

November 20, 2017

Washington State Department of Ecology
Southwest Region – Toxics Cleanup Program
300 Desmond Drive SE
Lacey, Washington 98503

Attention: Tim Mullin

Subject: Geotechnical Exploration Summary/Cap Repair Report Letter
Former Olympia Manufactured Gas Plant (MGP) Property
320 Columbia Street NW
Olympia, Washington
File No. 0186-774-04

INTRODUCTION

On the behalf of Puget Sound Energy (PSE), this letter has been prepared in regard to two recently completed geotechnical borings on the property located at 320 Columbia Street in Olympia, Washington (Property). This letter is being submitted in response to the Department of Ecology (Ecology) letter dated November 6, 2017.

Two geotechnical borings were advanced through the cap that was constructed on the Property as part of the 2012 cleanup action. As identified in the Property environmental covenant and in Section 2b of Ecology's letter, drilling is an activity that compromises the integrity of the cap. The cap must be repaired after such an action and reported to Ecology within 30 days. This letter summarizes those activities.

GEOTECHNICAL EXPLORATIONS AND CAP REPAIR ACTIVITIES

During October 23 through October 25, 2017, two geotechnical borings were advanced to 121.5 feet below ground surface (bgs) and subsequently abandoned in accordance with WAC 173-160-460(2)(e) at the Property. Artesian groundwater conditions were not encountered during drilling activities. Both borings were initially advanced with a hollow-stem auger to approximately 25 feet bgs, at which point bentonite chips were placed while the auger was simultaneously withdrawn to approximately 19 feet bgs. Bentonite was then hydrated in accordance with WAC 173-160-450. A casing was then pushed through the bentonite to approximately 25 feet bgs, and a mud rotary boring was advanced through the casing to 120 feet bgs.



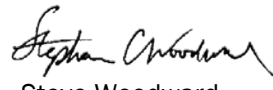
Geotechnical sampling was performed between approximately 25 feet bgs and 121.5 feet bgs (one sample was collected below the total mud rotary boring depth of 120 feet bgs). The borings were abandoned using a tremie pipe to pump neat cement grout, between the bottom of the borings to the ground surface. All augers and casing installed within each boring were also removed during decommissioning activities. All drill cuttings, drilling mud, and decontamination wash water was placed in labeled, steel 55-gallon drums pending profile sampling and permitted offsite disposal.

The geotechnical borings were completed at the originally planned locations as shown in Attachment A. Landau's draft boring logs are presented in Attachment B.

Sincerely,
GeoEngineers, Inc.



Nick Rohrbach
Project Manager



Steve Woodward
Principal

NER:SCW:lw

Copies sent to:

Greg Andrina – PSE

Daniel Simpson – Landau Associates

Ecology Southwest Regional Office – Water Resources Department

Attachments:

Attachment A. Completed Geotechnical Boring Locations

Attachment B. Geotechnical Boring Logs

Disclaimer: Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

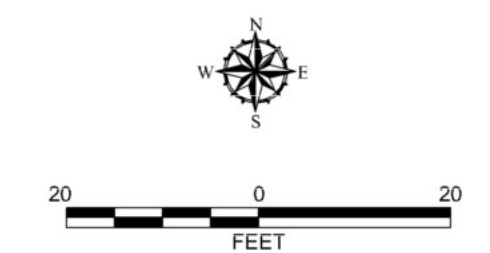
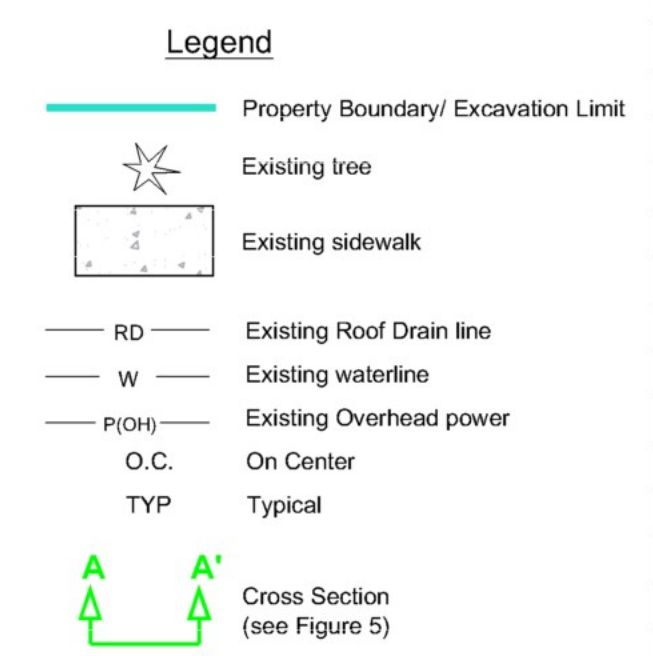
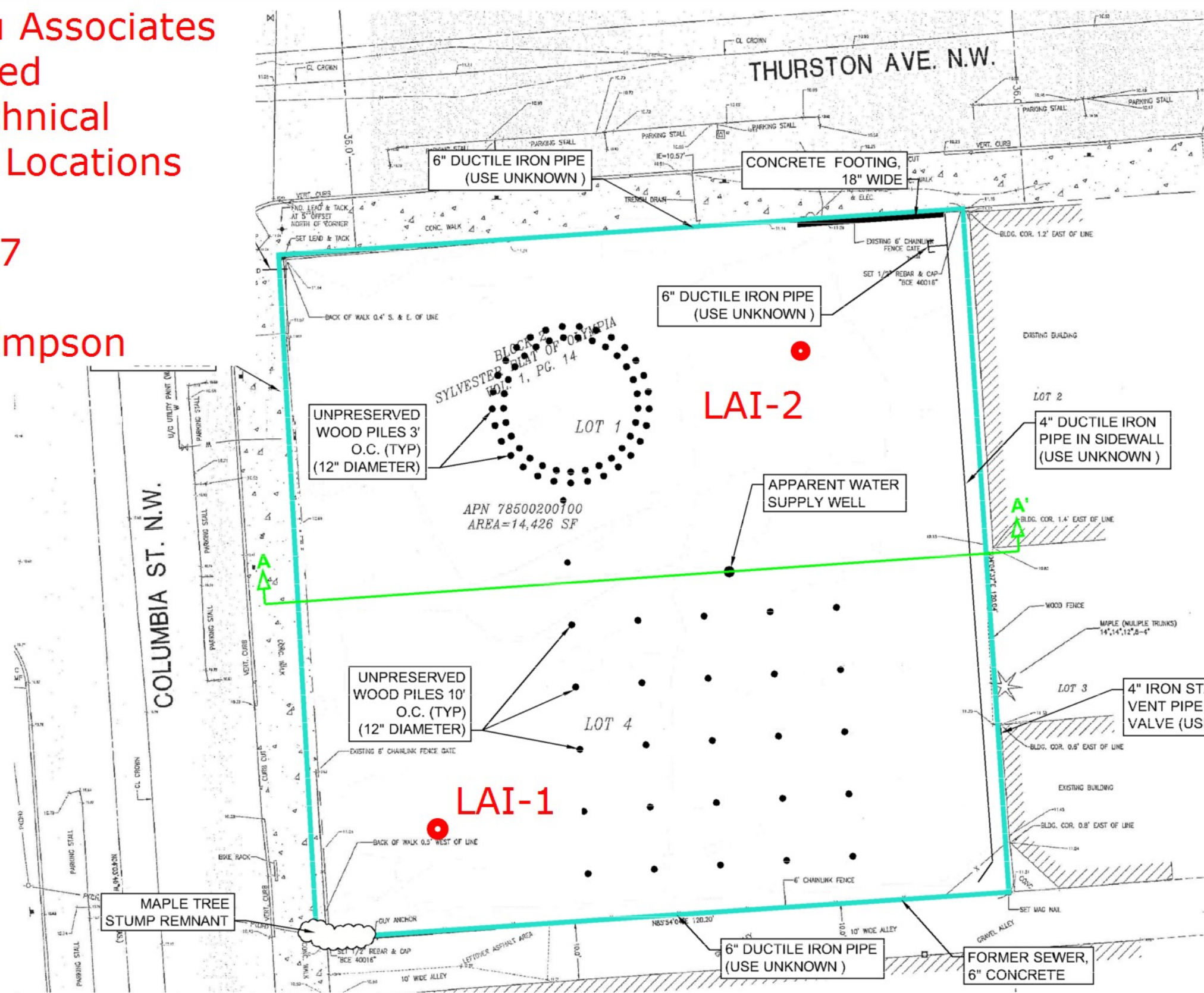


ATTACHMENT A
Completed Geotechnical Boring Locations

Landau Associates Proposed Geotechnical Boring Locations

10/4/17

D.C. Simpson



- Notes**
1. The locations of all features shown are approximate.
 2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
 3. All locations are approximate.

Reference: Background image provided by Barghausen dated 3/27/2012.

**Former MGP Utilities and Structures
Remaining After Excavation**

Former Olympia MGP Site
Olympia, Washington

Figure 3

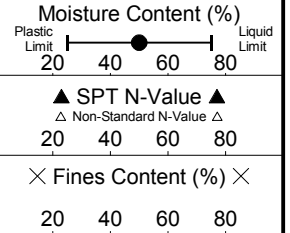
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ATTACHMENT B
Geotechnical Boring Logs

LAI- B-1

SAMPLE DATA

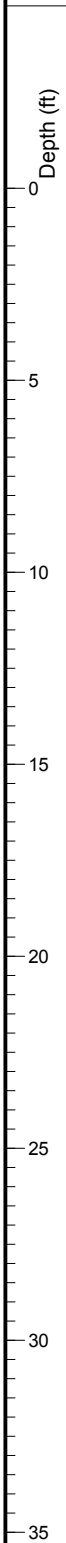
SOIL PROFILE



Drilling Method: Mud Rotary
 Ground Elevation (ft): Not measured
 Drilled By: Holocene Drilling Inc.
 Logged By: AMW Date: 10/23/17

Groundwater

Groundwater level not determined



Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol
0					GP GP- GM	
5					SP- SM	
10					SM	
25					GP- GM	
30	S-1	b2	27		[Symbol]	
30	S-2	b2	16		[Symbol]	
35					GP- GM	

Crushed gravel surfacing
(CRUSHED ROCK)

Brown, very sandy, fine to coarse GRAVEL with silt (medium dense, moist)

(FILL)

-No samples collected between ground surface and 27.5 ft bgs due to potential contamination. Lithology inferred from soil cuttings and historical boring logs.

Brown, gravelly, fine to coarse SAND with silt (medium dense, moist)

-Grades to wet

Gray, silty, fine to coarse SAND with gravel and shell fragments (medium dense, wet)

(DREDGE FILL)

Gray, fine to coarse GRAVEL with sand and silt (medium dense, wet)

(RECESSIONAL GLACIAL OUTWASH)

-Bentonite chips in sample

-Grades to brown

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

709006.01 11/16/17 C:\0709006.01\0709006.010.GPJ SOIL BORING LOG WITH GRAPH



320 Columbia Street
Olympia, Washington

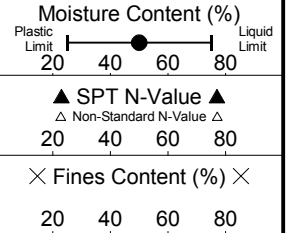
Log of Boring LAI- B-1

Figure
A-2
(1 of 4)

LAI- B-1

SAMPLE DATA

SOIL PROFILE



Drilling Method: Mud Rotary
 Ground Elevation (ft): Not measured
 Drilled By: Holocene Drilling Inc.
 Logged By: AMW Date: 10/23/17

Groundwater

Groundwater level not determined

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Description
35		S-3	b2	27			GP-GM	Gray, fine to coarse GRAVEL with sand and silt (medium dense, wet) (RECESSIONAL GLACIAL OUTWASH)
40		S-4	b2	13			SM	Gray-brown, very silty, fine to coarse SAND (medium dense, wet)
		S-5	c3		W = 41 AL		ML	Gray SILT with sand and trace gravel (stiff, wet)
45		S-6	b2	13	W = 41			-Grades to moist to wet, sandy, and without gravel
50		S-7	b2	14	W = 28 GS		SM	Gray, silty, fine to medium SAND (medium dense, wet) -Grades to very silty
55		S-8	b2	15	W = 34 -200 = 29		CL	Gray, lean CLAY (medium stiff, wet)
60		S-9	b2	6	W = 49 AL		ML	-Silty sand layer 3 inches thick
65		S-10	b2	11			ML	-Silty sand layer 2 inches thick

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320 Columbia Street
Olympia, Washington

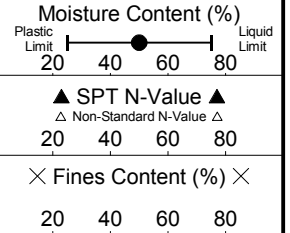
Log of Boring LAI- B-1

Figure
A-2
(2 of 4)

LAI- B-1

SAMPLE DATA

SOIL PROFILE

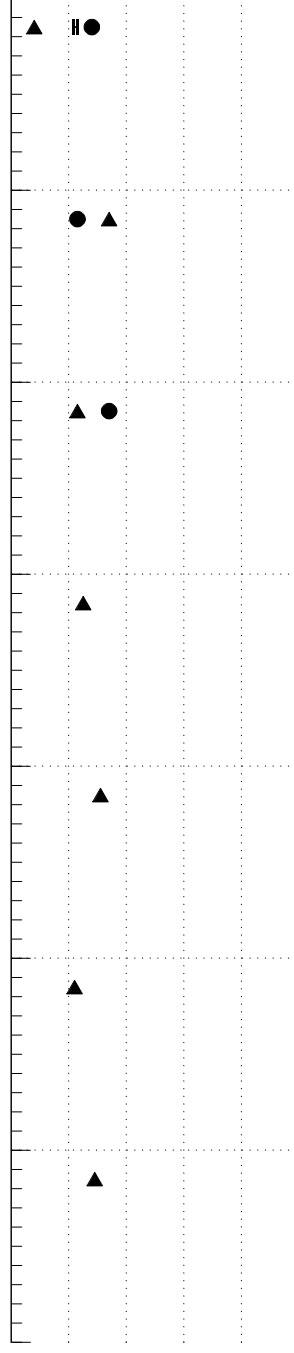


Groundwater

Groundwater level not determined

70
75
80
85
90
95
100
105

Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Soil Profile Description
	Drilling Method: Mud Rotary Ground Elevation (ft): Not measured Drilled By: Holocene Drilling Inc. Logged By: AMW Date: 10/23/17						
70	S-11	b2	8	W = 28 AL		ML	Gray SILT (medium stiff to stiff, wet)
75	S-12	b2	34	W = 23			-Grades to hard -Grades to sandy
80	S-13	b2	23	W = 34			-Grades to very stiff and without sand
85	S-14	b2	25				
90	S-15	b2	31				-Grades to hard
95	S-16	b2	22				-Grades to very stiff
100	S-17	b2	29				-Grades to with sand for about 2 ft



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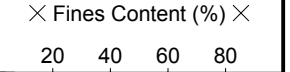
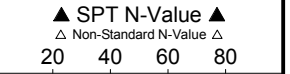
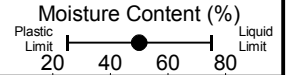
Log of Boring LAI- B-1

Figure
A-2
(3 of 4)

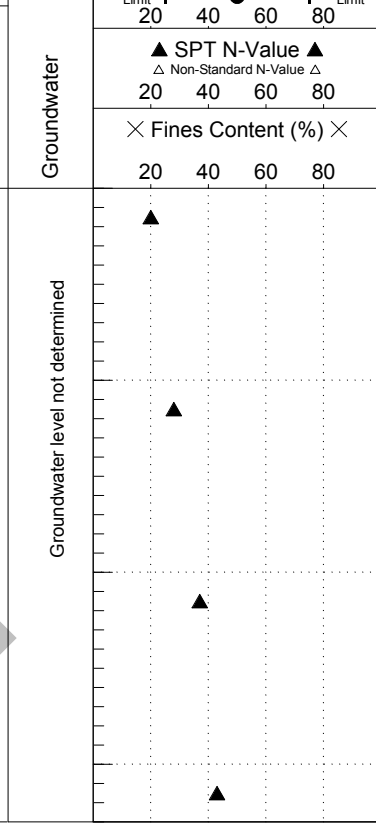
LAI- B-1

SAMPLE DATA

SOIL PROFILE



Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Soil Profile Description
105		S-18	b2	20			ML	Gray SILT (very stiff, wet)
110		S-19	b2	28				-Grades to with sand
115		S-20	b2	37				-Grades to hard
120		S-21	b2	43				-Grades to sandy



Boring Completed 10/23/17
Total Depth of Boring = 121.5 ft.

DRAFT

- Notes:
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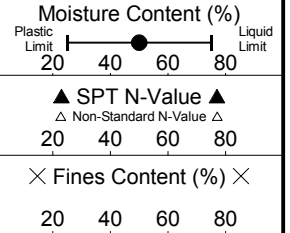
Log of Boring LAI- B-1

Figure
A-2
(4 of 4)

LAI- B-2

SAMPLE DATA

SOIL PROFILE



Drilling Method: Mud Rotary
 Ground Elevation (ft): Not measured
 Drilled By: Holocene Drilling Inc.
 Logged By: AMW Date: 10/24/17

Groundwater

Groundwater level not determined

Depth (ft)
0
5
10
15
20
25
30
35

Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Description
					GP GP- GM		Crushed gravel surfacing (CRUSHED ROCK) Brown, very sandy, fine to coarse GRAVEL with silt (medium dense, moist)
					SP- SM		(FILL) -No samples collected between ground surface and 25 ft bgs due to potential contamination. Lithology inferred from soil cuttings and historical boring logs
					SM		Brown, gravelly, fine to coarse SAND with silt (medium dense, moist) -Grades to wet Gray, silty, fine to coarse SAND with gravel and shell fragments (DREDGE FILL)
					GP- GM		Brown, sandy, fine to coarse GRAVEL with silt (medium dense, wet) (RECESSIONAL GLACIAL OUTWASH)
	S-1	b2	19		GP		-Bentonite in sample Brown, fine to coarse GRAVEL with sand (medium dense, wet)
	S-2	b2	28		SP- SM		Brown, fine to coarse SAND with silt and trace gravel (medium dense, wet)

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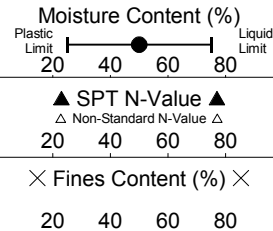
Log of Boring LAI- B-2

Figure
A-3
(1 of 4)

LAI- B-2

SAMPLE DATA

SOIL PROFILE



Drilling Method: Mud Rotary
 Ground Elevation (ft): Not measured
 Drilled By: Holocene Drilling Inc.
 Logged By: AMW Date: 10/24/17

Groundwater

Groundwater level not determined

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Soil Description
35		S-3	b2	21	W = 23 GS	[Dotted]	SM	Brown, silty, fine to coarse SAND with trace gravel (medium dense, wet)
40		S-4	b2	12	W = 32 GS	[Dotted]	SM	Gray, very silty, fine to coarse SAND (medium dense, wet)
45		S-5	b2	15		[Dotted]		
		S-6	c3		W = 27 -200 = 34	[Dotted]		
50		S-7	b2	20	W = 31	[Dotted]		-Grades to moist to wet
55		S-8	b2	9	W = 40 AL	[Diagonal Hatching]	CH	Gray, fat CLAY with sand (stiff, wet)
60		S-9	b2	10		[Dotted]	ML	Gray SILT with sand (stiff, wet) -Grades to sandy for 6 inches, then with sand
65		S-10	b2	27		[Dotted]		-Grades to very stiff and with trace gravel -Grades to without gravel

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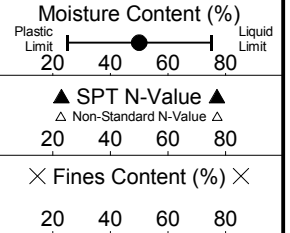
Log of Boring LAI- B-2

Figure
 A-3
 (2 of 4)

LAI- B-2

SAMPLE DATA

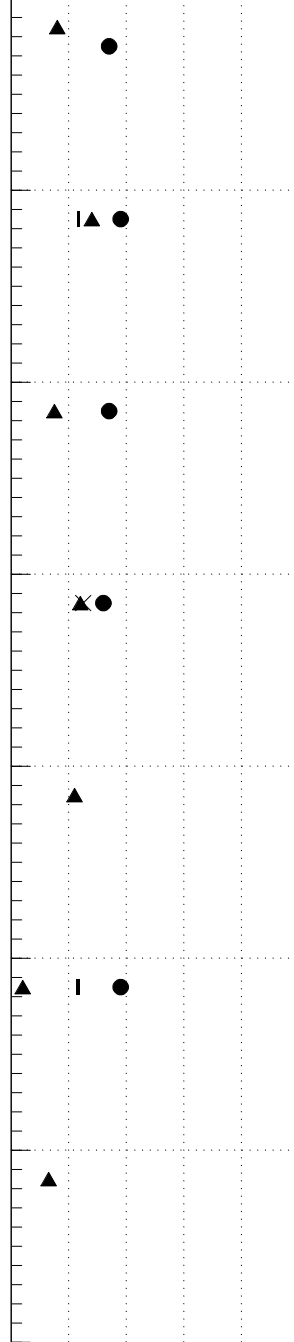
SOIL PROFILE



Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Soil Profile Description	
								Drilling Method: Mud Rotary	Ground Elevation (ft): Not measured
								Drilled By: Holocene Drilling Inc.	Logged By: AMW Date: 10/24/17
70		S-11A S-11B	b2	16	W = 34		ML	Gray SILT with sand (very stiff, wet) -Grades to without sand	
75		S-12	b2	28	W = 38 AL			-Grades to with gravel	
80		S-13	b2	15	W = 34			-Grades to sandy for 6 inches -Grades to stiff to very stiff and without gravel	
85		S-14	b2	24	W = 32 -200 = 25			-Grades to sandy and very stiff	
90		S-15	b2	22				-Grades to without sand	
95		S-16	b2	4	W = 38 AL			-Grades to soft to medium stiff	
100		S-17	b2	13				-Grades to stiff	

Groundwater

Groundwater level not determined



- Notes:
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709006.01 11/16/17 C:\0709006.01\0709006.010.GPJ SOIL BORING LOG WITH GRAPH



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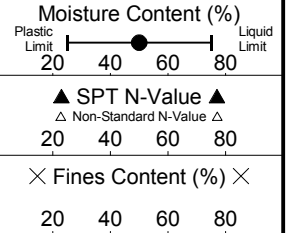
Log of Boring LAI- B-2

Figure
A-3
(3 of 4)

LAI- B-2

SAMPLE DATA

SOIL PROFILE



Drilling Method: Mud Rotary
 Ground Elevation (ft): Not measured
 Drilled By: Holocene Drilling Inc.
 Logged By: AMW Date: 10/24/17

Groundwater

Groundwater level not determined

Depth (ft)
105
110
115
120
125
130
135
140

Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol
105	S-18	b2	27			ML
110	S-19	b2	38			ML
115	S-20	b2	48			ML
120	S-21	b2	43			SM
						ML

Gray SILT with sand (very stiff, wet)
 -Grades to hard
 -Grades to sandy
 Gray, silty, fine to coarse SAND (dense, wet)
 Gray SILT (hard, wet)

Boring Completed 10/24/17
 Total Depth of Boring = 121.5 ft.

DRAFT

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709006.01 11/16/17 C:\0709006.010\T\0709006.010.GPJ SOIL BORING LOG WITH GRAPH



320 Columbia Street
 Olympia, Washington

Log of Boring LAI- B-2

Figure
 A-3
 (4 of 4)