Earth Solutions NW LLC
Geotechnical Engineering, Construction
Observation/Testing and Environmental Services

February 12, 2019
ES-6481

Best Parking Lot Cleaning, Inc.
2412 Inter Avenue
Puyallup, Washington 98372

Attention: Mr. Rich Hamilton

Subject: Geotechnical Evaluation
Proposed Parking Lot Redevelopment
2512 Inter Avenue
Puyallup, Washington

Reference: Timothy J. Walsh
Geologic Map of the South Half of the Tacoma Quadrangle, Washington, 1987

CES NW, Inc.
Topographic Survey, dated May 30, 2018

United States Department of Agriculture
Natural Resources Conservation Service
Online Web Soil Survey (WSS) Resource

Dear Mr. Hamilton:

As requested, Earth Solutions NW, LLC (ESNW) has prepared this geotechnical evaluation for the subject site. We performed our work in general accordance with the scope of services outlined in our proposal dated December 18, 2018 and authorized by you on January 2, 2019. A summary of our subsurface exploration and pertinent geotechnical considerations are provided in this letter.

Project Description

We understand the existing gravel parking lot, in the eastern portion of the site, will be improved. The feasibility of using shallow infiltration facilities to accommodate stormwater runoff from new impervious surfaces was the primary focus of our investigation. Infiltration facilities would likely be installed in the northeastern portion of the site, where feasible.

This letter has been prepared for the exclusive use of Best Parking Lot Cleaning, Inc. and their representatives. A warranty is neither expressed nor implied. The recommendations and conclusions provided in this letter are professional opinions consistent with the level of care and skill that is typical of other members in the profession currently practicing under similar conditions in this area. Variations in the soil and groundwater conditions encountered at the test pit locations may exist and may not become evident until construction. ESNW should reevaluate the contents of this letter if variations are encountered.

Surface Conditions

The subject site is located on the south side of Inter Avenue, about 450 feet east of the intersection with 23rd Street Southeast, in Puyallup, Washington. The approximate location of the property is illustrated on Plate 1 (Vicinity Map). The property is comprised of four tax parcels (Pierce County Parcel Nos. 210520-0320, -0350, -0340, and -0361) totaling approximately 2.79 acres. Two commercial buildings, asphalt parking, gravel parking, and related infrastructure improvements currently occupy the site. The site is surrounded to the north by Inter Avenue, to the south and east by BNSF railroad tracks, and to the west by a commercial development. Site topography is relateively level, with little discernible elevation change across the property. Vegetation primarily consists of scattered trees and grass.

Subsurface Conditions

An ESNW representative observed, logged, and sampled three test pits, excavated within accessible areas of the site, on January 30, 2019 using a trackhoe and operator provided by the client. The approximate locations of the test pits are depicted on Plate 2 (Test Pit Location Plan). Please refer to the attached test pit logs for a more detailed description of subsurface conditions. Representative soil samples collected at the test pit locations were analyzed in accordance with both Unified Soil Classification System (USCS) and United States Department of Agriculture (USDA) methods and procedures.

Topsoil and Fill

Topsoil was not encountered at the test pit locations. Given the existing level of site development, we do no anticipate topsoil will be consequential during the proposed construction.

Fill was encountered at the test pit locations to depths of approximately one to two and one-half feet below the existing ground surface (bgs). The fill was characterized as crushed rock or silty gravel with sand (USCS: GM) and was encountered in a medium dense and moist condition. Where encountered during construction, ESNW can evaluate fill deposits, as necessary.

Native Soil

Underlying fill, native soils at depth were characterized primarily as loose to medium dense silty sand (USCS: SM). The upper two feet was predominately silt (USCS:ML) with various amounts of sand and gravel. The native soils were observed primarily in a moist to wet condition. The maximum exploration depth was approximately 10 feet bgs.

Geologic Setting

The referenced geologic map resource identifies alluvium (Qal) as the primary geologic unit underlying the subject site and surrounding areas. Alluvial deposits are dominant in the Puyallup Valley and typically consist of loose, stratified to massively bedded fluvial silt, sand, and gravel, and locally includes sandy to silty estuarine deposits.

The referenced WSS resource identifies Briscot loam (Map Unit Symbol: 6A) as the primary soil unit underlying the subject site. The Briscot series was formed in flood plains. Based on our field observations, native soils on the subject site are consistent with alluvium, as outlined in this section.

Groundwater

During our subsurface exploration completed on January 30, 2019, groundwater was encountered at the test pit locations between depths of roughly three to eight feet bgs. Our interpretation of field conditions is that groundwater seepage is present in the upper three to four feet bgs, and the groundwater table occurs at about seven to eight feet bgs. Even though our fieldwork occurred during the wet season, our observed groundwater elevations should not be considered representative of the seasonal high without confirmation by a seasonal groundwater monitoring program.

It is our opinion that the contractor should be prepared to manage groundwater during construction, especially within deeper site excavations. Temporary measures to control surface water runoff and groundwater during construction would likely involve interceptor trenches, sumps, and dewatering pumps. It should be noted seepage rates and elevations fluctuate depending on many factors, including precipitation duration and intensity, the time of year, and soil conditions. In general, groundwater flow rates are higher during the winter, spring, and early summer months.

Stormwater Facility Considerations

We understand shallow infiltration facilities are proposed to accommodate stormwater runoff from new impervious surfaces. As indicated in the *Subsurface* section of this letter, native soils encountered during our fieldwork were characterized primarily as loose to medium dense alluvial deposits. Given the relatively high fines content and presence of a shallow groundwater table, it is our opinion infiltration is not feasible from a geotechnical standpoint.

Alternatively, we understand detention may be utilized for stormwater management. At the time of this letter, specific detention plans were not available for review; however, based on our field observations, in general, it is our opinion construction of a detention facility is feasible from a geotechnical standpoint. Design and installation of a detention facility must consider seasonal groundwater elevations, which were estimated at about seven feet bgs (in the northern site area) at the time of our January 2019 fieldwork. Perched groundwater seepage should be anticipated within detention facility excavations. Final detention facility designs must incorporate adequate buffer space from property boundaries such that temporary construction excavations may be successfully completed. ESNW can provide additional recommendations and design parameters to aid with detention facility design, if needed, as project plans develop.

ESNW should have an opportunity to review final project plans with respect to the geotechnical recommendations provided in this letter. ESNW should also be retained to observe the construction of detention facilities on site to provide supplementary testing and recommendations, where necessary.

We trust this letter meets your current needs. If you have questions regarding the content herein, or require additional information, please call.

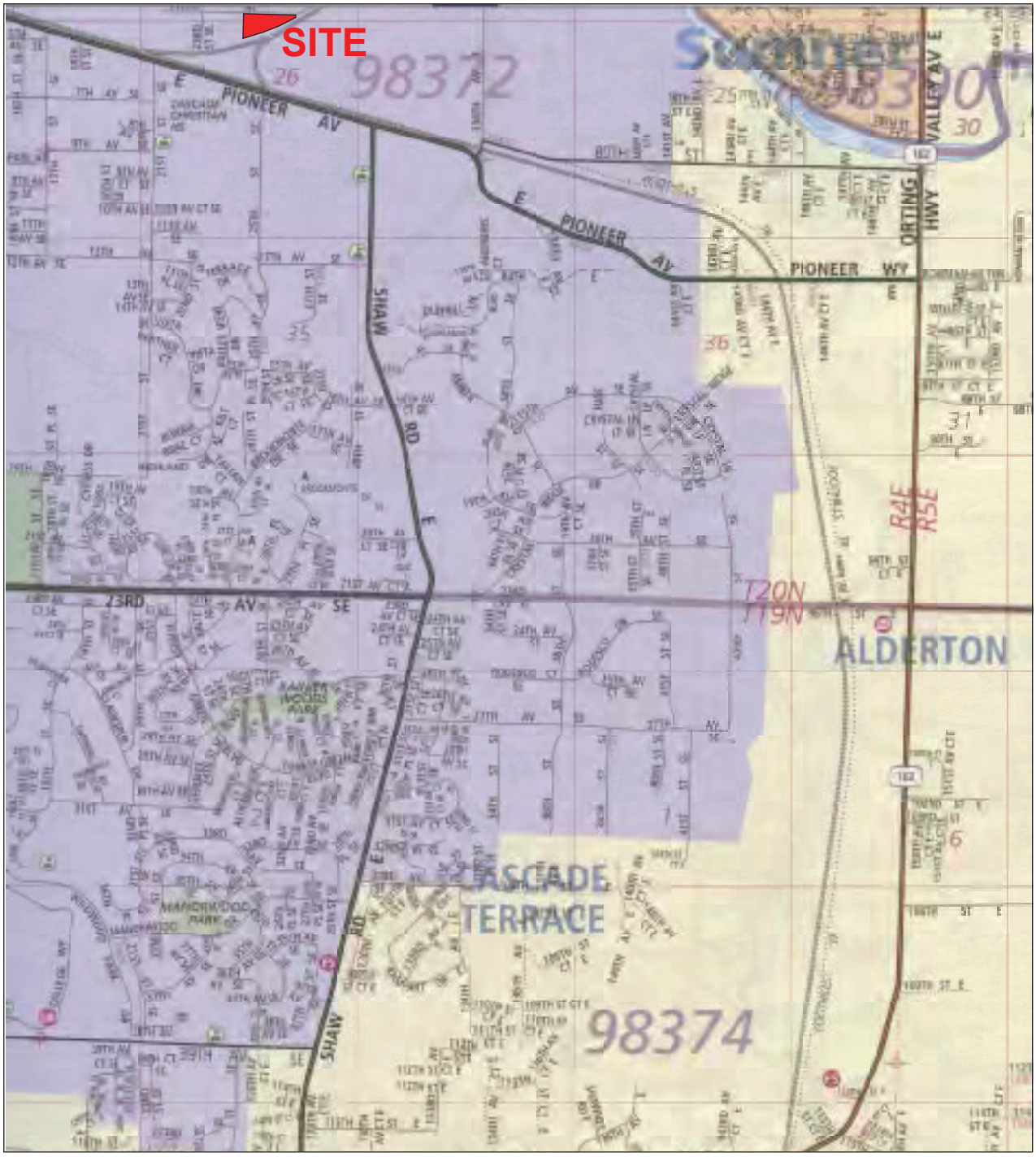
Sincerely,

EARTH SOLUTIONS NW, LLC

Terry J. Dunn
Staff Geologist

Keven D. Hoffmann, P.E.
Senior Project Manager

Attachments: Plate 1 – Vicinity Map
Plate 2 – Test Pit Location Plan
Test Pit Logs
Grain Size Distribution



Reference:
Pierce County, Washington
Map 835
By The Thomas Guide
Rand McNally
32nd Edition

NORTH

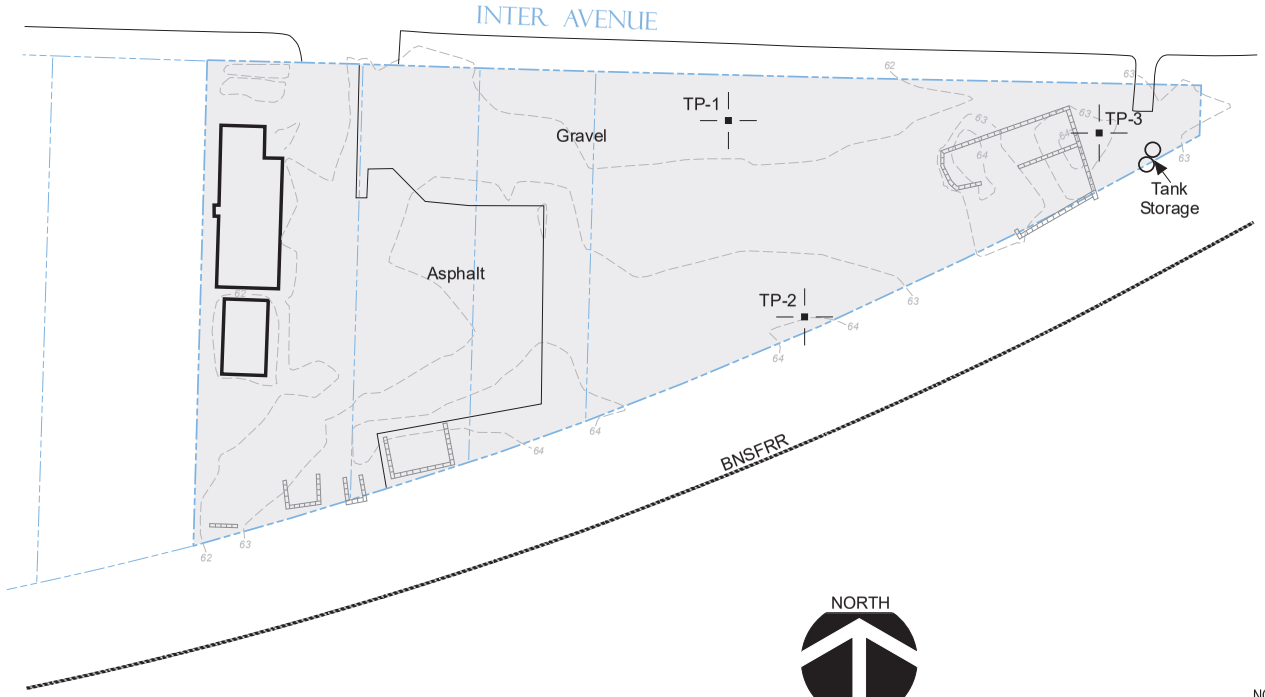
NOTE: This plate may contain areas of color. ESNW cannot be responsible for any subsequent misinterpretation of the information resulting from black & white reproductions of this plate.

Earth Solutions NW LLC

Geotechnical Engineering, Construction Observation/Testing and Environmental Services

Vicinity Map
Best Parking
Puyallup, Washington

Drwn. CAM	Date 02/06/2019	Proj. No. 6481
Checked TJD	Date Feb. 2019	Plate 1



LEGEND

TP-1 — Approximate Location of ESNW Test Pit, Proj. No. ES-6481, Jan. 2019

Subject Site

Existing Building

Existing Concrete Block Wall

NORTH

1"=80'

0 40 80 160

Scale in Feet

NOTE: The graphics shown on this plate are not intended for design purposes or precise scale measurements, but only to illustrate the approximate test locations relative to the approximate locations of existing and / or proposed site features. The information illustrated is largely based on data provided by the client at the time of our study. ESNW cannot be responsible for subsequent design changes or interpretation of the data by others.

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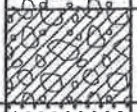
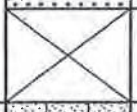
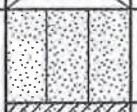
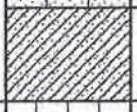
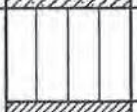
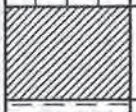
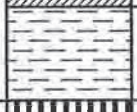
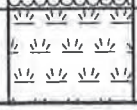
Test Pit Location Plan
Best Parking
Puyallup, Washington

Earth Solutions NW LLC
Geotechnical Engineering, Construction Observation/Testing and Environmental Services

Drwn. By	CAM
Checked By	TJD
Date	02/06/2019
Proj. No.	6481
Plate	2

Earth Solutions NW LLC

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO 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 (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

DUAL SYMBOLS are used to indicate borderline soil classifications.

The discussion in the text of this report is necessary for a proper understanding of the nature of the material presented in the attached logs.

Earth Solutions NW
1805 - 136th Place N.E., Suite 201
Bellevue, Washington 98005
Telephone: 425-449-4704
Fax: 425-449-4711

TEST PIT NUMBER TP-1

PROJECT NUMBER ES-6481 **PROJECT NAME** Best Parking

DATE STARTED 1/30/19 **COMPLETED** 1/30/19 **GROUND ELEVATION** 61 ft **TEST PIT SIZE**

EXCAVATION CONTRACTOR Client Provided **GROUND WATER LEVELS:**

EXCAVATION METHOD ▽ **AT TIME OF EXCAVATION** 8.0 ft / Elev 53.0 ft

LOGGED BY TJD **CHECKED BY** KDH **AT END OF EXCAVATION** ---

NOTES Depth of Topsoil & Sod 6": crushed rock minus **AFTER EXCAVATION** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0			FILL		Crushed rock minus	60.5
				0.5	Gray silty GRAVEL with sand, medium dense, moist (Fill)	
			GM		-increased gravel content	59.0
		MC = 22.20% Fines = 66.70%	ML	2.0	Gray gravelly SILT, loose to medium dense, moist [USDA Classification: gravelly LOAM] -caving to 8'	
				4.0	-light groundwater seepage at 4'	57.0
5		MC = 28.80%	SM		Gray silty fine SAND, loose to medium dense, moist to wet -iron oxide staining -moderate to heavy groundwater seepage	
		MC = 25.90%			-increased sand content -becomes black, wet	
					▽ -groundwater table	
10		MC = 26.80% Fines = 12.60%		10.0	[USDA Classification: slightly gravelly SAND]	51.0
					Test pit terminated at 10.0 feet below existing grade. Groundwater table encountered at 8.0 feet and groundwater seepage encountered at 4.0 and 6.0 feet during excavation. Caving observed from 3.0 to 8.0 feet. Bottom of test pit at 10.0 feet.	

Earth Solutions NW
1805 - 136th Place N.E., Suite 201
Bellevue, Washington 98005
Telephone: 425-449-4704
Fax: 425-449-4711

TEST PIT NUMBER TP-2

PROJECT NUMBER ES-6481 **PROJECT NAME** Best Parking

DATE STARTED 1/30/19 **COMPLETED** 1/30/19 **GROUND ELEVATION** 63 ft **TEST PIT SIZE**

EXCAVATION CONTRACTOR Client Provided **GROUND WATER LEVELS:**

EXCAVATION METHOD **AT TIME OF EXCAVATION** ---

LOGGED BY TJD **CHECKED BY** KDH **AT END OF EXCAVATION** —

NOTES Depth of Topsoil & Sod 4"-6": crushed rock minus **AFTER EXCAVATION** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0			FILL		0.5 Crushed rock minus	62.5
			GM		Gray silty GRAVEL with sand, medium dense, damp to moist (Fill)	
					2.5	60.5
		MC = 31.70%	ML		Gray SILT with sand, loose to medium dense, moist to wet -iron oxide staining	
		MC = 29.40%			4.5 -light groundwater seepage	58.5
5			SM		Gray silty fine SAND, loose to medium dense, moist to wet -caving from 4.5' to 8'	
		MC = 28.80% Fines = 37.30%			-iron oxide staining [USDA Classification: very fine sandy LOAM] -moderate groundwater seepage -becomes black, wet	
10		MC = 32.50%			10.0	53.0
					Test pit terminated at 10.0 feet below existing grade. Groundwater seepage encountered at 4.0 and 8.0 feet during excavation. Caving observed from 4.5 to 8.0 feet. Bottom of test pit at 10.0 feet.	

Earth Solutions NW
1805 - 136th Place N.E., Suite 201
Bellevue, Washington 98005
Telephone: 425-449-4704
Fax: 425-449-4711

TEST PIT NUMBER TP-3

PROJECT NUMBER ES-6481 **PROJECT NAME** Best Parking

DATE STARTED 1/30/19 **COMPLETED** 1/30/19 **GROUND ELEVATION** 63 ft **TEST PIT SIZE**

EXCAVATION CONTRACTOR Client Provided **GROUND WATER LEVELS:**

EXCAVATION METHOD ▽ **AT TIME OF EXCAVATION** 7.0 ft / Elev 56.0 ft

LOGGED BY TJD **CHECKED BY** KDH **AT END OF EXCAVATION** ---

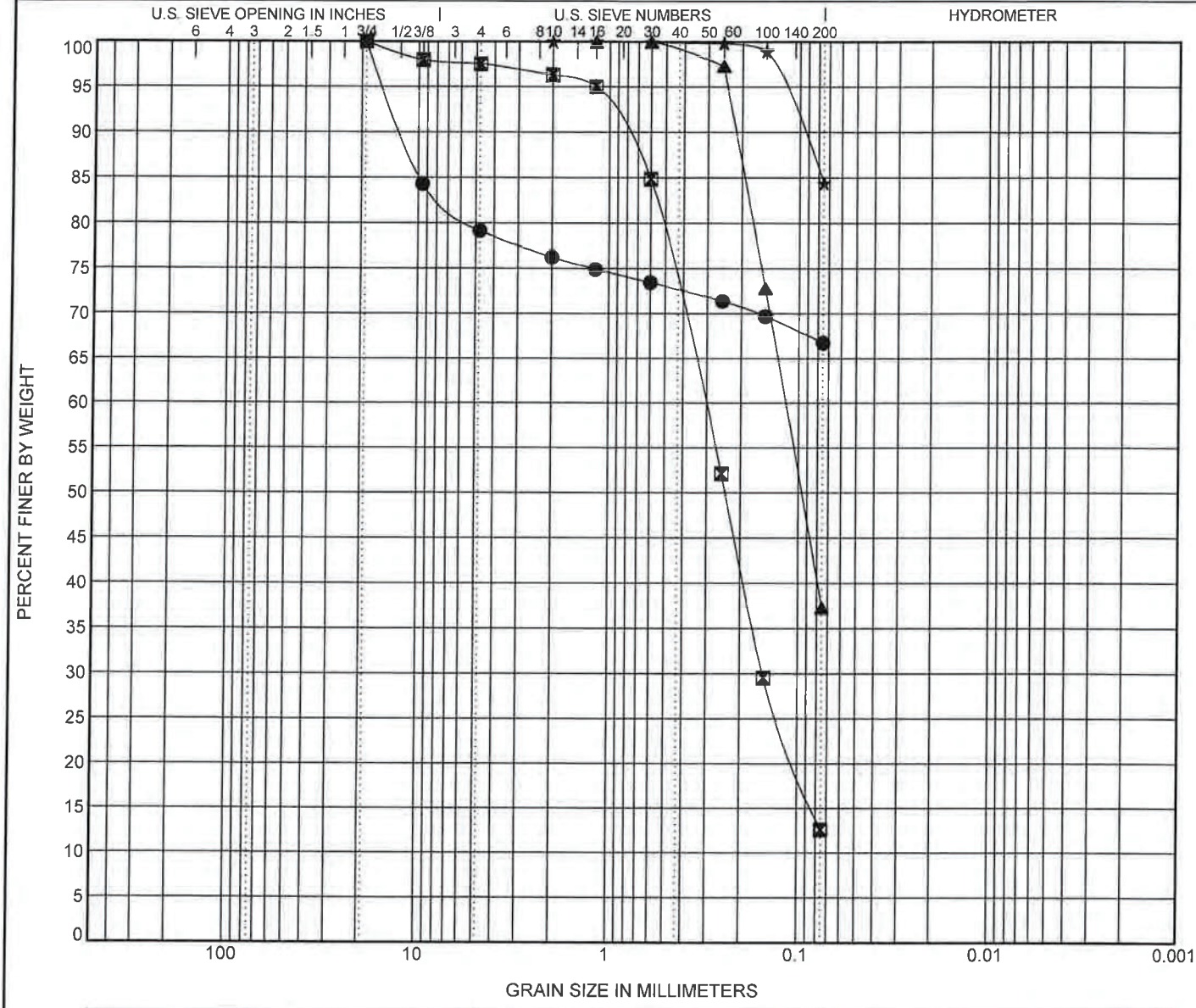
NOTES Depth of Topsoil & Sod 6"-10": 2"-4" quarry spalls **AFTER EXCAVATION** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0			FILL		Quarry spalls Crushed rock minus
				0.9	62.1
		MC = 25.30%	ML		Gray SILT with sand, loose to medium dense, moist to wet
		MC = 33.00% Fines = 84.40%		3.0	-light groundwater seepage at 3', caving from 3' to 7'
					60.0
			SM		Gray fine silty SAND, loose to medium dense, wet [USDA Classification: LOAM]
5					-light groundwater seepage -iron oxide staining to 8'
		MC = 32.10%			-silt lens ▽ -groundwater table
		MC = 31.60%		9.5	
					53.5
					Test pit terminated at 9.5 feet below existing grade. Groundwater table encountered at 7.0 feet and groundwater seepage encountered at 3.0 and 5.0 feet during excavation. Caving observed from 3.0 to 7.0 feet. Bottom of test pit at 9.5 feet.

Earth Solutions NW, LLC
1805 - 136th PL N.E., Suite 201
Bellevue, WA 98005
Telephone: 425-449-4704
Fax: 425-449-4711

GRAIN SIZE DISTRIBUTION

PROJECT NUMBER ES-6481 **PROJECT NAME** Best Parking



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	Cc	Cu
● TP-01	2.50ft.	USDA: Gray Gravelly Loam. USCS: Gravelly ML.		
⊠ TP-01	10.00ft.	USDA: Black Slightly Gravelly Sand. USCS: SM.		
▲ TP-02	7.50ft.	USDA: Gray Very Fine Sandy Loam. USCS: SM.		
★ TP-03	3.00ft.	USDA: Gray Loam. USCS: ML with Sand.		

Specimen Identification		D100	D60	D30	D10	LL	PL	PI	%Silt	%Clay
● TP-01	2.5ft.	19							66.7	
⊠ TP-01	10.0ft.	19	0.309	0.152					12.6	
▲ TP-02	7.5ft.	1.18	0.117						37.3	
★ TP-03	3.0ft.	2							84.4	

GRAIN SIZE USDA ES-6481 BEST PARKING.GPJ GINT US LAB.GDT 1/31/19

Earth Solutions NW LLC
Geotechnical Engineering, Construction
Observation/Testing and Environmental Services

April 27, 2021
ES-6481.01

BPLC Properties, LLC
10615 – 438th Street Court East
Eatonville, Washington 98328

Attention: Mr. Rich Hamilton

Subject: Groundwater Monitoring Program Summary
Best Parking Lot Cleaning Site Improvements
2412 Inter Avenue
Puyallup, Washington

Reference: Earth Solutions NW, LLC
Geotechnical Evaluation
Project No. ES-6481, dated February 19, 2019

City of Puyallup, Washington
E-20-0067 Civil Comments 1 Letter, dated March 16, 2020

Dear Mr. Hamilton:

As requested, Earth Solutions NW, LLC (ESNW) has prepared this letter summarizing the results of our seasonal groundwater monitoring program on site.

The monitoring program consisted of installing three groundwater monitoring wells at the approximate locations depicted on Plate 2 (Subsurface Exploration Plan). Since the installation of the groundwater wells on June 8, 2020, daily groundwater levels have been recorded using dataloggers. ESNW personnel visited the site biweekly to download the collected data and perform manual measurements at each borehole using a depth-to-water meter. The table on page 2 summarizes the groundwater data collected during our monitoring program.

Borehole	Depth of Borehole (ft)	Ground Elevation* (ft)	Peak GWT Depth† (ft bgs)	Peak GWT Elevation* (ft)	Peak Date
B-1	21.5	56	0.9	55.1	01/13/2021
B-2	21.5	56	1.6	54.4	01/13/2021
B-3	21.5	54	2.0	52.0	01/13/2021

** Elevations are approximate, based on readily available topographic survey data; monitoring well locations have not been surveyed.*
† Depth measured from existing ground surface.

Monitoring charts are attached to letter, along with boring logs and laboratory analyses from the June 2020 fieldwork. The monitoring period extended before and after the minimum period requested by the City of Puyallup (December 21 to April 1), as outlined in the referenced comments letter. As anticipated, high groundwater readings corresponded with relatively high rainfall events. Based on the data collected during the monitoring period, it is our opinion the peak groundwater table depths listed in the table above are indicative of the seasonal high groundwater elevations.

We trust this letter meets your current needs. Should you have any questions regarding the content herein, or require additional information, please call.

Sincerely,

EARTH SOLUTIONS NW, LLC

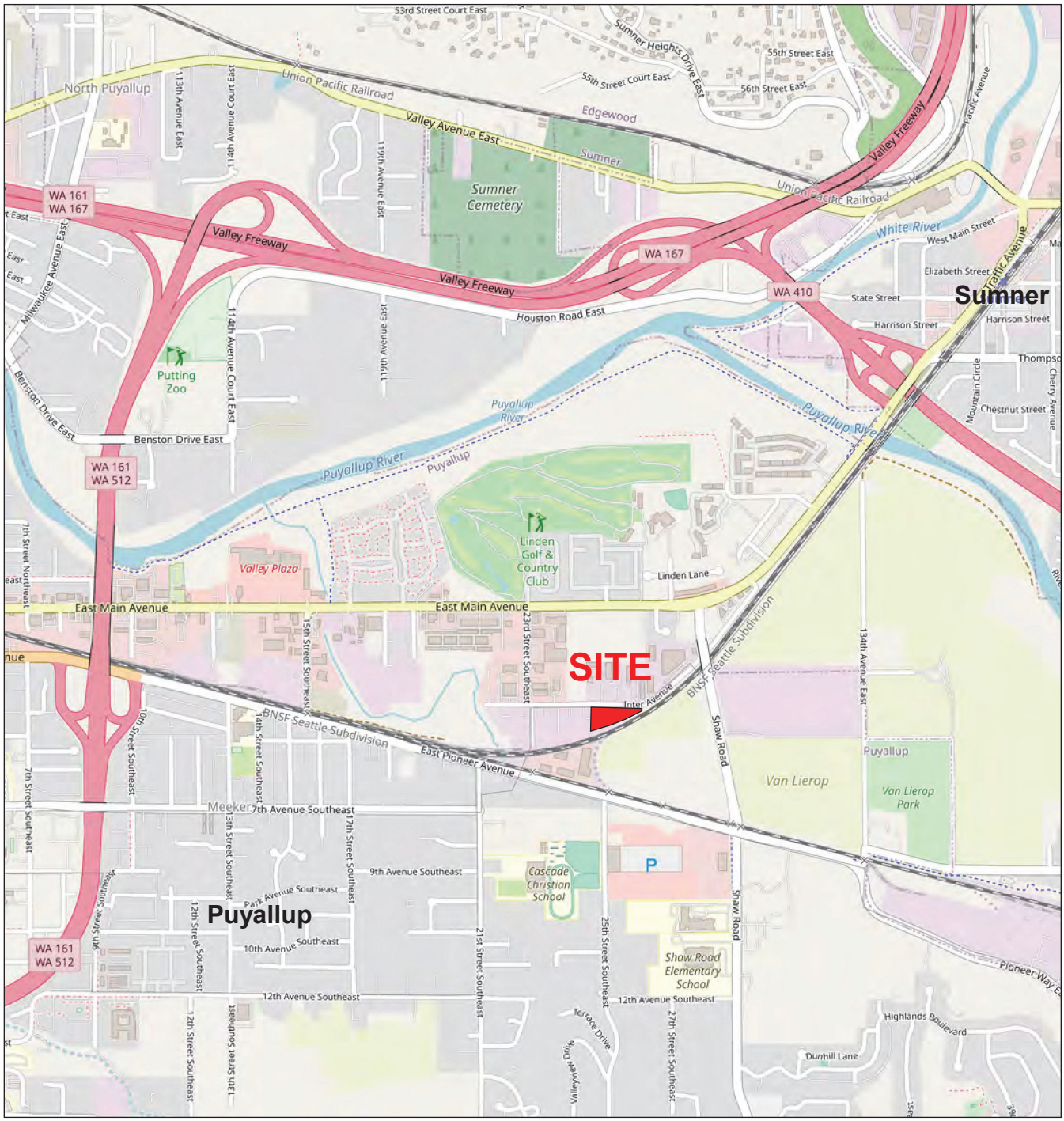
04/27/2021

Adam Z. Shier, L.G.
Project Geologist

Keven D. Hoffmann, P.E.
Geotechnical Engineering Services Manager

Attachments: Plate 1 – Vicinity Map
Plate 2 – Subsurface Exploration Plan
Boring Logs
Grain Size Distribution
Seasonal Groundwater Monitoring Charts

cc: Barghausen Consulting Engineers, Inc.
Attention: Mr. Jason Hubbell, P.E. (Email only)



Reference:
Pierce County, Washington
OpenStreetMap.org

NORTH

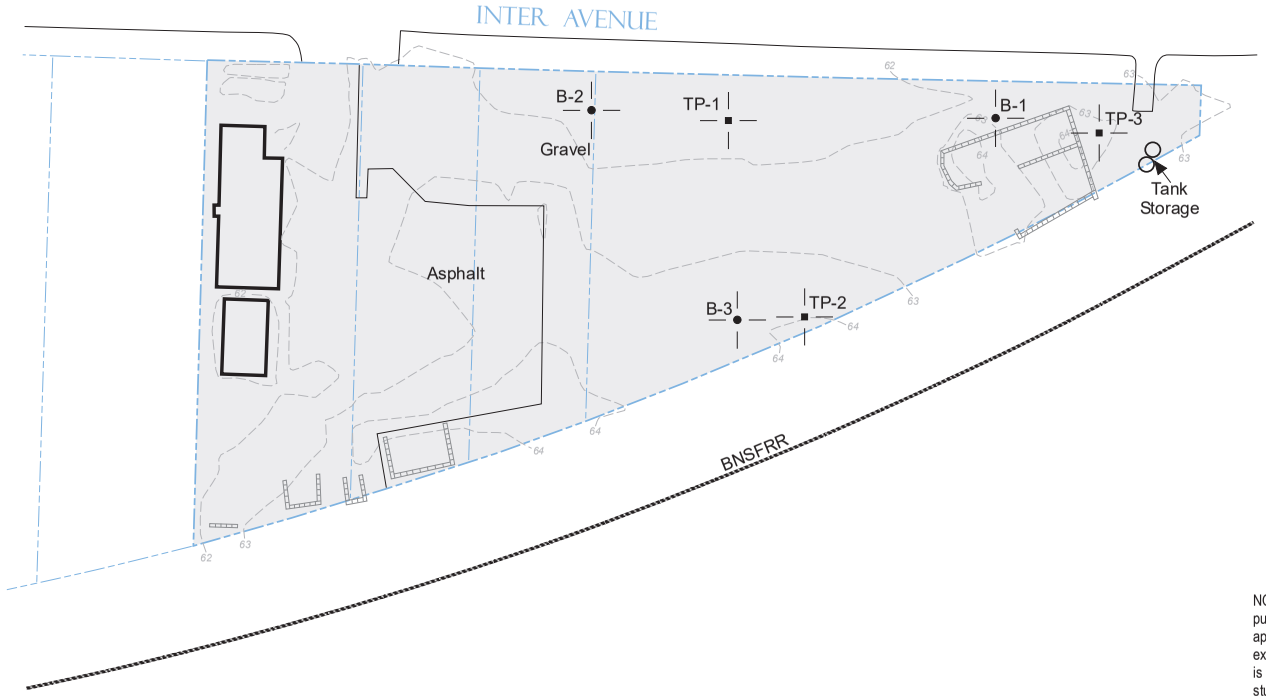
NOTE: This plate may contain areas of color. ESNW cannot be responsible for any subsequent misinterpretation of the information resulting from black & white reproductions of this plate.

Earth Solutions NW LLC

Geotechnical Engineering, Construction Observation/Testing and Environmental Services

Vicinity Map
Best Parking Lot Cleaning Site Improvements
Puyallup, Washington

Drwn. MRS	Date 06/30/2020	Proj. No. 6481.01
Checked KDH	Date June 2020	Plate 1



LEGEND

- B-1 — Approximate Location of ESNW Test Pit, Proj. No. ES-6481.01, June 2020
- TP-1 — Approximate Location of ESNW Test Pit, Proj. No. ES-6481, Jan. 2019
- Subject Site
- Existing Building
- Existing Concrete Block Wall

NORTH

1"=80' 0 40 80 160 Scale in Feet

NOTE: The graphics shown on this plate are not intended for design purposes or precise scale measurements, but only to illustrate the approximate test locations relative to the approximate locations of existing and / or proposed site features. The information illustrated is largely based on data provided by the client at the time of our study. ESNW cannot be responsible for subsequent design changes or interpretation of the data by others.

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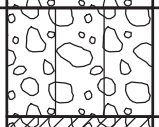
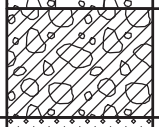
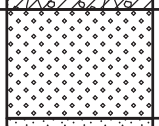
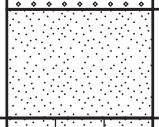
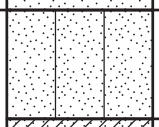
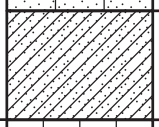
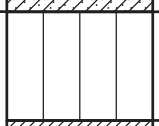
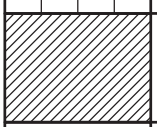
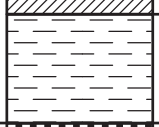
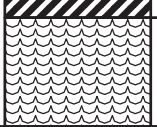
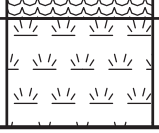
Subsurface Exploration Plan
Best Parking Lot Cleaning Site Improvements
Puyallup, Washington

Earth Solutions NW LLC
Geotechnical Engineering, Construction Observation/Testing and Environmental Services

Drwn. By	MRS
Checked By	KDH
Date	06/30/2020
Proj. No.	6481.01
Plate	2

Earth Solutions NW LLC

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO 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 (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

DUAL SYMBOLS are used to indicate borderline soil classifications.

The discussion in the text of this report is necessary for a proper understanding of the nature of the material presented in the attached logs.

Earth Solutions NW, LLC
15365 N.E. 90th Street, Suite 100
Redmond, Washington 98052
Telephone: 425-449-4704
Fax: 425-449-4711

BORING NUMBER B-1

PROJECT NUMBER ES-6481.01 **PROJECT NAME** Best Parking Lot Cleaning Site Improvements

DATE STARTED 6/8/20 **COMPLETED** 6/8/20 **GROUND ELEVATION** 63 ft **HOLE SIZE**

DRILLING CONTRACTOR Holocene Drilling **GROUND WATER LEVELS:**

DRILLING METHOD HSA ▽ **AT TIME OF DRILLING** 7.0 ft

LOGGED BY AZS **CHECKED BY** KDH **AT END OF DRILLING** ---

NOTES Surface Conditions: exposed soil **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0					SW-SM		Gray well-graded SAND with silt, medium dense, moist
	SS	11	7-8-7 (15)	MC = 10.6%			
5							
	SS	17	1-4-4 (8)	MC = 8.1% Fines = 11.1%			[USDA Classification: gravelly coarse SAND] -becomes loose
							▽ -groundwater table, becomes water bearing
	SS	50	4-2-5 (7)	MC = 40.5%			8.0
10					ML		Gray SILT, medium dense, water bearing
	SS	100	7-8-10 (18)	MC = 29.8%			
15							
	SS	67	3-5-6 (11)	MC = 34.5%			
20							20.0 55.0 43.0

(Continued Next Page)

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DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
20							
	SS	67	2-3-5 (8)	MC = 31.1%	ML		Gray SILT, loose, water bearing
21.5							41.5

Boring terminated at 21.5 feet below existing grade. Groundwater table encountered at 7.0 feet during drilling. 2" PVC standpipe installed to bottom of boring. Lower 10.0 feet slotted. Well ID: BNF287. Boring backfilled with bentonite/sand.

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BORING NUMBER B-2

PROJECT NUMBER ES-6481.01 **PROJECT NAME** Best Parking Lot Cleaning Site Improvements

DATE STARTED 6/8/20 **COMPLETED** 6/8/20 **GROUND ELEVATION** 62 ft **HOLE SIZE**

DRILLING CONTRACTOR Holocene Drilling **GROUND WATER LEVELS:**

DRILLING METHOD HSA ▽ **AT TIME OF DRILLING** 6.0 ft

LOGGED BY AZS **CHECKED BY** KDH **AT END OF DRILLING** ---

NOTES Surface Conditions: gravel driveway **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0					GM		Gray silty GRAVEL with sand, loose, moist (Fill)
	SS	6	1-2-5 (7)	MC = 22.3%			3.0 59.0
					SP		Gray poorly graded SAND, loose, moist
							4.0 58.0
5					ML		Brown SILT with sand, loose, wet
	SS	67	1-1-2 (3)	MC = 43.5% Fines = 77.1%			[USDA Classification: slightly gravelly LOAM]
							▽ -iron oxide staining
							-groundwater table, becomes water bearing
	SS	100	2-6-7 (13)	MC = 42.8%			8.5 53.5
10					SM		Gray silty fine SAND, medium dense, water bearing
	SS	100	3-11-16 (27)	MC = 31.3%			-4" wood debris
15							
	SS	67	6-6-6 (12)	MC = 29.5%			
20							20.0 42.0

(Continued Next Page)

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BORING NUMBER B-2

PROJECT NUMBER ES-6481.01 **PROJECT NAME** Best Parking Lot Cleaning Site Improvements

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
20							
	SS	100	2-4-8 (12)	MC = 33.5%	SP		Gray poorly graded SAND, medium dense, water bearing 21.0 41.0
					ML		21.5 Gray SILT, medium dense, water bearing -wood debris 40.5

Boring terminated at 21.5 feet below existing grade. Groundwater table encountered at 6.0 feet during drilling. 2" PVC standpipe installed to bottom of boring. Lower 10.0 feet slotted. Well ID: BNF288. Boring backfilled with bentonite/sand.

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BORING NUMBER B-3

PROJECT NUMBER ES-6481.01 **PROJECT NAME** Best Parking Lot Cleaning Site Improvements

DATE STARTED 6/8/20 **COMPLETED** 6/8/20 **GROUND ELEVATION** 64 ft **HOLE SIZE**

DRILLING CONTRACTOR Holocene Drilling **GROUND WATER LEVELS:**

DRILLING METHOD HSA ▽ **AT TIME OF DRILLING** 10.0 ft

LOGGED BY AZS **CHECKED BY** KDH **AT END OF DRILLING** ---

NOTES Surface Conditions: gravel driveway **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0					GM		Gray silty GRAVEL with sand, loose, moist (Fill)
2.5							61.5
	SS	67	4-3-4 (7)	MC = 34.5% Fines = 98.3%	ML		Gray SILT, loose, moist [USDA Classification: slightly gravelly LOAM] -iron oxide staining
5							-becomes sandy silt [USDA Classification: slightly gravelly LOAM]
	SS	11	4-4-5 (9)	MC = 25.2% Fines = 60.4%			
7.5							56.5
	SS	33	3-4-6 (10)	MC = 21.8%	SM		Gray silty fine SAND with gravel, medium dense, moist to wet
10							▽ -groundwater table, becomes water bearing, no recovery
	SS		4-4-6 (10)				
15							
15.5							48.5
	SS	67	2-4-7 (11)	MC = 28.6%	SP		Gray poorly graded SAND, medium dense, water bearing
20							
20.0							44.0

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BORING NUMBER B-3

PROJECT NUMBER ES-6481.01 **PROJECT NAME** Best Parking Lot Cleaning Site Improvements

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
20							
	SS	67	4-4-3 (7)	MC = 22.6%	SP		Gray poorly graded SAND, loose, water bearing
21.5							42.5

Boring terminated at 21.5 feet below existing grade. Groundwater table encountered at 10.0 feet during drilling. 2" PVC standpipe installed to bottom of boring. Lower 10.0 feet slotted. Well ID: BNF289. Boring backfilled with bentonite/sand.

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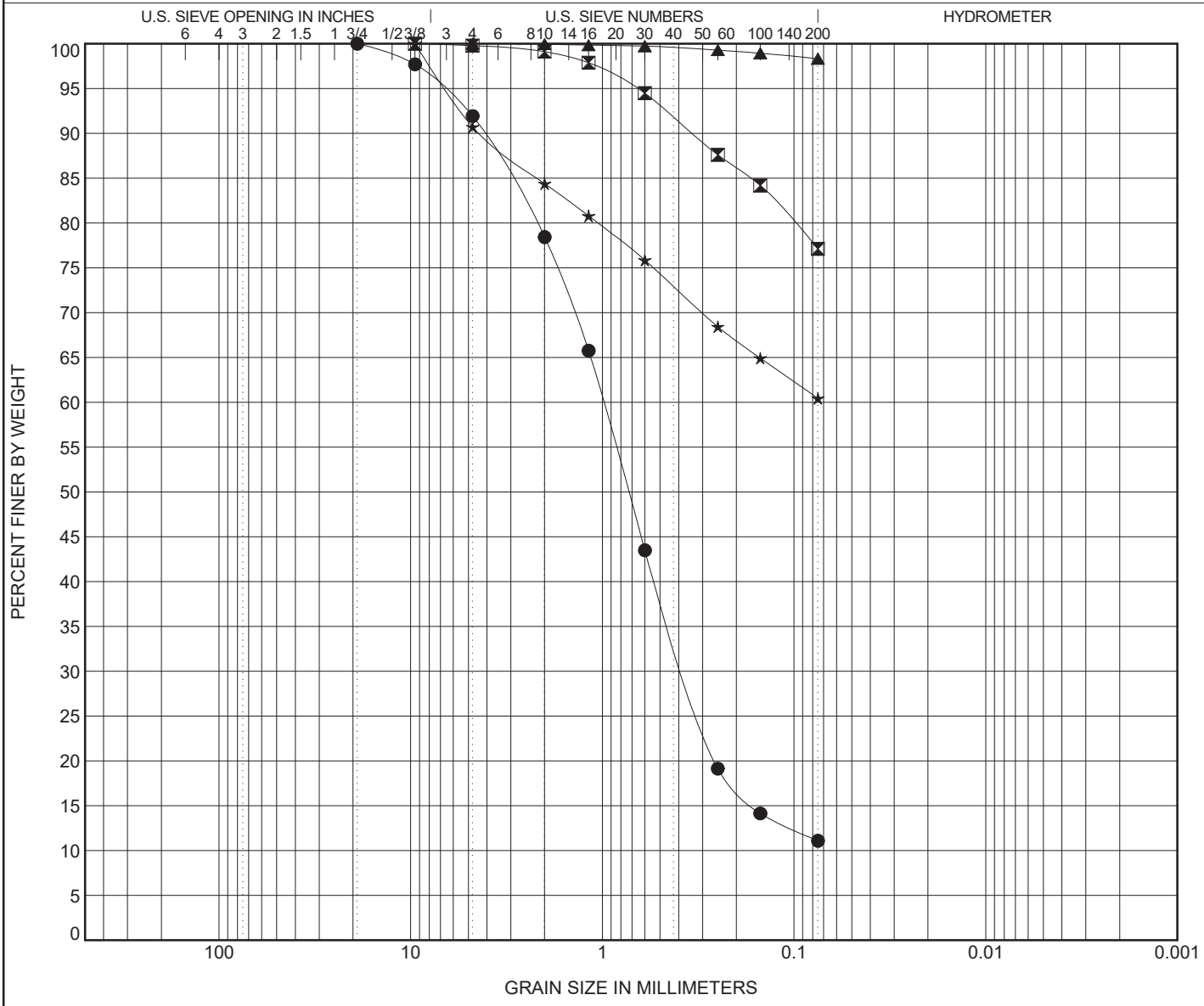
GRAIN SIZE DISTRIBUTION

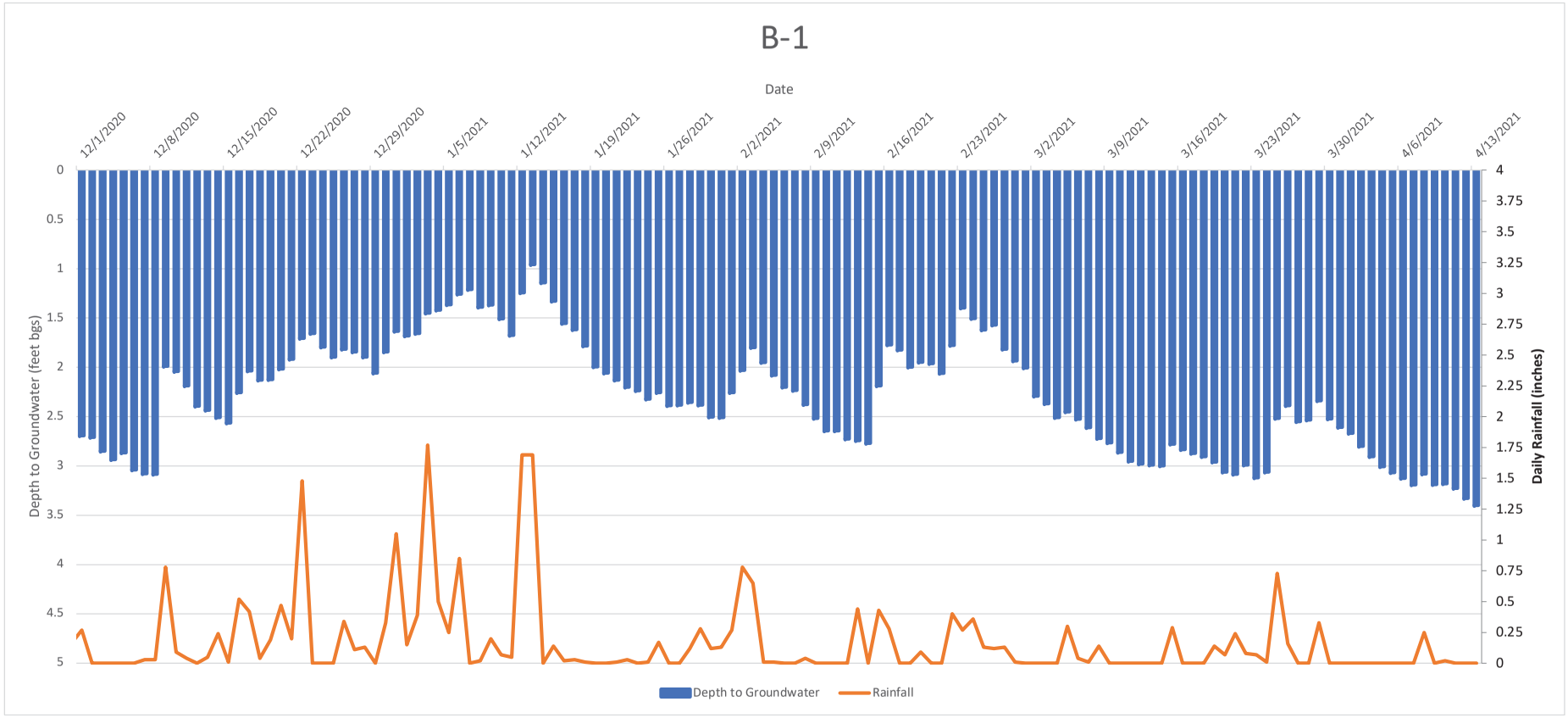
PROJECT NUMBER ES-6481.01 **PROJECT NAME** Best Parking Lot Cleaning Site Improvements



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification	Cc	Cu
●	B-01	5.00ft.	USDA: Gray Gravelly Coarse Sand. USCS: SW-SM.	2.35	16.92
⊠	B-02	5.00ft.	USDA: Brown Slightly Gravelly Loam. USCS: ML with Sand.		
▲	B-03	2.50ft.	USDA: Gray Slightly Gravelly Loam. USCS: ML.		
★	B-03	5.00ft.	USDA: Gray Slightly Gravelly Loam. USCS: Sandy ML.		

Specimen Identification			D100	D60	D30	D10	LL	PL	PI	%Silt	%Clay
●	B-01	5.0ft.	19	0.991	0.369					11.1	
⊠	B-02	5.0ft.	9.5							77.1	
▲	B-03	2.5ft.	4.75							98.3	
★	B-03	5.0ft.	9.5							60.4	


B-1
Date
12/1/2020
12/8/2020
12/15/2020
12/22/2020
12/29/2020
1/5/2021
1/12/2021
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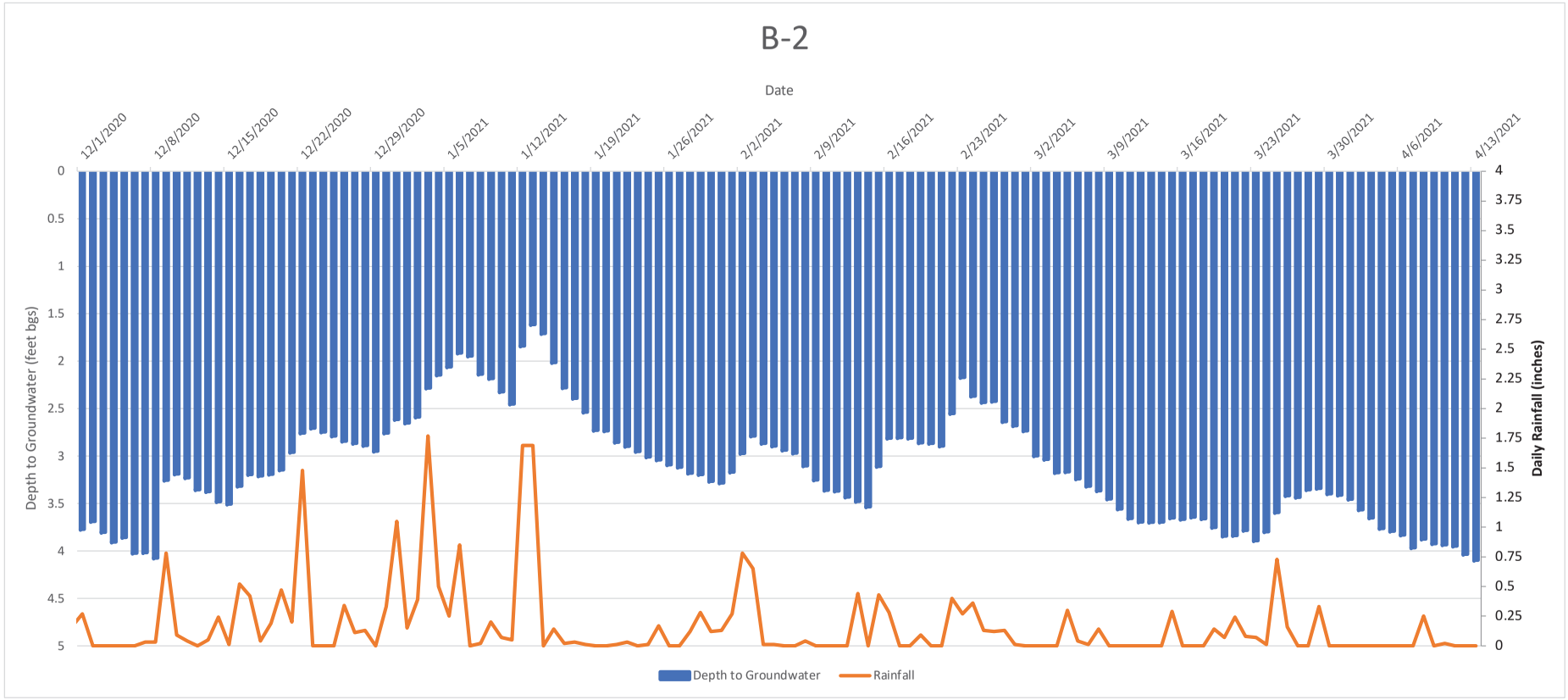
1/26/2021
2/2/2021
2/9/2021
2/16/2021
2/23/2021
3/2/2021
3/9/2021
3/16/2021
3/23/2021
3/30/2021
4/6/2021
4/13/2021
Depth to Groundwater (feet bgs)
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
Daily Rainfall (inches)
4
3.75
3.5
3.25
3
2.75
2.5
2.25
2
1.75
1.5
1.25
1
0.75
0.5
0.25
0
Depth to Groundwater
Rainfall


B-2
Date
12/1/2020
12/8/2020
12/15/2020
12/22/2020
12/29/2020
1/5/2021
1/12/2021
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1/26/2021
2/2/2021
2/9/2021
2/16/2021
2/23/2021
3/2/2021
3/9/2021
3/16/2021
3/23/2021
3/30/2021
4/6/2021
4/13/2021
Depth to Groundwater (feet bgs)
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
Daily Rainfall (inches)
4
3.75
3.5
3.25
3
2.75
2.5
2.25
2
1.75
1.5
1.25
1
0.75
0.5
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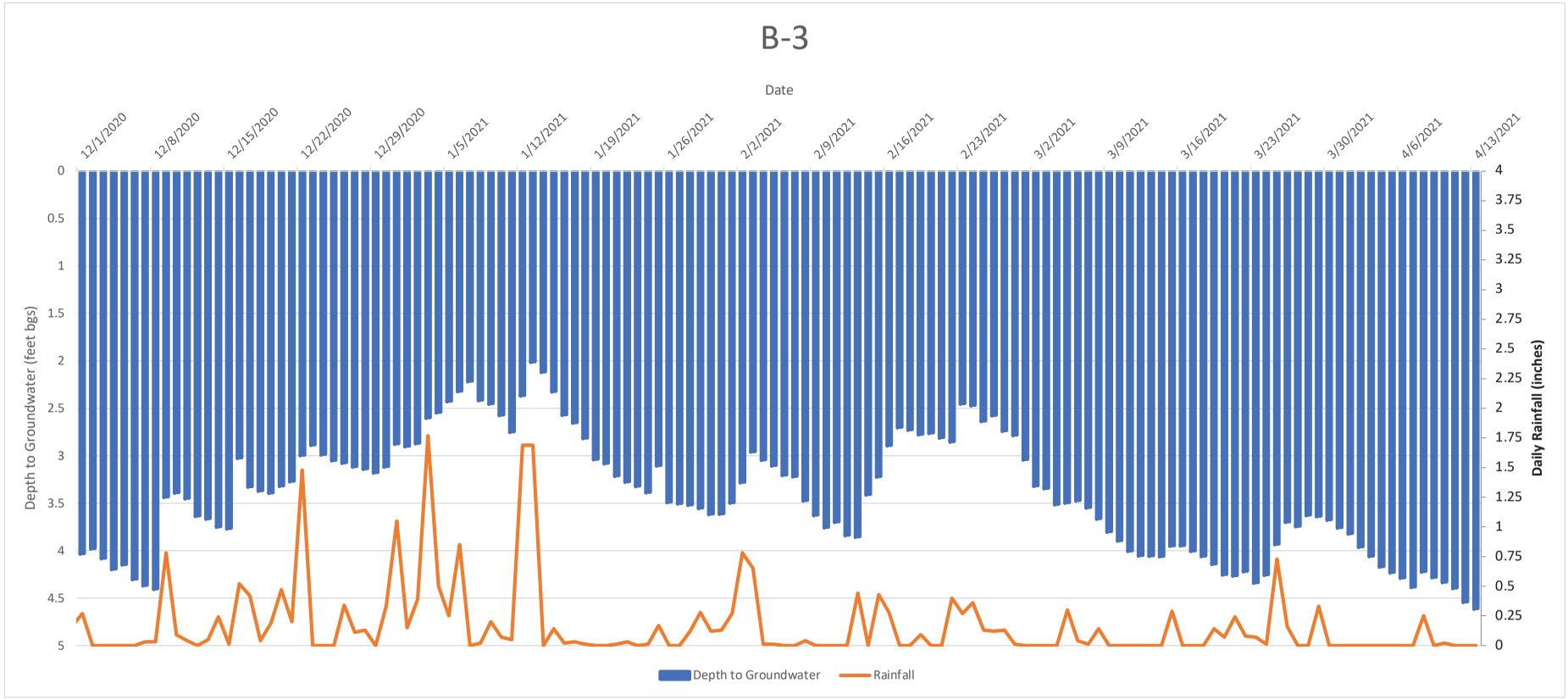
0
Depth to Groundwater
Rainfall


B-3
Date
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12/29/2020
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1/12/2021
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1/26/2021
2/2/2021
2/9/2021
2/16/2021
2/23/2021
3/2/2021
3/9/2021
3/16/2021
3/23/2021
3/30/2021
4/6/2021
4/13/2021
Depth to Groundwater (feet bgs)
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
Daily Rainfall (inches)
4
3.75
3.5
3.25
3
2.75
2.5
2.25
2
1.75
1.5
1.25
1
0.75
0.5
0.25
0
Depth to Groundwater
Rainfall