September 2, 2022

Jess Kenoyer
P.O. Box 446
Lynden, WA 98264

SUBJECT: **DRAFT** Soil Infiltration Evaluation for a New Residential Development
2706 Mill Avenue (Parcels 370306 102114 & 370306 125113)
Bellingham, Washington

Dear Jess Kenoyer:

This report presents the results of our soil infiltration evaluation for the proposed improvements to be located at the above-referenced address. Our services were completed in general accordance with our proposal dated August 18, 2022.

PURPOSE

We understand that there are plans for a new residential development at 2706 Mill Avenue in Bellingham, Washington. The project site includes two parcels that total 3.86 acres. Please refer to the Vicinity Map (Figure 1) for the approximate location of the project site.

The purpose of our evaluation was to determine if on-site stormwater management using infiltration methods appears feasible based on the *2019 Department of Ecology's Stormwater Management Manual for Western Washington*.

LOCAL GEOLOGY AND USDA SOIL SURVEY INFORMATION

According to the *Geologic Map of Western Whatcom County, Washington* (Easterbrook, 1976), the subject property is underlain by Undifferentiated Glacial Deposits (Qf) of the Frasier Glaciation. Undifferentiated Glacial Deposits are described as poorly exposed glacial till and gravel. This soil unit overlies Chuckanut Formation (TKc) bedrock of the Paleocene and Upper Cretaceous. The Chuckanut Formation generally consists of sandstone, conglomerate, shale and coal deposits, is strongly folded, and originated as alluvial flood plain deposits which may have accumulated to more than 10,000 feet in thickness.

The *Geomorphic Map of Western Whatcom County, Washington* (Kovanen, Haugerud and Easterbrook, 2020) maps the project site as an Older marine-modified surface (Qmo) of the Pleistocene. This surface was smoothed and modified by marine deposition, tidal current scour, and wave erosion and deposition, and is punctuated by fossil shorelines.

The United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Soil Survey website maps the soil within most of the site as Squalicum-Urban land complex with 5 to 20 percent slopes. Squalicum-Urban land complex is described as volcanic ash, loess and slope alluvium over glacial drift, and is listed as hydrologic soil group B. Hydrologic soil group B includes soils that have a moderate infiltration rate when thoroughly wet. The southwest and northeast corners of the site are mapped as Urban land-Whatcom-Labounty complex with 0 to 8 percent slopes. The Soil Survey does not provide a soil description or hydrologic soil group classification for the Urban land-Whatcom-Labounty complex.

SURFACE AND SUBSURFACE OBSERVATIONS

At the time of our field investigation on August 31, 2022, the western portion of the site included a single-family residence, detached outbuildings and fences, while the eastern portion of the site appeared undeveloped. The adjacent properties to the south and west included residential development, and the areas to the north and east appeared undeveloped. Most of the site included open grass fields with scattered weeds. Trees, brush and blackberries were observed within the northwestern and northeastern portions of the property and along the southern property line. The topography within most of the site appeared to slope down generally to the east and northeast at grades estimated to range from approximately 2 to 8 percent. The far western portion of the property appeared to slope down generally to the south and southwest at grades ranging from approximately 5 to 10 percent. Potential wetland areas are mapped by the City of Bellingham's CityIQ within the eastern portion of the site. Surface water was not observed within the areas explored during our fieldwork.

The subsurface conditions were explored by advancing ten test pits (TP-1 through TP-10) using hand equipment at the approximate locations shown on the Site and Exploration Map (Figure 2). The test pits were extended to depths ranging from approximately 2.7 to 4.0 feet below the existing ground surface (BGS). Soils were visually identified in the field based on both the Unified Soil Classification System (USCS) and the USDA Textural Triangle. We also completed five grain size tests performed in general accordance with ASTM D422 to help classify the native soils.

Soil

At the surface of all explorations, except TP-3, we encountered a layer of medium stiff, tan, dry, organic, slightly gravelly, very sandy silt with occasional cobbles and roots (topsoil) ranging from approximately 0.8 to 1.7 feet in thickness. At the surface of exploration TP-3, we encountered a layer of loose/soft, brown to gray-tan, dry to damp, slightly gravelly, very silty sand to very sandy silt with occasional cobbles, organics and debris (fill) that exceeded 3.3 feet in thickness. Below the topsoil, we encountered medium dense/stiff, gray-tan, dry to moist, slightly gravelly, very silty sand to slightly clayey, very sandy silt with occasional cobbles (weathered glacial drift). Exploration TP-3 was terminated in fill on cobbles. The remaining explorations were terminated in weathered glacial drift on relatively dense/very stiff soil deposits or cobbles.

Groundwater

Groundwater was not encountered in any of our explorations. The weathered glacial drift deposits were typically mottled which suggests the presence of shallow seasonal groundwater. Our groundwater observations were made during the dry season when groundwater elevations, seepage rates and soil moisture contents are typically well below a seasonal high.

Based on the subsurface conditions observed and interpreted to underlie the site, we anticipate that water would perch above relatively dense/stiff and/or finer-grained portions of the weathered glacial drift deposits (a restrictive layer of low permeability), particularly during the wet season when most of this soil unit is expected to become saturated. We estimate that perched groundwater would flow down generally to the east and northeast through most of the site, and down to the south and southwest within the far western portion of the site, at gradients that typically follow the natural topography.

Please be aware that groundwater elevations, seepage rates, and moisture contents are not constant and can be significantly affected by changes in season, precipitation, runoff, site use, removal of vegetation and other factors. Please refer to the test pit logs (Figures 4-8) for more specific detail at each location.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of our evaluation, we do not recommend on-site stormwater management for the project using infiltration methods that are designed in general accordance with the *2019 Department of Ecology's Stormwater Management Manual for Western Washington*.

A layer of fill was encountered at the surface of exploration TP-3 that exceeded 3.3 feet in thickness. The fill appears to be of variable composition and density/consistency and is not recommended for infiltration purposes.

The weathered glacial drift deposits encountered below the topsoil were typically mottled which suggests the presence of shallow seasonal groundwater. The depth to soil mottling suggest that seasonal high groundwater ranges from approximately 0.8 to 1.7 feet BGS during the wet season.

Permeable pavement and other on-site stormwater management infiltration facilities should be based on suitable native soil and maintain a minimum of 1.0 foot of vertical separation to seasonal high groundwater or a restrictive layer from the base course of the permeable pavement or the bottom of the infiltration facility. Therefore, it does not appear feasible to maintain the minimum separation requirements to seasonal groundwater from the base of permeable pavement or other on-site stormwater infiltration facilities at the site.

LIMITATIONS

This report was prepared for the sole use of Jess Kenoyer and his authorized agents for the proposed improvements to be located at 2706 Mill Avenue in Bellingham, Washington. The conclusions and recommendations contained in this report are based on the results of our exploration program conducted in August of 2022, lab tests, review of geologic references, and our experience working on similar projects.

Please be aware that subsurface conditions can vary with time, changes in site use, and between explorations. In the event that unanticipated subsurface conditions are encountered during construction or the project is modified, we should be contacted to reevaluate our recommendations accordingly.

Our services were accomplished within the generally accepted practices of the geologic profession at the time this report was prepared under the limitations of scope, budget and schedule. It should be understood that no guarantee or warranty, suggested or expressed, is included with the professional opinions or recommendations contained in this report.

Thank you for the opportunity to work on your project. Please contact us at (360) 306-6171 or soundgeology@gmail.com if you have any questions regarding this report or if we can be of further assistance.

Sincerely,
Sound Geology, LLC

DRAFT

David Jellum, LEG
Licensed Engineering Geologist

Attachments

Figure 1	Vicinity Map
Figure 2	Site and Exploration Map
Figure 3	Soil Classification and Legend
Figures 4-8	Test Pit Logs 1 through 10
	USCS Grain Size Test Data (5 pages)

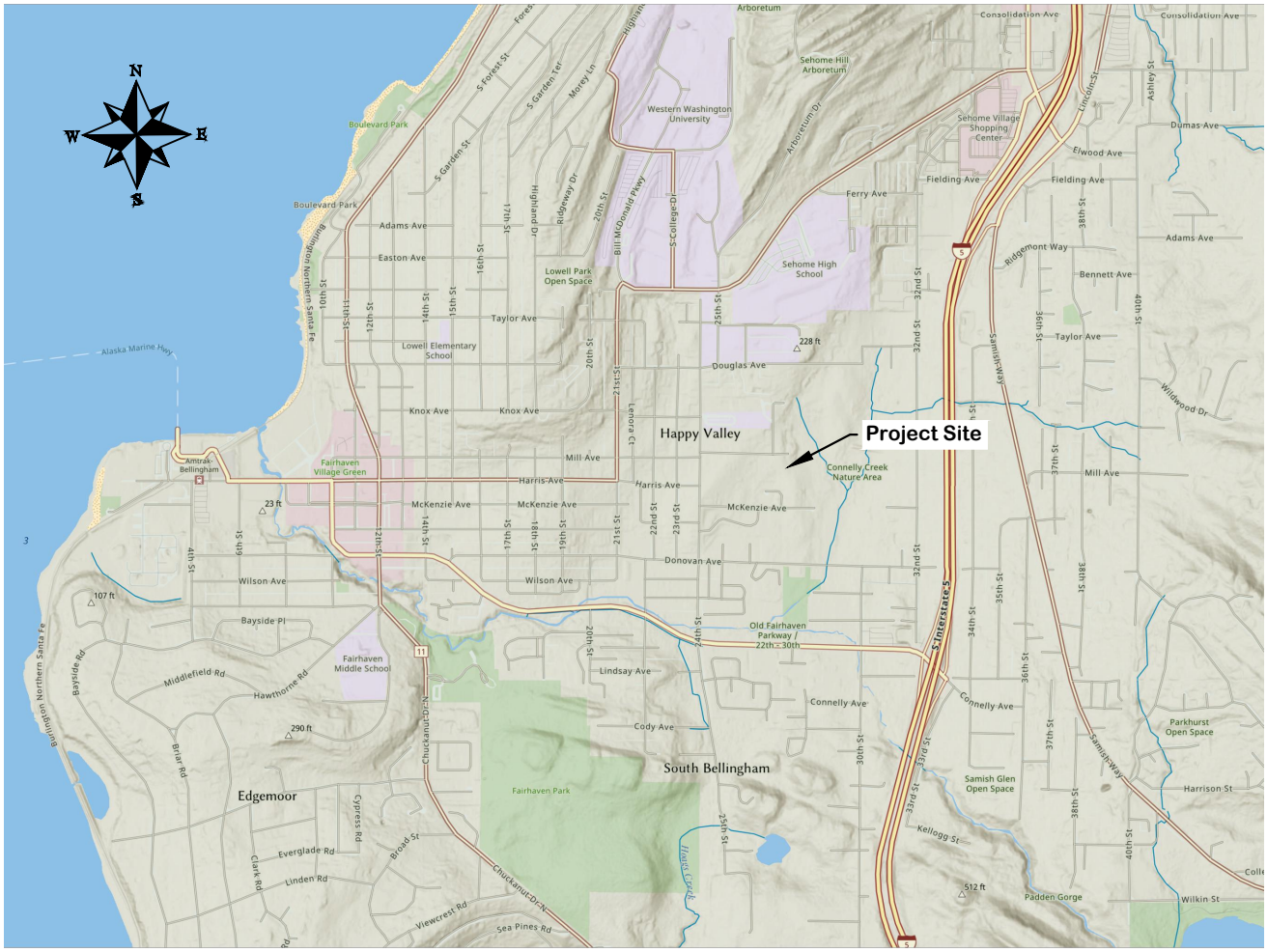
References

Easterbrook, D.J. 1976. *Geologic Map of Western Whatcom County, Washington*. United States Geological Survey. Map I-854-B.

Kovanen, D.J., Haugerud, R.A., and Easterbrook, D.J. 2020. *Geomorphic Map of Western Whatcom County, Washington* (ver. 1.1, November 2021): U.S. Geological Survey Scientific Investigations Map 3406, pamphlet 42 p., scale 1:50,000, https://doi.org/10.3133/sim3406.

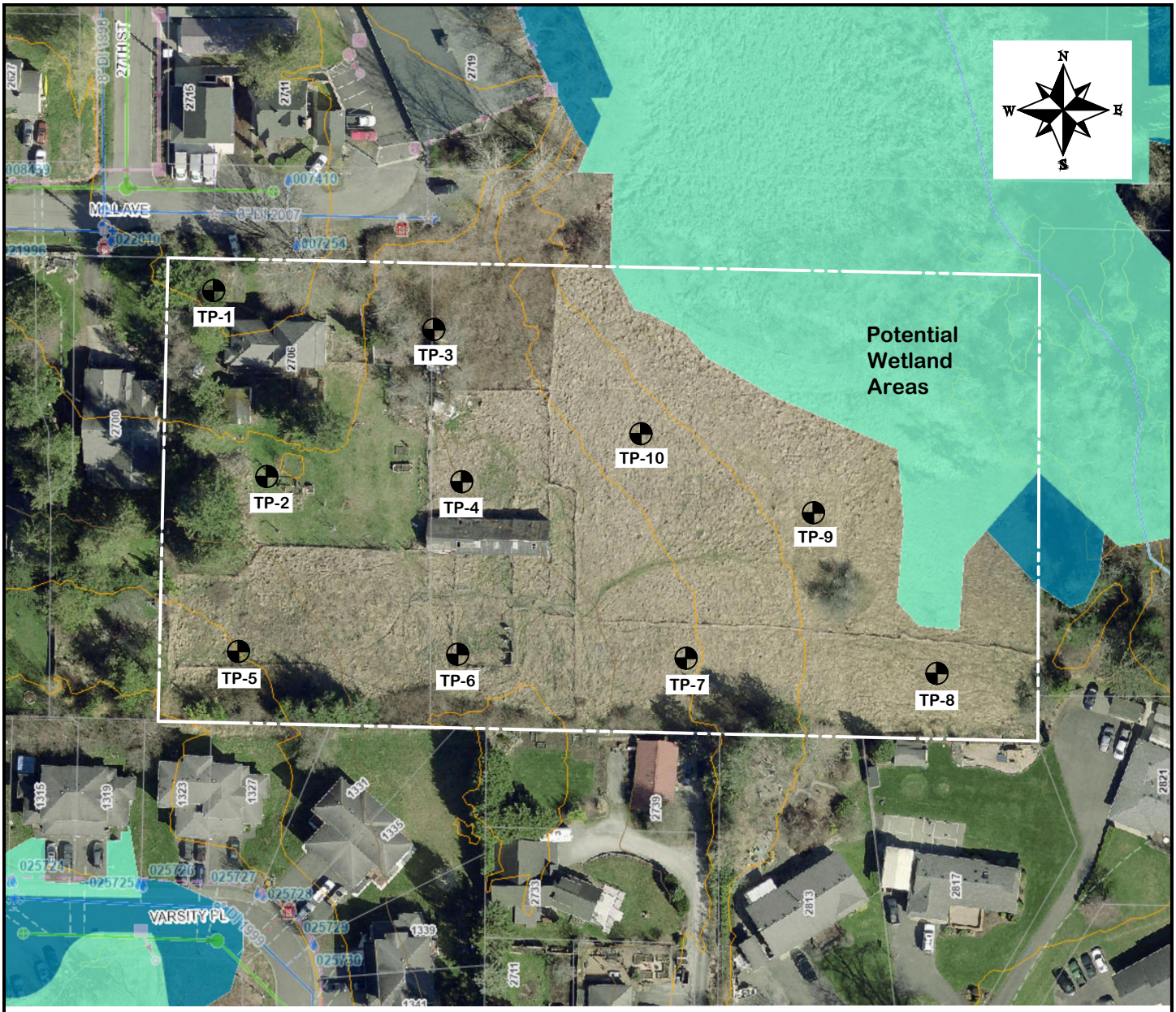
United States Department of Agriculture Natural Resources Conservation Service. Web Soil Survey. http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

Washington State Department of Ecology Water Quality Program. July 2019. *Stormwater Management Manual for Western Washington.* Publication Number 19-10-021.



Reference: Washington State Department of Natural Resources - Washington Geologic Information Portal

SOUND GEOLOGY 360.306.6171 www.soundgeology.com	**Date** 9-1-2022 **File No.** 22076 **Drawn By** DEJ **Scale** None	**Vicinity Map** Proposed Improvements 2706 Mill Avenue (Parcel 370306 102114 & 370306 125113) Bellingham, Washington	FIGURE **1 of 8**



◓ = Approximate Test Pit Location

100 0 50 100

1 inch = 100 feet

Reference: Base map from City of Bellingham's City IQ Online Map Viewer.

SOUND GEOLOGY 360.306.6171 www.soundgeology.com	**Date** 9-1-2022 **File No.** 22076 **Drawn By** DEJ **Scale** 1" = 100'	**Site and Exploration Map** Proposed Improvements 2706 Mill Avenue (Parcels 370306 102114 & 370306 125113) Bellingham, Washington	FIGURE **2 of 8**

Unified Soil Classification System (USCS)

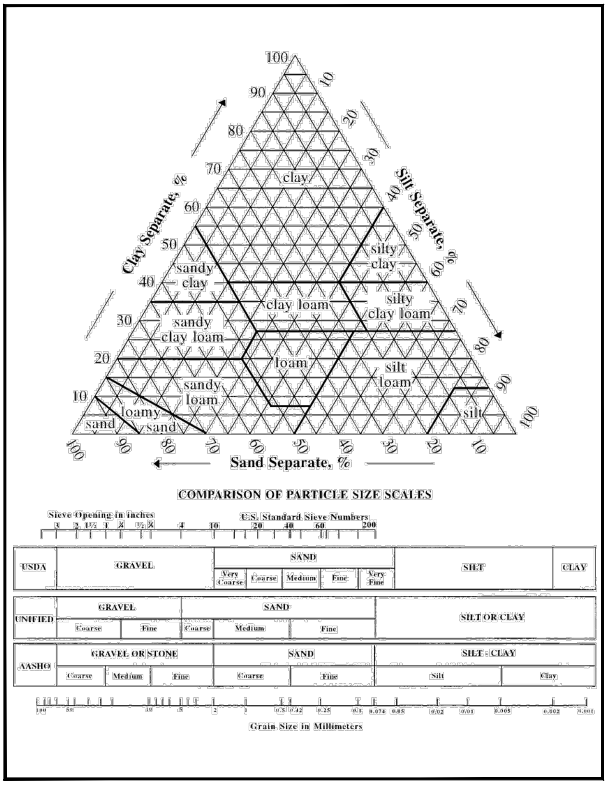
Material	Major Division Criteria		Symbol	Description
COARSE GRAINED SOIL More than 50% of material retained on No. 200 sieve	GRAVEL More than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVEL less than 5% fines	GW	Well-graded GRAVEL
			GP	Poorly-graded GRAVEL
		GRAVEL WITH FINES more than 12% fines	GM	Silty GRAVEL
			GC	Clayey GRAVEL
	SAND More than 50% of coarse fraction passes through No. 4 sieve	CLEAN SANDS less than 5% fines	SW	Well-graded SAND
			SP	Poorly-graded SAND
		SAND WITH FINES more than 12% fines	SM	Silty SAND
			SC	Clayey SAND
FINE GRAINED SOIL More than 50% of material passes the No. 200 sieve	SILT AND CLAY Liquid Limit (LL) less than 50	INORGANIC	ML	SILT (low plasticity)
			CL	Lean CLAY (low plasticity)
		ORGANIC	OL	Organic SILT (low plasticity)
	SILT AND CLAY Liquid Limit (LL) greater than 50	INORGANIC	MH	SILT (elastic, moderate to high plasticity)
			CH	Fat CLAY (moderate to high plasticity)
		ORGANIC	OH	Organic SILT or CLAY (M to H plasticity)
HIGHLY ORGANIC SOIL			PT	PEAT (soil with a high organic content)

PLEASE NOTE: "/" and "-" symbols are used to represent borderline or dual classification

Other Material Symbols

Symbol	Description
AP	Asphalt Pavement
BR	Bedrock
CB	Cobbles and Boulders
CC	Portland Cement Concrete
DB	Debris (garbage)
QS	Quarry Spalls
TS	Topsoil, sod or duff
WD	Wood (logs and chips)

USDA Textural Triangle



SOURCE: United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS), Texture Triangle and Particle-Size Limits of AASHTO, USDA and Unified Classification Systems, Exhibit 618-8.

Legend

AL	Atterberg Limits
CEC	Cation Exchange Capacity
OC	Organic Content
PP	Pocket Penetrometer (tsf)
SA	Sieve Analysis
W	Water Content (%)
▽ Slight	Water Level Elevation and Description
S-1	Grab Sample Number
– – –	Approximate transition between geologic unit or soil strata
———	Distinct contact between geologic unit or soil strata

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Soil Classification and Legend

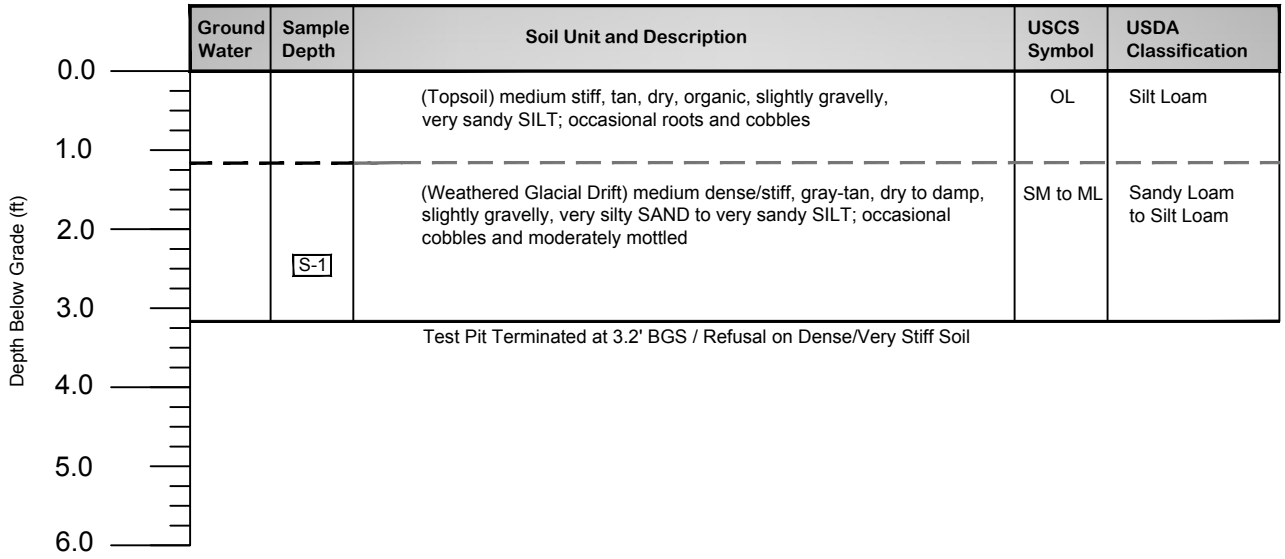
Proposed Improvements
2706 Mill Avenue
(Parcels 370306 102114 & 370306 125113)
Bellingham, Washington

FIGURE

3 of 8

TP-1

Date Completed: 8-31-2022 *Equipment Used: Hand Tools* *Geologist: DJ*
Weather Condition: Fair *Ground Elevation: Not Determined*

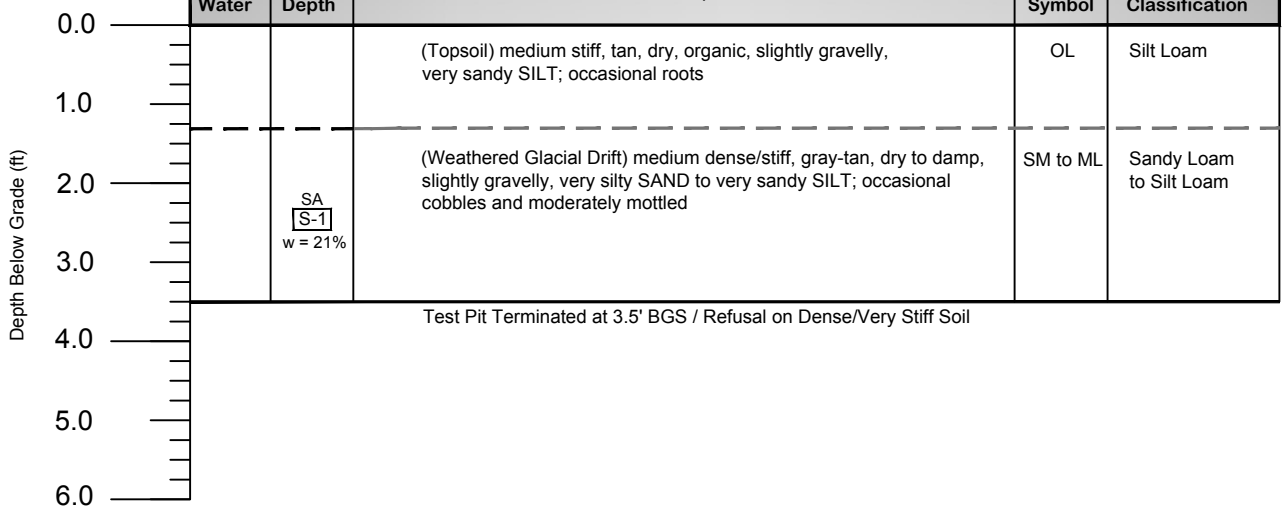


Ground Water	Sample Depth	Soil Unit and Description	USCS Symbol	USDA Classification
		(Topsoil) medium stiff, tan, dry, organic, slightly gravelly, very sandy SILT; occasional roots and cobbles	OL	Silt Loam
	S-1	(Weathered Glacial Drift) medium dense/stiff, gray-tan, dry to damp, slightly gravelly, very silty SAND to very sandy SILT; occasional cobbles and moderately mottled	SM to ML	Sandy Loam to Silt Loam

Test Pit Terminated at 3.2' BGS / Refusal on Dense/Very Stiff Soil

TP-2

Date Completed: 8-31-2022 *Equipment Used: Hand Tools* *Geologist: DJ*
Weather Condition: Fair *Ground Elevation: Not Determined*



Ground Water	Sample Depth	Soil Unit and Description	USCS Symbol	USDA Classification
		(Topsoil) medium stiff, tan, dry, organic, slightly gravelly, very sandy SILT; occasional roots	OL	Silt Loam
	SA S-1 w = 21%	(Weathered Glacial Drift) medium dense/stiff, gray-tan, dry to damp, slightly gravelly, very silty SAND to very sandy SILT; occasional cobbles and moderately mottled	SM to ML	Sandy Loam to Silt Loam

Test Pit Terminated at 3.5' BGS / Refusal on Dense/Very Stiff Soil

Notes: Exploration locations are shown on the Site and Exploration Map. Please refer to the Soil Classification and Legend for an explanation of symbols. Except where indicated by a sieve analysis (SA), soils were visually classified in the field.

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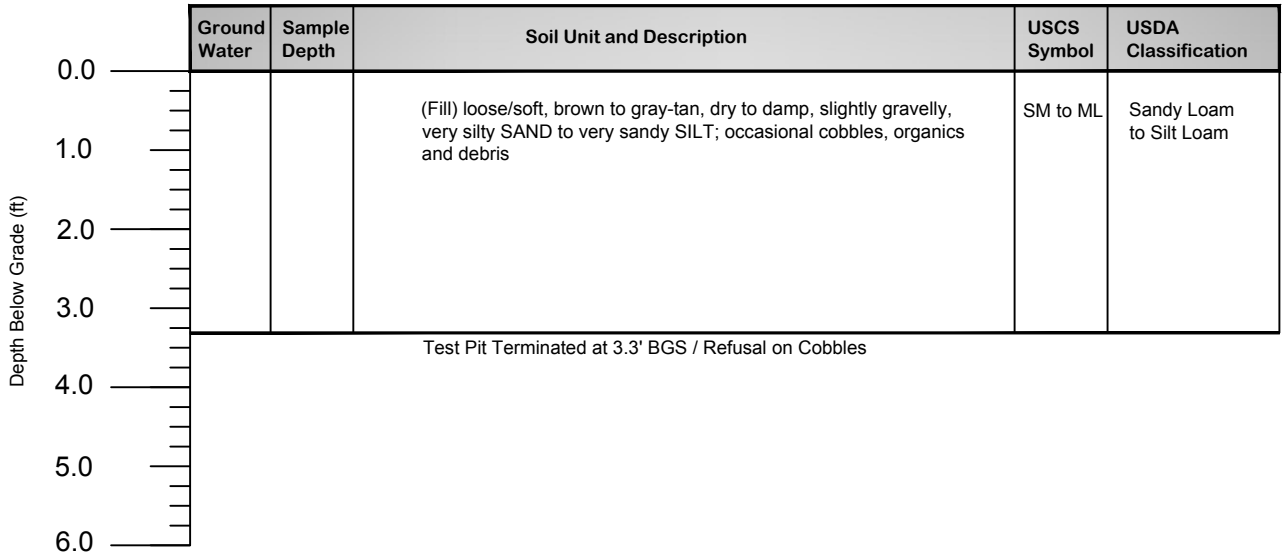
Test Pit Logs 1 and 2
Proposed Improvements
2706 Mill Avenue
(Parcels 370306 102114 & 370306 125113)
Bellingham, Washington

FIGURE
4 of 8

TP-3

Date Completed: 8-31-2022 *Equipment Used: Hand Tools* *Geologist: DJ*
Weather Condition: Fair *Ground Elevation: Not Determined*

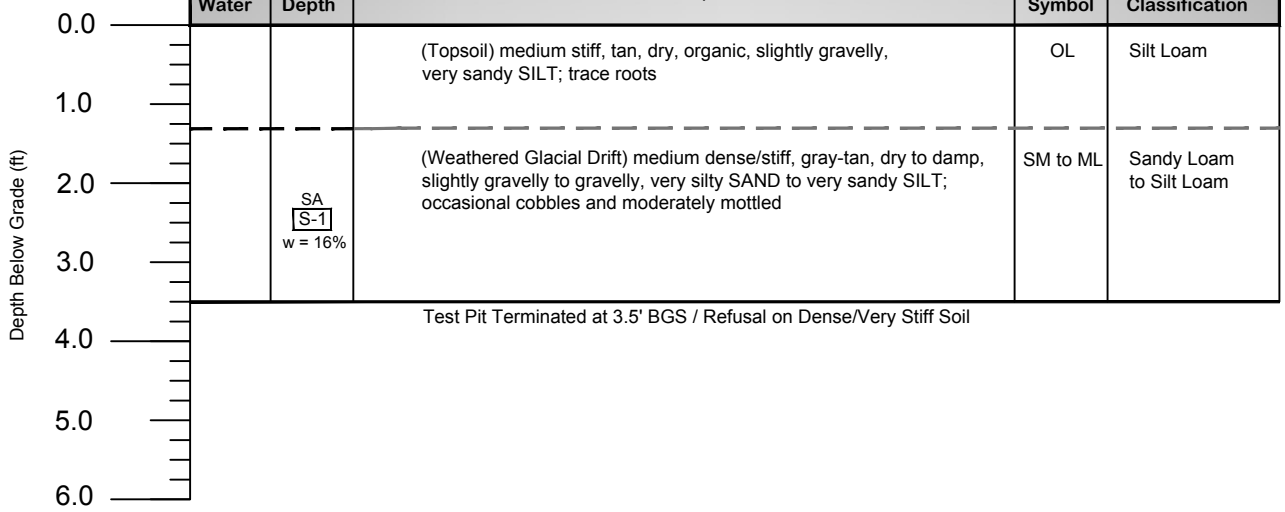


Ground Water	Sample Depth	Soil Unit and Description	USCS Symbol	USDA Classification
		(Fill) loose/soft, brown to gray-tan, dry to damp, slightly gravelly, very silty SAND to very sandy SILT; occasional cobbles, organics and debris	SM to ML	Sandy Loam to Silt Loam

Test Pit Terminated at 3.3' BGS / Refusal on Cobbles

TP-4

Date Completed: 8-31-2022 *Equipment Used: Hand Tools* *Geologist: DJ*
Weather Condition: Fair *Ground Elevation: Not Determined*



Ground Water	Sample Depth	Soil Unit and Description	USCS Symbol	USDA Classification
		(Topsoil) medium stiff, tan, dry, organic, slightly gravelly, very sandy SILT; trace roots	OL	Silt Loam
	SA S-1 w = 16%	(Weathered Glacial Drift) medium dense/stiff, gray-tan, dry to damp, slightly gravelly to gravelly, very silty SAND to very sandy SILT; occasional cobbles and moderately mottled	SM to ML	Sandy Loam to Silt Loam

Test Pit Terminated at 3.5' BGS / Refusal on Dense/Very Stiff Soil

Notes: Exploration locations are shown on the Site and Exploration Map. Please refer to the Soil Classification and Legend for an explanation of symbols. Except where indicated by a sieve analysis (SA), soils were visually classified in the field.

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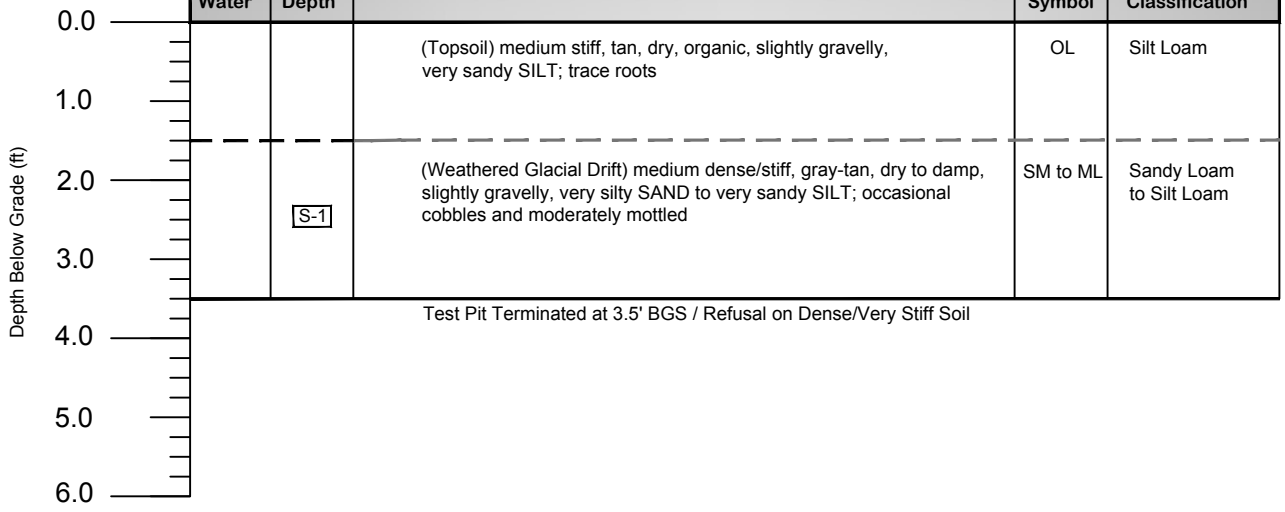
Test Pit Logs 3 and 4
Proposed Improvements
2706 Mill Avenue
(Parcels 370306 102114 & 370306 125113)
Bellingham, Washington

FIGURE
5 of 8

TP-5

Date Completed: 8-31-2022 *Equipment Used: Hand Tools* *Geologist: DJ*
Weather Condition: Fair *Ground Elevation: Not Determined*

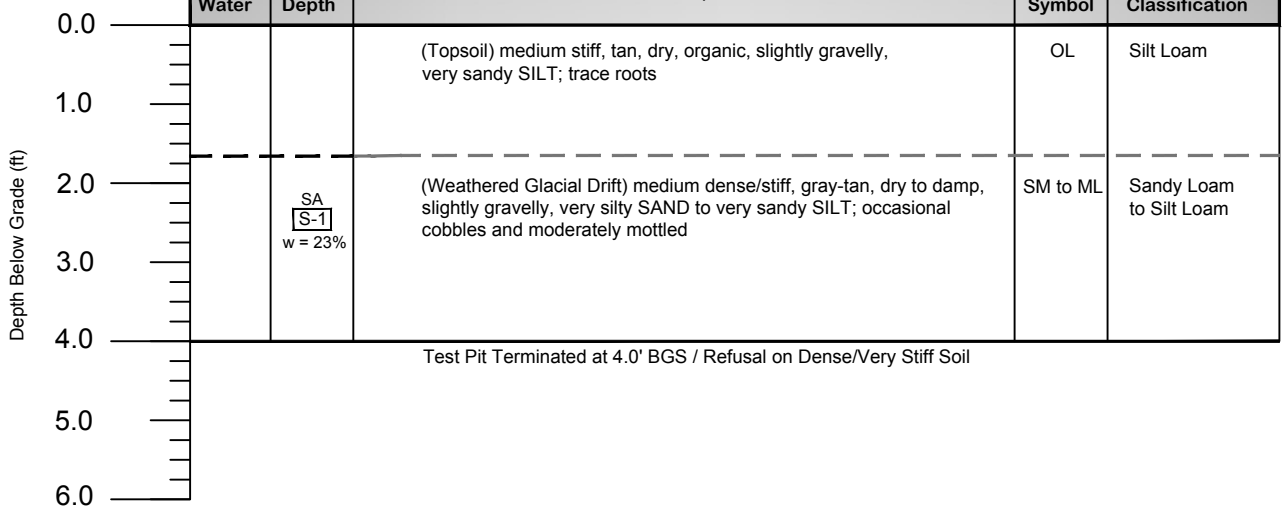


Ground Water	Sample Depth	Soil Unit and Description	USCS Symbol	USDA Classification
		(Topsoil) medium stiff, tan, dry, organic, slightly gravelly, very sandy SILT; trace roots	OL	Silt Loam
	S-1	(Weathered Glacial Drift) medium dense/stiff, gray-tan, dry to damp, slightly gravelly, very silty SAND to very sandy SILT; occasional cobbles and moderately mottled	SM to ML	Sandy Loam to Silt Loam

Test Pit Terminated at 3.5' BGS / Refusal on Dense/Very Stiff Soil

TP-6

Date Completed: 8-31-2022 *Equipment Used: Hand Tools* *Geologist: DJ*
Weather Condition: Fair *Ground Elevation: Not Determined*



Ground Water	Sample Depth	Soil Unit and Description	USCS Symbol	USDA Classification
		(Topsoil) medium stiff, tan, dry, organic, slightly gravelly, very sandy SILT; trace roots	OL	Silt Loam
	SA S-1 w = 23%	(Weathered Glacial Drift) medium dense/stiff, gray-tan, dry to damp, slightly gravelly, very silty SAND to very sandy SILT; occasional cobbles and moderately mottled	SM to ML	Sandy Loam to Silt Loam

Test Pit Terminated at 4.0' BGS / Refusal on Dense/Very Stiff Soil

Notes: Exploration locations are shown on the Site and Exploration Map. Please refer to the Soil Classification and Legend for an explanation of symbols. Except where indicated by a sieve analysis (SA), soils were visually classified in the field.

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Test Pit Logs 5 and 6
Proposed Improvements
2706 Mill Avenue
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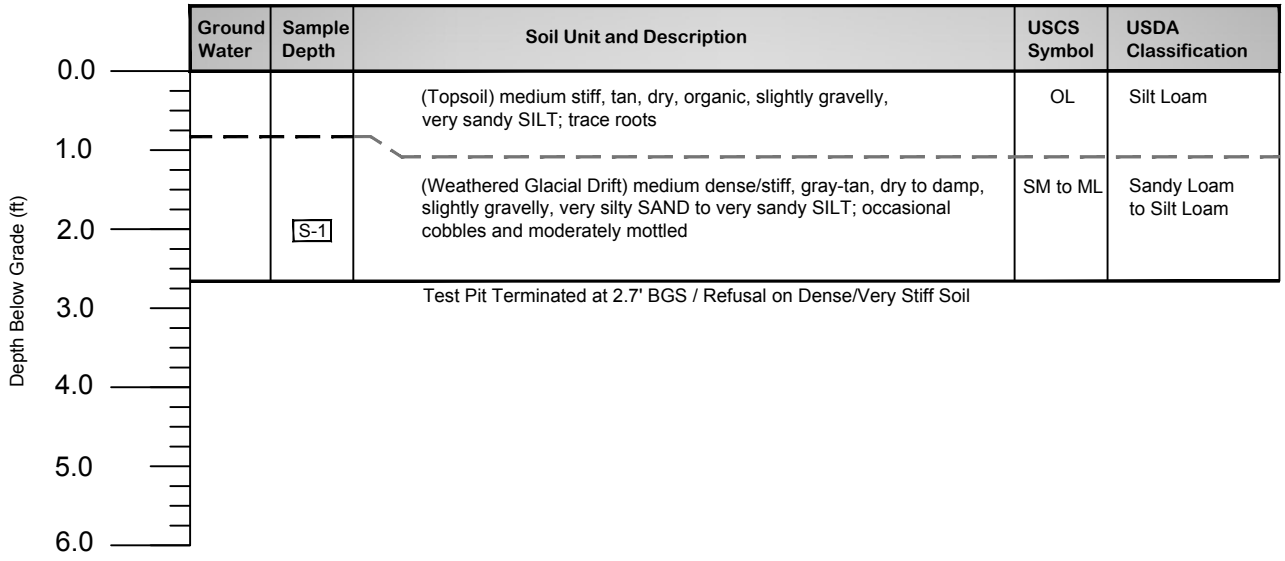
Bellingham, Washington

FIGURE
6 of 8

TP-7

Date Completed: 8-31-2022 *Equipment Used: Hand Tools* *Geologist: DJ*
Weather Condition: Fair *Ground Elevation: Not Determined*

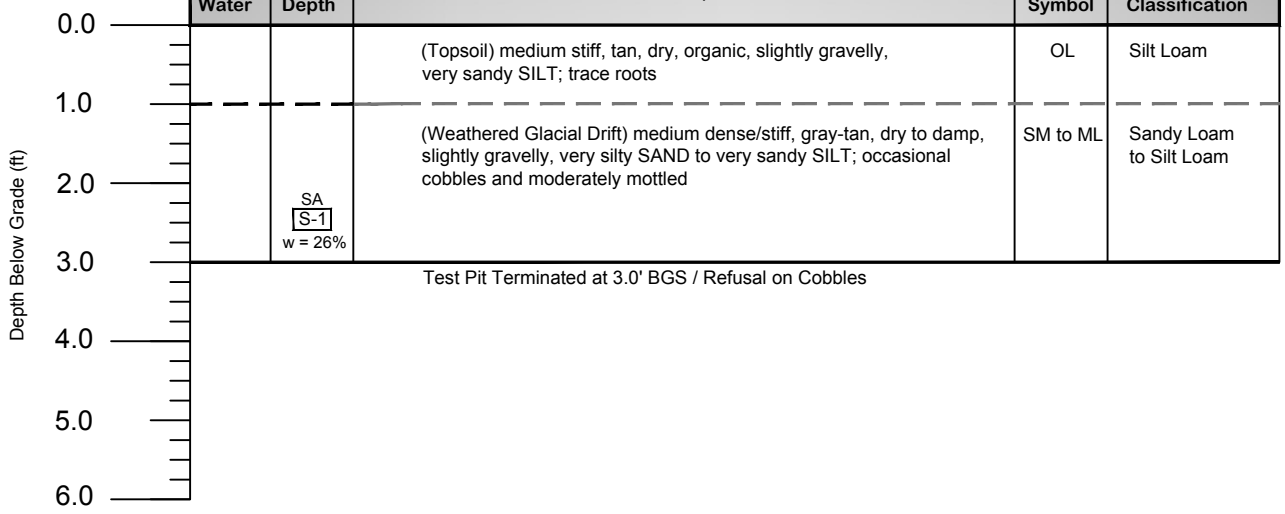


Ground Water	Sample Depth	Soil Unit and Description	USCS Symbol	USDA Classification
		(Topsoil) medium stiff, tan, dry, organic, slightly gravelly, very sandy SILT; trace roots	OL	Silt Loam
	S-1	(Weathered Glacial Drift) medium dense/stiff, gray-tan, dry to damp, slightly gravelly, very silty SAND to very sandy SILT; occasional cobbles and moderately mottled	SM to ML	Sandy Loam to Silt Loam

Test Pit Terminated at 2.7' BGS / Refusal on Dense/Very Stiff Soil

TP-8

Date Completed: 8-31-2022 *Equipment Used: Hand Tools* *Geologist: DJ*
Weather Condition: Fair *Ground Elevation: Not Determined*



Ground Water	Sample Depth	Soil Unit and Description	USCS Symbol	USDA Classification
		(Topsoil) medium stiff, tan, dry, organic, slightly gravelly, very sandy SILT; trace roots	OL	Silt Loam
	SA S-1 w = 26%	(Weathered Glacial Drift) medium dense/stiff, gray-tan, dry to damp, slightly gravelly, very silty SAND to very sandy SILT; occasional cobbles and moderately mottled	SM to ML	Sandy Loam to Silt Loam

Test Pit Terminated at 3.0' BGS / Refusal on Cobbles

Notes: Exploration locations are shown on the Site and Exploration Map. Please refer to the Soil Classification and Legend for an explanation of symbols. Except where indicated by a sieve analysis (SA), soils were visually classified in the field.

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Test Pit Logs 7 and 8
Proposed Improvements
2706 Mill Avenue
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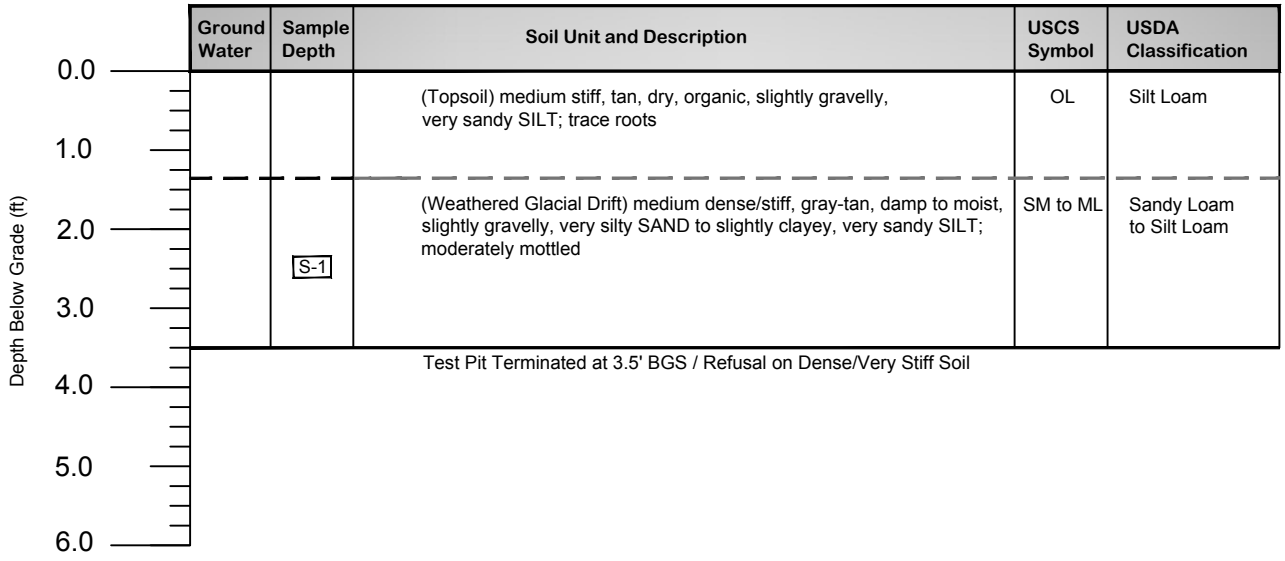
Bellingham, Washington

FIGURE
7 of 8

TP-9

Date Completed: 8-31-2022 *Equipment Used: Hand Tools* *Geologist: DJ*
Weather Condition: Fair *Ground Elevation: Not Determined*

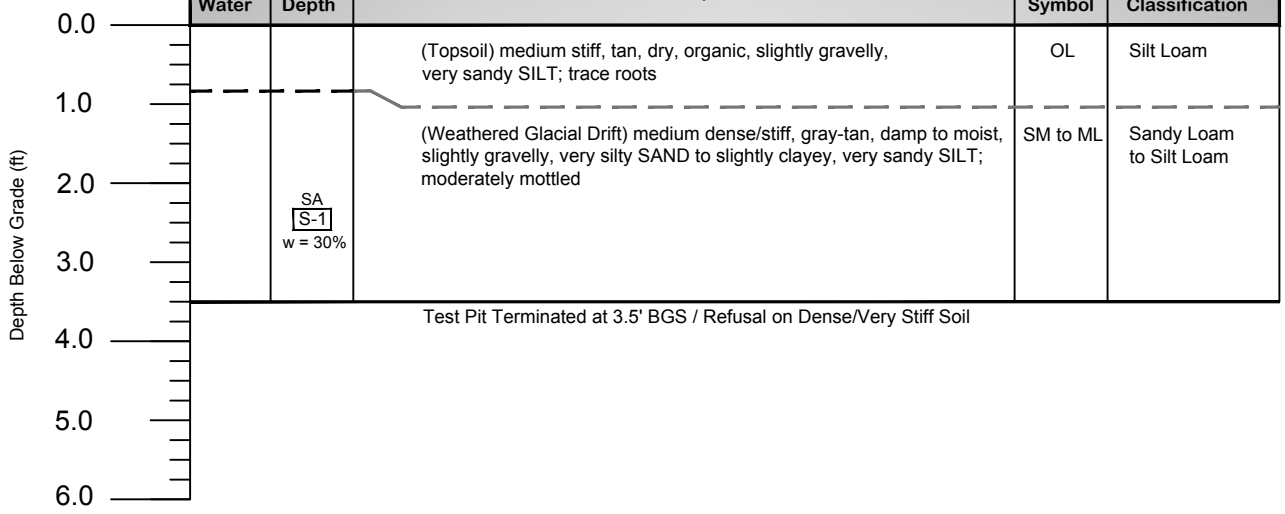


Ground Water	Sample Depth	Soil Unit and Description	USCS Symbol	USDA Classification
		(Topsoil) medium stiff, tan, dry, organic, slightly gravelly, very sandy SILT; trace roots	OL	Silt Loam
	S-1	(Weathered Glacial Drift) medium dense/stiff, gray-tan, damp to moist, slightly gravelly, very silty SAND to slightly clayey, very sandy SILT; moderately mottled	SM to ML	Sandy Loam to Silt Loam

Test Pit Terminated at 3.5' BGS / Refusal on Dense/Very Stiff Soil

TP-10

Date Completed: 8-31-2022 *Equipment Used: Hand Tools* *Geologist: DJ*
Weather Condition: Fair *Ground Elevation: Not Determined*



Ground Water	Sample Depth	Soil Unit and Description	USCS Symbol	USDA Classification
		(Topsoil) medium stiff, tan, dry, organic, slightly gravelly, very sandy SILT; trace roots	OL	Silt Loam
	SA S-1 w = 30%	(Weathered Glacial Drift) medium dense/stiff, gray-tan, damp to moist, slightly gravelly, very silty SAND to slightly clayey, very sandy SILT; moderately mottled	SM to ML	Sandy Loam to Silt Loam

Test Pit Terminated at 3.5' BGS / Refusal on Dense/Very Stiff Soil

Notes: Exploration locations are shown on the Site and Exploration Map. Please refer to the Soil Classification and Legend for an explanation of symbols. Except where indicated by a sieve analysis (SA), soils were visually classified in the field.

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Test Pit Logs 9 and 10
Proposed Improvements
2706 Mill Avenue
(Parcels 370306 102114 & 370306 125113)
Bellingham, Washington

FIGURE
8 of 8

USCS Grain Size Test Data

Project Information	
Date Started: 8-31-2022	File No.: 22076
Project Name: 2706 Mill Avenue	Client: Kenoyer

Test Results		
Exploration No.: TP-2	Sample Depth: 2.5’	Lab Tech: DJ

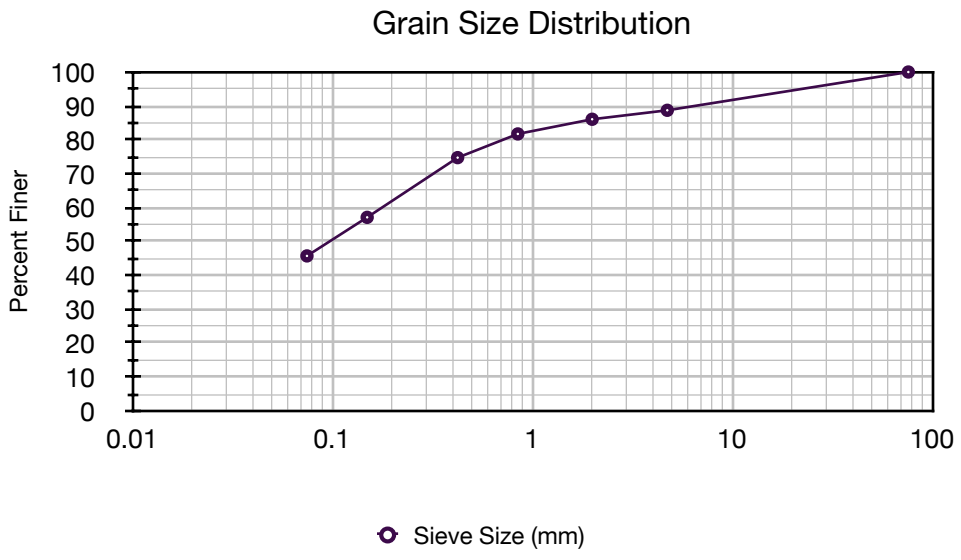
Sieve Analysis

Pan I.D. = B-1	Moist Soil + Pan Weight (g) = 233.40
Pan Weight (g) = 104.53	Dry Soil + Pan Weight (g) = 211.39
Water Content (%) = 20.60	Dry Soil Weight (g) = 106.86
	Washed Soil Weight (g) = 63.17

Sieve Number	Size (mm)	Cum. % Finer	Weight Retained (g)	Cum. Wt. Retained (g)	Percent Retained	Cum. % Retained
3-inch	76.2	100.00	0.00	0.00	0.00	0.00
4	4.75	88.70	12.07	12.07	11.30	11.30
10	2	86.05	2.84	14.91	2.66	13.95
20	0.85	81.72	4.62	19.53	4.32	18.28
40	0.425	74.72	7.48	27.01	7.00	25.28
100	0.15	57.09	18.84	45.85	17.63	42.91
200	0.075	45.70	12.18	58.03	11.40	54.30
Pan				63.15		

USCS Classification	
Gravel = 11.30%	Fine Sand = 29.03%
Coarse Sand = 2.66%	Fines (Passes U.S. No. 200) = 45.70%
Medium Sand = 11.32%	

USCS Soil Description: slightly gravelly, very silty, fine to medium SAND (SM)



References: ASTM D422, ASTM D2216 and ASTM D2487
USCS (Unified Soil Classification System)

USCS Grain Size Test Data

Project Information	
Date Started: 8-31-2022	File No.: 22076
Project Name: 2706 Mill Avenue	Client: Kenoyer

Test Results		
Exploration No.: TP-4	Sample Depth: 2.5’	Lab Tech: DJ

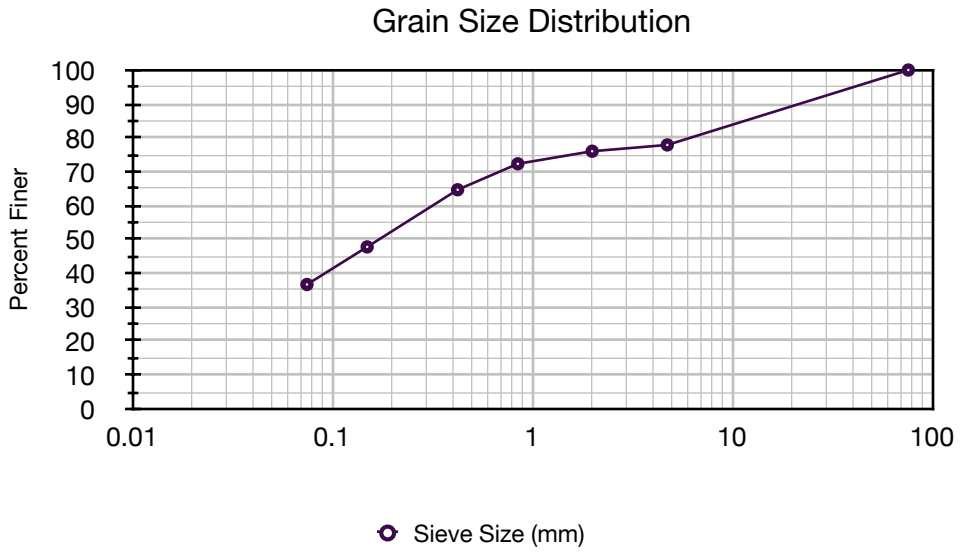
Sieve Analysis

Pan I.D. = B-2	Moist Soil + Pan Weight (g) = 221.49
Pan Weight (g) = 105.66	Dry Soil + Pan Weight (g) = 205.49
Water Content (%) = 16.03	Dry Soil Weight (g) = 99.83
	Washed Soil Weight (g) = 67.10

Sieve Number	Size (mm)	Cum. % Finer	Weight Retained (g)	Cum. Wt. Retained (g)	Percent Retained	Cum. % Retained
3-inch	76.2	100.00	0.00	0.00	0.00	0.00
4	4.75	77.88	22.08	22.08	22.12	22.12
10	2	76.02	1.86	23.94	1.86	23.98
20	0.85	72.31	3.7	27.64	3.71	27.69
40	0.425	64.65	7.65	35.29	7.66	35.35
100	0.15	47.77	16.85	52.14	16.88	52.23
200	0.075	36.67	11.08	63.22	11.10	63.33
Pan				67.17		

USCS Classification	
Gravel = 22.12%	Fine Sand = 27.98%
Coarse Sand = 1.86%	Fines (Passes U.S. No. 200) = 36.67%
Medium Sand = 11.37%	

USCS Soil Description: gravelly, very silty, fine to medium SAND (SM)



References: ASTM D422, ASTM D2216 and ASTM D2487
USCS (Unified Soil Classification System)

USCS Grain Size Test Data

Project Information	
Date Started: 8-31-2022	File No.: 22076
Project Name: 2706 Mill Avenue	Client: Kenoyer

Test Results		
Exploration No.: TP-6	Sample Depth: 2.5’	Lab Tech: DJ

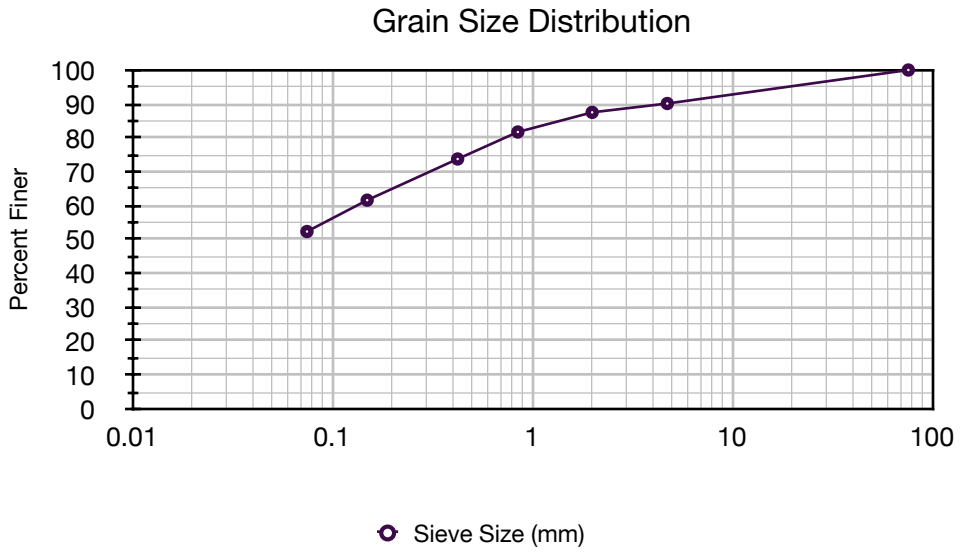
Sieve Analysis

Pan I.D. = B-3	Moist Soil + Pan Weight (g) = 231.91
Pan Weight (g) = 103.88	Dry Soil + Pan Weight (g) = 208.08
Water Content (%) = 22.87	Dry Soil Weight (g) = 104.20
	Washed Soil Weight (g) = 53.36

Sieve Number	Size (mm)	Cum. % Finer	Weight Retained (g)	Cum. Wt. Retained (g)	Percent Retained	Cum. % Retained
3-inch	76.2	100.00	0.00	0.00	0.00	0.00
4	4.75	90.11	10.31	10.31	9.89	9.89
10	2	87.50	2.71	13.02	2.60	12.50
20	0.85	81.70	6.05	19.07	5.81	18.30
40	0.425	73.73	8.3	27.37	7.97	26.27
100	0.15	61.57	12.67	40.04	12.16	38.43
200	0.075	52.31	9.65	49.69	9.26	47.69
Pan				53.29		

USCS Classification	
Gravel = 9.89%	Fine Sand = 21.42%
Coarse Sand = 2.60%	Fines (Passes U.S. No. 200) = 52.31%
Medium Sand = 13.77%	

USCS Soil Description: slightly gravelly, very sandy SILT (ML)



References: ASTM D422, ASTM D2216 and ASTM D2487
USCS (Unified Soil Classification System)

USCS Grain Size Test Data

Project Information	
Date Started: 8-31-2022	File No.: 22076
Project Name: 2706 Mill Avenue	Client: Kenoyer

Test Results		
Exploration No.: TP-8	Sample Depth: 2.5’	Lab Tech: DJ

Sieve Analysis

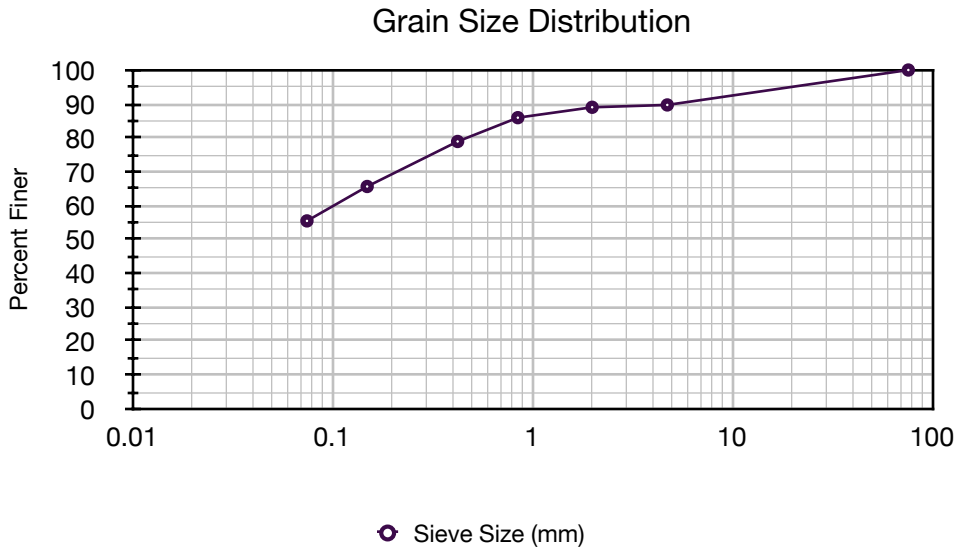
Pan I.D. = B-4	Moist Soil + Pan Weight (g) = 248.39
Pan Weight (g) = 100.05	Dry Soil + Pan Weight (g) = 218.07
Water Content (%) = 25.69	Dry Soil Weight (g) = 118.02
	Washed Soil Weight (g) = 57.52

Sieve Number	Size (mm)	Cum. % Finer	Weight Retained (g)	Cum. Wt. Retained (g)	Percent Retained	Cum. % Retained
3-inch	76.2	100.00	0.00	0.00	0.00	0.00
4	4.75	89.69	12.17	12.17	10.31	10.31
10	2	89.00	0.81	12.98	0.69	11.00
20	0.85	85.93	3.63	16.61	3.08	14.07
40	0.425	78.90	8.29	24.90	7.02	21.10
100	0.15	65.61	15.69	40.59	13.29	34.39
200	0.075	55.45	11.99	52.58	10.16	44.55
Pan				57.50		

USCS Classification

Gravel = 10.31%	Fine Sand = 23.45%
Coarse Sand = 0.69%	Fines (Passes U.S. No. 200) = 55.45%
Medium Sand = 10.10%	

USCS Soil Description: slightly gravelly, very sandy SILT (ML)



References: ASTM D422, ASTM D2216 and ASTM D2487
USCS (Unified Soil Classification System)

USCS Grain Size Test Data

Project Information	
Date Started: 8-31-2022	File No.: 22076
Project Name: 2706 Mill Avenue	Client: Kenoyer

Test Results		
Exploration No.: TP-10	Sample Depth: 2.5’	Lab Tech: DJ

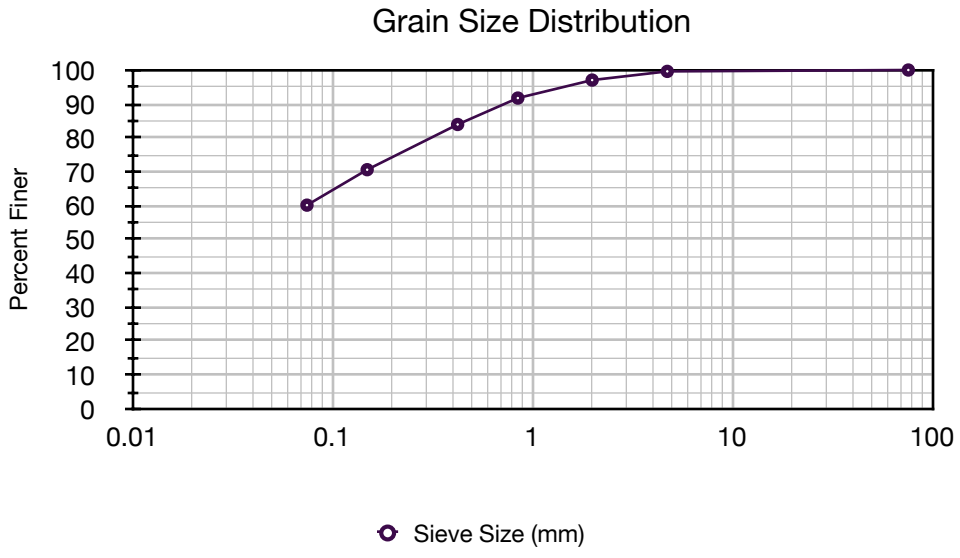
Sieve Analysis

Pan I.D. = B-5	Moist Soil + Pan Weight (g) = 236.13
Pan Weight (g) = 103.90	Dry Soil + Pan Weight (g) = 205.68
Water Content (%) = 29.92	Dry Soil Weight (g) = 101.78
	Washed Soil Weight (g) = 45.49

Sieve Number	Size (mm)	Cum. % Finer	Weight Retained (g)	Cum. Wt. Retained (g)	Percent Retained	Cum. % Retained
3-inch	76.2	100.00	0.00	0.00	0.00	0.00
4	4.75	99.60	0.41	0.41	0.40	0.40
10	2	97.03	2.61	3.02	2.56	2.97
20	0.85	91.72	5.41	8.43	5.32	8.28
40	0.425	83.92	7.94	16.37	7.80	16.08
100	0.15	70.57	13.58	29.95	13.34	29.43
200	0.075	60.10	10.66	40.61	10.47	39.90
Pan				45.45		

USCS Classification	
Gravel = 0.40%	Fine Sand = 23.82%
Coarse Sand = 2.56%	Fines (Passes U.S. No. 200) = 60.10%
Medium Sand = 13.12%	

USCS Soil Description: very sandy SILT (ML)



References: ASTM D422, ASTM D2216 and ASTM D2487
USCS (Unified Soil Classification System)