EXHIBIT J

Geotechnical Report

EARTH SOLUTIONS NW

REDMOND ▪ PASCO ▪ SILVERDALE

GEOTECHNICAL ENGINEERING STUDY
PROPOSED RESIDENTIAL PROPERTY
URDAHL HEIGHTS
EAST OF NORTHWEST SWENSON COURT AND ASHBY AVENUE NORTHWEST
POULSBO, WASHINGTON

ES-10443

PREPARED FOR

JKM HOLDINGS, LLC

July 17, 2025
Updated July 22, 2025

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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 not 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 Not 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 not 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 not building-envelope or mold specialists.***

GEOPROFESSIONAL
BUSINESS
ASSOCIATION

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July 17, 2025
Updated July 22, 2025
ES-10443

JKM Holdings, LLC
PO Box 188
Puyallup, Washington 98371

Attention: Geoffrey Sherwin

Greetings:

Earth Solutions NW, LLC (ESNW) is pleased to present this geotechnical engineering study regarding the proposed residential development. Based on the results of our investigation, the project is considered feasible from a geotechnical standpoint. Our field observations indicate that the site area is underlain primarily by ice-contact glacial deposits comprised of silty sand with or without gravel.

Based on the results of our investigation, it is our opinion that the proposed residential homes can be supported on conventional spread and continuous foundation systems constructed directly on competent native soil, recompacted native soil, or structural fill that is placed and compacted directly on competent native soil. Based on our observations, native soil considered suitable for direct foundation support is anticipated to begin at a depth of about one to three feet below the existing ground surface across the site. In general, where loose or unsuitable soil conditions are exposed at foundation subgrade elevations, compaction of the soil to the specifications of structural fill or overexcavation and replacement with suitable structural fill will be necessary.

In our opinion, large-scale infiltration should be considered infeasible from a geotechnical standpoint. Some soil conditions encountered on the site may prove feasible for targeted small or limited infiltration designs; further explorations and in-situ testing are required to adequately evaluate infiltration feasibility in these areas. Discussion and rationale regarding infiltration potential for this project are provided in this report.

This report provides geotechnical analyses and recommendations for the proposed 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

Samuel E. Suruda, L.G.
Senior Staff Geologist

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ES-10443

INTRODUCTION

General

This geotechnical engineering study was prepared for the proposed residential development to be constructed approximately 335 feet east of the intersection between Northwest Swenson Court and Ashby Avenue Northwest in Poulsbo, Washington. As part of our scope of services, the following tasks were completed:

- Subsurface exploration to characterize the soil and groundwater conditions.
- Laboratory testing of representative soil samples collected on site.
- Preliminary infiltration feasibility evaluation based on field observations and laboratory analyses.
- Engineering analyses and recommendations for the proposed construction.
- Preparation of this report.

Project Description

We understand that the project is pursuing the development of 23 residential lots, access roads, utilities, and associated infrastructure improvements. Site grading is anticipated to include cuts and/or fills of up to about 10 feet to establish design grades. Deeper excavations will likely be necessary to construct the stormwater management facility and install site utilities. Stormwater management is currently proposed via a detention pond (pond) located within the southeastern site corner.

At the time of report submission, specific building load values were not available for review; however, we anticipate the proposed residential structures will be two to three stories in height and constructed with relatively lightly loaded wood framing atop conventional foundation systems. Based on our experience with similar developments, we estimate perimeter footing loads of about 2 to 3 kips per linear foot and slab-on-grade loads of about 150 pounds per square foot (psf) will be incorporated into the final design.

If the above design assumptions either change or are incorrect, ESNW should be contacted to review the recommendations provided in this report. ESNW should also be contacted to review final designs to confirm that our geotechnical recommendations have been incorporated.

SITE CONDITIONS

Surface

The subject site is located approximately 335 feet east of the intersection between Northwest Swenson Court and Ashby Avenue Northwest in Poulsbo, Washington. The approximate site location is depicted on Plate 1 (Vicinity Map). The site consists of adjoining Kitsap County APNs 102601-2-017-2000 & 018-2009 and totals about 4.92 acres. The site is currently undeveloped, and vegetation primarily consists of moderate tree growth and associated undergrowth. Site topography generally descends to the east, with about 25 feet of elevation change occurring within the confines of the project area.

Subsurface

An ESNW representative observed, logged, and sampled the excavation of seven test pits within accessible site areas on April 21, 2025. The test pits were completed using a mini-trackhoe and an operator retained by ESNW. The purpose of the test pits was to assess and classify soil and shallow groundwater conditions across the project area. The maximum exploration depth was approximately 12 feet below the existing ground surface (bgs). In addition to the test pit explorations, two hand-auger borings were completed on May 21, 2025, to obtain near-surface samples for cation exchange capacity and organic content testing.

The approximate locations of the test pits are depicted on Plate 2 (Subsurface Exploration Plan). Please refer to the exploration logs provided in Appendix A for a more detailed description of the encountered subsurface conditions. Representative soil samples collected at the exploration locations were analyzed in general accordance with both the Unified Soil Classification System (USCS) and United States Department of Agriculture (USDA) methods and procedures. Laboratory test results are provided in Appendix B. Please note that the locations of the hand auger borings are not included on Plate 2, and associated soil logs were not completed; these explorations were only performed to obtain near-surface soil samples for representative soil quality sampling.

Topsoil and Fill

Topsoil was encountered within the upper approximately 6 to 12 inches of existing grades. The topsoil was characterized by a deep brown hue, minor root intrusions, and trace organic matter. Fill was not encountered at the exploration locations.

Native Soil

Underlying topsoil, native soils were characterized primarily as silty sand with varying amounts of gravel (USCS: SM). Local variations, such as the presence of poorly graded sand with silt (USCS: SP-SM) near the surface and the deeper exposure of poorly graded gravel with sand (USCS: GP), were encountered. However, silty sand should be considered the predominant soil condition that underlies the site. The upper approximately two to three feet of existing grades were characterized as medium dense. Thereafter, native soils were encountered in a dense to very dense condition and continued as such to the terminus of each test pit location. The in-situ moisture content of the native soils was characterized primarily as damp to moist during the April 2025 fieldwork.

Geologic Setting

The referenced geologic map resource indicates that the site area is underlain by ice-contact deposits (Qgic). These soils are characterized as cobbly pebble gravel and subglacial melt-out till. The referenced Web Soil Survey (WSS) identifies Poulsbo gravelly sandy loam of 0 to 15 percent slopes across the site area. The Poulsbo soil series is associated with glacial moraines and terraces and is derived from basal till. Based on the observed conditions, site soils are considered representative of till-like, ice-contact deposits, in accordance with local mapping designations.

Groundwater

Groundwater seepage was not encountered during the April 2025 fieldwork. Groundwater is common within glacially derived deposits and may be exposed within site excavations at depth, particularly during the wet season. Groundwater seepage rates and elevations may fluctuate depending on many factors, including precipitation duration and intensity, the time of year, and soil conditions. In general, groundwater flow rates are higher during the winter, spring, and early summer months.

Geologically Hazardous Areas Review

The subject project area was evaluated for the presence of geologically hazardous areas in general accordance with Chapter 16.20, Section 400 of the Poulsbo Municipal Code (PMC). As part of this evaluation, ESNW also reviewed the referenced geological hazard areas map maintained by the City of Poulsbo. Geologically hazardous areas in Poulsbo are categorized as either geologically hazardous areas or areas of geologic concern. Based on the conditions observed during the April 2025 exploration, review of the PMC, review of the referenced soil survey, and review of the geologic hazardous areas map, it is our opinion that neither geologically hazardous areas nor areas of geologic concern (as defined by the PMC) are present on site.

DISCUSSION AND RECOMMENDATIONS

General

Based on the results of our investigation, construction of the proposed residential development is considered feasible from a geotechnical standpoint. The primary geotechnical considerations associated with the proposed project include earthwork, temporary excavations, subgrade preparation, foundation support, and drainage recommendations.

Site Preparation and Earthwork

Site preparation activities will likely consist of installing temporary erosion control measures, establishing grading limits, and performing site stripping. Subsequent earthwork activities will involve mass site grading and installation of infrastructure and stormwater management improvements.

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 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 soil disturbed during construction should be wetted to minimize dust and wind-borne soil transport.

Additional TESC BMPs, as specified by the project civil engineer and indicated on the plans, should be incorporated into construction activities. TESC BMPs may be modified during construction as site conditions require and as approved by the site erosion control lead.

Excavations and Slopes

Based on the soil conditions observed at the test pit locations, the following allowable temporary slope inclinations, as a function of horizontal to vertical (H:V) inclination, may be used. The applicable Federal Occupational Safety and Health Administration and Washington Industrial Safety and Health Act soil classifications are also provided:

- 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 cemented native soil — 0.75H (Type A)

The presence of perched groundwater may cause localized sloughing of temporary slopes. An ESNW representative should be contacted 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, to minimize erosion, and should maintain a gradient of 2H:1V or flatter.

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. With respect to underground utility installations and backfill, local jurisdictions may dictate the soil type(s) and compaction requirements.

In-situ and Imported Soil

Based on the conditions observed during the subsurface exploration, the predominant on-site soil is considered to be highly moisture sensitive. Successful use of the on-site soil as structural fill will largely be dictated by the moisture content at the time of placement and compaction. Remedial measures (likely aeration or cement treatment) may be necessary as part of site grading and earthwork activities. If the on-site soil cannot be successfully compacted, the use of imported soil may be necessary. In our opinion, a contingency should be provided in the project budget for the export of soil that cannot be successfully compacted as structural fill, particularly if earthwork operations take place during periods of extended rainfall activity. In general, soils with fine contents greater than 5 percent typically degrade rapidly when exposed to periods of rainfall.

Imported soil intended for use as structural fill should consist of a well-graded, granular soil with a moisture content that is at (or slightly above) the optimum level. 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 may require additional measures to protect both 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.

Subgrade Preparation

Structural elements should be constructed on competent native soil, recompacted native soil, or structural fill placed directly on competent native soil. Loose or unsuitable soil conditions encountered below areas of footing and slab elements should be recompacted or overexcavated and restored as recommended both in this study and by ESNW during construction. ESNW should observe structural subgrade areas prior to placing any base course, formwork, or other structural preparation elements. Supplementary recommendations for subgrade improvement can be provided at the time of construction and would likely include further mechanical compaction effort and/or overexcavation and replacement with suitable structural fill.

Foundations

Based on our findings, the proposed residential homes can be supported on conventional spread and continuous foundation systems constructed directly on competent native soil, recompacted native soil, or structural fill that is placed and compacted directly on competent native soil. Based on our observations, competent native soil considered suitable for support of the proposed structures will likely be encountered beginning at a depth of about one to three feet bgs across most of the site. Where loose or unsuitable soil conditions are exposed at foundation subgrade elevations, compaction of the soil to the specifications of structural fill or overexcavation and replacement with suitable structural fill will be necessary.

Provided the structures will be supported as described above, the following parameters may be used for the 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 can 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 applicable.*
** *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.

Seismic Design

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 brief period spectral response acceleration, S_S (*g*)	1.359
Mapped 1-second period spectral response acceleration, S_1 (*g*)	0.482
Brief period site coefficient, F_a	1.2
Extended period site coefficient, F_v	1.5
Adjusted brief period spectral response acceleration, S_{MS} (*g*)	1.631
Adjusted 1-second period spectral response acceleration, S_{M1} (*g*)	0.723
Design brief period spectral response acceleration, S_{DS} (*g*)	1.087
Design 1-second period spectral response acceleration, S_{D1} (*g*)	0.482

* *Assumes very dense soil conditions, encountered to a maximum depth of 12 feet bgs during the field exploration, remain very dense to at least 100 feet bgs. Based on our experience with the project geologic setting (glacially consolidated soil) across the Puget Sound region, soil conditions are likely consistent with this assumption.*

Further discussion between the project structural engineer, the project owner (or their representative), and ESNW may be prudent to determine the possible impacts to the structural design due to increased earthquake load requirements under the 2021 IBC. ESNW can provide additional consulting services to aid with design efforts, including supplementary geotechnical and geophysical investigation, upon request.

Liquefaction

Liquefaction is a phenomenon where saturated, loose, and cohesionless fine sand or silt soil suddenly loses internal strength and behaves as a fluid. This behavior is in response to increased pore water pressures resulting from an earthquake or another intense ground shaking. In our opinion, site susceptibility to liquefaction may be considered negligible. The absence of a shallow groundwater table and the relatively dense to very dense characteristics of the native soil were the primary bases for this opinion.

Slab-on-Grade Floors

Slab-on-grade floors should be supported on firm and unyielding subgrades consisting of competent native soil or compacted structural fill that is firm and unyielding. Unstable or yielding areas of the subgrade should be recompacted or overexcavated and replaced with suitable structural fill before 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, which is 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 according to the manufacturer’s specifications.

Utility Support and Trench Backfill

In our opinion, the on-site soil will generally be suitable for the support of utilities. Remedial measures may be necessary in some areas to provide support for utilities, such as overexcavation and replacement with structural fill or placement of geotextile fabric. Groundwater seepage may be encountered 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 suitable for use as structural backfill throughout 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. Each section of the utility lines must be adequately supported in 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.

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 be in 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 or yielding subgrade conditions will require remedial measures, such as overexcavation and/or placement of thicker crushed rock or structural fill sections, before placing pavement.

We anticipate that 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:

- A minimum of two inches of hot-mix asphalt (HMA) placed over four inches of crushed rock base (CRB).
- A minimum of two inches of HMA placed over three inches of asphalt-treated base (ATB).

For relatively high volume, heavily loaded pavement areas subjected to occasional truck traffic, the following preliminary asphalt pavement sections may be considered:

- A minimum of three inches of hot-mix asphalt (HMA) placed over six inches of crushed rock base (CRB).
- A minimum of three inches of HMA placed over four and one-half inches of asphalt-treated base (ATB).

ESNW must be contacted to confirm that subgrade conditions below the pavement section are firm and unyielding prior to placing the CRB. As necessary, supplemental recommendations for achieving subgrade stability and drainage can be provided. If on-site roads are constructed with an inverted crown, additional drainage measures will be recommended to assist in maintaining road subgrade and pavement stability.

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. Road standards utilized by the governing jurisdiction may supersede the recommendations provided in this report. It is recommended that the HMA, ATB, and CRB materials 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.

Drainage

Groundwater seepage may be encountered within site excavations, particularly if earthwork takes place during the wet season. Temporary measures to control surface water runoff and groundwater during construction would likely involve passive elements, such as interceptor trenches, interceptor swales, and sumps. ESNW should be consulted during preliminary grading to identify areas of seepage and provide recommendations to reduce the potential for seepage-related instability. Finish grades must be designed to direct surface drain water away from structures and slopes, and water must not be allowed to pond adjacent to structures or slopes. In our opinion, a foundation drain should be installed along the building perimeter footings. A typical foundation drain detail is provided on Plate 4.

Infiltration Feasibility

In our opinion, large-scale infiltration should be considered infeasible from a geotechnical standpoint. The native silty sand within the ice-contact deposit exhibits characteristics similar to that of glacial till soils; a negligible infiltration potential can be assumed for the unweathered section of these soils. However, a localized area of poorly graded gravel with sand was encountered at depth at TP-5. Small-scale or low-impact development designs may be feasible in this area. Additional site explorations and in-situ testing would need to be completed to ultimately determine infiltration feasibility.

Soil Treatment Capacity

ESNW collected four near-surface soil samples for organic content (OC) and cation exchange capacity (CEC) testing. The results of the soil quality testing are provided in the following table.

Sample Location and Depth	Depth (Ft.)	OC Results (Percent)	CEC Results (meq/100g)
HA-1	0.5	28.1	20.5
HA-1	1.5	4.8	10.0
HA-2	0.5	6.6	17.3
HA-2	1.5	2.9	6.3

Preliminary Detention Pond Considerations

From a geotechnical standpoint, the construction of a detention pond for site stormwater management is considered feasible. We understand that a pond facility is currently being evaluated within the southeastern site area. Based on our nearby test pit explorations, silty sand ice-contact deposits are likely to be exposed in the pond area.

Depending on the exposed condition present throughout the pond bottom subsequent to excavation, a pond liner may be deemed necessary. As such, an ESNW representative should be requested on site during pond excavation activities to confirm the condition of, and soil characteristics along, the pond bottom. If a liner is considered necessary, a geomembrane, earthen material, or other liner application will likely be suitable.

LIMITATIONS

This study has been prepared for the exclusive use of JKM Holdings, LLC, 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 the design and construction phases of the project.

REFERENCES

The following documents and maps were reviewed as part of the preparation of this study:

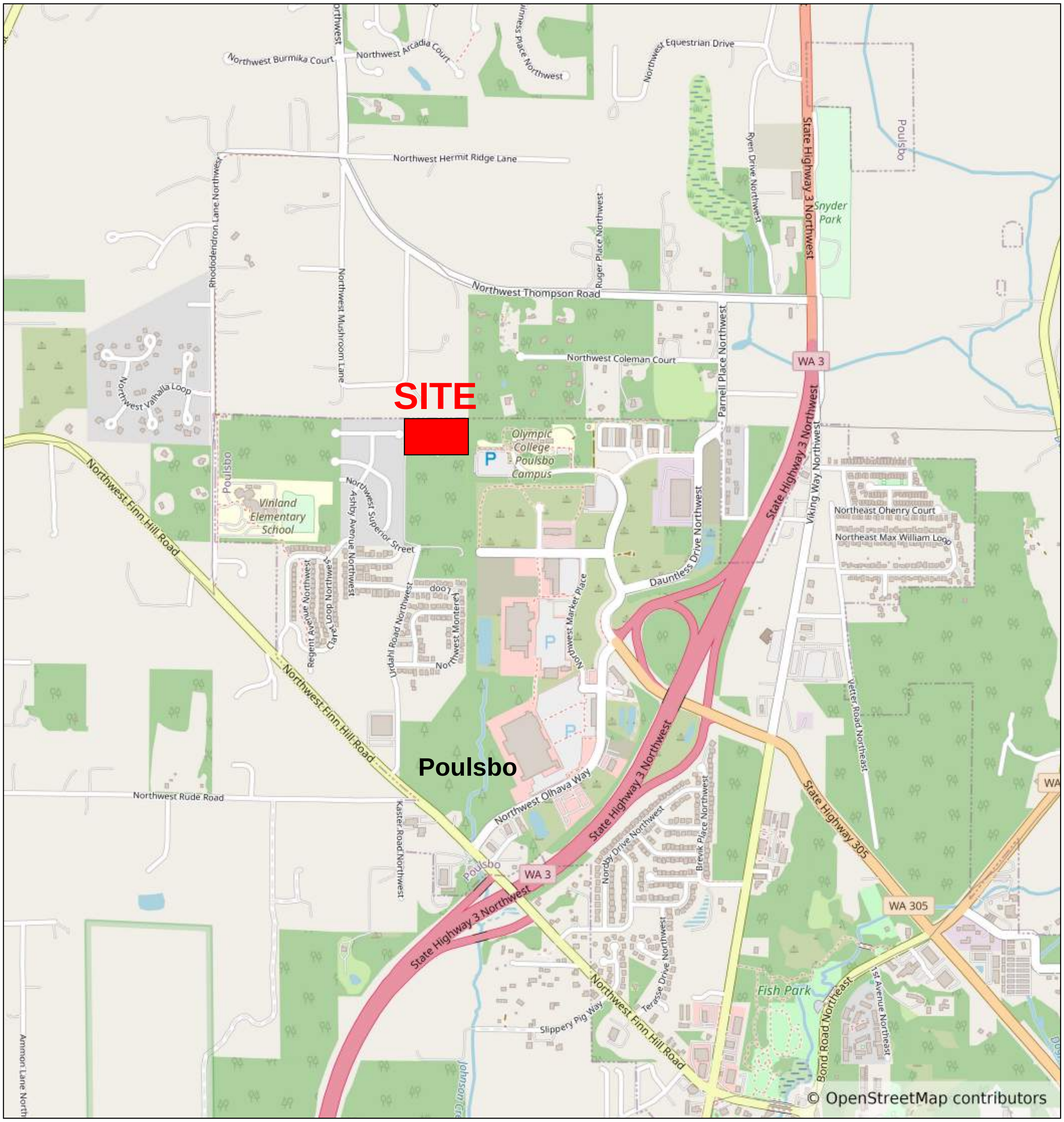
- Chapter 16.20 of the Poulsbo Municipal Code

- Geologic Map of the Lofall 7.5-Minute Quadrangle, Jefferson and Kitsap Counties, Washington, prepared by Trevor A. Contreras, Kimberly A. Stone, and Gabriel Legorreta Paulin, 2013

- Geological Hazards Areas Map, maintained by the City of Poulsbo, Washington, effective June 28, 2017

- Soil Survey of Kitsap County Area, Washington, by Carl J. McMurphy, USDA Soil Conservation Service, issued September 1980

- WSS, maintained by the Natural Resources Conservation Service under the USDA



Reference:
Kitsap 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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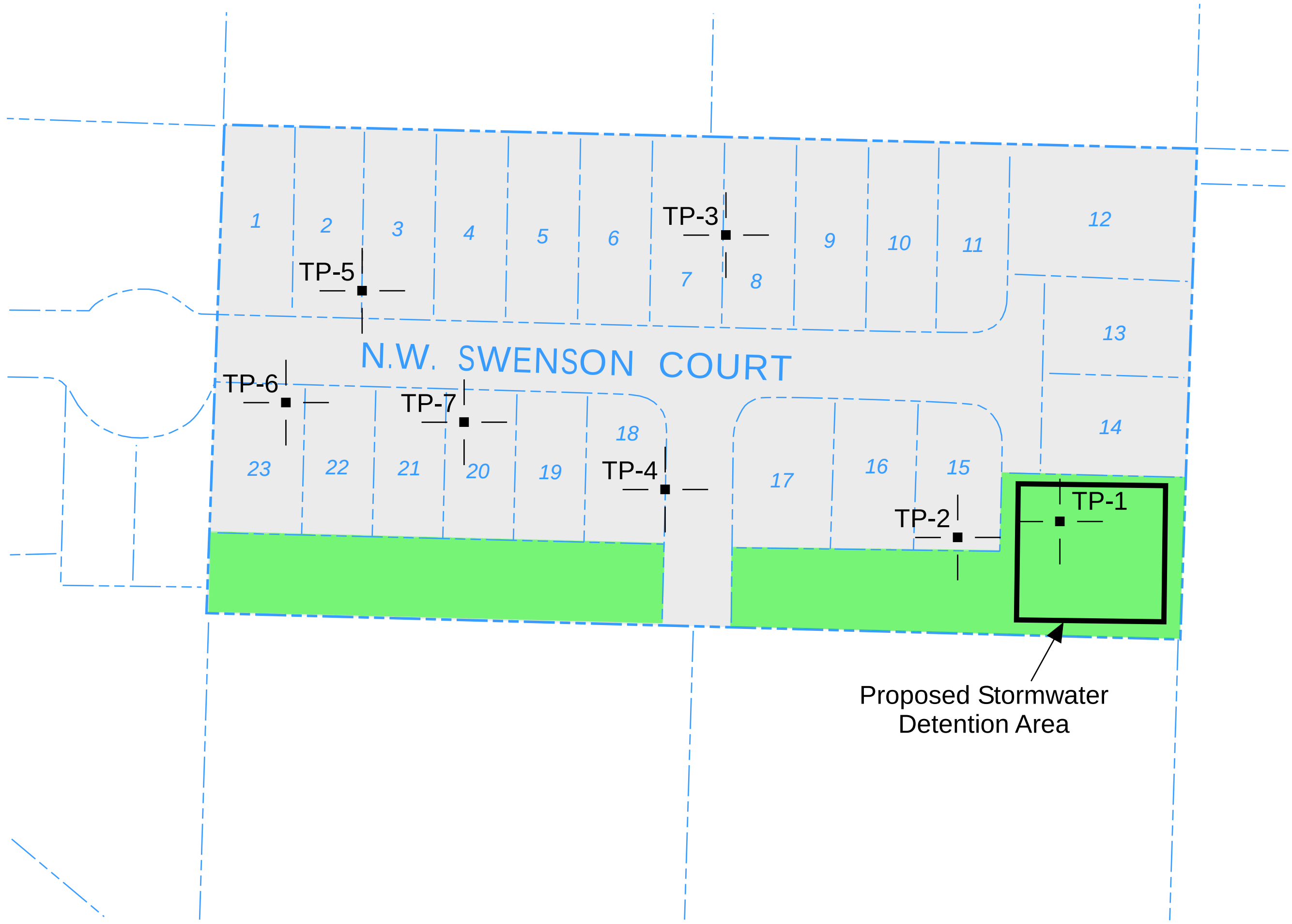
Vicinity Map
Urdahl Heights
Poulsbo, Washington

Drawn MRS	Date 07/14/2025	Proj. No. 10443
Checked SES	Date July 2025	Plate 1



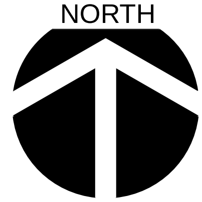
LEGEND

TP-1 — Approximate Location of ESNW Test Pit, Proj. No. ES-10443, April 2025

Subject Site

Green Space

10 — Proposed Lot Number



NOT - TO - SCALE

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.

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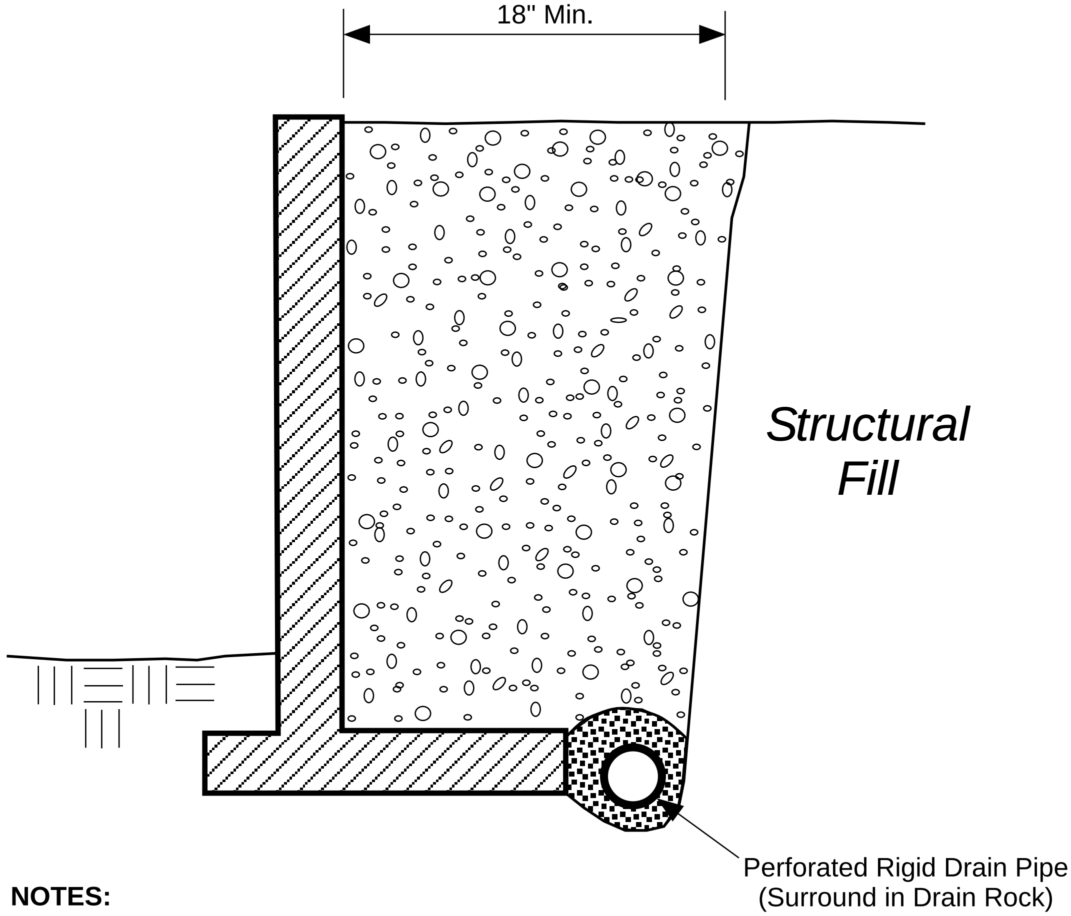
Subsurface Exploration Plan
Urdahl Heights
Poulsbo, Washington

Drawn MRS	Date 07/14/2025	Proj. No. 10443
Checked SES	Date July 2025	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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Geotechnical Engineering
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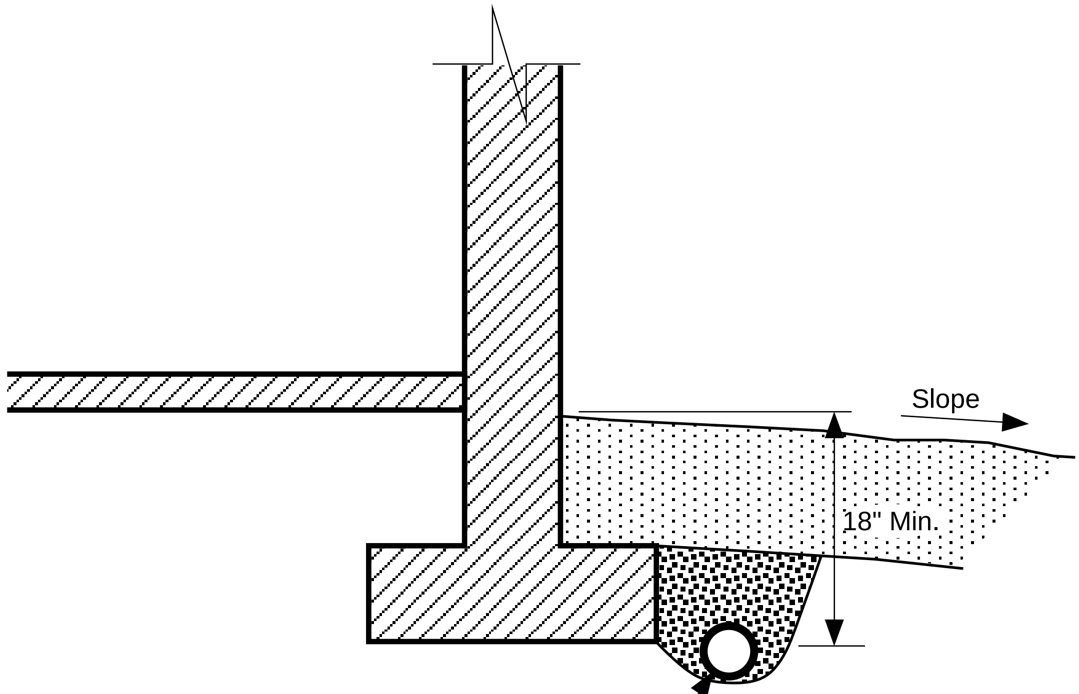
Retaining Wall Drainage Detail
Urdahl Heights
Poulsbo, Washington

Drawn MRS	Date 07/14/2025	Proj. No. 10443
Checked SES	Date July 2025	Plate 3



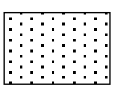
Perforated Rigid Drain Pipe
(Surround in Drain Rock)

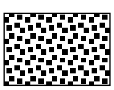
NOTES:

- 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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Environmental Services
Earthwork Observation & Testing
CESCL & Stormwater Services

Footing Drain Detail
Urdahl Heights
Poulsbo, Washington

Drawn MRS	Date 07/14/2025	Proj. No. 10443
Checked SES	Date July 2025	Plate 4

Appendix A

Subsurface Exploration Logs

ES-10443

Subsurface conditions on site were explored on April 21, 2025, by excavating seven test pits using a mini-trackhoe and an operator retained by ESNW. Two additional hand-auger borings were completed on May 21, 2025, to obtain near-surface soil samples for cation exchange testing and organic content evaluation. The approximate locations of the subsurface explorations are illustrated on Plate 2 of this study. The test pit logs are provided in this Appendix. The test pits were excavated to depths of about 8 to 12 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			Graphic	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

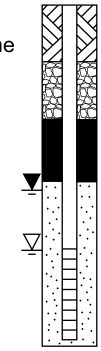
Wet - Water visible but not free draining, likely above optimum MC

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

TEST PIT NUMBER TP-1

EARTH SOLUTIONS NW
REDMOND • PASCO • SILVERDALE

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

PROJECT NUMBER ES-10443 **PROJECT NAME** Urdahl Heights
DATE STARTED 4/21/25 **COMPLETED** 4/21/25 **GROUND ELEVATION**
EXCAVATION CONTRACTOR NW Excavating **LATITUDE** 47.76563 **LONGITUDE** -122.66578
LOGGED BY SES **CHECKED BY** CGH **GROUND WATER LEVEL:**
NOTES **AT TIME OF EXCAVATION**
SURFACE CONDITIONS Duff **AFTER EXCAVATION**

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			TPSL	0.5	Dark brown TOPSOIL, root intrusions to 1'
			SM		Brown silty SAND with gravel, medium dense, damp to moist
2.5	GB	MC = 7.7			
					-becomes gray, dense to very dense
					-weakly cemented
	GB	MC = 6.2			
5.0					
					-becomes very dense
7.5	GB	MC = 6.7			
10.0					
					[USDA Classification: very gravelly loamy SAND]
	GB	MC = 7.1 Fines = 13.3		11.0	

Test pit terminated at 11.0 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.

TEST PIT NUMBER TP-2

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

PROJECT NUMBER ES-10443 **PROJECT NAME** Urdahl Heights
DATE STARTED 4/21/25 **COMPLETED** 4/21/25 **GROUND ELEVATION**
EXCAVATION CONTRACTOR NW Excavating **LATITUDE** 47.76561 **LONGITUDE** -122.66612
LOGGED BY SES **CHECKED BY** CGH **GROUND WATER LEVEL:**
NOTES **AT TIME OF EXCAVATION**
SURFACE CONDITIONS Duff **AFTER EXCAVATION**

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			TPSL	0.5	Dark brown TOPSOIL, root intrusions to 2'
	GB	MC = 10.0	SP-SM	2.5	Brown poorly graded SAND with silt and gravel, medium dense, moist
2.5			SM		Gray silty SAND with gravel, dense to very dense, damp to moist
5.0					
7.5	GB	MC = 10.4			
					-becomes very dense
10.0					
	GB	MC = 7.5		12.0	

Test pit terminated at 12.0 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.

TEST PIT NUMBER TP-3

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

PROJECT NUMBER ES-10443
PROJECT NAME Urdahl Heights
DATE STARTED 4/21/25 **COMPLETED** 4/21/25
GROUND ELEVATION
EXCAVATION CONTRACTOR NW Excavating
LATITUDE 47.76596 **LONGITUDE** -122.66657
LOGGED BY SES **CHECKED BY** CGH
GROUND WATER LEVEL:
NOTES
AT TIME OF EXCAVATION
SURFACE CONDITIONS Duff
AFTER EXCAVATION

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			TPSL	1.0	Dark brown TOPSOIL, root intrusions to 2'
2.5	GB	MC = 11.2 Fines = 10.1	SP-SM	3.0	Brown poorly graded SAND with silt and gravel, medium dense, moist [USDA Classification: very gravelly SAND]
5.0 7.5	GB	MC = 8.3	SM	8.0	Gray silty SAND with gravel, dense to very dense, moist -weakly cemented

Test pit terminated at 8.0 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.

TEST PIT NUMBER TP-4

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

PROJECT NUMBER ES-10443 **PROJECT NAME** Urdahl Heights
DATE STARTED 4/21/25 **COMPLETED** 4/21/25 **GROUND ELEVATION**
EXCAVATION CONTRACTOR NW Excavating **LATITUDE** 47.76562 **LONGITUDE** -122.66669
LOGGED BY SES **CHECKED BY** CGH **GROUND WATER LEVEL:**
NOTES **AT TIME OF EXCAVATION**
SURFACE CONDITIONS Duff **AFTER EXCAVATION**

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			TPSL	0.5	Dark brown TOPSOIL, root intrusions to 2'
			SM		Brown silty SAND with gravel, medium dense, damp
	GB	MC = 5.5			
2.5					
					-becomes gray, dense to very dense, moist
					-weakly cemented
5.0					
7.5					
	GB	MC = 11.2		8.0	

Test pit terminated at 8.0 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.

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

TEST PIT NUMBER TP-5

PROJECT NUMBER ES-10443
PROJECT NAME Urdahl Heights
DATE STARTED 4/21/25 **COMPLETED** 4/21/25
GROUND ELEVATION
EXCAVATION CONTRACTOR NW Excavating
LATITUDE 47.76587 **LONGITUDE** -122.66722
LOGGED BY SES **CHECKED BY** CGH
GROUND WATER LEVEL:
NOTES
AT TIME OF EXCAVATION
SURFACE CONDITIONS Duff
AFTER EXCAVATION

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			TPSL	0.5	Dark brown TOPSOIL, root intrusions to 2'
	GB	MC = 8.0	SM	3.0	Brown silty SAND with gravel, medium dense, damp to moist
2.5					
	GB	MC = 7.2 Fines = 4.5	GP	8.0	Gray poorly graded GRAVEL with sand, dense to very dense, damp to moist -weakly cemented [USDA Classification: extremely gravelly SAND]
5.0					
7.5	GB	MC = 8.4			

Test pit terminated at 8.0 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.

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

TEST PIT NUMBER TP-6

PROJECT NUMBER ES-10443
PROJECT NAME Urdahl Heights
DATE STARTED 4/21/25 **COMPLETED** 4/21/25
GROUND ELEVATION
EXCAVATION CONTRACTOR NW Excavating
LATITUDE 47.76570 **LONGITUDE** -122.66747
LOGGED BY SES **CHECKED BY** CGH
GROUND WATER LEVEL:
NOTES
AT TIME OF EXCAVATION
SURFACE CONDITIONS Duff
AFTER EXCAVATION

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			TPSL	0.5	Dark brown TOPSOIL, root intrusions to 1'
			SM		Brown silty SAND with gravel, medium dense, moist
	GB	MC = 11.6 Fines = 13.9			[USDA Classification: very gravelly loamy SAND]
2.5					
					-becomes gray, dense
5.0					
7.5					
	GB	MC = 7.3		8.0	

Test pit terminated at 8.0 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.

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

TEST PIT NUMBER TP-7

PROJECT NUMBER ES-10443
PROJECT NAME Urdahl Heights
DATE STARTED 4/21/25 **COMPLETED** 4/21/25
GROUND ELEVATION
EXCAVATION CONTRACTOR NW Excavating
LATITUDE 47.76568 **LONGITUDE** -122.66703
LOGGED BY SES **CHECKED BY** CGH
GROUND WATER LEVEL:
NOTES
AT TIME OF EXCAVATION
SURFACE CONDITIONS Duff
AFTER EXCAVATION

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			TPSL	0.5	Dark brown TOPSOIL, root intrusions to 1'
			SM		Brown silty SAND with gravel, medium dense, damp to moist
2.5	GB	MC = 7.1			
					-becomes gray, very dense
					-weakly cemented
5.0	GB	MC = 6.0			
7.5	GB	MC = 5.7		8.0	

Test pit terminated at 8.0 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.

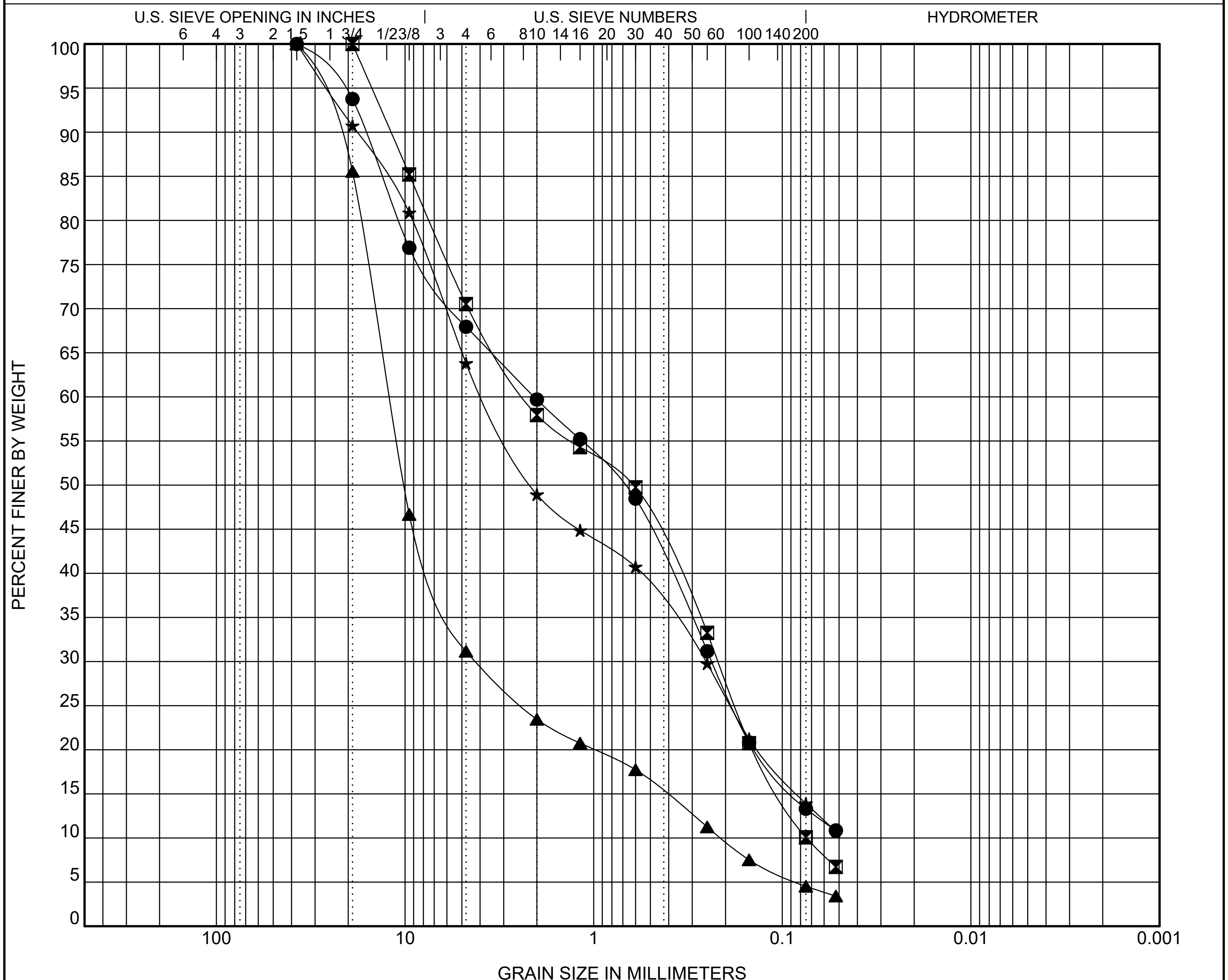
Appendix B

Laboratory Test Results

ES-10443

GRAIN SIZE DISTRIBUTION

PROJECT NUMBER ES-10443 **PROJECT NAME** Urdahl Heights



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification	Cc	Cu
●	**TP-01**	**11.00ft.**	**USDA: Gray Very Gravelly Loamy Sand. USCS: SM with Gravel.**		
⊠	**TP-03**	**2.50ft.**	**USDA: Brown Very Gravelly Sand. USCS: SP-SM with Gravel.**	**0.28**	**30.98**
▲	**TP-05**	**4.00ft.**	**USDA: Gray Extremely Gravelly Sand. USCS: GP with Sand.**	**6.86**	**57.17**
★	**TP-06**	**1.50ft.**	**USDA: Brown Very Gravelly Loamy Sand. USCS: SM with Gravel.**		

Specimen Identification			D100	D60	D30	D10	LL	PL	PI	%Silt	%Clay
●	**TP-01**	**11.0ft.**	**37.5**	**2.065**	**0.236**					**13.3**	
⊠	**TP-03**	**2.5ft.**	**19**	**2.305**	**0.219**	**0.074**				**10.1**	
▲	**TP-05**	**4.0ft.**	**37.5**	**12.048**	**4.172**	**0.211**				**4.5**	
★	**TP-06**	**1.5ft.**	**37.5**	**3.806**	**0.254**					**13.9**	

GRAIN SIZE USDA ES-10443 FIGGIS PROPERTY.GPJ GINT US LAB.GDT 4/29/25

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CESCL & Stormwater Services

SUMMARY OF LABORATORY RESULTS

PROJECT NUMBER ES-10443 **PROJECT NAME** Urdahl Heights

Borehole, Depth	Sample Location	Date Test Completed	Water Content (%)	Ash Content (%)	Organic Content (%)
HA-01, 0.5'		5/30/25	71.8	71.9	28.1
HA-01, 1.5'		5/30/25	17.2	95.2	4.8
HA-02, 0.5'		5/30/25	28.4	93.4	6.6
HA-02, 1.5'		5/30/25	15.1	97.1	2.9

Northwest Agricultural Consultants
2545 West Falls Ave Kennewick, WA 99336
509.783.7450 www.nwag.com lab@nwag.com

Report: 72779-1
Date: 2025-06-01
Project Name: Figgis Property
Project Number: ES-10443

EARTH SOLUTIONS NW
15365 NE 90TH ST STE 100
REDMOND, WA 98052

Sample ID	Sulfate mg/kg	pH s.u.	Resistivity ohm-m	OM %	CEC meq/100g	Chloride mg/kg	Moisture %	Sand %	Silt %	Clay %	Class
HA-1 @ 0.5'					20.5						
HA-1 @ 1.5'					10.0						
HA-2 @ 0.5'					17.3						
HA-2 @ 1.5'					6.3						

Analyte	Sulfate	pH	Resistivity	OM	CEC	Chloride	Moisture	Sand	Silt	Clay	Class
Method	SM-4500 SO4 E	SM 4500-H+ B	SM 2510 B	ASTM D2974	EPA 9081	ASTM D512	Gravimetric	Hydrometer	Hydrometer	Hydrometer	Hydrometer

EARTH SOLUTIONS NW

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

esnw.com info@esnw.com

February 4, 2026
ES-10443.01

JKM Holdings, LLC
PO Box 188
Puyallup, Washington 98371

Attention: Geoffrey Sherwin

Subject: Response to Comments
Proposed Cedar View at Glenwood
East of Northwest Swenson Court and
Ashby Avenue Northwest
Poulsbo, Washington

Greetings:

As requested, Earth Solutions NW, LLC (ESNW) has prepared this letter in response to the referenced Peer Review letter issued by BHC Consultants, LLC (BHC). In preparing this letter, ESNW reviewed the referenced geotechnical engineering study (study) prepared by our firm, along with a conceptual site plan and grading quantities.

RESPONSE TO COMMENTS

Preliminary Stormwater Site Plan

BHC Comment 1 – The “Infiltration Feasibility” section of the Geotechnical Report prepared by JKM Holdings, LLC states that “a localized area of poorly graded gravel with sand was encountered at depth at TP-5. Small-scale or low-impact development designs may be feasible in this area.” Please further evaluate the potential to infiltrate runoff from impervious surfaces (roofs) located within this target area.

ESNW Response – As indicated above, a localized area of relatively clean gravels was observed within the test pit location TP-5 within the northwestern project area. However, these soils are not consistent with the overall deposition/shallow soil makeup across the larger project area and are not extensive in depth or area. Based on a review of the provided earthwork quantities, this area of the site will be subject to cuts of five or more feet, and thus, the deeper, very dense, and weakly cemented soil horizon will likely be fully exposed at the proposed surface grades. In our experience, these soil conditions are not conducive to infiltration designs and should not be pursued as such. On this basis, it is our opinion that infiltration should be considered infeasible for the proposed project.

We trust this letter meets your current needs. Should you have any questions or if additional information is required, please call.

Sincerely,

EARTH SOLUTIONS NW, LLC

State of Washington
Engineering Geologist
19110613
Licensed Geologist
02/04/2026
Chase G. Halsen

Henry T. Wright
State of Washington
53803
Registered
Professional Engineer
02/04/2026

Chase G. Halsen, L.G., L.E.G.
Project Manager

Henry T. Wright, P.E.
Principal Engineer

References:

- Cedar View at Glenwood Plat Preliminary Stormwater Site Plan – Peer Review, prepared by BHC Consultants, LLC, dated January 23, 2026

- Geotechnical Engineering Study, prepared by ESNW, ES-10443, updated July 22, 2025