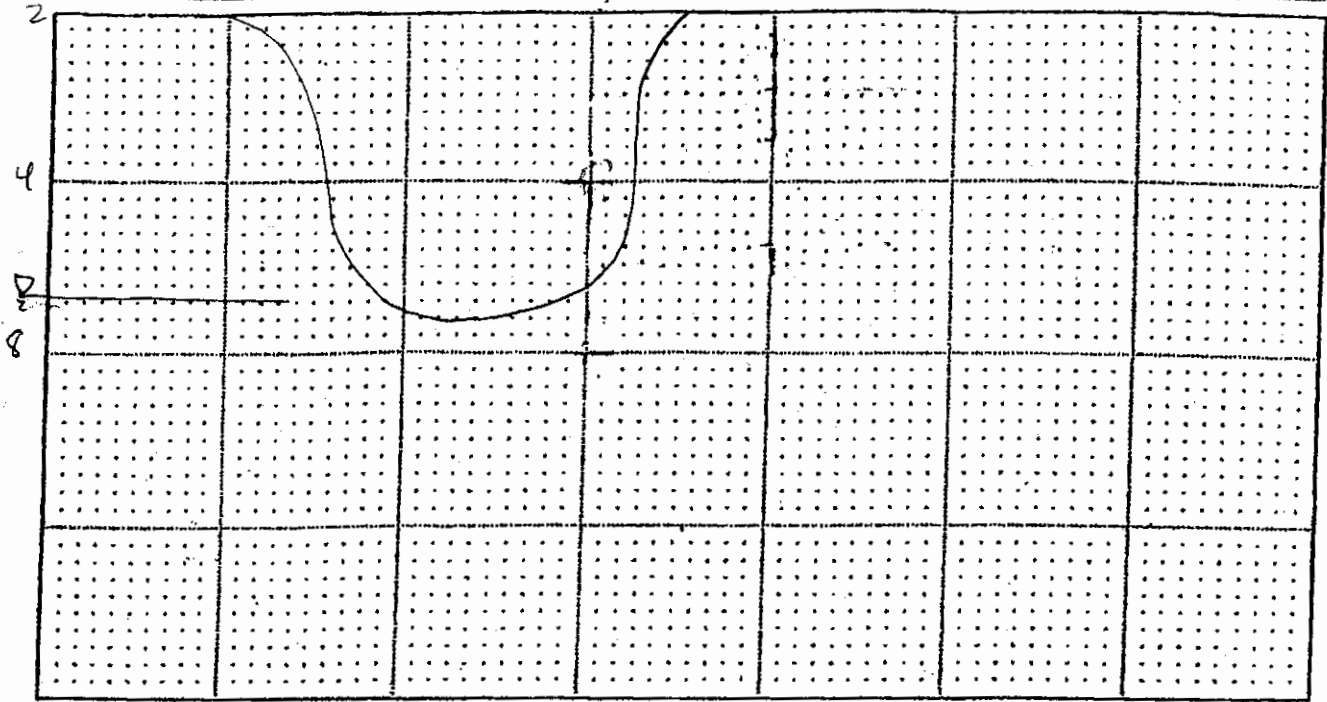
or • (Describe/Quantity) \_\_\_\_\_ ground water seepage encountered at \_\_\_\_\_ ft.

# Log of Test Pit

TEST PIT NO. FS TP. 5  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. \_\_\_\_\_

Client \_\_\_\_\_ Observer \_\_\_\_\_



Comments/Field Notes: Plot 1 205 Plot 2 07  
light soils at base of test pit hole

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-2		light brown, loose, dry, med. sand with 15% small to med. cobbles			
2-6		red. to dk. brown fine to med. grained sand with 10-15% small to med. gravel < 5% brick wood, glass, pipe at 3.5' 4" small to med. sized pieces of concrete light odor, no sheen granulate at 7' base			no sheen
6-7		dk. brown med sand, moist, 15-20% small to med. gravel			
7		blue mottled with light grey			

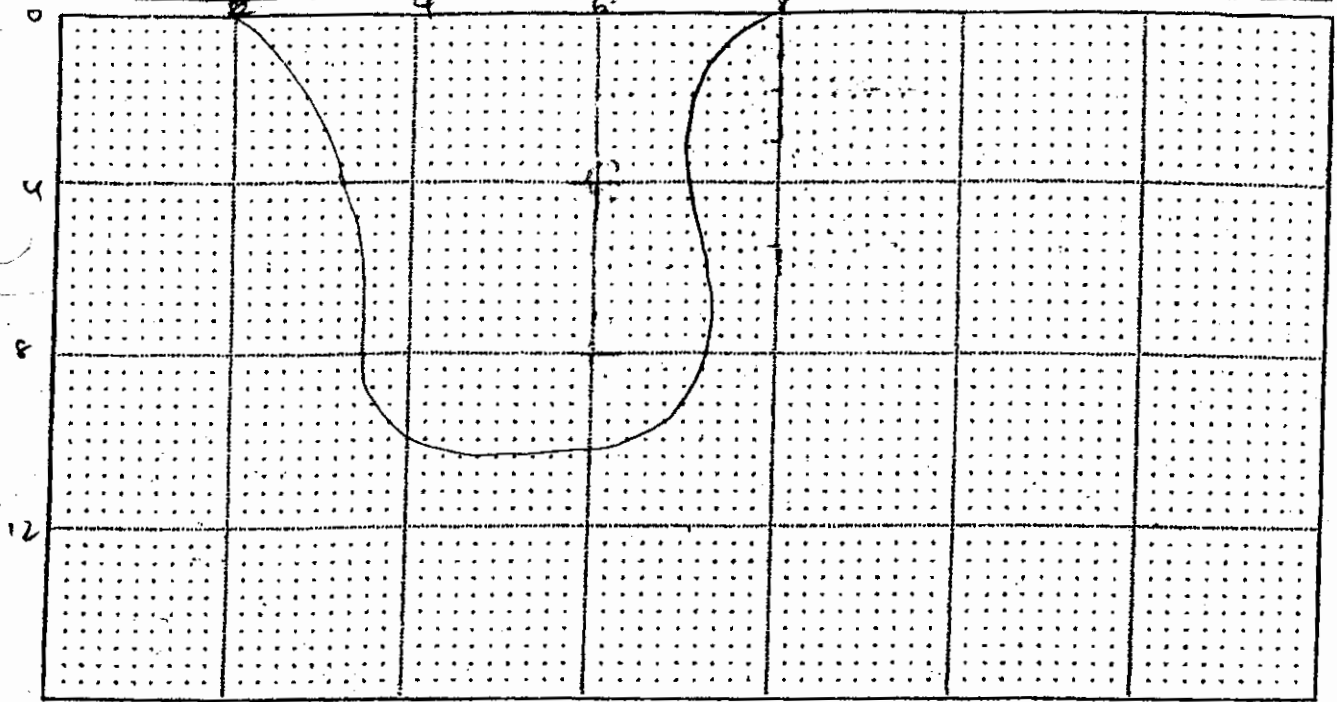
- Test Pit completed to \_\_\_\_\_ ft. on (date) \_\_\_\_\_
- No ground water seepage encountered
- or • (Describe/Quantity) 7' concrete ground water seepage encountered at \_\_\_\_\_ ft.

# Log of Test Pit

TEST PIT NO. FS-786  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. \_\_\_\_\_

Client \_\_\_\_\_ Observer \_\_\_\_\_



Comments/Field Notes: Light diesel/excavator odor from spud pile  
Loose odor is becoming harder with depth and gravel not due to  
concrete though. P.H. 1 0-10"

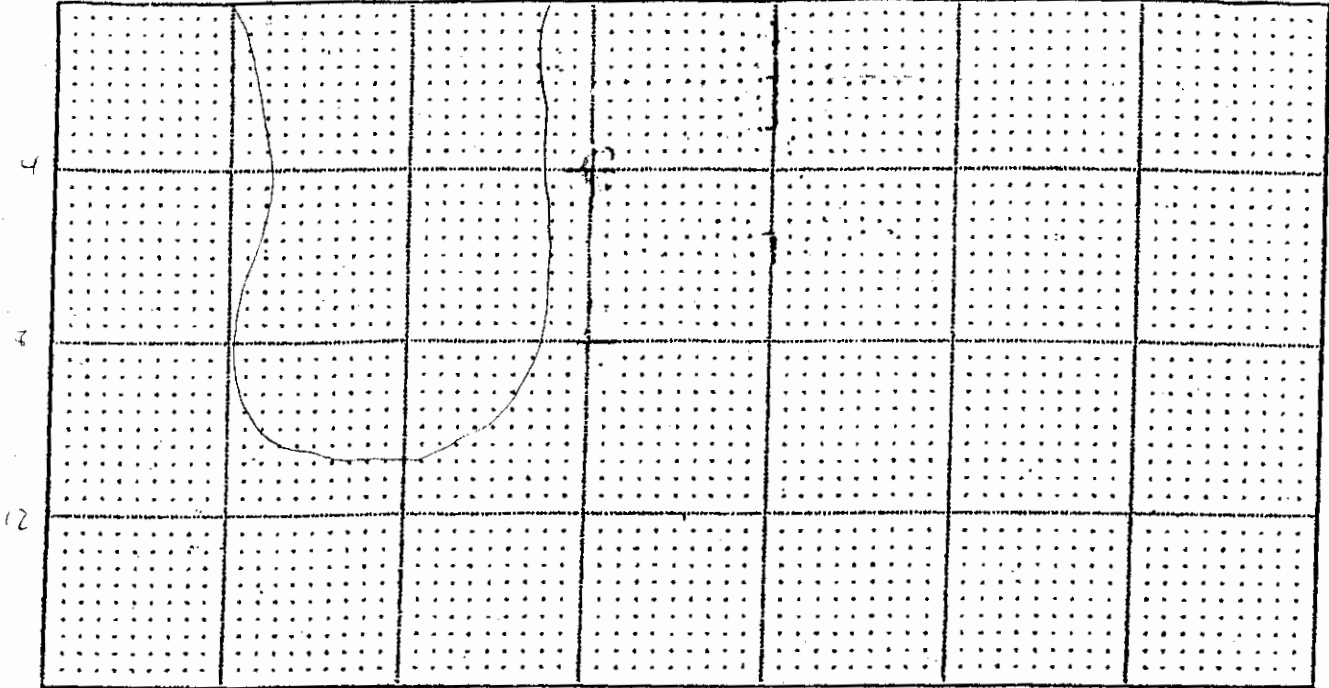
Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-2		lt. brown loose dry med sand with 10-15% small med size cobbles			
2-100		med to dk. brown med gravel sand with 10-15% small med sized gravel = 5% large wood debris metal small concrete light odor small metal odor next to water & gravel near sand			
		At 8' material becomes moist.			
		2" Pipe at 8', more like tan bar			
		slight bubble in hd. at 8' (from side)			

• Test Pit completed to 12 ft. on (date) 11/20/00  
 • No ground water seepage encountered  
 or • (Describe/Quantity) \_\_\_\_\_ ground water seepage encountered at \_\_\_\_\_ ft.

# Log of Test Pit

TEST PIT NO. FS TP 7  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. \_\_\_\_\_  
 Client \_\_\_\_\_ Observer \_\_\_\_\_



Comments/Field Notes: This TP is a lot more gravelly and looser  
At 5.5' concrete found debris made as much as possible to go further

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (density/consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-2.5'		light grey dry loose sand with small med. gravel at 1.5' and loose log 4' long 0.5" dia and wire found.			
1.5-3'		grey loose dry sand with 20-30% med-size cobbles < 5-10% med. med debris			
3-4.5'		dk brown slightly moist med gravel sand with small to med gravel slight odor large 2" piece of concrete found at 5' at 7' 20-25% mixed concrete cobbles < 5% to 5' 8' mixed sand and concrete and debris			

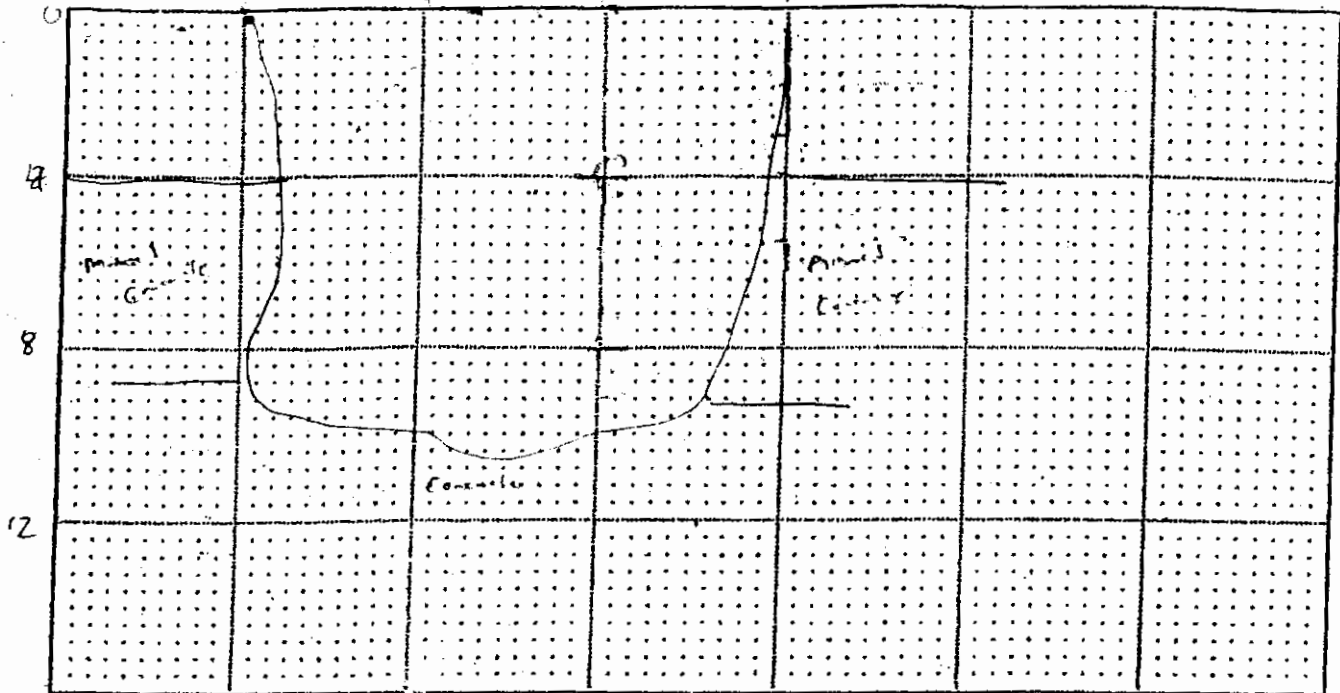
- Test Pit completed to 5.5 ft. on (date) \_\_\_\_\_
- No ground water seepage encountered
- (Describe/Quantity) \_\_\_\_\_ ground water seepage encountered at \_\_\_\_\_ ft.

# Log of Test Pit

TEST PIT NO. FS TP8  
 (Approx. Elev. \_\_\_\_\_ ft.)

Project \_\_\_\_\_ Project No. \_\_\_\_\_

Client \_\_\_\_\_ Observer \_\_\_\_\_



Comments/Field Notes: Loose mat'l, wood debris, various physical test colors  
Ph. 1 0-5'

Depth (ft.)	USCS Symbol	Description color, modifier, predominant size class, with modifiers (texture, consistency, moisture) (Geologic Unit)	Sample No./ Depth	Moisture Content, %	Other Tests
0-4		Grey, dry, loose sand with med. size gravel ~10% <sup>small</sup> med. size concrete chunks 1 large piece 2" at 2' ~20% gravel + loose, ~10% concrete from 2-5'			
4-9'		Med. to dk. brown med. sized sand with 15-20% small to med size gravel. At 7' med. sized debris, med. sized concrete 4-8' concrete mixed in and not to large cubes Large concrete at 9' waste to so			

- Test Pit completed to \_\_\_\_\_ ft. on (date) \_\_\_\_\_
- No ground water seepage encountered
- (Describe/Quantity) \_\_\_\_\_ ground water seepage encountered at \_\_\_\_\_ ft.



# Log of Soil Boring and Piezometer Construction PP-1a

<b>FLOYD I SNIDER</b> strategy • science • engineering				<b>Floyd Snider</b> Boring PP-1a Date 7/25/05 Sheet 1 of 1 Job PROLOGIS-TWP Job No. 06000 Logged By Jessie Satterberg Weather 70 Degrees Drilled By Cascade Drilling - Jay Drill Type/Method GeoProbe Sampling Method Direct Push - Power Probe 9630 Bottom of Boring 7 Ft. ATD Water Level Depth 5 Ft Ground Surface Elevation _____			
				Obs. Well Install. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
SAMPLE ID	Blow Count N <sub>12"</sub>	RECOVERY		GRAPHIC RECOVERY	USCS Symbol	DESCRIPTION: color, texture, moisture MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	WELL CONSTRUCTION
		From	To				
						SAND surface, dry  No sample until 5'  SM Silty Sand and Clay with wood fibers, organic odor.  Bottom of boring at 7 ft.	
					0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20		



Recovery

Subsample for Analysis

Driven Interval

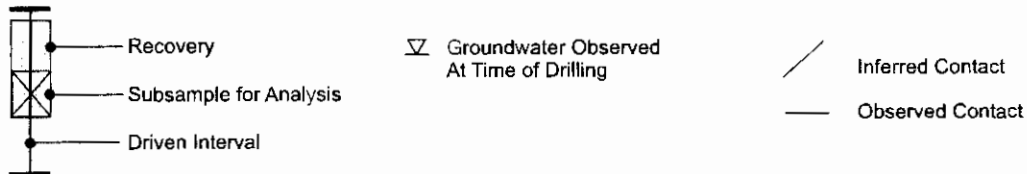
Groundwater Observed At Time of Drilling

Inferred Contact

Observed Contact

# Log of Soil Boring and Piezometer Construction PP-1b

<b>FLOYD I SNIDER</b> strategy • science • engineering		<b>Floyd Snider</b> Boring PP-1b Date 7/25/05 Sheet 1 of 1 Job PROLOGIS-TWP Job No. 06000 Logged By Jessie Satterberg Weather 70 Degrees Drilled By Cascade Drilling - Jay Drill Type/Method GeoProbe Sampling Method Direct Push - Power Probe 9630 Bottom of Boring 16 Ft. ATD Water Level Depth 10 Ft Ground Surface Elevation _____					
		Obs. Well Install. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					
SAMPLE ID	Blow Count N'/12"	RECOVERY		GRAPHIC RECOVERY	USCS Symbol	DESCRIPTION: color, texture, moisture MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	WELL CONSTRUCTION Steel Casing Well Seal
		From	To				
					0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	Dry Sand  No sample until 10'  Gray silty CLAY, poorly graded, wet. CL SP Dark gray to black SAND, wet.	3/4" PVC Casing  Bentonite Chips  # 2/12 Sand  3/4" Schedule 40 PVC 10 Slot Screen with Pre-packed Sand (#2/12)
						Bottom of boring at 16 ft.	



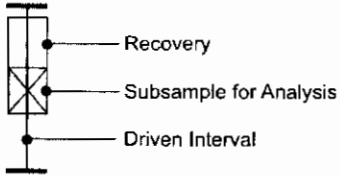
# Log of Soil Boring and Piezometer Construction PP-2a

**FLOYD | SNIDER**  
strategy • science • engineering

**Floyd Snider**  
 Boring PP-2a Date 7/25/05 Sheet 1 of 1  
 Job PROLOGIS-TWP Job No. 06000  
 Logged By Jessie Satterberg Weather Sunny, 75 Degrees  
 Drilled By Cascade Drilling - Jay  
 Drill Type/Method GeoProbe  
 Sampling Method Direct Push - Power Probe 9630  
 Bottom of Boring 8 Ft. ATD Water Level Depth 6 Ft  
 Ground Surface Elevation \_\_\_\_\_

Obs. Well Install.  Yes  No

SAMPLE ID	Blow Count N/12"	RECOVERY		GRAPHIC RECOVERY	USCS Symbol	DESCRIPTION: color, texture, moisture MAJOR CONSTITUENT NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	WELL CONSTRUCTION Steel Casing Well Seal 3/4" PVG Casing Bentonite Chips 3/4" Schedule 40 PVC 10 Slot Screen with Pre-packed Sand (#2/12)
		From	To				
				0		Gravel, rock, concrete debris.	
				1		No sample until 5'	
				2			
				3			
				4			
				5			
				6	SP	Black moist SAND with 1-2" wood debris.	
				7	CL	Dark gray to black CLAY with wood fibers.	
				8		Bottom of boring at 8 ft.	
				9			
				10			
				11			
				12			
				13			
				14			
				15			
				16			
				17			
				18			
				19			
				20			



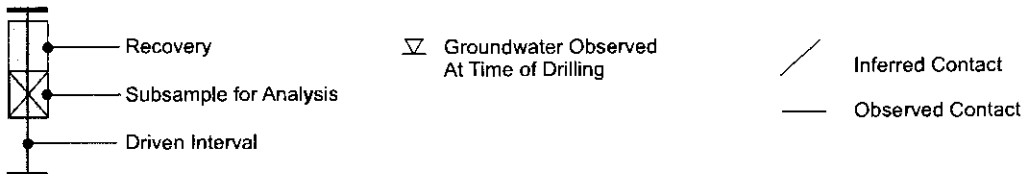
Groundwater Observed At Time of Drilling

Inferred Contact

Observed Contact

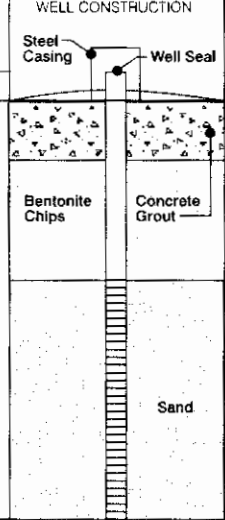
# Log of Soil Boring and Piezometer Construction PP-2b

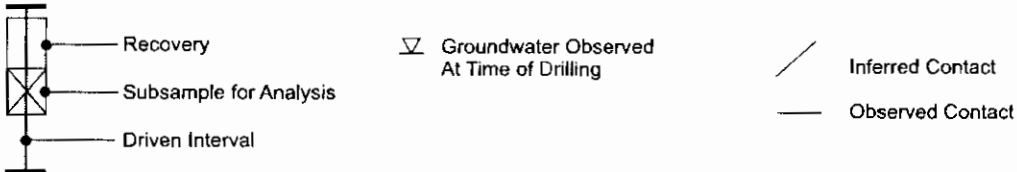
<b>FLOYD   SNIDER</b> strategy • science • engineering		<b>Floyd Snider</b> Boring PP-2b Date 7/25/05 Sheet 1 of 1 Job PROLOGIS-TWP Job No. 06000 Logged By Jessie Satterberg Weather 70 Degrees Drilled By Cascade Drilling - Jay Drill Type/Method GeoProbe Sampling Method Direct Push - Power Probe 9630 Bottom of Boring 17 Ft. ATD Water Level Depth 10 Ft. Ground Surface Elevation _____					
		Obs. Well Install. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					
SAMPLE ID	Blow Count N/12"	RECOVERY		GRAPHIC RECOVERY	USCS Symbol	DESCRIPTION: color, texture, moisture MAJOR CONSTITUENT: NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	WELL CONSTRUCTION Steel Casing Well Seal 3/4" PVC Casing Bentonite Chips # 2/12 Sand 3/4" Schedule 40 PVC 10" Slot Screen with Pre-packed Sand (#2/12)
		From	To				
					0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	Gravel, cobble size rocks.  No sample until 10'  Black to gray SAND, wet.  Bottom of boring at 17 ft.	



# Log of Soil Boring and Well Construction PMW-1A

<b>FLOYD   SNIDER</b> strategy • science • engineering	<b>Floyd Snider</b> Boring <u>PMW-1A</u> Date <u>7/25/05</u> Sheet <u>1</u> of <u>1</u> Job <u>PROLOGIS-TWP</u> Job No. <u>06000</u> Logged By <u>Stephen Bentsen</u> Weather <u>Sunny, 70's</u> Drilled By <u>Cascade Drilling - Steve</u> Drill Type/Method <u>6" Hollow Stem Auger</u> Sampling Method <u>None</u> Bottom of Boring <u>7'</u> ATD Water Level Depth _____ Ground Surface Elevation <u>-</u>		
	Obs. Well Install. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

SAMPLE ID	Blow Count N/12"	RECOVERY		GRAPHIC RECOVERY	USCS Symbol	DESCRIPTION: color, texture, moisture MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	WELL CONSTRUCTION																			
		From	To				Steel Casing	Well Seal																		
						Well installed 7' from PMW-1B. No samples collected, see Log PMW-1B for description of soil types.  Bottom of Boring at 7'																				
					0		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20



# Log of Soil Boring and Well Construction PMW-1B

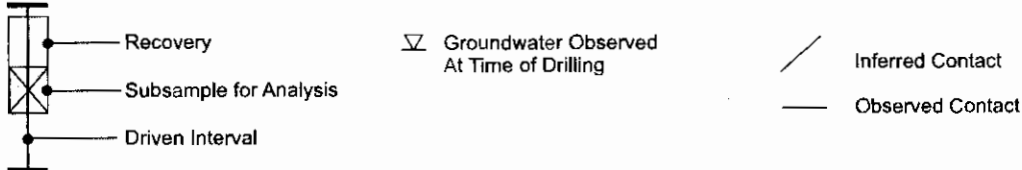
**FLOYD | SNIDER**  
strategy • science • engineering

**Floyd Snider**  
 Boring PMW-1B Date 7/25/05 Sheet 1 of 1  
 Job PROLOGIS-TWP Job No. 06000  
 Logged By Stephen Bentsen Weather Sunny, 70's  
 Drilled By Cascade Drilling - Steve  
 Drill Type/Method 6" Hollow Stem Auger  
 Sampling Method Split Spoon  
 Bottom of Boring 19' ATD Water Level Depth 5.5'

Obs. Well Install.  Yes  No

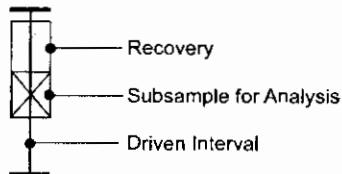
Ground Surface Elevation     

SAMPLE ID	Blow Count N/12'	RECOVERY		GRAPHIC RECOVERY	USCS Symbol	DESCRIPTION: color, texture, moisture MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	WELL CONSTRUCTION
		From	To				
				0		Dry Gravel	
				1	SP	Light gray gravelly SAND (FILL)	
				2			
				3		Woody debris and chips, dark, slightly moist, (FILL) Poor recovery.	
	17 50 for 6"			4			
				5	∇		
	11/12/18			6	PT		
				7			
	9/2/2			8			
				9			
	2/2/2			10	PT. CL	Clay layer underlain by peaty woody fibers.	
				11			
	4/8/9			12			
				13	SP		
	14/9/4			14			
				15		Grey to dark grey, poorly sorted fine silty SAND with minor woody fibers and clay lenses. Wet.	
	4/5/6			16			
				17			
	9/9/9			18			
				19		Bottom of Boring at 19'	
				20			



# Log of Soil Boring and Well Construction PMW-2A

<b>FLOYD   SNIDER</b> strategy • science • engineering			<b>Floyd Snider</b> Boring <u>PMW-2A</u> Date <u>7/25/05</u> Sheet <u>1</u> of <u>1</u> Job <u>PROLOGIS-TWP</u> Job No. <u>06000</u> Logged By <u>Stephen Bentsen</u> Weather <u>Sunny, 70's</u> Drilled By <u>Cascade Drilling - Steve</u> Drill Type/Method <u>6" Hollow Stem Auger</u> Sampling Method <u>None</u> Bottom of Boring <u>7'</u> ATD Water Level Depth _____ Ground Surface Elevation _____					
			Obs. Well Install. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					
SAMPLE ID	Blow Count N/12'	RECOVERY		GRAPHIC RECOVERY	USCS Symbol	DESCRIPTION: color, texture, moisture MAJOR CONSTITUENT, NON-SOIL SUBSTANCES: Odor, staining, spher, scrap, slag, etc.	WELL CONSTRUCTION	
		From	To				Steel Casing	Well Seal
					0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	Well installed 7' from PMW-2B. No samples collected, see Log PMW-2B for description of soil types.		
						Bottom of Boring at 7'		



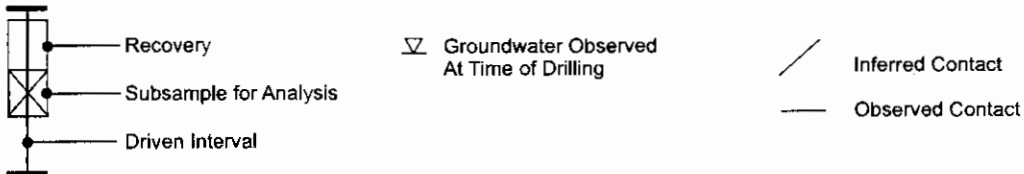
Groundwater Observed  
 At Time of Drilling

/ Inferred Contact  
 — Observed Contact

# Log of Soil Boring and Well Construction PMW-2B

<b>FLOYD   SNIDER</b> strategy • science • engineering	<b>Floyd Snider</b> Boring <u>PMW-2B</u> Date <u>7/25/05</u> Sheet <u>1</u> of <u>1</u> Job <u>PROLOGIS-TWP</u> Job No. <u>06000</u> Logged By <u>Stephen Bentzen</u> Weather <u>Sunny, 70's</u> Drilled By <u>Cascade Drilling - Steve</u> Drill Type/Method <u>6" Hollow Stem Auger</u> Sampling Method <u>Split Spoon</u> Bottom of Boring <u>16'</u> ATD Water Level Depth <u>4.5', 10'</u> Ground Surface Elevation <u>--</u>	
	Obs. Well Install. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

SAMPLE ID	Blow Count N/12'	RECOVERY		GRAPHIC RECOVERY	USCS Symbol	DESCRIPTION: color, texture, moisture MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	WELL CONSTRUCTION
		From	To				
						ASPHALT	Steel Casing
					GP	Sandy gravel. (FILL)	Well Seal
							Concrete Grout
	11/11/11						
	7/2/10						Bentonite Chips
	7/11/10						
	2/2/4				PT	Woody debris, dry. FILL	
	5/7/7					Dark gray, silty SAND, dry to wet.	2" PVC Casing
	12/12/24				SP		Sand
						Bottom of Boring at 16'	





# Log of Soil Boring and Well Construction PMW-3A

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**Floyd Snider**

Boring PMW-3A Date 7/25/05 Sheet 1 of 1

Job PROLOGIS-TWP Job No. 06000

Logged By Stephen Bentsen Weather Sunny, 70's

Drilled By Cascade Drilling - Steve

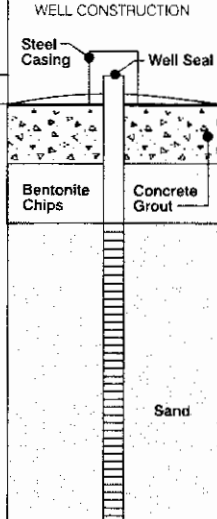
Drill Type/Method 6" Hollow Stem Auger

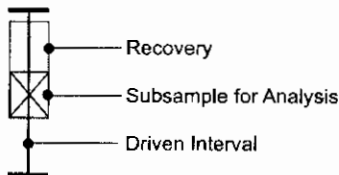
Sampling Method None

Bottom of Boring 7' ATD Water Level Depth \_\_\_\_\_

Obs. Well Install.  Yes  No

Ground Surface Elevation \_\_\_\_\_

SAMPLE ID	Blow Count N/12'	RECOVERY		GRAPHIC RECOVERY	USCS Soil Series	DESCRIPTION: color, texture, moisture MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag etc.	WELL CONSTRUCTION
		From	To				
							
					0		
					1	Well installed 7' from PMW-3B. No samples collected, see Log PMW-3B for description of soil types.	
					2		
					3		
					4		
					5		
					6		
					7		
					8	Bottom of Boring at 7'	
					9		
					10		
					11		
					12		
					13		
					14		
					15		
					16		
					17		
					18		
					19		
					20		



∇ Groundwater Observed At Time of Drilling

/ Inferred Contact  
 — Observed Contact

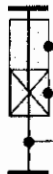
# Log of Soil Boring and Well Construction PMW-3B

**FLOYD I SNIDER**  
strategy • science • engineering

**Floyd Snider**  
 Boring PMW-3B Date 7/25/05 Sheet 1 of 1  
 Job PROLOGIS-TWP Job No. 06000  
 Logged By Stephen Bentsen Weather Sunny, 70's  
 Drilled By Cascade Drilling - Steve  
 Drill Type/Method 6" Hollow Stem Auger  
 Sampling Method Split Spoon  
 Bottom of Boring 18' ATD Water Level Depth 4.5', 9'  
 Ground Surface Elevation -

Obs. Well Install.  Yes  No

SAMPLE ID	Blow Count N/12'	RECOVERY		GRAPHIC RECOVERY	USCS Symbol	DESCRIPTION: color, texture, moisture MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	WELL CONSTRUCTION
		From	To				
				0		ASPHALT	Steel Casing Well Seal
				1	GP	Brown sandy GRAVEL. (FILL) Dry	Concrete Grout
				2			
	6/9/1			3			Bentonite Chips
				4			
	3/3/4			5	▽	Wood debris with gravel	2" PVC Casing
				6			
	19/20/24			7	SM	Silty SAND lense	
				8	CL	Silty Clay	
	7/14/18			9	▽	Dark grey SAND with some wood debris, wet.	
				10	SP		
	5/7/11			11			
				12			
	7/7/4			13			
				14			
	12/14/17			15			Sand
				16			
	17/17/17			17			
				18		Bottom of Boring at 18'	
				19			
				20			



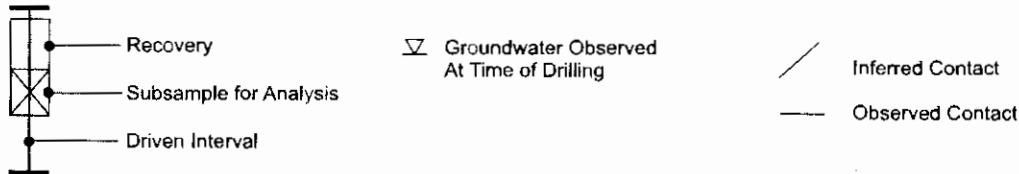
▽ Groundwater Observed  
At Time of Drilling

— Inferred Contact

— Observed Contact

# Log of Soil Boring and Well Construction PMW-4A

<b>FLOYD I SNIDER</b> strategy • science • engineering				<b>Floyd Snider</b> Boring <u>PMW-4A</u> Date <u>7/26/05</u> Sheet <u>1</u> of <u>1</u> Job <u>PROLOGIS-TWP</u> Job No. <u>06000</u> Logged By <u>Stephen Bentsen</u> Weather <u>Sunny, 70's</u> Drilled By <u>Cascade Drilling - Steve</u> Drill Type/Method <u>6" Hollow Stem Auger</u> Sampling Method <u>None</u> Bottom of Boring <u>17'</u> ATD Water Level Depth _____ Ground Surface Elevation <u>-</u>			
				Obs. Well Install. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
SAMPLE ID	Blow Count N <sub>12</sub>	RECOVERY		GRAPHIC RECOVERY	USCS Symbol	DESCRIPTION: color, texture, moisture MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, shear, scrap, slag, etc.	WELL CONSTRUCTION
		From	To				
						Well installed 7' from PMW-4B. No samples collected, see Log PMW-4B for description of soil types.	<p>The diagram shows a vertical well casing starting at the surface. At the top, there is a 'Steel Casing' and a 'Well Seal'. Below the seal is a layer of 'Concrete Grout'. The main body of the well is filled with 'Bentonite Chips'. At the bottom of the well, there is a section of 'Sand'. The well extends to a depth of 17 feet.</p>
						Bottom of Boring at 17'	

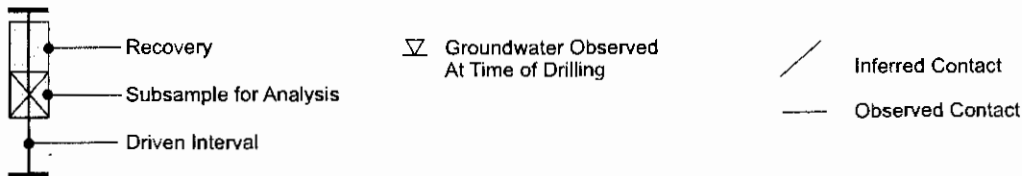


# Log of Soil Boring and Well Construction PMW-4B

**FLOYD | SNIDER**  
strategy • science • engineering

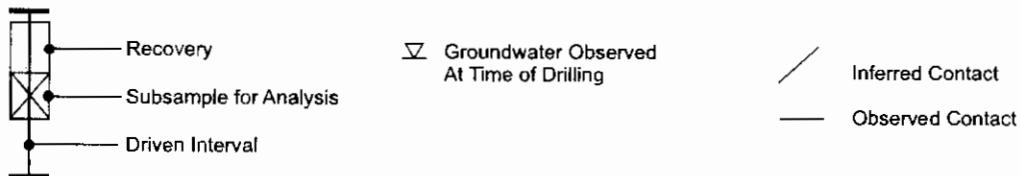
**Floyd Snider**  
 Boring PMW-4B Date 7/26/05 Sheet 1 of 2  
 Job PROLOGIS-TWP Job No. 06000  
 Logged By Stephen Bentsen Weather Sunny, 70's  
 Drilled By Cascade Drilling - Steve  
 Drill Type/Method 6" Hollow Stem Auger  
 Sampling Method Split Spoon  
 Bottom of Boring 30' ATD Water Level Depth 12'  
 Obs. Well Install.  Yes  No  
 Ground Surface Elevation -

SAMPLE ID	Blow Count N/12"	RECOVERY		GRAPHIC RECOVERY	USCS Symbol	DESCRIPTION: color, texture, moisture MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	WELL CONSTRUCTION	
		From	To				Steel Casing	Well Seal
						Brush Surface		
					GP to SP	Light grey sandy gravel to dark brown SAND, moist. (Surcharge Pile Fill)		Concrete Grout
15/7/9								
22/ 50 for 6"								
22/24/20						6 to 6.5' - White paste-like material.		Bentonite Chips
16/23/30					SP	Brown sand with wood fiber, moist. Zone of broken brick. 8 to 8.5' - White paste-like material		
60 for 6"					ML to SP	Dark brown sand to sandy SILT with gravel and occasional brick. (FILL)		2" PVC Casing
38/ 50 for 6"								
36/ 50 for 6"								
50 for 6"								
27/9/3					PT	Large decaying wood debris, native?		
3/3/3								
2/2/4					CL	Olive-grey clay with some plant or wood fibers.		
4/5/5								



# Log of Soil Boring and Well Construction PMW-4B

<b>FLOYD I SNIDER</b> strategy • science • engineering			<b>Floyd Snider</b> Boring <u>PMW-4B</u> Date <u>7/26/05</u> Sheet <u>2</u> of <u>2</u> Job <u>PROLOGIS-TWP</u> Job No. <u>06000</u> Logged By <u>Stephen Bentsen</u> Weather <u>Sunny, 70's</u> Drilled By <u>Cascade Drilling - Steve</u> Drill Type/Method <u>6" Hollow Stem Auger</u> Sampling Method <u>Split Spoon</u> Bottom of Boring <u>30'</u> ATD Water Level Depth <u>12'</u> Ground Surface Elevation <u>---</u>				
			Obs. Well Install. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				
SAMPLE ID	Blow Count N/12"	RECOVERY		GRAPHIC RECOVERY	USCS Symbol	DESCRIPTION: color, texture, moisture MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	WELL CONSTRUCTION
		From	To				
				20			
	2/2/4			21	CL- ML	Grades sandier.	
				22			
	6/6/6			23			
				24			
	4/7/12			25	SM	Grey silty SAND, moist to wet.	
				26			
	14/20/23			27			
				28			
	17/20/28			29			
				30		Bottom of Boring at 30'	
				31			
				32			
				33			
				34			
				35			
				36			
				37			
				38			
				39			
				40			



# Log of Soil Boring and Well Construction PMW-5A

**FLOYD | SNIDER**  
strategy • science • engineering

**Floyd Snider**

Boring PMW-5A Date 7/26/05 Sheet 1 of 1

Job PROLOGIS-TWP Job No. 06000

Logged By J. Satterberg Weather Sunny, 70's

Drilled By Cascade Drilling - Steve

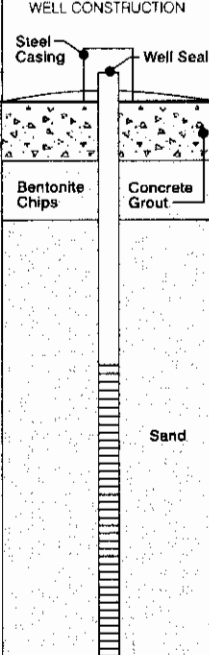
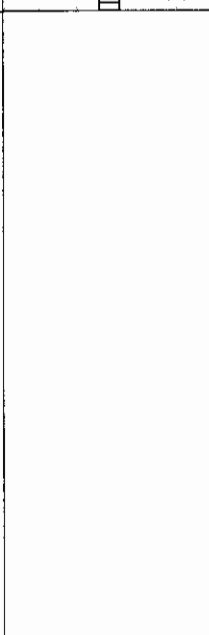
Drill Type/Method 6" Hollow Stem Auger

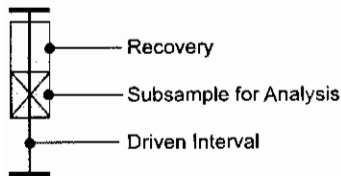
Sampling Method None

Bottom of Boring 9.5' ATD Water Level Depth \_\_\_\_\_

Ground Surface Elevation -

Obs. Well Install.  Yes  No

SAMPLE ID	Blow Count N/12"	RECOVERY		GRAPHIC RECOVERY	USCS Symbol	DESCRIPTION: color, texture, moisture MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	WELL CONSTRUCTION		
		From	To				Steel Casing	Well Seal	
						Well installed 7' from PMW-5B. No samples collected, see Log PMW-5B for description of soil types.			
						Bottom of Boring at 9.5'			



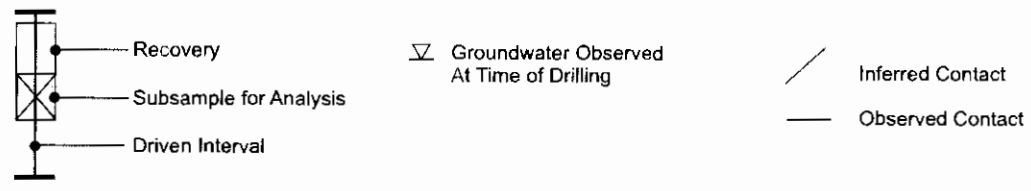
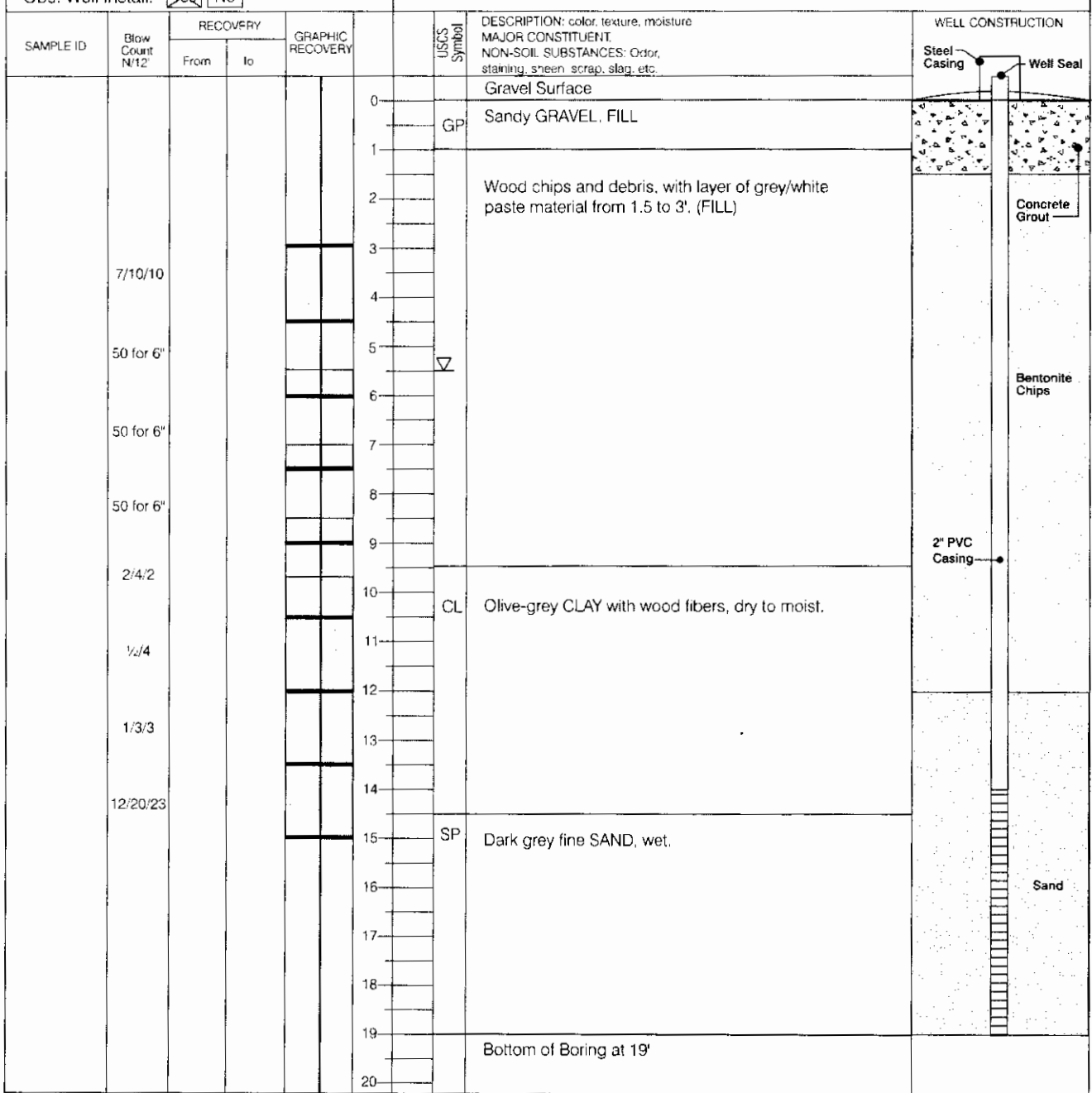
Groundwater Observed  
At Time of Drilling

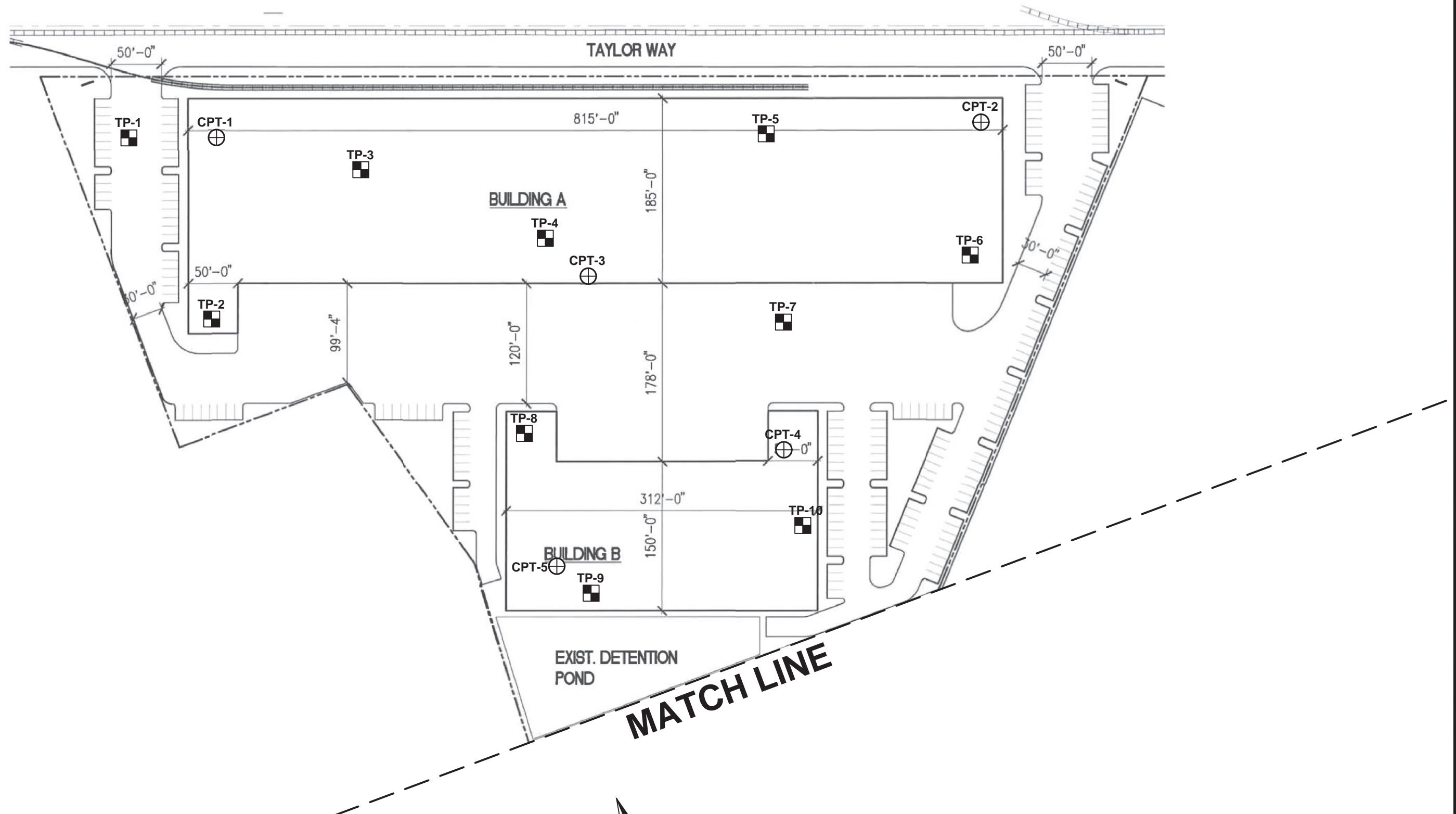
Inferred Contact

Observed Contact

# Log of Soil Boring and Well Construction PMW-5B

<b>FLOYD   SNIDER</b> strategy • science • engineering	<b>Floyd Snider</b> Boring <u>PMW-5B</u> Date <u>7/26/05</u> Sheet <u>1</u> of <u>1</u> Job <u>PROLOGIS-TWP</u> Job No. <u>06000</u> Logged By <u>J. Satterberg</u> Weather <u>Sunny, 70's</u> Drilled By <u>Cascade Drilling - Steve</u> Drill Type/Method <u>6" Hollow Stem Auger</u> Sampling Method <u>Split Spoon</u> Bottom of Boring <u>19'</u> ATD Water Level Depth <u>5.5'</u> Ground Surface Elevation <u>-</u>	
	Obs. Well Install. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	







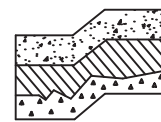
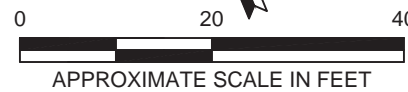
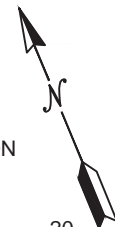
**NOTE:**

THIS SITE PLAN IS SCHEMATIC. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE. IT IS INTENDED FOR REFERENCE ONLY AND SHOULD NOT BE USED FOR DESIGN OR CONSTRUCTION PURPOSES.

**REFERENCE:** SITE PLAN PROVIDED BY CRAFT ARCHITECTS.

**LEGEND:**

-  APPROXIMATE BORING LOCATION
-  APPROXIMATE CONE PENETRATION LOCATION



**Terra Associates, Inc.**  
 Consultants in Geotechnical Engineering  
 Geology and Environmental Earth Sciences

EXPLORATION LOCATION PLAN  
 TAYLOR WAY AND LINCOLN AVE INDUSTRIAL SITES  
 TACOMA, WASHINGTON

Proj.No. T-7543

Date: APR 2017

Figure 2A



**APPENDIX A  
FIELD EXPLORATION AND LABORATORY TESTING**

**Taylor Way and Lincoln Avenue Industrial Sites  
Tacoma, Washington**

On November 28, 2016, we completed our site exploration by observing soil conditions at 10 test pits. On December 7 and December 8, 2016, we supplemented this data by observing soil conditions at 6 test borings drilled to a depth of 26 feet. The test pits were excavated using a track-mounted excavator to a maximum depth of ten feet below existing site grades. Test pit and boring locations were determined in the field by measurements from existing site features. The approximate location of the test pits and test borings is shown on the attached Exploration Location Plans, Figures 2a and 2b. Test Pit Logs and Test Boring Logs are attached as Figures A-2 through A-17.




An engineering geologist from our office conducted the field exploration. Our representative classified the soil conditions encountered, maintained a log of each test pit and test boring, obtained representative soil samples, and recorded water levels observed during excavation. During drilling, soil samples were obtained in general accordance with ASTM Test Designation D-1586. Using this procedure, a 2-inch (outside diameter) split barrel sampler is driven into the ground 18 inches using a 140-pound hammer free falling a height of 30 inches. The number of blows required to drive the sampler 12 inches after an initial 6-inch set is referred to as the Standard Penetration Resistance value or N value. This is an index related to the consistency of cohesive soils and relative density of cohesionless materials. N values obtained for each sampling interval are recorded on the Boring Logs, Figures A-12 through A-17. All soil samples were visually classified in accordance with the Unified Soil Classification System (USCS) described on Figure A-1.

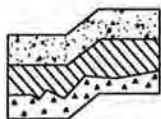
Representative soil samples obtained from the test pits and test borings were placed in closed containers and taken to our laboratory for further examination and testing. The moisture content of each sample was measured and is reported on the individual Test Pit Logs and Test Boring Logs. Atterberg Limits Tests were performed on selected samples. The results of the Atterberg Limits tests are shown on the individual Test Boring Logs.

InSitu Engineering, under subcontract with Terra Associates, Inc. conducted nine electric CPTs at locations selected by Terra Associates, Inc., which are shown on Figures 2a and 2b. The CPTs were advanced to depths of 60 feet below the surface. The CPT is an instrumented approximately 1 ½-inch diameter cone that is pushed into the ground at a constant rate. During advancement, continuous measurements are made of the resistance to penetration of the cone and the friction of the outer surface of a sleeve. The cone is also equipped with a porous filter and a pressure transducer for measuring groundwater or pore water pressure generated. Measurements of tip and sleeve frictional resistance, pore pressure, and interpreted soil conditions are summarized in graphical form on the attached CPT Logs.

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTION	
<b>COARSE GRAINED SOILS</b>	More than 50% material larger than No. 200 sieve size	<b>GRAVELS</b> More than 50% of coarse fraction is larger than No. 4 sieve	Clean Gravels (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 with fines	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines.
				GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines.
	More than 50% material smaller than No. 200 sieve size	<b>SANDS</b> More than 50% of coarse fraction is smaller than No. 4 sieve	Clean Sands (less than 5% fines)	SW	Well-graded sands, sands with gravel, little or no fines.
				SP	Poorly-graded sands, sands with gravel, little or no fines.
			Sands with fines	SM	Silty sands, sand-silt mixtures, non-plastic fines.
				SC	Clayey sands, sand-clay mixtures, plastic fines.
<b>FINE GRAINED SOILS</b>	More than 50% material smaller than No. 200 sieve size	<b>SILTS AND CLAYS</b> Liquid Limit is less than 50%	ML	Inorganic silts, rock flour, clayey silts with slight plasticity.	
			CL	Inorganic clays of low to medium plasticity. (Lean clay)	
			OL	Organic silts and organic clays of low plasticity.	
		<b>SILTS AND CLAYS</b> Liquid Limit is greater than 50%	MH	Inorganic silts, elastic.	
			CH	Inorganic clays of high plasticity. (Fat clay)	
			OH	Organic clays of high plasticity.	
<b>HIGHLY ORGANIC SOILS</b>			PT	Peat.	

### DEFINITION OF TERMS AND SYMBOLS

<b>COHESIONLESS</b>	<u>Density</u>	<u>Standard Penetration Resistance in Blows/Foot</u>		2" OUTSIDE DIAMETER SPILT SPOON SAMPLER
	Very Loose	0-4		2.4" INSIDE DIAMETER RING SAMPLER OR SHELBY TUBE SAMPLER
	Loose	4-10		WATER LEVEL (Date)
	Medium Dense	10-30	Tr	TORVANE READINGS, tsf
	Dense	30-50	Pp	PENETROMETER READING, tsf
	Very Dense	>50	DD	DRY DENSITY, pounds per cubic foot
<b>COHESIVE</b>	<u>Consistency</u>	<u>Standard Penetration Resistance in Blows/Foot</u>	LL	LIQUID LIMIT, percent
	Very Soft	0-2	PI	PLASTIC INDEX
	Soft	2-4	N	STANDARD PENETRATION, blows per foot
	Medium Stiff	4-8		
	Stiff	8-16		
	Very Stiff	16-32		
Hard	>32			



**Terra Associates, Inc.**  
 Consultants in Geotechnical Engineering  
 Geology and Environmental Earth Sciences

**UNIFIED SOIL CLASSIFICATION SYSTEM**  
 TAYLOR WAY AND LINCOLN AVE INDUSTRIAL SITES  
 TACOMA, WASHINGTON

Proj.No. T-7543

Date: APR 2017

Figure A-1

# LOG OF TEST PIT NO. TP-1

FIGURE A-2

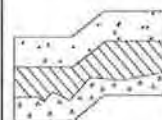
**PROJECT NAME:** Taylor Way and Lincoln Avenue Industrial Sites    **PROJ. NO:** T-7543    **LOGGED BY:** NRH

**LOCATION:** Tacoma, Washington    **SURFACE CONDITIONS:** Bare/Grass    **APPROX. ELEV:** N/A

**DATE LOGGED:** November 28, 2016    **DEPTH TO GROUNDWATER:** 2 Feet    **DEPTH TO CAVING:** 2 Feet

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0				
1		FILL: Gray silty SAND with gravel, fine grained, moist to wet.	Medium Dense	
2		Dark brown silt and wood debris, mostly wood debris and rubble.		
3			Loose	
4				
5		Test pit terminated at 5 feet due to heavy caving. Groundwater seepage observed at 2 feet.		
6				
7				
8				
9				
10				

**NOTE:** This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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# LOG OF TEST PIT NO. TP-2

FIGURE A-3

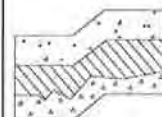
**PROJECT NAME:** Taylor Way and Lincoln Avenue Industrial Sites    **PROJ. NO:** T-7543    **LOGGED BY:** NRH

**LOCATION:** Tacoma, Washington    **SURFACE CONDITIONS:** Bare/Grass    **APPROX. ELEV:** N/A

**DATE LOGGED:** November 28, 2016    **DEPTH TO GROUNDWATER:** 4 Feet    **DEPTH TO CAVING:** N/A

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		FILL: Tan SAND, medium grained, moist.		
1		FILL: Gray silty SAND with gravel, fine grained, moist.		
2			Medium Dense	
3		FILL: Brown silty SAND, sticks, and organic debris. Heavy seepage at 4 feet.		
4		FILL: Metal, wood, and various other types of rubble.	Soft	
5				
6			Loose	
7				
8		Test pit terminated at 8 feet. Excavator stuck on rubble. Groundwater seepage observed at 4 feet.		
9				
10				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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# LOG OF TEST PIT NO. TP-3

FIGURE A-4

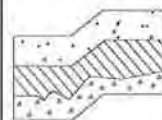
**PROJECT NAME:** Taylor Way and Lincoln Avenue Industrial Sites    **PROJ. NO:** T-7543    **LOGGED BY:** NRH

**LOCATION:** Tacoma, Washington    **SURFACE CONDITIONS:** Asphalt    **APPROX. ELEV:** N/A

**DATE LOGGED:** November 28, 2016    **DEPTH TO GROUNDWATER:** 3 Feet    **DEPTH TO CAVING:** N/A

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		FILL: Sand with gravel, medium grained, moist.		
1		FILL: Gray silty SAND with gravel, fine grained, moist.		
2				
3		FILL: Bricks and rubble, saturated.		
4				
5				
6				
7		Dark brown and gray silty CLAY/clayey SILT, soft, moist. (ML)		
8				
9				
10		Test pit terminated at 10 feet. Groundwater seepage observed at 3 feet.		
11				
12				
13				
14				
15				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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# LOG OF TEST PIT NO. TP-4

FIGURE A-5

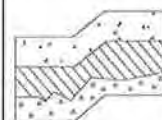
**PROJECT NAME:** Taylor Way and Lincoln Avenue Industrial Sites    **PROJ. NO:** T-7543    **LOGGED BY:** NRH

**LOCATION:** Tacoma, Washington    **SURFACE CONDITIONS:** Bare/Grass    **APPROX. ELEV:** N/A

**DATE LOGGED:** November 28, 2016    **DEPTH TO GROUNDWATER:** 2 Feet    **DEPTH TO CAVING:** N/A

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		FILL: Gravel with silt, moist.	Medium Dense	
1		FILL: Gray silty SAND with gravel, fine grained, moist.		
2		FILL: Gray gravelly SAND with wood debris, medium grained, moist.	Loose	
3		Light seepage from 2 to 5 feet.		
4				
5		FILL: Dark brown SILT with wood debris, moist.	Soft	
6				
7		Gray and brown silty CLAY/clayey SILT, moist. (ML)	Soft	
8				
9				
10		Test pit terminated at 10 feet. Groundwater seepage observed at 2 feet.		
11				
12				
13				
14				
15				

**NOTE:** This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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# LOG OF TEST PIT NO. TP-5

FIGURE A-6

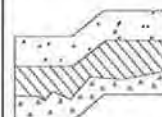
**PROJECT NAME:** Taylor Way and Lincoln Avenue Industrial Sites    **PROJ. NO:** T-7543    **LOGGED BY:** NRH

**LOCATION:** Tacoma, Washington    **SURFACE CONDITIONS:** Bare/Grass    **APPROX. ELEV:** N/A

**DATE LOGGED:** November 28, 2016    **DEPTH TO GROUNDWATER:** 3 Feet    **DEPTH TO CAVING:** N/A

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		FILL: Tan and gray silty SAND with gravel, fine grained, saturated.		
1		Heavy seepage observed at 3 feet.	Medium Dense	
2				
3		FILL: Brick and concrete rubble with cobbles, saturated.		
4			Loose	
5				
6				
7		FILL: Dark brown organic SILT, moist. (ML)	Soft	
8		Brown silty CLAY/clayey SILT, moist. (ML)		
9			Soft	
10		Test pit terminated at 10 feet. Groundwater seepage observed at 3 feet.		
11				
12				
13				
14				
15				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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# LOG OF TEST PIT NO. TP-6

FIGURE A-7

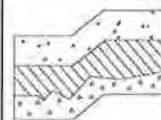
**PROJECT NAME:** Taylor Way and Lincoln Avenue Industrial Sites    **PROJ. NO:** T-7543    **LOGGED BY:** NRH

**LOCATION:** Tacoma, Washington    **SURFACE CONDITIONS:** Bare/Grass    **APPROX. ELEV:** N/A

**DATE LOGGED:** November 28, 2016    **DEPTH TO GROUNDWATER:** 4 Feet    **DEPTH TO CAVING:** N/A

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		FILL: Brown SAND, medium grained, moist, minor rubble debris.	Medium Dense	
1				
2				
3				
4		Brown and gray sandy SILT and SILT, wet. (ML)	Soft	
5				
6				
7		Dark gray SAND, medium grained, wet to saturated. (SP)	Loose	
8				
9				
10		Test pit terminated at 10 feet. Groundwater seepage observed at 4 feet.		
11				
12				
13				
14				
15				

**NOTE:** This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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# LOG OF TEST PIT NO. TP-7

FIGURE A-8

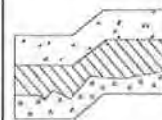
**PROJECT NAME:** Taylor Way and Lincoln Avenue Industrial Sites    **PROJ. NO:** T-7543    **LOGGED BY:** NRH

**LOCATION:** Tacoma, Washington    **SURFACE CONDITIONS:** Bare/Grass    **APPROX. ELEV:** N/A

**DATE LOGGED:** November 28, 2016    **DEPTH TO GROUNDWATER:** 4 Feet    **DEPTH TO CAVING:** N/A

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(TOPSOIL)		
1		FILL: Gray SAND, fine to medium grained, moist.		
2				
3				
4			Loose	
5				
6				
7		Test pit terminated at 7 feet due to excessive caving. Groundwater seepage observed at 4 feet.		
8				
9				
10				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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# LOG OF TEST PIT NO. TP-8

FIGURE A-9

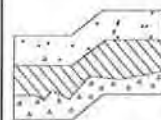
**PROJECT NAME:** Taylor Way and Lincoln Avenue Industrial Sites    **PROJ. NO:** T-7543    **LOGGED BY:** NRH

**LOCATION:** Tacoma, Washington    **SURFACE CONDITIONS:** Grass    **APPROX. ELEV:** N/A

**DATE LOGGED:** November 28, 2016    **DEPTH TO GROUNDWATER:** 7 Feet    **DEPTH TO CAVING:** N/A

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0				
1		<p><b>FILL:</b> Grayish-brown silty SAND with gravel, fine to medium grained, moist, occasional cobble sized chunks of asphalt and concrete rubble.</p>	Loose	
2				
3				
4				
5				
6				
7		<p>Light to moderate seepage observed at 7 feet.</p>		
8				
9				
10		<p>Test pit terminated at 10 feet. Groundwater seepage observed at 7 feet.</p>		
11				
12				
13				
14				
15				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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 Geology and Environmental Earth Sciences

# LOG OF TEST PIT NO. TP-9

FIGURE A-10

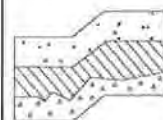
PROJECT NAME: Taylor Way and Lincoln Avenue Industrial Sites    PROJ. NO: T-7543    LOGGED BY: NRH

LOCATION: Tacoma, Washington    SURFACE CONDITIONS: Grass    APPROX. ELEV: N/A

DATE LOGGED: November 28, 2016    DEPTH TO GROUNDWATER: N/A    DEPTH TO CAVING: N/A

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0				
1		FILL: Grayish-brown silty SAND with gravel, fine grained, moist, minor brick and concrete debris, minor organics.  Cobbles in fill from 5 to 10 feet.	Loose	
2				
3				
4				
5				
6			Loose to Medium Dense	
7				
8				
9				
10				
11		Test pit terminated at 10 feet. No groundwater seepage observed.		
12				
13				
14				
15				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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# LOG OF TEST PIT NO. TP-10

FIGURE A-11

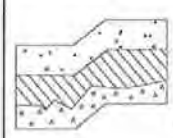
**PROJECT NAME:** Taylor Way and Lincoln Avenue Industrial Sites    **PROJ. NO:** T-7543    **LOGGED BY:** NRH

**LOCATION:** Tacoma, Washington    **SURFACE CONDITIONS:** Grass    **APPROX. ELEV:** N/A

**DATE LOGGED:** November 28, 2016    **DEPTH TO GROUNDWATER:** 4 Feet    **DEPTH TO CAVING:** N/A

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		<p>FILL: Gray silty SAND with gravel, fine grained, wet, occasional rubble.</p>       <p>Encountered 8-inch PVC pipe bedded in gravel at 7 feet. Bedding was saturated.</p>	Loose	
1				
2				
3				
4				
5				
6				
7				
8		<p>Test pit terminated at 8 feet in fill. Groundwater seepage observed at 4 feet.</p>		
9				
10				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



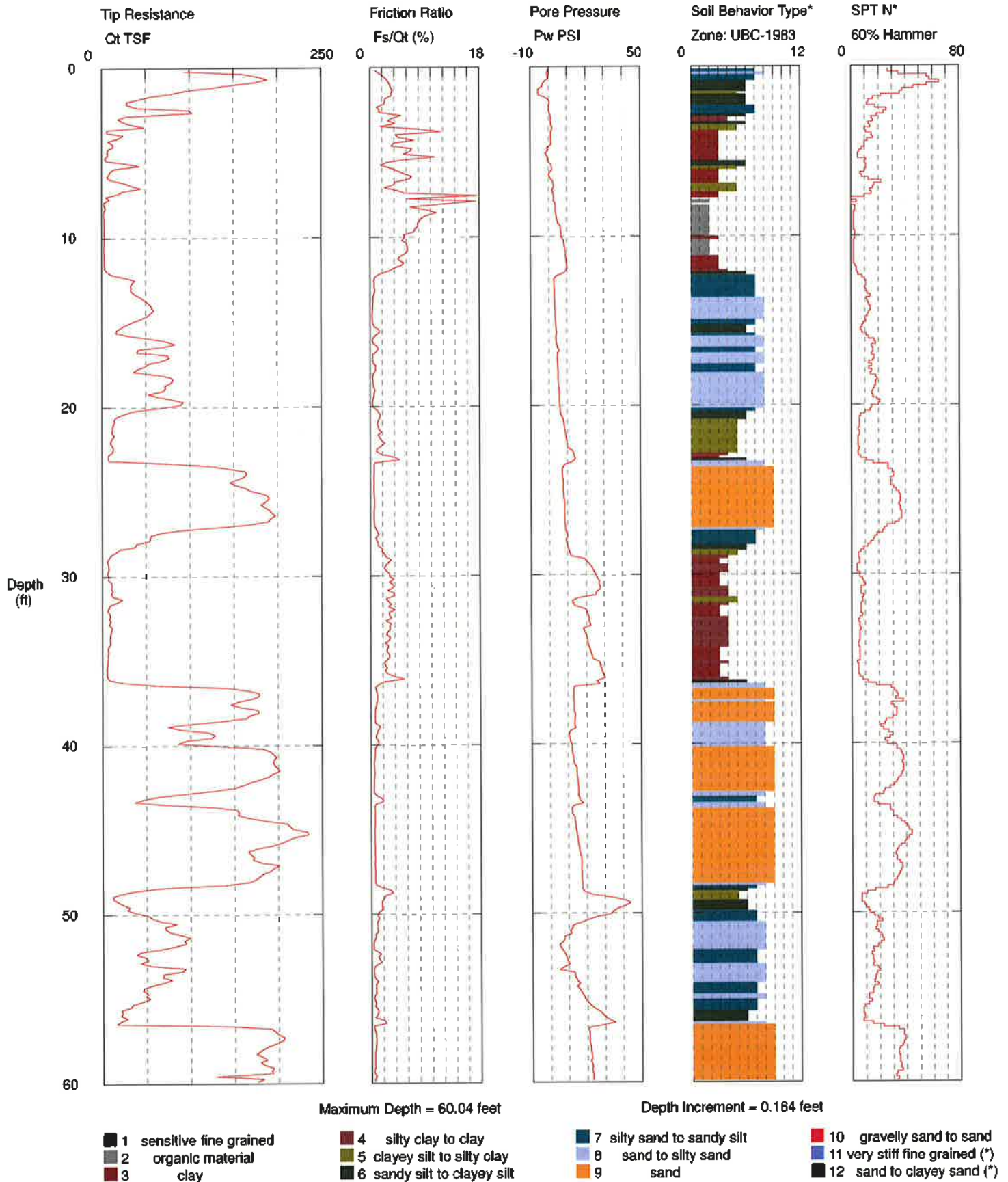
Terra  
Associates, Inc.

Consultants in Geotechnical Engineering  
Geology and  
Environmental Earth Sciences

# Terra Associates

Operator: Romanelli  
 Sounding: CPT-01  
 Cone Used: DDG1263  
 GPS Data: NO GPS

CPT Date/Time: 11/10/2016 5:10:25 PM  
 Location: Tacoma  
 Job Number: T-7543

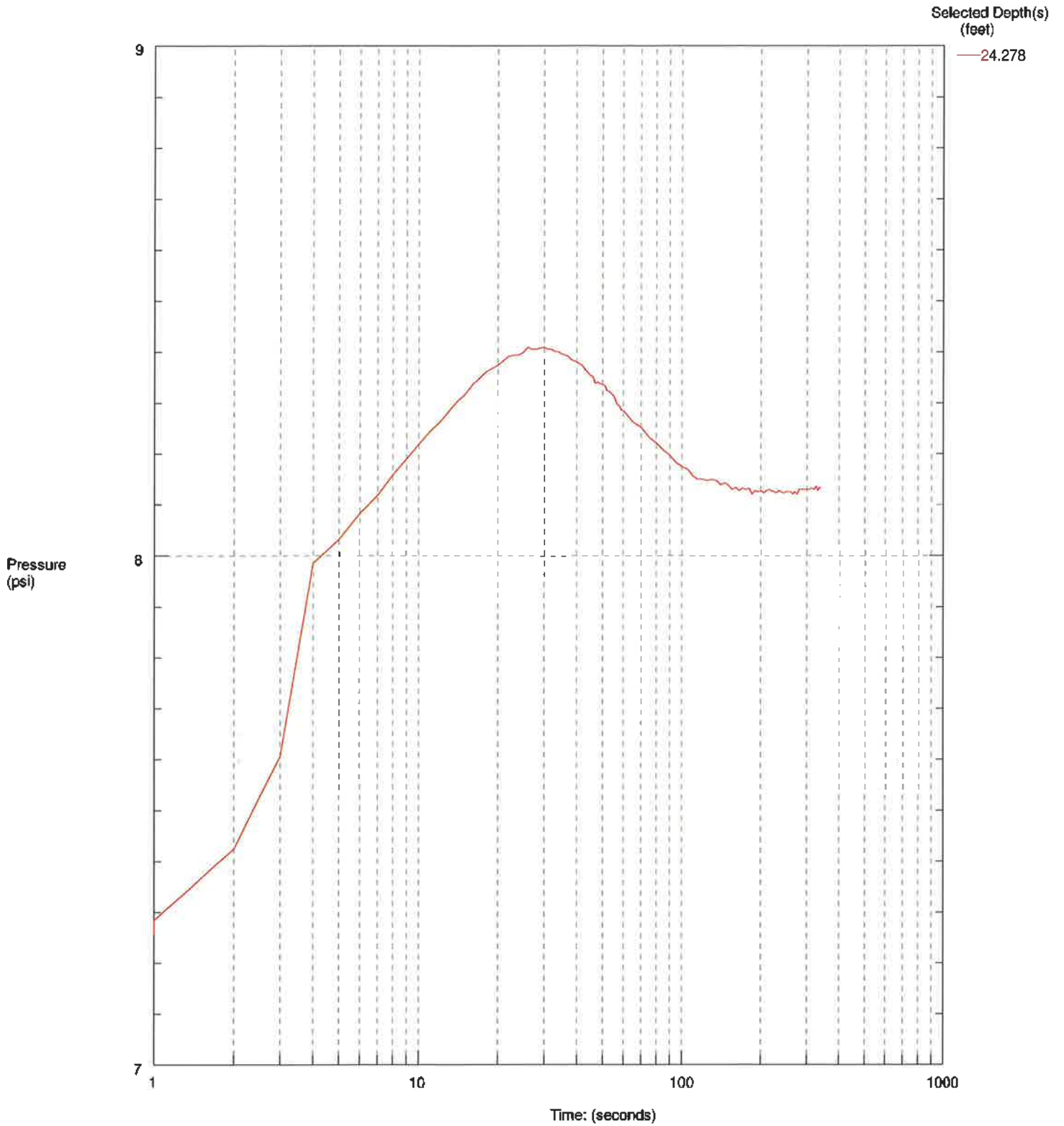


\*Soil behavior type and SPT based on data from UBC-1983

# Terra Associates

Operator Romanelli  
Sounding: CPT-01  
Cone Used: DDG1263  
GPS Data: NO GPS

CPT Date/Time: 11/10/2016 5:10:25 PM  
Location: Tacoma  
Job Number: T-7543

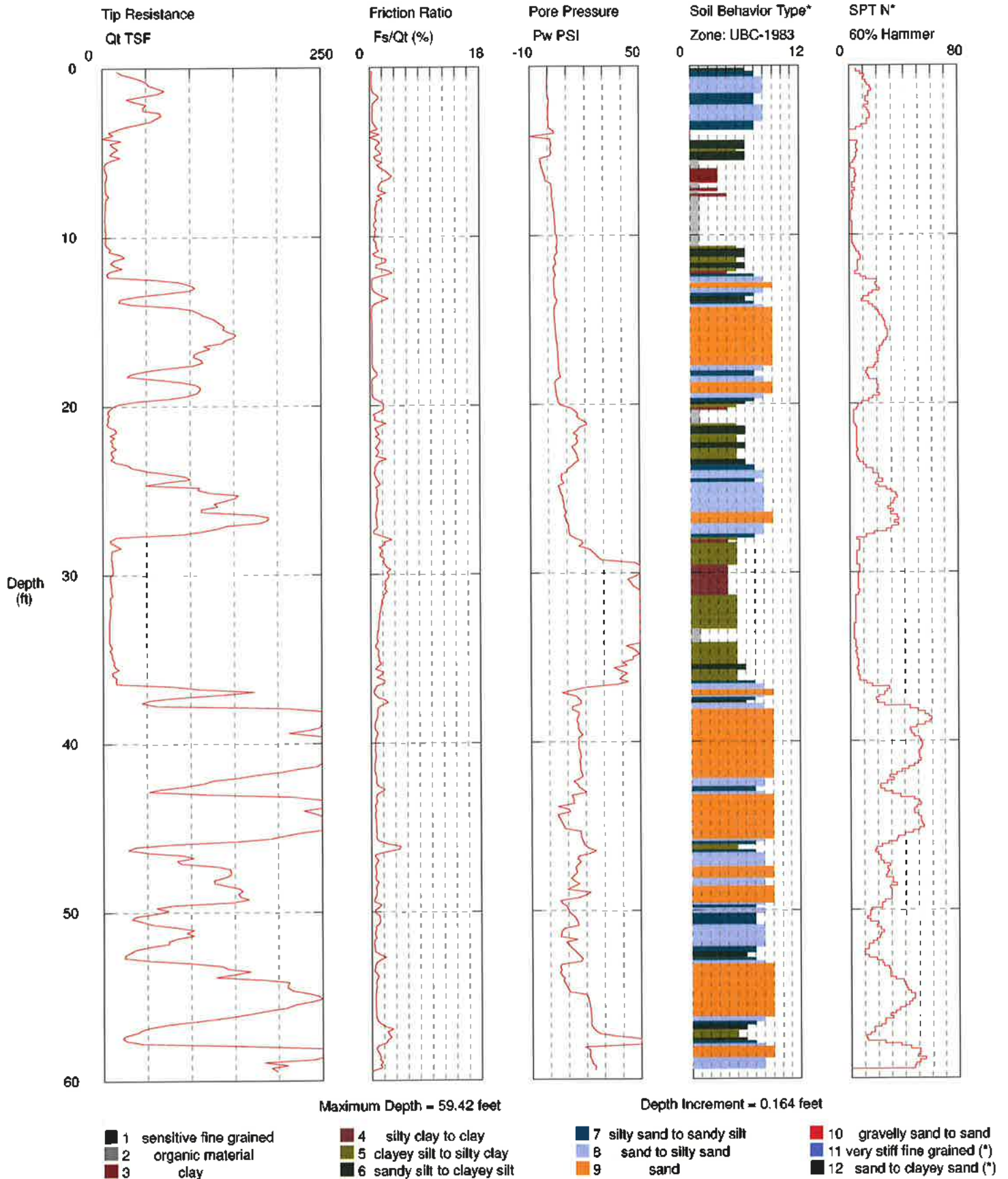


Maximum Pressure = 8.41 psi

# Terra Associates

Operator: Romanelli  
 Sounding: CPT-02  
 Cone Used: DDG1263  
 GPS Data: NO GPS

CPT Date/Time: 11/10/2016 2:58:47 PM  
 Location: Tacoma  
 Job Number: T-7543

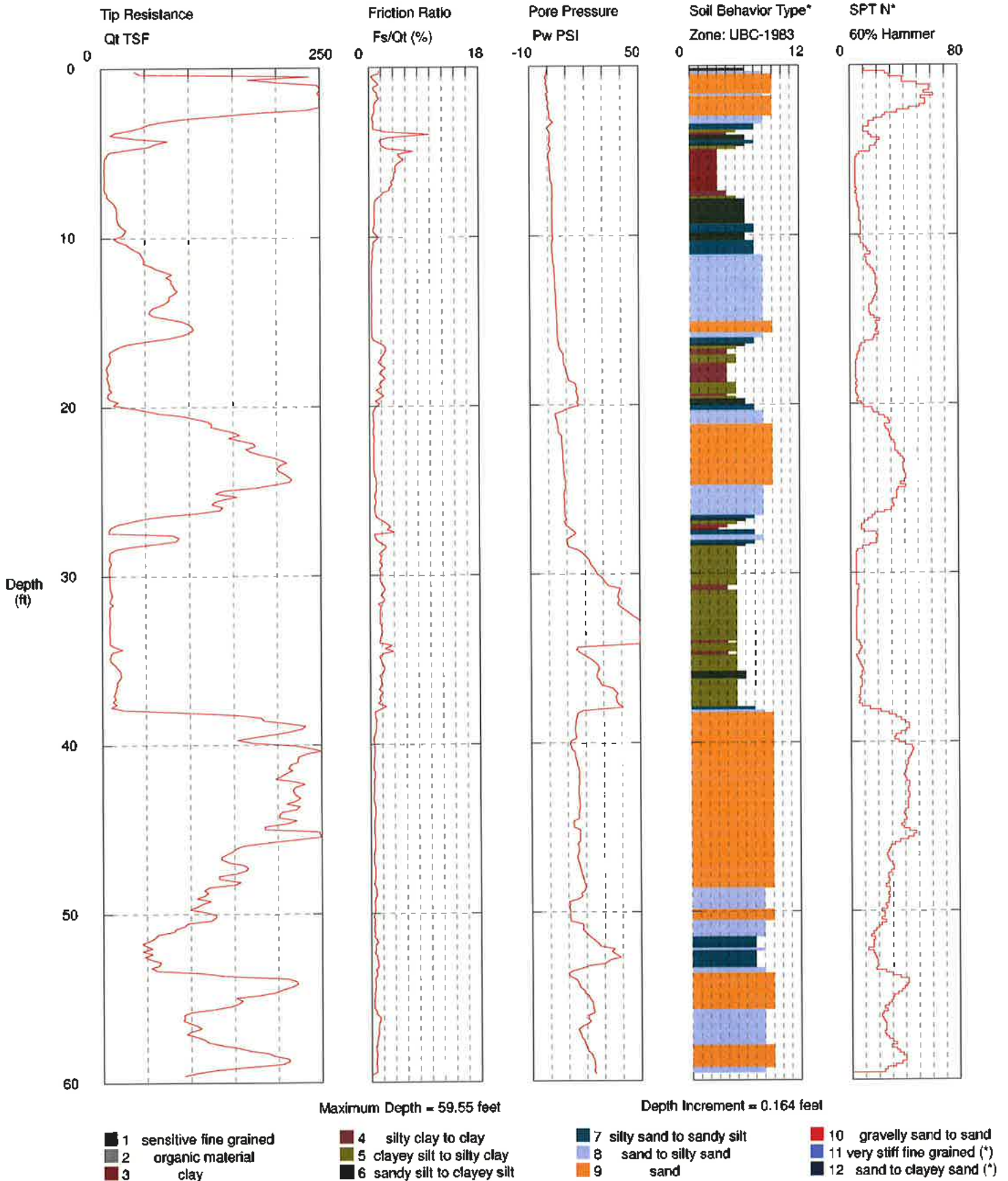


\*Soil behavior type and SPT based on data from UBC-1983

# Terra Associates

Operator: Romanelli  
 Sounding: CPT-03  
 Cone Used: DDG1263  
 GPS Data: NO GPS

CPT Date/Time: 11/10/2016 4:07:01 PM  
 Location: Tacoma  
 Job Number: T-7543



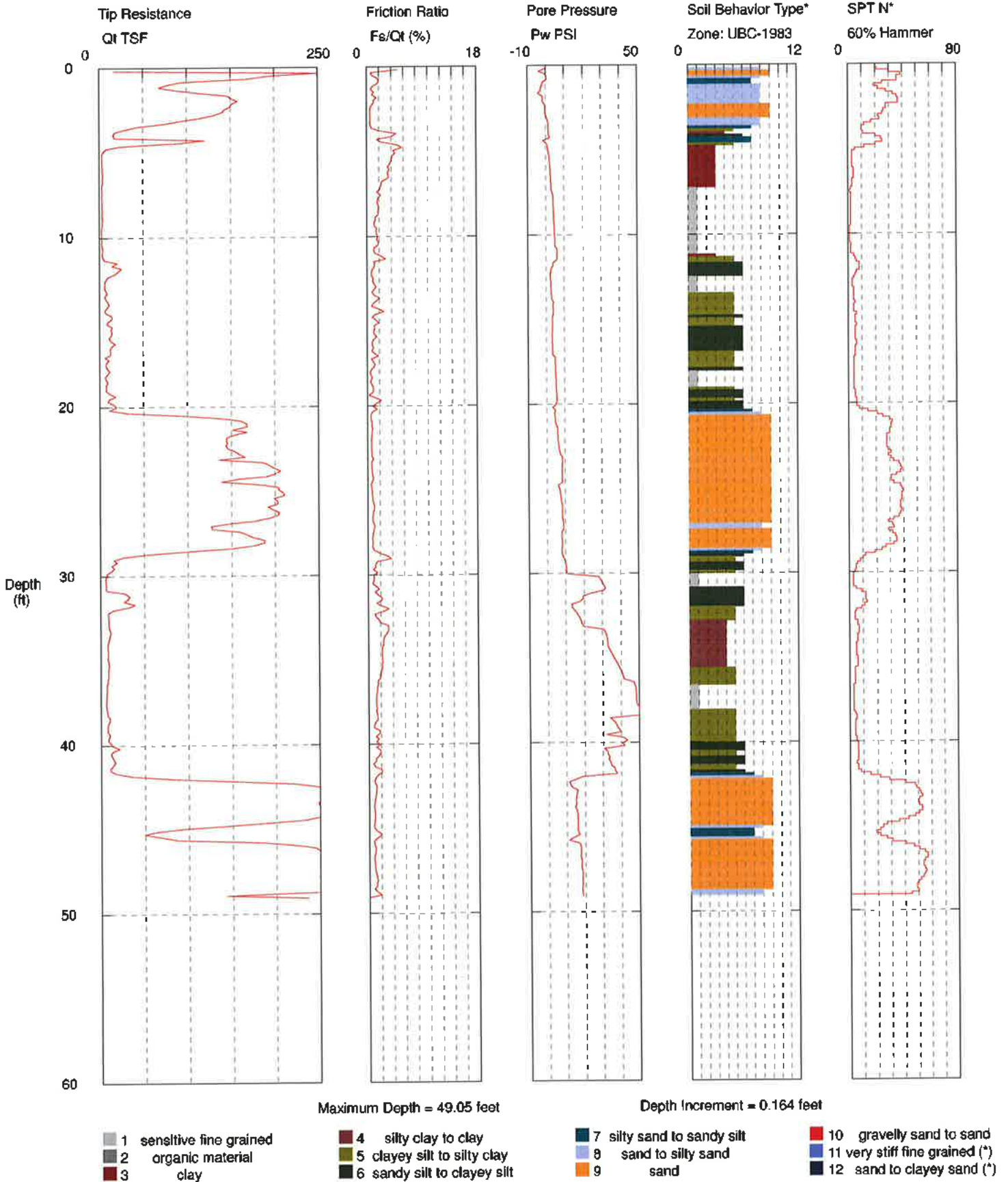
\*Soil behavior type and SPT based on data from UBC-1983



# Terra Associates

Operator: Romanelli  
 Sounding: CPT-04b  
 Cone Used: DDG1369  
 GPS Data: NO GPS

CPT Date/Time: 11/10/2016 7:08:58 PM  
 Location: Tacoma  
 Job Number: T-7543

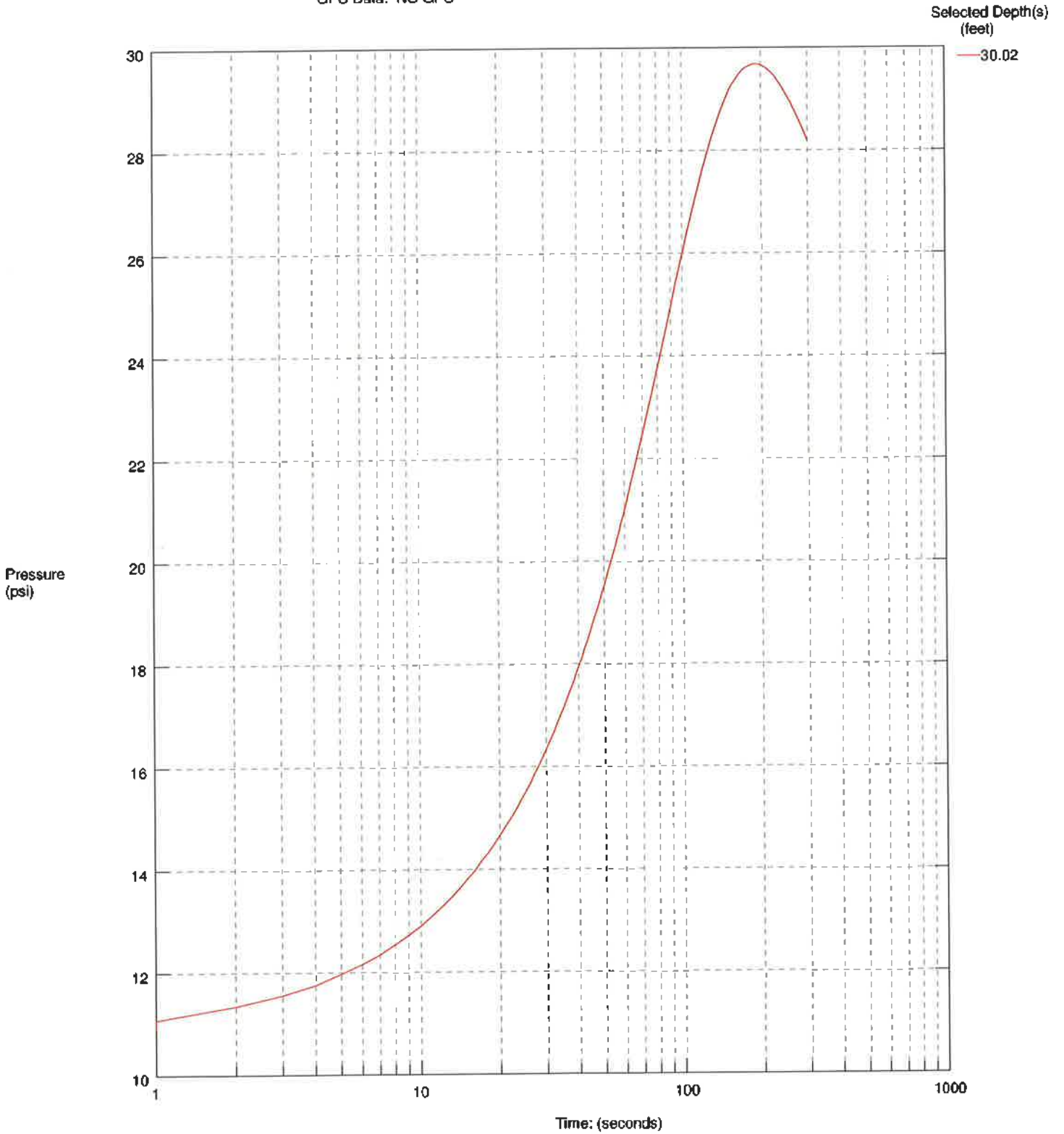


\*Soil behavior type and SPT based on data from UBC-1983

# Terra Associates

Operator: Romanelli  
Sounding: CPT-04b  
Cone Used: DDG1369  
GPS Data: NO GPS

CPT Date/Time: 11/10/2016 7:08:58 PM  
Location: Tacoma  
Job Number: T-7543

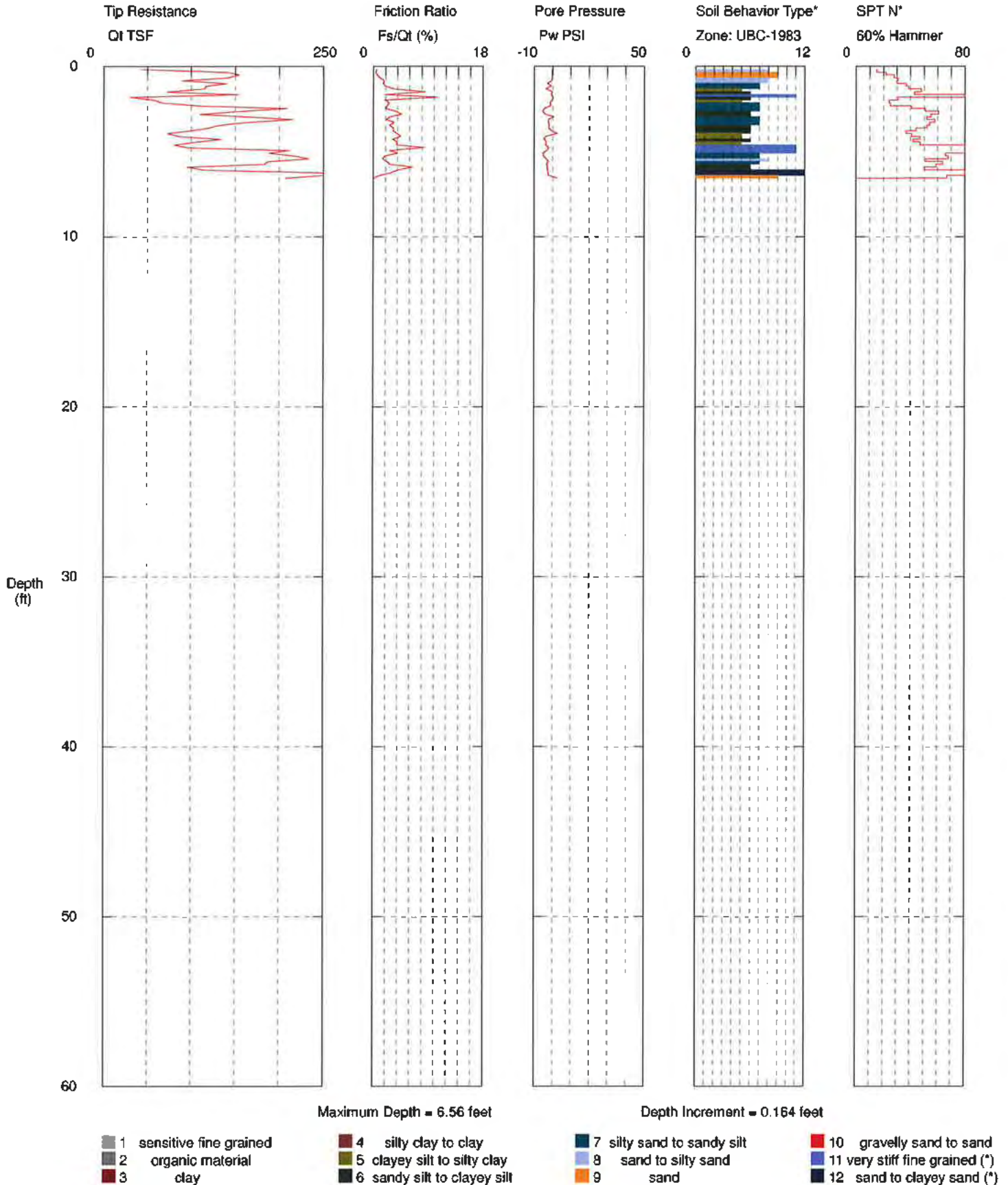


Maximum Pressure = 29.682 psi

# Terra Associates

Operator: Romanelli  
 Sounding: CPT-05  
 Cone Used: DDG1369  
 GPS Data: NO GPS

CPT Date/Time: 11/10/2016 2:13:23 PM  
 Location: Tacoma  
 Job Number: T-7543



\*Soil behavior type and SPT based on data from UBC-1983



Soil Stratigraphy Field Log

Location ID A-1  
 Facility TACOMA  
 Project TAL RI

Date 01.17.01

Field Geologist Jeff Speck

Location Type: TEMP  
 Soil Boring Only  Well  Test Pit

Drilling Method Geoprob

Sampling Method 4' 2" acetate liner

Total Depth 8'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			0.0 ppm	24"	0-6" <u>MA</u> , brown to gray, medium to fine grain, well sorted, dry, moderate compaction, no odor, trace organics 6-18" <u>ML</u> , gray, fine grain, well sorted, wet, moderate compaction, no odor, trace oxidation. 18-24" <u>SW</u> , red to brown, coarse to med grain, poorly sorted, damp, med compaction, no odor, oxidation. (BRICK)
4.5'			0.0 ppm	36"	6-6" (SAME AS 18-24" in 4-4") (BRICK) 6-36" <u>OL</u> , light to dark gray, fine grained, moderate sorting, moist, med compaction, no odor, abundant organic matter, trace oxidation. [overlain by < 1" layer of black organic material]

Gravel SAND  
 SILT SAND  
 BRN

SILT

Geologist's Signature [Signature] Date 1-17/01 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg \_\_\_\_\_ of \_\_\_\_\_



Soil Stratigraphy Field Log

Location ID AA-2  
 Facility TALOMA  
 Project TAL RA

Date 01.17.01

Field Geologist Jeff Speck TS:1701

Location Type: Temp  
 Soil Boring Only  Well  Test Pit

Drilling Method beeprobe

Sampling Method 4' 2" acetate liner

Total Depth 12'

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (Inches)	Geological Description
0.0'	NA	NA	Breathing Zone: 0.0 In-Spoon: 0.0 Headspace: 0.0	24"	0-8" GM, light brown, medium grain, poorly sorted, moist, lightly compacted, slight petroleum odor
4'					8-24" SP, brown to gray, medium and fine grained, poorly sorted, moist moderate compaction, slight petroleum odor.
6'			6.0 ppm	24"	0-6" (SAME AS 8"-24" in 0'-4') 6-18" ML, brown to gray, fine, well sorted, wet, compacted, slight odor, 18-24" (SAME AS 0-12" in 8'-12')
8'					
9'			0.0 ppm	48"	0-12" SM, black, medium to fine grain, well sorted, wet, moderate compaction, petroleum odor, organic matter 12-48" OL, light brown, <del>medium</del> fine, well sorted, wet, well compacted, no odor, trace organic matter.
12'					

GRAVEL SAND  
~~SAND~~  
 SAND W/GRAV  
 SILT  
 SILTY SAND  
 SILT

4'  
 1'  
 SILT 6'  
 8'  
 SILT 9'  
 12'

Geologist's Signature [Signature] Date 1/17/01 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg \_\_\_\_\_ of \_\_\_\_\_



Soil Stratigraphy Field Log

Location ID AA-2  
 Facility TALM4  
 Project TAL R1

Date 01-17-01

Field Geologist Jeff Beck TS17-1

Location Type:  Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe

Sampling Method 4' 2" acetate liner

Total Depth 12'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 5')	Total Organics (ppm)	Sample Recovery (Inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'	NA	NA	Breathing Zone: 0.0 In-Spoon: 0.0 Headspace: 0.0	24"	0-8" GM, light brown, medium grain, poorly sorted, moist, lightly compacted, slight petroleu odor.
4'					8-24" SP, brown to gray, medium and fine grained, poorly sorted, moist moderate compaction, slight petro odor.
6'			0.0 ppm	24"	0-6" (SAME AS 8-24" in 0'-4') 6-28" ML, brown to gray, fine, well sorted, wet, compacted, slight odor.
9'			0.0 ppm	48"	10-24" (SAME AS 0-12" in 0-12') 0-12" SM, black, medium to fine grain, well sorted, wet, moderate compaction, petro odor, organic matter. 12-48" OL, light brown, moist, fine, well sorted, wet, well compacted, no odor, trace organic matter.

4'  
4'  
SILT 6  
5  
SILT 9  
12'

GRAVE SAND  
SILT  
SILT  
SILT  
SILT

Geologist's Signature [Signature] Date 1/17/01 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg \_\_\_\_\_ of \_\_\_\_\_



Soil Stratigraphy Field Log

Location ID C1

Facility JACOMA

Project T&E R1

Date 01.17.01

Field Geologist Corey Johnson

Location Type: TEMP  
 Soil Boring Only  Well  Test Pit

Drilling Method Geo probe

Sampling Method 2' 2" acetate liner

Total Depth 4'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (Inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'				36"	0-6" SM, dark gray, medium to fine grained, poorly sorted, wet, poorly compacted, abundant wood fibers, no odor
			0.0 ppm		6-33" SM, dark gray to brown, medium to fine grained, well sorted, wet, med compaction, no odor, trace oxidation, organic matter
					33-36" DL, gray, fine, well sorted, wet, well compacted, no odor, trace organic matter

Silt  
SAND  
SAND  
SAND  
SAND  
SAND

SILT  
4'



Soil Stratigraphy Field Log

Location ID DI  
 Facility Therma  
 Project TAC RI

Date 1/17/01

Field Geologist Jeff Speck

Location Type: TEMP  
 Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe

Sampling Method 4' 2" auger liner

Total Depth 11'

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'			0.0 ppm	15"	0-15" SP, light to dark brown, fine to coarse grained, poorly sorted, dry, moderate compaction, organics, oxidation, no odor
3'					
4'			0.0 ppm	12"	0-8" CL, brown to gray, fine, well sorted, wet, compacted, no odor. 8-12" SW, dark brown to black, fine to coarse, poorly sorted, wet, med compaction, petro odor, organic matter, <del>green glass</del> brown broken.
7'					
8'			0.0 ppm	32"	0-4" (same as 8-12" in 4-8') 4-32" OL, light to dark gray, fine grained, moderate sorting, moist med compaction, no odor, abundant organic matter, trace oxidation
11'					

Geologist's Signature [Signature]

Date 1/17/01

Reviewer \_\_\_\_\_

Date \_\_\_\_\_

Pg \_\_\_\_\_ of \_\_\_\_\_





Soil Stratigraphy Field Log

Location ID D 2  
 Facility TALUMA  
 Project JAC R1

Date 01.25.01

Field Geologist JEFF SPECIE

Location Type: TEMP  
 Soil Boring Only  Well  Test Pit

Drilling Method


Sampling Method

Total Depth

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'					
			0.0 ppm	12"	0-12" SP, light to dark brown, fine to coarse, poorly sorted, dry, mod compaction, no odor.
2'			0.0 ppm	12"	0-12" SP, red to light brown, fine to coarse, well sorted, dry, mod compaction, no odor, traces of brick and gray rock.
4'			0.0 ppm over background 0.0 ppm	5"	0-5" broken glass and trace brick
6'			0.0 ppm	5"	0-5" broken glass, wood and organic debris
8'			0.0 ppm	2"	0-2" broken glass 1-2" OL stained black to gray, fine, well sorted, wet, compact, no odor organic matter (organic black stain)

Geologist's Signature \_\_\_\_\_ Date \_\_\_\_\_ Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg \_\_\_\_\_ of \_\_\_\_\_

		<b>Soil Stratigraphy Field Log</b>			Location ID <u>E-1</u> Facility <u>TACOMA</u> Project <u>TAC R1</u>
Date <u>01.17.09</u>		Field Geologist <u>Jeff Speck</u>			Location Type: <u>TEMP</u> <input type="checkbox"/> Soil Boring Only <input checked="" type="checkbox"/> Well <input type="checkbox"/> Test Pit
Drilling Method <u>Geoprobe</u>		Sampling Method <u>4'2" acetate liner</u>			Total Depth <u>4'</u>
Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			0.0ppm	3/2"	0-20" SW, red, brown to light brown, coarse to med grain, poorly sorted, dry, med compaction, no odor, (brick remnants) <span style="float: right;">20-20 20-30 SAND</span> 20-24" SM, gray, fine granular, well sorted, damp, med compaction, no odor; <span style="float: right;">SAND SILT</span> 24-32" ML, gray, fine, well sorted, damp, med compaction, no odor. <span style="float: right;">SILT</span> ↓ GRADES FROM COARSE TO ↓ FINE <span style="float: right;">4'</span>

SILT  
4'

Geologist's Signature [Signature] Date 1/17/09 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg \_\_\_\_\_ of \_\_\_\_\_



Soil Stratigraphy Field Log

Location ID F.1  
 Facility TALOMA  
 Project TAC R1

Date 01.17.01

Field Geologist Jeff Speck

Location Type:  TEMP  
 Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe

Sampling Method 4" 2" acetate liner

Total Depth 8'

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'			0.0	12"	0-12" SP, brown, medium to coarse, partly sorted, dry, med compaction, no odor, some organic material
4.0'			0.0 ppm	6"	0-6" SM, brown, fine to medium grained, well sorted, dry, med compaction, no odor,

Geologist's Signature [Signature] Date 1/17/01 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg \_\_\_\_\_ of \_\_\_\_\_



Soil Stratigraphy Field Log

Location ID F-2  
 Facility TALCOMA  
 Project TAL R1

Date 6/25/01

Field Geologist JEFF SPECK

Location Type: TEMP  
 Soil Boring Only  Well  Test Pit

Drilling Method

Sampling Method

Total Depth

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'			Breathing Zone: In-Spoon: Headspace:  NA	0	<del>temp</del> No SAMPLE JS012501
2'			NA	0	COMPLETE REFUSAL
4'			0.0 ppm	8"	0-8" Broken GLASS, BRICK, WOOD
6'				8"	0-2" Broken GLASS, WOOD 2-8" OL, stained black to gray, fine, well sorted, wet, compact, no odor, organic matter. organic black stain
8'					7.5' SILT 3' ↓
10'					

Geologist's Signature \_\_\_\_\_ Date \_\_\_\_\_ Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg \_\_\_\_\_ of \_\_\_\_\_



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location See figure 1

Boring No. CTMW-1

Surface Elevation 26.5 ft.

Drilling Method Hollow Stem Auger

Total Depth 11.2 ft.

Drilled By Tacoma Pump & Drilling

Date Completed 6/3/87

Logged By SRS

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
5-inch dia. security casing and lock Concrete 2-inch PVC well casing Pellets 2-inch PVC well screen w/.010-inch slots #8x12 Colorado silica sand Pellets Slip cap		0				SW	Gravelly SAND, gray to black, fine to coarse, trace silt; moist.	
	20-20-20	2	1	SB		SP	2.0-3.5'. SAND, black, fine to medium, trace silt; very moist at 3.5 ft.; oil odor.	oily
	3-4-6	8	2	SS		SP	7.0-8.5'. SAND, gray to brown gray, fine to medium, with scattered interbeds of silty SAND; saturated; slight odor.	slightly oily
	3-2-1	10	3	SS		ML	10.4-11.2'. SILT, gray brown to light gray, scattered roots and grasses; very moist	
		12						



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location See figure 1

Boring No. CTMW-2 \*

Surface Elevation 25.7 ft.

Drilling Method Hollow Stem Auger

Total Depth 10.3 ft.

Drilled By Tacoma Pump & Drilling

Date Completed 5/28/87

Logged By D.E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
<p>5-inch dia. security casing and lock            Concrete            2-inch PVC well casing            Pellets            2-inch PVC well screen w/ 010-inch slots            #8x12 Colorado silica sand            Slip case</p>		0						
		2					See sample description on Boring log CTSB-3 for depth 0 to 9 ft.	
		4						
		6						
		8						
		10	1	SS		ML	9-10.3' Clayey SILT, mottled orange brown and black, abundant plant roots (very fine); moist; soft; no odor.	
		12					*Note: The boring notation has been changed effective August, 1987. Old notation: CTMW-2(A)	



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location See Figure 1

Boring No. CTW-3

Surface Elevation 27.3 ft.

Drilling Method Hollow Stem Auger

Total Depth 11.2 ft.

Drilled By Tacoma Pump & Drilling

Date Completed 5/29/87

Logged By SRS

WELL DETAILS	PENETRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERMEABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
<p>5-inch dia. security casing and lock</p>		0				SW	0-2.3'. Gravelly SAND, brown, fine to coarse, slightly moist.	
		2	1	SS		SP	2.3-3.5'. SAND, gray, fine to medium, trace coarse sand and silt, scattered fine roots; very moist.	
	4-4-6	4						
		6						
		8	2	SB		SP	7.0-8.5'. SAND, gray fine to medium, trace coarse sand and fine gravel, with interbeds of silty SAND, wet.	
		10						
	2-1-1	10	3	SS		ML	10.4-11.2'. SILT, gray grading to brown, thinly bedded. 10.4-10.7 abundant grasses (brown to black); moist.	
		12						



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location See figure 1

Boring No. CTMW-4

Surface Elevation 27.3 ft.

Drilling Method Hollow Stem Auger

Total Depth 12.0 ft.

Drilled By Tacoma Pump & Drilling

Date Completed 5/28/87

Logged By D.E.M

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
		0						
	9-6-6	2	1			SP	2-3.5' SAND, brown, fine to medium, trace silt to silty, abundant shell fragments; moist; slight odor.	
	6-11-25	8	2			SP/SM	7-8.5'; SAND & Silty SAND, gray brown, fine to medium, trace gravel at 8 ft., grades finer downward; saturated; slight oil (?) odor.	
	3-5-6	10	3			SP	10-11.5'. SAND, dark gray, fine to medium, trace coarse, with interbed of silty sand (gray) from 11.0 to 11.5 ft; saturated	
		12						





PROJECT CHEMPRO, Tacoma Plant

Page 1 of 2

Location See figure 1

Boring No. CTMW-5

Surface Elevation 27.2 ft.

Drilling Method Hollow Stem Auger

Total Depth 13.0

Drilled By R Tacoma Drilling & Pump

Date Completed 5/29/87

Logged By DEM

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
		0				SW	0-1.5'. <u>Gravelly SAND</u> , light brown, fine to medium, abundant wood debris, trace gravel & cobbles, dry.	
		2				SM	2.0-2.5'. <u>Silty SAND</u> , dk. brown, fine to medium, abundant plant roots, moist.	
	15-14-14	1	SB					
	4							
	4-6-8	1A	SS			SM	4.0-4.5'. <u>Silty SAND</u> , brown to black, fine, trace fine gravel, moist.	
						SP	4.5-5.5'. <u>SAND</u> , gray, fine to medium, scattered red fragments, saturated.	
	6							
	6-5-5	2	SS			SP	7.0-8.5'. <u>SAND</u> , gray, fine to medium, saturated.	
	10							
	2-1/2-1/2	3	SS				Solvent(?) odor	
		12	4	SS		CL	<u>Clayey SILT</u> , see following pages for description	

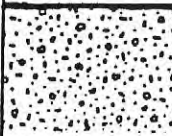


PROJECT CHEMPRO, Tacoma Plant

Page 2 of 2

Boring No. CTMW-5

Native soil collapse

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
	Pushed 1.5 ft.	12	4	SS			11.5-13.0'. <u>Clayey SILT</u> , light gray, abundant plant roots, indistinct bedding, moist.	
		14						



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 2

Location See Figure 1

Boring No. CTMW-6

Surface Elevation 27.5 ft.

Drilling Method Hollow Stem Auger

Total Depth 13.0


Drilled By Tacoma Pump & Drilling

Date Completed 6/1/87

Logged By SRS

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
		0						
		0-1.5'				SW	0-1.5'. Gravelly SAND, brown, fine to coarse, trace silt; moist.	oily
	7-5-3	2	1	SB			1.5-6.0'. Solid Waste, brown to black, string, glass, wire, tires, etc.. with intermixed sand and gravel; moist; oil odor.	(auto debris)
		4					change in cuttings	
	5-6-6	8	2	SS		SP	7.0-8.5'. SAND, gray, fine to medium, trace silt, scattered red fragments, saturated.	very oily
		10						
	3-1-1	11	3	SS			11.0-13.0'. Interbedded Sandy Silt and SILT, lt. gray to gray, very fine to fine, with scattered medium to coarse (11-11.5)	oily and black color in sandy layers.
	1-1-1	12	4	SS		ML	moist to saturated	



WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
 Pellets		12						
		14						



PROJECT Chempro, Tacoma Plant

Page 1 of 3

Location See Figure 2.1

Boring No. CTMW-7

Surface Elevation \_\_\_\_\_

Drilling Method Cable Tool

Total Depth 32.5'

Drilled By Tacoma Pump & Drilling

Date Completed 11/25/87

Logged By KGL

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
5-inch diam. security casing and lock concrete 2-inch PVC Well Casing Bentonite Chips		0				GP	0-1' <u>GRAVEL</u> , 3/4" crushed rock	
		1				SM	1-2' <u>SILTY SAND</u> , brown, fine to coarse, some fine gravel, trace clay, med. dense, moist.	
		2						
		4					2-7' <u>SOLID WASTE (Auto Debris)</u> Brown to black, misc. man-made fill intermixed with sand and gravel, med. dense, moist to wet, slight odor.	
		6						
		8					7-11' <u>SAND</u> , gray brown, medium grained, bluish sheen, med. dense, trace to some silt, oil odor.	
		10					SM/ SP heaving sand	
	10-32-8		1	SS				
		12				ML	11-12' <u>SILT</u> , dark brown, trace to some med. sand, trace fine gravel, soft, wet.	Hnu=50ppm, Poly Draege Tube = 4mm



WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY	
			NO.	TYPE					
2-inch PVC Well Screen w/0.010-inch slots Stainless Steel Centralizer #8x12 Colorado Silica Sand 2-inch PVC Well Casing Bentonite Pellets	9-11-50 /4"	12				SP	12-26' SAND, dark gray to black, fine to med., trace coarse, trace silt, med. dense to soft, wet, no odor.	Hnu=4ppm Poly Draeger Tube=4mm	
		14							
		16							
		18							some gravel from 18-20'
		20	2	SS					
		22				SP	heaving sand		
		24							
		26					26-32.5' <u>INTERBEDDED SILT AND SAND</u> description on following page		



Stainless Steel Centralizer

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
<p>#8x12 Colorado Silica Sand</p> <p>6"</p>		26				SM/ML	26-32.5' <u>INTERBEDDED SILT AND SAND</u> organic rich lenses, thinly laminated to lenses several inches thick, med. dense to soft, wet, no odor.	
		28						
	10-15-30	32	3	SS			Terminate boring at 31' 11/24/87	Hnu=150ppm, Poly Draege Tube=Zero, Duplicate Sample
		34						
		36						
		38						
		40						



PROJECT Chempro, Tacoma Plant

Page 1 of 1

Location See Figure 2.1

Boring No. CTMW-8

Surface Elevation \_\_\_\_\_

Drilling Method Hollow Stem Auger

Total Depth 10 ft.

Drilled By Tacoma Pump and Drilling

Date Completed 11/27/87

Logged By KGL

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
		0				GP	0-1' GRAVEL, 3/4" crushed rock	
		2					1-9.5' LIME WASTE, blue gray, some silty sand and fine gravel, sticky, med. dense to dense, moist to wet.	
		4					wet cuttings at 5'	
		6						
		8						
		10				ML	9.5-10' CLAYEY SILT, brown, organic rich, medium plasticity, soft, wet.	
		12					Terminate boring at 10', 11/27/87	





PROJECT Chempro, Tacoma Plant

Page 1 of 3

Location See Figure 2.1

Boring No. CTMW-9

Surface Elevation \_\_\_\_\_

Drilling Method Hollow Stem Auger

Total Depth 30  
10 ft.

Drilled By Tacoma Pump and Drilling

Date Completed 11/27/87

Logged By KGL

WELL DETAILS	PENETRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERMEABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
5-inch dia. security casing and lock Concrete Bentonite Slurry 2-inch PVC Well Screen Bentonite Pellets		0				GP	0-1' <u>GRAVEL</u> , 3/4" crushed rock.	
		2					1-9.5' <u>LIME WASTE</u> , blue gray, some silty sand and fine gravel, sticky, med. dense to dense, moist to wet.	
		4						
		6						Hnu=14ppm
		8						
		10				ML	9.5-14' <u>CLAYEY SILT</u> , brown, organic rich, med. plasticity, soft, wet.	
		12						



WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY	
			NO.	TYPE					
		12				ML	CLAYEY SILT (description on previous page)		
		14					14-27' SAND, dark gray to black, med., some coarse, abundant shell fragments, trace silt, med. dense to loose, wet.		
		16				SP		grades to less silt with depth	
		18							
		20		1	SS				
		22							
	10-10-25	24				SP			
		26							



WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
		26				SP	SAND (description on previous page)	Hnu=13ppm
		28				SM/ ML	27-31.5' <u>INTERBEDDED SILT AND SAND</u> , dark gray, fine grained, low plasticity silt, thinly laminated to lenses several inches thick, med. dense to soft, wet, no odor.	
	6-12-16	30	2	SS				
		32						
		34					Terminate boring at 30' 11/28/87	
		36						
		38						
		40						



PROJECT Chempro, Tacoma Plant

Page 1 of 1

Location See Figure 2.1

Boring No. CTMW-10

Surface Elevation \_\_\_\_\_

Drilling Method Hollow Stem Auger

Total Depth 10'

Drilled By Tacoma Pump and Drilling

Date Completed 11/27/87

Logged By KGL

WELL DETAILS	PENETRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERMEABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
		0				SM/ML	0-1' <u>SANDY SILT</u> (Top Soil), brown.	
		2				SM	1-3' <u>SANDY SILT</u> , light blue gray, some lime waste, med. to coarse, some fine gravel, med. dense, moist.	
		4				ML	3-5.25' <u>SILT</u> , brown, organic fragments, med. plasticity, moist, strong oil odor, wet cuttings at 4'.	Hnu=5ppm
	12-10-9	6	1	SS		SP	5.25-10' <u>SAND</u> , black, fine to med., some shell fragments, med. dense, saturated.	Hnu=7.5ppm
		10						Terminate boring at 10' 11/27/87
		12						



PROJECT Chempro, Tacoma Plant

Page 1 of 2

Location See Figure 2.1

Boring No. CTMW-11

Surface Elevation \_\_\_\_\_

Drilling Method Hollow Stem Auger

Total Depth 14 ft.

Drilled By Tacoma Pump and Drilling


Date Completed 11/27/87

Logged By KGL

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY	
			NO.	TYPE					
<p>5-inch diam. Security Casing and Lock</p>		0							
						GP	0-1' <u>GRAVEL</u> , 3/4" crushed rock		
			2				SM	1-4.5' <u>SILTY SAND</u> , brown, fine to medium, some gravel, trace cobbles, med. dense, moist, no odor.	
		6-4-5	4	1	SS		4.5-14' <u>SOLID WASTE</u> (Lime Waste ?) greenish white, "chalkey", creamy consistency, appears greasy, slight effervescence with dilute HCl, very soft, wet.	Hnu=1.5ppm  Poly Draege Tube=zero	
			6						
		8							
		10						Poly Draege Tube=zero	
		12							



Slip Cap

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
 <p>#8x12 Colorado Silica Sand</p> <p>7.5"</p>		-12					SOLID WASTE description on previous page	
		14				ML	14-14.25' <u>CLAYEY SILT</u> , brown, bedded to thinly laminated, abundant organics, med. to low plasticity, soft, wet, organic rich odor.	
		16					Terminate boring at 14.25' 11/27/87	
		18						
		20						
		22						
		24						
		26						



PROJECT Chempro, Tacoma Plant

Page 1 of 3

Location See Figure 2.1

Boring No. CTMW-12

Surface Elevation \_\_\_\_\_

Drilling Method Cable Tool

Total Depth 35.5 ft.

Drilled By Tacoma Pump & Drilling

Date Completed 11/27/87

Logged By KGL

5-inch diam. Security Casing and Lock

WELL DETAILS	PENETRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERMEABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
<p>Concrete</p> <p>Bentonite Pellets</p> <p>2-inch PVC Well Screen</p> <p>Bentonite Chips</p>		0				GP	0-1' <u>GRAVEL</u> , 3/4" crushed rock.	
		2				SM	1-4.5' <u>SILTY SAND</u> , brown, fine to medium, some gravel, trace cobbles, med. dense, moist, no odor.	
		4					encounter ground water	
		6					4.5-14' <u>SOLID WASTE</u> (Lime Waste ?) greenish white, "chalkey", creamy consistency, appears greasy, slight effevescence with dilute HCl, very soft, wet.	
		8						
		10						
		12						



WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY	
			NO.	TYPE					
Stainless Steel Centralizer 2-inch PVC Well Screen w/0.010-inch slots #8x12 Colorado Silica Sand 2-inch PVC Well Casing Bentonite Chips	18-25-34	12	1	SS			SOLID WASTE description on previous page		
		14							
		16					ML		14.5-20' CLAYEY SILT, brown to gray, bedded to thinly laminated, abundant organics, med. to low plasticity, soft, wet, organic-rich odor.
		18							
		20							
		22				SM/SP	20-31' SAND, dark gray to black, fine to med., trace coarse, med. dense to loose, trace silt, wet, no odor.  heaving sand		
		24							
		26							





WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY	
			NO.	TYPE					
<p>2-in. PVC Well Screen w/0.010-inch slots</p> <p>Stainless Steel Centralizer</p> <p>#8x12 Colorado Silica Sand</p> <p>Slough</p> <p>6"</p>		26				SM/SP	SILTY SAND TO SAND (description on previous page)		
		28							
		30							
		32					SM/ML	31-35.5 SAND WITH INTER-BEDDED SILT, dark gray to black, fine grained, some med., low plasticity silt, med. dense to loose, wet, no odor. heaving sand	
		34		2	SS				
		36					Terminate boring at 34' 11/27/87		
		38							
		40							

# LOG OF EXPLORATORY BORING

PROJECT NAME: Chemical Processors, Inc.  
 LOCATION: Tacoma, Parcels B & C  
 DRILLED BY: Hokkaido Drilling  
 DRILL METHOD: H.S. Auger  
 LOGGED BY: Anne Udaly

BORING NO.: CTMW-13  
 PAGE: 1 OF 2  
 REFERENCE ELEV.: 28.30'  
 TOTAL DEPTH: 20.00'  
 DATE COMPLETED: 5/9/89

SAMPLE NUMBER/ INTERVAL	SAMPLE TYPE	BLOW COUNT PER 6" / % TOTAL RECOVERY	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO- LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
0-1.5 0.5	GRAB GRAB							0 - 0.5 feet: SANDY GRAVEL (FILL); light grey to brown, 20% sand, 80% subangular gravel to 3 inches in diameter. Dry. No odor. (GW-GM)
1.5-3	GRAB							0.5 - 5.0 feet: SAND (FILL); dark brown to grey, <10% fines, 80% medium sand, <10% subrounded gravel to 3 inches in diameter. Slightly moist, no odor. (SP-SM)
2.5 3-4.5	GRAB SS	17-13-8 30%						@ 2.5 - 3.0 feet: SILTY SAND; grey to light brown, 25% silt, trace gravel to 2 inches in diameter. (SM)
4.5-6	SS	3-4-4 100%		5				@ 3.3 - 3.5 feet: Wood, dark brown, saturated.
6-7.5	SS	4-3-1 100%						5.0 - 7.5 feet: LIME WASTE; white with grey and tan streaks, 90% fines, <10% coarser than silt. Firm, saturated, not making much water. No response to dilute HCL. (FILL)
7.5-9	SS	4-3-3 0%						7.5 - 12.1 feet: AUTO FLUFF (FILL); dark brown, plastic fibers in silty matrix, no recovery from 7.5 - 12.0 feet, traces of auto debris (glass shards, paint chips, rubber-coated wire) in catcher, auto debris in cuttings.
9-10.5	SS	7-10-6 0%		10				12.1 - 13.5 feet: SILT; light tan, 90% silt, common grass and root fragments, firm. Saturated. (ML-OH)
10.5-12	SS	2-3-2 0%		11				Boring terminated at 13.5 feet. See page 2 of 2 for Well Construction Details.
12-13.5	SS	1-1-2 100%		12				
				13				
				14				
				15				
				20				

**REMARKS**

1) All SAMPLE NUMBERS are prefaced by "CTMW-13". 2) Elevations are referenced to City of Tacoma datum.



## LOG OF EXPLORATORY BORING

PROJECT NAME: Chemical Processors, Inc.  
 LOCATION: Tacoma, Parcels B & C  
 DRILLED BY: Hokkaido Drilling  
 DRILL METHOD: H.S. Auger  
 LOGGED BY: Anne Udaloy

BORING NO.: CTMW-13  
 PAGE: 2 OF 2  
 REFERENCE ELEV.: 28.30'  
 TOTAL DEPTH: 20.00'  
 DATE COMPLETED: 5/9/89

SAMPLE NUMBER/ INTERVAL	SAMPLE TYPE	BLOW COUNT PER 6" / % TOTAL RECOVERY	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO- LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
				25				<p><b>WELL CONSTRUCTION DETAILS:</b> Total assembly length: 13.7 feet.                      Casing stickup: 1.3 feet.                      Screened interval: 4.7-12.3 feet.                      Filter pack: 3.0-12.4 feet, Colorado 8x12 Silica Sand.                      Seal: 0.5-3.0 feet, Enviroplug medium bentonite chips.                      Surface Seal: 0-0.5 feet, concrete.</p>
				30				
				35				
				40				

**REMARKS**

1) All SAMPLE NUMBERS are prefaced by "CTMW-13-". 2) Elevations are referenced to City of Tacoma datum.



## LOG OF EXPLORATORY BORING

PROJECT NAME: Chemical Processors, Inc.  
 LOCATION: Tacoma, Parcels B & C  
 DRILLED BY: Hokkaido Drilling  
 DRILL METHOD: H.S. Auger  
 LOGGED BY: Anne Udalay

BORING NO.: CTMW-14  
 PAGE: 1 OF 2  
 REFERENCE ELEV.: 25.50'  
 TOTAL DEPTH: 10.50'  
 DATE COMPLETED: 5/12/89

SAMPLE NUMBER/ INTERVAL	SAMPLE TYPE	BLOW COUNT PER 6" / % TOTAL RECOVERY	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO- LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
0-1.5	GRAB							0 - 3.0 feet SANDY GRAVEL with cobbles (FILL); light brown, 40% medium sand, 60% subangular to subrounded gravel to 3 inches in diameter, trace cobbles to 6 inches in diameter, very dense, difficult to sample. Dry. (GW)
0.5	GRAB							
1.5-3	GRAB							— @ 0.4 - 0.7 foot SAND; light brown, <15% subrounded gravel to 2 inches in diameter, loose, dry. (SP)
2.5	GRAB							
3-4.5	SS	4-30-28 30%						3.0 - 6.0 feet LIME WASTE (FILL); light brown with white splotches, 10-15% fines, 70% medium sand, <20% subrounded to subangular gravel 1/4 to 1 inch in diameter. White splotches effervesce in dilute HCl. Dry. No recovery from 4.5-6.0 feet. (FILL)
4.5-6	SS	5-3-3 0%						
6-7.5	SS	2-4-4 100%						6.0 - 6.4 feet SANDY GRAVEL (FILL); light grey, 30% sand, 70% subrounded and subangular gravel to 1 inch in diameter, loose, saturated. (GP-GM)
7.5-9	SS	3-4-3 30%						
9-10.5	SS	2-2-2 100%						— @ 6.3 - 6.4 feet SAND (FILL); black with red grains, 90% medium sand. (SP) 6.4 - 7.5 feet CLAYEY SILT (FILL); light grey with red sand grains, 70-95% silt, trace to 30% fine sand, roots common, fines downward. Plastic. Saturated. (MH-OH) 7.5 - 7.9 feet SAND (FILL); black with red grains and white shell fragments. 15% fines, 85% coarse sand, saturated, loose. (SM) 7.9 - 10.5 feet CLAYEY SILT; light grey with tan streaks, 80-95% silt, trace to 20% fine and medium sand, common roots, plastic, saturated. (MH-OH) — @ 9.7 - 9.9 feet PEAT; light brown and black. (PT)

**REMARKS**

1) All SAMPLE NUMBERS are prefaced by "CTMW-14". 2) Elevations are referenced to City of Tacoma datum.



APPENDIX

# LOG OF EXPLORATORY BORING

PROJECT NAME Chemical Processors, Inc.  
 LOCATION Tacoma, Parcels B & C  
 DRILLED BY Hokkaido Drilling  
 DRILL METHOD H.S. Auger  
 LOGGED BY Anne Udalay

BORING NO. CTMW-14  
 PAGE 2 OF 2  
 REFERENCE ELEV. 25.50'  
 TOTAL DEPTH 10.50'  
 DATE COMPLETED 5/12/89

SAMPLE NUMBER/INTERVAL	SAMPLE TYPE	BLOW COUNT PER 6" / ± TOTAL RECOVERY	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
------------------------	-------------	--------------------------------------	---------------------	--------------	---------	--------------------	--------------	------------------------

				<div style="display: flex; flex-direction: column; align-items: center;"> <span>25</span> <span>30</span> <span>35</span> <span>40</span> </div>				<p>Boring terminated at 10.5 feet.                      WELL CONSTRUCTION DETAILS: Total assembly length: 11.2 feet                      Casing stickup: 1.6 feet                      Screened interval: 4.9-9.4 feet                      Filter pack: 3.5-9.5 feet, Colorado 8x12 Silica Sand.                      Seal: 0.5-3.5 feet, Enviroplug medium bentonite chips.                      Surface seal: 0-0.5 foot, concrete.</p>
--	--	--	--	--	--	--	--	--

**REMARKS**

1) All SAMPLE NUMBERS are prefaced by "CTMW-14-". 2) Elevations are referenced to City of Tacoma datum.



# LOG OF EXPLORATORY BORING

PROJECT NAME: Chemical Processors, Inc.  
 LOCATION: Tacoma, Parcels B & C  
 DRILLED BY: Hokkaido Drilling  
 DRILL METHOD: H.S. Auger  
 LOGGED BY: Anne Udalyo

BORING NO.: CTMW-15  
 PAGE: 1 OF 1  
 REFERENCE ELEV.: 24.60'  
 TOTAL DEPTH: 9.50'  
 DATE COMPLETED: 5/16/89

SAMPLE NUMBER/ INTERVAL	SAMPLE TYPE	BLOW COUNT PER 6" / * TOTAL RECOVERY	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO- LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
0-1.5	GRAB							0 - 0.4 feet GRAVELLY SANDY SILT (FILL); light grey and tan, 55% silt, 25% medium to fine sand, 20% 1/4 to 1/2 inch diameter gravel. Moist, slightly plastic, no odor. (ML)
0.5	GRAB							
1.5-3	GRAB							0.4 - 3.4 feet SILTY SAND; dark brown, 20-25% silt, 70% medium to fine sand, <5% subrounded gravel to 2 inches in diameter. Moist. (SM) @ 3.3 - 3.4 feet: PEAT; dark brown, <20% silt or coarser, roots abundant. (PT)
2.5	GRAB							
3-4.5	SS	1-1-1 40%						3.4 - 7.5 feet SANDY SILT/SILTY SAND; light grey, 25-80% silt, 20-75% fine and medium sand, slightly plastic, saturated. (SM/ML)-
4.5-6	SS	1-2-3 30%		5				
6-7.5	SS	2-2-4 10%						7.5 - 9.0 feet CLAYEY SILT; light brown and light grey, light grey with black splotches to 1/8 inch in diameter from 7.5 to 7.9 feet. 90% silt or finer, <10% fine sand; plastic, not sticky, saturated. (MH-OH)
7.5-9	SS	2-3-4 100%						
								Boring terminated at 9.0 feet. WELL CONSTRUCTION DETAILS: Total assembly length: 7.1 feet. Casing stickup: -0.7 feet. Screened interval: 5.3-8.2 feet. Filter pack: 4.1-8.2 feet, Colorado 8x12 Silica Sand. Seal: 1.1-4.1, Enviropug medium bentonite chips. Surface seal: 0-1.1 feet, concrete.

**REMARKS**

1) All SAMPLE NUMBERS are prefaced by "CTMW-15-". 2) Elevations are referenced to City of Tacoma datum.



# LOG OF EXPLORATORY BORING

PROJECT NAME Chempro, Tacoma  
 LOCATION Parcel A  
 DRILLED BY Tacoma Pump & Drilling  
 DRILL METHOD H.S. Auger  
 LOGGED BY P. Rowland

BORING NO. CTMW-16  
 PAGE 1 OF 1  
 REFERENCE ELEV. 30.11'  
 TOTAL DEPTH 15.50'  
 DATE COMPLETED 04/09/91

SAMPLE NUMBER	PHOTO FRAME NUMBER	BLOW COUNT (per six inches)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
CT-4 91-7	20	50						0.5 to 2.2 feet: SAND, (SP); brown, fine to medium sand, 10 percent gravel, trace to 10 percent silt, moderately dense, dry. (FILL)
		50						
	21	100		2.5				2.2 to 5.5 feet: SAND, (SP); gray to gray-green, fine to medium sand, trace gravel to 2-inch diameter. Plastic at 3.5 feet. No odor. Dry to 5 feet, moderately dense. (FILL)
		12						
		38						
		52						
CT-4 91-8	22	38						
		93						
		50		5				
CT-4 91-9	23	41						5.5 to 13.9 feet: LIME WASTE, (ML); light gray to white, fins to very fine silt. Very soft. Saturated. (FILL)
		32						
		16						
	24	3						
		2						
		3						
	25	1						
		1						
		1						
	26	0		10				
		0						
		0						
	27	4						
		2						
		2						
	28	1						
		1						
		1						
	29	2						13.9 to 14.4 feet: SILT, (ML); black to dark gray, silt; abundant organic fibers, odorous. Former soil surface. (FILL)
		2		15				14.4 to 15.5 feet: SAND, (SW); gray, fine to medium sand, 20 percent silt, no gravel. Poorly graded; saturated.
		2						Bottom of boring at 15.5 feet.

**REMARKS**

Well Construction details: 2-inch diameter PVC Screen and riser. Factory slotted screen 0.010-inch diameter slots. 10-20 silica sand. Reference elevation is ground surface. Top of PVC elevation is 32.32. Blow counts are per 6-inch penetration using a 140 -pound hammer with a 30-inch stroke.



# LOG OF EXPLORATORY BORING

PROJECT NAME Chempro, Tacoma  
 LOCATION Parcel A  
 DRILLED BY Tacoma Pump & Drilling  
 DRILL METHOD H.S. Auger  
 LOGGED BY P. Rowland

BORING NO. CTMW-17  
 PAGE 1 OF 1  
 REFERENCE ELEV. 30.20'  
 TOTAL DEPTH 15.50'  
 DATE COMPLETED 04/08/91

SAMPLE NUMBER	PHOTO FRAME NUMBER	BLOW COUNT (per six inches)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
CT-4 91-4	10	7						0.5 to 7.8 feet: GRAVELLY SAND, (SW-GW); gray to brown, fine to coarse sand, fine to coarse gravel to 1 1/2-inches, trace of silt, subangular to rounded. (FILL)
		13						
		15						
CT-4 91-5	11	15						@ 5.5 feet: sand bed.
		10						
		14						
		10						
CT-4 91-6	12	12						7.8 to 15.0 feet: SAND AND GRAVEL, (SW-GW); dark gray to black, fine to coarse sands and gravels; wood fibers; plastic; rubber; wire; metal fragments; oil and grease; sheen on grains; saturated. (AUTOFLUFF-FILL)
		20						
		20						
		30						
		26						
		46						
		30						
CT-4 91-6	13	3						15.0 to 15.5 feet: SILTY CLAY, (ML); gray, soft, plastic; wood root fibers. Former soil surface.  Bottom of boring at 15.5 feet.
		3						
		3						
		20						
		64						
CT-4 91-6	14	60						
		22						
		11						
CT-4 91-6	15	20						
		6						
		3						
CT-4 91-6	16	5						
		3						
		5						
CT-4 91-6	17	20						
		64						
		60						
CT-4 91-6	18	22						
		11						
		20						
CT-4 91-6	19	6						
		3						
		5						



**REMARKS**  
 Well Construction details: 2-inch diameter PVC Screen and riser. Factory slotted screen 0.010-inch diameter slots, 10-20 silica sand. Reference elevation is ground surface. Top of PVC elevation is 30.16. Blow counts are per 6-inches penetration using a 140-pound hammer with a 30-inch stroke. Surface monument is flush mounted.



# LOG OF EXPLORATORY BORING

PROJECT NAME Chempro, Tacoma  
 LOCATION Parcel A  
 DRILLED BY Tacoma Pump & Drilling  
 DRILL METHOD H.S. Auger  
 LOGGED BY P. Rowland

BORING NO. CTMW-18  
 PAGE 1 OF 1  
 REFERENCE ELEV. 30.93'  
 TOTAL DEPTH 15.50'  
 DATE COMPLETED 04/09/91

SAMPLE NUMBER	PHOTO FRAME NUMBER	BLOW COUNT (per six inches)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
CT-4 91-1	1	6						0.5 to 4.5 feet: SAND, (SW); brown to gray, fine to coarse sand, trace to 10 percent gravel, well rounded; wood fragments at 3 feet; dry.
		10						
CT-4 91-2	2	11						4.5 to 8.0 feet: GRAVELLY SAND, (SW-GW); gray, fine to medium sand, fine to medium gravel; up to 15 percent silt beds of gravel at 5 and 7.6 feet. Saturated below 5.5 feet. (FILL)
		10						
		22						
		27						
		38						
CT-4 91-3	3	11						8.0 to 9.5 feet: SAND, (SW); gray, fine to medium sand, trace of gravel, trace of silt. (FILL)
		36						
		19	▽	5				
		22						
		50						
		10						
CT-4 91-3	4	5						9.5 to 13.5 feet: GRAVELLY SAND, (SW-GW); gray, fine to coarse sand, fine to coarse gravel to 1-inch diameter, rounded; shell fragments at 12 feet; saturated. (FILL)
		5						
		5						
		10						
		22						
CT-4 91-3	5	22						13.5 to 14.5 feet: SILT/CLAYEY SILT, (ML); gray; root fibers; odorous. Former soil surface.
		25						
		22						
		23						
CT-4 91-3	6	15						Bottom of boring at 14.5 feet.
		3						
		5						
CT-4 91-3	7	3						
		3						
CT-4 91-3	8	10						
		15						
CT-4 91-3	9	22						
		25						
CT-4 91-3	9	22						
		23						
CT-4 91-3	9	15						
		3						
CT-4 91-3	9	5						
		3						
CT-4 91-3	9	3						
		3						

**REMARKS**

Well Construction details: 2-inch diameter PVC Screen and riser. Factory slotted screen 0.010-inch diameter slots. 10-20 silica sand. Reference elevation is ground surface. Top of PVC elevation is 33.35. Blow counts are per 6-inch penetration using a 140-pound hammer with a 30-inch stroke.





Location: Tacoma  
 Project Number: 11071  
 Permit No.: AGJ983

Site Id: CTMW-17D

Elevation: 16.90' Datum: NGVD 1929  
 Date Started: 01/11/01 Date Completed: 01/11/01

Borehole Dia.: 14.25in

Total Depth: 31.50'

Contractor: Cascade Drilling, Co

Static Water Level: 3.00'

Drilling Method: Hollow Stem Auger

Logged By: C. Johnson

Consulting Firm: PSC

Remarks:

Certified By:

Page 1 of 3

Depth (ft)	Sample No.	Recovery	Recovery (percent)	Blow Count	Headspace (ppm)	Graphic Log	Material Description	MP. E. Well Construction
0							(FILL) GRAVEL	16.64
2								
4		100	100	5 7 19	0.00 ppm		WATER 3.00'	
6							(ML) SILT, Silt Lens olive gray, wet, with woody debris.	
8							(GW) GRAVEL, medium brown/olive, loose, wet, poorly sorted, small amount of sandy silt.	
10		50		12 19 21	0.00 ppm			
12		100		18 12 14	0.00 ppm			
14		75		19 20 20	0.00 ppm			
16		100		25 25 25	0.00 ppm			
18								
20		100		24 19 16	0.00 ppm			
22								
24		100		25				



Location: Tacoma

Site Id: CTMW-17D

Project Number: 11071

Remarks:

Measuring Point: 16.64'

Page 2 of 3

Depth (bgs)	Sample No.	Recovery	Recovery (percent)	Blow Count	Headspace (ppm)	Graphic Log	Material Description	Well Construction
16			25	24 32	0.00 ppm			
18			100	7 10 10	0.00 ppm		(GW) Gravel, Olive gray, pebble sized, loose, wet, poorly sorted.	
20			100	10 5 5			(ML) SILT, Olive gray, well sorted, soft to medium stiff.	
22			0	4 4 4				
24			100	60	1.2 ppm		(SW) SAND Brownish black w/red, white, and transparent grains, fine to medium, dense, wet, poorly sorted.	
26			100	50 50 60			4" thick silt stringer at 24'bgs.#	
28			100	34 50	0.1 ppm			
30								





Site ID: CTMW-18	Location: Tacoma	Date(s): 04/09/91
Permit No.:	Well Depth (ft bgs): 13.00'	Boring Depth (ft bgs): 14.50'
Purpose: Monitoring Well, Shallow	Borehole Diameter: NA	From (feet bgs): NA To (feet bgs): NA
Geologist: P.Rowland	Chempro	Contractor: Tacoma Pump & Drill
Drilling Method: Hollow Stem Auger	Drilling Fluid Used: NA Drilling Fluid Type: NA	Wellbox Type: Standpipe w/ Locking Cap

Type / Material	Depth (feet bgs) From: To:	Length (ft)	Volume (ft <sup>3</sup> )	Comments:	
Conductor Casing: 0.00in	0.00' 0.00'	0.00'	##	PVC Joint:	
Well Casing: 2.00in PVC	-2.4' 5.00'	7.40'	##	PVC Joint: Threaded	
Screens: 2.00in Slotted 0.010in	5.00' 13.00'	8.00'	##	PVC Joint: Threaded	
Annular Fill Materials:	Concrete Grout	0.00' 2.00'	2.00'	##	Poured
	Bentonite Chips	2.00' 4.00'	2.00'	##	Tremied
	Sand #2/20	4.00' 14.50'	10.50'	##	Tremied

Elevation (ft)	Depth (ft)	Recovery	Sample No.	Blow Count	Graphic Log	Geological Description:	Well Construction Diagram (Not To Scale)
10	10					(SP) SAND, Brown to gray, fine to coarse, dry, some organic debris.	
10	10					(SW) GRAVELLY SAND, Gray, fine to medium, saturated below 7.6 feet bgs.	
10	10					(SP) SAND, Gray, fine to medium, trace of gravel, trace of silt.	
10	10					(SW) GRAVELLY SAND, Gray, fine to coarse to 1" dia., saturated, some organic debris.	
0	20					(ML) SILT, Gray, some organic debris.	
-10	30						
-20	40						
-30	50						
-40							

\* All measurements are in feet bgs.



Location: Tacoma  
 Project Number: 11071  
 Permit No.: AFF966

Site Id: CTMW-19

Elevation: 16.40' Datum: NGVD 1929  
 Date Started: 06/20/00 Date Completed: 06/20/00

Rehole Dia.: 9.00in

Total Depth: 14.00'

Contractor: Cascade Drilling, Co

Static Water Level: 1.00'

Drilling Method: Hollow Stem Auger

Logged By: T. Gray

Consulting Firm: PSC

Remarks:  
 Well has been abandoned

Certified By:

Page 1 of 1

Depth (fsg)	Sample No.	Recovery	Recovery (percent)	Blow Count	Headspace (ppm)	Graphic Log	Material Description	Well Construction
0			0				(FILL) GRAVEL	
2			30	50	0.00 ppm		(SW) SAND, Dark yellowish brown, very loose, fine sand, angular gravel, medium to coarse grained sand, dry, poorly sorted.	
4							WATER ~6.00'	
6								
8			60	1 2 1	0.00 ppm		(W) SOLID WASTE Gelatinous, moderately sorted lime waste, some sand.	
10			60	1 1 1	0.00 ppm			
12							(SM) SILTY SAND, dark grayish brown with black streaks, fine grained, sand and silt mix, moist, well sorted.	
14			60	1 1 1	0.00 ppm		(OL) SILT, Grayish brown, soft, moist, well sorted, some streaks of lime-waste.	









Location: Tacoma  
 Project Number: 11071  
 Permit No.: AHB200

Site Id: CTMW-23

Elevation: 21.53' Datum: NGVD 1929  
 Date Started: 05/28/02 Date Completed: 05/28/02

Borehole Dia.: 8.25in

Total Depth: 12.50'

Contractor: Cascade Drilling, Co

Static Water Level:

Drilling Method: Hollow Stem Auger

Logged By: C. Johnson

Consulting Firm: PSC

Remarks:

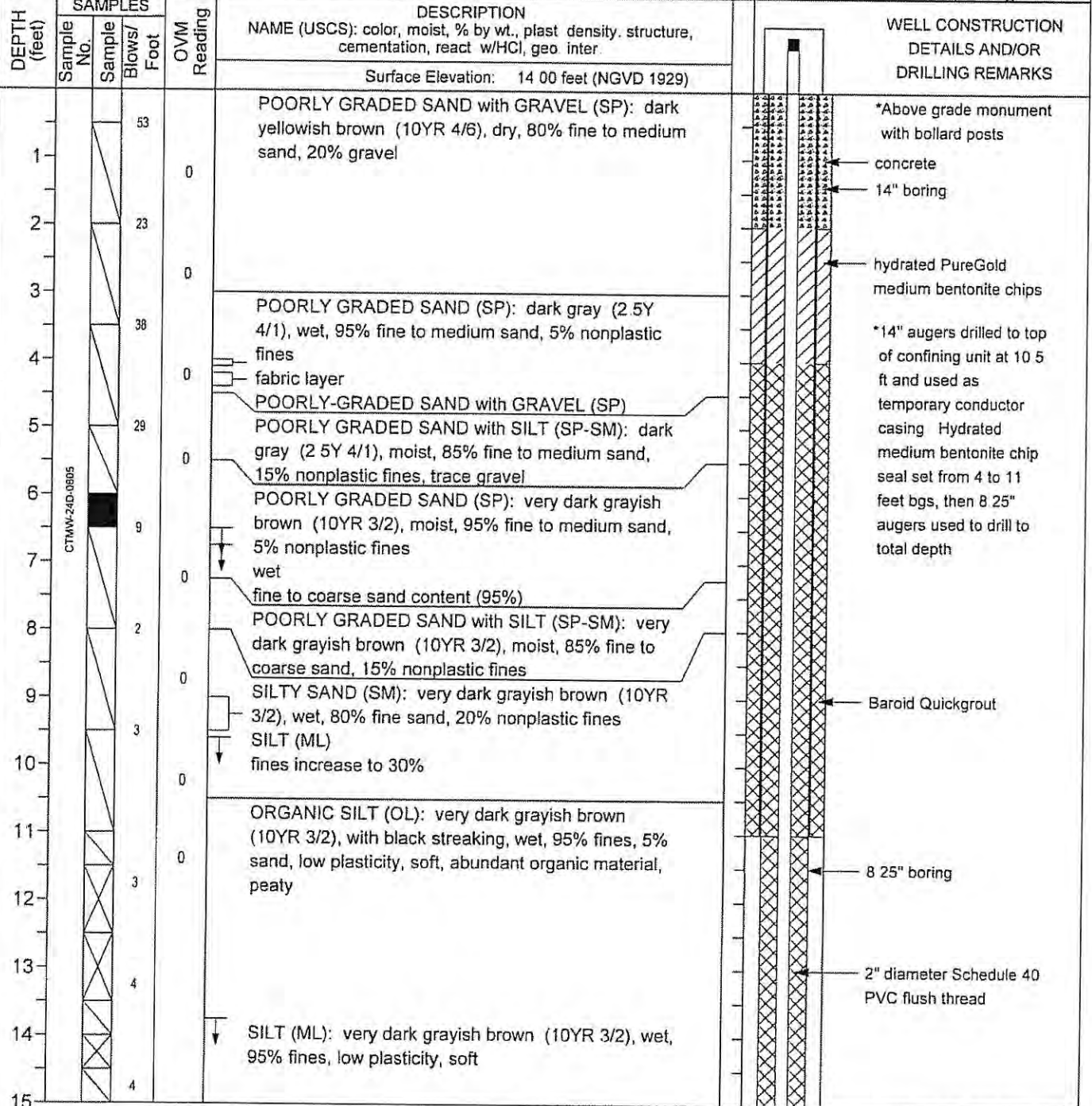
Certified By:

Depth (bgs)	Sample No.	Recovery	Recovery (percent)	Blow Count	Headspace (ppm)	Graphic Log	Material Description	Well Construction
2			30	50			(GW) GRAVEL, dark gray, coarse with medium to coarse sand, loose, moist, poorly sorted.	
4			100	2 2 3			White Limewaste	
8			100	1 1 1			White Limewaste	
10			100	1			(ML) SILT, dark olive gray, some fine sand, soft, moist, well sorted, with some limewaste.	
12								
14								

PROJECT: PSC Tacoma Tacoma, Washington		<b>Log of Well No. CTMW-24</b>	
BORING LOCATION: 1649 E Alexander (N 712293 1; E 1170515 8)		TOP OF CASING ELEVATION AND DATUM: 16.35 feet (NGVD 1929)	
DRILLING CONTRACTOR: Cascade Drilling, Inc		DATE STARTED: 8/16/05	DATE FINISHED: 8/16/05
DRILLING METHOD: Hollow-stem auger		TOTAL DEPTH (ft.): 11.0	SCREEN INTERVAL (ft.): 5.5 - 10.3
DRILLING EQUIPMENT: CME-75		DEPTH TO FIRST WATER (ft.):	COMPL ~6.5 CASING: 2" Sched. 40 PVC
SAMPLING METHOD: NA		LOGGED BY: T. Gray	
HAMMER WEIGHT: NA		DROP: NA	RESPONSIBLE PROFESSIONAL: J. Long
			REG NO. L.Hg. 1354

DEPTH (feet)	SAMPLES			OVM Reading	DESCRIPTION NAME (USCS): color, moist. % by wt., plast density, structure, cementation, react w/HCl, geo inter	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
	Sample No.	Sample	Blows/ Foot			
Surface Elevation: 14 00 feet (NGVD 1929)						
1					See CTMW-24D log for lithology as this well is located ~5 feet away from well CTMW-24D	*Above grade monument with bollard posts
2						concrete
3						PureGold hydrated medium bentonite chips
4						2" diameter Schedule 40 PVC flush thread
5						2/12 Monterey sand
6						8 25" boring
7						
8						Schedule 40 PVC well screen, 0.010" slot
9						
10						
11						0 30' PVC end cap
12					End of boring at 11.0 feet	
13						
14						
15						

PROJECT: PSC Tacoma Tacoma, Washington		<b>Log of Well No. CTMW-24D</b>	
BORING LOCATION: 1649 E. Alexander (N 712297 2; E 1170515 4)		TOP OF CASING ELEVATION AND DATUM: 16.39 feet (NGVD 1929)	
DRILLING CONTRACTOR: Cascade Drilling, Inc.		DATE STARTED: 8/16/05	DATE FINISHED: 8/16/05
DRILLING METHOD: Hollow-stem auger		TOTAL DEPTH (ft.): 24.5	SCREEN INTERVAL (ft.): 19 - 23.8
DRILLING EQUIPMENT: CME-75		DEPTH TO FIRST WATER (ft.):	COMPL CASING: ~6.5 2" Sched. 40 PVC
SAMPLING METHOD: SPT split spoon drive sampler [18" x 2 5"]		LOGGED BY: T. Gray	
HAMMER WEIGHT: 300 lb	DROP: 30 in	RESPONSIBLE PROFESSIONAL: J. Long	REG NO L.Hg. 1354



OAKWELLV\_TOC\_FINE(REV. 4/03)

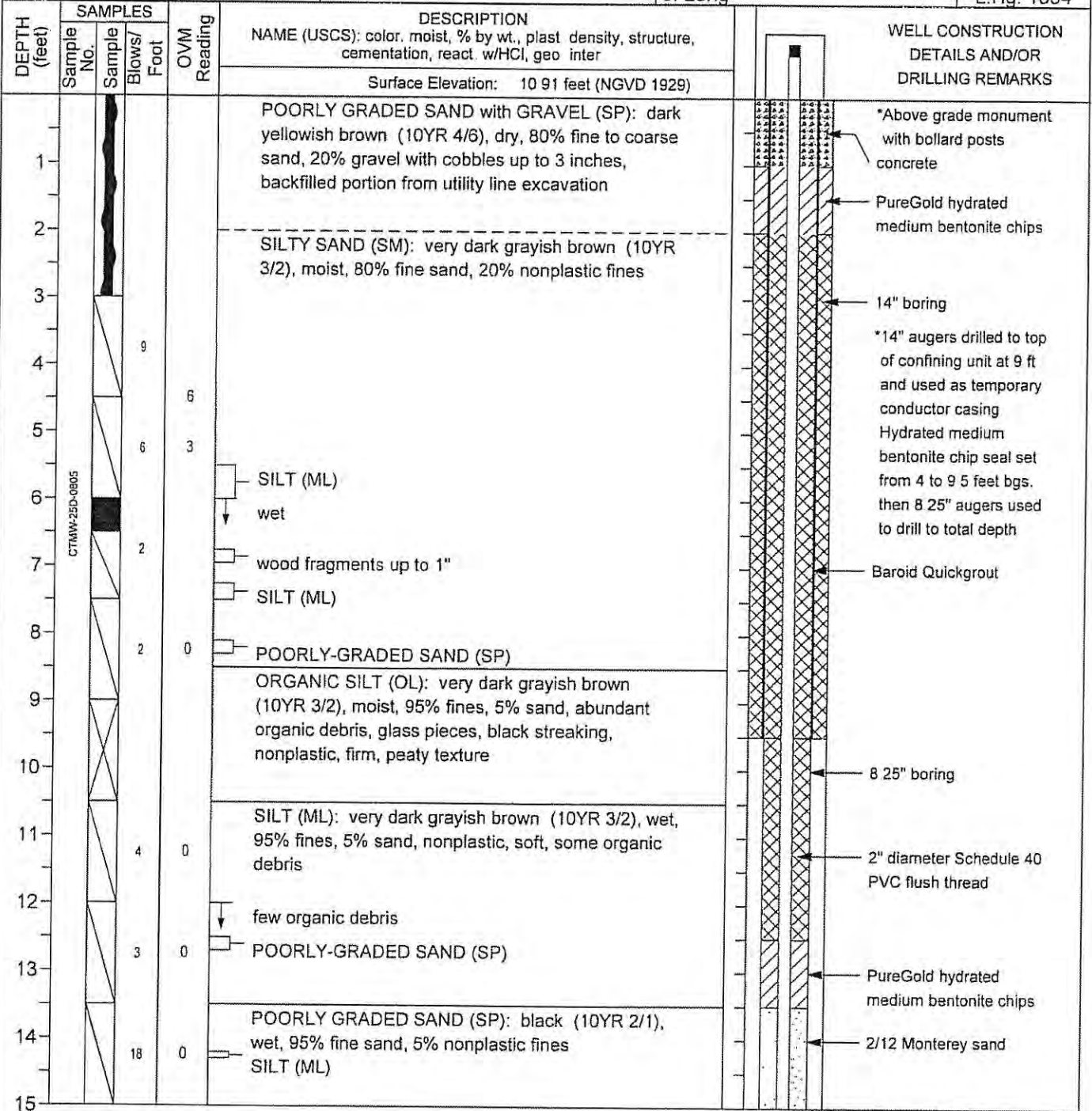
### Log of Well No. CTMW-24D (cont'd)

DEPTH (feet)	SAMPLES			OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast density, structure, cementation, react. w/HCl, geo inter	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
	Sample No.	Sample Blows/ Foot				
16		8			SILT (ML): (cont'd)	
17					SILT with SAND (ML): very dark grayish brown (10YR 3/2), wet, 75% fines, 25% fine sand, firm, some sand and silt stringers	
18		14			POORLY GRADED SAND (SP): black (10YR 2/1), wet, 95% fine sand, 5% nonplastic fines	
19		8				
20						
21						
22						
23						
24						
25					End of boring at 24.5 feet	
26						
27						
28						
29						
30						
31						
32						
33						

OAKWELLV\_TOC\_FINE(REV 4/03)



PROJECT: PSC Tacoma Tacoma, Washington		<b>Log of Well No. CTMW-25D</b>	
BORING LOCATION: 1801 E. Alexander (N 711774 1; E 1170888 6)		TOP OF CASING ELEVATION AND DATUM: 13.06 feet (NGVD 1929)	
DRILLING CONTRACTOR: Cascade Drilling, Inc.		DATE STARTED: 8/19/05	DATE FINISHED: 8/19/05
DRILLING METHOD: Hollow-stem auger		TOTAL DEPTH (ft.): 21.0	SCREEN INTERVAL (ft.): 15.5 - 20.3
DRILLING EQUIPMENT: CME-75		DEPTH TO FIRST WATER (ft.): 6	CASING: 2" Sched. 40 PVC
SAMPLING METHOD: SPT split spoon drive sampler [18" x 2.5"]		LOGGED BY: T. Gray	
HAMMER WEIGHT: 300 lb	DROP: 30 in	RESPONSIBLE PROFESSIONAL: J. Long	REG NO L.Hg. 1354



DAKWELLV\_TOC\_FINE (REV. 4/03)

PROJECT: PSC Tacoma  
Tacoma, Washington

### Log of Well No. CTMW-25D (cont'd)

DEPTH (feet)	SAMPLES			OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast density, structure, cementation, react w/HCl, geo inter.	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
	Sample No.	Sample Blows/ Foot				
16		5			POORLY GRADED SAND (SP): (cont'd) sand is fine to medium	<p>2/12 Monterey sand</p> <p>Schedule 40 PVC well screen, 0.010" slot</p> <p>8.25" boring</p> <p>0.30" PVC end cap</p>
17		14			SILT (ML)	
18						
19						
20						
21					End of boring at 21.0 feet	
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						

OAKWELLV\_TOG\_FINE(REV 4/03)



**BURLINGTON ENVIRONMENTAL**

Consulting Firm: Burlington	Date(s): 03/17/94 - 03/17/94
Drilling Contractor: Burlington	Casing Elevation: 13.77
Drilling Method: RECON	Datum: NGVD 1929
Logged By: K. Tahghighi	Approved By:
Total Depth 7.00 ft	
Borehole Diameter: 2.20 in	
Well Casing: 1.56" PVC	From 0.0 to 1.00 ft
Screen: PVC Slot Size: 0.020in	From 1.00 to 7.00 ft
Annular Fill: Bentonite	From 0.00 to 0.5 ft

Project: Tacoma RFI

Identification: PZ-1

State Permit # R09293

Permit Date:

Remarks: Pilot hole to 7.5 ft bgs  
Driven Piezometer  
Flush mount monument, with security bolts

ELEVATION (feet)	DEPTH (feet)	GRAPHIC LOG	Material Description	Well Construction
13.77	0		(SW) Brown medium to fine to coarse SAND, trace SILT (0.0' - 0.5') Fill Material	
			(SW) Brown medium to fine to coarse SAND, trace SILT, trace fine GRAVEL (0.5' - 1.5') Fill Material	
			(FI) Dark gray medium to fine to coarse SAND and SILT, trace fine GRAVEL, trace miscellaneous FILL (AUTO FLUFF) (1.5' - 5.5') Fill Material	
8.77	5		(SP) Dark gray medium to fine SAND, trace SILT (from 5.5')	
			Total Depth = 7.0 feet bgs	
3.77	10			



**BURLINGTON ENVIRONMENTAL**

Consulting Firm: Burlington	Date(s): 03/17/94 - 03/17/94
Drilling Contractor: Burlington	Casing Elevation: 12.47
Drilling Method: RECON	Datum: NGVD 1929
Logged By: K. Tahghighi	Approved By:
Total Depth 7.00 ft	
Borehole Diameter: 2.20 in	
Well Casing: PVC Diameter: 1.56 in	From 0.00 to 1.00 ft
Screen: PVC Slot Size: 0.02 in	From 1.00 to 7.00 ft
Annular Fill: Bentonite	From 0.00 to 0.50 ft

Project: Tacoma RFI

Identification: PZ-2

State Permit # R09293 Permit Date:

Remarks: Pilot hole to 7.5' bgs  
Driven Piezometer  
Flush mount monument with security bolts

ELEVATION (feet)	DEPTH (feet)	GRAPHIC LOG	Material Description	Well Construction
12.47	0		(FI) Crushed aggregate (0' - 0.8')	
			(SW) Brown medium to fine to coarse SAND, some SILT (0.8' - 2.0') Fill Material	
			(FI) Dark gray-brown coarse to medium to fine SAND, some SILT, miscellaneous FILL (AUTO FLUFF) (2.0' - 3.3') Fill Material	
7.47	5		(ML) Light gray-white SILT, some CLAY, some fine SAND, trace fine GRAVEL, (LIME WASTE) (3.3' - 6.9') Fill Material	
			(MH) Dark gray SILT and organic matter (from 6.9')	
			Total Depth = 7.0 feet bgs	
2.47	10			





**BURLINGTON ENVIRONMENTAL**

Consulting Firm: Burlington Date(s): 03/17/94 - 03/17/94

Drilling Contractor: Burlington Casing Elevation: 12.50

Drilling Method: RECON Datum: NGVD 1929

Project: Tacoma RFI

Logged By: K. Tahghighi

Approved By:

Identification: PZ-3

Total Depth 7.00 ft

Borehole Diameter: 0.01

State Permit # R09293

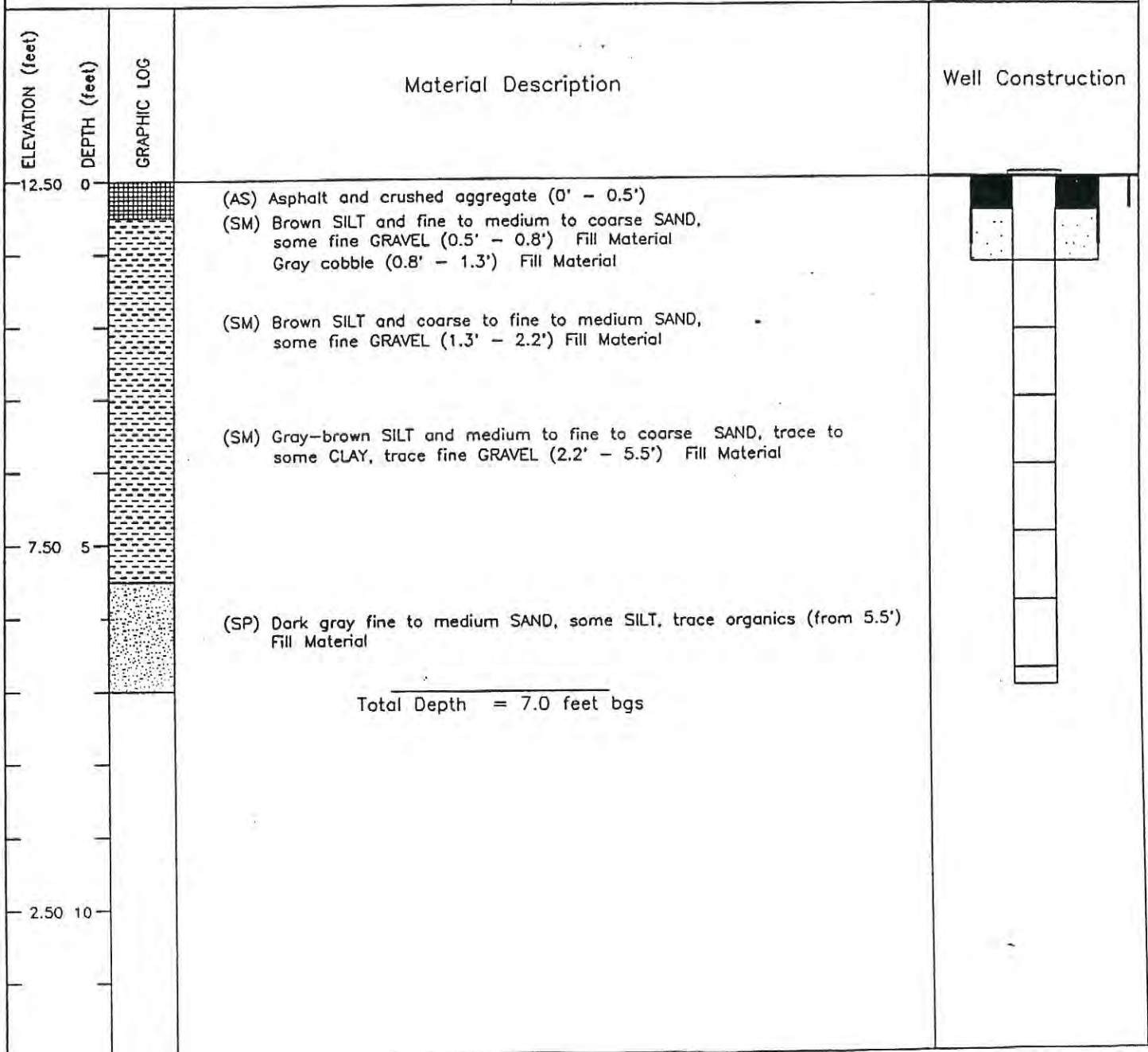
Permit Date:

Well Casing: PVC Diameter: 1.56 in From 0.00 to 1.0 ft

Remarks: Pilot hole to 7.5' bgs  
Driven piezometer  
Flush mount monument with security bolts

Screen: PVC Slot Size: 0.02 in From 1.00 to 7.0 ft

Annular Fill: Bentonite From 0.00 to 0.5 ft





**BURLINGTON ENVIRONMENTAL**

Consulting Firm: Burlington	Date(s): 03/17/94 - 03/17/94
Drilling Contractor: Burlington	Casing Elevation: 13.80
Drilling Method: RECON	Datum: NGVD 1929
Logged By: K. Tahghighi	Approved By:

Project: Tacoma RFI

Identification: PZ-4

State Permit # R09293	Permit Date:	Well Casing: PVC Diameter: 1.56 in From 0.00 to 1.2 ft
Remarks: Pilot hole to 8.0' bgs. Driven piezometer. Flush mount monument with security bolts.		Screen: PVC Slot Size: 0.01 in From 1.20 to 7.00 ft
		Annular Fill: Bentonite From 0.00 to 0.5 ft

ELEVATION (feet)	DEPTH (feet)	GRAPHIC LOG	Material Description	Well Construction
13.80	0		Nearest known boring/well: CTMW-12	
8.80	5			
3.80	10			

Total Depth = 7.2 feet bgs



**BURLINGTON ENVIRONMENTAL**

Consulting Firm: Burlington	Date(s): 03/17/94 - 03/17/94
Drilling Contractor: Burlington	Casing Elevation: 12.86
Drilling Method: RECON	Datum: NGVD 1929
Logged By: K. Tahghighi	Approved By:

Project: Tacoma RFI

Identification: PZ-5

State Permit # R09293

Permit Date:

Total Depth 7.20 ft

Borehole Diameter: 2.20 in

Well Casing: PVC Diameter: 1.56 in From 0.00 to 1.2 ft

Screen: PVC Slot Size: 0.01 in From 1.20 to 7.20 ft

Annular Fill: Bentonite From 0.00 to 0.5 ft

Remarks: Pilot hole to 8.5' bgs  
Driven piezometer  
Flush mount monument with security bolts

ELEVATION (feet)	DEPTH (feet)	GRAPHIC LOG	Material Description	Well Construction
12.86	0		Nearest known boring/well: CTMW-8	
7.86	5			
2.86	10			

Total Depth = 7.2 feet bgs



Location: Tacoma

Project Number: 11071

Permit No.:

Site Id: PZ-6

Elevation: 12.46'

Datum: NGVD 1929

Date Started: 06/15/99

Date Completed: 06/15/99

Rehole Dia.: 12.00in

Total Depth: 14.50'

Contractor: CASCADE

Static Water Level: 5.00'

Drilling Method: Hollow Stem Auger

Logged By: C. MINTON

Consulting Firm: PSC

Remarks:

Certified By: NA

Permanent Piezometer

Water Elevation Measuring Point

Page 1 of 2

Depth (logs)	Sample No.	Recovery	Recovery (percent)	Blew Count	Headspace (ppm)	Graphic Log	Material Description	Well Construction
0 - 2							(FILL) Asphalt	
2 - 3							Autofluff and Debris	
3 - 4			100	14	6.2 ppm		(GW) SANDY GRAVEL, Brownish black, fine to coarse, loose, moist, poorly sorted, some organic debris.	
4 - 5			30	9	1.5 ppm		(SP) SAND, Greenish black, fine to coarse, loose, very wet, poorly sorted.	
5 - 6			30	10				
6 - 7				11	3.0 ppm		WATER ~5.00'	
7 - 8				4				
8 - 9			100	3				
9 - 10			75	17	1.2 ppm			
10 - 11				11				
11 - 12			60	9	0.2 ppm			
12 - 13				13				
13 - 14			25	9	0.00 ppm			
14 - 15			100	6	2.1 ppm			
15 - 16				3	0.00 ppm			
16 - 17				5				
17 - 18				4				
18 - 19				5				
19 - 20				3				
20 - 21				8			(ML) SILT, Olive black, fine silt to fine sand, medium stiff, wet, some wood debris.	



Location: Tacoma

Site Id: PZ-6

Project Number: 11071

Remarks:

Measuring Point: 12.10'

Depth (ft)	Sample No.	Recovery	Recovery (percent)	Blow Count	Headspace (ppm)	Graphic Log	Material Description	Well Construction
16 18 20 22 24 26 28 30								.....



Location: Tacoma  
 Project Number: 11071  
 Permit No.:

Site Id: PZ-7

Elevation: 18.66' Datum: NGVD 1929  
 Date Started: 01/10/01 Date Completed: 01/10/01

Rehole Dia.: 9.25in  
 Contractor: Cascade Drilling, Co  
 Drilling Method: Hollow Stem Auger  
 Consulting Firm: PSC  
 Certified By:  
 Page 1 of 2

Total Depth: 18.00'  
 Static Water Level: 6.75  
 Logged By: T. Gray  
 Remarks:  
 Permanent Piezometer  
 Water Elevation Measurement Point

Depth (fsg)	Sample No.	Recovery	Recovery (percent)	Blow Count	Headspace (ppm)	Graphic Log	Material Description	Well Construction
			60	8 12 21	0.00 ppm		(FILL) SANDY GRAVEL, Olive orange brown, medium dense, poorly sorted, moist to dry.	
2			30	9 13 19	0.2 ppm			
4			60	19 20 12	0.00 ppm		(FILL) Auto-fluff	
			60	30 30 30	0.00 ppm			
6			60	15 19 30	0.00 ppm		(SM) SILTY SAND, Olive gray to brown, medium sand with silt, poorly sorted, wet, some wood debris and auto-fluff present. WATER ~6.75'	
8			60	18 23 18	0.7 ppm			
10			60	10 14 10	5.9 ppm			
			100	9 17	0.00 ppm		(ML) SILT Silt lens.	
12			60	50 22 17	0.00 ppm		(ML) SILT Silt lens with wood debris.	
14			18	12				



Location: Tacoma  
 Project Number: 11071  
 Measuring Point: 20.97'

Site Id: PZ-7  
 Remarks:

Depth (lbs)	Sample No.	Recovery	Recovery (percent)	Blow Count	Headspace (ppm)	Graphic Log	Material Description	Well Construction
16			18	9 12			(ML) SILT, Olive gray, medium stiff, moist, well sorted.	
18			60	9 9 7 4 3 4				



Location: Tacoma

Project Number: 11071

Permit No.:

Site Id: PZ-8

Elevation: 11.65'

Datum: NGVD 1929

Date Started: 01/09/01

Date Completed: 01/09/01

Wellbore Dia.: 9.25in

Total Depth: 12.00'

Contractor: Cascade Drilling, Co

Static Water Level: 4.50'

Drilling Method: Hollow Stem Auger

Logged By: T. Gray

Consulting Firm: PSC

Remarks:

Certified By:

Permanenet Piezometer

Water Elevation Measuring Point

Page 1 of 1

Depth (logs)	Sample No.	Recovery	Recovery (percent)	Blow Count	Headspace (ppm)	Graphic Log	Material Description	Well Construction
			60	15			(FILL) Gravel, Surface Debris, and Organic Debris.	
			60	50			(SW) GRAVELLY SAND, Orange brown, medium dense, poorly sorted, dry to moist, some organic debris.	
2			60	24	2.8 ppm			
			60	26				
			60	30				
4			20	9				
			60	6				
			60	12	2.4 ppm			
			60	19				
6			60	11	0.00 ppm			
			60	16				
			60	18				
8			60	10	0.00 ppm			
			60	12				
			60	15				
10			60	2	0.00 ppm			
			60	2				
			60	2				
12			60	5	0.00 ppm			
			60	5				
			60	9			(OL) SILT, Olive brown with black streaks, stiff, moist to wet, some wood debris.	
14								







Location: Tacoma

Project Number: 11071

Permit No.:

Site Id: PZ-10

Elevation: 12.85'

Datum: NGVD 1929

Date Started: 08/07/02

Date Completed: 08/07/02

Rehole Dia.: 9.25in

Total Depth: 8.00'

Contractor: Cascade Drilling, Co

Static Water Level:

Drilling Method: Hollow Stem Auger

Logged By: C. Johnson

Consulting Firm: PSC

Certified By:

Remarks:

Page 1 of 1

Depth (fsg)	Sample No.	Recovery	Recovery (percent)	Blow Count	Headspace (ppm)	Graphic Log	Material Description	MP. EL. 12.61 Well Construction
2							See PZ-2 for boring log information.	
4								
6								
8								
10								
12								
14								



Soil Stratigraphy Field Log

Location ID GP-1  
 Facility TAC  
 Project Geoprobe Step-Out

Date 10/12/99

Field Geologist T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct Push  
1.5 ID 2.0 OD

Sampling Method

Total Depth 11.0'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: <u>0.0 PID</u> <u>0.0 FID</u> <hr/> <u>0.0 PID</u> <u>2.0 FID</u>  Hanby Test: 500 ppm Diesel	30	0-3" concrete, gravel 3-9" SP medium-fine, moist medium dense, poorly sorted, moderate brown, some fine gravel 9-19" SP coarse-fine, some gravel, moist, poorly sorted, olive black, looks similar but different color 19-24" SP same as above (3-9") but coarser, fine gravels dominant 24"-30" lime waste, fine, light gray, dry
17.5'			<u>0.0 PID</u> <u>50 FID</u> <hr/> <u>0.0 PID</u> <u>129 FID</u>  Hanby Test: <10 ppm Waste Oil & Diesel	22	0-6" SP, very gravelly, same as above (0-3", 3-9") 6-12" SP same as above but no gravel (0-3", 9-19") 12-17" lime waste 17-22" SP medium-fine, poorly sorted, wet, dense, greenish black, smears a little

0.0'

3'

6'

Geologist's Signature T. Gray Date 10/12/99 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 2



Soil Stratigraphy Field Log

Location ID GP-1  
 Facility IAC  
 Project Geoprobe Step-Out

Date 10/12/99

Field Geologist  
T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method  
direct push  
1.5" ID 2.0" OD

Sampling Method

Total Depth  
11.0'

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

6'

8'-10' ~~no recovery~~  
 10'

11'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'			Breathing Zone: In-Spoon: Headspace: 0.0 PID 0.0 FID 0.0 PID 0.0 FID	20	0-3" same as above (3-6', 17-22") 3-15" SP wet, medium fine olive black, poorly sorted, medium dense 15-20" SM wet, <sup>to</sup> sandy silty sand, fine sand some silt, medium dense, dark olive grey
			0.0 PID 0.0 FID 0.0 PID 0.0 FID	9	0-9 ML silt with small amounts of fine sands, wet, soft, dark olive grey



Soil Stratigraphy Field Log

Location ID GP-2  
 Facility TAL  
 Project Geoprobe Step-Out

Date 10/12/99

Field Geologist T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method direct push  
1.5" ID 2.0" OD

Sampling Method

Total Depth 10.0'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: 0.0 PID 0.0 FID ----- 0.0 PID  Hamby Test Kit <10 ppm for Diesel and Waste 0:1	26	0-3" asphalt, gravel 3-16" SP medium-fine, moist, dense, poorly sorted, some fine gravels moderate brown 16-22" mixed lime waste with SP, poorly sorted, moist, some fine gravels, medium bluish grey, dense 22-26" <del>SP</del> , fine-medium, medium dense, olive black, poorly sorted, glass debris, looks like asphalt crumbled, somewhat soft, less sandy than above lithologies, possibly auto fluff
3'			0.0 PID ----- 0.0 PID  Hamby Test: 500 ppm Diesel	<del>26</del> 25	0-7" same as above (0-3", 3-16") 7-10" auto fluff same as above same as above (0-3, 22-26") 10-20" SP mixed with lime waste, same as above (0-3, <del>22-26"</del> 16-22") 20-25" dark greenish grey SM silt, dense, silty sand, silt to fine-medium sand, some fine gravels, poorly sorted.
6'					

Geologist's Signature T. Gray Date 10/12/99 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1



Soil Stratigraphy Field Log

Location ID GP-2  
 Facility Tac  
 Project Geoprobe Step-Out

Date 10/12/99  
 Drilling Method Direct Push  
1.5" ID 2.0" OD

Field Geologist T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Sampling Method

Total Depth 10.0'

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'			Breathing Zone: In-Spoon: Headspace: <u>0.0 PID</u> <u>0.0 PID</u>	17	0-13" SM same as above (3-6', 20-25") 13-15" wood debris 15-17" SM same as above (3-6', 20-25")
			<u>0.0 PID</u> <u>0.0 PID</u>	24	<del>0-10" SM same as above (6-8' 0-12")</del> <del>10-24"</del> 10-13" ML, sandy silt, wet, fine, soft, moderately well sorted, dark greenish grey 13-24" SP fine-medium, wet, medium dense, poorly sorted, brownish black

6'

8'

setscreens 8.5'

10'



Soil Stratigraphy Field Log

Location ID GP-4  
 Facility Tal  
 Project Geoprobe STEP-OUT

Date 10/12/99

Field Geologist T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct Push  
1.5" ID 2.0" OD

Sampling Method

Total Depth 8.0'

0'

3'

6'

8'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: <u>0.0 PID</u> <u>0.0 PID</u>  Hanby Test: <10 ppm Diesel or Waste Oil	36	0-2" asphalt <del>2-36"</del> 2-7" lime waste, dry, light bluish grey, chalky  7-9" SP dusky yellow green, poorly sorted, medium grained sand, dense, moist  9-36" same as above (2-7")
oil 4.7' ≅ 5.5'			<u>9.0 PID</u> <u>32.0 PID</u>  Hanby Test: >1000 ppm Diesel & Waste Oil	30	0-14" same as above (0-3', 2-7") 14-25" very oily, SP with fine and coarse gravel black, poorly sorted, medium dense, oil smell 25-30" oily SP fine-medium, black, wet, dense, poorly sorted, medium dense, oil smell
				20	0-20" SP oily, same as above (3-6', 25-30")

Geologist's Signature Natasha S. Gray Date 10/12/99 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1



Soil Stratigraphy Field Log

Location ID GP-6  
 Facility TAC  
 Project Geoprobe Step-Out

Date 10/12/99

Field Geologist T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct Push  
0.5" ID 2.0" OD

Sampling Method

Total Depth 9.0'

0.0'  
3'  
6'  
8'  
9'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: 0.0 PID 0.0 PID Hanby Test: 200ppm Diesel	18	0-18" SP, fine-medium, moist, poorly sorted, medium dense, dusky yellowish brown
1.4 = 5.25			0.0 PID 0.8 PID  Hanby Test: 0 ppm	26	0-23" SP same as above (0-3', 0-18") some brick debris, wet 23-26" SP same as above but darker color, brownish black (0-3', 0-18") wet
			0.0 PID 0.0 PID	18	0-16" SP same as above (0-3-6', 23-26") 16-18" SP same as above but finer grained, wet, medium dense, brownish black, poorly sorted,
			0.0 PID 0.0 PID	12	0-2" SP same as above (0-8', 16-18") 2-6" ML sandy silt, wet, fine sands and silt, soft, moderately well sorted, dark greenish black 6-12" CL clayey silt with root debris, brownish black, well sorted, fine, medium stiff, wet

Geologist's Signature T. Gray Date 10/12/99 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1





Soil Stratigraphy Field Log

Location ID GP-7  
 Facility TAL  
 Project Geoprobe Step-Out

Date 10/12/99

Field Geologist T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct Push  
1.5" ID 2.0" OD

Sampling Method

Total Depth

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: <u>0.0 PID</u>  Hanby test: <u>0.0 ppm</u>	<u>28</u>	<u>0-2" lime waste</u> <u>2-28" SP, fine-medium, medium dense, poorly sorted, dark yellowish brown, moist</u>
<u>3'</u> <u>▽=4'</u>			<u>0.0 PID</u>  Hanby test: <u>0.0 ppm</u>	<u>26</u>	<u>0-26" SP same as above (0-3', 2-28") but gradually got darker from dark yellowish brown to brownish black</u>
<u>6'</u>			<u>0.0 PID</u>	<u>18</u>	<u>0-18" SP brownish black fading to olive black, very wet in last 12" poorly sorted, medium dense, fine-medium with small amounts of silt in last 2"</u>
<u>8'</u>			<u>0.0 PID</u>	<u>11</u>	<u>0-11" SP brownish black same as above (6-8', 0-18") some shell debris</u>
<u>9'</u>					<u>SP same as above (8-9', 0-11")</u>
<u>10'</u>					

Geologist's Signature T. Gray Date 10/12/99 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1



Soil Stratigraphy Field Log

Location ID GP-10  
 Facility Tac  
 Project Geoprobe Step-Out

Date 10/14/99

Field Geologist  
T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct Push  
1.5" ID 2.0" OD

Sampling Method

Total Depth  
12' had to set at 4-9' dpe to pressu  
~~12' set screen 6-11'~~

0'  
3'  
6'  
8'  
10'  
12'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: 0.0 PID 0.0 FID 0.0 FID Hanby: 0.0 PPM	36	0-20" GP gravelly sand, fine-coarse, poorly sorted, dense, dry, moderate olive brown 20-36" lime waste, light bluish grey
	Sample 1125		140 FID 3.7 FID Hanby 0.0 PPM	36	0-35" lime waste, same as above (0-3', 20-36") 35-36" SP, fine-medium, wet, root debris, loose, poorly sorted, brownish black,
$\nabla = 6'$			0.0 PID 111 FID 20.9 FID Hanby 0.0 PPM	20	0-20" SP same as above (3-6', 35-36")
			193 FID 191 FID	16	0-16" SP same as above (3-6', 35-36") with some shell debris
			79 FID	20	0-12" SP same as above (3-6', 35-36") fines out at bottom 12-14" ML sandy silt, wet, very fine, medium stiff, well sorted, dark yellowish brown 14-20" peat, rooty debris, very fine, moist, dark yellowish brown, medium stiff,

Geologist's Signature T. Gray Date 10/14/99 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1



Soil Stratigraphy Field Log

Location ID GP-12  
 Facility Tac  
 Project Glacisole Step-Out

Date 10/13/99

Field Geologist  
T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method DIRECT PUSH  
1.5" ID 2.0" OD

Sampling Method

Total Depth  
10' set screen 3-8'

0'  
3'  
6'  
8'  
10'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: 0.0 PID 0.0 FID 0.0 FID Hanby: 0.0 ppm	28	0-3" gravel 3-28" SP, Wet, fine-coarse sand, poorly sorted, medium-dense, dusky yellowish brown, some shell debris
<u>3.0'</u>			0.0 PID 11.2 FID 95.5 FID Hanby: 0.0 ppm	32	0-32" SP same as above, (0-3', 3-28")
			93.0 FID 290.1 FID	160	0-16" SP same as above, (0-3', 3-28") with silt lens at 4-6" and 14-15"
			5.0 FID 293.6 FID Hanby: 10-50 ppm	15	0-13" ML sandy silt, fine silt and sand, wet, soft, well sorted, olive grey 13-15" <del>ML</del> very fine silt and sand, wet, medium stiff, wood debris, well sorted, olive black

Geologist's Signature T. Gray Date 10/13/99 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1



Soil Stratigraphy Field Log

Location ID GP-16  
 Facility Tac  
 Project Geoprobe Step-Out

Date 10/14/99

Field Geologist T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct Push  
1.5" ID 2.0" OD

Sampling Method

Total Depth  
~~57~~ 14' silt screen 4.5-9.5'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: 0.0 FID 94 FID 39.0 FID  Hanby: 0.0 ppm	36	0-3" gravel 3-15" SP gravelly sand, dry, loose medium dense, poorly sorted, moderate olive brown 15-35" <sup>fine-medium</sup> lime waste 35-36" SP fine-medium, poorly sorted, dry, medium dense brownish black
3' <u>∇=45'</u>	Sample 1255		197 FID 124.1 FID  Hanby: 0.0 ppm	28	0-26" SP same as above (0-3', 35-76") but wet and 1" of silt at 5.5'
6'			61 FID 104.1 FID	14	0-12" SP same as above (3-6', 0-26") 12-13" silt ML, medium stiff, wet well sorted, very fine, olive grey 13-17" same as above (3-6', 0-26") SP but coarser sand
8'			129 FID 287 FID	18	0-18" same as above (6-8', 13-17") with 1.5" silt layer at 14"
10'					

Geologist's Signature T. Gray Date 10/14/99 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 2



Soil Stratigraphy Field Log

Location ID GP-16  
Facility TAC  
Project Geoprobe Step-Out

Date 10/14/99

Field Geologist T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct Push  
1.5" ID 2.0" OD

Sampling Method

Total Depth 14'

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

10'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)
--------------------------	-----------	----------------------	----------------------	--------------------------

0.0'			Breathing Zone: In-Spoon: Headspace: <u>61 FID</u> <u>1089 FID</u>	<u>24</u>
------	--	--	--	-----------

0-21" same as above  
SP (6-8', 13-17") fining out  
21-23" ML silt layer, fine, well sorted, wet, medium stiff, olive grey,  
23-24" SP same as above (10-12' 0-21")

12'

			<u>363 FID</u> <u>793 FID</u>	<u>20</u>
--	--	--	----------------------------------	-----------

0-11" SP same as above (10-12' 0-21")  
11-20" ML silt very fine, well sorted, wet, medium stiff, dark yellowish brown with black striations

14'



Soil Stratigraphy Field Log

Location ID GP-17  
 Facility TAC  
 Project Geoprobe Step-Out

Date 10/13/99

Field Geologist T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct Push  
1.5" ID 2.0" OD

Sampling Method

Total Depth 10' screen 4-9'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: <u>0.0 PID</u> <u>0.0 PID</u>  Hanby Test: 1000 ppm Diesel	22	0-5" SP gravelly sand, loose, poorly sorted, dry, fine to coarse sand & gravel, moderate brown 5-17" lime waste, light bluish grey, mixed with some sand, olive grey in color, fine-coarse, dense 17-22" oily wood debris and oily SP, black, fine-medium, poorly sorted, medium dense, strong oil odor,
3' 7" = 5'			<u>0.2 PID</u> <u>2.0 PID</u>  Hanby Test: 1000 ppm Diesel	27	0-7" ML sandy silt lense with some wood debris, brownish black, fine silt and sand, moderately well sorted, medium stiff, moist, oil odor 7-27" SP brownish black, oily sheen, some shell debris, poorly sorted, fine-medium, wet, oil odor
6'			<u>0.0 PID</u> <u>0.0 PID</u>	18	0-18" SP same as above (3-6', 7-27") lots of shells in last 2", 1" silt lens at 15"
8'					

Geologist's Signature T. Gray Date 10/13/99 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 2



Soil Stratigraphy Field Log

Location ID GP-17  
Facility Tac  
Project Geoprobe Step-Out

Date 10/13/99

Field Geologist T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct Push  
1.5" ID 2.0" OD

Sampling Method

Total Depth 10' screen 4-9'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
8' 0.0'			Breathing Zone: In-Spoon: Headspace:  0.0PID 0.0PID	23	0-23" same as above (3-6', 7-27") with asilt lens at 6-8" and at 18-19", oily sheen appears to end at 6"
10'					

Geologist's Signature T. Gray Date 10/13/99 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 2 of 2



Soil Stratigraphy Field Log

Location ID GP-18  
 Facility TAL  
 Project Geoprobe Step-out

Date 10/3/99

Field Geologist T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct Push  
1.5" ID 2.0" OD

Sampling Method

Total Depth

0'

3'

4'

6'

8'

10'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: <u>0.0 PID</u> <u>0.0</u>  Hanby Test: <u>0.0 ppm</u>	<u>25</u>	<u>0-3" OL clayey silt with gravel, fill substance dusky yellowish brown, moist, poorly sorted, fine silt &amp; clay to fine gravel, medium stiff,</u> <u>3-17" SP, some fine gravel, some line waste, fine-medium sands, dry, dense, dark yellowish brown, poorly sorted</u> <u>17-25" ML sandy silt, fine silt and sand, moist to wet, brownish grey, medium stiff, moderately well sorted.</u>
<u>2.9'</u>			<u>0.0 PID</u> <u>0.3</u>	<u>10</u>	<u>0-10" SP wet, fine-coarse sand, loose, poorly sorted, brownish black</u>
			<u>0.0 PID</u> <u>0.9</u>	<u>20</u>	<u>0-20" SP same as above (3-4', 0-10")</u>
			<u>0.0 PID</u> <u>0.5</u>	<u>14</u>	<u>0-14" SP same as above but fine-medium, also some shell debris</u>
			<u>—</u> <u>0.5</u>	<u>21</u>	<u>0-21" SP same as above (6-8', 0-14") wood with oily sheen at 17"</u>

Geologist's Signature T. Gray Date 10/3/99 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 2







Soil Stratigraphy Field Log

Location ID G7-23  
 Facility Tac  
 Project Geoprobe Step-Out

Date 10/14/99

Field Geologist T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct Push  
1.5" ID 2.0" OD

Sampling Method

Total Depth 2.5-7.5'  
12' silt screen 3-8'

0'  
3'  
6'  
8'  
10'  
12'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: 1.6 FID 2.2 FID Hanby: 0.0 ppm	27	0-2" top soil 2-27" SP fine + medium, moist poorly sorted, medium dense, moderate olive brown, some wood debris, some fine gravel, <del>silty</del> small amounts of silt
<u>3'</u> <u>3'</u>	Sample 1445		39 FID 0 FID  Hanby: 0.0 ppm	16	0-16" SP same as above (0-3', 2-27") but wet
6'			73 FID 40 FID	14	0-14" SP wet, fine-medium, poorly sorted, medium dense, small amounts of gravel, olive <del>black</del> grey
8'			20.3 FID 82.0 FID	15	0-15" SP soupy same as above (6-8', 0-14") with more gravel (fine)
10'			35.2 FID 163 FID	5	0-5" peat, rooty debris, very fine, medium dense, moist, well sorted, dark yellowish brown. with some black striations
12'					

Geologist's Signature T. Gray Date 10/14/99 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1



Soil Stratigraphy Field Log

Location ID GP-24  
 Facility Tac  
 Project Geoprobe

Date 10/13/99

Field Geologist T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct Push  
1.5" ID 2.0" OD

Sampling Method

Total Depth 10' set screen 4-9'

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

0'  
3'  
6'  
8'  
10'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'			Breathing Zone: In-Spoon: Headspace: 0.0 PID 0.0 FID 20.8 FID Hanby: 50 ppm Diesel	17	0-2" gravel 2-17" SP with fine gravel intermixed, dry, loose, poorly sorted, fine-coarse sand,
11.7 = 3.5'			0.5 PID 18.0 FID 249 FID  Hanby: 50 ppm Diesel	33	0-3" SP same as above (0-3', 2-17") 3-30" ML <sup>well sorted</sup> fine silt with small amounts of sand, some root debris, wet, medium stiff, dark olive grey, 30-33" SP medium dense, wet, brown black, fine-coarse sand, some shell debris, poorly sorted
			6.0 PID 3.0 FID 481.2 FID	19	0-19" SP same as above (3-6', 30-33")
			0.0 PID 152.0 FID 526 FID	16	0-7" SP same as above (3-6', 30-33") 7-16" CL Peet, silty clay, lots of roots, moist, fine, stiff, well sorted, swampy anaerobic odor, dark yellowish brown

Geologist's Signature T. Gray Date 10/13/99 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1



Soil Stratigraphy Field Log

Location ID GP-25  
 Facility TAL  
 Project Geoprobe Step-Out

Date 10/13/99

Field Geologist T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method DIRECT PUSH  
1.5" ID 2.0" OD

Sampling Method

Total Depth

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace:  59 FID 117 FID  Hanby: 0.0 ppm	29	0-2" gravel 2-24" fill material SP, fine-coarse sands and gravel, moist, medium dense, poorly sorted, moderate yellowish brown 24-29" SM silty fine sand, moderately well sorted, moist, medium dense, black
3' to 4'			75 FID 142 FID  Hanby: 0.0 ppm	30	0-5" <del>same as above</del> slough 5-25" SM silty sand, wet, fine sands to very fine silt same as above (0-6', 24-29") 25-30" ML sandy silt, wet, very fine, well sorted, soft, olive black
6'			0.0 FID 45.8 FID	18	0-18" SP fine-medium sand, wet, shell fragments, medium dense, poorly sorted, brownish black
8'			0.0 FID 177.3 FID	14	0-14" SP same as above (6-8', 0-18")

Geologist's Signature T. Gray Date 10/13/99 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 2





Soil Stratigraphy Field Log

Location ID GP-30  
 Facility 1 ac  
 Project Geoprobe Step-Out

Date 10/14/99

Field Geologist  
T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct Push  
1.5" ID 2.0" OD

Sampling Method

Total Depth  
10' set screen 4-9'

0'  
3'  
6'  
8'  
10'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace:  0.0 FID 0.0 FID  Hamby: 0.0 ppm	26	0-2" top soil 2-13" SP, dry, fine-medium, poorly sorted, loose, some fine gravel, moderate olive brown 13-15" lime waste 15-23" woody debris, unconsolidated 23-26" SM silty sand, moist, fine-medium, medium dense, dark yellowish brown, poorly sorted
<u>Δ = 4.5'</u>	Sample 1550		0.0 FID 6.6 FID  Hamby: 0.0 ppm	24	0-6" SM same as above (0-3', 23-26") 6-24" ML very fine silt, some woody debris, moist, medium stiff, well sorted
			55 FID 191.7 FID	10	0-10" gravelly peat, wet, lots of roots, fine gravel and very fine, medium stiff, dark yellowish brown
			178 FID 267 FID	12	0-2" same as above (6-8' 0-10") 2-12" CL peaty clay, still lots of roots, very fine, medium stiff, dark yellowish brown, well sorted

Geologist's Signature T. Gray Date 10/14/99 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1



Soil Stratigraphy Field Log

Location ID GP-31  
 Facility Tac  
 Project Geo probe - Step Out

Date 10/13/99

Field Geologist  
T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method DIRECT PUSH  
1.5" ID 2.0" OD

Sampling Method

Total Depth  
8' set screen 3-8'

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

0'  
3'  
6'  
8'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'			Breathing Zone: In-Spoon: Headspace: 0.0 PID 0.0 FID \$ 02.9 FID Hanby: 0.0 ppm	2	0-2" SM silty sand with fine gravel, wet, poorly sorted, medium dense, slight sheen, dark yellowish brown
			191.0 FID 296 FID Hanby: >1000 ppm	31	0-3" GM, silty gravels, wet, fine-medium and coarse gravel, medium dense, poorly sorted, oil odor, brownish black 3-16" auto fluff 16-31" ML silt, fine silt and sand, well sorted, medium stiff, wet, oil odor, olive black
			42.0 FID 133.6 FID	24	0-17" ML same as above (3-6', 16-31") 17-24" CL Peet, silty clay, lots of roots, moist, fine, stiff, dark yellowish brown

Geologist's Signature T. Gray Date 10/13/99 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1



Soil Stratigraphy Field Log

Location ID GP-32  
 Facility JAL  
 Project Geoprobe Step-Out

Date 10/13/99

Field Geologist T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method DIRECT PUSH  
1.5" ID 2.0" OD

Sampling Method

Total Depth  
8' setscreen 3-8'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: <u>105 FID</u> <u>1003 FID</u>  <u>Hanby</u> <u>&gt; 1000ppm</u>	<u>27</u>	<u>0-3" gravel</u> <u>3-15" SP fine-medium sand with fine to coarse gravel, dry, loose, poorly sorted, ish + olive brown</u> <u>15-20" Au + fluff</u> <u>20-27" ML sandy silt medium stiff, moderately well sorted, moist, oil odor, olive black</u>
3'			<u>151 FIP</u> <u>1253 FID</u>  <u>Hanby</u> <u>&gt; 1000 ppm</u>	<u>24</u>	<u>0-24" ML same as above (0-3', 20-27") but stiff</u>
5' <u>∇</u>			<u>119 FID</u> <u>284 FID</u>	<u>17</u>	<u>0-<del>3</del>" ML same as above (0-3', 20-27")</u> <u>5-17" OL very fine silt, some wood debris, wet, soft, well sorted, dark olive grey</u>
8'					

0'  
3'  
5' ∇  
6'  
8'





Soil Stratigraphy Field Log

Location ID GP-33  
 Facility TAC  
 Project Geoprobe Step-Out

Date 10/14/99

Field Geologist T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct Push  
1.5" ID 2.0" OD

Sampling Method

Total Depth 1 we did not  
6 set screen

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace:  0.0 PID 4.0 FID 7.8 FID  Hanby: 0.0 ppm	22	0-2" top soil 2-12" SP fine-medium sand, some gravel (fine and coarse), dry, poorly sorted, loose, moderate brown 12-22" SP same as above but no gravel and it's dark greenish grey
$\nabla = 3.83'$	sample 1005		59.8 FID 126.7 FID  Hanby: 10 ppm	9	0-5' SP same as above (0-3', 12-22") 5-9" AL very fine silt and clay, moist, medium stiff, well sorted, dark yellowish brown with black striations

0'

3'

6'

Geologist's Signature T. Gray Date 10/14/99 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1



Soil Stratigraphy Field Log

Location ID GP-37  
 Facility Tac  
 Project Geoprobe Step-Out

Date 10/15/99

Field Geologist  
T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct Push  
1.5" ID 2.0" OD

Sampling Method

Total Depth  
10' set screen 5-10'

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

0'  
3'  
6'  
8'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'			Breathing Zone: In-Spoon: Headspace: 0.0 FID 0.0 FID Hanby: 10 ppm	27	0-4" asphalt 4-27" GP fine-coarse gravel and sand, dry, loose, poorly sorted, moderate yellowish brown
$\nabla = 5.1$	Sample 1140		0.0 FID 5.8 FID  Hanby: 200 ppm	20	0-10" same as above (0-3, 4-27") 10-20" debris including glass, brick, tile, alternating colors, red, black, white, yellowish brown, moist, very poorly sorted, medium dense, some medium grained sand,
			0.0 FID 321 FID	12	0-7" GP, wet, loose, fine-coarse, some wood debris, poorly sorted, dark yellowish brown 7-12" <sup>unconsolidated</sup> peat and gravel, <sup>unconsolidated</sup> fine to coarse gravel, very fine-fine silt & sand, wood debris, olive black, wet, poorly sorted, loose,



Soil Stratigraphy Field Log

Location ID GP-37  
Facility Tal  
Project Geoprobe Stop-Out

Date 10/15/99

Field Geologist T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct Push  
1.5" ID 2.0" OD

Sampling Method

Total Depth  
10

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
8' 0.0'			Breathing Zone: In-Spoon: Headspace: <u>94.9 FID</u> <u>800 FID</u>	<u>20</u>	<u>0-20" peat.silt, OL very fine well sorted, stiff, moist, olive grey, with black stripes, wood and root debris</u>
10'					

Geologist's Signature T. Gray Date 10/15/99 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 2 of 2



Soil Stratigraphy Field Log

Location ID GP-38  
 Facility TAC  
 Project Geoprobe Step-Out

Date 10/15/99

Field Geologist T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct Push  
1.5" ID 2.0" OD

Sampling Method

Total Depth  
10' set screen 5-10'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: 0.0 FID 194.7 FID Hamby: 0.0 ppm	18	0-4" asphalt, road 4-18" GP gravelly sand medium-coarse, dry, poorly sorted, loose, moderate brown
3'	Sample 0915		2.9 FID 1.1 FID Hamby: 0.0 ppm	21	0-12" GP same as above (0-3', 4-18") 12-14" glass debris 14-17" red debris, poorly sorted, medium dense, fine-coarse, <del>GP</del> 17-19" plastic debris 19-21" same as above (3-6', 14-17")
6'			52.2 FID 772 FID Hamby: 507 ppm	12	0-7" same as above GP (0-3', 4-18") but wet 7-10" GP with woody debris wet, poorly sorted, loose, fine-coarse sand and fine gravel, olive black, stains gloves 10-12" peat, very fine, <sup>some</sup> woody debris, well sorted, medium stiff, moist black

0'  
3'  
6'  
8'





Soil Stratigraphy Field Log

Location ID GP-39  
Facility TAG  
Project Geoprobe Step-Out

Date 10/15/99

Field Geologist T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct Push  
1.5" ID 2.0" OD

Sampling Method

Total Depth 10' set screen 5-10'

0'  
3'  
6'  
8'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: 0.0 FID 0.0 FID Hamby: 10 ppm	27	0-3" asphalt 3-27" GP fine-coarse gravel, medium-coarse sand, moist, poorly sorted, loose, moderate yellowish brown
	Sample 1030		0.0 FID 0.0 FID  Hamby: 30 ppm	14	0-9" GP same as above (0-3', 3-27") 9-14" OL very fine silt, some root debris, well sorted, moist, olive grey
5.6'			0.0 FID 0.0 FID	13	0-5" loose peat and gravel, moist, <del>medium dense</del> poorly sorted, fine-coarse, woody root debris, olive black 5-11" ML silt with some peat and sand, medium dense moderately well sorted, moist, olive black, black stripes 11-13" same as above (6-8', 0-5")

Geologist's Signature T. Gray Date 10/15/99 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 2





Soil Stratigraphy Field Log

Location ID GP-40  
 Facility Tac  
 Project Tacoma Geoprobe Stepout

Date 10/14/99

Field Geologist T. Gray

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct Push  
1.5" ID 2.0" OD

Sampling Method

Total Depth 6' did not set screen

0'  
3'  
6'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: 0.0 FID 1.3 FID  Hanby: 0.0 ppm	27	0-2" top soil 2-4" asphalt 4-14" fill material, woody debris, glass debris 14-27" SM silty sand, fine-medium, moderately sorted, moist, dark yellowish brown to moderate brown
2-3'	Sample 1050		2.8 FID 5.2 FID Hanby: 0.0 ppm	26	0-6" same as above SM (0-3', 14-27") 6-26" ML very fine silt, small amounts of sand, wet, medium stiff, <del>is</del> well sorted, but small amounts of gravel dark yellowish brown, woody debris

Geologist's Signature Nancy M Gray Date 10/14/99 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1



# RECORD OF SUBSURFACE EXPLORATION

PROJECT NAME: TACOMA FACILITY RFI PROJECT NO: 11071  
 ELEVATION: \_\_\_\_\_ BOREHOLE LOCATION/COORDINATES: RB-1A, RB-1B  
 LOGGED BY: K TAHGHIGHI GWL: depth \*6" 15:45 date/time \_\_\_\_\_  
 DRILLED BY: Jim DOLAN GWL: depth \_\_\_\_\_ date/time \_\_\_\_\_  
 DRILLING/RIG METHODS: RECON  
 DATE/TIME STARTED: 3/15/94 13:40 DATE/TIME COMPLETION (S): 3/15/94 14:00  
 AIR MONITORING TYPE: PID BZ = Breathing Zone; BH = Borehole; S = Sample

DEPTH (feet)	SAMPLE NUMBER	SAMPLE INTERVAL	SAMP TYPE RECOV. (in)	SAMPLE DESCRIPTION CLASSIFICATION SYSTEM: <u>USC</u>	USCS SYMBOL	DEPTH CHG (feet)	AIR MONITORING UNITS PPM			DRILLING CONDITIONS AND (BLOW COUNTS)	
							BZ	BH	S		
5'          10'	<del>S-1</del>	<del>0.5-0.5</del>	<del>0.5</del>	ASPHALT		0.2'				RB-1A	
	<del>S-1</del>	<del>0.5-2.0</del>	<del>2.0</del>	BROWN F/M/C SAND S/SILT (FILL)		1.5'	ND	ND	300	PRODUCT ENCOUNTERED AT 1' OFFSET BORING 3' WEST STARTED RB-1B	
				BROWN WOOD CHIPS AND SOIL (FILL)						RB-1A	
				END OF BORING AT 2'						PRODUCT ROSE TO THE SURFACE. APPROX. 2 GALLONS OF PRODUCT WAS FORCED UP UNTIL WATER ONLY WAS PRESENT	
		<del>S-1</del>	<del>0.8-2.2</del>	<del>2.2</del>	RB-1B SFS CRUSHED AGGREGATE		0.8'	ND	ND	3	RB-1B
		<del>S-2</del>	<del>2.2-3.5</del>	<del>3.5</del>	BROWN M/F/C SAND S/SILT (FILL)		2'				PENCHED WATER WAS ENCOUNTERED AT 2'. A SHEEN OF PRODUCT WAS PRESENT
		<del>S-2</del>	<del>3.0-4.5</del>	<del>4.5</del>	LT GRAY-BROWN C/M/F SAND, S/SILT, SOIL FILL (ALSO E. FF) (PBRD.) (DARK)		3.5'				
		<del>S-3</del>	<del>3.5-5.0</del>	<del>5.0</del>	LT GRAY/WHITE S/SILT, SOIL FILL		5.0'				
		<del>S-3</del>	<del>4.5-6.0</del>	<del>6.0</del>	FR. SAND, M/F/C SAND (LIME WASTE) (FILL)		6.0'				BOTH BOREHOLES ABANDONED W/ CEMENT/BENTONITE
		<del>S-4</del>	<del>6.0-7.0</del>	<del>7.0</del>	DARK GRAY SILT AND ORGANIC MATTER (ROOTS)		6.9'				* PENCHED
	<del>S-5</del>	<del>7.0-7.0</del>	<del>7.0</del>	END OF BORING AT 7'							

COMMENTS: S-3 IN TUBE  
S-4

GEOLOGIST SIGNATURE K. Tahghighi

# RECORD OF SUBSURFACE EXPLORATION

Page 1 of 2  
Borehole No. \_\_\_\_\_  
Well No. \_\_\_\_\_

PROJECT NAME: TACOMA FACILITY RFI PROJECT NO: 11071  
 ELEVATION: \_\_\_\_\_ BOREHOLE LOCATION/COORDINATES: RB-2  
 LOGGED BY: K. TAHGHIGHI GWL: depth \_\_\_\_\_ date/time \_\_\_\_\_  
 DRILLED BY: Jim Dolan GWL: depth \_\_\_\_\_ date/time \_\_\_\_\_  
 DRILLING/RIG METHODS: RECON  
 DATE/TIME STARTED: 3/15/94 1330 DATE/TIME COMPLETION (S): 3/15/94 15.00  
 AIR MONITORING TYPE: PID BZ = Breathing Zone; BH = Borehole; S = Sample

DEPTH (feet)	SAMPLE NUMBER	SAMPLE INTERVAL	SAMP TYPE RECOV. (in)	SAMPLE DESCRIPTION CLASSIFICATION SYSTEM: <u>USC</u>	USCS SYMBOL	DEPTH CHG (feet)	AIR MONITORING UNITS PPM			DRILLING CONDITIONS AND (BLOW COUNTS)
							BZ	BH	S	
				ASPHALT		1"				
	S-1	0.5-2		LT BROWN-GRAY MED/FINE SAND SOME SILT, TRACE FINE GRAVEL (FILL)		1.5	ND	ND	ND	STANDING WATER AT 2"
	S-2	2-3.5		DARK BROWN SILT, SOME FINE TO MEDIUM SAND (FILL)		2	ND	ND	ND	SLIGHT PETRO. ODD FROM 4"
5	S-3	3.5-5.0		DARK GRAY/BROWN MED TO FINE TO COARSE SAND (FILL)		5	ND	ND	ND	
	S-4	5.0-6.0		TRACE FINE GRAVEL (FILL)		5.9				BORING ADVANCED W/ CEMENT/BENT SLURRY
	S-5	6.0-7.0		DARK GRAY F/M/SAND S/SILT (AUTO FLUFF) (FILL)						
10				END OF BORING AT 7'						* PERCHED WATER AT 6"
				BORING TERMINATED DUE TO GRAVEL BEING ADVANCED THROUGH THE HOLE BY SPLIT-SPON						
15										

COMMENTS: S-3, S-4 5 IN TUBE

GEOLOGIST SIGNATURE \_\_\_\_\_

K. Tahghighi

# RECORD OF SUBSURFACE EXPLORATION

Page 1 of 2  
Borehole No.  
Well No.

PROJECT NAME: TACOMA RFI PROJECT NO: 1127  
 ELEVATION: \_\_\_\_\_ BOREHOLE LOCATION/COORDINATES: RB-3  
 LOGGED BY: K. TANGHIGH GWL: depth 3.3 ± date/time \_\_\_\_\_  
 DRILLED BY: Jim Dolan GWL: depth \_\_\_\_\_ date/time \_\_\_\_\_  
 DRILLING/RIG METHODS: HEMN 2" 100'  
 DATE/TIME STARTED: 3/16/94 14:50 DATE/TIME COMPLETION (S): 3/16/94 15:50  
 AIR MONITORING TYPE: P10 BZ = Breathing Zone; BH = Borehole; S = Sample

DEPTH (feet)	SAMPLE NUMBER	SAMPLE INTERVAL	SAMP TYPE RECOV. (in)	SAMPLE DESCRIPTION CLASSIFICATION SYSTEM: <u>USC</u>	USCS SYMBOL	DEPTH CHG (feet)	AIR MONITORING UNITS <u>PPM</u>			DRILLING CONDITIONS AND (BLOW COUNTS)
							BZ	BH	S	
5	S-1	0.5-2.0		ASPHALT AND CRUSHED AGGREGATE BROWN SILT AND F/M SAND, S/F/GRAVEL (FILL)		0.5 0.8			700	PRODUCT AT FROM 3-3'
	S-2	2.0-3.5		GRAY COBBLE BROWN SILT AND F/M/C SAND, TR/F/RAVEL (FILL)		1.3				
	S-3	3.5-5.0		GRAY-BROWN SILT AND F/M/C SAND, TR/F/RAVEL (FILL)		5.2				
	S-4	5.0-6.0		DARK GRAY M/F SAND, S/F/ TR/ROOTS (FILL) END OF PROBE AT 6.0'		5.5				

COMMENTS: \_\_\_\_\_

GEOLOGIST SIGNATURE K. Tanghigh

# RECORD OF SUBSURFACE EXPLORATION

Page 1 of 2  
Borehole No. \_\_\_\_\_  
Well No. \_\_\_\_\_

PROJECT NAME: TACOMA FACILITY RFI PROJECT NO: 11071  
 ELEVATION: \_\_\_\_\_ BOREHOLE LOCATION/COORDINATES: RB-4  
 LOGGED BY: K. TAGHGHIGHI GWL: depth 3' ± date/time \_\_\_\_\_  
 DRILLED BY: Jim DOLAN GWL: depth \_\_\_\_\_ date/time \_\_\_\_\_  
 DRILLING/RIG METHODS: RECUM  
 DATE/TIME STARTED: 3/16/74 16:10 DATE/TIME COMPLETION (S): 3/16/74 17:10  
 AIR MONITORING TYPE: PID BZ = Breathing Zone; BH = Borehole; 5 Sample

DEPTH (feet)	SAMPLE NUMBER	SAMPLE INTERVAL	SAMP TYPE RECOV. (in)	SAMPLE DESCRIPTION CLASSIFICATION SYSTEM: <u>USC</u>	USCS SYMBOL	DEPTH CING (feet)	AIR MONITORING UNITS <u>PPM</u>			DRILLING CONDITIONS AND (BLOW COUNTS)
							BZ	BH	S	
	S-1	6.0-2.0		GRASS AND ROOTS		0.5				
	S-2	2.0-3.5		DRY M/F/C SAND S/SILT, TR/CLAY, TR/F/GRAVEL TRACE MISC FILL		3'				
	S-3	3.5-5.2		DARK GRAY M/F/C SAND TR/F/GRAVEL TR/SILT (TRACE ROOTS) (FILL)		4'				PRODUCT FROM 3'
5	S-4	5.2-6.5		DARK GRAY F/M/SAND TR/SILT (OILY)						
	S-5	6.5-8.0								
	S-6	8.0-9.5								HOLE ABANDONED W/ CEMENT/BENT. SLURRY
				END OF BDRING AT 9.5'						

COMMENTS: S-5 IN TUBE

GEOLOGIST SIGNATURE \_\_\_\_\_

*K. Taghghighi*

# RECORD OF SUBSURFACE EXPLORATION

PROJECT NAME: TACOMA RFT PROJECT NO: 11071  
 ELEVATION: \_\_\_\_\_ BOREHOLE LOCATION/COORDINATES: RB-5  
 LOGGED BY: K TAHGHIGHI GWL: depth ± date/time \_\_\_\_\_  
 DRILLED BY: Jim LILAN GWL: depth \_\_\_\_\_ date/time \_\_\_\_\_  
 DRILLING/RIG METHODS: RECON  
 DATE/TIME STARTED: 3/16/94 DATE/TIME COMPLETION (S): 3/16/94 10:40  
 AIR MONITORING TYPE: PID BZ = Breathing Zone; BH = Borehole; S = Sample

DEPTH (feet)	SAMPLE NUMBER	SAMPLE INTERVAL	SAMP TYPE RECOV. (in)	SAMPLE DESCRIPTION CLASSIFICATION SYSTEM: _____	USCS SYMBOL	DEPTH CHG (feet)	AIR MONITORING UNITS <u>PYM</u>			DRILLING CONDITIONS AND (BLOW COUNTS)
							BZ	BH	S	
5	S-1	3.5 2.0	1.5 0.5	ASPHALT AND CRUSHED AGGREGATE		0.5	-	-	-	
	S-2	2.0 3.5	1.2	BROWN SILT SANDY AGGREGATE, S/SILT, <1/4" SAND (S&M)		1.0	-	-	-	
	S-3	3.5 5.0	1.0	DARK GRAY-LIMON SILT AND MISC FILL (AUTO FINE)			-	-	2	OIL SPIN <del>PETRO PRESENT</del> IN S-2
	S-4	5.0 6.5	0.6	(MORE COARSE) (RESP. P. SAND AND) FINE SAND GRAINED			-	-	3	S.3 NO OIL SPIN S.4 # SHORT OIL SPIN
	S-5	6.5 8	0.7							S.5 NO OIL SPIN PETRO PRESENT
	S-6	8 9.5	1.5	EVAPORITE SAND TR/SILT POSSIBLE @ TO FINE INTERFACE END OF LOG AT 7'		3.5				

COMMENTS: S-5, S-6 IN TUBE

GEOLOGIST SIGNATURE \_\_\_\_\_

# RECORD OF SUBSURFACE EXPLORATION

Page 1 of 2  
Borehole No. \_\_\_\_\_  
Well No. \_\_\_\_\_

PROJECT NAME: TACOMA FACILITY RFI PROJECT NO: 11071  
 ELEVATION: \_\_\_\_\_ BOREHOLE LOCATION/COORDINATES: RB-5 (2B-6)  
 LOGGED BY: K. TAHHIGHI GWL: depth 3' date/time \_\_\_\_\_  
 DRILLED BY: Jim DOLAN GWL: depth \_\_\_\_\_ date/time \_\_\_\_\_  
 DRILLING/RIG METHODS: RECON  
 DATE/TIME STARTED: 3/16/94 7:50 DATE/TIME COMPLETION (S): 3/16/94  
 AIR MONITORING TYPE: PID BZ = Breathing Zone; BH = Borehole; S = Sample

DEPTH (feet)	SAMPLE NUMBER	SAMPLE INTERVAL	SAMP TYPE RECOV. (in)	SAMPLE DESCRIPTION CLASSIFICATION SYSTEM: <u>USC</u>	USCS SYMBOL	DEPTH (feet)	AIR MONITORING UNITS <u>PPM</u>			DRILLING CONDITIONS AND (BLOW COUNTS)
							BZ	BH	S	
5				ASPHALT		0.5				
				BROWN MUD SAND		1.5				
				CLAY SAND		2.5				
				CLAY SAND		3.5				
				CLAY SAND		4.5				
10				CLAY SAND		5.5				
				CLAY SAND		6.5				
				CLAY SAND		7.5				
				CLAY SAND		8.5				
				CLAY SAND		9.5				

COMMENTS: \_\_\_\_\_

GEOLOGIST SIGNATURE \_\_\_\_\_

# RECORD OF SUBSURFACE EXPLORATION

PROJECT NAME: TACOMA RFI PROJECT NO: 11071  
 ELEVATION: \_\_\_\_\_ BOREHOLE LOCATION/COORDINATES: RB-7  
 LOGGED BY: K. TAGHGHIGHI GWL: depth 4.5' date/time 3/16/94  
 DRILLED BY: Jim DALAN GWL: depth \_\_\_\_\_ date/time \_\_\_\_\_  
 DRILLING/RIG METHODS: RECUN 2" SP20N  
 DATE/TIME STARTED: 3/16/94 13:45 DATE/TIME COMPLETION (S): 3/16/94 14:40  
 AIR MONITORING TYPE: PID BZ = Breathing Zone; BH = Borehole; S = Sample

DEPTH (feet)	SAMPLE NUMBER	SAMPLE INTERVAL	SAMP TYPE RECOV. (in)	SAMPLE DESCRIPTION CLASSIFICATION SYSTEM: <u>USC</u>	USCS SYMBOL	DEPTH CHNG (feet)	AIR MONITORING UNITS <u>PI/M</u>			DRILLING CONDITIONS AND (BLOW COUNTS)
							BZ	BH	S	
	S-1	0.5 2.0		BROWN M/F/C SAND TR/SLT (FILL)		3.5	-	-	-	
	S-2	2.0 3.5		BROWN M/F/M SAND TR/SLT, TR/TINE GRAVEL (FILL)		1.5	-	-	-	REF 15m 100000
	S-3	3.5 5.0		DARK GRAY M/F/C SAND TR/SLT, TR/TINE GRAVEL (FILL)			-	-	-	
	S-4	5.0 6.0		DARK GRAY F/M SAND, TR/SLT END OF BORING AT 6.0		5.5	-	-	-	REF 15m 100000 S-2 AND 3 PROJECT IN S-4

COMMENTS: \_\_\_\_\_

GEOLOGIST SIGNATURE \_\_\_\_\_

*K. Taghghighi*

# RECORD OF SUBSURFACE EXPLORATION

Page 1 of 2  
Borehole No. \_\_\_\_\_  
Well No. \_\_\_\_\_

PROJECT NAME: TACOMA RFI PROJECT NO: 11071  
 ELEVATION: \_\_\_\_\_ BOREHOLE LOCATION/COORDINATES: RB-8  
 LOGGED BY: K. TANGHIGHT GWL: depth 35 ± date/time \_\_\_\_\_  
 DRILLED BY: Jim DOLAN GWL: depth \_\_\_\_\_ date/time \_\_\_\_\_  
 DRILLING/RIG METHODS: RECON 2" SPOON  
 DATE/TIME STARTED: 3/16/94 11:05 DATE/TIME COMPLETION (S): 3/16/94 17:00  
 AIR MONITORING TYPE: PID BZ = Breathing Zone; BH = Borehole; S = Sample

DEPTH (feet)	SAMPLE NUMBER	SAMPLE INTERVAL	SAMP TYPE RECOV. (in)	SAMPLE DESCRIPTION CLASSIFICATION SYSTEM: <u>USC</u>	USCS SYMBOL	DEPTH CING (feet)	AIR MONITORING UNITS <u>PPM</u>			DRILLING CONDITIONS AND (BLOW COUNTS)
							BZ	BH	S	
5'	S-1	0.5	18	BROWN M/C/F SAND, S/F/GRAVEL, S/SILT		0.5	-	-	-	S-3 MORE GRANULAR CLAY SAND.
		2.0		BROWN M/F SAND, TR/S SILT		1.0	-	2		
	S-2	2.0	07	DARK BROWN SILT AND MISC. FILL		1.5	-	-	3	
		3.5		(AUTO FLUFF)		6'				
5'	S-3	3.5								
		5.0								
10'	S-4	5.0		DARK BROWN M/C/F SAND						
		6.5								

COMMENTS: \_\_\_\_\_

GEOLOGIST SIGNATURE K. Tanghight





**PROJECT** CHEMPRO, Tacoma Plant

Page 1 of 1

**Location** S tank on SE corner of oil area

**Boring No.** SEA-1

**Surface Elevation** Not Surveyed


**Drilling Method** Hand Auger

**Total Depth** 4 ft.

**Drilled By** Sweet, Edwards & Assoc., Inc.

**Date Completed** 5/13/87

**Logged By** D.E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Boring allowed to collapse with surrounding soils		1	1	H.A.*		SP	0-1.2'. SAND, black, moist (oily). Medium to coarse, fining downward to silty sand (fine) at lower 3". Oil residue on auger.	
		2	2	H.A.			1.5-2.5'. SAND, blackish gray, moist (oily). Fine to medium, trace coarse. Red specks common. Trace shell fragments.	
		3	3	H.A.		SM	3-4'. Silty SAND, gray, moist to 3.5', saturated from 3.5 to 4'. Fine to medium. Saturated with mixture of oil and water.	
		4						 5/13/87 14:05
		5					*H.A. = Hand Auger	



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location 2nd tank N on SE side of oil area Boring No. SEA-2

Surface Elevation Not Surveyed


Drilling Method Hand Auger

Total Depth 4.0 ft.

Drilled By Sweet, Edwards, & Assoc., Inc.

Date Completed 5/14/87

Logged By D.E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Boring allowed to collapse with surrounding soils		1	1	H.A.		SW	0-2.0'. SAND, black, moist (oily). Fine to coarse, trace silt. Abundant shell fragments. Strong oil odor.	
		2	2	H.A.		SM	2.0-2.5'. Silty SAND, dark gray, moist (oily). Clayey silt nodules to 1" diameter, light gray, cohesive. Abundant shell fragments.	
		3	3	H.A.		SP/SM	3.0-4.0'. SAND, gray, saturated. Fine to medium, trace silt. Red specks (med. grained) common. Saturated with oil and water mixture.	 5/14/87 9:00
		4						



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location 3rd tank N. on SE side of oil area.

Boring No. SEA-3

Surface Elevation Not Surveyed

Drilling Method Hand Auger

Total Depth 4.5 ft.

Drilled By Sweet, Edwards, & Assoc., Inc.

Date Completed 5/14/87

Logged By D.E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Boring allowed to collapse with surrounding soils		1	1	H.A.		SW	0-1.2'. SAND, black, moist (oily). Fine to coarse, trace silt. Silt nodules at top. Strong odor.	
		2	2	H.A.		SM	1.5-2.5'. SAND, gray, moist (oily). Fine to medium, dominantly fine. Medium grained red specks. Trace shell fragments. Slight odor. Oiliest near top.	
		3	3	H.A.			3-4'. Silty SAND, gray, saturated, fine to medium. Red specks common. Fine to medium, trace silt. Trace shell fragments.	$\nabla$ <hr style="width: 20px; margin: 0 auto;"/> 5/14/87 10:50
		4						
		5						



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location SW of boiler room slab in oil area.

Boring No. SEA-4

Surface Elevation Not Surveyed

Drilling Method Hand Auger

Total Depth 4.5 ft.

Drilled By Sweet, Edwards, & Assoc., Inc.

Date Completed 5/14/87

Logged By L.B. Adolfson

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Boring allowed to collapse with surrounding soils		1				GP	0-0.1'. Asphalt. 0.1-1.5'. <u>Sandy GRAVEL</u> , brown, dry. Wood frag-ments common.	
		2	1	H.A.		SM	1.5-2.5'. <u>Silty SAND</u> , black, moist. Fine. Red speckles common. Trace silty clay. Slight odor.	
		3	2	H.A.		CL	2.5-3.5'. <u>Silty CLAY</u> , brown, cohesive. Trace fine sand, wood debris. Slight odor.	
		4	3	H.A.		SM	3.5-4.5'. <u>Silty SAND</u> , dark gray, moist to 3.7', saturated below. Fine, Red specks common. Slight odor.	▽ ≡ 5/14/87 14:40
		5						



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location S. of sump in oil area

Boring No. SEA-5

Surface Elevation Not Surveyed

Drilling Method Hand Auger

Total Depth 5 ft.

Drilled By Sweet, Edwards & Assoc., Inc.

Date Completed 5/15/87

Logged By L.B. Adolfson

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY	
			NO.	TYPE					
Boring allowed to collapse with surrounding soils		1				GP	0-0.1'. ASphalt. 0.1-1.0'. <u>Sandy GRAVEL</u> , orange-brown, moist. Gravel to 1.5", rounded. Sand medium to coarse. Saturated from 10-12". Abundant auto fluff (rubber, foam).	No water encountered	
		2	1	H.A.		SM	1.0-5.0'. <u>Silty SAND</u> , grayish-black, saturated. Fine to medium. Trace gravel to 0.5", rounded. Oily, strong odor.		
		3							Shell fragments below 3'. Moist from 3-5'.
		4							
		5		3	H.A.				



PROJECT CHEMPRO, Tacoma Plant


Page 1 of 1

Location On boiler room slab, north side Boring No. SEA-6

Surface Elevation Not Surveyed Drilling Method Hand Auger

Total Depth 5.5 ft. Drilled By Sweet, Edwards & Assoc., Inc.

Date Completed 5/15/87 Logged By L. B. Adolfson

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Boring allowed to collapse with surrounding soils							0-0.8' <u>ASPHALT</u>	
		1				GP	0.8-2'. <u>Sandy GRAVEL</u> , black, moist (oily). Gravel to 2" diameter, rounded, sand generally medium. Odor.	
		2	1	H.A.		SP/SM	2-3'. <u>SAND</u> , black, moist. Fine. Some gray clay nodules. Trace oil; slight odor.	
		3						
		4	2	H.A.		SM	3.5-5.5'. <u>Silty SAND</u> , brownish-black, moist (oily). Fine to medium.	 5/15/87 13:25
		5	3	H.A.			@ 4.5'. Color change to grayish black. Abundant shell fragments. Strong odor.	
		6						



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location N. tank on E. side of oil area

Boring No. SEA-7

Surface Elevation Not Surveyed


Drilling Method Hand Auger

Total Depth 4.5 ft.

Drilled By Sweet, Edwards & Assoc., Inc.

Date Completed 5/18/87

Logged By L.B. Adolfson

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Boring allowed to collapse with surrounding soils		1				SP	0-4.5'. <u>SAND</u> , black, moist to 3.5', saturated from 3.5 to 4.5'. Medium. Red speckles common.	
		2	1	H.A.			-Odor detected below 1.5'. Oily.	
		3						
		4	2	H.A.			Trace shell fragments. Very oily.	 5/18/87 9:10
		5						



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location S tank on NW side of oil area

Boring No. SEA-8

Surface Elevation Not Surveyed

Drilling Method Hand Auger

Total Depth 4.5 ft.

Drilled By Sweet, Edwards & Assoc., Inc.

Date Completed 5/18/87

Logged By L.B. Adolfson

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Boring allowed to collapse with surrounding soils		1					0-4.5'. SAND, black, moist to 3.5', saturated below 3.5'. Medium. Medium red specks common. Oily, odor.	
		2	1	H.A.		SP		
		3						
		4	2	H.A.			Some shell fragments, very oily, strong odor.	▽ — — 5/18/87 10:40
		5						





**PROJECT** CHEMPRO, Tacoma Plant

**Page** 1 **of** 1

**Location** Center tank, NW side tank area

**Boring No.** SEA-9

**Surface Elevation** Not Surveyed


**Drilling Method** Hand Auger

**Total Depth** 4.0 ft.

**Drilled By** Sweet, Edwards & Assoc., Inc.

**Date Completed** 5/18/87

**Logged By** L.B. Adolfson

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Boring allowed to collapse with surrounding soils		1					0-1.5'. SAND, black, moist. Fine to medium.	
		2	1	H.A.		SP	1.5-3.0'. SAND, grayish-black, moist. Fine to medium. Red sand grains common. Some oil, slight odor. Local brown clay nodules.	
		3						
		4	2	H.A.			3.0-4.0'. SAND, grayish-black, saturated, very oily, odor. Medium to coarse.	 5/18/87 11:45



**PROJECT** CHEMPRO, Tacoma Plant

Page 1 of 1

**Location** N tank on NW side, oil area

**Boring No.** SEA-10

**Surface Elevation** Not Surveyed

**Drilling Method** Hand Auger

**Total Depth** 5 ft.

**Drilled By** Sweet, Edwards & Assoc., Inc.

**Date Completed** 5/19/87

**Logged By** D. E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Boring allowed to collapse with surrounding soils		1				GP	0-1'. <u>Sandy GRAVEL</u> , dark gray, saturated.	
						SP-SM	1-1.6'. <u>Gravelly SAND</u> with silt, light brown, dry. Gravel to 1.5", rounded. Slight odor.	
		2	1	H.A.		SM	1.6-2.5'. <u>Silty SAND</u> , gray, moist. Fine to medium. Red specks common (sand grains).	
		3						
		4						
								▽ =
		5	2	H.A.		SW	4-5'. <u>SAND</u> , gray, saturated, loose. Fine to coarse. Abundant red grains. Slight odor.	5/19/87 10:20



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location Adjacent to NE edge oil area

Boring No. SEA-11

Surface Elevation Not Surveyed


Drilling Method Hand Auger

Total Depth 5.3 ft.

Drilled By Sweet, Edwards & Assoc., Inc.

Date Completed 5/18/87

Logged By L. B. Adolfson

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY	
			NO.	TYPE					
Boring allowed to collapse with surrounding soils		1				GP	0-1.0'. <u>Sandy GRAVEL</u> , black, moist. Gravel to 2", subangular.		
		2	1	H.A.		SP	1.5-2.5'. <u>SAND</u> , black, moist. Medium to coarse, red and white grains common. Trace gravel and shell fragments. Some oil, odor.		
		3							
		4							
		5		2	H.A.		SM	4.3-5.3'. <u>Silty SAND</u> , black, saturated. Fine. Red grains common. Trace brown clay layers. Oily, slight odor.	 5/18/87 14:45
		6							



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location Adjacent to N-NE edge of oil area Boring No. SEA-12

Surface Elevation Not Surveyed


Drilling Method Hand Auger

Total Depth 3.5 ft.

Drilled By Sweet, Edwards & Assoc., Inc.

Date Completed 5/18/87

Logged By L. B. Adolfson

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Boring allowed to collapse with surrounding soils		1				SM	0-1.5'. <u>Silty SAND</u> , black, moist.	
		2	1	H.A.		SM	1.5-2.5'. <u>Silty SAND</u> , black, moist. Red and white grains common. Medium.	 5/18/87 15:40
		3	2	H.A.			2.5-3.5'. <u>Silty SAND</u> , black, saturated. Fine. Local grayish-brown clay nodules. Trace oil.	
		4						



**PROJECT** CHEMPRO, Tacoma Plant

Page 1 of 1

**Location** Adjacent to E-Central edge of oil <sup>area</sup> **Boring No.** SEA-13

**Surface Elevation** Not Surveyed

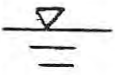
**Drilling Method** Hand Auger

**Total Depth** 5.2 ft.

**Drilled By** Sweet, Edwards & Assoc., Inc.

**Date Completed** 5/19/87

**Logged By** D. E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Borehole abandoned with bentonite chips. Concrete cap placed in borehole from approximately 0 to 6" below ground surface.		1				SM	0-1.5'. <u>Silty SAND</u> , dark brown, moist. Trace gravel to 3", angular.	 5/19/87 8:20
		2	1	H.A.		SP	1.5-2.5'. <u>SAND</u> , black, moist (oily), very loose. Fine to medium. Trace silt, generally fining downward. Abundant shell fragments.	
		3						
	4							
	5		2	H.A.		SM	4.2-5.2'. <u>Silty SAND</u> , grayish brown, saturated. Fine. Abundant shell fragments, plant roots. Slight odor.	
	6							



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location Sump in oil area

Boring No. SEA-14

Surface Elevation Not Surveyed

Drilling Method Hand Auger

Total Depth 4.7 ft.

Drilled By Sweet, Edwards & Assoc., Inc.

Date Completed 5/19/87

Logged By D. E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY	
			NO.	TYPE					
Boring allowed to collapse with surrounding soils		1					Standing oil to 3.7'.  Sludge		
		2							
		3							
		4		1	H.A.		GM	3.7-4.7'. <u>Silty GRAVEL</u> , black, saturated. Gravel to 1", rounded. Abundant wire debris and plant debris. Trace sand. (SLUDGE)	
		5							



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location South end of east fence line

Boring No. SEA-15

Surface Elevation Not Surveyed

Drilling Method Hand Auger

Total Depth 4.8 ft.

Drilled By Sweet, Edwards & Assoc., Inc.

Date Completed 5/19/87

Logged By D. E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Borehole abandoned with bentonite chips. Concrete cap placed in borehole from approximately 0 to 6" below ground surface.		1				SM	0-2.5'. <u>Silty SAND</u> , brown, dry. Trace fine, rounded gravel. Fine to coarse. Abundant shell fragments.	
		2	1	H.A.				
		3						
		4	2	H.A.		SW	3.8-4.8'. <u>SAND</u> , dark brown, saturated, loose. Fine to coarse. Trace silt. Red grains common.	
		5						

▽  
=

5/19/87  
11:15



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location Center of east fence line

Boring No. SEA-16

Surface Elevation Not Surveyed

Drilling Method Hand Auger

Total Depth 5.3 ft.

Drilled By Sweet, Edwards & Assoc., Inc.

Date Completed 5/19/87

Logged By D. E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY	
			NO.	TYPE					
Borehole abandoned with bentonite chips. Concrete cap placed in borehole from approximately 0 to 6" below ground surface.		1				SP	0-1'. <u>Gravelly SAND</u> , brown, dry, loose. Gravel to 3", rounded. Cobble approx. 10" dia., rounded. Plant debris.		
		2	1	H.A.			1.5-2.5'. <u>SAND</u> , brown to 2.3', change to grayish brown at 2.3', moist, loose. Fine to coarse. Abundant shell fragments.		
		3							
		4							
		5		2	H.A.		SW	4.3-5.3'. <u>SAND</u> , brown, saturated. Fine to coarse. Slight odor.	▽ 5/19/87 13:32
		6							





**PROJECT** CHEMPRO, Tacoma Plant

Page 1 of 1

**Location** South end east fence line

**Boring No.** SEA-17

**Surface Elevation** Not Surveyed


**Drilling Method** Hand Auger

**Total Depth** 3.6 ft.

**Drilled By** Sweet, Edwards & Assoc., Inc.

**Date Completed** 5/19/87

**Logged By** D. E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Borehole abandoned with bentonite chips. Concrete cap placed in borehole from approximately 0 to 6" below ground surface.		1				SP	0-1.5'. SAND, brown, moist, loose.	
		2	1	H.A.		SM	1.5-2.5'. Silty SAND, brown, moist to 2.5', saturated below. Fine to coarse.	
		3	2	H.A.		SP/SM	2.6-3.6'. SAND, brown, saturated. Slightly silty. Abundant shell fragments.	 5/19/87 14:30
		4						
		5						



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location NE corner of property

Boring No. SEA-18

Surface Elevation Not Surveyed


Drilling Method Hand Auger

Total Depth 4.8 ft.

Drilled By Sweet, Edwards & Assoc., Inc.

Date Completed 5/20/87

Logged By D. E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY	
			NO.	TYPE					
Borehole abandoned with bentonite chips. Concrete cap placed in borehole from approximately 0 to 6" below ground surface.		1				SP	0-1'. Gravelly SAND, orange-brown, dry, compacted. Gravel to 3", rounded. Trace cobbles to 4" dia.	 5/20/87 8:00	
		2	1	H.A.		ML	1-1.8'. Sandy SILT, black, moist. Trace gravel to 3", rounded. Strong solvent (?) odor.		
		3					OL		1.8-2.5'. Sandy SILT, black, moist. Fine to medium. Abundant wood debris (bark chips). Cobble at 2.8'.
		4					SM		2.8-4.8'. Silty SAND, black, saturated. Fine to medium. Trace shell fragments. Strong solvent (?) odor.
		5		2	H.A.				



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location Adjacent to sump on east boundary Boring No. SEA-19

Surface Elevation Not Surveyed


Drilling Method Hand Auger

Total Depth 4.4 ft.

Drilled By Sweet, Edwards & Assoc., Inc.

Date Completed 5/20/87

Logged By D. E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Borehole abandoned with bentonite chips. Concrete cap placed in borehole from approximately 0 to 6" below ground surface.		1				SP	0-1.5'. <u>Gravelly SAND</u> , light brown, dry, compacted. Fine to medium. Gravel to 3", subrounded. Trace silt.	 5/20/87 9:00
		2	1	H.A.		SM	1.5-2.5'. <u>Silty SAND</u> , brownish gray, moist. Fine. Local light yellow-brown silt nodules in lower 6".	
		3					Coarse, angular gravel at 3'.	
		4	2	H.A.		SP/SM	3.4-4.4'. <u>SAND</u> and <u>Silty SAND</u> , dark gray, saturated. Abundant shell fragments. Fine to medium. Slight odor (oil?)	
		5						



**PROJECT** CHEMPRO, Tacoma Plant

Page 1 of 1

**Location** Adjacent to fence, N of oil area **Boring No.** SEA-20

**Surface Elevation** Not Surveyed **Drilling Method** Hand Auger

**Total Depth** 4.7 ft. **Drilled By** Sweet, Edwards & Assoc., Inc.

**Date Completed** 5/20/87 **Logged By** D. E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY	
			NO.	TYPE					
Borehole abandoned with bentonite chips. Concrete cap placed in borehole from approximately 0 to 6" below ground surface.		1				SP	0-1.4'. Gravelly SAND, orange-brown, dry. Gravel to 3", rounded. Very compacted. Trace 5" cobbles.  Increasing sand @ 1.4'.		
		2	1	H.A.		SP	1.5-2.5'. SAND, dark gray, moist. Fine to medium. Slight odor. Wood chips abundant from 1.5 to 1.7'.		
		3							
		4					SW	3.7-4.7'. SAND, dark gray, saturated. Fine to coarse. Slight, indistinct odor.	▽ =
		5							5/20/87 9:40



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location NE corner of site

Boring No. SEA-21

Surface Elevation Not Surveyed

Drilling Method Hand Auger

Total Depth 3.8 ft.

Drilled By Sweet, Edwards & Assoc., Inc.

Date Completed 5/20/87

Logged By D. E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Borehole abandoned with bentonite chips. Concrete cap placed in borehole from approximately 0 to 6" below ground surface.		1				SP	0-1.1'. <u>SAND</u> , brown, wet. Medium to coarse. Cobbles to 7", rounded.	
						SM	1.1-1.5'. <u>Silty SAND</u> , blueish gray, moist. Gravel to 1", subangular.	
		2	1	H.A.			At 1.4' encountered tar paper, cloth, foam (auto debris?)	▽ 5/21/87 10:00
		3				ML	1.5-2.5'. <u>Sandy SILT</u> , dark brown to 2', light gray at 2-2.4', moist. Light gray material clayey silt, resembles ash. Abundant auto debris. Indistinct odor.	
			2	H.A.			3.4-3.8'. <u>Sandy SILT</u> , dark brown, wet. Oil (?) odor.	▽ 5/20/87 11:00
		4					Boring terminated at 3.8' due to refusal.	



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location N-NE boundary of caustics area

Boring No. SEA-22

Surface Elevation Not Surveyed

Drilling Method Hand Auger

Total Depth 4.0 ft.

Drilled By Sweet, Edwards & Assoc., Inc.

Date Completed 5/20/87

Logged By D. E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Borehole abandoned with bentonite chips. Concrete cap placed in borehole from approximately 0 to 6" below ground surface.		1				GP	0-1.5'. <u>Gravelly SAND</u> , brown, moist. Fine to medium. Gravel to 3", subrounded.	No water encountered
		2	1	H.A.		ML	1.5-1.9'. <u>Gravelly SILT</u> , light blueish gray, moist. Very compacted. Resembles lime waste.	
		3				ML	1.9-2.6'. <u>Sandy SILT</u> , blueish gray, moist. Frequent angular gravel to 3".	
		4	2	H.A.			3.5-4.0'. <u>Sandy SILT</u> , light blueish gray, moist. Abundant angular gravel to 1.5" (lime-stone).	
							Terminated at 4.0' due to refusal.	



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location W of caustics area

Boring No. SEA-23

Surface Elevation Not Surveyed

Drilling Method Hand Auger

Total Depth 6.5 ft

Drilled By Sweet, Edwards & Assoc., Inc.

Date Completed 5/20/87

Logged By D. E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Borehole abandoned with bentonite chips. Concrete cap placed in borehole from approximately 0 to 6" below ground surface.		1				SW	0-1.2'. SAND, brown, dry. Abundant gravel to 3", rounded. Fine to coarse.	
						SP	1.2-1.5'. SAND, black, moist. Fine to medium. Red cakey debris within. Slight odor.	
		2	1	H.A.		SM	1.5-2.5'. Silty SAND, dark brown, moist (oily), fine to medium. Slight odor.	
		3						
		4						
		5					Oily to 5.5'.	
		6	2	H.A.		SP/SM	5.5-6.0'. SAND and Silty SAND, dark brown, saturated. Fine to medium.	
						ML	6.0-6.5'. SILT, dark brown, saturated. Abundant matted plant roots and debris.	
		7						

▽  
5/20/87  
15:15



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location S. boundary of caustics area

Boring No. SEA-24

Surface Elevation Not Surveyed

Drilling Method Hand Auger

Total Depth 5.3 ft.

Drilled By Sweet, Edwards & Assoc., Inc.

Date Completed 5/21/87

Logged By D. E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Borehole abandoned with bentonite chips. Concrete cap placed in borehole from approximately 0 to 6" below ground surface.		1				SM	0-0.5'. <u>Silty SAND</u> , brown, moist. Gravel to 3", rounded.	
						SP-SM	0.5-1.5'. <u>SAND</u> and <u>Silty SAND</u> , dark brown, moist. Abundant tar paper and metal scraps.	
		2	1	H.A.		SM	1.5-2.5'. <u>Silty SAND</u> , very dark brown, saturated, (oily). Fine to medium. Trace gravel to 1.5", rounded; local light brown silt nodules. Abundant rubber, vinyl, and cloth debris.  @ 2.9', light brown.	
		3						
		4						
		5		2	H.A.		SP	4.3-5.3'. <u>SAND</u> , black, saturated (oily). Fine to medium. Very strong odor. Trace gravel to 1.5", rounded. Liquid is tar-like.
		6						5/21/87 8:45





**PROJECT** CHEMPRO, Tacoma Plant

**Page** 1 **of** 1

**Location** S-SE boundary of caustics area

**Boring No.** SEA-25

**Surface Elevation** Not Surveyed


**Drilling Method** Hand Auger

**Total Depth** 4.9 ft.

**Drilled By** Sweet, Edwards & Assoc., Inc.

**Date Completed** 5/21/87

**Logged By** D. E. Mills/ J. Kuhlman

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Borehole abandoned with bentonite chips. Concrete cap placed in borehole from approximately 0 to 6" below ground surface.		1				SP	0-0.5'. SAND, gray-green to brown, dry. Medium. Minor silt, gravel common.	
		2	1	H.A.			0.5-1.5'. SAND, dark brown, moist. Medium. Oily odor. Trace shell fragments.	
		3					1.5-2.5'. SAND, dark brown, moist. Fine-med-ium. Abundant shell frag-ments. Very oily.	
		4				SW	3.9-4.9'. SAND, dark brown, saturated. Fine to coarse. Abundant shell fragments. Very oily.	 5/21/87 9:20
		5						



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location Center of south fence line

Boring No. SEA-26

Surface Elevation Not Surveyed


Drilling Method Hand Auger

Total Depth 3.9 ft.

Drilled By Sweet, Edwards & Assoc., Inc.

Date Completed 5/21/87

Logged By D. E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Borehole abandoned with bentonite chips. Concrete cap placed in borehole approximately 0 to 6" below ground surface.		1				GM	0-0.8'. <u>Silty GRAVEL</u> , light gray, dry. Very compacted. Angular to 1.5", limestone.	
		2	1	H.A.		SM	0.8-2.5'. <u>Silty SAND</u> , brown to grayish brown, moist, loose. Fine.	
		3				SW	2.9-3.9'. <u>SAND</u> , brown, saturated. Fine to coarse.	 5/21/87 11:20
		4						



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location West loading ramp, caustics area Boring No. SEA-27

Surface Elevation Not Surveyed Drilling Method Hand Auger

Total Depth 2.0 ft. Drilled By Sweet, Edwards & Assoc., Inc.

Date Completed 5/21/87 Logged By D. E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Borehole abandoned with bentonite chips. Concrete cap placed in borehole from approx. 0 to 6" below ground surface.		1					0-0.5'. Concrete pad.	
		2	1	H.A.		SP	0.5-2.0'. Gravelly SAND (Roadbase), light brown, moist. Trace silt. Very compacted gravel.	
		3					Refusal at 2.0'.	<div style="text-align: center;"> </div> 5/21/87 15:30



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location N of caustic tank 5

Boring No. SEA-28

Surface Elevation Not Surveyed

Drilling Method Hand Auger

Total Depth 6.7 ft.

Drilled By Sweet, Edwards & Assoc., Inc.

Date Completed 5/21/87

Logged By D. E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY	
			NO.	TYPE					
Borehole abandoned with bentonite chips. Concrete cap placed in borehole from approximately 0 to 6" below ground surface.		1				SP-SM	Top 2" - Asphalt 2"-1.5'. <u>Gravelly SAND</u> with silt, light brown, moist.		
		2	1	H.A.		SM	1.5-2.3'. <u>Silty SAND</u> , brown, moist. Fine to medium. Abundant gravel to 1 1/2", rounded.  At 2.3', penetrated auto debris: scraps of leather, rubber, metal, cloth. Oily, black.		
		3							
		4							
		5					ML	5-5.7'. <u>Clayey SILT</u> , black, very oily. Abundant wire and rubber debris.	
		6		2	H.A.		SP	5.7-6.7'. <u>SAND</u> , black, saturated. Very strong odor. Fine to medium.	▽ =
		7							

5/21/87  
16:15



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location W. of caustic tank #7

Boring No. SEA-29

Surface Elevation Not Surveyed


Drilling Method Hand Auger

Total Depth 6.1 ft.

Drilled By Sweet, Edwards & Assoc., Inc.

Date Completed 5/22/87

Logged By D. E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Borehole abandoned with bentonite chips. Concrete cap placed in borehole from approximately 0 to 6" below ground surface.		1				SP	0-3.0'. <u>Gravelly SAND</u> and <u>SAND</u> , brown, moist. Fine to medium. Gravel to 1.5", rounded. Trace 4" cobbles.	
		2	1	H.A.			@ 1.6', 6" thick layer of auto debris.	
		3				SM	3.0-4.6'. <u>Silty SAND</u> , grayish brown, moist. Fine to medium. Oily, not saturated. Odor.	
		4					- increasing oil @ 4.6'.	
		5				SP-SM	4.6-5.1'. <u>SAND</u> , dark brown, moist. Very fine to fine. Sticky.	
		6		2	H.A.		5.1-6.1'. <u>SAND</u> , brown, saturated. Fine to medium, trace coarse. Trace fine gravel (to 3/8" dia.). Slightly oily.	 5/22/87 8:50 (oil)
		7						



**PROJECT** CHEMPRO, Tacoma Plant

Page 1 of 1

**Location** Between tanks 4 & 5, caustics area **Boring No.** SEA-30

**Surface Elevation** Not Surveyed

**Drilling Method** Hand Auger

**Total Depth** 6.2 ft.

**Drilled By** Sweet, Edwards & Assoc., Inc.

**Date Completed** 5/22/87

**Logged By** D. E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Borehole abandoned with bentonite chips. Concrete cap placed in borehole from approximately 0 to 6" below ground surface.		1					0-0.3': Asphalt	
						GM	0.3-1.0'. <u>Silty GRAVEL</u> , brown, wet. Loose. Trace sand.	
						SP	1-1.5'. <u>Gravelly SAND</u> , brown, moist.	
			2				- layer of fine to medium gravel at 1.8', rounded.	
				1	H.A.		2-3'. <u>Gravelly SAND</u> with silt, brown, moist. Fine. Gravel to 1.5", rounded. - auto debris @ 2.8', oily.	
			3					
			4					
						ML	4.1-4.7'. <u>SILT</u> , black, moist. Very soft, oily.	
		5				SW	4.7-6.1'. <u>SAND</u> , black, wet to saturated (at 6'), very oily. Fine to coarse.	
		6	2	H.A.				
		7						

▽  
5/22/87  
10:30



PROJECT CHEMPRO, Tacoma Plant

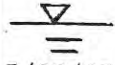
Page 1 of 1

Location Between tanks 8 and 9, caustics area Boring No. SEA-31

Surface Elevation Not Surveyed Drilling Method Hand Auger

Total Depth 7.2 ft. Drilled By Sweet, Edwards & Assoc., Inc.

Date Completed 5/22/87 Logged By D. E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Borehole abandoned with bentonite chips. Concrete cap placed in borehole from approximately 0 to 6" below ground surface.		0					0-0.3': Asphalt	
		1				SP-SM	0.3-1.5'. Gravelly SAND, with silt, brown, moist, loose to compacted. Cob- bles to 4" common.	
		2	1	H.A.		SM	1.5-2.6'. Silty SAND, light brown, moist. Fine to medium. Slight odor (indistinct).	
		3					2.6-3.8'. Black, silty auto debris. Oily.	
		4				ML	3.8-4.3'. SILT, yellow- ish brown, saturated, sticky. Mottled, mixed with black oily silt.	
		5				SP	4.3-7.2'. SAND, black, saturated, very strong odor. Fine to medium. with some coarse. Some shell fragments	
		6						
		7	2	H.A.			Bottom at 7.2'.	 5/22/87 13:20 (oil)



PROJECT CHEMPRO, Tacoma Plant

Page 1 of 1

Location SE corner of site

Boring No. SEA-32

Surface Elevation Not Surveyed


Drilling Method Hand Auger

Total Depth 4.1 ft.

Drilled By Sweet, Edwards & Assoc., Inc.

Date Completed 5/22/87

Logged By D. E. Mills

WELL DETAILS	PENE-TRATION TIME/RATE	DEPTH (FEET)	SAMPLE		PERME-ABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
			NO.	TYPE				
Borehole abandoned with bentonite chips. Concrete cap placed in borehole from approximately 0 to 6" below ground surface.		1				SP	0-1.5'. <u>SAND</u> , grayish brown, dry. Fine. Plant roots (grass) to 8".	
		2	1	H.A.		SM	1.5-2.5'. <u>Silty SAND</u> , grayish brown, moist. Very fine to fine.	
		3						
		4	2	H.A.		SW	3.1-4.1'. <u>SAND</u> , brown, saturated, fine to coarse. Red grains common. Abundant shell fragments.	 5/22/87 13:55
		5						





Soil Stratigraphy Field Log

Location ID SRI-1  
Facility TAL  
Project Supplemental R1

Date 1/12/01

Field Geologist Helle Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method geoprobe

Sampling Method 4' section lines, 2" diameter

Total Depth 28'

0  
4  
8

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: 0.0 0.0	24	0-24" GM fine sand and gravel (to 2 inches) brown and orange brown, some fines, poorly sorted, moist medium dense
			0.0 0.0	48	0-20" GM sand and gravel same as above (0-4', 0-24") 20-23" GM sand and gravel same as above (0-4', 0-24") except dark brown 23-38" GM sand and gravel same as above (0-4', 0-24") 38-48" GM sand and gravel same as above (0-4', 0-24") except olive gray.

Geologist's Signature Helle Gylling Date 1/12/01 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 4



Soil Stratigraphy Field Log

Location ID SK1-1  
 Facility TAC  
 Project Supplemental R1

Date 1/12/01

Field Geologist Helle Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method logprobe

Sampling Method 4' cableline, 2" diameter

Total Depth 28'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'				48" 0.0	<p>Breathing Zone: In-Spoon: Headspace:</p> <p>0-12" GM sand and gravel same as above (0-4', 0-24")            12-24" GM sand and gravel same as above (0-4' 0-24")            @ 20" plastic fibers            24-48" SW fine to medium sand dark greenish gray, medium sorted, moist, medium dense            @ 42" plastic fibers to 2 inches in length</p>
				48" 0.0	<p>0-24" SW medium to coarse sand and gravel, poorly sorted, orange brown and gray, moist, medium dense            24-48" autofluff, wires, foam, metal pieces and some fine sand and silt, dark brown</p>

8  
12  
16



Soil Stratigraphy Field Log

Location ID SRI-1  
 Facility FAL  
 Project supplemental R1

Date 11/2/01

Field Geologist Helle Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method bioprobe

Sampling Method 4 acetate liners, 2" diameter

Total Depth 28'

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

16

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'			Breathing Zone: In-Spoon: Headspace: <u>4.6</u> <del>118</del> <u>H6</u> <u>118</u>	<u>48"</u>	0-12" SW olive gray medium to fine sand, medium sorted, moist, medium dense  12-30" lime waste, light grey, chalky, moist, wood debris present *  30-36" open gap  36-48" wood and oily residue, <sup>auto sluff</sup> brick pieces, silty muddy matrix, dark brown

20

			<u>0.0</u>	<u>12"</u>	0-8" SW olive gray, medium to fine sand, medium sorted, <del>moist</del> <sup>with</sup> medium dense  8-12" silty silt and sand mix, black, medium sorted, wet, soft and soupy
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24

Geologist's Signature Helle Gylling Date 11/2/01 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 3 of 4

\* lime solvent sludge according to Keith Petersen



Soil Stratigraphy Field Log

Location ID SR1-1  
Facility TAR  
Project supplemental R1

Date 1/12/01

Field Geologist Helle Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method logprobe

Sampling Method 4' outer liner, 2' inner

Total Depth 28'

2.4

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: <u>0.0</u>	<u>48"</u>	0-21" SM silty sandy mix, olive gray, medium sorted, wet, soft, gooey, some metal wires 21-24" SM silt sand mix, oily, black, medium sorted, wet, soft, some wood debris 24-28" ML silt olive gray well sorted, wet, medium stiff & top becoming stiff and more brittle towards bottom, when there's also a little sand in it, plant debris to 2 inches.

28

Geologist's Signature Helle Gylling Date 1/12/01 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 4 of 4





Soil Stratigraphy Field Log

Location ID SRI-2  
 Facility TAZ  
 Project Supplemental R1

Date 1/16/01

Field Geologist Helle Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method 6" probe

Sampling Method 4' acetate liner 2" diam.

Total Depth 22

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: 0.0 0.0	30"	0-30" GW medium sand and gravel (to 2 inches, poorly sorted, moist, loose, moderately yellowish brown
			0.0 0.0	35"	0-27" GW medium sand and gravel, same as above (0-4', 0-30") 27-35" GW medium sand and gravel (to tin), dark greenish grey, poorly sorted, moist, loose
			0.0 2,3	48"	0-41" GW medium sand and gravel, same as above (4-8', 27-35") 4-48" autoflux, wires, metal parts, wood chunks, fine-grained sand, dusky brown, poorly sorted, moist, loose

0  
4  
8  
12

Geologist's Signature Helle Gylling Date 1/16

Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 3



Soil Stratigraphy Field Log

Location ID SRI-2  
 Facility TAC  
 Project Supplemental R1

Date 1/16/01

Field Geologist Helle Gylling

Location Type:  Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe

Sampling Method Hydraulic line 2" diameter

Total Depth 22

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

12

15

16

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'				32"	Breathing Zone: In-Spoon: Headspace: 0.0 0-5" SW medium sand, dark yellowish brown, medium sorted, moist, loose 5-15" SW medium sand with minor coarse sand/fine gravel, dark greenish grey, moist, poorly sorted 15-27" autofluff same as above (8-12', 4-48") 27-32" PT saw dust, wood pieces, peat
			99.1	30"	0-15" SW medium sand, dark greenish grey same as above (12-16', 0-15") 15-16" PT peat, saw dust 16-27" SM, dark grey silty sand, fine, medium sorted, medium dense, wet

\* the P.D. hit

Geologist's Signature

*Helle Gylling*

Date 1/16/01

Reviewer \_\_\_\_\_

Date \_\_\_\_\_

Pg 2 of 3



Soil Stratigraphy Field Log

Location ID SRI-2  
Facility TAC  
Project Supplemental RI  
Location Type:  
 Soil Boring Only  Well  Test Pit

Date 1/16/01

Field Geologist Helle Gylling

Drilling Method Geoprobe

Sampling Method 4' acetate liner, 2" dia.

Total Depth 22

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'					27-30" ML silt with peat, well sorted, dark grey, wet, medium stiff

20			94.1	21"	0-5" PT peat, saw dust 5-21" ML, silt, olive gray, well sorted, wet, medium stiff, @ 3-8 a lot of saw dust and wood debris in the silt and this where the PID hit was.
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22					
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Geologist's Signature Helle Gylling Date 1/16 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 3 of 3





Soil Stratigraphy Field Log

Location ID SRI-20  
 Facility TAC  
 Project supplemental R1

Date 1/16/01

Field Geologist Helle Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method HSA/geoprobe

Sampling Method 2' section lines, 1" diameter

Total Depth 28'

0  
22  
24  
26  
28

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'					Breathing Zone: In-Spoon: Headspace:  see SRI-20
			0.0	8"	0-8" ML silt, olive gray, medium stiff, well sorted, wet
			0.0	24"	0-3" ML silt same as above (22-24', 0-8') 3-8" SM sandy silt, olive gray, soupy, medium sorted, 8-24" ML silt with some plant debris, olive gray, medium stiff, wet, well sorted
				24	0-17" ML silt, olive gray, medium stiff; well sorted, wet 17-24" SM medium sand, medium sorted, olive black, wet, red, white & black specks, loose.

Geologist's Signature Helle Gylling Date 1/16/01

Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1



Soil Stratigraphy Field Log

Location ID IRI-3  
 Facility TAL  
 Project Ri investigation  
 Location Type:  
 Soil Boring Only  Well  Test Pit  
 Total Depth 14'

Date 1/15/01

Field Geologist Hille Gylling

Drilling Method Augerprobe

Sampling Method 4' auger liner, 2" diameter

0

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: 0.0 Headspace: 0.0	38"	0-26" GW sand, medium, and gravel (to 1 inch) dark yellowish brown, poorly sorted, moist, loose 26-38" GW medium sand and gravel (to 2 inches), olive gray, poorly sorted, moist, loose

4

			0.0 0.0	24"	0-17" SW medium sand, olive gray, poorly sorted, moist, loose 17-24" SW fine to medium sand, dark gray with many roots and plant debris, poorly sorted, wet, loose
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7

Geologist's Signature Hille Gylling Date 1/15/01 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 2



Soil Stratigraphy Field Log

Location ID SRI-3

Facility

Project Ri investigation

Date

1/15/01

Field Geologist

Hille Gylling

Location Type:

Soil Boring Only  Well  Test Pit

Drilling Method

Geoprobe

Sampling Method

4' catch liner, 2" diameter

Total Depth

14'

Depth of Sample (ft bgs)

Sample ID

Blow Counts (per 6")

Total Organics (ppm)

Sample Recovery (inches)

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

7

0.0'

Breathing Zone:  
In-Spoon:  
Headspace:

0.0  
0.0

20"

0-5" SW medium sand, same as above (4-7', 0-17")  
5-20" lime waste, white to grey, chalky to putty-like, 2" pebbles

11

0.0  
0.0

38"

0-3" SW medium sand same as above (4-7', 0-17")  
3-10" lime waste same as above  
10-38" ML silt grading from black with pebbles (1/4 in) to olive gray and just silt, well sorted, wed, medium stiff.

14

Geologist's Signature

Hille Gylling

Date 1/15

Reviewer

Date

Pg 2 of 2



Soil Stratigraphy Field Log

Location ID SRI-3D  
 Facility IAC  
 Project Suppl. R1

Date 1/17/01

Field Geologist Helle Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Geo probe / auger

Sampling Method 2' cuttings lines, 1" diameter

Total Depth 22'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'					Breathing Zone: In-Spoon: Headspace:  see SRI-3
14					no recovery
16			0.0	10"	0-10" ML, olive gray and black silt with some plant debris. medium stiff, wet, well sorted
18			0.0	24"	0-24" ML silt same as above (16-18', 0-10') at 11-14": 1/2 inch of dark grey silt, then yellowish orange "brown sugar crystals", odd, and another 1/2 inch of dark grey silt, medium stiff, wet, well sorted
20			0.0	24"	0-16" ML silt, same as above (16-18', 0-10") 16-24" SW sand, medium, olive black with rd, white and black specks, loose, medium sorted, wet.
22					

Geologist's Signature Helle Gylling Date 1/17 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1



Soil Stratigraphy Field Log

Location ID SR1-4  
 Facility Tacomn  
 Project SI invest

Date 1/15/01

Field Geologist Corey Johnson

Location Type: Temp  
 Soil Boring Only  Well  Test Pit

Drilling Method geoprobe

Sampling Method 4' 2" acetate liner

Total Depth 12' 4"

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0'	0.0'				0-24" 6P olive gray, mostly gravel and sands, little or no fines, poorly sorted, dry, loose
4'			0.0	24"	<del>0-2" 6P</del> 0-2" 6P same as above (0-4' 0-24") 2-24" SP medium <del>dark</del> light gray, medium to fine grains with some silt, some gravel poorly sorted, medium dense - loose, moist, light and chunky
8'			0.0	~6" poor recovery	0-6" SM olive gray, silty sands mostly fine sands, medium sorted, very wet and soupy, one large piece of metal 1.5" x 1.5". One small piece of metal 0.5" x 0.5"
11'			0.0	16"	0-16" ML grayish black, silt, few very fine sands, very well sorted, soft-medium stiff, moist.
12' 4"					

Geologist's Signature [Signature] Date 1/15/01 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg \_\_\_\_\_ of \_\_\_\_\_



Soil Stratigraphy Field Log

Location ID SRI-5  
Facility TAC  
Project suppl. R. investigation

Date 1/17/01

Field Geologist Hille Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe

Sampling Method 4' on line, 2" diameter

Total Depth 28

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

24

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'			0.0	37"	0-33" SW olive block sand same as above (16-20', 0-22')
					33-37" ML silt, olive gray, medium stiff, well sorted, wet, loose

28

Geologist's Signature Hille Gylling Date 1/17 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 2 of 2



Soil Stratigraphy Field Log

Location ID SRI-S-4  
Facility TAL  
Project Suppl. Ri investigation  
Location Type  
 Soil Boring Only  Well  Test Pit

Date 1/19/01

Field Geologist

Drilling Method

Sampling Method

Total Depth 8

0-4  
4

8

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'					
			0.0 3.4	16.5	see SRI-S
	SRI-S-S-48-0101			16.5	0-14" auto filled wire, plastic, dark grey fine sand and fines, poorly sorted, wet, medium dense 14-16.5 ML silt olive grey, medium stiff, wet, well sorted

Breathing Zone:  
In-Spoon:  
Headspace:

Geologist's Signature

*[Handwritten Signature]*

Date

1/19

Reviewer

Date

Pg

of

1 of 1



Soil Stratigraphy Field Log

Location ID SRI-SA  
Facility TAL  
Project Suppl. RI investigation

Date 11/8/01

Field Geologist Helle Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method HSA/geoprobe

Sampling Method 2 touch lines, 1<sup>st</sup> d. only

Total Depth 13

0  
8  
9  
11  
13

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'					Breathing Zone: In-Spoon: Headspace:  see no sample
			0.0	24"	0-24" SM, sandy silt, olive gray, well sorted, wet, <del>soil</del> sodd
			0.0	24"	0-18" SM sandy silt, same as above (8-11, 0-24") 18-24" SW, sand, fine to medium, medium sorted, wet, olive black with rd, black and white specks, loose
	SRI-SA-W-20-0101				

HG

Geologist's Signature Helle Gylling Date \_\_\_\_\_ Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1





Soil Stratigraphy Field Log

Location ID SR-60  
 Facility TAL  
 Project Suppl. R. inurb job  
 Location Type:  
 Soil Boring Only  Well  Test Pit

Date 1/19/01

Field Geologist Helle bylling

Drilling Method HSA/guprobe

Sampling Method 2' catch liner, 1" diameter

Total Depth 16

0  
12'  
14'  
16'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'					sec <u>CTHW-5</u>
			0.0	20"	0-2" <u>PT</u> <u>pebb</u> , grayish brown, medium <del>dense</del> , well sorted, wet
					2-20" <u>ML</u> silt, olive grey, well sorted, wet, medium stiff,
			0.0	24"	0-20" <u>ML</u> silt, same as above (12-14', 2-20") 20-24" <u>SW</u> sand, fine to medium, black with red, white and black specks, loose, wet, medium sorted.
	<u>SR-60-W-22-0101</u>				

Geologist's Signature Helle Bylling Date 1/19 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1



Soil Stratigraphy Field Log

Location ID SRI-7  
 Facility TAL  
 Project Supplemental Ri

Date 1/8/01

Field Geologist Helle Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe

Sampling Method 4' acetate liner, 2" diameter

Total Depth 15'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (Inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: 0.0 Headspace: 0.0	40	0-16" GW gravel-sand mix, pebbles to 2 inches, light greyish brown, moist, loose, poorly sorted  16-21" cement mix, light grey, poorly sorted, medium to coarse grained, loose, moist  21-40" autofluff, dark brown fine to silt size, wires, upholstery, glass
			0.0 0.0	24	0-12" SW fine silt & silt mix, olive black, grains to .5cm scattered throughout, loose, moist, poorly sorted

Geologist's Signature Helle Gylling Date 1/8 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 2



Soil Stratigraphy Field Log

Location ID SRI-7  
 Facility TAC  
 Project Supplemental R1  
 Location Type:  Soil Boring Only  Well  Test Pit

Date 1/8/01

Field Geologist Helle Gylling

Drilling Method Geoprobe

Sampling Method 4' section lines, 2" diameter

Total Depth 15'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'					Breathing Zone: In-Spoon: Headspace: 12-17" ML silt w/minor wood debris, olive gray soft, wet, well sorted 17-24" SW sand, medium, olive black, red, black & white specks, loose, medium sorted, wet
			0.0 0.0	30"	0-3" G-M silty gravel (lim) w/minor sand, light grey, loose, wet/soupy, poorly sorted 3-30" SW sand, medium, olive black, red, black, white specks, loose, medium sorted, wet
			0.0 0.0	12"	0-8" SW sand, medium, olive black, red, black & white specks, loose, medium sorted, wet 8-12" ML silt, light grey medium stiff, trace wood debris, moist, well sorted

Geologist's Signature Helle Gylling

Date 1/8

Reviewer \_\_\_\_\_

Date \_\_\_\_\_

Pg 2 of 2

8

12

15



Soil Stratigraphy Field Log

Location ID SRI-7-D  
 Facility TAL  
 Project Supplemental RI

Date 1/9/01

Field Geologist Helle Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method ASA/Geoprobe

Sampling Method Excavate liner, 1" diameter

Total Depth 19

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

0  
15'  
17'  
19'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'					see SRI-7
			0.0	18	0-18" ML silt with increasing sand concentration towards the bottom, olive gray, well sorted, medium stiff grading to soft toward the bottom, minor plant roots, web,
			0.0	24	0-12" SM sandy silt, olive gray, poorly sorted, soft, web, fine to medium silt, sand in the silt.
	SRI-7-D-W 23-0101				

Geologist's Signature Helle Gylling Date 1/9/01 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1



Soil Stratigraphy Field Log

Location ID 3171-80  
Facility FAC  
Project

Date 1/19/01

Field Geologist Helle Gjylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method HSA/geoprobe

Sampling Method 2' sand line, 1' diameter

Total Depth 16'

0  
12  
14  
16

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

0.0'   
Breathing Zone:  
In-Spoon:  
Headspace:  
see CIMW-20

no recovery

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'					
			0.0	24"	0-18" SW/CL olive black medium sand with 1/2 - 1/4 inch clays mixed in, red, white and black specks, <del>loose</del> , wet, medium dense, HG
					18-24" - SW fine sand with some fines, olive black, wet, loose,

Geologist's Signature

*Helle Gjylling*

Date

1/19/01

Reviewer

Date

Pg 1 of 1



Soil Stratigraphy Field Log

Location ID SRI-9  
Facility TAL  
Project Supplemental RI  
Location Type:  Soil Boring Only  Well  Test Pit

Date 1/8/01

Field Geologist Hella Gylling

Drilling Method Geoprobe

Sampling Method 4' acetate liner, 2" diameter

Total Depth 12

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'					Asphalt
0.5'			0.0	28"	0-6" GW coarse gravel and medium sand, gravel up to 2 inches, moist, grey, poorly sorted, loose.
					6-12" GW ground up brick, black, orange, brown, coarse pebbles to 1 inch, fine to coarse grained, poorly sorted, moist
					12-24" SW fine to medium sand, light orange brown, moist, poorly sorted, loose
					24-28" GW coarse pebbles to 2 inches with medium sand orange brown, moist, poorly sorted, loose

Geologist's Signature Hella Gylling Date \_\_\_\_\_

Reviewer \_\_\_\_\_

Date 1/8 Pg 1 of 3

0.5

4



Soil Stratigraphy Field Log

Location ID TAC  
Facility SRI-9  
Project Supplemental R1

Date 1/8/01

Field Geologist Helle Kylling

Location Type:  Soil Boring Only  Well  Test Pit

Drilling Method 6" probe

Sampling Method 4' ecobore liner, 2" diameter

Total Depth 12

41

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			0.0	9.8'	<p>0-6" GW. sand, medium, and gravel mix, pebbles to 2 1/2 inch, poorly sorted, light brown, wet, loose</p> <p>6-38" SW olive black medium sand with red, white and black specks, medium sorted, wet, medium dense</p> <p>38-42" SM silty sand, olive <sup>grey</sup> <del>black</del>, poorly sorted, fine to medium sand, wet, medium stiff,</p> <p>42-48" SW medium sand same as above, (4-8', 6-38")</p>

8

Geologist's Signature Helle Kylling Date 1/8

Reviewer \_\_\_\_\_ Date 1/8 Pg 2 of 3



Soil Stratigraphy Field Log

Location ID SRI-40  
Facility TAC  
Project Ri investigation

Date 1/17/01

Field Geologist Hille Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method HSA/geoprobe

Sampling Method 2' section lines, 1" diameter

Total Depth 18

0  
12  
14  
16  
18

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'					Breathing Zone: In-Spoon: Headspace:
			0.0	8"	0-8" ML silt, olive gray, well sorted, wet, medium stiff, @ 3-5" <del>ML</del> black silt, otherwise same
			0.0	6"	0-6" SM sandy silt, soupy, dark grey, loose, medium sorted
				no recovery	sample fell out but rod was sandy and wet

Geologist's Signature [Signature] Date 1/17 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1





Soil Stratigraphy Field Log

Location ID SRI-5  
Facility TAL  
Project supplemental R'invest  
Location Type:  Soil Boring Only  Well  Test Pit

Date 11/7/01

Field Geologist Hille bylling

Drilling Method logprobe

Sampling Method 4' acetate line, 2" diameter

Total Depth 28

0  
4  
8  
12  
16  
20  
24

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'				16"	0-16" GW sand, medium, and gravel, to 2 inches, dark greenish grey, poorly sorted, moist, loose
			0.0	1.5'	0-15 GW same as above (0-4', 0-16")
					NO RECOVERY
			0.0	3.5"	0-3.5" SM olive black sandy silt, medium sorted, wet, loose
			0.0	22"	0-22" SW olive black medium sand, medium sorted, loose, med, white and black specks, wet
			0.0	30"	0-26" SW same as above (16-20', 0-22") 26-30" SM silty sand, olive black, medium sorted, some wood debris, loose, wet

\*SRI-5  
11/9/01



Soil Stratigraphy Field Log

Location ID TAC  
Facility SEI-9  
Project Supplemental R1

Date 1/8/01

Field Geologist Hella Gylling

Location Type:  Soil Boring Only  Well  Test Pit

Drilling Method Geo probe

Sampling Method 4' section liner, 2" diameter

Total Depth 12

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

8'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'			Breathing Zone: In-Spoon: Headspace: 0.0	10"	0-7" GM silt and gravel mix, olive gray, pebbles to 1 1/2 inches, medium stiff, wet, poorly sorted  7-10" OK fine wood and silt mix, orange brown with some black wood debris, medium stiff, wet, <del>wet</del> poorly sorted

12



Soil Stratigraphy Field Log

Location ID SRI-9-0  
 Facility IAC  
 Project Supplemental RI  
 Location Type:  Soil Boring Only  Well  Test Pit

Date 1/8/01  
 Field Geologist Helle Gylling  
 Drilling Method Auger / Gyroprobe  
 Sampling Method 2' autoh line, 1" gyroprobe

Total Depth 18

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (Inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'					Breathing Zone: In-Spoon: Headspace:  see SRI-9
12'			0.0	24"	<del>Not sampled (bentonite)</del> 0-24" ML silt, olive gray, soft, wet, well sorted, trace wood @ 12-14" more plant debris
14'			0.0	24"	0-20" ML silt same as above (12-14', 0-24") 20-24" SM silty sand, olive gray, wet, well sorted, poorly sand, medium dense
16'			0.0	24"	0-5" ML silt same as above (12-14', 0-24") 5-24 SW medium-grained sand, olive black with rd, white and black specks, wet, medium sorted, few fines, loose
18'					

H. G

0  
12'  
14'  
16'  
18'

Geologist's Signature Helle Gylling Date 1/8 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1



Soil Stratigraphy Field Log

Location ID 2Ri-10  
 Facility TAC  
 Project Supplemental RI

Date 1/9/01

Field Geologist Helle Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe

Sampling Method 4' acetate liner, 2" diameter

Total Depth 10

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: 8.0 @ 18" 7.6	24"	0-8" GW orange brown sand and gravel (to 3 inches) medium-grained, poorly sorted, moist, loose 8-14" wood (to 2 inches), pebbles (to 1 inch), grey medium sand, moist, poorly sorted, loose 14-24" GW medium sand and gravel (to 2 inches), poorly sorted, moist, loose
			0.0 4.2	40"	0-6" GW gravel, medium sand, soupy, silt mix, pebbles to 3 inches, light grey, soupy, loose, poorly sorted. 6-40" SW olive black medium sand, moist, loose, red, white, black specks, medium sorted

Geologist's Signature Helle Gylling Date 1/9/01 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 2



Soil Stratigraphy Field Log

Location ID SRi-10  
 Facility TAC  
 Project Supplemental Ri

Date 1/9/01

Field Geologist Helle Gylling

Location Type:  Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe

Sampling Method 4' acetate liner, 2" diameter

Total Depth 10

8

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'	SRi-10-W-4.5-a01		Breathing Zone: In-Spoon: 0.0 Headspace: 3.0	24	0-20" SW olive black sand with red, black and white specks, <del>mass</del> wet, loose, medium sorted @14-16" ML olive grey silt, lense, well sorted, soft, wet 20-24" ML silt, olive grey, well sorted, medium stiff, wet
10'					

10'



Soil Stratigraphy Field Log

Location ID SPi-100  
 Facility TAC  
 Project supplemental 12i

Date 1/10/01 Field Geologist Helle Gylling Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method HSA / auger Sampling Method: 2' outside lines, 1" diameter Total Depth 16

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'					Breathing Zone: In-Spoon: Headspace:  SEE SPi-10
10			0.0	12"	0-12" SW olive black sand, medium, with fines, red, black and white specks, poorly to medium sorted, with medium dense  2-5" ML clayey silt light cream to tan, medium stiff, wet, well sorted  5-7" SW olive black sand, same as above (10-12', 0-2")  7-12" ML/SM silt with some fine sand, dark grey, medium stiff, wet well sorted
12			0.0	24"	0-4" SW sand same as above (10-12', 0-2") 4-6" ML clayey silt, same as above (10-12', 2-5") 6-8" SW sand same as above (10-12', 0-2")

Geologist's Signature Helle Gylling Date 1/10 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 2



Soil Stratigraphy Field Log

Location ID SRI-10P  
Facility TAC  
Project suppl. R. invest.

Date 1/10/01

Field Geologist Halle Gylling

Location Type:  Soil Boring Only  Well  Test Pit

Drilling Method HSA/proprobe

Sampling Method 2' ac. hole liner, 1" diameter

Total Depth 16

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

14

16

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'					8-24" ML silt with decreasing sand concentration toward the bottom; bottom 3 inches has plant debris, medium stiff, wet, well sorted
			0.0	12"	0-12" SW sand, some as above (10-12', 0-2")
	SRI-10P-W -20-0101				

Breathing Zone:  
In-Spoon:  
Headspace:

Geologist's Signature

*Halle Gylling*

Date

1/10/01

Reviewer

Date

Pg 2 of 2



Soil Stratigraphy Field Log

Location ID SR-116  
 Facility TAC  
 Project Suppl. R. invest.

Date 1/11/01

Field Geologist Helle Bylling

Location Type:  Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe

Sampling Method 4' catch liner, 2" diameter

Total Depth 14'

0

4

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: 0.0 1.0	36"	0-8" SW fine sand and gravel (to 1 inch) orange brown, poorly sorted, moist, medium dense 8-16" SW fine sand and gravel (to 1 inch) greyish black, wood to 1.5 inches, poorly sorted, medium dense, moist 16-36" GW fine sand and gravel (to 2 inches) greyish brown, poorly sorted, moist, medium dense @ 25-27" red brick
			0.0 1.6	40"	0-10" GM fine sand with silt and gravel (to 1 inch), poorly sorted, orange brown, moist

10

Geologist's Signature Helle Bylling Date 1/11/01 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 3





Soil Stratigraphy Field Log

Location ID SRI-11  
Facility TAL  
Project suppl. RI invest.

Date 9/11/01

Field Geologist Halle Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Augerprobe

Sampling Method 4' catch lines, 2" diameter

Total Depth 14'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
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8

0.0'					10-11" brittle clumps of grey/white lime waste
					11-40" SW olive block medium sand, shell fragments, red, white and black specks, moist to 30" wet 30-40" medium sorted, loose
			0.0 1.5	40"	0-12" SW sand same as above (4-8', 11-40") 12-15" ML silt olive grey, medium stiff, wet, <del>is</del> well sorted 15-20" SW sand same as above (4-8')(11-40") 20-21" ML silt same as above (8-12', 12-15") 21-36" SW sand same as above (4-8', 11-40") 36-38" ML silt, same as above (8-12', 12-15")

Geologist's Signature Halle Gylling Date 11/11

Reviewer \_\_\_\_\_ Date \_\_\_\_\_

Pg 2 of 3



Soil Stratigraphy Field Log

Location ID SR1-11

Facility JAL

Project Supp. RI invest.

Date 1/11

Field Geologist Helle Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe

Sampling Method 4 sensor line, 2" diameter

Total Depth 14'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
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12

0.0'					38-40" <del>ML</del> SW sand as above (4-8", 11-40")
			0.0	24	0-6" SW sand same as above (4-8", 11-40")
			1.5		6-24" ML/OL olive gray silt w/ plant material well sorted, well medium stiff grading to just ML silt, olive gray well sorted, medium stiff, well

14

Geologist's Signature Helle Gylling Date 1/11

Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 3 of 3



Soil Stratigraphy Field Log

Location ID SR-12  
 Facility TAL  
 Project suppl. R. must.  
 Location Type:  
 Soil Boring Only  Well  Test Pit

Date 1/10/01

Field Geologist Helle Gylling

Drilling Method loop hole

Sampling Method 4' push line, 2" diameter

Total Depth 15'

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'			Breathing Zone: In-Spoon: Headspace:  0.0 5.8	26"	0-28" GW medium sand and gravel (to 3 in) mix, poorly sorted, moist, minor fines, light orange brown, loose, hard, compact  28-35" lime waste, white chalky with pebbles (angular) to 1 inch, moist, stiff  35-36" lime mixed with olive block sand, poorly sorted, moist, mostly medium-grained with minor coarse sand, loose
			0.0 14.6*	48" HG	0-4 SW medium sand and gravel (to 0.5 in) light brown, poorly sorted, hard, compact, moist,

Geologist's Signature Helle Gylling

Date 1/10/01

Reviewer \_\_\_\_\_

Date \_\_\_\_\_

Pg 1 of 4



Soil Stratigraphy Field Log

Location ID SRI-12  
Facility TAC  
Project suppl. R: invest.

Date 1/10/01

Field Geologist Hille Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe

Sampling Method 4 inch line, 2" O.D. core

Total Depth 15'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'					<p>Breathing Zone: In-Spoon: Headspace:</p> <p>4-10" lime waste, white, gooey, plastic-like, medium stiff, brown specks in it,</p> <p>10-14" SW medium sand olive black with red, white and black speck, gravel to 1 inch, poorly sorted, moist, loose</p> <p>14-32" lime waste white white brown specks medium stiff at top, grading to soft towards bottom</p> <p>32"-48" SW medium sand olive black with red, white and black specks in it, medium sorted, moist, loose</p>

Geologist's Signature Hille Gylling Date 1/10/01 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 2 of 4



Soil Stratigraphy Field Log

Location ID SRI-12  
 Facility TAL  
 Project suppl. r. invest

Date 1/10

Field Geologist Helle Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method drop tube

Sampling Method 4' outer liner, 2" diameter

Total Depth 15'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: <u>13.0*</u> <u>0 0</u>	<u>24"</u>	<u>0-24" SW sand, medium olive black with red, white and black specks, loose, wet, medium sorted</u>
			<u>0.0</u> <u>0.0</u>	<u>.24</u>	<u>0-18" SW sand, same as above (8-10', 0-24")</u> <u>18-20" ML silt, olive gray, medium stiff, wet, well sorted</u> <u>20-23" SW sand, same as above (8-10', 0-24")</u> <u>23-24" ML silt same as above (10-12', 18-20")</u>
			<u>0.0</u> <u>0.0</u>	<u>12</u>	<u>0-12" SW sand, same as above (8-10', 0-24")</u>
			<u>0.0</u> <u>0.0</u>	<u>18</u>	<u>0-6" OL black silt &amp; plant material, well sorted, medium stiff, wet,</u>

Geologist's Signature Helle Gylling Date 1/10 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 3 of 4

\* Possibly faulty PID



Soil Stratigraphy Field Log

Location ID SRI-10  
Facility TAL  
Project suppl. R. invest.

Date 1/10/01

Field Geologist Heidi Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe

Sampling Method 4" cut liner, 2" diameter

Total Depth 15'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
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15

0.0'			Breathing Zone: In-Spoon: Headspace:		6-18 ML silt, olive grey, well sorted, medium stiff, wed
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Geologist's Signature Heidi Gylling Date 1/10 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 4 of 4



Soil Stratigraphy Field Log

Location ID SRI-12D  
 Facility TAL  
 Project Supplemental RI

Date 1/10/01

Field Geologist Helle Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Auger/geoprobe

Sampling Method 2' acetate liner, 1" diameter

Total Depth 23'

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

0  
15  
17  
19  
21  
23

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'					see SRI-12
					No recovery
					No recovery
			0.0	24"	0-24" ML silt olive gray, medium stiff, well sorted, wet,
			0.0	24"	0-27" ML silt olive gray, grading from no sand at top to some sand at bottom, well sorted, wet, medium stiff
					17-24" SW sand, olive black with red, white and black specks, medium sorted, loose, wet
	SRI-12D-W-29-0101				

Geologist's Signature Helle Gylling Date 1/10/01 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1



Soil Stratigraphy Field Log

Location ID SRI-13  
Facility TAC  
Project Suppl. R. Invest.

Date 1/11/01

Field Geologist Heidi Bylling

Location Type  
 Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe

Sampling Method 4' auto line 2" diameter

Total Depth 16'

Depth of Sample (ft bgs)    Sample ID    Blow Counts (per 6")    Total Organics (ppm)    Sample Recovery (inches)    Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

0.0'				36"	<p>Breathing Zone: In-Spoon: Headspace:</p> <p>0-3" GP pebbles &amp; plant material, pebbles to 1/2 inch</p> <p>3-7" SW medium sand, orange brown, coarse gravel present, poorly sorted, loose, moist, medium dense</p> <p>7-9" SW medium gray sand, medium, dense, gravel to .5 inches, poorly sorted, moist</p> <p>9-24" SW medium sand, same as above (0-4', 3-7") @ 22-24 plant material to 2 inches</p> <p>24-27" SW sand same as above (0-4', 7-9")</p> <p>27-36" auto fluff, wires, plastic, medium sand with fines, poorly sorted, moist, dense</p>
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Geologist's Signature [Signature] Date 1/11 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 2





Soil Stratigraphy Field Log

Location ID SRI-13  
Facility TAC  
Project Suppl. Ri investigation

Date 1/11/01

Field Geologist Helle Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe

Sampling Method 4' outer liner, 2" diameter

Total Depth 16'

4

8

12

16

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'				36"	<p>Breathing Zone: In-Spoon: Headspace: 0.0</p> <p>0-2" SW medium gray sand with pebbles to 0.5 inches, poorly sorted, moist, dense</p> <p>2-31" lime waste, white with dark specks, stiffer at the top - more putty-like - and fluffier towards the bottom</p> <p>31-36" SW olive black sand, medium, medium sorted, red, black and white specks, loose moist</p>
			0.0	44"	0-44" SW sand same as above (4-8', 31-36")
			0.0	48"	0-25" SW sand, same as above (4-8', 31-36")
	SRI-13-W-14-0101				<p>25-38" ML silt olive gray, medium stiff, wet, well sorted</p> <p>38-48" ML silt dark gray with much plant material, wet, stiff, well sorted</p>

Geologist's Signature

Helle Gylling Date 1/11

Reviewer

Date

Pg 2 of 2



### Soil Stratigraphy Field Log

Location ID SRI-14  
Facility TAL

Project Supplemental R:

Date 4/11/01

Field Geologist  
Helle Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method  
Geoprobe

Sampling Method  
4' auto line, 2" diameter

Total Depth  
156 15'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: <u>0.0</u> <u>3.7</u> HC <u>1.0</u>	<u>40"</u>	<p>0-1" GW sand and gravel mix with some vegetation, medium sand, gravel to 2 in., orange brown, poorly sorted, moist, loose</p> <p>1-38" SW medium sand olive gray with white specks, medium sorted, moist, loose</p> <p>38-40" auto fluff, wires, plastic, medium brown medium sand with some fines, poorly sorted, moist, loose, gravel to 0.5 in.</p>
4			<u>0.0</u> <u>1.0</u>	<u>16"</u>	<p>0-12" auto fluff same as above (0-4, 38-40)</p> <p>12-13" GW greenish gray fine sand and gravel poorly sorted, wet, medium dense, gravel to .5 in</p> <p>13-16 lime waste, grey to white, granular - medium size</p>
8					

Geologist's Signature Helle Gylling Date 4/11/01 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 3



Soil Stratigraphy Field Log

Location ID SR-14  
 Facility TAL  
 Project suppl. RI invest.

Date 1/11/01

Field Geologist Helle Bytling

Location Type  
 Soil Boring Only  Well  Test Pit

Drilling Method auger

Sampling Method 4' push line, 2" diameter

Total Depth 1st 1646

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

8

12

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'			0.0 0.8	40"	0-6" auto fluff with wood, debris (to 1 inch), wires, silt and sand mix, poorly sorted, wet, medium dense 6-40" SW medium sand, olive block with red, white and black specks, medium sorted, some gravel to 0.5", loose
			0.0 0.8	36"	0-10" SW same as above (8-10', 6-40") 10-14" ML silt, olive gray well sorted, wet, medium stiff 14-20" SW same as above (8-10', 6-40") 20-22" ML silt same as above (12-14, 10-14")

Geologist's Signature [Signature] Date 1/11

Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 2 of 3



Soil Stratigraphy Field Log

Location ID SZ1-14  
 Facility TAC  
 Project Suppl. R. Invest.

Date 1/11/01

Field Geologist Halle Gylling

Location Type  
 Soil Boring Only  Well  Test Pit

Drilling Method loop hole

Sampling Method 4' auto take lower, 2" diameter

Total Depth +5' 16' HB

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'					Breathing Zone: In-Spoon: Headspace: 22-31" SM fine sand and silt mix with marine shells and wood debris, poorly sorted, medium dense 31-36" ML silt same as above (12-14', 10-14")
			0.0	12"	0-3" - auto flight same as above (plus a 2" metal piece) 3-6" SW medium sand, olive black with red, white and black specks, medium sorted, wet 6-12" ML silt olive gray and black with roots and plant material to 3 inches, well sorted, wet, medium stiff

15HB  
 14

16HB  
 15

Geologist's Signature Halle Gylling Date 1/11

Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 3 of 3



Soil Stratigraphy Field Log

Location ID SRI-14D  
 Facility TAC  
 Project Suppl. R. 1401

Date 1/12/01

Field Geologist Halle Gylling

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method HSA/propobr

Sampling Method 2' push line, 2' diameter

Total Depth 24.5

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

0  
 1.5  
 14.5  
 HG  
 16.5  
 18.5  
 20.5  
 22.5  
 24.5

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'					Breathing Zone: In-Spoon: Headspace:  See SRI-14
					No recovery
0-10"			0.0	10"	0-10" ML silt, olive gray, medium stiff, wet, well sorted,
0-18"			0.0	18"	0-18" ML silt same as above (14.5-16.5', 0-10")
0-24"			0.0	24"	0-24" ML silt same as above (14.5-16.5')(0-10")
0-24"			0.0	24"	0-24" ML silt, same as above (14.5-16.5', 0-10")
0-19"			0.0	24"	0-19" ML silt, same as above (14.5-16.5', 0-10")
19-24"					19-24" SW olive black sand, medium, with red, white and black specks, wet, medium sorted, loose

Geologist's Signature Halle Gylling Date \_\_\_\_\_ Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1

11111 70 km mm



Soil Stratigraphy Field Log

Location ID SRI-15  
 Facility Tacona  
 Project Tacona RI investigation

Date 1/16/01  
 Field Geologist Carcy Johnson

Location Type: Temp  
 Soil Boring Only  Well  Test Pit

Drilling Method Geo probe  
 Sampling Method 4', 2" Acetate liner

Total Depth 24'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (Inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'					0-3' no recovery because of large rocks 3-4' <sup>SM</sup> yellow brown sand with some silt, gravel, lg. rocks. poorly sorted. Moist. crumbly. Organic roots. woody debris.
4'			0	12" poor recovery	0-5" <sup>SM</sup> orange sand. few silt, gravel. large rocks. poorly sorted. Moist - Dry. Loose. Auto fluff. roots. 5-16" <sup>SM</sup> Dark brown sand. few silt, gravel, large rocks. <del>WOOD</del> Dry. loose. poorly sorted. Auto fluff.
8'			0	18"	0-18" <sup>SM</sup> Sand Brown. Medium grain. <del>Medium</del> sorted. Dry. Brittle, loose. 50-50 sand - auto fluff (white).
12'			0	41"	0-4' Auto fluff, white, dry. <sup>SM</sup> very little sand. Dark gray. Medium grain. few silt. poorly sorted. Dry, loose.
16'	SRI-15- S-16-20- 0101		0.0	4'	0-16" <sup>ML</sup> sandy-silt. silt with few very fine sand. 80-20 silt to sand. Gray. Dry. Crumbles. Red silt and brown silt throughout, Lime waste. large rocks. 16-18" yellow brown silt with some sand. Very wet. soft. Gravel. poorly sorted. 18-48" Lime waste, white. Dry. rocks. silt smear on liner. 46-48" <sup>SM</sup> black sand. Moist. Loose. poorly sorted.

Geologist's Signature Selma M... Date 1/16/01 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 2



Soil Stratigraphy Field Log

Location ID 581-15  
 Facility TAC  
 Project TAC R1 Invest.

Date 4/16/01

Field Geologist Corey Johnson

Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe

Sampling Method 4" 2" Acetate Liner

Total Depth 24'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'				4'	<p>Breathing Zone:            In-Spoon:            Headspace:            0</p> <p>0-18" GM silt, sand, gravel rocks. Gray-brown. Poorly sorted. Wet. Soft, loose. Woody debris.</p> <p>18-36" SM Black Sand with fines and gravel. Poorly sorted wet. Loose. Trace of lime waste.</p> <p>36-48" ML Gray silt. well sorted. Moist. Stiff. Black streaking</p>
					Total Depth



Soil Stratigraphy Field Log

Location ID SRI-16  
 Facility Tacoma  
 Project Tacoma SRI-II

Date 1/18/02

Field Geologist Corey Johnson

Location Type: Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe thru 4.25 in HSA

Sampling Method 4' X 2" Acetate liner

Total Depth 26'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (Inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: 0.0 has 0.0	36"	0-5" SP olive black, fine sand with few medium sand, moderately sorted, moist, loose, root debris 5-9" SW, Moderate Olive Brown, fine sand with some medium and some fine gravel, poorly sorted, moist, loose, fine and coarse gravel size pieces of black charcoal 9-15" SM light olive gray with light olive brown patches, 50/50 silt/sand mix, moderately sorted, moist to dry, medium stiff 15-17" Brown Black wood/Bark 17-20" SW, Moderate Olive Brown, medium and fine grain sand with fine gravel, partly sorted, loose, some brown black wood debris 20-24" ML light olive gray, sandy silt with fine sands, well sorted, dry, very stiff, 24-36 SM, Moderate Olive Brown/with light olive brown mixed throughout, silty sand, fine sand, with some medium, one 2" x 1" cobble, wood debris poorly sorted, moist, loose

Geologist's Signature

Date 1/18/02 Reviewer \_\_\_\_\_

Date \_\_\_\_\_ Pg 1 of 3





Soil Stratigraphy Field Log

Location ID SRI-16  
 Facility TALONNA  
 Project Jaloma SRI-II

Date 1/18/02

Field Geologist Corey Johnson

Location Type:  Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method beeprobe thru 4.25 in HSA

Sampling Method 4" X 2" Acetate liner

Total Depth 26'

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

4'

8'

12'

14'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			0.0	34"	0-12" SR Olive Black, moderately sorted, fine sand with few fines, moderately sorted, wet, loose 12-19" SM, olive black/moderate yellowish brown mixtures, moderately sorted, wet, medium dense, silty sand. (fine sand) 19-34" SM, olive black, fine sand with silt increasing with depth, moderately sorted, moist to wet, loose-medium dense
			0.0	34"	0-19" SM/ML olive gray, silt/fine grain mix with silt increasing with depth 25/75 → 75/25, wet to moist with depth, soft to medium stiff with depth, 19-34" SM olive black, moderately sorted, wet, medium dense, fine red grain sands
			0.0	24"	0-4" SM olive black, moderately sorted, wet, medium dense, fine red grain sands 4-24" ml olive gray with dark gray streaks from 0-10", silt with <sup>very</sup> few fine sands, very well sorted, moist, medium stiff to soft with depth, root debris throughout

Geologist's Signature [Signature]

Date 1/18/02

Reviewer \_\_\_\_\_

Date \_\_\_\_\_

Pg 2 of 3

of 4 8' sample



Soil Stratigraphy Field Log

Location ID SPI-16D  
 Facility Taloma  
 Project Taloma Sky-II

Date 1/18/02

Field Geologist Corey Johnson

Location Type:  Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe thru 4.25 in HSA

Sampling Method 4' x 2" Acetate liners

Total Depth 26'

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

14'  
18'  
22'  
26'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'			0.0	46"	0-40" ml Olive Gray silt with few fine sand, very well sorted, wet, soft 40-43" ml olive gray silt with some fine sand, well sorted, wet soft 43-46" SM olive black fine sand with few silt, moderately sorted, wet, loose,
			0.0	48"	0-48" SP/SW olive black, fine sand with few silt, moderately sorted, wet, loose, fine red sand grains throughout
			0.0	44"	0-13" SP/SW olive black, fine sand with few silt, moderately sorted, wet, loose, fine red sand grains throughout 13-28" SM, olive gray/olive black, fine sand with silt mix (mostly on outside of sample cone) moderately sorted, wet, soft/loose 28-44" SP/SW olive black, fine sand with few silt, moderately sorted, wet, loose, fine red sand grains throughout
			0.0		

Geologist's Signature [Signature]

Date 1/18/02 Reviewer \_\_\_\_\_

Date \_\_\_\_\_ Pg 3 of 3



Soil Stratigraphy Field Log

Location ID W SRI-17/17D  
 Facility TALOMA  
 Project TALOMA SRI-II

Date 1/16/02 Field Geologist Carey Johnson Location Type:  Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method benzene Sampling Method 4' x 2" Acetate liner Total Depth 24'

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

0'  
4'  
8'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'	SRI-17-S-2-4-0102		Breathing Zone: In-Spoon: Headspace: 0.0	42"	0-5" <u>6W</u> Dark yellowish brown, medium and coarse grain sand with fine and coarse gravel, loose, moist, several moderate brown gravels, poorly sorted
		bag 0.0			5-16" <u>6W</u> Light gray/very light gray mix, medium and coarse grain sand with fine and coarse gravels. Some fines, dry, loose, poorly sorted, look like cement.
			0.0 bag 0.0	36"	16-42" <u>SM</u> , Olive black, medium and fine sands with silt, ml silt in small pockets from 16-28", medium dense, moist, fine sands increasing with depth.
					0-7" <u>SM</u> Moderate yellowish brown, fine sand with some medium sand and several pockets of ml silt, moderately sorted, medium dense, 2 moderate brown layers at 5", pale yellowish orange medium sands at 6" 6.5" moist - wet 7-36" <u>SM</u> Olive black, fine sand with increasing medium sands with depth, some fines, moderately sorted, loose - medium dense, white shells at 15"-22", red grains throughout, wet

Geologist's Signature [Signature] Date 1/16/02 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 3

4-8' sample - 4-8' to wet/soft to stay in sampler



Soil Stratigraphy Field Log

Location ID SRI-17/17D  
 Facility TALON 4  
 Project TALON SRI-II

Date 1/16/02

Field Geologist Corey Johnson

Location Type: Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method keoptube

Sampling Method 4' x 2" acetate liner

Total Depth 24'

8'  
10'  
12'  
16'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			0.0	24"	<p>Breathing Zone: In-Spoon: Headspace: 0.0</p> <p>0-3" sm olive black medium and fine sand with increasing fines, medium dense, wet, moderately sorted.</p> <p>3-8" sm same as 8-10 0-3 50% silt 50% medium sand fine sand.</p> <p>8-12" sm, olive black, fine and medium sand, moderately sorted, loose-medium dense, wet,</p> <p>12-18" ml olive gray, silt with some fine sand, well sorted, soft, moist-wet,</p> <p>18-24" OL, olive black silt with some fine sand full of root debris, moderately sorted, dry-moist, soft but bound together by roots</p>
			0.0	24"	<p>0-24" ml olive gray with grayish black streaks, silt with few fine sand. Several chunks (1-2") of wood from 11-11.5'</p> <p>soft, moist, well sorted</p>
				44"	<p>0-44 ml olive gray with grayish black streaks, silt with few fines, sands, soft, moist, very well sorted</p>

Geologist's Signature [Signature] Date 1/16/02 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 2 of 3



Soil Stratigraphy Field Log

Location ID SBJ-17/17D  
Facility Tacoma  
Project Tacoma

Date 1/16/02 Field Geologist Corey Johnson Location Type: Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe thru 4.25 in HSA Sampling Method 4' x 2" Acetate liner Total Depth 24'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (Inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
16 0.0'			Breathing Zone: In-Spoon: Headspace: 0.0	36"	0-12" ml olive black silt with some fines, well sorted, 0-4 wet and soupy 4-12 wet, very soft, 12-36" sm, olive black, fine and medium sands with some silt, moderately sorted, loose, wet, red grains
20'				44"	0-44" sm, olive black, medium and fine sands, very few fines, moderately sorted, medium dense sand, wet, red grains
24'					

Geologist's Signature [Signature] Date 1/16/02 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 3 of 3

16-20 recovery from 17-20, 16-17 felt really soft and soupy end of silt @ 18'



Soil Stratigraphy Field Log

Location ID SRI-18  
 Facility TACOMA  
 Project TACOMA SRI-II

Date 1/16/02

Field Geologist Corey Johnson

Location Type:  Temporary  
 Soil-Boring Only  Well  Test Pit

Drilling Method geoprobe

Sampling Method 4' x 2" acetate lines

Total Depth 10'

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (Inches)	Geological Description
0.0'			0.0 bag 0.0	36"	0-6" sm olive black to black, fine grain sand with organic debris (roots, leaves, grass), moist, loose, moderately sorted, some fines 6-29" sm, olive black, fine sand with some fines, moist, medium dense, moderate-well sorted, 29-36" sm olive black, medium sand with some fine sand and few fines, medium dense, moist-wet, moderately sorted.
4'			0.0	24"	0-24" sm grayish black, medium and fine sands with some fines, moderately sorted, wet, medium dense, mixed pockets of ml silt from 10-13", white rocks and shells 6-15".
8'			0.0	24"	0-2" ml olive gray, silt with few fine sand, very well sorted, soft, wet, 2-7" ol olive black, silt with few fine sand, organic debris (small roots) well sorted, moist 7-24" ml olive gray, silt with few fine sand, very well sorted, dark gray/grayish black streaks from 7-20", medium stiff, moist

Geologist's Signature [Signature]

Date 1/16/02

Reviewer \_\_\_\_\_

Date \_\_\_\_\_

Pg 1 of 1

0-4' sample is 0-3' top material was dense making 3-4' soil displaced  
 4-8' sample is 4-8' foot of soil consolidated to 6-8', 4-6' was water from soils



Soil Stratigraphy Field Log

Location ID SFI-18D  
 Facility TACOMA  
 Project SRE-II

Date 1/17/02 Field Geologist Corey Johnson Location Type: Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method geoprobe thru 4.25 in HSA Sampling Method 4' x 2" Acetate liner Total Depth 22'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			0.0	44"	0-23" ml olive gray, silt with few fines, very well sorted, moist, soft 23-25" sm, olive black, fine sand with some silt, moderately to well sorted, moist, loose-medium dense, 25-44" ml olive gray, silt with few fines, very well sorted, moist, medium stiff
14'			0.0	44"	0-30" sm, olive black, medium and fine grain sands, some fines, wet, moderately sorted, red grains throughout 30-33" sm olive gray silt with fine sand medium sand 50/50 silt sand, wet, stiff, dense 33-44" sm, olive black, medium and fine sand, some fine few fines, wet, moderately sorted, red grains,
18'				46"	0-46" sm, olive black, medium and fine sand, few fines, moderately sorted, wet, red grains throughout
22'					

Geologist's Signature [Signature] Date 1/17/02 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1



Soil Stratigraphy Field Log

Location ID SRI-19/19D  
 Facility Tacoma  
 Project Tacoma SRI-II

Date 1/17/02

Field Geologist Corey Johnson

Location Type: TACOMA  
 Soil Boring Only  Well  Test Pit

Drilling Method beoprobe thru beoprobe thru 4.25in HSA

Sampling Method

Total Depth 36'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (Inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'				36"	<p>Breathing Zone: In-Spoon: Headspace:</p> <p>0-3" SM olive black, fine grain sands with few fines, organic debris (roots, leaves), moist to wet, loose</p> <p>3-15" SW, olive black, medium and fine grain sand with few fines, moderately sorted, wet, loose</p> <p>15-18" SM, moderate yellowish brown, fine sand with medium sand and pocket of ml. silt, same color, wet, poorly moderately sorted, loose - medium dense</p> <p>18-36" SW, olive black, medium and fine grain sand, few fines, several small pockets of moderate yellowish brown ml silt, wet, poorly to moderately sorted, loose to medium dense</p>
			0.0	40"	<p>0-7" SW olive black medium and fine grain sand, few fines, wet, medium dense, red grains</p> <p>7-20" SW, grayish black, medium and fine sand, few fines, wet, small white shells, red fine and med. grains,</p> <p>20-32" SW, grayish black, fine sand with some medium and</p>

0'

4'

Geologist's Signature [Signature]

Date 1/17/02

Reviewer \_\_\_\_\_

Date \_\_\_\_\_

Pg 1 of 4

4-8' sample mostly 5-8'





Soil Stratigraphy Field Log

Location ID SRI-19/19D  
 Facility TALOMA  
 Project TALOMA SRI-II

Date 1/17/02 Field Geologist Corey Johnson Location Type: Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method beeprobe thru beeprobe / 4.25 in HSA Sampling Method 4' x 2" Acetate liner Total Depth 36'

4-8 cont.

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			0.0		20-32" cont. Some fines, red fine grain sand through out, wet, medium dense, moderately sorted. 32-40" sm, olive gray, fine grain sand with silt, wet, dense, wood piece 2" x 1" at 37-39", moderately sorted
8'			0.0	18"	0-7" sm, olive gray, fine grain sand with silt, wet, dense, moderately - well sorted, 7-11" ml, olive gray, silt with root debris, moist to wet, well sorted, 7-18" OL, olive gray, silt with few fines, moderate olive brown root debris through out moist, dark gray streaks, soft,
10'			0.0	47"	0-47 ml, <del>light</del> gray, silt, very well sorted, moist, medium stiff, dark gray streaks from 0-22"
14'			0.0	45"	0-24" ml, olive gray, silt, very well sorted, moist, soft, 24-30 ml, olive gray/dark gray, silt with few/fine grain sand, soft, moist, well sorted

Geologist's Signature [Signature] Date 1/17/02 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 2 of 4



Soil Stratigraphy Field Log

Location ID SRI-19D  
 Facility Tacoma  
 Project Tacoma SRI-II

Date 1/17/02

Field Geologist Corey Johnson

Location Type: ~~Permanent~~ Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method 6" probe thru 4.25 HSA

Sampling Method 4' x 2" Acetate liner

Total Depth 36'

14-18' Cont  
18'  
22'  
26'  
30'  
34'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'					30-45" ml, Olive gray, Silt with few fine gray sand, well sorted, moist, stiff
			0.0	42"	0-42" ml, olive gray, silt with few fine sands increasing with depth, well sorted, medium stiff,
			0.0	48"	0-30" sm, olive gray, silt sand mix 50/50 silt fine sand mix, moderately sorted, moist, stiff 30-48" ml, olive gray, silt with few fine sand, moist, well sorted, medium stiff, white shells throughout.
			0.0	48"	0-48 ml, olive gray/light gray, silt with few fine sand, sand increasing with depth to 50/50 silt/fine sand mix, well sorted, soft going to medium stiff with depth, white shells 0-20"
			0.0	48"	0-48" sm, olive gray/dark gray, silty sand with fine grain sand, moderately sorted, wet, dense

Geologist's Signature

Date 1/17/02 Reviewer \_\_\_\_\_

Date \_\_\_\_\_

Pg 3 of 4





Soil Stratigraphy Field Log

Location ID SRI-20  
 Facility PSC Tacoma  
 Project SRI II

Date 01/08/02

Field Geologist Joe Depner

Location Type: temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct-Push (Geoprobe)

Sampling Method 1" x 2' acetate liner

Total Depth 16 feet

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone:- In Spoon:- Headspace:- 0.0	At least 14"	0-14": Light brown to gray, medium to coarse, poorly sorted, moist loose, silty sand with gravel. Color grades from light grayish brown (0') to gray (7-14"). 14-24": Not recovered.
2'			0.0	~12"	0-12": No recovery 12-24": Auto-fluff (foam, plywood, plastic frags., textile frags.), mixed with dark grey silty sand, moist, loose
4'			0.0	~12"	0-12": No recovery 12-24": Auto-fluff (frags of foam, plywood, metal, plastic, rubber), wires, mixed w/dark grey, silty sand, moist loose. The 22-24" interval had dark, oily appearance and petroleum odor.
6'			0.0	~18"	<del>0-2": Auto fluff - frags of J.D.</del> 0-2": Dark grey, oily-appearing wood fibers (sawdust). Has petroleum odor. Wet, loose. 2-18": Brown, fibrous (wood), sawdust
8'			0.0	~12" J.D.	0-6": Dark greenish gray fibers. Wet, loose. With a few long (lin.) brown, wood slivers. 6-12": Light brown fibers. Wet, loose. With a few wood slivers visible.
10'					

} wood

Geologist's Signature Joe Depner Date 01/08/02 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 2



Soil Stratigraphy Field Log

Location ID SRI-20  
 Facility PSC Tacoma  
 Project SRI II

Date 01/08/02

Field Geologist  
Joe Depner

Location Type: temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method  
Direct-Push (Geoprobe)

Sampling Method  
1" x 2' Acetate Liner

Total Depth  
16 feet

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			0.0	24"	Breathing Zone: In-situ: Headspace: 0-6": Grayish-brown, fine, wet, loose, wood fibers. 6-10": Light brown, medium, wet, loose, wood fibers. 10-24": Light brown, coarse (1 in) wet, loose, wood fragments (chunks/chips)
12'			0.0	~14"	0-7": Greyish-brown, wet, loose, wood fibers, up to about 0.5 inch long. 7-8": Grey clay, well sorted, fine, wet, loose, med. plasticity. 8-14": Dark grey, med. to coarse, poorly sorted silty sand, wet, loose, with white specks and red specks scattered throughout.
14'				~24"	0-10": Dark grey, med to coarse, poorly sorted silty sand, wet, loose, with white and red specks throughout. 10-12": Gray wood chips and fibers, wet. Some large chunks (~1 in dia.). 12-24": Grey, fine, well sorted, wet, loose clay. Highly plastic. With occasional wood fragments.
16'					

Geologist's Signature Joe Depner Date 01/08/02 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 2 of 2



Soil Stratigraphy Field Log

Location ID SRI-20  
 Facility PSC Tacoma  
 Project SRI II

Date 01/08/02

Field Geologist  
Joe Depner

Location Type: temporary  
 Soil Boring Only  Wall  Test Pit

Drilling Method  
Direct-Push (Geoprobe)

Sampling Method  
1" x 2' Acetate Liner

Total Depth  
16 feet

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			0.0	24"	0-6": Grayish-brown, fine, wet, loose, wood fibers. 6-10": Light brown, medium, wet, loose, wood fibers. 10-24": Light brown, coarse (1 in) wet, loose, wood fragments (chunks/chips)
12'			0.0	~14"	0-7": Greyish-brown, wet, loose, wood fibers, up to about 0.5 inch long. 7-8": Grey clay, well sorted, fine, wet, loose, med. plasticity. 8-14": Dark grey, med. to coarse, poorly sorted silty sand, wet, loose, with white specks and red specks scattered throughout.
14'				~24"	0-10": Dark grey, med to coarse, poorly sorted silty sand, wet, loose, with white and red specks throughout. 10-12": Gray wood chips and fibers, wet. Some large chunks (~1 in dia.). 12-24": Grey, fine, well sorted, wet, loose clay. Highly plastic. With occasional wood fragments.
16'					

Geologist's Signature Joe Depner Date 01/08/02 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 2 of 2



Soil Stratigraphy Field Log

Location ID SRI-20D  
 Facility Taloma  
 Project Taloma SRI-II

Date 9/10/02

Field Geologist Corey Johnson

Location Type: Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method 4.25-in  
bequa thru TSA

Sampling Method 4' x 2" acetate liner

Total Depth 34'

16'  
18'  
22'  
26'  
30'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'				24"	<del>0-24"</del> 0-24" ml olive gray, fine silt, very well sorted, moist, soft - medium stiff, organic roots from 0-12" (very small)
				48"	0-48" ml olive gray, fine silt with some fine sands, well sorted, moist, sand increasing with depth, soft
				48"	0-48" ml olive gray, fine silt with increasing fine sands with depth, well sorted, soft,
				44"	0-10" ml olive gray, fine silt and fine sand, medium sorted, wet, very soft/wet 10-44" SM Dark gray, fine sand with some silt, medium sorted, shell fragments from 20-30", becoming moist, decreasing silt with depth, red grains of fine sand throughout.

Geologist's Signature [Signature] Date 9/10/02 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg \_\_\_\_\_ of \_\_\_\_\_



Soil Stratigraphy Field Log

Location ID SRI-20D  
 Facility Tacoma  
 Project Tacoma SRI-II

Date 1/10/02

Field Geologist Lorey Johnson

Location Type: Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method 4.25-in  
beeprobe thru ITSA

Sampling Method 4' x 2" acetate liner

Total Depth 34'

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

16'  
18'  
22'  
26'  
30'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'				24"	0-24" ml olive gray, fine silt, very well sorted, moist, soft - medium stiff, organic roots from 0-12" (very small)
				48"	0-48" ml olive gray, fine silt with some fine sands, well sorted, moist, sand increasing with depth, soft
				48"	0-48" ml olive gray, fine silt with increasing fine sands with depth, well sorted, soft,
				44"	0-10" ml olive gray, fine silt and fine sand, medium sorted, wet, very soft/wet 10-44" SW Dark gray, fine sand with some silt, medium sorted, shell fragments from 20-30", becoming moist, decreasing silt with depth, red grains of fine sand throughout.

Geologist's Signature [Signature] Date 1/10/02 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg \_\_\_\_\_ of \_\_\_\_\_





Soil Stratigraphy Field Log

Location ID SAI-70 D  
Facility Taconic  
Project Taconic SAI-II

Date 11/10/02

Field Geologist Corey Johnson

Location Type:  Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method geoprobe thru 4.75-in HSA

Sampling Method 4' x 2" acetate liner

Total Depth 34'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'				48"	SP 0-48" SP, DARK Gray, medium sand, very well sorted, moist, medium dense, red grains through-out, ML silt lense at 43-45"

30'  
34'

Geologist's Signature [Signature] Date 11/10/02 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg \_\_\_\_\_ of \_\_\_\_\_





Soil Stratigraphy Field Log

Location ID SRI-21  
 Facility Taloma  
 Project Taloma SRI-II

Date 11/14/02

Field Geologist Cory Johnson

Location Type: Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method beeprobe

Sampling Method 2' x 1" Acetate liner

Total Depth 12'

0

2'

4'

6'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			0.0	24"	0-4" 6W olive gray, medium sand with fine and coarse grain sands with fine and coarse gravel, very poorly sorted, dry, loose, 4-11" 6W, olive gray/light gray mix, medium sand with some fine gravel, poorly sorted, loose, dry 11-24" SP olive greenish gray, medium sands with few fine sands, moderately well sorted, loose, moist,
			0.0	20"	0-16" SM medium sand with some fine sand and few silt, few coarse gravel, moderately sorted, loose, moist 16-20" SM, olive black/brownish black mix, fine and medium sands with few silt, moderately sorted, loose, moist
			0.0	4"	0-4" SM olive black, medium and fine sand with some silt, Auto fluff, wood debris stuck in shoe, poorly sorted, loose, moist, small spongy material
			0.0	4"	0-4" SM olive gray/Brownish Black mix, fine sand with some silt, wood throughout, plastic,

Geologist's Signature [Signature] Date 11/14/02 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 2





Soil Stratigraphy Field Log

Location ID SAI ~~0221~~ 22  
 Facility TALOMA  
 Project S

Date 1/7/02

Field Geologist Corey Johnson

Location Type: Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method geoprobe

Sampling Method 1" x 2' acetate liner

Total Depth 12'

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'			0.0 In-Spoon: Headspace: 0.0	22"	0-9" SW light olive gray, poorly sorted, med and large grain sands with fine and coarse gravel, moist, loose 9-22" SW, Dark grey to medium dark gray, medium to large grain sands, moist, loose, Several large pieces of gravel, pieces of wood from 20-22" approx 1x1"
2'			1.3 0.0	18"	0-6" SW greenish black, medium sorted, medium sand with some fines, moist, loose 6-11" SP Black, medium to well sorted, mostly fine sand with few <sup>st</sup> some medium sands and fines. moist, loose 11-12" piece of grayish red sponge. probably Auto fluff. 12-18" <del>st</del> Small pieces of wood, greenish gray, no soil, shredded to 1" pieces.
4'			2.4	14"	0-4" Shredded wood with oily sheen, smelly. 4-14' Solid wood core, very smelly, dark gray with oily sheen
6'					No Recovery
8'					No Recovery
10'					No Recovery

Geologist's Signature [Signature] Date 1/7/02 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of \_\_\_\_\_

John Dolan (Driver) believes poor recovery due to sample falling out of liner.



Soil Stratigraphy Field Log

Location ID SPI-22  
Facility Taloma  
Project Taloma SPI-22

Date 1/11/02

Field Geologist Corey Johnson

Location Type: Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe

Sampling Method 4' x 2" Acetate liner

Total Depth 10'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace:  0.0	8"	0-8" grayish black/black wood debris, shreds and chips. Auto stuff with elastoidal wires in sample shoe
6'					
10'					

Geologist's Signature [Signature] Date 1/11/02 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1



Soil Stratigraphy Field Log

Location ID SRI-22D  
 Facility TALOM4  
 Project SRI-II

Date 1/15/02

Field Geologist COREY JOHNSON

Location Type: Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe thru 4.25" in HSA

Sampling Method 2' x 2" Acetate liner

Total Depth 30'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
14' 0.0'			Breathing Zone: In-Spoon: Headspace: 0.0	46"	0-26" ml Olive Black, silt with few fine sand, very well sorted, soft moist, 26-31" ml Olive Black silt with some fine sand, wet-very wet, moderately sorted - well sorted, very soft 31-46" ml Olive Black, silt with few fine sand, very well sorted, medium stiff, moist
18' 0.0'				36"	0-12" SW Grayish Black, fine and medium sands with some fines, moist to wet, moderately sorted, medium dense, 12-18" sm Olive gray, <del>fine sand with</del> silt with fine sands, well sorted, stiff, moist 18-33" ml olive Black, silt with some fine sand, very well sorted well-very well sorted, moist, medium stiff. 33-36" SW, grayish black, fine and medium sands with few fines, moderately sorted, medium dense, moist, red grains
22' 0.0'				44"	0-19" SW, grayish Black, fine and medium fine sands with few fines, moderately sorted, medium dense, moist to wet, red grains, small interbedded stringers of ml silt.

Geologist's Signature [Signature] Date 1/15/02 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 2

14-18' Sand in shoe.  
 18-22' 18-19' interval not recovered



Soil Stratigraphy Field Log

Location ID SRI-22D  
 Facility Talonia  
 Project Talonia SRI-II

Date 1/15/02

Field Geologist Coley Johnson

Location Type: Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method auger thru 4.25 in HSA

Sampling Method 4' x 2" Acetate liners

Total Depth 30'

22 cont.

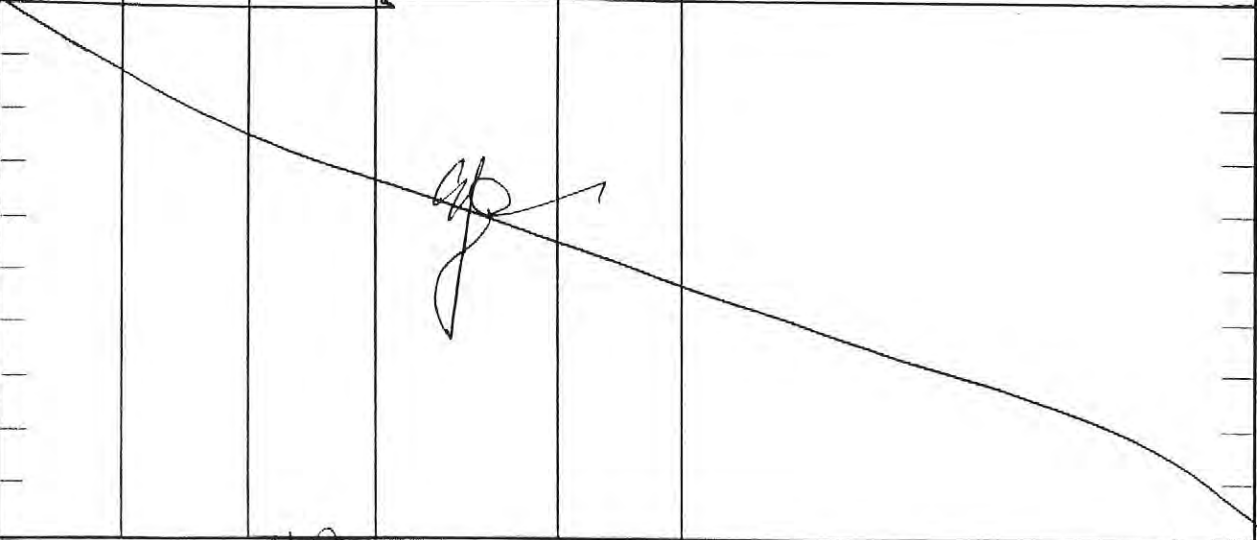
Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
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0.0'				44"	19-28" SW olive gray - silt with fine sand, moderately sorted, small shells, moist, medium stiff to stiff, 28-44" increasing sand with depth SW, grayish black, fine and medium fine sand with few fines, moderately sorted, medium dense, wet, red grains throughout
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26'

			0.0	45"	0-45" SW, grayish black, fine and medium sand with few fines, moderately sorted, medium dense, moist to wet, red grains throughout, few white medium and coarse grain sands from 32-45"
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30'



Geologist's Signature

Date 1/15/02

Reviewer \_\_\_\_\_

Date \_\_\_\_\_

Pg 2 of 2





Soil Stratigraphy Field Log

Location ID SRI-23  
 Facility PSC Tacoma  
 Project SRI II

Date 01/08/02

Field Geologist  
Joe Depner

Location Type: temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method  
Direct-Push (Geoprobe)

Sampling Method  
1" x 2' acetate liner

Total Depth  
15 feet

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, Indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: 0.0 Headspace:	12	0-12": SW greyish brown, coarse, poorly sorted, moist, loose, w/occasional pebbles. 12-24": no recovery
2'			0.0	18	0-6": no recovery 6"-15": lt. brown, coarse, poorly sorted, moist, loose, sand 15-18": gray, coarse, poorly sorted, moist, loose, sand with occasional pebbles 18-19": white, coarse, moist, fine, crumbly, (lime waste) 19-24": dark brownish-grey, medium grained, moderately sorted, sand with some silt, moist.
4'			0.0	24	0-4": gray, medium sand w/silt, poorly sorted, moist, loose. 4-5": gray fibers (textile?) mixed w/some material as 0-4". 5-17": dark grey, silt w/clay, low to med plasticity, moist, well sorted. 17-24": dark greyish-brown, well sorted, moist, wood chips and fibers, loose, grading to dark reddish brown wood chips and fibers.
6'			0.0	14	0-14": reddish-brown wood chips and fibers, size varies - up to one inch, moist. About midpt of liner: 2 inches of fibers/chips mixed with grayish, medium sand/silt, moist, loose.
8'					

Geologist's Signature Joe Depner Date 01/08/02 Reviewer [Signature] Date 01/08/02 Pg 1 of 2

For 0-2' : 0-12" recovered; 12-24" not recovered.  
 2-4' : 0-6" not recovered; 6-24" recovered.  
 4-6' : 0-24" recovered.  
 6-8' : [0-20" : 8" recovered] [20-24" : refusal - no recovery] 1st attempt  
 6-8' : [14" recovered] 2nd attempt



Soil Stratigraphy Field Log

Location ID SRI-23  
 Facility PSC Tacoma  
 Project SRI II

Date 01/08/02

Field Geologist  
Joe Depner

Location Type: temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method  
Direct-Push (Geoprobe)

Sampling Method  
1" x 2" acetate liner

Total Depth  
15 feet

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
8'			0.0	14	0-10": reddish brown, moist, loose, wood chips. 10-14": light brown/tan wood chunks ~ 1", wet, with some grey silt and aromatic odor.
10'					Sample from 10-12' was submitted to lab for geotechnical analyses. Two additional sampling attempts met refusal. No sample available for geologic logging.
12'			0.0	8	0-2": dark grey, med. to coarse sand, moderately sorted, moist, loose 2-4": grey, fine grained, well sorted, moist loose silt, low plasticity. 4-8": dark grey, coarse grained, poorly sorted, moist, loose, silty sand, with white specks (sand grains or shell frags.)
13'			0.0	16	0-3": grey to dark grey, med to coarse sand, moderately to poorly sorted, silty, wet, loose, sand 3"-5": light grey, fine, well sorted, wet, loose, silt with few white, sand grain-size particles. 5-8": grey, fine to med., poorly to med. sorted, silty sand, wet, loose 8-13": grey, med. to coarse, poorly sorted silty sand, wet, loose, with white specks 13-16": Olive to dark grey, fine, well sorted, wet, loose, silt with clay and plant fibers.
15'					

Same Excuse for your shortcomings Depner!

Geologist's Signature Joe Depner Date 01/08/02 Reviewer [Signature] Date 1/8/02 Pg 2 of 2

For 8-10': 14" recovered.  
 10-12': at least 18" recovered.  
 12-13': 8" recovered  
 13-15': 16" recovered



Soil Stratigraphy Field Log

Location ID SRE-23D  
 Facility TACOMA  
 Project Tacoma SAE-23D

Date 1/10/02

Field Geologist  
Corey Johnson

Location Type: Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method  
60 probe thru 4.25" in HSA

Sampling Method  
4' x 2" acetate liner

Total Depth  
32'

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

16'  
20'  
24'  
28'  
32'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (Inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'	Geotechnical SAE-23D-S-18-20-0102			38"	0-20" ml Olive Gray, silt with increasing fine sands, with depth, moist, loose, moderately sorted 20-38" same as above 16-20 0-20" except fines decreasing with depth.
	Geotechnical SAE-23D-S-20-21-0102			38"	0-24" ml olive gray, silt with few fine sands, well sorted, moist, medium stiff, 24-38" subgrayish black, fine and medium sand with some fines, wet, loose, poorly sorted, red and white grains of sand.
	Geotechnical SAE-23D-S-25-26.5-0102			40"	0-40" sm grayish black, fine and medium sand with few fines, wet, loose, moderately sorted, red and white grains of sand.
				36"	0-28" sm black sand with of medium and fine sand with patches of olive gray sandy silt, moist to wet, loose, poorly sorted, 28-36" ml olive gray silt, soft, moist to wet, well sorted.

Geologist's Signature [Signature] Date 1/10/02 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1



Soil Stratigraphy Field Log

Location ID SRI-24  
 Facility Tacoma  
 Project Tacoma SRI-II

Date 11/9/02

Field Geologist  
COREY JOHNSON

Location Type: Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method  
geoprobe

Sampling Method  
2' x 1" acetate liner

Total Depth  
12'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			0.0 bas 0.0	24"	0-4" <u>6W</u> light olive gray, med - coarse sand with gravel and cobbles, moist - Dry, loose, poorly sorted 4-6" <u>SP</u> light olive brown, mostly fine sand with some medium, dry, loose, well sorted 6-8.5" <u>SP</u> pale brown, mostly fine sand with few medium, dry, loose, well sorted - very well sorted. 8.5"-22" <u>SP</u> , light gray, fine sand with few medium, dry, loose, well sorted 22-24" <u>SP</u> Dusty yellow green with some black throughout, fine sand, very well sorted, dry, loose,
			0.0 bas	20"	0-10" <u>SM</u> Dusty yellow green, fine sand with trace silt, very well sorted, moist, loose 10-18" <u>SM</u> , Dark yellow orange with streaks of moderate brown, fine sand with few silty fines, moist, loose 18-20" same as 2-4' 0-10"

Geologist's Signature

Date 11/9/02

Reviewer \_\_\_\_\_

Date \_\_\_\_\_

Pg 1 of 2



Soil Stratigraphy Field Log

Location ID SRI-24  
 Facility TALCOM4  
 Project TALCOM4 SRI-TT

Date 1/9/02

Field Geologist Corey Johnson

Location Type: Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe

Sampling Method 2' x 1" acetate liner

Total Depth 12'

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

4'  
6'  
8'  
10'  
12'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'			0.0	8"	0-4" Silty Dusty Yellow Green, fine sand with trace silt, very well sorted, moist, loose 4-8" Yellowish orange and olive black bark and wood chips.
			0.0	16"	brownish black wood debris moist, mostly small pieces of pieces with some 1/2" chunks
			0.0	22"	black, very wet and soupy woody debris. small pieces.
			0.0	24"	0-24" OL, olive gray, fine silt, very well sorted, medium plasticity, medium stiff, organic debris throughout (small plant roots. wood from 10-12"

Geologist's Signature [Signature]

Date 1/9/02

Reviewer \_\_\_\_\_

Date \_\_\_\_\_

Pg 2 of 2



Soil Stratigraphy Field Log

Location ID SRI-25  
 Facility Tucson  
 Project SRI-II

Date 1/9/02

Field Geologist Corey Johnson

Location Type: Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe

Sampling Method 2" x 4' Acetate lined

Total Depth 12'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (Inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			Breathing Zone: In-Spoon: Headspace: 0.0  bag-0.0	22"	0-6" SW greenish gray, medium sand with some small cobbles, some coarse sand, poorly sorted, loose, moist 6-10" Sp. black, medium sand with several cobbles, medium well sorted, loose, moist, smells like asphalt. 10-22" SW, greenish gray, med & coarse sands with cobbles poorly sorted, loose, moist, 1 piece of sponge material approx 1"x1" (probably Auto float)
2'			0.0 bag 0.0	18"	0-3" SW grayish brown, medium and coarse sands, loose, dry, med. - poorly sorted 3-18" SW grayish brown with grayish black mixed throughout, medium sand with some coarse, medium-well sorted, loose, moist, some cobbles last 4, 6".
4'			0.0	12"	0-9" BW grayish black, medium and coarse sand with gravels and cobbles, poorly sorted, moist becoming wet at 4", loose 9-12" Wood debris,

Geologist's Signature [Signature] Date 1/9/02 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 2

2'-4' recovery from 2'-3.5'



Soil Stratigraphy Field Log

Location ID SRI-25  
Facility Taconic  
Project Taconic SRI-II  
Location Type: Temporary  
 Soil Boring Only  Well  Test Pit

Date 11/9/02  
Field Geologist Carey Johnson

Drilling Method geoprobe  
Sampling Method 4' x 2" acetate liner  
Total Depth 12'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
6'	0.0'		0.0	10"	0-10" Dark wood debris, wet, 3 pieces of brick
10'			0.0	12"	0-12" OH olive gray, very fine, very well sorted, medium stiff, moist, medium-high plasticity, organic debris throughout (roots, wood, very small)
12'					

Geologist's Signature [Signature] Date 11/9/02 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 2 of 2

6-10' Driller Bill Moyer says sample is from different sections of entire interval  
10-12' silt at 11'



Soil Stratigraphy Field Log

Location ID Talcom 9  
 Facility SRI-25D  
 Project Talcom SRI-II

Date 1/11/02

Field Geologist Covey Johnson

Location Type: Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method becprobe thru 4.25 in HSA

Sampling Method 4"x2" Acetate liner

Total Depth 28'

Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.

12'  
16'  
20'  
24'  
28'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description
0.0'	beotechnical SRI-25D-S-14-16-0102			48"	0-48" ML olive black, silt with some fine sand, well sorted, medium soft, moist, organic debris (small roots)
	beotechnical SRI-25D-S-17-19-0102			48"	0-36" ML olive black silt with some fine sand, well sorted, soft, wet, 36-48" SM Dark gray, fine sand with some medium sand and some fines, moderately sorted, wet, loose
	beotechnical SRI-25D-S-21-22.5-0102			38"	0-12" SM Dark gray, fine and medium sand, red grains, loose, moderately sorted, wet 21-38" same as above 20-24' 0-12" with ml silt increasing with depth,
				42"	0-8" SM Dark gray, fine sand with some medium sand, some ml silt increasing with depth, wet increasing to very wet, soupy & loose, poorly sorted 8-36" SM/ML 50/50 fine sand silt mix, medium stiff, moist, moderately to poorly sorted, 36-42" same as (24-28', 8-36") except increasing sand with depth.

Geologist's Signature [Signature] Date 1/11/02 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1





Soil Stratigraphy Field Log

Location ID SRI-32/32D  
 Facility Tacomq  
 Project SRI-II

Date 03 Feb 2002

Field Geologist Joe Depner

Location Type: temp.  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct-Push (Geoprobe)

Sampling Method acetate liner

Total Depth 29'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'				48"	<p>Breathing Zone: In-Spoon: Headspace:</p> <p>0-8": SM. Silty sand. (Fine to med. sand, with silt) Well mixed - poorly sorted. Moist. Moderately to highly compacted. Stems and rootlets throughout. Dark grayish brown.</p> <p>8"-40": SW, Medium-grained sand. Well sorted. Grayish brown. Moderately compacted. No roots visible. Moist</p> <p>40-48": Rust and gray-brown colored silt with <del>coarse</del> <sup>medium</sup> brown, poorly sorted sand mixed in. Moderately to highly compacted. ML? SC?</p>
4.0'				36"	<p>0-16": Gray-brown, <sup>medium</sup> <del>coarse</del> well-sorted sand, SP. Wet. Moderately compacted. Red fragments scattered throughout.</p> <p>16-36": SW. Dark gray, medium-grained well-sorted sand. Numerous white shell fragments (&lt; 0.25 in.) and red particles. Moderately compacted. Wet.</p>
8.0'				36"	<p>0-12": No recovery. Driller says sand was too soupy to collect in sampler.</p> <p>12-20": Medium-Sand (SW), well-sorted, dark gray, Wet, mod. compacted, red particles and white shell frags throughout. Grading to SM - silty med. sand, dark gray, poorly sorted, wet, mod. compact, red particles and white frags. throughout. Fragments of plant stalks/stems, up to 1.5 inches long.</p>

Geologist's Signature Joe Depner Date 2/3/02 Reviewer [Signature] Date 2/5/02 Pg 1 of 3



Soil Stratigraphy Field Log

Location ID SRI-32/320  
 Facility Tacoma  
 Project SRI-II

Date 03 Feb 2002

Field Geologist Joe Depner

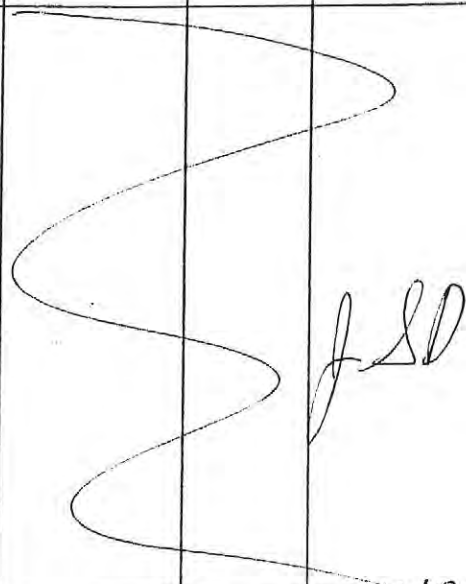
Location Type:  
 Soil Boring Only  Well  Test Pit

Drilling Method Direct-Push (Geoprobe)

Sampling Method acetate liner

Total Depth 29'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0' 24'			Breathing Zone: In-Spoon: Headspace:	40"	0-8" - no recovery 8-42": SP. Dark gray, medium, well sorted sand, Wet, loose to moderately compact. Numerous red particles and light (white?) shell fragments scattered throughout. 42-48": ML, Gray silt. Fine. Well sorted, Wet. Moderately compact. One large shell present (~0.75 in.) with iridescent sheen.
28'				12"	0-12": ML, Gray silt. Fine. Well sorted. Wet. Moderately compact. Low plasticity. Large (~0.5-in) shell fragments scattered throughout. Some plant stalks present (grass?).
29'					



Geologist's Signature Joe Depner Date 2/3/02 Reviewer [Signature] Date 2/5/02 Pg 3 of 3

26-27' - Geotech. sample of sand. In acetate liner.



Soil Stratigraphy Field Log

Location ID SRI-33D  
Facility TACOMA  
Project TACOMA SRI-II

Date 2/2/02

Field Geologist Corey Johnson

Location Type: Temporary  
 Soil Boring Only  Well  Test Pit

Drilling Method Geoprobe thru 4.25 HSA

Sampling Method 2" x 4" Acetate lined

Total Depth 24'

12'  
16'  
20'  
24'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
0.0'			0.0	46"	0-43" ml olive gray, silt with few fine sand, very well sorted, moist to wet, soft, low plasticity 43-46" sm, olive gray/dark gray, sandy silt, ml silt with 30% fine sand, moderately well sorted, moist to wet, soft to medium dense
			0.0	40"	0-13" sm, olive gray/dark gray, silty sand, fine grain sand with 20% ml silt, moderately sorted, medium dense, wet 13-40" sm, olive grayish black, fine and medium sands with few fines, moderately sorted, wet, medium dense, fines increasing to 20% at 33"-40"
			0.0	37"	0-37" sm, grayish black, fine sand with some medium sand, medium grains increasing with depth, moderately sorted, wet, medium dense to dense, red and white fine and medium grains throughout.

Geologist's Signature [Signature] Date 2/2/02 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1

16-20' sample is 16-19'



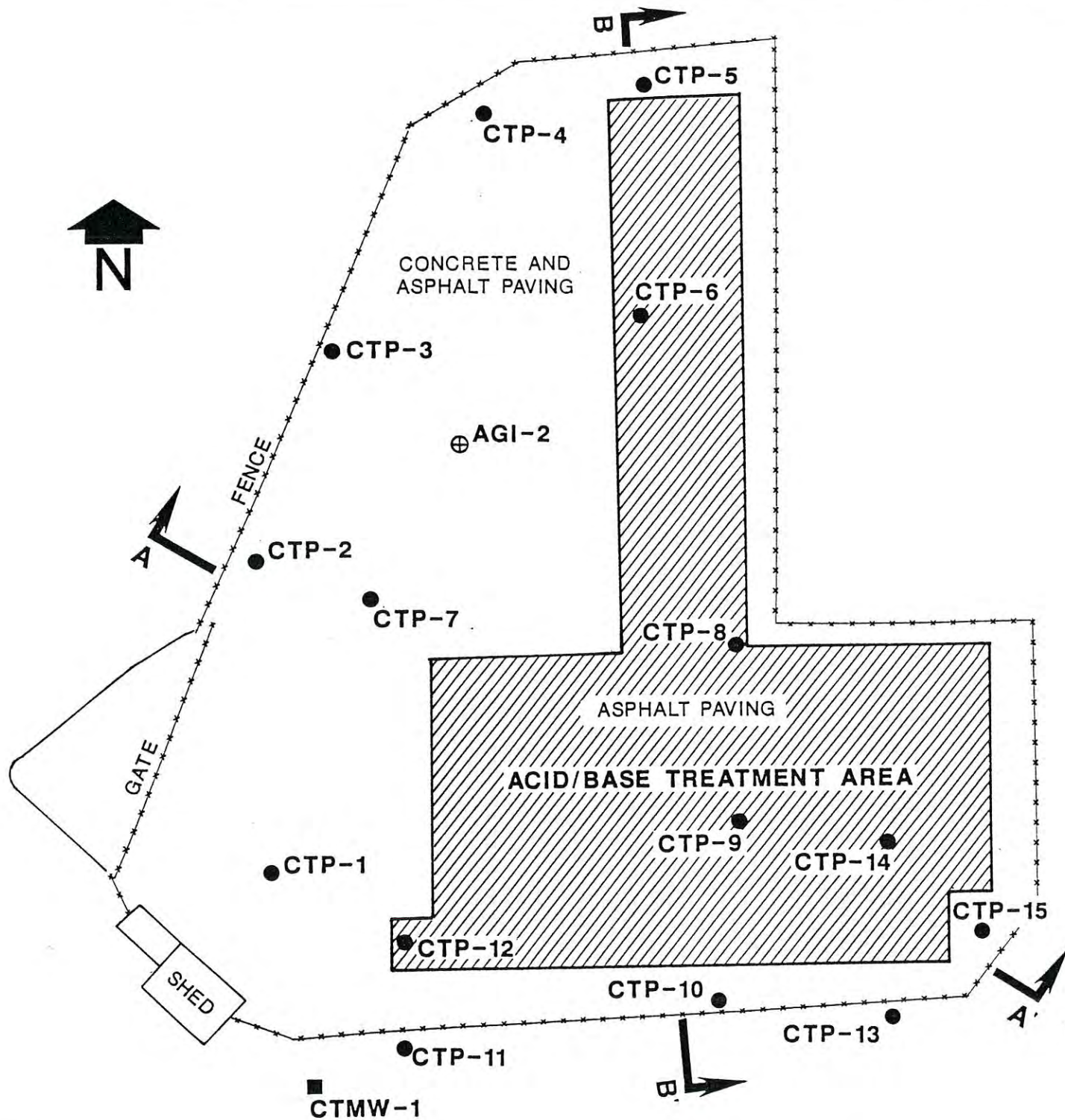
Soil Stratigraphy Field Log

Location ID SRI-34D  
 Facility TALONG  
 Project TALONG SRI-II

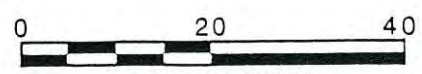
Date 2/2/02 Field Geologist Corey Johnson Location Type: Temporary  
 Soil Boring Only  Well  Test Pit  
 Drilling Method Geoprobe thru 4.25 in HST Sampling Method 2" x 4' Acetate liner Total Depth 26'

Depth of Sample (ft bgs)	Sample ID	Blow Counts (per 6")	Total Organics (ppm)	Sample Recovery (inches)	Geological Description: Sample Interval, Unified Soil Class ID, Munsell Color, grain size, sorting, moisture, compaction, indication of contaminants (odor or sheen), and general stratigraphic description.
10'	0.0'		0.0	38"	0-32" ml olive gray, silt with few fine sand, <del>very</del> well sorted, moist, medium stiff, Dark gray streaks 0-6", organic debris from 8-19" 32-38" sm olive black, fine sand with ml silt mix, moderately sorted, moist, medium dense, red fine grain sands
14'			0.0	46"	0-31" ml olive gray, silt with very few fine sand, soft, very well sorted; 31-46" sm olive gray, sandy silt, ml silt with fine sands increasing with depth, wet, soft, moderately sorted
18'			0.0	40"	0-40" sm olive black, fine sand with few fines, medium sand increasing with depth, moderately sorted, wet, medium dense, red fine grains throughout, white fine grains throughout
22'			0.0	43"	0-43" sm olive black, fine sand with some medium sand, few fines, moderately sorted, wet, medium dense, ml silt smeared on sample at 37-41", coarse grain sand from 39-43"
26'					

Geologist's Signature [Signature] Date 2/2/02 Reviewer \_\_\_\_\_ Date \_\_\_\_\_ Pg 1 of 1



LEGEND





Sweet, Edwards & Associates, Inc.

# BORING LOG

PROJECT NAME Chempro - Phase II Tacoma, WA

PROJECT NUMBER S9403.02 BORING NUMBER CTP 1A & 1B

DATE OF BORING 9/30/87

DRILLING CONTRACTOR/ GEOLOGISTS Tacoma Pump and Drilling PFD/BAB

DEPTH (FEET)	BORING A SAMPLE DATA			BORING B SAMPLE DATA					SYMBOL	SOIL AND ROCK DESCRIPTION AND COMMENTS	WATER TABLE
	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	INTERVAL SAMPLED FOR GEOCHEMISTRY	SAMPLE #			
0 - 1										0-.45' <u>CONCRETE</u>	
1 - 2	9	18	2 1/2"	11	17	3"	← VOA	1B-1	80 SW	.45-2.95' <u>GRAVELLY SAND (Fill)</u> Light olive gray to olive brown, moist, odorless. Medium sand, trace fines, trace to some gravel decreasing with depth.	
2 - 3	15	55		39	23					2.95-3.5' <u>AUTO DEBRIS/SAND (Fill)</u> Dark gray brown, oily, dense. Fine sand intermixed with rubber, wire, glass, cloth.	
3 - 4	7		2 1/2"	20		3"				3.5-6.95' <u>SAND (Fill)</u> Dark gray brown, fine to medium, trace silt, loose. Some auto debris. Very oily, increasing with depth. Strong odor.	
4 - 5	3		2"	7		3"			SP		
5 - 6	4			7							





PROJECT NAME Chempro - Phase II Tacoma, WA.

PROJECT NUMBER S9403.02 BORING NUMBER CTP-3A & 3B

DATE OF BORING 9/29/87

DRILLING CONTRACTOR/ GEOLOGISTS Tacoma Pump and Drilling PFD/BAB

DEPTH (FEET)	BORING A SAMPLE DATA			BORING B SAMPLE DATA					SYMBOL	SOIL AND ROCK DESCRIPTION AND COMMENTS	WATER TABLE
	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	INTERVAL SAMPLED FOR GEOCHEMISTRY	SAMPLE #			
0										0-.3 ASPHALT	
1		11			12					SW .3-1.1' GRAVELLY SAND (Fill) Olive brown, fine to medium, some medium gravel, trace silt. Dry.	
2		13	2 1/2"		50	3"				3B-1 1.1-1.7' AUTO DEBRIS/SAND (Fill) Dark gray brown, fine sand intermixed with glass, wire foam rubber, plastic. Moist.	
3		19			28					SM 1.7-2.6' SILTY SAND (Fill) Dark gray brown, fine, some silt. Odorless. Moist.	
4		12			15	3"				3B-2 2.6-6.75' SAND (Fill) Dark gray brown, fine to medium, trace silt. Slight oil odor and color, increasing with depth. Sporadic silty sand lenses.	
5		18	2 1/2"		19						
6		27			20						
7		15	2"		14	3"				3B-3 SP	
8		6			12						
9		5			8						
10		4									
11		6	2"								
12		6									
13		7									
B.O.H. = 6.75'											

Ø - DIAMETER OF SPLIT-BARREL





Sweet, Edwards & Associates, Inc.

# BORING LOG

PROJECT NAME Chempro - Phase II Tacoma, WA.  
 PROJECT NUMBER S9403.02 BORING NUMBER CTP-4A, 4B & 4C  
 DATE OF BORING 9/29/87  
 DRILLING CONTRACTOR/ GEOLOGISTS Tacoma Pump and Drilling PFD/BAB

DEPTH (FEET)	BORING A SAMPLE DATA			BORING B SAMPLE DATA				SYMBOL	SOIL AND ROCK DESCRIPTION AND COMMENTS	WATER TABLE
	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	INTERVAL SAMPLED FOR GEOCHEMISTRY			
0									0-.8' <u>CONCRETE</u>	
1									.8-1.1' <u>ASPHALT</u>	
								GP	1.1-1.3' <u>GRAVEL (Fill)</u>	
	7			4				SW	1.3-2.45' <u>GRAVELLY SAND (Fill)</u> Light olive brown, fine to medium, some coarse gravels, trace silt. Moderately dense, moist.	
2	30		2 1/2"	9		3"	VOA	4C-1		
	20		2 1/2"	13				SM	2.45-2.8' <u>SILTY SAND (Fill)</u> Dark gray brown, fine, trace to some silt. Moist. Slight odor.	
3	50			20		3"	VOA	4B-1	2.8-4.3' <u>LIME CEMENT (Fill)</u> Light gray, very fine grained, powdery to granular. Soft, dense, dry.	
	6			12				4B-2		
4	7			8			VOA			
	3							4B-3	4.3-7.3' <u>SAND (Fill)</u> Dark gray brown, fine to medium, trace silt. Trace scattered shell fragments. Loose, odorless, moist to wet.	
5	2		2"	NA		3"	VOA			
	2							SP		
6	3		2"							
	9									
7	12									

Ø = DIAMETER OF SPLIT-BARREL



PROJECT NAME Chempro - Phase II Tacoma, WA.

PROJECT NUMBER S9403.02 BORING NUMBER CTP 5A & 5B

DATE OF BORING 9/29/87

DRILLING CONTRACTOR/ GEOLOGISTS Tacoma Pump and Drilling PFD/BAB

DEPTH (FEET)	BORING A SAMPLE DATA			BORING B SAMPLE DATA					SYMBOL	SOIL AND ROCK DESCRIPTION AND COMMENTS	WATER TABLE
	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	INTERVAL SAMPLED FOR GEOCHEMISTRY	SAMPLE #			
0										0-.25' ASPHALT	
1		7			8					.25-1.75' SAND (Fill) Olive brown, fine to medium, trace silt. Moderately dense, odorless, moist.	
		11			9				5B-1		
2		20	2 1/2"		31	3"				1.75-3.9' SILT SAND (Fill) Dark gray brown, fine. Oily from 2.35-4.9'. Strong odor.	
		18			14				5B-2		
3		22	2 1/2"		22	3"				3.9-6.75' SAND (Fill) Dark gray brown, fine to medium, trace silt. Scattered sandy silt lenses. Trace shell fragments throughout. Odorless. Moist to wet.	
		21			28				5B-3		
4		5			39					3.9-6.75' SAND (Fill) Dark gray brown, fine to medium, trace silt. Scattered sandy silt lenses. Trace shell fragments throughout. Odorless. Moist to wet.	
		6	2"		8	3"					
5		7			11				SP		
6		3								B.O.H. = 6.75'	▽
		7	2"								
7		10									



PROJECT NAME Chempro - Phase II Tacoma, WA.  
 PROJECT NUMBER S9403.02 BORING NUMBER CTP-6A & 6B  
 DATE OF BORING 9/25/87  
 DRILLING CONTRACTOR/ GEOLOGISTS Tacoma Pump and Drilling PFD/BAR

DEPTH (FEET)	BORING A SAMPLE DATA			BORING B SAMPLE DATA					SYMBOL	SOIL AND ROCK DESCRIPTION AND COMMENTS	WATER TABLE
	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	INTERVAL SAMPLED FOR GEOCHEMISTRY	SAMPLE #			
1										0-.3' ASPHALT	
		5		7						.3-1.25' GRAVELLY SAND (Fill) Light olive brown, fine to medium, some medium gravel, trace fines. Loose. Moist	
2		16	2 1/2"	12	3"			6B-1		1.25-2.15' SANDY GRAVEL (Fill) Gray, some fine - medium sand, coarse gravel. Dense. Moist.	
		25		15							
3		12	2 1/2"					6B-2		2.15-2.40' GRAVELLY SAND (Fill) Light olive brown, fine - medium, some silt. Moderately dense. Slight odor.	
		18		19	3"						
4		24		18						2.4-3.7' SILTY SAND (Fill) Dark gray brown, fine-medium, some silt. Moderately dense. slight odor.	
		7	2"	8	3"			6B-3		3.7-6.8' SAND (Fill) Dark gray brown, fine to medium, trace silt. Loose slight odor, moist to wet.	
5		11		13							
		15		18							
6		8	2"								
		9									
7		12									
7										B.O.H. = 6.80'	

Ø = DIAMETER OF SPLIT-BARREL



PROJECT NAME Chempro - Phase II Tacoma, WA.  
 PROJECT NUMBER S9403.02 BORING NUMBER CTP-7A & 7B  
 DATE OF BORING 9/29/87 & 9/30/87  
 DRILLING CONTRACTOR/ GEOLOGISTS \_\_\_\_\_

DEPTH (FEET)	BORING A SAMPLE DATA			BORING B SAMPLE DATA				SAMPLE #	SYMBOL	SOIL AND ROCK DESCRIPTION AND COMMENTS	WATER TABLE
	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	INTERVAL SAMPLED FOR GEOCHEMISTRY				
0										0-.25' <u>CONCRETE</u>	
										.25-.5' <u>ASPHALT</u>	
1		9			9				7B-1	SW .5-1.4' <u>GRAVELLY SAND (Fill)</u> Light olive brown, fine to medium, trace fine gravels. Moderately dense. Moist.	
		12		2 1/2"	24	3"				GC 1.4-2.3' <u>CLAYEY GRAVEL (Fill)</u> Dark gray brown, fine, rounded gravel; trace to some fine sand. Odorless. Moist.	
2		15			21						
		8		2 1/2"	11	3"			7B-2	2.3-3.75' <u>AUTO DEBRIS/SAND (Fill)</u> Dark gray black, fine to medium sand intermixed with glass, rubber, plastic, wire, cloth. Very oily. Strong odor.	
3		10			12						
		50/4"			13						
4		3		2"	1	3"			7B-3	SP 3.75-6.6' <u>SAND (Fill)</u> Black, fine to medium, trace silt. Very oily, increasing with depth. Strong odor.	
		5			6						
5		7			8						
		4		2"							
6		5									
		9									
7											
										B.O.H. = 6.65'	▽

Ø = DIAMETER OF SPLIT-BARREL



PROJECT NAME Chempro - Phase II Tacoma, WA.

PROJECT NUMBER S9403.02 BORING NUMBER CTP-8A & CTP 8B

DATE OF BORING 9/28/87

DRILLING CONTRACTOR/ GEOLOGISTS Tacoma Pump and Drilling PFD/BAB

DEPTH (FEET)	BORING A SAMPLE DATA			BORING B SAMPLE DATA					SYMBOL	SOIL AND ROCK DESCRIPTION AND COMMENTS	WATER TABLE
	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	INTERVAL SAMPLED FOR GEOCHEMISTRY	SAMPLE #			
8		9	2"						SP	Sand - Continued	
9		19								B.O.H. = 8.2'	

Ø = DIAMETER OF SPLIT-BARREL





PROJECT NAME Chempro - Phase II Tacoma, WA.  
 PROJECT NUMBER S9403.02 BORING NUMBER CTP-10A & 10B  
 DATE OF BORING 9/28/87  
 DRILLING CONTRACTOR/ GEOLOGISTS Tacoma Pump and Drilling PFD/BAB

DEPTH (FEET)	BORING A SAMPLE DATA			BORING B SAMPLE DATA				SAMPLE #	SYMBOL	SOIL AND ROCK DESCRIPTION AND COMMENTS	WATER TABLE
	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	INTERVAL SAMPLED FOR GEOCHEMISTRY				
0										0-.3' <u>ASPHALT</u>	
1		6			5					.3-2.2' <u>GRAVELLY SAND</u> (Fill) Olive brown, fine to medium, trace to some fine to medium gravel, trace silt. CLAYEY GRAVEL lense 1.7-1.9'. Moderately dense. Moist	
		12	2½"	12	3"		← VOA	10B-1	SW		
2		12			15					20B-1	GC
3		8			16					10B-2	
		10	2½"	17	3"		← VOA	21B-2		2.2-3.1' <u>AUTO DEBRIS/SAND</u> (Fill) Black, medium sand intermixed with glass, plastic, foam rubber, wire. Medium dense, wet, oily. Strong odor.	
4		18			16					10B-3	
		8			5		← VOA	10B-3	SP	3.1-6.7' <u>SAND</u> (Fill) Black, fine to medium, moderately dense. Wet with oil. Saturated with water and oil @ 6.6'.	
		8	2"	10	3"			22B-3			
5		10			11						
		5									
		6									
6		6									
		8	2"								
7											
											▽
										B.O.H. = 6.7'	

Ø = DIAMETER OF SPLIT-BARREL



PROJECT NAME Chempro - Phase II Tacoma, WA.

PROJECT NUMBER S9403.02 BORING NUMBER CTP-11A & 11B

DATE OF BORING 9/30/87

DRILLING CONTRACTOR/ GEOLOGISTS Tacoma Pump and Drilling PFD/BAB

DEPTH (FEET)	BORING A SAMPLE DATA			BORING B SAMPLE DATA				SAMPLE #	SYMBOL	SOIL AND ROCK DESCRIPTION AND COMMENTS	WATER TABLE
	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	INTERVAL SAMPLED FOR GEOCHEMISTRY				
0-1										0-.3' <u>CONCRETE</u>	
1		10								.3-.7' <u>GRAVELLY SAND</u> (Fill) Gray, fine to medium, trace to some gravel, trace silt. Dry to moist.	
1.5		15	2 1/2"	NA	3"			11B-1		.7-2.3' <u>LIME/SAND</u> (Fill) Light gray, lime silt, trace to some fine to medium sand. Stiff. Moist.	
2		10									
2.5		15									
3		20	2 1/2"	NA	3"			11B-2		2.3-4.9' <u>AUTO DEBRIS/SAND</u> (Fill) Black, some medium sand intermixed with glass, plastic, wire, foam rubber. Moist to wet with oil. moderate odor.	
3.5		25									
4		5									
4.5		7	2"	NA	3"			11B-3			
5		16									
5.5											
6		9									
6.5		10	2"						SP	4.9-6.6' <u>SAND</u> (Fill) Dark gray brown, fine to medium, trace silt. Wet to saturated with oil, increasing towards bottom.	
7		8									
7.5		10									
7.5			2"						ML	6.6-7' <u>CLAYEY SILT</u> (Fill) Olive brown, soft. Slight product odor. Saturated.	▽
7.5									SP		

Ø = DIAMETER OF SPLIT-BARREL





PROJECT NAME Chempro - Phase II Tacoma, WA.  
 PROJECT NUMBER S9403.02 BORING NUMBER CTP-11A & 11B  
 DATE OF BORING 9/30/87  
 DRILLING CONTRACTOR/ GEOLOGISTS Tacoma Pump and Drilling PFD/BAB

DEPTH (FEET)	BORING A SAMPLE DATA			BORING B SAMPLE DATA					SYMBOL	SOIL AND ROCK DESCRIPTION AND COMMENTS	WATER TABLE
	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	INTERVAL SAMPLED FOR GEOCHEMISTRY	SAMPLE #			
8		15							SP	7-7.5' SAND (Fill) Black, fine to medium, moderately dense. Scattered shell fragments. Saturated with oil and H <sub>2</sub> O.	
		20							CL	7.5-8.05' CLAY (Fill) Olive brown, stiff. Moderate odor. Wet.	
9										B.O.H. = 8.05'	

Ø = DIAMETER OF SPLIT-BARREL



PROJECT NAME Chempro - Phase II Tacoma, WA.  
 PROJECT NUMBER S9403.02 BORING NUMBER CTP-12A CTP-12B  
 DATE OF BORING 9/25/87 & 9/28/87  
 DRILLING CONTRACTOR/ GEOLOGISTS Tacoma Pump and Drilling PFD/BAB

DEPTH (FEET)	BORING A SAMPLE DATA			BORING B SAMPLE DATA					SYMBOL	SOIL AND ROCK DESCRIPTION AND COMMENTS	WATER TABLE
	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	INTERVAL SAMPLED FOR GEOCHEMISTRY	SAMPLE #			
										0-.3' ASPHALT	
1		11			8					SW .3-2.2' GRAVELLY SAND (Fill) Light olive brown, fine to medium, fine to medium gravels, trace silt. Moderately dense. Dry to moist.	
		13	2½"		23	3"					
2		25			24					SP 2.2-2.7' SAND (Fill) Light olive brown, fine to medium. Moist.	
		11			8						
3		10	2½"		31	3"				12B-1 2.7-3.4' AUTO DEBRIS/SAND (Fill) Dark gray brown, some medium sand intermixed with glass, plastic, wire, foam rubber. Oily.	
		11			13						
4		6			1					SP 3.4-6.7' SAND (Fill) Black, fine to medium, loose. Wet to saturated with oil, increasing with depth, strong odor.	
		9	2"		1	3"					
5		10			10					12B-2 VOA	
		5									
		7	2"								
6		9									
											▽
7										B.O.H. = 6.7'	

Ø = DIAMETER OF SPLIT-BARREL



PROJECT NAME Chempro - Phase II Tacoma, WA  
 PROJECT NUMBER S9403.02 BORING NUMBER CTP-13A & 13B  
 DATE OF BORING 9/30/87  
 DRILLING CONTRACTOR/ GEOLOGISTS Tacoma Pump and Drilling PFD/BAB

DEPTH (FEET)	BORING A SAMPLE DATA			BORING B SAMPLE DATA					SYMBOL	SOIL AND ROCK DESCRIPTION AND COMMENTS	WATER TABLE
	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	INTERVAL SAMPLED FOR GEOCHEMISTRY	SAMPLE #			
0 - .6'										0-.6' ASPHALT	
1		3			13					.6-2.2' GRAVELLY SAND (Fill) Light yellow brown to olive brown @ 1.2', fine to medium, some medium gravel, trace coarse sand. Dense. Dry to moist. Odorless.	
		8	2 1/2"		14	3"	← VOA	13 B-1	SW		
2		24			20					2.2-6.5' SAND (Fill) Dark gray brown, fine to medium, trace silt, moderately dense from 2.2 - 3.3. Scattered shell fragments. Moderate oil increasing to saturated at depth. Strong odor.	
		14			20		← VOA	13 B-2			
3		19	2 1/2"		23	3"					
		21			20						
4		7	2"		10	3"			SP		
		8			11		← VOA	13 B-3			
5		9			15						
		5	2"								
6		7									
		7									
7											▽
										B.O.H. = 6.5'	

Ø = DIAMETER OF SPLIT-BARREL



PROJECT NAME Chempro - Phase II Tacoma, WA.  
 PROJECT NUMBER S9403.02 BORING NUMBER CTP-14A & 14B  
 DATE OF BORING 9/24/87  
 DRILLING CONTRACTOR/ GEOLOGISTS Tacoma Pump and Drilling PFD/BAB

DEPTH (FEET)	BORING A SAMPLE DATA			BORING B SAMPLE DATA				SAMPLE #	SYMBOL	SOIL AND ROCK DESCRIPTION AND COMMENTS	WATER TABLE
	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	INTERVAL SAMPLED FOR GEOCHEMISTRY				
0										0-.35' <u>ASPHALT</u>	
1		3			9				GP	.35-.6' <u>SANDY GRAVEL</u> (Fill) Light olive brown, fine gravel, some medium sand. Loose. Dry to moist.	
2		11	2½"		3	3"	VOA	14B-1	SW	.6-2.1' <u>GRAVELLY SAND</u> (Fill) Olive brown, fine to medium, trace to some fine gravel, trace fines. Dense. Slight odor. Moist.	▽
3		35			12					2.1-5.7' <u>AUTO-DEBRIS/SAND</u> (Fill) Dark gray brown, medium sand intermixed with glass, foam rubber, plastic, wire. Wet to saturated with oil, increasing with depth. Perched H <sub>2</sub> O at 2.1'.	
4		23			13						
5		11	2½"		13	3"					
6		15			26						
7		5			4						
8		3	2'		4	3"					
9		4			4						
10		1			1						
11		1	2"		1	2½"		14B-2	SP	5.7-6.8' <u>SAND</u> (Fill) Black, fine to medium, loose. Saturated with oil and H <sub>2</sub> O.	
12		12			12		VOA				
13											
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Ø = DIAMETER OF SPLIT-BARREL



Sweet, Edwards & Associates, Inc.

# BORING LOG

Page 1 of 2

PROJECT NAME Chempro - Phase II Tacoma, WA  
 PROJECT NUMBER S9403.02 BORING NUMBER CTP 15A & 15B  
 DATE OF BORING 9/23/87 - 9/24/87  
 DRILLING CONTRACTOR/ GEOLOGISTS Tacoma Pump and Drilling PFD/BAB

DEPTH (FEET)	BORING A SAMPLE DATA			BORING B SAMPLE DATA				SYMBOL	SOIL AND ROCK DESCRIPTION AND COMMENTS	WATER TABLE
	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	INTERVAL SAMPLED FOR GEOCHEMISTRY			
0-1									0-.3 <u>ASPHALT</u>	
1-2		6			5		15B-1	1	.3-2.8' <u>GRAVELLY SAND</u> (Fill) Olive brown, fine to medium, trace to some medium gravels, decreasing with depth; trace fines. Scattered shell fragments. Dense. Dry to moist.	
		25			14					
2-3		50	2 1/2"		26					
		25			8					
3-4		24	2 1/2"		10				2.8-3.4' <u>SAND</u> (Fill) Reddish brown, fine to medium, trace fine gravels, dense. Slightly oily. Strong odor. Moist.	
		32			10					
4-5		6					15B-2	2	3.4-8.1' <u>SAND</u> (Fill) Dark gray brown to black, fine to medium, coarsens with depth, trace silt. Loose. Strong odor. Saturated with oil, increasing with depth. Moist to wet with water.	
		9		NA	3"					
5-6		11	2"							



PROJECT NAME Chempro - Phase II Tacoma, WA.

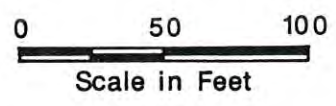
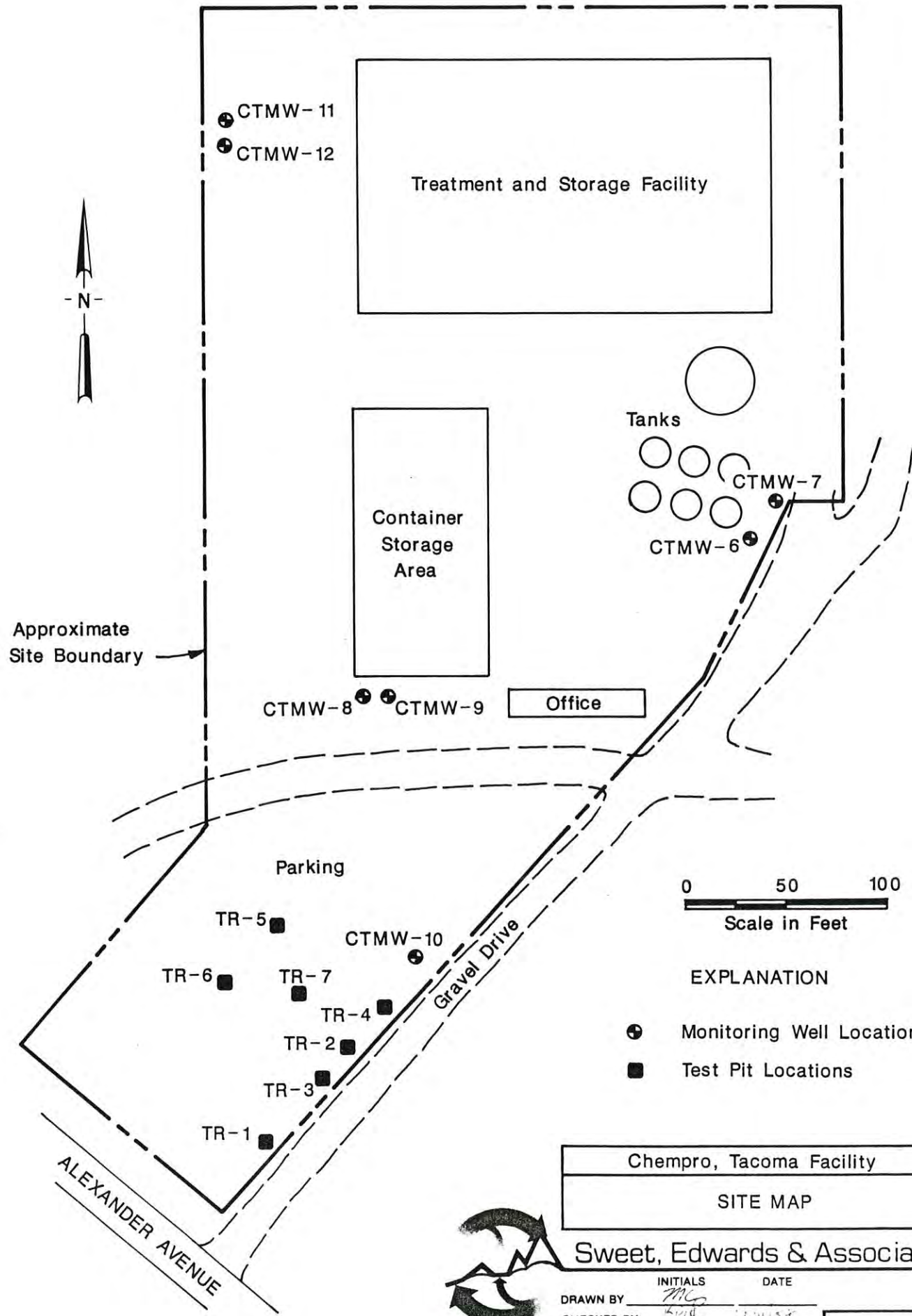
PROJECT NUMBER S9403.02 BORING NUMBER CTP-15A & 15B

DATE OF BORING 9/23/87 - 9/24/87

DRILLING CONTRACTOR/ GEOLOGISTS Tacoma Pump and Drilling PFD/BAB

DEPTH (FEET)	BORING A SAMPLE DATA			BORING B SAMPLE DATA					SYMBOL	SOIL AND ROCK DESCRIPTION AND COMMENTS	WATER TABLE
	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	SAMPLE INTERVAL	BLOW COUNT	SPLIT BARREL Ø	INTERVAL SAMPLED FOR GEOCHEMISTRY	SAMPLE #			
8		8	2"						SP	3.4-8.1' Continued	
8.1		13								B.O.H. = 8.1'	

Ø = DIAMETER OF SPLIT-BARREL



EXPLANATION

- ⊕ Monitoring Well Locations
- Test Pit Locations

Chempro, Tacoma Facility	
SITE MAP	
Sweet, Edwards & Associates	
DRAWN BY	INITIALS      DATE
CHECKED BY	DATE
REVISED	

Figure 2.1





Sweet, Edwards & Associates, Inc.

PROJECT NO.

S9406.03

TEST PIT NO.

TR-1

SHEET 1 OF 1

Chempro-Tacoma

### TEST PIT LOG

PROJECT Chempro-Tacoma

LOCATION 50 ft from fence

LOGGER PFD

ELEVATION \_\_\_\_\_

CONTRACTOR 3 ft from road

Tony's Backhoe

EXCAVATION METHOD Backhoe-2 ft wide bucket

DATE EXCAVATED 11/30/87

WATER LEVEL AND DATE 4'

APPROX. DIMENSIONS: Length 4'

Width 2.5

Maximum Depth 4.5

ELEVATION ( )	DEPTH BELOW SURFACE ( )	SAMPLE		SOIL DESCRIPTION  SOIL NAME, GRADATION OR PLASTICITY, PARTICLE SIZE, DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, STRUCTURE, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS  DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTATION
		INTERVAL	TYPE AND NUMBER			
	1			FILL; Sand and Gravel; brown, 15-20% fines, 30-40% medium sand, 20-30% fine gravel.	SP/GP	0-1.5'
	2			FILL; Clay; brown, trace fine sand, moist.	CL	1.5-2.5'
	3			FILL; Sandy Silt; gray, laminated, 1/4" interbeds of organics, 15-25% fine sand, moist, soft.	ML	2.5-3.5'
	4			FILL; Refuse; household refuse odor in gray slough material, wet, no oil odor.	Solid Waste	3.5-4.5' @ 4.0' - no oil residue
	5					Terminate Trench at 4.5'.





TEST PIT LOG

PROJECT Chempro-Tacoma LOCATION 70 ft from Trench 1 LOGGER PFD

ELEVATION \_\_\_\_\_ CONTRACTOR Tony's Backhoe

EXCAVATION METHOD Backhoe - 2ft bucket DATE EXCAVATED 11/30/87

WATER LEVEL AND DATE 4' APPROX. DIMENSIONS: Length 4.5' Width 2.5' Maximum Depth 4.5'

ELEVATION ( )	DEPTH BELOW SURFACE ( )	SAMPLE		SOIL DESCRIPTION  SOIL NAME, GRADATION OR PLASTICITY, PARTICLE SIZE, DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, STRUCTURE, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS  DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE GRADATIONAL CONTACTS, TESTS, INSTRUMENTATION
		INTERVAL	TYPE AND NUMBER			
	1			FILL; Clayey Sand & Gravel; brown, 10-15% fines, 30-40% fine and medium sand, 10-20% fine to medium gravels, moist.	SC/ GP	0-1'
	2			FILL; Silt; gray, believed to be lime waste, dry.	Refuse	lime fill 1.0-1.5'
	3			FILL; wood debris, oil saturated.	Refuse	1.5-2.5' oil saturated.
	4			FILL; Silt with sand lenses, gray, predominate silt with 2" lenses of medium grained sand, sand saturated w/oil and water.	ML	2.5-4.5' @4'-oil and H <sub>2</sub> O.
	5					Terminate Trench at 4.5'.



### TEST PIT LOG

PROJECT Chempro-Tacoma LOCATION 46' from Trench 1 LOGGER PFD  
 ELEVATION \_\_\_\_\_ CONTRACTOR Tony's Backhoe  
 EXCAVATION METHOD Backhoe-2 ft bucket DATE EXCAVATED 11/30/87  
 WATER LEVEL AND DATE 4.5' APPROX. DIMENSIONS: Length 4' Width 2.5' Maximum Depth 5'

ELEVATION ( )	DEPTH BELOW SURFACE ( )	SAMPLE		SOIL DESCRIPTION  SOIL NAME, GRADATION OR PLASTICITY, PARTICLE SIZE, DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, STRUCTURE, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS
		INTERVAL	TYPE AND NUMBER			DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTATION
	1			FILL; Clayey Sand and Gravel; brown, 10-15% medium plastic fines, 20- 30% fine to medium sand, 15-20% cobble gravel, moist.	GP/ SC	0-1.5'
	2			FILL; auto debris, foam, wire, with roots, oily.	Refuse	1.5-2.5'
	3			FILL; Silt to Sandy Silt; with minor sand lenses, 1" sand lenses become more prominent @4', oil in sand or rootlet lenses, wet @ 4 & 5'.	ML/ SM	2.5-5' @2.5' oil seep from side wall.
	4					
	5					Terminate Trench at 5'.



### TEST PIT LOG

PROJECT Chempro-Tacoma LOCATION 32 ft SW of MW along fence LOGGER PFD  
 ELEVATION \_\_\_\_\_ CONTRACTOR Tony's Backhoe  
 EXCAVATION METHOD Backhoe - 2 ft Bucket DATE EXCAVATED 11/30/87  
 WATER LEVEL AND DATE 3.5' APPROX. DIMENSIONS: Length 4' Width 2.5' Maximum Depth 4.25'

ELEVATION ( )	DEPTH BELOW SURFACE ( )	SAMPLE		SOIL DESCRIPTION  SOIL NAME, GRADATION OR PLASTICITY, PARTICLE SIZE, DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, STRUCTURE, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS  DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTATION
		INTERVAL	TYPE AND NUMBER			
	1			FILL; Clayey Sand & Gravel; brown, clean, moist.	SC/ GP	0-1'
	2			FILL; Sandy Silt w/Sand interbeds, gray, predominantly silt w/1" lenses of sand, strong oil odor, moist.	SM	1-2.5'
	3			FILL; Sand; black, medium grained, saturated with oil, loose.	SP	2.5-4.25' oil saturated.
	4					Terminate Trench at 4.25'.
	5					



TEST PIT LOG

PROJECT Chempro-Tacoma LOCATION 75 ft NW of TR-4 in in parking lot LOGGER PFD
ELEVATION CONTRACTOR Tony's Backhoe
EXCAVATION METHOD Backhoe-2 ft Bucket DATE EXCAVATED 11/30/87
WATER LEVEL AND DATE APPROX. DIMENSIONS: Length 3.5' Width 2.5' Maximum Depth 4.5'

Table with 6 columns: ELEVATION, DEPTH BELOW SURFACE, SAMPLE (INTERVAL, TYPE AND NUMBER), SOIL DESCRIPTION, SYMBOLIC LOG, COMMENTS. Contains soil data for intervals 1, 2, and 5.





TEST PIT LOG

PROJECT Chempro-Tacoma LOCATION 20 ft SW of 4-5 line LOGGER PFD  
 ELEVATION \_\_\_\_\_ CONTRACTOR 40 ft from Chempro fence  
 EXCAVATION METHOD Backhoe- 2 ft wide bucket DATE EXCAVATED 11/30/87  
 WATER LEVEL AND DATE 5' APPROX. DIMENSIONS: Length 3.5' Width 2.5' Maximum Depth 5.5'

ELEVATION ( )	DEPTH BELOW SURFACE ( )	SAMPLE		SOIL DESCRIPTION  SOIL NAME, GRADATION OR PLASTICITY, PARTICLE SIZE, DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, STRUCTURE, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS  DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTATION
		INTERVAL	TYPE AND NUMBER			
	1			FILL; Clayey Sand & Gravel; brown, 10-20% fines, 30% fine to medium sand, 15-25% coarse sand to fine gravel, loose, moist.	SP/ GC	0-2'
	2			FILL; Silt; lime waste, gray, soft, moist.	ML	Lime waste. 2-4'
	3					
	4			FILL; Sandy Silt to Silty Sand w/ Sand interbeds; black, no oil evident, wet.	ML/ SM	
	5					@5' no oil residue. Terminate Trench at 5.5'.

**E3RA**

**Geotechnical Engineering Report**

**Stericycle Environmental Solutions  
PSC Tacoma Facility  
1701 Alexander Avenue  
Port of Tacoma, Washington 98421**

**Submitted to:**

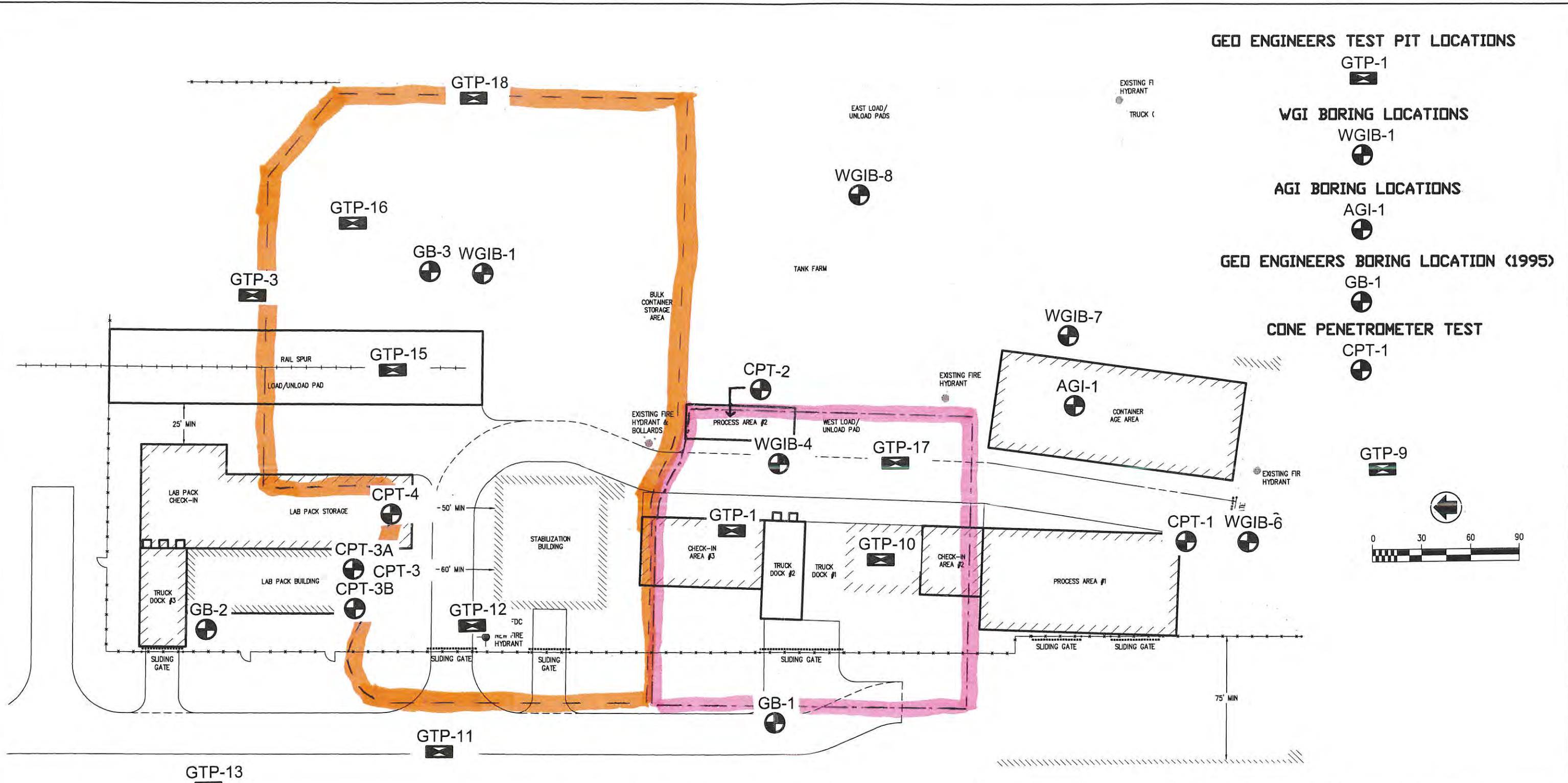
**Stericycle Environmental Solutions  
Attn: Keith Lund  
18000 72nd Avenue South, Suite 217  
Kent, Washington 98032**

**Submitted by:**

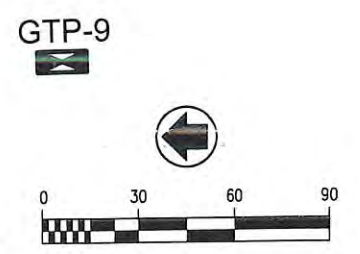
**E3RA, Inc.  
PO Box 44840  
Tacoma, Washington 98448**

**February 13, 2015  
*Revised July 20, 2015***

**Project No. T14100**



- GEO ENGINEERS TEST PIT LOCATIONS**  
 GTP-1
- WGI BORING LOCATIONS**  
 WGIB-1
- AGI BORING LOCATIONS**  
 AGI-1
- GEO ENGINEERS BORING LOCATION (1995)**  
 GB-1
- CONE PENETROMETER TEST**  
 CPT-1



NOTE:  
 BOUNDARY AND TOPOGRAPHY ARE BASED ON  
 MAPPING PROVIDED TO E3RA AND OBSERVATIONS  
 MADE IN THE FIELD. THE INFORMATION SHOWN DOES  
 NOT CONSTITUTE A FIELD SURVEY BY E3RA.

**INFERRED PRE-LOAD LOCATION (2002)**  
 (Pink dashed line)

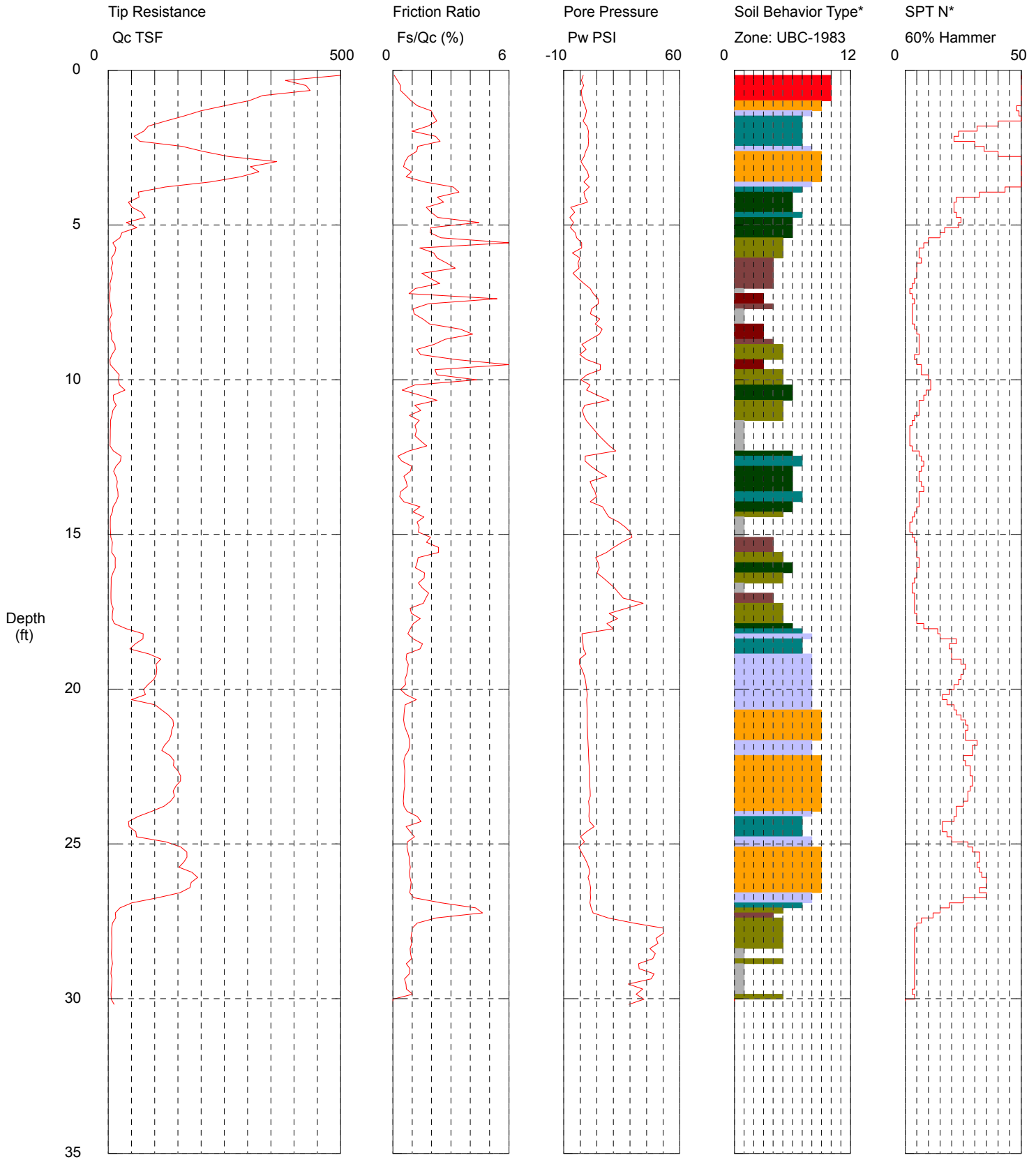
**APPROXIMATE PRE-LOAD LOCATION (1995)**  
 (Orange dashed line)

<b>E3RA Inc.</b> PO Box 44840 Tacoma, WA 98448 253-537-9400 253-537-9401 fax www.e3ra.com	PROJECT: 1701 E Alexander Ave Tacoma, Washington	
	SHEET TITLE: Site and Exploration Plan	
DESIGNER: CRL	JOB NO. T14100	
DRAWN BY: CRL	SCALE: As Shown	
CHECKED BY: JEB	FIGURE: 2	
DATE: Jan. 21, 2014	FILE: T14100.dwg	



Operator: Brown  
 Sounding: CPT-01  
 Cone Used: DDG1254

CPT Date/Time: 12/22/2014 8:37:46 AM  
 Location: Stericycle Environmental  
 Job Number: T14100



Maximum Depth = 30.18 feet

Depth Increment = 0.164 feet

- |  |  |  |  |
|--|--|--|--|
| <ul style="list-style-type: none"> <li>1 sensitive fine grained</li> <li>2 organic material</li> <li>3 clay</li> </ul> | <ul style="list-style-type: none"> <li>4 silty clay to clay</li> <li>5 clayey silt to silty clay</li> <li>6 sandy silt to clayey silt</li> </ul> | <ul style="list-style-type: none"> <li>7 silty sand to sandy silt</li> <li>8 sand to silty sand</li> <li>9 sand</li> </ul> | <ul style="list-style-type: none"> <li>10 gravelly sand to sand</li> <li>11 very stiff fine grained (*)</li> <li>12 sand to clayey sand (*)</li> </ul> |
|--|--|--|--|

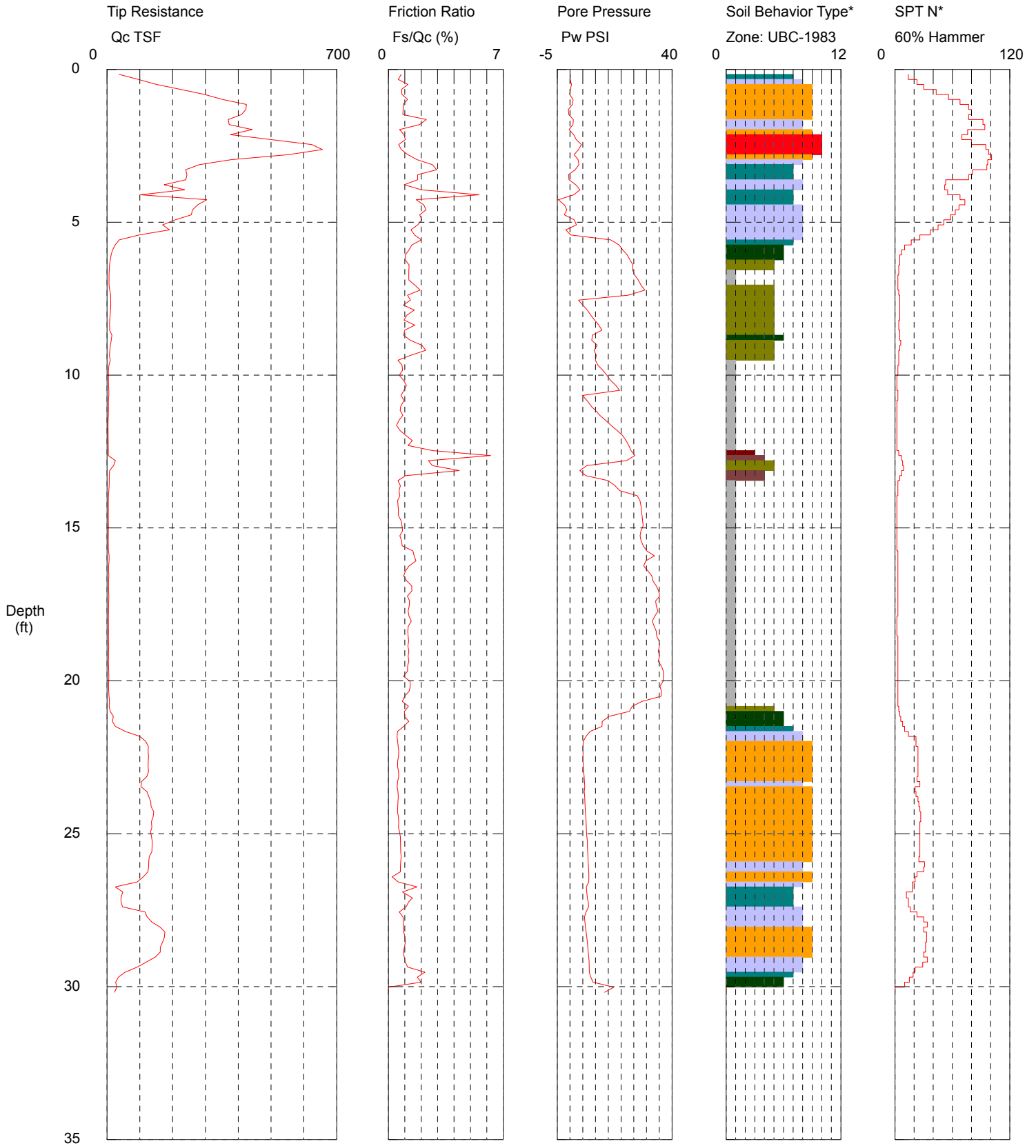
InSitu Engineering

\*Soil behavior type and SPT based on data from UBC-1983

# E3RA

Operator: Brown  
 Sounding: CPT-02  
 Cone Used: DDG1254

CPT Date/Time: 12/22/2014 9:17:39 AM  
 Location: Stericycle Environmental  
 Job Number: T14100



Maximum Depth = 30.18 feet

Depth Increment = 0.164 feet

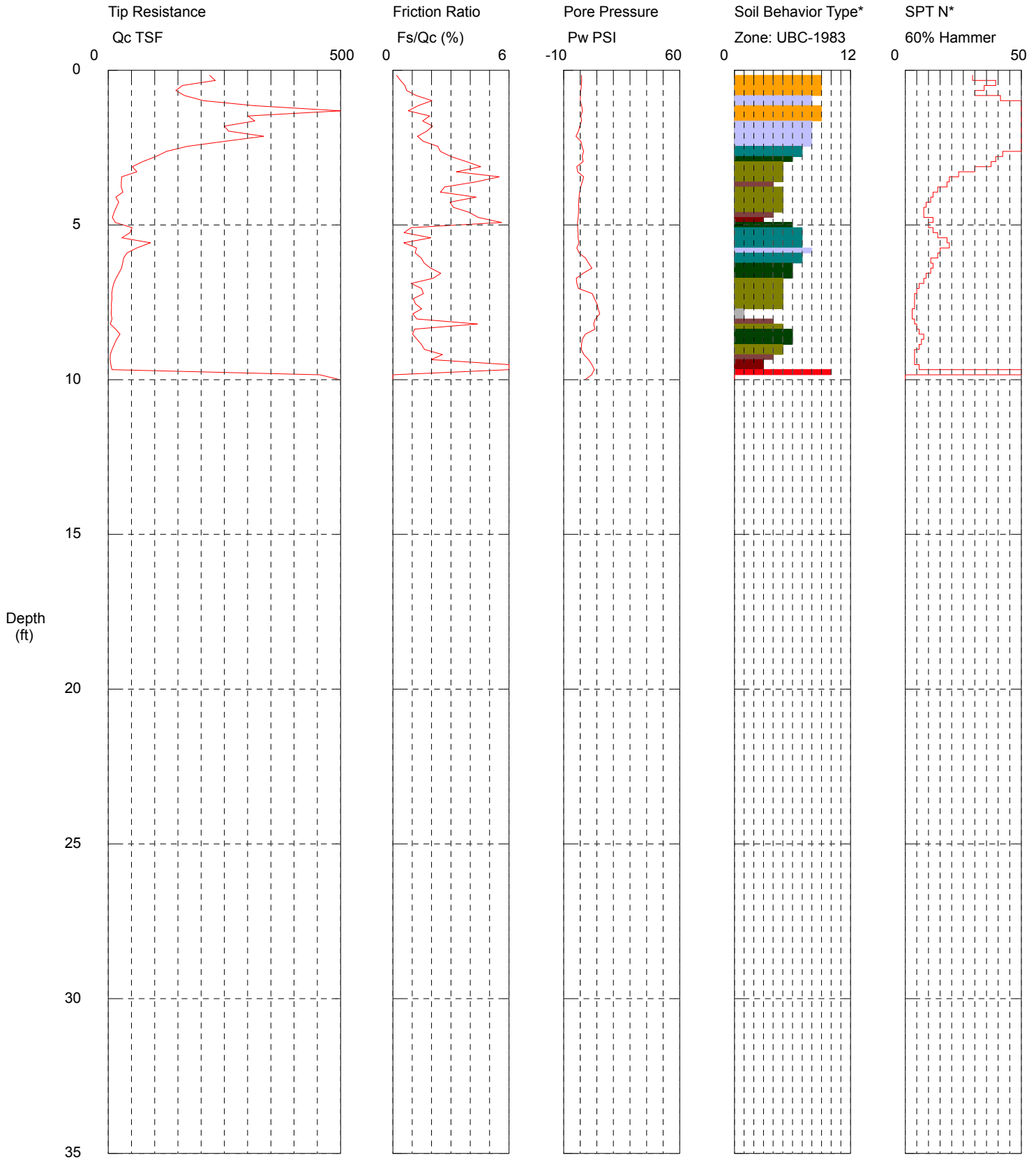
- |                          |                             |                            |                                |
|--------------------------|-----------------------------|----------------------------|--------------------------------|
| 1 sensitive fine grained | 4 silty clay to clay        | 7 silty sand to sandy silt | 10 gravelly sand to sand       |
| 2 organic material       | 5 clayey silt to silty clay | 8 sand to silty sand       | 11 very stiff fine grained (*) |
| 3 clay                   | 6 sandy silt to clayey silt | 9 sand                     | 12 sand to clayey sand (*)     |

InSitu Engineering

\*Soil behavior type and SPT based on data from UBC-1983

Operator: Brown  
Sounding: CPT-03  
Cone Used: DDG1254

CPT Date/Time: 12/22/2014 9:49:52 AM  
Location: Stericycle Environmental  
Job Number: T14100



Maximum Depth = 10.01 feet

Depth Increment = 0.164 feet

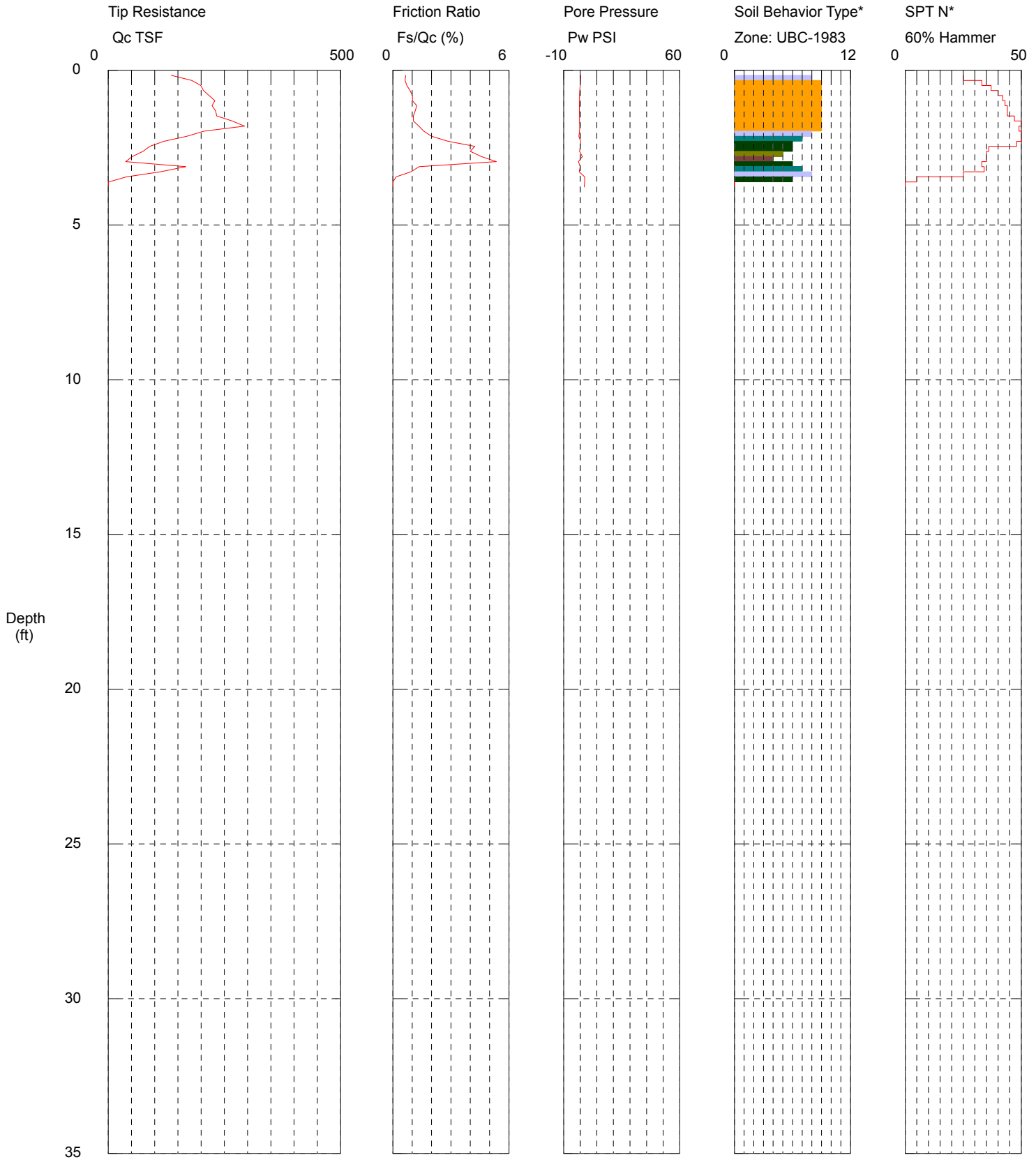
- |                          |                             |                            |                                |
|--------------------------|-----------------------------|----------------------------|--------------------------------|
| 1 sensitive fine grained | 4 silty clay to clay        | 7 silty sand to sandy silt | 10 gravelly sand to sand       |
| 2 organic material       | 5 clayey silt to silty clay | 8 sand to silty sand       | 11 very stiff fine grained (*) |
| 3 clay                   | 6 sandy silt to clayey silt | 9 sand                     | 12 sand to clayey sand (*)     |

InSitu Engineering Refused at 10 feet. Log?

\*Soil behavior type and SPT based on data from UBC-1983

Operator: Brown  
 Sounding: CPT-03A  
 Cone Used: DDG1254

CPT Date/Time: 12/22/2014 10:03:49 AM  
 Location: Stericycle Environmental  
 Job Number: T14100



Maximum Depth = 3.77 feet

Depth Increment = 0.164 feet

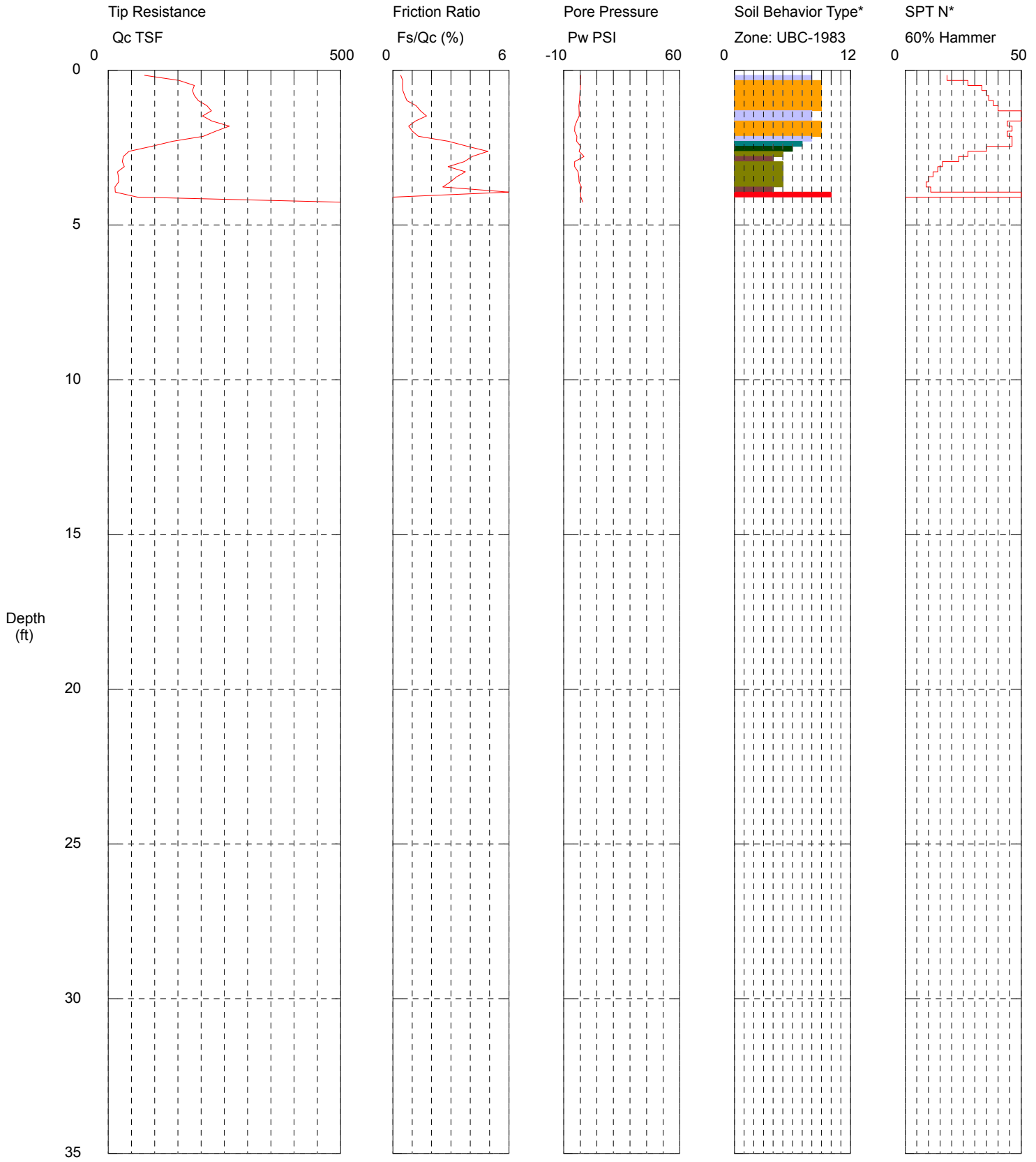
- |                          |                             |                            |                                |
|--------------------------|-----------------------------|----------------------------|--------------------------------|
| 1 sensitive fine grained | 4 silty clay to clay        | 7 silty sand to sandy silt | 10 gravelly sand to sand       |
| 2 organic material       | 5 clayey silt to silty clay | 8 sand to silty sand       | 11 very stiff fine grained (*) |
| 3 clay                   | 6 sandy silt to clayey silt | 9 sand                     | 12 sand to clayey sand (*)     |

InSitu Engineering Encountered void at 3.5 feet. PVC pipe?

\*Soil behavior type and SPT based on data from UBC-1983

Operator: Brown  
Sounding: CPT-03B  
Cone Used: DDG1254

CPT Date/Time: 12/22/2014 12:15:33 PM  
Location: Stericycle Environmental  
Job Number: T14100



Maximum Depth = 4.27 feet

Depth Increment = 0.164 feet

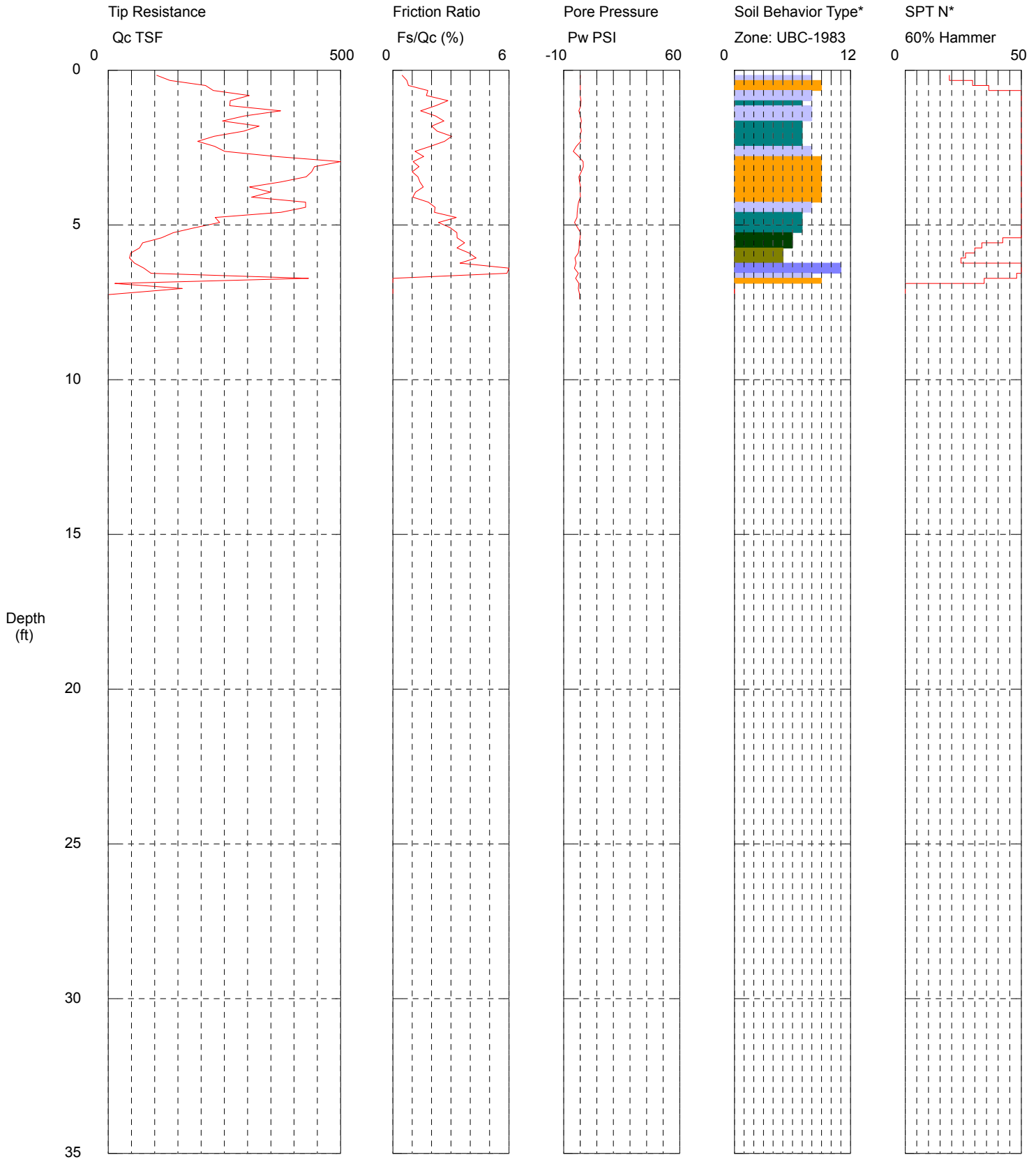
- |                          |                             |                            |                                |
|--------------------------|-----------------------------|----------------------------|--------------------------------|
| 1 sensitive fine grained | 4 silty clay to clay        | 7 silty sand to sandy silt | 10 gravelly sand to sand       |
| 2 organic material       | 5 clayey silt to silty clay | 8 sand to silty sand       | 11 very stiff fine grained (*) |
| 3 clay                   | 6 sandy silt to clayey silt | 9 sand                     | 12 sand to clayey sand (*)     |

InSitu Engineering Refused at 4.27 feet on rock?

\*Soil behavior type and SPT based on data from UBC-1983

Operator: Brown  
 Sounding: CPT-04  
 Cone Used: DDG1254

CPT Date/Time: 12/22/2014 12:46:30 PM  
 Location: Stericycle Environmental  
 Job Number: T14100



Maximum Depth = 7.38 feet

Depth Increment = 0.164 feet

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|--|--|--|--|
| <ul style="list-style-type: none"> <li>1 sensitive fine grained</li> <li>2 organic material</li> <li>3 clay</li> </ul> | <ul style="list-style-type: none"> <li>4 silty clay to clay</li> <li>5 clayey silt to silty clay</li> <li>6 sandy silt to clayey silt</li> </ul> | <ul style="list-style-type: none"> <li>7 silty sand to sandy silt</li> <li>8 sand to silty sand</li> <li>9 sand</li> </ul> | <ul style="list-style-type: none"> <li>10 gravelly sand to sand</li> <li>11 very stiff fine grained (*)</li> <li>12 sand to clayey sand (*)</li> </ul> |
|--|--|--|--|

InSitu Engineering Instrument damaged at 7 feet.

\*Soil behavior type and SPT based on data from UBC-1983

# E3RA

SUBJECT	Proposed Stericycle Facility, Tacoma, WA (1701 Alexander Ave E)		
Job no.	T14100	Design by:	M. Rohrbach
File	CPT-Liquefaction-Youd	Checked	
Spreadsheet Rev.	22-May-14	Reviewed	
		Date:	11-Jan-15

## Liquefaction Susceptibility Analysis based on CPT values (After Youd et al. 2001)

Exploration Evaluated: CPT-01

### Project Specific Information

Earthquake Magnitude	7.01	(M)	
PGA	0.4838	g	
Depth to Groundwater	5.0-ft		ASSUMED NOT DATA AVAILABLE
Use moist or dry density for calculation of overburden stress?			Moist
Maximum NF Value for Interpolation of soil density	50		
Elevation of top of Soil profile	25	ft.	ASSUMED NOT DATA AVAILABLE
Elevation of bottom of Soil Profile	-5.18	ft.	ASSUMED NOT DATA AVAILABLE
Bottom of Footing Elevation	25		ASSUMED NOT DATA AVAILABLE
Thickness of soil profile to analyze	30.2-ft		
Poisson's Ratio for Soil, $\nu_s$	0.333		
Critical Facility (Hospital/Life line Br.)?	NO		
Load from embankment cut/fill (negative for cut)	0.00-psf		

### Magnitude Scaling Factor

$$MSF = 10^{2.24} / M_w^{2.56} \quad (\text{Youd EQN 24})$$

$$= 10^{2.24} / 7.01^{2.56} = 1.19$$

### Amount of Seismic Caused Settlement

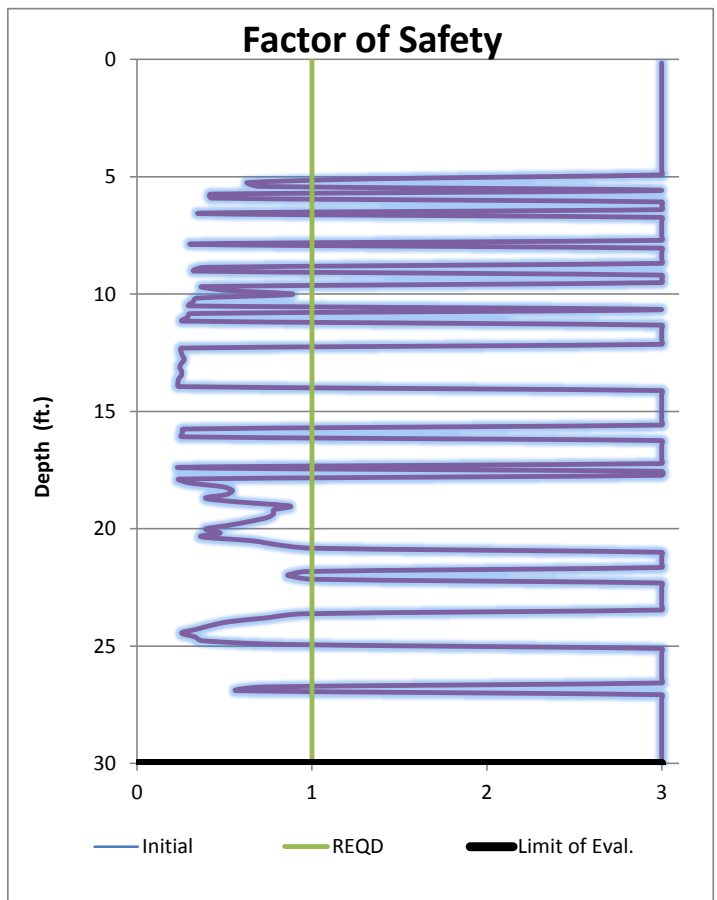
Thickness of profile	30.0-ft
Minimum Sett. occurs at F.S.=	1.0
Maximum Sett. occurs at F.S.=	1.3

### Existing Conditions

Evaluated Thickness of Liquefiable Layer: 10.5-ft.  
 Calculated Min: 2.17-in via T&S, Min never < 0.5 in.  
 Calculated Max: 2.19-in via T&S

### Special Notes / Comments

Factor of Safety Required for the Project: 1



### Notes:

- 1-To simplify presentation of results if the calculated factor of safety is 3.0 or greater it is plotted as 3.0.
- 2-The Youd et al. 2001 method to evaluate the potential for liquefaction has been validated to a depth of 50 feet. Extrapolation below this depth requires engineering judgment. See the associated project specific report for more information.

# E3RA

SUBJECT	Proposed Stericycle Facility, Tacoma, WA (1701 Alexander Ave E)		
Job no.	T14100	Design by:	M. Rohrbach
File	CPT-Liquefaction-Youd	Checked	
Spreadsheet Rev.	22-May-14	Reviewed	
			Date: 11-Jan-15

## Liquefaction Susceptibility Analysis based on CPT values (After Youd et al. 2001)

Exploration Evaluated: CPT-02

### Project Specific Information

Earthquake Magnitude	7.01	(M)	
PGA	0.4838	g	
Depth to Groundwater	5.0-ft		ASSUMED NOT DATA AVAILABLE
Use moist or dry density for calculation of overburden stress?			Moist
Maximum NF Value for Interpolation of soil density	50		
Elevation of top of Soil profile	25	ft.	ASSUMED NOT DATA AVAILABLE
Elevation of bottom of Soil Profile	-5.18	ft.	ASSUMED NOT DATA AVAILABLE
Bottom of Footing Elevation	25		ASSUMED NOT DATA AVAILABLE
Thickness of soil profile to analyze	30.2-ft		
Poisson's Ratio for Soil, $\nu_s$	0.333		
Critical Facility (Hospital/Life line Br.)?	NO		
Load from embankment cut/fill (negative for cut)	0.00-psf		

### Magnitude Scaling Factor

$$MSF = 10^{2.24} / M_w^{2.56} \quad (\text{Youd EQN 24})$$

$$= 10^{2.24} / 7.01^{2.56} = 1.19$$

### Amount of Seismic Caused Settlement

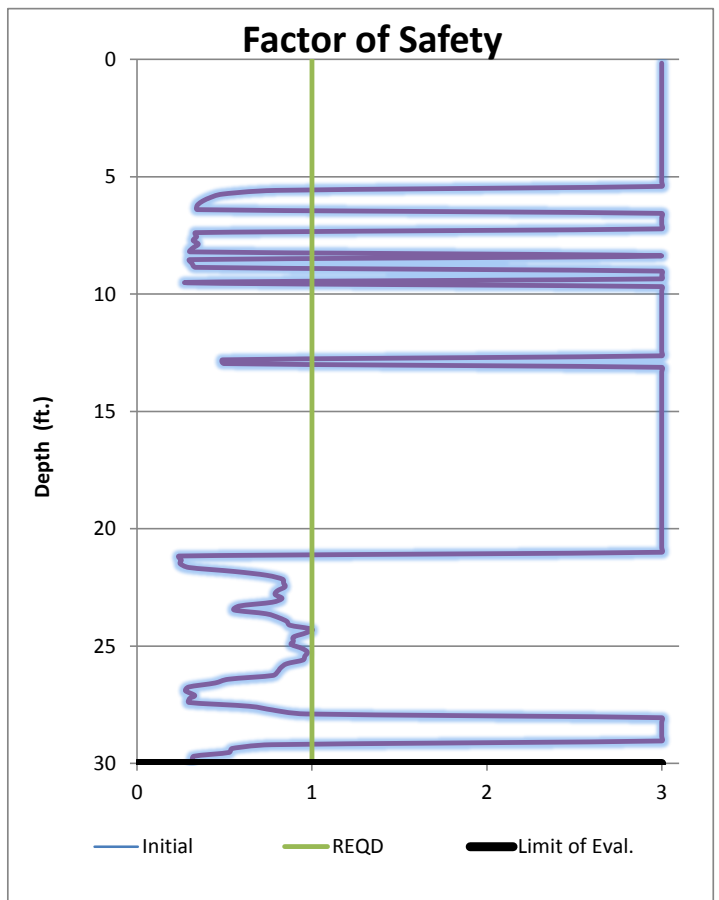
Thickness of profile	30.0-ft
Minimum Sett. occurs at F.S.=	1.0
Maximum Sett. occurs at F.S.=	1.3

### Existing Conditions

Evaluated Thickness of Liquefiable Layer: 10.8-ft.  
 Calculated Min: 1.77-in via T&S, Min never < 0.5 in.  
 Calculated Max: 1.77-in via T&S

### Special Notes / Comments

Factor of Safety Required for the Project: 1



### Notes:

- 1-To simplify presentation of results if the calculated factor of safety is 3.0 or greater it is plotted as 3.0.
- 2-The Youd et al. 2001 method to evaluate the potential for liquefaction has been validated to a depth of 50 feet. Extrapolation below this depth requires engineering judgment. See the associated project specific report for more information.



# E3RA

SUBJECT		Proposed Stericycle Facility, Tacoma, WA (1701 Alexander Ave E)		
Job no.	T14100	Design by:	M. Rohrbach	Date: 11-Jan-15
File	SPT-Liquefaction-Youd	Checked	M. Rohrbach	
Spreadsheet Rev.	25-Apr-14	Reviewed	J. Brigham	

## Liquefaction Susceptibility Analysis based on SPT ( $N_1$ )<sub>60</sub> values (After Youd et al. 2001)

### Soil Profile Based on Boring GEI-B-1

#### Project Specific Information

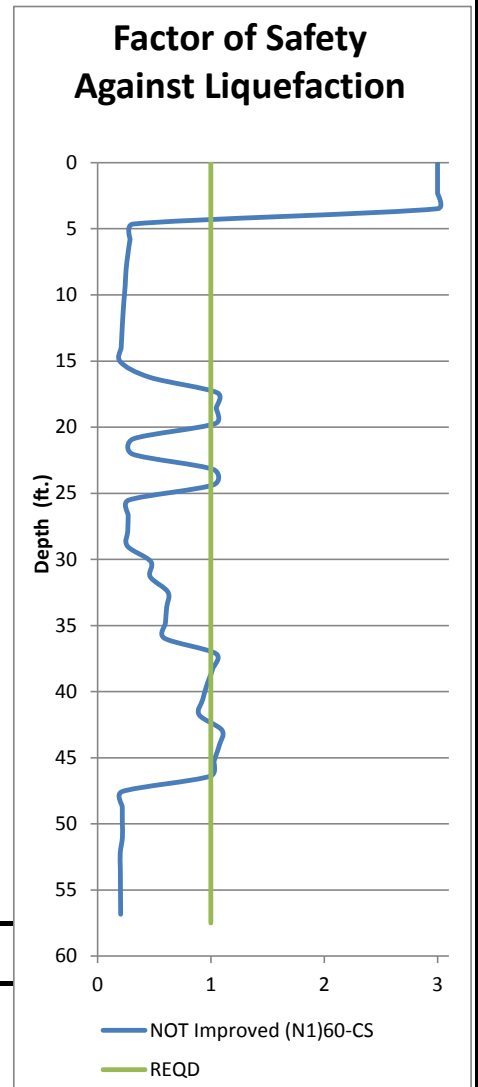
Earthquake Magnitude / Mw>8.5?	7.01 (Mw)	
PGA	0.4838 g	
SPT Hammer Efficiency	0.6 =(actual) / (theory)	ASSUMED NOT DATA AVAILABLE
Bore Hole Diameter	6 in.	ASSUMED NOT DATA AVAILABLE
Finished Ground Surface Elevation:	25 ft.	ASSUMED NOT DATA AVAILABLE
Elevation of top of Soil profile	25 ft.	ASSUMED NOT DATA AVAILABLE
Elevation of bottom of Soil Profile	-33 ft.	

#### Soil Layers for Analysis

Use moist or dry density for calculation of overburden stress?	Moist	
Maximum $N_{SPT}$ Value for Interpolation of soil density	50	
Groundwater elevation	20.0-ft	Were Sample Liners used? no
Thickness of soil profile to analyze	57.5-ft	

Factor of Safety Required for the Project: 1  
Critical Facility? NO

	Soil Type	Thickness	Depth	% fines	$N_F$	Unit Wt. (pcf)	$\pm (N_1)_{60}$	$\pm (N_1)_{60-CS}$
0	Ground Surface	--	0.0	13	41	141-pcf	30-pcf	33-pcf
1	GM	2.5-ft	3.0	13	41	141-pcf	30.0	33.0
2	ML	6.0-ft	9.0	51	1.0	100-pcf	1.8	7.1
3	ML	5.0-ft	14.0	51.0	1.0	100-pcf	1.8	7.1
4	ML	3.0-ft	17.0	51.0	1.0	100-pcf	1.7	7.0
5	SM	1.0-ft	18.0	13.0	10.0	106-pcf	16.5	19.0
6	SP	4.0-ft	22.0	5.0	23.0	120-pcf	30.0	30.0
7	SP	2.0-ft	24.0	5.0	9.0	107-pcf	13.1	13.1
8	SP	2.0-ft	26.0	5.0	39.0	135-pcf	30.0	30.0
9	ML	2.0-ft	28.0	51.0	4.0	103-pcf	5.4	11.4
10	ML	3.0-ft	31.0	51.0	4.0	103-pcf	5.2	11.2
11	ML	2.0-ft	33.0	51.0	10.0	110-pcf	12.6	20.1
12	SP	5.0-ft	38.0	5.0	20.0	117-pcf	23.6	23.6
13	SP	5.0-ft	43.0	5.0	26.0	123-pcf	28.4	28.4
14	SP	5.0-ft	48.0	5.0	28.0	124-pcf	29.0	29.0
15	SP	5.0-ft	53.0	5.0	7.0	105-pcf	7.0	7.0
16	SP	5.0-ft	58.0	5.0	6.0	104-pcf	5.8	5.8
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**Unimproved Liquefaction Induced Settlement: 8.2-in**

#### Notes:

- 1-To simplify presentation of results, if the calculated factor of safety is 3 or greater then it is plotted as 3.0.
- 2-The above table above is a summary of the numerical integration performed on the calculation pages.
- 3-The maximum ( $N_1$ )<sub>60-CS</sub> value used for analysis is 33.

# E3RA

SUBJECT		Proposed Stericycle Facility, Tacoma, WA (1701 Alexander Ave E)		
Job no.	T14100	Design by:	M. Rohrbach	Date: 11-Jan-15
File	SPT-Liquefaction-Youd	Checked	M. Rohrbach	
Spreadsheet Rev.	25-Apr-14	Reviewed	J. Brigham	

## Liquefaction Susceptibility Analysis based on SPT $(N_1)_{60}$ values (After Youd et al. 2001)

### Soil Profile Based on Boring GEI-B-2

#### Project Specific Information

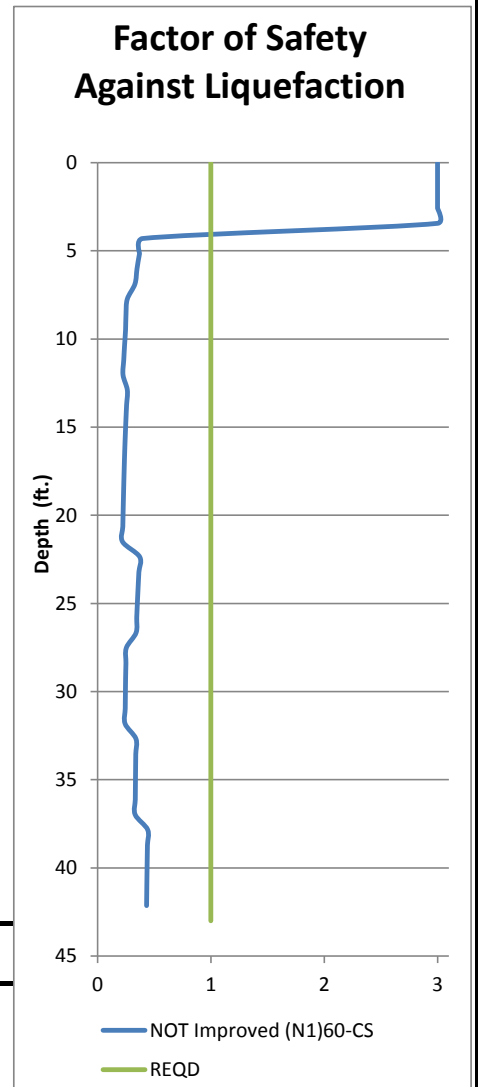
Earthquake Magnitude / Mw>8.5?	7.01 (Mw)	
PGA	0.4838 g	
SPT Hammer Efficiency	0.6 =(actual) / (theory)	ASSUMED NOT DATA AVAILABLE
Bore Hole Diameter	6 in.	ASSUMED NOT DATA AVAILABLE
Finished Ground Surface Elevation:	25 ft.	ASSUMED NOT DATA AVAILABLE
Elevation of top of Soil profile	25 ft.	ASSUMED NOT DATA AVAILABLE
Elevation of bottom of Soil Profile	-18 ft.	

#### Soil Layers for Analysis

Use moist or dry density for calculation of overburden stress?	Moist	
Maximum $N_{SPT}$ Value for Interpolation of soil density	50	
Groundwater elevation	20.0-ft	Were Sample Liners used? no
Thickness of soil profile to analyze	43.0-ft	

Factor of Safety Required for the Project: 1  
Critical Facility? NO

	Soil Type	Thickness	Depth	% fines	$N_F$	Unit Wt. (pcf)	$\pm (N_1)_{60}$	$\pm (N_1)_{60-CS}$
0	Ground Surface	--	0.0	13	75	149-pcf	30-pcf	33-pcf
1	SM	2.5-ft	3.0	13	75	149-pcf	30.0	33.0
2	SM	5.0-ft	8.0	13	4.0	100-pcf	7.0	9.2
3	ML	5.0-ft	13.0	51.0	1.0	100-pcf	1.8	7.1
4	ML	5.0-ft	18.0	51.0	2.0	101-pcf	3.3	8.9
5	ML	5.0-ft	23.0	51.0	2.0	110-pcf	3.0	8.5
6	SP	5.0-ft	28.0	5.0	11.0	109-pcf	15.0	15.0
7	SP	5.0-ft	33.0	5.0	8.0	106-pcf	10.2	10.2
8	SM	5.0-ft	38.0	13.0	10.0	106-pcf	12.0	14.3
9	SP	5.0-ft	43.0	5.0	16.0	113-pcf	18.1	18.1
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**Unimproved Liquefaction Induced Settlement: 10.9-in**

#### Notes:

- 1-To simplify presentation of results, if the calculated factor of safety is 3 or greater then it is plotted as 3.0.
- 2-The above table above is a summary of the numerical integration performed on the calculation pages.
- 3-The maximum  $(N_1)_{60-CS}$  value used for analysis is 33.

# E3RA

SUBJECT		Proposed Stericycle Facility, Tacoma, WA (1701 Alexander Ave E)		
Job no.	T14100	Design by:	M. Rohrbach	Date: 11-Jan-15
File	SPT-Liquefaction-Youd	Checked	M. Rohrbach	
Spreadsheet Rev.	25-Apr-14	Reviewed	J. Brigham	

## Liquefaction Susceptibility Analysis based on SPT ( $N_1$ )<sub>60</sub> values (After Youd et al. 2001)

### Soil Profile Based on Boring GEI-B-3

#### Project Specific Information

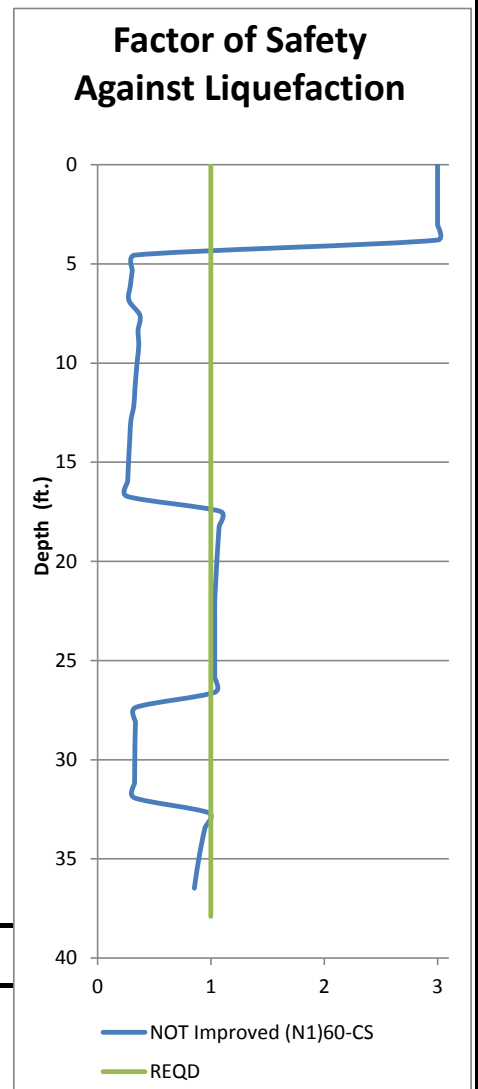
Earthquake Magnitude / Mw>8.5?	7.01 (Mw)	
PGA	0.4838 g	
SPT Hammer Efficiency	0.6 =(actual) / (theory)	ASSUMED NOT DATA AVAILABLE
Bore Hole Diameter	6 in.	ASSUMED NOT DATA AVAILABLE
Finished Ground Surface Elevation:	25 ft.	ASSUMED NOT DATA AVAILABLE
Elevation of top of Soil profile	25 ft.	ASSUMED NOT DATA AVAILABLE
Elevation of bottom of Soil Profile	-13 ft.	

#### Soil Layers for Analysis

Use moist or dry density for calculation of overburden stress?	Moist	
Maximum $N_{SPT}$ Value for Interpolation of soil density	50	
Groundwater elevation	20.0-ft	Were Sample Liners used? no
Thickness of soil profile to analyze	37.9-ft	

Factor of Safety Required for the Project: 1  
Critical Facility? NO

	Soil Type	Thickness	Depth	% fines	$N_F$	Unit Wt. (pcf)	$\pm (N_1)_{60}$	$\pm (N_1)_{60-CS}$
0	Ground Surface	--	0.0	5	50	147-pcf	30-pcf	30-pcf
1	SP-SM	2.5-ft	3.0	5	50	147-pcf	30.0	30.0
2	ML	5.0-ft	8.0	51	1.0	100-pcf	1.8	7.1
3	MH	5.0-ft	13.0	51.0	3.0	111-pcf	5.2	11.3
4	SM	5.0-ft	18.0	12.0	5.0	101-pcf	8.0	9.8
5	SP	5.0-ft	23.0	5.0	36.0	108-pcf	30.0	30.0
6	SP	5.0-ft	28.0	5.0	35.0	131-pcf	30.0	30.0
7	ML	5.0-ft	33.0	51.0	6.0	105-pcf	7.4	13.9
8	SM	5.0-ft	38.0	13.0	22.0	119-pcf	25.4	28.3
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Unimproved Liquefaction Induced Settlement: 6.0-in

#### Notes:

- 1-To simplify presentation of results, if the calculated factor of safety is 3 or greater then it is plotted as 3.0.
- 2-The above table above is a summary of the numerical integration performed on the calculation pages.
- 3-The maximum  $(N_1)_{60-CS}$  value used for analysis is 33.

# E3RA

SUBJECT		Proposed Stericycle Facility, Tacoma, WA (1701 Alexander Ave E)		
Job no.	T14100	Design by:	M. Rohrbach	Date: 11-Jan-15
File	SPT-Liquefaction-Youd	Checked	M. Rohrbach	
Spreadsheet Rev.	25-Apr-14	Reviewed	J. Brigham	

## Liquefaction Susceptibility Analysis based on SPT $(N_1)_{60}$ values (After Youd et al. 2001)

### Soil Profile Based on Boring BEI-BH-1

#### Project Specific Information

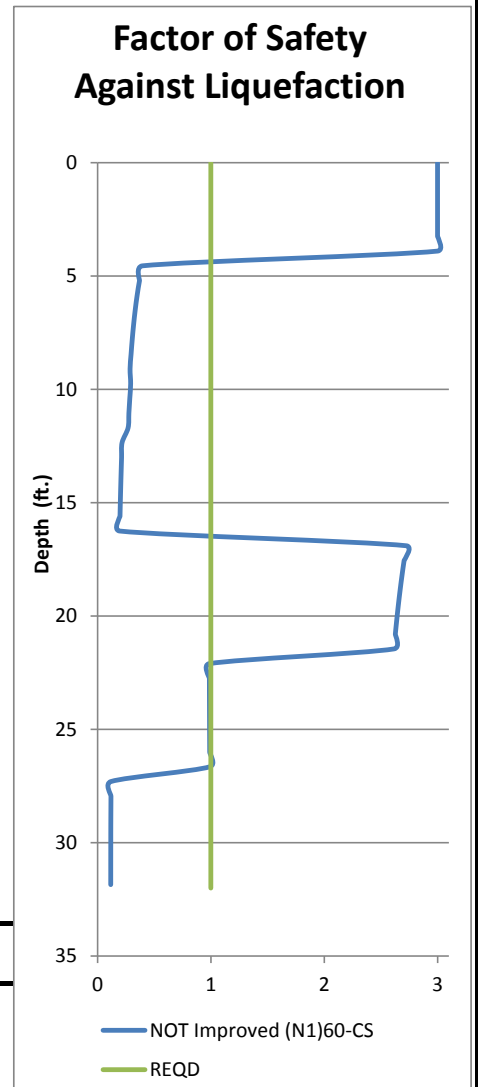
Earthquake Magnitude / $M_w > 8.5?$	7.01 (Mw)	
PGA	0.4838 g	
SPT Hammer Efficiency	0.6 = (actual) / (theory)	ASSUMED NOT DATA AVAILABLE
Bore Hole Diameter	6 in.	ASSUMED NOT DATA AVAILABLE
Finished Ground Surface Elevation:	25 ft.	ASSUMED NOT DATA AVAILABLE
Elevation of top of Soil profile	25 ft.	
Elevation of bottom of Soil Profile	-7.5 ft.	

#### Soil Layers for Analysis

Use moist or dry density for calculation of overburden stress?	Moist	
Maximum $N_{SPT}$ Value for Interpolation of soil density	50	
Groundwater elevation	20.0-ft	Were Sample Liners used? no
Thickness of soil profile to analyze	32.0-ft	

Factor of Safety Required for the Project: 1  
Critical Facility? NO

	Soil Type	Thickness	Depth	% fines	$N_F$	Unit Wt. (pcf)	$\pm (N_1)_{60}$	$\pm (N_1)_{60-CS}$
0	Ground Surface	--	0.0	51	5	103-pcf	9-pcf	16-pcf
1	CH	2.5-ft	2.5	51	5	103-pcf	8.8	15.6
2	CH	5.0-ft	7.5	51	2.0	101-pcf	3.5	9.2
3	ML	5.0-ft	12.5	51.0	2.0	101-pcf	3.8	9.6
4	ML	5.0-ft	17.5	51.0	1.0	100-pcf	1.7	7.1
5	CL	5.0-ft	22.5	51.0	17.0	109-pcf	26.5	33.0
6	SP	5.0-ft	27.5	5.0	31.0	127-pcf	30.0	30.0
7	SP	5.0-ft	32.5	5.0	2.0	100-pcf	2.6	2.6
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Unimproved Liquefaction Induced Settlement: 9.1-in

#### Notes:

- 1-To simplify presentation of results, if the calculated factor of safety is 3 or greater then it is plotted as 3.0.
- 2-The above table above is a summary of the numerical integration performed on the calculation pages.
- 3-The maximum  $(N_1)_{60-CS}$  value used for analysis is 33.

# E3RA

SUBJECT		Proposed Stericycle Facility, Tacoma, WA (1701 Alexander Ave E)		
Job no.	T14100	Design by:	M. Rohrbach	Date: 11-Jan-15
File	SPT-Liquefaction-Youd	Checked	M. Rohrbach	
Spreadsheet Rev.	25-Apr-14	Reviewed	J. Brigham	

## Liquefaction Susceptibility Analysis based on SPT $(N_1)_{60}$ values (After Youd et al. 2001)

### Soil Profile Based on Boring BEI-BH-4

#### Project Specific Information

Earthquake Magnitude / Mw>8.5?	7.01 (Mw)	
PGA	0.4838 g	
SPT Hammer Efficiency	0.6 =(actual) / (theory)	ASSUMED NOT DATA AVAILABLE
Bore Hole Diameter	6 in.	ASSUMED NOT DATA AVAILABLE
Finished Ground Surface Elevation:	25 ft.	ASSUMED NOT DATA AVAILABLE
Elevation of top of Soil profile	25 ft.	ASSUMED NOT DATA AVAILABLE
Elevation of bottom of Soil Profile	-2 ft.	

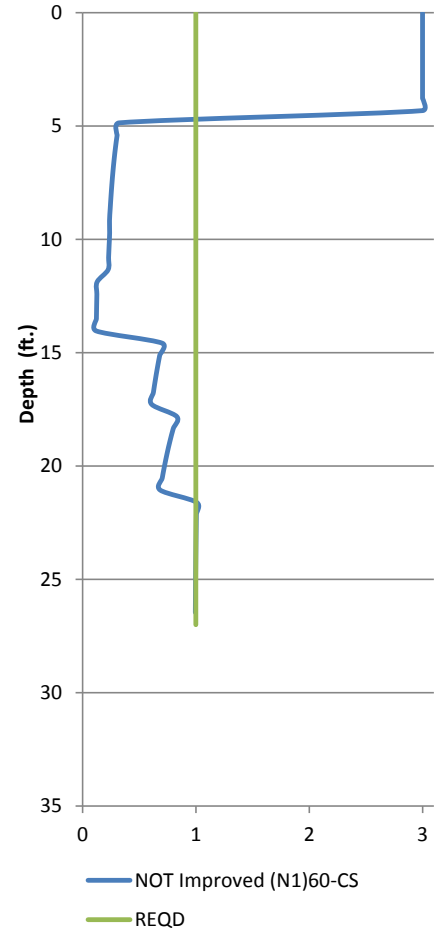
#### Soil Layers for Analysis

Use moist or dry density for calculation of overburden stress?	Moist	
Maximum $N_{SPT}$ Value for Interpolation of soil density	50	
Groundwater elevation	20.0-ft	Were Sample Liners used? no
Thickness of soil profile to analyze	27.0-ft	

Factor of Safety Required for the Project: 1  
Critical Facility? NO

	Soil Type	Thickness	Depth	% fines	$N_F$	Unit Wt. (pcf)	$\pm (N_1)_{60}$	$\pm (N_1)_{60-CS}$
0	Ground Surface	--	0.0	51	1	100-pcf	2-pcf	7-pcf
1	CH	2.5-ft	2.5	51	1	100-pcf	1.8	7.1
2	CH	2.5-ft	5.0	51	1.0	100-pcf	1.8	7.1
3	ML	2.5-ft	7.5	51.0	1.0	100-pcf	1.8	7.1
4	ML	2.5-ft	10.0	51.0	1.0	100-pcf	1.8	7.1
5	CL	2.0-ft	12.0	51.0	1.0	109-pcf	1.9	7.3
6	ML	3.0-ft	15.0	5.0	1.0	100-pcf	1.8	1.8
7	SM	3.0-ft	18.0	12.0	13.0	110-pcf	21.9	24.1
8	SP	4.0-ft	22.0	5.0	17.0	114-pcf	26.2	26.2
9	SP	5.0-ft	27.0	5.0	23.0	120-pcf	30.0	30.0
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### Factor of Safety Against Liquefaction



Unimproved Liquefaction Induced Settlement: 7.3-in

#### Notes:

- 1-To simplify presentation of results, if the calculated factor of safety is 3 or greater then it is plotted as 3.0.
- 2-The above table above is a summary of the numerical integration performed on the calculation pages.
- 3-The maximum  $(N_1)_{60-CS}$  value used for analysis is 33.

# E3RA

SUBJECT		Proposed Stericycle Facility, Tacoma, WA (1701 Alexander Ave E)		
Job no.	T14100	Design by:	M. Rohrbach	Date: 11-Jan-15
File	SPT-Liquefaction-Youd	Checked	M. Rohrbach	
Spreadsheet Rev.	25-Apr-14	Reviewed	J. Brigham	

## Liquefaction Susceptibility Analysis based on SPT $(N_1)_{60}$ values (After Youd et al. 2001)

### Soil Profile Based on Boring BEI-BH-6

#### Project Specific Information

Earthquake Magnitude / Mw>8.5?	7.01 (Mw)	
PGA	0.4838 g	
SPT Hammer Efficiency	0.6 =(actual) / (theory)	ASSUMED NOT DATA AVAILABLE
Bore Hole Diameter	6 in.	ASSUMED NOT DATA AVAILABLE
Finished Ground Surface Elevation:	25 ft.	ASSUMED NOT DATA AVAILABLE
Elevation of top of Soil profile	25 ft.	ASSUMED NOT DATA AVAILABLE
Elevation of bottom of Soil Profile	-2 ft.	

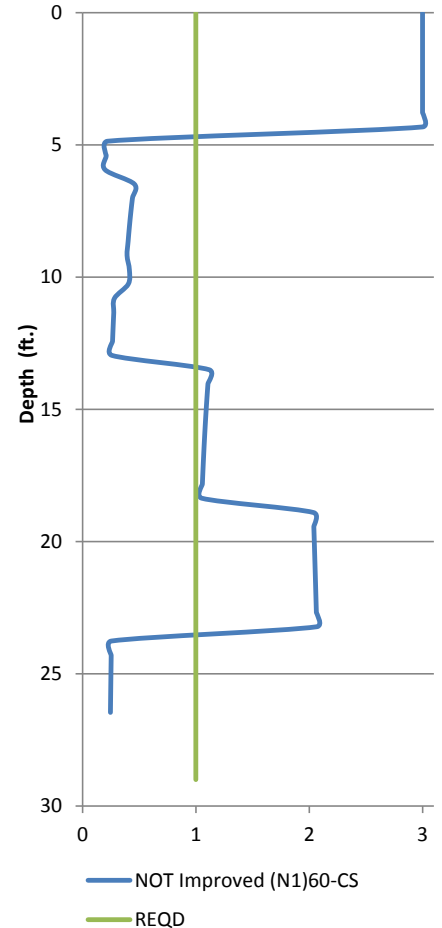
#### Soil Layers for Analysis

Use moist or dry density for calculation of overburden stress?	Moist	
Maximum $N_{SPT}$ Value for Interpolation of soil density	50	
Groundwater elevation	20.0-ft	Were Sample Liners used? no
Thickness of soil profile to analyze	29.0-ft	

Factor of Safety Required for the Project: 1  
Critical Facility? NO

	Soil Type	Thickness	Depth	% fines	$N_F$	Unit Wt. (pcf)	$\pm (N_1)_{60}$	$\pm (N_1)_{60-CS}$
0	Ground Surface	--	0.0	12	6	102-pcf	11-pcf	12-pcf
1	SM	2.5-ft	2.5	12	6	102-pcf	10.6	12.4
2	CL	2.5-ft	5.0	51	1.0	102-pcf	1.8	7.1
3	SM	1.5-ft	6.5	12.0	1.0	97-pcf	1.8	3.4
4	CL	4.5-ft	11.0	51.0	4.0	104-pcf	7.9	14.5
5	CH	3.0-ft	14.0	51.0	2.0	106-pcf	3.7	9.4
6	SP	5.0-ft	19.0	5.0	19.0	116-pcf	30.0	30.0
7	SM	5.0-ft	24.0	12.0	49.0	148-pcf	30.0	32.5
8	CL	5.0-ft	29.0	51.0	3.0	103-pcf	3.9	9.7
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### Factor of Safety Against Liquefaction



**Unimproved Liquefaction Induced Settlement: 4.3-in**

#### Notes:

- 1-To simplify presentation of results, if the calculated factor of safety is 3 or greater then it is plotted as 3.0.
- 2-The above table above is a summary of the numerical integration performed on the calculation pages.
- 3-The maximum  $(N_1)_{60-CS}$  value used for analysis is 33.

# E3RA

SUBJECT	Proposed Stericycle Facility, Tacoma, WA (1701 Alexander Ave E)		
Job no.	T14100	Design by:	M. Rohrbach
File	SPT-Liquefaction-Youd	Checked	M. Rohrbach
Spreadsheet Rev.	25-Apr-14	Reviewed	J. Brigham
		Date:	11-Jan-15

## Liquefaction Susceptibility Analysis based on SPT $(N_1)_{60}$ values (After Youd et al. 2001)

### Soil Profile Based on Boring BEI-BH-7

#### Project Specific Information

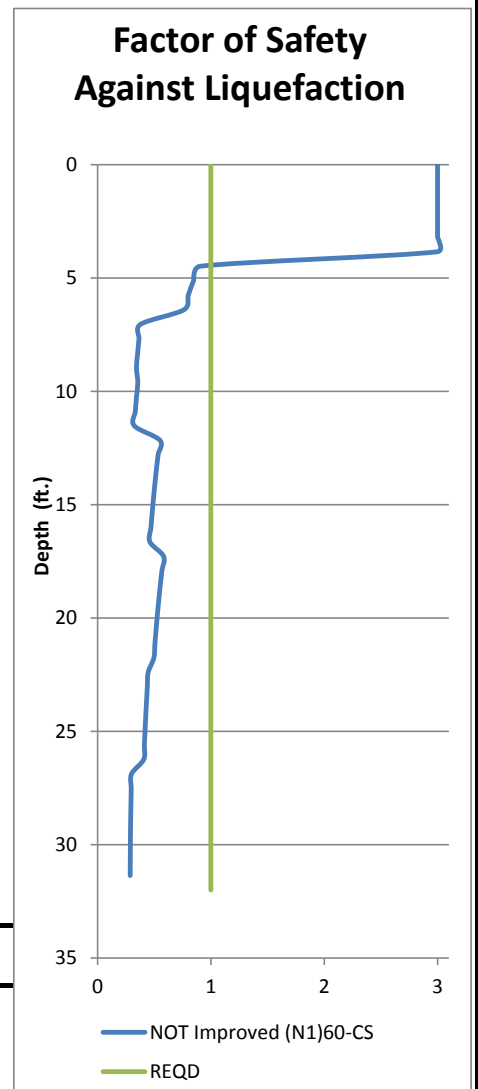
Earthquake Magnitude / $M_w > 8.5$ ?	7.01 (Mw)	
PGA	0.4838 g	
SPT Hammer Efficiency	0.6 = (actual) / (theory)	ASSUMED NOT DATA AVAILABLE
Bore Hole Diameter	6 in.	ASSUMED NOT DATA AVAILABLE
Finished Ground Surface Elevation:	25 ft.	ASSUMED NOT DATA AVAILABLE
Elevation of top of Soil profile	25 ft.	ASSUMED NOT DATA AVAILABLE
Elevation of bottom of Soil Profile	-7 ft.	

#### Soil Layers for Analysis

Use moist or dry density for calculation of overburden stress?	Moist
Maximum $N_{SPT}$ Value for Interpolation of soil density	50
Groundwater elevation	20.0-ft
Thickness of soil profile to analyze	32.0-ft
Were Sample Liners used?	no

Factor of Safety Required for the Project: 1  
Critical Facility? NO

	Soil Type	Thickness	Depth	% fines	$N_F$	Unit Wt. (pcf)	$\pm (N_1)_{60}$	$\pm (N_1)_{60-CS}$
0	Ground Surface	--	0.0	51	3	101-pcf	5-pcf	11-pcf
1	CH	2.5-ft	2.5	51	3	101-pcf	5.3	11.3
2	CH	5.0-ft	7.5	51	8.0	105-pcf	14.1	21.9
3	CL	5.0-ft	12.5	51.0	3.0	103-pcf	5.7	11.8
4	CH	5.0-ft	17.5	51.0	7.0	104-pcf	11.8	19.2
5	SP	5.0-ft	22.5	5.0	14.0	108-pcf	21.3	21.3
6	SP	5.0-ft	27.5	5.0	13.0	110-pcf	18.3	18.3
7	ML	5.0-ft	32.5	51.0	5.0	104-pcf	6.6	12.9
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Unimproved Liquefaction Induced Settlement: 5.8-in

#### Notes:

- 1-To simplify presentation of results, if the calculated factor of safety is 3 or greater then it is plotted as 3.0.
- 2-The above table above is a summary of the numerical integration performed on the calculation pages.
- 3-The maximum  $(N_1)_{60-CS}$  value used for analysis is 33.

# E3RA

SUBJECT		Proposed Stericycle Facility, Tacoma, WA (1701 Alexander Ave E)		
Job no.	T14100	Design by:	M. Rohrbach	Date: 11-Jan-15
File	SPT-Liquefaction-Youd	Checked	M. Rohrbach	
Spreadsheet Rev.	25-Apr-14	Reviewed	J. Brigham	

## Liquefaction Susceptibility Analysis based on SPT ( $N_1$ )<sub>60</sub> values (After Youd et al. 2001)

### Soil Profile Based on Boring BEI-BH-8

#### Project Specific Information

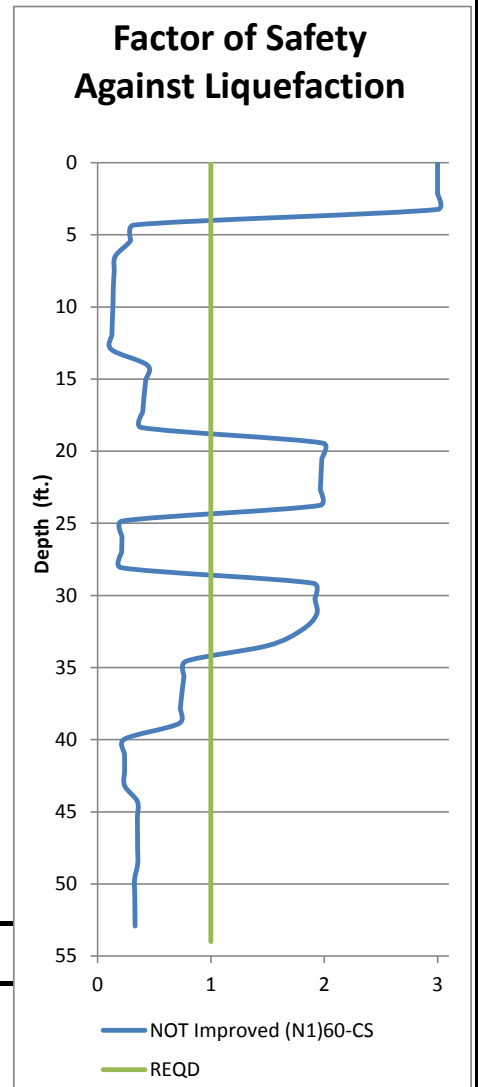
Earthquake Magnitude / Mw>8.5?	7.01 (Mw)	
PGA	0.4838 g	
SPT Hammer Efficiency	0.6 =(actual) / (theory)	ASSUMED NOT DATA AVAILABLE
Bore Hole Diameter	6 in.	ASSUMED NOT DATA AVAILABLE
Finished Ground Surface Elevation:	25 ft.	ASSUMED NOT DATA AVAILABLE
Elevation of top of Soil profile	25 ft.	ASSUMED NOT DATA AVAILABLE
Elevation of bottom of Soil Profile	-29 ft.	

#### Soil Layers for Analysis

Use moist or dry density for calculation of overburden stress?	Moist	
Maximum $N_{SPT}$ Value for Interpolation of soil density	50	
Groundwater elevation	20.0-ft	Were Sample Liners used? no
Thickness of soil profile to analyze	54.0-ft	

Factor of Safety Required for the Project: 1  
Critical Facility? NO

	Soil Type	Thickness	Depth	% fines	$N_F$	Unit Wt. (pcf)	$\pm (N_1)_{60}$	$\pm (N_1)_{60-CS}$
0	Ground Surface	--	0.0	51	5	103-pcf	9-pcf	16-pcf
1	CH	2.5-ft	2.5	51	5	103-pcf	8.8	15.6
2	CH	2.5-ft	5.0	51	1.0	100-pcf	1.8	7.1
3	CH	2.5-ft	7.5	51.0	1.0	100-pcf	1.8	7.1
4	SP	2.5-ft	10.0	5.0	1.0	99-pcf	1.8	1.8
5	SP	5.0-ft	15.0	5.0	1.0	108-pcf	1.8	1.8
6	MH	5.0-ft	20.0	51.0	6.0	112-pcf	9.6	16.5
7	SM	5.0-ft	25.0	12.0	24.0	121-pcf	30.0	32.5
8	SM	5.0-ft	30.0	12.0	5.0	101-pcf	6.7	8.5
9	SM	5.0-ft	35.0	12.0	24.0	121-pcf	29.3	31.8
10	SM	5.0-ft	40.0	12.0	21.0	118-pcf	23.9	26.2
11	ML	5.0-ft	45.0	51.0	3.0	102-pcf	3.3	8.9
12	ML	5.0-ft	50.0	51.0	7.0	106-pcf	7.3	13.8
13	ML	5.0-ft	55.0	51.0	6.0	105-pcf	6.1	12.3
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								



**Unimproved Liquefaction Induced Settlement: 13.3-in**

#### Notes:

- 1-To simplify presentation of results, if the calculated factor of safety is 3 or greater then it is plotted as 3.0.
- 2-The above table above is a summary of the numerical integration performed on the calculation pages.
- 3-The maximum ( $N_1$ )<sub>60-CS</sub> value used for analysis is 33.



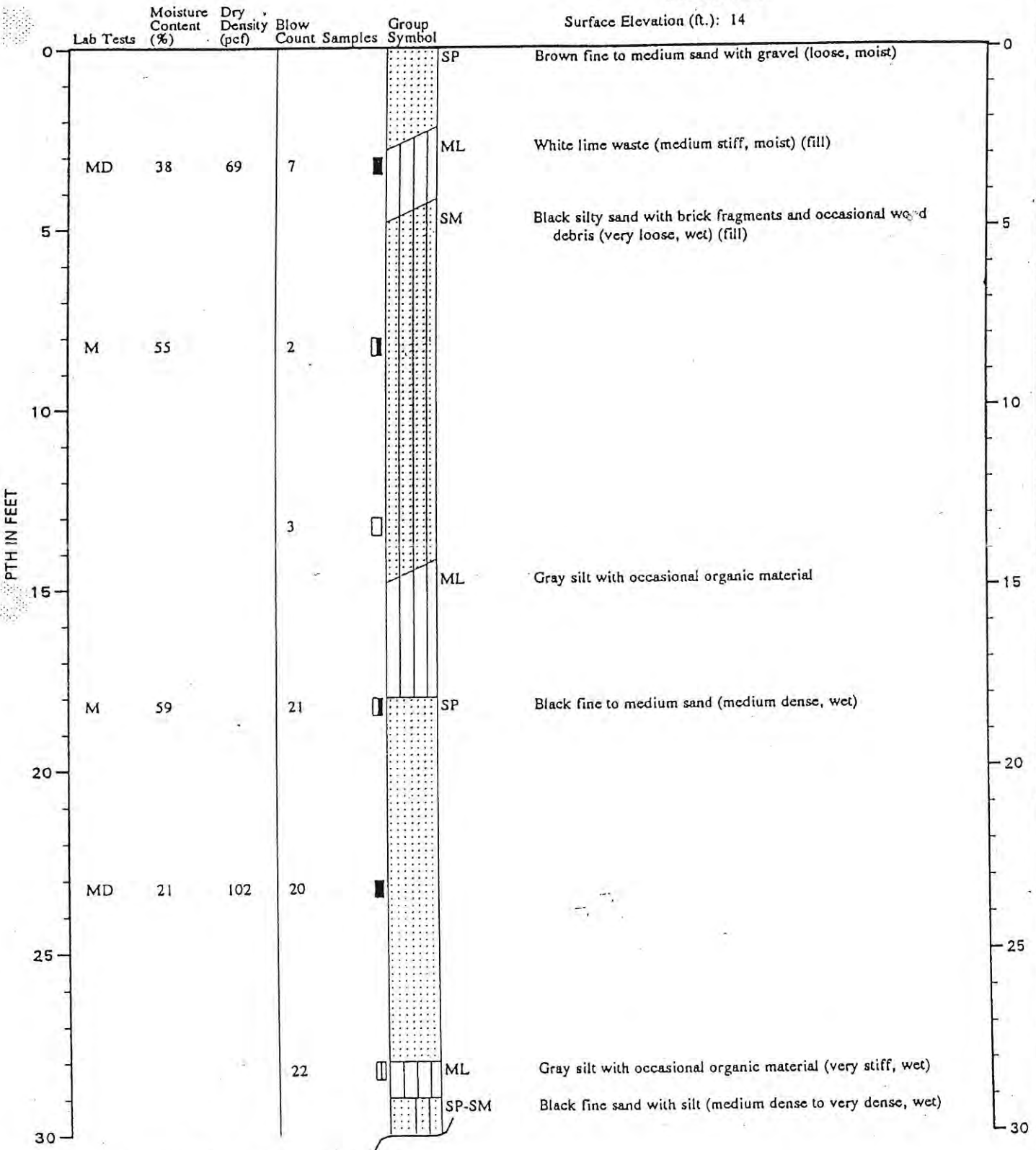
**APPENDIX D**  
**ADDITIONAL EXPLORATIONS**

TEST DATA

BORING B-1

DESCRIPTION

Surface Elevation (ft.): 14

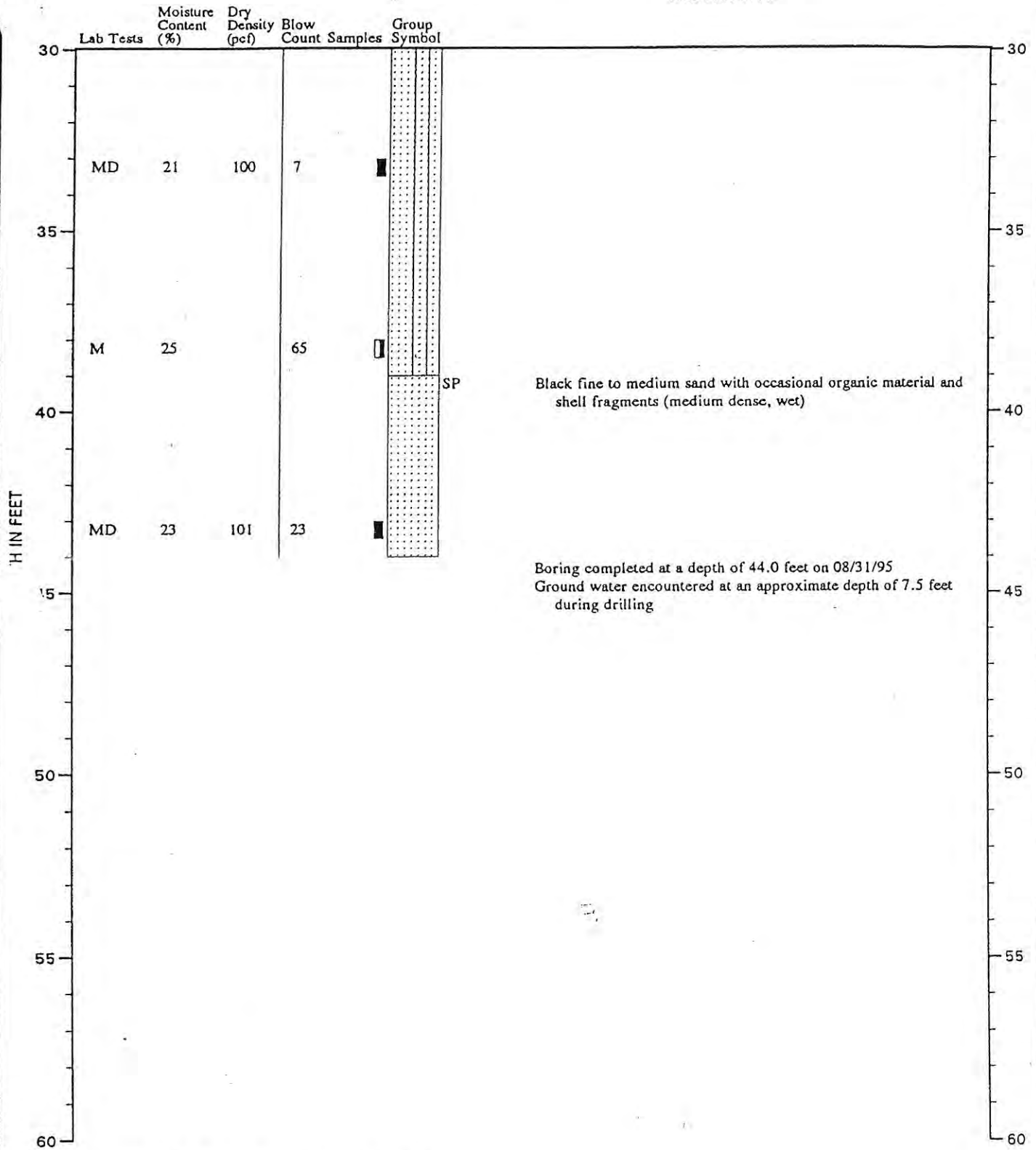


Note: See Figure for explanation of symbols

TEST DATA

BORING B-1  
(Continued)

DESCRIPTION



Note: See Figure for explanation of symbols

JEB:GWH:vc: 10/31/95

4579-001-103

NB40



LOG OF BORING

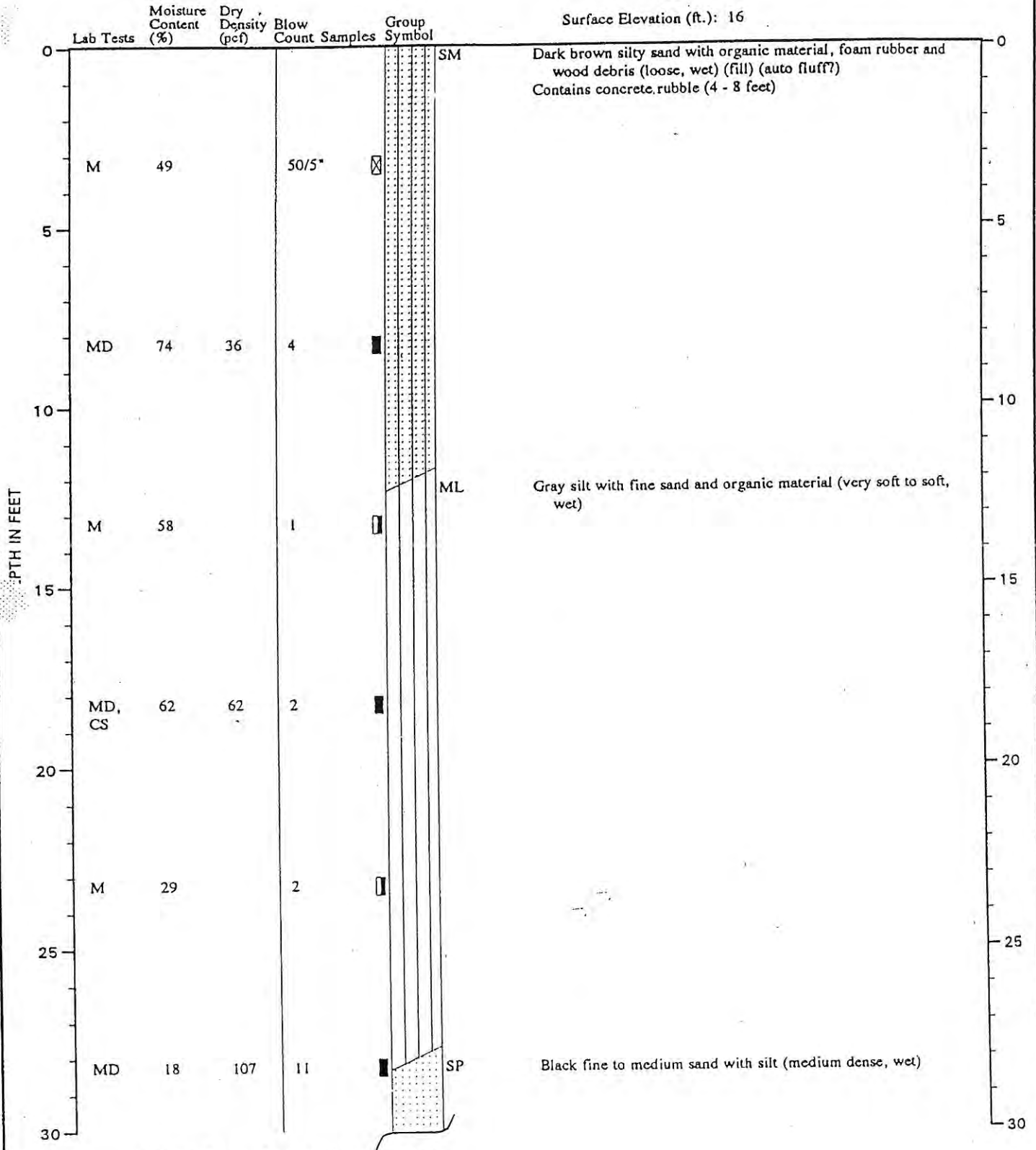
FIGURE 6

BEI 024461

TEST DATA

BORING B-2

DESCRIPTION

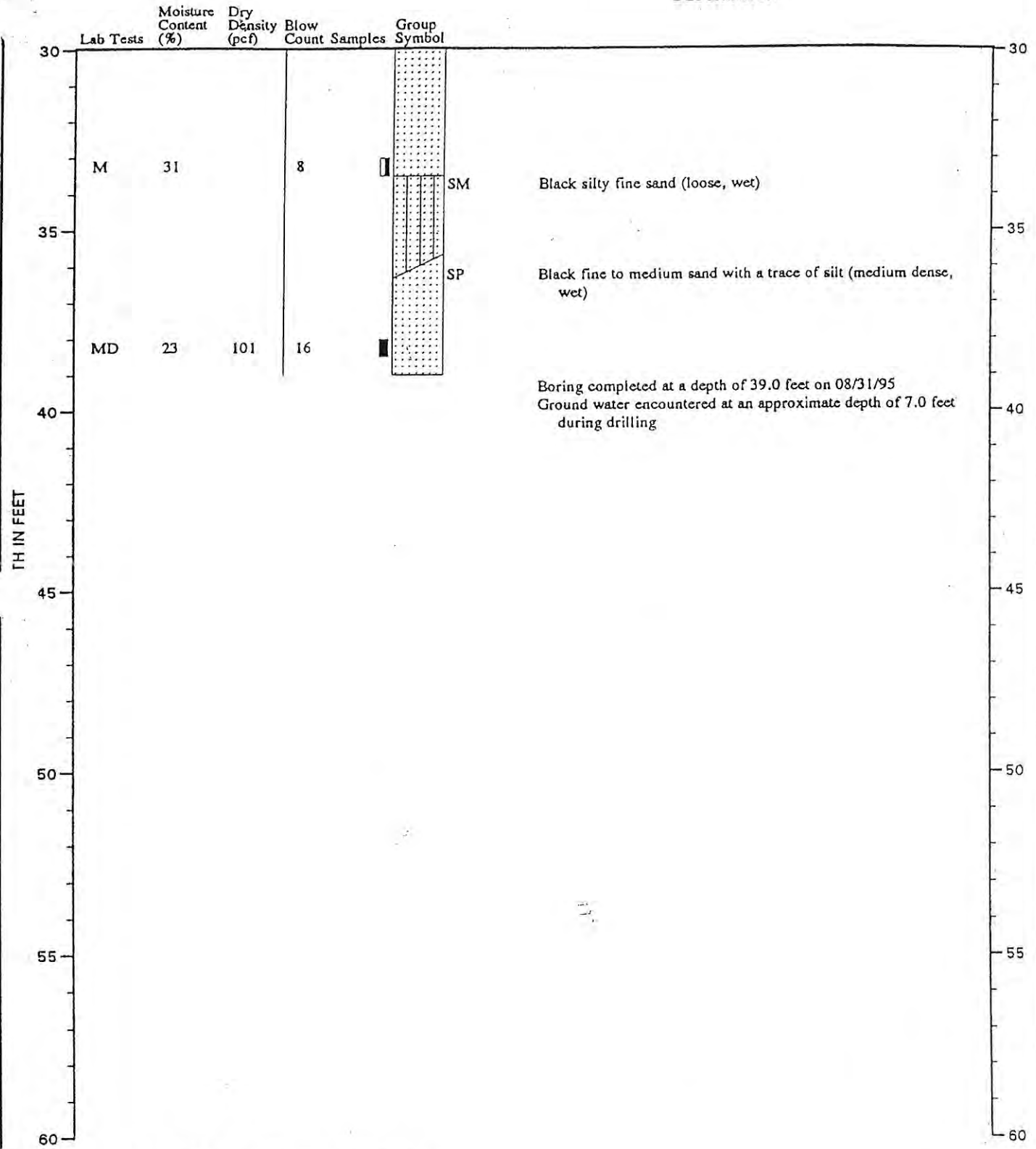


Note: See Figure for explanation of symbols

TEST DATA

BORING B-2  
(Continued)

DESCRIPTION



Note: See Figure for explanation of symbols



LOG OF BORING

FIGURE 8

BEI 024463

4579-001-T03 JEB:GWH:vc: 10/31/95

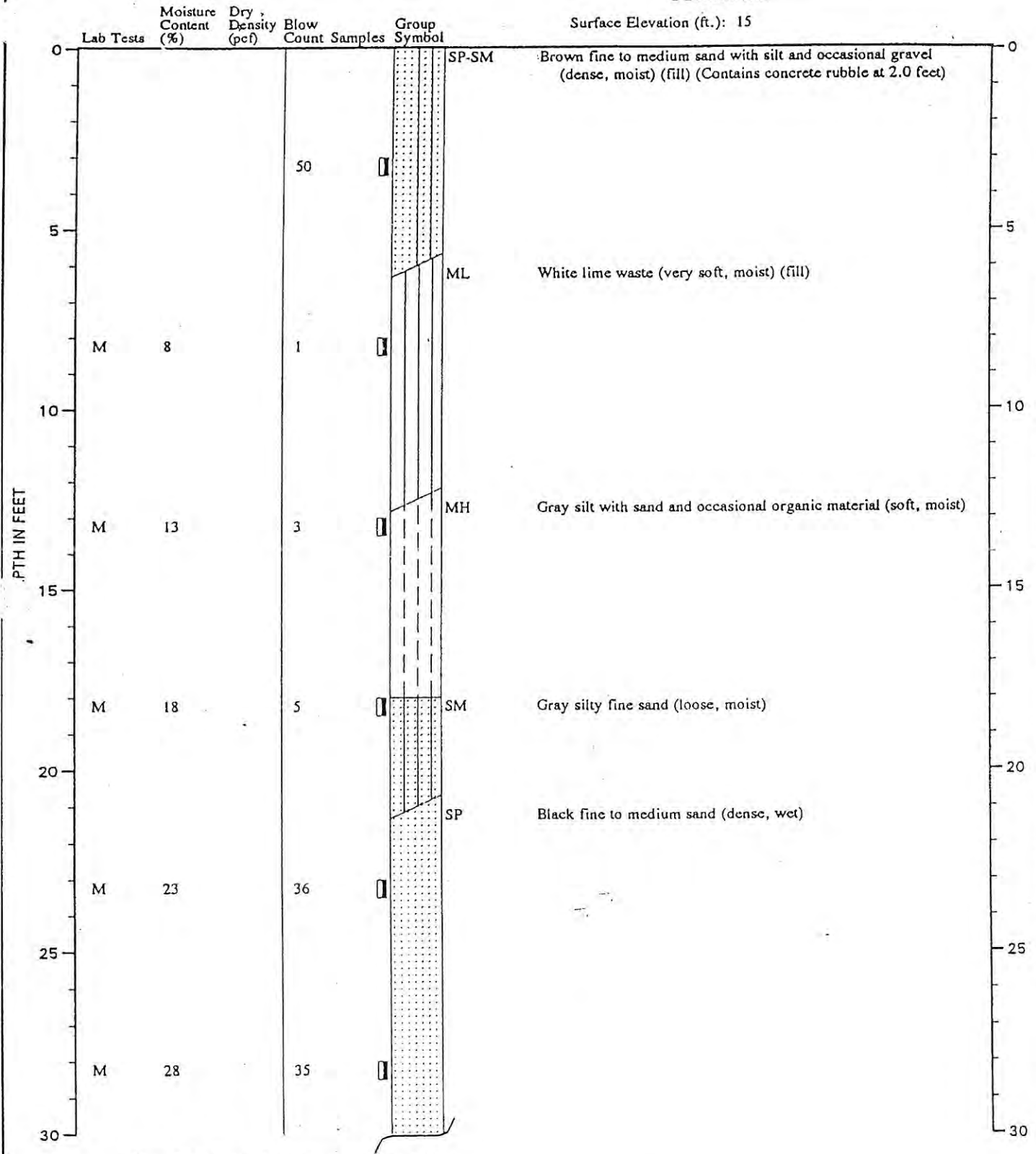
NB40

TEST DATA

BORING B-3

DESCRIPTION

Surface Elevation (ft.): 15

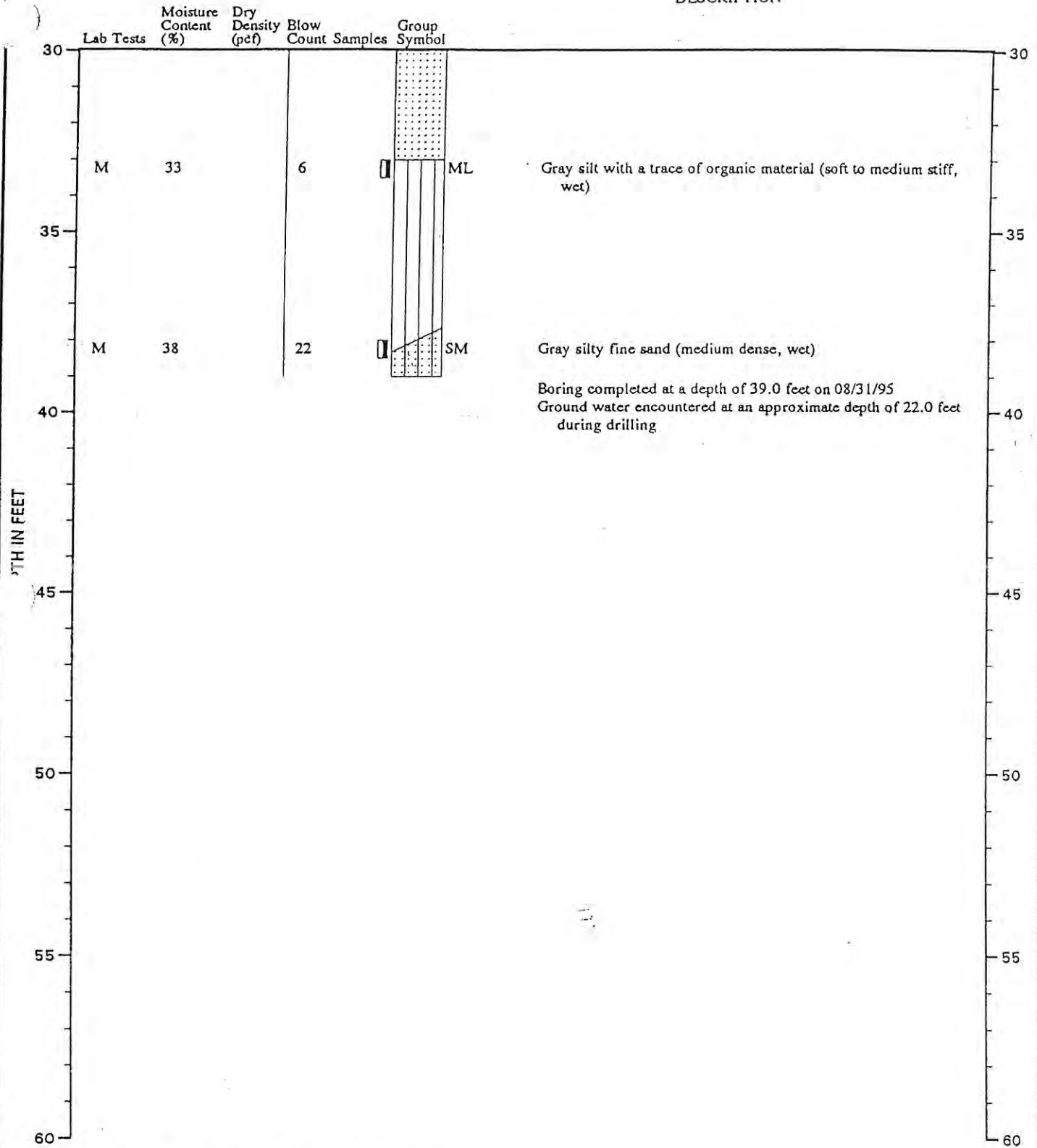


Note: See Figure for explanation of symbols

TEST DATA

BORING B-3  
(Continued)

DESCRIPTION



Note: See Figure for explanation of symbols



LOG OF BORING

FIGURE 10

BEI 024465

JEB:GWH:vc: 10/31/95

4578-001-T03

NB40

## LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
<u>TEST PIT 1</u>		
0.0 - 3.0	SP-SM	Brown fine to medium sand with silt and occasional gravel (dense, moist) (fill)
3.0 - 11.0	ML	White lime waste (very soft, moist) (fill)
11.0 - 12.0	SP-SM	Black fine to medium sand with silt lenses (loose, wet)
Test pit completed at a depth of 12.0 feet on 09/11/95		
Slight ground water seepage observed at an approximate depth of 10.0 feet		
<u>TEST PIT 2</u>		
0.0 - 3.0	SP-SM	Brownish gray fine to medium sand with silt, occasional gravel and organic material (dense, moist) (fill)
3.0 - 6.5	ML	White lime waste with gravel (medium stiff to stiff, moist) (fill)
6.5 - 7.5	SM	Black cemented sand (slag?) (very dense, moist)
Test pit completed at a depth of 7.5 feet on 09/11/95		
No ground water seepage observed		
Disturbed soil obtained at a depth of 7.0 feet		
Backhoe refusal at 7.5 feet in slag		
<u>TEST PIT 3</u>		
0.0 - 0.5		Crushed rock
0.5 - 5.0	SP-SM	Brown fine to medium sand with silt and gravel (dense, moist) (fill)
5.0 - 6.0	SM	Dark brown silty fine sand with abundant wood debris and garbage (loose, moist) (fill) (auto fluff?)
6.0 - 12.0	ML	White lime waste (very soft, moist) (fill)
Test pit completed at a depth of 12.0 feet on 09/11/95		
Slight ground water seepage observed at a depth of 11.0 feet		

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

4579-001-T03



## LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
<u>TEST PIT 4</u>		
0.0 - 0.5		Crushed rock
0.5 - 3.0	SP-SM	Brownish gray fine to medium sand with gravel (dense, moist) (fill)
3.0 - 5.0	SM	Dark brown silty fine sand with abundant wood debris and garbage (medium dense to dense, moist) (fill) (auto fluff?)
5.0 - 10.5	Wood	Brown nondecomposed wood products, chips, and wood debris (loose, moist) (fill)
10.5 - 11.5	ML	Gray silt (soft, wet)
Test pit completed at a depth of 11.5 feet on 09/11/95		
Rapid ground water seepage observed at a depth of 9.5 feet		
<u>TEST PIT 5</u>		
0.0 - 3.5	SP-SM	Brown fine to medium sand with silt and occasional gravel (loose, moist) (fill)
3.5 - 6.0	SM	Dark brown silty sand with abundant wood debris and garbage (medium dense, moist) (fill) (auto fluff?)
6.0 - 11.5	Wood	Wood chip saw dust (fill)
11.5 - 12.0	ML	Gray silt with organic material (soft, moist)
Test pit completed at a depth of 12.0 feet on 09/11/95		
Slight ground water seepage observed at a depth of 11.5 feet		
<u>TEST PIT 6</u>		
0.0 - 1.0	SM	Gray silty fine to medium sand with gravel (dense, moist) (fill)
1.0 - 5.0	SM	Gray silty sand with organic material and garbage (medium dense, moist) (fill) (auto fluff?)
5.0 - 9.5	Wood	Brown nondecomposed wood products, chips, and wood debris (loose, moist) (fill)
9.5 - 10.0	SM	Black sand (loose, wet)
Test pit completed at a depth of 10.0 feet on 09/11/95		
Slight ground water seepage observed at 9.5 feet		

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.  
4579-001-T03

## LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
---	--	-------------

TEST PIT 8

0.0 - 3.0	SP	Brown fine to medium sand with gravel (dense, moist) (fill) (contains fabric layer at 1.5 feet)
3.0 - 4.0	ML	White lime waste (soft, moist) (fill)
4.0 - 6.5	SP-SM	Gray fine to coarse sand with gravel and silt (dense, moist) (fill)
6.5 - 7.0	ML	White lime waste (soft, moist) (fill)
7.0 - 8.0	SM	Brown silty sand with organic material (loose, moist) (fill) (auto fluff?)
8.0 - 9.0	SM/SP	Gray silty fine sand with black sand lenses (loose, wet)
Test pit completed at a depth of 9.0 feet on 10/11/95		
Slight ground water seepage observed at 9.0 feet		
No caving observed		

TEST PIT 9

0.0 - 2.0	SP	Brown fine to medium sand with gravel (dense, moist) (fill)
2.0 - 5.0		Gray concrete/lime waste mix (dense, moist) (fill)
5.0 - 7.0	SP	Black fine to medium sand with organic material (loose to medium dense, wet) (fill)
Test pit completed at a depth of 7.0 feet on 10/11/95		
Moderate ground water seepage observed at 6.5 feet		
Moderate caving observed at 6.5 feet		

TEST PIT 10

0.0 - 6.5	SM	Brownish gray silty fine to medium sand (dense, moist) (fill) (contains 2-inch layer of white lime waste at 5.0 feet)
6.5 - 9.0	SP	Black fine to medium sand with abundant wood and brick debris (loose to medium dense, wet) (fill)
Test pit completed at a depth of 9.0 feet on 10/11/95		
Moderate ground water seepage observed at 8.0 feet		
No caving observed		

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.  
4579-001-T03

## LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
<u>TEST PIT 11</u>		
0.0 - 3.5	SP-SM	Brownish gray fine to medium sand with silt and gravel (dense, moist) (fill)
3.5 - 4.0	SM	Dark brown silty fine sand with abundant organics and garbage (loose, moist) (fill) (auto fluff?)
4.0 - 9.0	ML	White lime waste (soft, moist) (fill)
		Test pit completed at a depth of 9.0 feet on 10/11/95. Backhoe refusal on large log or wood, unable to dig further.
		No ground water seepage observed
		No caving observed
<u>TEST PIT 12</u>		
0.0 - 4.0	SP-SM	Brownish gray fine to medium sand with silt and gravel (dense, moist) ( fill)
4.0 - 10.0	ML	White lime waste (soft, moist) (fill)
10.0 - 11.5	SP	Black fine to medium sand with gray silt lenses (loose, moist)
		Test pit completed at a depth of 11.5 feet on 10/11/95
		No ground water seepage observed
		No caving observed
<u>TEST PIT 13</u>		
0.0 - 4.0	SM	Brown silty fine to medium sand with gravel (medium dense, moist) (fill)
4.0 - 10.0	SM	Dark brown silty sand with abundant garbage and organic material (loose, moist) (fill) (auto fluff?)
10.0 - 12.0	Wood	Brown nondecomposed wood chips and larger wood debris (loose, moist) (fill)
		Test pit completed at a depth of 12.0 feet on 10/11/95
		No ground water seepage observed
		No caving observed

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.  
4579-001-T03

## LOG OF TEST PIT

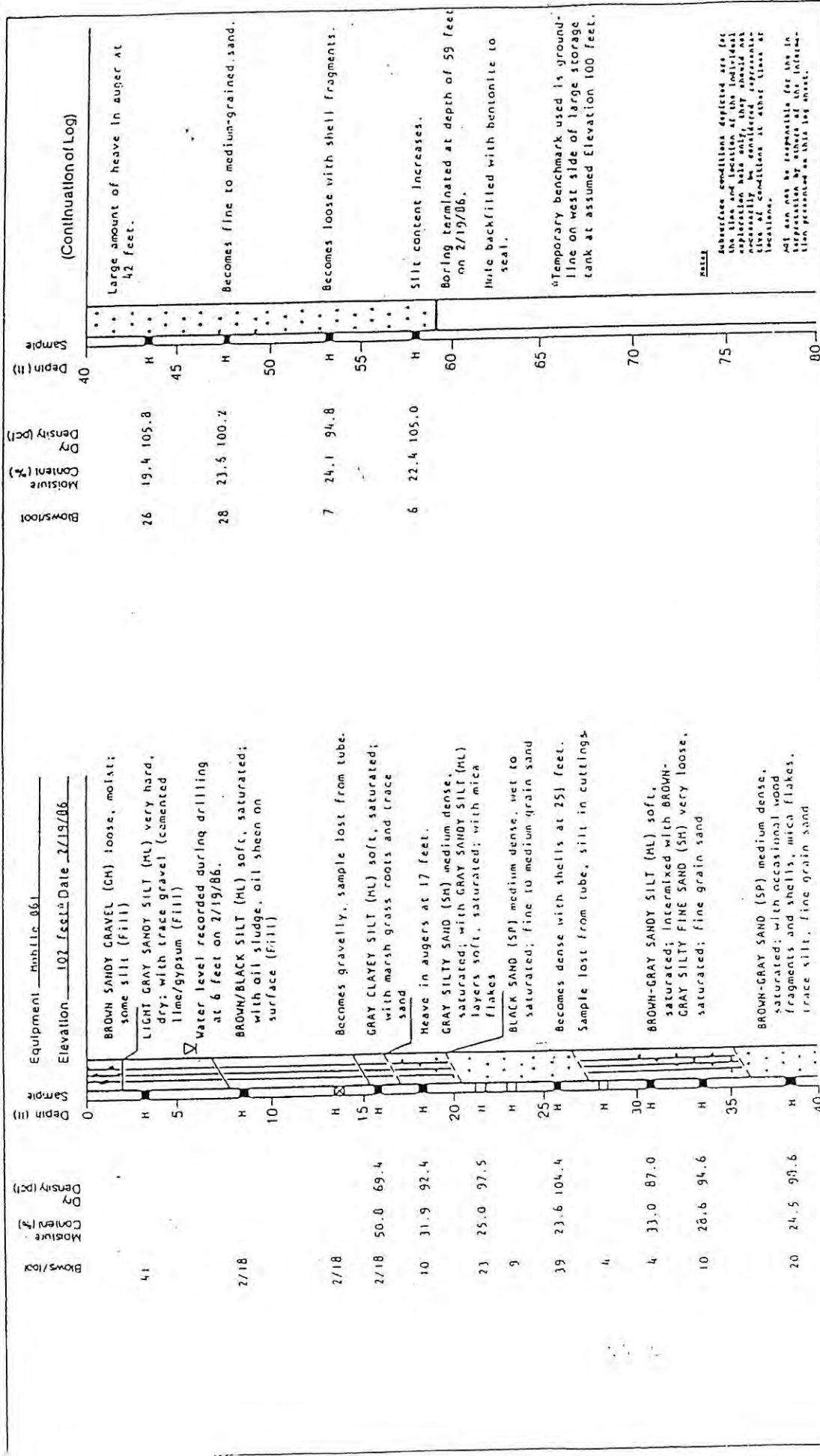
DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
<b><u>TEST PIT 14</u></b>		
0.0 - 6.0	SM	Dark brown silty fine sand with occasional organic material (medium dense to dense, moist) (fill)
6.0 - 8.0	Wood	Brown nondecomposed wood chips, bark and sawdust (loose, moist) (fill)
<p>Test pit completed at a depth of 8.0 feet on 10/11/95. Unable to dig further due to rapid ground water seepage.</p> <p>Rapid ground water seepage observed at 7.0 feet</p> <p>No caving observed</p>		
<b><u>TEST PIT 15</u></b>		
0.0 - 2.0	SM	Gray fine to medium sand with gravel (medium dense, moist) (fill)
2.0 - 9.0	SM	Dark brown silty sand with organic material and garbage (loose, moist) (fill) (auto fluff?)
9.0 - 10.0	ML	White lime waste (soft, moist) (fill)
10.0 - 11.0	SM	Dark brown silty sand with organic material and garbage (loose, moist) (fill) (auto fluff?)
<p>Test pit completed at a depth of 11.0 feet on 10/11/95</p> <p>No ground water seepage observed</p> <p>No caving observed</p>		
<b><u>TEST PIT 16</u></b>		
0.0 - 4.0	SP-SM	Gray fine to medium sand with silt and occasional gravel (medium dense, moist) (fill)
4.0 - 10.5	SM	Gray silty sand with wood and garbage (loose, moist) (fill) (auto fluff?)
10.5 - 11.5	ML	White lime waste (soft, moist) (fill)
11.5 - 13.0	SM	Gray silty sand with wood and garbage (loose, moist) (fill) (auto fluff?)
<p>Test pit completed at a depth of 13.0 feet on 10/11/95</p> <p>Slight ground water seepage observed at 13.0 feet</p> <p>No caving observed</p>		

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.  
4579-001-T03

## LOG OF TEST PIT

DEPTH BELOW GROUND SURFACE (FEET)	SOIL GROUP CLASSIFICATION SYMBOL	DESCRIPTION
<u>TEST PIT 17</u>		
0.0 - 5.0	SM	Brownish gray silty fine to medium sand with gravel (dense, moist) (fill)
5.0 - 11.5	ML	White lime waste (soft, moist) (fill)
11.5 - 12.5	SP/ML	Black fine to medium sand with gray silt lenses (loose, wet)
Test pit completed at a depth of 12.5 feet on 10/11/95		
Slight ground water seepage observed at 10.0 feet		
Moderate caving observed at 8.0 to 10.0 feet		
<u>TEST PIT 18</u>		
0.0 - 5.0	SP-SM	Brown fine to medium sand with silt and gravel (medium dense to dense, moist) (fill)
5.0 - 8.0	SM	Dark brown silty sand with abundant garbage (loose, moist) (fill) (auto fluff?)
8.0 - 10.0	ML	White lime waste (loose, moist) (fill)
10.0 - 11.5	SP/ML	Black fine to medium sand with gray silt lenses (loose, wet)
Test pit completed at a depth of 11.5 feet on 10/11/95		
Slight ground water seepage observed at 11.0 feet		
No caving observed		

THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.  
4579-001-T03



**LOG OF BORING 1**  
 Applied Geotechnology Inc.  
 Geotechnical Engineering  
 Geology & Hydrogeology  
 Chemical Processors Warehouse  
 Tacoma, Washington

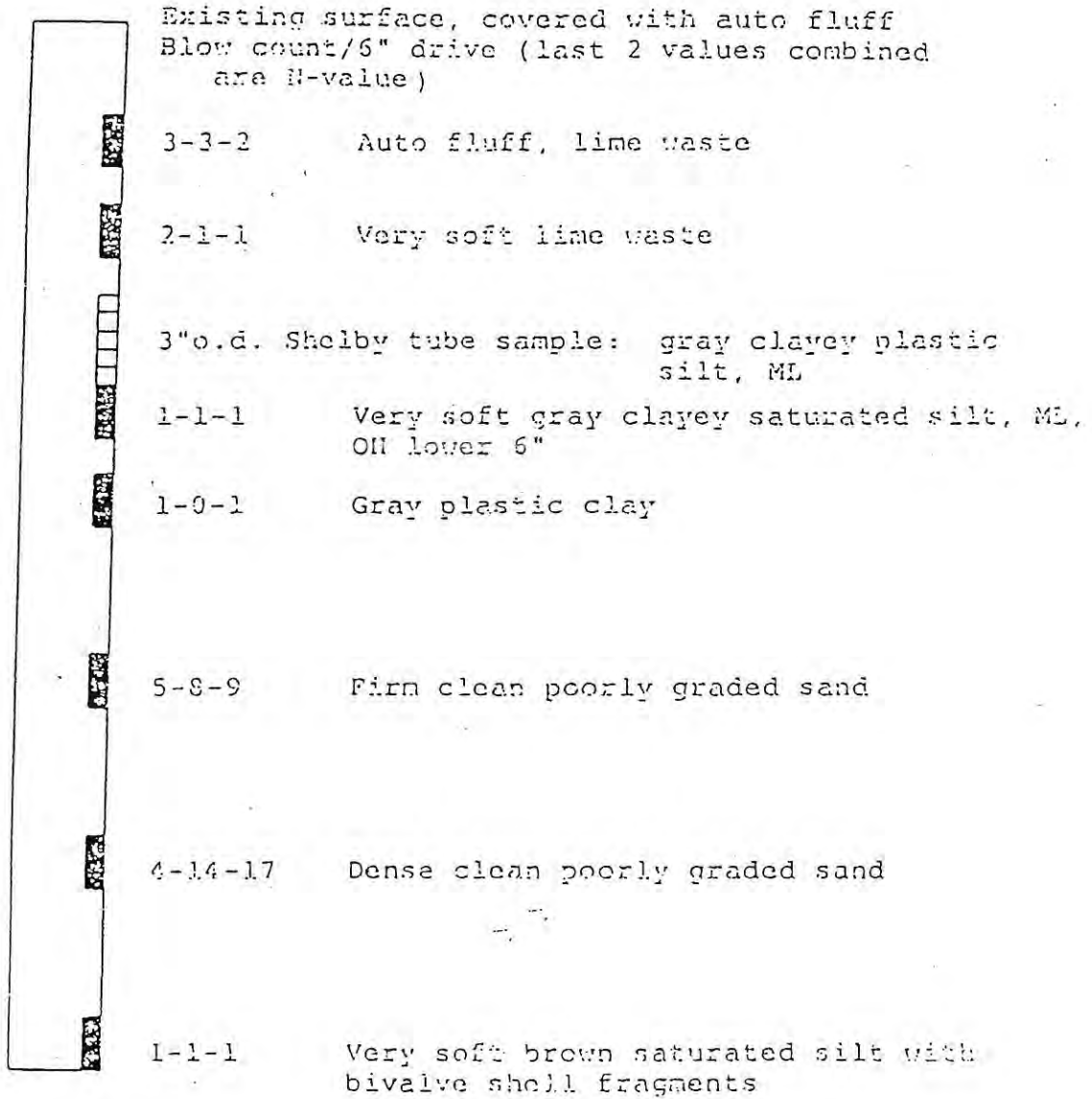
(Continuation of Log)  
 Large amount of heave in auger at 42 feet.  
 Becomes fine to medium-grained sand.  
 Becomes loose with shell fragments.  
 Silt content increases.  
 Boring terminated at depth of 59 feet on 2/19/86.  
 Hole backfilled with bentonite to seal.  
 Temporary benchmark used is groundline on west side of large storage tank at assumed Elevation 100 feet.

NOTE  
 Subsurface conditions depicted are for the time and location of the individual exploration hole only, they should not necessarily be considered representative of other conditions at other times or locations.  
 AET can not be responsible for the in-formation provided by other than information furnished by the client.

CHEMICAL PROCESSING CO.

Project No. S-4300

BORE HOLE NO. 1

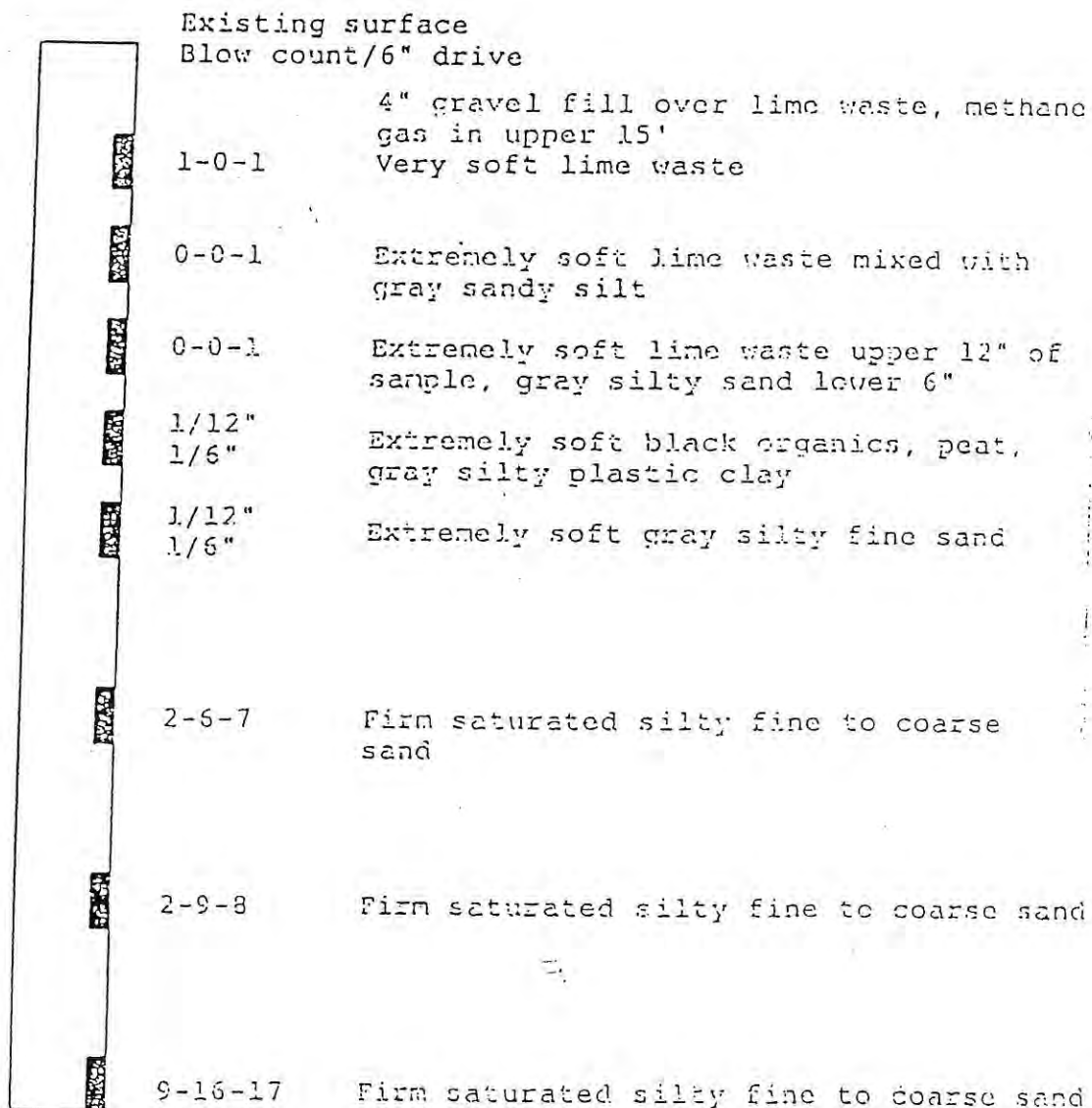


Vertical Scale: 1" represents 5'

CHEMICAL PROCESSING CO.

Project No. S-4300

BORE HOLE NO. 4



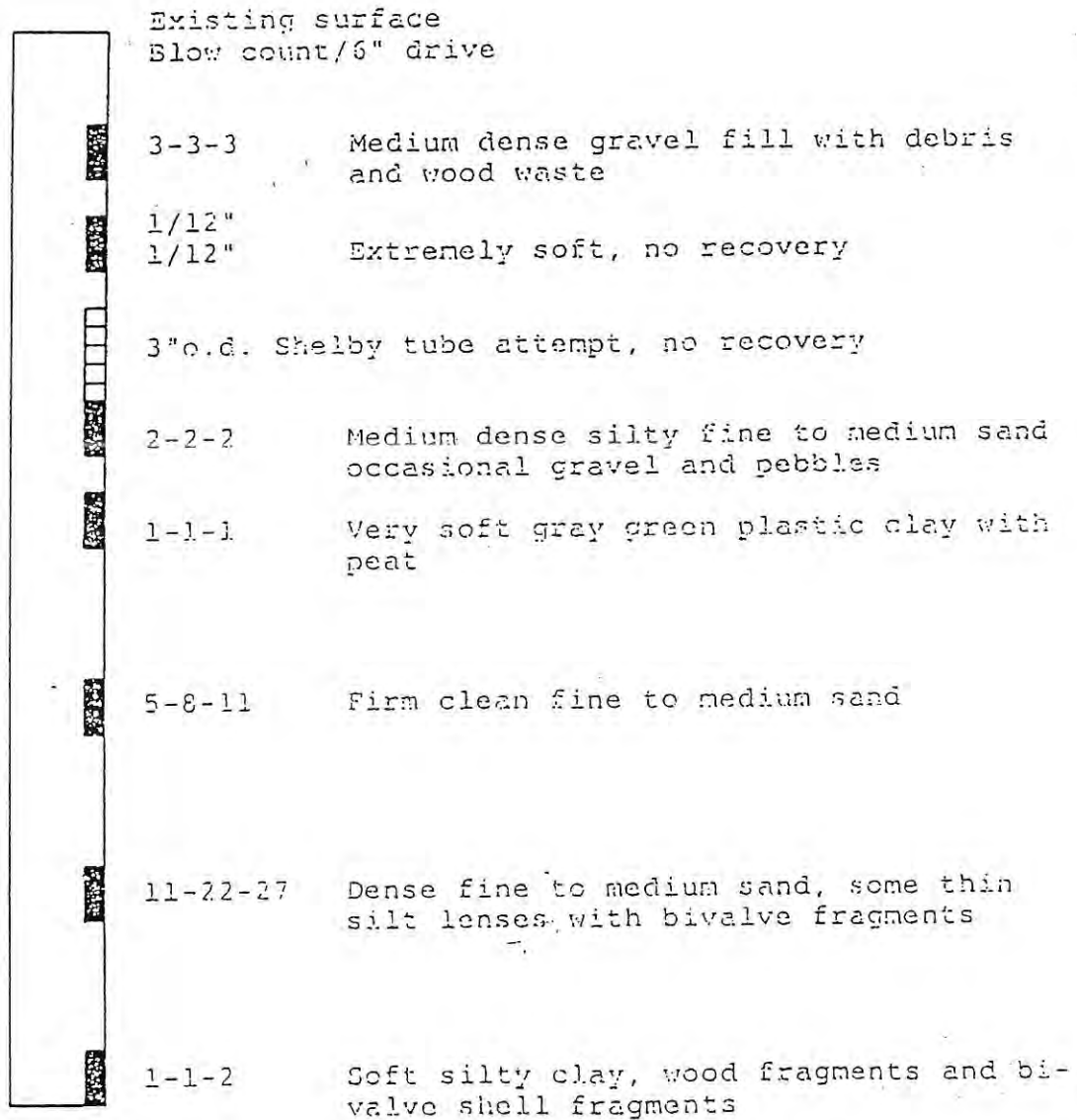
Vertical Scale: 1" represents 5'



CHEMICAL PROCESSING CO.

Project No. S-4300

BORE HOLE NO. 6

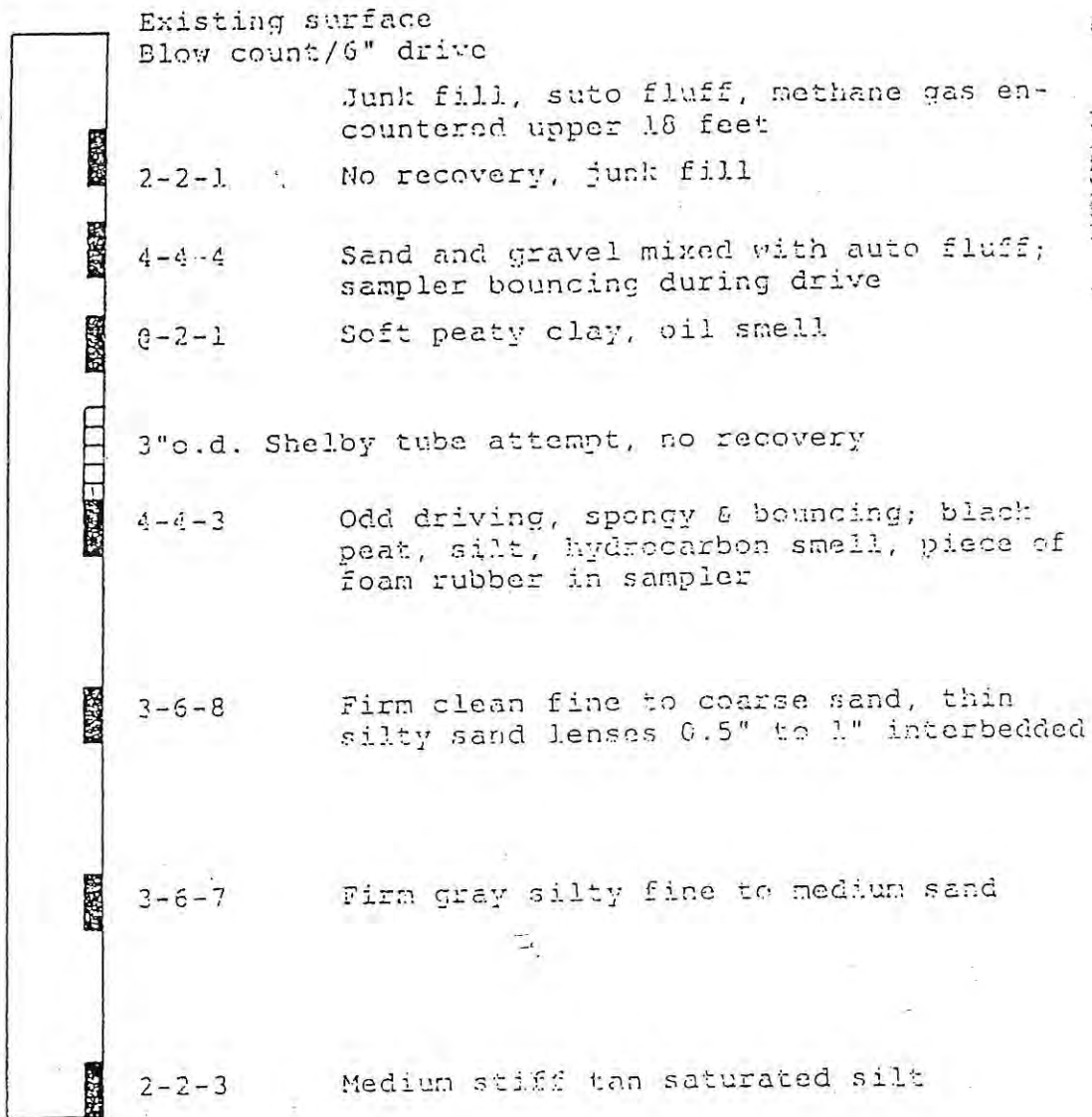


Vertical Scale: 1" represents 5'

CHEMICAL PROCESSING CO.

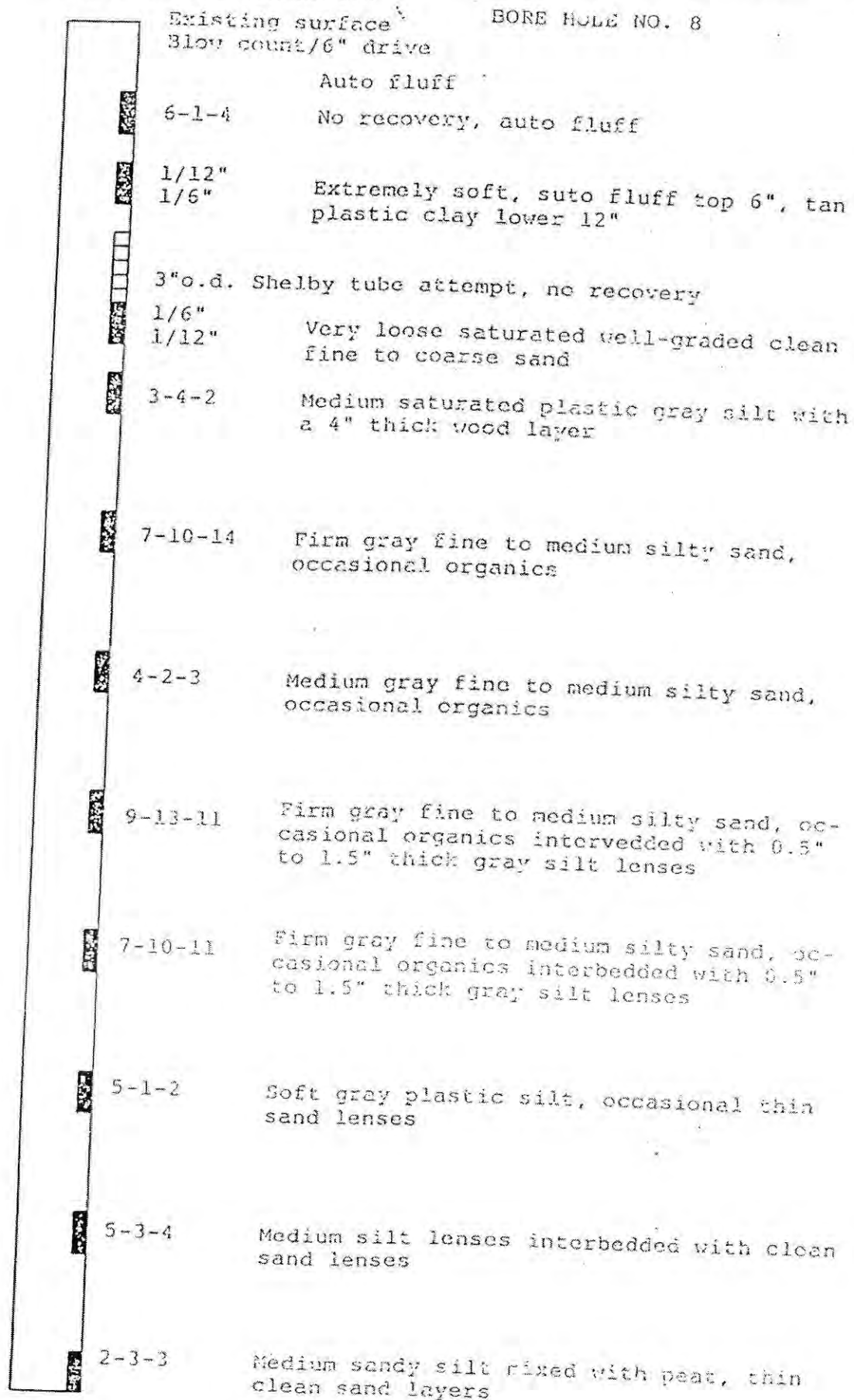
Project No. S-4300

BORE HOLE NO. 7



Vertical Scale: 1" represents a 5'

BORE HOLE NO. 8





# RECORD OF BOREHOLE EH-B

SHEET 1 of 1

PROJECT: PSE/Tacoma LNG Phase 2/WA DRILLING DATE: 9/21/15 COORDINATES: N: 713,451.00 E: 1,170,308.00 ELEVATION: 14.5  
 PROJECT NUMBER: 1537265.002 DRILLING METHOD: Hollow Stem Auger DATUM: Washington State Plane South Zone DATUM: NAVD88  
 LOCATION: N end of Taylor Way, Tacoma DRILL RIG: Diedrich D-50 Track Rig (US foot) INCLINATION: -90

DEPTH (Ft)	BORING METHOD	SOIL PROFILE				SAMPLES				PENETRATION RESISTANCE BLOWS / ft				NOTES WATER LEVELS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	NUMBER	TYPE	PID Readings (in ppm)	N	REC / ATT	WATER CONTENT (PERCENT)				
					DEPTH (ft)						W <sub>p</sub>	W <sub>L</sub>	W <sub>u</sub>		
0	4.25-inch Inner Diameter Hollow Stem Auger with Autohammer	0.0 - 0.5 Asphalt.	SP	█	14.0									Borehole backfilled with bentonite chips and capped with EZ street cold patch.  Groundwater measured at 7.5 ft bgs at time of drilling  GW Readings 10:30 pH: 6.71 Conductivity (uS/cm): 427 Turbidity (ntu): 427 Temp (C): 19.9  GW Readings 10:35 pH: 6.57 Conductivity (uS/cm): 421 Turbidity (ntu): 551 Temp (C): 19.9 GW sample collected at 10:49	
		0.5 - 4.5 FILL - (SP) SAND, fine to coarse; black with some iron-oxide staining, trace organics, non-stratified; non-cohesive, moist, compact.		█	0.5										
5		4.5 - 9.5 FILL - (SM) SILTY SAND, fine to medium, non-plastic; olive grey and black with red grains, trace organics, thinly laminated with alternating sand and silt, (ALLUVIUM); non-cohesive, moist, loose to compact.	SM	█	10.0										
		Becomes wet and compact.		█	4.5										
				█	5.0										
10		9.5 - 11.5 (SP) SAND, fine to coarse, trace to some silt; black with red and white grains, non-stratified, (ALLUVIUM); non-cohesive, wet, very loose.	SP	█	9.5										
				█	5.0										
		Boring completed at 11.5 ft.			3.0										
					11.5										

ENVIRONMENTAL 1537265 PSE- EH.GPJ GLDR\_WA.GDT 11/11/15

# RECORD OF BOREHOLE EH-C

SHEET 1 of 1

PROJECT: PSE/Tacoma LNG Phase 2/WA DRILLING DATE: 9/21/15 COORDINATES: N: 713,256.00 E: 1,170,791.00 ELEVATION: 14.5  
 PROJECT NUMBER: 1537265.002 DRILLING METHOD: Hollow Stem Auger DATUM: Washington State Plane South Zone DATUM: NAVD88  
 LOCATION: N end of Taylor Way, Tacoma DRILL RIG: Diedrich D-50 Track Rig (US foot) INCLINATION: -90

DEPTH (Ft)	BORING METHOD	SOIL PROFILE				SAMPLES				PENETRATION RESISTANCE BLOWS / ft				NOTES WATER LEVELS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	PID Readings (in ppm)	N	REC / ATT	WATER CONTENT (PERCENT)				
											W <sub>p</sub>	W <sub>L</sub>	W <sub>p</sub>		W <sub>L</sub>
0	4.25-inch Inner Diameter Hollow Stem Auger with Autohammer	0.0 - 0.5 Asphalt.			14.0										Borehole backfilled with bentonite chips and capped with EZ street cold patch.  <div style="text-align: right;">                         Groundwater measured at 7.3 ft  </div>
0.5		0.5 - 4.5 FILL - (SP-SM) SAND, fine to medium, some silt, non-plastic to low plasticity; brown and olive grey, non-stratified; non-cohesive, moist, very dense.	SP-SM												
5		4.5 - 9.5 (SP) SAND, fine to medium; black and light brown with red grains and some iron-oxide staining, non-stratified, (ALLUVIUM); non-cohesive, moist, compact.	SP		10.0										
		Becomes wet and loose.													
		EH-C-V HD	0.0	50/6"	1.0 1.5										
		EH-C-5 SS	0.1	17	1.2 1.5										
		EH-C-S HD	0.1	9	0.7 1.5										
10		9.5 - 11.5 (ML) SILT, low plasticity, trace fine sand; olive grey mottled black, trace organics (rootlets), non-stratified, (ALLUVIUM); non-cohesive, moist to wet, very loose.	ML		5.0 9.5										
		EH-C-10 SS	0.1	0	1.5 1.5										
		Boring completed at 11.5 ft.				3.0 11.5									
15														GW Readings 09:10 pH: 7.02 Conductivity (uS/cm): 324 Turbidity (ntu): 497 Temp (C): 17.7  GW Readings 09:15 pH: 6.74 Conductivity (uS/cm): 315 Turbidity (ntu): 456 Temp (C): 17.4 GW sample collected at 9:26	
20															
25															
30															

ENVIRONMENTAL 1537265 PSE- EH.GPJ GLDR\_WA.GDT 11/11/15

1 in to 4 ft  
 DRILLING CONTRACTOR: Holocene Drilling, Inc.  
 DRILLER: D. Puckets

LOGGED: R. Hunt  
 CHECKED: A. Dennison  
 DATE: 9/29/2015



# RECORD OF BOREHOLE EH-D

SHEET 1 of 1

PROJECT: PSE/Tacoma LNG Phase 2/WA DRILLING DATE: 9/18/15 COORDINATES: N: 713,048.00 E: 1,171,312.00 ELEVATION: 14.5  
 PROJECT NUMBER: 1537265.002 DRILLING METHOD: Hollow Stem Auger DATUM: Washington State Plane South Zone DATUM: NAVD88  
 LOCATION: N end of Taylor Way, Tacoma DRILL RIG: Diedrich D-120 Truck Rig (US foot) INCLINATION: -90

DEPTH (Ft)	BORING METHOD	SOIL PROFILE				SAMPLES				PENETRATION RESISTANCE BLOWS / ft				NOTES WATER LEVELS		
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	NUMBER	TYPE	PID Readings (in ppm)	N	REC / ATT	WATER CONTENT (PERCENT)					
					DEPTH (ft)											
0	4.25-inch Inner Diameter Hollow Stem Auger with Autohammer	0.0 - 0.5 Asphalt.			14.0										Borehole backfilled with bentonite chips and capped with EZ street cold patch.  <div style="text-align: right; margin-top: 100px;">  Groundwater measured at 6.5 ft bgs at time of drilling                 </div>	
0.5		0.5 - 7.0 FILL - (SP) SAND, fine to medium; black and light brown with red and white grains, non-stratified; non-cohesive, moist, compact.	SP			EH-D-V	HD	0.0	26	1.0 / 1.5						
5						EH-D-5	SS	0.0	16	1.0 / 1.5						
7.5																
7.0		7.0 - 9.5 (SM-ML) SAND, fine, and SILT, non-plastic; black and olive grey, trace organics (rootlets), thinly stratified with alternating sand and silt layers, (ALLUVIUM); non-cohesive, moist to wet, loose.	SM/ML		7.0	EH-D-S	HD	0.0	5	1.0 / 1.5						
10																
9.5		9.5 - 11.5 (ML) sandy SILT, fine sand; olive grey and dark grey, trace organics, thinly stratified with pockets of fine sand, (ALLUVIUM); non-cohesive, wet, loose.	ML		9.5	EH-D-10	SS	0.0	3	1.5 / 1.5						
11.5		Boring completed at 11.5 ft.														
15																GW Readings 14:58 pH: 6.51 Conductivity (uS/cm): 1567 Turbidity (ntu): 841  GW Readings 15:03 pH: 6.56 Conductivity (uS/cm): 1550 Turbidity (ntu): 384 GW sample collected at 15:16
20																
25																
30																

ENVIRONMENTAL 1537265 PSE- EH.GPJ GLDR\_WA.GDT 11/11/15

# RECORD OF BOREHOLE BH-16

SHEET 1 of 2

PROJECT: PSE/Tacoma LNG Phase 2/WA DRILLING DATE: 9/14/15 COORDINATES: N: 712,658.00 E: 1,172,279.00 ELEVATION: 13.8  
 PROJECT NUMBER: 1537265.001 DRILLING METHOD: Hollow Stem Auger DATUM: Washington State Plane South Zone DATUM: NAD83  
 LOCATION: Lincoln & Taylor- NE, Tacoma DRILL RIG: Diedrich D-50 Track Rig INCLINATION: -90

DEPTH (Ft)	BORING METHOD	SOIL PROFILE				SAMPLES				PENETRATION RESISTANCE BLOWS / ft				NOTES WATER LEVELS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	NUMBER	TYPE	PID Readings (in ppm)	N	REC / ATT	WATER CONTENT (PERCENT)				
											$W_p$ $W_L$ $W_U$				
0	4.25-inch Inner Diameter Hollow Stem Auger with Autohammer	0.0 - 0.5 Asphalt.			13.3										Borehole backfilled with cement-bentonite grout mixture and capped with EZ street cold patch.
0.5		0.5 - 7.0 FILL - (SP) SAND, fine to coarse, some fine, sub-rounded gravel; light brown to grey with some iron-oxide staining, heterogeneous; non-cohesive, dry to moist, dense.	SP			S-1	SS	37	0.9 1.5						
5		Becomes fine to medium sand, trace coarse sand, no iron-oxide staining, and moist.				S-2	SS	38	0.7 1.5						
6.8		7.0 - 12.8 FILL - (SP/GP) SAND, fine to coarse, and GRAVEL, fine to coarse, sub-rounded to sub-angular, trace coarse gravel; dark grey with red grains, heterogeneous; non-cohesive, wet, compact.	SP/GP		7.0	S-3	SS	16	0.4 1.5						
10		Trace iron-oxide staining, becomes very loose.				S-4	SS	3	0.7 1.5						
12.8		Black plastic matt at boundary between FILL (SP/GP) and ALLUVIUM (SP).			1.0	S-5	SS	10	0.8 1.5						
15		12.8 - 20.5 (SP) SAND, fine, trace medium sand; black with red grains, non-stratified, (ALLUVIUM); non-cohesive, wet, loose to compact.	SP			S-6	SS	11	0.9 1.5						
20		Becomes fine to medium sand with trace coarse sand.				S-7	SS	1	1.5 1.5						
20.5		20.5 - 23.0 (ML) SILT, non-plastic to low plasticity, trace to some fine sand; olive grey, trace organics (wood debris), non-stratified with pockets of fine sand, (ALLUVIUM); non-cohesive, wet, very loose.	ML		-6.7 20.5										
25		23.0 - 28.0 (SM) SILTY SAND, fine to medium; black with red grains, non-stratified with trace pockets of silt, (ALLUVIUM); non-cohesive, moist to wet, loose.	SM		-9.2 23.0	S-8	SS	5	1.0 1.5						
30	28.0 - 33.0 (OH) sandy ORGANIC SILT, fine to medium, low plasticity; dark grey to olive grey, trace to some organics, thinly laminated, (ALLUVIUM); non-cohesive, moist to wet, loose. Log continued on next page	OH		-14.2 28.0											

Groundwater measured at 7.8 ft bgs at time of drilling

ENVIRONMENTAL 1537265 PSE- BH.GPJ GLDR\_WA.GDT 11/11/15

1 in to 4 ft  
 DRILLING CONTRACTOR: Holocene Drilling, Inc.  
 DRILLER: D. Puckets

LOGGED: R. Hunt  
 CHECKED: A. Dennison  
 DATE: 9/29/2015







# RECORD OF BOREHOLE BH-17

SHEET 1 of 2

PROJECT: PSE/Tacoma LNG Phase 2/WA DRILLING DATE: 9/14/15 COORDINATES: N: 712,790.00 E: 1,171,948.00 ELEVATION: 14.0  
 PROJECT NUMBER: 1537265.001 DRILLING METHOD: Hollow Stem Auger DATUM: Washington State Plane South Zone DATUM: NAD83  
 LOCATION: Taylor Way, Tacoma DRILL RIG: Diedrich D-50 Track Rig (US foot) INCLINATION: -90

DEPTH (Ft)	BORING METHOD	SOIL PROFILE				SAMPLES				PENETRATION RESISTANCE BLOWS / ft		NOTES WATER LEVELS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	PID Readings (in ppm)	N	REC / ATT	WATER CONTENT (PERCENT)		
											W <sub>p</sub>		W <sub>L</sub>
0	4.25-inch Inner Diameter Hollow Stem Auger with Autohammer	0.0 - 0.5 Asphalt.			13.5								Borehole backfilled with cement-bentonite grout mixture and capped with EZ street cold patch.  No recovery with 1.5 inch sampler, 0.9/1.5 recovery with 3.0 inch sampler.
0.5		0.5 - 7.0 FILL - (SP/GP) SAND, fine to coarse, and GRAVEL, fine to coarse, sub-rounded; light grey with iron-oxide staining, heterogeneous; non-cohesive, dry to moist, very dense.	SP/GP			S-1	SS	>50	0.5 1.5				
5		7.0 - 7.0 Becomes light grey mottled dark grey and orange, trace organics, dry, compact.				S-2	SS	29	0.9 1.5				
7.0		7.0 - 12.0 FILL - (SP) SAND, fine to medium; dark grey with red grains, non-stratified, (ALLUVIUM); non-cohesive, wet, loose.	SP		7.0	S-3	SS	9	0.5 1.5				
10		12.0 - 18.0 FILL - (ML) SILT, non-plastic to low plasticity, trace to some fine sand; dark grey to olive grey, trace organics (wood chunks); thinly laminated with pockets of fine sand, dilatant, (ALLUVIUM); non-cohesive, wet, very loose.	ML		12.0	S-4	SS	7	0.9 1.5				
15		18.0 - 23.0 FILL - (SP-SM) SAND, fine to medium, some silt; black to dark grey with red grains, non-stratified, (ALLUVIUM); non-cohesive, moist to wet, compact.	SP-SM		18.0	S-5	SS	3	1.0 1.5				
20		23.0 - 28.0 (ML) sandy SILT, fine, non-plastic to low plasticity, dark grey to olive grey, trace organics (woody debris), non-stratified, dilatant, (ALLUVIUM); non-cohesive, wet, loose.	ML		23.0	S-6	SS	4	0.6 1.5				
25		28.0 - 35.3 (SP-SM) SAND, fine, some silt, black with red grains, non-stratified, (ALLUVIUM); non-cohesive, moist to wet, compact.	SP-SM		28.0	S-7	SS	13	1.5 1.5				
30		Log continued on next page				S-8	SS	6	1.5 1.5				

Groundwater measured at 8.1 ft bgs at time of drilling

ENVIRONMENTAL 1537265 PSE- BH.GPJ GLDR\_WA.GDT 11/11/15

1 in to 4 ft  
 DRILLING CONTRACTOR: Holocene Drilling, Inc.  
 DRILLER: D. Puckets

LOGGED: R. Hunt  
 CHECKED: A. Dennison  
 DATE: 9/29/2015



# RECORD OF BOREHOLE BH-17

SHEET 2 of 2

PROJECT: PSE/Tacoma LNG Phase 2/WA DRILLING DATE: 9/14/15 COORDINATES: N: 712,790.00 E: 1,171,948.00 ELEVATION: 14.0  
 PROJECT NUMBER: 1537265.001 DRILLING METHOD: Hollow Stem Auger DATUM: Washington State Plane South Zone DATUM: NAD83  
 LOCATION: Taylor Way, Tacoma DRILL RIG: Diedrich D-50 Track Rig (US foot) INCLINATION: -90

DEPTH (Ft)	BORING METHOD	SOIL PROFILE				SAMPLES				PENETRATION RESISTANCE BLOWS / ft				NOTES WATER LEVELS		
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	PID Readings (in ppm)	N	REC / ATT	WATER CONTENT (PERCENT)					
											10	20	30		40	
30	4.25-inch Inner Diameter Hollow Stem Auger with Autohammer	28.0 - 35.3 (SP-SM) SAND, fine, some silt, black with red grains, non-stratified, (ALLUVIUM); non-cohesive, moist to wet, compact. <i>(Continued)</i>	SP-SM	[Graphic Log: Dotted pattern]		S-9	SS		12	0.6 1.5	■					
35		35.3 - 36.3 (ML) SILT, low plasticity, trace to some fine sand; dark grey to olive grey, trace organics, thinly laminated with pockets of fine sand, (ALLUVIUM); non-cohesive, wet, very loose.	ML	[Graphic Log: Vertical lines]	-21.3 35.3 -22.3 36.3	S-10	SS		0	1.5 1.5	■					
		36.3 - 38.0 (PT) SILTY PEAT, fibrous woody organics (~75%); light brown, non-stratified, strong odor (decaying organics), (ALLUVIUM); cohesive, moist, very soft.	PT	[Graphic Log: Wavy lines]	-24.0 38.0											
40		38.0 - 46.0 (ML) CLAYEY SILT to SILT, low plasticity, trace fine sand; dark grey to olive grey, trace organics (woody), thinly laminated (ALLUVIUM); non-cohesive, wet, very loose.	ML	[Graphic Log: Vertical lines]		S-11	SS		3	1.5 1.5	■					
45		46.0 - 46.5 (SP) SAND, fine to medium; black with red grains, non-stratified, (ALLUVIUM); non-cohesive, moist to wet, compact. Boring completed at 46.5 ft.	SP	[Graphic Log: Dotted pattern]	-32.0 -32.5 46.5	S-12	SS		11	1.5 1.5	■					

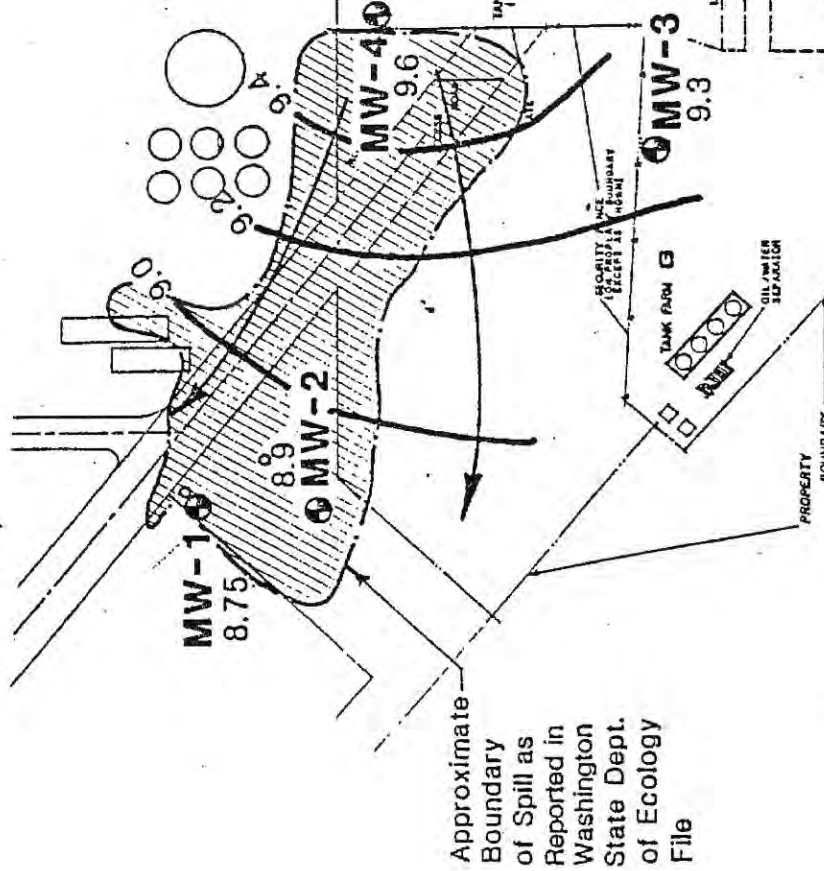
ENVIRONMENTAL 1537265 PSE- BH.GPJ GLDR\_WA.GDT 11/11/15

1 in to 4 ft  
 DRILLING CONTRACTOR: Holocene Drilling, Inc.  
 DRILLER: D. Puckets

LOGGED: R. Hunt  
 CHECKED: A. Dennison  
 DATE: 9/29/2015



# Site and Exploration Plan



Approximate Boundary of Spill as Reported in Washington State Dept. of Ecology File

● MW-1

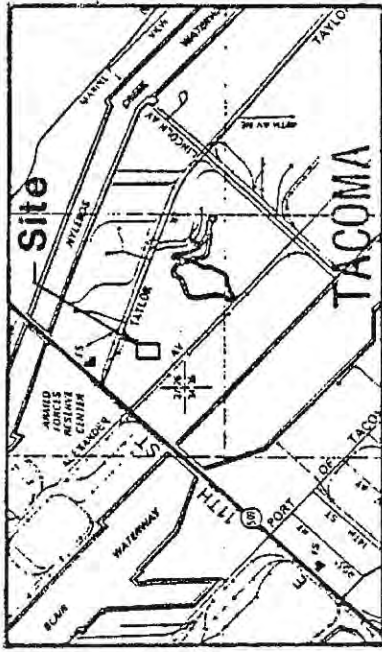
9.3

Monitoring Well Location and Number

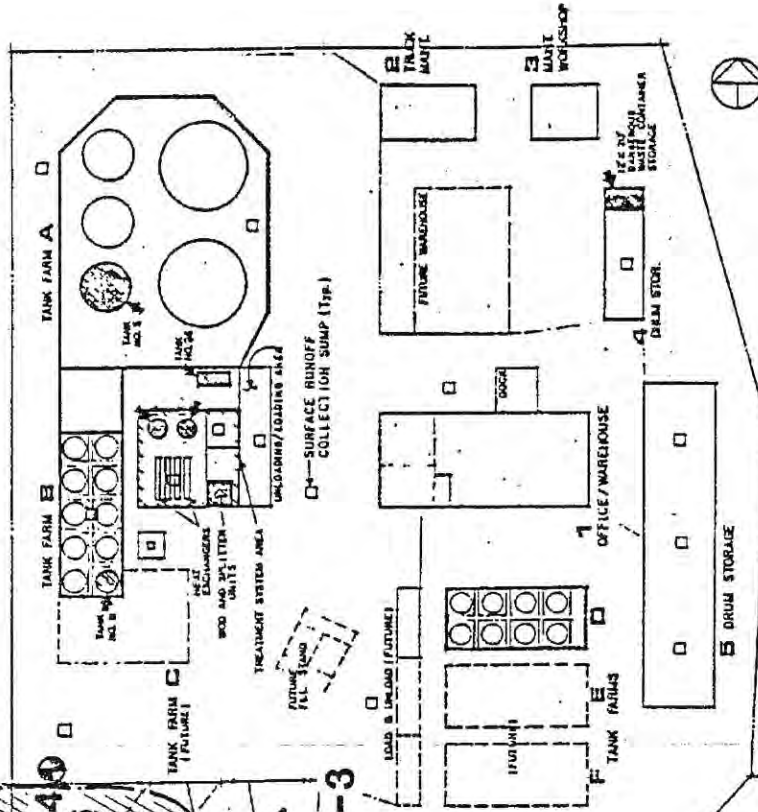
Water Level Spot Elevation in Feet Measured 2/20/86

Contour in Feet of Equal Water Level Elevation

Groundwater Flow Direction



Vicinity Map

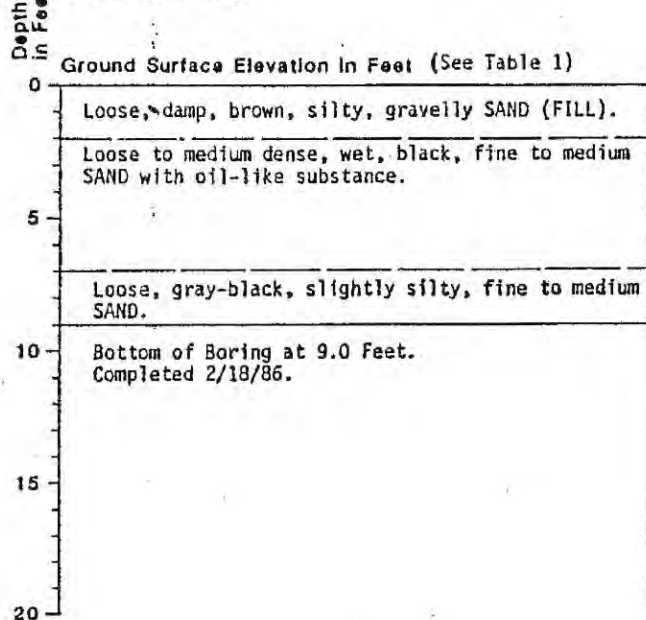


DEMOTES AREAS OF DANGEROUS WASTE STORAGE OR TREATMENT



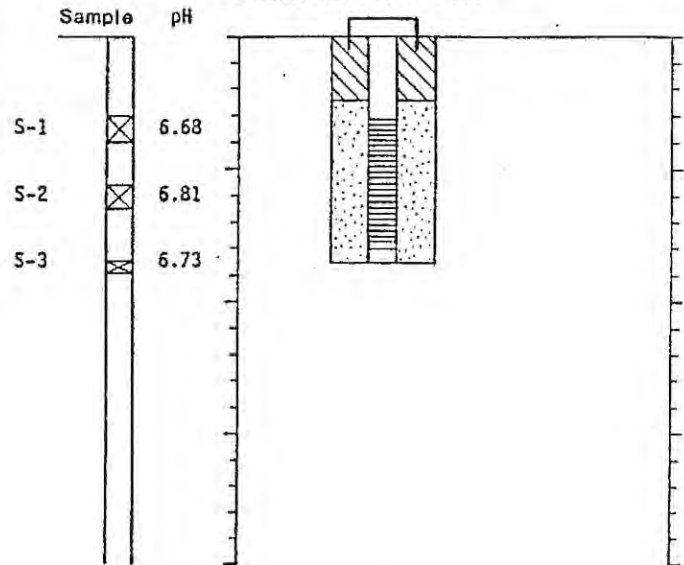
# Boring Log and Construction Data for Well MW-1

## Geologic Log



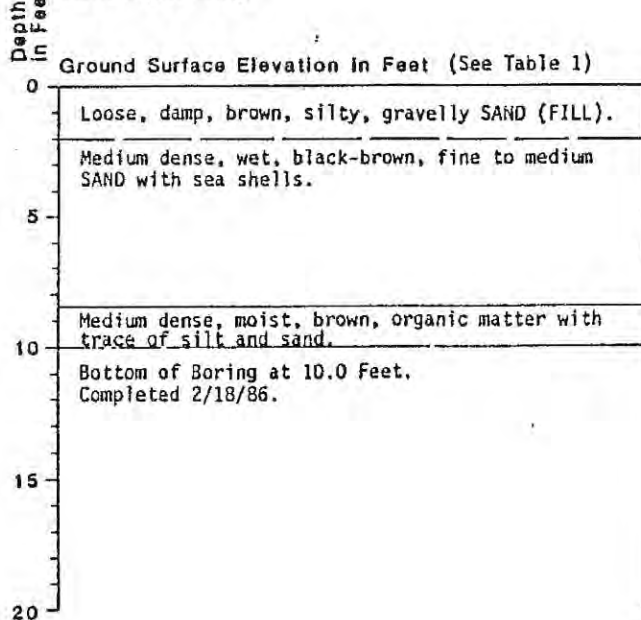
## Well Design

Top Casing Elevation in Feet  
Casing Slickup in Feet



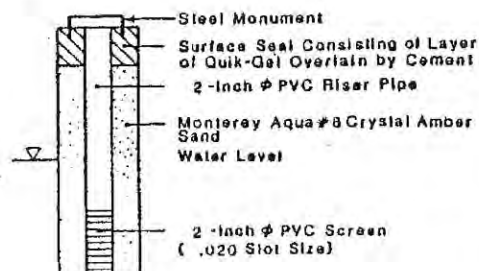
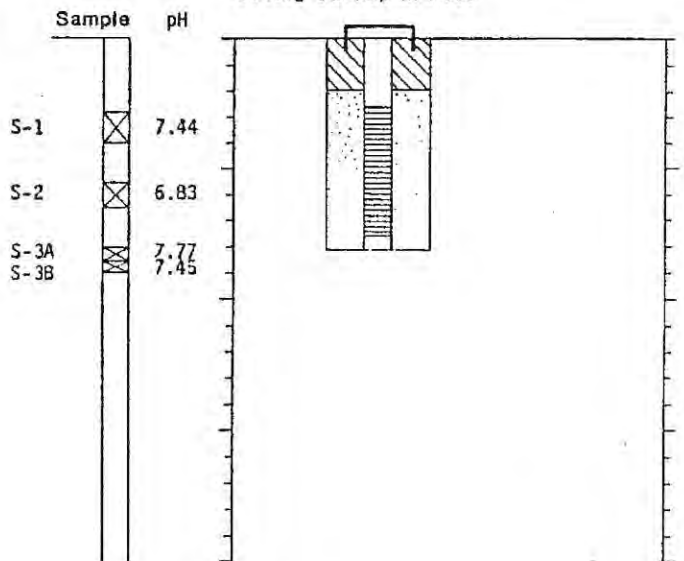
# Boring Log and Construction Data for Well MW-2

## Geologic Log



## Well Design

Top Casing Elevation in Feet  
Casing Slickup in Feet



- 2-inch O.D. Split Spoon Sample
- \* No Sample Recovery
- N Standard Penetration Resistance, Blows per foot
- GS Grain Size Analysis
- K Permeability Test
- pH Test for pH of Soil Slurry Consisting of 50% Soil and 50% Distilled Water

### NOTES:

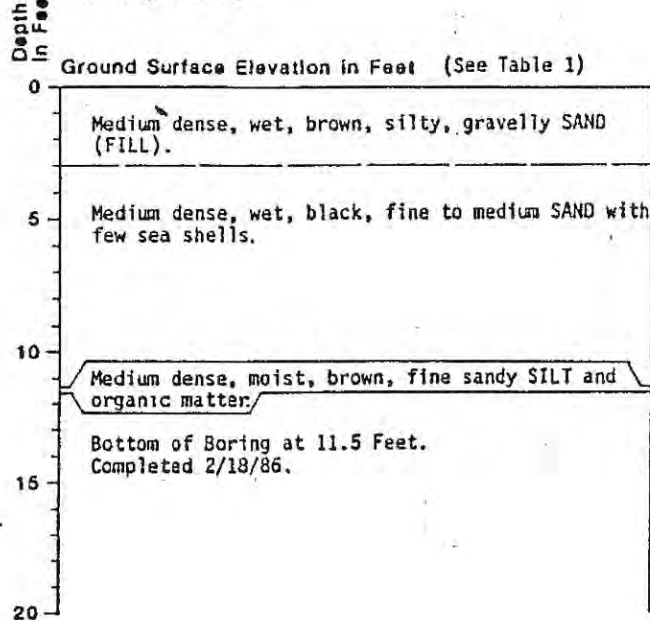
1. Soil descriptions are interpretive and actual changes may be gradual.
2. Water Level is for data indicated and may vary with time of year. ATD:At Time of Drilling

J-1615-03 March 1986  
HART-CROWSER & associates, inc.

Figure 2

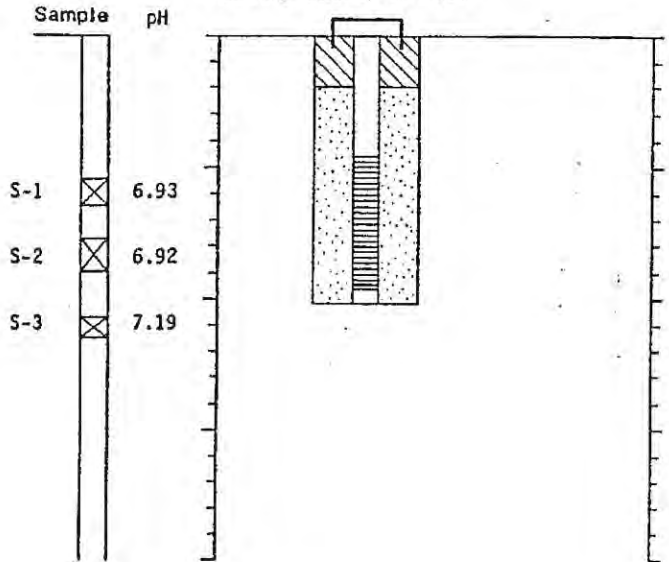
# Boring Log and Construction Data for Well MW-3

## Geologic Log



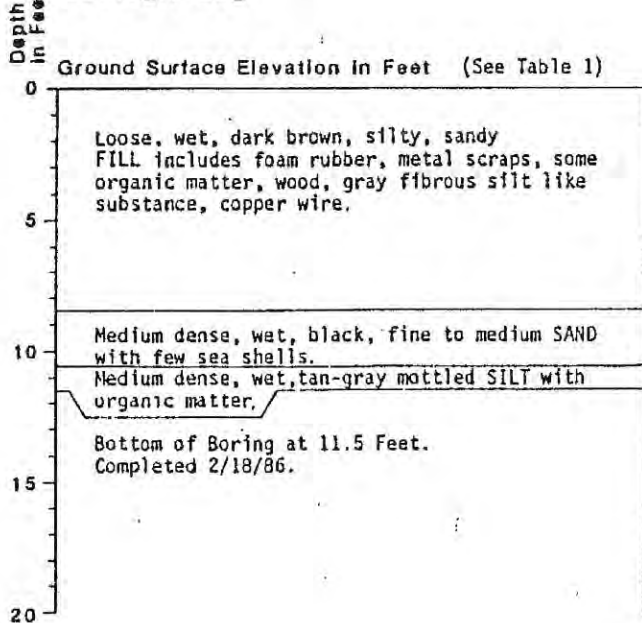
## Well Design

Top Casing Elevation in Feet  
Casing Stickup in Feet



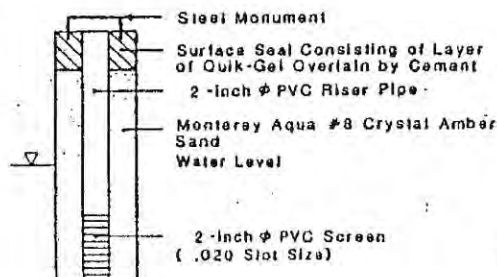
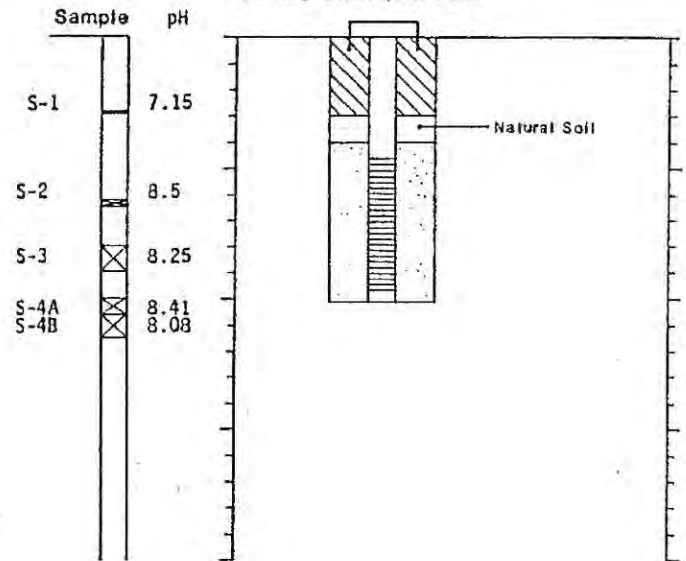
# Boring Log and Construction Data for Well MW-4

## Geologic Log



## Well Design

Top Casing Elevation in Feet  
Casing Stickup in Feet



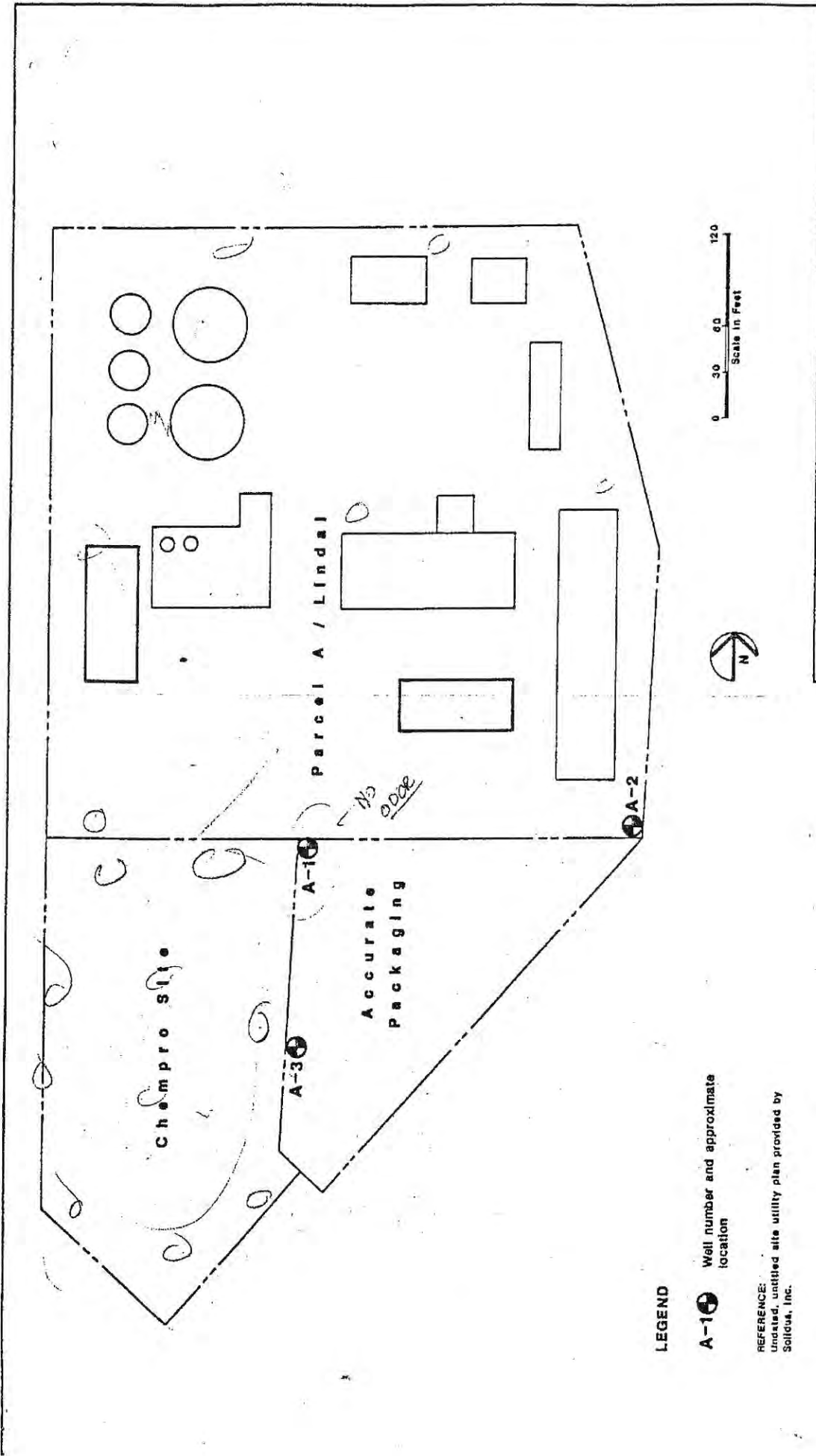
- $\boxtimes$  2-Inch O.D. Split Spoon Sample
- \* No Sample Recovery
- N Standard Penetration Resistance, Blows per foot
- GS Grain Size Analysis
- K Permeability Test
- pH Test for pH of Soil Slurry Consisting of 50% Soil and 50% Distilled Water

### NOTES:

1. Soil descriptions are interpretive and actual changes may be gradual.
2. Water Level is for date indicated and may vary with time of year. ATD: At Time of Drilling

J-1615-03 March 1986  
HART-CROWSER & associates, inc.

Figure 3



**LEGEND**

**A-1** Well number and approximate location

REFERENCE: Unsat'd, unfiltered site utility plan provided by Solidus, Inc.

FIGURE **2**

**SITE PLAN**  
Solidus, Inc. - Accurate Packaging Property  
Tacoma, Washington

APPROVED

DRAWN NB

DATE 2/2/87

REVISED

DATE

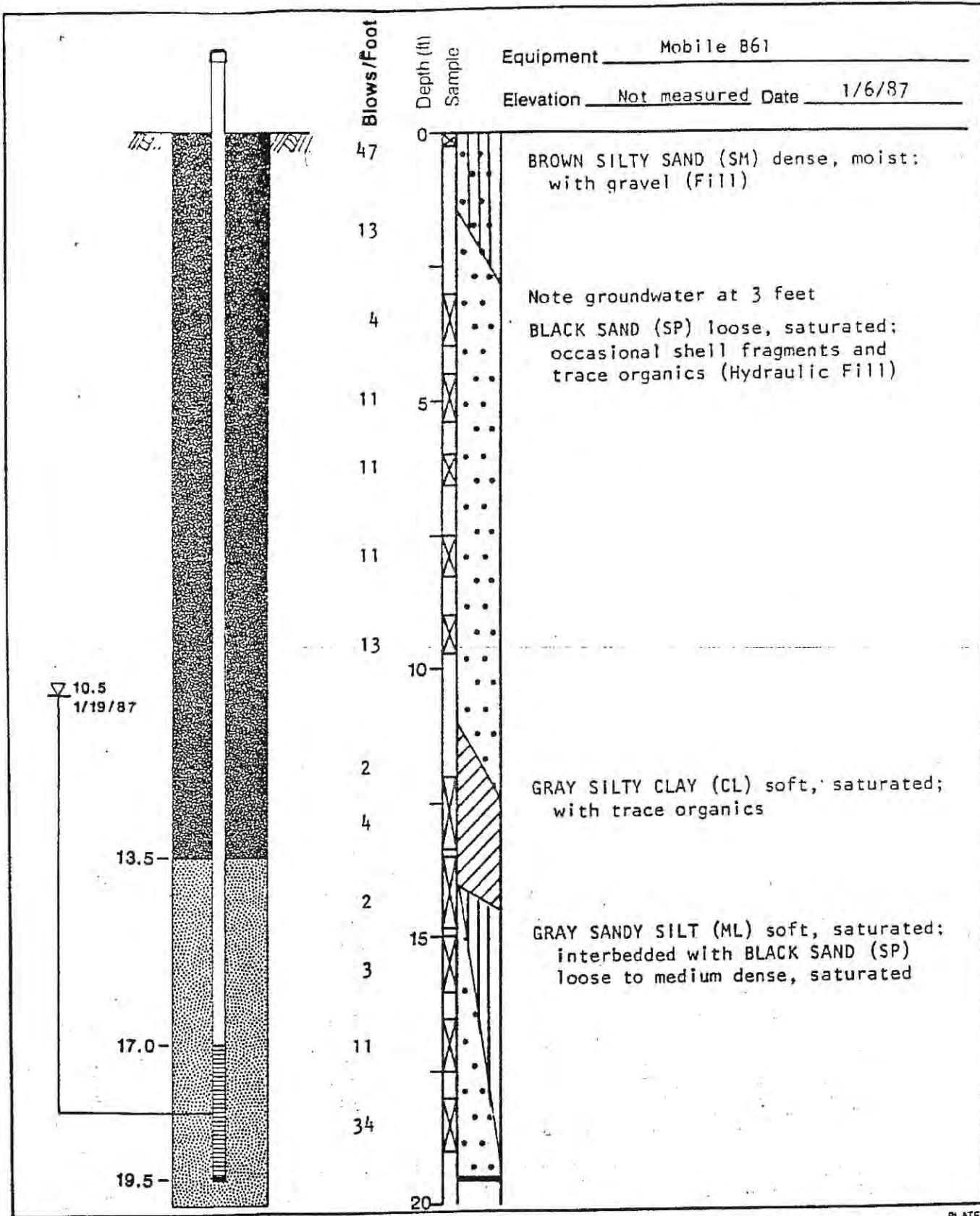
15-181.001

DRAWN NB

DATE 2/2/87

REVISED

DATE



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 Geology & Hydrogeology

**LOG AND INSTALLATION - WELL A-1**  
 Solidus, Inc. - Accurate Packaging Property  
 Tacoma, Washington

PLATE

**3**

JOB NUMBER  
15,181.001

DRAWN  
NB

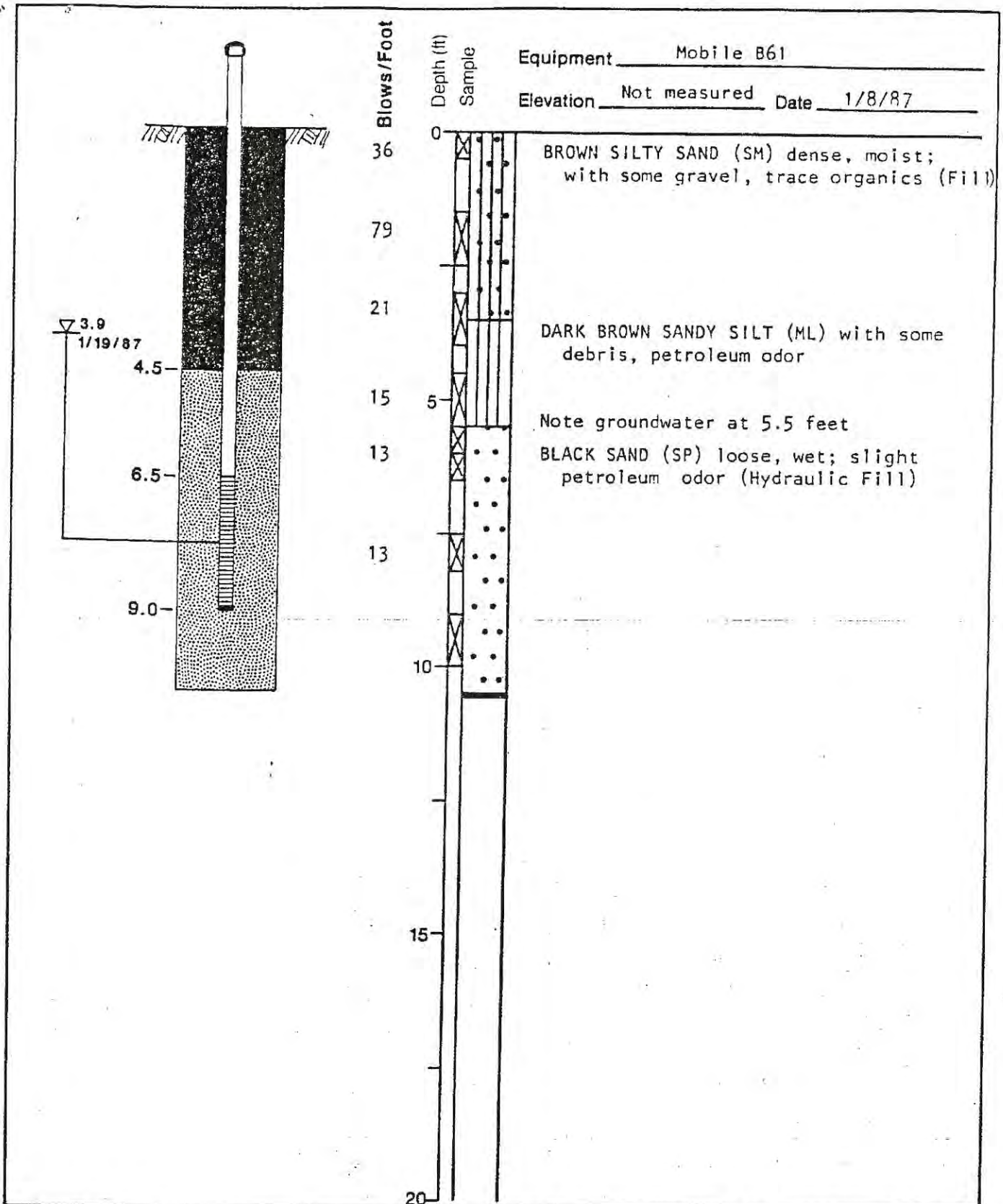
APPROVED  
VPL

DATE  
2/2/87

REVISED

DATE





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**LOG AND INSTALLATION - WELL A-2**  
 Solidus, Inc. - Accurate Packaging Property  
 Tacoma, Washington

PLATE

**4**

JOB NUMBER  
 15,181.001

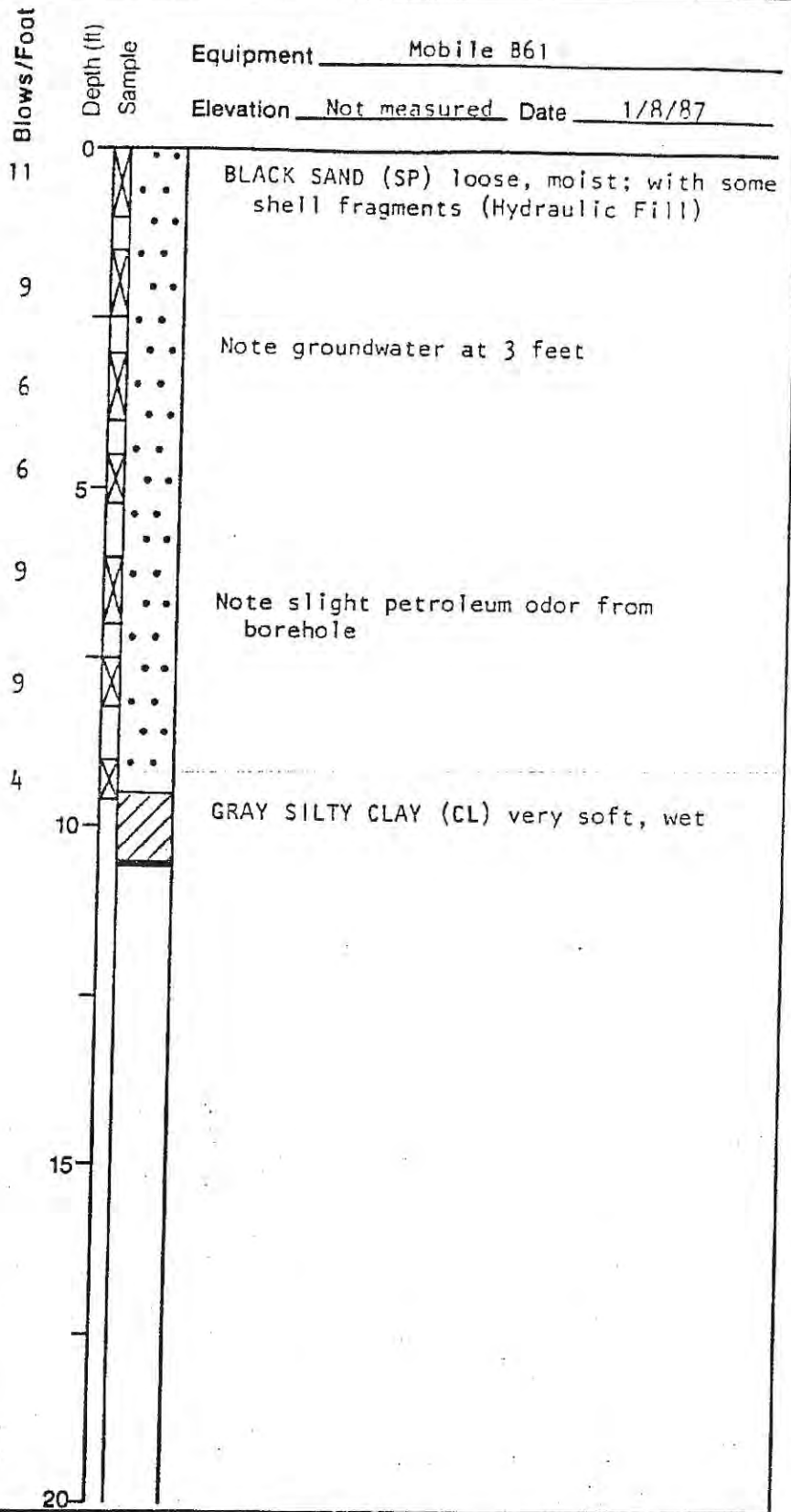
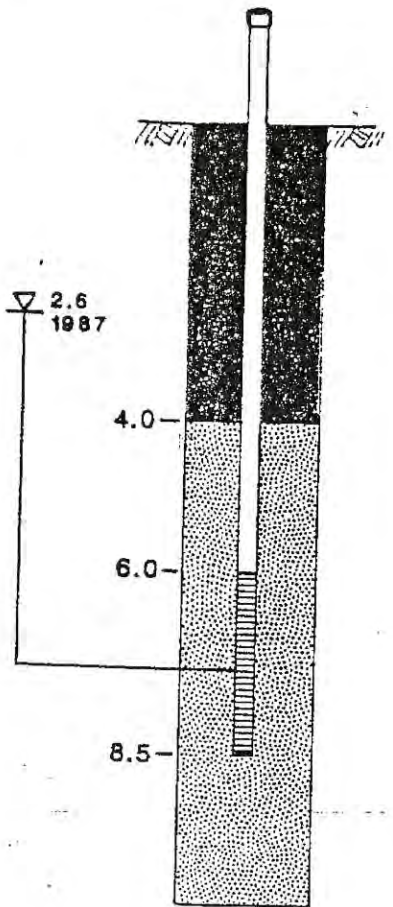
DRAWN  
 NB

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 WPL

DATE  
 2/2/87

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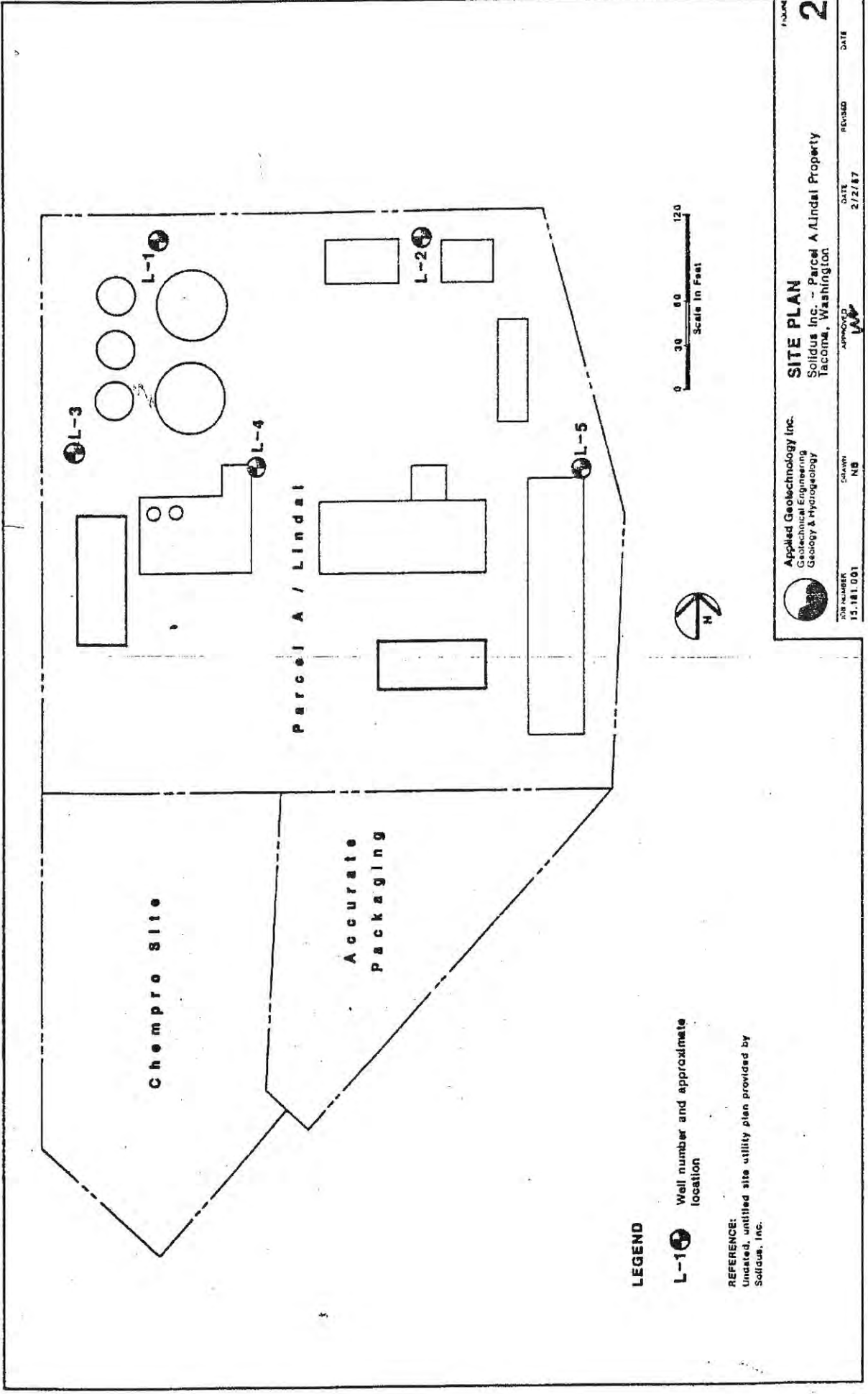
DATE



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**LOG AND INSTALLATION - WELL A-3**  
 Solidus, Inc. - Accurate Packaging Property  
 Tacoma, Washington

PLATE  
**5**



**LEGEND**

**L-1** Well number and approximate location

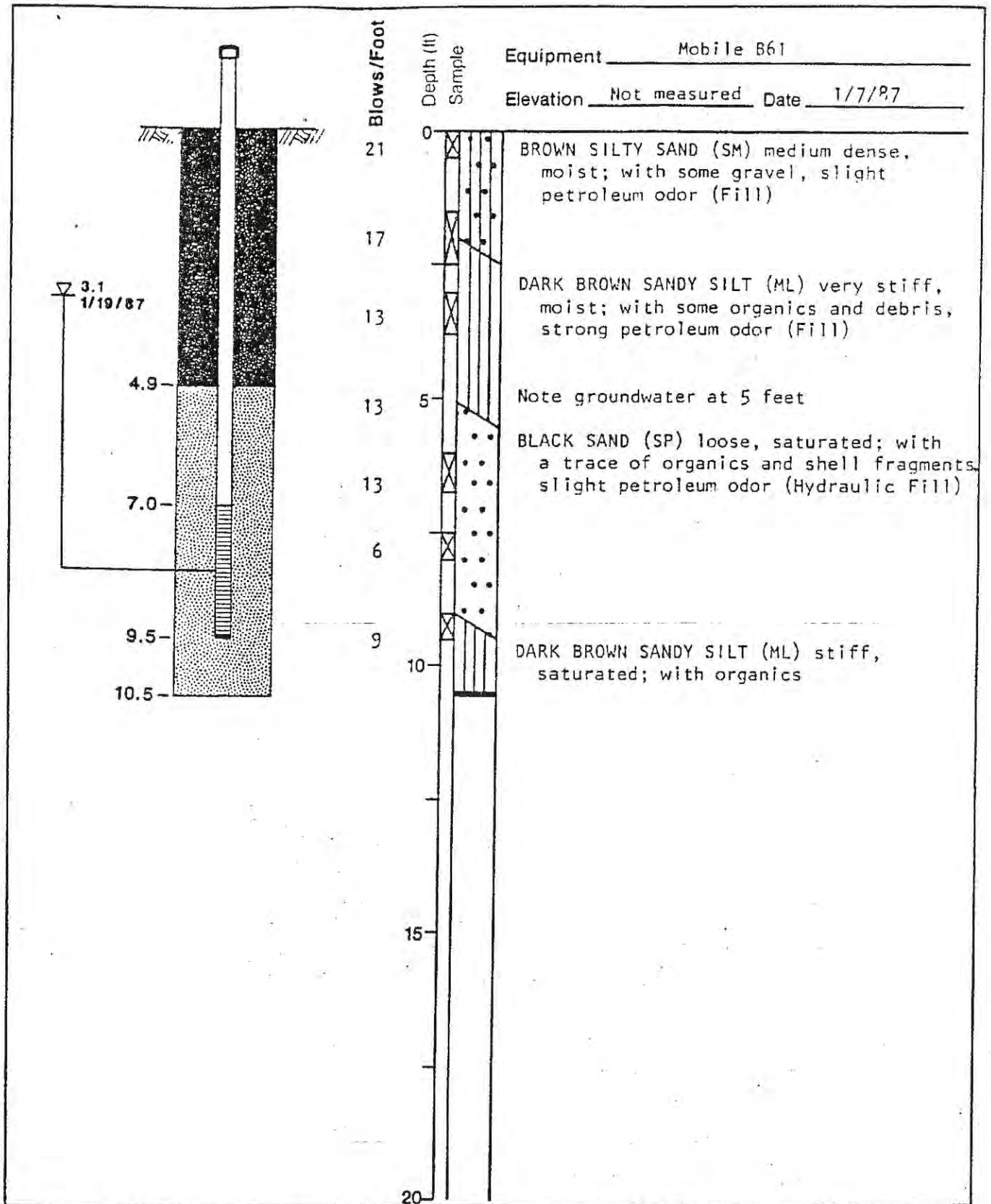
REFERENCE:  
Undated, unfilled site utility plan provided by  
Solidus, Inc.



Applied Geotechnology Inc.  
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 Tacoma, Washington

**SITE PLAN**  
 Parcel A / Lindal Property

JOB NUMBER: 12.181.001  
 DRAWN: NB  
 APPROVED: [Signature]  
 DATE: 2/2/87  
 REVISION: [Blank]  
 DATE: [Blank]



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### LOG AND INSTALLATION - WELL L-1

PLATE

**3**

Solidus Inc. - Parcel A / Lindal Property  
 Tacoma, Washington

JOB NUMBER  
 15,181.001

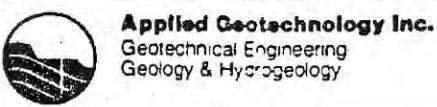
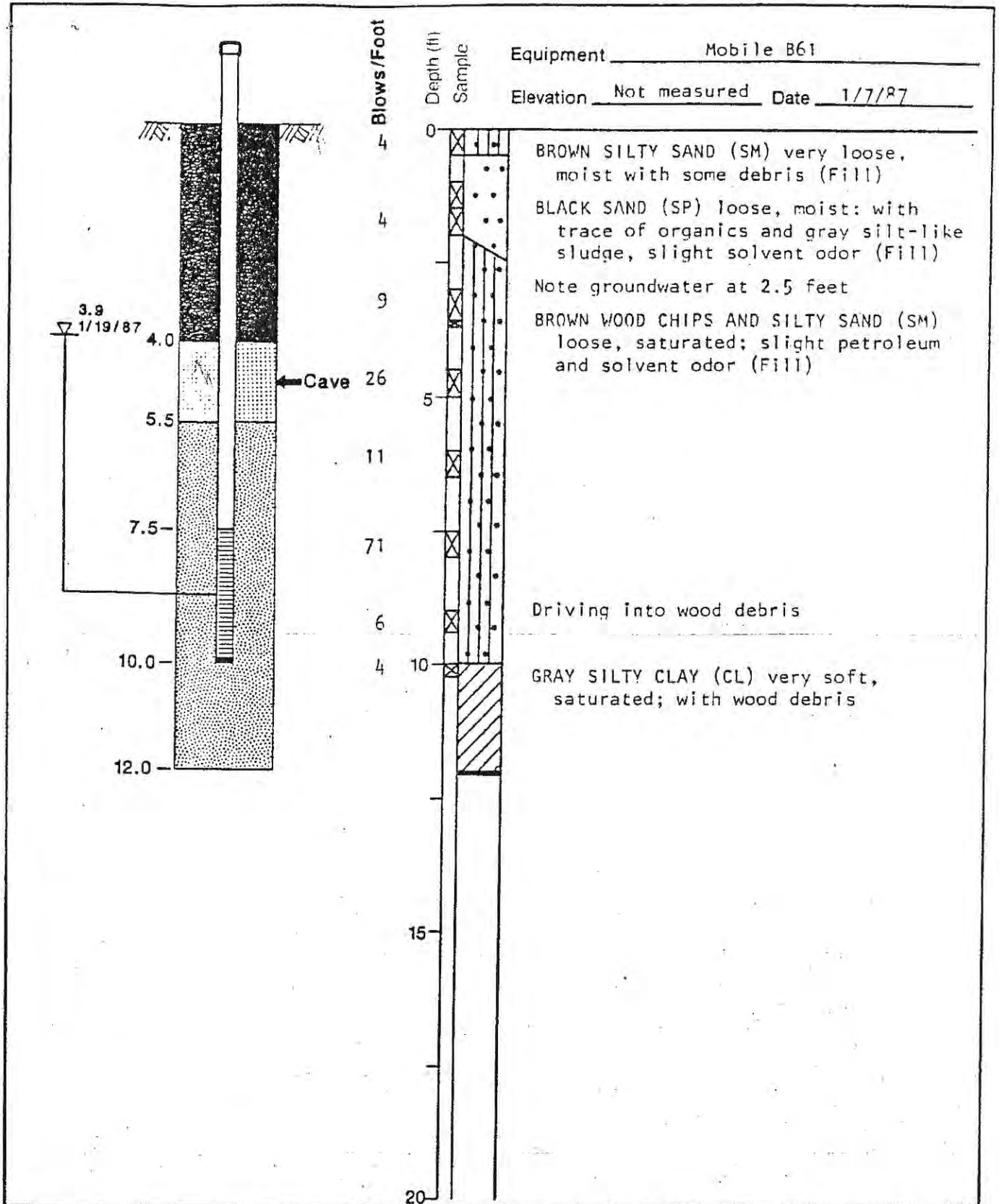
DRAWN  
 NB

APPROVED

DATE  
 2/2/87

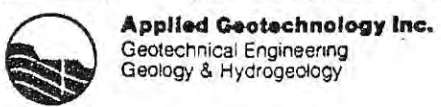
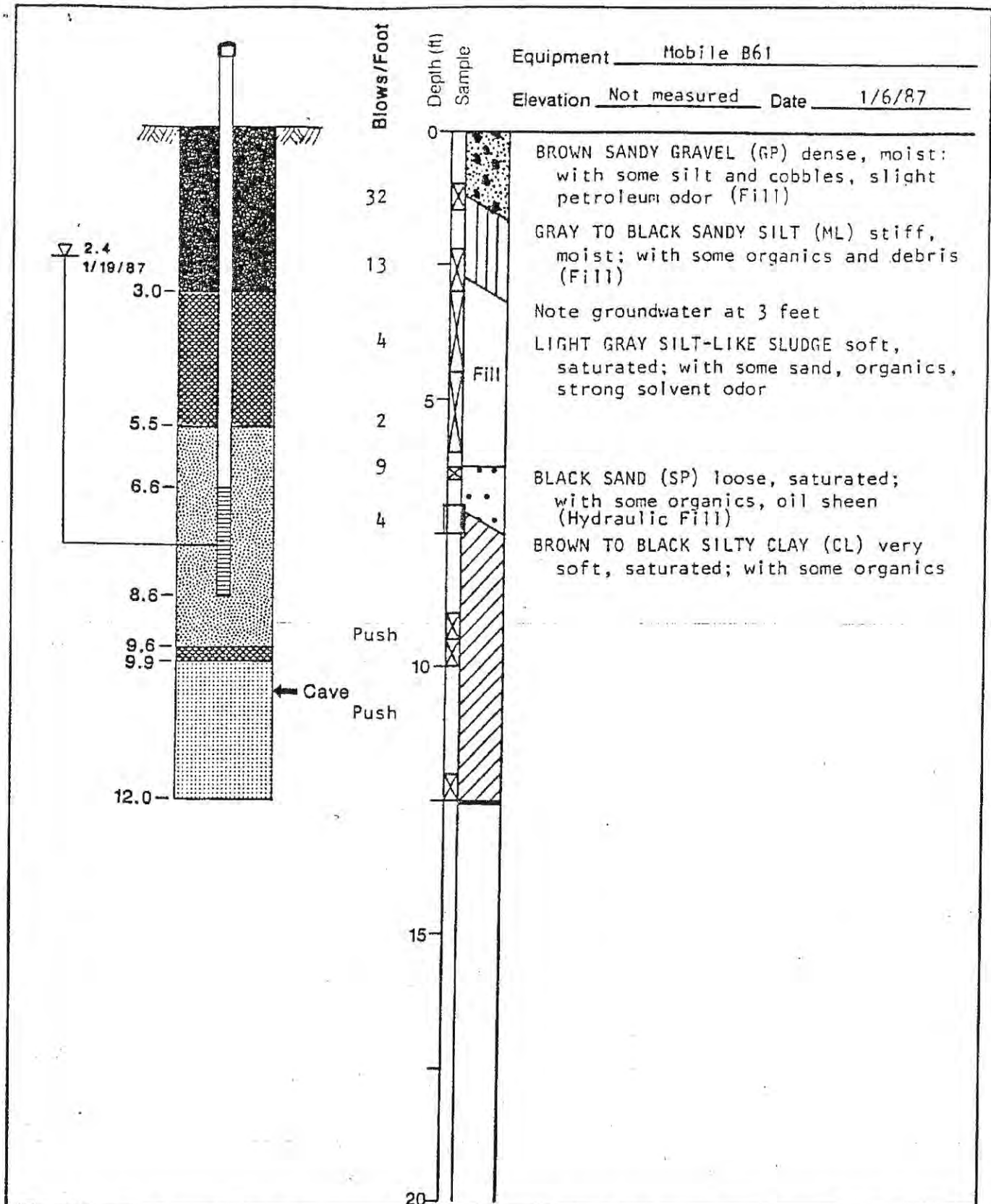
REVISION

DATE



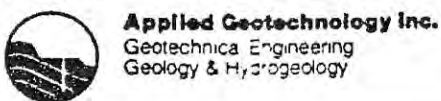
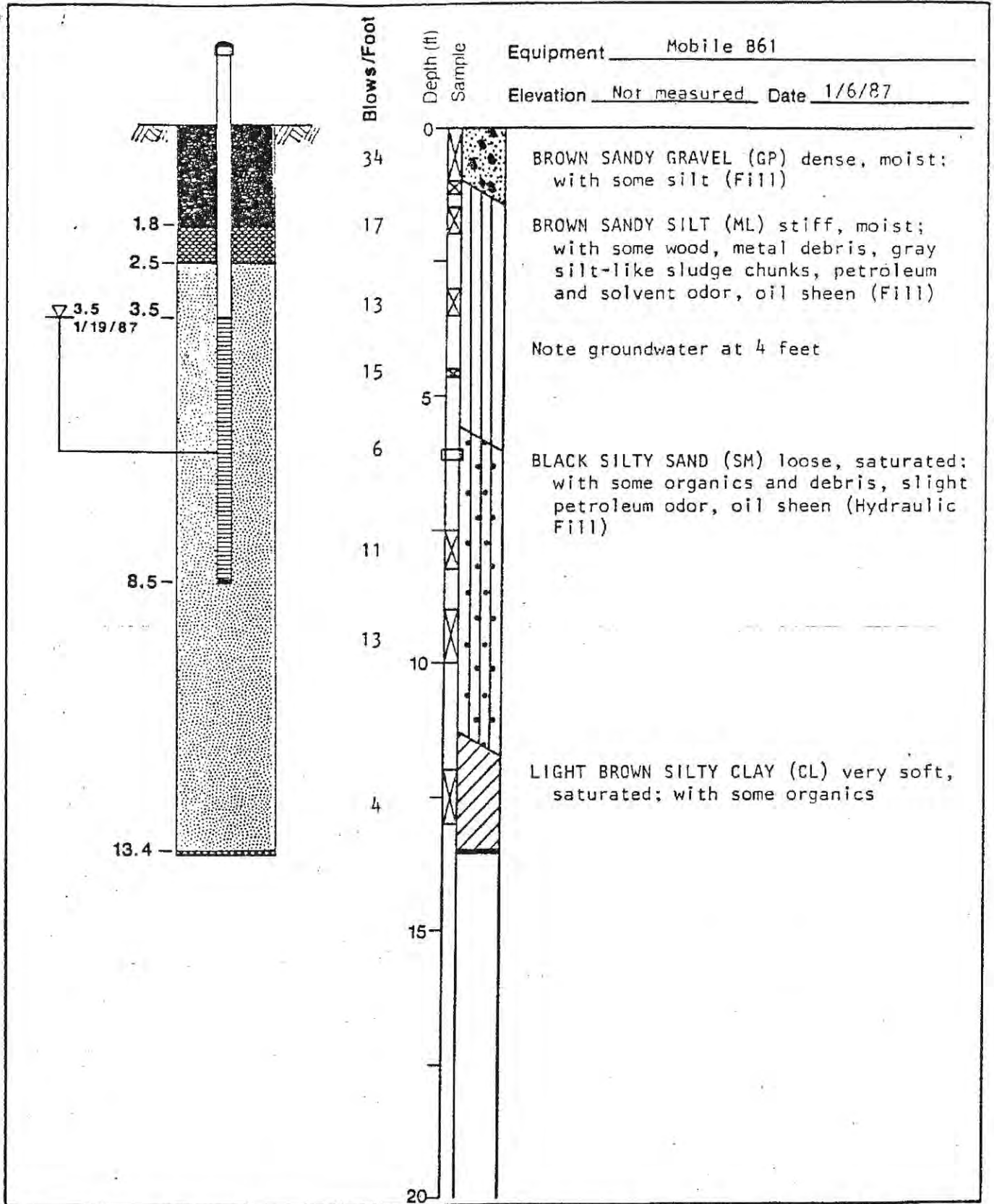
**LOG AND INSTALLATION - WELL L-2**  
 Solidus Inc. - Parcel A/Lindal Property  
 Tacoma, Washington

PLATE  
**4**



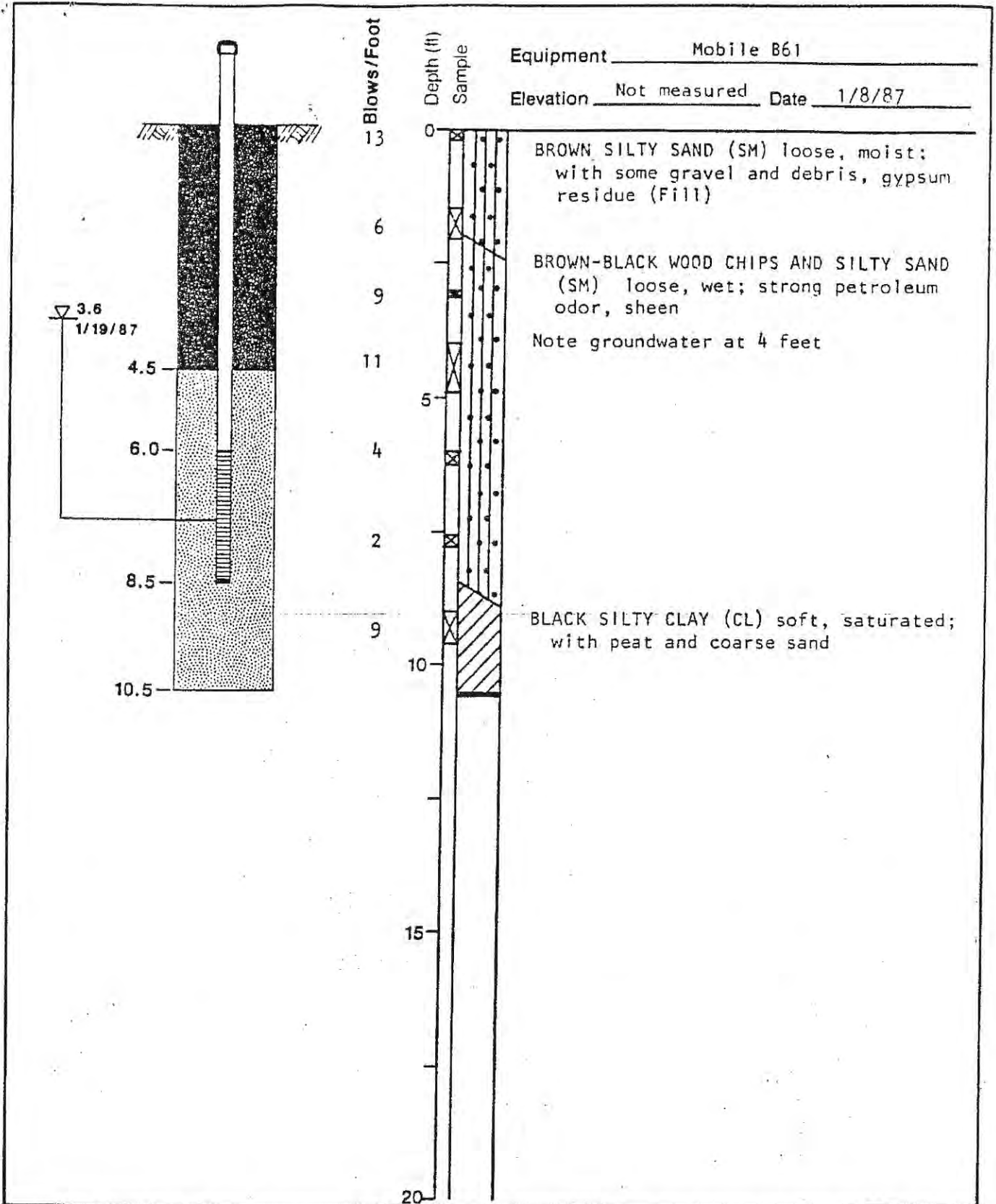
**LOG AND INSTALLATION - WELL L-3**  
 Solidus Inc. - Parcel A Lindal Property  
 Tacoma, Washington

PLATE  
**5**



**LOG AND INSTALLATION - WELL L-4**  
 Solidus Inc. - Parcel A/Lindal Property  
 Tacoma, Washington

PLATE  
**6**



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**LOG AND INSTALLATION - WELL L-5**  
 Solidus Inc. - Parcel A/Lindal Property  
 Tacoma, Washington

PLATE

**7**

JOB NUMBER  
 15,181.001

DRAWN  
 NB

APPROVED

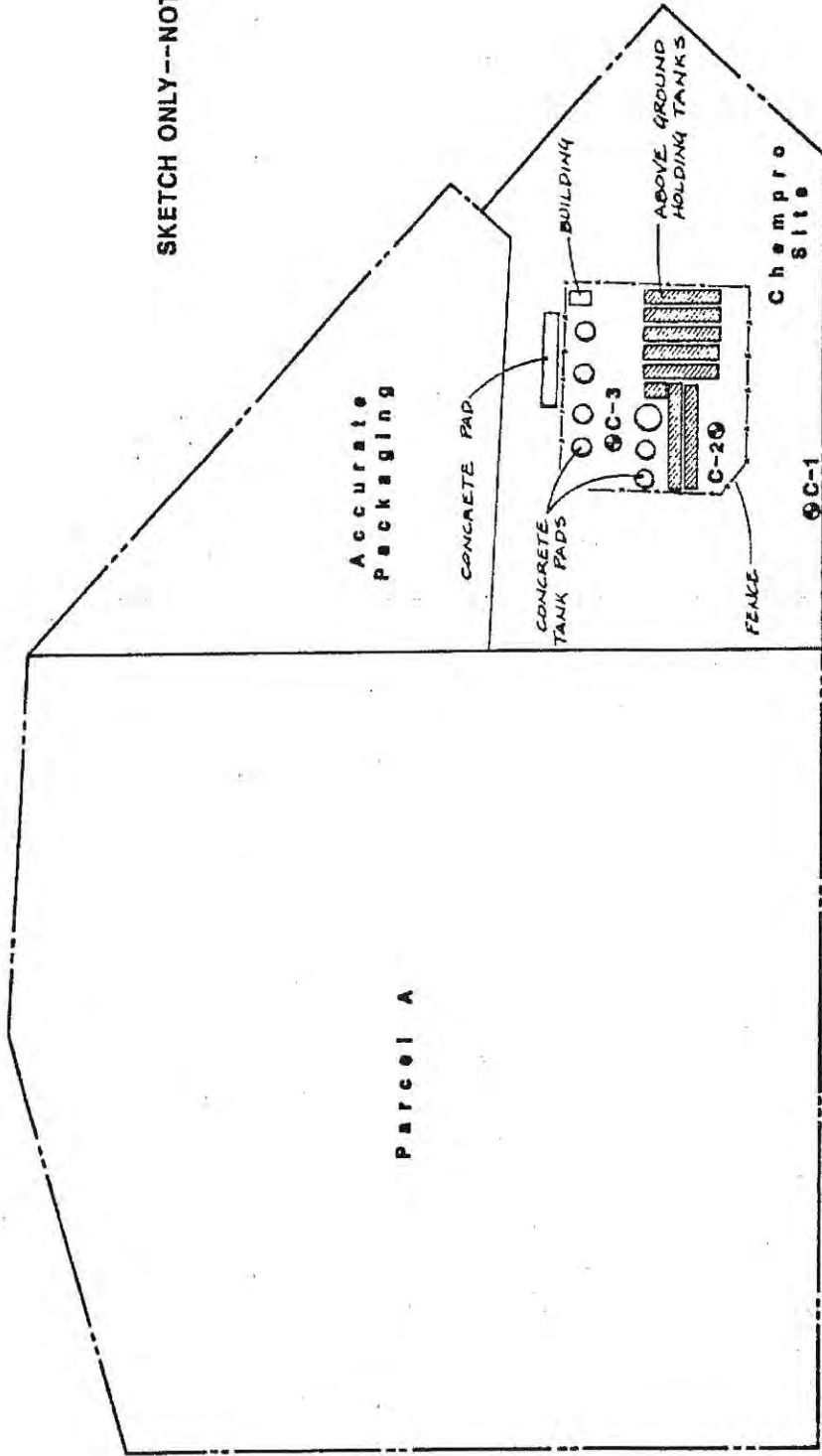
DATE  
 2/2/87

REVISED

DATE



SKETCH ONLY -- NOT TO SCALE



**LEGEND**

- C-1 Well number and approximate location
- Approximate property lines

Reference: Undated, unutilized site utility plan provided by Solidus, Inc.



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Geotechnical Engineering  
Geology & Hydrogeology

**SITE PLAN**

Solidus, Inc. - Chempco Site  
Tacoma, Washington

JOB NUMBER  
15,181,001

DRAWN  
NB

APPROVED  
[Signature]

DATE  
1/28/87

REVISED

DATE

FIG. #1

2

6-inch Iron monument  
(Installed by Solidus)

3.5  
1/19/87

4.6

7.4

10.0

10.5

Blows/Foot

Depth (ft)  
Sample

Equipment Mobile B61

Elevation Not Measured Date 1/9/87

0

32

13

4

2

11

9

4

10

15

20

BROWN SILTY SAND (SM) medium dense, moist to wet; with some gravel (Fill)

Note groundwater at 3 feet

Note wood chips and slight petroleum odor

GRAY SILTY CLAY-LIKE SLUDGE  
very soft, saturated; with paper-like fibers. Note solvent odor (gypsum residue?)

BLACK SAND (SP) loose, saturated; with occasional shell fragments. Note oily sheen and petroleum odor to bottom of boring (Hydraulic Fill)



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**LOG AND INSTALLATION - WELL C-1**

PLATE

Solidus, Inc. - Chempro Site  
Tacoma, Washington

**3**

JOB NUMBER  
15,181.001

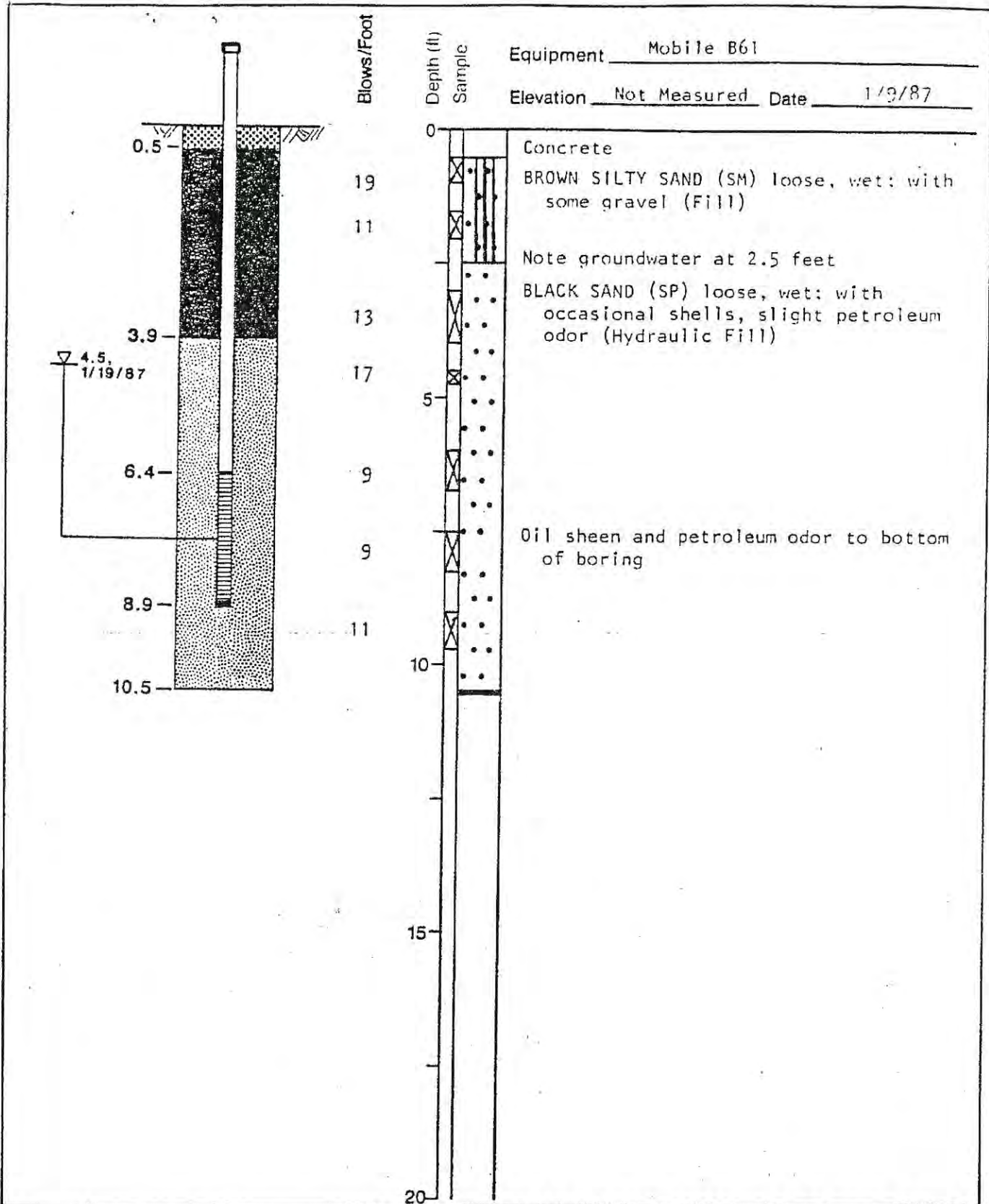
DRAWN  
NB

APPROVED  
*[Signature]*

DATE  
1/26/87

REVISED

DATE



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## LOG AND INSTALLATION - WELL C-2

Solidus, Inc. - Chempro Site  
Tacoma, Washington

PLATE

**4**

JOB NUMBER  
15,181.001

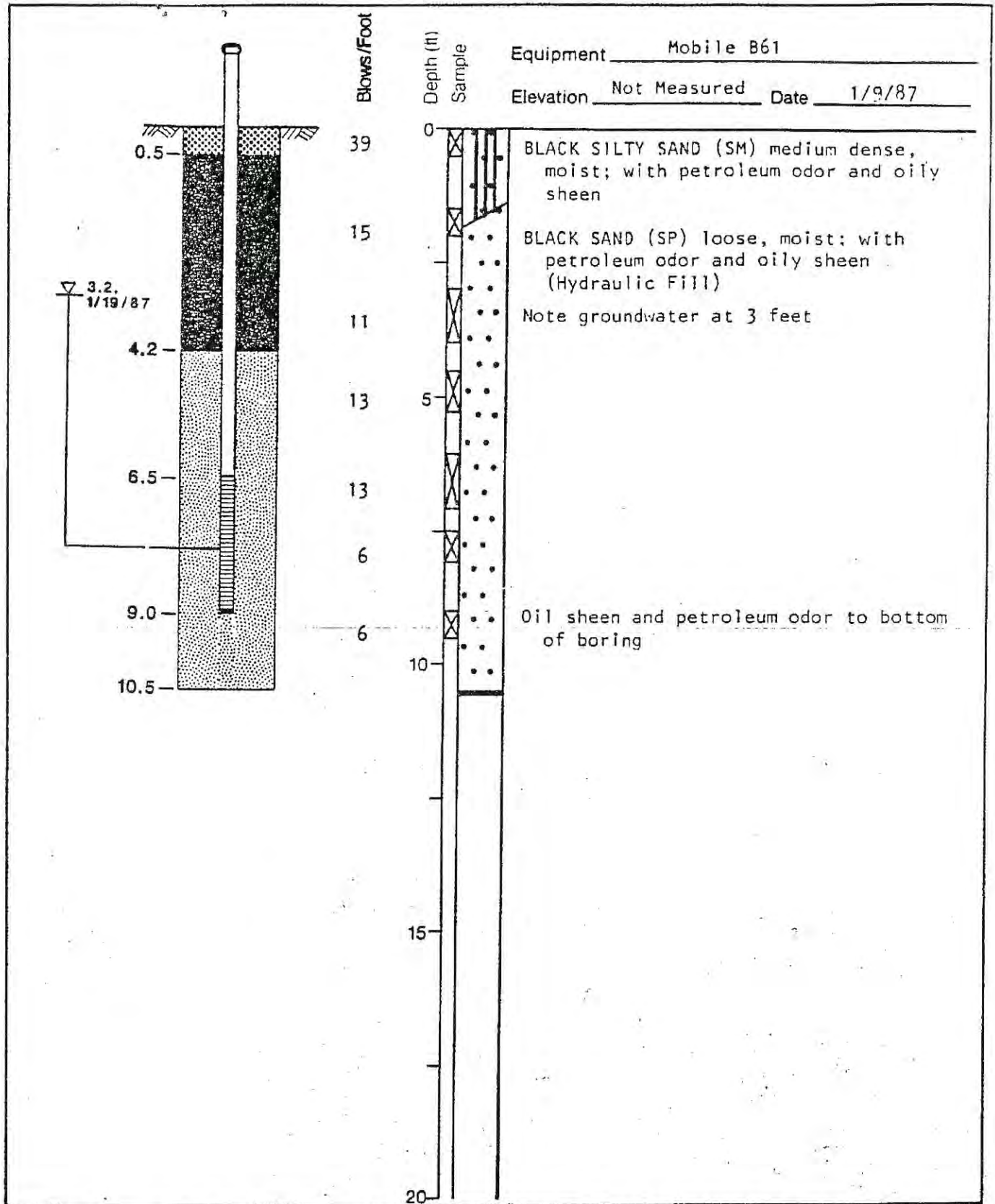
DRAWN  
NB

APPROVED  
*NB*

DATE  
1/26/87

REVISION

DATE



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**LOG AND INSTALLATION - WELL C-3**

PLATE

Solidus, Inc. - Chempro Site  
 Tacoma, Washington

**5**

JOB NUMBER  
 15,181.001

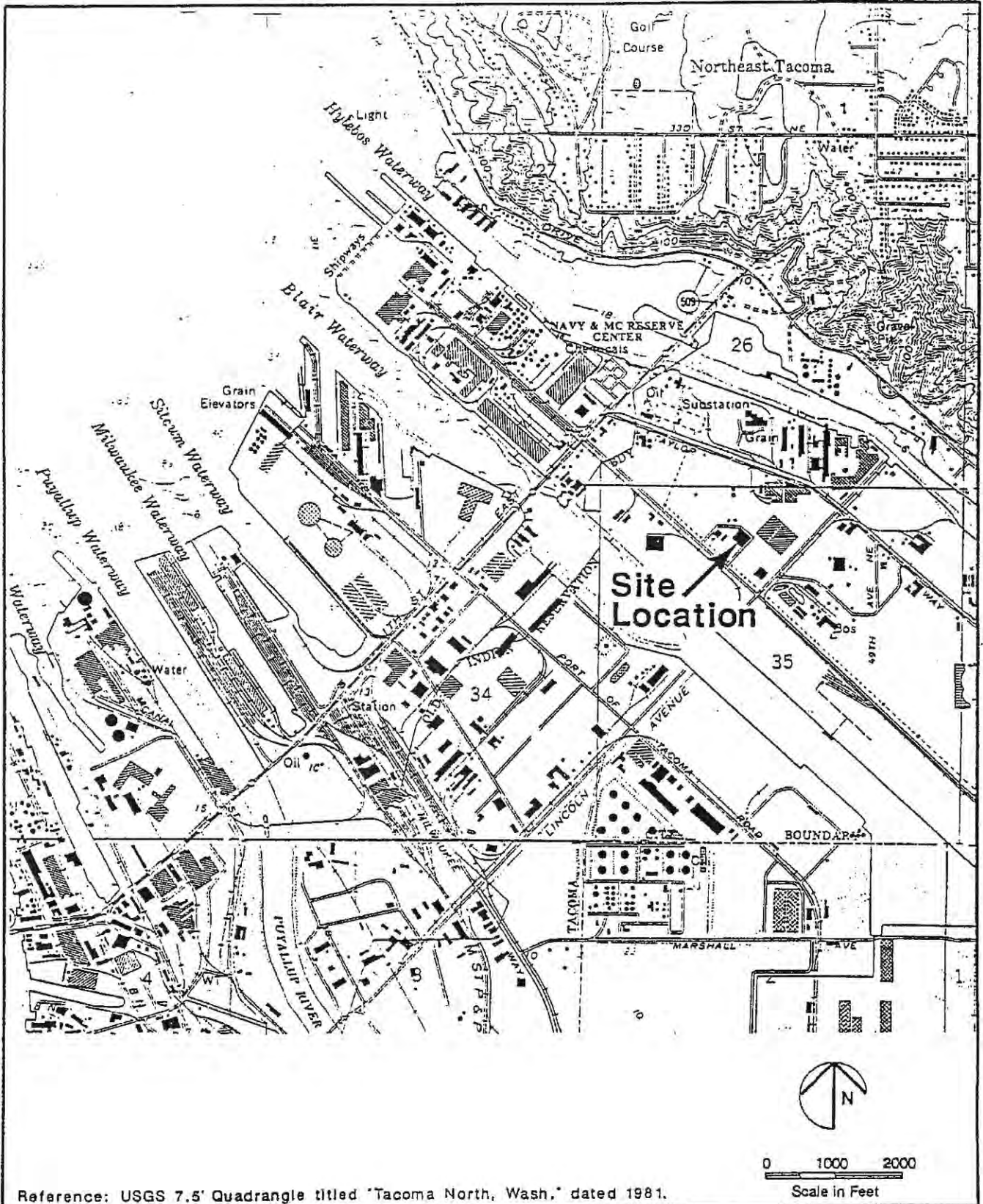
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 VPL

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 1/26/87

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DATE



Reference: USGS 7.5' Quadrangle titled "Tacoma North, Wash." dated 1981.



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## Vicinity Map

FIGURE

Consoer Townsend & Assoc./Northwest Processing  
 Tacoma, Washington

**1**

JOB NUMBER  
 15,523.001

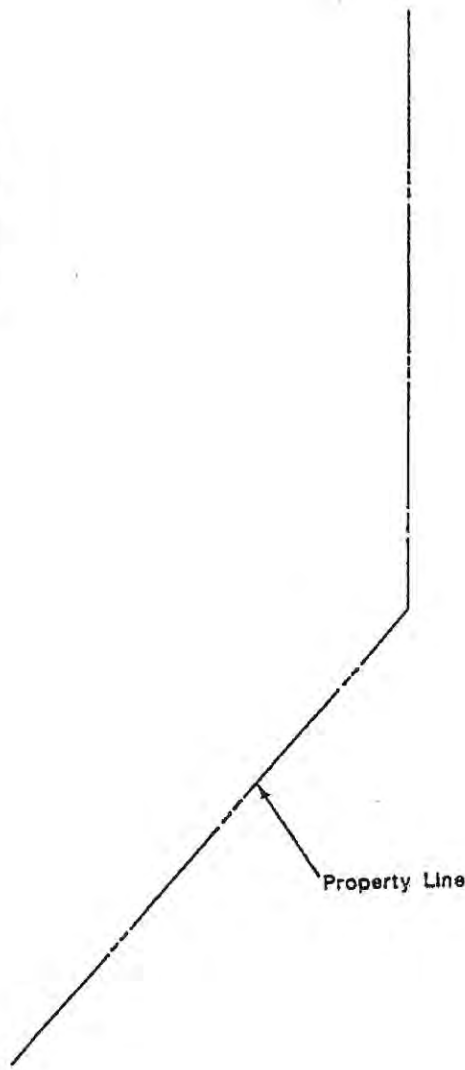
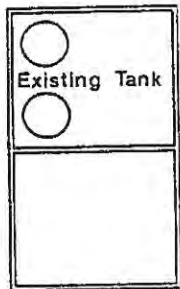
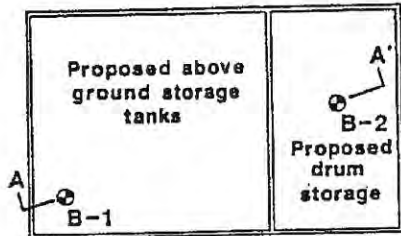
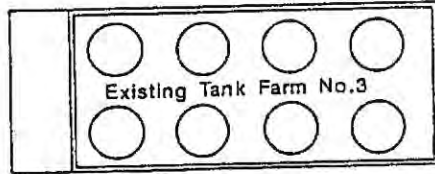
DRAWN  
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APPROVED  
*[Signature]*

DATE  
 4 Sep. 90

REVISED

DATE



**LEGEND**

⊙ B-2 Boring number and approximate location



Reference: Site Plan prepared by Consoer Townsend & Associates, undated.



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**Site Plan**  
Consoer Townsend & Assoc./Northwest Processing  
Tacoma, Washington

FIGURE

**2**

JOB NUMBER  
15,523.001

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MCT

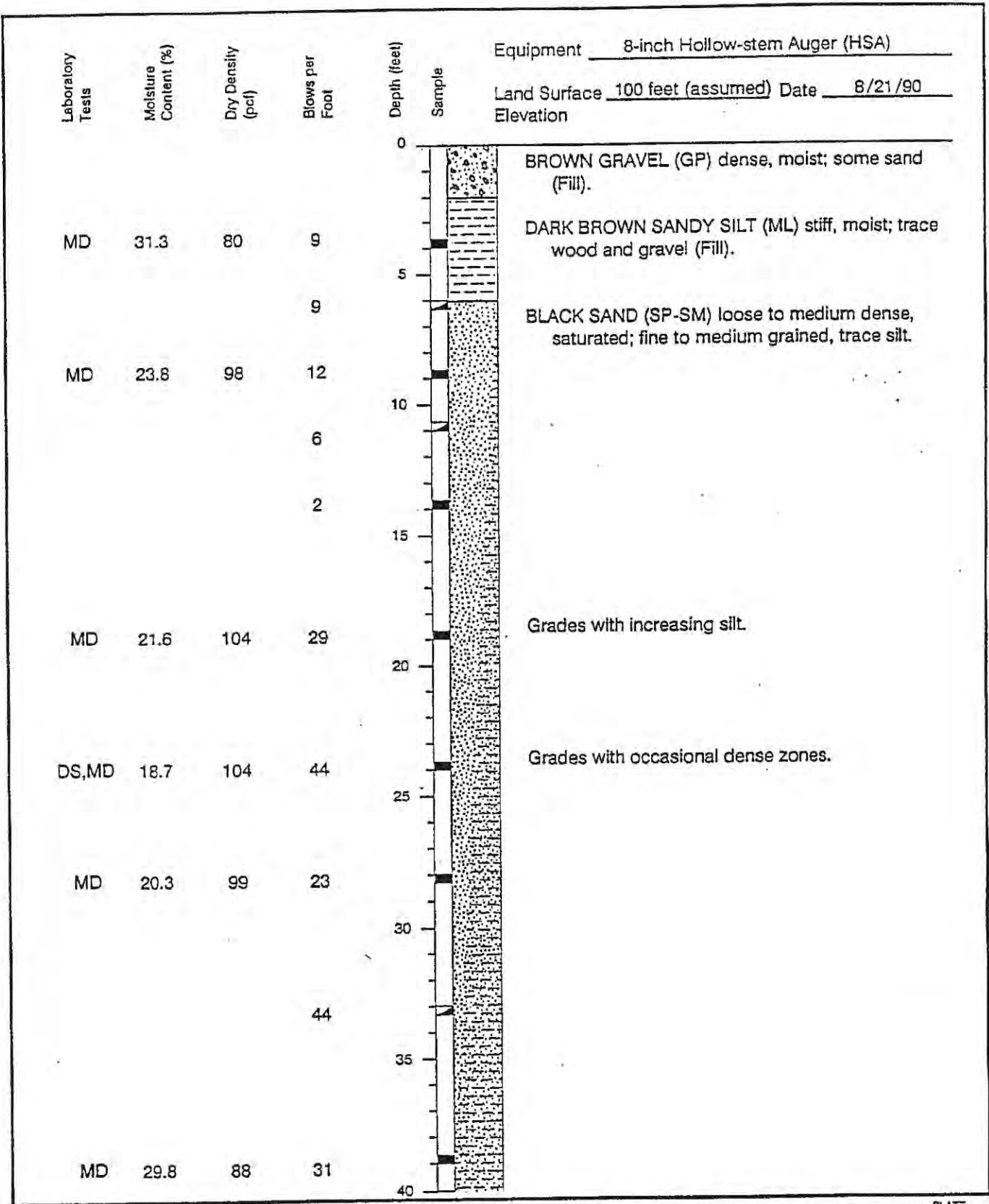
APPROVED

*[Signature]*

DATE  
4 Sep. 90

REVISED

DATE

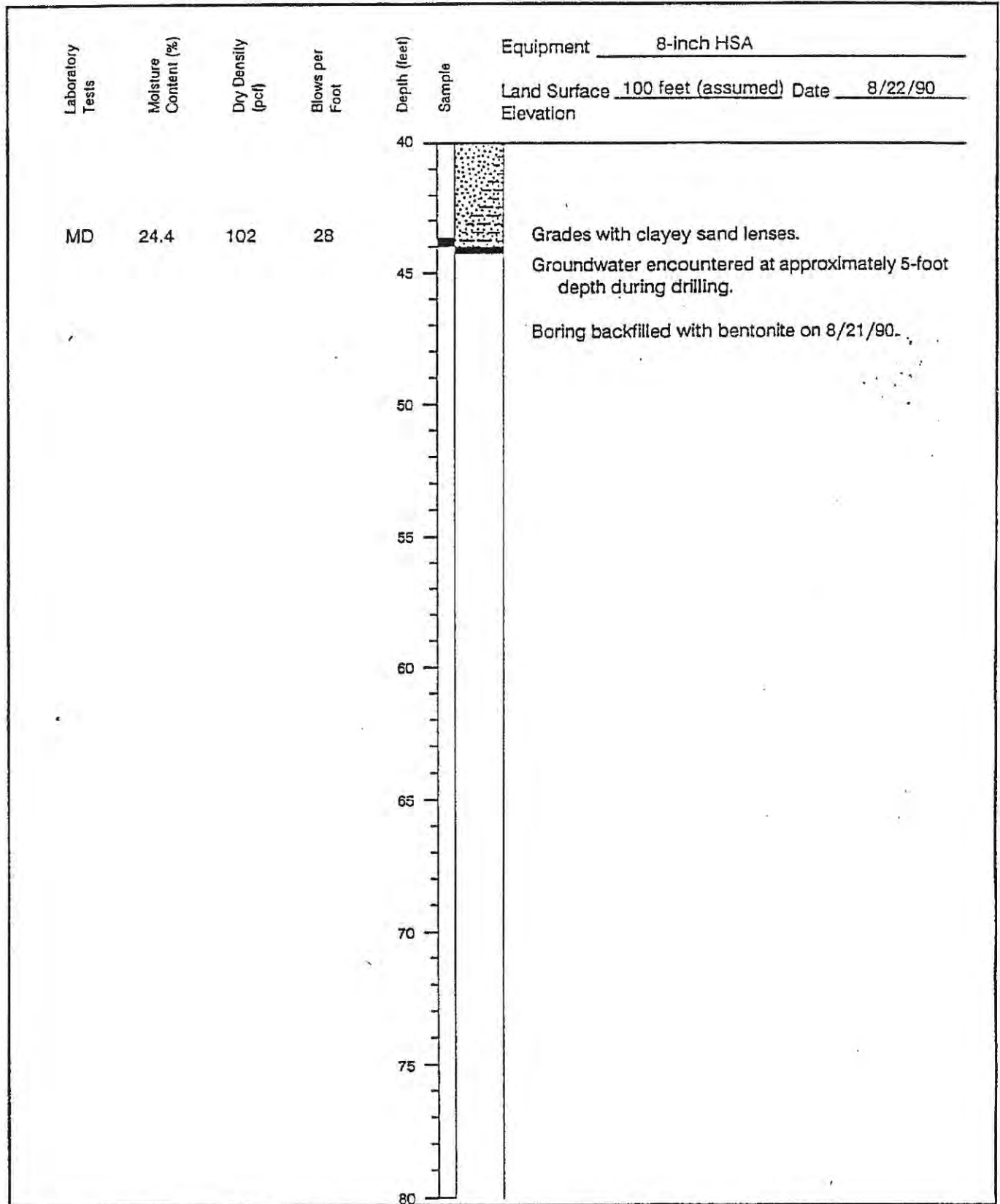


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**Log of Boring 1 (0'-40')**  
 Conser Townsend & Assoc./Northwest Processing  
 Tacoma, Washington

PLATE  
**A2**

JOB NUMBER	DRAWN	APPROVED	DATE	REVISED	DATE
15.523.001	SES	<i>[Signature]</i>	27 August 90		



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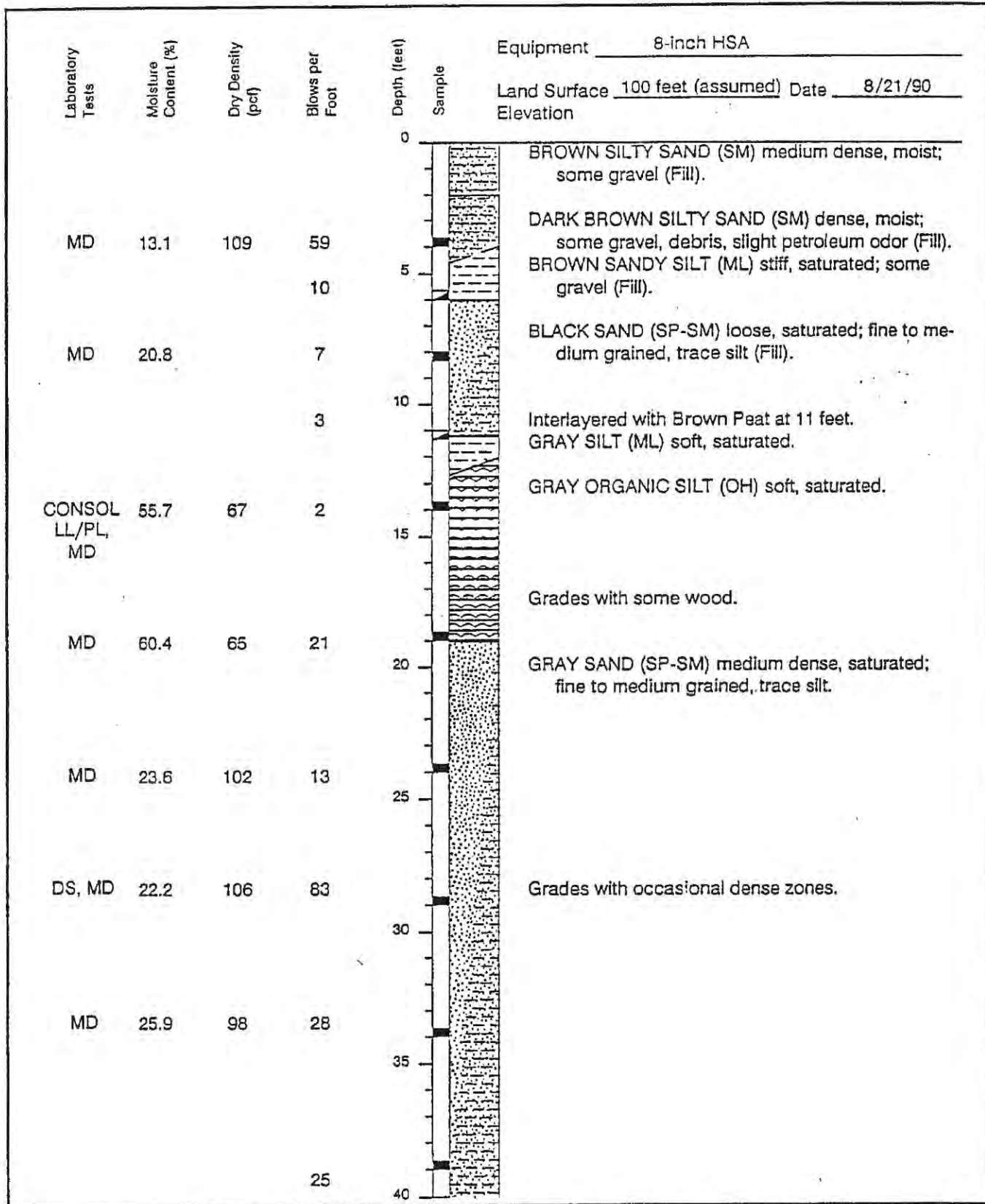
**Log of Boring 1 (40'-44')**  
Consoer Townsend & Assoc./Northwest Processing  
Tacoma, Washington

PLATE

**A3**

JOB NUMBER	DRAWN	APPROVED	DATE	REVISED	DATE
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BROWN SILTY SAND (SM) medium dense, moist; some gravel (Fill).

DARK BROWN SILTY SAND (SM) dense, moist; some gravel, debris, slight petroleum odor (Fill). BROWN SANDY SILT (ML) stiff, saturated; some gravel (Fill).

BLACK SAND (SP-SM) loose, saturated; fine to medium grained, trace silt (Fill).

Interlayered with Brown Peat at 11 feet. GRAY SILT (ML) soft, saturated.

GRAY ORGANIC SILT (OH) soft, saturated.

Grades with some wood.

GRAY SAND (SP-SM) medium dense, saturated; fine to medium grained, trace silt.

Grades with occasional dense zones.



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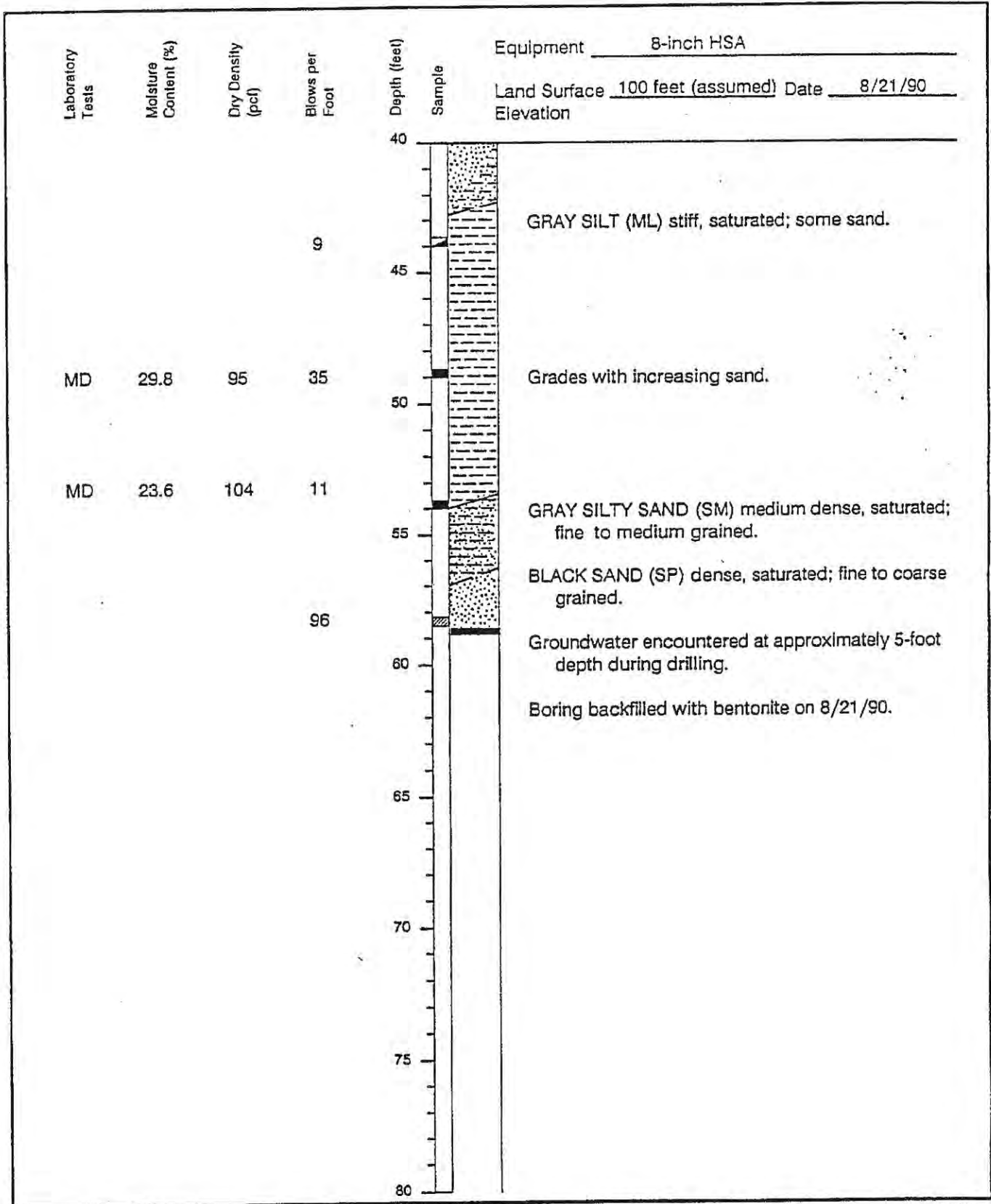
### Log of Boring 2 (0'-40')

Consoer Townsend & Assoc./Northwest Processing  
 Tacoma, Washington

PLATE

**A4**

JOB NUMBER	DRAWN	APPROVED	DATE	REVISED	DATE
15,523.001	SES	<i>QMA</i>	27 August 90		



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**Log of Boring 2 (40'-59')**  
 Consoer Townsend & Assoc./Northwest Processing  
 Tacoma, Washington

PLATE  
**A5**

JOB NUMBER	DRAWN	APPROVED	DATE	REVISED	DATE
15,523.001	SES	<i>[Signature]</i>	27 August 90		