December 15, 2022

Jane Dieveney-Hinkle
4209 Padden Hills Court
Bellingham, WA 98229

SUBJECT: **DRAFT** Stormwater Evaluation for a New Single-Family Residence
4205 Padden Hills Court (Parcel 370308 082362)
Bellingham, Washington

Dear Jane Dieveney-Hinkle:

This report presents the results of our stormwater evaluation for the proposed single-family residence to be located at the above-referenced address. Our services were completed in general accordance with our proposal dated October 27, 2022.

PURPOSE

We understand that there are plans to construct a new single-family residence and driveway on a 0.21 acre lot located at 4205 Padden Hills Court in Bellingham, Washington. A total of approximately 2,839 square feet of new impervious surfaces (roof and driveway) are proposed for the project. Please refer to the Vicinity Map (Figure 1) for the approximate location of the subject property.

The purpose of our evaluation was to determine if on-site stormwater management using infiltration or dispersion 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 site as a Vashon-age glaciated surface (Q1g) of the Pleistocene. A glaciated surface is described as a mostly smooth, undulating surface, typically with generally south-trending ice-flow lineations. It is limited to southern and higher elevation areas outside the extent of Sumas-stade ice. A glaciated surface includes minor lumpy ablation moraine and small, sinuous ridges of end moraine.

The United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Soil Survey website maps the soil at the site as Squalicum gravelly loam with 5 to 15 percent slopes. This soil unit 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.

SURFACE AND SUBSURFACE OBSERVATIONS

At the time of our field investigation on December 7, 2022, the subject property was undeveloped except for landscape steps and gardens. The adjacent lots to the east and west included residential development and the area to the north appeared undeveloped. Vegetation at the site consisted of occasional trees, shrubs, garden plants and lawn. The topography on the property appeared to slope down generally to the southwest at grades estimated to range from approximately 15 to 25 percent. A block retaining wall that was estimated to be up to approximately 5 feet in height was observed below the site along the neighbor's eastern property line. Surface water was not observed on the property during our fieldwork.

The subsurface conditions were explored by advancing six test pits (TP-1 through TP-6) using hand equipment at the approximate locations shown on the Stormwater Site Plan (Figure 2). The test pits were extended to depths ranging from approximately 2.8 to 4.3 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 two grain size tests performed in general accordance with ASTM D422 to help classify the native soil.

Soil

At the surface of all six explorations, we encountered a layer of loose, gray-brown to dark brown, moist to wet, gravelly, silty to very silty sand with occasional cobbles and organics (fill) ranging from approximately 2.2 feet to over 4.3 feet in thickness. Below the fill at explorations TP-4 and TP-6, we encountered a layer of medium stiff, dark brown, moist to wet, organic, very sandy silt (relic topsoil) ranging from approximately 0.5 to 0.8 feet in thickness. Under the fill at exploration TP-2, and below the relic topsoil at explorations TP-4 and TP-6, we encountered medium dense, gray, moist, silty to very silty sand with occasional gravel and cobbles (weathered glacial drift). Explorations TP-1, TP-3 and TP-5 were terminated in fill on cobbles. Explorations TP-2, TP-4 and TP-6 were terminated in weathered glacial drift on cobbles.

Groundwater

Slight to moderate groundwater seepage was encountered in all explorations, except TP-5, at depths ranging from approximately 1.8 to 2.8 feet BGS. The weathered glacial drift deposits were typically mottled which indicates the presence of shallow seasonal groundwater. Our groundwater observations were made near the beginning of the wet season when groundwater elevations, seepage rates and soil moisture contents are typically 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 and/or finer-grained layers within the fill material and weathered glacial drift deposits (restrictive layers of low permeability). We estimate that perched groundwater flows down generally to the southwest at gradients that typically follow the 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 4-6) 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 using infiltration methods for the project 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 all explorations ranging from approximately 2.2 feet to over 4.3 feet in thickness. The fill and relic topsoil are of variable composition and density/consistency and are not recommended for infiltration purposes.

Relatively shallow groundwater was encountered below the site at depths ranging from approximately 1.8 to 2.8 feet BGS. The weathered glacial drift deposits were typically mottled which indicates the presence of shallow seasonal groundwater.

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 project site.

On-Site Stormwater Management Review

Based on our review of Section I-3.4.5 MR5: On-site Stormwater Management from Chapter 3 of Volume I of the 2019 DOE Stormwater Manual, we recommend the following BMPs be incorporated into the project.

Lawn and Landscape Areas:

We recommend Post-Construction Soil Quality and Depth in accordance with BMP T5.13 in Chapter 11 of Volume V to restore all disturbed lawn and landscape areas associated with the project. Please refer to Figure V-11.1 - Planting Bed Cross-Section attached to this report for more detail.

Roofs:

We understand that the new residence will have a total of approximately 2,025 square feet of roof area.

Stormwater management using full dispersion in accordance with BMP T5.30 does not appear feasible due to the small lot size. Stormwater management using full infiltration in accordance with BMP T5.10A, rain gardens in accordance with BMP T5.14, and bioretention facilities in accordance with BMP T7.30 do not appear feasible due to shallow groundwater.

Downspout dispersion systems in accordance with BMP T5.10B in Section V-4 in Chapter 4 of Volume V are not recommended because we cannot maintain gravity flow (positive drainage) to a suitable area within the upper eastern portions of the property where grades typically exceed 15 percent. Additionally, we cannot meet the minimum setback requirements to the downslope property line with the minimum 25-foot long vegetated flow path required for a dispersion trench or the minimum 50-foot long vegetated flow path required for splash blocks. A minimum of 28.9 linear feet of

typical roof downspout dispersion trench would be needed for the roof area if the site conditions were suitable.

A perforated stub-out connection in accordance with BMP T5.10C in Section V-4 in Chapter 4 of Volume V is not recommended because perforated stub-outs are not appropriate when seasonal high groundwater is less than 1 foot below the bottom of the trench. Groundwater was encountered as shallow as 1.8 feet BGS at the site.

Other Hard Surfaces:

We understand that approximately 814 square feet of new driveway is proposed to be located within the southwestern portion of the property.

Stormwater management for the new driveway using full dispersion in accordance with BMP T5.30 does not appear feasible due to the small lot size. Permeable pavement in accordance with BMP T5.15, rain gardens in accordance with BMP T5.14, and bioretention facilities in accordance with BMP T7.30 do not appear feasible due to shallow groundwater.

Concentrated Flow Dispersion in accordance with BMP T5.11 of Chapter 3 of Volume V is not recommended to manage stormwater from the proposed driveway because there does not appear to be enough space on the lot to meet the setback requirements to the downslope property line with the minimum 25-foot long vegetated flow path required for the gravel dispersion trench option or the 50-foot long vegetated flow path required for the crushed rock pad option.

Stormwater management using Sheet Flow Dispersion in accordance with BMP T5.12 of Chapter 3 of Volume V is not recommended because there is not enough space on the lot to fit the 2-foot-wide crushed rock transition zone and minimum 10-foot-wide vegetated buffer required between the driveway and the downslope property line.

Based on our evaluation, we recommend that all stormwater collected from the new roof and driveway be routed into the municipal stormwater utility using the existing 6-inch diameter stormwater tightline shown on the Padden Lake Hills As-built (SD 347-02). A copy of the as-built is included with this report for your convenience.

All collected water should be routed into a new Type 1 concrete catch basin (or similar) using 4-inch diameter PVC pipes. We recommend using a radius trench drain (or similar) placed along the southern property line to collect water from the driveway. We recommend that a curb and gutter be installed along the lower western edge of the driveway, or that the driveway be sloped, to keep the stormwater off of the adjacent property to the west and directed into the catch basin. The new catch basin should outflow all collected water into the existing 6-inch diameter stormwater tightline located in the Padden Hill Court right-of-way.

A block retaining wall that was estimated to be up to approximately 5 feet in height was observed below the site along the neighbor's eastern property line. The new driveway will need to be setback from the retaining wall or configured in a way so it does not apply a surcharge to the back of the retaining wall.

If walkways, steps, a small patio/deck are proposed for the project, then it is our opinion that the minor amount of stormwater runoff from these small features are unlikely to cause erosion, flooding

or other drainage issues provided that the adjacent areas are restored to meet BMP T5.13 and protected using well-established lawn or other approved vegetation.

Please refer to the Stormwater Site Plan (Figure 2) for a potential configuration for the curb and gutter, trench drain, catch basin and PVC drain lines. These features should be field fit as needed to ensure proper function and to meet the requirements and recommendations contained in this report. Please contact the City of Bellingham for more information on how to connect to the municipal stormwater utility.

LIMITATIONS

This report was prepared for the sole use of Jane Dieveney-Hinkle and her authorized agents for the project located at 4205 Padden Hills Court in Bellingham, Washington. The conclusions and recommendations contained in this report are based on the results of our exploration program conducted in December 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	Stormwater Site Plan
Figure 3	Soil Classification and Legend
Figures 4-6	Test Pit Logs 1 through 6
	USCS Grain Size Test Data (2 pages)
	Figure V-11.1 - Planting Bed Cross-Section
	Padden Lake Hills As-Built (sheet 13 of 30)

References

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

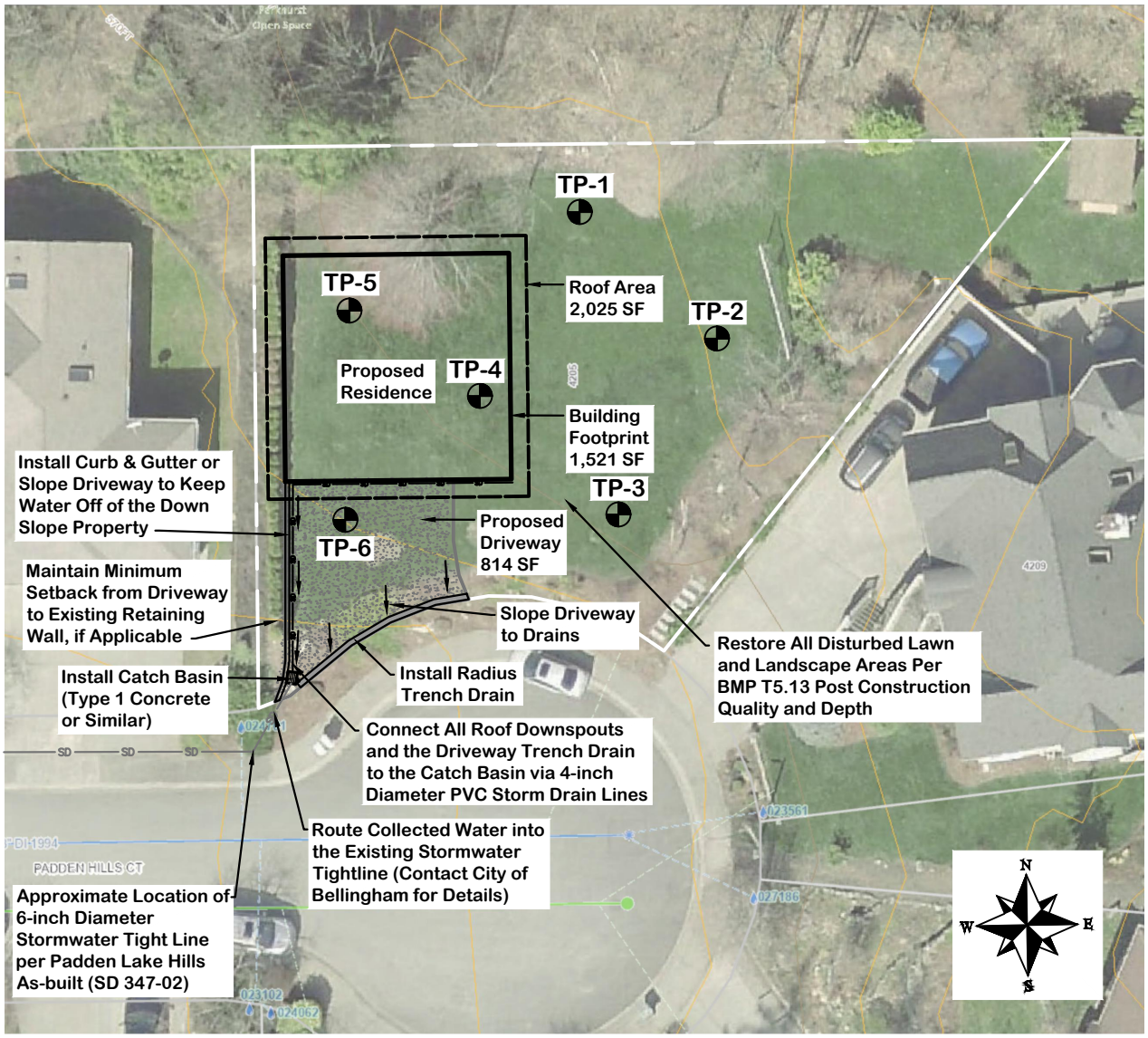
Kovanen, D.J., Haugerud, R.A., and Easterbrook, D.J. 2020. *Geomorphic Map of Western Whatcom County, Washington* (ver. 1.1, November 2021): U.S. Geological Survey Scientific Investigations Map 3406, pamphlet 42 p., scale 1:50,000, https://doi.org/10.3133/sim3406.

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** 12-13-2022 **File No.** 22102 **Drawn By** DEJ **Scale** None	**Vicinity Map** Proposed Single-Family Residence 4205 Padden Hills Court (Parcel 370308 082362) Bellingham, Washington	FIGURE **1 of 6**



⊕ = Approximate Test Pit Location

30 0 15 30

1 inch = 30 feet

Notes: The City of Bellingham's CityIQ Online Map Viewer used for a base map. The locations of the proposed residence and driveway are based on a preliminary site plan by Jim Bishop. The locations of the proposed curb and gutter, drain lines and catch basin should be field fit as needed to ensure proper function and to meet the requirements and recommendations contained in the attached stormwater report. Please contact the City of Bellingham for information on how to connect to the existing stormwater tightline located in the Padden Hills Court right-of-way.

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Scale 1" = 30'

Stormwater Site Plan

Proposed Single-Family Residence
4205 Padden Hills Court (Parcel 370308 082362)
Bellingham, Washington

FIGURE

2 of 6

Unified Soil Classification System (USCS)

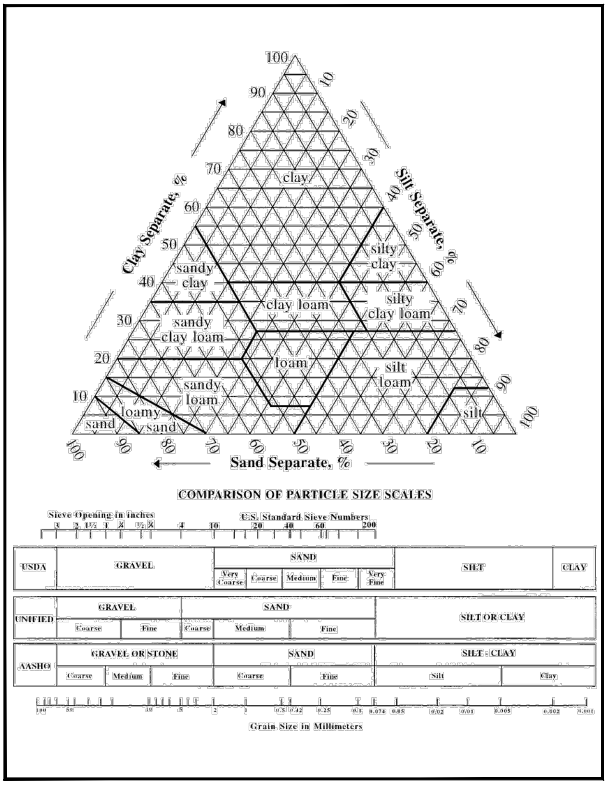
Material	Major Division Criteria		Symbol	Description
COARSE GRAINED SOIL More than 50% of material retained on No. 200 sieve	GRAVEL More than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVEL less than 5% fines	GW	Well-graded GRAVEL
			GP	Poorly-graded GRAVEL
		GRAVEL WITH FINES more than 12% 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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Drawn By DEJ

Scale None

Soil Classification and Legend

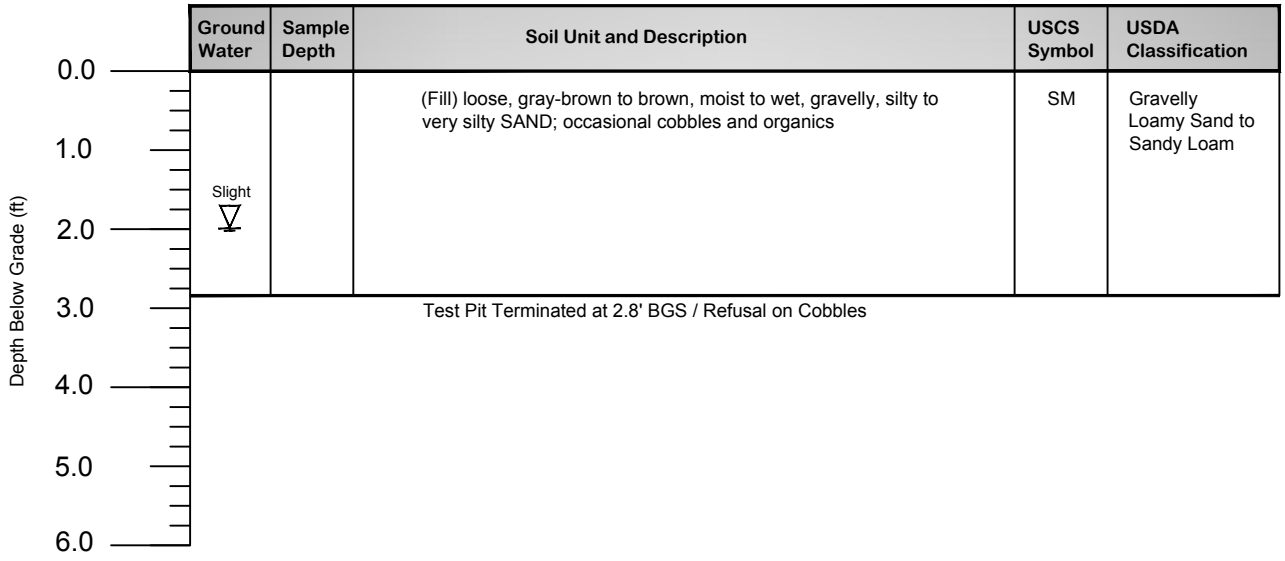
Proposed Single-Family Residence
4205 Padden Hills Court (Parcel 370308 082362)
Bellingham, Washington

FIGURE

3 of 6

TP-1

Date Completed: 12-7-2022 *Equipment Used: Hand Tools* *Geologist: DJ*
Weather Condition: Fair *Ground Elevation: Not Determined*

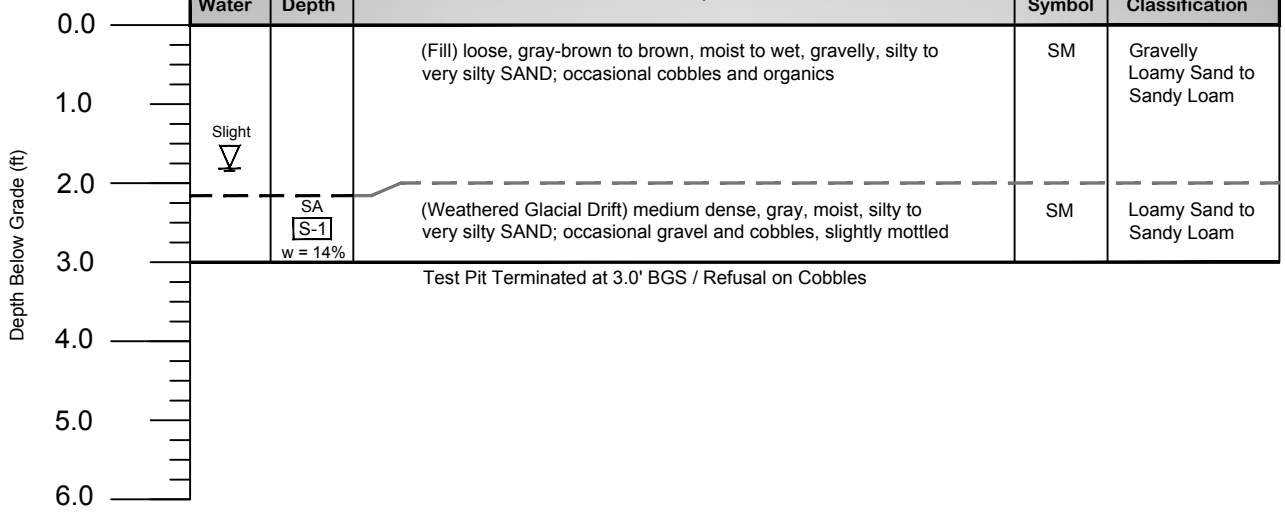


Ground Water	Sample Depth	Soil Unit and Description	USCS Symbol	USDA Classification
Slight		(Fill) loose, gray-brown to brown, moist to wet, gravelly, silty to very silty SAND; occasional cobbles and organics	SM	Gravelly Loamy Sand to Sandy Loam

Test Pit Terminated at 2.8' BGS / Refusal on Cobbles

TP-2

Date Completed: 12-7-2022 *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
Slight		(Fill) loose, gray-brown to brown, moist to wet, gravelly, silty to very silty SAND; occasional cobbles and organics	SM	Gravelly Loamy Sand to Sandy Loam
	SA S-1 w = 14%	(Weathered Glacial Drift) medium dense, gray, moist, silty to very silty SAND; occasional gravel and cobbles, slightly mottled	SM	Loamy Sand to Sandy Loam

Test Pit Terminated at 3.0' BGS / Refusal on Cobbles

Notes: Exploration locations are shown on the Stormwater Site Plan. 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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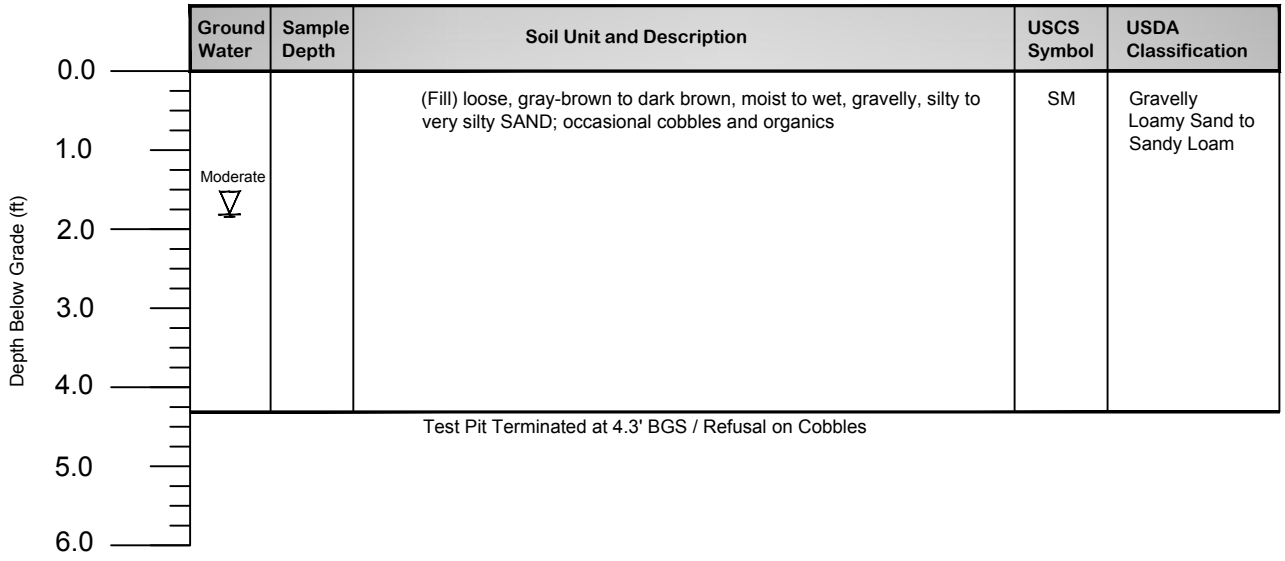
Test Pit Logs 1 and 2
Proposed Single-Family Residence
4205 Padden Hills Court (Parcel 370308 082362)
Bellingham, Washington

FIGURE
4 of 6

TP-3

Date Completed: 12-7-2022 *Equipment Used: Hand Tools* *Geologist: DJ*
Weather Condition: Fair *Ground Elevation: Not Determined*

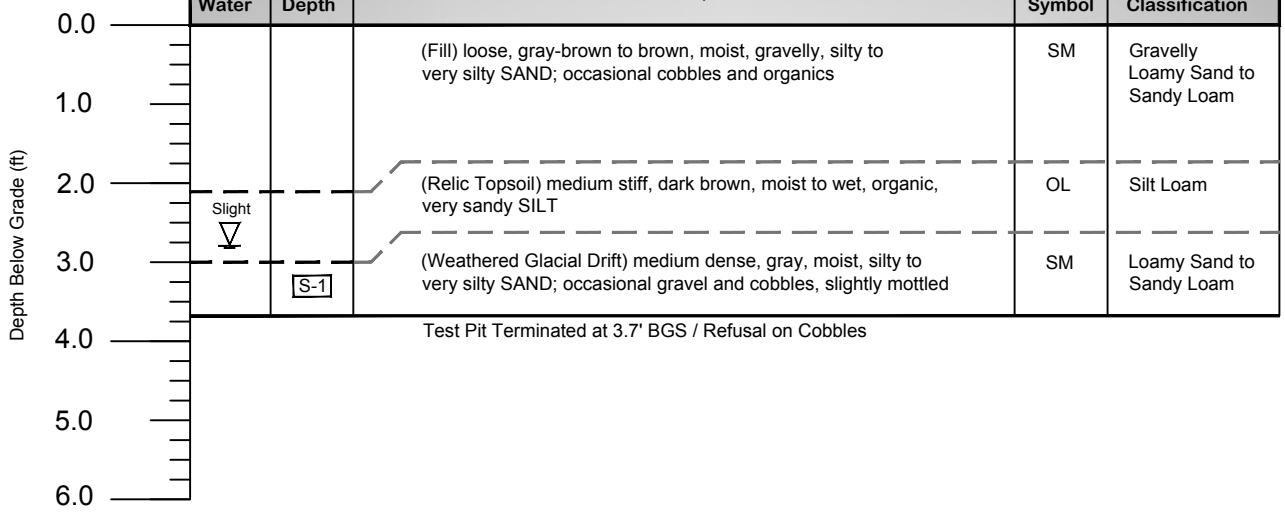


Ground Water	Sample Depth	Soil Unit and Description	USCS Symbol	USDA Classification
Moderate		(Fill) loose, gray-brown to dark brown, moist to wet, gravelly, silty to very silty SAND; occasional cobbles and organics	SM	Gravelly Loamy Sand to Sandy Loam

Test Pit Terminated at 4.3' BGS / Refusal on Cobbles

TP-4

Date Completed: 12-7-2022 *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, gray-brown to brown, moist, gravelly, silty to very silty SAND; occasional cobbles and organics	SM	Gravelly Loamy Sand to Sandy Loam
Slight		(Relic Topsoil) medium stiff, dark brown, moist to wet, organic, very sandy SILT	OL	Silt Loam
	S-1	(Weathered Glacial Drift) medium dense, gray, moist, silty to very silty SAND; occasional gravel and cobbles, slightly mottled	SM	Loamy Sand to Sandy Loam

Test Pit Terminated at 3.7' BGS / Refusal on Cobbles

Notes: Exploration locations are shown on the Stormwater Site Plan. 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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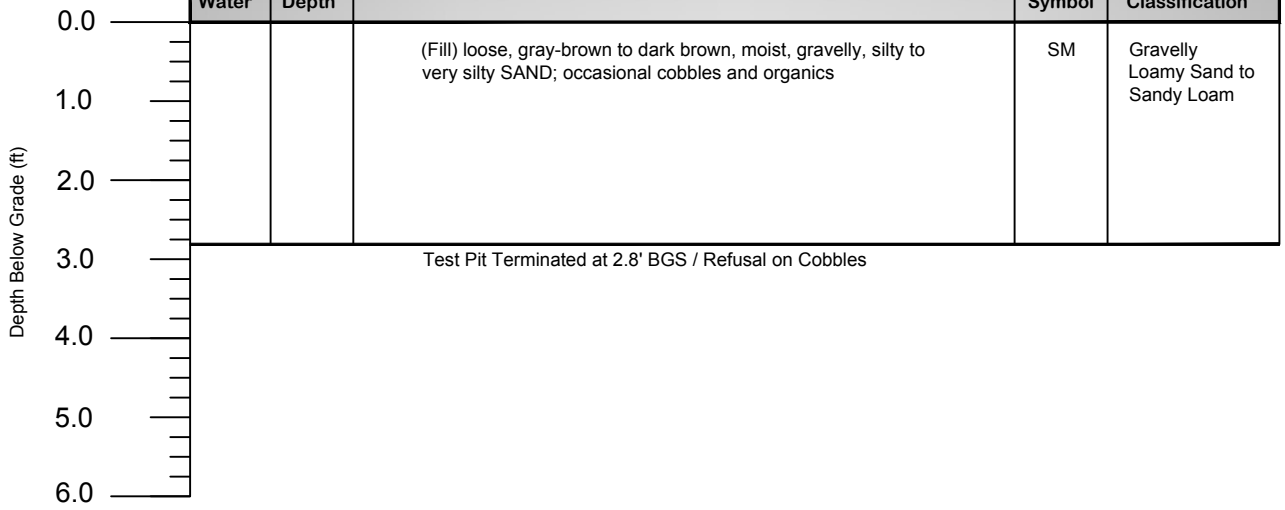
Test Pit Logs 3 and 4
Proposed Single-Family Residence
4205 Padden Hills Court (Parcel 370308 082362)
Bellingham, Washington

FIGURE
5 of 6

TP-5

Date Completed: 12-7-2022 *Equipment Used: Hand Tools* *Geologist: DJ*
Weather Condition: Fair *Ground Elevation: Not Determined*

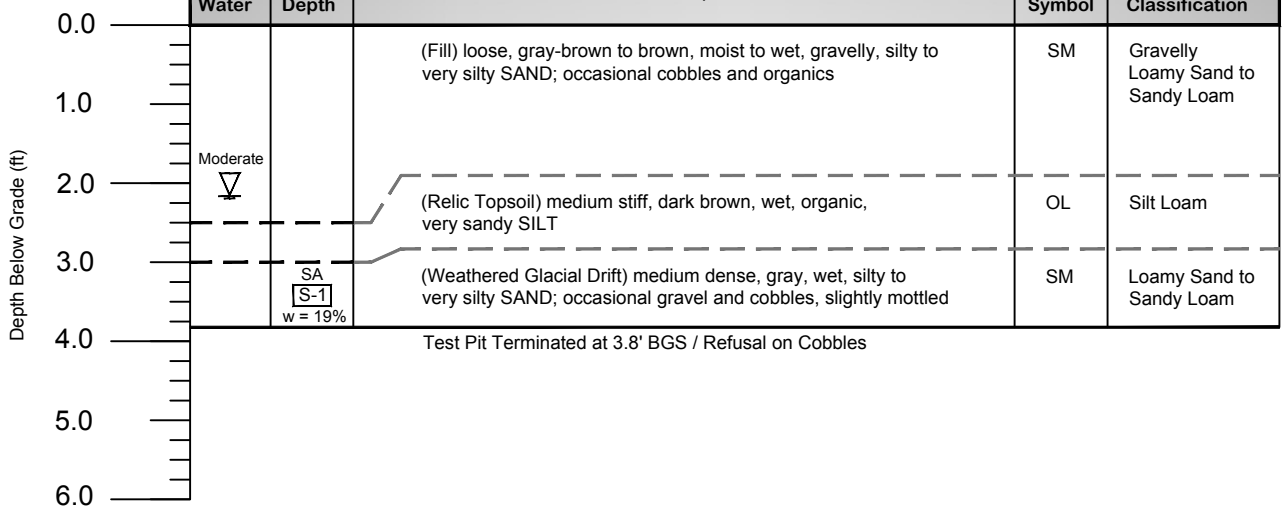


Ground Water	Sample Depth	Soil Unit and Description	USCS Symbol	USDA Classification
		(Fill) loose, gray-brown to dark brown, moist, gravelly, silty to very silty SAND; occasional cobbles and organics	SM	Gravelly Loamy Sand to Sandy Loam

Test Pit Terminated at 2.8' BGS / Refusal on Cobbles

TP-6

Date Completed: 12-7-2022 *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, gray-brown to brown, moist to wet, gravelly, silty to very silty SAND; occasional cobbles and organics	SM	Gravelly Loamy Sand to Sandy Loam
Moderate		(Relic Topsoil) medium stiff, dark brown, wet, organic, very sandy SILT	OL	Silt Loam
	SA S-1 w = 19%	(Weathered Glacial Drift) medium dense, gray, wet, silty to very silty SAND; occasional gravel and cobbles, slightly mottled	SM	Loamy Sand to Sandy Loam

Test Pit Terminated at 3.8' BGS / Refusal on Cobbles

Notes: Exploration locations are shown on the Stormwater Site Plan. 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 Single-Family Residence
4205 Padden Hills Court (Parcel 370308 082362)
Bellingham, Washington

FIGURE
6 of 6

USCS Grain Size Test Data

Project Information	
Date Started: 12-7-2022	File No.: 22102
Project Name: 4205 Padden Hills Court	Client: Dieveney-Hinkle

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

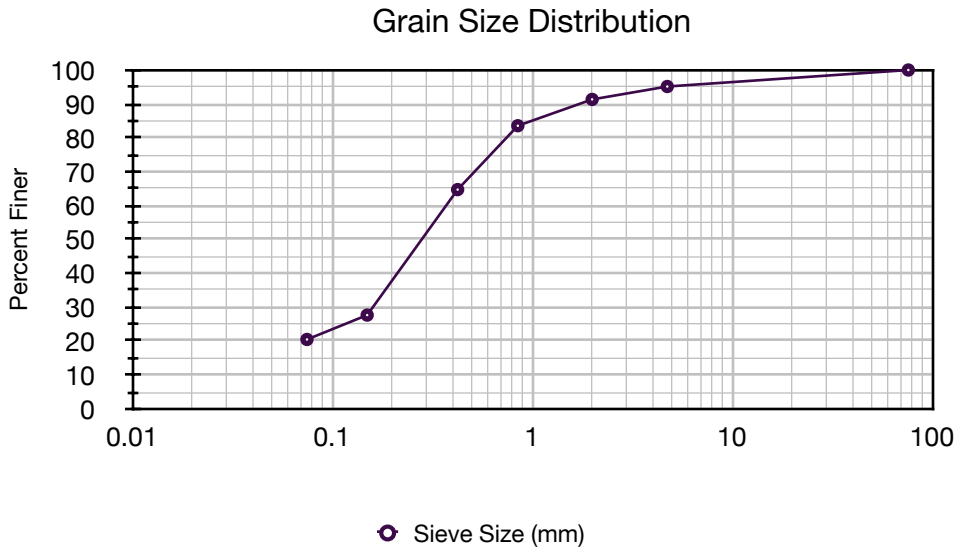
Sieve Analysis

Pan I.D. = B-1	Moist Soil + Pan Weight (g) = 219.82
Pan Weight (g) = 104.53	Dry Soil + Pan Weight (g) = 205.32
Water Content (%) = 14.39	Dry Soil Weight (g) = 100.79
	Washed Soil Weight (g) = 81.84

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	95.13	4.91	4.91	4.87	4.87
10	2	91.32	3.84	8.75	3.81	8.68
20	0.85	83.55	7.83	16.58	7.77	16.45
40	0.425	64.69	19.01	35.59	18.86	35.31
100	0.15	27.64	37.34	72.93	37.05	72.36
200	0.075	20.44	7.26	80.19	7.20	79.56
Pan				81.73		

USCS Classification	
Gravel = 4.87%	Fine Sand = 44.25%
Coarse Sand = 3.81%	Fines (Passes U.S. No. 200) = 20.44%
Medium Sand = 26.63%	

USCS Soil Description: 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: 12-7-2022	File No.: 22102
Project Name: 4205 Padden Hills Court	Client: Dieveney-Hinkle

Test Results		
Exploration No.: TP-6	Sample Depth: 3.5’	Lab Tech: DJ

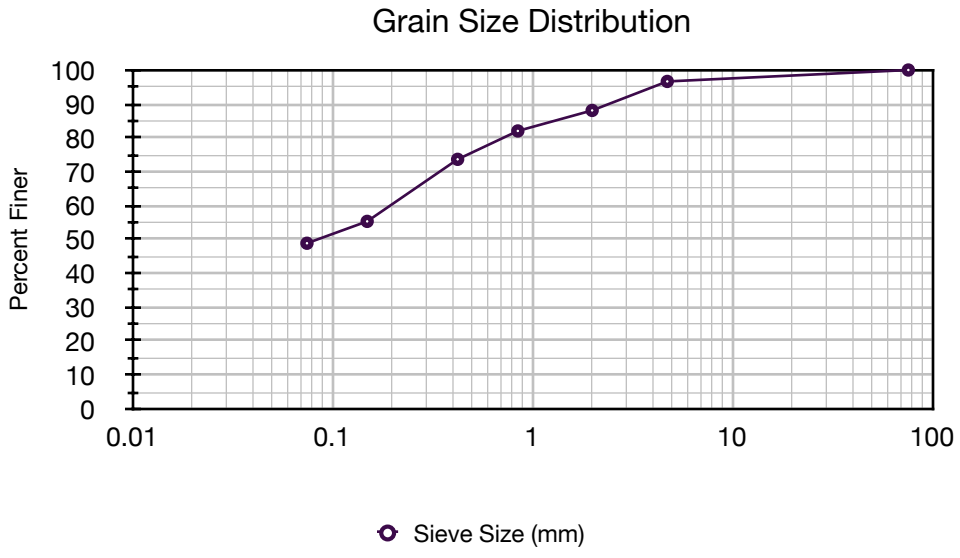
Sieve Analysis

Pan I.D. = B-2	Moist Soil + Pan Weight (g) = 230.22
Pan Weight (g) = 105.60	Dry Soil + Pan Weight (g) = 210.46
Water Content (%) = 18.84	Dry Soil Weight (g) = 104.86
	Washed Soil Weight (g) = 55.12

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	96.63	3.53	3.53	3.37	3.37
10	2	88.07	8.98	12.51	8.56	11.93
20	0.85	82.01	6.35	18.86	6.06	17.99
40	0.425	73.63	8.79	27.65	8.38	26.37
100	0.15	55.31	19.21	46.86	18.32	44.69
200	0.075	48.85	6.78	53.64	6.47	51.15
Pan				55.21		

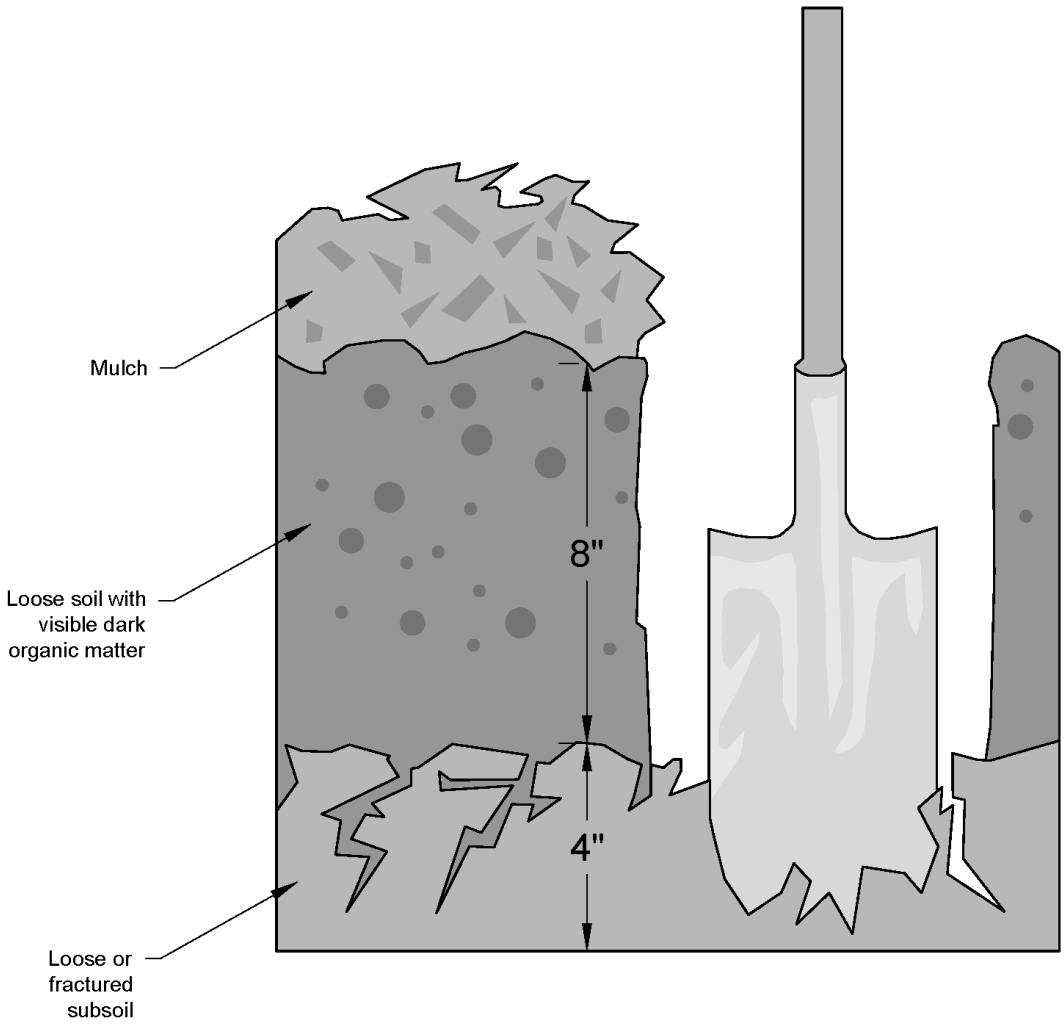
USCS Classification	
Gravel = 3.37%	Fine Sand = 24.79%
Coarse Sand = 8.56%	Fines (Passes U.S. No. 200) = 48.85%
Medium Sand = 14.44%	

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



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

Figure V-11.1: Planting Bed Cross-Section



Reprinted from *Guidelines and Resources For Implementing Soil Quality and Depth BMP T5.13 in WDOE Stormwater Management Manual for Western Washington*, 2010, Washington Organic Recycling Council

NOT TO SCALE

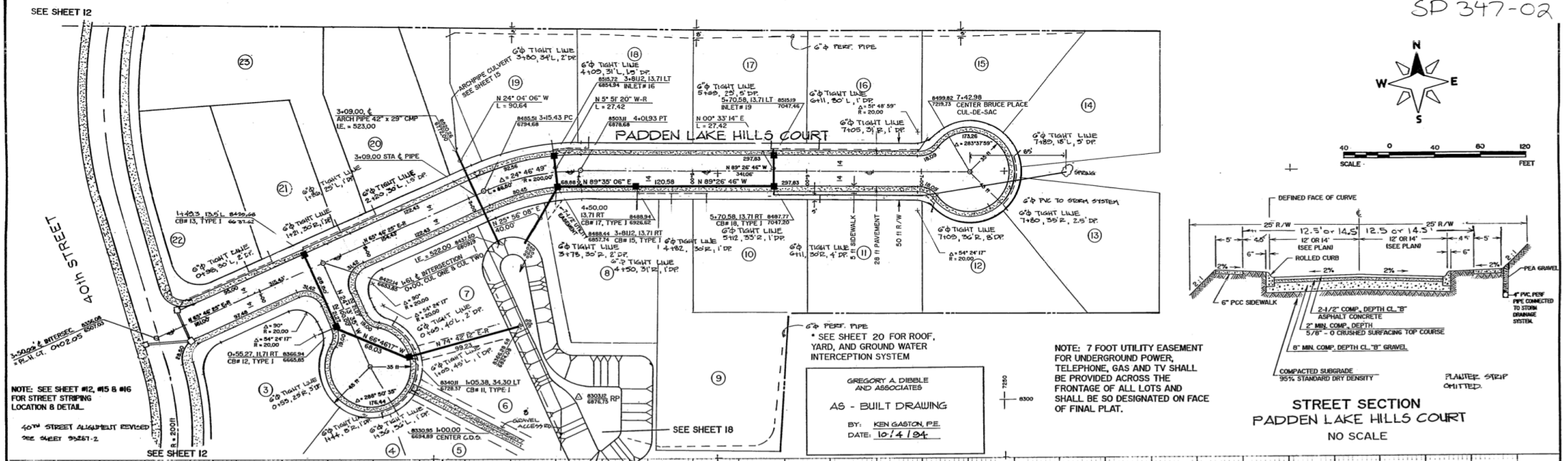
DEPARTMENT OF ECOLOGY
State of Washington

Planting Bed Cross-Section

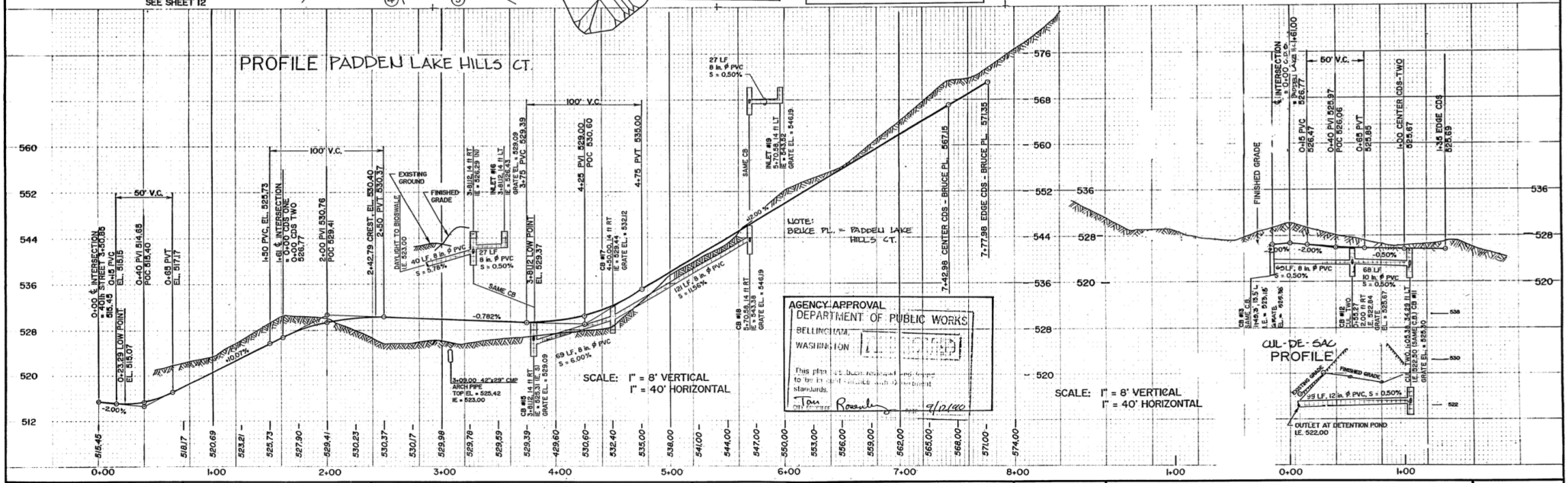
Revised June 2016

AS-BUILT

SP 347-02



STREET SECTION
PADDEN LAKE HILLS COURT
NO SCALE



CONTROL DATUM

HORIZONTAL: WASHINGTON LAMBERT GRID – NORTH ZONE
POSITION: WEST QUARTER CORNER MONUMENT Y = 627,972.791 X = 1,406,378.493
SEC 8, T37N, R6E, WM
MERIDIAN: WEST LINE OF NW 1/4 SECTION 8 = N 04° 00' 56"W
0 = - 1° 11' 53"
K = 0.9999545
VERTICAL: U.S.C. & G.S. DATUM (1947) +5.89 FT.
WEST QUARTER CORNER MONUMENT SEC. 8
CITY DATUM ELEVATION 498.01 FT.

I HEREBY CERTIFY THAT THIS DESIGN PLAN AND SPECIFICATION WERE PREPARED UNDER MY PERSONAL SUPERVISION AND MEET THE REQUIREMENTS OF THE CITY OF BELLINGHAM STANDARDS AND CODES AND FURTHER THAT SAID PLANS MEET THE GENERALLY ACCEPTED STANDARDS OF PROFESSIONAL PRACTICE WITHIN THE STATE OF WASHINGTON.

Aug. 1 1990
DATE

FOR
PADDEN HILLS ASSOC.

DRN. | DSGN. | CHKD.

ORIGINAL DESIGN BY:
JONES ENGINEERS, INCORPORATED, PS
CONSULTING ENGINEERS
2509 CEDARWOOD AVENUE
BELLINGHAM, WA 98225
(206) 733-8888

CONSTRUCTION REVISIONS AND AS - BUILTS BY:
GREGORY A. DIBBLE AND ASSOCIATES
1210 CENTRAL AVENUE
BELLINGHAM WA
(206) 734-1288

HARRY P. JONES STATE OF WASHINGTON REGISTERED PROFESSIONAL ENGINEER

PADDEN LAKE HILLS
A RESIDENTIAL SUBDIVISION
STREET & STORM, PLAN & PROFILE BRUCE PLACE

REV. SEPT. 5, 1990
DATE : AUG 1, 1990 | JOB # 89005 | SCALE AS NOTED

SHEET 13 OF 30

24X