EARTH SOLUTIONS NW

REDMOND ▪ PASCO ▪ SILVERDALE

GEOTECHNICAL ENGINEERING STUDY
MONTGOMORIE
SOUTHWEST OF HARBOUR PLACE AND 99TH PLACE SOUTHWEST
MUKILTEO, WASHINGTON

ES-9259.03

Geotechnical Engineering

Environmental Services

Earthwork Observation & Testing

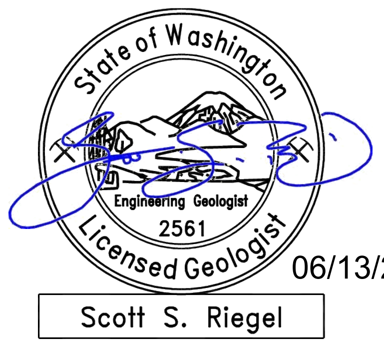
CESCL & Stormwater Services

esnw.com

PREPARED FOR

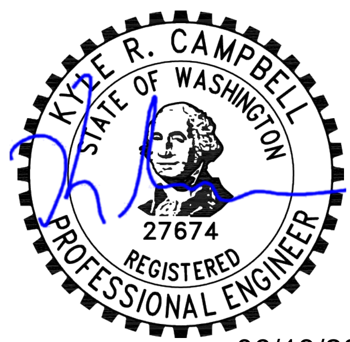
WESTCOTT HOLDINGS & INVESTMENTS, INC.

June 13, 2025



06/13/2025

Scott S. Riegel, L.G., L.E.G.
Associate Principal Geologist



06/13/2025

Kyle R. Campbell, P.E.
Senior Principal Engineer

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Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept* *responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are <u>not</u> final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are <u>Not</u> Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will <u>not</u> of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are <u>not</u> building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

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EARTH SOLUTIONS NW

Geotechnical Engineering ■ Earthwork Observation & Testing
Environmental Services ■ CESCL & Stormwater Services

esnw.com info@esnw.com

June 13, 2025
ES-9259.03

Westcott Holdings & Investments, Inc.
1010 Market Street
Kirkland, Washington 98033

Attention: David Pritchard

Greetings, David:

Earth Solutions NW, LLC (ESNW) is pleased to present this geotechnical engineering study regarding the proposed project. Based on the results of our investigation, construction of the proposed multi-family residential development is feasible from a geotechnical standpoint. This study indicates the site is underlain primarily by glacial till deposits and isolated areas of shallow uncontrolled fill. Groundwater was not encountered at the test pit locations during the December 2024 fieldwork.

In general, competent native soil, suitable for support of the new foundations, will likely be encountered beginning at depths of about two to four feet below the existing ground surface. ESNW should review the final plans to confirm the recommendations in this report remain applicable. Areas of existing fill should be evaluated by ESNW prior to placement or foundation work to confirm it is suitable for either use as structural fill or direct foundation support. If earthwork activities occur during wet weather, additional drainage measures, cement treatment of native soil, and the use of select, all-weather structural fill material will likely be necessary.

In our opinion, infiltration should not be considered a viable means of stormwater management for this project from a geotechnical standpoint. Further discussion and rationale regarding infiltration infeasibility is provided herein.

This report provides analyses and recommendations for the proposed multi-family residential development. The opportunity to be of service to you is appreciated. If you have any questions regarding the content of this geotechnical engineering study, please call.

Sincerely,

EARTH SOLUTIONS NW, LLC

Scott S. Riegel, L.G., L.E.G.
Associate Principal Geologist

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MONTGOMORIE
SOUTHWEST OF HARBOUR PLACE AND 99TH PLACE SOUTHWEST
MUKILTEO, WASHINGTON

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INTRODUCTION

General

This geotechnical engineering study (study) was prepared for the proposed multi-family residential development to be constructed along the west side of Harbour Place in Mukilteo, Washington. Our scope included the following geotechnical services:

- Subsurface exploration to characterize the soil and groundwater conditions.
- Laboratory testing of representative soil samples collected on site.
- Engineering analyses and recommendations for the proposed commercial development.
- Preparation of this report.

Project Description

Based on the referenced site plan, the site will be developed with eight buildings with a total of 36 residential units, garages and interior roadways. Grading plans were not available at the time of this report; however, based on the existing site topography, we anticipate grading will consist of cuts and fills of ten feet or less. Given the geologic setting, we presume detention will be the primary stormwater management strategy.

At the time of report submission, specific building load plans were not available for review; however, based on our experience with similar developments, the proposed structures will likely be two to four stories in height and constructed using relatively lightly loaded wood framing supported on conventional foundations. Perimeter footing loads will likely be about 3 to 5 kips per linear foot. Slab-on-grade loading is anticipated to be approximately 150 pounds per square foot (psf).

If the above design assumptions are incorrect or change, ESNW should be contacted to review the recommendations in this report. ESNW has reviewed the referenced plans as part of this report preparation.

SITE CONDITIONS

Surface

The subject site is located along the west side of Harbour Place, across from the intersection with 99th Place Southwest in Mukilteo, Washington. The approximate site location is illustrated on the attached Vicinity Map (Plate 1). The site is comprised of one tax parcel (Snohomish Parcel No.: 28042100103200) that is irregularly shaped, with a total area of about 3.26 acres, of which, about 1.96 acres will be included in the development proposal.

The subject site is currently vacant, and vegetation consists of invasive scrub trees, forested areas and field grass. The site topography generally descends gently to the west with post-glacial erosion features that support wetland and surface flows along the west and south property areas. There is a natural drainage feature in the southern property area that contains steep slope hazard areas; otherwise, no regulated geologic hazards encumber the site.

Subsurface

An ESNW representative observed, logged, and sampled five test pits on December 18, 2024. The test pits were excavated within accessible areas of the site using a mini trackhoe and operator retained by ESNW. The test pits were completed to assess soil conditions, classify site soils, and characterize groundwater conditions within the proposed development area. The approximate locations of the test pits are depicted on the attached Plate 2 (Subsurface Exploration Plan). Please refer to the attached test pit logs for a more detailed description of subsurface conditions. Representative soil samples collected at the test pit locations were analyzed in general accordance with both Unified Soil Classification System (USCS) and USDA methods and procedures.

Topsoil and Fill

Topsoil, was generally encountered within the upper 6 to 12 inches below the existing ground surface (bgs). The topsoil was characterized by its dark brown color, the presence of fine organic material, and minimal root intrusions.

Fill was encountered during the subsurface exploration at test pit locations TP-2, 4 and 5. The fill consisted primarily of silty sand (USCS: SM) with variable gravel content and extended to depths ranging from about four and one-half to six feet below existing grades. The fill was generally loose to medium dense and did not contain significant amounts of deleterious debris or organics; however, the relic topsoil layer was observed at some of the test pit locations. Based on the texture of the fill, it is likely that the material represents uncontrolled fill placed from nearby development.

Native Soil

The native soil at the test pit locations consisted of silty sand with variable gravel content (USCS: SM). The native soil was observed to generally be in a medium dense condition, becoming dense to very dense at depth where fill was not encountered and within a couple feet below the fill, where exposed. An isolated layer of sand with silt (USCS: SP-SM) was encountered at test pit location TP-3 within the upper approximately four feet before transitioning to a dense glacial till. Typical within glacial till deposits, this weakly cemented layer is commonly referred to as “hardpan”. The in-situ moisture condition of the native soil was characterized as “damp”. The maximum exploration depth was about 10.5 feet bgs and all test pits were terminated in undisturbed native soil.

Geologic Setting

The referenced geologic map identifies ground moraine deposits (Qgt) as the primary geologic unit underlying the site. As described on the geologic map, ground moraine deposits are characterized as ablation till over thick sections of lodgment till. Till is typically comprised of unsorted cobbles, pebbly sand, and sandy silt, with a locally compact layer (referred to as “hardpan”) at depth.

The referenced WSS resource identifies Alderwood gravelly sandy loam, as the primary units underlying the approximate eastern half of the subject site and Everett soils along the western half. The Alderwood series formed in glacial till plains. Based on the field observations, the native depositional environment is characterized as relatively medium dense to dense glacial till, which is consistent with local geologic mapping.

Based on the soil conditions encountered during the fieldwork, it is our opinion the native soil is consistent with glacial till, as locally mapped.

Groundwater

Minor groundwater seepage was observed at test pits TP-3 and TP-5 during the December 2024 subsurface exploration. It should be noted that groundwater seepage rates and elevations fluctuate depending on many factors, including precipitation duration and intensity, the time of year, and soil conditions. Groundwater seepage flow rates are typically higher during the winter, spring, and early summer months. Therefore, perched groundwater seepage should be expected in site excavations, particularly if excavations are made during winter, spring, and early summer months.

Geologically Hazardous Areas Assessment

ESNW reviewed Mukilteo Municipal Code (MMC) 17.52A to determine if geologically critical areas recognized by the city (including erosion, landslide, and seismic hazard areas) exist on or near the subject site. Our review indicates portions of the western area of the site are mapped as high landslide hazard. Documents provided to us for review indicate the natural drainage ravine in the southern portion of the site contains slopes inclined at least 40 percent and are about 30 feet in height.

Slope Reconnaissance

During our December 2024 site visit, we completed a reconnaissance across the site to assess indications of potential instability. The sloped areas on the site are generally vegetated with grass and small trees. No obvious signs of recent erosion or soil movement were observed during our slope reconnaissance. Based on our investigation, the site does not exhibit indications of instability.

Steep Slope Setback Recommendations (MMC 17.52A.050)

The native soil near the steep slope area is composed primarily of firm glacial till that is resistant to deep-seated landslide activity. No shallow pervasive groundwater was observed at the test pit locations. In our opinion, these conditions render the steep slopes acceptable for a setback reduction to 25 feet from the top of the slopes inclined at least 40 percent with no adverse impacts to slope stability. The referenced Site plan delineates the top of steep slope areas and the reduced 25-foot setback. No grading or land disturbance is proposed for the steep slope areas on this site.

Erosion Hazard Areas

Based on preliminary site plans, the development envelope will most likely be positioned in an area of the site where slope gradients are relatively gentle, and the USDA classification of erosion potential is slight to moderate. Highly erosive soil units are unlikely to be disturbed during site development, and therefore it is our opinion that the proposed site development should not be impacted by erosion hazard area regulations.

In any case, typical construction stormwater management methods should be adhered to in accordance with the local stormwater manual and are anticipated to be adequate for mitigating erosion potential during the earthwork and construction phases of the project. At a minimum, silt fencing should be placed along the appropriate site margins, and soil stockpiles should be covered with plastic sheeting when not in use. If construction occurs during periods of wet weather, methods to control surface water runoff will be necessary. Construction stormwater should neither be allowed to collect at the top of slope nor flow over steeply sloping areas. Final drainage plans should be designed such that stormwater is collected and diverted away from slopes exceeding 15 percent to an approved discharge location. Erosion control measures should be actively maintained to ensure proper performance.

Based on typical residential project design and construction practices, improved drainage, and engineered grading practices will be included. In this respect, and based on our geotechnical evaluation of the proposed development activity, in our opinion the project as proposed will not increase the potential for slope instability on the site or immediately surrounding properties. Consistent with local standards, ESNW should be requested to observe and document the site mass grading activities and foundation subgrade preparation during construction to confirm suitable conditions are present and to provide additional recommendations, as deemed necessary.

DISCUSSION AND RECOMMENDATIONS

General

Based on the results of our investigation, the proposed multi-family residential development is feasible from a geotechnical standpoint. The primary geotechnical considerations associated with the proposed development include site preparation and earthwork, utility installation, foundation support, slab-on-grade subgrade support, drainage, and the suitability of using on-site soils as structural fill.

The site will be graded to create a new roadway and building pads. Areas of existing fill should be evaluated by ESNW prior to placement or foundation work to confirm it is suitable for either use as structural fill or direct foundation support. In any case, existing fill should be free of deleterious debris or organics. If earthwork activities occur during wet weather, additional drainage measures, cement treatment of native soil, and the use of select fill material will likely be necessary. Based on the conditions encountered at the test pit locations, in our opinion, the proposed structures can be supported on conventional spread and continuous foundations bearing on undisturbed, competent native soil, compacted native soil, or new structural fill. In general, competent native soil, suitable for support of the new foundations, will likely be encountered beginning at depths of about two to four feet below the existing ground surface where fill was not encountered and within a couple feet of the transition from fill to native soils. ESNW should review the final plans to confirm the recommendations in this report remain applicable.

In our opinion, infiltration should not be considered a viable means of stormwater management for this project from a geotechnical standpoint. Further discussion and rationale regarding infiltration infeasibility is provided herein.

Site Preparation and Earthwork

Initial site preparation activities will consist of installing temporary erosion control measures, establishing grading limits, and performing clearing and site stripping. Subsequent earthwork activities will involve site grading and related infrastructure improvements. If earthwork activities occur during wet weather, additional drainage measures, cement treatment of native soil (where allowed by the presiding jurisdiction), and/or the use of select fill material will likely be necessary during construction.

Temporary Erosion Control

The following temporary erosion and sediment control (TESC) Best Management Practices (BMPs) should be considered:

- Temporary construction entrances and drive lanes, consisting of at least six inches of quarry spalls, should be considered to both minimize off-site soil tracking and provide stable surfaces at site entrances. Placing geotextile fabric underneath the quarry spalls will provide greater stability, if needed.

- Silt fencing should be placed around the appropriate portions of the site perimeter.

- When not in use, soil stockpiles should be covered or otherwise protected to reduce the potential for soil erosion, especially during periods of wet weather.

- Temporary measures for controlling surface water runoff, such as interceptor trenches, sumps, or interceptor swales, should be installed prior to beginning earthwork activities.

- Dry soils disturbed during construction should be wetted to minimize dust and airborne soil erosion.

Additional TESC BMPs, as specified by the project civil engineer and indicated on the plans and/or as required by the permitting jurisdiction, should be incorporated into construction activities. Temporary erosion control measures may be modified during construction as site conditions require and as recommended by the site erosion control lead (if applicable).

Excavations and Slopes

Based on the soil conditions observed at the test pit locations, excavation activities are likely to expose areas of medium dense existing uncontrolled fill and native soils within the upper two to six feet of existing grades (OSHA/WISHA Type C). Thereafter, native soils are expected to become dense to very dense (OSHA/WISHA Type A). The following Federal Occupation Safety and Health Administration and Washington Industrial Safety and Health Act soil classifications and maximum allowable temporary slope inclinations may be used:

- Areas exposing groundwater seepage 1.5H:1V (Type C)

- Loose soil 1.5H:1V (Type C)

- Medium dense soil 1H:1V (Type B)

- Dense to very dense native soil (hardpan) 0.75H:1V (Type A)

Steeper temporary slope inclinations within undisturbed, very dense native soil may be feasible based on the soil and groundwater conditions exposed within the excavations. ESNW can evaluate the feasibility of utilizing steeper temporary slopes at the time of construction.

An ESNW representative should be requested to observe temporary and permanent slopes to confirm the slope inclinations are suitable for the exposed soil conditions and to provide additional excavation and slope recommendations, as necessary. If the recommended temporary slope inclinations cannot be achieved, temporary shoring may be necessary to support excavations. Permanent slopes should be planted with vegetation to enhance stability and to minimize erosion and should maintain a gradient of 2H:1V or flatter.

The site contains slopes; therefore, fill placed on slopes greater than about 15 percent inclination as part of the project grading plans should include a keyway at the base, excavated into firm native soil and bench system to ensure that fill is placed on a level surface. ESNW should review the grading plans to confirm appropriate methods are utilized for fill placed on a sloping condition.

Structural Fill

Structural fill is defined as compacted soil placed in foundation, slab-on-grade, roadway, permanent slope, retaining wall, and utility trench backfill areas. Structural fill placed and compacted during site grading activities should meet the following specifications and guidelines:

- Moisture Content — At or slightly above optimum
- Relative compaction (minimum) — 95 percent (Modified Proctor)
- Loose lift thickness (maximum) — 12 inches

The existing soil may not be suitable for use as structural fill unless the soil is at (or slightly above) the optimum moisture content at the time of placement and compaction. Soil shall not be placed dry of the optimum moisture content and should be evaluated by ESNW during construction.

Concerning underground utility installations and backfill, local jurisdictions may dictate the soil type(s) and compaction requirements. Unsuitable material or debris must be removed from structural areas if encountered. It may be feasible to utilize existing fill as structural fill provided the existing fill is free of deleterious material and can achieve adequate compaction at the time of construction. ESNW should be contacted to evaluate existing fill soils before use as structural fill material.

In-situ and Imported Soil

Based on the conditions observed during the subsurface exploration, the in-situ soils are highly moisture sensitive and will degrade rapidly when exposed to precipitation and heavy traffic. Compaction of the soils to the levels necessary for use as structural fill may be difficult to impossible during wet weather conditions. Soils encountered during site excavations that are excessively over the optimum moisture content will likely require aeration or treatment prior to placement and compaction. Conversely, soils that are substantially below the optimum moisture content will require moisture conditioning through the addition of water prior to use as structural fill. An ESNW representative should be requested to determine the suitability of in-situ soils for use as structural fill at the time of construction.

Imported soil intended for use as structural fill should be evaluated by ESNW during construction. The imported soil must be workable to the optimum moisture content, as determined by the Modified Proctor Method (ASTM D1557), at the time of placement and compaction. During wet weather conditions, imported soil intended for use as structural fill should consist of a well-graded, granular soil with a fines content of 5 percent or less (where the fines content is defined as the percent passing the Number 200 sieve, based on the minus three-quarter-inch fraction).

Wet-Season Grading

Earthwork activities that occur during the wet season will require additional measures to protect structural subgrades and soil intended for use as structural fill. Site-specific recommendations can be provided at the time of construction and may include leaving cut areas several inches above design subgrade elevations, covering working surfaces with crushed rock, protecting structural fill soil from adverse moisture conditions, and additional TESC recommendations. ESNW can assist in obtaining a wet season grading permit if required by the governing jurisdiction.

Foundations

Based on the results of our study, the proposed structures can be supported on conventional spread and continuous footings bearing on undisturbed, competent native soil, compacted existing fill or native soil, or new structural fill placed directly on a competent native soil subgrade. In general, competent (medium dense or better) native soil suitable for direct foundation support is anticipated beginning at depths between about two to five feet below existing grades across most of the project site. The uncontrolled fill observed at test pits TP-2, 4 and 5 did not contain significant organics or debris, but was generally loose to medium dense and may require additional compaction prior to support of new foundations. Existing fill should be compacted to a minimum depth of two feet below all foundation elements.

Where loose or unsuitable soil conditions are encountered at the design foundation subgrade elevations, compaction of the soils to the specifications of structural fill, or overexcavation and replacement with suitable structural fill, will likely be necessary. ESNW should be requested to evaluate the design subgrade conditions to confirm suitable conditions are exposed and to provide additional preparation recommendations, where necessary.

Provided the structures will be supported as described above, the following parameters may be used for design of the new foundations:

- Allowable soil bearing capacity — 2,500 psf
- Passive earth pressure — 300 pcf
- Coefficient of friction — 0.40

A one-third increase in the allowable soil bearing capacity may be assumed for short-term wind and seismic loading conditions. The passive earth pressure and coefficient of friction values include a safety factor of 1.5. With structural loading as expected, total settlement in the range of one inch is anticipated, with differential settlement of about one-half inch. Most of the anticipated settlement should occur during construction as dead loads are applied.

Retaining Walls

Retaining walls must be designed to resist earth pressures and applicable surcharge loads. The following parameters may be used for retaining wall design:

- Active earth pressure (unrestrained condition) — 35 pcf
- At-rest earth pressure (restrained condition) — 55 pcf
- Traffic surcharge (passenger vehicles) — 70 psf (rectangular distribution)
- Passive earth pressure — 300 pcf
- Coefficient of friction — 0.40
- Seismic surcharge — 8H psf*

* *Where H equals the retained height (in feet).*

The passive earth pressure and coefficient of friction values include a safety factor of 1.5. Additional surcharge loading from adjacent foundations, sloped backfill, or other loads should be included in the retaining wall design.

Retaining walls should be backfilled with free-draining material that extends along the height of the wall and a distance of at least 18 inches behind the wall. The upper 12 inches of the wall backfill may consist of a less permeable soil, if desired.

Drainage should be provided behind retaining walls such that hydrostatic pressures do not develop. If drainage is not provided, hydrostatic pressures should be included in the wall design. A perforated drainpipe should be placed along the base of the wall and connected to an approved discharge location. A typical retaining wall drainage detail is provided on Plate 3.

<u>Seismic Design</u>

The 2021 International Building Code (2021 IBC) recognizes ASCE 7-16 (formally known as the Minimum Design Loads and Associated Criteria for Buildings and Other Structures manual) for seismic design, specifically with respect to earthquake loads. Based on the soil conditions encountered at the test pit locations, the parameters and values provided below are recommended for seismic design per the 2021 IBC.

Parameter	**Value**
Site Class	C*
Mapped short period spectral response acceleration, S_S (g)	1.401
Mapped 1-second period spectral response acceleration, S_1 (g)	0. 5
Short period site coefficient, F_a	1.2
Long period site coefficient, F_v	1.5
Adjusted short period spectral response acceleration, S_{MS} (g)	1.681
Adjusted 1-second period spectral response acceleration, S_{M1} (g)	0.75
Design short period spectral response acceleration, S_{DS} (g)	1.121
Design 1-second period spectral response acceleration, S_{D1} (g)	0.5

* *Assumes very dense soil conditions, encountered to a maximum depth of 10.5 feet bgs at the majority of test pit locations during the December 2024 field exploration, remain very dense to at least 100 feet bgs. Based on our experience with the project geologic setting (glacial till deposits) across the Puget Sound region, soil conditions are likely consistent with this assumption.*

Liquefaction

Liquefaction is a phenomenon that can occur within a soil profile as a result of an intense ground shaking or loading condition. Most commonly, liquefaction is caused by ground shaking during an earthquake. Fine sand or silt soil profiles that are loose, cohesionless, and saturated are most susceptible to liquefaction. During the ground shaking, the soil contracts, and porewater pressure increases. The increased porewater pressure occurs quickly and without sufficient time to dissipate, resulting in water flowing upward to the ground surface and a liquefied soil condition. Soil in a liquefied condition possesses very little shear strength in comparison to the drained condition, which can result in a loss of foundation support for structures.

In our opinion, site susceptibility to liquefaction may be considered very low to negligible. The composition and relative density of the native soil are the primary bases for this opinion.

Slab-on-Grade Floors

Slab-on-grade floors for the proposed structures should be supported on well-compacted, firm, and unyielding subgrades. Where feasible, the native soil exposed at the slab-on-grade subgrade levels can likely be compacted in situ to the specifications of structural fill if groundwater seepage does not interfere with compaction activities. Unstable or yielding subgrade areas should be recompacted or overexcavated and replaced with suitable structural fill prior to slab construction.

A capillary break consisting of a minimum of four inches of free-draining crushed rock or gravel should be placed below the slab. The free-draining material should have a fines content of 5 percent or less defined as the percent passing the number 200 sieve, based on the minus three-quarter-inch fraction. In areas where slab moisture is undesirable, installation of a vapor barrier below the slab should be considered. If used, the vapor barrier should consist of a material specifically designed to function as a vapor barrier and should be installed in accordance with the manufacturer's specifications.

Utility Support and Trench Backfill

In our opinion, the native soil will generally be suitable for the support of utilities. Remedial measures may be necessary for some areas to provide support for utilities, such as overexcavation and replacement with structural fill and/or placement of geotextile fabric. Groundwater should be anticipated within utility excavations, and caving of trench walls may occur where groundwater is encountered. Depending on the time of year and conditions encountered, dewatering or temporary trench shoring may be necessary during utility excavation and installation.

The on-site soil may not be considered suitable for use as structural backfill throughout the utility trench excavations unless the soil is at (or slightly above) the optimum moisture content at the time of placement and compaction. Moisture conditioning of the soil may be necessary at some locations before use as structural fill. If utility installation occurs during the wet season, site soils will likely be saturated and therefore difficult to use as utility backfill without treatment or aeration. Each section of the utility lines must be adequately supported by the bedding material. Utility trench backfill should be placed and compacted to the structural fill specifications previously detailed in this report or to the applicable specifications of the presiding jurisdiction.

Drainage

The presence of isolated groundwater seepage should be expected in excavations. Where zones of groundwater seepage are encountered, temporary measures to control groundwater seepage may be needed. Temporary measures to control groundwater seepage and surface water runoff during construction will likely involve passive elements such as interceptor trenches and sumps, as necessary. Surface water should not be directed to the top or toe of slopes, modular block walls, or rockeries; wall and rockery drainage should not be used to temporarily control surface water during construction.

Surface grades must be designed to direct water away from buildings, slopes, and retaining walls. The grade adjacent to buildings, slopes, and retaining walls should be sloped away at a gradient of at least 2 percent for a horizontal distance of at least 10 feet or as setbacks allow. In our opinion, perimeter footing drains should be installed at or below the invert of the building footings. A typical footing drain detail is provided on Plate 4 of this report. If footing drains are not installed, footings should be backfilled with a relatively impermeable soil. If footing drains are omitted, there is a higher potential for moisture issues for slabs-on-grade or crawl space areas.

Infiltration Feasibility

The dense, weakly cemented, and unweathered glacial till soils (hardpan) observed at depths beginning at about two to six feet bgs generally exhibit very poor soil infiltration characteristics, which is exhibited by the zones of mottled soil texture. In our opinion, the unweathered glacial till soils should be considered impermeable for stormwater design purposes. The use of full infiltration systems for stormwater control is not recommended for this site.

Preliminary Pavement Sections

The performance of site pavements is largely related to the condition of the underlying subgrade. To ensure adequate pavement performance, the subgrade should exhibit a firm and unyielding condition when subjected to proof rolling with a loaded dump truck. Structural fill in pavement areas should be compacted to the specifications previously detailed in this report. Soft, wet, or otherwise unsuitable subgrade areas may still exist after base grading activities. Areas containing unsuitable or yielding subgrade conditions will require remedial measures, such as overexcavation and/or placement of thicker crushed rock or structural fill sections, prior to pavement.

Where applicable, we anticipate new pavement sections will be subjected primarily to passenger vehicle traffic. For lightly loaded pavement areas subjected primarily to passenger vehicles, the following preliminary pavement sections may be considered:

- Two inches of hot-mix asphalt (HMA) placed over four inches of crushed rock base (CRB), or;

- Two inches of HMA placed over three inches of asphalt-treated base (ATB).

Heavier traffic areas generally require thicker pavement sections depending on site usage, pavement life expectancy, and site traffic. For preliminary design purposes, the following pavement sections for occasional truck traffic and access roadways areas may be considered:

- Three inches of HMA placed over six inches of CRB, or;

- Three inches of HMA placed over four-and-one-half inches of ATB.

A representative of ESNW should be requested to observe subgrade conditions prior to placement of CRB or ATB. As necessary, supplemental recommendations for achieving subgrade stability and drainage can be provided. If on-site paved areas will be constructed with an inverted crown, additional drainage measures should be included in the road design to assist in maintaining subgrade and pavement stability. ESNW can provide further consultation and design considerations regarding roadway draining if inverted crowns will be included in the project design, upon request.

Final pavement design recommendations, including recommendations for heavy traffic areas, access roads, and frontage improvement areas, can be provided once final traffic loading has been determined, upon request. Road standards utilized by the governing jurisdiction may supersede the recommendations provided in this report. The HMA, ATB, and CRB materials should conform to WSDOT specifications. All soil base material should be compacted to a relative compaction of 95 percent, based on the laboratory maximum dry density as determined by ASTM D1557.

LIMITATIONS

This study has been prepared for the exclusive use of Westcott Holdings & Investments, Inc., and its representatives. The recommendations and conclusions provided in this study are professional opinions consistent with the level of care and skill that is typical of other members in the profession currently practicing under similar conditions in this area. A warranty is neither expressed nor implied. Variations in the soil and groundwater conditions observed at the exploration locations may exist and may not become evident until construction. ESNW should reevaluate the conclusions provided in this study if variations are encountered.

Additional Services

ESNW should have an opportunity to review final project plans with respect to the geotechnical recommendations provided in this report. ESNW should also be retained to provide testing and consultation services as needed during future design and construction phases of the project.

REFERENCES

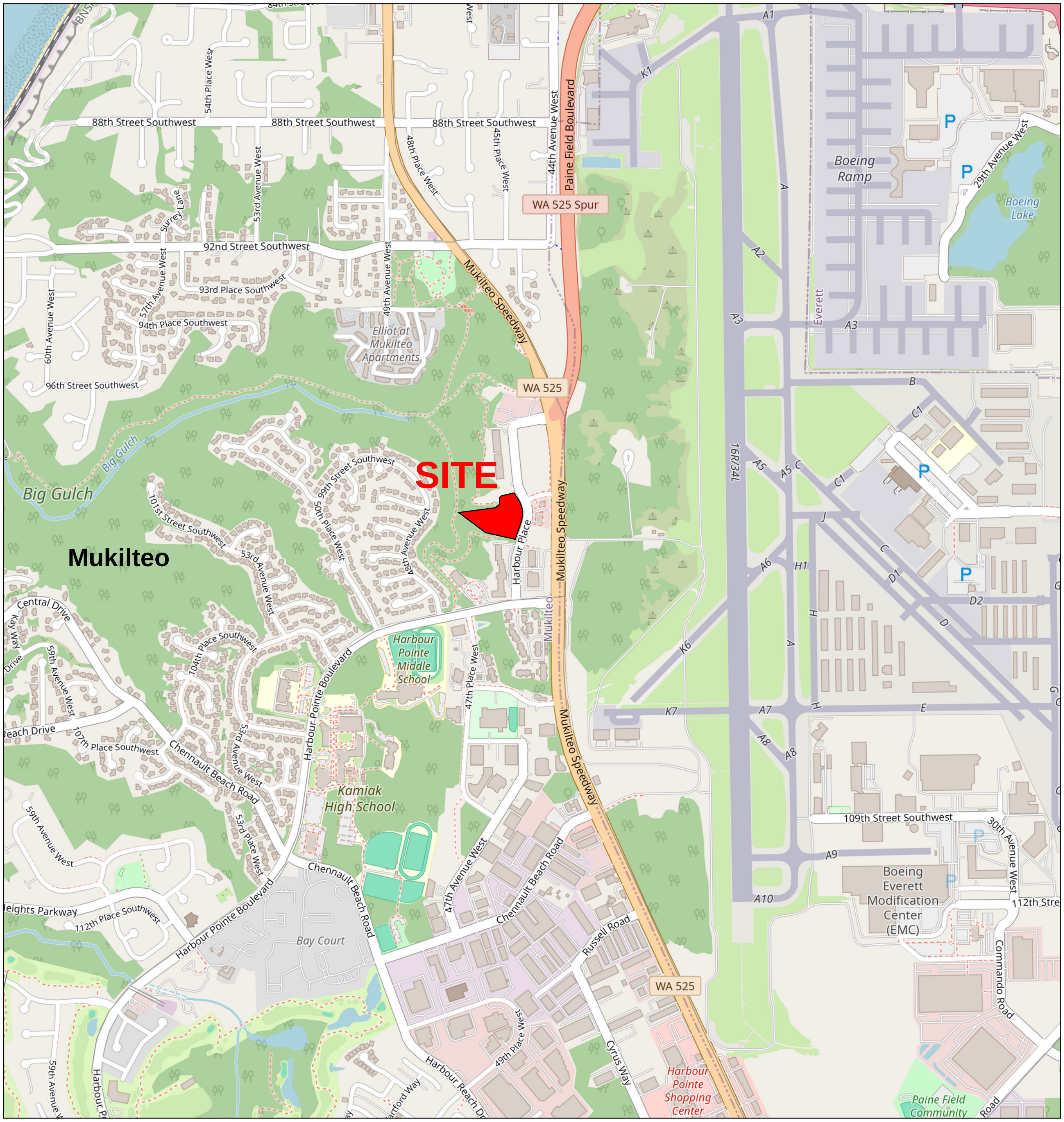
The following documents and resources were reviewed as part of our report preparation:

- Distribution and Description of Geologic Units in the Mukilteo Quadrangle, Washington, prepared by James P. Minard, dated 1982

- Mukilteo Municipal Code (MMC) Chapter 17.52A – Geologic Sensitive Areas Regulations

- Site Plan – Concept A, prepared by CPH Consultants, dated March 3, 2025

- Web Soil Survey (WSS) resource, maintained by the Natural Resources Conservation Service under the United States Department of Agriculture



Reference:
Snohomish County, Washington
OpenStreetMap.org

NORTH

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

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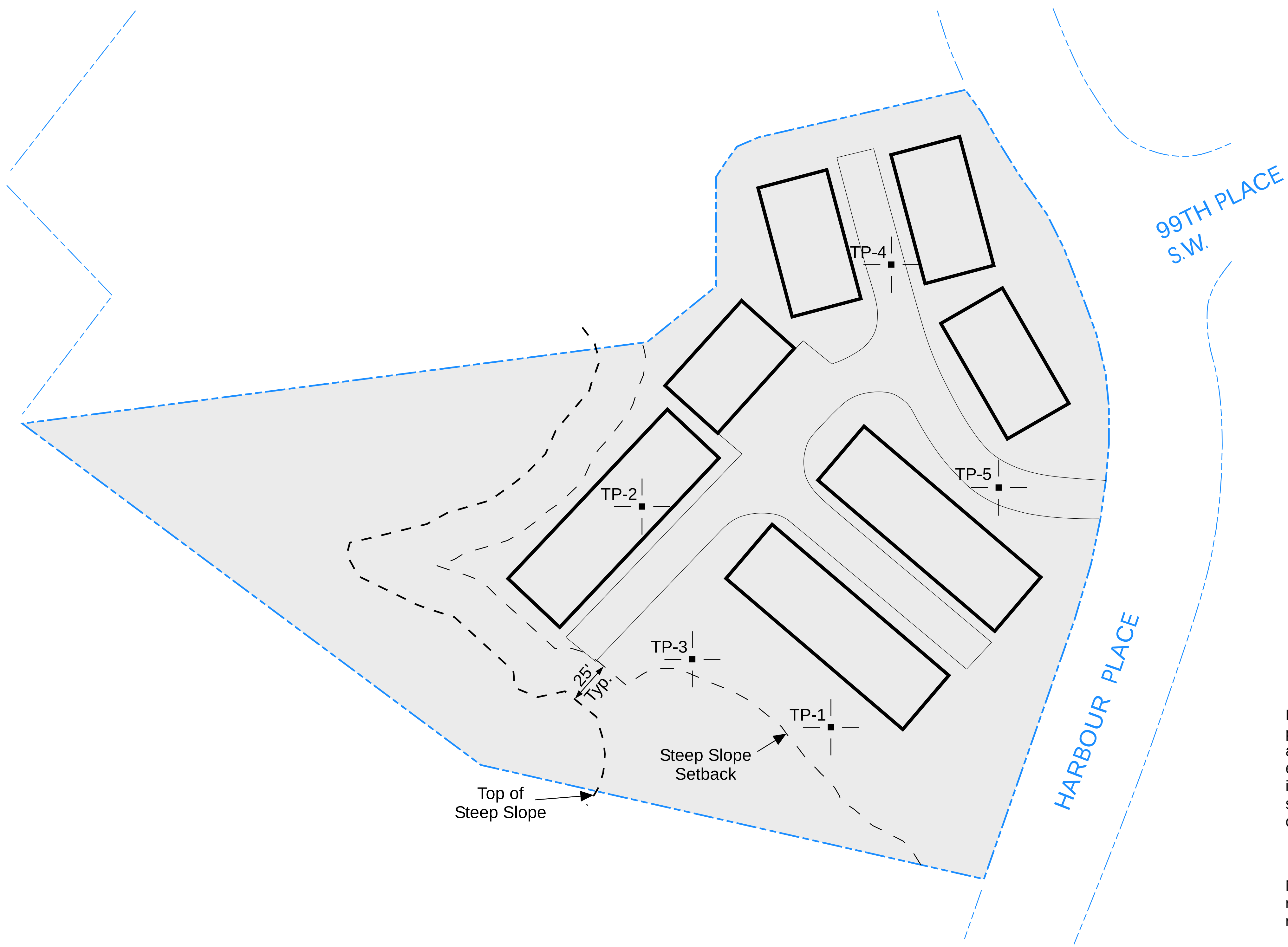
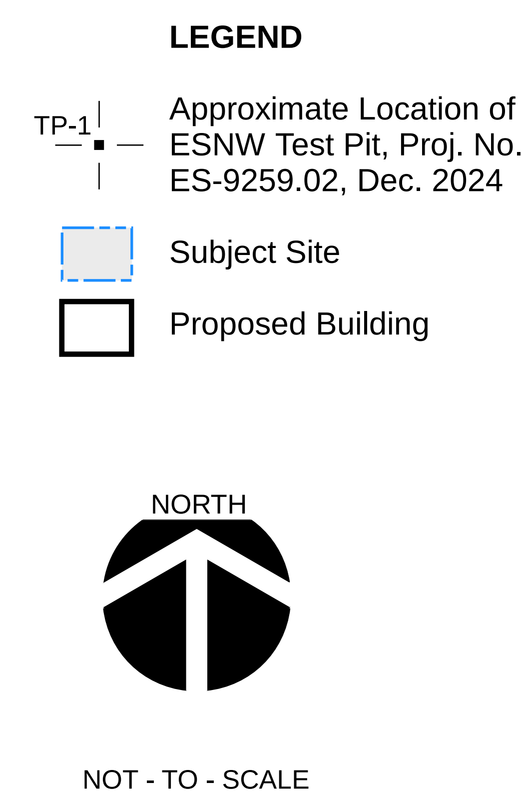
Vicinity Map
Montgomorie
Mukilteo, Washington

Drawn MRS	Date 06/12/2025	Proj. No. 9259.03
Checked SKH	Date June 2025	Plate 1





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

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

Subsurface Exploration Plan
Montgomorie
Mukilteo, Washington

Geotechnical Engineering
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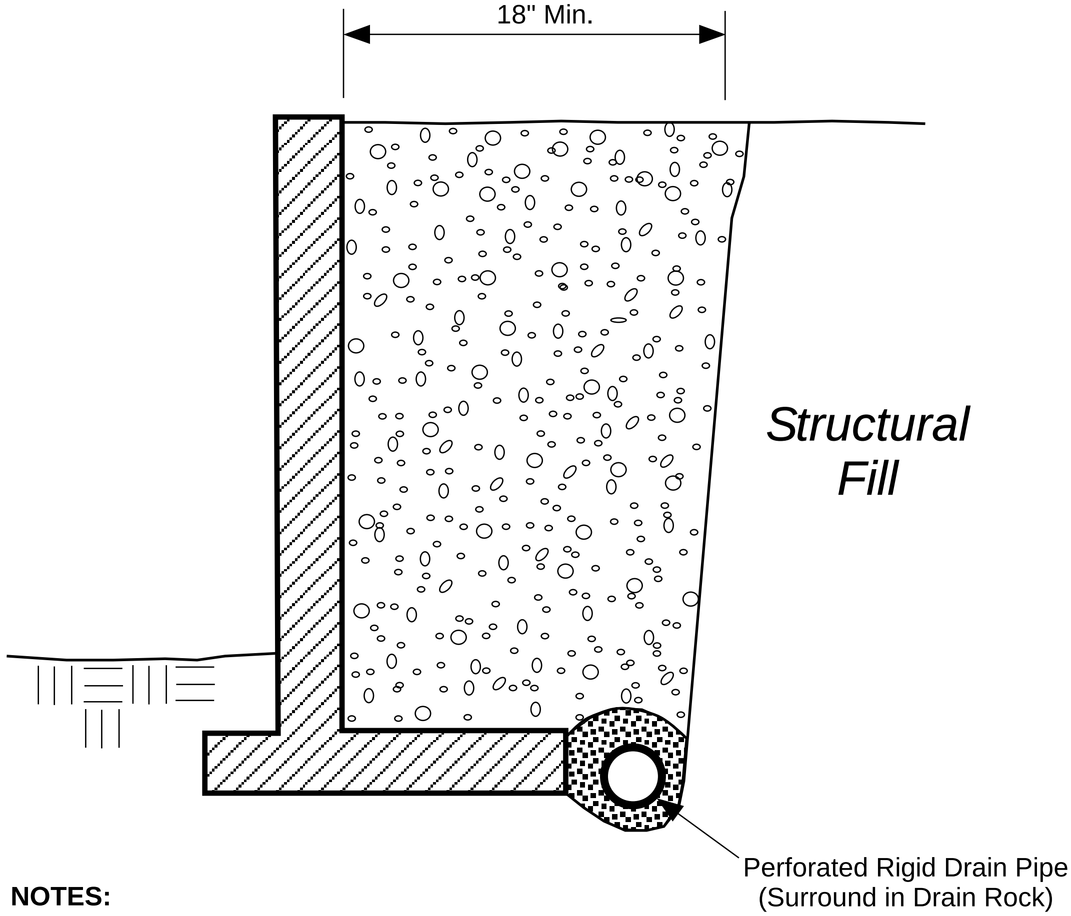
Drawn	MRS
Checked	SKH
Date	06/12/2025
Proj. No.	9259.03
Plate	2



NOTES:

- Free-draining Backfill should consist of soil having less than 5 percent fines. Percent passing No. 4 sieve should be 25 to 75 percent.
- Sheet Drain may be feasible in lieu of Free-draining Backfill, per ESNW recommendations.
- Drain Pipe should consist of perforated, rigid PVC Pipe surrounded with 1-inch Drain Rock.

SCHEMATIC ONLY - NOT TO SCALE
NOT A CONSTRUCTION DRAWING

LEGEND:

Free-draining Structural Backfill

1-inch Drain Rock

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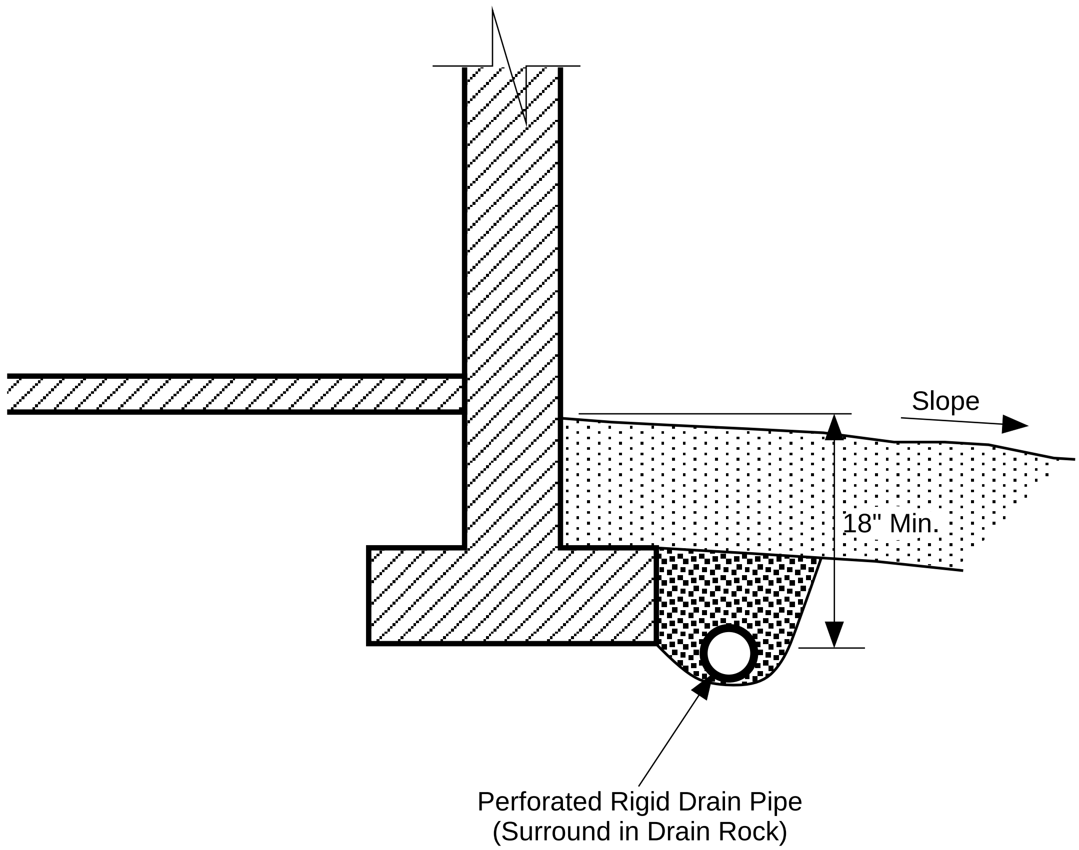
Retaining Wall Drainage Detail
Montgomorie
Mukilteo, Washington

Drawn MRS	Date 06/12/2025	Proj. No. 9259.03
Checked SSR	Date June 2025	Plate 3



NOTES:

- Do NOT tie roof downspouts to Footing Drain.
- Surface Seal to consist of 12" of less permeable, suitable soil. Slope away from building.

SCHEMATIC ONLY - NOT TO SCALE
NOT A CONSTRUCTION DRAWING

LEGEND:

Surface Seal: native soil or other low-permeability material.

1-inch Drain Rock

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Footing Drain Detail
Montgomorie
Mukilteo, Washington

Drawn MRS	Date 06/12/2025	Proj. No. 9259.03
Checked SSR	Date June 2025	Plate 4

Appendix A

Subsurface Exploration Logs

ES-9259.03

Subsurface conditions on site were explored on December 18, 2024, by excavating five test pits using a mini-trackhoe and operator retained by ESNW. The approximate locations of the test pits are illustrated on Plate 2 of this study. The test pit logs are provided in this Appendix. The test pits were advanced to a maximum depth of about 10.5 feet bgs.

The final logs represent the interpretations of the field logs and the results of laboratory analyses. The stratification lines on the logs represent the approximate boundaries between soil types. In actuality, the transitions may be more gradual.

Major Divisions		Fines	Group Symbol	Description
Coarse-Grained Soils - More Than 50% Retained on No. 200 Sieve	Gravels - More Than 50% of Coarse Fraction Retained on No. 4 Sieve	< 5% Fines	GW	Well-graded gravel with or without sand, little to no fines
			GP	Poorly graded gravel with or without sand, little to no fines
		> 12% Fines	GM	Silty gravel with or without sand
			GC	Clayey gravel with or without sand
	Sands - 50% or More of Coarse Fraction Passes No. 4 Sieve	< 5% Fines	SW	Well-graded sand with or without gravel, little to no fines
			SP	Poorly graded sand with or without gravel, little to no fines
		> 12% Fines	SM	Silty sand with or without gravel
			SC	Clayey sand with or without gravel
Fine-Grained Soils - 50% or More Passes No. 200 Sieve	Silts and Clays Liquid Limit Less Than 50		ML	Silt with or without sand or gravel; sandy or gravelly silt
			CL	Clay of low to medium plasticity; lean clay with or without sand or gravel; sandy or gravelly lean clay
			OL	Organic clay or silt of low plasticity
	Silts and Clays Liquid Limit 50 or More		MH	Elastic silt with or without sand or gravel; sandy or gravelly elastic silt
			CH	Clay of high plasticity; fat clay with or without sand or gravel; sandy or gravelly fat clay
			OH	Organic clay or silt of medium to high plasticity
Highly Organic Soils			PT	Peat, muck, and other highly organic soils
Fill			FILL	Made Ground

Moisture Content

Dry - Absence of moisture, dusty, dry to the touch

Damp - Perceptible moisture, likely below optimum MC

Moist - Damp but no visible water, likely at/near optimum MC

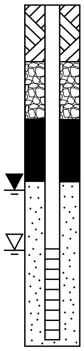
Wet - Water visible but not free draining, likely above optimum MC

Saturated/Water Bearing - Visible free water, typically below groundwater table

Symbols

ATD = At time of drilling

Static water level (date)



Terms Describing Relative Density and Consistency

Coarse-Grained Soils:

Density	SPT blows/foot
Very Loose	< 4
Loose	4 to 9
Medium Dense	10 to 29
Dense	30 to 49
Very Dense	≥ 50

Fine-Grained Soils:

Consistency	SPT blows/foot
Very Soft	< 2
Soft	2 to 3
Medium Stiff	4 to 7
Stiff	8 to 14
Very Stiff	15 to 29
Hard	≥ 30

Test Symbols & Units

Fines = Fines Content (%)

MC = Moisture Content (%)

DD = Dry Density (pcf)

Str = Shear Strength (tsf)

PID = Photoionization Detector (ppm)

OC = Organic Content (%)

CEC = Cation Exchange Capacity (meq/100 g)

LL = Liquid Limit (%)

PL = Plastic Limit (%)

PI = Plasticity Index (%)

Component Definitions

Descriptive Term	Size Range and Sieve Number
Boulders	Larger than 12"
Cobbles	3" to 12"
Gravel	3" to No. 4 (4.75 mm)
Coarse Gravel	3" to 3/4"
Fine Gravel	3/4" to No. 4 (4.75 mm)
Sand	No. 4 (4.75 mm) to No. 200 (0.075 mm)
Coarse Sand	No. 4 (4.75 mm) to No. 10 (2.00 mm)
Medium Sand	No. 10 (2.00 mm) to No. 40 (0.425 mm)
Fine Sand	No. 40 (0.425 mm) to No. 200 (0.075 mm)
Silt and Clay	Smaller than No. 200 (0.075 mm)

Modifier Definitions

Percentage by Weight (Approx.)	Modifier
< 5	Trace (sand, silt, clay, gravel)
5 to 14	Slightly (sandy, silty, clayey, gravelly)
15 to 29	Sandy, silty, clayey, gravelly
≥ 30	Very (sandy, silty, clayey, gravelly)

Classifications of soils in this geotechnical report and as shown on the exploration logs are based on visual field and/or laboratory observations, which include density/consistency, moisture condition, grain size, and plasticity estimates, and should not be construed to imply field or laboratory testing unless presented herein. Visual-manual and/or laboratory classification methods of ASTM D2487 and D2488 were used as an identification guide for the Unified Soil Classification System.

EXPLORATION LOG KEY

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Geotechnical Engineering
Environmental Services
Earthwork Observation & Testing
CESCL & Stormwater Services

TEST PIT NUMBER TP-1

PROJECT NUMBER ES-9259.02
PROJECT NAME Harbour Pointe Townhomes
DATE STARTED 12/18/24 **COMPLETED** 12/18/24
GROUND ELEVATION
EXCAVATION CONTRACTOR NW Excavating
LATITUDE 47.90724 **LONGITUDE** -122.29514
LOGGED BY SKH **CHECKED BY** SSR
GROUND WATER LEVEL:
NOTES
AT TIME OF EXCAVATION
SURFACE CONDITIONS Heavy brush
AFTER EXCAVATION

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			TPSL	0.5	Dark brown TOPSOIL, roots to 1'
			SM		Brown silty SAND, medium dense, moist
	GB	MC = 11.1			-probed 7"
2.5					
					-becomes gray
	GB	MC = 11.2 Fines = 25.1			[USDA Classification: gravelly sandy LOAM]
5.0					-becomes dense
					-becomes weakly cemented
7.5					
10.0					
	GB	MC = 10.3		10.5	

Test pit terminated at 10.5 feet below existing grade. No groundwater encountered during excavation. No caving observed.

LIMITATIONS: Ground elevation (if listed) is approximate; the test location was not surveyed. Coordinates are approximate and based on the WGS84 datum. Do not rely on this test log as a standalone document. Refer to the text of the geotechnical report for a complete understanding of subsurface conditions.

EARTH SOLUTIONS NW

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Geotechnical Engineering
Environmental Services
Earthwork Observation & Testing
CESCL & Stormwater Services

TEST PIT NUMBER TP-2

PROJECT NUMBER ES-9259.02

PROJECT NAME Harbour Pointe Townhomes

DATE STARTED 12/18/24 **COMPLETED** 12/18/24

GROUND ELEVATION

EXCAVATION CONTRACTOR NW Excavating

LATITUDE 47.90749 **LONGITUDE** -122.29550

LOGGED BY SKH **CHECKED BY** SSR

GROUND WATER LEVEL:

NOTES

AT TIME OF EXCAVATION

SURFACE CONDITIONS Brush

AFTER EXCAVATION

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			TPSL	0.5	Dark brown TOPSOIL, roots to 6" (Fill)
	GB	MC = 12.4 Fines = 29.2	SM	5.5	Brown silty SAND, loose to medium dense, wet (Fill) -probed 9" [USDA Classification: gravelly sandy LOAM] -becomes gray
2.5					
5.0					
			TPSL	6.0	Relic TOPSOIL
	GB	MC = 8.1	SM		Brown silty SAND with gravel, medium dense, damp
7.5					-becomes gray, dense
	GB	MC = 11.9		9.5	

Test pit terminated at 9.5 feet below existing grade. No groundwater encountered during excavation. No caving observed.

LIMITATIONS: Ground elevation (if listed) is approximate; the test location was not surveyed. Coordinates are approximate and based on the WGS84 datum. Do not rely on this test log as a standalone document. Refer to the text of the geotechnical report for a complete understanding of subsurface conditions.

EARTH SOLUTIONS NW
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Geotechnical Engineering
Environmental Services
Earthwork Observation & Testing
CESCL & Stormwater Services

TEST PIT NUMBER TP-3

PROJECT NUMBER ES-9259.02
PROJECT NAME Harbour Pointe Townhomes
DATE STARTED 12/18/24 **COMPLETED** 12/18/24
GROUND ELEVATION
EXCAVATION CONTRACTOR NW Excavating
LATITUDE 47.90730 **LONGITUDE** -122.29542
LOGGED BY SKH **CHECKED BY** SSR
GROUND WATER LEVEL:
NOTES
AT TIME OF EXCAVATION
SURFACE CONDITIONS Brush
AFTER EXCAVATION

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			TPSL	0.5	Dark brown TOPSOIL, roots to 6"
			SP-SM		Brown poorly graded SAND with silt, medium dense, moist
2.5	GB	MC = 22.2			-probed 6"
				4.0	-slight perched groundwater seepage -becomes gray, dense
5.0	GB	MC = 14.5	SM		Gray silty SAND with gravel, dense, moist
7.5					
10.0	GB	MC = 13.3 Fines = 31.4		10.0	[USDA Classification: slightly gravelly sandy LOAM]

Test pit terminated at 10.0 feet below existing grade. Groundwater seepage encountered at 3.5 feet during excavation. No caving observed.

LIMITATIONS: Ground elevation (if listed) is approximate; the test location was not surveyed. Coordinates are approximate and based on the WGS84 datum. Do not rely on this test log as a standalone document. Refer to the text of the geotechnical report for a complete understanding of subsurface conditions.

EARTH SOLUTIONS NW
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Geotechnical Engineering
Environmental Services
Earthwork Observation & Testing
CESCL & Stormwater Services

TEST PIT NUMBER TP-4

PROJECT NUMBER ES-9259.02
PROJECT NAME Harbour Pointe Townhomes
DATE STARTED 12/18/24 **COMPLETED** 12/18/24
GROUND ELEVATION
EXCAVATION CONTRACTOR NW Excavating
LATITUDE 47.90784 **LONGITUDE** -122.29480
LOGGED BY SKH **CHECKED BY** SSR
GROUND WATER LEVEL:
NOTES
AT TIME OF EXCAVATION
SURFACE CONDITIONS Field brush
AFTER EXCAVATION

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0 – 0.5			TPSL	0.5	Dark brown TOPSOIL, roots to 6" (Fill)
0.5 – 4.5	GB	MC = 13.5	SM	4.5	Gray silty SAND, loose to medium dense, wet (Fill) -probed 8"
4.5 – 9.0	GB GB	MC = 11.3 Fines = 31.6 MC = 12.8	SM	9.0	Brown silty SAND with gravel, dense, moist [USDA Classification: slightly gravelly sandy LOAM]

Test pit terminated at 9.0 feet below existing grade. No groundwater encountered during excavation. No caving observed.

LIMITATIONS: Ground elevation (if listed) is approximate; the test location was not surveyed. Coordinates are approximate and based on the WGS84 datum. Do not rely on this test log as a standalone document. Refer to the text of the geotechnical report for a complete understanding of subsurface conditions.

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Geotechnical Engineering
Environmental Services
Earthwork Observation & Testing
CESCL & Stormwater Services

TEST PIT NUMBER TP-5

PROJECT NUMBER ES-9259.02 | **PROJECT NAME** Harbour Pointe Townhomes

DATE STARTED 12/18/24 | **COMPLETED** 12/18/24 | **GROUND ELEVATION**

EXCAVATION CONTRACTOR NW Excavating | **LATITUDE** 47.90747 | **LONGITUDE** -122.29478

LOGGED BY SKH | **CHECKED BY** SSR | **GROUND WATER LEVEL:**

NOTES | ∇ **AT TIME OF EXCAVATION**

SURFACE CONDITIONS Heavy brush | **AFTER EXCAVATION**

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			TPSL	0.5	Dark brown TOPSOIL, roots to 1' (Fill)
2.5			SM	4.0	Brown silty SAND with gravel, loose to medium dense, moist to wet
			TPSL	4.5	Relic TOPSOIL -slight perched groundwater seepage
5.0	GB	MC = 12.1	SM		Gray silty SAND with gravel, dense, damp
					-becomes very dense
7.5					
	GB	MC = 10.2		9.0	

Test pit terminated at 9.0 feet below existing grade due to refusal. Groundwater seepage encountered at 4.5 feet during excavation. No caving observed.

LIMITATIONS: Ground elevation (if listed) is approximate; the test location was not surveyed. Coordinates are approximate and based on the WGS84 datum. Do not rely on this test log as a standalone document. Refer to the text of the geotechnical report for a complete understanding of subsurface conditions.

Appendix B

Laboratory Test Results

ES-9259.03

GRAIN SIZE DISTRIBUTION

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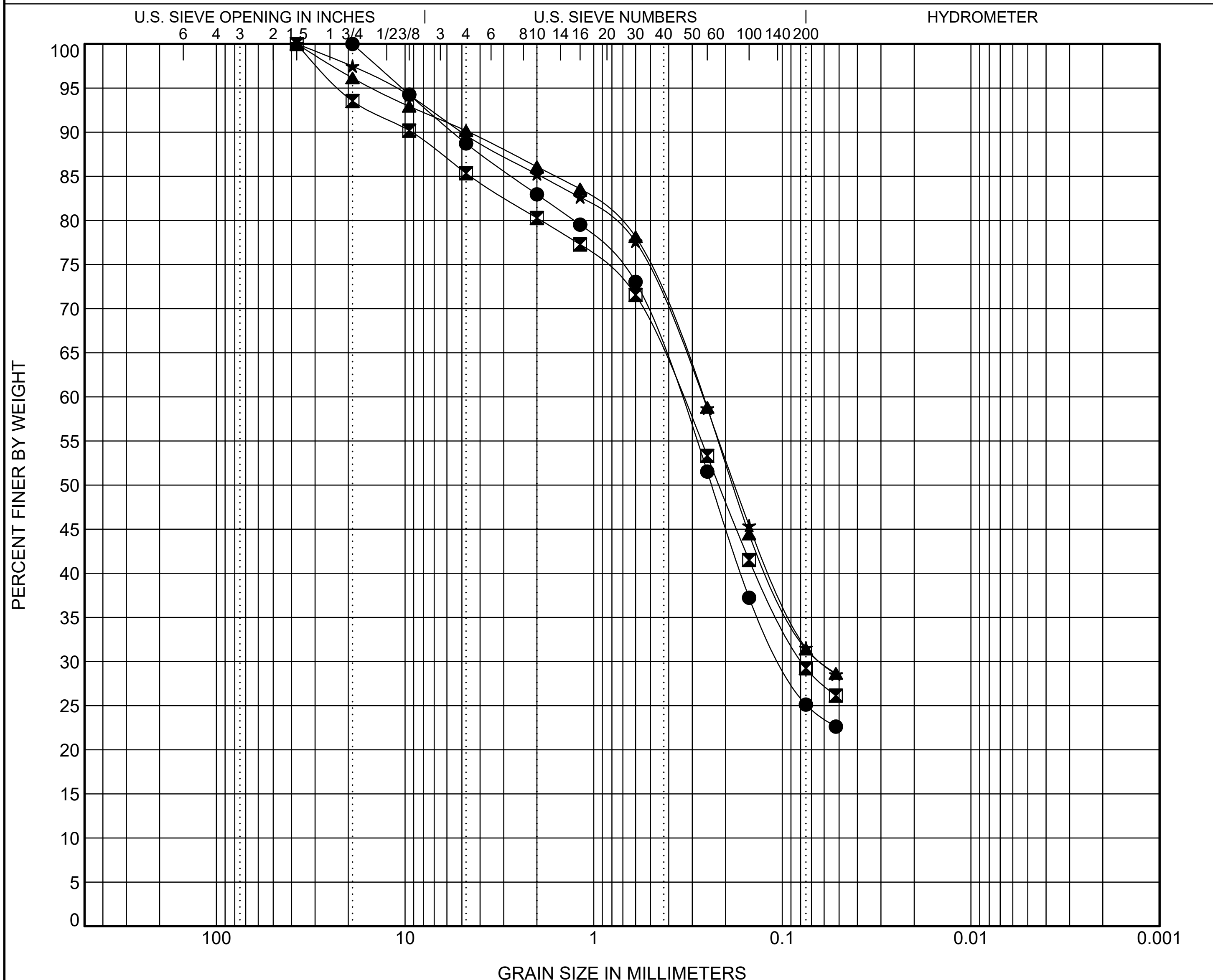
Geotechnical Engineering
Environmental Services
Earthwork Observation & Testing
CESCL & Stormwater Services

PROJECT NUMBER ES-9259.02 **PROJECT NAME** Harbour Pointe Townhomes



Specimen Identification		Classification	Cc	Cu
● TP-01	4.00ft.	**USDA: Gray Gravelly Sandy Loam. USCS: SM.**		
⊠ TP-02	1.50ft.	**USDA: Brown Gravelly Sandy Loam. USCS: SM.**		
▲ TP-03	10.00ft.	**USDA: Gray Slightly Gravelly Sandy Loam. USCS: SM.**		
★ TP-04	5.00ft.	**USDA: Gray Slightly Gravelly Sandy Loam. USCS: SM.**		

Specimen Identification		D100	D60	D30	D10	LL	PL	PI	%Silt	%Clay
● TP-01	4.0ft.	19	0.353	0.099					25.1	
⊠ TP-02	1.5ft.	37.5	0.344	0.078					29.2	
▲ TP-03	10.0ft.	37.5	0.264	0.062					31.4	
★ TP-04	5.0ft.	37.5	0.266	0.062					31.6	