Geotechnical Engineering Services Report Update 1

HopeSource Cle Elum
Cle Elum, Washington

for

Teanaway Court Associates LLLP
c/o Shelter Resources, Inc.

October 10, 2025

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October 10, 2025

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1.0 Introduction

This report presents the results of our geotechnical engineering services for the proposed HopeSource Cle Elum project located in Cle Elum, Washington. The location of the site and general configuration of the proposed project are shown on the Vicinity Map (Figure 1) and Site Plans (Figures 2 and 3). This updated report includes additional explorations that were conducted to determine the approximate limits of the debris fill on the north end of the site as well as additional test pits completed in the remaining portion of the site based on building locations which had moved from our original mobilization.

1.1 PROJECT DESCRIPTION

We understand that the development plans consist of construction of approximately 41 units within seven separate three-story buildings. In addition, depending on the option, plans include a childcare center, common building, and maintenance building, as well as associated roadway and utility improvements. No below-grade structures are planned as part of the project.

1.2 PURPOSE AND SCOPE

The purpose of our services is to evaluate subsurface soil and groundwater conditions as a basis for developing design criteria for the geotechnical aspects of the proposed HopeSource Cle Elum project. Field explorations and laboratory testing were performed to identify and evaluate subsurface conditions at the site in order to develop engineering recommendations for use in design of the project. Our services were performed in general accordance with our consulting services contract dated August 23, 2024, and Contract Amendment No. 1 dated March 10, 2025.

2.0 Field Investigation and Laboratory Testing

2.1 FIELD EXPLORATIONS

The subsurface conditions at the site were evaluated by drilling four borings (GEI-B-1 through GEI-B-4) and excavating 22 test pits (GEI-TP-1 through GEI-TP-8 and GEI-TP-12 through GEI-TP-25). Numerous other test pits were completed at the north end of the site to help delineate the extent of the debris fill in that area. GEI-TP-9 through GEI-TP-11 did not include prepared test pit logs as they were completed within the fill debris delineation area. The borings were drilled to depths ranging from 21½ to 31 feet below existing site grades and the test pits were excavated to depths ranging from 6½ to 9 feet below existing site grades. The approximate locations of the explorations were recorded by measuring from known site features and are shown on Figures 2 through 4. A detailed description of the field exploration program and the summary exploration logs are presented in Appendix A.

2.2 LABORATORY TESTING

Soil samples obtained from the explorations were transported to our laboratory and evaluated to confirm or modify field classifications, as well as to evaluate engineering and index properties of the soil. Representative samples were selected for laboratory testing consisting of moisture content, percent fines (material passing the U.S. No. 200 sieve), grain-size distribution, and plasticity indices (Atterberg Limits).

The tests were performed in general accordance with test methods of the American Society for Testing and Materials (ASTM) or other applicable procedures. A description of the laboratory testing and the test results are presented in Appendix B.

3.0 Site Conditions

3.1 REGIONAL GEOLOGY

Geologic maps of the project area identify near surface soils as “Alluvium of Yakima River” (Qy). This unit is described as “boulder to pebble gravel containing rounded stones” (USGS 1982). The United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) online Web Soil Survey maps describe the surficial soil as Patnish-Mippon-Myzel complex. The Patnish-Mippon-Myzel complex is described as a very cobbly loam grading into an extremely cobbly loamy sand in a typical profile of the upper 60 inches of surficial soils. Subsurface soils encountered in our explorations deviated slightly from the mapped units, with approximately 10 to 28 feet of fine-grained alluvial soils overlying coarse-grained alluvial soils consistent with the literature. Details of subsurface conditions encountered in the field explorations are described below.

3.2 SURFACE CONDITIONS

The site consists of an undeveloped open pasture/field. There are some trees present in the south-central to southeastern portion of the site. The existing ground surface descends moderately from the north towards the south, with approximately 25 feet of relief across the site. The site is surrounded by residential housing to the north, south and west, while North Short Avenue borders the east side of the site. An existing single-family residence is located east of the central portion of the site. Stockpiled fill material exists north of the west entrance to the site.

3.3 SUBSURFACE CONDITIONS

Based on the soil conditions encountered in the explorations, the site is generally underlain by 10 to 25 feet of fine-grained alluvium overlying the coarse-grained Alluvium of Yakima River. The soil units observed in the borings and test pits are described below.

3.3.1 Soil Conditions

- **Sod/Topsoil.** Approximately 4 to 6 inches of sod and topsoil was observed in the test pits that were excavated in the grass areas on the site.
- **Fill.** Fill was observed in test pit GEI-TP-1 and boring GEI-B-2. The fill extended from ground surface to approximately 3 feet below site grades in test pit GEI-TP-1 and consisted of reworked soils containing glass, wood, and concrete debris. This area is located at the northern end of the project site and was further evaluated during a second mobilization (including GEI-TP-12 and other test pits unlabeled and included on Figure 4) that observed these soils extended across a significant footprint. The extents and depth are summarized in Figures 2 through 4. Boring GEI-B-2 encountered some ash debris at a depth of approximately 5 feet, which was interpreted to be fill soils. This area was also further explored during the second mobilization with GEI-TP-17 which observed wood debris within the soils located in the upper approximately 2½ feet of the test pit.

- **Fine-grained Alluvium Deposits.** Fine-grained alluvium was observed below the topsoil or fill (where encountered) in all explorations and extended approximately 10 to 28 feet below site grades. The fine-grained alluvium generally consisted of soft to very stiff silt with sand to clay with fine sand, and loose to dense clayey sand or silty sand.
- **Coarse-grained Alluvium Deposits.** Coarse-grained alluvium was observed below the fine-grained deposits in borings GEI-B-1 through GEI-B-4. The coarse-grained alluvium deposits typically consist of dense to very dense fine to coarse gravel with variable silt, sand and cobbles. The coarse-grained alluvium deposits, where encountered, extended to the depths explored.

3.3.2 Groundwater Conditions

Groundwater seepage was observed approximately 21 feet below the ground surface in boring GEI-B-3 and about 18 feet below ground surface in boring GEI-B-4. Test pit explorations did not encounter groundwater. Nearby wells listed on the Washington State Department of Ecology web portal describe static groundwater between 8 and 50 feet below ground surface. The groundwater table is anticipated to be located approximately 17 to 21 feet below site grades and will fluctuate based on the season and precipitation, and will rise during the irrigation season.

4.0 Conclusions and Recommendations

4.1 SUMMARY OF KEY GEOTECHNICAL ISSUES

A summary of the key geotechnical considerations is provided below. The summary is presented for introductory purposes only and should be used in conjunction with the complete recommendations presented in this report.

- The site is designated as seismic Site Class D per the 2021 International Building Code (IBC).
- All existing fill and associated debris located below planned buildings, structures, and pavement areas should be removed and replaced with compacted structural fill. Figure 4 illustrates the approximate area and depth of debris fill located at the north end of the project site, which should be removed and properly disposed of off-site during initial grading activities.
- The proposed buildings may be supported on shallow foundations designed using an allowable bearing pressure of 3,000 pounds per square foot (psf) if bearing on undisturbed medium dense/stiff fine-grained alluvium deposits or on compacted structural fill extending to the medium dense/stiff fine-grained alluvium deposits.
- The design frost depth in the project area is 24 inches; therefore, we recommend that all perimeter foundations extend at least 30 inches below the lowest adjacent finished grades.
- Soils observed in the test pits are considered to be capable of providing adequate support for slabs-on-grade. Conventional slabs-on-grade should be underlain by a 4-inch-thick capillary break gravel layer over a 1-foot-thick subbase of properly placed and compacted structural fill. Where existing fill is present below building footprints, the fill should be removed and be replaced with structural fill compacted to at least 95 percent of the maximum dry density (MDD) per ASTM D 1557.

- New hot-mix asphalt (HMA) pavement sections should consist of at least 3 inches HMA over 4 inches of base course in light-duty pavement areas such as car parking and at least 4 inches HMA over 6 inches of base course in heavy-duty pavement areas such as drive aisles.
- The near surface soils and fine-grained alluvium contain a high percentage of fines and are highly moisture sensitive. The fine-grained alluvial soils and existing fill should not be reused as structural fill and should be used in landscape areas or exported off site. Fill with debris should be exported off site. Imported gravel borrow should be used as structural fill under all foundations and building floor slabs.
- Based on laboratory testing, we estimate that the long-term hydraulic conductivity of the fine-grained alluvial soils located in the upper approximately 10 feet of the site will be less than about 0.25 inches per hour.

Our specific geotechnical recommendations are presented in the following sections of this report.

4.2 EARTHQUAKE ENGINEERING

4.2.1 2021 IBC Seismic Design Information

We recommend the 2021 IBC parameters for Site Class, short period spectral response acceleration (S_S), 1-second period spectral response acceleration (S_1), and Seismic Coefficients F_A and F_V presented in Table 1.

TABLE 1. 2021 IBC SEISMIC DESIGN PARAMETERS

2021 IBC PARAMETER	RECOMMENDED VALUE
Site Class	D
Short Period Spectral Response Acceleration, S_S (percent g)	61.9
1-Second Period Spectral Response Acceleration, S_1 (percent g)	23.9
Seismic Coefficient, F_a	1.305
Seismic Coefficient, F_V	2.122

Notes:

[1] Parameters developed based on latitude 47.1959647 and longitude -120.9158044 using the Applied Technology Council (ATC) Hazards online tool (https://hazards.atcouncil.org/).

4.2.2 Liquefaction Potential

Liquefaction is a phenomenon where soils experience a rapid loss of internal strength as pore water pressures increase in response to strong ground shaking. The increased pore water pressure may temporarily meet or exceed soil overburden pressures to produce conditions that allow soil and water to flow, deform, or erupt from the ground surface. Ground settlement, lateral spreading and/or sand boils may result from soil liquefaction. Structures supported on or within liquefied soils may suffer foundation settlement or lateral movement that can be damaging to the structure.

Groundwater levels at the site are generally within the dense to very dense coarse-grained alluvium encountered near the bottom of the borings. Our analysis indicates that the soils that underlie the proposed building areas have a low risk of liquefying because of the density and gradation of these soils.

4.2.3 Lateral Spreading

Ground rupture from lateral spreading is associated with liquefaction. Lateral spreading involves lateral displacements of large volumes of liquefied soil and can occur on near-level ground as blocks of surface soils displace relative to adjacent blocks. In our opinion, ground rupture resulting from lateral spreading is unlikely because potentially liquefiable soils are not present at the site.

4.2.4 Other Seismic Hazards

Due to the location of the site and the site's topography, the risk of adverse impacts resulting from seismically induced slope instability, differential settlement, or surface displacement due to faulting is considered to be remote.

4.3 FOUNDATION SUPPORT

We recommend that the proposed buildings be supported on shallow foundation bearing on undisturbed, native, medium dense/stiff fine-grained alluvium deposits as described below.

4.3.1 Allowable Bearing Pressure

Foundations may be designed using an allowable bearing pressure of 3,000 psf if footings are supported on medium dense/stiff undisturbed fine-grained alluvium deposits or on structural fill extending to undisturbed medium dense/stiff alluvium deposits. Existing fill soils should be removed from below planned foundations. Structural fill placed below footings should consist of imported gravel borrow compacted to at least 95 percent MDD. Structural fill should extend beyond the edges of the foundation by a distance equal to the depth of the excavation.

The allowable soil bearing value applies to the total of dead and long-term live loads and may be increased by up to one-third for wind or seismic loads.

We recommend widths of at least 18 and 24 inches, respectively, for continuous wall and isolated column footings supporting the proposed buildings. The design frost depth for the Kittitas County area is 24 inches; therefore, we recommend that the footings be founded at least 30 inches below lowest adjacent finished grade. Interior footings should be founded at least 24 inches below the bottom of slab or adjacent finished grade.

4.3.2 Foundation Settlement

We estimate that the post-construction settlement of footings founded as recommended above will be less than 1 inch. Differential settlement between comparably loaded column footings or along a 25-foot section of continuous wall footing should be less than ½ inch. We expect most of the footing settlements will occur as loads are applied. Loose or disturbed soils not removed from footing excavations prior to placing concrete will result in additional settlement.

4.3.3 Lateral Resistance

Lateral loads can be resisted by passive resistance on the sides of the footings and by friction on the base of the footings. Passive resistance should be evaluated using an equivalent fluid density of 350 pounds per cubic foot (pcf) where footings are poured neat against native soil or are surrounded by structural fill compacted to at least 95 percent of MDD, as recommended. Resistance to passive pressure should be calculated from the bottom of adjacent floor slabs and paving or below a depth of 1 foot where the adjacent area is unpaved, as appropriate. Frictional resistance can be evaluated using 0.35 for the coefficient of base friction against footings. The above values incorporate a factor of safety of about 1.5.

If soils adjacent to footings are disturbed during construction, the disturbed soils must be recompacted; otherwise the lateral passive resistance value must be reduced.

4.3.4 Construction Considerations

Immediately prior to placing concrete, all debris and loose soils that accumulated in the footing excavations during forming and steel placement must be removed. Debris or loose soils not removed from the footing excavations will result in increased settlement.

We recommend that all completed footing excavations be observed by a representative of our firm prior to placing a protective mud mat (if used), reinforcing steel, and/or structural concrete. Our representative will confirm that the bearing surface has been prepared in a manner consistent with our recommendations and that the subsurface conditions are as expected.

4.4 FOOTING DRAINS

Depending on the finished floor elevation relative to existing site grades located outside of the building footprints, perimeter footing drains may be required to be installed around the proposed buildings. The need for footing drains should be reviewed with the project team during the design phase. We recommend that footing drains be constructed around the buildings if the finished floor slab elevation is less than 12 inches above surrounding grades. If footing drains are required, they should be provided as summarized below.

If footing drains are required, the perimeter drains should be installed at the base of the exterior footings. The perimeter drains should be provided with cleanouts and should consist of at least 4-inch-diameter perforated pipe placed on a 4-inch bed of, and surrounded by, 6 inches of drainage material enclosed in a non-woven geotextile fabric such as Mirafi 140N (or approved equivalent) to prevent fine soil from migrating into the drain material, as shown on Figure 5. The footing drain pipe should be installed at least 18 inches below the top of the adjacent floor slab. The drainage material should consist of "Gravel Backfill for Drains" per Section 9-03.12(4) of the Washington State Department of Transportation (WSDOT) Standard Specifications. We recommend the drainpipe consist of either heavy-wall solid pipe (SDR-35 polyvinyl chloride [PVC], or equal) or rigid corrugated smooth interior polyethylene pipe (ADS N-12, or equal). We also recommend against using flexible tubing for footing drainpipes. The perimeter drains should be sloped to drain by gravity to a suitable discharge point, preferably a storm drain. We recommend the cleanouts be covered and placed in flush mounted utility boxes. Water collected in roof downspout lines must not be routed to the footing drain lines.

4.5 SLAB-ON-GRADE FLOORS

4.5.1 Subgrade Preparation

We recommend that slab-on-grade floors be supported on a gravel layer to provide uniform support and drainage, and to act as a capillary break. We expect that slab-on-grade floors can be supported on a 4-inch gravel layer overlying a 12-inch-thick subbase layer of compacted structural fill. Prior to placing the subbase layer, the subgrade should be proof rolled and compacted, as described in the Earthwork section of this report. The subgrade should be recompacted to a firm and unyielding condition prior to placing structural fill.

4.5.2 Design Parameters

The capillary break gravel layer below slabs-on-grade should consist of 4 inches of clean crushed gravel with a maximum particle size of 1-inch and negligible sand or silt, such as WSDOT 9-03.1(4)C Grading No. 67. The capillary break layer should be placed on a subbase layer consisting of 12 inches of structural fill. For slabs designed as a beam on an elastic foundation, a modulus of subgrade reaction of 100 pounds per cubic inch (pci) may be used for the subgrade soils.

If water vapor migration through the slabs is objectionable, the gravel layer should be covered with a heavy plastic sheet, such as Stego® Wrap 15-Mil Vapor Barrier placed beneath the slab to act as a vapor retarder. This will be desirable where the slabs will be surfaced with tile or will be carpeted. It may also be prudent to apply a sealer to the slab to further retard the migration of moisture through the floor. The contractor should be made responsible for maintaining the integrity of the vapor barrier during construction.

4.6 SITE RETAINING WALLS

We understand that the location or need for site retaining walls has not been determined at this time. If needed for grade transitions, site retaining walls can be constructed using traditional structural systems, such as reinforced concrete, concrete masonry unit (CMU) blocks and mechanically stabilized earth (MSE) walls, or using nonstructural systems such as rockeries.

The following recommendations should be used for the design of site retaining and for other retaining structures that are used to achieve grade changes.

4.6.1 Wall Design Parameters

Lateral earth pressures for design of site retaining structures should be evaluated using an equivalent fluid density of 35 pcf provided that the walls will not be restrained against rotation when backfill is placed. If the walls will be restrained from rotation, we recommend using an equivalent fluid density of 55 pcf. Walls are assumed to be restrained if top movement during backfilling is less than H/1000, where H is the wall height. These lateral soil pressures assume that the ground surface behind the wall is horizontal. For unrestrained walls with backfill sloping up at 2H:1V (horizontal to vertical), the design lateral earth pressure should be increased to 55 pcf, while restrained walls with a 2H:1V sloping backfill should be designed using an equivalent fluid density of 75 pcf. These lateral soil pressures do not include the effects of surcharges such as floor loads, traffic loads or other surface loading. Surcharge effects should be included as appropriate. Below-grade walls for buildings should also include seismic earth pressures. Seismic earth pressures should be determined using a rectangular distribution of 3H in psf, where H is the wall height.

If vehicles can approach the tops of exterior walls to within half the height of the wall, a traffic surcharge should be added to the wall pressure. For car parking areas, the traffic surcharge can be approximated by the equivalent weight of an additional 1 foot of soil backfill (125 psf) behind the wall. For delivery truck parking areas and access driveway areas, the traffic surcharge can be approximated by the equivalent weight of an additional 2 feet (250 psf) of soil backfill behind the wall. GeoEngineers, Inc. (GeoEngineers) should be consulted if other surcharge loads, such as from foundations, construction equipment, or construction staging areas, will exist. Positive drainage should be provided behind below-grade walls and retaining structures as discussed below; otherwise, the wall design should include a hydrostatic water pressure of 62.4 pcf fluid density in addition to the lateral earth pressures presented above. It may be economical to design short walls (less than about 3 or 4 feet) to resist hydrostatic water pressures rather than providing wall drainage.

The foundation recommendations presented above for the proposed buildings are appropriate for design of retaining wall foundations. Walls located on level ground areas should be founded at a depth of at least 24 inches below the adjacent grade.

4.6.2 Wall Drainage

Unless walls are designed to resist hydrostatic water pressure buildup behind the retaining walls, we recommend that the walls be provided with adequate drainage, as shown in Figure 5. Wall drainage can be achieved by using free draining wall drainage material with perforated pipes to discharge the collected water.

Wall drainage material may consist of washed ⅜-inch to No. 8 pea gravel per WSDOT 9.03.1(4)C, AASHTO Grading No. 8, or clean gravel (gravel backfill for drains per WSDOT Standard Specification Section 9-03.12(4)) surrounded with a non-woven geotextile fabric such as Mirafi 140N (or approved equivalent). The zone of wall drainage material should be 2 feet wide and should extend from the base of the wall to within 2 feet of the ground surface. The wall drainage material should be covered with 2 feet of less permeable material, such as the on-site silty sand that is properly moisture conditioned and compacted.

A 4-inch-diameter perforated drain pipe should be installed within the free-draining material at the base of each wall. We recommend using either heavy-wall solid pipe (SDR-35 PVC) or rigid corrugated polyethylene pipe (ADS N-12, or equal). We recommend against using flexible tubing for the wall drain pipe. The footing drain recommended above can be incorporated into the bottom of the drainage zone and used for this purpose.

The pipes should be laid with minimum slopes of one-quarter percent and discharge into the storm water collection system to convey the water off site. The pipe installations should include a cleanout riser with cover located at the upper end of each pipe run. The cleanouts could be placed in flush mounted access boxes. Collected downspout water should be routed to appropriate discharge points in separate pipe systems, and not be connected to foundation or wall drainage pipes.

4.7 EARTHWORK

Based on the subsurface soil conditions encountered in the explorations, we expect that the soils at the site can be excavated using conventional construction equipment. Deeper cuts may require a large, heavy-duty excavator to accomplish the excavations. The contractor should be prepared to deal with cobbles, if encountered, as well as miscellaneous debris (glass, wood, metal, concrete, etc.) in the existing on-site fill. The north end of the project site includes a large area of fill soil containing debris. The approximate extents of the debris fill is shown in Figure 4.

The near surface soils contain sufficient fines to be highly moisture-sensitive and susceptible to disturbance, especially when wet. Ideally, earthwork should be undertaken during extended periods of dry weather when the subgrade soils will be less susceptible to disturbance and provide better support for construction equipment. Dry weather construction will help reduce earthwork costs and increase the potential for using suitable on-site soils as structural fill where approved by the engineer.

4.7.1 Clearing and Site Preparation

After any needed demolition is completed, the debris should be removed from the site. Existing utilities and associated trench backfill should be removed from below the proposed building footprints. All excavations that extend below slabs-on-grade or foundation subgrades should be backfilled with structural fill.

Areas to be developed or graded should be cleared of surface and subsurface deleterious matter including any debris, brush, trees, and associated stumps and roots. Graded areas should be stripped of organic soils and grubbed. Based on our explorations and site observations, we estimate that stripping depths will typically be on the order of 6 inches to remove the sod and topsoil. Deeper stripping and grubbing depths may be required in areas with deeper deposits of topsoil and to remove tree roots and stumps. The organic soils can be stockpiled and processed for landscaping purposes or may be spread over disturbed areas following completion of grading. If spread out, the organic strippings should be placed in a layer less that 1-foot thick, should not be placed on slopes greater than 3H:1V and should be track-walked to a uniformly compacted condition. Materials that cannot be used for landscaping or protection of disturbed areas should be removed from the project site.

Existing fill must be removed and replaced with imported structural fill if located under planned buildings and other structures. Outside of building footprints, fill should be removed to a depth of at least 2 feet below pavements and hardscape and replaced with structural fill. The exposed soil shall be compacted with a heavy roller or hoe-pack mounted on a large excavator prior to placing the structural fill to achieve final grade. We recommend that all existing on-site fill containing debris such as glass, wood, and other deleterious materials be removed and disposed of off-site. If deep accumulations of fill with debris exists under landscape areas, it may be possible to leave the fill in place if capped with at least 2 feet of clean and compacted (to at least 90 percent MDD) on-site soils.

4.7.2 Subgrade Preparation

Preparation of footing subgrades and slab-on-grade subgrade areas should follow the recommendations provided previously in this report. All topsoil, existing fill, and organic soils should be removed from below building footprints and other structures. Prior to placing new fills, pavement base course materials or structural fill below on-grade floor slabs, all subgrade areas should be evaluated by proofrolling to locate any soft or pumping soils. Proofrolling can be completed using a piece of heavy tire-mounted equipment such as a loaded dump truck. During wet weather, the exposed subgrade areas should be probed to evaluate the presence and determine the extent of soft soils. If soft or pumping soils are observed they should be removed and replaced with structural fill.

If deep pockets of soft or pumping soils are encountered in areas to be developed outside the building areas, it may be possible to limit the depth of overexcavation by placing a non-woven geotextile separator such as Mirafi 500X (or approved equivalent) on the overexcavated subgrade prior to placing structural fill. The geotextile will provide additional support by bridging over the soft material and will help reduce fines contamination into the structural fill. We anticipate that no more than 2 feet of structural fill placed over a geotextile will be needed to support pavement/hardscape areas over soft subgrade conditions.

After completing proofrolling, the subgrade areas should be recompacted to a firm condition, if possible. The degree of compaction that can be achieved will depend on when the construction is performed. If the work is performed during dry weather conditions, we recommend that all subgrade areas be recompacted to at least 95 percent of the MDD in accordance with the ASTM D 1557 test procedure. If the work is performed during wet weather conditions, it may not be possible to recompact the subgrade to 95 percent of MDD. In this case, we recommend that the subgrade be compacted to the extent possible without causing undue weaving or pumping of the subgrade soils.

Subgrade disturbance or deterioration could occur if the subgrade is wet and cannot be dried. If the subgrade deteriorates during proofrolling or compaction, it may become necessary to modify the proofrolling or compaction criteria or methods.

4.7.3 Subgrade Protection

Site soils contain significant fines content (silt/clay) and will be highly sensitive and susceptible to moisture and equipment loads. The exposed near surface subgrade soils can deteriorate rapidly in wet weather and under equipment loads.

The contractor should take necessary measures to prevent site subgrade soils from becoming disturbed or unstable. Construction traffic during the wet season should be restricted to specific areas of the site, preferably areas that are surfaced with crushed rock not susceptible to wet weather disturbance.

4.7.4 Structural Fill

All fill that will support foundations, floor slabs, or pavements and hardscape areas, or in utility trenches, should generally meet the criteria for structural fill presented below. The suitability of soil for use as structural fill depends on its gradation and moisture content.

4.7.4.1 MATERIALS

Materials used to construct the building pads, placed under foundations and hardscape, and used to backfill utility trenches are classified as structural fill for the purpose of this report. Structural fill material quality varies depending upon its use as described below:

1. Structural fill placed to support building foundations and floor slabs should consist of imported Gravel Borrow as described in Section 9-03.14(1) of the WSDOT Standard Specifications, with the additional restriction that the fines content be limited to no more than 5 percent. Imported Gravel Borrow should also be used during wet weather conditions, and during the wet season (typically October through May).
2. Structural fill placed to construct parking and hardscape areas, and to backfill utility trenches, may consist of on-site fine-grained alluvial deposits provided that the fine-grained soils can be compacted to at least 95 percent of the MDD in the dry summer months in the upper 2 feet below pavement subgrade and to at least 90 percent MDD below the upper 2 feet. If on-site soils do not meet the required moisture conditioning and compaction requirements, then imported Gravel Borrow should be used, especially during the wet season or fall/winter months.
3. Drain rock placed for footing drains (drainage zone) should consist of washed ⅜-inch to No. 8 pea gravel or conform to Section 9-03.12(4) of the WSDOT Standard Specifications, as shown on Figure 5.

4. Crushed surfacing base course below pavements should conform to Section 9-03.9(3) of the WSDOT Standard Specifications.
5. Capillary break below building slabs-on-grade should consist of 1-inch minus clean crushed gravel with negligible sand or silt in conformance with Section 9-03.1(4)C, grading No. 67 of the WSDOT Standard Specifications.

4.7.4.2 REUSE OF ON-SITE SOILS

Fill was encountered to a depth of 3 feet in test pit GEI-TP-1 and to a depth of 7 feet in boring GEI-B-2. The fill observed in GEI-TP-1 included deleterious debris such as concrete, glass and wood. We anticipate that fill soils may also be present in other areas of the site. Additionally, there are what appear to be fill embankments along the south edge of the western boundary near GEI-B-2 and GEI-TP-6 that appear raised from nearby site grades. The fill material with debris should be removed and disposed of offsite.

On-site fill material and fine-grained alluvial soils that contain a high percentage of fines will be sensitive to changes in moisture content and difficult to handle and compact during wet weather. The on-site fill and fine-grained alluvial soils should not be planned for reuse during the wet season (October through May) or during wet weather conditions.

Clean on-site fill absent of debris and the fine-grained alluvial soils may be suitable for use as structural fill outside of the building footprints provided that the soil can be properly moisture conditioned and compacted during the dry summer months. Imported structural fill consisting of WSDOT Gravel Borrow should be planned under all building floor slabs and foundation elements, as well as structural fill during the wet season and fall/winter months.

The contractor should plan to cover and maintain all stockpiles with plastic sheeting if planned to be used as structural fill. The reuse of on-site soils is highly dependent on the skill of the contractor and schedule, and we will work with the design team and contractor to maximize the reuse of on-site soils during the wet and dry seasons.

4.7.4.3 FILL PLACEMENT AND COMPACTION CRITERIA

Structural fill should be mechanically compacted to a firm condition. Structural fill should be placed in loose lifts not exceeding 12 inches in thickness. The actual thickness will be dependent on the structural fill material used and the type and size of compaction equipment. Each lift should be moisture conditioned to within about 3 percent of the optimum moisture content and compacted to the specified density before placing subsequent lifts. Compaction of all structural fill should be in accordance with the ASTM D 1557 (modified proctor) test method. Structural fill should be compacted to the following criteria:

1. Structural fill placed below building foundations and concrete slabs-on-grade should be compacted to at least 95 percent of the MDD.
2. Structural fill placed behind below-grade walls should be compacted to between 90 to 92 percent of the MDD. Care should be taken when compacting fill near the face of below-grade walls to avoid over-compaction and hence overstressing the walls. Hand operated compactors should be used within 5 feet behind the wall. The contractor should keep all heavy construction equipment away from the top of retaining walls a distance equal to half the height of the wall, or at least 5 feet, whichever is greater.

3. Structural fill in new pavement and hardscape areas, including utility trench backfill, should be compacted to at least 90 percent of the MDD, except that the upper 2 feet of fill below final subgrade should be compacted to at least 95 percent of the MDD; see Figure 6.
4. Crushed surfacing base course below pavements and hardscape should be compacted to at least 95 percent of the MDD.
5. Non-structural fill, such as fill placed in landscape areas, should be compacted to at least 90 percent of the MDD, unless otherwise specified by the landscape architect.

4.7.4.4 WEATHER CONSIDERATIONS

The near surface on-site soils contain a high percentage of fines and are moisture sensitive. When the moisture content of the fine-grained soils is more than a few percent above the optimum moisture content, it becomes muddy and unstable. Operation of equipment in these conditions will be difficult and the required compaction criteria will not be achieved. Additionally, disturbance of near-surface soil should be expected if earthwork is completed during periods of wet weather. During dry weather, on-site soil should: (1) be less susceptible to disturbance; (2) provide better support for construction equipment; and (3) be more likely to meet the required compaction criteria.

Proof-compaction or structural fill placement will be difficult to accomplish if earthwork is performed during extended periods of wet weather. No earthwork should occur during periods of extended freezing weather. We recommend that earthwork be scheduled for the normally warmer months unless delays in the construction schedule cannot be tolerated.

If wet weather earthwork is unavoidable, we recommend that the following steps be taken should near-surface soil conditions begin to deteriorate:

- The ground surface in and around the work area should be sloped so that surface water is directed away from excavations and exposed soil. The ground surface should be graded so that areas of ponded water do not develop. Measures should be taken by the contractor to prevent surface water from collecting in excavations and trenches. Measures should be implemented to remove surface water from the work area.
- Earthwork activities should not take place during periods of heavy precipitation.
- Accumulated water should be removed from the work area in accordance with applicable project requirements.
- The contractor should take necessary measures to prevent on-site soil and soil to be used as fill from becoming wet or unstable. These measures may include the use of plastic sheeting, sumps with pumps, and grading. The site soil should not be left uncompacted and exposed to moisture.
- Construction activities should be scheduled so that the length of time that soil is left exposed to moisture is reduced to the extent practical.
- At the start of each shift, frozen ground within the working area should be removed before initiating or continuing earthwork activities.

In addition, we recommend that sloped surfaces in exposed or disturbed soil be restored so that surface runoff does not become channeled. Some sloughing and raveling of slopes with exposed or disturbed soil should be expected.

Unprotected site soil also can deteriorate under construction traffic if exposed to inclement weather. Accordingly, to the degree possible, we recommend that construction equipment and personnel be prohibited from traversing prepared subgrade areas during wet weather conditions. Excavations that are prepared before inclement weather should be re-inspected to identify areas requiring repair. Any such areas should be recompacted or overexcavated to firm bearing or a depth of 2 feet, whichever is less, and replaced with compacted structural fill as discussed in the previous section of this report.

4.7.5 Utility Trenches

Trench excavation, pipe bedding, and trench backfilling should be completed using the general procedures described in the WSDOT Standard Specifications or other suitable procedures specified by the project civil engineer. The native fine-grained alluvial soils encountered at the site are generally of low corrosivity based on our experience. If corrosivity of site soils is a concern, then additional testing should be completed.

Utility trench backfill should consist of structural fill and should be placed in lifts of 12 inches or less (loose thickness) such that adequate compaction can be achieved throughout the lift. Each lift must be compacted prior to placing the subsequent lift. Prior to compaction, the backfill should be moisture conditioned to within 3 percent of the optimum moisture content, if necessary. The backfill should be compacted in accordance with the criteria discussed above. Figure 6 illustrates recommended trench compaction criteria under pavement and non-structural areas.

4.8 CUT AND FILL SLOPES

We anticipate that temporary open cut slopes will be suitable for excavations required for the project. The following sections summarize the general excavation recommendations for temporary cut slopes and permanent cut and fill slope.

4.8.1 Temporary Cut Slopes

The stability of open cut slopes is a function of soil type, groundwater seepage, slope inclination, slope height and nearby surface loads. The use of inadequately designed open cuts could impact the stability of adjacent work areas, existing utilities, and endanger personnel. In our opinion, the contractor will be in the best position to observe subsurface conditions continuously throughout the construction process and to respond to variable soil and groundwater conditions. Therefore, the contractor should have the primary responsibility for deciding whether or not to use open cut slopes rather than some form of temporary excavation support, and for establishing the safe inclination of the cut slope. Acceptable slope inclinations should be determined during construction. All open cut slopes and temporary excavation support should be constructed or installed, and maintained in accordance with the requirements of the appropriate governmental agency.

For planning purposes, temporary unsupported cut slopes more than 4 feet high may be inclined no steeper than 1.5H:1V in the fine-grained alluvium deposits if groundwater seepage is not present as approved by the geotechnical engineer. We recommend that a representative from our firm observe the cuts in the site soils to assess stability prior to making final temporary cuts.

The above guidelines assume that surface loads such as equipment loads and storage loads will be kept a sufficient distance away from the top of the cut so that the stability of the excavation is not affected. We recommend that this distance be not less than half the height of the cut.

Water entering excavations must be collected and routed away from prepared subgrade areas. We expect that this may be accomplished by installing a system of drainage ditches and sumps along the toe of the cut slopes. Some sloughing and raveling of the cut slopes should be expected. Temporary covering, such as heavy plastic sheeting with appropriate ballast, should be used to protect these slopes during periods of wet weather. Surface water runoff from above cut slopes should be prevented from flowing over the slope face by using berms, drainage ditches, swales or other appropriate methods.

If temporary cut slopes experience excessive sloughing or raveling during construction, it may become necessary to modify the cut slopes to maintain safe working conditions. Slopes experiencing problems can be flattened, regraded to add intermediate slope benches, or additional dewatering can be provided if the poor slope performance is related to groundwater seepage.

4.8.2 Permanent Cut and Fill Slopes

We recommend that permanent cut or fill slopes be constructed at inclinations of 2H:1V or flatter, and be blended into existing slopes with smooth transitions. Steeper slopes can be constructed if the fill is reinforced with geogrid or other types of reinforcement designed for fill slopes. To achieve uniform compaction, we recommend that fill slopes be overbuilt slightly and subsequently cut back to expose well-compacted fill. Structural fill placed on slopes inclined steeper than 5H:1V should be properly benched or keyed into the slope in accordance with Section 2-03.3(14) of the WSDOT Standard Specifications.

To reduce erosion, newly constructed slopes should be planted or hydroseeded shortly after completion of grading. Until the vegetation is established, some sloughing and raveling of the slopes should be expected. This may necessitate localized repairs and reseeding. Temporary covering, such as clear heavy plastic sheeting, jute fabric, or erosion control blankets (such as American Excelsior Curlex 1 or North American Green SC150) could be used to protect the slopes during periods of rainfall.

4.9 SEDIMENTATION AND EROSION CONTROL

In our opinion, the erosion potential of the near surface on-site soils is moderate to high. Construction activities including stripping and grading will expose soils to the erosional effects of wind and water. The amount and potential impacts of erosion are partly related to the time of year that construction actually occurs. Wet weather construction will increase the amount and extent of erosion and potential sedimentation.

Erosion and sedimentation control measures may be implemented by using a combination of interceptor swales, straw bale barriers, silt fences and straw mulch for temporary erosion protection of exposed soils. All disturbed areas should be finish graded and seeded as soon as practical to reduce the risk of erosion. Erosion and sedimentation control measures should be installed and maintained in accordance with the requirements of Kittitas County or other applicable procedures specified by the project civil engineer.

4.10 PAVEMENT RECOMMENDATIONS

4.10.1 Subgrade Preparation

We recommend the subgrade soils in new pavement areas be prepared and evaluated as described in the Earthwork section of this report. If the subgrade soils are excessively loose or soft, it may be necessary to excavate localized areas and replace them with additional gravel borrow or gravel base material. Pavement subgrade conditions should be compacted to at least 95 percent of the MDD in the upper 12 inches and be observed and proof-rolled during construction in order to evaluate the presence of unsuitable subgrade soils and the need for over-excavation and placement of a geotextile separator.

4.10.2 New Hot-mix Asphalt Pavement

HMA pavement recommendations described below are for passenger vehicles and delivery trucks based on our engineering judgment. In light-duty pavement areas (e.g., automobile parking), we recommend a pavement section consisting of at least a 3-inch thickness of ½-inch HMA (PG 64-28) per WSDOT Sections 5-04 and 9-03, over a 4-inch thickness of densely compacted crushed rock base course per WSDOT Section 9-03.9(3). In heavy-duty pavement areas (e.g., materials delivery and vehicle drive aisles) around the buildings, we recommend a pavement section consisting of at least a 4-inch thickness of ½-inch HMA (PG 64-28) over a 6-inch thickness of densely compacted crushed rock base course. The base course should be compacted to at least 95 percent of the MDD (ASTM D 1557). Prior to placing the base course, the exposed subgrade should be compacted to at least 95 percent of the MDD and be proof-rolled and approved by the geotechnical engineer. We recommend that a proof-roll of the compacted base course be observed by a representative from our firm prior to paving. Soft or yielding areas observed during proof-rolling may require over-excavation and replacement with compacted structural fill.

The pavement sections recommended above are based on our experience. Thicker asphalt sections may be needed based on the actual subgrade conditions, traffic data and intended use, especially for pavements supporting bus traffic.

4.10.3 Portland Cement Concrete Pavement

Portland cement concrete (PCC) sections should be considered for trash dumpster areas and where other concentrated heavy loads may occur. We recommend that these pavements consist of at least 6 inches of PCC over 6 inches of crushed surfacing base course. A thicker concrete section may be needed based on the actual traffic data. If the concrete pavement will have doweled joints, we recommend that the concrete thickness be increased by an amount equal to the diameter of the dowels. The base course, as well as the exposed subgrade below the basecourse, should be compacted to at least 95 percent MDD.

We recommend PCC pavements incorporate construction joints and/or crack control joints spaced maximum distances of 12 feet apart, center-to-center, in both the longitudinal and transverse directions. Crack control joints may be created by placing an insert or groove into the fresh concrete surface during finishing, or by sawcutting the concrete after it has initially set-up. We recommend the depth of the crack control joints be approximately one-fourth the thickness of the concrete; or about 1½ inches deep for the recommended concrete thickness of 6 inches. We also recommend the crack control joints be sealed with an appropriate sealant to help restrict water infiltration into the joints.

4.10.4 Asphalt-Treated Base

Because pavements may be constructed during the wet seasons, consideration may be given to covering the areas to be paved with asphalt-treated base (ATB) for protection. Light-duty pavement areas should be surfaced with 3 inches of ATB, and heavy-duty pavement areas should be surfaced with 6 inches of ATB. Prior to placement of the final pavement sections, we recommend that areas of ATB pavement failure be removed and the subgrade repaired. If ATB is used and is serviceable when final pavements are constructed, the crushed surfacing base course can be eliminated, and the design PCC or asphalt concrete pavement thickness can be placed directly over the ATB.

4.11 DRAINAGE CONSIDERATIONS

We anticipate that surface water may enter excavations depending on the time of year construction takes place, especially in the spring and winter months. However, we expect this seepage water can be handled by digging interceptor trenches in the excavations and pumping from sumps. The water if not intercepted and removed from the excavations will make it difficult to place and compact structural fill and may destabilize cut slopes, especially cut slopes in the silts and clays.

All paved and landscaped areas should be graded so surface drainage is directed away from the buildings to appropriate catch basins. Water collected in roof downspout lines must not discharge into or be routed to the perforated pipes intended for footing or wall drainage.

4.12 INFILTRATION CONSIDERATIONS

We understand that infiltration facilities, such as bio-infiltration ponds and swales, are proposed across the site as part of planned development. We also understand that infiltration requirements will be designed in accordance with the Washington State Department of Ecology's 2019 Stormwater Management Manual for Eastern Washington (SWMMEW) (Ecology 2019). Initial saturated hydraulic conductivity (K_{sat}) values were estimated for site soils using laboratory grain-size analyses, as described below.

4.12.1 Grain-size Analyses

Since the soils have not been glacially consolidated, the initial saturated hydraulic conductivity (K_{sat}) can be estimated using the soil grain size analysis method (Massmann 2008) per Section 6.3.3 of the SWMMEW.

We completed four grain size analyses on selected samples from our explorations in order to estimate an initial saturated hydraulic conductivity (K_{sat}). The initial saturated hydraulic conductivity values were estimated using the grain size analysis method per Section 3.3.6 of the SWMMEW. The estimated long-term (factored) saturated hydraulic conductivity values for fine grained alluvium soils vary between approximately 0.1 and 0.25 inches per hour. The estimated hydraulic conductivity values (K_{sat}) are the long-term infiltration rates and include correction factors. The correction factors used for site variability, test method, and degree of influent control to prevent siltation and bio-buildup are 0.33, 0.4, and 0.9, respectively. The combined correction factors result in an overall safety factor of 8.3 and were applied as outlined in Section 3.3.6 of the SWMMEW.

4.13 RECOMMENDED ADDITIONAL GEOTECHNICAL SERVICES

Throughout this report, recommendations are provided where we consider additional geotechnical services to be appropriate. These additional services are summarized below:

- If on-site infiltration facilities are incorporated into the project, in-situ pilot infiltration testing should be performed by GeoEngineers at the location(s) and at the planned depth(s) of the infiltration facilities.
- GeoEngineers should be retained to review the project plans and specifications when complete to confirm that our design recommendations have been implemented as intended.
- During construction, GeoEngineers should evaluate the suitability of the foundation subgrades, evaluate the suitability of floor slab and pavement subgrades, observe installation of subsurface drainage measures, observe and test structural fill and utility trench backfill, evaluate the bottom of infiltration facilities, and provide a summary letter of our construction observation services. The purposes of GeoEngineers construction phase services are to confirm that the subsurface conditions are consistent with those observed in the explorations and other reasons described in Appendix C, Report Limitations and Guidelines for Use.

5.0 Limitations

We have prepared this report for Teanaway Court Associates LLLP and Shelter Resources, Inc. for the HopeSource Cle Elum project located in Cle Elum, Washington. Teanaway Court Associates LLLP and Shelter Resources, Inc. may distribute copies of this report to their authorized agents and regulatory agencies as may be required for the project.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering in this area at the time this report was prepared. The conclusions, recommendations, and opinions presented in this report are based on our professional knowledge, judgment and experience. No warranty or other conditions, express or implied, should be understood.

Any electronic form, facsimile or hard copy of the original document (email, text, table and/or figure), if provided, and any attachments should be considered a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

Please refer to Appendix C for additional information pertaining to use of this report.

6.0 References

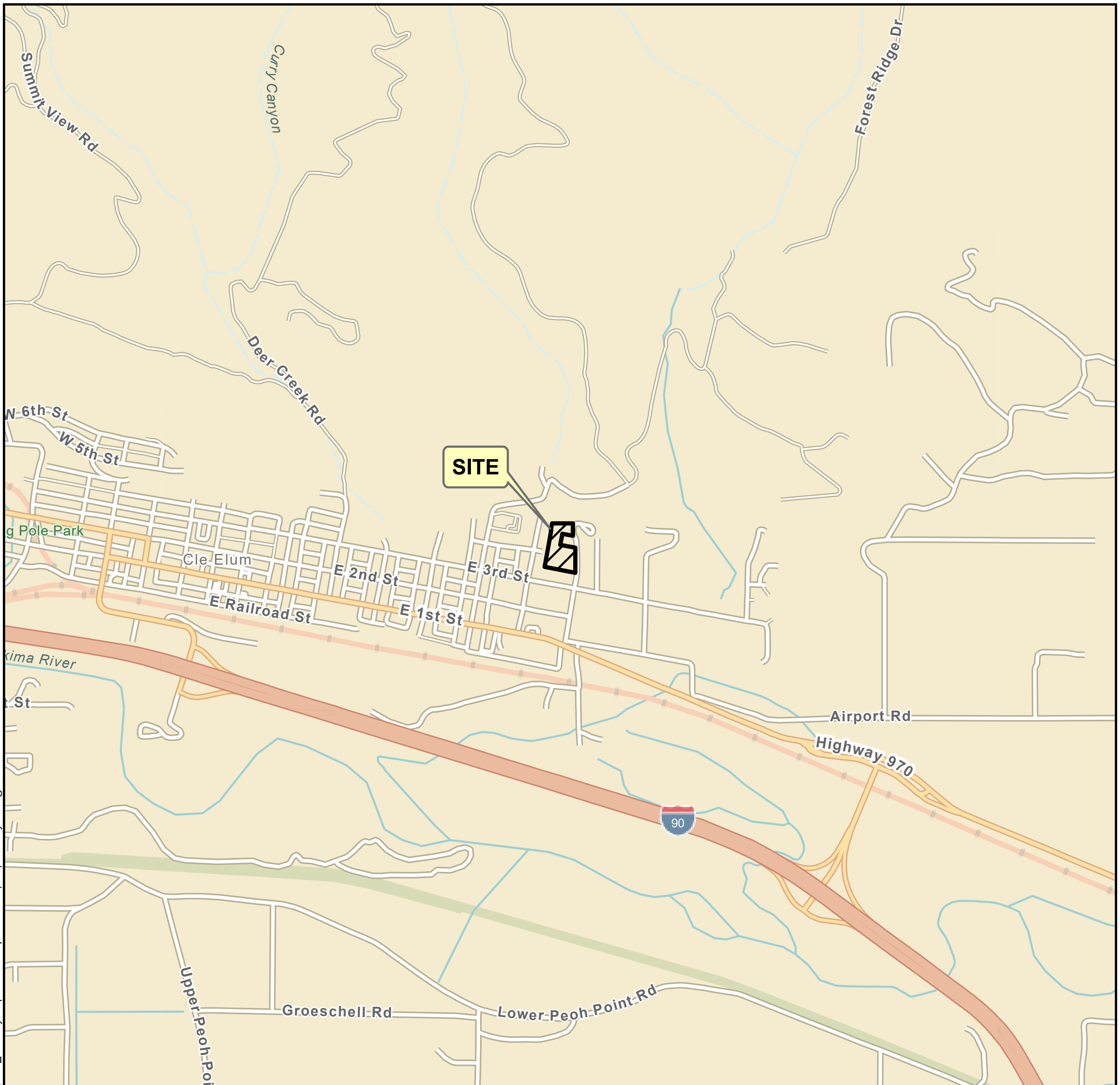
International Code Council, 2021. International Building Code.

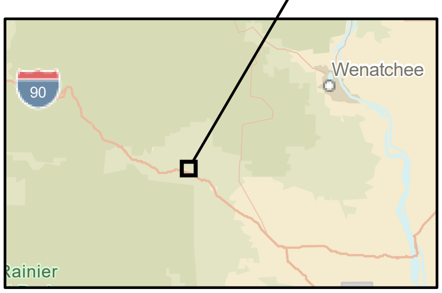
Tabor, R.W., et al, 1982. “Geologic Map of the Wenatchee Quadrangle, Central Washington, Miscellaneous Investigation Studies,” U.S. Geological Survey, Geologic Quadrangle Map I-1311.

Washington State Department of Ecology (Ecology), 2019. “Stormwater Management Manual for Eastern Washington –Chapter 6, Infiltration BMPs,” August 2019, Publication No. 18-10-044.

Washington State Department of Transportation, 2024. Standard Specifications for Road, Bridge and Municipal Construction.

Figures





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Feet

Source(s):
- ESRI

Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Disclaimer: This figure was created for a specific purpose and project. Any use of this figure for any other project or purpose shall be at the user's sole risk and without liability to GeoEngineers. The locations of features shown may be approximate. GeoEngineers makes no warranty or representation as to the accuracy, completeness, or suitability of the figure, or data contained therein. The file containing this figure is a copy of a master document, the original of which is retained by GeoEngineers and is the official document of record.

Vicinity Map

HopeSource Cle Elum
Cle Elum, Washington

GEOENGINEERS

Figure 1

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Legend

Site Boundary

GEI-B-1 Boring by GeoEngineers

GEI-TP-1 Test Pit by GeoEngineers

Approximate Extents of Debris Field

Note:
GEI-TP-9 through GEI-TP-11 were not completed as there were multiple test pits completed within the debris fill area.

Source: Aerial from Microsoft Bing

Coordinate System: Washington State Plane, South Zone, NAD83, US Foot

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Site Plan
Existing Conditions

HopeSource Cle Elum
Cle Elum, Washington

GeoEngineers

Figure 2

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Legend

- Site Boundary
- GEI-B-1 Boring by GeoEngineers
- GEI-TP-1 Test Pit by GeoEngineers
- Approximate Extents of Debris Field

Sources:

- Aerial from Microsoft Bing
- Proposed layout by SMR Architects, dated 2/14/25

Coordinate System: Washington State Plane, South Zone, NAD83, US Foot

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Site Plan
Proposed Improvements

HopeSource Cle Elum
Cle Elum, Washington

GEOENGINEERS

Figure 3

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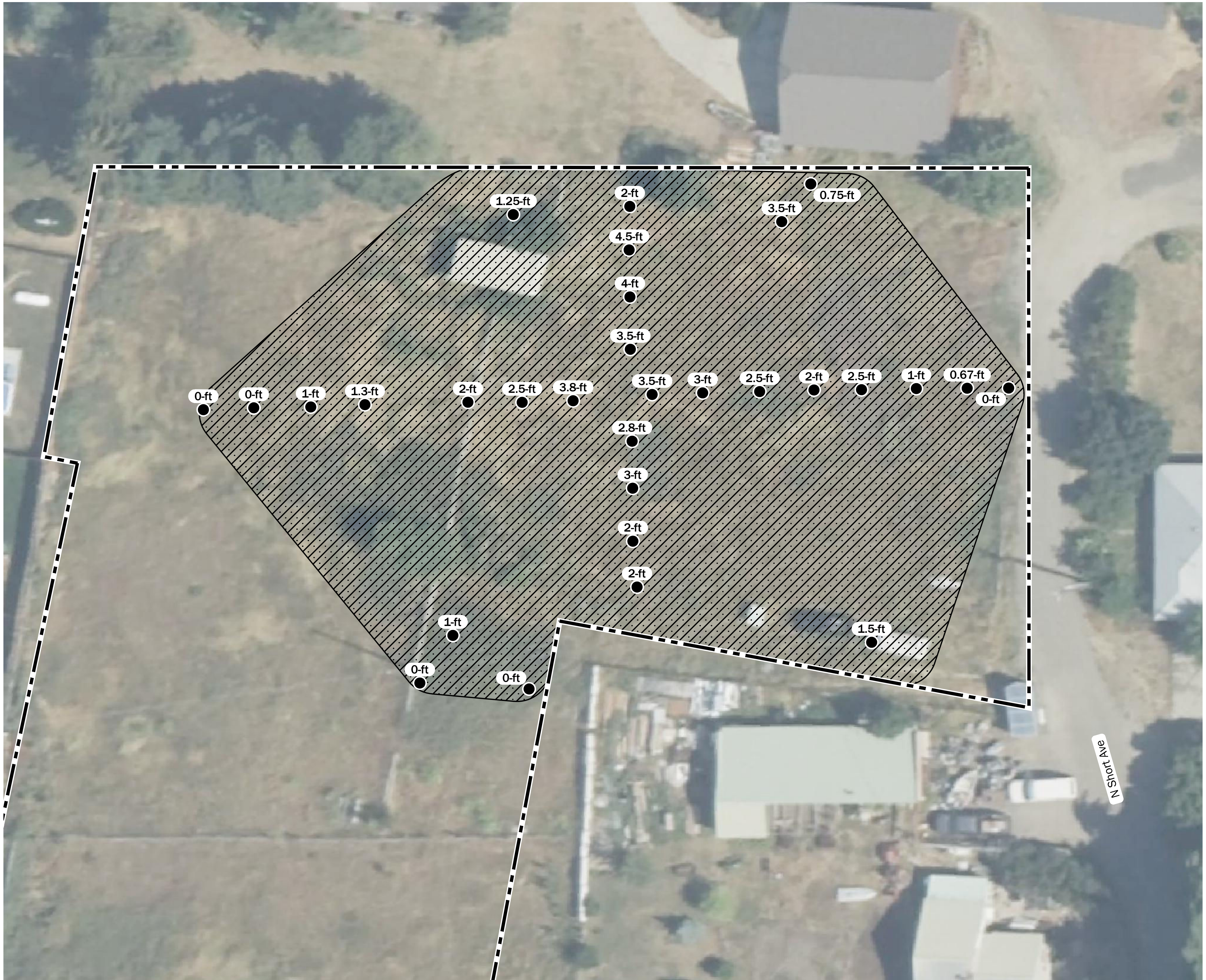

Legend

Site Boundary

1-ft ● Approximate Depth of Debris Fill Encountered in Test Pit

Approximate Extents of Debris Fill

Source(s): Aerial from MicroSoft Bing

Coordinate System: Washington State Plane, South Zone, NAD83, US Foot

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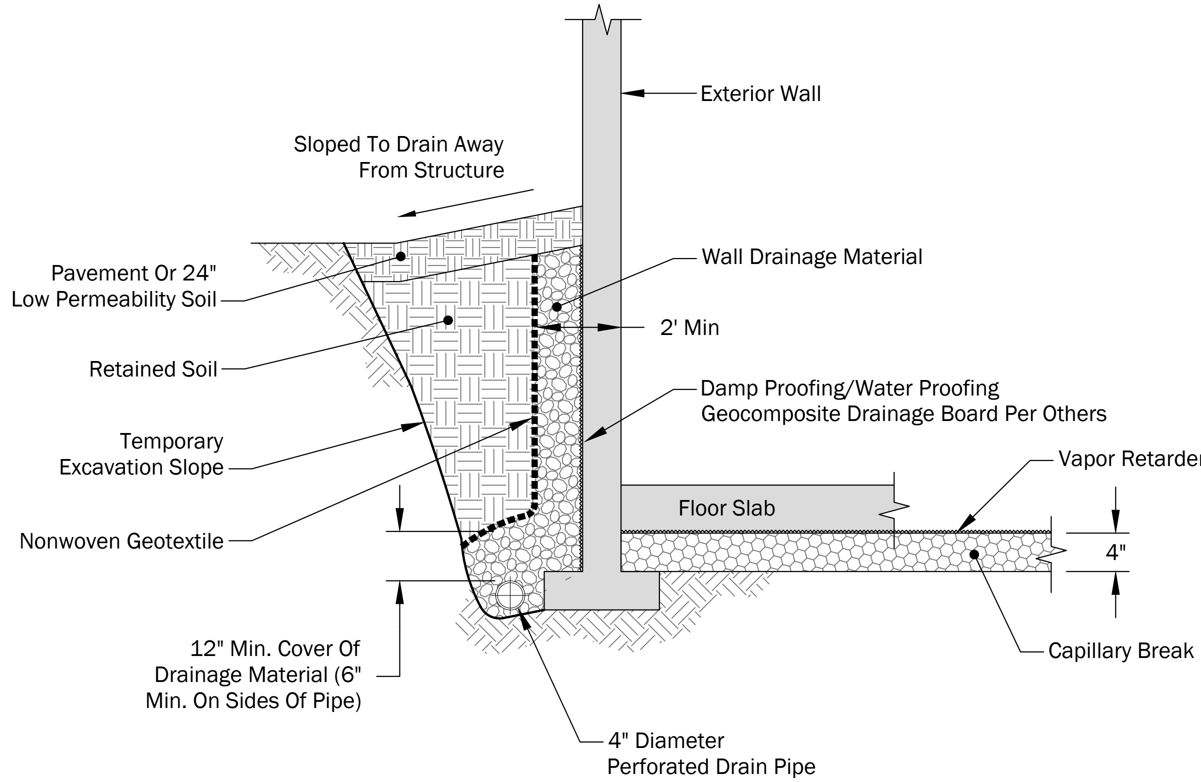
Site Plan
Extents and Depth of Debris Fill

HopeSource Cle Elum
Cle Elum, Washington

GeoEngineers

Figure 4

P:\27\27639001\CAD\00\Geotech\2763900100_F04_Site Plan Depth of Debris.dwg 4 Date Exported:4/2/2025 12:54 PM - by Lisa Witkowski



Not To Scale

MATERIALS:

A. WALL DRAINAGE MATERIAL

Should consist of "Gravel Backfill for Drains" per WSDOT Standard Specification 9-03.12(4), surrounded with a non-woven geotextile such as Mirafi 140N (or approved equivalent).

B. RETAINED SOIL

Should consist of structural fill, either on-site soil or imported. The backfill should be compacted in loose lifts not exceeding 6 inches. Wall backfill supporting building floor slabs should consist of imported sand and gravel per WSDOT Standard Specification 9-03.14(1) compacted to at least 95 percent ASTM D1557. Backfill not supporting building floor slabs, sidewalks, or pavement should be compacted to 90 to 92 percent of the maximum dry density, per ASTM D1557. Backfill supporting sidewalks or pavement areas should be compacted to at least 95 percent in the upper two feet. Only hand-operated equipment should be used for compaction within 5 feet of the walls and no heavy equipment should be allowed within 5 feet of the wall.

C. CAPILLARY BREAK

Should consist of at least 4 inches of clean crushed gravel with a maximum size of 1-1/2 inches and negligible sand or fines.

D. PERFORATED DRAIN PIPE

Should consist of a 4-inch diameter perforated heavy-wall solid pipe (SDR-35 PVC) or rigid corrugated polyethylene pipe (ADS N-12) or equivalent. Drain pipes should be placed with 0.5 percent minimum slopes and discharge to the storm water collection system.

Notes:
1. Thickness/location of permanent wall and slab on grade, and perimeter foundation shown here to depict intent of wall drainage design. Actual thickness/location of these structural elements will vary.

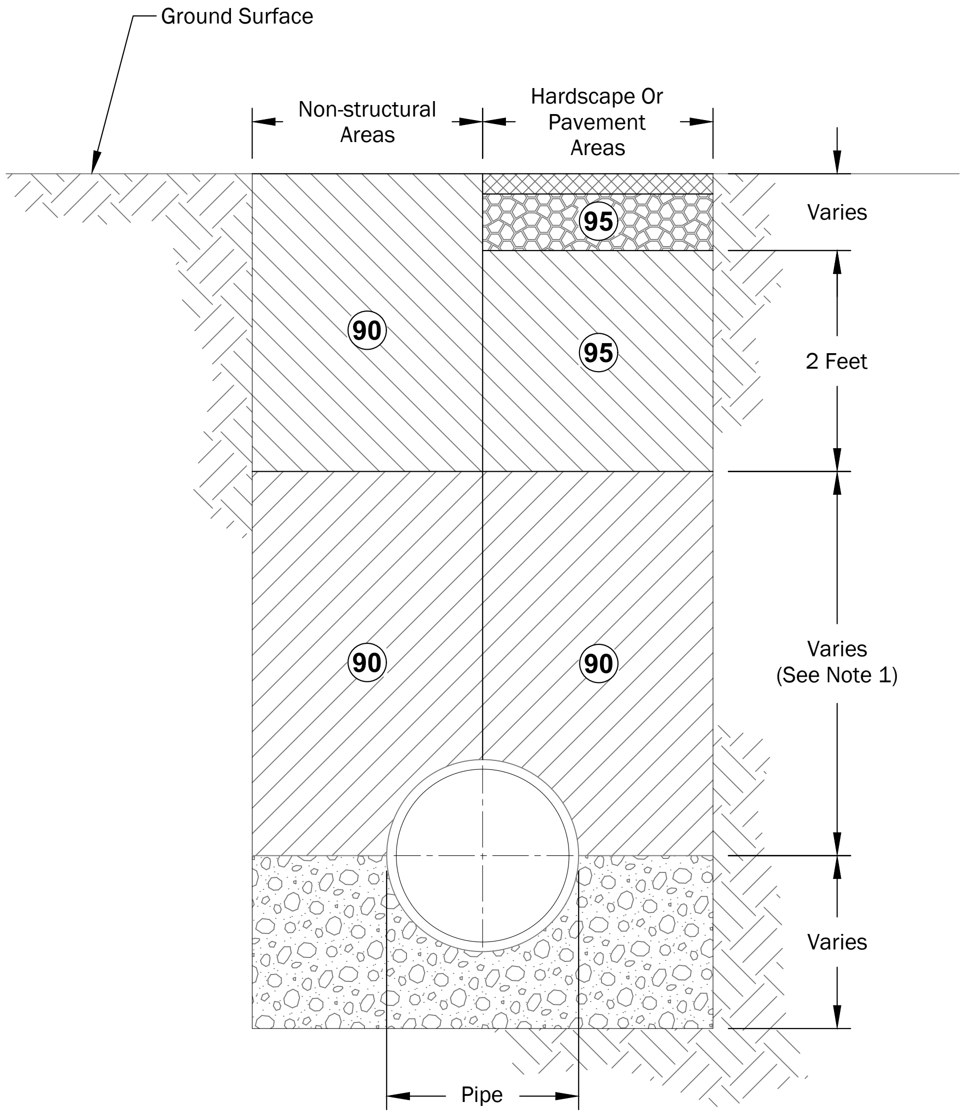
Wall Drainage and Backfill

HopeSource Cle Elum
Cle Elum, Washington

GeoEngineers

Figure 5

P:\27\27639001\CAD\00\Geotech\2763900100_F05_Wall Drainage.dwg TAB:5 Date Exported: 03/20/25 - 12:07 by lwitkowski



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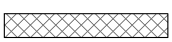
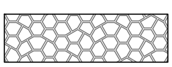
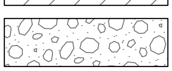
Legend

95	Recommended Compaction as a Percentage of Maximum Dry Density, by Test Method ASTM D1557 (Modified Proctor)
	Concrete or Asphalt Pavement
	Base Course
	Trench Backfill
	Pipe Bedding

Notes:

1. All backfill under building areas should be compacted to at least 95 percent per ASTM D1557.

Compaction Criteria for Trench Backfill

HopeSource Cle Elum
Cle Elum, Washington

GeoEngineers

Figure 6

Appendices

Appendix A

Field Explorations

Appendix A
Field Explorations

Subsurface conditions were explored at the site by drilling four borings (GEI-B-1 through GEI-B-4) and excavating 22 test pits (GEI-TP-1 through GEI-TP-8 and GEI-TP-12 through GEI-TP-25). The borings were completed on September 16 and 17, 2024, to depths ranging from 21½ to 31 feet below existing site grades. The test pits were completed on September 20, 2024 (GEI-TP-1 through GEI-TP-8) and March 11 and 12, 2025 (GEI-TP-12 through GEI-TP-25) to depths ranging from approximately 4.5 to 9 feet below existing site grades. Test pits conducted to help delineate the north debris fill were also performed on March 11 and 12, 2025. The locations of the explorations were measured from nearby site features and the approximate locations are shown on Figures 2, 3 and 4.

The soils encountered during explorations were visually classified in general accordance with the soil classification system described in Figure A-1. The logs of the explorations are presented in Figures A-2 through A-27. Representative soil samples were obtained from the explorations, logged, sealed in plastic bags and transported to our laboratory. The field classifications were further evaluated in our laboratory.

Groundwater conditions observed in the explorations are presented on the exploration logs. Groundwater conditions observed during drilling and excavation represent a short-term condition and may or may not be representative of the long-term groundwater conditions at the site.

BORINGS

Borings were advanced using a truck mounted CME-75 hollow-stem auger drill rig owned and operated by GeoEngineers, Inc. (GeoEngineers). The borings were continuously observed by a representative from our firm who classified the soils encountered, obtained representative soil samples and maintained a detailed log of each boring. Samples of soil encountered in the borings were obtained at approximate 2½- to 5-foot-depth intervals using either a 2.4-inch, inside diameter, California-style, split-barrel sampler or a 2-inch, outside-diameter, standard split-spoon standard penetration test (SPT) sampler. Each sampler was driven into the soil using a 140 pound automatic hammer, falling 30 inches on each blow. The number of blows required to drive the samplers each of three, 6-inch increments of penetration were recorded in the field. The sum of the blow counts for the last two, 6-inch increments of penetration, unless otherwise noted, is reported on the boring logs in the “Blows/foot” column. The sum of the blow counts for the last two, 6 inch increments of penetration for the California-style sampler were converted to approximate ASTM International (ASTM) D 1586 08A Standard Penetration Test (SPT) N-values. The conversion of California sampler blow counts to approximate SPT N values was made using the Lacroix-Horn Equation (ASTM SPT 523, 1973). The approximate N-values are shown in the Remarks section of the boring logs.

TEST PITS

The test pits, for both mobilizations, were excavated using a CAT 308 mini-track excavator owned and operated by Belsaas & Smith. The test pits were continuously observed by a representative from our firm who classified the soils encountered, obtained representative soil samples and maintained a detailed log of each test pit. Selected areas within the upper approximately four feet of each test pit were probed with a ½-inch-diameter steel probe rod to estimate density. Probe depths are shown on the test pit logs at the depths the testing was completed. In addition, pertinent information including soil sample depths, stratigraphy, caving, and groundwater seepage were recorded.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS: GRAPH	SYMBOLS: LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% RETAINED ON NO. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
				SP	POORLY-GRADED SANDS, GRAVELLY SAND
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS: GRAPH	SYMBOLS: LETTER	TYPICAL DESCRIPTIONS
	AC	Asphalt Concrete
	CC	Cement Concrete
	CR	Crushed Rock/ Quarry Spalls
	SOD	Sod/Forest Duff
	TS	Topsoil

Groundwater Contact

Measured groundwater level in exploration, well, or piezometer

Measured free product in well or piezometer

Graphic Log Contact

Distinct contact between soil strata

Approximate contact between soil strata

Material Description Contact

Contact between geologic units

Contact between soil of the same geologic unit

Sampler Symbol Descriptions

Modified California Sampler (6-inch sleeve) or Dames & Moore

Standard Penetration Test (SPT)

Shelby tube

Piston

Direct-Push

Bulk or grab

Continuous Coring

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

"P" indicates sampler pushed using the weight of the drill rig.

"WOH" indicates sampler pushed using the weight of the hammer.

Laboratory / Field Tests

%F	Percent fines
%G	Percent gravel
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DD	Dry density
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
Mohs	Mohs hardness scale
OC	Organic content
PM	Permeability or hydraulic conductivity
PI	Plasticity index
PL	Point load test
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
UU	Unconsolidated undrained triaxial compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

Key to Exploration Logs

GEOENGINEERS

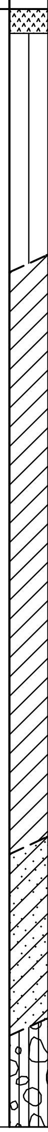
Figure A-1

Drilled	Start 9/16/2024	End 9/17/2024	Total Depth (ft)	30.75	Logged By AMN Checked By GT	Driller	GeoEngineers, Inc.	Drilling Method	Hollow-stem Auger

Surface Elevation (ft) Vertical Datum	1925 NAVD88	Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop	Drilling Equipment	CME-75 Truck
Easting (X) Northing (Y)	1536790 679640	System Datum	WA State Plane South NAD83 (feet)	Groundwater not observed at time of exploration	

Notes:

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0						TS	Approximately 8 inches of brown silt with sand and rootlets			
							ML	Light brown sandy silt (stiff, moist) (alluvium)			
		X	7	15		1					
1920	5	X	6	13		2					
							CL	Reddish brown lean clay with fine sand (soft to stiff, moist)			
		X	12	8		3					
1915	10	X	17	6		4 AL			21		AL (LL = 26; PI = 10)
1910	15	X	18	6		5					
1905	20	X	18	4		6					Boring stopped at 20 feet on 9/16/2024. Resumed drilling on 9/17/2024 starting with sampling at 25 feet
							SC	Reddish brown clayey fine to medium sand (loose, moist)			
1900	25	X	17	9		7					
							GM	Brown silty fine to coarse gravel with sand and occasional cobbles (very dense, wet)			Drill chatter at 28 feet
1895	30	X	9	50/3"		8					



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Boring GEI-B-1

GeoEngineers

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Drilled	Start 9/16/2024	End 9/16/2024	Total Depth (ft) 21.5	Logged By AMN / Checked By GT	Driller GeoEngineers, Inc.	Drilling Method Hollow-stem Auger

Surface Elevation (ft) 1916 / Vertical Datum NAVD88	Hammer Data: Autohammer 140 (lbs) / 30 (in) Drop	Drilling Equipment: CME-75 Truck	
Easting (X) 1536740 / Northing (Y) 679380	System Datum: WA State Plane South NAD83 (feet)	Groundwater not observed at time of exploration	

Notes:

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
1915	0							TS	Approximately 7 inches of brown silt with sand and roots			
								ML	Light brown silt with sand and organic matter (stiff, moist) (fill)			
			7	13		1						
1910	5		5	13		2 %F		ML	Reddish brown sandy silt with ash (medium dense, moist)	11	63	
			7	11		3		CL	Reddish brown clay with sand and ash (medium stiff to stiff, moist) (alluvium)			
1905	10		16	11		4						
1900	15		15	7		5						
								SC	Reddish brown clayey fine to medium sand with trace gravel (very dense, moist)			
1895	20		16	52		6						Rock stuck in sampler shoe

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Boring GEI-B-2

GEOENGINEERS

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Drilled — Start: 9/17/2024 — End: 9/17/2024	Total Depth (ft): 21.5	Logged By: AMN Checked By: GT	Driller: GeoEngineers, Inc.	Drilling Method: Hollow-stem Auger	
Surface Elevation (ft): 1909 Vertical Datum: NAVD88	Hammer Data: Autohammer 140 (lbs) / 30 (in) Drop	Drilling Equipment: CME-75 Truck			
Easting (X): 1537000 Northing (Y): 679330	System Datum: WA State Plane South NAD83 (feet)	See "Remarks" section for groundwater observed			
Notes:					

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0							TS	Approximately 7 inches of brown silt with rootlets			
								ML	Light brown sandy silt (stiff, moist) (alluvium)			
1905			4	14		1 %F				11	63	
	5		5	14		2						
1900			8	9		3		SC	Reddish brown clayey fine to medium sand (loose, moist)			
	10		14	7		4		CL	Reddish brown clay with fine sand (medium stiff to very stiff, moist)			
1895												
	15		13	27		5A 5B						
								GP	Gray fine to coarse gravel with sand and trace silt (very dense, moist)			
1890								GM	Brown silty fine to coarse gravel with sand and occasional cobbles (very dense, wet)			
	20		10	160		6						Approximate SPT N-value = 50+
												Groundwater encountered at approximately 21¼ feet

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Boring GEI-B-3

GeoEngineers

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Drilled	Start 9/17/2024	End 9/17/2024	Total Depth (ft) 21.5	Logged By AN / Checked By GT	Driller GeoEngineers, Inc.	Drilling Method Hollow-stem Auger

Surface Elevation (ft) / Vertical Datum	1908 / NAVD88	Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop	Drilling Equipment	CME-75 Truck
Easting (X) / Northing (Y)	1536850 / 679220	System Datum	WA State Plane South NAD83 (feet)	See "Remarks" section for groundwater observed	

Notes:

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0							TS	Approximately 6 inches of brown silt with rootlets			
								ML	Light brown silt with fine sand (stiff, moist) (alluvium)			
1905			8	14		1						
	5		7	11		2			Trace ash			
1900			15	9		3		SC	Reddish brown clayey fine to medium sand (loose, moist)			
	10		12	31		4		SM	Reddish brown silty fine to medium sand (dense, moist)			
								GM	Gray silty fine to medium gravel with sand and cobbles (dense, moist)			
1895								GP-GM	Gray fine to coarse gravel with silt and sand (very dense, moist)			
	15		2	50/4"		5						
1890												Rock stuck in sampler shoe. Driller notes cobbles at 17 feet Groundwater encountered at approximately 18 feet
	20		8	144		6			Becomes wet			Approximate SPT N-value = 50+

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Boring GEI-B-4

GEOENGINEERS

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Figure A-5
Sheet 1 of 1

Date Excavated	9/20/2024	Total Depth (ft)	7.5	Logged By	RM	Excavator	Belsaas & Smith	Groundwater not observed
				Checked By	MAG	Equipment	CAT 308E2 CR	Caving not observed

Surface Elevation (ft)	1923	Easting (X)	1536890	Coordinate System	WA State Plane South
Vertical Datum	NAVD88	Northing (Y)	679650	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0				FILL	Fill with debris including concrete, glass and wood			Less than 1-inch probe rod penetration at surface
1922	1								
1921	2								Water line encountered at 1¾ feet
									5-inch probe rod penetration at 2½ feet
1920	3				ML	Brown silt with occasional sand and trace rootlets (stiff, moist) (alluvium)			1-inch probe rod penetration at 3 feet
1919	4		1						
1918	5		2 %F			Increasing sand content	17	71	
1917	6		3						
1916	7								

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-1

GeoEngineers

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Figure A-6
Sheet 1 of 1

Date Excavated 9/20/2024	Total Depth (ft) 8	Logged By RM Checked By MAG	Excavator Belsaas & Smith Equipment CAT 308E2 CR	Groundwater not observed Caving not observed

Surface Elevation (ft) 1921 Vertical Datum NAVD88	Easting (X) 1536770 Northing (Y) 679550	Coordinate System WA State Plane South Horizontal Datum NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0				ML	Brown sandy silt with trace rootlets (stiff, moist) (alluvium)			1-inch probe rod penetration at surface
1920	1								
			1 / %F				11	65	
1919	2								1-inch probe rod penetration at 2 feet
1918	3								Less than 1-inch probe rod penetration at 3 feet
1917	4		2						
1916	5								
			3			Becomes medium stiff			
1915	6								
			4		ML	Brown sandy silt (medium dense, moist)			
1914	7								
1913	8								

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-2

GEOENGINEERS

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Figure A-7
Sheet 1 of 1

Date Excavated	9/20/2024	Total Depth (ft)	9	Logged By	RM	Excavator	Belsaas & Smith	Groundwater not observed
				Checked By	MAG	Equipment	CAT 308E2 CR	Caving not observed

Surface Elevation (ft)	1918	Easting (X)	1536850	Coordinate System	WA State Plane South
Vertical Datum	NAVD88	Northing (Y)	679510	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
1918	0				ML	Gray sandy silt with trace rootlets (stiff, moist) (alluvium)			1-inch probe rod penetration at surface
1917	1	▯	1 / %F				9	63	
1916	2								1-inch probe rod penetration at 2 feet
1915	2.5–3	▯	2						
	3¼								1-inch probe rod penetration at 3¼ feet
1913	5	▯	3 / SA				14	67	
	6.5				SM	Brown silty fine sand (medium dense, moist)			
	7.5	▯	4			Increasing moisture content			Hard digging
1909	9								

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-3

GeoEngineers

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Figure A-8
Sheet 1 of 1

Date Excavated	9/20/2024	Total Depth (ft)	8	Logged By	RM	Excavator	Belsaas & Smith	Groundwater not observed
				Checked By	MAG	Equipment	CAT 308E2 CR	Caving not observed

Surface Elevation (ft)	1912	Easting (X)	1536850	Coordinate System	WA State Plane South
Vertical Datum	NAVD88	Northing (Y)	679350	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
1912	0				ML	Gray sandy silt with trace rootlets (very stiff, moist) (alluvium)			1-inch probe rod penetration at surface
1911	1		1 %F				8	66	
									Less than 1-inch probe rod penetration at 1½ feet
1910	2								
			2 %F				11	63	Less than 1-inch probe rod penetration at 2½ feet
1909	3								
									Less than 1-inch probe rod penetration at 3½ feet
1908	4				ML	Brown silt with sand (very stiff, moist)			
			3						
1907	5								
			4						
1906	6				SM	Brown silty fine sand (medium dense, moist)			
1905	7								
1904	8								

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-4

GeoEngineers

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Date Excavated	9/20/2024	Total Depth (ft)	8.25	Logged By	RM	Excavator	Belsaas & Smith	Groundwater not observed
				Checked By	MAG	Equipment	CAT 308E2 CR	Caving not observed

Surface Elevation (ft)	1910	Easting (X)	1536720	Coordinate System	WA State Plane South
Vertical Datum	NAVD88	Northing (Y)	679290	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0		1		ML	Gray sandy silt with rootlets (very stiff, moist) (alluvium)			3-inch probe rod penetration at subsurface Less than 1-inch probe rod penetration at 0.5 feet
1909	1								
1908	1.5				ML	Brown sandy silt (very stiff, moist)			
	2		2						Less than 1-inch probe rod penetration at 2 feet
1907	3								Less than 1-inch probe rod penetration at 3 feet
1906	4				ML	Brown silt with sand (very stiff, moist)			
1905	5		3 SA; HA			Increasing moisture content	12	77	
1904	6								
1903	6.5		4		SM	Brown silty fine to medium sand (medium dense, moist)			
1902	8								

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-5

GeoEngineers

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Figure A-10
Sheet 1 of 1

Date Excavated	9/20/2024	Total Depth (ft)	7.25	Logged By	RM	Excavator	Belsaas & Smith	Groundwater not observed
				Checked By	JSO	Equipment	CAT 308E2 CR	Caving not observed

Surface Elevation (ft)	1906	Easting (X)	1536700	Coordinate System	WA State Plane South
Vertical Datum	NAVD88	Northing (Y)	679140	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Sample Name / Testing	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
1906	0		ML	Brown sandy silt (very stiff, moist) (alluvium)			1-inch probe rod penetration - surface
1905	1	1					3½-inch probe rod penetration at 1 foot bgs
1904	2						
1903	3	2 SA; HA			8	67	1-inch probe rod penetration at 3 feet
1902	4						1-inch probe rod penetration at 4 feet
1901	5	3					
1900	6	4		Increased sand content; becomes medium stiff			
1899	7						

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-6

GEOENGINEERS

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Figure A-11
Sheet 1 of 1

Date Excavated	9/20/2024	Total Depth (ft)	7.5	Logged By	RM	Excavator	Belsaas & Smith	Groundwater not observed
				Checked By	JSO	Equipment	CAT 308E2 CR	Caving not observed

Surface Elevation (ft)	1906	Easting (X)	1536840	Coordinate System	WA State Plane South
Vertical Datum	NAVD88	Northing (Y)	679120	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0				SM	Brown silty fine to medium sand (medium dense, moist) (alluvium)			1-inch-probe rod penetration at surface
1905	1		1						2 inch-probe rod penetration at 1 foot
1904	2								1½ inch-probe rod penetration at 2 feet
1903	3		2						
									3½ inch-probe rod penetration at 3½ feet
1902	4		3						
	4.5		4 %F		ML	Brown silt with sand (medium stiff, moist)	16	71	
1901	5								
1900	6								
	6.5		5		SM	Brown silty fine to coarse sand with gravel (medium dense, moist)			
1899	7								

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-7

GEOENGINEERS

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Figure A-12
Sheet 1 of 1

Date:4/2/25 Path:P:\27\27639001\GINT\2763900100.GPJ DBLibrary/Library:GEOENGINEERS_DF_STD_US_JUNE_2017.GLB/GEI8_TESTPIT_1P_GEOTEC_%F

Date Excavated	9/20/2024	Total Depth (ft)	6.5	Logged By	RM	Excavator	Belsaas & Smith	Groundwater not observed
				Checked By	JSO	Equipment	CAT 308E2 CR	Caving not observed

Surface Elevation (ft)	1905	Easting (X)	1536990	Coordinate System	WA State Plane South
Vertical Datum	NAVD88	Northing (Y)	679100	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0				SM	Brown silty fine to medium sand (medium dense, moist) (alluvium)			2 to 3-inch probe rod penetration at surface
1904	1		1						
					ML	Brown sandy silt (medium stiff, moist)			
1903	2		2 / %F				8	61	
1902	3								
1901	4		3						
					GM	Brown silty fine to coarse gravel with sand and cobbles (medium dense, moist)			
1900	5		4 / SA				3	14	
1899	6		5		SM	Brown silty fine to medium sand with gravel and occasional cobbles (dense, moist)			

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-8

GEOENGINEERS

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Date Excavated	3/12/2025	Total Depth (ft)	4.5	Logged By	SSO	Excavator	Belsaas & Smith	Groundwater not observed
				Checked By	MAG	Equipment	CAT 308	Caving not observed

Surface Elevation (ft)	1923	Easting (X)	1536830	Coordinate System	WA State Plane South
Vertical Datum	NAVD88	Northing (Y)	679600	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0				FILL	Brown silt with sand and debris (glass) (moist) (fill)			
1922	1								6-inch probe rod penetration at 1 foot
1921	2		1						6-inch probe rod penetration at 2 feet
	2.5				SM	Brown fine silty sand with trace rootlets (moist) (alluvium)			
1920	3		2		ML	Brown silt with occasional sand (moist)			3-inch probe rod penetration at 3 feet
1919	4								3-inch probe rod penetration at 4 feet Encountered water service line. Coordinated with utility representative who arrived on site and evaluated the utility. Representative directed us to backfill the test pit location and that it would be evaluated at a later date.

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-12

GEOENGINEERS

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Date Excavated	3/12/2025	Total Depth (ft)	6	Logged By	SSO	Excavator	Belsaas & Smith	Groundwater not observed
				Checked By	MAG	Equipment	CAT 308	Caving not observed

Surface Elevation (ft)	1918	Easting (X)	1536760	Coordinate System	WA State Plane South
Vertical Datum	NAVD88	Northing (Y)	679510	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0				ML	Brown sandy silt with trace rootlets (moist) (alluvium)			
1917	1								1½-foot probe rod penetration at 1 foot
	1.5				SM	Brown silty fine sand (moist)			
1916	2		1						1-foot probe rod penetration at 2 feet
1915	3				ML	Brown sandy silt (moist)			8-inch probe rod penetration at 3 feet
	3.5		2						
1914	4								6-inch probe rod penetration at 4 feet
1913	5								
	5.5		3						
1912	6								

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-13

GeoEngineers

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Date Excavated	3/12/2025	Total Depth (ft)	6	Logged By	SSO	Excavator	Belsaas & Smith	Groundwater not observed
				Checked By	MAG	Equipment	CAT 308	Caving not observed

Surface Elevation (ft)	1918	Easting (X)	1536810	Coordinate System	WA State Plane South
Vertical Datum	NAVD88	Northing (Y)	679480	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0				ML	Brown sandy silt with trace rootlets (moist) (alluvium)			
1917	1		1		SM	Brown silty fine sand (moist)			1-foot probe rod penetration at 1 foot
1916	2		2		ML	Brown sandy silt (moist)			1-foot probe rod penetration at 2 feet
1915	3								1-foot probe rod penetration at 3 feet
1914	4								6-inch probe rod penetration at 4 feet
1913	5								
1912	6		3						

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-14

GeoEngineers

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Date Excavated	3/12/2025	Total Depth (ft)	5.5	Logged By	SSO	Excavator	Belsaas & Smith	Groundwater not observed
				Checked By	MAG	Equipment	CAT 308	Caving not observed

Surface Elevation (ft)	1917	Easting (X)	1536750	Coordinate System	WA State Plane South
Vertical Datum	NAVD88	Northing (Y)	679450	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0				ML	Brown sandy silt with trace rootlets (moist) (alluvium)			
1916	1								1½-foot probe rod penetration at 1 foot
			1		SM	Dark brown silty fine sand (moist)			
1915	2								9-inch probe rod penetration at 2 feet
					ML	Brown sandy silt (moist)			
1914	3		2						7- to 8-inch probe rod penetration at 3 feet
1913	4								7- to 8-inch probe rod penetration at 4 feet
1912	5		3						

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-15

GeoEngineers

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Date Excavated	3/12/2025	Total Depth (ft)	6	Logged By	SSO	Excavator	Belsaas & Smith	Groundwater not observed
				Checked By	MAG	Equipment	CAT 308	Caving not observed

Surface Elevation (ft)	1914	Easting (X)	1536790	Coordinate System	WA State Plane South
Vertical Datum	NAVD88	Northing (Y)	679390	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
1914	0				ML	Brown sandy silt with trace rootlets (moist) (alluvium)			
1913	1		1		SM	Brown silty fine sand (moist)			1½-foot probe rod penetration at 1 foot
1912	2		2		ML	Brown sandy silt (moist)			1½-foot probe rod penetration at 2 feet
1911	3								1-foot probe rod penetration at 3 feet
1910	4								1-foot probe rod penetration at 4 feet
1909	5		3						
1908	6								

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-16

GeoEngineers

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Figure A-18
Sheet 1 of 1

Date Excavated	3/11/2025	Total Depth (ft)	9	Logged By	SSO	Excavator	Belsaas & Smith	Groundwater not observed
				Checked By	MAG	Equipment	CAT 308	Caving not observed

Surface Elevation (ft)	1916	Easting (X)	1536730	Coordinate System	WA State Plane South
Vertical Datum	NAVD88	Northing (Y)	679350	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0				ML	Brown sandy silt with occasional small wood debris (moist) (fill)			
1915	1								2-foot probe rod penetration at 1 foot
1914	2	▯	1						1½-foot probe rod penetration at 2 feet
	2.6				ML	Brown sandy silt with gravel (dry) (alluvium)			
1913	3	▯	2						
1912	4								3-inch probe rod penetration at 4 feet
1911	5	▯	3			Becomes moist			1- to 1½-inch probe rod penetration at 5 feet
1910	6								
1909	7								
1908	8								
1907	9								

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-17

GeoEngineers

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Figure A-19
Sheet 1 of 1

Date Excavated	3/12/2025	Total Depth (ft)	6	Logged By	SSO	Excavator	Belsaas & Smith	Groundwater not observed
				Checked By	MAG	Equipment	CAT 308	Caving not observed

Surface Elevation (ft)	1910	Easting (X)	1536780	Coordinate System	WA State Plane South
Vertical Datum	NAVD88	Northing (Y)	679290	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0				ML	Brown sandy silt with trace rootlets (moist) (alluvium)			
1909	1		1		SM	Brown silty fine sand (moist)			1-foot probe rod penetration at 1 foot
1908	2		2		ML	Brown sandy silt (moist)			6-inch probe rod penetration at 2 feet
1907	3								6-inch probe rod penetration at 3 feet
1906	4		3						4- to 5-inch probe rod penetration at 4 feet
1905	5								
1904	6								

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-18

GEOENGINEERS

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Date Excavated	3/12/2025	Total Depth (ft)	6	Logged By SSO / Checked By MAG	Excavator Belsaas & Smith / Equipment CAT 308	Groundwater not observed / Caving not observed

Surface Elevation (ft)	1910	Easting (X)	1536890	Coordinate System	WA State Plane South
Vertical Datum	NAVD88	Northing (Y)	679280	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
					ML	Brown sandy silt with trace rootlets (moist) (alluvium)			
1909	1		1		SM	Brown silty fine sand (moist)			1-foot probe rod penetration at 1 foot
1908	2				ML	Brown sandy silt (moist)			1-foot probe rod penetration at 2 feet
			2						
1907	3								1-foot probe rod penetration at 3 feet
1906	4								5-inch probe rod penetration at 4 feet
1905	5		3						
1904	6								

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-19

GEOENGINEERS

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Date Excavated	3/11/2025	Total Depth (ft)	7	Logged By	SSO	Excavator	Belsaas & Smith	Groundwater not observed
				Checked By	MAG	Equipment	CAT 308	Caving not observed

Surface Elevation (ft)	1910	Easting (X)	1536710	Coordinate System	WA State Plane South
Vertical Datum	NAVD88	Northing (Y)	679250	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0				ML	Brown sandy silt with trace rootlets (moist) (alluvium)			
1909	1								2-foot probe rod penetration at 1 foot
	1.5		1		ML	Brown sandy silt with gravel (moist)			
1908	2								2- to 4-inch probe rod penetration at 2 feet
1907	3								
1906	4		2		ML	Light brown sandy silt (dry)			1- to 2-inch probe rod penetration at 4 feet
1905	5				SM	Brown silty fine sand (moist)			1-inch probe rod penetration at 5 feet
1904	6		3						
1903	7								

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-20

GEOENGINEERS

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Figure A-22
Sheet 1 of 1

Date Excavated	3/12/2025	Total Depth (ft)	7	Logged By	SSO	Excavator	Belsaas & Smith	Groundwater not observed
				Checked By	MAG	Equipment	CAT 308	Caving not observed

Surface Elevation (ft)	1906	Easting (X)	1537000	Coordinate System	WA State Plane South
Vertical Datum	NAVD88	Northing (Y)	679190	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0				ML	Brown sandy silt with trace rootlets (moist) (alluvium)			
1905	1		1		SM	Brown silty fine sand (moist)			1-foot probe rod penetration at 1 foot
1904	2								4-inch probe rod penetration at 2 feet
1903	3				ML	Brown sandy silt (moist)			3-inch probe rod penetration at 3 feet
1902	4		2						3- to 4-inch probe rod penetration at 4 feet
1901	5								
1900	6								
1899	7								

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-21

GeoEngineers

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Date Excavated	3/11/2025	Total Depth (ft)	7	Logged By	SSO	Excavator	Belsaas & Smith	Groundwater not observed
				Checked By	MAG	Equipment	CAT 308	Caving not observed

Surface Elevation (ft)	1908	Easting (X)	1536760	Coordinate System	WA State Plane South
Vertical Datum	NAVD88	Northing (Y)	679210	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0				ML	Brown sandy silt with trace rootlets (moist) (alluvium)			
1907	1								1½-foot probe rod penetration at 1 foot
1906	2		1		ML	Brown sandy silt (loose, moist)			9-inch probe rod penetration at 2 feet
1905	3								
	3.5				SM	Brown silty fine sand (dry)			
1904	4		2						Less than 1-inch probe penetration at 4 feet
1903	5				ML	Brown sandy silt (moist)			
1902	6								
1901	7								

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-22

GeoEngineers

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Date Excavated	3/11/2025	Total Depth (ft)	7	Logged By	SSO	Excavator	Belsaas & Smith	Groundwater not observed
				Checked By	MAG	Equipment	CAT 308	Caving not observed

Surface Elevation (ft)	1909	Easting (X)	1536700	Coordinate System	WA State Plane South
Vertical Datum	NAVD88	Northing (Y)	679190	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
1909	0				ML	Brown sandy silt with trace rootlets (moist) (alluvium)			
1908	1					Grades to with gravel			1-foot probe rod penetration at 1 foot
1907	2		1						1- to 4-inch probe penetration at 2 feet
	2.5				SM	Brown silty fine to medium sand with gravel and occasional cobbles (moist)			
1906	3		2						Less than 1-inch probe penetration at 3 feet
1905	4								Less than 1-inch probe penetration at 4 feet
1904	5								Hard to dig
1903	5.5–6		3			Grades to with gravel			
1902	7								

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-23

GeoEngineers

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Date Excavated	3/11/2025	Total Depth (ft)	6	Logged By	SSO	Excavator	Belsaas & Smith	Groundwater not observed
				Checked By	MAG	Equipment	CAT 308	Caving not observed

Surface Elevation (ft)	1907	Easting (X)	1536890	Coordinate System	WA State Plane South
Vertical Datum	NAVD88	Northing (Y)	679160	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0				ML	Brown sandy silt with trace rootlets (moist) (alluvium)			
1906	1								4- to 6-inch probe rod penetration at 1 foot
			1			Grades to without rootlets			
1905	2		2		SM	Brown silty fine sand (moist)			
1904	3								2- to 4-inch probe rod penetration at 3 foot
					ML	Brown sandy silt (moist)			
1903	4		3						
1902	5								Less than 1-inch probe penetration at 5 feet
1901	6								Hard to dig

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-24

GeoEngineers

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Date Excavated	3/12/2025	Total Depth (ft)	6	Logged By SSO Checked By MAG	Excavator Belsaas & Smith Equipment CAT 308	Groundwater not observed Caving not observed

Surface Elevation (ft) Vertical Datum	1906 NAVD88	Easting (X) Northing (Y)	1536940 679120	Coordinate System Horizontal Datum	WA State Plane South NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0				ML	Brown sandy silt with trace rootlets (moist) (alluvium)			
1905	1								2-foot probe rod penetration at 1 foot
1904	2		1		SM	Brown silty fine sand (moist)			2-foot probe rod penetration at 2 feet
1903	3				SP-SM	Brown fine to medium sand with silt (moist)			4-inch probe penetration at 3 feet
1902	4		2						1-inch probe penetration at 4 feet
1901	5		3						Hard to dig
1900	6								

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on DEM.

Log of Test Pit GEI-TP-25

GEOENGINEERS

Project: HopeSource Cle Elum
Project Location: Cle Elum, Washington
Project Number: 27639-001-00

Appendix B
Laboratory Testing

Appendix B
Laboratory Testing

LABORATORY TESTING

Soil samples obtained from the explorations were transported to our laboratory and evaluated to confirm or modify field classifications, as well as to evaluate engineering and index properties of the soil samples. Representative samples were selected for laboratory testing consisting of moisture content, percent fines (material passing the U.S. No. 200 sieve), sieve analysis (grain-size distribution), and plasticity indices (Atterberg limits). The tests were performed in general accordance with test methods of the American Society for Testing and Materials (ASTM) or other applicable procedures.

Soil Classifications

Soil samples obtained from the explorations were visually classified in the field and/or in our laboratory using a system based on the Unified Soil Classification System (USCS) and ASTM classification methods. ASTM test method D 2488 was used to visually classify the soil samples, while ASTM D 2487 was used to classify the soils based on laboratory tests results. These classification procedures are incorporated in the exploration logs in Appendix A.

Moisture Content (MC)

Moisture content tests were completed in general accordance with ASTM D 2216 for representative samples obtained from the test pits. The results of these tests are presented on the logs in Appendix A at the depths at which the samples were obtained.

Fines Content (%F)

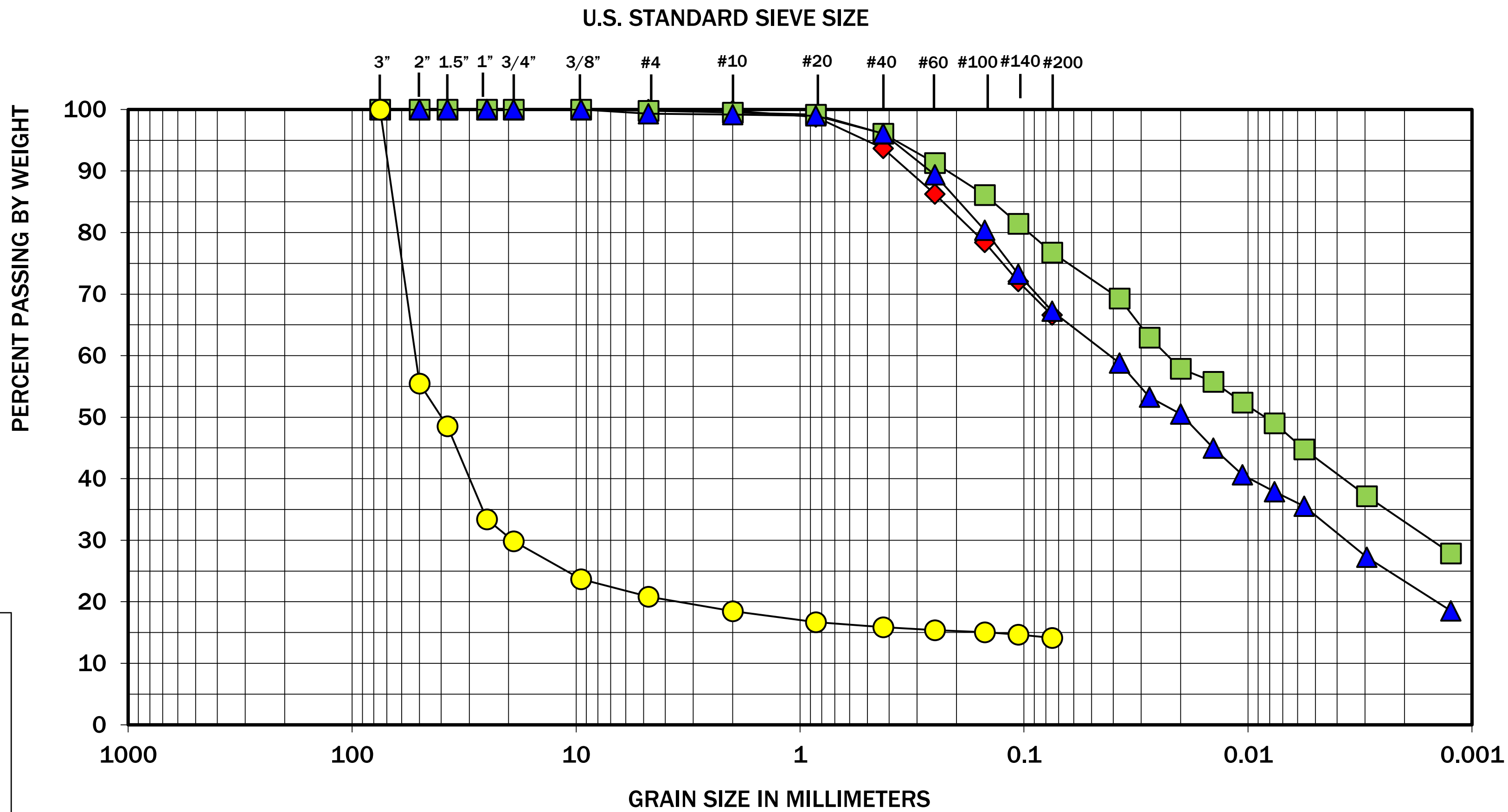
Selected samples were “washed” through the U.S. No. 200 mesh sieve to estimate the relative percentages of coarse- and fine-grained particles in the soil. The percent passing value represents the percentage by weight of the sample finer than the U.S. No. 200 sieve. These tests were conducted to verify field descriptions and to estimate the fines content for analysis purposes. The tests were conducted in accordance with ASTM D 1140, and the results are shown on the logs in Appendix A at the depths at which the samples were obtained.

Sieve Analysis (SA)

Sieve analysis testing was performed on selected samples in general accordance with ASTM C 136. The wet sieve analysis method was used to determine the percentage of soil passing the U.S. No. 200 mesh sieve. The results of the sieve analyses were plotted, classified in general accordance with the USCS, and are presented in Figure B-1. It should be noted that the gravel and cobble content can vary significantly and based on the size of the samples taken during our exploration program the sieve analysis results may not be representative for the coarse-grained alluvial deposits.

Atterberg Limits Testing (AL)

Atterberg limits testing was performed on selected fine-grained soil samples. The tests were used to classify the soil as well as to evaluate index properties. The liquid limit and the plastic limit were estimated through a procedure performed in general accordance with ASTM D 4318. The results of the Atterberg limits testing are summarized in Figure B-2.



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Symbol	Boring Number	Depth (feet)	Moisture (%)	Soil Description
◆	TP-3	5	14	Sandy silt (ML)
■	TP-5	5	12	Silt with sand (ML)
▲	TP-6	3	8	Sandy silt (ML)
●	TP-8	5	3	Silty coarse gravel with occasional sand (GM)

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The grain size analysis results were obtained in general accordance with ASTM D6913. GeoEngineers 17425 NE Union Hill Road Ste 250, Redmond, WA 98052

GEOENGINEERS

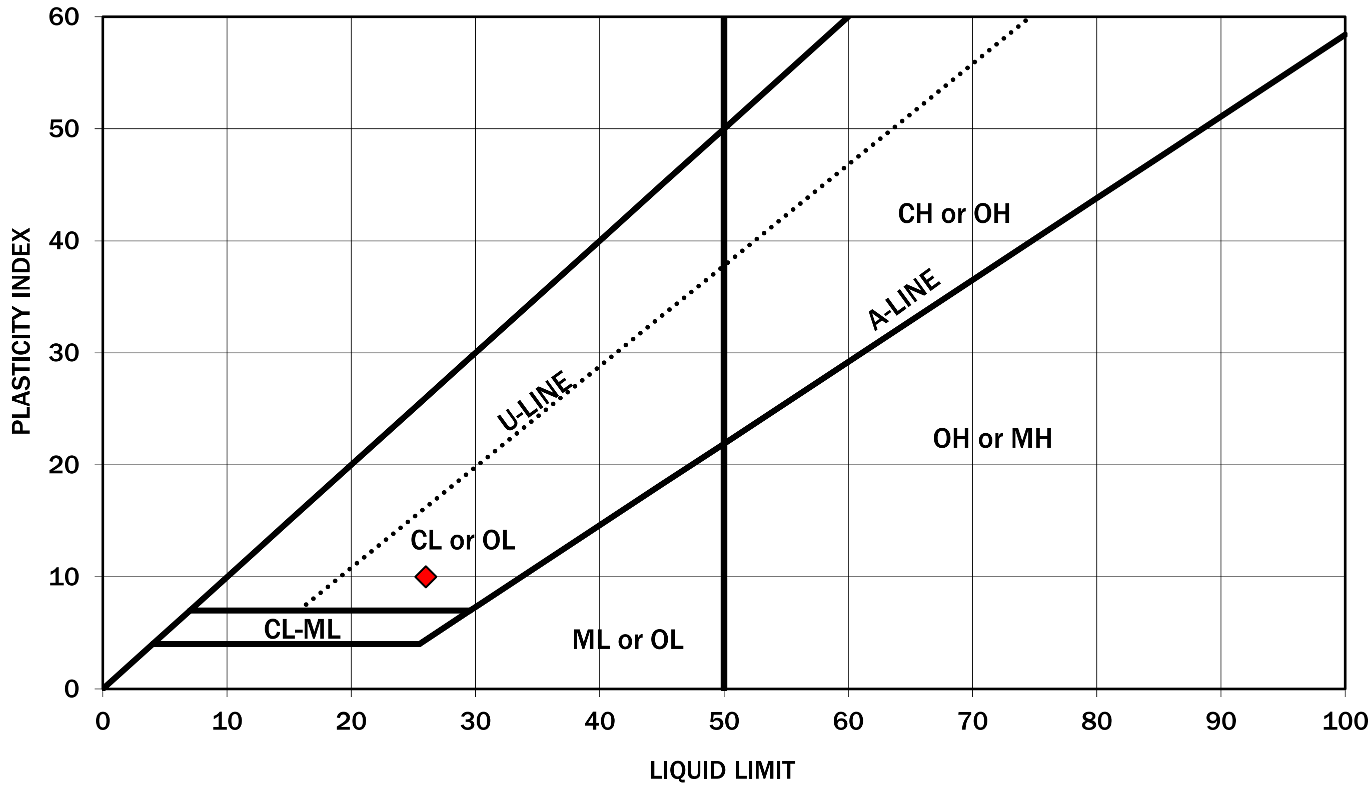
HopeSource Cle Elum

Cle Elum, Washington

Sieve Analysis Results

Figure B-1

PLASTICITY CHART



Symbol	Boring Number	Depth (feet)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	Soil Description
◆	B-1	10	21	26	10	Lean clay with sand (CL)

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The liquid limit and plasticity index were obtained in general accordance with ASTM D 4318.

Atterberg Limits Test Results

HopeSource Cle Elum
Cle Elum, Washington

GeoEngineers

Figure B-2

27639-001-00 Date Exported: 11/11/24

Appendix C
Report Limitations and Guidelines for Use

Appendix C
Report Limitations and Guidelines For Use[1]

This appendix provides information to help you manage your risks with respect to the use of this report.

READ THESE PROVISIONS CLOSELY

It is important to recognize that the geoscience practices (geotechnical engineering, geology and environmental science) rely on professional judgment and opinion to a greater extent than other engineering and natural science disciplines, where more precise and/or readily observable data may exist. To help clients better understand how this difference pertains to our services, GeoEngineers includes the following explanatory "limitations" provisions in its reports. Please confer with GeoEngineers if you need to know more how these "Report Limitations and Guidelines for Use" apply to your project or site.

GEOTECHNICAL SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES, PERSONS AND PROJECTS

This report has been prepared for Teanaway Court Associates LLLP and Shelter Resources, Inc., and for the project specifically identified in the report. The information contained herein is not applicable to other sites or projects.

GeoEngineers structures its services to meet the specific needs of its clients. No party other than the party to whom this report is addressed may rely on the product of our services unless we agree to such reliance in advance and in writing. Within the limitations of the agreed scope of services for the Project, and its schedule and budget, our services have been executed in accordance with our Proposal executed on September 4, 2024, and generally accepted geotechnical practices in this area at the time this report was prepared. We do not authorize, and will not be responsible for, the use of this report for any purposes or projects other than those identified in the report.

A GEOTECHNICAL ENGINEERING OR GEOLOGIC REPORT IS BASED ON A UNIQUE SET OF PROJECT-SPECIFIC FACTORS

This report has been prepared for the HopeSource Cle Elum project. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, it is important not to rely on this report if it was:

- Not prepared for you,
- Not prepared for your project,
- Not prepared for the specific site explored, or
- Completed before important project changes were made.

1 Developed based on material provided by GBA, GeoProfessional Business Association; www.geoprofessional.org.

For example, changes that can affect the applicability of this report include those that affect:

- The function of the proposed structure;
- Elevation, configuration, location, orientation or weight of the proposed structure;
- Composition of the design team; or
- Project ownership.

If changes occur after the date of this report, GeoEngineers cannot be responsible for any consequences of such changes in relation to this report unless we have been given the opportunity to review our interpretations and recommendations. Based on that review, we can provide written modifications or confirmation, as appropriate.

ENVIRONMENTAL CONCERNS ARE NOT COVERED

Unless environmental services were specifically included in our scope of services, this report does not provide any environmental findings, conclusions, or recommendations, including but not limited to, the likelihood of encountering underground storage tanks or regulated contaminants.

SUBSURFACE CONDITIONS CAN CHANGE

This geotechnical or geologic report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by man-made events such as construction on or adjacent to the site, new information or technology that becomes available subsequent to the report date, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. If more than a few months have passed since issuance of our report or work product, or if any of the described events may have occurred, please contact GeoEngineers before applying this report for its intended purpose so that we may evaluate whether changed conditions affect the continued reliability or applicability of our conclusions and recommendations.

GEOTECHNICAL AND GEOLOGIC FINDINGS ARE PROFESSIONAL OPINIONS

Our interpretations of subsurface conditions are based on field observations from widely spaced sampling locations at the site. Site exploration identifies the specific subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied its professional judgment to render an informed opinion about subsurface conditions at other locations. Actual subsurface conditions may differ, sometimes significantly, from the opinions presented in this report. Our report, conclusions and interpretations are not a warranty of the actual subsurface conditions.

GEOTECHNICAL ENGINEERING REPORT RECOMMENDATIONS ARE NOT FINAL

We have developed the following recommendations based on data gathered from subsurface investigation(s). These investigations sample just a small percentage of a site to create a snapshot of the subsurface conditions elsewhere on the site. Such sampling on its own cannot provide a complete and accurate view of subsurface conditions for the entire site. Therefore, the recommendations included in this report are preliminary and should not be considered final. GeoEngineers' recommendations can be finalized only by observing actual subsurface conditions revealed during construction. GeoEngineers cannot assume responsibility or liability for the recommendations in this report if we do not perform construction observation.

We recommend that you allow sufficient monitoring, testing and consultation during construction by GeoEngineers to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes if the conditions revealed during the work differ from those anticipated, and to evaluate whether earthwork activities are completed in accordance with our recommendations. Retaining GeoEngineers for construction observation for this project is the most effective means of managing the risks associated with unanticipated conditions. If another party performs field observation and confirms our expectations, the other party must take full responsibility for both the observations and recommendations. Please note, however, that another party would lack our project-specific knowledge and resources.

A GEOTECHNICAL ENGINEERING OR GEOLOGIC REPORT COULD BE SUBJECT TO MISINTERPRETATION

Misinterpretation of this report by members of the design team or by contractors can result in costly problems. GeoEngineers can help reduce the risks of misinterpretation by conferring with appropriate members of the design team after submitting the report, reviewing pertinent elements of the design team's plans and specifications, participating in pre-bid and preconstruction conferences, and providing construction observation.

DO NOT REDRAW THE EXPLORATION LOGS

Geotechnical engineers and geologists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. The logs included in a geotechnical engineering or geologic report should never be redrawn for inclusion in architectural or other design drawings. Photographic or electronic reproduction is acceptable, but separating logs from the report can create a risk of misinterpretation.

GIVE CONTRACTORS A COMPLETE REPORT AND GUIDANCE

To help reduce the risk of problems associated with unanticipated subsurface conditions, GeoEngineers recommends giving contractors the complete geotechnical engineering or geologic report, including these "Report Limitations and Guidelines for Use." When providing the report, you should preface it with a clearly written letter of transmittal that:

- advises contractors that the report was not prepared for purposes of bid development and that its accuracy is limited; and
- encourages contractors to conduct additional study to obtain the specific types of information they need or prefer.

CONTRACTORS ARE RESPONSIBLE FOR SITE SAFETY ON THEIR OWN CONSTRUCTION PROJECTS

Our geotechnical recommendations are not intended to direct the contractor's procedures, methods, schedule or management of the work site. The contractor is solely responsible for job site safety and for managing construction operations to minimize risks to on-site personnel and adjacent properties.

BIOLOGICAL POLLUTANTS

GeoEngineers' Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants, and no conclusions or inferences should be drawn regarding Biological Pollutants as they may relate to this project. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria and viruses, and/or any of their byproducts.

A Client that desires these specialized services is advised to obtain them from a consultant who offers services in this specialized field.

INFORMATION PROVIDED BY OTHERS

GeoEngineers has relied upon certain data or information provided or compiled by others in the performance of our services. Although we use sources that we reasonably believe to be trustworthy, GeoEngineers cannot warrant or guarantee the accuracy or completeness of information provided or compiled by others.