MERIT ENGINEERING INC.

GEOTECHNICAL ENGINEERING INVESTIGATION

Proposed Fairfield Hotel Expansion
202 15th Ave SW
Puyallup, Washington 98371
Parcel#: 6026420010

Prepared For:
Hollander Investments Inc.
119 N Commercial Street
Bellingham, Washington 98225

October 14, 2025
Project No. 2GJ01201100

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Mark Hollander
Hollander Investments Inc.
119 N Commercial Street
Bellingham, Washington 98225

Re: Geotechnical Engineering Study
Proposed Fairfield Hotel Expansion
202 15th Ave SW,
Puyallup, WA 98371

Dear Mark:

At your request, we have conducted a preliminary geotechnical engineering investigation at the above referenced project site. The following preliminary geotechnical engineering report represents the results of our visual site reconnaissance, test pit observations, engineering analysis, and derived conclusions on the feasibility of proposed development at the site.

Thank you for this opportunity to work with you on this project. Please contact us if you have any questions about this report.

Sincerely,

Austin X. Huang, Ph.D., P.E., L.G., D.GE., F.ASCE
Principal

F.ASCE: Fellow - American Society of Civil Engineering
D.GE - Diplomate - Academy of GeoProfessionals

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GEOTECHNICAL ENGINEERING REPORT

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Prepared for:

Mark Hollander
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by

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TABLE OF CONTENTS

1. INTRODUCTION

Mark Hollander of Hollander Investments LLC requested Merit Engineering, Inc. conduct a geotechnical engineering investigation for a proposed Fairfield Hotel Expansion (48 unit addition building) with elevated parking garage at 202 15th Ave SW, in City of Puyallup, Washington 98371 (Parcel #6026420010). The proposed project and vicinity is shown in Figure 1 and the site plan with proposed hotel expansion building in Figure 2 in the Appendix. The property is currently occupied by a six-story Fairfield hotel with associated access roads, tiered paved parking, and retaining walls. Relevant studies completed for the property are listed in the Table below and organized by year in chronological order.

12/11/2007	Geotechnical Engineering Report	Earth Consulting Incorporated
06/30/2009	Phase I Environmental Investigation	Merit Engineering Inc.
09/11/2009	Environmental Investigation	Merit Engineering Inc.
09/15/2009	Geotechnical Engineering Report	Merit Engineering Inc.
06/25/2010	Slope Stability Assessment	Merit Engineering Inc.
08 - 12, 2010	Earthwork for Proposed 6-story Fairfield Inn	Merit Engineering Inc. Inspection
12/12/11 - 1/24/12	Ultrablock Gravity Retaining Wall / Keystone Geogrid Retaining Wall Extension (~25' east ward add)	Merit Engineering Inc. Inspection
10/06/2017	Phase I Environmental Investigation	Merit Engineering Inc.

At this phase of the study, we understand, from preliminary site plan provided by Architect David Murphy, that the proposed 48-unit building extends southeastward from east side of the existing hotel. The building footprint extends beyond the existing parking and retaining wall area, fully incorporating the location of the current retaining wall, but not reach to steep slope within large southeastern slope. An elevated parking structure, connected to the new

building, will be situated above the existing parking lot. The ground surface behind the retaining wall slopes upward to south was studied as a large southeastern slope in our Slope Stability Assessment dated June 25, 2010. Testing and analysis for this report focuses on the proposed addition building at the request of the client. Discussion and recommendations for other areas are generalized and subject to limitations. Additional investigation and analysis may be warranted for areas not tested within the scope of this study.

Therefore, the objective of this study was based on previous investigation of surface, subsurface, and groundwater conditions at the project site, derive conclusions, and provide preliminary recommendations for site preparation and design of foundations to support the proposed structures, and parking.

2. PROJECT DESCRIPTION

The subject property is located within the City of Puyallup, Pierce County, Washington on south side of 15th Ave SW, ~1/8 mile west of the intersection with S Meridian St in a zone of generally commercial usage with some remaining undeveloped area. A location and vicinity map is shown in the Appendix of this report (Figure 1). A site plan with major site features, property boundaries, and adjacent features is also presented in the Appendix (Figure 2). The current parcel number is #6026420010 due to the segregation of the initial parcel C #0420338067, and the site is 1.47 acres in size, as listed with the Pierce County Assessor-Treasurer.

The subject property is bordered at its northern end by 15th Ave SW and beyond that motel buildings. To the west of the site is the elevated SR 512 corridor, followed by residential lots with houses. South of the site is undeveloped forest/prairie land, and beyond ~0.2 miles is a

Woodcreek Health Care facility. Just east and southeast of the site border is a large ravine with a wet zone and running stream that wraps around to parallel the northern edge of the site next to 15th Avenue. Further east next to S Meridian Street is an active Chevron/ARCO gas station and neighboring Canopy West Truck Accessories Store.

A total of five (5) test pits and four (4) environmental borings were performed at the subject site in accordance with our geotechnical engineering report dated September 15, 2009. In addition, six (6) DCP tests were performed along the critical area slope located behind the Ultrablock gravity retaining wall and the Keystone geogrid retaining wall, extending downslope to the east property boundary and ultimately reaching the stream bed, in accordance with our Slope Stability Assessment dated June 25, 2010.

3. SCOPE

We reviewed our previous studies in subject parcel and based on all the above information and understanding of the project, the scope of work for this study has included:

- Conducting a site reconnaissance of the property and adjacent area;
- Reviewing the previous studies and investigation including:

  · Conducting 4 test borings to a maximum depth of 35.0´ (refusal);
  · Observing five (5) test pits to a maximum depth of 10.0´ or refusal;
  · Conducting six (6) DCP (Dynamic Cone Penetration) tests along three slope transects;
  · Logging soil and ground water conditions;
  · Completing a slope stability analysis of existing conditions concerning circular failure;

- Preparing a geotechnical engineering report with geotechnical engineering recommendations:

  (1) surface conditions;
  (2) subsurface soil conditions;
  (3) groundwater conditions;

Recommendations for:

(4) foundation design parameters;
(5) structural fill and compaction criteria;
(6) foundation retaining wall design parameters;
(7) slab-on-grade floor;
(8) drainage;
(9) site grading.

4. SITE INVESTIGATION

4.1 Surface Conditions

A representative of Merit Engineering, Inc. conducted a site visit on September 26, 2025, for reconnaissance and documentation of surface conditions. The observed site conditions were generally consistent with our previous observations dated October 4, 2017, with no significant changes identified.

Currently the subject property site is occupied by one (1) 6 stories hotel in the center of the parcel with pavement parking lot and forest land surrounding. The Ultrablock gravity retaining wall and the Keystone geogrid retaining wall extension are located to the east of the existing hotel, running along the east and southeast site boundaries, respectively. The large ravine and side slope follows the site boundary from its southern point to the northeast corner and turns westward to flank the north edge of the site as well. Forest, and underbrush are common along the boundaries of the site. Vegetation is found westward bordering the highway. The adjacent ravine east and north of the site is thick with undergrowth and trees down to the stream-bed.

The large southeastern slope and adjacent areas beyond the high Ultrablock gravity retaining wall is very difficult to access. Due to the constrained schedule and site access limitations,

the current phase of work could not be completed in a manner that would allow for a fully adequate evaluation of these areas. Therefore, for this phase of the study, we are referencing the surface conditions documented in our Slope Stability Assessment dated June 25, 2010. Further study will be conducted as needed in future phases to more thoroughly evaluate these areas. According to our our Slope Stability Assessment dated June 25, 2010, the large southeastern slope is laterally extensive and relatively consistent in character, stretching ~400 ´ in a NE/SW orientation. The study focuses on the northern ~200´ near existing hotel building, shown in Figures 2A & 2B. In this zone the slope is interrupted near its midpoint by a flat to shallowly sloping terrace, likely an old access road path, that follows the site boundary. The path is ~10´ wide at its north end to upwards of 20´ wide further south, and appears artificially graded but overgrown. Slope above the path ranges from 30° to an average of ~35° and observed 40° maximum inclination with local variability. Below the path, the slope is consistently ~34° over 25´ vertical. Slope vegetation consists of medium deciduous trees with patchy undergrowth including brambles, moss, and ferns.

4.2 Subsurface Conditions

Subsurface soil and groundwater conditions were investigated by conducting six (6) DCP tests to 8´-19´ refusal depth, arranged along three slope-perpendicular transects on large southeastern slope, in accordance with Slope Stability Assessment dated June 25, 2010. Test locations are shown on the detail slope map in Figure 2B of the Appendix. DCP test logs are provided in Figures 4 to 9, with interpretive profiles of each transect line in Figures 10 to 12. A description of soil symbols and USCS soil classification chart used in this report is presented in Figure 3.

Soil types and properties were approximated based on DCP results and soil residue left on

rods upon extraction, along with observed surface exposures of shallow material and existing site soil data from previous studies. Soils at depth are not directly observed or sampled during DCP testing. Therefore, the stratigraphy presented in Slope Stability Assessment is an interpretation of major soil layering and strength properties, shown in the adjacent schematic and described below:

a. Sandy Silt to Sand-Silt Mixture (ML)

b. Silty Sand, cemented (SM)

a. Sandy Silt to Sand-Silt Mixture (ML)

We observed a brown to tan-brown sandy silt to sand-silt mixture soil in surface exposures and local slope disturbances during our field reconnaissance. DCP testing documented in all test locations an upper soil horizon that was soft for the top ~3´, becoming stiff/dense below, and residue on rods indicative of damp sand-silt soil. Thin coarse lenses were evidenced by variable results as noted on the soil logs. Near-surface soils were moist from rainfall, and damp to slightly damp below. Along the base of the unit, we locally observed moist to wet conditions on test rods suggesting basal seepage. Thickness ranges from ~8´ - 10´ (A-1 and B-1) at the eastern site boundary, increasing upslope to an observed maximum of ~19´ (A-3). A previous boring by Earth Consulting Incorporated (2007) at the topographic top of the site west of the slope study area found the package to extend past 30´ depth. This sandy silt appears to correlate with documented soil conditions for the site area, Kitsap Silt Loam and USGS-mapped interbedded glaciolacustrine deposits.

b. Silty Sand. cemented (SM)

At termination depth in all test locations we encountered a brown-gray silty sand,

very stiff/dense to hard. Sparse rod residue was slightly damp to damp, crumbly, and moderately cemented. Based on our test results, prior studies, and available geologic maps, we interpret this unit to underlie the entire study slope beginning at about 10´ depth near the east property line and 15´ - 20´ depth further up the slope face. Correlation with mapped conditions suggests this unit extends to depths well beyond the concern of this investigation.

4.3 Geologic Background

The project area is located in the Southern Puget lowlands on a bench over the current Puyallup River Valley. The greater area was invaded by glacial ice several times during the Pleistocene Epoch, from 1.6 million to 10,000 years ago. The area has also been subjected to repeated volcanic events including ash deposits, lahar flows, and mud flows from nearby Mt. Rainier.

The proposed project site is mapped by the Pierce County Soil Survey to ~60" as **Kitsap loam** and **Shalcar muck**, both glaciolacustrine deposits from the last glaciation. Kitsap soils are a mixture of loess and volcanic ash classified as silty clay loam. Shalcar muck generally occurs locally in lowlying zones.

Surface geology is mapped by the USGS as Vashon Stade recessional lacustrine deposits, (**Qvrl**; Troost, K.G., in press). The unit is commonly ~20' thick and part of a large Qvrl-mapped body that may reflect a glacial margin. The unit is highly varied with fine sand, silt, and clay. Below Qvrl are found deposits of Pre-Olympian age, (**Qpo**), consisting of sand, gravel, silt, and clay. These deposits range up to ~140' thick and are typically very dense to hard.

4.4 Surface and Ground Water Conditions

No surface water was observed within the site boundaries during our site visits in previous studies. A groundwater table was not encountered during DCP testing for Slope Stability Assessment in May, 2010. Groundwater was encountered in our testing of our geotechnical engineering report dated September 15, 2009, and may be relatively complicated to characterize due to both natural and altered features of the site. Identified regimes include seasonal perched groundwater and a deeper, permanent water table in an unconfined to semi-confined soil aquifer. Groundwater was not directly observed in any test pits at the time of excavation, although soil mottling and iron oxide staining was observed as shallow as 1.0 ´-2.0´. Previous test pits conducted by Earth Consulting Inc. in December of 2007 noted seepage at 8´ to 10´ in winter months. During the wet season, perched groundwater may fluctuate or become trapped during infiltration and transport within near surface soils due to the fine-grained nature of the Qvrl and irregularity of possible fill soils.

A detailed review of site groundwater conditions and estimated hydrologic character of the adjacent creek including a groundwater contour map for the lower northern part of the site was provided in our Environmental Investigation (Merit Engineering, Inc., 2009). Monitoring well measurements revealed a site water table generally coincident with the creek bed, which rises very gradually upslope into the property.

5. INFILTRATION FEASIBILITY

Specific grading and stormwater plans were not available at the time this report was prepared. However, the on-site detention vault was previously designed and constructed to serve the existing six-story Fairfield Hotel, including its associated access roads and parking

areas. This design was necessary due to the steeply sloping nature of the property and the presence of a stream and wetlands along the east and north boundaries. Therefore, it is our opinion that, the stormwater generated from proposed Fairfield Hotel Expansion (48 unit addition building) with elevated parking garage may also need to be directed to a controlled detention/release stormwater facility or tight-line to municipal stormwater system.

6. SLOPE STABILITY EVALUATION

The building footprint extends beyond the existing parking and retaining wall area, fully incorporating the location of the current retaining wall, but not reach to steep slope within large southeastern slope. An elevated parking structure, connected to the new building, will be situated above the existing parking lot.

A detailed slope stability evaluation of the large southeastern slope of the site was conducted as part of the Slope Stability Assessment dated June 25, 2010. The following study summary and conclusions are restated from our Slope Stability Assessment dated June 25, 2010:

> *"We have completed a study of existing slope conditions for the designated critical area slope adjacent to the southeast edge of proposed development as described herein. This study has included site slope visual reconnaissance, surface profile mapping, subsurface soil investigation via DCP testing, and circular failure analysis for factor of safety determination in order to interpret general full-slope stability of the study area.*
>
> *Based on the results of our reconnaissance and site testing, the study slope does not appear to show evidence of past large-scale failure or current major failures. However, signs of ongoing near-surface erosional instability, shallow slumping, and*

soil creep remain prevalent along the study slope, especially on the top half within the subject property. Observed evidence includes widespread moderate curvature of regrowth trees, common underbrush disruption with loose barren spots, and scattered minor slump scarps and deposits, as well as disturbances in stormwater drainage pathways. Field soil testing results suggest the near-surface stability issues are due to soft or loose fine-grained soils in the uppermost subsurface column, whereas soils at depth range from stiff and cohesive silt to the very dense cemented sand basal unit. We interpret the surficial instability may be partly a consequence of prior land clearing activities, including clearcutting of original stable vegetation and installation of the access path along the middle of the slope. The slope surface may not have fully stabilized after such activities due to a combination of fine-grained surface soils, poor drainage, and lack of adequate vegetative rooting, leaving the slope exposure more vulnerable to future destabilization and ongoing shallow erosional failures.

Circular failure analysis (Hoek and Bray, 1981), used to consider large-scale failure of the study slope, yielded a factor of safety of FS = 1.8 for global stability. This result exceeds the typical target factor of safety value (FS = 1.5). It is our opinion that this factor of safety result

is reasonable given the site slope geometry, as well as the soil conditions encountered at depth and documented in previous studies. In addition, our result may be an underestimate of the site full-slope safety factor, since soil and slope parameters were selected to provide a conservative analysis as described above. Therefore, the study slope appears to be at low risk for major circular failure given present conditions and

the results of this study."

7. CONCLUSIONS AND RECOMMENDATIONS

At the time of preparing this report, a preliminary site plan was provided by architect David Murphy. We were informed to conduct the study for the proposed development within a limited time frame. Based on the results of this study of previous geotechnical investigation and slope stability assessment, we conclude that the site may be suitable for the proposed construction, provided that the recommendations presented in this report are followed. Additional investigation and analysis may be warranted for areas not tested within the scope of this study when detailed excavation and grading plans become available. General recommendations are provided below for this preliminary design phase, and revised or additional recommendations will be provided once detailed plans are available.

7.1 Site Preparation and Grading

We recommend removing any organic topsoils and unsuitable loose and soft soils from the areas under the proposed buildings and parking lots down to firm subgrade or compacted gravel fill atop firm subgrade. We anticipate that soil excavation can be accomplished with conventional equipment, although excavation into the hardpan till may be more difficult.

Due to the fine-grained nature of site soils and potential for shallow perched groundwater and storm runoff on the hillside site, we recommend that care be taken to the maximum extent possible for erosion and ground control if work is done in the wet season. It should be understood that significant additional costs and construction difficulty could be incurred if work proceeds in wet weather comparing with dry weather construction. We recommend that

sufficient erosion controls be implemented along the sloped edges of the site during wetweather construction so as to protect the adjacent stream from runoff.

Exposed subgrade soils in the area of the proposed building should be proof-rolled with a loaded dump truck to reveal soft or yielding near-surface soils. Any soft subgrade or fill soils encountered during site excavation or exposed during proof-rolling should be removed and replaced with structural fill as recommended in the Structural Fill section of this report.

A temporary cut slope at the site should be no steeper than 1:1 in clayey soil and 2:1 in sandy soil (Horizontal to Vertical). Temporary shoring is required for excavation below the water table or perched water-bearing soils. We recommend that we evaluate the site conditions for suitable cut slope during site excavation.

We recommend that we observe and verify site excavation to suitable soil stratum, observe proof-roll, test to verify import fill materials, and observe and test compaction of structural fills.

7.2 Structural Fill

Structural fill should be placed on firm, horizontal subgrade in about 10-inch thick loose lifts and compacted to at least 95% of the ASTM D-1557 maximum dry density for footings, grade slab, parking and road, and sidewalks.

We recommend import structural fill be sandy gravel or gravelly sand meeting specification - 9-03.12 (1) B, APWA/DOT 2006, that is typical in this area as base granular materials with exception that percent passing U.S. No. 200 Sieve shall not exceed 5% and all materials smaller than 4″. The specification is summarized below:

Table 2: Specification of Imported Fill Materials

Sieve Size	Percent Passing by Weight
4″ Square	100
2″ Square	75-100
U.S. No. 4	22-66
U.S. No. 200	5.0 max.
Dust Ratio $\frac{\%\ Passing\ U.S.\ No.\ 200}{\%\ Passing\ U.S.\ No.\ 40}$	⅔ max.
Sand Equivalent	30 min.

Backfill immediately behind retaining walls or adjacent to foundation stem walls should be compacted to about 90% of the ASTM D-1557 maximum dry density. Care must be taken to avoid over-compaction immediately behind walls. Backfill behind retaining walls must be free draining material.

It is important that plumbing and utility trenches be properly backfilled. Backfill in the trenches should meet the appropriate compaction criteria described above.

7.3 Foundation Design Parameters

We recommend placing foundation on native dense glacial till soils or on import structural fill installed on the native glacial till soils. Sand sub grade soils should be compacted to 95% modified proctor. If site soils are not found to be firm at a footing location and grade, we recommend excavating down to appropriately firm soils and replacing the soft/loose soil section with structural fill.

We recommend that all perimeter footings be at least 18 inches below final outside grade for frost protection. The base width of footings shall be at least 18 and 24 inches for continuous and isolated column spread footings, respectively.

Under condition of satisfying the above recommended footing dimensions, a soil bearing pressure of 2,500 psf (*pounds per square foot*) is recommended. Bearing pressure may be increased by 1/3 for transient wind or seismic loads. This bearing recommendation is preliminary pending building design details. We recommend that we be contacted in the design phase to evaluate building details with our soils and slope condition and revise bearing allowances accordingly.

With the above recommended soil bearing capacity, the anticipated load on the footings, and the soil conditions from the tests, we estimate that the total potential settlement of the foundations should be less than 1 inch. While most settlement will occur in the short term as loads are applied, some settlement may occur over a long period of time after construction.

We recommend proof-rolling building pads before placement of footings with a loaded dump truck to reveal soft or yielding surficial soils. Any soft subgrade soils encountered during site excavation or exposed during proof-rolling should be re-compacted.

We recommend that we review portions of plans and specifications pertaining to earthwork and foundations to ensure they are consistent with recommendations in this report.

We also recommend that we observe and verify site excavation to suitable soil stratum, a proof roll test to verify imported fill materials, and observe and test compaction of structural fill materials.

7.4 Foundation and Site Drainage

A perimeter footing drainage system should consist of at least 6-inch diameter, perforated, rigid pipe. Pipes should be placed along the exterior base of the foundation perimeter and tightlined to a storm drain system or natural drain course. Pipe should be bedded on 2 inches,

and backfilled with a minimum of 12-inches, of pea gravel.

Under-slab cross-drains are recommended to maintain a dry slab floor to facilitate drainage. A cross-drain system should be overlain by drain rock beneath the slab. From our experience buildings with basement often has water problem in just matter of time. A sump pump may need to be designed to collect and divert the water.

Roof downspouts should be tightlined to a storm drain system separately from footing drains. In addition, the site should be graded so that surface water runoff is directed to catch basins attached to a storm sewer drain.

In addition, the site general perimeter drain shall be installed for general slope stability protection. And we recommend that we be retained to consult and review on the drainage installation work.

7.5 Slab-On-Grade Floor

A slab-on-grade floor may be supported on building pads that are prepared with firm native subgrade soils, or import structure fill compacted over firm native soils. At least 4-inches of drain rock of $^{3}/_{4}''$ maximum size should be placed between the slab and slab subgrade.

A vapor barrier visquine should be placed between the slab and capillary break material. An additional 1 to 2 inches of sand may be placed on top of the vapor barrier if desired to aid in concrete curing. In addition, use of a commercial concrete slab sealant for moisture protection may prove to be very helpful.

Floor slabs reinforced with 6 x 6 wire mesh may help reduce potential crack separation and vertical offsets at cracks. Reinforcement should be set at or above the mid-depth of the slabs. To reduce cracking potential we suggest exterior patios and other flatworks contain

reinforcement as recommended above for floor slabs. Any flatwork subgrades should be watered thoroughly prior to concrete placement to close soil shrinkage cracks. Flatworks should have frequent joint controls.

Additional measures to reduce potential cracking are considered warranted at critical areas where slab movement could impair use; such critical areas include any exterior patio slabs that meet the interior floor level at doorways. For such areas we recommend that recommend that the upper 12-inches of native soil be over excavated and replace with import structural materials as specified in the Structural Fill section of this report.

7.6 Lateral Earth Pressure on Permanent Subgrade Wall

Basement walls should be properly designed to resist the lateral earth pressures exerted by the soils behind the wall. Proper drainage provisions should also be provided behind the walls to intercept and remove groundwater and seepage that may be present behind the wall. Our geotechnical recommendations for the design and construction of the retaining and basement walls are presented below.

We recommend that we be contacted for consultation and evaluation engineered retaining walls or walls with a surcharge loads are considered in site design. Addition of a retaining wall and backfill near the top or on a slope may cause undue loading and therefore surficial soil-slope instability, and it is preferable to limit or avoid such load application if possible. Retaining walls against the base of an existing slope or cut are acceptable given the wall will not change the current topography significantly.

We recommend placing structural fill behind subsurface and retaining wall. The horizontal thickness of the fill should be at least the height of the wall. For structural fill, as

recommended in the Structural Fill section of this report with a level ground, the parameters of lateral earth pressures are listed in Table 3.

Soil	Active K_a	Passive, K_p	At Rest, K_o
Structural Fills	0.28	3.54	0.44
Equivalent Fluid Pressures*			
Structural Fills	34	425	53

*Equivalent fluid pressure is the product of lateral earth pressure coefficient and the unit weight of the soil.

The soil parameters of lateral earth pressure for the on-site soils may be much stronger than those in the above table, however, it must be evaluated to confirm on site during construction when site excavation opens up the ground for visual observation.

Design of subsurface walls should include appropriate lateral load due to adjacent surcharge. Under uniform surcharge qo, lateral load due to a uniformly distributed lateral pressure σ, should be added to active and at rest soil lateral pressure, respectively as defined in the following equations:

$$\sigma = \begin{cases} K_a q_o & \text{for active case} \\ K_o q_o & \text{for at rest case} \end{cases}$$

A coefficient of base friction of 0.55 and 0.45 may be used between concrete and structural fill and between concrete and native fine sandy soil, respectively. However, if passive pressures are used in conjunction with frictional resistance to determine lateral resistance to sliding, only 1/2 the value of passive pressure presented above should be used since larger strains are required to mobilize passive soil resistance as compared to frictional resistance.

7.7 Seismic Design Parameters

The site is located in the seismically active Puget Low lands. Deep focus earthquakes from subduction of the Juan de Fuca plate beneath the North American plate can cause amplified shaking at the ground surface due to seismic waves of different velocities interacting. Seismic waves propagate relatively slow through soft soils and considerably faster in rock. As a result, areas with softer soils underlain by rock tend to experience greater ground shaking than areas with little variation in the underlying substratum. Local building codes and design practices now consider the possible effects of soil conditions and large subduction related earthquake in the design of structures.

7.7.1 Liquefaction

Liquefaction is a phenomenon associated primarily with near surface saturated cohesionless soils under zero effective stress. Effective stress equals the confining pressure of the soil minus pore water pressure. When saturated cohesionless soils undergo cyclic seismic loading, the induced excessive pore pressure cannot dissipate and thus grows larger. When the pore pressure becomes equal to the confining pressure from the overburden load, the effective stress of the soil becomes zero and the soil lost its strength or stiffness and becomes liquefied. Foundation settlement and lateral movement could damage structures supported by liquefiable soils and sites with conditions favorable for liquefaction are designated as Site Class F. Site classes are a simplified method for describing the amplification of ground shaking during a seismic event due to effects of underlying soil conditions and are defined by a unique range of average shear wave velocities in the upper 100´ of the site soil column.

The site soils consist primarily of very dense till soil at shallow depth. Based on

these soil, it is our opinion that liquefaction potential at the site is low because soils at the site are generally very dense sand with gravel.

7.7.2 Design Parameters

Using the results of our DCP (Dynamic Cone Penetration) test holes and geologic setting as discussed in this report, we estimate the average N value, using methods provided in Section 1613 of the 2021 IBC. The results of our average N value estimated and projected for a 100´ section indicate a very dense soil N > 50. Based on the results from our subsurface exploration the soil profile at the site may be defined as Site Class D according to IBC (International Building Code) 2021, representing a stiff soil. Seismic design parameters for this site class and location, from ASCE 7 Hazard Tool with ASCE/SEI 7-22 reference document, are summarized in the following table:

Table 4: Spectral Response Acceleration (SRA)

SRA and Site Conditions	Short Period (0.2 sec)	1- Second Period
Mapped SRA	$S_S = 1.44$	$S_1 = 0.42$
SITE CLASS D		
Max. Considered Earthquake SRA	$S_{MS} = 1.56$	$S_{M1} = 0.9$
Design SRA	$S_{DS} = 1.04$	$S_{D1} = 0.6$

8. DESIGN AND CONSTRUCTION PHASE SERVICES

We understand that the proposed building footprint extends beyond the existing parking and retaining wall area, fully incorporating the location of the current retaining wall, but not reach to steep slope within large southeastern slope. Therefore, future construction activities

will involve demolition of the existing retaining wall and excavation into the existing steep slope.

We also understand the subject slope adjacent to a portion of the development site is designated as a geologically critical area. Therefore, the analyses and recommendations provided in this report are based on the assumption that our firm's level of professional services will be retained for additional related consultations and construction phase services. Due to the constrained schedule and site access limitations, the current phase of work could not be completed in a manner that would allow for a fully adequate evaluation of large southeastern slope areas. We recommend that we be contacted for additional design phase services as needed pertaining to the slope and nearby development activities. We recommend that we review project plans and specifications relating to site improvements near the critical area slope, including grading, erosion control, stormwater, and drainage plans to ensure activities are adequately addressed in consideration of the results of this study.

We recommend that general precautions be taken during and after site development to avoid amplifying erosional and creeping instability on the subject slope. Vegetation removal next to and above the critical area should be avoided if possible, and limited upon approval by the engineer. Revegetation of bare areas on the slope face may be helpful to attain long-term surface stability against erosion if allowed by local development standards. Heavy machinery should be kept sufficiently away from the critical area slope as possible, and if needed assessed for use on a case by-case basis near the slope.

We recommend drainage controls be implemented near the critical area to limit storm runoff from entering the subject slope. Site drains and surface water runoff should be tight-lined

away from entering the slope, and directed into a natural drainage or storm water system well away from the slope face or slope base area.

The construction phase of a project is very important in that final design and specifications will be implemented. Because no one can understand as much about the intent of a design as the designers/engineers themselves, we recommend that our firm be retained to provide construction phase quality control services including geotechnical engineering and soil testing services, to observe and verify compliance with project specifications and any applicable geologically related regulations, and to confirm/verify subsurface conditions. If this condition of retainment is broken, we recommend the sit conditions be reevaluated and appropriate recommendations assessed.

9. GENERAL CONDITIONS

The recommendations provided herein are based on our understanding of the project at this time. We expect the on-site geologic conditions to reflect our findings, however, some variations may occur. Should soil conditions be encountered that cause concern and/or are not discussed herein, Merit Engineering, Inc. should be contacted immediately to determine if additional or alternate recommendations are required.

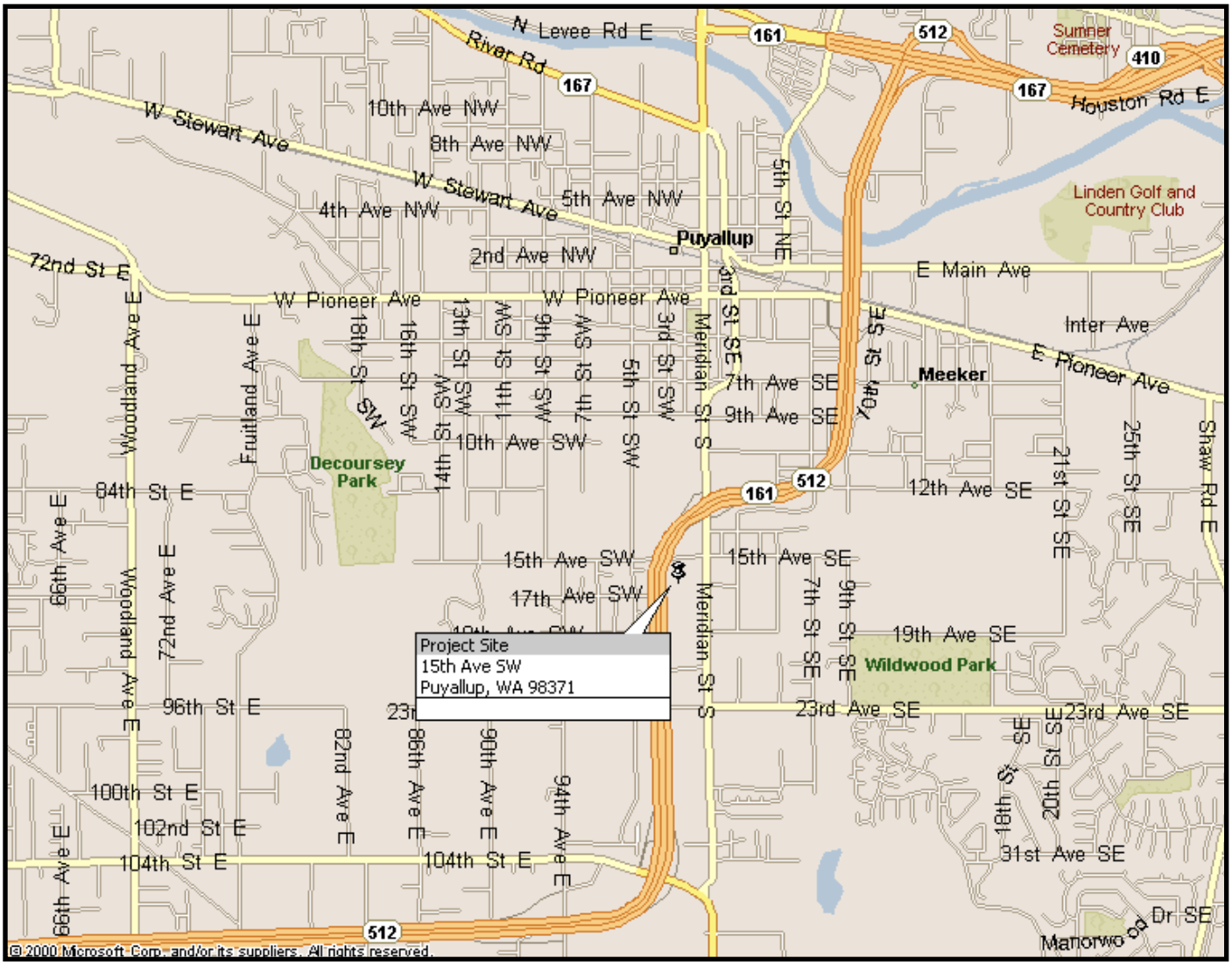
We were informed to conduct the study for the proposed development within a limited time frame. Accordingly, we recommend that additional investigation and analysis be conducted for areas not tested within the scope of this study once detailed excavation and grading plans become available.

We recommend that we review those portions of the plans and specifications pertaining to earthwork, cutslopes, and wall design to ensure that they are consistent with the recommendations in this report.

We recommend that we verify site excavation to suitable soil stratum, verify imported fill materials, and observe and test compaction of structural fill. We recommend that we be retained to evaluate the condition of cutslopes once open, including soil condition, structures, and soil stability, and provide recommendations as needed for remediation or reinforcement of permanent cutbanks.

This report is prepared for Mark Hollander of Hollander Investments LLC for specific application to aforementioned proposed Fairfield Hotel Expansion and related development located at 202 15th Ave SW, in City of Puyallup, Washington 98371 (Parcel #6026420010). This report has been prepared in accordance with generally accepted geotechnical/geological engineering practices in this area. No other warranty, expressed or implied, is made.

This report is an instrument of our professional service, and we (Merit Engineering, Inc.) shall retain an ownership and property interest therein. We grant Mark Hollander of Hollander Investments LLC a license to use the instrument of our professional service for the purpose of constructing the above mentioned proposed improvements. We do not permit reuse or modification of this document for application to a different structure or location other than the proposed or to another property because soil and subsurface conditions are unique and site specific for different locations.

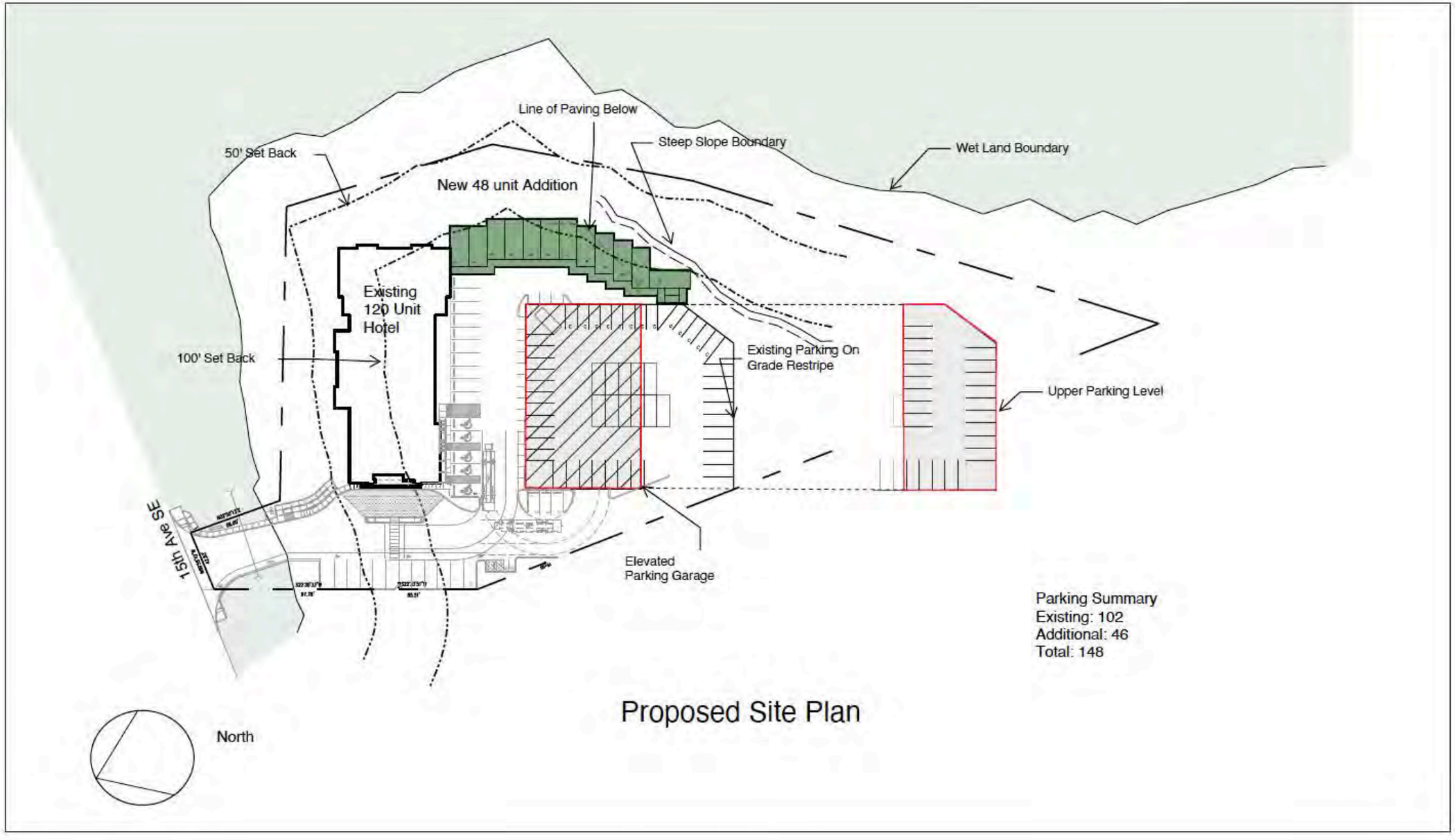


Project No. 2GJ01201100	**PROJECT LOCATION & VICINITY MAP**	Date: 10/14/25	*Figure 1*

Geotechnical Engineering Investigation
Proposed Fairfield Hotel Expansion
202 15th Ave SW
Puyallup, Washington

For: Hollander Investments

MERIT ENGINEERING INC.
10129 Main Street #201
Bellevue, Washington 98004
Telephone: (425) 454-2133
http://www.MeritEngineering.com



Proposed Site Plan

MURPHY VAREY PS
720 Belmont Avenue East
Seattle, WA 98102
(206) 841-9875

Puyallup Fairfield Expansion

Note: Site Plan constructed and provided by Architect David Murphy		Geotechnical Engineering Investigation Proposed Fairfield Hotel Expansion 202 15th Ave SW Puyallup, WA 98371	SITE PLAN	PROJECT NO.	2GJ01201100
				DATE	10/14/25
Scale: NOT IN SCALE	For: Hollander Investments		*Figure 2*	APPROVED BY	AXH

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Bellevue, Washington 98004
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http://www.MeritEngineering.com

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS				DESCRIPTION
COARSE GRAINED SOILS more than 50% retained on #200 sieve	GRAVELS more than 50% coarse fraction is larger than No. 4 sieve size	Gravels with less than 5% fines	GW	Well graded gravels, gravel-sand mixtures
			GP	Poorly graded gravels, gravel-sand mixtures
		Gravels with more than 12% fines	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS more than 50% coarse fraction is smaller than No. 4 sieve size	Sands with less than 5% fines	SW	Well graded sands, gravelly sands
			SP	Poorly graded sands, gravelly sands
		Sands with more than 12% fines	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
FINE GRAINED SOILS more than 50% passing #200 sieve	SILTS AND CLAYS Liquid Limit less than 50		ML	Inorganic silts & very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, or lean clays
			OL	Organic clays and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid Limits greater than 50		MH	Inorganic silts, micaceous or diatomacious fine, sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			PT	Peat and other highly organic soils
UNCONTROLLED FILL				Uncontrolled, with highly variable constituents

LEGEND

SAMPLE	SYMBOL
SPLIT SPOON SAMPLER	GROUNDWATER TABLE
SHELBY TUBE SAMPLER	q_u PENETROMETER READING TSF (*tons per square foot*)

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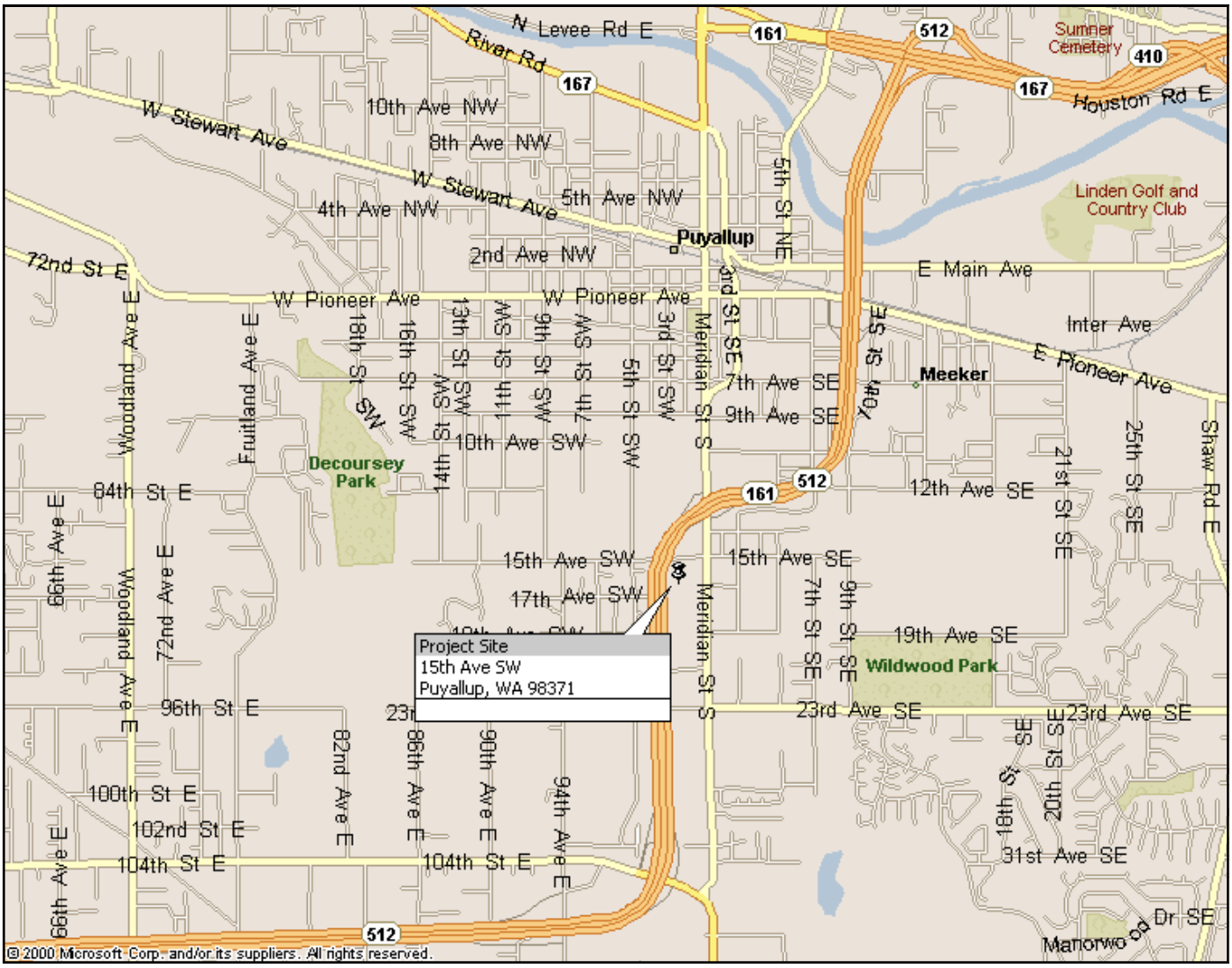
SOIL CLASSIFICATION & LEGEND

Figure 3

APPENDIX A

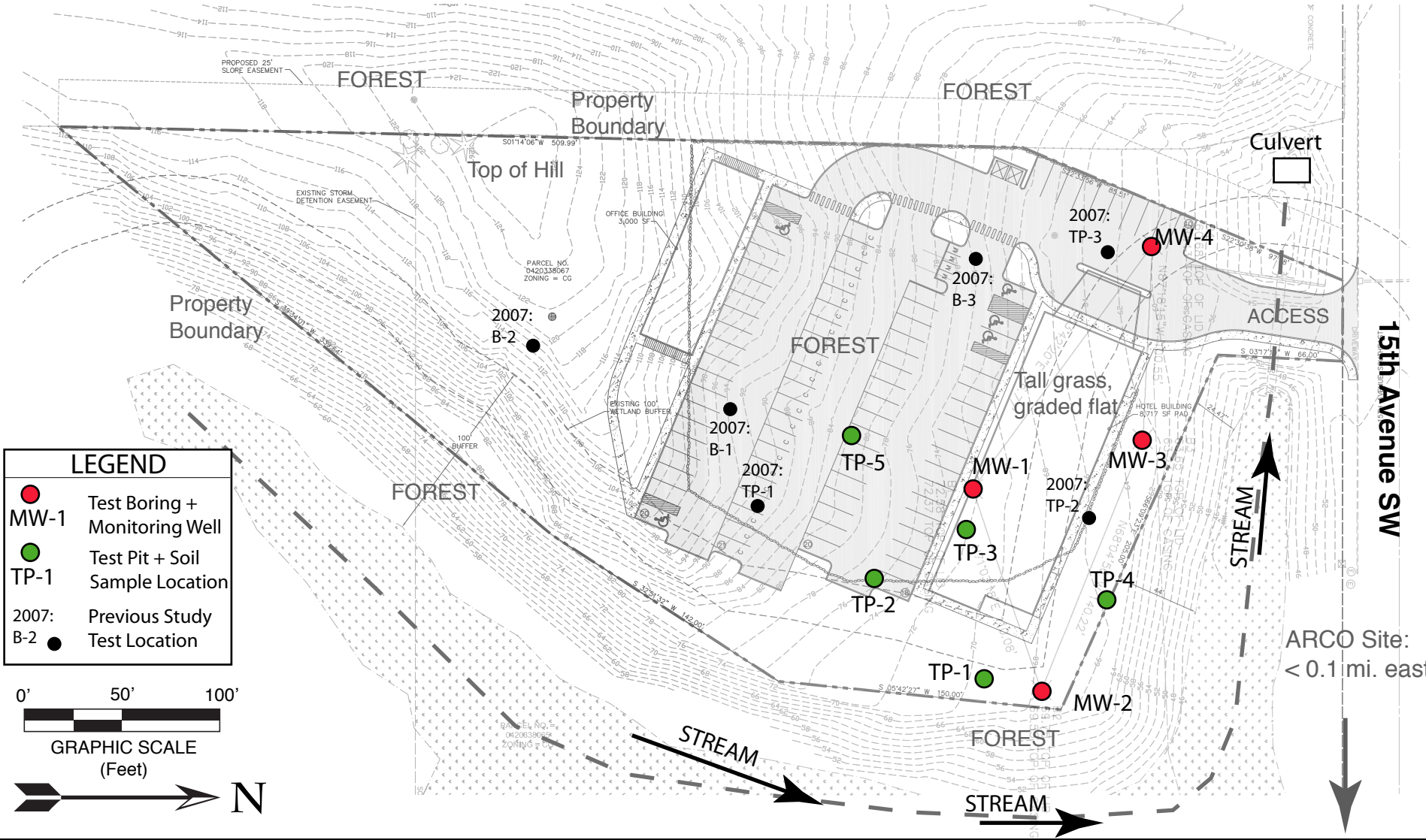


Project No. QF0217645	**PROJECT LOCATION & VICINITY MAP**	Date: 9/14/09	*Figure 1*

Geotechnical Engineering Investigation
Proposed Hotel
15th Ave SW & SR 512
Puyallup, Washington

For: Hollander Investments LLC

MERIT ENGINEERING INC.
2715 Meridian Street
Bellingham, Washington 98225
Telephone: (360)738-6083
Fax: (360)738-1499
http://www.MeritEngineering.com



Geotechnical Engineering Investigation Proposed Hotel 15th Ave SW & SR 512 Puyallup, Washington	**SITE PLAN**		
	PROJECT NO.	DATE	APPROVED BY
For: Hollander Investments LLC	QF0217645	9/16/09	AXH
Figure 2 — Scale: as shown	Note: Site Plan base map completed by Abbey Road Group LLC, provided by Mark Hollander (client).		

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UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS				DESCRIPTION
COARSE GRAINED SOILS more than 50% retained on #200 sieve	GRAVELS more than 50% coarse fraction is larger than No. 4 sieve size	Gravels with less than 5% fines	GW	Well graded gravels, gravel-sand mixtures
			GP	Poorly graded gravels, gravel-sand mixtures
		Gravels with more than 12% fines	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS more than 50% coarse fraction is smaller than No. 4 sieve size	Sands with less than 5% fines	SW	Well graded sands, gravelly sands
			SP	Poorly graded sands, gravelly sands
		Sands with more than 12% fines	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
FINE GRAINED SOILS more than 50% passing #200 sieve	SILTS AND CLAYS Liquid Limit less than 50		ML	Inorganic silts & very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, or lean clays
			OL	Organic clays and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid Limits greater than 50		MH	Inorganic silts, micaceous or diatomacious fine, sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			PT	Peat and other highly organic soils
UNCONTROLLED FILL				Uncontrolled, with highly variable constituents

LEGEND

SAMPLE	SYMBOL
SPLIT SPOON SAMPLER	GROUNDWATER TABLE
SHELBY TUBE SAMPLER	q_u PENETROMETER READING TSF (*tons per square foot*)

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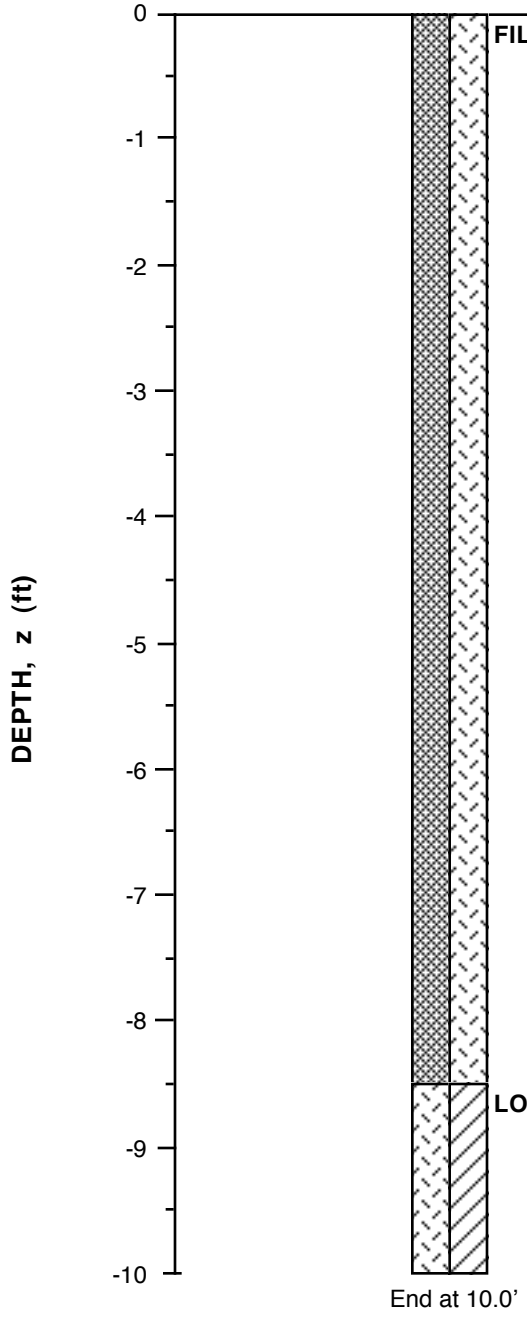
SOIL CLASSIFICATION & LEGEND

Figure 3

TP-1	Surface Elevation ≈ X = Y=	SOIL DESCRIPTION AND CLASSIFICATION



FILL: SILTY CLAYEY SAND with COBBLES (SM/SC)
Tan-brown sand with rounded gravel and cobbles throughout. Dry with roots to ~9" deep, then moist.
Very dense and compacted to ~2' deep. Fill material likely.

Gray sandy clay lense with pebbles ~6" thick at 7'

LOAMY SAND (SC/CL)
Gray clayey sand with many rounded cobbles ~4-6" dia., some rounded gravel. Damp and dense.
Sticks and small logs (1/2"-2" dia.) at 8.5'-9.0' depth.
Clear horizon with above layer. Interpreted as native soil.

Project No. QF0217645	Date: 8/11/09	Approved by A.X.H.	*Figure 4*

Geotechnical Engineering Investigation
Proposed Hotel
15th Ave SW & SR 512
Puyallup, Washington

For: Hollander Investments LLC

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Bellingham, Washington 98225
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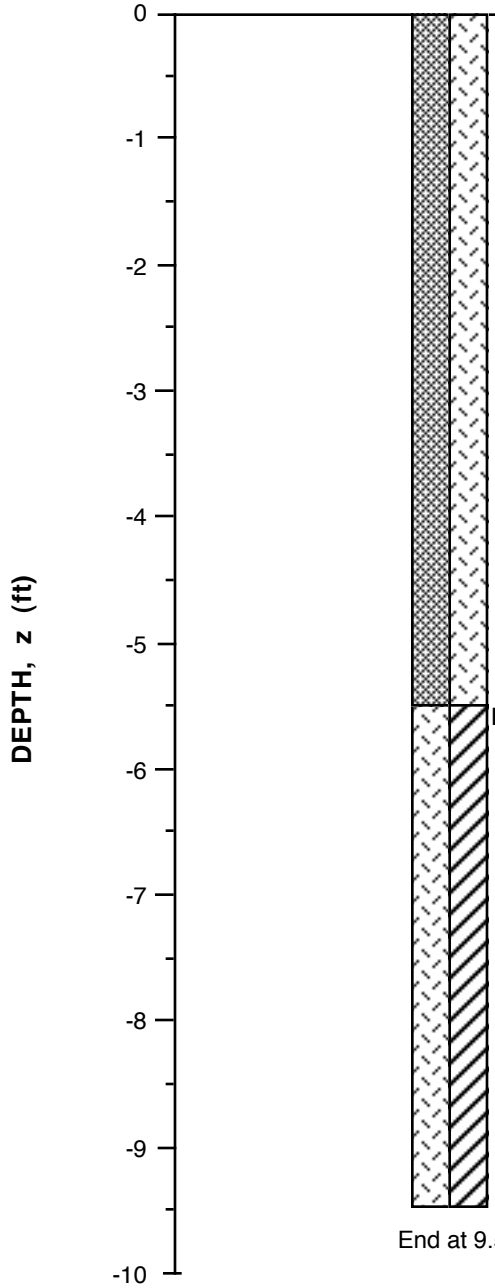
Fax: (360)738-1499
http://www.MeritEngineering.com

TP-2	Surface Elevation ≈ X = Y=	SOIL DESCRIPTION AND CLASSIFICATION



FILL: SILTY CLAYEY SAND with COBBLES (SM/SC)
Tan-brown sand with some fines, rounded cobbles, gravel and pebbles. Dry with small roots to 1´ deep, then moist. Very dense and compacted to ~1.5' deep. Fill material likely.

Old glass bottle observed at 12" depth.

LOAMY SAND with COBBLES (SC/CL)
Grey loamy sand with rounded pebbles, gravel, cobbles. Damp, dense/stiff, and cohesive. Interpreted as native soil.

End at 9.5'

Project No. QF0217645	Date: 8/11/09	Approved by A.X.H.	*Figure 5*

Geotechnical Engineering Investigation
Proposed Hotel
15th Ave SW & SR 512
Puyallup, Washington

For: Hollander Investments LLC

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Bellingham, Washington 98225
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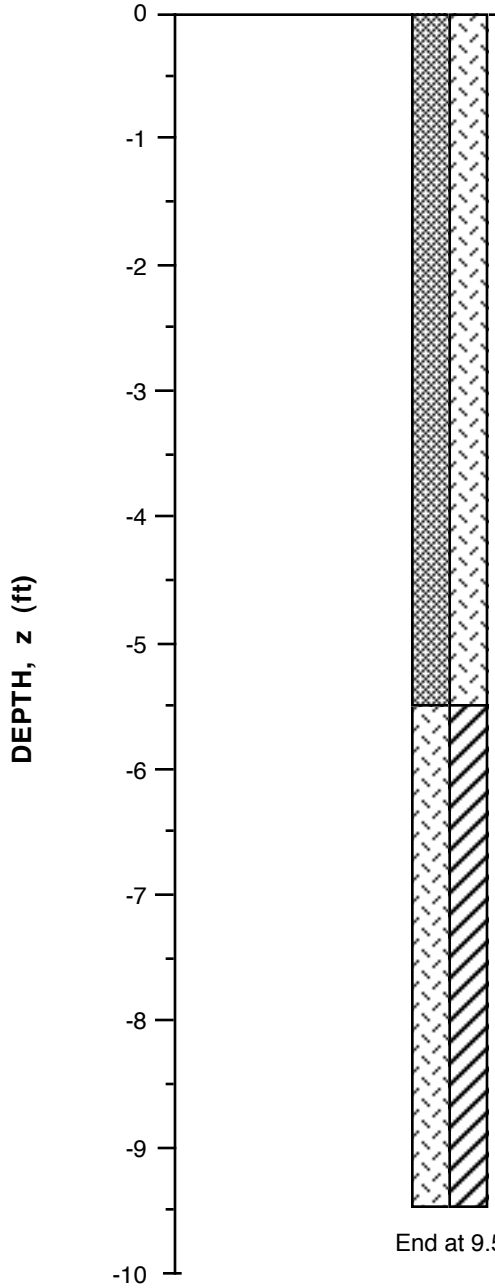
Fax: (360)738-1499
http://www.MeritEngineering.com

TP-3	Surface Elevation ≈ X = Y=	SOIL DESCRIPTION AND CLASSIFICATION



FILL: SILTY CLAYEY SAND with COBBLES (SM/SC)

Tan-brown sand with some fines, rounded cobbles, gravel and pebbles. Dry with small roots to 1´ deep, then moist. Very dense and compacted to ~1.5' deep. Fill material likely.

LOAMY SAND with COBBLES (SC/CL)

Brown loamy sand with rounded pebbles, gravel, cobbles. Damp, dense/stiff, and cohesive. Interpreted as native soil.

Becomes more damp at ~7.0'.

Project No. QF0217645	Date: 8/11/09	Approved by A.X.H.	*Figure 6*

Geotechnical Engineering Investigation
Proposed Hotel
15th Ave SW & SR 512
Puyallup, Washington

For: Hollander Investments LLC

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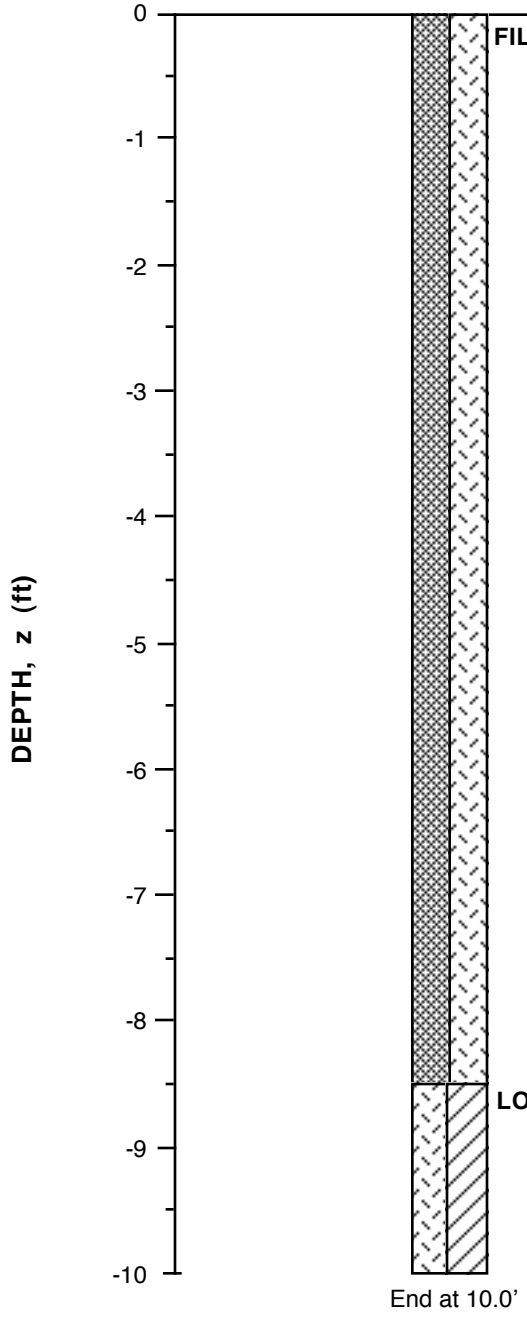
http://www.MeritEngineering.com

TP-4	Surface Elevation ≈ X = Y=	SOIL DESCRIPTION AND CLASSIFICATION



FILL: SILTY CLAYEY SAND with COBBLES (SM/SC)
Brown loamy sand with rounded pebbles, gravel, and cobbles. Dry near surface, to damp with depth.
Very dense and compacted to ~1.0' depth. Fill material likely.

Soil becomes damp by ~6.0'.

LOAMY SAND with COBBLES (SC/CL)
Gray clayey sand with many cobbles ~4-6" dia., some gravel and pebbles. Damp and dense.
Clear horizon with above layer. Interpreted as native soil.

Project No. QF0217645	Date: 8/11/09	Approved by A.X.H.	*Figure 7*

Geotechnical Engineering Investigation
Proposed Hotel
15th Ave SW & SR 512
Puyallup, Washington

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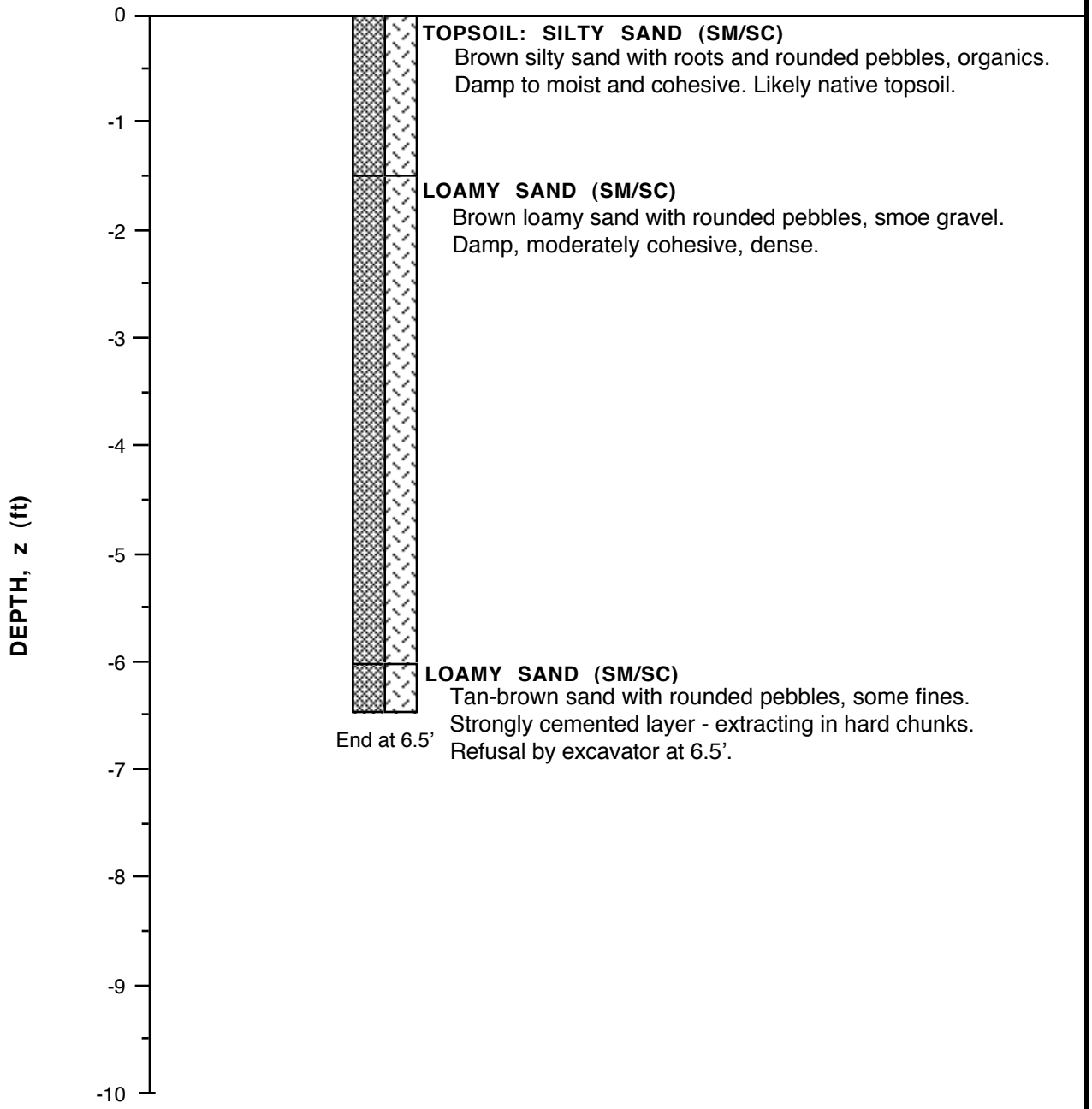
Fax: (360)738-1499
http://www.MeritEngineering.com

TP-5	Surface Elevation ≈ X = Y=	SOIL DESCRIPTION AND CLASSIFICATION



Project No. QF0217645	Date: 8/11/09	Approved by A.X.H.	*Figure 8*

Geotechnical Engineering Investigation
Proposed Hotel
15th Ave SW & SR 512
Puyallup, Washington

For: Hollander Investments LLC

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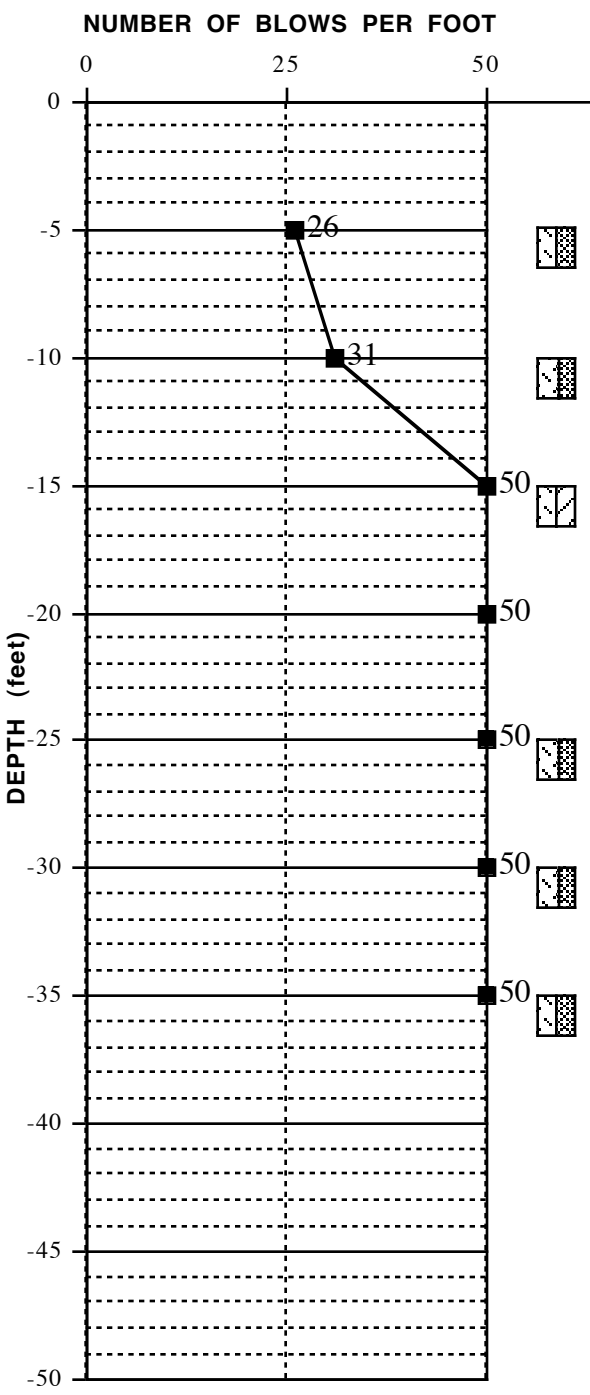
2715 Meridian Street
Bellingham, Washington 98225
Telephone: (360)738-6083
Fax: (360)738-1499
http://www.MeritEngineering.com

B-1 STANDARD PENETRATION TEST	SOIL DESCRIPTION AND CLASSIFICATION



X,Y =
Surface Elevation = 72.37 (ft)
Surface Conditions = Tall grass

SILTY CLAYEY SAND with COBBLES (SM/SC)

Brown loamy medium sand with cobbles. Damp, dense, cohesive to crumbly. Very stiff brown-gray clay lenses with gravel observed in samples. Fill material likely.

LOAMY SAND (SC/CL)

Light brown loamy sand with clay observed in tailings. Damp, some gravel, mod. coherent. Soil is likely native.

Sand lamellae in sample at 15'.

SILTY CLAYEY SAND (SM/SC)

Medium to fine sand with ~30% silt and clay. Damp to wet, sl. coherent, very dense.

Becomes saturated at 30'.

End @ 36.5'

Note: Groundwater level measured within monitoring well after development and stabilization - 8/18/09.

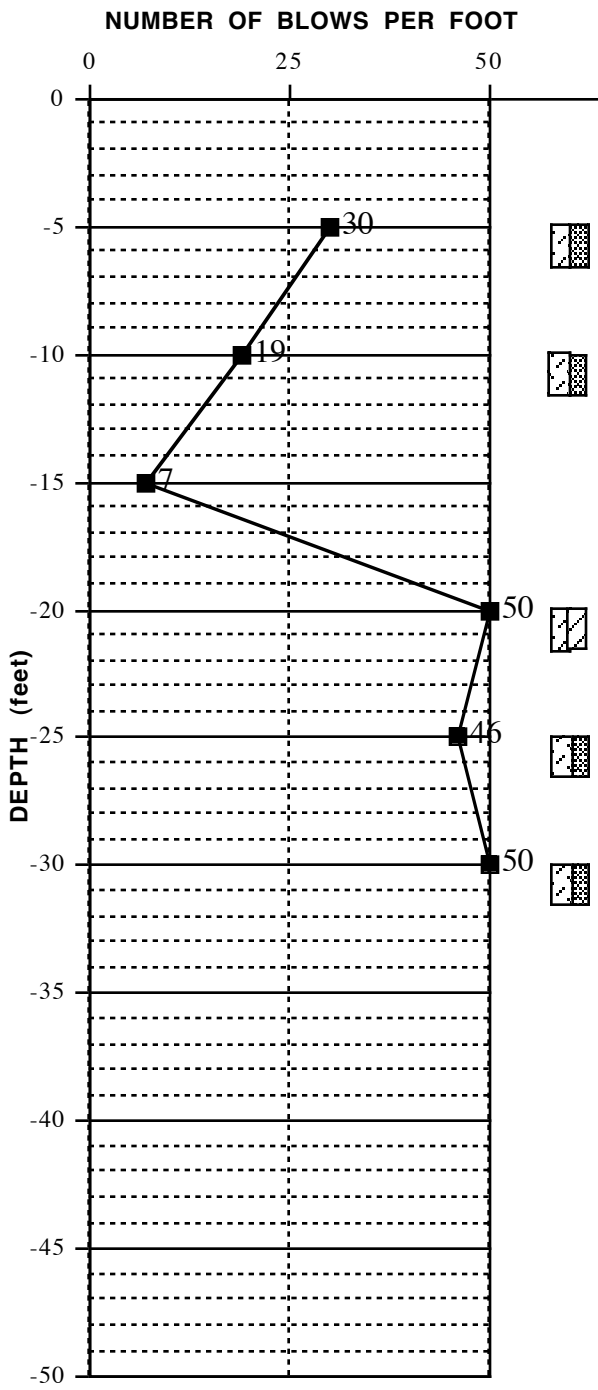
Project No. QF0217645	Date: 7/27/09	**LOG OF TEST BORING**	Approved by AXH	Figure 9

Geotechnical Engineering Investigation
Proposed Hotel
15th Ave SW & SR 512
Puyallup, Washington

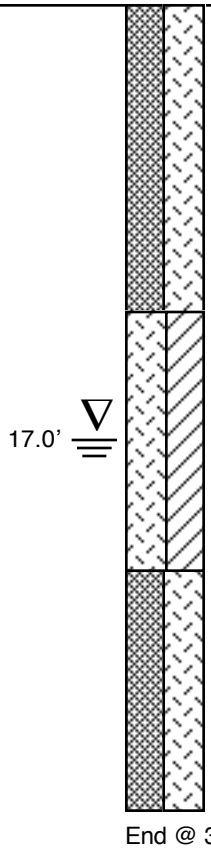
For: Hollander Investments LLC

MERIT ENGINEERING INC.
2715 Meridian Street
Bellingham, Washington 98225
Telephone: (360)738-6083
Fax: (360)738-1499
http://www.MeritEngineering.com

B-2 STANDARD PENETRATION TEST	SOIL DESCRIPTION AND CLASSIFICATION



X,Y =
Surface Elevation = 69.55 (ft)
Surface Conditions = Tall grass



SILTY CLAYEY SAND with COBBLES (SM/SC)
Brown medium sand, loamy with gravel and cobbles. Damp, dense, cohesive to crumbly. Fill material likely.

LOAMY SAND (SC/CL)
Light brown loamy sand with gray-brown clay observed in tailings. Damp to moist, some gravel, mod. coherent to coherent. Soil is likely native.

SILTY CLAYEY SAND (SM/SC)
Medium to fine sand with ~20% silt and clay, some gravel. Moist, to saturated by 25'. Very dense to hard, sl. coherent.

End @ 31.5'

Note: Groundwater level measured within monitoring well after development and stabilization - 8/18/09.

Project No. QF0217645	Date: 7/27/09	**LOG OF TEST BORING**	Approved by AXH	Figure 10

Geotechnical Engineering Investigation
Proposed Hotel
15th Ave SW & SR 512
Puyallup, Washington

For: Hollander Investments LLC

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Bellingham, Washington 98225
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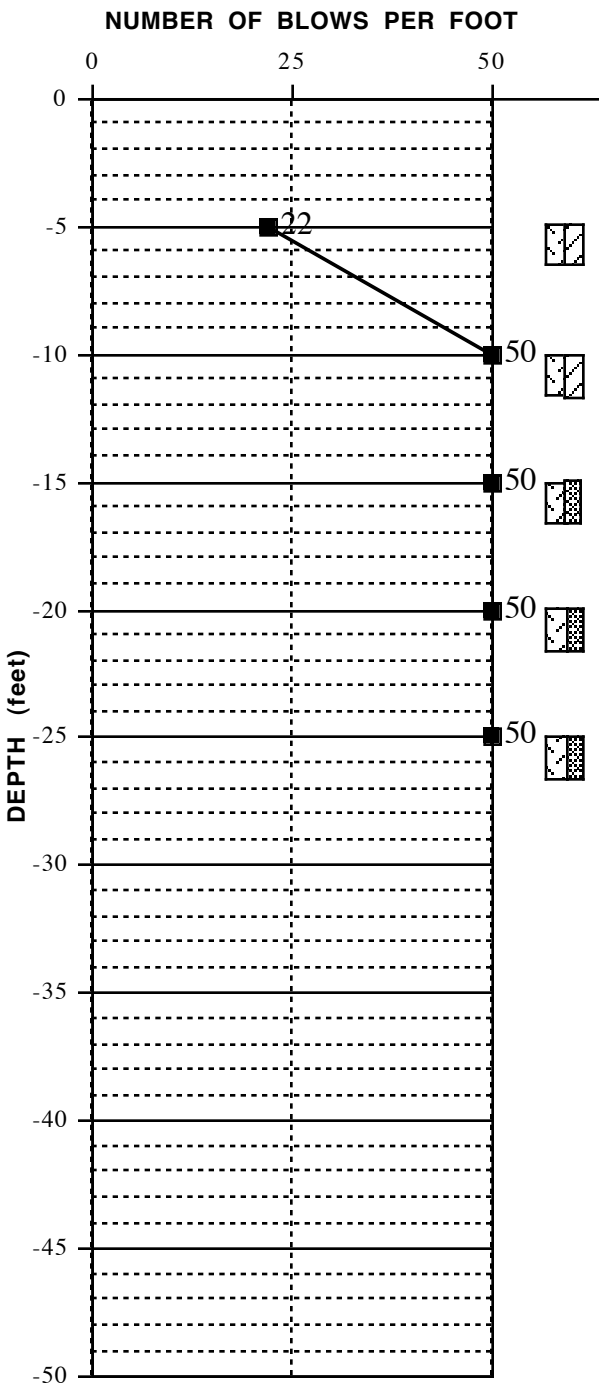
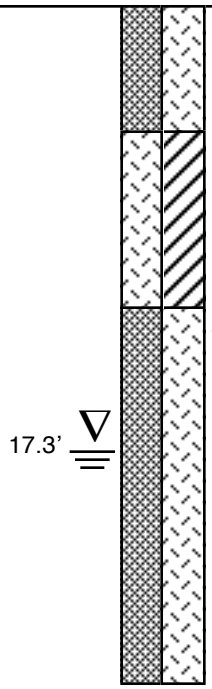
Fax: (360)738-1499
http://www.MeritEngineering.com

B-3 STANDARD PENETRATION TEST	SOIL DESCRIPTION AND CLASSIFICATION



X,Y =
Surface Elevation = 63.24 (ft)
Surface Conditions = Tall grass



SILTY CLAYEY SAND with COBBLES (SM/SC)
Brown medium sand, loamy with gravel. Dry to damp, dense, cohesive. Fill material likely.

LOAMY SAND (SC/CL)
Light brown loamy sand with clay observed in tailings and samples. Damp to moist, some gravel, mod. coherent. Soil is likely native.

SILTY CLAYEY SAND (SM/SC)
Grey medium to fine sand with ~25% silt and clay. Very dense in place, damp to wet, crumbly to mod. coherent.

End @ 26.5'

Note: Groundwater level measured within monitoring well one day after drilling, before development - 7/28/09.

Project No. QF0217645	Date: 7/27/09	**LOG OF TEST BORING**	Approved by AXH	Figure 11

Geotechnical Engineering Investigation
Proposed Hotel
15th Ave SW & SR 512
Puyallup, Washington

For: Hollander Investments LLC

MERIT ENGINEERING INC.
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Bellingham, Washington 98225
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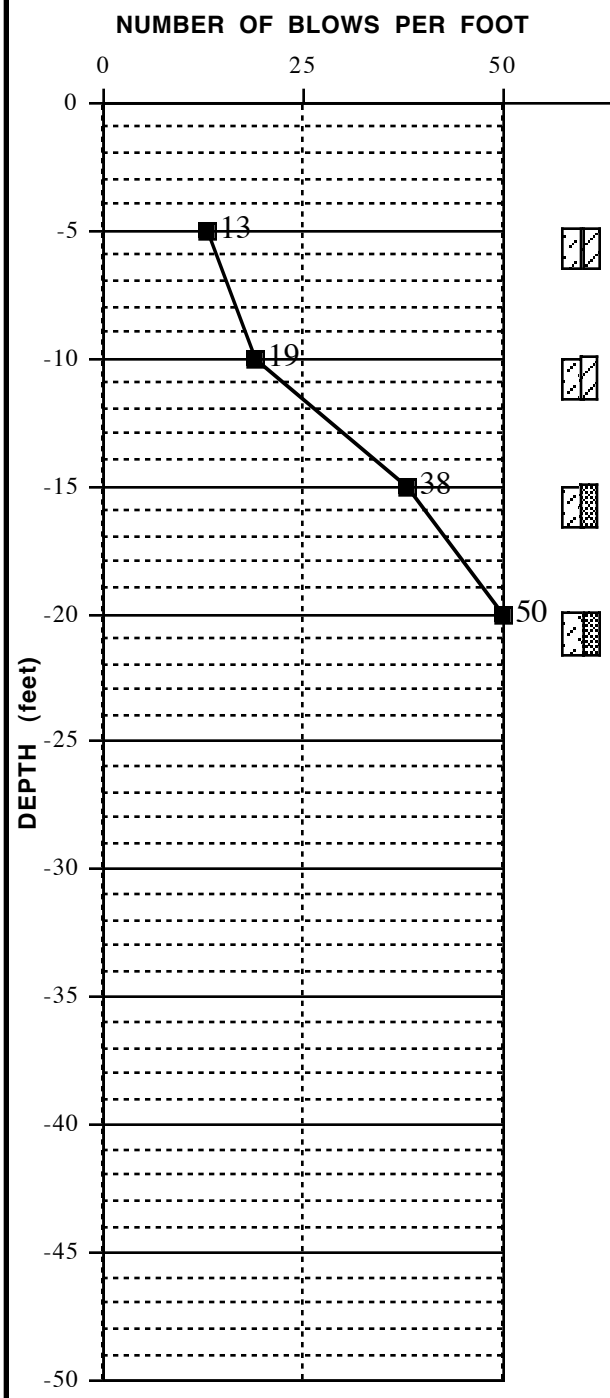
Fax: (360)738-1499
http://www.MeritEngineering.com

B-4 STANDARD PENETRATION TEST	SOIL DESCRIPTION AND CLASSIFICATION



X,Y =
Surface Elevation = 60.43 (ft)
Surface Conditions = Tall grass

5.9' ▽

SILTY CLAYEY SAND with COBBLES (SM/SC)
Brown medium sand, loamy with gravel. Dry to damp, dense, cohesive. Fill material likely.

LOAMY SAND (SC/CL)
Light brown loamy sand with clay. Moist, some gravel, mod. coherent. Soil is likely native.

SILTY CLAYEY SAND (SM/SC)
Brown-gray medium to fine sand with ~25% silt and clay intermixed. Dense to hard in place, wet.

End @ 21.5'

Note: Groundwater level measured within monitoring well after development and stabilization - 8/18/09.

Project No. QF0217645	Date: 7/28/09	**LOG OF TEST BORING**	Approved by AXH	Figure 12

Geotechnical Engineering Investigation
Proposed Hotel
15th Ave SW & SR 512
Puyallup, Washington

For: Hollander Investments LLC

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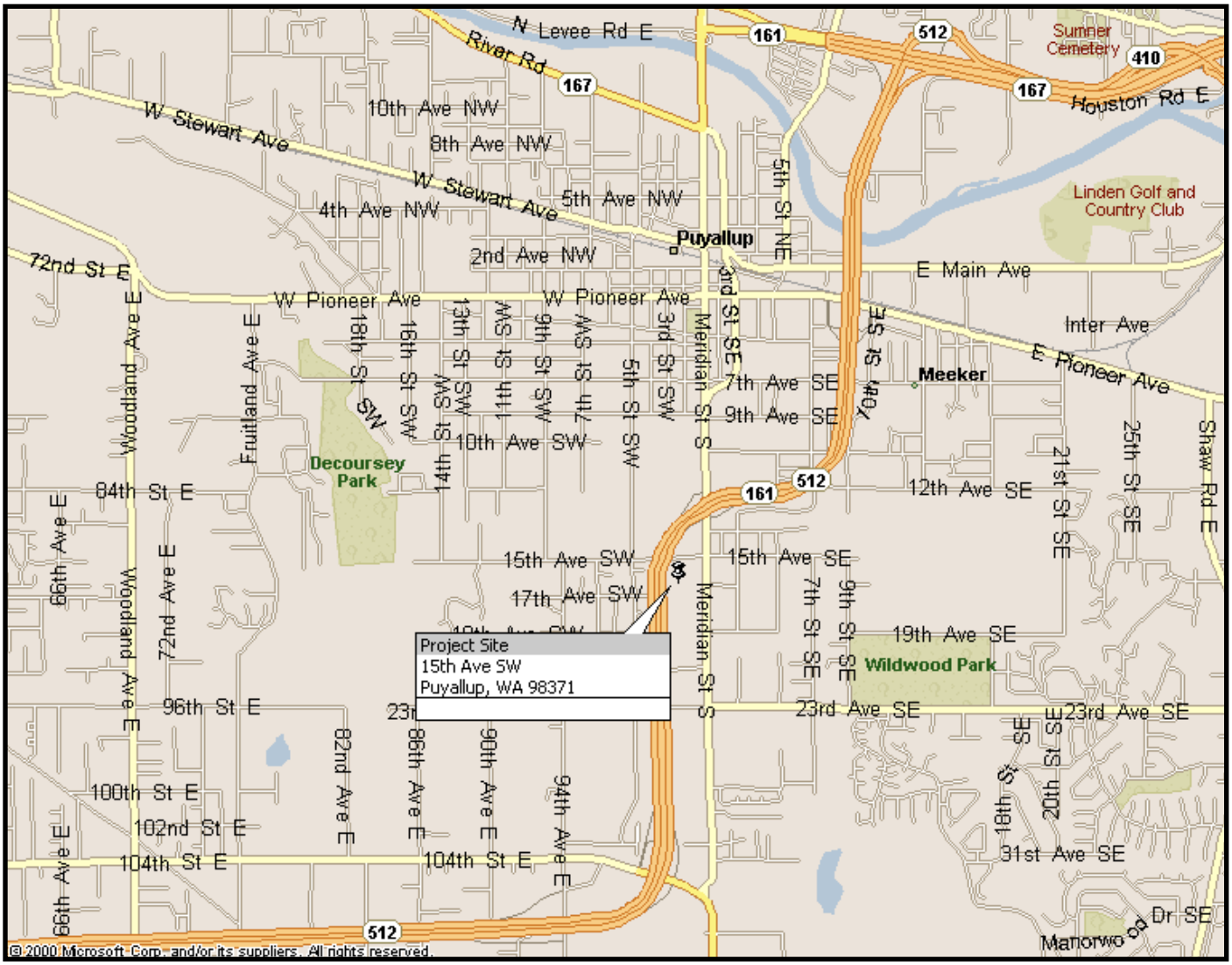


Project No. QF0217645	**PROJECT LOCATION & VICINITY MAP**	Date: 6/4/10	*Figure 1*

Critical Area Slope Assessment
Proposed Fairfield Inn
15th Avenue SW - Hwy 512
Puyallup, Washington

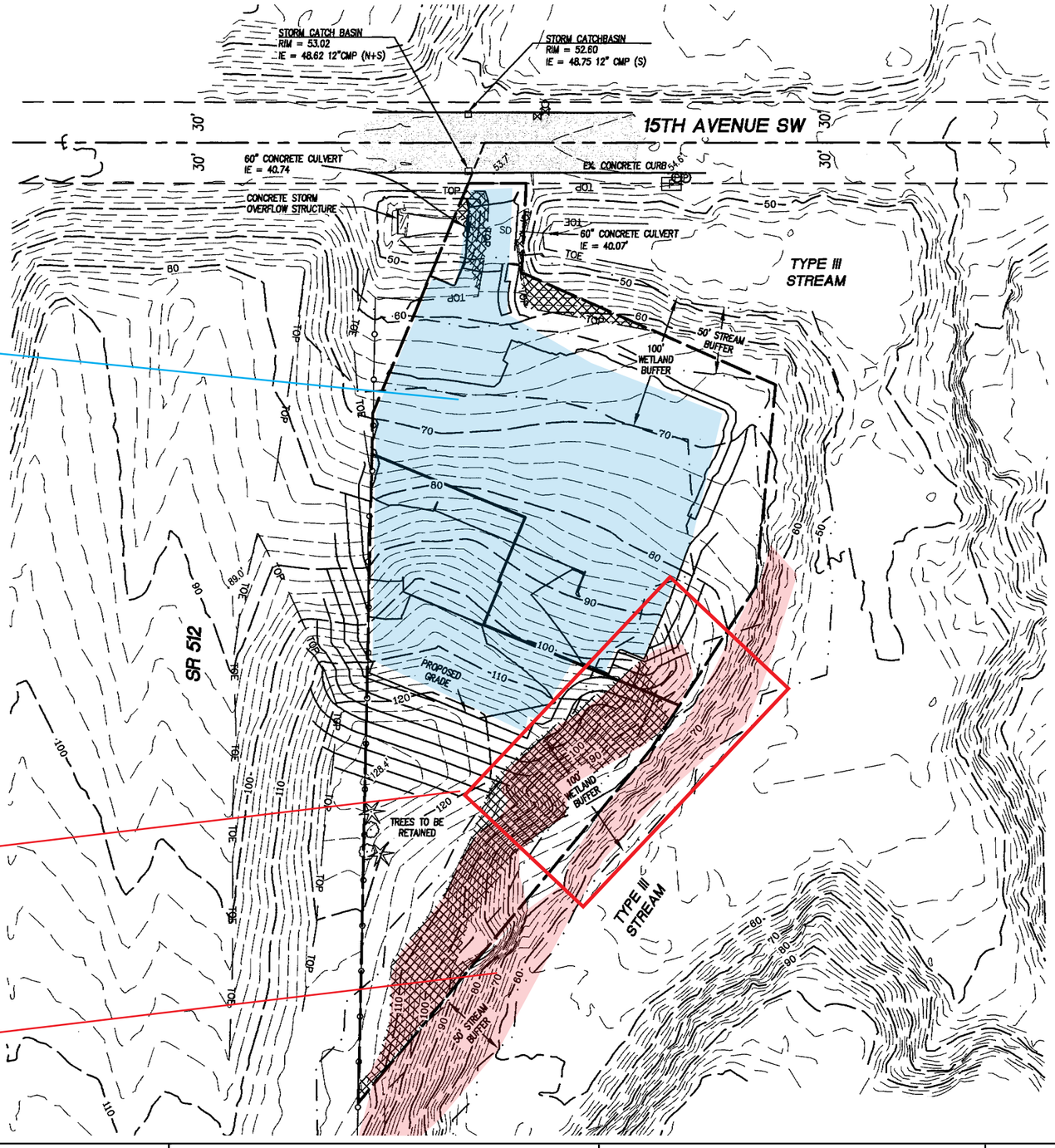
For: Hollander Investments

MERIT ENGINEERING INC.
2715 Meridian Street
Bellingham, Washington 98225
Telephone: (360)738-6083
Fax: (360)738-1499
http://www.MeritEngineering.com

PROPOSED EXTENT OF DEVELOPMENT

SLOPE ASSESSMENT STUDY AREA

ESTIMATED EXTENT OF >40% SLOPES
(Adjacent to development area)
- Based on Topographic Map shown -



GRAPHIC SCALE

60 0 30 60 120

(IN FEET)
1 inch = 60 ft.

LEGEND

- EXISTING STORMWATER CATCHBASIN
- EXISTING WATER VALVE
- EXISTING FIRE HYDRANT
- EXISTING POWER MANHOLE
- EXISTING POWER VAULT
- TOP — EXISTING TOP OF BANK
- TOE — EXISTING TOE OF SLOPE
- EXISTING MAJOR CONTOUR (10 FOOT INTERVAL)
- EXISTING MINOR CONTOUR (2 FOOT INTERVAL)
- +100.0' EXISTING SPOT ELEVATION

SLOPE LEGEND

- 40.00%+

VERTICAL DATUM

NGVD 29
REFERENCE BENCHMARKS

BM 153-6
PUBLISHED ELEVATION: 81.21'
DESCRIPTION: BRASS MON IN CASE AT THE INTERSECTION OF 15TH AVENUE SW & 9TH STREET

BM 155-1
PUBLISHED ELEVATION: 49.112'
DESCRIPTION: BRASS MON IN CASE AT THE INTERSECTION OF 15TH AVENUE SW & 5TH STREET, P.C.P.W.D. #2212

METHODS AND EQUIPMENT

SURVEY PERFORMED WITH A 1" TOTAL STATION, USING TRAVERSE AND RADIAL SURVEY METHODS. SURVEY MEETS OR EXCEEDS ACCURACY REQUIREMENTS CONTAINED IN W.A.C. 332.130.090.

SURVEYOR'S NOTES

1. DATA FOR THIS SURVEY WAS GATHERED BY FIELD TRAVERSE UTILIZING ELECTRONIC DATA COLLECTION ON 10-07-07.
2. CONTOUR INTERVALS ARE TWO FOOT AND ARE COMPUTER GENERATED FROM GROUND FIELD TOPOGRAPHY GATHERED FOR THIS SURVEY UTILIZING ELECTRONIC DATA COLLECTION.
3. APEX ENGINEERING PLLC, ASSUMES NO LIABILITY FOR ANY SUBSURFACE CONDITIONS OR FEATURES THAT MAY EXIST THAT ARE UNDETECTABLE AND/OR NOT VISIBLE.
4. THE OFFSITE TOPOGRAHPY WAS TAKEN ENTIRELY FROM PIERCE COUNTY GIS DATA AND CONVERTED TO NGVD 1929 DATUM.

Note: Site Plan base survey map provided by client, constructed by Apex Engineering.

Scale: See above bar scale.

For: Hollander Investments

Critical Area Slope Assessment
Proposed Fairfield Inn
15th Avenue SW - Hwy 512
Puyallup, Washington

OVERVIEW SITE PLAN

Figure 2A

PROJECT NO.	QF0217645
DATE	5/28/10
APPROVED BY	AXH

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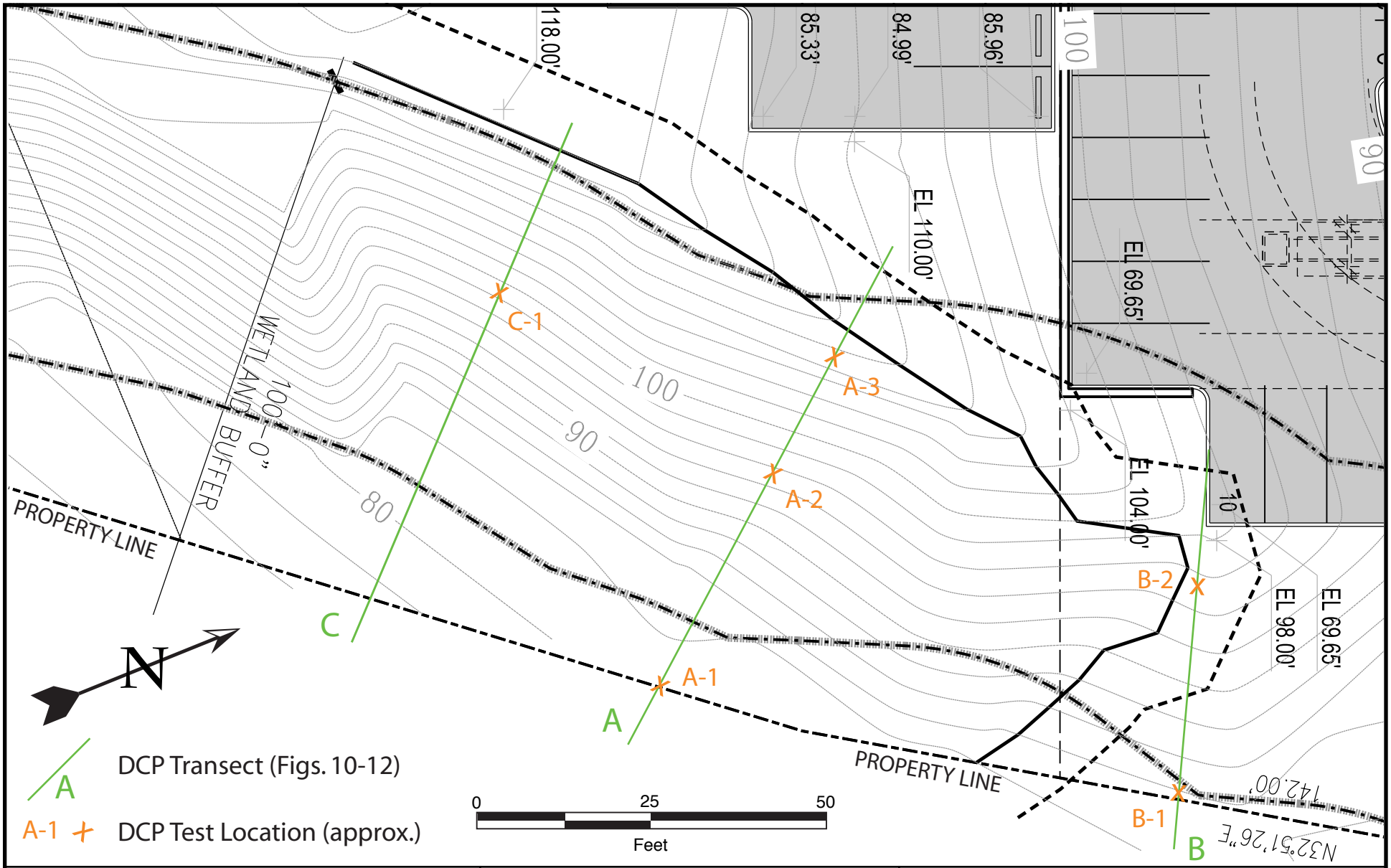

Critical Area Slope Assessment Proposed Fairfield Inn 15th Avenue SW - Hwy 512 Puyallup, Washington	**DETAIL SITE PLAN**		
	PROJECT NO.	DATE	APPROVED BY
For: Hollander Investments	QF0217645	6/30/10	AXH
Figure 2B / Scale: Approximate	Note: Site Plan base survey map provided by the architect.		

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UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS				DESCRIPTION
COARSE GRAINED SOILS more than 50% retained on #200 sieve	GRAVELS more than 50% coarse fraction is larger than No. 4 sieve size	Gravels with less than 5% fines	GW	Well graded gravels, gravel-sand mixtures
			GP	Poorly graded gravels, gravel-sand mixtures
		Gravels with more than 12% fines	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS more than 50% coarse fraction is smaller than No. 4 sieve size	Sands with less than 5% fines	SW	Well graded sands, gravelly sands
			SP	Poorly graded sands, gravelly sands
		Sands with more than 12% fines	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
FINE GRAINED SOILS more than 50% passing #200 sieve	SILTS AND CLAYS Liquid Limit less than 50		ML	Inorganic silts & very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, or lean clays
			OL	Organic clays and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid Limits greater than 50		MH	Inorganic silts, micaceous or diatomacious fine, sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			PT	Peat and other highly organic soils
UNCONTROLLED FILL				Uncontrolled, with highly variable constituents

LEGEND

SAMPLE	SYMBOL
SPLIT SPOON SAMPLER	GROUNDWATER TABLE
SHELBY TUBE SAMPLER	q_u PENETROMETER READING TSF (*tons per square foot*)

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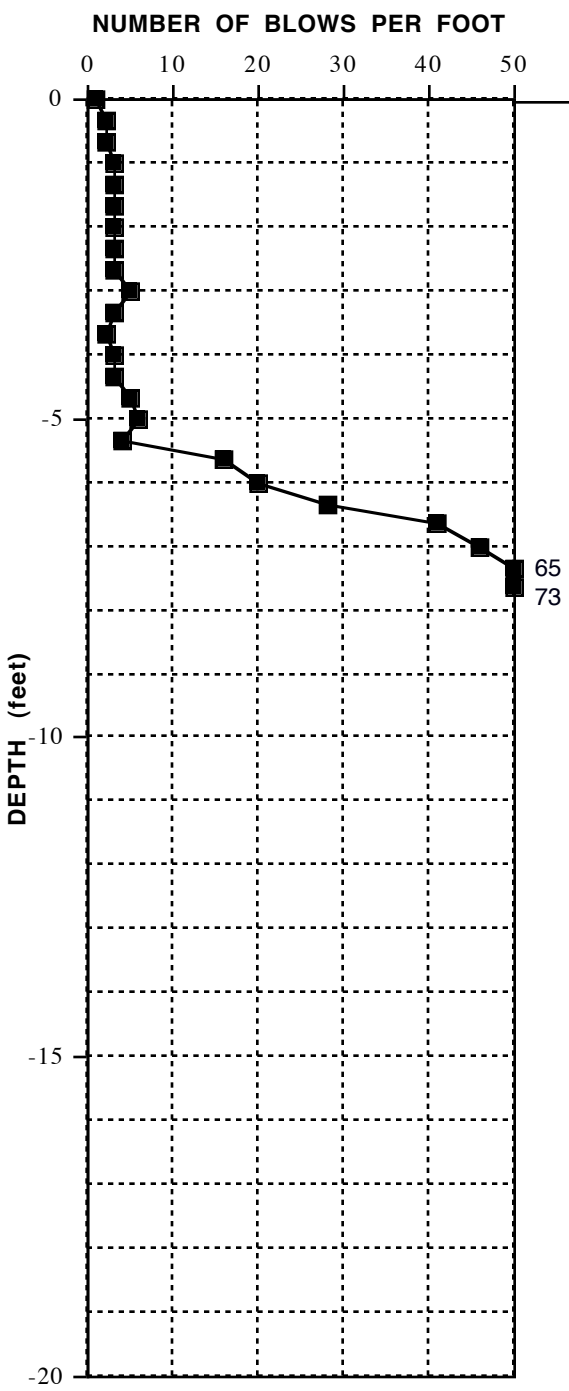
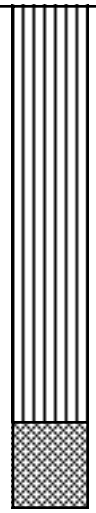
SOIL CLASSIFICATION & LEGEND

Figure 3

DYNAMIC CONE PENETRATION TEST **A-1** | SOIL DESCRIPTION AND CLASSIFICATION



X, Y =
Surface Elevation =



SANDY SILT TO SAND-SILT MIX (ML)
Brown sand-silt loam mixture at surface.
Damp, soft, coherent to malleable.

Soil is moist - perched runoff?

Becomes stiff/dense. Lt. brown sandy silt residue on rods. Damp to moist.

SILTY SAND (SM)
Brown-gray sandwith silt, v. dense. Damp, locally cemented.

Refusal - 8´

Notes: Soils not observed directly during DCP testing. Profile inferred from DCP results, surface exposures, and past site borings.

Project: QF0217645	Date: 5/11/10	**LOG OF DCP TEST**	Approved by A.X.H.	*Figure 4*

Critical Area Slope Assessment
Proposed Fairfield Inn
15th Avenue SW - Hwy 512
Puyallup, Washington

For: Hollander Investments

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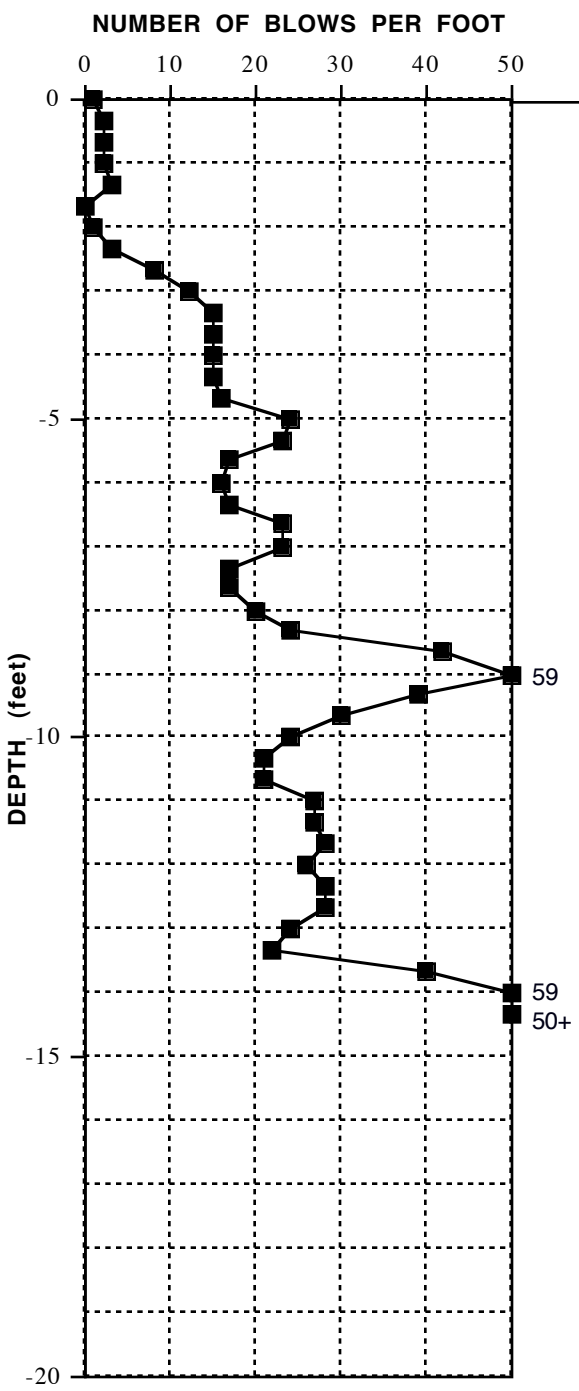
DYNAMIC CONE PENETRATION TEST **A-2** | SOIL DESCRIPTION AND CLASSIFICATION



X, Y =
Surface Elevation =

SANDY SILT TO SAND-SILT MIX (ML)
Brown sand-silt loam mixture at surface. Damp, soft, coherent to malleable.

Becomes stiff/dense. Lt. brown sandy silt residue on rods. Damp, mod. coherent.

Very dense section - sandy lens or rock?

SILTY SAND (SM)
Brown-gray sandwith silt, v. dense. Damp, locally cemented.

Refusal - 14´

Notes: Soils not observed directly during DCP testing. Profile inferred from DCP results, surface exposures, and past site borings.

Project: QF0217645	Date: 5/11/10	**LOG OF DCP TEST**	Approved by A.X.H.	*Figure 5*

Critical Area Slope Assessment
Proposed Fairfield Inn
15th Avenue SW - Hwy 512
Puyallup, Washington

For: Hollander Investments

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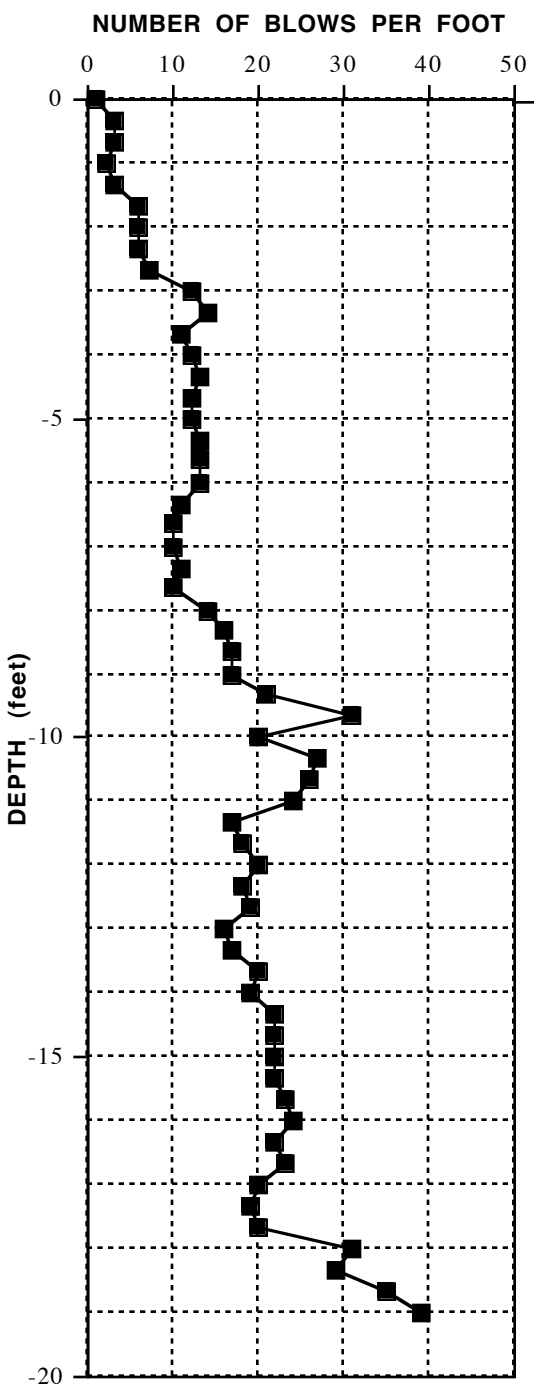
DYNAMIC CONE PENETRATION TEST **A-3**

SOIL DESCRIPTION AND CLASSIFICATION



X, Y =
Surface Elevation =

SANDY SILT TO SAND-SILT MIX (ML)
Brown sand-silt loam mixture at surface. Damp, soft, coherent to malleable.

Becomes stiff/dense. Lt. brown sand-silt residue on rods. Sl. damp, crumbly.

Sandy pocket likely - results variable.

Sandy silt-clay rod residue, damp to moist with depth.

SILTY SAND (SM)
Brown-gray sandwith silt, v. dense. Damp, locally cemented.

End at 19´

Notes: Soils not observed directly during DCP testing. Profile inferred from DCP results, surface exposures, and past site borings.

Project: QF0217645	Date: 5/11/10	**LOG OF DCP TEST**	Approved by A.X.H.	*Figure 6*

Critical Area Slope Assessment
Proposed Fairfield Inn
15th Avenue SW - Hwy 512
Puyallup, Washington

For: Hollander Investments

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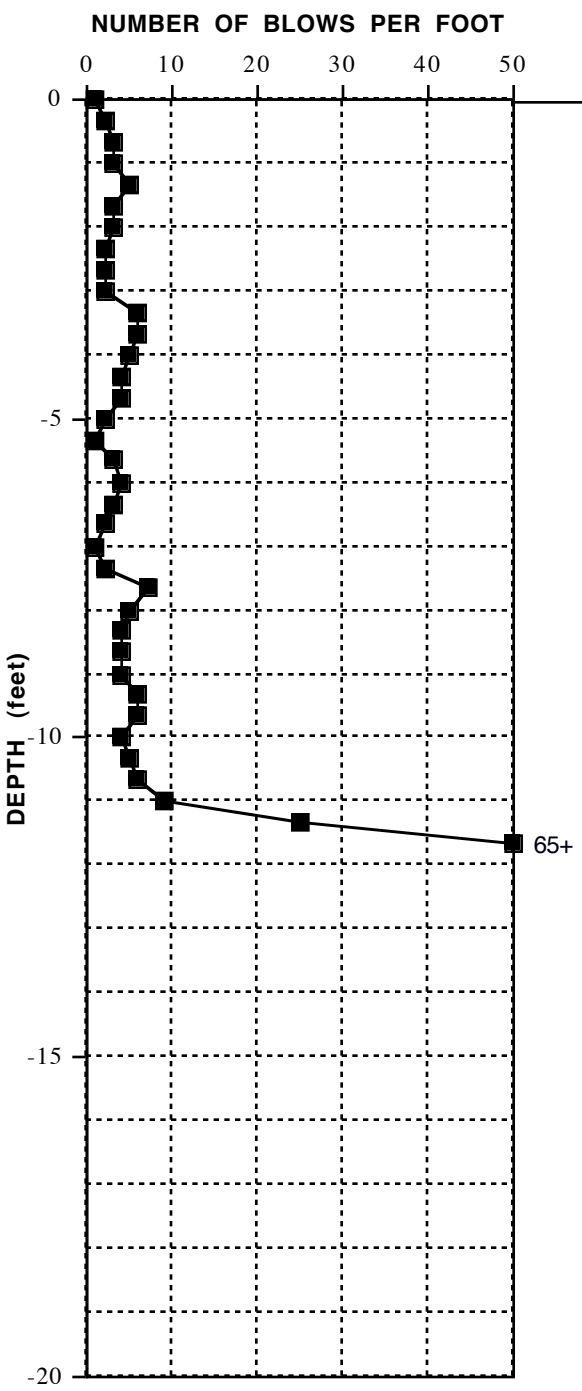
DYNAMIC CONE PENETRATION TEST **B-1** | SOIL DESCRIPTION AND CLASSIFICATION



X, Y =
Surface Elevation =

SANDY SILT TO SAND-SILT MIX (ML)
Brown sand-silt loam mixture at surface.
Damp, soft, coherent to malleable.

Remains mod. soft, moist throughout.

SILTY SAND (SM)
Brown-gray sandwith silt, v. dense. Damp, locally cemented.

Refusal - 12´

Notes: Soils not observed directly during DCP testing. Profile inferred from DCP results, surface exposures, and past site borings.

Project: QF0217645	Date: 5/11/10	**LOG OF DCP TEST**	Approved by A.X.H.	*Figure 7*

Critical Area Slope Assessment
Proposed Fairfield Inn
15th Avenue SW - Hwy 512
Puyallup, Washington

For: Hollander Investments

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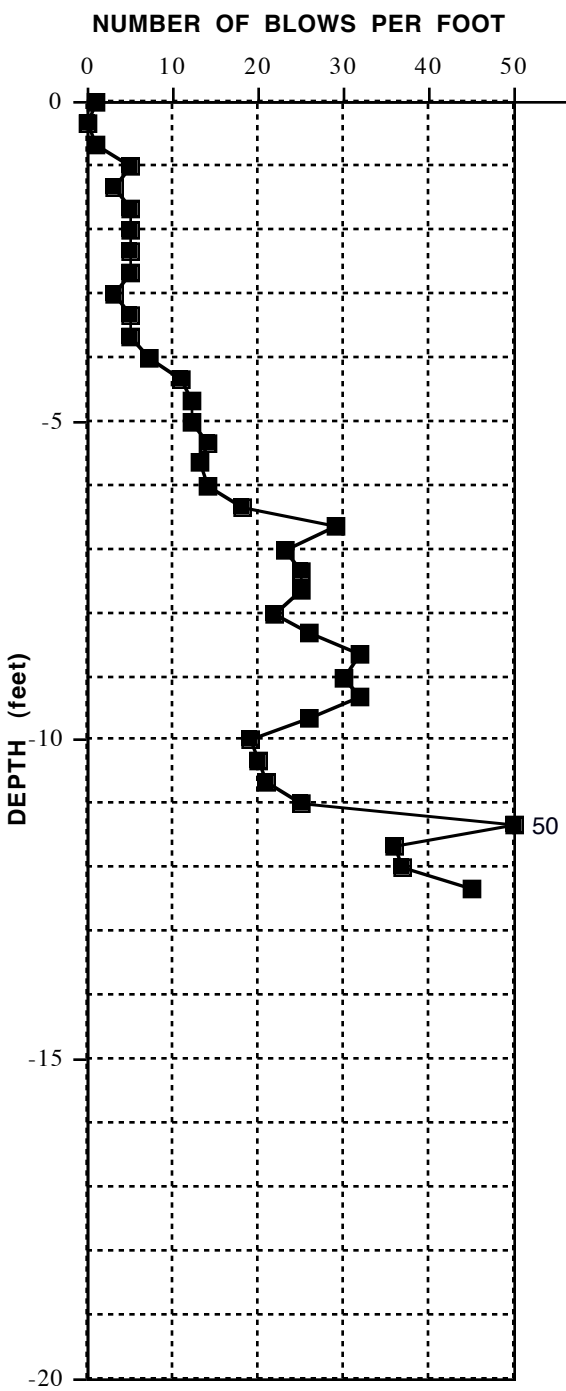
DYNAMIC CONE PENETRATION TEST **B-2** | SOIL DESCRIPTION AND CLASSIFICATION



X, Y =
Surface Elevation =

SANDY SILT TO SAND-SILT MIX (ML)
Brown sand-silt loam mixture at surface. Damp, soft, coherent to malleable.

Becomes stiff/dense. Lt. brown sandy silt residue on rods. Damp, mod. coherent.

Soil becomes more coarse, variable.

SILTY SAND (SM)
Brown-gray sandwith silt, v. dense. Damp, locally cemented.

End at 13´

Notes: Soils not observed directly during DCP testing. Profile inferred from DCP results, surface exposures, and past site borings.

Project: QF0217645	Date: 5/11/10	**LOG OF DCP TEST**	Approved by A.X.H.	*Figure 8*

Critical Area Slope Assessment
Proposed Fairfield Inn
15th Avenue SW - Hwy 512
Puyallup, Washington

For: Hollander Investments

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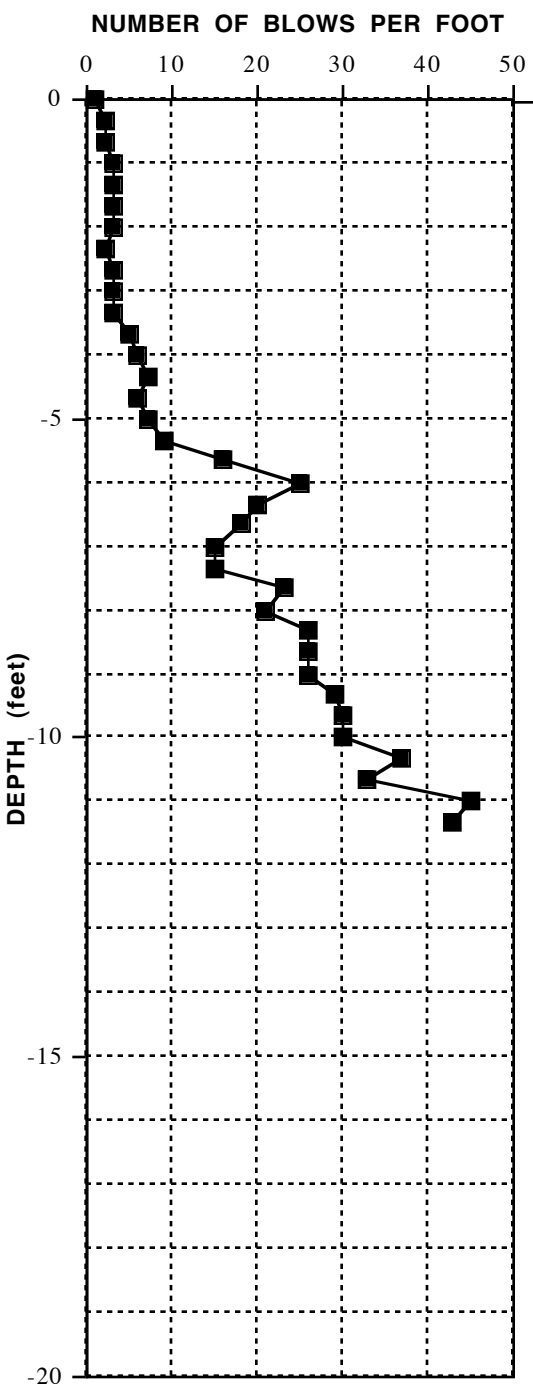
DYNAMIC CONE PENETRATION TEST **C-1** | SOIL DESCRIPTION AND CLASSIFICATION



X, Y =
Surface Elevation =

SANDY SILT TO SAND-SILT MIX (ML)
Brown sand-silt loam mixture at surface.
Damp, soft, coherent to malleable.

Becomes stiff/dense. Lt. brown sandy silt residue on rods. Damp, mod. coherent.

Soil becomes more coarse, variable.

SILTY SAND (SM)
Brown-gray sandwith silt, v. dense. Damp, locally cemented.

End at 13´

Notes: Soils not observed directly during DCP testing. Profile inferred from DCP results, surface exposures, and past site borings.

Project: QF0217645	Date: 5/12/10	**LOG OF DCP TEST**	Approved by A.X.H.	*Figure 9*

Critical Area Slope Assessment
Proposed Fairfield Inn
15th Avenue SW - Hwy 512
Puyallup, Washington

For: Hollander Investments

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GEOTECHNICAL ENGINEERING STUDY
PROPOSED MEDICAL OFFICE BUILDING
15TH AVENUE SOUTHWEST NEAR SOUTH MERIDIAN
PUYALLUP, WASHINGTON

December 11, 2007
ECI Project No. E-13106

Prepared for
Offenbecher Commercial
101 South Meridian Street
Puyallup, Washington 98371

EARTH CONSULTING INCORPORATED
1805 136th Place Northeast
Suite 201
Bellevue, Washington 98005
(425) 643-3780
Toll Free 1-888-739-6670

Boring Log

Project Name: Puyallup Medical Center				Sheet 1 of 2
Job No. 13106	Logged by: STS/MGM	Start Date: 2/21/03	Completion Date: 2/21/03	Boring No.: B-1
Drilling Contractor: Gregory Drilling		Drilling Method: HSA		Sampling Method: SPT
Approximate Ground Surface Elevation: 120'		Hole Completion: ☐ Monitoring Well ☐ Piezometer ☒ Abandoned, sealed with bentonite		

General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	Sample	USCS Symbol	Surface Conditions: Grass
				1		ML	Brown SILT, loose, moist to wet -trace sand -mottled
	22.1	8		2 3			
	24.2	8		4 5 6			-becomes wet -iron oxide staining
	22.4	9		7 8			-slight increase in sand content
	15.1	9		9 10 11			-trace medium- to coarse-grained sand and gravel -becomes moist
				12		SM	Brown silty SAND with gravel, medium dense, moist
	10.7	64		13 14 15 16			-becomes dense
				17 18 19			

Earth Consulting Incorporated

Boring Log
Puyallup Medical Center
Puyallup, Washington

Proj. No. 13106	Dwn. DNM	Date 12/5/07	Checked RAB	Date 12/5/07	Plate A2

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

BV BORING LOG 13106.GPJ ECI.GDT 12/10/07

Boring Log

Project Name: Puyallup Medical Center				Sheet 2 of 2
Job No. 13106	Logged by: STS/MGM	Start Date: 2/21/03	Completion Date: 2/21/03	Boring No.: B-1
Drilling Contractor: Gregory Drilling		Drilling Method: HSA		Sampling Method: SPT
Approximate Ground Surface Elevation: 120'		Hole Completion: ☐ Monitoring Well ☐ Piezometer ☒ Abandoned, sealed with bentonite		

General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	Sample	USCS Symbol	
	9.2	82		21		SM	Brown silty SAND with gravel, very dense, moist
				22			-pockets of brown poorly graded sand with silt and gravel
				23			
				24			
	10.7	74/10"		25			-decreasing fines
				26			
				27			
				28			
				29			
	11.7	60		30			-seepage
				31			
				32			
				33			
				34			
	23.1	68/11"		35		ML	Grades to brown SILT with fine sand with gravel, very dense, saturated
				36			Boring terminated at 36' below existing grade. Groundwater seepage encountered at 30.5' during drilling. Boring backfilled with bentonite chips.

Earth Consulting Incorporated

Boring Log
Puyallup Medical Center
Puyallup, Washington

Proj. No. 13106	Dwn. DNM	Date 12/5/07	Checked RAB	Date 12/5/07	Plate A3

BV BORING LOG 13106.GPJ ECI.GDT 12/10/07

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

Boring Log

Project Name: Puyallup Medical Center				Sheet 1 of 2
Job No. 13106	Logged by: STS/MGM	Start Date: 2/21/03	Completion Date: 2/21/03	Boring No.: B-2
Drilling Contractor: Gregory Drilling		Drilling Method: HSA		Sampling Method: SPT
Approximate Ground Surface Elevation: 101'		Hole Completion: ☐ Monitoring Well ☐ Piezometer ☒ Abandoned, sealed with bentonite		

General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	Sample	USCS Symbol	Surface Conditions: Alder trees
				1		ML	Brown SILT, loose, moist to wet -mottled; trace sand
				2			
				3			
				4			
	22.7	12		5			-becomes medium dense
				6			
				7			
				8			
				9			
	19.5	13		10			-thinly laminated
				11			
				12			
				13			
				14			
	19.6	14		15			-slight sand increase -iron oxide staining
				16			
				17			
				18			
				19			

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Boring Log
Puyallup Medical Center
Puyallup, Washington

Proj. No. 13106	Dwn. DNM	Date 12/5/07	Checked RAB	Date 12/5/07	Plate A4

BV BORING LOG 13108.GPJ ECI.GDT 12/10/07

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

Boring Log

Project Name: Puyallup Medical Center				Sheet 2 of 2
Job No. 13106	Logged by: STS/MGM	Start Date: 2/21/03	Completion Date: 2/21/03	Boring No.: B-2
Drilling Contractor: Gregory Drilling		Drilling Method: HSA		Sampling Method: SPT
Approximate Ground Surface Elevation: 101'		Hole Completion: ☐ Monitoring Well ☐ Piezometer ☒ Abandoned, sealed with bentonite		

General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	Sample	USCS Symbol	
	23.7	12		21		ML	Brown SILT, medium dense, wet -trace sand; thinly laminated
				22			-iron oxide staining
				23			
				24			
	22.3	19		25			
				26			
				27			
				28			
				29			
	17.7	25		30			-trace thin fine sand laminations
				31			
				32			
				33			
				34			
	15.6	10		35			
				36		ML	Grades to SILT with sand, loose to medium dense, wet -trace small rounded gravel
							Boring terminated at 36.5' below existing grade. No groundwater encountered during drilling. Boring backfilled with bentonite.

Earth Consulting Incorporated

Boring Log
Puyallup Medical Center
Puyallup, Washington

Proj. No. 13106	Dwn. DNM	Date 12/5/07	Checked RAB	Date 12/5/07	Plate A5

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

BV BORING LOG 13106.GPJ ECI.GDT 12/10/07

Boring Log

Project Name: Puyallup Medical Center				Sheet 1 of 1
Job No. 13106	Logged by: STS/MGM	Start Date: 2/24/03	Completion Date: 2/24/03	Boring No.: B-3
Drilling Contractor: Gregory Drilling		Drilling Method: HSA		Sampling Method: SPT
Approximate Ground Surface Elevation: 84'		Hole Completion: ☐ Monitoring Well ☐ Piezometer ☒ Abandoned, sealed with bentonite		

General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	Sample	USCS Symbol	Surface Conditions:
				1		ML	Brown SILT, loose, wet
				2			-trace sand; mottled
				3			
				4			
	23.3	8		5			
				6			
				7			
				8			
				9			
	15.1	13		10			-becomes medium dense
				11			-increasing fine sand content; iron oxide staining
				12			
				13			
				14			
	10.5	53		15		SM	Grades to brown silty SAND with gravel, very dense, wet
				16			
				17			
	9.7	82		18			
				19			Boring terminated at 19' below existing grade due to refusal. No groundwater encountered during drilling; backfilled with bentonite.

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Boring Log
Puyallup Medical Center
Puyallup, Washington

Proj. No. 13106	Dwn. DNM	Date 12/5/07	Checked RAB	Date 12/5/07	Plate A6

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

BV BORING LOG 13106.GPJ ECI.GDT 12/10/07

Test Pit Log

Project Name: Puyallup Medical Center			Sheet 1 of 1
Job No. 13106	Logged by: STS	Date: 2/26/03	Test Pit No.: TP-1
Excavation Contractor: Aikins' Excavating			Approx. Ground Surface Elevation: 89'
Notes:			

Surface Conditions: Depth of topsoil and sod 6" to 8"

General Notes	W (%)	Graphic Symbol	Depth Ft.	Sample	USCS Symbol	
					TPSL	TOPSOIL
			1		ML	Brown SILT, loose to medium dense, moist -trace sand -mottled
	13.5		2 3 4			-iron oxide staining
			5 6		SM	Grades into brown silty SAND with gravel, medium dense, moist -trace boulders
	11.2		7 8 9			-increasing gravel
	8.7		10			Test pit terminated at 10.5' below existing grade. No groundwater encountered during excavation.

Earth Consulting Incorporated

Test Pit Log
Puyallup Medical Center
Puyallup, Washington

Proj. No. 13106	Dwn. DNM	Date 12/5/07	Checked RAB	Date 12/5/07	Plate A7

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

BV TEST PIT LOG 13106.GPJ ECI.GDT 12/10/07

Test Pit Log

Project Name: Puyallup Medical Center				Sheet 1 of 1
Job No. 13106	Logged by: STS		Date: 2/26/03	Test Pit No.: TP-2
Excavation Contractor: Aikins' Excavating				Approx. Ground Surface Elevation: 68'
Notes:				

General Notes	W (%)	Graphic Symbol	Depth Ft.	Sample	USCS Symbol	Surface Conditions: Depth of topsoil and sod 6"
					TPSL	TOPSOIL
			1		ML	Brown SILT with gravel, medium dense, moist -trace sand
	14.4		2			
			3			
			4			
			5			
			6			
			7			-contains cobbles -moderate seepage
			8		SM	Brown silty SAND with gravel, medium dense, wet
	12.0		9			-slight caving -trace boulders
			10			-increasing sand content
	10.7		11			Test pit terminated at 11' below existing grade. Groundwater seepage encountered at 8' during excavation.

Earth Consulting Incorporated

Test Pit Log
Puyallup Medical Center
Puyallup, Washington

Proj. No. 13106	Dwn. DNM	Date 12/5/07	Checked RAB	Date 12/5/07	Plate A8

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

BV TEST PIT LOG 13106.GPJ ECI.GDT 12/10/07

Test Pit Log

Project Name: Puyallup Medical Center			Sheet 1 of 1
Job No. 13106	Logged by: STS	Date: 2/26/03	Test Pit No.: TP-3
Excavation Contractor: Aikins' Excavating			Approx. Ground Surface Elevation: 68'
Notes:			

General Notes	W (%)	Graphic Symbol	Depth Ft.	Sample	USCS Symbol	Surface Conditions: Depth of topsoil and sod 8"
					TPSL	TOPSOIL
	15.4		1 2 3		ML	Brown SILT with gravel, loose to medium dense, moist -mottled
	14.8		4 5 6 7 8 9 10		SM	Brown silty SAND, dense, moist -increasing moisture -moderate seepage
	17.0		11		SM	Brown silty SAND with gravel, dense, wet
						Test pit terminated at 11.5' below existing grade. Groundwater seepage encountered at 10' during excavation.

Earth Consulting Incorporated

Test Pit Log
Puyallup Medical Center
Puyallup, Washington

Proj. No. 13106	Dwn. DNM	Date 12/5/07	Checked RAB	Date 12/5/07	Plate A9

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

BV TEST PIT LOG 13106.GPJ ECI.GDT 12/10/07

APPENDIX B

MERIT ENGINEERING INC.

GEOTECHNICAL ENGINEERING REPORT

Proposed Hotel Development
15th Ave SW & SR 512
Puyallup, Washington 98371

Prepared For:

Hollander Investments Inc.
119 N Commercial Street
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September 15, 2009
Project No. QF0217645

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September 15, 2009
Project No. QF0217645

2004 ACEC Washington Gold Award Recipient Engineering Excellence

Mark Hollander
Hollander Investments Inc.
119 N Commercial Street
Bellingham, Washington 98225

Re: Geotechnical Engineering Study
Proposed Hotel Development
15th Avenue SW & SR 512
Puyallup, Washington

Dear Mark:

At your request, we have conducted a geotechnical engineering investigation for the above referenced project. The following geotechnical report represents the results of our study and derives conclusions on the feasibility of proposed development at the site.

Thank you for this opportunity to work with you on this project. Please contact us if you have any questions about this report.

Sincerely,

Austin X. Huang, Ph.D., P.E., L.G.
Principal

GEOTECHNICAL ENGINEERING REPORT

Proposed Hotel Development
15th Avenue SW & SR 512
Puyallup, Washington

Report Prepared for:

Mark Hollander
Hollander Investments Inc.
119 N Commercial Street
Bellingham, Washington 98225

by

Austin X. Huang, Ph.D., P.E., L.G.
Principal

Project No. QF0217645
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TABLE OF CONTENTS

1. INTRODUCTION

Mark Hollander of Hollander Investments LLC requested Merit Engineering, Inc. conduct a geotechnical engineering investigation for a proposed hotel at the vacant lot on the south side of 15th Avenue SW, west of S Meridian Street and east of Highway 512 in Puyallup, Washington (Parcel number #0420338067). The proposed project and vicinity is shown in Figure 1 and the site plan with test locations in Figure 2 in the Appendix. We understand the proposed project at this time includes a large six-story hotel in the north end of the site, several tiers of above-ground or daylighted parking to the south, and a small two-story office building uphill in the south-central part of the site, as well as associated access roads. Testing and analysis for this report focuses on the proposed hotel at the request of the client. Discussion and recommendations for other areas are generalized and subject to limitations. Additional investigation and analysis may be warranted for areas not tested within the scope of this study.

The objective of this study was to investigate subsurface soil and groundwater conditions at the project site, derive conclusions, and provide preliminary recommendations for site preparation and design of foundations to support the proposed structures, parking and roads.

2. SCOPE

The scope of work for this study has included:

- Performing visual site reconnaissance of proposed building and surrounding areas;
- Conducting 4 test borings to a maximum depth of 35.0´ (refusal);
- Observing five (5) test pits to a maximum depth of 10.0´ or refusal;
- Logging subsurface soil and groundwater conditions;
- Review of previous Geotechnical Engineering Study (Earth Consulting Inc., 2007)
- Completing laboratory soil index tests for engineering/classification purposes;
- Preparing this engineering report addressing:
    (1) surface conditions,
    (2) subsurface soil conditions,
    (3) groundwater conditions, and

Recommendations for:

    (4) foundation and retaining wall design,
    (5) structural fill and compaction criteria,
    (6) seismic design parameters,
    (7) drainage considerations,
    (8) site grading, and
    (9) pavement design.

3. SITE INVESTIGATION

3.1 Surface Conditions

The subject property is located in the city of Puyallup, Pierce County, Washington on the south side of 15th Ave SW, ~1/8 mile west of the intersection with S Meridian Street in a zone of generally commercial usage with some remaining undeveloped area. A location and vicinity map is shown in the Appendix of this report (Figure 1). A site plan with major features, property lines, and proposed development plan is also presented in the Appendix (Figure 2).

The roughly triangular subject property is bordered at its northern end by a creek ravine and 15th Ave SW, and beyond that apartment buildings. There is currently an access road to the proposed project site over the ravine from 15th Ave SW. To the west of the site is an upslope leading to the elevated SR 512 corridor. Just south and uphill of the site is vacant forest/prairie land. Along the east and southeast site border is a large ravine with a wet zone and running stream that wraps around to parallel the northern edge of the site next to 15th Avenue before entering a culvert near the northwest site corner. Further east near S Meridian Street is an ARCO gas station and neighboring Car Wash.

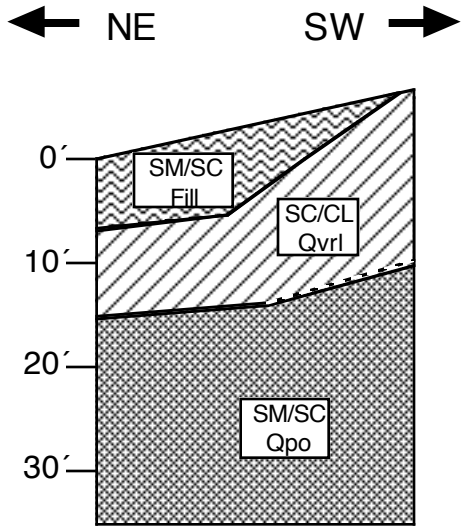
The subject site has a topographic high in the southwest, with a top elevation of ~128´ according to a survey map provided by the client. Topography slopes gently to very gently downhill to the north on the site to an elevation of ~60´ at the north border after ~300´. The southeast, east, and northeast site edges border steeper ravine sideslopes down to the creekbed, with ~20-25´ of fall in the northeast growing to 40-50´ vertical relief southeast of the knoll. The area of proposed development within the north half of the property is characterized by a gentle and relatively even northward slope of 10 - 15% estimated grade.

The north 1/3 of the site is currently open with tall grass and virtually no large vegetation. Uphill to the south past the proposed hotel area the forest begins, which continues to the southern high area of the site as young and densely wooded with thick underbrush. Trees, blackberries, and underbrush are common along the boundaries of the site. Similar vegetation is found westward bordering the highway. The adjacent ravine with sideslopes is thick with undergrowth and trees down to the streambed.

3.2 Subsurface Conditions

Subsurface soil and groundwater conditions at the site were investigated by excavating five (5) test pits to a maximum depth of 10´ and conducting four (4) environmental borings to a maximum depth of 35´. Procedure for test pit documentation included soil sample collection and logging of soil stratigraphy and groundwater conditions. Procedure for test borings included soil sample collection, pocket penetrometer readings, and logging of soil and groundwater conditions during augering, along with SPT[1] (*Standard Penetration Test*) at each sample interval (5´ increments). Descriptions of soil symbols and classifications used in this report also are presented in the Appendix as Figure 3. Test pit logs are shown as Figures 4 - 8 and test boring logs as Figures 9 - 12. Results of laboratory sieve analyses for soil classification are attached as Figures 13 - 18.

Site soils are generalized in the following schematic drawing and summarized consisting of:



a. Silty Clayey Sand with Cobbles (SM/SC), Fill

b. Loamy Sand (SC/CL), Qvrl

c. Silty Clayey Sand (SM/SC), Qpo

a. Silty Clayey Sand with Cobbles (SM/SC)

A light brown silty clayey sand with rounded pebbles, gravel, and cobbles was observed at the surface in all test pits and borings except TP-5. The soil was generally very dense and compacted at the surface to ~2.0' depth, and remained dense throughout the layer. Roots extended to an average depth of ~9″, with mottling and iron oxide staining observed locally at ~1.0´ to ~2.0´ depth in Test Pits 1, 3, and 4. An old bottle was observed at 1´ depth in TP-3 and a distinct horizon of branches and small logs was observed at ~8.5´ depth in TP-1.

[1] SPT consists of driving a split-barrel sampler of 1.5″ ID (*Inside Diameter*) and 2″ OD (*Outside Diameter*) 18″ into the ground using a 140 pound hammer with 30″ of free fall. The number of blows for the last one foot of penetration is obtained as the blow count (N) which is correlated with the strength properties of the soil.

We interpret this soil to be fill material and suspect that a fill layer ~10´ thick covers most of the proposed building pad area, although we were not able to determine the exact extent of the fill within the scope of our testing. The layer was generally observed to be at maximum ~12' thick near MW-2 and TP-1, and seems to pinch out uphill and laterally to the south and west towards MW-1/TP-5 and MW-4, respectively. The fill surface is relatively flat in the proposed building area, likely machine graded.

b. Loamy Sand (SC/CL)

A layer of light brown to gray loamy sand with variable clay content was observed in TP-1 and TP-4 beginning at ~8.5´ depth, and in all four borings starting at depths of 5´-12´ beneath the suspected fill layer. The soil was moderately coherent to crumbly, damp to moist, and generally dense/stiff. The unit was encountered at roughly the same elevation throughout the test borings, ~10´ thick on average. The loamy sand appears consistent with native recessional lacustrine deposits (Qvrl) mapped to occur in the site area.

In TP-5 (upper forested area) beneath topsoil was a slightly dense, yellow-brown, cohesive loamy sand with minor gravel and cobbles which became extremely dense and cemented at 6.5´. The subsoil and underlying dense soil also appears consistent with native Qvrl deposits. We interpret this unit is likely present on the surface in other forested areas of the site that were not filled.

c. Silty Clayey Sand (SM/SC)

A gray fine to medium sand with ~20-30% fines was observed to begin in all borings at depths of ~13´ to 25´, beneath the loamy sand unit, and extended past the maximum boring depth of ~36.5´ in MW-1. Minor pebble gravel was observed in the top portion of the layer. The soil was generally very dense, slightly to moderately coherent, and moist to saturated. We correlate this unit with older pre-Olypian age glacial sand, gravel, silt and clay deposits mapped as Qpo on the USGS geologic map. These deposits are know to be up to ~140´ thick.

A previous Geotechnical Engineering Study (Earth Consulting Incorporated, 2007) on the subject property was reviewed for additional subsurface information. Logs from their 3 borings and 3 test pits conducted in February 2003 are provided at the end of the Appendix, with

locations shown in Figure 2. The previous boring locations were uphill and south of our test area, thus covering site area not explored in this study. In general, the report also documents a predominantly fine-grained stiff/dense silty unit overlying a very dense sandier unit. They interpret both units as native soil and correlate with mapped stratigraphy for the area. Their lowest and northernmost boring, B-3, encountered the sandy unit at 15´, and B-1 just uphill and southeast found the contact at 12´. B-2 at the top of the knoll further south found the silty unit extending to end depth of 35´. Test pits 2 and 3 in the northern end of the site showed 3´-8´ of silty soil atop the silty sand, as well as shallow mottling and water seepage by 8´-10´ depth.

3.3 Geologic Background

The project area is located in the Southern Puget lowlands on a bench over the current Puyallup River Valley. The greater area was invaded by glacial ice several times during the Pleistocene Epoch, from 1.6 million to 10,000 years ago. The area has also been subjected to repeated volcanic events including ash deposits, lahar flows, and mud flows from nearby Mt. Rainier.

The proposed project site is mapped by the Pierce County Soil Survey to ~60" as **Kitsap loam** and **Shalcar muck**, both glaciolacustrine deposits from the last glaciation. Kitsap soils are a mixture of loess and volcanic ash classified as silty clay loam. Shalcar muck generally occurs locally in lowlying zones.

Surface geology is mapped by the USGS as Vashon Stade recessional lacustrine deposits, (Qvrl; Troost, K.G., in press), as shown in Figure 4 of Appendix A. The unit is commonly ~20' thick and part of a large Qvrl-mapped body that may reflect a glacial margin. The unit is highly varied with fine sand, silt, and clay. Below Qvrl are found deposits of Pre-Olympian age, (Qpo), consisting of sand, gravel, silt, and clay. These deposits range up to ~140' thick and are typically very dense to hard.

3.4 Surface and Ground Water Conditions

No surface water was observed within the site boundaries during our summer visits. We observed the stream to the east and north of the property confined within the bordering ravine to be a permanent feature, flowing steadily with roughly 3´ of depth near the north site entrance. No other surface water features were observed in the vicinity of the site. Due to the

nature of the site as a topographic high with consistently sloping flanks and virtually no flat or low-lying portions, we anticipate that surface runoff may be common during wet periods and that little to no ponding occurs within the area of proposed development.

Groundwater was encountered in our testing, and may be relatively complicated to characterize due to both natural and altered features of the site. Identified regimes include seasonal perched groundwater and a deeper, permanent water table in an unconfined to semi-confined soil aquifer. Groundwater was not directly observed in any test pits at the time of excavation, although soil mottling and iron oxide staining was observed as shallow as 1.0´-2.0´. Previous test pits conducted by Earth Consulting Inc. in December of 2007 noted seepage at 8´ to 10´ in winter months. During the wet season, perched groundwater may fluctuate or become trapped during infiltration and transport within near surface soils due to the fine-grained nature of the Qvrl and irregularity of possible fill soils.

The permanent groundwater table was measured ranging from 6´ depth below the ground surface in the lowest B-4 well to 23´ depth in the highest B-1 well after development and stabilization during groundwater sampling. Levels were consistently several feet higher after development than during boring advancement. Static water elevations recorded in the wells using surveyed casing elevations for reference ranged from ~50´ to ~54´ above sea level. All four wells appear to be completed within the same aquifer unit and approximately the same elevation, which corresponds to the moderately permeable silty clayey sand at depth. We were not able to determine thickness of this bottom unit within the scope of our borings, but if correlated with the regional Qpo as suggested above the aquifer may be upwards of 100´ thick. Groundwater flow is generalized for this report to be towards the north and northeast in the north half of the site proposed for development, roughly mirroring topography. The water table at the northern edge of the site seems to correspond with the level of the adjacent stream.

4. CONCLUSIONS AND RECOMMENDATIONS

We conclude, based on this investigation, that the site may be suitable for proposed construction if the recommendations in this report are followed:

4.1 Site Preparation and Grading

We recommend removing any organic soils and unsuitable loose or soft fill soils from the area of the proposed buildings, parking lots, and roadways down to firm subgrade or compacted gravel fill atop firm subgrade. We recommend grading the exposed subgrade away from footing and slab-on-grade locations to minimize the potential for accumulation of surface water. We anticipate soil excavation can be accomplished with conventional equipment. For underground parking, basement, or daylighted structures if applicable to the project, we recommend excavating to required depth and verifying suitable soil conditions.

Due to the fine-grained nature of site soils and potential for shallow perched groundwater and storm runoff on the hillside site, we recommend that care be taken to the maximum extent possible for erosion and ground control if work is done in the wet season. It should be understood that significant additional costs and construction difficulty could be incurred if work proceeds in wet weather comparing with dry weather construction. We recommend that sufficient erosion controls be implemented along the sloped edges of the site during wet-weather construction so as to protect the adjacent stream from runoff.

Exposed subgrade soils in the area of the proposed building should be proof-rolled with a loaded dump truck to reveal soft or yielding near-surface soils. Any soft subgrade or fill soils encountered during site excavation or exposed during proof-rolling should be removed and replaced with structural fill as recommended in the Structural Fill section of this report.

A temporary cut slope at the site should be no steeper than 1:1 in clayey soil and 2:1 in sandy soil (Horizontal to Vertical). Temporary shoring is required for excavation below the water table or perched water-bearing soils. We recommend that we evaluate the site conditions for suitable cut slope during site excavation.

We recommend that we observe and verify site excavation to suitable soil stratum, observe proof-roll, test to verify import fill materials, and observe and test compaction of structural fills.

4.2 Foundation Design Parameters

We recommend placing footings on dense compacted sand-silt soils, or on import structural fill installed on firm native or dense compacted fill soils. If shallow soils are not found to be firm

at a footing location and grade, we recommend excavating down to appropriate soils and replacing the unsuitable soil section with structural fill.

We recommend that all perimeter footings be at least 18 inches below final outside grade for frost protection. Base width of footings shall be between 18 and 24 inches for continuous, and between 2 and 6 feet for isolated, spread footings.

Under the condition of satisfying the above recommended footing dimensions, an allowable soil bearing pressure of 2,500 psf (*pounds per square foot*) is recommended. The bearing pressure recommended may be increased by 1/3 for transient wind or seismic loads.

These bearing pressure and foundation recommendations are preliminary pending building design details. We understand the hotel is proposed to be 6 stories and the office building 2 stories high. Therefore the design bearing pressure may be higher than given here and specific for each building. We recommend that we be contacted in the design phase to evaluate building details with our soils information and revise bearing allowances accordingly.

Assuming construction of the proposed structure is accomplished as recommended above, we estimate the total and differential settlements of foundations should be less than about 1 inch. Most settlement will occur immediately during construction when loads are applied.

We recommend proof-rolling building pads before placement of concrete with a loaded dump truck to reveal soft or yielding soils. Any loose or soft subgrade or fill soils encountered during site excavation or exposed during proof-rolling should be recompacted or replaced with structural fill.

We recommend that we review those portions of plans and specifications that pertain to earthwork and foundations to ensure they are consistent with the recommendations in this report. We recommend that we verify site excavation to suitable soil stratum, and observe and test compaction.

4.3 Seismic Design Parameters

The soil profile at the site may be defined as Site Class D according to IBC (*International Building Code*) 2006, representing a soil profile with dense and stiff soil conditions, where the soil depth exceeds 200´. The seismic design parameters for this site class and location, from

Seismic Hazard Curves and Uniform Hazard Response Spectra (2006), are summarized in the following table:

Table 1: Spectral Response Acceleration (SRA)

SRA and Site Conditions	Short Period (0.2 sec)	1- Second Period
Mapped SRA	$S_S = 1.19$	$S_1 = 0.40$
SITE CLASS D		
Site Coefficient	$F_a = 1.03$	$F_v = 1.60$
Max. Considered Earthquake SRA	$S_{MS} = 1.22$	$S_{M1} = 0.64$
Design SRA	$S_{DS} = 0.81$	$S_{D1} = 0.43$

It is our opinion that liquefaction potential at the site is low because the soils are generally silty to clayey sand or sandy silt-clay, dense to hard-packed. Liquefaction is a phenomenon associated primarily with saturated cohesionless soils under zero effective stress. Effective stress equals the confining pressure of the soil minus the pore water pressure. When saturated cohesionless soils undergo cyclic seismic loading, the induced excessive pore water pressure cannot dissipate and thus grows larger. When pore pressure becomes equal to the confining pressure from the overburden load, effective stress on the soil becomes zero and therefore the soil loses its strength or stiffness and becomes liquified. Such action may consequently result in the settlement of structures or even ground disruption if shallow or severe enough.

4.4 Slab-On-Grade Floor

The slab-on-grade-floor may be supported on the building pad prepared as recommended above. At least 4-inches of drain rock of ¾″ maximum size should be placed between the slab and the slab subgrade.

A vapor barrier visquine should be placed between the slab and capillary break material for moisture control. An additional 1- to 2-inches of sand may be placed on top of the vapor barrier if desired to aid in concrete curing. In addition, use of a commercial concrete slab sealant for moisture protection may prove to be very helpful considering the potential for shallow perched groundwater at the site.

Floor slabs reinforced with 6 x 6 wire mesh may help reduce potential crack separation and vertical offsets at cracks. Reinforcement should be set at or above the mid-depth of the slabs.

To reduce cracking potential we suggest exterior patios and other flatworks contain reinforcement as recommended above for floor slabs. Any flatwork subgrades should be watered thoroughly prior to concrete placement to close soil shrinkage cracks. Flatworks should have frequent joint controls.

Additional measures to reduce potential cracking are considered warranted at critical areas where slab movement could impair use; such critical areas include decks surrounding swimming pools and any exterior patio slabs that meet the interior floor level at doorways. For such areas we recommend that the upper 12-inches of soil be over-excavated and replaced with import structural materials as specified in the Structural Fill section of this report.

4.5 Foundation Drainage

A perimeter drainage system should consist of at least 4-inch diameter, perforated, rigid pipe. The pipes should be placed along the exterior base of the foundation perimeter and tightlined to a storm drain system or natural drain course. Pipe should be bedded on 2 inches, and backfilled with a minimum of 12-inches, of pea gravel. Some under-slab cross-drains may be helpful to maintain a dry slab floor.

Roof downspouts should be tightlined to a storm drain system separately from footing drains. In addition, the site should be graded so that surface water runoff is directed to catch basins attached to a storm sewer drain.

4.6 Lateral Earth Pressures

We recommend placing structural fill behind retaining walls if called for. Horizontal thickness of the fill should be at least ½ the height of the wall. For structural fill as recommended in the Structural Fill section of this report with level ground, the parameters of lateral earth pressures are listed in Table 2.

TABLE 2: Lateral Earth Pressures Parameters

Soil	Active, K_a	Passive, K_p	At Rest, K_o
Structural Fills	0.28	3.54	0.44
Equivalent Fluid Pressure* (pcf):			
Structural Fills	34	425	53

*Equivalent fluid pressure is the product of lateral earth pressure coefficient and the unit weight of the soil.

Design of subsurface walls should include appropriate lateral load due to adjacent surcharge. Under uniform surcharge q_o, lateral load due to a uniformly distributed lateral pressure σ, should be added to active and at rest soil lateral pressure, respectively, as defined in the following equation:

$$\sigma = \begin{cases} K_a q_o & \text{for active case} \\ K_o q_o & \text{for at rest case} \end{cases}$$

A coefficient of base friction of 0.45 may be used between concrete and sub-soil. However, if passive pressures are used in conjunction with frictional resistance to determine lateral resistance to sliding, only ½ the value of passive pressure presented above should be used since larger strains are required to mobilize passive soil resistance as compared to frictional resistance.

4.7 Structural Fill

Structural fill should be placed on firm, horizontal subgrade in about 10-inch thick loose lifts and compacted to at least 95% of the ASTM D-1557 maximum dry density.

We recommend import structural fill be sandy gravel or gravelly sand meeting specification 9-03.12 (1) B, APWA/DOT 2006, that is typical in this area as base granular materials with exception that percent passing U.S. No. 200 Sieve shall not exceed 5% and all materials smaller than 4″. The specification is summarized next:

Table 3: Specification of Imported Fill Materials

Sieve Size		Percent Passing by Weight
4″ Square		100
2″ Square		75-100
U.S. No. 4		22-66
U.S. No. 200		5.0 max.
Dust Ratio	% Passing U.S. No. 200 / % Passing U.S. No. 40	⅔ max.
Sand Equivalent		30 min.

4.8 Pavement Design Parameters

Pavement for roads and parking must be placed over firm subgrade - either firm compacted site soils or on import structural fill. Recommended pavement design parameters for the silt-sand soils at the site and imported structural fill as recommended in the Structural Fill section of this report are listed in Table 4.

Table 4: Soil Parameters for Pavement Design

Soil	CBR[1]	R[2]	k[3]
Native Silt/Clay Soil	3.5	20	75
Structural Fill/Sand	6.7	34	95

1. *California Bearing Ratio*
2. *Hveem's Resistance*
3. *Subgrade Modulus*

In Table 4, CBR values were estimated on the basis of soil classifications while R and k values were determined from correlation between CBR and R values, and between R and k, respectively.

We recommend compacting the base course to a minimum 95% of ASTM D-1557 maximum dry density. Efforts should be made in site design and implementation to limit the amount of water entering the base course in order to prevent the road base from saturation so as to assure pavement durability.

Frost damage sometimes affects pavement in this area where moist silty subgrade is encountered. To fully protect against this type of damage, a pavement section including granular base must extend to a depth of at least 18 inches total. However, thinner sections may be used if occasional damage is acceptable in return for a more economical pavement section.

We recommend asphalt concrete be Class B aggregate material conforming to Section 5-04 of the Washington State Department of Transportation Standard Specifications for Road, Bridge, and Municipal Construction.

Construction equipment having loads greater than those expected on the asphalt pavement should be avoided on parking areas. A haul road or increased pavement section should be installed to allow for heavier construction equipment movement.

5. GENERAL CONDITIONS

The recommendations provided herein are based on our understanding of the project at this time. We expect the onsite soil conditions to reflect our findings, however, some variations may occur. Should soil conditions be encountered that cause concern and/or are not discussed herein, Merit Engineering, Inc. should be contacted immediately to determine if additional or alternate recommendations are required.

We recommend that we review those portions of the plans and specifications that pertain to earthwork, foundations, and paving to ensure that they are consistent with the recommendations in this report.

We recommend that we verify site excavation to suitable soil stratum, observe proof-roll, verify imported fill materials, and observe and test compaction of structural fill.

This report is prepared for Mark Hollander of Hollander Investments LLC for specific application to the aforementioned proposed hotel structure and related development on 15th Ave SW, west of S Meridian Street and east of Highway 512 in Puyallup, Washington. This report is completed in accordance with generally accepted geotechnical engineering practices in this area. No other warranty, expressed or implied, is made.

This report is an instrument of our professional service, and we (Merit Engineering, Inc.) shall retain an ownership and property interest therein. We grant Mark Hollander of Hollander

Investments LLC a license to use the instrument of our professional service for the purpose of constructing the aforementioned proposed hotel and associated development. We do not permit reuse or modification of this document for application to a different structure other than the proposed at the site or to another property because soil and subsurface conditions are unique and site specific for different locations.

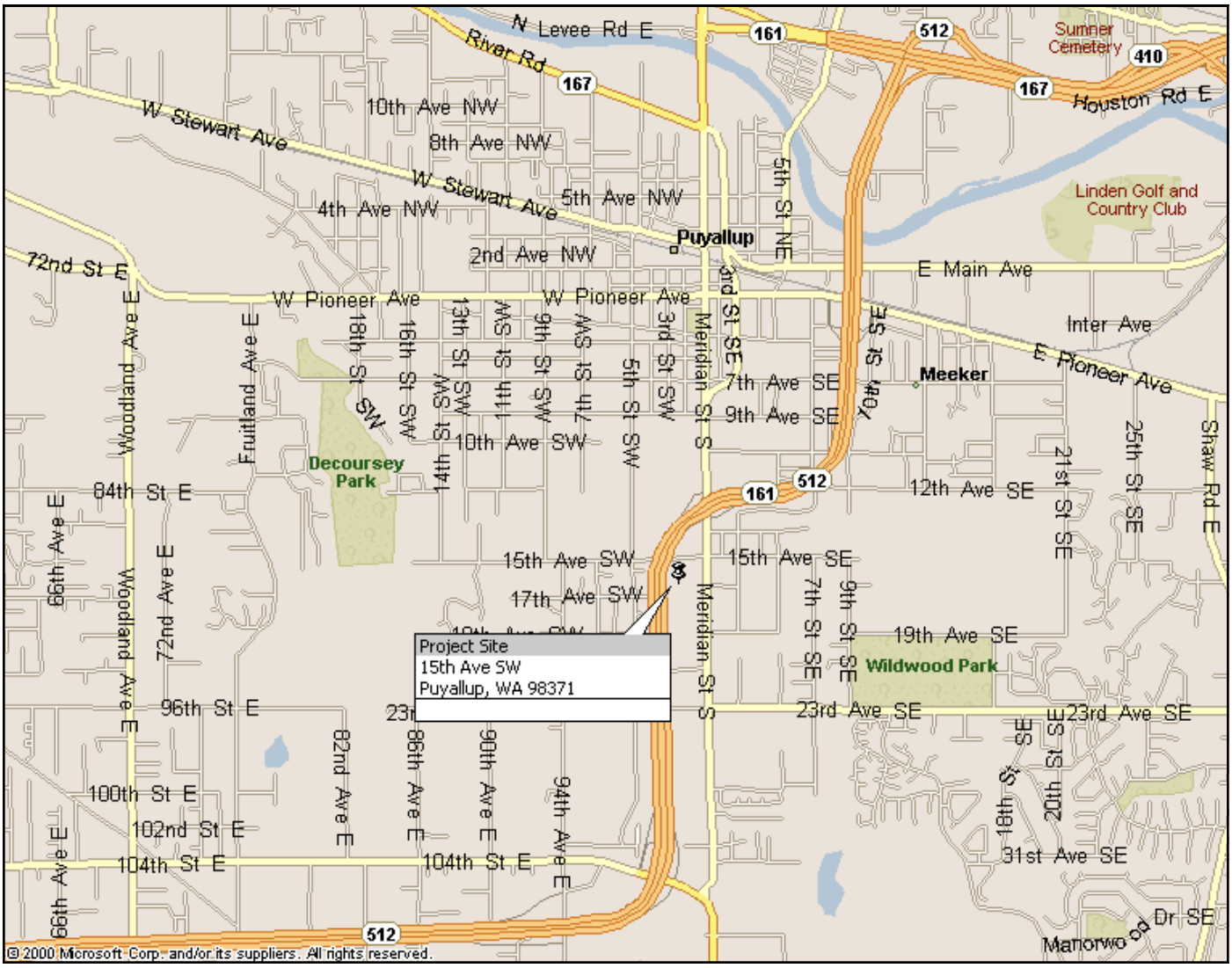
APPENDIX

Subsurface conditions at the site were investigated during several visits in July and August of 2009. Field work for this study was completed in tandem with environmental exploration and soil sampling of the project site. Four (4) test borings were conducted to a maximum depth of 35´ on July 27th - 28th, 2009. Five (5) test pits were subsequently completed on August 11th, 2009 to better delineate fill soils and collect additional samples.

Proposed project plans were provided by Hollander Investments LLC prior to field work, illustrated on a conceptual site plan for the development. Boring and test pit locations were determined by a representative of Merit Engineering Inc. on site at the time of drilling, as shown approximately on the Site Plan (Figure 2) presented in the Appendix of this report. Depths referred to in this report are relative to the existing ground surface at the time of the field investigation.

The description of subsurface conditions is based on observations made on site at the time of the field investigation, in coordination with the results of our laboratory analysis. Test pit soil logs are presented in Figures 4 through 8. Bore logs are shown in Figures 9 to 12. Soils were classified using the USCS (*Unified Soils Classification System*) in accordance with ASTM D-2488-69 and ASTM D 2487. This classification system is also presented in the Appendix (Figure 3). Sieve analysis results are attached as Figures 13 to 18.

Boring and test pit soil logs from the previous Geotechnical Engineering Study (Earth Consulting Incorporated, December 2007) are attached at the end of the Appendix to supplement their discussion within this report.



Project No. QF0217645	**PROJECT LOCATION & VICINITY MAP**	Date: 9/14/09	*Figure 1*

Geotechnical Engineering Investigation
Proposed Hotel
15th Ave SW & SR 512
Puyallup, Washington

For: Hollander Investments LLC

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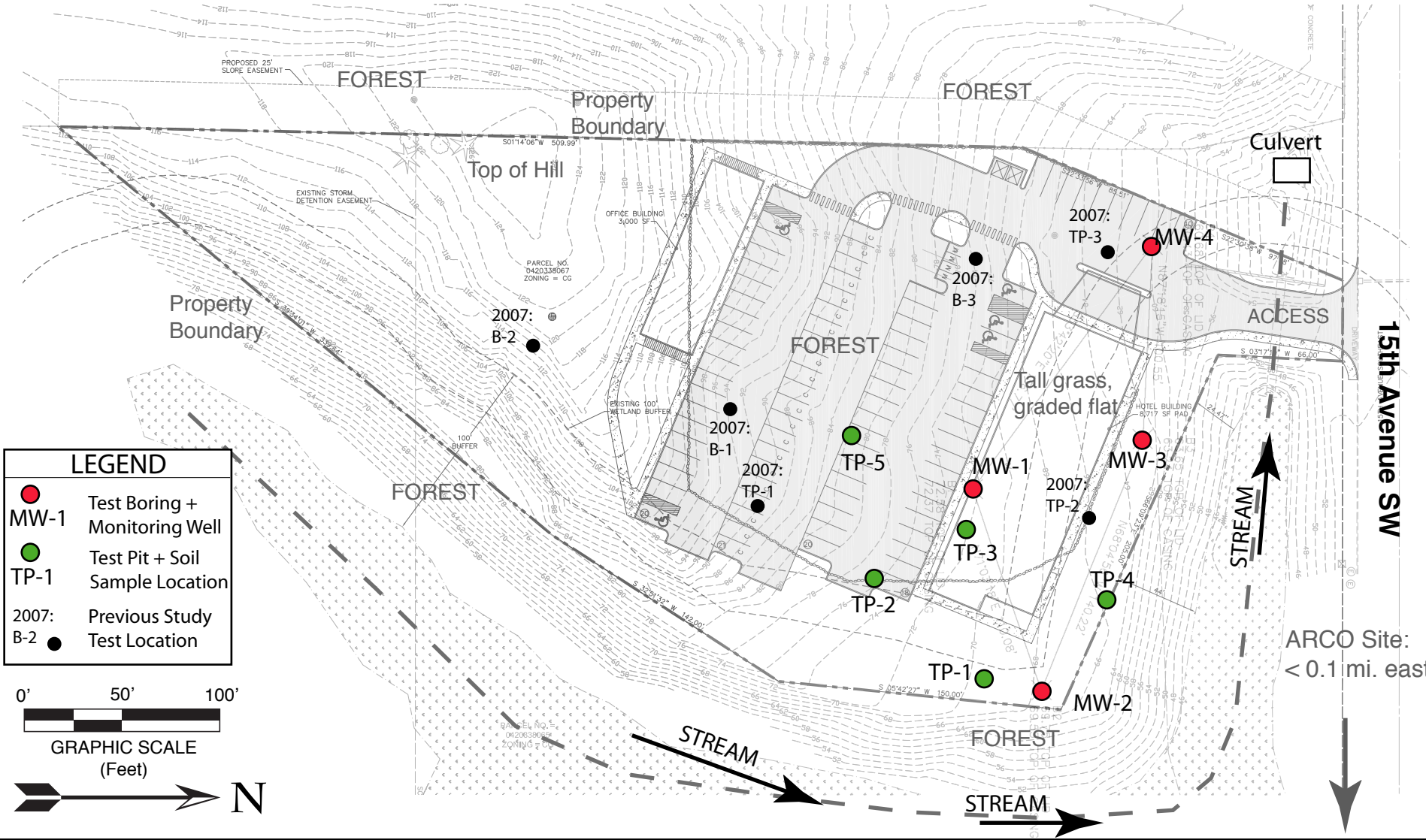

Geotechnical Engineering Investigation Proposed Hotel 15th Ave SW & SR 512 Puyallup, Washington	**SITE PLAN**		
	PROJECT NO.	DATE	APPROVED BY
For: Hollander Investments LLC	QF0217645	9/16/09	AXH
Figure 2 — Scale: as shown	Note: Site Plan base map completed by Abbey Road Group LLC, provided by Mark Hollander (client).		

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UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS				DESCRIPTION
COARSE GRAINED SOILS more than 50% retained on #200 sieve	GRAVELS more than 50% coarse fraction is larger than No. 4 sieve size	Gravels with less than 5% fines	GW	Well graded gravels, gravel-sand mixtures
			GP	Poorly graded gravels, gravel-sand mixtures
		Gravels with more than 12% fines	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS more than 50% coarse fraction is smaller than No. 4 sieve size	Sands with less than 5% fines	SW	Well graded sands, gravelly sands
			SP	Poorly graded sands, gravelly sands
		Sands with more than 12% fines	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
FINE GRAINED SOILS more than 50% passing #200 sieve	SILTS AND CLAYS Liquid Limit less than 50		ML	Inorganic silts & very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, or lean clays
			OL	Organic clays and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid Limits greater than 50		MH	Inorganic silts, micaceous or diatomacious fine, sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			PT	Peat and other highly organic soils
UNCONTROLLED FILL				Uncontrolled, with highly variable constituents

LEGEND

SAMPLE	SYMBOL
SPLIT SPOON SAMPLER	GROUNDWATER TABLE
SHELBY TUBE SAMPLER	q_u PENETROMETER READING TSF (*tons per square foot*)

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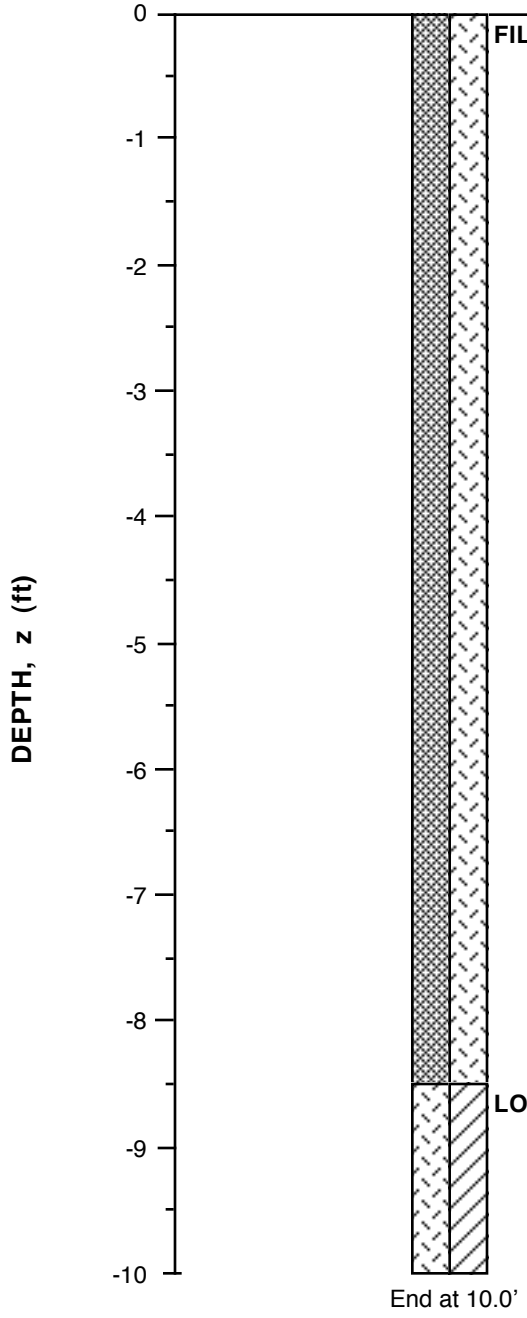
SOIL CLASSIFICATION & LEGEND

Figure 3

TP-1	Surface Elevation ≈ X = Y=	SOIL DESCRIPTION AND CLASSIFICATION



FILL: SILTY CLAYEY SAND with COBBLES (SM/SC)
Tan-brown sand with rounded gravel and cobbles throughout. Dry with roots to ~9" deep, then moist.
Very dense and compacted to ~2' deep. Fill material likely.

Gray sandy clay lense with pebbles ~6" thick at 7'

LOAMY SAND (SC/CL)
Gray clayey sand with many rounded cobbles ~4-6" dia., some rounded gravel. Damp and dense.
Sticks and small logs (1/2"-2" dia.) at 8.5'-9.0' depth.
Clear horizon with above layer. Interpreted as native soil.

Project No. QF0217645	Date: 8/11/09	Approved by A.X.H.	*Figure 4*

Geotechnical Engineering Investigation
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Puyallup, Washington

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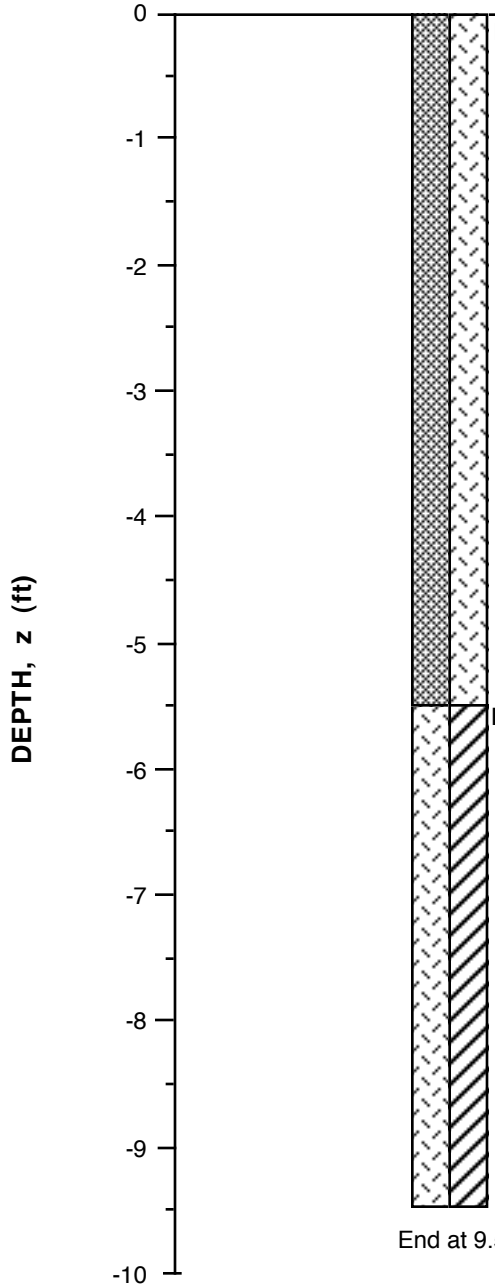
TP-2	Surface Elevation ≈ X = Y=	SOIL DESCRIPTION AND CLASSIFICATION



FILL: SILTY CLAYEY SAND with COBBLES (SM/SC)
Tan-brown sand with some fines, rounded cobbles, gravel and pebbles. Dry with small roots to 1´ deep, then moist. Very dense and compacted to ~1.5' deep. Fill material likely.

Old glass bottle observed at 12" depth.

LOAMY SAND with COBBLES (SC/CL)
Grey loamy sand with rounded pebbles, gravel, cobbles. Damp, dense/stiff, and cohesive. Interpreted as native soil.

End at 9.5'

Project No. QF0217645	Date: 8/11/09	Approved by A.X.H.	*Figure 5*

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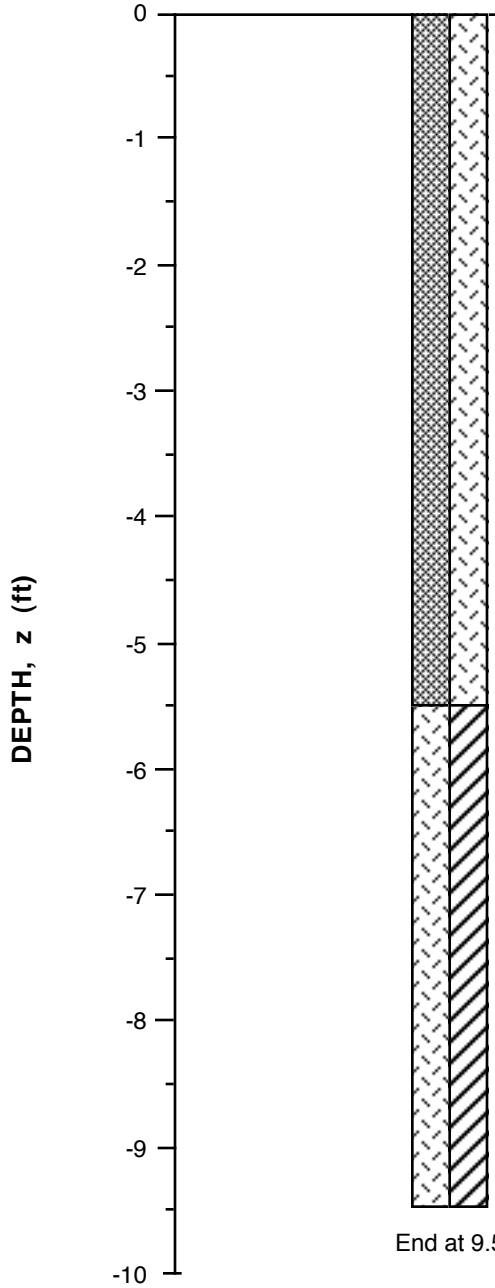
TP-3	Surface Elevation ≈ X = Y=	SOIL DESCRIPTION AND CLASSIFICATION



FILL: SILTY CLAYEY SAND with COBBLES (SM/SC)

Tan-brown sand with some fines, rounded cobbles, gravel and pebbles. Dry with small roots to 1´ deep, then moist. Very dense and compacted to ~1.5' deep. Fill material likely.

LOAMY SAND with COBBLES (SC/CL)

Brown loamy sand with rounded pebbles, gravel, cobbles. Damp, dense/stiff, and cohesive. Interpreted as native soil.

Becomes more damp at ~7.0'.

Project No. QF0217645	Date: 8/11/09	Approved by A.X.H.	*Figure 6*

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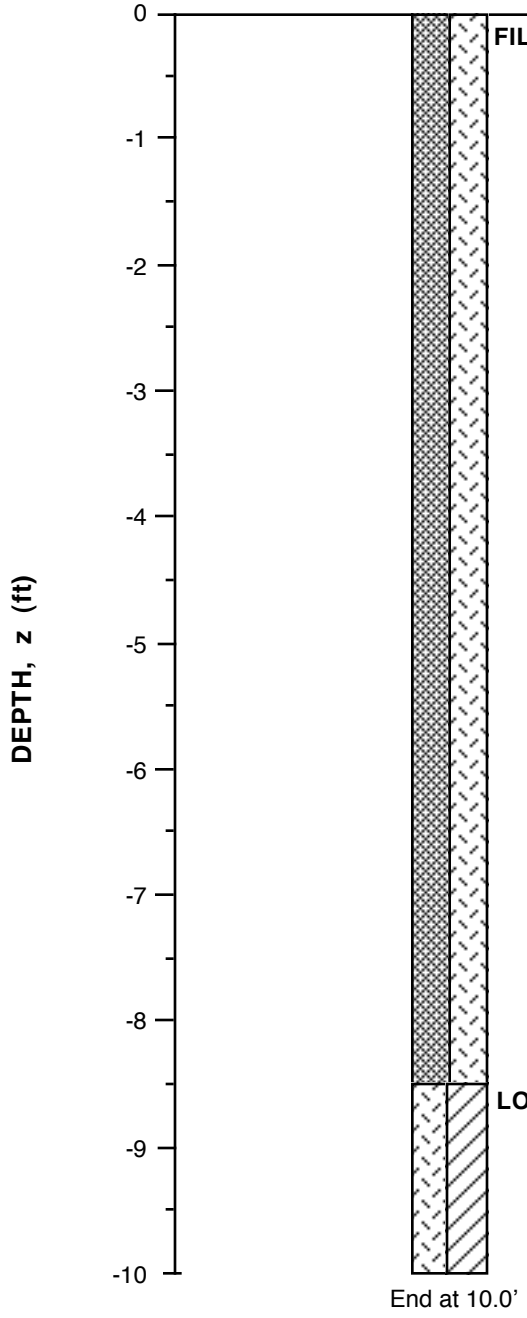
TP-4	Surface Elevation ≈ X = Y=	SOIL DESCRIPTION AND CLASSIFICATION



FILL: SILTY CLAYEY SAND with COBBLES (SM/SC)
Brown loamy sand with rounded pebbles, gravel, and cobbles. Dry near surface, to damp with depth.
Very dense and compacted to ~1.0' depth. Fill material likely.

Soil becomes damp by ~6.0'.

LOAMY SAND with COBBLES (SC/CL)
Gray clayey sand with many cobbles ~4-6" dia., some gravel and pebbles. Damp and dense.
Clear horizon with above layer. Interpreted as native soil.

Project No. QF0217645	Date: 8/11/09	Approved by A.X.H.	*Figure 7*

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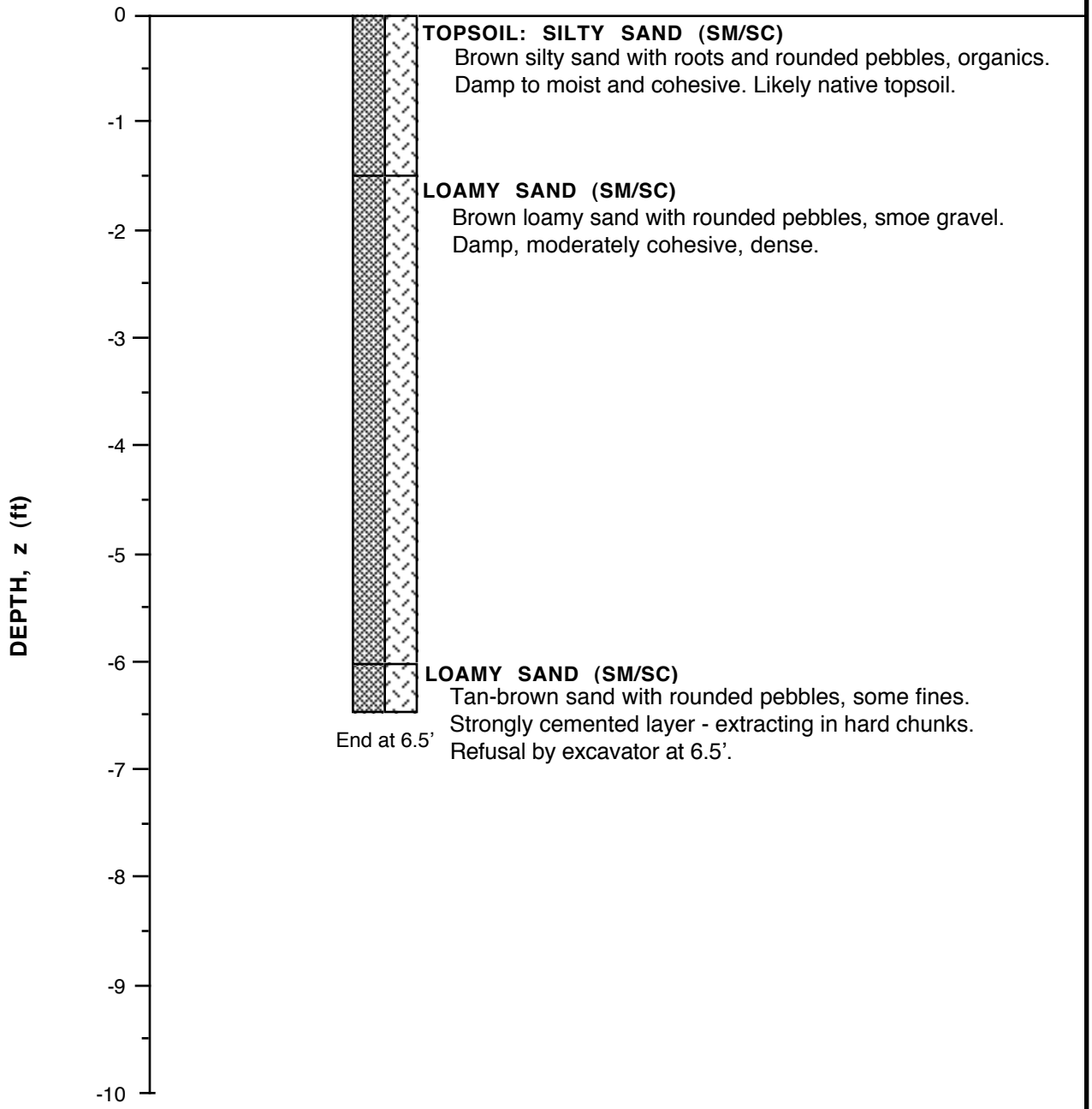
TP-5	Surface Elevation ≈ X = Y=	SOIL DESCRIPTION AND CLASSIFICATION



Project No. QF0217645	Date: 8/11/09	Approved by A.X.H.	*Figure 8*

Geotechnical Engineering Investigation
Proposed Hotel
15th Ave SW & SR 512
Puyallup, Washington

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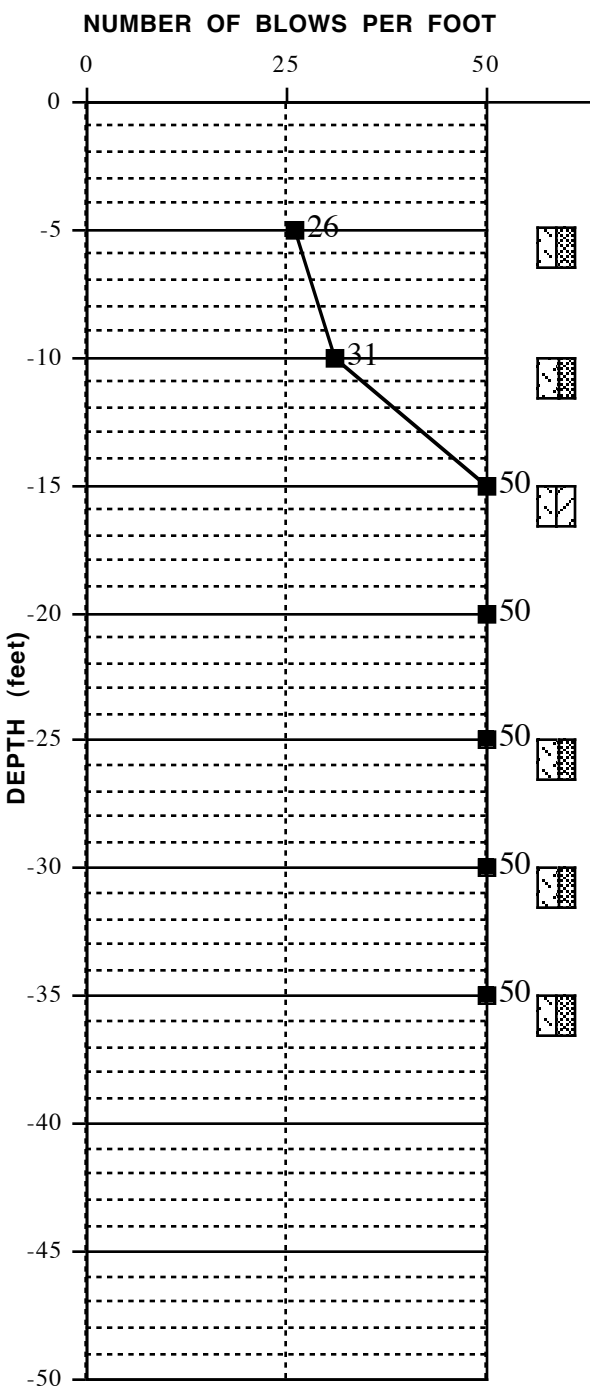
B-1 STANDARD PENETRATION TEST	SOIL DESCRIPTION AND CLASSIFICATION



X,Y =
Surface Elevation = 72.37 (ft)
Surface Conditions = Tall grass

SILTY CLAYEY SAND with COBBLES (SM/SC)

Brown loamy medium sand with cobbles. Damp, dense, cohesive to crumbly. Very stiff brown-gray clay lenses with gravel observed in samples. Fill material likely.

LOAMY SAND (SC/CL)

Light brown loamy sand with clay observed in tailings. Damp, some gravel, mod. coherent. Soil is likely native.

Sand lamellae in sample at 15'.

SILTY CLAYEY SAND (SM/SC)

Medium to fine sand with ~30% silt and clay. Damp to wet, sl. coherent, very dense.

Becomes saturated at 30'.

End @ 36.5'

Note: Groundwater level measured within monitoring well after development and stabilization - 8/18/09.

Project No. QF0217645	Date: 7/27/09	**LOG OF TEST BORING**	Approved by AXH	Figure 9

Geotechnical Engineering Investigation
Proposed Hotel
15th Ave SW & SR 512
Puyallup, Washington

For: Hollander Investments LLC

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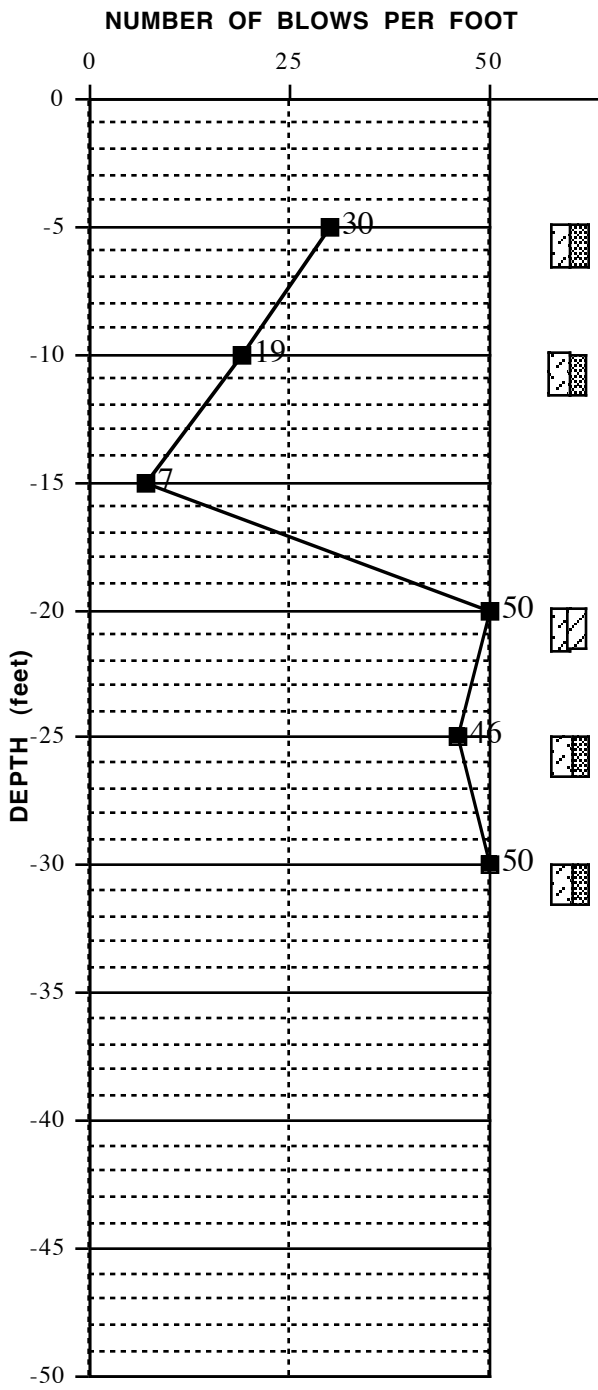
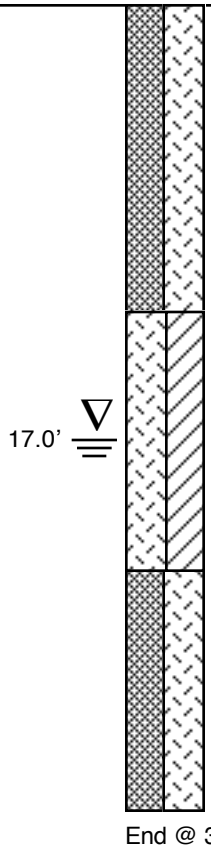
B-2 STANDARD PENETRATION TEST	SOIL DESCRIPTION AND CLASSIFICATION



X,Y =
Surface Elevation = 69.55 (ft)
Surface Conditions = Tall grass



SILTY CLAYEY SAND with COBBLES (SM/SC)
Brown medium sand, loamy with gravel and cobbles. Damp, dense, cohesive to crumbly. Fill material likely.

LOAMY SAND (SC/CL)
Light brown loamy sand with gray-brown clay observed in tailings. Damp to moist, some gravel, mod. coherent to coherent. Soil is likely native.

SILTY CLAYEY SAND (SM/SC)
Medium to fine sand with ~20% silt and clay, some gravel. Moist, to saturated by 25'. Very dense to hard, sl. coherent.

End @ 31.5'

Note: Groundwater level measured within monitoring well after development and stabilization - 8/18/09.

Project No. QF0217645	Date: 7/27/09	**LOG OF TEST BORING**	Approved by AXH	Figure 10

Geotechnical Engineering Investigation
Proposed Hotel
15th Ave SW & SR 512
Puyallup, Washington

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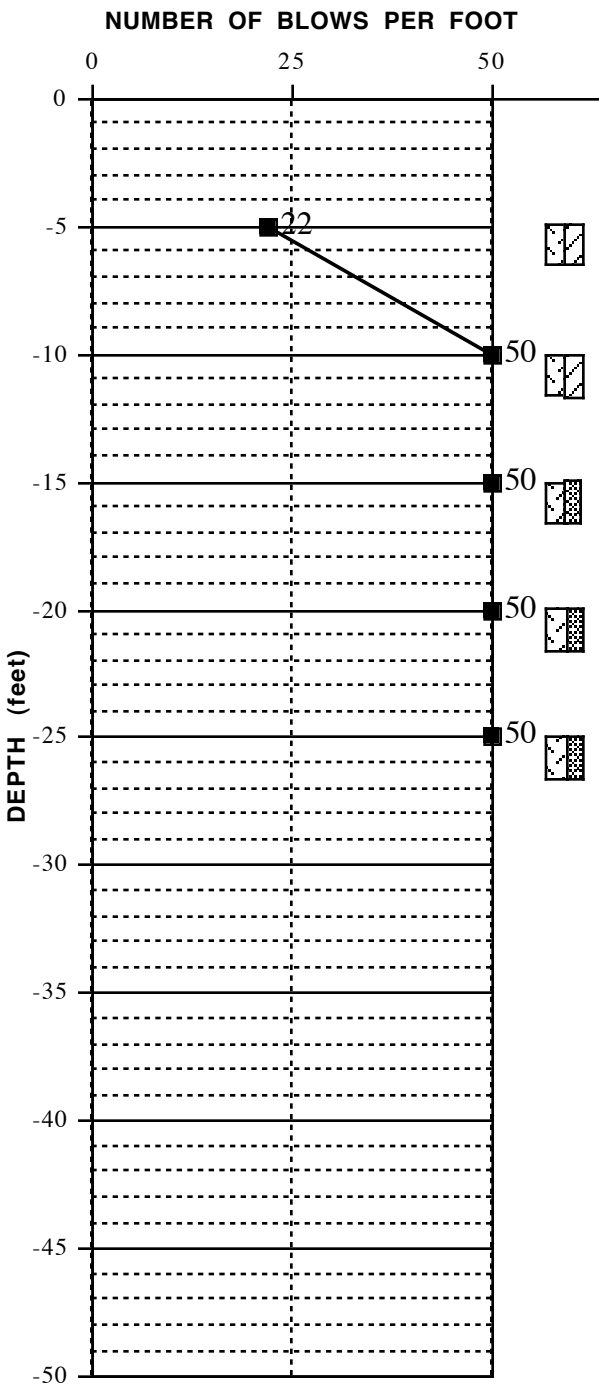
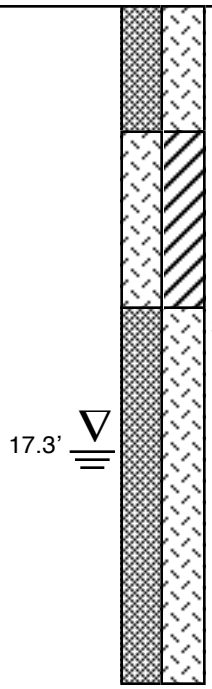
B-3 STANDARD PENETRATION TEST	SOIL DESCRIPTION AND CLASSIFICATION



X,Y =
Surface Elevation = 63.24 (ft)
Surface Conditions = Tall grass



SILTY CLAYEY SAND with COBBLES (SM/SC)
Brown medium sand, loamy with gravel. Dry to damp, dense, cohesive. Fill material likely.

LOAMY SAND (SC/CL)
Light brown loamy sand with clay observed in tailings and samples. Damp to moist, some gravel, mod. coherent. Soil is likely native.

SILTY CLAYEY SAND (SM/SC)
Grey medium to fine sand with ~25% silt and clay. Very dense in place, damp to wet, crumbly to mod. coherent.

End @ 26.5'

Note: Groundwater level measured within monitoring well one day after drilling, before development - 7/28/09.

Project No. QF0217645	Date: 7/27/09	**LOG OF TEST BORING**	Approved by AXH	Figure 11

Geotechnical Engineering Investigation
Proposed Hotel
15th Ave SW & SR 512
Puyallup, Washington

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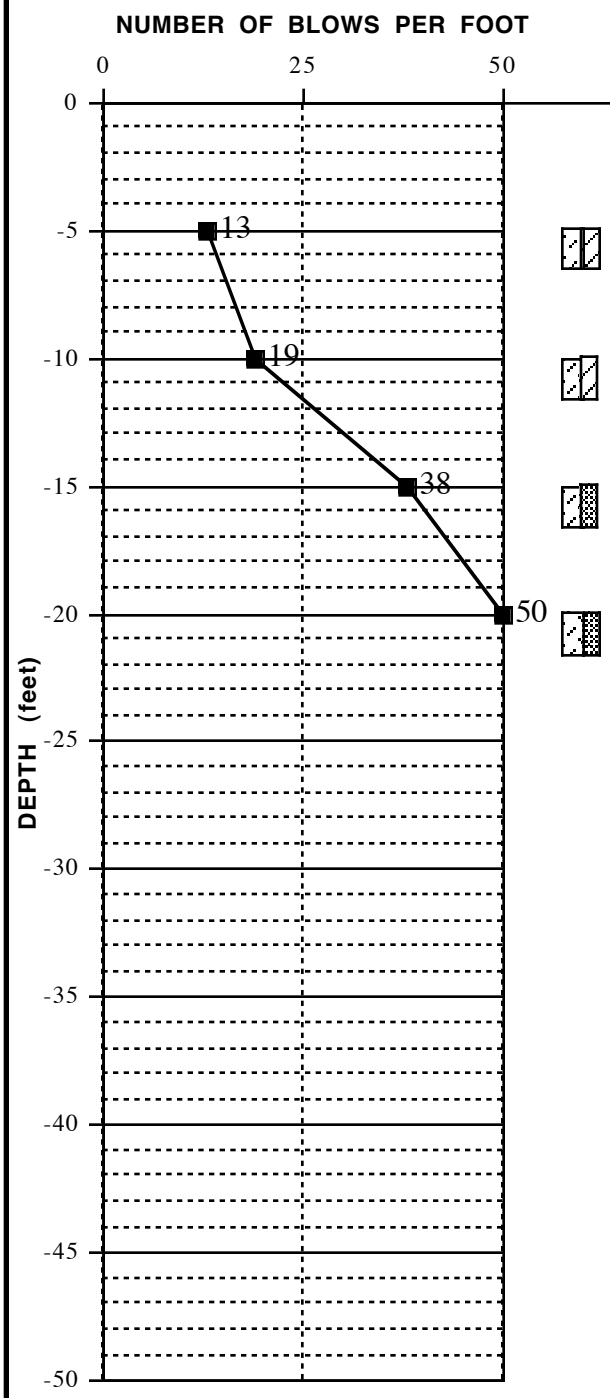
B-4 STANDARD PENETRATION TEST	SOIL DESCRIPTION AND CLASSIFICATION



X,Y =
Surface Elevation = 60.43 (ft)
Surface Conditions = Tall grass

5.9' ▽

SILTY CLAYEY SAND with COBBLES (SM/SC)
Brown medium sand, loamy with gravel. Dry to damp, dense, cohesive. Fill material likely.

LOAMY SAND (SC/CL)
Light brown loamy sand with clay. Moist, some gravel, mod. coherent. Soil is likely native.

SILTY CLAYEY SAND (SM/SC)
Brown-gray medium to fine sand with ~25% silt and clay intermixed. Dense to hard in place, wet.

End @ 21.5'

Note: Groundwater level measured within monitoring well after development and stabilization - 8/18/09.

Project No. QF0217645	Date: 7/28/09	**LOG OF TEST BORING**	Approved by AXH	Figure 12

Geotechnical Engineering Investigation
Proposed Hotel
15th Ave SW & SR 512
Puyallup, Washington

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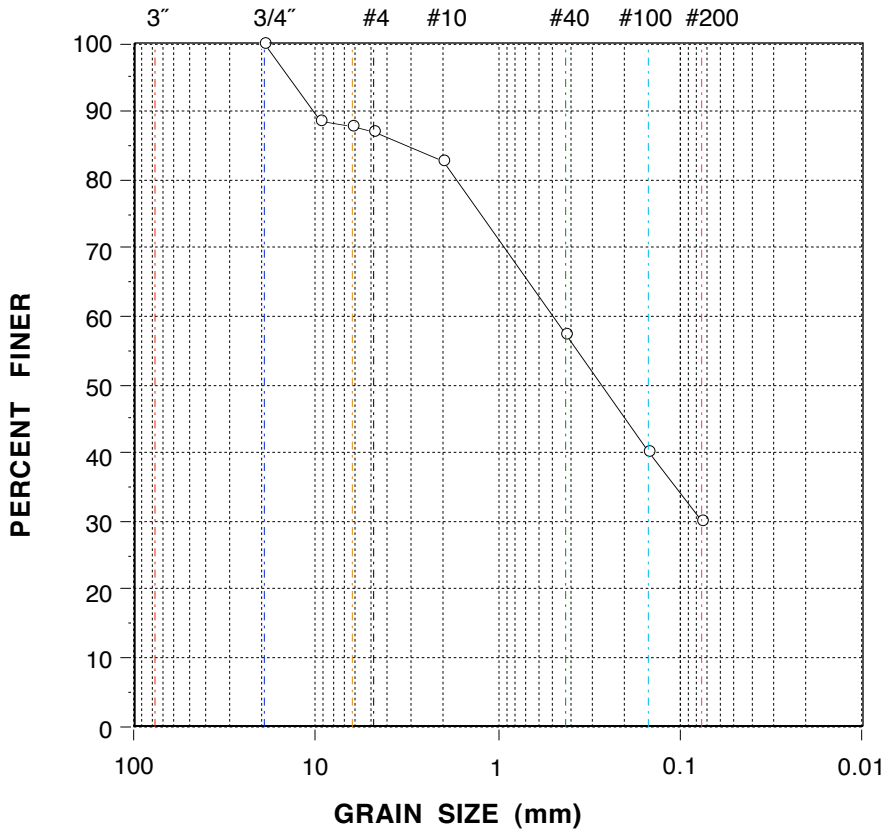
Grain Size Distribution



SIEVE SIZE	% PASSING
3″	----
1-1/2″	----
1″	----
3/4″	100
3/8″	88.6
1/4″	87.8
#4	86.9
#10	82.6
#40	57.3
#60	-
#100	40.1
#200	29.9

SAMPLE LOCATION: B1-2
SAMPLED DEPTH: 10´
SOIL TYPE: Silty Clayey Sand (SM/SC)

ASTM D 2487

Project No. QF0217645	Date: 8/25/2009	**LABORATORY TESTS**	Approved by A.X.H.	*Figure 13*

Geotechnical Engineering Investigation
Proposed Hotel
15th Ave SW & SR 512
Puyallup, Washington

For: Hollander Investments Inc.

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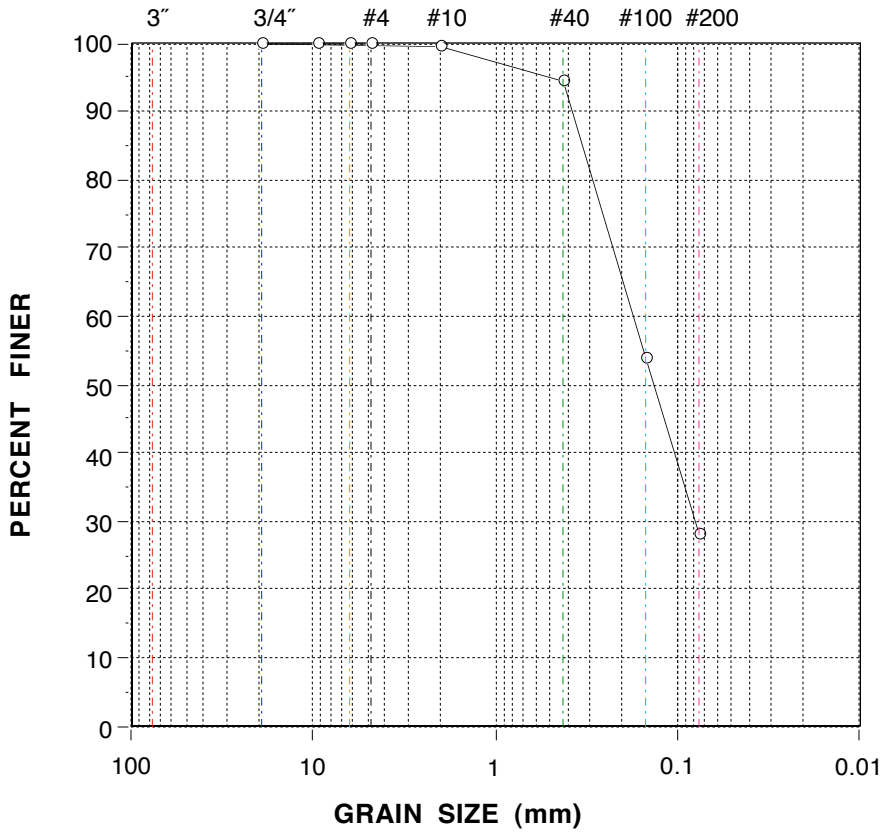
Grain Size Distribution



SIEVE SIZE	% PASSING
3″	----
1-1/2″	----
1″	----
3/4″	100
3/8″	100
1/4″	100
#4	100
#10	99.3
#40	94.4
#60	-
#100	53.6
#200	27.9

SAMPLE LOCATION: B1-7
SAMPLED DEPTH: 35´
SOIL TYPE: Silty Clayey Sand (SM/SC)

ASTM D 2487

Project No. QF0217645	Date: 8/26/2009	**LABORATORY TESTS**	Approved by A.X.H.	*Figure 14*

Geotechnical Engineering Investigation
Proposed Hotel
15th Ave SW & SR 512
Puyallup, Washington

For: Hollander Investments LLC

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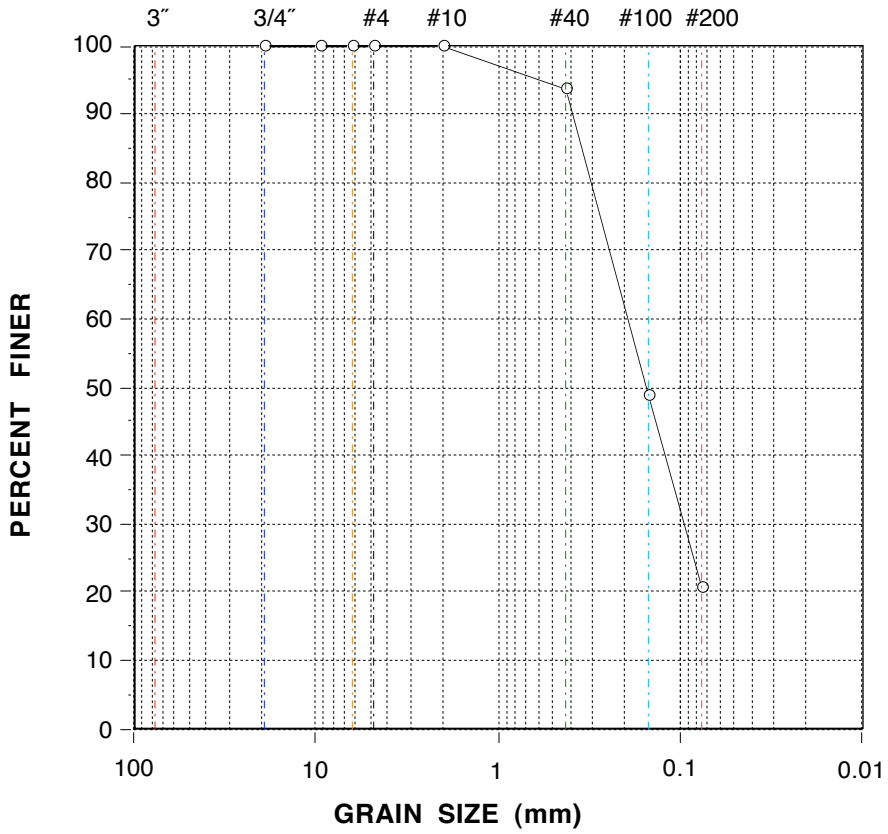
Grain Size Distribution



SIEVE SIZE	% PASSING
3″	----
1-1/2″	----
1″	----
3/4″	100
3/8″	100
1/4″	100
#4	100
#10	99.9
#40	93.5
#60	-
#100	48.6
#200	20.6

SAMPLE LOCATION: B2-6
SAMPLED DEPTH: 30´
SOIL TYPE: Silty Clayey Sand (SM/SC)

ASTM D 2487

Project No. QF0217645	Date: 8/25/2009	**LABORATORY TESTS**	Approved by A.X.H.	*Figure 15*

Geotechnical Engineering Investigation
Proposed Hotel
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Puyallup, Washington

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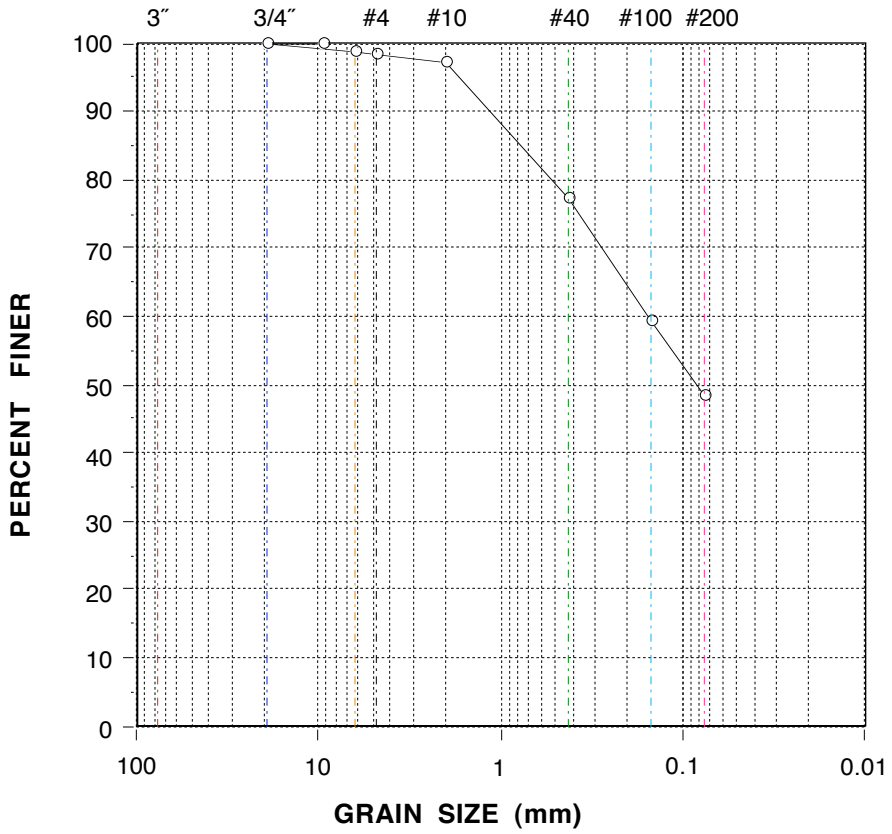
Grain Size Distribution



SIEVE SIZE	% PASSING
3″	----
1-1/2″	----
1″	----
3/4″	100
3/8″	100
1/4″	98.5
#4	98.2
#10	96.9
#40	77.3
#60	-
#100	59.2
#200	48.4

SAMPLE LOCATION: B3-1
SAMPLED DEPTH: 5´
SOIL TYPE: Sandy Loam (SC/CL)

ASTM D 2487

Project No. QF0217645	Date: 8/25/2009	**LABORATORY TESTS**	Approved by A.X.H.	*Figure 16*

Geotechnical Engineering Investigation
Proposed Hotel
15th Ave SW & SR 512
Puyallup, Washington

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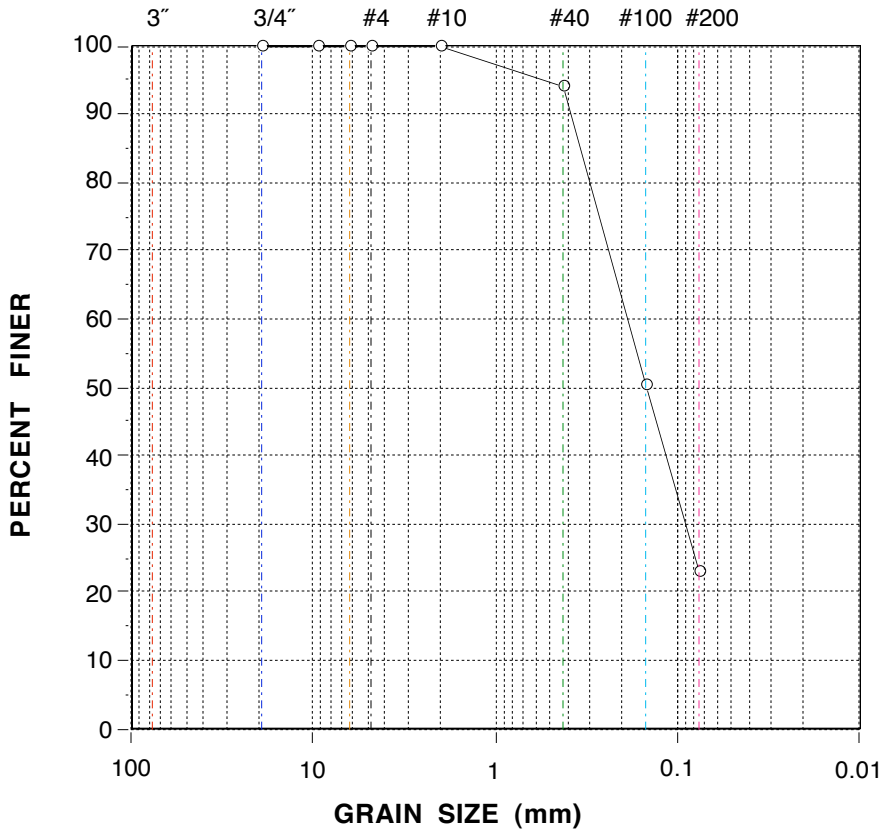
Grain Size Distribution



SIEVE SIZE	% PASSING
3″	----
1-1/2″	----
1″	----
3/4″	100
3/8″	100
1/4″	100
#4	100
#10	99.7
#40	93.9
#60	-
#100	50.4
#200	22.8

SAMPLE LOCATION: B3-5
SAMPLED DEPTH: 25´
SOIL TYPE: Silty Clayey Sand (SM/SC)

ASTM D 2487

Project No. QF0217645	Date: 8/25/2009	**LABORATORY TESTS**	Approved by A.X.H.	*Figure 17*

Geotechnical Engineering Investigation
Proposed Hotel
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Puyallup, Washington

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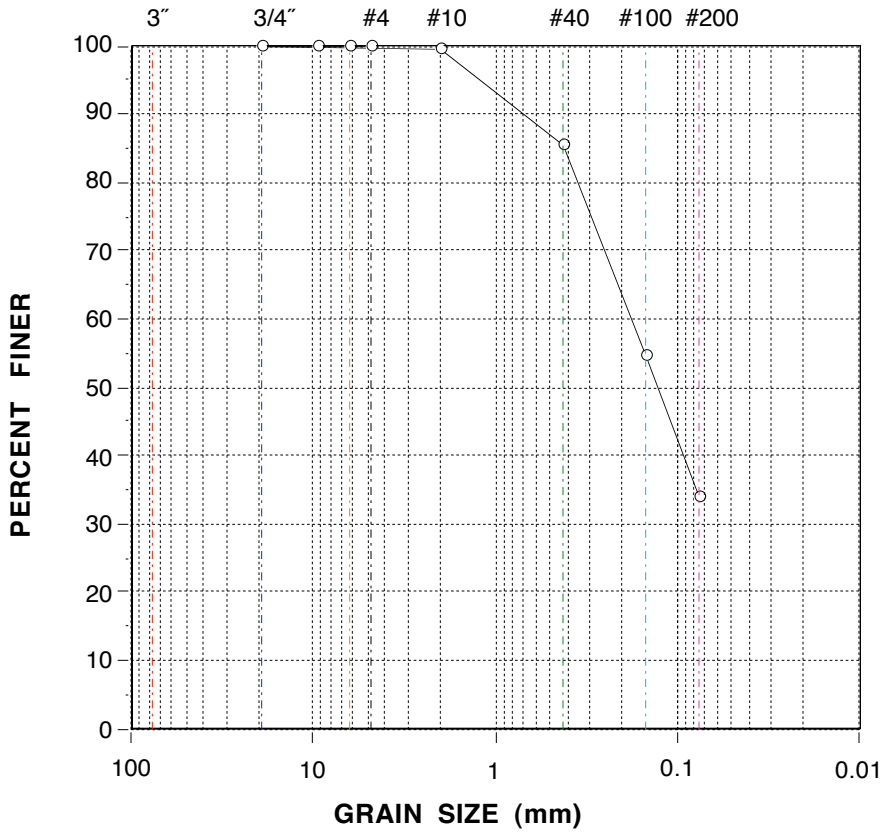
Grain Size Distribution



SIEVE SIZE	% PASSING
3″	----
1-1/2″	----
1″	----
3/4″	100
3/8″	100
1/4″	100
#4	100
#10	99.4
#40	85.5
#60	-
#100	54.4
#200	34.0

SAMPLE LOCATION: B4-1
SAMPLED DEPTH: 5´
SOIL TYPE: Loamy Sand (SC)

ASTM D 2487

Project No. QF0217645	Date: 8/25/2009	**LABORATORY TESTS**	Approved by A.X.H.	*Figure 18*

Geotechnical Engineering Investigation
Proposed Hotel
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Puyallup, Washington

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GEOTECHNICAL ENGINEERING STUDY
PROPOSED MEDICAL OFFICE BUILDING
15TH AVENUE SOUTHWEST NEAR SOUTH MERIDIAN
PUYALLUP, WASHINGTON

December 11, 2007
ECI Project No. E-13106

Prepared for
Offenbecher Commercial
101 South Meridian Street
Puyallup, Washington 98371

EARTH CONSULTING INCORPORATED
1805 136th Place Northeast
Suite 201
Bellevue, Washington 98005
(425) 643-3780
Toll Free 1-888-739-6670

Boring Log

Project Name: Puyallup Medical Center				Sheet 1 of 2
Job No. 13106	Logged by: STS/MGM	Start Date: 2/21/03	Completion Date: 2/21/03	Boring No.: B-1
Drilling Contractor: Gregory Drilling		Drilling Method: HSA		Sampling Method: SPT
Approximate Ground Surface Elevation: 120'		Hole Completion: ☐ Monitoring Well ☐ Piezometer ☒ Abandoned, sealed with bentonite		

General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	Sample	USCS Symbol	Surface Conditions: Grass
				1		ML	Brown SILT, loose, moist to wet -trace sand -mottled
	22.1	8		2 3			
	24.2	8		4 5 6			-becomes wet -iron oxide staining
	22.4	9		7 8			-slight increase in sand content
	15.1	9		9 10 11			-trace medium- to coarse-grained sand and gravel -becomes moist
				12		SM	Brown silty SAND with gravel, medium dense, moist
	10.7	64		13 14 15 16			-becomes dense
				17 18 19			

Earth Consulting Incorporated

Boring Log
Puyallup Medical Center
Puyallup, Washington

Proj. No. 13106	Dwn. DNM	Date 12/5/07	Checked RAB	Date 12/5/07	Plate A2

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

BV BORING LOG 13106.GPJ ECI.GDT 12/10/07

Boring Log

Project Name: Puyallup Medical Center				Sheet 2 of 2
Job No. 13106	Logged by: STS/MGM	Start Date: 2/21/03	Completion Date: 2/21/03	Boring No.: B-1
Drilling Contractor: Gregory Drilling		Drilling Method: HSA		Sampling Method: SPT
Approximate Ground Surface Elevation: 120'		Hole Completion: ☐ Monitoring Well ☐ Piezometer ☒ Abandoned, sealed with bentonite		

General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	Sample	USCS Symbol	
	9.2	82		21		SM	Brown silty SAND with gravel, very dense, moist
				22			-pockets of brown poorly graded sand with silt and gravel
				23			
				24			
	10.7	74/10"		25			-decreasing fines
				26			
				27			
				28			
				29			
	11.7	60		30			-seepage
				31			
				32			
				33			
				34			
	23.1	68/11"		35		ML	Grades to brown SILT with fine sand with gravel, very dense, saturated
				36			Boring terminated at 36' below existing grade. Groundwater seepage encountered at 30.5' during drilling. Boring backfilled with bentonite chips.

Earth Consulting Incorporated

Boring Log
Puyallup Medical Center
Puyallup, Washington

Proj. No. 13106	Dwn. DNM	Date 12/5/07	Checked RAB	Date 12/5/07	Plate A3

BV BORING LOG 13106.GPJ ECI.GDT 12/10/07

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

Boring Log

Project Name: Puyallup Medical Center				Sheet 1 of 2
Job No. 13106	Logged by: STS/MGM	Start Date: 2/21/03	Completion Date: 2/21/03	Boring No.: B-2
Drilling Contractor: Gregory Drilling		Drilling Method: HSA		Sampling Method: SPT
Approximate Ground Surface Elevation: 101'		Hole Completion: ☐ Monitoring Well ☐ Piezometer ☒ Abandoned, sealed with bentonite		

General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	Sample	USCS Symbol	Surface Conditions: Alder trees
				1		ML	Brown SILT, loose, moist to wet -mottled; trace sand
				2			
				3			
				4			
	22.7	12		5			-becomes medium dense
				6			
				7			
				8			
				9			
	19.5	13		10			-thinly laminated
				11			
				12			
				13			
				14			
	19.6	14		15			-slight sand increase -iron oxide staining
				16			
				17			
				18			
				19			

Earth Consulting Incorporated

Boring Log
Puyallup Medical Center
Puyallup, Washington

Proj. No. 13106	Dwn. DNM	Date 12/5/07	Checked RAB	Date 12/5/07	Plate A4

BV BORING LOG 13108.GPJ ECI.GDT 12/10/07

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

Boring Log

Project Name: Puyallup Medical Center				Sheet 2 of 2
Job No. 13106	Logged by: STS/MGM	Start Date: 2/21/03	Completion Date: 2/21/03	Boring No.: B-2
Drilling Contractor: Gregory Drilling		Drilling Method: HSA		Sampling Method: SPT
Approximate Ground Surface Elevation: 101'		Hole Completion: ☐ Monitoring Well ☐ Piezometer ☒ Abandoned, sealed with bentonite		

General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	Sample	USCS Symbol	
	23.7	12		21		ML	Brown SILT, medium dense, wet -trace sand; thinly laminated
				22			-iron oxide staining
				23			
				24			
	22.3	19		25			
				26			
				27			
				28			
				29			
	17.7	25		30			-trace thin fine sand laminations
				31			
				32			
				33			
				34			
	15.6	10		35			
				36		ML	Grades to SILT with sand, loose to medium dense, wet -trace small rounded gravel
							Boring terminated at 36.5' below existing grade. No groundwater encountered during drilling. Boring backfilled with bentonite.

Earth Consulting Incorporated

Boring Log
Puyallup Medical Center
Puyallup, Washington

Proj. No. 13106	Dwn. DNM	Date 12/5/07	Checked RAB	Date 12/5/07	Plate A5

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

BV BORING LOG 13106.GPJ ECI.GDT 12/10/07

Boring Log

Project Name: Puyallup Medical Center				Sheet 1 of 1
Job No. 13106	Logged by: STS/MGM	Start Date: 2/24/03	Completion Date: 2/24/03	Boring No.: B-3
Drilling Contractor: Gregory Drilling		Drilling Method: HSA		Sampling Method: SPT
Approximate Ground Surface Elevation: 84'		Hole Completion: ☐ Monitoring Well ☐ Piezometer ☒ Abandoned, sealed with bentonite		

General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	Sample	USCS Symbol	Surface Conditions:
				1		ML	Brown SILT, loose, wet
				2			-trace sand; mottled
				3			
				4			
	23.3	8		5			
				6			
				7			
				8			
				9			
	15.1	13		10			-becomes medium dense
				11			-increasing fine sand content; iron oxide staining
				12			
				13			
				14			
	10.5	53		15		SM	Grades to brown silty SAND with gravel, very dense, wet
				16			
				17			
	9.7	82		18			
				19			Boring terminated at 19' below existing grade due to refusal. No groundwater encountered during drilling; backfilled with bentonite.

Earth Consulting Incorporated

Boring Log
Puyallup Medical Center
Puyallup, Washington

Proj. No. 13106	Dwn. DNM	Date 12/5/07	Checked RAB	Date 12/5/07	Plate A6

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

BV BORING LOG 13106.GPJ ECI.GDT 12/10/07

Test Pit Log

Project Name: Puyallup Medical Center			Sheet 1 of 1
Job No. 13106	Logged by: STS	Date: 2/26/03	Test Pit No.: TP-1
Excavation Contractor: Aikins' Excavating			Approx. Ground Surface Elevation: 89'
Notes:			

Surface Conditions: Depth of topsoil and sod 6" to 8"

General Notes	W (%)	Graphic Symbol	Depth Ft.	Sample	USCS Symbol	
					TPSL	TOPSOIL
			1		ML	Brown SILT, loose to medium dense, moist -trace sand -mottled
	13.5		2 3 4			-iron oxide staining
			5 6		SM	Grades into brown silty SAND with gravel, medium dense, moist -trace boulders
	11.2		7 8 9			-increasing gravel
	8.7		10			Test pit terminated at 10.5' below existing grade. No groundwater encountered during excavation.

Earth Consulting Incorporated

Test Pit Log
Puyallup Medical Center
Puyallup, Washington

Proj. No. 13106	Dwn. DNM	Date 12/5/07	Checked RAB	Date 12/5/07	Plate A7

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

BV TEST PIT LOG 13106.GPJ ECI.GDT 12/10/07

Test Pit Log

Project Name: Puyallup Medical Center				Sheet 1 of 1
Job No. 13106	Logged by: STS		Date: 2/26/03	Test Pit No.: TP-2
Excavation Contractor: Aikins' Excavating				Approx. Ground Surface Elevation: 68'
Notes:				

General Notes	W (%)	Graphic Symbol	Depth Ft.	Sample	USCS Symbol	Surface Conditions: Depth of topsoil and sod 6"
					TPSL	TOPSOIL
			1		ML	Brown SILT with gravel, medium dense, moist -trace sand
	14.4		2			
			3			
			4			
			5			
			6			
			7			-contains cobbles -moderate seepage
			8		SM	Brown silty SAND with gravel, medium dense, wet
	12.0		9			-slight caving -trace boulders
			10			-increasing sand content
	10.7		11			Test pit terminated at 11' below existing grade. Groundwater seepage encountered at 8' during excavation.

Earth Consulting Incorporated

Test Pit Log
Puyallup Medical Center
Puyallup, Washington

Proj. No. 13106	Dwn. DNM	Date 12/5/07	Checked RAB	Date 12/5/07	Plate A8

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

BV TEST PIT LOG 13106.GPJ ECI.GDT 12/10/07

Test Pit Log

Project Name: Puyallup Medical Center			Sheet 1 of 1
Job No. 13106	Logged by: STS	Date: 2/26/03	Test Pit No.: TP-3
Excavation Contractor: Aikins' Excavating			Approx. Ground Surface Elevation: 68'
Notes:			

General Notes	W (%)	Graphic Symbol	Depth Ft.	Sample	USCS Symbol	Surface Conditions: Depth of topsoil and sod 8"
					TPSL	TOPSOIL
	15.4		1 2 3		ML	Brown SILT with gravel, loose to medium dense, moist -mottled
	14.8		4 5 6 7 8 9 10		SM	Brown silty SAND, dense, moist -increasing moisture -moderate seepage
	17.0		11		SM	Brown silty SAND with gravel, dense, wet
						Test pit terminated at 11.5' below existing grade. Groundwater seepage encountered at 10' during excavation.

Earth Consulting Incorporated

Test Pit Log
Puyallup Medical Center
Puyallup, Washington

Proj. No. 13106	Dwn. DNM	Date 12/5/07	Checked RAB	Date 12/5/07	Plate A9

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

BV TEST PIT LOG 13106.GPJ ECI.GDT 12/10/07

MERIT ENGINEERING INC.

SLOPE STABILITY ASSESSMENT

Proposed Fairfield Inn
15th Avenue SW - Hwy 512
Puyallup, Washington

Prepared For:

Mark Hollander
Hollander Investments, Inc.
119 N Commercial Street
Bellingham, Washington

June 25, 2010
Project No. QF0217645

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June 25, 2010
Project No. QF0217645

2004 ACEC Washington Gold Award Recipient Engineering Excellence

Mark Hollander
Hollander Investments, Inc.
119 N Commercial Street
Bellingham, Washington

Re: Critical Area Slope Assessment
Proposed Fairfield Inn
15th Avenue SW - Hwy 512
Puyallup, Washington

Dear Mark,

At your request, we have conducted a geotechnical slope stability assessment for the above referenced project. The following report represents the results of this investigation and presents our recommendations and conclusions on the feasibility of development at the site.

Thank you for this opportunity to work with you on this project. Please contact us if you have any questions regarding this report.

Sincerely,

Austin X. Huang, Ph.D., P.E., L.G.
Principal

SLOPE STABILITY ASSESSMENT

Proposed Fairfield Inn
15th Avenue SW - Hwy 512
Puyallup, Washington

Report Prepared for:

Mark Hollander
Hollander Investments, Inc.
119 N Commercial Street
Bellingham, Washington

by

Austin X. Huang, Ph.D., P.E., L.G.
Principal

Project No. QF0217645
June 25th, 2010

TABLE OF CONTENTS

1. INTRODUCTION

Mark Hollander of Hollander Investments, Inc. in Bellingham, Washington requested Merit Engineering, Inc. conduct a geotechnical slope stability assessment for a portion of the large southeast-facing slope on the undeveloped property located south of 15th Avenue SW and east of Highway 512 in the city of Puyallup, Washington. The project area and vicinity is shown in Figure 1 and an overview site map in Figure 2A of the Appendix. The property is currently proposed for development as a six-story Fairfield Inn with associated access roads and tiered paved parking. Addition of a four-story office building to the site in a future development phase is considered but not addressed at this time. Relevant studies completed for the property include a Geotechnical Engineering Study (Earth Consulting Incorporated, 2007) for a previous owner, and our Geotechnical Engineering Report (Merit Engineering Inc., 2009) focusing on the main building area for the current proposed development.

We are informed that, according to the city of Puyallup, portions of the site are considered a critical area geohazard for erosion and landslide potential. Therefore our site evaluation is required for the permit process to address concerns regarding stability of the critical area in proximity to proposed site enhancements. As we understand from currently available topographic maps, the critical slope runs within and along the southeast site boundary, east and downslope of proposed development, leading down to the adjacent wetland streambed. To the northeast near the main building area, the bordering slope is 15´ - 20´ high and 20° or less. The southern 2/3 of the site is flanked to the southeast by the large slope 50´ - 55´ high in total and 30° - 35° overall. Our study focuses on the north half of the large slope, as shown in Figures 2A & 2B, which is the primary area of stability concern near the proposed development.

The objective of this study was to: 1) Evaluate slope conditions at the subject property via surface reconnaissance and geotechnical subsurface testing on the slope, 2) Perform stability analysis characterizing existing slope conditions, and 3) Address critical area concerns and provide recommendations for proposed development. Six DCP[1] (*Dynamic Cone Penetration*) tests on three slope transects were used to determine general subsurface soil and groundwater conditions as well as soil strength properties. Field observations and test data are combined

[1] DCP testing consists of driving a 10 cm^2 (1.4˝ diameter) cone into the ground. The cone is attached to steel rods and driven by a 35-lb hammer with 15˝ free fall. Number of blows for each 10 cm (4˝) penetration is recorded.

with slope analysis results to evaluate overall slope conditions and derive conclusions on the feasibility of proposed development.

2. SCOPE

The scope of work for this critical area slope assessment has included:

- Performing visual reconnaissance of the large southeastern slope and adjacent areas;
- Measuring slope profiles and drafting of interpretive slope cross-sections;
- Conducting six (6) DCP (*Dynamic Cone Penetration*) tests along three slope transects;
- Logging and interpreting slope soil and groundwater conditions, with literature review;
- Performing analysis of DCP results for soil strength properties on the slope;
- Completing a slope stability analysis of existing conditions concerning circular failure;
- Preparing this critical area slope assessment report addressing:

    (1) current surface conditions;
    (2) subsurface soil and groundwater conditions;
    (3) analysis and discussion of existing slope stability;
    (4) critical area considerations; and,
    (5) general recommendations for site development near the slope.

3. SITE RECONNAISSANCE & CONDITIONS

3.1 Overview of Site Conditions

The subject property is located in the city of Puyallup, Pierce County, Washington on the south side of 15th Ave SW and east of Highway 512, ~1/8 mile west of the intersection with S Meridian Street in a zone of commercial and apartment usage with some undeveloped area. A location and vicinity map is shown in the Appendix (Figure 1). Site plans with topography, property lines, adjacent conditions, and the slope study area are shown in Figures 2A & 2B.

The N-S oriented triangular property is bordered on its northern end by a creek ravine and 15th Avenue SW, then apartments. The main access road bridges the ravine and large culvert from the north. To the west is a vegetated, variably sloped area bordering Highway 512. South of the site is undeveloped forest and slope area. Oriented along the east and southeast site border is a wide ravine containing a broad wetland and north-flowing creek that wraps around to parallel the northern site edge. The slope of focus for field testing in this study forms the west ravine wall, rooted at the edge of the wetland and rising westward into the south half of the site.

Further east past the ravine on S Meridian Street is an ARCO gas station and car wash.

The subject site contains a knoll in the southwest, with a peak elevation of 128´ according to survey data. Topography slopes gently to very gently downhill to the north to ~60´ elevation at the north border past the proposed building area. The upper site area is generally forested with medium deciduous trees and undergrowth, while the lower northern 1/3 is cleared of trees but covered with tall grass and brambles. Smaller ravine sideslopes border the north and northeast site boundaries to fall ~20´ down to the adjacent wetland. East and southeast from the knoll, the site slopes gently at first then becomes steeper and extends past the site boundary. Elevation loss down to the wetland is ~50´ - 60´ over about 100´ horizontal from the upper plateau.

The large southeast slope is laterally extensive and relatively consistent in character, stretching ~400´ in a NE/SW orientation. This study focuses on the northern ~200´ near proposed development activities, shown in Figures 2A & 2B. In this zone the slope is interrupted near its midpoint by a flat to shallowly sloping terrace, likely an old access roadpath, that follows the site boundary. The path is ~10´ wide at its north end to upwards of 20´ wide further south, and appears artificially graded but overgrown. Slope above the path ranges from 30° to an average of ~35° and observed 40° maximum inclination with local variability. Below the path, the slope is consistently ~34° over 25´ vertical. Slope vegetation consists of medium deciduous trees with patchy undergrowth including brambles, moss, and ferns.

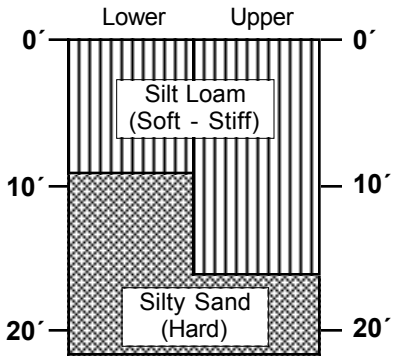
3.2 Soil Conditions

Subsurface soil and groundwater conditions were investigated by conducting six (6) DCP tests to 8´-19´ refusal depth, arranged along three slope-perpendicular transects. Test locations are shown on the detail slope map in Figure 2B of the Appendix. DCP test logs are provided in Figures 4 to 9, with interpretive profiles of each transect line in Figures 10 to 12. A description of soil symbols and USCS soil classification chart used in this report is presented in Figure 3.

Soil types and properties were approximated based on DCP results and soil residue left on rods upon extraction, along with observed surface exposures of shallow material and existing site soil data from previous studies. Soils at depth are not directly observed or sampled during DCP testing. Therefore, the stratigraphy presented in this report is an interpretation of major soil layering and strength properties, shown in the adjacent schematic and described below:

a. Sandy Silt to Sand-Silt Mixture (ML)

b. Silty Sand, cemented (SM)



a. Sandy Silt to Sand-Silt Mixture (ML)

We observed a brown to tan-brown sandy silt to sand-silt mixture soil in surface exposures and local slope disturbances during our field reconnaissance. DCP testing documented in all test locations an upper soil horizon that was soft for the top ~3´, becoming stiff/dense below, and residue on rods indicative of damp sand-silt soil. Thin coarse lenses were evidenced by variable results as noted on the soil logs. Near-surface soils were moist from rainfall, and damp to slightly damp below. Along the base of the unit, we locally observed moist to wet conditions on test rods suggesting basal seepage. Thickness ranges from ~8´ - 10´ (A-1 and B-1) at the eastern site boundary, increasing upslope to an observed maximum of ~19´ (A-3). A previous boring by Earth Consulting Incorporated (2007) at the topographic top of the site west of the slope study area found the package to extend past 30´ depth. This sandy silt appears to correlate with documented soil conditions for the site area, Kitsap Silt Loam and USGS-mapped interbedded glaciolacustrine deposits.

b. Silty Sand. cemented (SM)

At termination depth in all test locations we encountered a brown-gray silty sand, very stiff/dense to hard. Sparse rod residue was slightly damp to damp, crumbly, and moderately cemented. Based on our test results, prior studies, and available geologic maps, we interpret this unit to underlie the entire study slope beginning at about 10´ depth near the east property line and 15´ - 20´ depth further up the slope face. Correlation with mapped conditions suggests this unit extends to depths well beyond the concern of this investigation.

3.3 Geologic Background

The project area is located in the Southern Puget lowlands on a lowland bench overlooking the current Puyallup River Valley floodplain to the north. The greater area in western Washington was invaded by glacial ice several times during the Pleistocene Epoch, from 1.6 million to 10,000 years ago. The Puyallup area has also been subjected to repeated volcanic events including ash deposits, lahar flows, and mud flows from nearby Mt. Rainier.

The proposed project site and adjacent subject slope is mapped wholly by the Pierce County Soil Survey to 60"+ as **Kitsap silt loam**, formed in glacial lake sediments from the last glaciation on remnant terraces and within drainage channels. The unit is typically silt loam but may vary from sandy loam to silty clay loam locally. Although moderately well drained on hillsides, infiltration is generally slow to very slow and runoff moderate to rapid. The soil survey lists erosional hazard as moderate to severe, with hillside slippage a common issue. Difficulties for development on sloped areas include controlling runoff and mitigating for slippage hazard. Suitable planting reportedly helps check erosion. Areas underlying the site to the northeast and east are mapped as **Shalcar muck**, generally occurring in lowlying zones including wetlands and broad drainage channels.

Surface geology is mapped by the USGS as Vashon Stade recessional lacustrine deposits, (**Qvrl**; Troost, K.G., in press). The unit is variable in content with interbedded fine sand and silt to silt-clay laminae, ranging from loose/soft to dense/stiff in character. Thickness is typically ~20´ but may be a few feet to upwards of 30´. Below are found thick mixed deposits of Pre-Olympian age, (**Qpo**), consisting of sand to gravel and fine material. These sediments are typically very dense to hard and may be locally oxidized or cemented.

3.4 Surface and Ground Water Conditions

A groundwater table was not encountered during DCP testing for this study in May, 2010. Moist surface conditions appeared to be from rainfall and runoff. Shallow seepage seen in slope cuts and evidenced on test rods occurred locally, likely a result of poor infiltration in upper soils. Therefore, parts of the soil column on the slope may be saturated even when the groundwater table is deeper, due to slow percolation in the native soil and uncontrolled site drainage. The site plateau and slope were free of lasting surface water features, although small

storm runoff channels were observed on the slope. The main surface water feature bordering the property and slope study area to the east is the creekbed and surrounding wide wetland, at elevations below ~60´ according to provided topographic information and 20´ or more below the eastern site boundary (Figure 2A). The large slope contacts the edge of the wetland zone, but we did not observe an active creek running near the slope base within the study area.

A detailed review of site groundwater conditions and estimated hydrologic character of the adjacent creek including a groundwater contour map for the lower northern part of the site was provided in our recent Environmental Investigation (Merit Engineering, Inc., 2009). Monitoring well measurements revealed a site water table generally coincident with the creekbed, which rises very gradually upslope into the property. For the purposes of our slope analysis, we anticipate a similar groundwater gradient below the current study area. Therefore, we assume the groundwater table under the slope begins at creek level near the base and rises slowly in approximately the same direction as the slope.

4. SLOPE STABILITY EVALUATION

We used multiple methods for documenting and evaluating the slope at the project site. Subsurface soil conditions were investigated by conducting DCP testing to end depths of 8´ - 19´ in transects oriented perpendicular to the slope face. Soil strength properties were determined from DCP blow count values and previous site soil knowledge. Topographic slope profiles were constructed from field measurements, shown with interpreted soil layering to illustrate slope conditions for analysis (Figures 10 to 12). We also conducted slope reconnaissance, documenting general vegetation and surface characteristics including any disturbances, discussed below. Lastly, we performed a circular failure graphical analysis (Hoek and Bray, 1981) to estimate factors of safety for existing slope conditions.

4.1 Observations & Discussion of Existing Slope Conditions

Representatives from Merit Engineering, Inc. visited the site in May, 2010 for DCP testing and reconnaissance of the large critical area slope. Soil testing was accomplished over two visits, on May 11th & 12th, 2010. Surface reconnaissance with profile mapping and observation of

surface conditions was completed while on site.

The main southeast-facing slope is ~50´-60´ tall in total and around 35° inclined, excluding the intersecting path, illustrated in the attached measured profiles. Topography is notably very consistent below the path at ~34° slope, while uphill areas range in slope from 25° - 30° up to 40° maximum in places. In contrast, ravine sideslopes at the north edge of the study area are much smaller and sloped less, 25° to ~30° maximum inclined and 20´ - 25´ in height.

Vegetation is generally consistent in character throughout the study area. Medium deciduous trees estimated at 15-20 years old are spaced along the slope and flanking areas, with no large older trees observed. Within the main body of the slope, we noted that most trees exhibited visible to substantial curvature. Curving is often greater and some tilting of trees had occurred near small storm drainage pathways. Underbrush of ferns, grass, and small bushes is patchy and in some places absent or replaced by thick brambles. Local areas exhibit exposed soil but are typically surrounded by areas of stable brush and trees. Vegetation loss and soil exposures were generally not seen on the lower slope, and bowing of trees appeared less pronounced below the access path terrace.

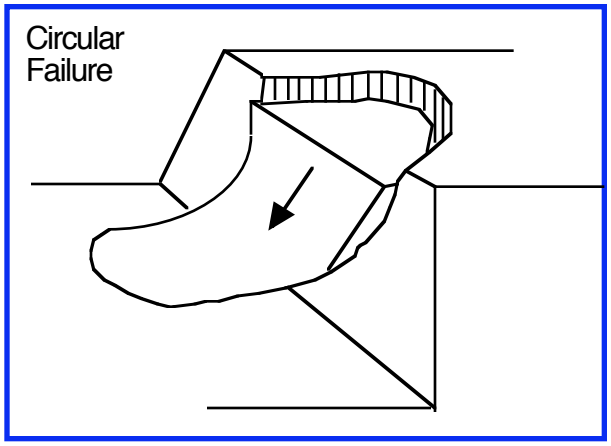
Shallow slumping, loose surface soil debris, and small hummocky deposits were observed in several locations along the uphill edge of the path and lower part of the upper slope. One instance of a small surface scarp was found bordering the path, exposing dense laminated silt-sand soils. We did not observe any obvious evidence of larger, deeper failure features that would be evidence of a major slope stability problem versus an ongoing erosional issue.

We interpret tentatively from our reconnaissance that the slope as a whole appears to have been stable for many years considering the widespread developed trees and undergrowth with lack of evidence for major failure features, but that it does exhibit signs of ongoing local erosion, surface slumping, and prevalent near-surface soil creep. Consistent curving of trees suggests shallow soil creep has occurred over an extended period of time. In addition, tilting of trees and brush disturbance in drainage channels is most commonly a result of confined stormwater erosion from lack of drainage controls above the slope. The disturbances observed during field testing appear to be contributing to and a result of near-surface soft or loose soil conditions. The site appears stripped of large trees and much original groundcover in the past and allowed

to revegetate, at which point the susceptibility for erosional instability and runoff incision on the slope likely increased from original conditions. The ground surface may not have fully stabilized after clearing activities due to a combination of fine-grained surface soils, poor drainage, and lack of adequate vegetative coverage, leaving the slope more vulnerable to future destabilization and ongoing shallow erosional failures.

4.2 Slope Failure Mode Considerations

The possible mode of slope failure at the site must be considered and selected for this slope stability analysis. Modes of slope failure are typically best categorized according to controlling geologic structures at a given site. Slope failure may be controlled by existing geological discontinuities such as joints, faults, bedding planes, and layers of weak material within a subsurface section. However, subsurface conditions at the project slope consist of thick soils of generally increasing strength with depth. Soil slopes without major controlling features are characterized to failure in a circular mode (Hoek and Bray, 1981), as illustrated in the adjacent schematic. Circular failure is therefore assumed for the following analysis.



• *4.3 Engineering Properties of Soil*

We defined average engineering properties of the materials on the slope based on general interpreted soil conditions and the results of DCP tests. These parameters include friction angle (ϕ), cohesion (c), and unit weight (γ). The dominant materials, according to our field tests and observations plus literature data, were defined as stiff Silt Loam underlain by very dense Silty Sand. Using parameters from Hoek and Bray (1981) in conjunction with our study results, we estimate average values as follows:

TABLE 1: Basic Engineering Properties of Site Soils

Soil Type	Depth (ft)	Cohesion c (psf)	Friction Angle ϕ	Dry Unit Wt. γdry, (pcf)	Sat. Unit Wt. γwet, (pcf)
SILT LOAM (stiff)	0′ to 10′-15′	1000	25°	100	115
SILTY SAND (v. dense)	10′-15′+	0*	38°	115	125

Average cohesion (c) of the Silt Loam layer was estimated using the correlation between soil type and DCP blow-count results (which represent soil strength) in comparison with typical values provided by Hoek and Bray (1981). Cohesion of the underlying Silty Sand does not factor in any contribution from fine content or cementation. All soil parameters were selected conservatively for the purpose of our stability analysis.

4.4 Slope Analysis Methodology

Circular failure charts of Hoek and Bray (1981) were used to calculate the factor of safety (FS) for current slope conditions, which allows us to assess slope stability versus a standard goal factor of safety of 1.5. These calculations require a series of parameters to be defined. For parameters specific to this site, slope height and surface angle were determined in the field by manual mapping techniques and compared with provided topographic survey maps. We used the maximum total slope profile identified in the field to ensure applicability of results to the entire study area: Slope expression was defined to be 55′ in total height, with an average inclination of 35°. Soil parameters were selected representing the upper Silt Loam unit (Table 1) in order to conduct a conservative analysis using the relatively weaker of the two identified soil types on site. Circular failure chart #2 was employed, corresponding to deep low-rising groundwater behind the toe of the slope (Figure 13), based on observed surface and ground water conditions and site analysis from prior studies. The circular failure chart for this scenario is shown in Figure 14.

Calculations for the factor of safety are as follows:

$$\frac{c}{\gamma H \tan \phi} \qquad (1)$$

Equation (1) determines which radial line to use on the Failure Chart. This unitless value represents a relationship between the slope and inherent soil parameters. The radial line is traced to the intersection with the slope surface angle, in this case 35°, and the corresponding x-axis value can be found. Finally, the estimated factor of safety is found using the equation:

$$\frac{c}{\gamma H F} \qquad (2)$$

The factor of safety for this slope was determined to be **FS = 1.8**.

4.5 Discussion of Results

Theoretically a slope is stable and safe if FS > 1. However, in practical use for design, a safety factor of larger than 1 is always adopted in order to account for uncertainties that may come from either the parameter estimation or the approximations to assumptions and conditions imposed by the analytical model, which may not be perfectly applicable to the project site. Hoek and Bray (1981) suggest a safety factor of 1.5 for critical slopes adjacent to haul roads or important installations that are required to remain stable for long periods of time. The U.S. Naval Design Manual (1986) requires a safety factor of no less than 1.5 for permanent or sustained loading conditions; however for transient loads, such as earthquakes, safety factors as low as 1.2 or 1.15 may be tolerated. For this study, we adopt this standard goal for a factor of safety minimum of FS = 1.5 under static conditions.

According to our analysis, the factor of safety for the slope of focus (FS = 1.8) exceeds the target value. Therefore, the slope appears to display adequate general stability under current conditions when considering traditional full-slope circular failure. In addition, it is our opinion that the slope and soil parameters selected are all conservative in nature, thus providing added precaution to the analysis results. We also note that the weaker silt loam soil was applied globally in our calculations, whereas typical arc geometry would pass the failure envelope

mostly through the underlying hard cemented silty sand unit. So in a practical sense, the actual factor of safety for the subject slope may be greater due to these several aspects of our conservative analysis.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of Study

We have completed a study of existing slope conditions for the designated critical area slope adjacent to the southeast edge of proposed development as described herein. This study has included site slope visual reconnaissance, surface profile mapping, subsurface soil investigation via DCP testing, and circular failure analysis for factor of safety determination in order to interpret general full-slope stability of the study area.

Based on the results of our reconnaissance and site testing, the study slope does not appear to show evidence of past large-scale failure or current major failures. However, signs of ongoing near-surface erosional instability, shallow slumping, and soil creep remain prevalent along the study slope, especially on the top half within the subject property. Observed evidence includes widespread moderate curvature of regrowth trees, common underbrush disruption with loose barren spots, and scattered minor slump scarps and deposits, as well as disturbances in stormwater drainage pathways. Field soil testing results suggest the near-surface stability issues are due to soft or loose fine-grained soils in the uppermost subsurface column, whereas soils at depth range from stiff and cohesive silt to the very dense cemented sand basal unit. We interpret the surficial instability may be partly a consequence of prior land clearing activities, including clearcutting of original stable vegetation and installation of the access path along the middle of the slope. The slope surface may not have fully stabilized after such activities due to a combination of fine-grained surface soils, poor drainage, and lack of adequate vegetative rooting, leaving the slope exposure more vulnerable to future destabilization and ongoing shallow erosional failures.

Circular failure analysis (Hoek and Bray, 1981), used to consider large-scale failure of the study slope, yielded a factor of safety of **FS = 1.8** for global stability. This result exceeds the

typical target factor of safety value (FS = 1.5). It is our opinion that this factor of safety result is reasonable given the site slope geometry, as well as the soil conditions encountered at depth and documented in previous studies. In addition, our result may be an underestimate of the site full-slope safety factor, since soil and slope parameters were selected to provide a conservative analysis as described above. Therefore, the study slope appears to be at low risk for major circular failure given present conditions and the results of this study.

5.2 Recommendations for Development

We recommend that general precautions be taken during and after site development to avoid amplifying erosional and creeping instability on the subject slope. Vegetation removal next to and above the critical area should be avoided if possible, and limited upon approval by the engineer. Revegetation of bare areas on the slope face may be helpful to attain long-term surface stability against erosion if allowed by local development standards. Heavy machinery should be kept sufficiently away from the critical area slope as possible, and if needed assessed for use on a case-by-case basis near the slope.

We recommend drainage controls be implemented near the critical area to limit storm runoff from entering the subject slope. Site drains and surface water runoff should be tight-lined away from entering the slope, and directed into a natural drainage or storm water system well away from the slope face or slope base area.

We understand the subject slope adjacent to a portion of the development site is designated as a geologically critical area. Therefore, the analyses and recommendations provided in this report are based on the assumption that our firm's level of professional services will be retained for additional related consultations and construction phase services. We recommend that we be contacted for additional design phase services as needed pertaining to the slope and nearby development activities. We recommend that we review project plans and specifications relating to site improvements near the critical area slope, including grading, erosion control, stormwater, and drainage plans to ensure activities are adequately addressed in consideration of the results of this study.

6. GENERAL CONDITIONS

The recommendations provided herein are based on our understanding of the project at this time. We expect on-site conditions to reflect our findings; however, some variations may occur. Should soil or slope conditions be encountered that cause concern and/or are not discussed herein, Merit Engineering, Inc. should be contacted immediately to determine if additional or alternate recommendations are required.

This report is prepared for Mark Hollander of Hollander Investments, Inc. in Bellingham, Washington for the specific application to the proposed development of the Fairfield Inn and associated complex at 15th Avenue SW and Hwy 512 in Puyallup, Washington. We understand that the owners have chosen and are ultimately willing to accept responsibility for developing an area designated as a potential geohazard. This report has been prepared in accordance with generally accepted geological engineering practices in this area. No other warranty, expressed or implied, is made.

This report is an instrument of our professional service, and we (Merit Engineering, Inc.) shall retain an ownership and property interest therein. We grant Mark Hollander and Hollander Investments, Inc. a license to use the instrument of our professional service for the purpose of constructing the above mentioned proposed development. We do not permit reuse or modification of this document for application to a different plan other than the proposed at the site or to another property, because soil and subsurface conditions are unique and site specific and the recommendations may be plan specific.

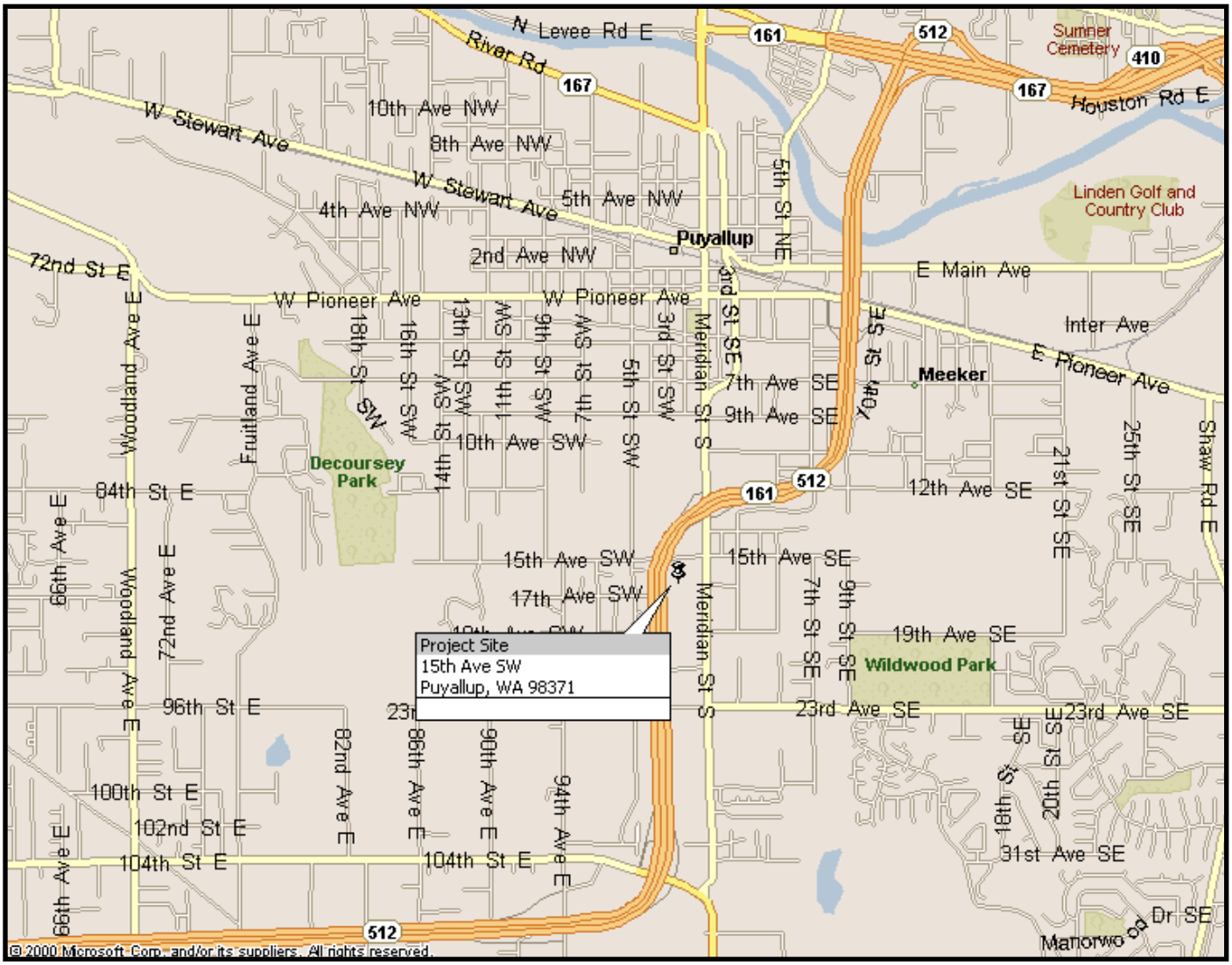
The owners and/or their representatives should understand that they are willing to take the risk to develop in a designated geologically critical area and, therefore, agree to indemnify and hold Merit Engineering, Inc. harmless, including its owners and employees, for the property owners are ultimately responsible for the potential adverse consequences of site development in a geologically critical area.

APPENDIX

Subsurface conditions at the site were investigated with DCP (*Dynamic Cone Penetration*) testing on the difficult-access forested slope during two visits, May 11th & 12th, 2010. Six (6) DCP tests were arranged along three (3) slope profile transects spaced through the slope study area. Additional slope reconnaissance with profile mapping and observation of surface conditions was conducted concurrently.

An overview topographic site map (Figure 2A) and topographic map with proposed site development features near the study slope (Figure 2B) was provided by the client prior to the field investigation. The area of study concern was determined in conference with the client, based on local critical area statutes and development plans. Test amount, depths, and locations were executed in accordance with verbal proposals, adjusted on site for field conditions by representatives of Merit Engineering. Slope transect lines with locations of DCP tests in relation to proposed development are shown on the detail site plan (Figure 2B) in the Appendix.

Descriptions of slope surface conditions are based on observations made on site at the time of the field investigation. Descriptions of subsurface conditions are based on the results of DCP testing in correlation with observation of surface exposures and review of previous studies. DCP logs are presented in Figures 4 through 9. Constructed slope profiles combining surface measurements and subsurface data are presented in Figures 10 - 12. Soils observed at the site were classified using the USCS (*Unified Soils Classification System*) in accordance with ASTM D-2488-69 and ASTM D-2487 (Figure 3). Slope stability analysis circular failure charts shown in Figures 13 & 14 are from Hoek and Bray (1981).



Project No. QF0217645	**PROJECT LOCATION & VICINITY MAP**	Date: 6/4/10	*Figure 1*

Critical Area Slope Assessment
Proposed Fairfield Inn
15th Avenue SW - Hwy 512
Puyallup, Washington

For: Hollander Investments

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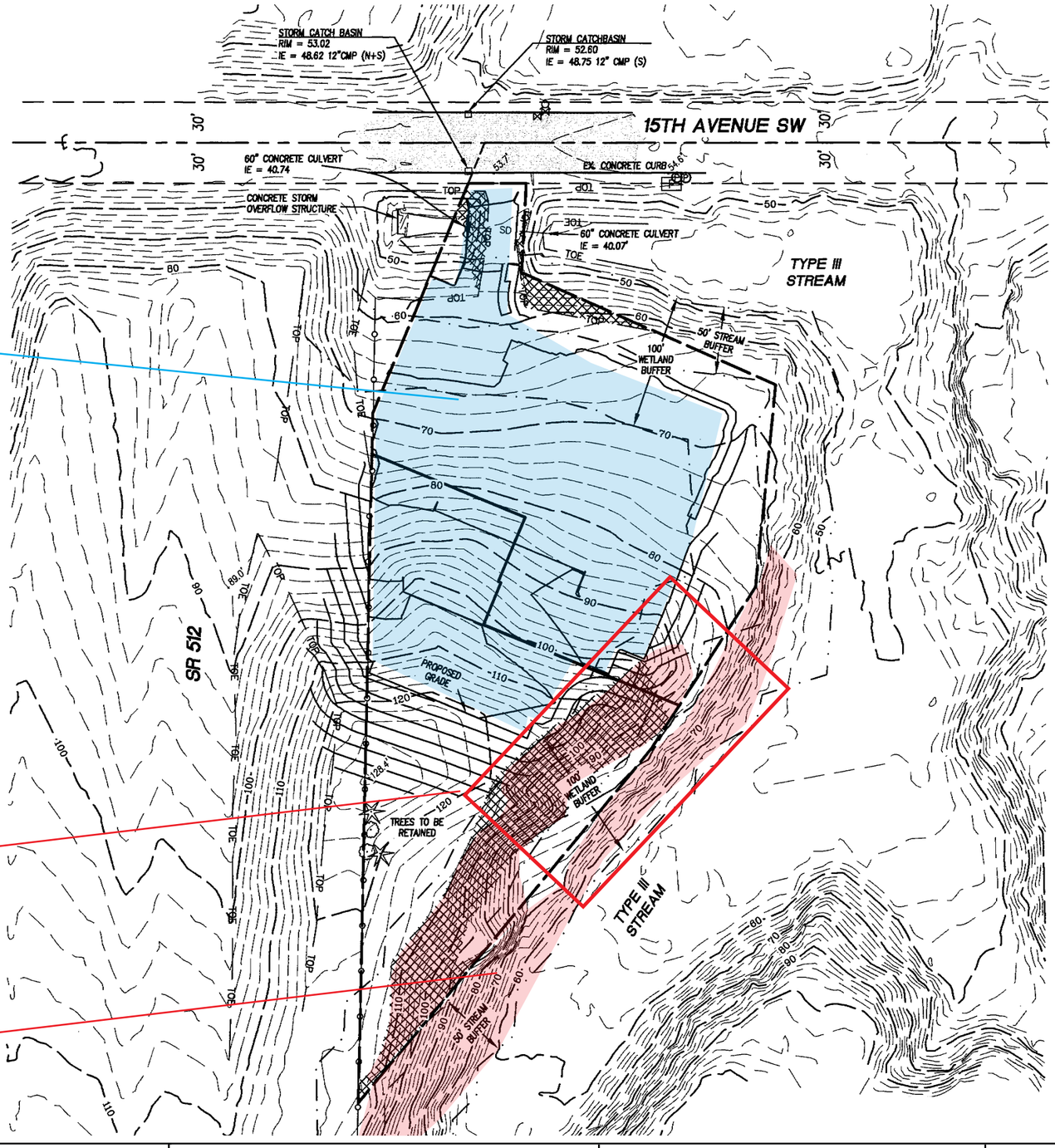
PROPOSED EXTENT OF DEVELOPMENT

SLOPE ASSESSMENT STUDY AREA

ESTIMATED EXTENT OF >40% SLOPES
(Adjacent to development area)
- Based on Topographic Map shown -



GRAPHIC SCALE

60 0 30 60 120

(IN FEET)
1 inch = 60 ft.

LEGEND

- EXISTING STORMWATER CATCHBASIN
- EXISTING WATER VALVE
- EXISTING FIRE HYDRANT
- EXISTING POWER MANHOLE
- EXISTING POWER VAULT
- TOP — EXISTING TOP OF BANK
- TOE — EXISTING TOE OF SLOPE
- EXISTING MAJOR CONTOUR (10 FOOT INTERVAL)
- EXISTING MINOR CONTOUR (2 FOOT INTERVAL)
- +100.0' EXISTING SPOT ELEVATION

SLOPE LEGEND

- 40.00%+

VERTICAL DATUM

NGVD 29
REFERENCE BENCHMARKS

BM 153-6
PUBLISHED ELEVATION: 81.21'
DESCRIPTION: BRASS MON IN CASE AT THE INTERSECTION OF 15TH AVENUE SW & 9TH STREET

BM 155-1
PUBLISHED ELEVATION: 49.112'
DESCRIPTION: BRASS MON IN CASE AT THE INTERSECTION OF 15TH AVENUE SW & 5TH STREET, P.C.P.W.D. #2212

METHODS AND EQUIPMENT

SURVEY PERFORMED WITH A 1" TOTAL STATION, USING TRAVERSE AND RADIAL SURVEY METHODS. SURVEY MEETS OR EXCEEDS ACCURACY REQUIREMENTS CONTAINED IN W.A.C. 332.130.090.

SURVEYOR'S NOTES

1. DATA FOR THIS SURVEY WAS GATHERED BY FIELD TRAVERSE UTILIZING ELECTRONIC DATA COLLECTION ON 10-07-07.
2. CONTOUR INTERVALS ARE TWO FOOT AND ARE COMPUTER GENERATED FROM GROUND FIELD TOPOGRAPHY GATHERED FOR THIS SURVEY UTILIZING ELECTRONIC DATA COLLECTION.
3. APEX ENGINEERING PLLC, ASSUMES NO LIABILITY FOR ANY SUBSURFACE CONDITIONS OR FEATURES THAT MAY EXIST THAT ARE UNDETECTABLE AND/OR NOT VISIBLE.
4. THE OFFSITE TOPOGRAHPY WAS TAKEN ENTIRELY FROM PIERCE COUNTY GIS DATA AND CONVERTED TO NGVD 1929 DATUM.

Note: Site Plan base survey map provided by client, constructed by Apex Engineering.

Scale: See above bar scale.

For: Hollander Investments

Critical Area Slope Assessment
Proposed Fairfield Inn
15th Avenue SW - Hwy 512
Puyallup, Washington

OVERVIEW SITE PLAN

Figure 2A

PROJECT NO.	QF0217645
DATE	5/28/10
APPROVED BY	AXH

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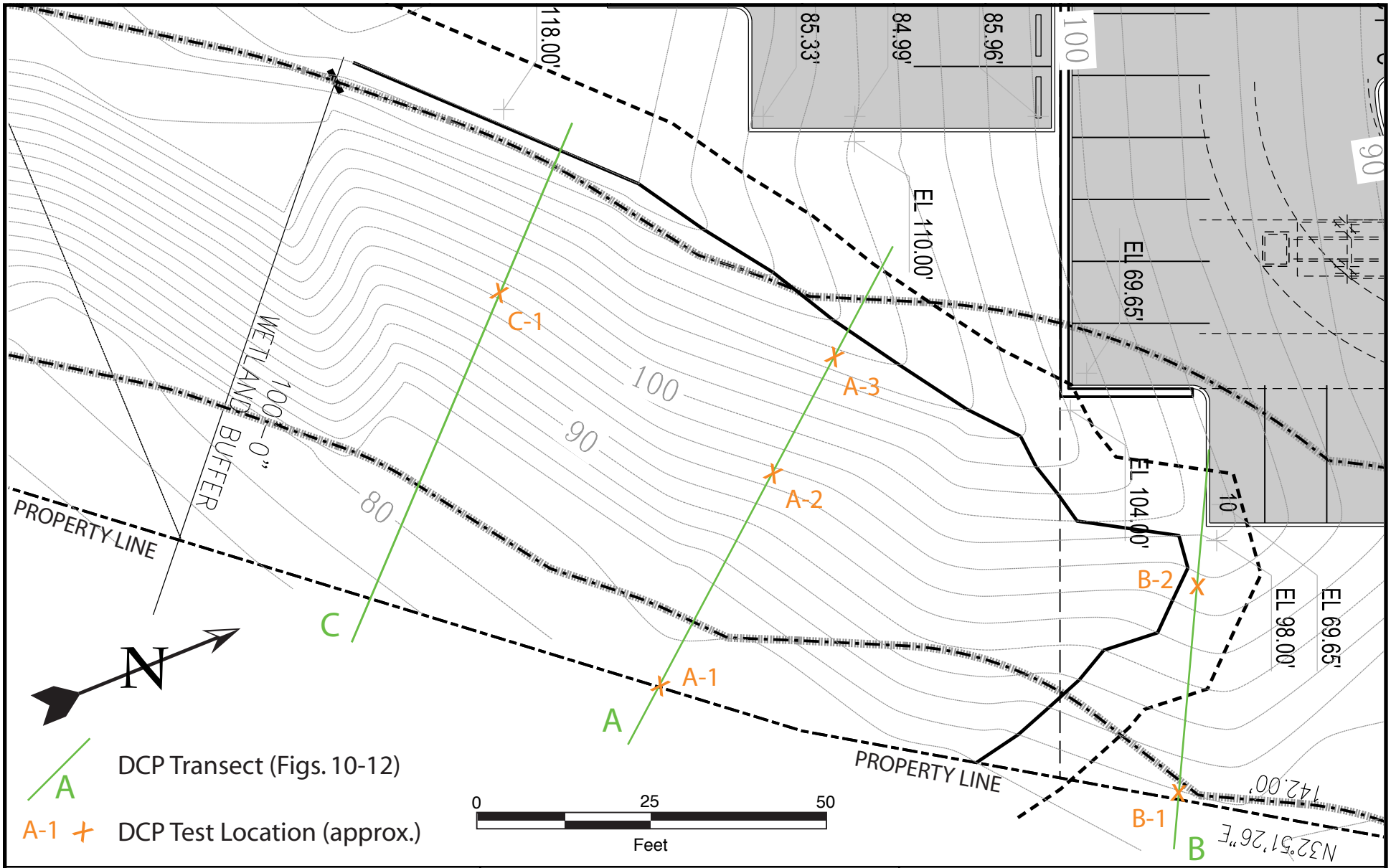

Critical Area Slope Assessment Proposed Fairfield Inn 15th Avenue SW - Hwy 512 Puyallup, Washington	**DETAIL SITE PLAN**		
	PROJECT NO.	DATE	APPROVED BY
For: Hollander Investments	QF0217645	6/30/10	AXH
Figure 2B / Scale: Approximate	Note: Site Plan base survey map provided by the architect.		

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UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS				DESCRIPTION
COARSE GRAINED SOILS more than 50% retained on #200 sieve	GRAVELS more than 50% coarse fraction is larger than No. 4 sieve size	Gravels with less than 5% fines	GW	Well graded gravels, gravel-sand mixtures
			GP	Poorly graded gravels, gravel-sand mixtures
		Gravels with more than 12% fines	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS more than 50% coarse fraction is smaller than No. 4 sieve size	Sands with less than 5% fines	SW	Well graded sands, gravelly sands
			SP	Poorly graded sands, gravelly sands
		Sands with more than 12% fines	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
FINE GRAINED SOILS more than 50% passing #200 sieve	SILTS AND CLAYS Liquid Limit less than 50		ML	Inorganic silts & very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, or lean clays
			OL	Organic clays and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid Limits greater than 50		MH	Inorganic silts, micaceous or diatomacious fine, sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			PT	Peat and other highly organic soils
UNCONTROLLED FILL				Uncontrolled, with highly variable constituents

LEGEND

SAMPLE	SYMBOL
SPLIT SPOON SAMPLER	GROUNDWATER TABLE
SHELBY TUBE SAMPLER	q_u PENETROMETER READING TSF (*tons per square foot*)

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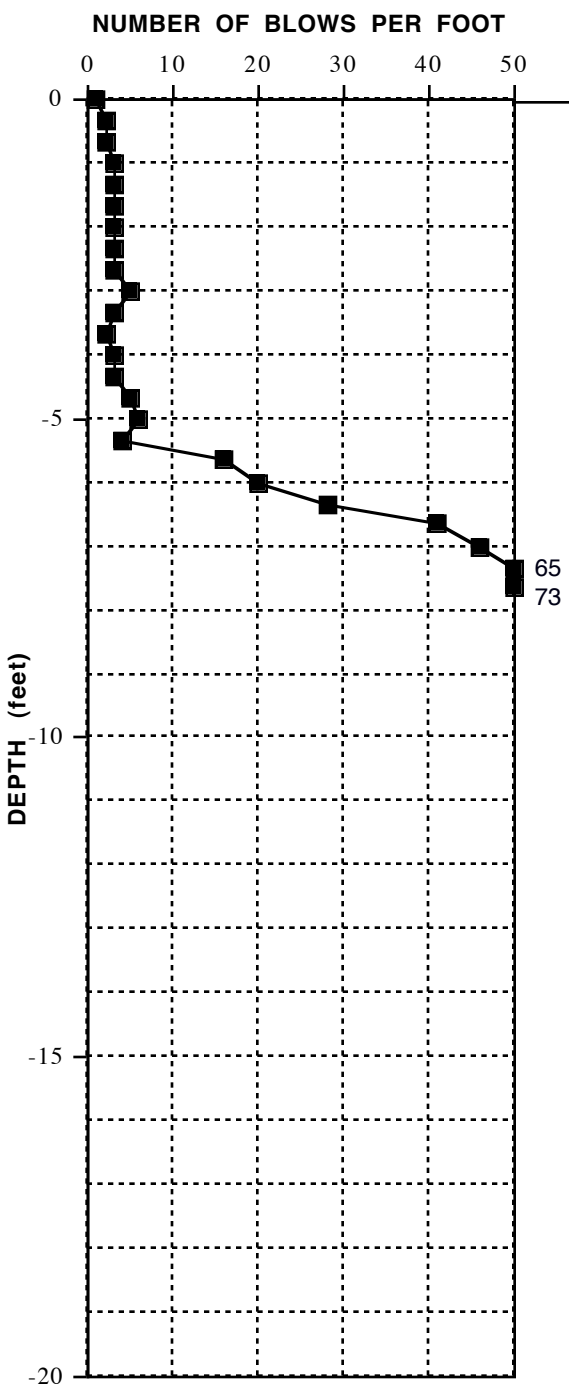
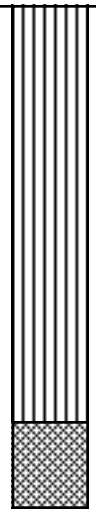
SOIL CLASSIFICATION & LEGEND

Figure 3

DYNAMIC CONE PENETRATION TEST **A-1** | SOIL DESCRIPTION AND CLASSIFICATION



X, Y =
Surface Elevation =



SANDY SILT TO SAND-SILT MIX (ML)
Brown sand-silt loam mixture at surface.
Damp, soft, coherent to malleable.

Soil is moist - perched runoff?

Becomes stiff/dense. Lt. brown sandy silt residue on rods. Damp to moist.

SILTY SAND (SM)
Brown-gray sandwith silt, v. dense. Damp, locally cemented.

Refusal - 8´

Notes: Soils not observed directly during DCP testing. Profile inferred from DCP results, surface exposures, and past site borings.

Project: QF0217645	Date: 5/11/10	**LOG OF DCP TEST**	Approved by A.X.H.	*Figure 4*

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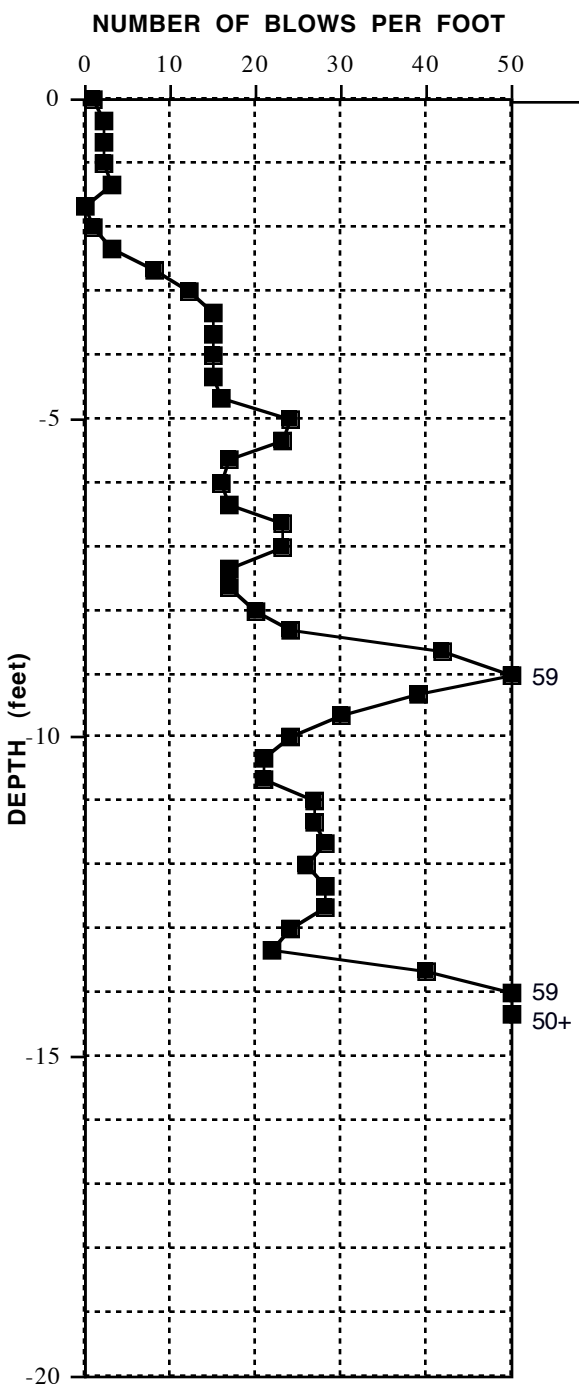
DYNAMIC CONE PENETRATION TEST **A-2** | SOIL DESCRIPTION AND CLASSIFICATION



X, Y =
Surface Elevation =

SANDY SILT TO SAND-SILT MIX (ML)
Brown sand-silt loam mixture at surface. Damp, soft, coherent to malleable.

Becomes stiff/dense. Lt. brown sandy silt residue on rods. Damp, mod. coherent.

Very dense section - sandy lens or rock?

SILTY SAND (SM)
Brown-gray sandwith silt, v. dense. Damp, locally cemented.

Refusal - 14´

Notes: Soils not observed directly during DCP testing. Profile inferred from DCP results, surface exposures, and past site borings.

Project: QF0217645	Date: 5/11/10	**LOG OF DCP TEST**	Approved by A.X.H.	*Figure 5*

Critical Area Slope Assessment
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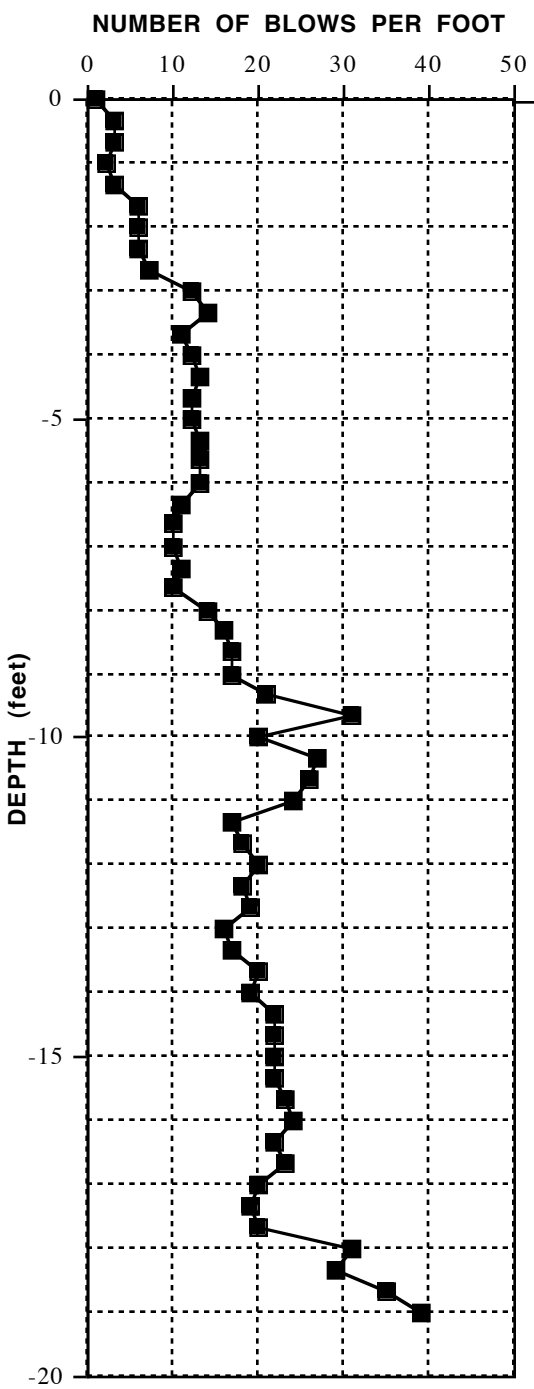
DYNAMIC CONE PENETRATION TEST **A-3**

SOIL DESCRIPTION AND CLASSIFICATION



X, Y =
Surface Elevation =

SANDY SILT TO SAND-SILT MIX (ML)
Brown sand-silt loam mixture at surface. Damp, soft, coherent to malleable.

Becomes stiff/dense. Lt. brown sand-silt residue on rods. Sl. damp, crumbly.

Sandy pocket likely - results variable.

Sandy silt-clay rod residue, damp to moist with depth.

SILTY SAND (SM)
Brown-gray sandwith silt, v. dense. Damp, locally cemented.

End at 19´

Notes: Soils not observed directly during DCP testing. Profile inferred from DCP results, surface exposures, and past site borings.

Project: QF0217645	Date: 5/11/10	**LOG OF DCP TEST**	Approved by A.X.H.	*Figure 6*

Critical Area Slope Assessment
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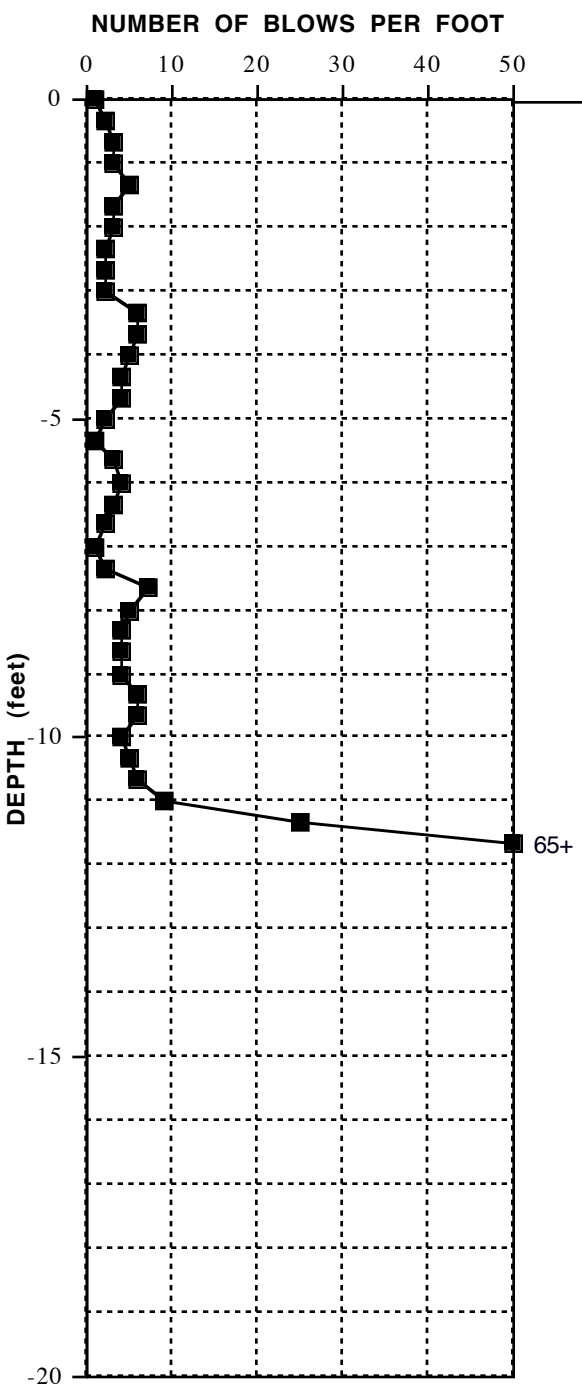
DYNAMIC CONE PENETRATION TEST **B-1** | SOIL DESCRIPTION AND CLASSIFICATION



X, Y =
Surface Elevation =

SANDY SILT TO SAND-SILT MIX (ML)
Brown sand-silt loam mixture at surface.
Damp, soft, coherent to malleable.

Remains mod. soft, moist throughout.

SILTY SAND (SM)
Brown-gray sandwith silt, v. dense. Damp, locally cemented.

Refusal - 12´

Notes: Soils not observed directly during DCP testing. Profile inferred from DCP results, surface exposures, and past site borings.

Project: QF0217645	Date: 5/11/10	**LOG OF DCP TEST**	Approved by A.X.H.	*Figure 7*

Critical Area Slope Assessment
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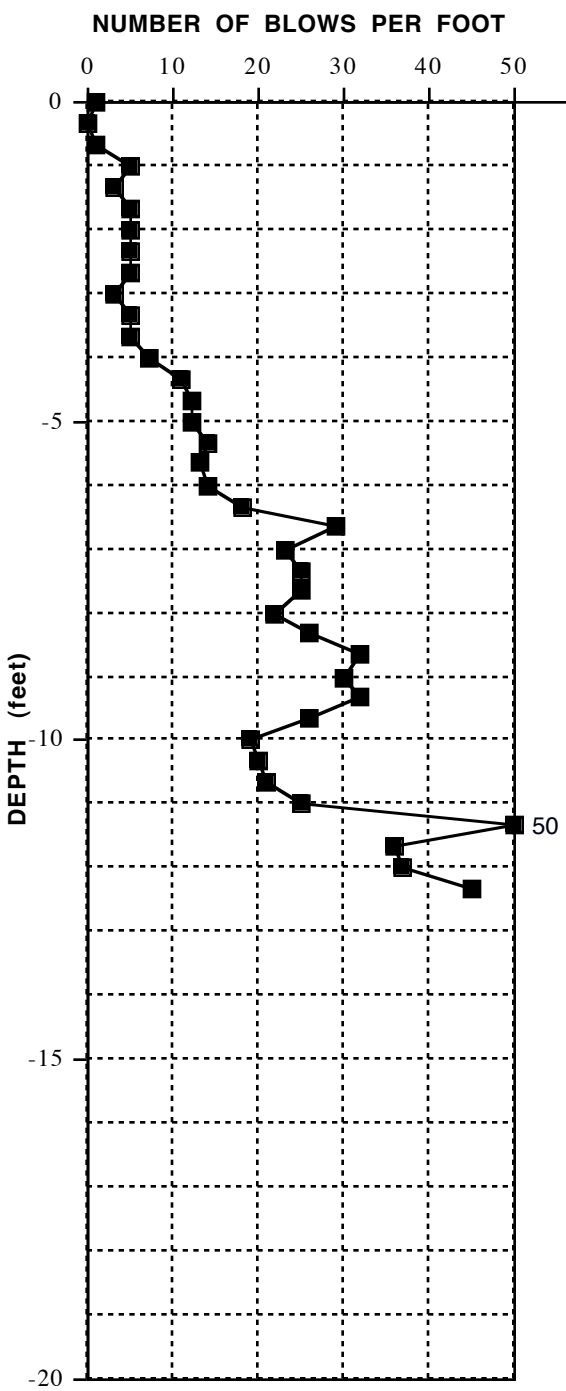
DYNAMIC CONE PENETRATION TEST **B-2** | SOIL DESCRIPTION AND CLASSIFICATION



X, Y =
Surface Elevation =

SANDY SILT TO SAND-SILT MIX (ML)
Brown sand-silt loam mixture at surface. Damp, soft, coherent to malleable.

Becomes stiff/dense. Lt. brown sandy silt residue on rods. Damp, mod. coherent.

Soil becomes more coarse, variable.

SILTY SAND (SM)
Brown-gray sandwith silt, v. dense. Damp, locally cemented.

End at 13´

Notes: Soils not observed directly during DCP testing. Profile inferred from DCP results, surface exposures, and past site borings.

Project: QF0217645	Date: 5/11/10	**LOG OF DCP TEST**	Approved by A.X.H.	*Figure 8*

Critical Area Slope Assessment
Proposed Fairfield Inn
15th Avenue SW - Hwy 512
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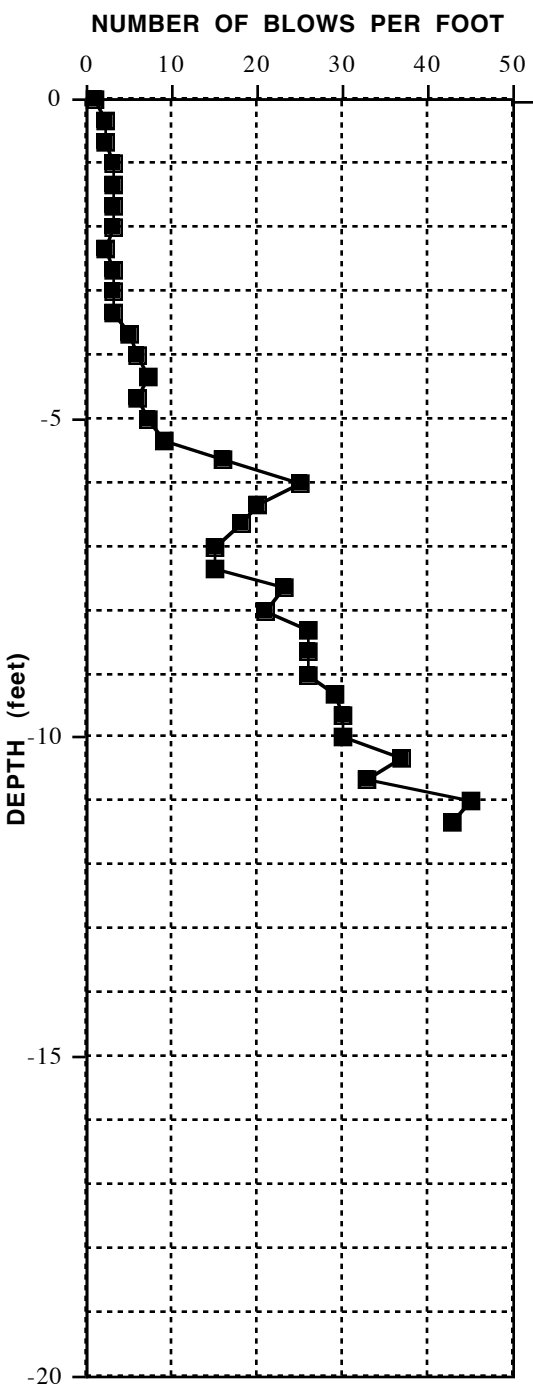
DYNAMIC CONE PENETRATION TEST **C-1** | SOIL DESCRIPTION AND CLASSIFICATION



X, Y =
Surface Elevation =

SANDY SILT TO SAND-SILT MIX (ML)
Brown sand-silt loam mixture at surface.
Damp, soft, coherent to malleable.

Becomes stiff/dense. Lt. brown sandy silt residue on rods. Damp, mod. coherent.

Soil becomes more coarse, variable.

SILTY SAND (SM)
Brown-gray sandwith silt, v. dense. Damp, locally cemented.

End at 13´

Notes: Soils not observed directly during DCP testing. Profile inferred from DCP results, surface exposures, and past site borings.

Project: QF0217645	Date: 5/12/10	**LOG OF DCP TEST**	Approved by A.X.H.	*Figure 9*

Critical Area Slope Assessment
Proposed Fairfield Inn
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Puyallup, Washington

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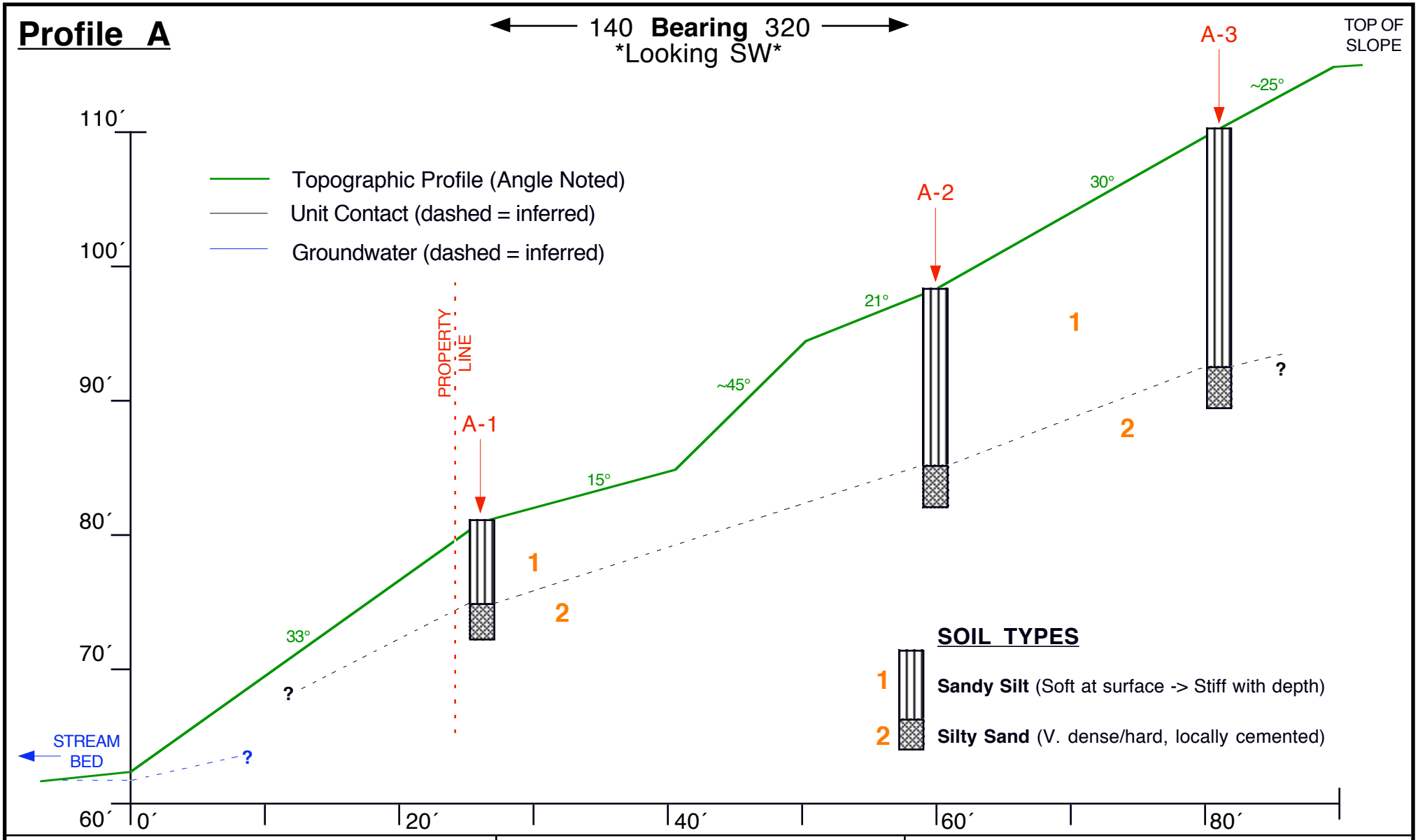
Profile A



Critical Area Slope Assessment
Proposed Fairfield Inn
15th Avenue SW - Hwy 512
Puyallup, Washington

For: Hollander Investments

Figure 10

Scale: *Approximate*

SLOPE CROSS-SECTION

PROJECT NO.	DATE	APPROVED BY
QF0217645	5/27/10	A.X.H

Notes: No vertical exaggeration. Topographic profile measured on site.

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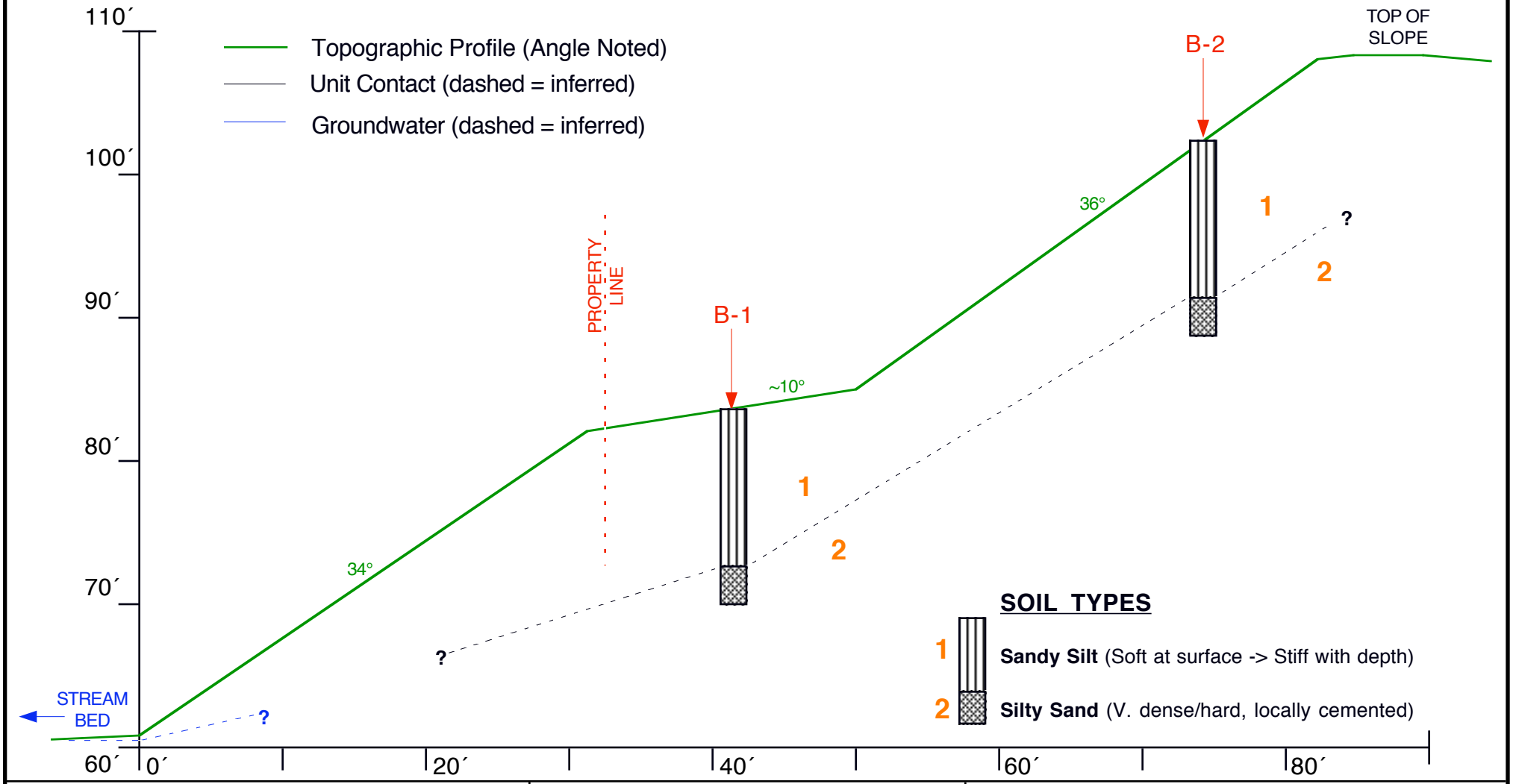
Profile B

117 **Bearing** 297
Looking SW



Critical Area Slope Assessment
Proposed Fairfield Inn
15th Avenue SW - Hwy 512
Puyallup, Washington

For: Hollander Investments

Figure 11

Scale: *Approximate*

SLOPE CROSS-SECTION

PROJECT NO.	DATE	APPROVED BY
QF0217645	5/27/10	A.X.H

Notes: No vertical exaggeration. Topographic profile measured on site.

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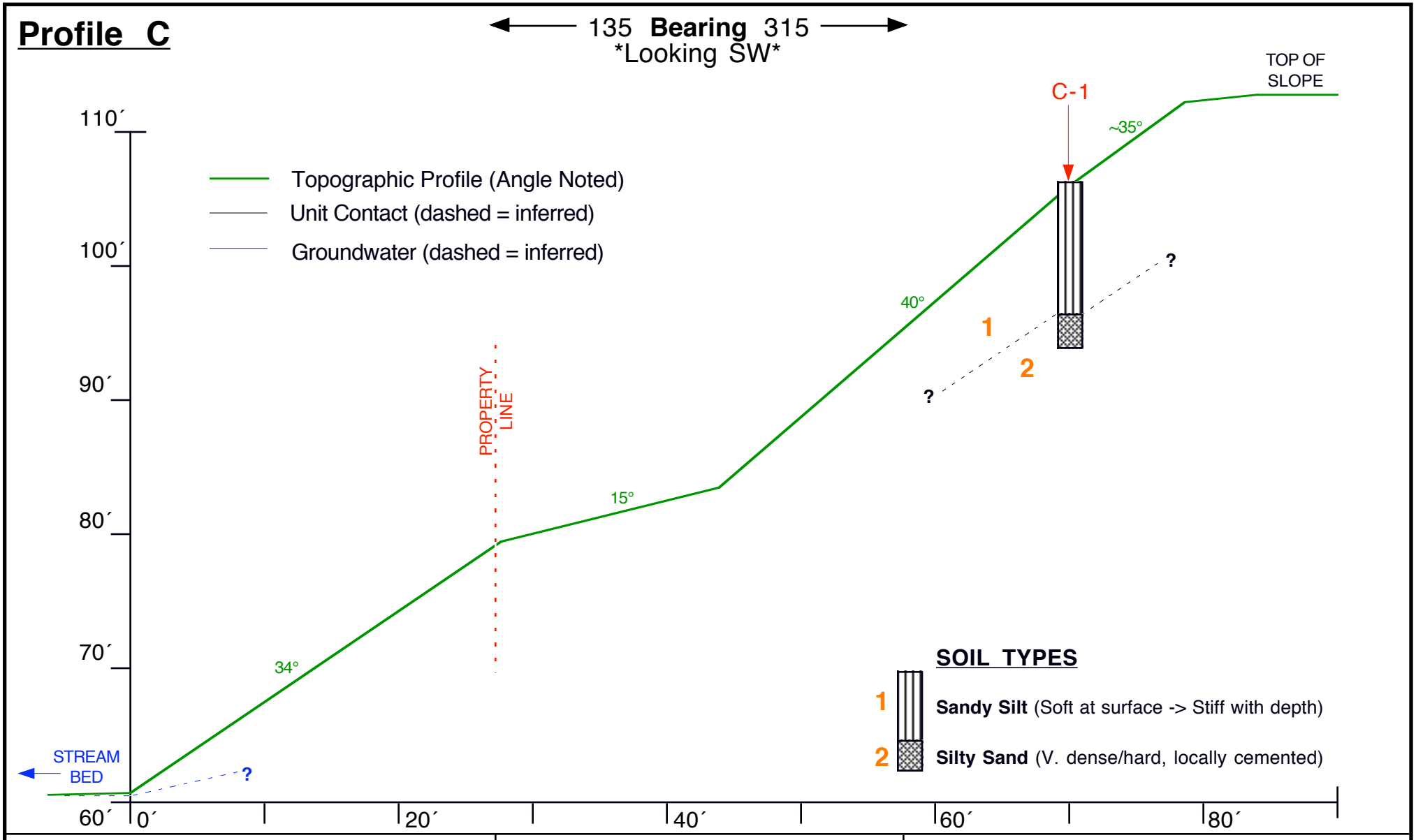
Profile C



Critical Area Slope Assessment
Proposed Fairfield Inn
15th Avenue SW - Hwy 512
Puyallup, Washington

For: Hollander Investments

Figure 12

Scale: *Approximate*

SLOPE CROSS-SECTION

PROJECT NO.	DATE	APPROVED BY
QF0217645	5/27/10	A.X.H

Notes: No vertical exaggeration. Topographic profile measured on site.

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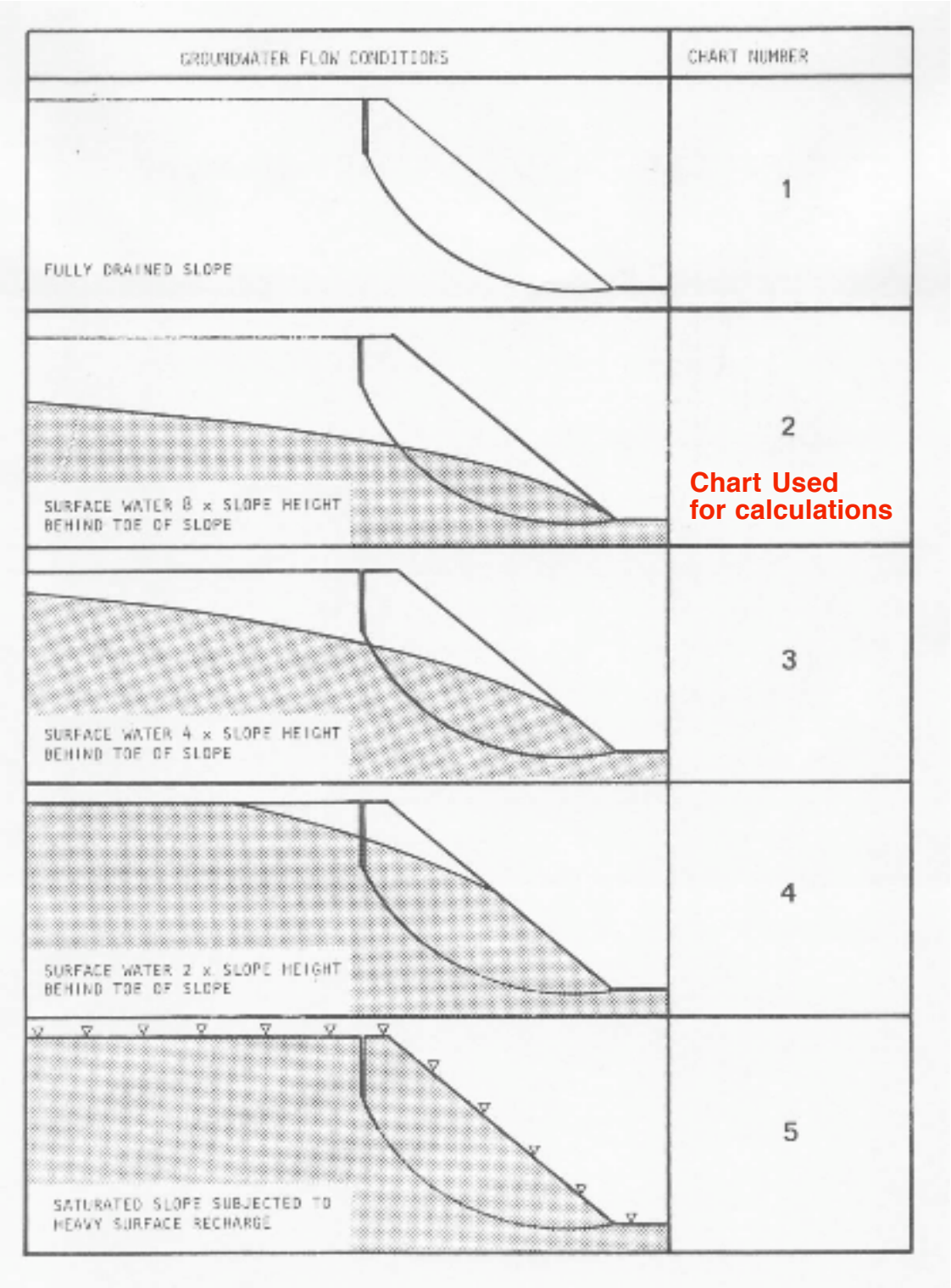

Figure from Hoek and Bray (1981).

Project No. QF0217645	**GROUNDWATER FLOW CONDITIONS**	Date: 6/4/10	*Figure 13*

Critical Area Slope Assessment
Proposed Fairfield Inn
15th Avenue SW - Hwy 512
Puyallup, Washington

For: Hollander Investments

MERIT ENGINEERING INC.
2715 Meridian Street
Bellingham, Washington 98225
Telephone: (360)738-6083
Fax: (360)738-1499
http://www.MeritEngineering.com

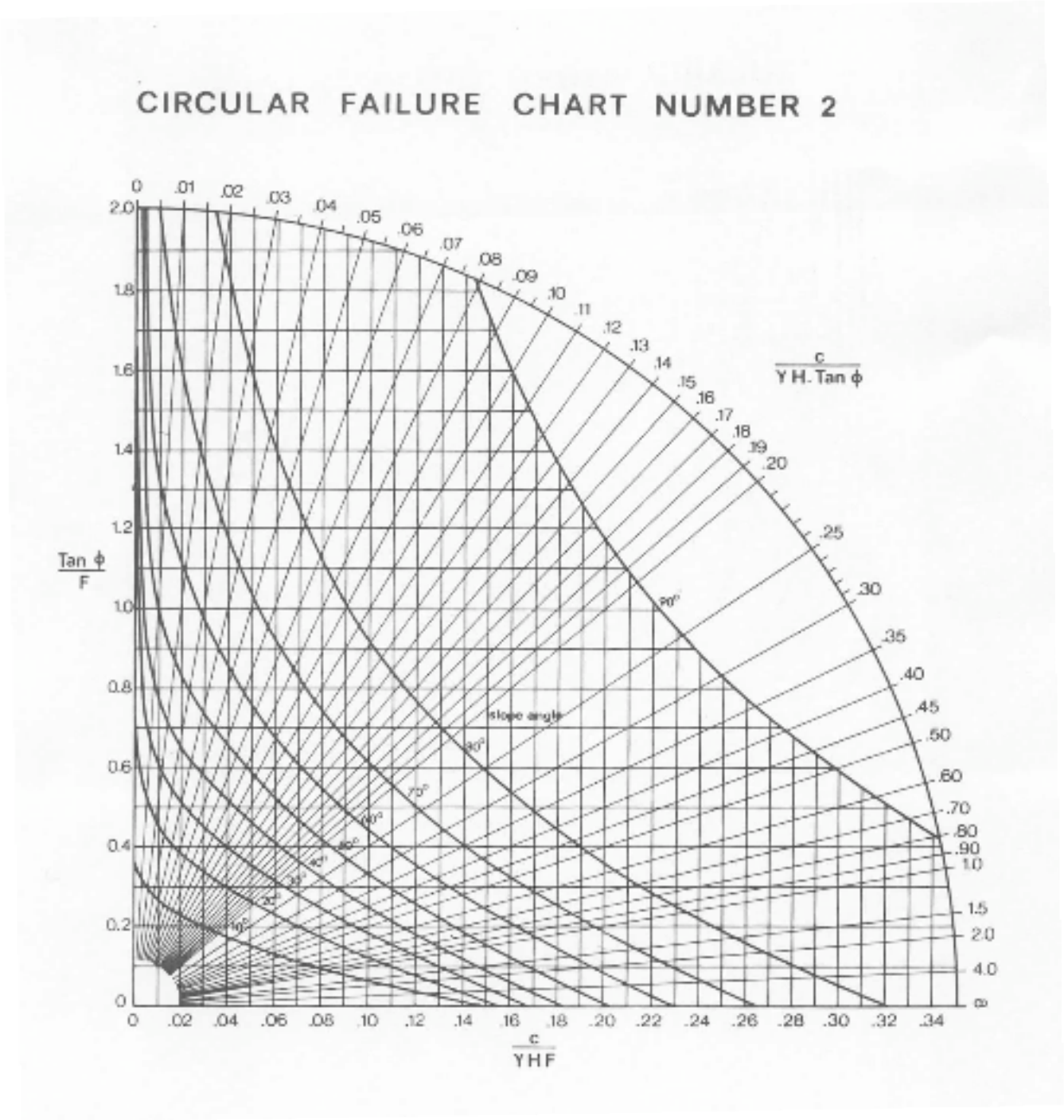

Chart used for calculations

Figure from Hoek and Bray (1981).

Project No. QF0217645	**CIRCULAR FAILURE CHART #4**	Date: 6/4/10	*Figure 14*

Critical Area Slope Assessment
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MERIT ENGINEERING INC.

ENVIRONMENTAL INVESTIGATION

Proposed Hotel Site
15th Avenue SW
Parcel #0420338067
Puyallup, Washington

Prepared For:

Mark Hollander
Hollander Investments Inc.
119 N Commercial Street
Bellingham, Washington

September 11, 2009
Project No. QF0217645

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September 11, 2009
Project No. QF0217645

2004 ACEC Washington Gold Award Recipient Engineering Excellence

Mark Hollander
Hollander Investments Inc.
119 N Commercial Street
Bellingham, Washington 98225

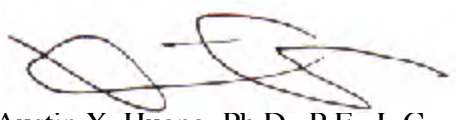
Re: Environmental Investigation
Proposed Hotel Site
15th Avenue SW, Parcel #0420338067
Puyallup, Washington 98371

Dear Mark:

At your request, we have conducted a follow up Environmental Investigation at the above referenced site based on the conclusions of our Phase 1 ESA dated June 30th, 2009. The following report summarizes our findings from site reconnaissance, WA DoE research, and our exploratory sampling program. Additionally, we derived conclusions and recommendations for the site for planning and future use.

Thank you for this opportunity to work with you on this project. Please contact us if you have any questions about this report.

Sincerely,



Austin X. Huang, Ph.D., P.E., L.G.
Principal

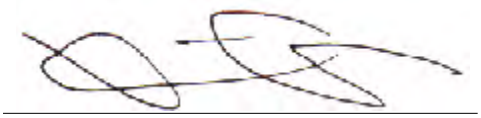
ENVIRONMENTAL INVESTIGATION

Proposed Hotel Site
15th Avenue SW
Parcel #0420338067
Puyallup, Washington

Report Prepared for:

Mark Hollander
Hollander Investments Inc.
119 N Commercial Street
Bellingham, Washington 98225

by



Austin X. Huang, Ph.D., P.E., L.G.
Principal

Project No. QF0217645
September 11th, 2009

TABLE OF CONTENTS

1. INTRODUCTION

1.1 Purpose

At the request of Mark Hollander of Hollander Investments Inc., in Bellingham, Washington, Merit Engineering, Inc. has conducted a follow up Environmental Investigation for the subject property located at 15th Avenue SW, west of S Meridian Street and east of Highway 512 in Puyallup, Washington 98371. A Phase I ESA was completed by Merit Engineering Inc. on June 30th, 2009 in accordance with current *American Standard of Testing Materials* (ASTM) E-1527-05 guidelines. The findings of the June 30th ESA suggested that further research and sampling was necessary concerning two (2) possible sources of contamination:

1) ARCO #5877 - 1502 S Meridian St, < 0.1 miles east. Currently on WA Hazardous Sites List (HSL), updated February 18, 2009.

2) Possible soil fill activity at subject site or adjacent sites.

The objective of this follow up environmental investigation was to provide more information regarding these two issues. Specifically, research was conducted on the ARCO #5877 site through the Washington State Department of Ecology (WA DoE) to develop an understanding of possible impacts to the subject site. Exploratory samples of groundwater, surface water, and subsurface soils were also collected and analyzed for possible hydrocarbon and heavy metal contamination from the ARCO site, fill soils, or other unknown sources. The sampling program was intended as a general screening of the site for contaminants associated with the two sources of concern listed above and did not include comprehensive environmental sampling to test for all possible forms of contamination at the site.

1.2 Scope of Investigation

The scope of this environmental investigation included an environmental records review at the Southwest WA DoE branch office, visual site reconnaissance, and soil and water sample collection for laboratory analysis. Our records search was limited to review and evaluation of existing information on file with the Southwest branch of the WA DoE on 7/28/2009 concerning ARCO #5877. The scope of work for this environmental investigation is in compliance with our proposal and correspondence with Mark Hollander and includes:

- Research available WA DoE documentation concerning ARCO #5877;

- Observe installation of four (4) groundwater monitoring wells, logging soil and groundwater conditions;
- Sample soils obtained during borings for laboratory analysis;
- Excavate and observe minimum of five (5) test pits to a maximum depth of 10.0´ or refusal, logging soil and groundwater conditions;
- Develop and sample groundwater wells for laboratory analysis;
- Sample surface water in the stream bed for laboratory analysis;
- Preparing this environmental investigation addressing:
    (1) WA DoE documentation concerning ARCO #5877,
    (2) subsurface soil conditions,
    (3) sampling procedure for groundwater, surface water, and soil,
    (4) exploratory sample test results from subject property, and

Recommendations concerning:

    (5) possible site contamination,
    (6) future sampling,
    (7) remediation.

- 1.3 Limitations and Exceptions of Investigation

This report has been prepared for the exclusive use of Mark Hollander and Hollander Investments Inc. of Whatcom County in Bellingham, Washington for specific application to the property on the south side of 15th Avenue SW as depicted in Figures 1 and 2, located in Puyallup, Washington, 98371, legally summarized as 'Parcel "C" of DBLR 99-05-27-5001 described as that portion of lots 2 & 4 of S P 86-07-07-0251...'. The subject site has not been assigned an address by the City of Puyallup Development Services Department. The following parcel number is listed with the Pierce County Assessor-Treasurer Office, comprising the property in total:

XXX SR512 HWY E (2.73 acres): **0420338067**

Our best efforts were made, using our professional judgment, knowledge of site conditions, and understanding of possible contaminant sources, to identify environmental concerns at the site. However, due to the limited, exploratory style sampling program, it was not possible to test all site soils and water occurrences. Some sources of potential contamination may exist even though they were not discovered during this investigation.

1.4 Limiting Conditions and Methodology Used

This investigation was limited to available records provided by the WA DoE concerning the

ARCO #5877 site based on studies done primarily by others. Subsurface soil and water sampling was exploratory in nature and targeted two (2) contamination concerns aforementioned. The scope of this investigation does not purport to specifically cover conditions or contents of privately owned vehicles if present within or near the property boundaries. Conditions or contents of any contamination beyond what would be identified through typical exploratory sampling programs are not covered in this investigation. This investigation also does not cover conditions or contents of any contamination outside (1) site fill soils and/or (2) possible contamination from ARCO #5877. This is an environmental investigation prepared in accordance with generally accepted practices in this area. No other warranty, expressed or implied, is made.

2. SITE CONDITIONS

The subject property is located within the city of Puyallup, Pierce County, Washington on the south side of 15th Ave SW, ~1/8 mile west of the intersection with S Meridian St in a zone of mixed residential and commercial land usage. A location and vicinity map is shown in Appendix A of this report as Figure 1. A site plan with major site features, property boundaries, and adjacent features is also presented in Appendix A as Figure 2.

An environmental specialist from our firm has visited the site several times throughout July and August of 2009. We have performed several duties while on site:

1) General reconnaissance,

2) Observe monitoring well installation, log soil and groundwater conditions,

3) Soil sample collection during borings for laboratory analysis,

4) Development of monitoring wells and groundwater sampling for laboratory analysis,

5) Excavation, observation, and soil sampling of test pits, and

6) Surface water sampling for laboratory analysis.

2.1 Geologic Background

The project area is located in the Southern Puget lowlands on a bench of the current Puyallup River Valley. This area was invaded by glacial ice at least three times during the Pleistocene

Epoch, from 1.6 million to 10,000 years ago. Also, the area has been subjected to repeated volcanic events including ash deposits, lahar flows, and mud flows from nearby Mt. Rainier.

The proposed project site is mapped by the Pierce County Soil Survey to ~60" as Kitsap loam and Shalcar muck, both glaciolacustrine deposits from the last glaciation. The soils are a mixture of loess and volcanic ash classified as silty clay loam.

The surface geology is mapped by the USGS as Vashon Stade, Recessional lacustrine deposits, Qvrl (Troost, K.G., in press), Figure 4 of Appendix A. The unit is commonly ~20' thick and part of a large Qvrl body that may reflect a glacial margin. The unit is highly varied with fine sand, silt, and clay. Below Qvrl lies Deposits of Pre-Olympian age, Qpo, consisting of sand, gravel, silt, and clay. These deposits range up to ~140' thick and are typically very dense to hard.

2.2 Surface Conditions

The site has remained mostly unchanged since our initial site visit on June 17th 2009. Surface conditions generally consist of a grassy meadow in the northern half of the property with a young deciduous forest covering the southern portion. Topography slopes down to the north towards 15th Avenue from a hill located just to the south/southwest of the site. A stream runs just beyond the east property boundary towards the northeast corner where it turns west and flows through a culvert under the site access road. During our recent work, much of the tall grass had been knocked down throughout the proposed building pad area and the observed ground surface appeared to be machine graded. A more detailed description of site surface conditions can be found in our Phase I ESA dated June 29th 2009.

2.3 Subsurface Soil Conditions

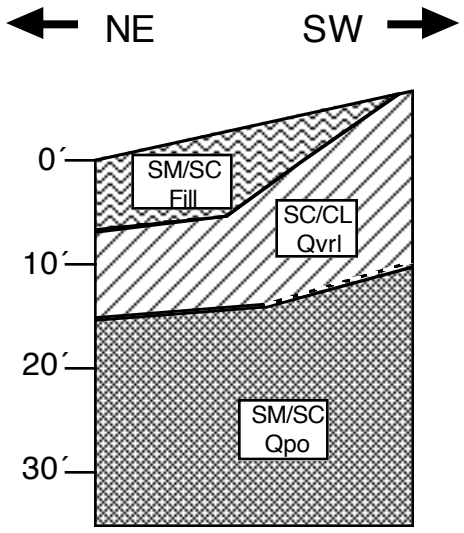
Subsurface soil and groundwater conditions at the site were investigated by excavating five (5) test pits to a maximum depth of 10´ and conducting four (4) environmental borings to a maximum depth of 36.5´. Descriptions of soil symbols and classifications used in this report also are presented in the Appendix A as Figure 5. Test pit logs are shown as Figures 5-9 and Test Boring Logs are shown as Figures 10-13 of Appendix A. Site soils are generalized in the following schematic drawing and consisting of:

a. Loamy Sand with Gravel (SC), Native Topsoil

b. Silty Clayey Sand with Cobbles (SM/SC), Fill

c. Loamy Sand (SC/CL), Qvrl

d. Silty Clayey Sand (SM/SC), Qpo



a. Loamy Sand with Gravel (SC)

Beneath the topsoil in TP-5 was a slightly dense, yellow-brown, cohesive loamy sand with minor gravel and cobbles which became extremely dense and cemented at 6.5´. This subsoil appears consistent with native Qvrl deposits and is described below in section C.

b. Silty Clayey Sand with Cobbles (SM/SC)

A light brown silty clayey sand with rounded pebbles, gravel, and cobbles was observed at the surface in all test pits except TP-5. The soil was generally very dense and compacted at the surface to ~2.0' depth, and remained dense underneath. Modularity developed roots extended to an average depth of ~9", with mottling and iron oxide staining observed at ~1.0´ to ~2.0´ depth in Test Pits 1, 3, and 4. An old bottle was observed at 12" depth in TP-3 and a distinct horizon of branches and small logs was also observed at ~8.5 in TP-1. We interpret this soil to be fill material and suspect that a fill layer ~10´ thick covers most of the proposed building pad area however, we were not able to determine the exact extent of the fill. The layer was generally observed to be a maximum ~12' thick near MW-2 and TP-1, and appears to pinch out laterally to the south and west towards TP-5 and MW-4, respectively. The fill surface is relatively flat in the proposed building area and was likely machine graded.

c. Loamy Sand (SC/CL)

A layer of light brown to gray loamy sand with clay was observed in TP-1 and TP-4 beginning at ~8.5´ depth, as well as in all four borings starting at depths of ~5´-12´. The soils were coherent, damp, and moderately dense. The top of the unit was encountered at the same relative elevation throughout the test borings, and it appears to be ~10´ thick.

This soil unit appears consistent with native recessional lacustrine deposits mapped as Qvrl on the USGS geologic map showing the site. In TP-5 up slope and to the south of the proposed building pad, ~2.0´ of dark brown loamy sand with gravel topsoil was observed overlying the unit. The soil appears native and is likely present on the surface in other forested areas of the site that were not filled.

d. Silty Clayey Sand (SM/SC)

A gray fine sand with ~20-30% fines was observed in all borings at depths of ~13´ to 25´, and extended to the maximum boring depth of ~36.5´. Minor pebble gravel was observed in the top portion of the layer and the soil was generally dense to very dense, and wet to saturated. We correlate this unit with older pre-Olypian age glacial sand, gravel, silt and clay deposits mapped as Qpo on the USGS geologic map for the area. These deposits are know to be up to ~140´ thick.

2.4 Groundwater Conditions

There appears to be multiple groundwater occurrences at the site including shallow perched groundwater and a larger intermediate depth aquifer. Groundwater was not directly observed in any test pits at the time of excavation, however, soil mottling and iron oxide staining was observed as shallow as 1.0´-2.0´ depths in the test pits. Previous test pits conducted by Earth Consulting Incorporated in December of 2007 also noted seepage at 8´ to 10´. During the wet season, a shallow perched groundwater table likely fluctuates within the near surface soils due to the fine grained nature of the Qvrl and possible fill soils. The perched groundwater, resulting from infiltration of precipitation, appears to exist within discontinuous lenses and pockets of more permeable material.

Groundwater was encountered at depths of ~6´ to ~23´ below the ground surface in our test borings. A significant amount of groundwater recharge therefore appears to be transmitted to a shallow- intermediate depth aquifer. Four (4) monitoring wells were installed with the bottoms of the casings at elevations of 36´ - 39´ above Mean Sea Level (MSL). For complete well data and locations see Figure 3. Static water elevations recorded in the wells ranged from ~46´ to ~55´ above MSL. All four wells appear to be completed within the same aquifer unit with the bottoms of the casings at approximately the same elevation. The aquifer is thought to exist within a lower layer of the Qvrl unit or the upper portion of the Qpo. The wells appear to

partially penetrate a continuous lens of saturated silty clayey sand this is slightly to moderately permeable. We were not able to determine the aquifer thickness due to limited depth of the borings.

Groundwater flow at the site within this aquifer appears to have localized flow patterns with different flow directions. A groundwater contour map showing inferred groundwater elevations within the aquifer and estimated flow directions based on our well data is also provided in Figure 3 in Appendix A. The groundwater-surface water interaction with the stream near the east and north edges of the site is not fully understood. However, potentiometric surfaces in the wells are several feet above the stream, suggesting a gaining stream reach with groundwater flowing towards the stream bed maintaining the base flow. Another deeper aquifer also likely exists at the site with more regional flow patterns to the north/northwest towards the Puyallup River, but there is insufficient subsurface data to characterize this aquifer.

3. SAMPLING METHODOLOGY

Soil, groundwater, and surface water samples were taken from the site during various phases of our investigation. Due to the possibility of contamination and the unknown origin of the suspected fill, special care was exercised to preserve the integrity of all samples collected at the site. During test pit excavation, test borings, and installation of the monitoring wells, all equipment and machinery was decontaminated or steam cleaned in accordance with current EPA procedures. Sampling was also conducted in accordance with Wa DoE and EPA standard procedures using sterile sampling equipment and appropriate containers.

3.1 Environmental Drilling and Soil Sampling

Our subsurface investigation generally involved advancing four (4) test borings and conducting five (5) test pits at the site. All four test borings were completed as groundwater monitoring wells, MW-1 through MW-4, at the locations shown in Figure 2 in Appendix A. Monitoring wells were installed at locations we feel are best suited to expresses site groundwater flow patterns, explore possible down gradient contaminant plumes from the adjacent ARCO #5877, and to identify any possible boundary conditions.

The test borings and well installations were completed on July 27-28, 2009 by Boretec Inc.

using a 4 1/4″ (ID) hollow-stem auger driven on a track mounted drill rig. The environmental borings included 2.5″ split-spoon sampling and SPT blow-counts. The auger, drilling equipment, and sampling tools were steam cleaned between each boring. During the borings, a staff geologist observed the drilling process, logged soil and groundwater conditions, and collected samples for analysis. Soils were sampled directly from the split spoon sampler and placed in appropriate sterile containers.

Five (5) test pits were also excavated and back-filled on August 11, 2009 with a ~30hp Track-hoe. During the excavation, a staff geologist observed and logged soil and groundwater conditions plus collected samples for analysis. Soils were sampled directly from test pit walls using a sterile spoon and placed directly into appropriate sterile jars.

3.2 Surface Water Collection

Surface water samples were collected in accordance with the direct sampling method, US EPA SOP #2013 for surface water sampling, on August 25th, 2009. Surface water samples were collected from the stream in 4 locations most inline and down stream from the ARCO #5877 as shown in the Site Plan, Figure 2 of Appendix A. Samples were collected in order from downstream to upstream.

3.3 Well Development

Monitoring wells were developed by a representative from Merit Engineering Inc. on August 10-11 of 2009 following US EPA SOP #2044 procedure for monitor well development. A "Q-Water Well Developer" was used employing the surge block method to remove silt and sand from the casing and surrounding porous media. Up to 30 gallons of water was pumped from the wells into approved storage vessels during well development until sediment free water was observed. A new surge block was used for each well and all hoses were decontaminated between wells with non-phosphate soap, isopropyl alcohol, and a final de-ionized water rinse. Sterile gloves were also worn by employees during development.

3.4 Well Purging and Sampling

Monitoring wells were purged and sampled by a representative from Merit Engineering Inc. on August 17-18, 2009. Procedures followed US EPA SOP #GW 0001 for low-flow purging and

sampling of groundwater from monitoring wells.

All four wells were purged prior to sampling for 30-90 minutes using a submersible pump with all the water collected in on-site containment vessels. Purge rates were adjusted to 2L/min or less with < 0.3 feet of stabilized drawdown in the well and the pump depth was set 1´ - 2´ below the stabilized drawdown level. A flow-meter was installed in-line and readings for pH, temperature, turbidity, dissolved oxygen, specific conductance, and oxidation reduction potential were recorded every four minutes. Samples were obtained after readings stabilized[1] for 3 consecutive four minute intervals.

With the flow cell and meter disconnected, samples for BTEX analysis were obtained first, directly from the sampling tube into two (2) 40mL VOA vials pre-filled with HCl preservative. A 1L amber bottle with HCl preservative was then filled for NWTPH-HCID analysis followed by a 1L sample for the RCRA metals analysis. Sample collection vials were handled in accordance with Edge Analytical Inc. procedures including temperature and chain of custody requirements. Edge Analytical Inc. is a WA DoE accredited testing facility for soil and groundwater.

All sampling equipment, including the pump, was decontaminated between wells using non-phosphate soap, isopropyl alcohol, and de-ionized water rinse. New sterile tubing was also used for each well. Field staff wore sterile gloves at all times during purging, sampling, and handling of equipment. Drums containing all water from the wells were removed and disposed of by Emerald Services Inc.

4. SAMPLING RESULTS

Groundwater, surface water, and soil samples were collected from the site during several visits in July and August of 2009. Samples were analyzed for a range of contaminants including:

1) Gasoline-range, diesel-range, and heavy oils-range total petroleum hydrocarbons (HCID);

2) Volatile Organic Compounds: Benzene, toluene, ethylbenzene, and xylenes (BTEX);

3) Metals concentrations: Arsenic (As), Barium (Ba), Cadmium (Cd), Chromium (Cr),

[1] Reading must be within: Turbidity 10%, DO 10%, Specific Conductance 3%, Temp. 3%, pH +-0.1, ORP/Eh =- 10mv.

Copper (Cu), Lead (Pb), Selenium (Se), and Silver (Ag) (RCRA metals). Additionally, Mercury (Hg).

Table 1 below outlines our sampling program for soil, groundwater, and surface water sources, including depths and contaminant testing:

Table 1: Environmental Investigation Sampling Program.

FIELD METHOD	SOURCE	Hydro-carbon I.D. (HCID)	BTEX	RCRA metals
Environmental Borings, 7/27-28/2009	Soil, 5′-36.5′ depth	Gasoline, Diesel, and Heavy Hydrocarbons	---	As, Ba, Cd, Cr, Cu, Pb, Ag, Se, and Hg
Test Pits, excavated 8/11/2009	Soil, 5′-8.5′ depth	Gasoline, Diesel, and Heavy Hydrocarbons	---	As, Ba, Cd, Cr, Cu, Pb, Ag, Se, and Hg
Surface water sampling 8/25/2009	Stream along N and E of subject site	Gasoline, Diesel, and Heavy Hydrocarbons	Benzene, Ethylbenzene, Toluene, and Xylenes	As, Ba, Cd, Cr, Cu, Pb, Ag, Se, and Hg
Groundwater sampling 8/18/2009	Groundwater from monitoring wells, 6′-20′ depth	Gasoline, Diesel, and Heavy Hydrocarbons	Benzene, Ethylbenzene, Toluene, and Xylenes	As, Ba, Cd, Cr, Cu, Pb, Ag, Se, and Hg

4.1 Groundwater and Surface Water Results

Groundwater samples were successfully obtained from three (3) of the four (4) monitoring wells and surface water samples were collected from four (4) locations within the stream channel at the locations shown in the Site Plan, Figure 2 of Appendix A. Water samples were analyzed for the presence of HCID by WA DoE Method NWTPH-HCID and the presence of BTEX by WA DoE Method 8260B. RCRA metals and mercury concentrations were tested by WA DoE Method 200.8/3010A and WA DoE Method 245.1, respectively.

Copies of the original lab results and chain of custody forms from Edge Analytical Inc. for surface and groundwater are included in Appendix C. The lab results for each analysis including MTCA Method A minimum cleanup levels are summarized in the following Tables 2 through 4:

Table 2: Laboratory results for HCID analysis of groundwater and surface water samples with MTCA Method A minimum cleanup levels. Units in mg/L.

		Groundwater			Surface Water			
HCID test	MTCA Method A Minimum cleanup level	**MW-1**	**MW-2**	**MW-4**	**SW-1**	**SW-2**	**SW-3**	**SW-4**
Gasoline	1.0	ND	ND	ND	ND	ND	ND	ND
Diesel	0.5	ND	ND	ND	ND	ND	ND	ND
Heavy Hydrocarbons	0.5	ND	ND	ND	ND	ND	ND	ND

Table 3: Laboratory results for BTEX analysis of groundwater and surface water samples with MTCA Method A minimum cleanup levels. Units in mg/L.

		Groundwater			Surface Water			
BTEX test	MTCA Method A Minimum cleanup level	**MW-1**	**MW-2**	**MW-4**	**SW-1**	**SW-2**	**SW-3**	**SW-4**
Benzene	0.005	ND	ND	ND	ND	ND	ND	ND
Toluene	1.0	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	0.7	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	1.0	ND	ND	ND	ND	ND	ND	ND

Table 4: Laboratory results for RCRA metals and Mercury in groundwater and surface water samples with MTCA Method A minimum cleanup levels. Units in mg/L.

		Groundwater			Surface Water			
RCRA metals	MTCA Method A Minimum cleanup level	**MW-1**	**MW-2**	**MW-4**	**SW-1**	**SW-2**	**SW-3**	**SW-4**
Arsenic, As	0.005	0.002	0.001	ND	0.001	0.001	0.001	0.001
Barium, Ba	N/A*	0.010	0.014	0.016	0.011	0.010	0.011	0.010
Cadmium, Cd	0.005	ND	ND	ND	ND	ND	ND	ND
Chromium, Cr	0.050	0.039	0.005	0.002	0.001	ND	0.001	0.001
Copper, Cu	N/A*	ND	ND	ND	0.003	0.0024	ND	0.003
Lead, Pb	0.015	0.001	ND	0.001	ND	ND	0.003	ND
Silver, Ag	N/A*	ND	ND	ND	ND	ND	ND	ND
Selenium, Se	N/A*	ND	ND	ND	ND	ND	ND	ND
Mercury, Hg	0.002	ND	ND	ND	ND	ND	ND	ND

*** Note: If N/A, a safe concentration has not been established by WA DoE.**

4.2 Soil Results from Environmental Borings and Test Pits

Twelve (12) soil samples collected from the test borings and two (2) from the test pits were analyzed for the presence of HCID by WA DoE Method NWTPH-HCID. Four (4) soil samples from the test borings and one (1) from the Test Pit 1 were also analyzed for RCRA metals concentrations by WA DoE Method 6010B and mercury concentration by WA DoE 7471A.

Copies of the original lab results and chain of custody forms from Edge Analytical Inc. for soil samples are included in Appendix D. The lab results for each analysis including MTCA Method A minimum cleanup levels are summarized in the following Tables 5 through 7:

Table 5: Laboratory results for HCID analysis of soil from Test Borings at monitoring well locations. All units in mg/L.

HCID test	MW-1 @ 10'	MW-1 @ 15'	MW-1 @ 25'	MW-2 @ 5'	MW-2 @ 20'	MW-2 @ 25'	MW-3 @ 5'	MW-3 @ 10'	MW-3 @ 15'	MW-4 @ 5'	MW-4 @ 10'	MW-4 @ 15'
Gasoline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diesel	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heavy Hydrocarbons	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 6: Laboratory results for HCID analysis of soil from Test Pits and MTCA Method A minimum cleanup levels. All units in mg/L.

HCID test	MTCA Method A Minimum cleanup level	TP-1 @ 7'	TP-4 @ 4'
Gasoline	100	ND	ND
Diesel	2,000	ND	ND
Heavy Hydrocarbons	2,000	ND	ND

Table 7: Laboratory results for RCRA metals and mercury in soil from test borings and test pits. All units in mg/L.

RCRA metals	MTCA Method A Minimum cleanup level	MW-1 @ 10'	MW-2 @ 5'	MW-3 @ 5'	MW-4 @ 5'	TP-1 @ 8.5'
Arsenic, As	20	1.83	2.59	1.75	0.001	1.56
Barium, Ba	N/A*	78.7	80.6	106	165	72.7
Cadmium, Cd	2	ND	ND	ND	ND	ND
Chromium, Cr	2,000	19.7	33.6	37.8	11.7	33.1
Copper, Cu	N/A*	16.6	14.9	32.2	10.9	14.2
Lead, Pb	250	21.4	21.5	2.83	ND	1.81
Silver, Ag	N/A*	0.04	0.06	0.03	0.02	0.03
Selenium, Se	N/A*	ND	ND	ND	ND	ND
Mercury, Hg	2	ND	ND	ND	ND	ND

*** Note: If N/A, a safe concentration has not been established by WA DoE.**

5. RECORDS REVIEW

Our Phase I ESA completed in June of 2009 identified one (1) site adjacent to the subject property within the WA DoE database and in the United States Environmental Protection Agency (EPA) database. The Phase I ESA research determined that the ARCO #5877 site is generally under observation for diesel, petroleum, and related contamination found several years ago. The EPA has turned over all responsibility of this site to WA DoE, Southwest branch and forwarded all known records to this facility. Therefore, records review performed for this investigation was limited to documents on file with the Southwest branch of the WA DoE.

On July 28th, 2009 an environmental specialist from our firm visited the southwest branch of the WA DoE in Lacey, WA. Prior to our arrival, we requested that all files concerning ARCO #5877 be available and upon arrival we were able to view these files and make copies for our records.

5.1 ARCO #5877, WA DoE, Southwest Branch Documentation

The WA DoE had on file records dating back to ~1980s for the ARCO #5877 site when the first Underground Storage Tanks (USTs) were installed. These documents included permits

and applications. In 1998, new regulations required all USTs to be outfitted with or upgraded to double-wall fuel lines. In compliance with these new regulations, the operator of the site replaced the original single-wall fuel lines with double-wall fuel lines. It appears that during the excavation for this repair that "impacted soil" was observed. In October of 2001, six (6) monitoring wells were installed on the site. Soils tested from these borings confirmed contaminated soils on site.

WA DoE has concluded that the storage tanks on site are not leaking because the diesel and lube-oil range contaminants found on site have never been stored by site USTs. The site is therefore not on the Leaking UST list.

Additionally, the horizon where the contamination is concentrated is at ~15´-25´ depth while soils from the surface to ~15´ depth are below MTCA Method A MCL. This soil horizon is thought to correspond with the original ground surface prior to the construction of the ARCO, AM/PM convenience store. WA DoE documentation suggests the source of contamination is likely diesel fuel applied to the original ground surface for dust control prior to construction of the convenience store and ownership by Atlantic-Richfield. WA DoE has concluded that "natural attenuation" is an appropriate course of action for the site cleanup, with continued monitoring and review.

5.1.1 Groundwater Sampling Reports

Since November 2001, groundwater at the site has been tested 16 times, approximately every 6 months, with all of the sampling reports available at the WA DoE. Groundwater testing results are included in Appendix B and have indicated diesel and lube-oil concentrations above MTCA Method A minimum cleanup levels. Included in the most recent report was a graph that showed contaminant concentrations at the site over time, also presented in Appendix B. The last testing, June 30th 2009, showed slightly elevated levels above MTCA Method A minimum cleanup levels.

5.1.2 Subsurface Conditions at ARCO #5877

Delta Environmental Consultants Inc. prepared a report for the Atlantic Richfield Co. titled: Subsurface Investigation Report, Former ARCO Facility No. 5877. The report was dated November 11, 2001 and was the summary of findings after the six monitoring wells were

installed. The WA DoE references the report in their preliminary conclusions of the contamination at the site. The report describes from 5´-10´ of silty gravel fill overlying native silt and sand with groundwater levels 18´-25´ below the current ground surface. Laboratory analysis detected gasoline-range hydrocarbons in soil at one location and diesel plus lube-oil hydrocarbons in soil at multiple locations. Four monitoring wells contained groundwater with diesel-range hydrocarbon concentrations above the Method A minimum cleanup levels detected. The site plan, bore logs, lab results, and an inferred groundwater contour map from the Delta Environmental report are included in Appendix B.

6. CONCLUSIONS AND RECOMMENDATIONS

Based on results of this investigation, it is our opinion that the subject site generally does not appear to be contaminated from, or at major risk of becoming contaminated by the The ARCO #5877 or possible site fill soils. Laboratory analyses of all selected water and soil samples indicated concentrations below MTCA Method A minimum cleanup levels for RCRA metals, HCID, and BTEX. All testing limits from Edge Analytical Inc. are below MTCA Method A cleanup levels.

Soils to at least ~10.0´ depth observed in some test pits seems to be fill material. It is likely that the material came from off site as it does not appear to correlate with native soils observed on site or geologic soil units identified by the USGS geologic map. Exploratory testing has revealed no evidence of contamination within the possible fill soils, or near the inferred fill and native soil horizon. All HCID and BTEX samples for soil at depths from 4´ to 25´ were “not detected”, ND, due to concentrations below testing limits. Traces of arsenic, barium, chromium, copper, lead, and silver were detected in most soil samples at concentrations below the MTCA Method A cleanup levels. Metal concentrations in the site soils are similar to background levels we have experienced as typical for the Puget Sound region and do not appear to be of major concern.

Records review regarding the ARCO #5877 indicate that diesel-range and lube-oil hydrocarbons have been detected at the site with concentrations above MTCA Method A cleanup levels. The report by Delta Environmental Consultants Inc. includes an inferred ground water table contour map with estimated flow directions around the contamination site.

Surface topography and the groundwater contours suggest a possible west northwest flow component at the ARCO #5877 site towards the stream and the subject site. However, potentiometric data from monitoring wells installed at the subject site also indicate groundwater flow towards the creek but in east/ northeast direction. The stream therefore appears to be a lateral no-flow boundary between the two sites gaining groundwater from both sides. Groundwater from the ARCO #5877 site may experience communication with the stream, however surface water samples collected from the stream did not indicate the presence of HCID or BTEX. Trace metals in the surface water samples are below cleanup levels and appear similar to normal background levels in the Puget Sound area.

Although the stream appears to separate groundwater at the ARCO #5877 from our subject site, deeper regional flow patterns may still exist that traverse under the stream. However, based on our understanding of regional flow patterns in the area, flow directions are typically north/ northwest from the valley edges towards the Puyallup River and not directly towards the subject site. Groundwater samples from the wells at the subject site did not indicate detectable concentrations of HCID or BTEX.

Since 2001, contaminant concentrations in groundwater from the monitoring wells at the ARCO #5877 site have continued to decline. The most recent results from the monitoring wells show diesel and lube-range hydrocarbons below MTCA Method A cleanup levels. The concentrations have fluctuated up and down slightly over the past 7 years, however, the "natural attenuation" mitigation program implemented by the WA DoE appears to be working steadily towards reducing contaminant levels at this site. Based on this information and our understanding of the hydrogeologic setting at the site, it is our opinion that the potential risk of contamination at the subject site from the ARCO #5877 site is generally low.

Continued monitoring and sampling of the site is strongly recommended, especially during earthwork and construction phases when soils are more accessible. A continued groundwater and surface water testing program should also be implemented. We recommend that Merit Engineering Inc. be retained for these services and be present on site so that said observation and sampling can be conducted. At this time, no mitigation for environmental contamination at the site appears necessary.

7. LIMITATIONS AND DISCLAIMER

This report has been prepared for the exclusive use of Mark Hollander of Hollander Investments LLC in Bellingham, Washington for specific application to the property in Puyallup, Washington located on the south side of 15th Avenue SW with the following property information listed with the Pierce County Assessor's Office, comprising the property area in total:

XXX SR512 HWY E (2.73 acres): **0420338067**

Our best efforts were made using site knowledge to thoroughly test the site for contamination however, due to the limited, exploratory style sampling program, it was not possible to test all site soils. Some sources of potential contamination may exist even though they were not discovered.

The scope of this environmental investigation included limited, exploratory sampling including groundwater, surface water and soil. Also, a records review with the WA DoE was conducted concerning the adjacent ARCO #5877. This is an environmental investigation and is prepared in accordance with generally accepted practices in this area. No other warranty, expressed or implied, is made.

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in 312.10 of 40 CFR 312. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

REFERENCES

ASTM E-1527-05, Standard Practice for Environmental Site investigations: Phase 1 Environmental Site investigation Process.

Coppernoll, James D. and Hurd, Markham C. Subsurface Investigation Report, Former ARCO Facility No. 5877. Delta Environmental Consultants, Inc. November 20, 2001.

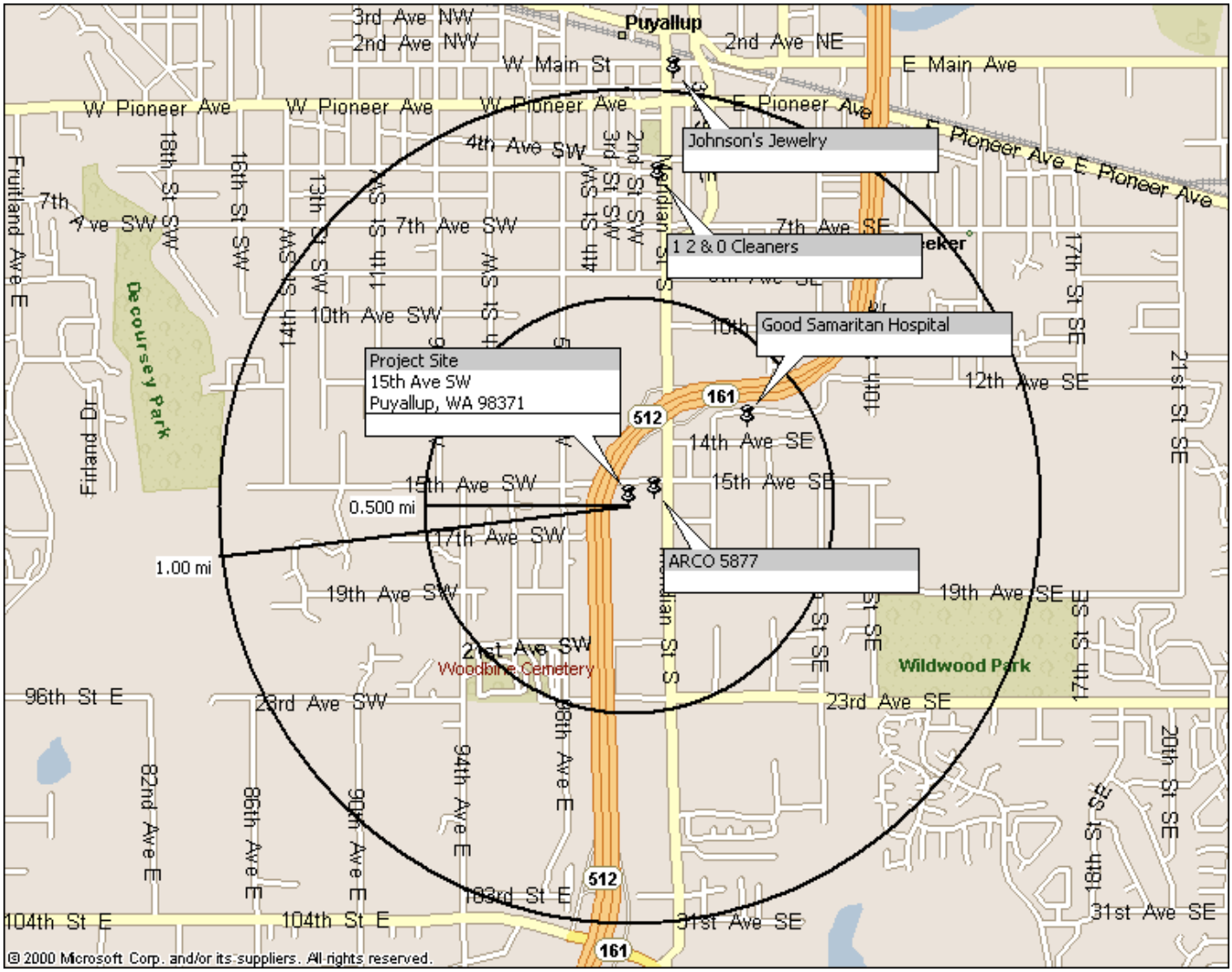
Earth Consulting Inc. Geotechnical Engineering investigation, Proposed Medical Office Building, 15th Avenue SW near S Meridian, Puyallup, WA. December 11, 2007. ECI proj. # E-13106.

Standard Operating Procedures, Monitor Well Development, EPA SOP #2044, 10/23/2001.

Standard Operating Procedures, Surface Water Sampling, EPA SOP #2013, 12/17/2002.

Troost, K.G., in press, Geologic map of the Puyallup 7.5-minute quadrangle, Washington: U.S. Geological Survey Miscellaneous Field Investigation, scale 1:24,000.

U.S. EPA. Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells. SOP #: GW 0001. July 30, 1996.



Project No. QF0217645	**PROJECT LOCATION & VICINITY MAP**	Date: 8/31/09	*Figure 1*

Environmental Site Assessment
Proposed Hotel Site
15th Ave SW
Puyallup, Washington

For: Hollander Investments LLC

MERIT ENGINEERING INC.
2715 Meridian Street
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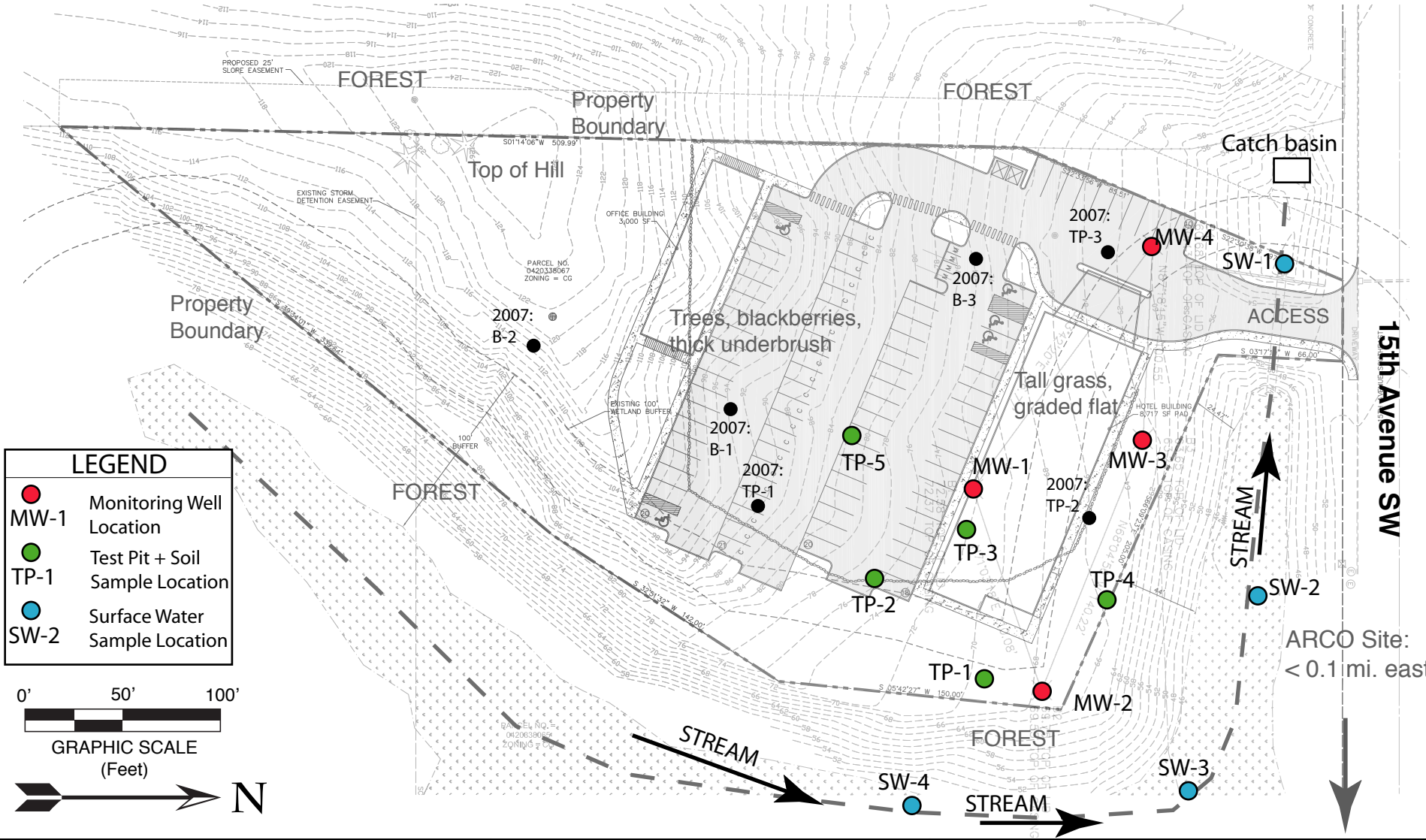
Fax: (360)738-1499
http://www.MeritEngineering.com



Environmental Investigation
15th Ave SW
Puyallup, WA 98371

For: Hollander Investments Inc.

Figure 2 | Scale: as shown

SITE PLAN

PROJECT NO.	DATE	APPROVED BY
QF0217645	9/11/09	AXH

Note: Site Plan base map completed by Abbey Road Group LLC, provided by Mark Hollander (client).

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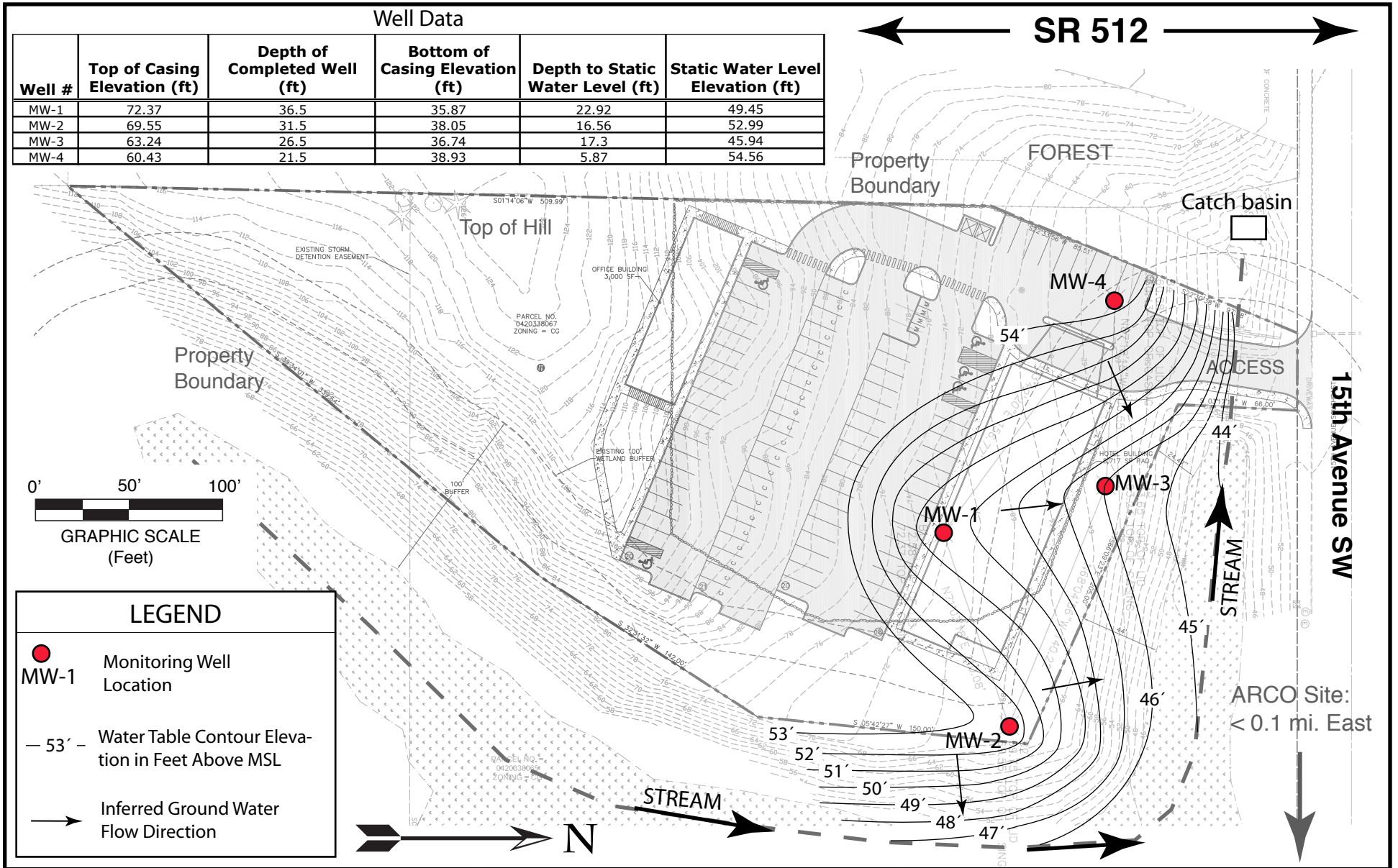
Well Data

Well #	Top of Casing Elevation (ft)	Depth of Completed Well (ft)	Bottom of Casing Elevation (ft)	Depth to Static Water Level (ft)	Static Water Level Elevation (ft)
MW-1	72.37	36.5	35.87	22.92	49.45
MW-2	69.55	31.5	38.05	16.56	52.99
MW-3	63.24	26.5	36.74	17.3	45.94
MW-4	60.43	21.5	38.93	5.87	54.56



Environmental Investigation
15th Ave SW and HWY 512
Puyallup, WA 98371

For: Hollander Investments Inc.

Figure 3 | Scale: as shown

GROUND WATER CONTOURS

PROJECT NO.	DATE	APPROVED BY
QF0217645	8/26/09	AXH

Note: Site Plan base map completed by Abbey Road Group LLC, provided by Mark Hollander (client).

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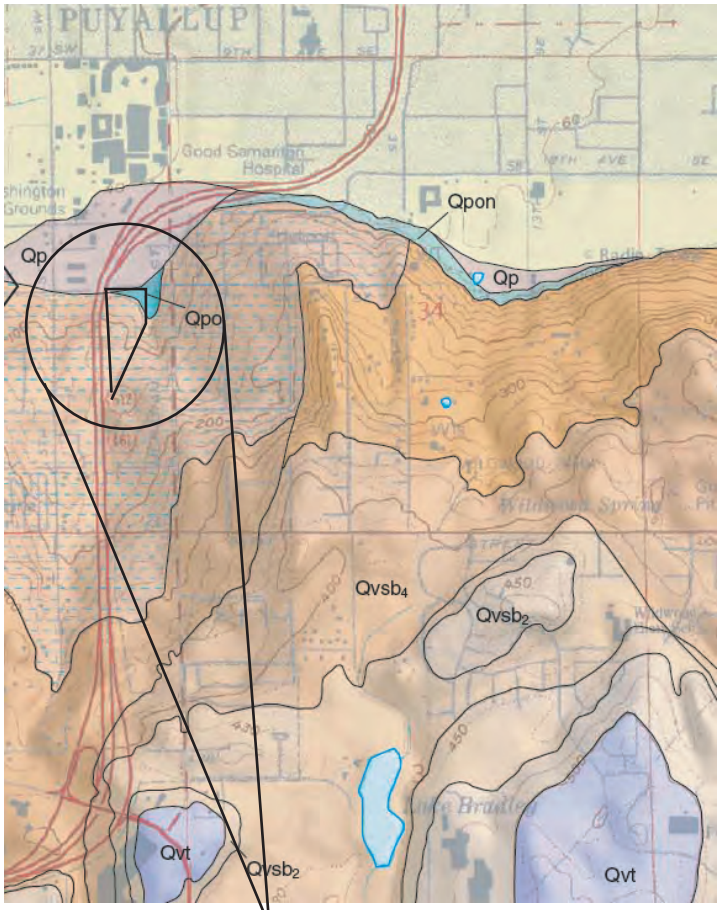
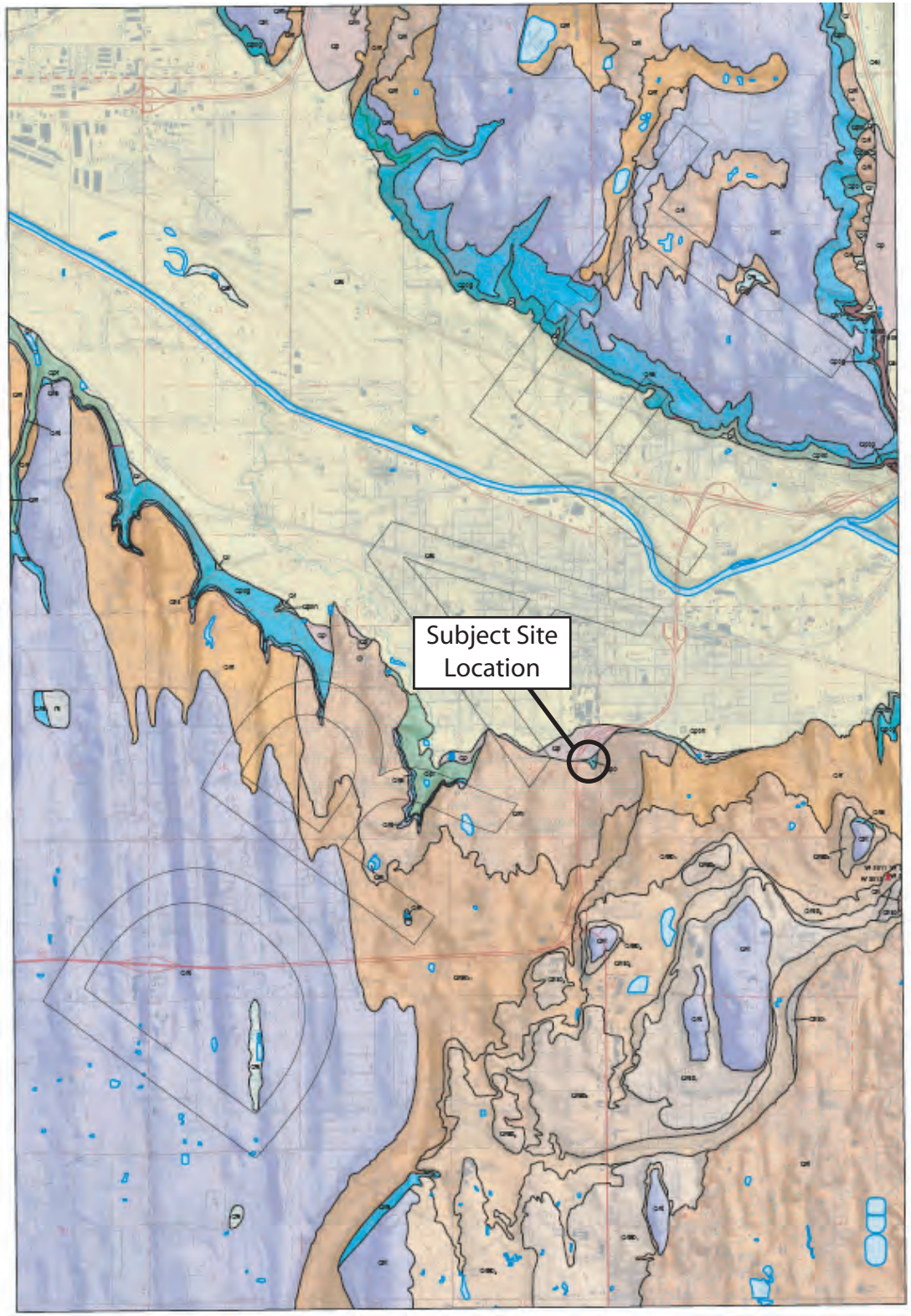


Subject Site



Qvrl Recessional lacustrine deposits—Interbedded fine sand and silt to laminated silt and clay; locally contains expandable clays; loose to medium dense and soft to stiff; 1 to 10 m (3 to 35 ft), commonly 6 m (20 ft) thick. Largest deposit from glacial Lakes Puyallup and Russell (south of City of Puyallup) spanning an elevation from 98 to 9 m (320 to 30 ft). Linear contacts at east and west sides of the large Qvrl body likely reflect ice margins. Also deposited in isolated recessional lakes on the upland at elevation 140 m (460 ft) near the south end of quadrangle

Qpo Deposits of pre-Olympia age (Pleistocene)—Mixed fine- and coarse-grained deposits, too thin or intermixed to differentiate at map scale. Unoxidized to moderately oxidized sand, gravel, silt, and clay, and unoxidized to strongly oxidized diamict with silt matrix and rounded gravel clasts. Very dense or hard. Present below 60 m (200 feet) in elevation, and >

Map accessed 9/9/2009, U.S.G.S. website Troost, K.G., in press

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS				DESCRIPTION
COARSE GRAINED SOILS more than 50% retained on #200 sieve	GRAVELS more than 50% coarse fraction is larger than No. 4 sieve size	Gravels with less than 5% fines	GW	Well graded gravels, gravel-sand mixtures
			GP	Poorly graded gravels, gravel-sand mixtures
		Gravels with more than 12% fines	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS more than 50% coarse fraction is smaller than No. 4 sieve size	Sands with less than 5% fines	SW	Well graded sands, gravelly sands
			SP	Poorly graded sands, gravelly sands
		Sands with more than 12% fines	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
FINE GRAINED SOILS more than 50% passing #200 sieve	SILTS AND CLAYS Liquid Limit less than 50		ML	Inorganic silts & very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, or lean clays
			OL	Organic clays and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid Limits greater than 50		MH	Inorganic silts, micaceous or diatomacious fine, sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			PT	Peat and other highly organic soils
UNCONTROLLED FILL				Uncontrolled, with highly variable constituents

LEGEND

SAMPLE	SYMBOL
SPLIT SPOON SAMPLER	GROUNDWATER TABLE
SHELBY TUBE SAMPLER	q_u PENETROMETER READING TSF (*tons per square foot*)

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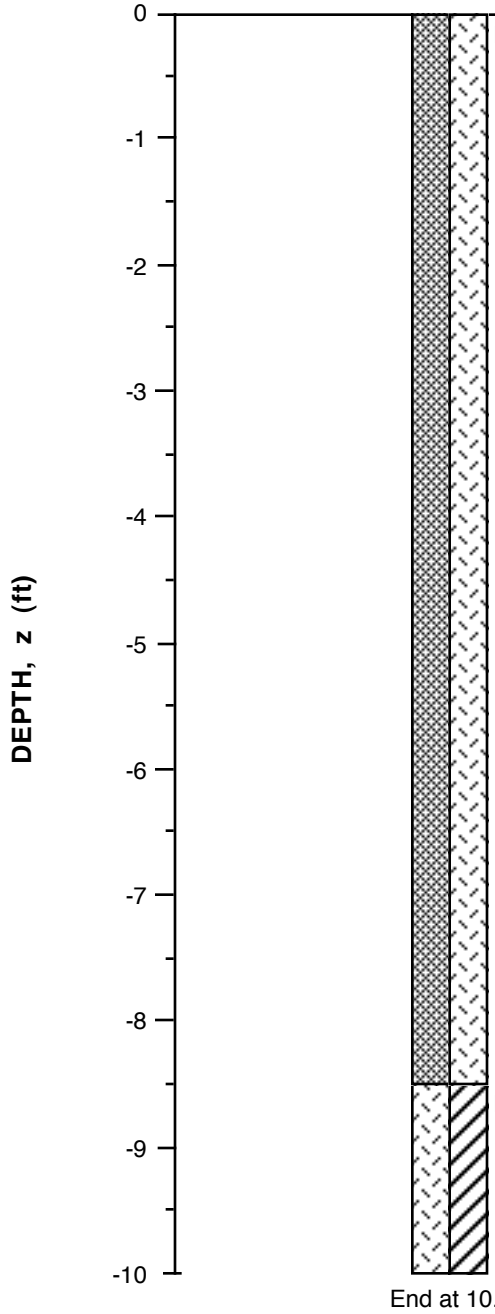
SOIL CLASSIFICATION & LEGEND

Figure 5

TP-1	Surface Elevation ≈ X = Y=	SOIL DESCRIPTION AND CLASSIFICATION



FILL: SILTY CLAYEY SAND with COBBLES (SM/SC)
Tannish-brown sand with rounded gravel and cobbles throughout layer. Dry with roots, from surface to ~9" deep. Very dense and compacted from surface to ~2' deep. Moist beyond ~9" depth. Fill material likely.

Gray sandy clay lense with pebbles ~6" thick at 7'

LOAMY SAND (SC/CL)
Gray clayey sand with many rounded cobbles ~4-6" in diameter. Some rounded gravel exists. Damp and dense. Sticks and small logs from 8.5'-9.0' depth, range from ~1/2"-2" in diameter.Very clear horizon from above layer. Native soil likely.

End at 10.0'

Project No. QF0217645	Date: 8/11/09	Approved by A.X.H.	*Figure 6*

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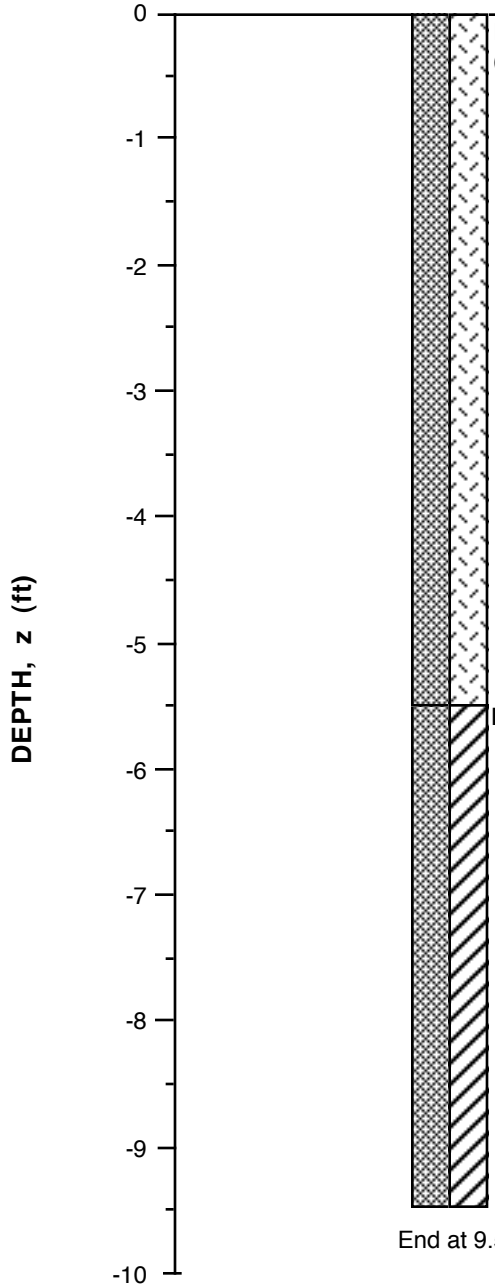
TP-2	Surface Elevation ≈ X = Y=	SOIL DESCRIPTION AND CLASSIFICATION



FILL: SILTY CLAYEY SAND with COBBLES (SM/SC)

Tannish-brown sand with fines and rounded cobbles, gravel and pebbles. Dry w/ small roots from surface to 12" deep. Moist beyond ~1.0' deep. Very dense and compacted from surface to ~1.5' deep. Fill material likely.

Old glass bottle observed at 12.0" depth.

LOAMY SAND with COBBLES (SM/CL)

Grey loamy sand with rounded pebbles, gravel, and cobbles. Damp and cohesive. Native soil likely.

End at 9.5'

Project No. QF0217645	Date: 8/11/09	Approved by A.X.H.	*Figure 7*

Environmental Investigation
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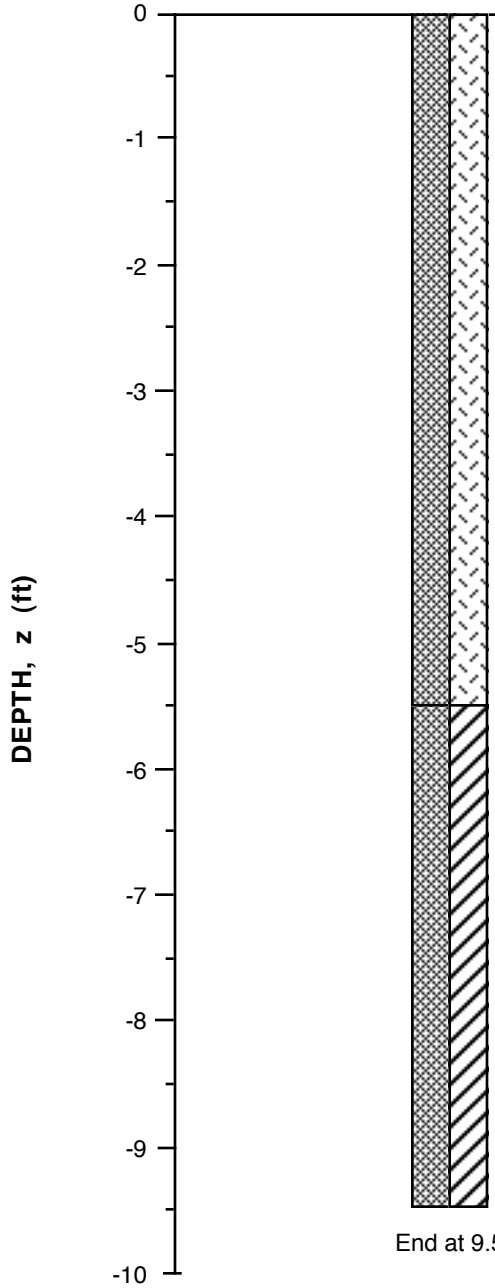
TP-3	Surface Elevation ≈ X = Y=	SOIL DESCRIPTION AND CLASSIFICATION



FILL: SILTY CLAYEY SAND with COBBLES (SM/SC)

Tannish-brown sand with fines and rounded cobbles, gravel and pebbles. Dry w/ small roots from surface to 12" deep. Moist below ~1.0' deep. Very dense and compacted from surface to ~1.5' deep. Fill material likely.

LOAMY SAND with COBBLES (SM/CL)

Brown loamy sand with rounded pebbles, gravel, and cobbles. Dense and cohesive. Native soil likely.

Moisture content observed to be damp at ~7.0'.

Project No. QF0217645	Date: 8/11/09	Approved by A.X.H.	*Figure 8*

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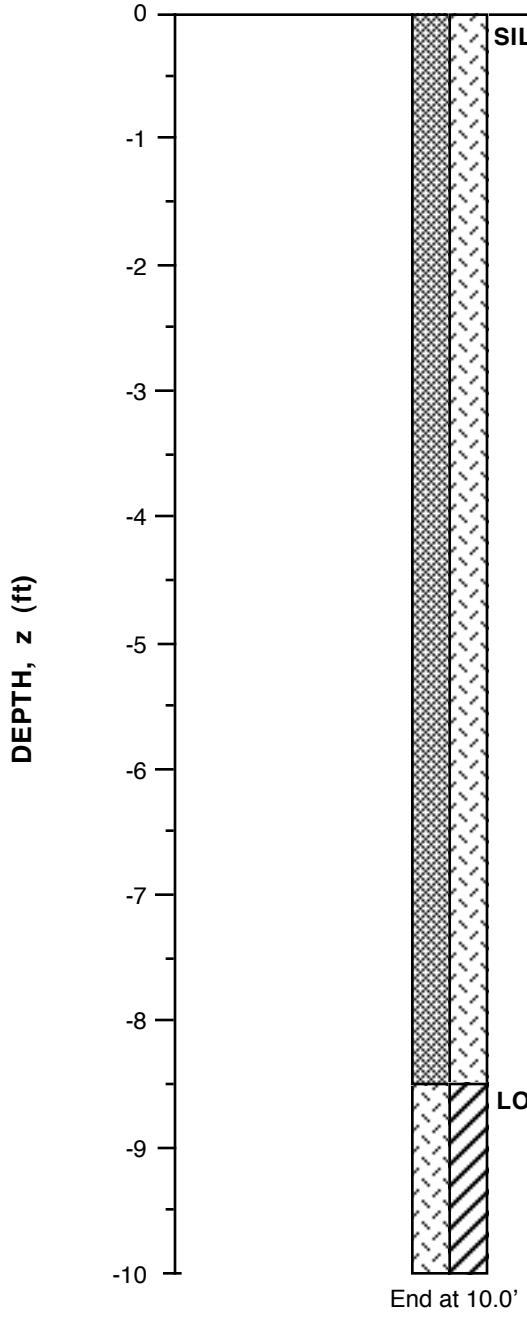
TP-4	Surface Elevation ≈ X = Y=	SOIL DESCRIPTION AND CLASSIFICATION



SILTY CLAYEY SAND with COBBLES (SM/SC)
Brown loamy sand with rounded pebbles, gravel, and cobbles. Moist and dense. Very dense and compacted from surface to ~1.0' depth. Soil becomes damp by ~6.0'. Fill material likely.

LOAMY SAND with COBBLES (SM/CL)
Gray clayey sand with many cobbles ~4-6" in diameter. Some gravel and pebbles exist. Damp and dense. Very clear horizon from layer above. Native soil likely.

Project No. QF0217645	Date: 8/11/09	Approved by A.X.H.	*Figure 9*

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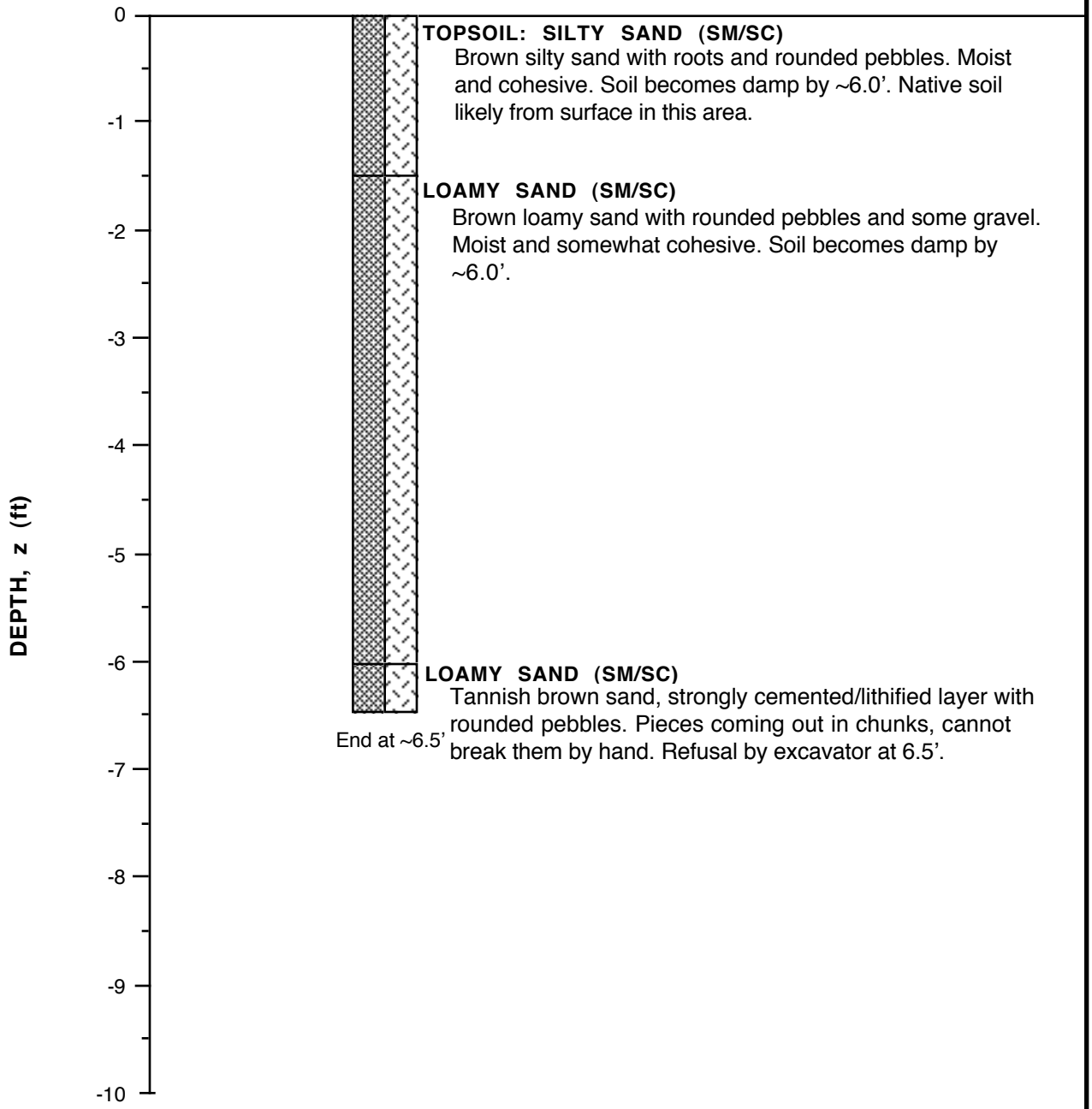
TP-5	Surface Elevation ≈ X = Y=	SOIL DESCRIPTION AND CLASSIFICATION



Project No. QF0217645	Date: 8/11/09	Approved by A.X.H.	*Figure 10*

Environmental Investigation
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15th Ave SW & SR 512
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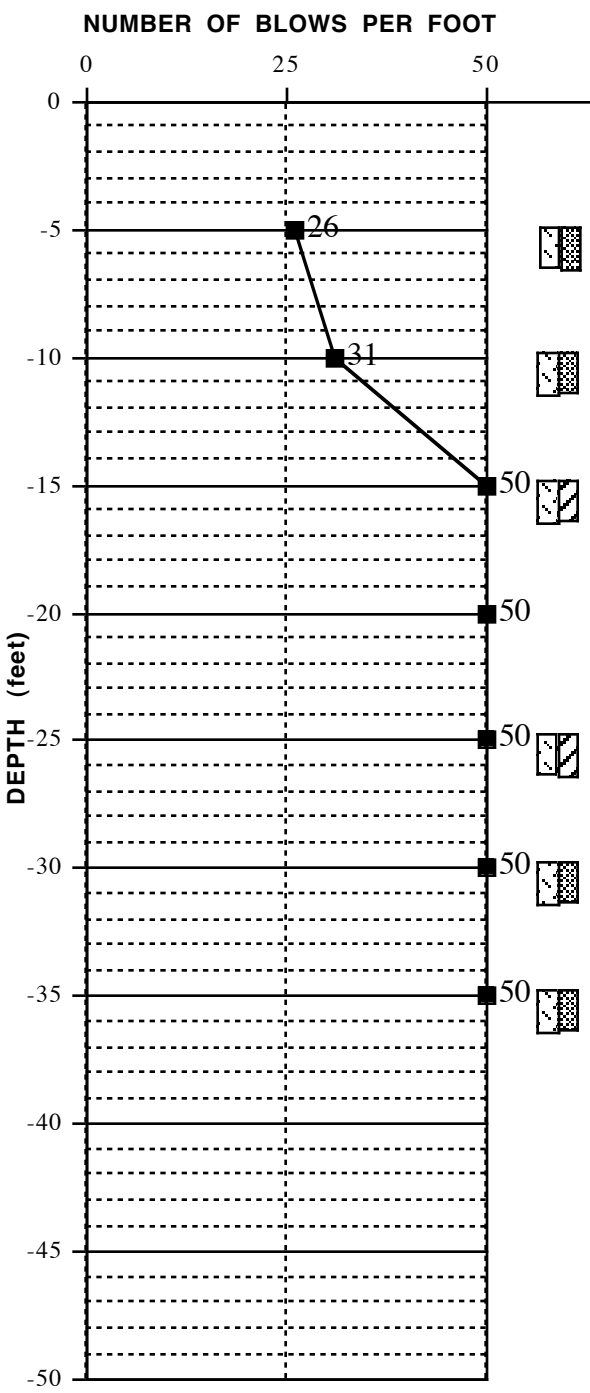
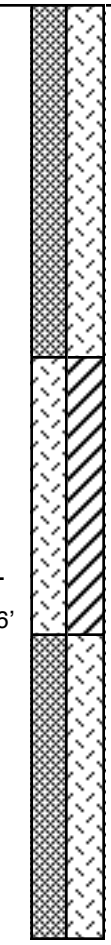
B-1 STANDARD PENETRATION TEST	SOIL DESCRIPTION AND CLASSIFICATION



X,Y =
Surface Elevation = 72.37 (ft)
Surface Conditions = Tall grass



~ ▽ 23.16'

SILTY CLAYEY SAND with COBBLES (SM/SC)

Brown loamy medium sand with cobbles. Moist, dense, cohesive. Very stiff grayish clay lenses with gravel observed in samples. Fill material likely.

LOAMY SAND (SC/CL)

Light brown loamy sand with clay observed in tailings. Moist, some gravel. Soil is likely native.

Sand lamellae observed in sample at ~15'.

SILTY CLAYEY SAND (SM/SC)

Fine sand with ~30% silt and clay. Damp to wet. Soil is likely native.

Saturated sample at 30', fine sand with clay.

End @ 36.5'

Project No. QF0217645	Date: 7/27/09	**LOG OF TEST BORING**	Approved by AXH	Figure 11

Environmental Investigation
Proposed Hotel
15th Ave SW & SR 512
Puyallup, Washington 98371

For: Hollander Investments Inc.

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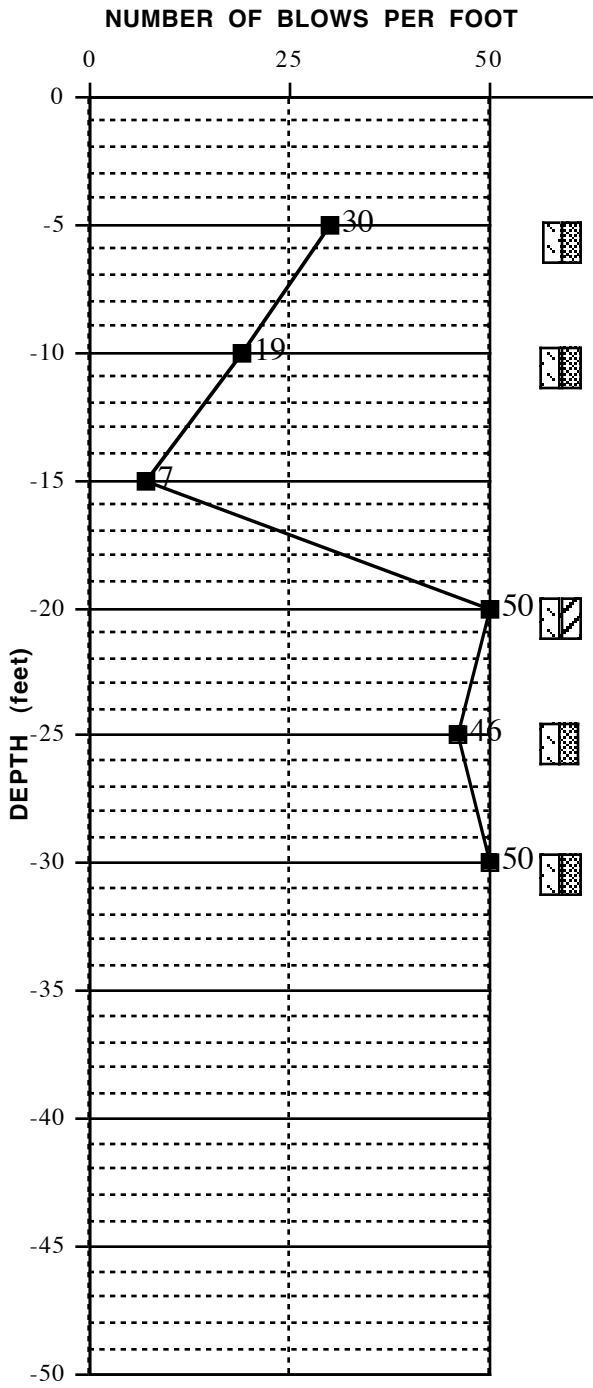
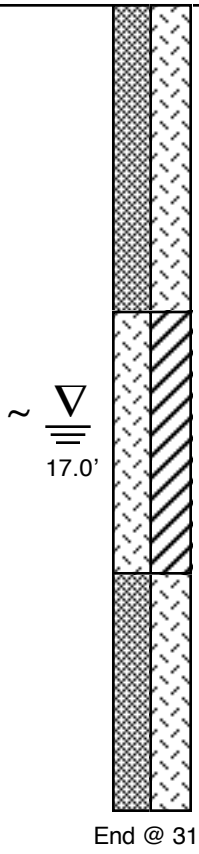
B-2 STANDARD PENETRATION TEST | SOIL DESCRIPTION AND CLASSIFICATION



X,Y =
Surface Elevation = 69.55 (ft)
Surface Conditions = Tall grass



SILTY CLAYEY SAND with COBBLES (SM/SC)

Brown medium sand, loamy with gravel. Moist, dense, cohesive. Fill material likely.

LOAMY SAND (SC/CL)

Light brown sand with grayish brown clay observed in tailings. Moist, some gravel. Soil is likely native.

SILTY CLAYEY SAND (SM/SC)

Fine sand with ~20% silt and clay. Ranges from moist at ~17' to saturated by 25'. Gravel observed in samples and tailings. Soil is likely native.

Saturated sample at 25.0'

Project No. QF0217645	Date: 7/27/09	**LOG OF TEST BORING**	Approved by AXH	Figure 12

Environmental Investigation
Proposed Hotel
15th Ave SW & SR 512
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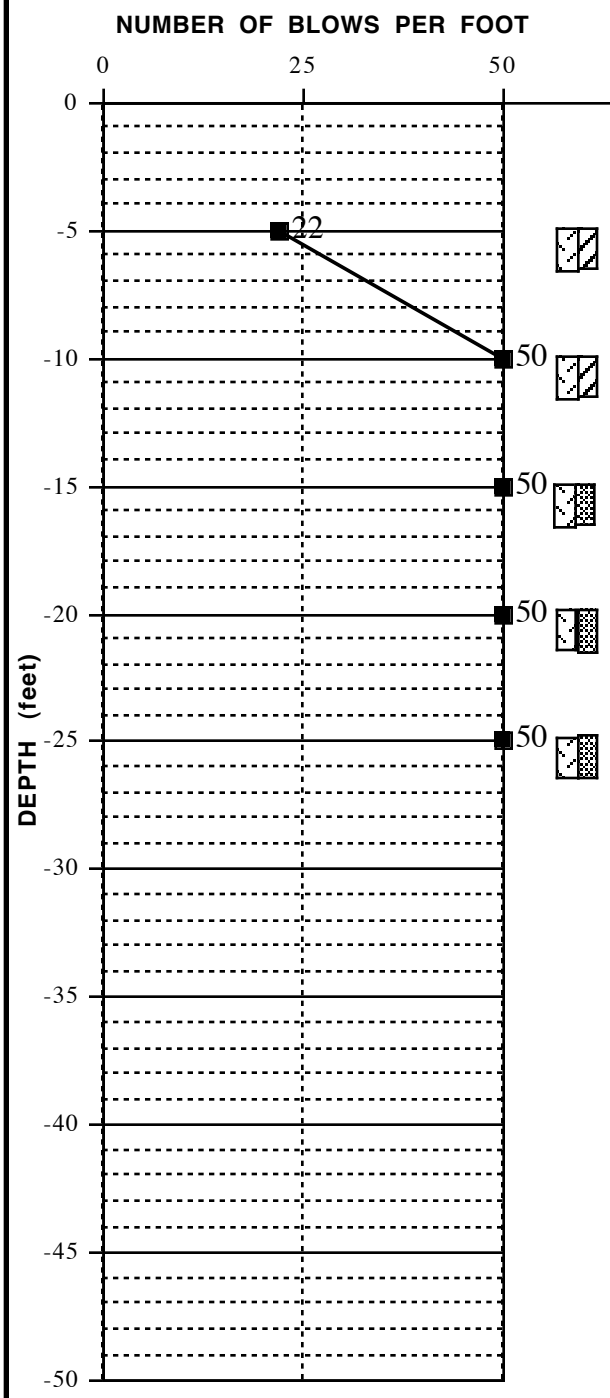
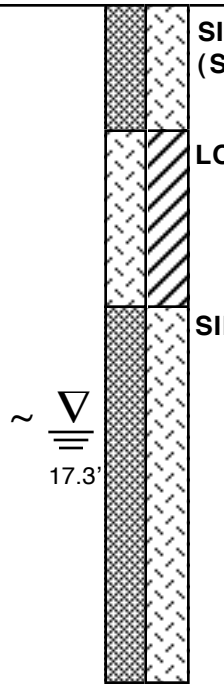
B-3 STANDARD PENETRATION TEST	SOIL DESCRIPTION AND CLASSIFICATION



X,Y =
Surface Elevation = 63.24 (ft)
Surface Conditions = Tall grass



SILTY CLAYEY SAND with COBBLES (SM/SC)
Brown medium sand, loamy with gravel. Moist, dense, cohesive. Fill material likely.

LOAMY SAND (SC/CL)
Light brown loamy sand with clay observed in tailings and samples. Moist, some gravel. Soil is likely native.

SILTY CLAYEY SAND (SM/SC)
Grey fine sand with ~25% silt and clay. Loose and moist, samples become wet by ~15'. Soil is likely native.

Sample at 20' saturated.

Project No. QF0217645	Date: 7/27/09	**LOG OF TEST BORING**	Approved by AXH	Figure 13

Environmental Investigation
Proposed Hotel
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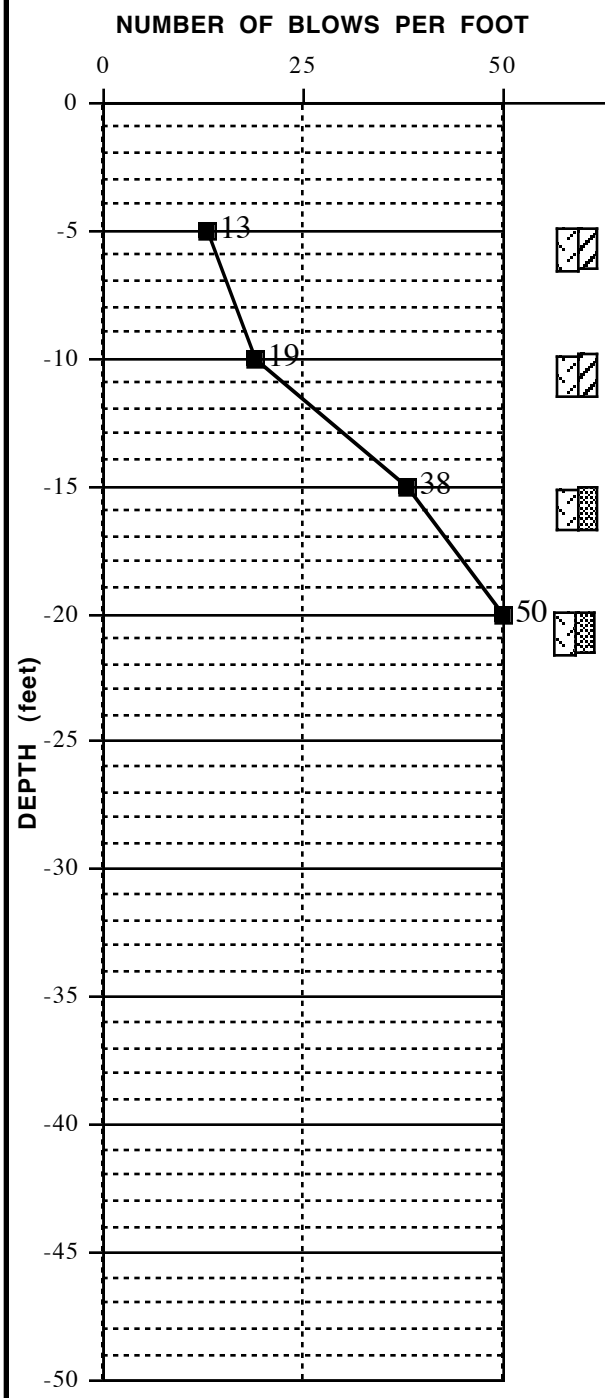
B-4 STANDARD PENETRATION TEST | SOIL DESCRIPTION AND CLASSIFICATION



X,Y =
Surface Elevation = 60.43 (ft)
Surface Conditions = Tall grass

~ ▽ 5.9'

SILTY CLAYEY SAND with COBBLES (SM/SC)
Brown medium sand, loamy with gravel. Moist, dense, cohesive. Fill material likely.

LOAMY SAND (SC/CL)
Light brown loamy sand with clay observed in tailings. Moist, some gravel. Soil is likely native.

SILTY CLAYEY SAND (SM/SC)
Fine sand with ~25% silt and clay. Loose and wet to saturated. Soil is likely native.

Tailings were saturated, groundwater running out of auger area at 20'.

End @ 21.5'

Project No. QF0217645	Date: 7/28/09	**LOG OF TEST BORING**	Approved by AXH	Figure 14

Enironmental Investigation
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