GEOTECH
CONSULTANTS, INC.

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August 4, 2023

JN 22336

Russell and Linda Vandenbelt
4153 Boulevard Place
Mercer Island, Washington 98040

Attention: Tyler Engle Architects – Jim Tung
via email: jim@tylerengle.com

Subject: **Geotechnical Engineering Report and Critical Area Report**
Proposed Repair of Failing Retaining Wall
4153 Boulevard Place
Mercer Island, Washington

Greetings:

This report presents our geotechnical engineering report related to the planned work associated with your existing residence. The scope of our services consisted of assessing the site surface and subsurface conditions, and then developing this summary report.

Based on the September 30, 2022 drawings developed by Tyler Engle Architects, we understand that the existing, stepped western driveway retaining wall, which has settled and cracked, is proposed to be stabilized in place. The ground disturbance for the retaining wall repair will be limited to what is needed to install the bracing system for the wall at this time. We also understand that the residence is proposed to undergo an interior remodel. Based on correspondence with the project architect, it would appear that most of the remodel will be of a cosmetic nature. However, some structural modification of the interior walls within the kitchen and living room may be needed, which may modify the existing loading within the residence. No new exterior structural work requiring any new foundations is being proposed at this time, but some limited replacement and reconfiguring of surficial hardscaping and paving is being proposed.

The City of Mercer Island GIS maps your entire lot as a Potential Landslide Hazard, Erosion Hazard, and Seismic Hazard. Based on the provided site plan, while not mapped on Mercer Island's GIS, the northern section of the western slope near the property line is inclined steeply from 40 to 50 percent over an elevation change of 12 to 20 feet. An approximately 6-foot-tall rockery lines the toe of much of this slope, which acts to oversteepen the inclination slightly. It is apparent that this slope was previously modified during residential lot grading which would have occurred during the construction of the downslope, western residence. The proposed wall repair is situated at least 50 lineal feet from the grade break at the top of this sloped area and is located on the far side of the residence away from this slope. The remainder of the southern half of this slope is moderately inclined.

We visited the subject property on September 26, 2022 to observe the existing site conditions and to excavate a shallow hand auger test hole. The property is rectangular shaped, with dimensions of 100 feet in the north-south direction, and 150 feet in the east-west direction. The site is bordered on the north, east, and west by single family parcels, and on the south by Boulevard Place. The existing residence, which consists of one above-grade floor overlying a partial footprint, west- and south-facing daylight basement, is located in the approximate center of the lot. This house was constructed in 1952, but it appears that a more recent, on-grade addition, which comprises the eastern wing of the residence, has been constructed since the original construction of the house. This eastern wing is not underlain by a basement. In addition, the southwestern corner of the residence is not underlain by a basement.

The ground surface on the lot, and in the vicinity, generally slopes down toward the west, trending with the general downgradient of the area which continues to the elevation of Lake Washington. The ground surface on the developed portion of the lot slopes only gently to moderately. The west perimeter of the lot slopes down moderately to steeply to the adjacent western neighbor's house. As noted previously, the northern section of this slope is inclined steeply; however, the southern half is only inclined moderately, and a 6-foot-tall rockery lines the toe of this slope within the neighboring western lot. On the west side of the house is a terraced wood-framed deck located closer to the elevation of the main floor. This deck is supported on isolated posts that rest on shallow footings. Along the west side of the driveway that leads into the basement of the house is an older, concrete retaining wall. This wall was observed to be 4 to 8.5 feet tall and was leaning out-of-plumb several degrees into the driveway. Large cracks were also observed in the face of this wall. East of the driveway, the grade steps up along a landscaped area and stairway; an 8-foot-tall concrete wall retains soil placed to backfill the basement near the southeastern corner of the residence, where a secondary entryway is located.

We saw no indications of recent instability on, or around, the subject property.

The subject property lies within a Potential Landslide Hazard as shown on the Mercer Island GIS. The Mercer Island Landslide Hazard Map notes a geologic contact just west of the site's western property line, and maps identified landslide locations, as well as shallow groundwater both on the adjacent northern, and western extent of the adjacent western properties. The identified landslide locations appear to refer to notes regarding soil classification in the borings conducted for the large residence located on the northern adjacent property, and the shallow groundwater mapping appears to both coincide with the proximity to Lake Washington, as well as recorded water conditions encountered in the subsurface borings on the northern lot. No mapped landslide events have been reported on the subject property in recent recorded history. The closest mapped landslide consists of a long scarp which occurred several lots south of the site, along the downslope side of Southeast 42nd Street and Holly Lane. This scarp is mapped near numerous steep slope features, which form a larger ravine-like feature located southeast, well away from the site. No signs of recent, deep-seated instability were observed during our time at the site.

We are familiar with the subsurface conditions on the site from: 1) the excavation of one test hole on the property near the wall repair location, 2) explorations conducted for the nearby residences surrounding the property, and 3) review of geologic mapping for the area. Explorations on properties around the site show fill and loose, weathered native soils underlain by dense, glacially compressed sand and silt. Perched groundwater and groundwater were found in the adjacent borings to the north at variable depths ranging from 2 to 13 feet. For reference, the adjacent borings north of the subject site have been included at the end of this report.

A staff geotechnical engineer from our firm excavated and logged the test hole, which was excavated approximately 8 feet west of the existing driveway retaining wall. Due to the presence of a concrete driveway, explorations were not able to be conducted at the base of the retaining wall. The log of the test hole is presented below. The test hole generally confirms the shallow subsurface conditions encountered within the other explorations conducted in the area. The native soils became dense below a depth of approximately 5 feet.

TEST HOLE 1

Depth (feet)	Soil Description
0.0 – 2.5	Brown silty SAND with roots, fine-grained, dry, loose **[FILL]**
2.5 – 5.0	Orange-brown mottled, silty SAND with roots, very fine-grained, dry, desiccated, loose to medium-dense **[SM]** - 4', with abundant roots and layers of silt
5.0 – 6.0	Brown and gray-brown with rusting, silty SAND with silt and sand lenses, fine-grained, moist, to dry, medium-dense to dense **[SM]**
6.0- 7.0	Gray-brown mottled orange, slightly silty SAND, fine-grained, moist, intact, dense **[SP/SM]**

Test Hole was terminated at 7 feet September 26, 2022.
No groundwater seepage was encountered in the test hole.

***NOTE** – Letters in brackets **[ ]** denote the USCS soil classification.

The stratification lines on the log represent the approximate boundaries between soil types at the exploration location. The log provides specific subsurface information only at the location tested. The relative densities and moisture descriptions indicated on the test hole log are interpretive descriptions based on the conditions observed during excavation.

CONCLUSIONS AND RECOMMENDATIONS

GENERAL

THIS SECTION CONTAINS A SUMMARY OF OUR STUDY AND FINDINGS FOR THE PURPOSES OF A GENERAL OVERVIEW ONLY. MORE SPECIFIC RECOMMENDATIONS AND CONCLUSIONS ARE CONTAINED IN THE REMAINDER OF THIS REPORT. ANY PARTY RELYING ON THIS REPORT SHOULD READ THE ENTIRE DOCUMENT.

The test hole encountered fill and loose, native soil to a depth of 5 feet below the ground surface behind the existing retaining wall. Glacially-compressed silty sand and slightly silty sand were revealed beneath the surficial soils and continued to the base of the test hole.

The driveway retaining wall is proposed to be stabilized in place to prevent further movement and distress of the wall. The test hole found competent soil near the base of the wall footing, indicating that it bears on, or close to, suitable bearing soil. In order to provide adequate lateral support to this wall and prevent further leaning, helical anchors installed through cored holes in the face of this wall would provide enough lateral capacity to keep the wall from deflecting further. These helical anchors would be mechanically fastened to the face of this wall, either by a steel crossbeam or whaler, or by grouting the cored holes and bolting the anchors to the face of the wall. We understand that the wall will be left in place at this time and will be resurfaced with a stone veneer. While it ultimately is the client's decision to determine the extents of the stabilization efforts related to the retaining wall, we recommend that as much of the wall as possible be underpinned to prevent differential settlement/rotation of the stabilized portions relative to the existing wall. We understand that there is some concern related to potential damage to the nearby fir tree located south of the wall area. The use of these discreet deep foundation and anchor systems create a very limited disturbance to the existing ground during installation and should be able to be installed without adversely impacting the roots of the nearby fir tree. Additional recommendations are presented in the ***Helical Anchors*** section of this report.

Our current understanding of the proposed project is that the interior remodel will mostly be cosmetic. However, there is a potential that some structural modification to the residence may be needed in order to reconfigure the layout of the kitchen and living room, including removal of more substantial interior walls. If new foundations, or increased loading is to be introduced to the existing foundations in areas of this remodel, we recommend that the bearing conditions in these areas be observed to determine if the soils in these areas will be able to support the new/additional loads, or if the foundations in question be underpinned. If dense, native soils can be exposed, then conventional footings can be used for the new loads. New or existing foundations bearing directly on dense, native soils can be designed for any allowable bearing capacity of 2,000 pounds per square foot (psf). Otherwise, small-diameter pipe piles would be appropriate.

CRITICAL AREA STUDY (MICC 19.07)

Seismic Hazard: The glacially-compressed soils beneath the site are not susceptible to seismic liquefaction. The retention systems to stabilize the existing driveway wall will be embedded into the dense, non-liquefiable native soils found in our test hole.

Potential Landslide Hazard and Steep Slopes: The planned work will be located well away from the steeply inclined portion of the western slope. The stability of the steeply inclined area of the western steep slope, as well as the gentle to moderate site slopes, and slopes in the vicinity of the site will not be adversely affected by the discrete sitework for the work related to stabilizing the existing wall. No additional buffer or other mitigation measures are required to address the Potential Landslide Hazard mapping of the site.

Erosion Hazard: The site disturbance for any of the cosmetic exterior work for the project will be limited and will occur primarily on flat to gently-slope ground. The mapped Erosion Hazard can be mitigated by implementing proper temporary erosion control measures that will depend heavily on the weather conditions that are encountered. We anticipate that a silt fence may be needed around the downslope sides of any work areas. Existing ground cover and landscaping should be left in place wherever possible to minimize the amount of exposed soil. Small soil stockpiles should be covered with plastic during wet weather. Soil and mud should not be tracked onto the adjoining streets, and silty water must be prevented from traveling off the site. It should be possible to complete the planned work during the wet season without adverse impacts to the site and neighboring lots. On most construction projects, it is necessary to periodically maintain or modify temporary erosion control measures to address specific site and weather conditions.

We provide the following "statement of risk" to satisfy City of Mercer Island conditions:

> *"It is our professional opinion that the development practices proposed in this report for the new development would render the development as safe as if it were not located in a geologic hazard area."*

We recommend including this report, in its entirety, in the project contract documents. This report should also be provided to any future property owners so they will be aware of our findings and recommendations.

SEISMIC CONSIDERATIONS

In accordance with the International Building Code (IBC), the site class within 100 feet of the ground surface is best represented by Site Class Type D (Stiff Soil).

The IBC and ASCE 7 require that the potential for liquefaction (soil strength loss) during an earthquake be evaluated for the peak ground acceleration of the Maximum Considered Earthquake (MCE), which has a probability of occurring once in 2,475 years (2 percent probability of occurring in a 50-year period). The dense soils beneath the site are not susceptible to seismic liquefaction under the ground motions of the MCE because of the absence of near-surface groundwater.

PIPE PILES

A 2-inch-diameter pipe pile driven with a minimum 90-pound jackhammer or a 140-pound Rhino hammer to a final penetration rate of 1-inch or less for one minute of continuous driving may be assigned an allowable compressive load of 3 tons. Load tests are not required to verify this allowable capacity.

Extra-strong, Schedule 80 steel pipe should be used. The site soils are not highly organic and are not located near salt water. As a result, they do not have an elevated corrosion potential. Considering this, it is our opinion that standard “black” pipe can be used, and corrosion protection, such as galvanizing, is not necessary for the pipe piles. Subsequent pipe sections should be connected together using threaded or slip couplers, or by welding. If slip couplers are used, they must fit snugly into the ends of the pipes. This can require that shims or beads of welding flux be applied to the couplers.

Pile caps and grade beams should be used to transmit loads to the piles. In general, a minimum of two piles should be used in isolated pile caps, in order to prevent eccentric loading on individual piles.

HELICAL ANCHORS

Helical anchors consist of single or multiple helixes that are rotated into the ground on the end of round or square metal shafts. These anchors can be used to support both compression and tension loads, but their lateral capacity is negligible due to the relatively small diameter of the metal shafts. The design capacity of single helix anchors is the allowable soil bearing capacity on the helix area. Multiple-helix anchors are typically assumed to have a design capacity equal to the sum of the allowable bearing capacity on each helix if they are separated more than three helix diameters.

Due to better access in the driveway area, the helical anchors could either be installed using hand carried equipment, or with excavator mounted installation equipment. The use of larger installation equipment would help to achieve the needed anchor capacities more easily.

The minimum diameter of a single helix anchor is 8 inches. At least a dual, 8-/10-inch helix lead should be used for this project. The ultimate capacity of the anchor in tension or compression can be estimated roughly by multiplying the installation torque by 10. We recommend that the helix be installed at least 5 feet into competent native soil. A typical anchor capacity for small to mid-size anchors in the site soils is 10 kips. The anchors should be installed by a specialty contractor familiar with the design and installation of chance systems. The contractor can assist with refining the anchor design and details and estimating capacities for different soil and anchor conditions. All anchors should be torque tested during installation to at least 200 percent of the design capacity, but we do not believe that load testing is necessary for anchors with such low anticipated loads.

LIMITATIONS

This report has been prepared for the exclusive use of Russell and Linda Vandenbelt, and their representatives, for specific application to this project and site. Our conclusions and recommendations are professional opinions derived in accordance with our understanding of current local standards of practice, and within the scope of our services. No warranty is expressed or implied. The scope of our services does not include services related to construction safety precautions, and our recommendations are not intended to direct the contractor's methods, techniques, sequences, or procedures, except as specifically described in our report for consideration in design. Our services also do not include assessing or minimizing the potential for biological hazards, such as mold, bacteria, mildew, and fungi in either the existing or proposed site development.

ADDITIONAL SERVICES

In addition to reviewing the final plans, Geotech Consultants, Inc. should be retained to provide geotechnical consultation, testing, and observation services during construction. This is to confirm that subsurface conditions are consistent with those indicated by our exploration, to evaluate whether earthwork and foundation construction activities comply with the general intent of the recommendations presented in this report, and to provide suggestions for design changes in the event subsurface conditions differ from those anticipated prior to the start of construction. However, our work would not include the supervision or direction of the actual work of the contractor and its employees or agents. Also, job and site safety, and dimensional measurements, will be the responsibility of the contractor.

During the construction phase, we will provide geotechnical observation and testing services when requested by you or your representatives. Please be aware that we can only document sitework we actually observe. It is still the responsibility of your contractor or on-site construction team to verify that our recommendations are being followed, whether we are present at the site or not.

We appreciate the opportunity to be of service on this project. Please contact us if you have any questions, or if we can be of further assistance.

Respectfully submitted,

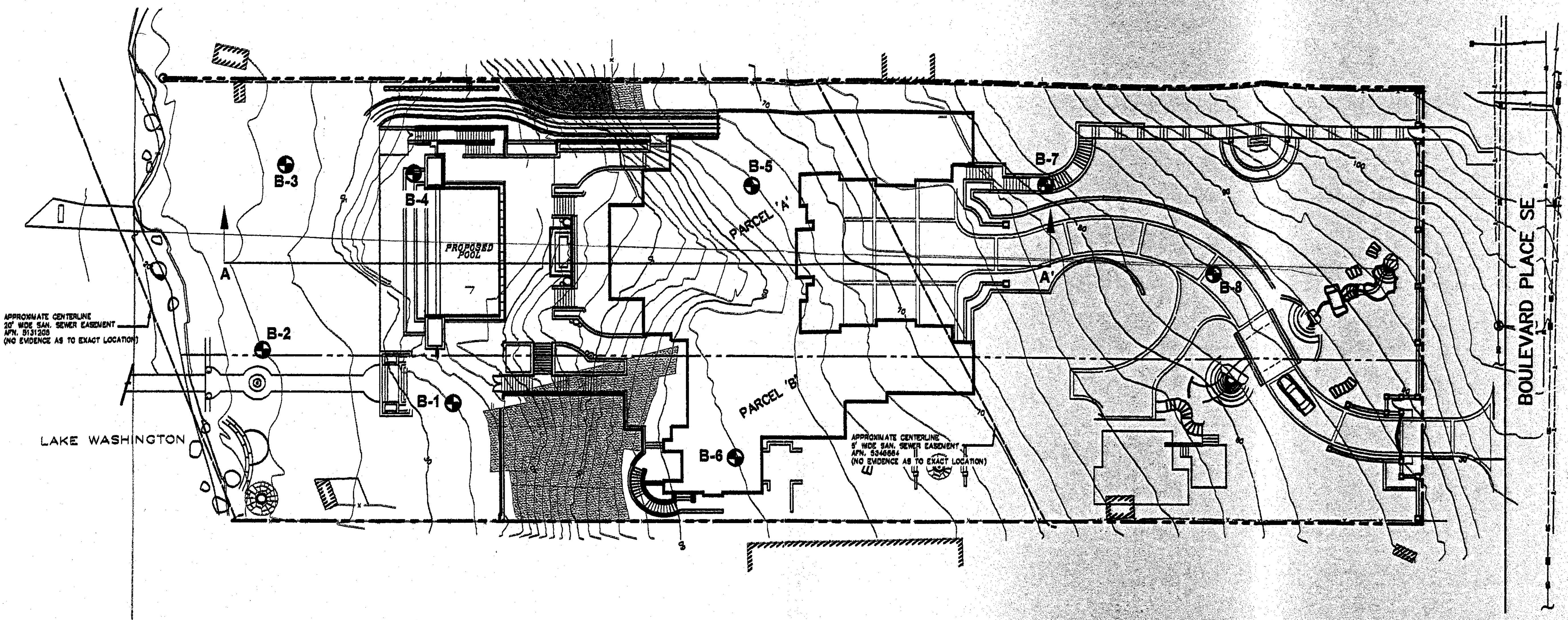
GEOTECH CONSULTANTS, INC.

MARC R. McGINNIS
STATE OF WASHINGTON
27845
REGISTERED
PROFESSIONAL ENGINEER

08/04/2023

Marc R. McGinnis, P.E.
Principal

Attachments: Logs of Borings to North of Site



NOTE:

THIS SITE PLAN IS SCHEMATIC. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE. IT IS INTENDED FOR REFERENCE ONLY AND SHOULD NOT BE USED FOR DESIGN OR CONSTRUCTION PURPOSES.

REFERENCE:

SITE PLAN PROVIDED BY CURTIS GELOTTE ARCHITECTS

LEGEND:

B–1 APPROXIMATE LOCATION OF BORING

INDICATES STEEP SLOPE

0 40 80

APPROXIMATE SCALE IN FEET

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EXPLORATION LOCATION PLAN
SANDWITH RESIDENCE
MERCER ISLAND, WASHINGTON

Proj. No. T-5643	Date MAY 2005	Figure 2

Boring No. B-1

Logged by: JV

Date: 12/14/04

Approximate Elev. 32

Soil Description	Consistency/ Relative Density	Depth (ft.)	Sample	(N) Blows/ ft.	Moisture Content (%)
(8 inches TOPSOIL) (GRASS and SMALL ROOTS)				7	18.1
Tan to gray, medium grained SAND with some SILT and gravel, moist. (SP-SM)	Medium Dense			10	20.0
Some thin layers of SILT.		5		8	23.4
				16	15.1
Bluish-gray SILT, low plasticity, moist. (ML)	Medium Dense	10		15	17.4 LL = 39 PI = 13
Pp = 4.5 tsf	Very Dense	15		53	27.3
Pp = 3.0 tsf		20		50/6"	25.9

Boring terminated at 21.5 feet.
Light groundwater observed at 7.5 to 9 feet.

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BORING LOG
SANDWITH RESIDENCE
MERCER ISLAND, WASHINGTON

Proj. No. T-5643	Date MAY 2005	Figure A-2

Boring No. B-2

Logged by: JV

Date: 12/14/04

Approximate Elev. 26

Soil Description	Consistency/ Relative Density	Depth (ft.)	Sample	(N) Blows/ ft.	Moisture Content (%)
(8 inches TOPSOIL with GRASS COVER)	Loose		I	5	20.3
Tan to gray, fine-grained SAND with SILT and some gravel, moist. (SP-SM)	Medium Dense	▼	I	15	20.2
		5	I	16	28.6
			I	19	20.2
		10	I	16	12.5
Gray to bluish-gray SILT, slightly layered, moist. (ML)	Hard				
Pp = 3.0 tsf		15	I	50/6"	28.2

Boring terminated at 16.5 feet.
Groundwater encountered at 2 feet.

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BORING LOG
SANDWITH RESIDENCE
MERCER ISLAND, WASHINGTON

Proj. No. T-5643 | Date MAY 2005 | Figure A-3

Boring No. B-3

Logged by: JV

Date: 12/14/04

Approximate Elev. 27

Soil Description	Consistency/ Relative Density	Depth (ft.)	Sample	(N) Blows/ ft.	Moisture Content (%)
(1-inchTOPSOIL with GRASS and ROOTS)	Loose		I	8	13.9
Tan to gray, medium- to coarse-grained SAND with some gravel and silt, moist. (SP-SM)	Medium Dense		I	11	15.0
		5 ▼	I	10	19.3
			I	17	20.6
		10	I	16	16.9
Bluish-gray, fine-grained SILT, moist. (ML)	Very Stiff				

Boring terminated at 11.5 feet.
Groundwater observed at 6 feet.

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BORING LOG
SANDWITH RESIDENCE
MERCER ISLAND, WASHINGTON

Proj. No. T-5643	Date MAY 2005	Figure A-4

Boring No. B-4

Logged by: JV

Date: 12/14/04

Approximate Elev. 37

Soil Description	Consistency/ Relative Density	Depth (ft.)	Sample	(N) Blows/ ft.	Moisture Content (%)
(TOPSOIL with GRASS and ROOTS)			I	8	19.4
Gray SILT with sand, moist. (ML)	Medium Stiff	5	I	7	14.2
Gray, coarse-grained SAND with some gravel, wet. (SP)	Medium Dense	10	I	18	13.9
Gray SILT, slightly layered, moist. (ML)	Very Dense	15	I	50/3"	20.4
		20	I	50/6"	

Boring terminated at 21.5 feet.
Groundwater observed at 11 feet.

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BORING LOG
SANDWITH RESIDENCE
MERCER ISLAND, WASHIGTON

Proj. No. T-5643	Date MAY 2005	Figure A-5

Boring No. B-5

Logged by: KPR

Date: 12/14/04

Approximate Elev. 66

Soil Description	Consistency/ Relative Density	Depth (ft.)	Sample	(N) Blows/ ft.	Moisture Content (%)
(16 inches TOPSOIL)					
Brownish-gray, silty fine SAND, wet. (SM)	Loose				
Brown, fine to medium SAND with silt, moist. (SP-SM)	Medium Dense to Very Dense		I	24	12.5
Becomes medium grained and with gravel.		5	I	50/5 1/2"	7.9
Brownish-gray, fine to medium SAND, faintly mottled, damp. (SP)	Dense	10	I	44	7.0
		▼ 12-14-05			
	Very Dense	15	I	59	16.9
Gray SILT, fractured, low plasticity, damp. (ML)	Hard				
Gray CLAY, massive, low plasticity, moist to wet. (CL)		20	I	30	30.8 LL = 31 PI = 3
Becomes laminated and moist.	Hard	25	I	73/11"	28.3
Drills gravelly.					
Gray sandy SILT, non-plastic, massive, moist to wet. (ML)	Dense				

Continued on next page

Boring No. B-6

Logged by: KPR

Date: 12/14/04

Approximate Elev. 62

Soil Description	Consistency/ Relative Density	Depth (ft.)	Sample	(N) Blows/ ft.	Moisture Content (%)
(8 inches TOPSOIL)					
Light brown, silty, very fine to fine SAND with occasional gravel, damp. (SM) Drills gravelly	Very Dense			63	4.4
Light brownish-gray, mottled, silty, gravelly fine SAND, silt layers, damp. (SM)		5		49	7.2
Brown, fine to medium SAND, moist. (SP)	Dense	10		33	5.0
Light brown becoming gray CLAY, disturbed texture, medium plasticity, wet. (CL)		15		60	38.6
Drills smooth					
Gray CLAY, massive, low plasticity, moist. (CL)	Hard	20		60	28.9
Drills gravelly		25		80/12"	22.2
Gray SILT with wet fine sand seams and occasional gravels, fractured, low plasticity, moist. (ML)	Hard				

Continued on next page

Boring No. B-6 (Continued)

Logged by: KPR

Date: 12/14/04

Approximate Elev. 62

Soil Description	Consistency/ Relative Density	Depth (ft.)	Sample	(N) Blows/ ft.	Moisture Content (%)
Gray SILT with wet fine sand, seams, and occasional gravel, fractured, low plasticity, moist. (ML)	Hard		I	51	22.8
Gray to dark gray, silty fine SAND with gravel, moist. (SM)					
Drills gravelly		35	I	50/3"	12.4
Drills smooth					
Drills gravelly					
		40	I	50/4 1/2"	12.2
	Very Dense				
		45	I	98/11"	14.1
With layers of wet fine sand.		50	I	79/9 1/2"	13.1
		▼			
Gray, gravelly, medium to coarse SAND with silt, water-bearing. (SP-SM)	Very Dense				
One foot of sand heave into auger		55	I	50/5" 89*	8.8

Boring terminated at 56.5 feet.
Groundwater observed at approximately 53 feet.
* Probable erroneous blowcounts due to sand heave.

TERRA ASSOCIATES
Geotechnical Consultants

BORING LOG
SANDWITH RESIDENCE
MERCER ISLAND, WASHINGTON

Proj. No. T-5643	Date MAY 2005	Figure A-7

Boring No. B-7

Logged by: KPR

Date: 12/15/04

Approximate Elev. 81

Soil Description	Consistency/ Relative Density	Depth (ft.)	Sample	(N) Blows/ ft.	Moisture Content (%)
(11 inches TOPSOIL)					
Light brown, becoming mottled at 2 1/2 feet, silty, very fine to medium SAND with gravel, wet becoming moist at 2 1/2 feet. (SM)	Dense			31	14.7
	Very Dense	5		61	11.0
Brownish-gray, mottled, fine- to medium-grained SAND with silt, moist. (SP-SM)	Dense	10		38	10.7
Light brown SILT, fractured, moist. (ML)	Hard				
Brown, fine to medium SAND, moist. (SP)	Very Dense	15		57	11.7
Gray SILT, with very fine sand and occasional gravel, fractured, low plasticity, moist. (ML)	Hard	20		50/6"	23.8

Test boring terminated at 21 feet.
No significant groundwater observed.

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BORING LOG
SANDWITH RESIDENCE
MERCER ISLAND, WASHINGTON

Proj. No. T-5643	Date MAY 2005	Figure A-8

Boring No. B-8

Logged by: KPR

Date: 12/15/04

Approximate Elev. 86

Soil Description	Consistency/ Relative Density	Depth (ft.)	Sample	(N) Blows/ ft.	Moisture Content (%)
(10 inches TOPSOIL) Brown, silty, fine to medium SAND with gravel, saturated. (SM)	Medium Dense	▼	I	11	10.4
Light brown, mottled SILT, fractured, low plasticity, moist. (ML)	Very Stiff	5	I	19	33.6
Brownish-gray, silty fine SAND, moist. (SM)	Medium Dense				
Brown SAND with silt, wet to saturated. (SP-SM)	Dense	▼ 10	I	34	19.0
Bluish-gray, mottled, silty, very fine to medium SAND with gravel, moist. (SM) Rock in shoe. No sample recovery. Erroneous blowcounts.	Very Dense	15	I	50/3"	

Boring terminated at 16 feet.
Perched groundwater observed at approximately 2 feet and 9 feet.

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BORING LOG
SANDWITH RESIDENCE
MERCER ISLAND, WASHINGTON

Proj. No. T-5643	Date MAY 2005	Figure A-9