SITE ENGINEERING, PLLC
CIVIL & GEOTECHNICAL ENGINEERING SERVICES

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R3 Homes -1, LLC
5055 38th Avenue NE
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January 30, 2025

Attn: Mr. Stuart Ortega
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Geotechnical Engineering Report
Mukilteo Short Plat
405 – 4th Street
Mukilteo, WA 98275-1541
Parcel No.: 0527500800500
Job No.: R3Homes.00527500800500.GR

INTRODUCTION

We are pleased to present this geotechnical engineering report for the proposed 2-lot short plat to be located at 405 – 4th Street in Mukilteo, Washington. The location of the site is shown on the attached Site Vicinity Map, Figure 1. This geotechnical engineering report summarizes our site observations, subsurface explorations, laboratory testing, and engineering analyses in addition to providing recommendations and design criteria for the proposed development.

Our understanding of the project is based on our discussions with you, your architect, and our January 9, 2025 site visit. We understand that the northern lot of the short plat will include the existing residence reclassified as a DADU with a new single-family residence and the southern lot will include a new single-family residence both constructed utilizing conventional wood framing and spread concrete footings. We understand that you are in the process of obtaining a building permit to allow for the construction of the proposed development. Clearing and grading are expected to be limited to that required to construct the proposed single-family residences, driveways, and utilities.

SCOPE

The purpose of our services is to evaluate the surface and subsurface conditions at the site as a basis for providing geotechnical recommendations and design criteria for the proposed development. Specifically, the scope of services for this project includes the following:

1. Review available geologic, hydrogeologic, and geotechnical data for the site area;
2. Site reconnaissance to explore the surface and subsurface conditions by monitoring the excavation of a series of test pits at select locations across the site;
3. Describe surface and subsurface conditions including soil type, depth to groundwater, and estimate of seasonal high groundwater levels;
4. Provide geotechnical conclusions and recommendations regarding site grading activities including site preparation, subgrade preparation, fill placement criteria, suitability of on-site soils for use a structural fill, temporary and permanent cut slopes, and drainage and erosion control measures;

5. Provide conclusions regarding shallow foundations and floor slab support and design criteria including bearing capacity and subgrade modulus, as appropriate;
6. Provide our opinion about the feasibility of onsite infiltration in accordance with the City of Mukilteo's Stormwater Code.
7. Provide recommendations for erosion and sediment control during wet weather grading and construction; and
8. Prepare a written Geotechnical Engineering Report summarizing our site observations and conclusions in addition to our geotechnical recommendations, design criteria, and supporting data.

The aforementioned scope of work was summarized in our proposal for civil and geotechnical engineering services dated November 16, 2024. We received authorized to proceed on December 20, 2024.

SITE CONDITIONS

Surface Conditions

The site is located within the Plat of Mukilteo in the city of Mukilteo, Washington within an area of single-family residential development. The site consists of a rectangular shaped parcel approximately 145 feet in length (east to south) west and 120 feet in width (north to south). The parcel encompasses approximately 0.40 acres (17,400 square feet). The site is bounded by established single-family residences to the south, east and west, and by 4th Street to the north. Access to the site is from 4th Street to the north.

The site generally slopes down from the southeast to the northwest toward the Puget Sound. The site generally slopes down to the northwest at 10-15 percent slopes. Overall elevation change across the site is approximately 25 feet. A site plan was not available at the time of our site visit. However, A topographic survey for the preliminary short plat was provided at the time of writing this letter and is included as Figure 2.

No seepage was observed at the time of our site visit. No evidence of deep-seated slope instability was observed at the site or adjacent areas at the time of our site visit. No erosion or other soil movement was observed at the time of our site visit.

Site Soils

A review of the USDA Soil Survey of Pierce County (Soil Conservation Service) indicates that the site is underlain by Everett very gravelly sandy loam (17). The Everett soils are generally formed in sandy and gravelly glacial outwash on slopes of 0 to 8 percent. The nearly level to undulating soil is "excessively drained" and listed as having "rapid" permeability and "little" erosion hazard when exposed. The Everett series soils are listed as being in hydrologic group "A". These soils are derived from glacial outwash and typically have high infiltration capabilities. A copy of the USDA Soils Map is included as Figure 3.

Site Geology

The *Preliminary Surficial Geologic Map of the Mukilteo and Everett Quadrangles, Snohomish County, Washington*, compiled by Mackey Smith (1976), maps the site as Vashon Till (Qvt). These glacial soils were deposited prior to and during the most recent Vashon Stade of the Fraser Glaciation, approximately 12,000 to 15,000 years ago. The glacial till consists of a mixture of clay, silt, sand, and gravel that was deposited at the base of the prehistoric continental ice mass and were subsequently over-ridden. Glacial soils overridden by glacial ice can be considered over consolidated, which typically exhibit high strength and low compressibility characteristics. An excerpt of the above referenced map is included as Figure 4.

The Coastal Atlas Map by the Washington State Department of Ecology maps the site as "Stable". An excerpt pf the map is included as Figure 5.

Based on our site observations and test pit explorations described below, the near surface soils would be consistent with the USGS Geological site mapping.

Subsurface Explorations

On January 9, 2025, a Site Engineering, PLLC engineer was onsite and monitored the excavation of four (4) test pits at select locations near the proposed and existing development. Our engineer logged the subsurface conditions encountered in each test pit and obtained representative soil samples.

The test pits were excavated with a small track mounted excavator provided by the contractor. The test pit locations were selected by Site Engineering, PLLC personnel in the field based on discussions regarding the proposed development and site constraints. The soils encountered were visually classified in accordance with the Soil Classification System (SCS) included as Figure 6. Representative soil samples obtained from the excavations were placed in sealed plastic bags and taken to our office for further examination and tested as deemed necessary. The test pits were backfilled after our observations and tamped with the excavator bucket, but not otherwise compacted. A copy of the hand auger logs is included as Figure 7.

The test pits were excavated to a maximum depth of 3-3.5 feet below the existing ground surface. Because the soils encountered were consistent between the test pits and the geologic mapping, it is our opinion that no additional test pits or borings are required to evaluate the subsurface conditions at the site as long as the proposed development does not change.

The explorations performed as part of this evaluation indicate conditions only at the specific location and that the actual site conditions in other locations could vary. Furthermore, the nature and extent of any such variations would not become evident until additional explorations are performed or until construction activities have begun.

Subsurface Conditions

Our test pits encountered subsurface conditions that generally confirm the mapped stratigraphy shown on the geological mapping for the property. In general, the stratigraphy as observed in our test pits encountered 12 inches of topsoil mantling light brown/gray sandy silt with clay and gravel to a depth of two and a half to three (2.5-3) feet over gray silty sand with gravel to a

depth of three to three and a half (3-3.5) below ground surface. Generally, we interpret the near surface soils to be consistent with the mapped glacial till soils.

The test pits completed as part of this evaluation indicate the subsurface conditions at a specific location only, as actual subsurface conditions can vary across the site.

Groundwater

Minor seepage was observed in our test pits at the time of excavation. We anticipate that the site may be prone to perched groundwater conditions given the shallow depth of the impermeable layer. Perched groundwater develops when vertical infiltration of runoff through a shallow, more permeable soil is slowed by a deeper, less permeable layer.

Throughout the year, groundwater levels will likely fluctuate in response to changing precipitation patterns, off-site usage, nearby construction activities, and site utilization. No surficial erosion was observed at the time of our site visit.

Geologic Sensitive Areas – Per Mukilteo Municipal Code Section 17B.52A.020

Geologic sensitive areas include areas susceptible to erosion, sliding, earthquake, or other geological events and conditions. These pose a threat to the health and safety of citizens when improper and incompatible development is sited in these areas. Such incompatible development may not only place itself at risk, but also may cause or increase the hazards to surrounding development and land uses. Areas susceptible to one or more of the following types of hazards shall be designated as a geologic sensitive area:

A. Areas subject to erosion rated moderate to severe or higher by the U.S. Department of Agriculture's Natural Resource Conservation Service;
B. Areas subject to erosion caused by streams, surface drainage, or along the shoreline;
C. Areas within a stream's channel migration zone;
D. Areas mapped on the city of Mukilteo's Landslide Hazard Map having a moderate or higher rating;
E. Areas that are found to have, based on a site-specific inspection, all of the following characteristics:
    1. Springs or ground water seepage;
    2. Hillsides showing intersecting geologic contacts; and
    3. Slopes steeper than fifteen percent; fifteen-foot rise over one-hundred-foot run.
F. Areas that are underlain or covered by mass wastage debris or landslide materials;
G. Areas of known landslides, earth movement, or containing evidence of past landslides or earth movement;
H. Areas of steep slopes; slopes that have forty percent (forty percent or a twenty-two-degree angle) or steeper gradients and having a vertical relief greater than ten feet, excluding constructed slopes;
I. Areas subject to liquefaction due to soil type and/or location or seismically induced ground disturbance such as surface rupture, fissuring, and lateral spreading;

J. Areas that have soil types that fall within soil category II or III per the Preliminary Surficial Geologic Map of the Mukilteo and Everett Quadrangles, Snohomish County, Washington, 1976; and/or
K. Areas that are subject to tsunami wave action.

ENGINEERING CONCLUSIONS AND RECOMMENDATIONS

Based on our site evaluation, it is our opinion that the site is suitable for the construction of the proposed 2-lot short plat and related appurtenances. It is also our opinion that an active erosion, landslide, or seismic hazards area does not exist on the site.

Geological Sensitive Areas – Per Mukilteo Municipal Code Section 17B.52A.020

City of Mukilteo Section 17B.52A.020 uses the above definitions for designating geologic sensitive areas. Based on our observations of the site and review of published information, we offer the following comments.

The soils on site are classified as having "little" erosion hazard when exposed. The geologic unit mapped on site is Qvt (Vashon Till). There are no historic records of failures, including unstable old and recent landslides. There are some slopes steeper than 15 percent though no evidence of intersecting geologic contacts observed or mapped in the vicinity of the site. There was no evidence of areas underlain or covered by mass wasting debris or landslide materials. There was no evidence of known landslides, earth movement, or evidence of past landslides or past earth movement. There were no planes of weakness or rockfall hazards observed at the site. The site is not located in a canyon or on an alluvial fan. There were slopes steeper than 40 percent with vertical relief greater than 10 feet located northwest of the parcel though they appear to have been constructed for the Burlington-Santa Fe Railroad. There are no limitations for building site development. There are no areas of cohesionless soils associated with a shallow groundwater table. The mapped Vashon Till soils are located on site though are very dense and approximately 3 feet below ground surface.

Based on the information provided above, the site does not meet the definition of a geologic sensitive area. The standard building setbacks should be adequate and no additional buffer should be required by the City of Mukilteo. We recommend that appropriate soil erosion control and site stabilizing measures are employed during construction; we do not anticipate that it will be a limiting feature to site development.

Erosion Control

Weathering, erosion and the resulting surficial sloughing and shallow land sliding are natural processes that affect steep slope areas. To manage and reduce the potential for these natural processes, we recommend the following:

- No drainage of concentrated surface water or significant sheet flow directly onto steeply sloped area(s) (greater than 40%).
- Grading should be limited to providing surface grades that promote surface flows away from the top of slope to an appropriate discharge location. Provided the proposed

building is located at least 50 feet from any slopes over 40 percent, splash blocks or other dispersion methods will be a suitable stormwater control for the site.

- Large trees on the steeper areas could be removed provided the stumps are left behind with minimal disturbance to the slope.

Erosion hazards can be mitigated by applying Best Management Practices (BMP's) outlined in the Washington State Department of Ecology's (DOE) Stormwater Management Manual for Western Washington.

Seismic

Based on our observations and the subsurface units mapped at the site, we interpret the structural site conditions to correspond to seismic site class "C" in accordance with the 2024 International Building Code (IBC) and the American Society of Civil Engineers (ASCE) Hazard Tool. This is based on the likely range of equivalent SPT (Standard Penetration Test) blow counts for the soil types observed in the site area. These conditions were assumed to be representative for the conditions beyond the depths explored. Structures located at the site that are constructed in accordance with the appropriate seismic criteria will have the same risk as other similarly designed structures in the Puget Sound area.

Site Preparation

All areas to be graded/excavated should be cleared of deleterious matter including any existing structures, foundations, abandoned utility lines, debris and vegetation. Graded areas should be stripped of any forest duff and organic-laden soils.

Based on our explorations, we estimate that stripping on the order of 6 to 12 inches will be necessary to remove the root zone and surficial soils containing significant organic debris. Areas with deeper, unsuitable organics should be expected in the vicinity of depressions or heavy vegetation. Stripping depths of up to ½ to 1 ½ feet may be required in these areas. Stripped materials may be stockpiled and later used for erosion control and landscaping/ revegetation. Materials that cannot be used for landscaping or erosion control should be removed from the project site.

Where placement of fill material is required, the exposed subgrade areas should be compacted to a firm and unyielding surface prior to placement of any fill material. We recommend that a member of our staff evaluate the exposed subgrade conditions after removal of vegetation and topsoil stripping is completed and prior to placement of structural fill. The exposed subgrade soil should be proof-rolled with heavy rubber-tired equipment during dry weather or probed with a 1/2-inch-diameter steel rod during wet weather conditions.

Any soft, loose or otherwise unsuitable areas delineated during proof-rolling or probing should be recompacted, if practical, or over-excavated and replaced with structural fill, based on the recommendations of our site representative.

Structural Fill

All fill material, including trench backfill, should be placed as structural fill. The structural fill should be placed in horizontal lifts of appropriate thickness to allow adequate and uniform

compaction of each lift. Fill should be compacted to at least 90 percent of MDD (maximum dry density as determined in accordance with ASTM D-1557) to within 2 feet of subgrade and 95 percent MDD in the upper 2 feet.

The appropriate lift thickness will depend on the fill characteristics and compaction equipment used. We recommend that the appropriate lift thickness be evaluated by our field representative during construction. We recommend that our representative be present during site grading activities to observe the work and perform field density tests.

The suitability of material for use as structural fill will depend on the gradation and moisture content of the soil. As the amount of fines (material passing No. 200 sieve) increases, soil becomes increasingly sensitive to small changes in moisture content and adequate compaction becomes more difficult to achieve. During wet weather, we recommend use of well-graded sand and gravel with less than 5 percent (by weight) passing the No. 200 sieve based on that fraction passing the 3/4-inch sieve. If prolonged dry weather prevails during the earthwork and foundation installation phase of construction, somewhat higher (up to 10 to 12 percent) fines content will be acceptable.

Material placed for structural fill should be free of debris, organic matter, trash and cobbles greater than 6 inches in diameter. The moisture content of the fill material should be adjusted as necessary for proper compaction.

Suitability of On-Site Materials as Fill

During dry weather construction, any nonorganic on-site soil may be considered for use as structural fill; provided it meets the criteria described above in the structural fill section and can be compacted as recommended. If the material is over-optimum moisture content when excavated, it will be necessary to aerate or dry the soil prior to placement as structural fill. As previously indicated, the site soils are near the optimum moisture condition, and will likely be suitable for structural fill provided proper moisture content is maintained.

We recommend that completed graded-areas be restricted from traffic or protected prior to wet weather conditions. The graded areas may be protected by placing a layer of free-draining material such as pit run sand and gravel or crushed rock (2-inch minus) material containing less than 5 percent fines, or some combination of the above. These materials should be placed as structural fill and compacted to at least 95 percent of the MDD. During wet weather conditions, traffic should be confined to protected areas. If fill material is imported to the site, we recommend that it be a sand and gravel mixture such as high-quality pit run with less than 5 percent fines, a clean crushed rock or quarry spalls. Where free standing groundwater or surface water is encountered, quarry spalls should be used.

Cut and Fill Slopes

All job site safety issues and precautions are the responsibility of the contractor providing services/work. Temporary cut slopes will likely be necessary during grading operations. As a general guide, temporary slopes of 1.5H:1V (Horizontal to Vertical) or flatter may be used for temporary cuts in the upper layer of loose sand and gravel.

These guidelines assume that all surface loads are kept at a minimum distance of at least one half the depth of the cut away from the top of the slope and that significant seepage is not present on the slope face.

We recommend a maximum slope of 2H:1V for permanent cut and fill slopes. Where 2 to 1 slopes are not feasible, retaining structures or other erosion protective measures should be considered.

Spread Footings

Spread footings can be designed to support foundation elements. Provided footings are founded on undisturbed glacial till or appropriately prepared structural backfill, an allowable soil bearing pressure of 2,500 psf for combined dead and long-term live loads may be used. This value may be increased by one-third for transient loads such as those induced by seismic events or wind loadings.

The subsurface conditions encountered in our test pit indicated that the medium dense soils were encountered at depths of up to 3.5 feet. Depending on finish floor elevations and foundation elevations, it may be necessary to over excavate and replace with structural fill soils beneath the foundation elements. In this case, we recommend a minimum width of 24 inches for isolated footings and 16 inches for continuous wall footings.

All exterior footing elements should be embedded at least 18 inches below the lowest adjacent finished grade or as required to meet frost protection requirements. We recommend that any disturbed soils in the footing excavations be removed, or if practical, recompacted prior to concrete placement. All foundation subgrades should be evaluated to verify adequate bearing surface preparation prior to placing concrete.

We estimate that settlements of footings designed and constructed on structural soils as recommended will be less than 1 inch, with differential settlements between comparably loaded footings of ¾-inch or less. Differential settlements between areas supported by deep foundations and shallow spread footings could be more than twice that amount. Settlements will occur essentially as loads are applied. Disturbance of the foundation subgrade during construction could result in larger settlements than predicted.

Floor Slab Support

Slab-on-grade floors or patios should be supported on a uniform subbase consisting of 12 inches of free draining granular structural fill placed over a compacted subbase. The subgrade material should be placed in one lift and compacted to a minimum of 95 percent of the MDD. Where the native materials meet these criteria, they may be substituted.

A vapor barrier, such as a polyethylene or PVC liner, is also recommended to prevent the migration of moisture through the slab. We recommend that the vapor barrier consist of a specifically engineered material for this purpose.

A subgrade modulus of 350 kcf (kips per cubic foot) may be used for design. We estimate that settlement of the floor slabs designed and constructed as recommended, will be 1/2 inch or less over a span of 50 feet.

Subgrade/Basement Walls

Based on existing topography, we anticipate the proposed residence may include a daylight basement configuration.

The lateral pressures acting on subgrade and retaining walls (such as basement walls) will depend upon the nature and density of the soil behind the wall. It is also dependent upon the presence or absence of hydrostatic pressure. If the walls are backfilled with granular well-drained soil, the design active pressure may be taken as 35 pcf (equivalent fluid density). This design value assumes a level backslope and drained conditions as described below.

Positive drainage which controls the development of hydrostatic pressure can be accomplished by placing a zone of coarse sand and gravel behind the walls. The granular drainage material should contain less than 5 percent fines. The drainage zone should extend horizontally at least 18 inches from the back of the wall. The drainage zone should also extend from the base of the wall to within 1 foot of the top of the wall. The drainage zone should be compacted to approximately 90 percent of the MDD. Over-compaction should be avoided as this can lead to excessive lateral pressures.

A perforated PVC pipe with a minimum diameter of 4 inches should be placed in the drainage zone along the base of the wall to direct accumulated water to an appropriate discharge location. We recommend that a nonwoven geotextile filter fabric be placed between the drainage material and the remaining wall backfill to reduce silt migration into the drainage zone. The infiltration of silt into the drainage zone can, with time, reduce the permeability of the granular material. The filter fabric should be placed such that it fully separates the drainage material and the backfill, and should extend over the top of the drainage zone.

Lateral loads may be resisted by friction on the base of footings and as passive pressure on the sides of footings and the buried portion of the wall, as described in the "**Foundation Support**" section. We recommend that an allowable coefficient of friction of 0.35 be used to calculate friction between the concrete and the underlying soil. Passive pressure may be determined using an allowable equivalent fluid density of 350 pcf (pounds per cubic foot). Factors of safety have been applied to these values.

Site Drainage

All ground surfaces, decks or patios and pavement/driveway areas should be sloped away from the residence. Surface water runoff should be controlled by a system of curbs, berms, drainage swales, and or catch basins, and should also be conveyed via tightline to an appropriate discharge point. Based on our test pits we do not recommend that stormwater be infiltrated on site.

LIMITATIONS

We have prepared this report for R3 Homes, LLC and other members of the design team for use in evaluating a portion of this project. Subsurface conditions described herein are based on our observations of exposed soils on the parcel. This report may be made available to regulatory agencies or others, but this report and conclusions should not be construed as a warranty of subsurface conditions. Subsurface conditions can vary over short distances and can change with time.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in this area at the time this report was prepared. No warranty, express or implied, should be understood.

We trust this is sufficient for your current needs. Should you have any questions, or require additional information, please contact us at your earliest convenience.

We appreciate the opportunity to submit this report to you. If you have any questions regarding the findings of this report, please don't hesitate to call with any questions, comments, or concerns at your earliest convenience.

Yours Very Truly,

Site Engineering, PLLC

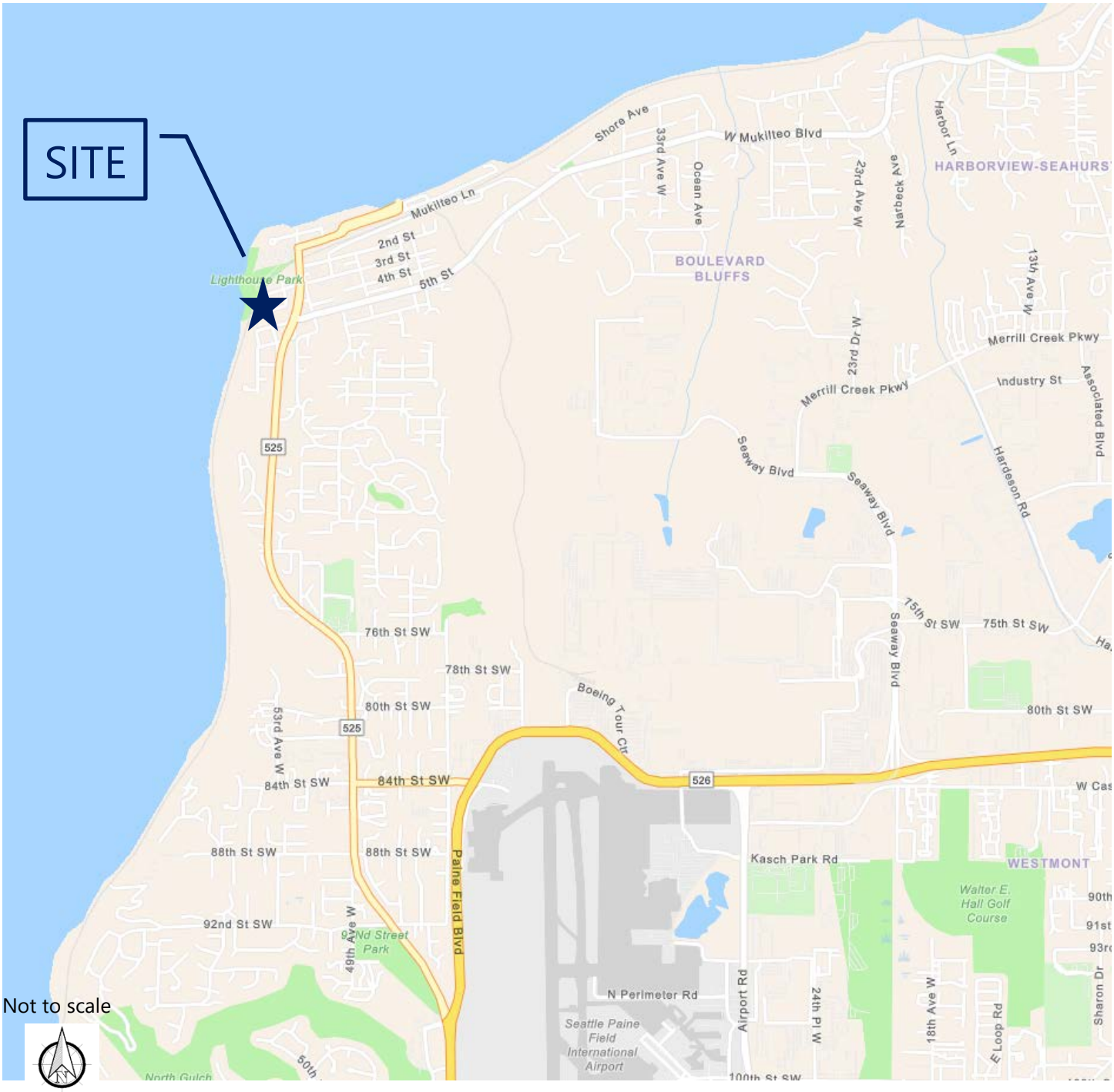
Ryan P. O'Rourke, P.E.

Principal Engineer

RPO: rpo

DocID: R3Homes.00527500800500.GR

Attachments:
Figure 1 – Site Vicinity Map
Figure 2 – Site Plan
Figure 3 – USDA Soils Map
Figure 4 – USGS Geologic Map
Figure 5 – Test Pit Logs
Figure 6 – USCS Soil Classification



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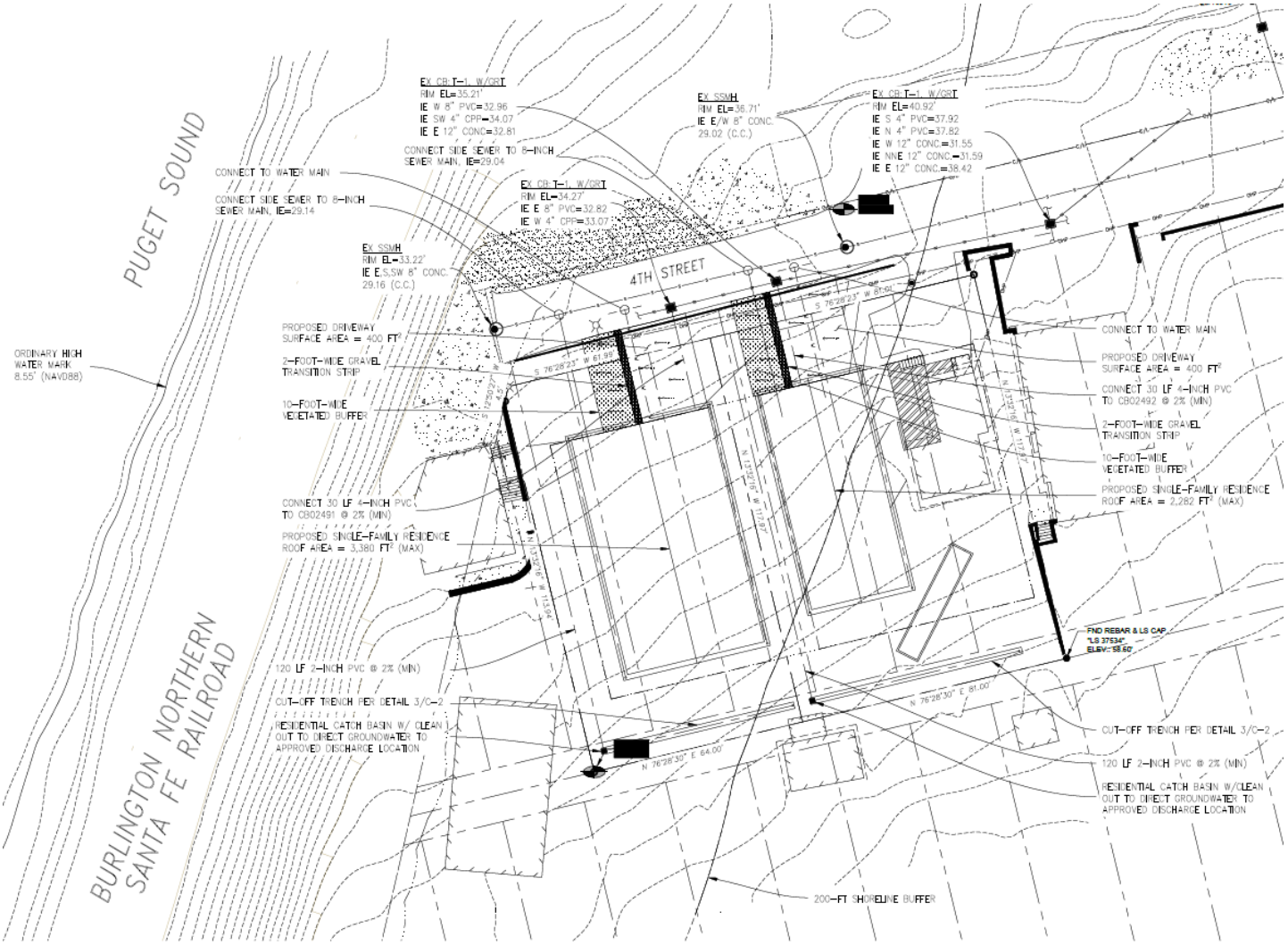
Site Vicinity Map
Mukilteo Short Plat
405 – 4th Street
Mukilteo, Washington

Job No: 241113	January 2025	Figure 1



Not to scale

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Site Plan
Mukilteo Short Plat
405 – 4th Street
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Job No: 241113	January 2025	Figure 2

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
17	Everett very gravelly sandy loam, 0 to 8 percent slopes	0.8	100.0%
Totals for Area of Interest		**0.8**	**100.0%**

Not to scale

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USDA Soils Map
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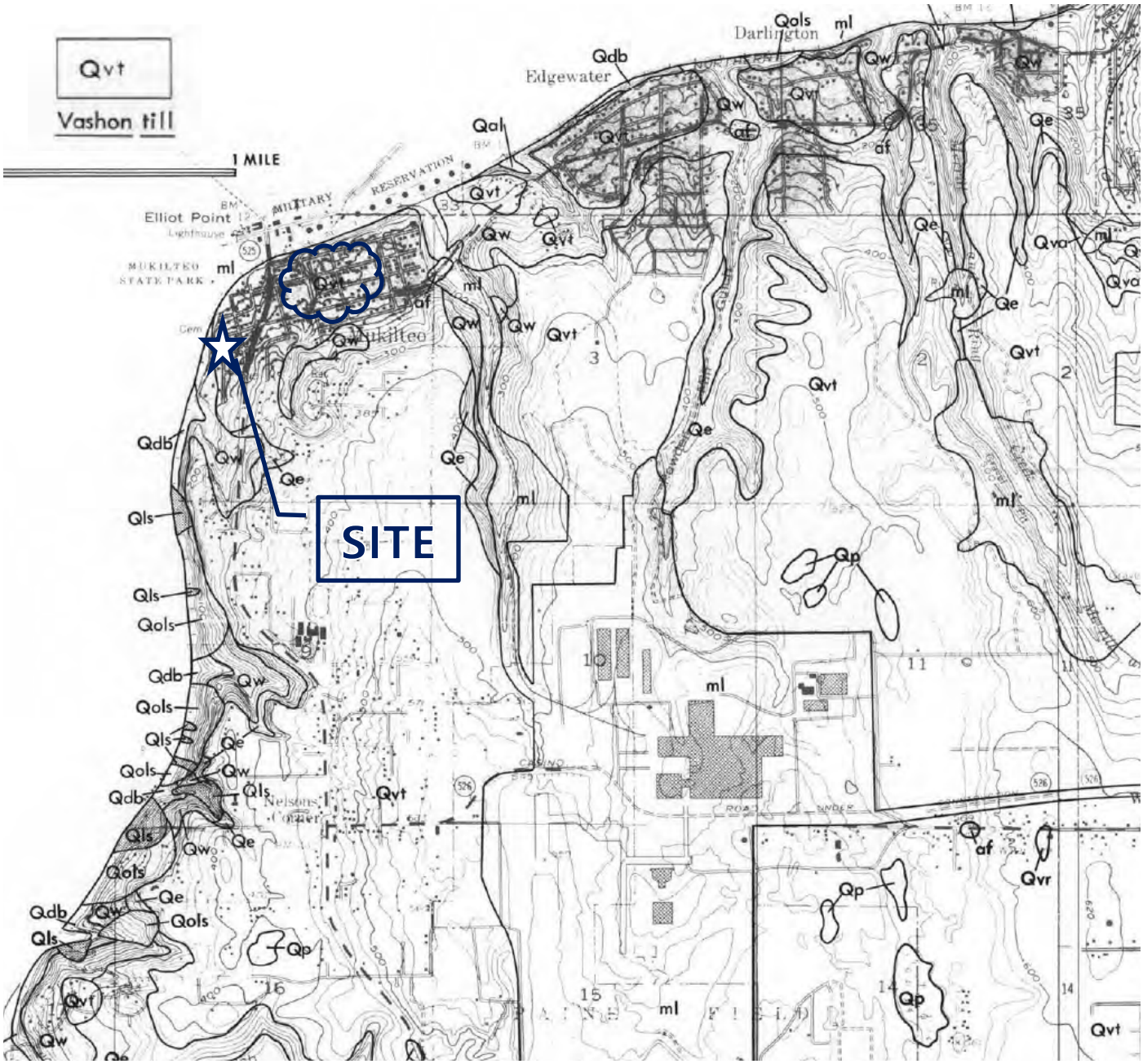
Job No: 241113	January 2025	Figure 3



An excerpt from the *PRELIMINARY SURFICIAL GEOLOGIC MAP of the MUKILTE and EVERETT QUADRANGLES, SNOHOMISH COUNTY, WASHINGTON*
By Mackey Smith (1976)

Not to scale

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USGS Geologic Map
Mukilteo Short Plat
405 – 4th Street
Mukilteo, Washington

Job No: 241113	January 2025	Figure 4

Test Pit TP-1 Location: Approximately 25' North and 50' East of the SW Property Corner

Depth (inches)	Soil Type	Description
00-12	TS	Topsoil
12-36	SM	Light Brown/Gray silty SAND w/some gravel, occasional cobbles, roots, Fe stain (medium, moist-wet)
36+	SM	Gray silty sand w/ gravel, cementation (dense-very dense, moist)
		No caving, Minor seeps @ 18"
		Terminated at 36 inches below ground surface.

Test Pit TP-2 Location: Approximately 25' North and 25' East of the SW Property Corner

Depth (inches)	Soil Type	Description
00-12	TS	Topsoil
12-42	SM	Light Brown/Gray silty SAND w/some gravel, occasional cobbles, roots, Fe stain (medium, moist-wet)
42+	SM	Gray silty sand w/ gravel, cementation (dense-very dense, moist)
		No caving, Minor seeps @ 18"
		Terminated at 42 inches below ground surface.

Test Pit TP-3 Location: Approximately 25' North and 50' East of the SW Property Corner

Depth (inches)	Soil Type	Description
00-12	TS	Topsoil
12-36	SM	Light Brown/Gray silty SAND w/some gravel, occasional cobbles, roots, Fe stain (medium, moist-wet)
36+	SM	Gray silty sand w/ gravel, cementation (dense-very dense, moist)
		No caving, Minor seeps @ 18"
		Terminated at 36 inches below ground surface.

Test Pit TP-1 Location: Approximately 25' North and 50' East of the SW Property Corner

Depth (inches)	Soil Type	Description
00-12	TS	Topsoil
12-36	SM	Light Brown/Gray silty SAND w/some gravel, occasional cobbles, roots, Fe stain (medium, moist-wet)
36+	SM	Gray silty sand w/ gravel, cementation (dense-very dense, moist)
		No caving, Minor seeps @ 18"
		Terminated at 36 inches below ground surface.

Logged by: RPO on 1/9/2025

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Test Pit Logs
Mukilteo Short Plat
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Job No: 241113	January 2025	Figure 5

SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE GRAINED SOILS More than 50% Retained on No. 200 Sieve	GRAVEL More than 50% Of Coarse Fraction Retained on No. 4 Sieve	CLEAN GRAVEL	GW	WELL-GRADED GRAVEL, FINE TO COARSE GRAVEL
			GP	POORLY-GRADED GRAVEL
		GRAVEL WITH FINES	GM	SILTY GRAVEL
			GC	CLAYEY GRAVEL
	SAND More than 50% Of Coarse Fraction Passes No. 4 Sieve	CLEAN SAND	SW	WELL-GRADED SAND, FINE TO COARSE SAND
			SP	POORLY-GRADED SAND
		SAND WITH FINES	SM	SILTY SAND
			SC	CLAYEY SAND
FINE GRAINED SOILS More than 50% Passes No. 200 Sieve	SILT AND CLAY Liquid Limit Less than 50	INORGANIC	ML	SILT
			CL	CLAY
		ORGANIC	OL	ORGANIC SILT, ORGANIC CLAY
	SILT AND CLAY Liquid Limit 50 or more	INORGANIC	MH	SILT OF HIGH PLASTICITY, ELASTIC SILT
			CH	CLAY OF HIGH PLASTICITY, FAT CLAY
		ORGANIC	OH	ORGANIC CLAY, ORGANIC SILT
HIGHLY ORGANIC SOILS			PT	PEAT

NOTES:

1. Field classification is based on visual examination of soil in general accordance with ASTM D2488-90.
2. Soil classification using laboratory tests is based on ASTM D2487-90.
3. Description of soil density or consistency are based on interpretation of blow count data, visual appearance of soils, and or test data.

SOIL MOISTURE MODIFIERS:

Dry- Absence of moisture, dry to the touch

Moist- Damp, but no visible water

Wet- Visible free water or saturated, usually soil is obtained from below water table

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USCS Soil Classification
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Job No: 241113	January 2025	Figure 6