ROBINSON
NOBLE

EXHIBIT # 2.1

April 21, 2016

Mr. Dan Mundall, PE
Lake Forest Park Water District
4029 NE 178th Street
Lake Forest Park, Washington 98155

Revision 2 - Geotechnical Information Report
Lake Forest Park McKinnon Creek Pumphouse
Lake Forest Park, Washington
RN File No. 2093-006A

Dear Mr. Mundall:

This letter serves as transmittal for our Revision 2 - Geotechnical Information Report for the McKinnon Creek Pumphouse project. The scope of our services is outlined in our proposal, "Lake Forest Park Utilities Building", dated March 2, 2012.

The slopes at the site appear stable and we do not expect the construction of the McKinnon Creek Pumphouse will significantly reduce the stability. An 8-foot gravel "porch" is planned on the west side of the planned McKinnon Creek Pumphouse structure. We understand you are planning a small detention tank beneath the planned utility building. We have discussed with you the potential for shallow surficial sloughing on the slope and we expect the new building and detention tank improvements will help stabilize the upper part of the slope.

We appreciate the opportunity of working with you on this project. If you have any questions regarding this report, please contact us.

Sincerely,

Rick B. Powell
Principal Engineer

RBP:am

2105 South C Street
Tacoma, Washington 98402
P: 253.475.7711 | F: 253.472.5846

www.robinson-noble.com

17625 130th Avenue, NE, Suite 102
Woodinville, Washington 98072
P: 425:488.0599 | F: 425.488.2330

EXHIBIT # 9.2

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EXHIBIT # 9.3

INTRODUCTION

This report presents the results of our geotechnical engineering investigation for the proposed utility McKinnon Creek Pumphouse located north of 47th Place Northeast in Lake Forest Park, Washington. The general site area is shown on the Vicinity Map in Figure 1 and a detailed view of the project is on the Site Plan in Figure 2.

You have requested that we complete this report to evaluate subsurface conditions near the proposed McKinnon Creek Pumphouse and provide recommendations for site development. For our use in preparing this report, we have been provided with an undated, untitled electronic copy of a plan sheet designated "lfpwd_18460_map" showing the proposed McKinnon Creek Pumphouse and topography. We have also been provided with a topographic survey dated July 1, 2008 by Signature Surveying and Mapping, PLLC that shows site topography and property boundaries. The site plan shows an area of the slope that is over 40% and that area is defined on the plans slightly taller than 20 feet. The steep slope area does not show that a large portion of the slope is man-made by placing fill on the slope, creating a taller and steeper slope. Since the fill was placed prior to 2009, we expect the slope was made during development of the original house; therefore, the steep slope was created during a legal grading activity.

We have previously prepared a geotechnical report, dated July 16, 2010 for the water line installed below McKinnon Creek using a directional drill process. We have been provided with a geotechnical report dated September 17, 2008, prepared by Geotech Consultants, Inc. titled "Geotechnical Engineering Considerations" that shows the location of four test pits performed on the east side of the site area near the proposed McKinnon Creek Pumphouse.

PROJECT DESCRIPTION

The project will include the installation of a new utilities building as shown on the site plan. The project is located near the top of a steep west facing slope. The slope extends down to McKinnon Creek at the base of the slope. You plan to construct a building with a daylight basement into the existing hillside. The depth of the building will be approximately 10 feet below grade and will have dimensions of 32 feet in the north-south direction and 24 feet in the east-west direction. A gravel "porch" is planned on the west side of the McKinnon Creek Pumphouse to access the building. Below the pumphouse, you are planning a small detention tank. The tank will be approximately 8 feet wide, 8 feet tall and 30 feet long.

SCOPE

The purpose of this study is to explore and characterize the subsurface conditions and present our opinion on the installation of a new utilities building. Specifically, our scope of services as outlined in our Services Agreement, dated March 2, 2012, includes the following:

- Review available geologic maps for the site area.
- Explore the subsurface soil and groundwater conditions in the area of the proposed tank with hand auger borings.
- Prepare a geotechnical report containing the results of our subsurface explorations, and our conclusions and recommendations for geotechnical design elements of the project. Our report will include:
    - Description of the geologic materials encountered.
    - Description of depth to groundwater, if encountered.

- Exploration logs with the density information from the hand augers and other available explorations previously performed.
- A site plan showing the boring locations.
- Discussion of seismicity at the site along with seismic design parameters including Site Class and site coefficients based on current IBC criteria.
- Excavation considerations and potential foundation support recommendations.
- Recommendations for shallow foundations including allowable soil bearing values, minimum footing sizes, soil parameters for lateral load resistance, and footing drains.
- Estimate the total and differential settlements of spread footings and floor slabs for variable loading within the building.
- Geotechnical recommendations and considerations for support of concrete slab-on-grade floors.
- Recommendations for earthwork and site preparation. An evaluation of the effects of weather and/or construction equipment on site soils and mitigation of any unsuitable soil conditions at the site will be included.

SITE CONDITIONS

Surface Conditions

An access road exists east of the proposed McKinnon Creek Pumphouse extending north from 47th Place Northeast to the approximate location of a water reservoir tank. To the west of the proposed McKinnon Creek Pumphouse there is a steep slope with an approximate 42% inclination and 16 feet of elevation drop. The slope then decreases to an approximate inclination of 37% to McKinnon Creek at the base of the slope. The steep slope continues to the north and south of the site in an approximate Northwest to Southeast alignment. A residential structure and property exist to the east of the project site.

Numerous small to large trees and some dense undergrowth occupy the area of the proposed McKinnon Creek Pumphouse. The large diameter trees appeared to be growing straight. Curvature of mature trees is an indication of long-term creep or slope movement. No groundwater seepage onto the slope was evident below the improvements.

Geology

Most of the Puget Sound Region was affected by past intrusion of continental glaciation. The last period of glaciation, the Vashon Stade of the Fraser Glaciation, ended approximately 10,000 to 11,000 years ago. Many of the geomorphic features seen today are a result of scouring and overriding by glacial ice. During the Vashon Stade, areas of the Puget Sound region were overridden by over 3,000 feet of ice. Soil layers overridden by the ice sheet were compacted to a much greater extent than those that were not.

The surface geologic units mapped for this area are shown on the Geologic Map of the Edmonds East and Edmonds West Quadrangles, Snohomish and King Counties, Washington, by James P. Minard (U.S.G.S., 1985). The site is mapped as Esperance sand (Qe) with nearby areas of older clay (Qcl), glacial till (Qvt) and recessional outwash (Qvr). Our explorations encountered Esperance sand.

- **Older Clay:** Clay and silt of unknown origin compacted by the weight of the Vashon glacier.
- **Esperance sand:** Thinly bedded sand and gravel layers placed prior to and compacted by the weight of advancing glaciers.
- **Glacial till:** Glacially consolidated mixture of non-sorted, non-stratified silt, sand and gravel deposited directly beneath the glacier.
- **Recessional Outwash:** Non-glacially consolidated stratified sand and gravel deposited by meltwater streams as the glacier retreated.
- **Fill:** Artificial or foreign soils used for grading in construction. Consistency and density of the fill soils will depend on construction procedures.

Subsurface Explorations

General: We explored the soil and groundwater conditions on the site with hand excavating equipment on April 4, 2012. The hand augers were excavated to depths of 3.5 to 7.5 feet below the ground surface. The approximate locations of the explorations are shown on the Site Plan in Figure 2. The soils were visually classified in general accordance with the Unified Soil Classification System, a copy of which is presented as Figure 3. The logs of the explorations are presented in Figure 4. A cross section view of the slope in the area of the proposed McKinnon Creek Pumphouse can be seen in Figure 5.

We have also reviewed Boring 1 from our previously prepared report for the adjacent water main project drilled just north of the planned building. Four test pits were also excavated just east of our hand augers at the top of the east slope. These test pits were excavated by Geotech Consultants for a residential evaluation.

Robinson Noble Hand Augers 1 through 3: Topsoil was encountered within the hand augers to a depth of 2 feet. Below the topsoil, Hand Auger 1, located at the top of the slope, encountered silty sand with and gravel from 2.2 feet to the depths explored of 3.5 feet. Hand Auger 2, located approximately half way down the slope encountered silty sand and gravel from 1.5 feet to the depths explored of approximately 7.5 feet. Hand Auger 3 was performed at the bottom of the slope and encountered silty sand and gravel from 1.9 feet to the depths explored of approximately 3 feet.

Robinson Noble Boring 1: Boring 1 was performed on the gravel access road above the creek on the east slope. Fine sand was encountered from the surface to 26 feet below grade. Silty fine sand to sandy silt was encountered from 26 feet below grade to 30 feet below grade. Sand

with silt was encountered from 30 feet below grade to the depth explored of 41.5 feet. Groundwater was encountered at 28 feet below grade.

Geotech Consultants Test Pits 1 through 4: These test pits encountered fill soils to depths of 1 to 8 feet. The fill consisted of loose to medium dense slightly silty sand with gravel. Dense sandy silt underlayed the fill in Test Pit 2 from a depth of approximately 3 to 6 feet. Underlying the silt in Test Pit 2 and fill in the other test pits, dense sand to slightly silty sand was observed from 1 foot to the depths explored of up to 12 feet. We expect the fill was placed during the development of the removed residence.

Hydrologic Conditions

We observed no groundwater in Hand Augers 1, 2 and 3 but we observed some mottling as identified in the exploration logs. We observed groundwater seeping out of the toe of the slope at an approximate elevation of 258 feet. Wetland vegetation was also observed in this area. We also observed a water level in Boring 1 on top of the underlying less permeable fine grained soil at 28 feet below grade. We consider this water to be perched on top of the low permeable soils.

GEOLOGIC HAZARDS

Landslide Hazards

The core of the site is inferred to be composed of glacially overridden soils. We consider these soils stable with regard to deep-seated slope failures. We did not observe indications of shallow or deep-seated slope failures at the site. Numerous mature evergreen trees are located on the site. We expect that the surficial soils on the steeper sections of the site slopes could slough over time. Any sloughing events are expected to be surficial. We believe that the removal of man made fill in the proposed McKinnon Creek Pumphouse will increase overall slope stability. Removal of trees and roots could destabilize the slope. Care should be used when removing vegetation from a steep slope.

Erosion Hazards

The erosion hazard criteria used for determination of affected areas include soil type, slope gradient, vegetation cover, and groundwater conditions. The erosion potential is related to vegetative cover and the specific surface soil types (group classification), which are related to the underlying geologic units. Over the gently sloping conditions of the site we consider the erosion hazard to be slight with vegetative cover in place and moderate when stripped of vegetation. A portion of the site is over 40 percent slope. These areas are generally considered to have moderate potential for erosion when covered with vegetation and high when stripped of vegetation. We do not expect removal of vegetation in areas of steep sloping conditions outside of the area of the planned building. Best management practices (BMPs) and applicable codes should be followed during site grading to limit potential for erosion. We do not expect this site will require unusual or extreme erosion management methods.

Steep Slopes Hazards

The proposed McKinnon Creek Pumphouse is adjacent to the steep slope on the west side of the site. Removal of man made soils near the top of the slope will increase the slope stability.

The planned foundation depth for the McKinnon Creek Pumphouse of approximately 10 feet and the detention tank will add stability to the upper portion of the slope. The drains behind the wall will help control near-surface groundwater.

Seismic Hazard

It is our opinion based on our subsurface explorations that the Soil Profile in accordance with the 2012 International Building Code (IBC) is Site Class D with Seismic Design Category D. We used the US Geological Survey program "U.S. Seismic Design Maps Web Application." The design maps summary report for the 2012 IBC is included in this report as Appendix C.

Additional seismic considerations include liquefaction potential and amplification of ground motions by soft soil deposits. The liquefaction potential is highest for loose sand with a high groundwater table. We do not expect groundwater at the elevations within the medium dense sands observed near the surface in our explorations. If liquefaction was to occur we would expect that the settlement induced would be minor and would not be detrimental to the structure.

CONCLUSIONS AND RECOMMENDATIONS

General

It is our opinion that the site is compatible with the planned improvements. We do not anticipate that the planned McKinnon Creek Pumphouse will have adverse impacts on the slope stability and it should improve the stability of the top portion of the slope. We recommend that the building and detention tank foundations be embedded deep enough to have at least a 15 foot horizontal distance from the slope face to the footing as shown in Figure 6. The footing should extend through any loose soil and be embedded at least 2 feet into native dense soil.

The natural steep slope in the area of the project is less than 20 feet tall after the man-made fills are discounted. At least a portion of the fill appears to have been placed during the development of the residence that has been removed; therefore, the fill was placed during a legal grading activity. Native steep slopes observed in the area of the project were measured to be less than 20 feet in height with no signs of instability. According to the LFP municipal code chapter 16.16.310 C 2, this designation allows the slope to be regraded as part of an approved development plan. Any steep slope after the project completion will be considered a steep slope and subject to all steep slope requirements.

Any shallow slope failures will have minimal impacts to the planned improvements due to the depth of the planned improvements.

It is important to reduce the amount of uncontrolled fill placed out over the slope. Placing fill on the slopes could increase the risk of landslides. Any soils removed during the excavation should be removed from the site or stockpiled in the eastern region of the site, away from the top of the steep slope. Controlling surface water from over the slope will help maintain the planned improvements.

Temporary Slopes

Temporary cut slope stability is a function of many factors, such as the type and consistency of soils, depth of the cut, surcharge loads adjacent to the excavation, length of time a cut remains open, and the presence of surface or groundwater. It is exceedingly difficult under these variable conditions to estimate a stable temporary cut slope geometry. Therefore, it should be the responsibility of the contractor to maintain safe slope configurations, since the contractor is continuously at the job site, able to observe the nature and condition of the cut slopes, and able to monitor the subsurface materials and groundwater conditions encountered.

For planning purposes, we recommend that temporary cuts be no steeper than 1.5 Horizontal to 1 Vertical (1.5H:1V). If groundwater seepage is encountered, we would expect that flatter inclinations would be necessary. We recommend that cut slope heights and inclinations conform to local and WISHA/OSHA standards. Shoring may be needed to control the size of the excavation.

Structural Fill

General: All fill placed beneath buildings or other settlement sensitive features should be placed as structural fill. Structural fill, by definition, is placed in accordance with prescribed methods and standards, and is observed by an experienced geotechnical professional or soils technician. Field observation procedures would include the performance of a representative number of in-place density tests to document the attainment of the desired degree of relative compaction.

Materials: Imported structural fill should consist of a good quality, free-draining granular soil, free of organics and other deleterious material, and be well graded to a maximum size of about 3 inches. Imported, all-weather structural fill should contain no more than 5 percent fines (soil finer than a Standard U.S. No. 200 sieve), based on that fraction passing the U.S. 3/4-inch sieve.

The use of on-site soil as structural fill will be dependent on moisture content control. Some drying of the native soils may be necessary in order to achieve compaction. During warm, sunny days this could be accomplished by spreading the material in thin lifts and compacting. Some aeration and/or addition of moisture may also be necessary. We expect that compaction of the native soils to structural fill specifications would be difficult, if not impossible, during wet weather.

Fill Placement: Following subgrade preparation, placement of the structural fill may proceed. Fill should be placed in 8- to 10-inch-thick uniform lifts, and each lift should be spread evenly and be thoroughly compacted prior to placement of subsequent lifts. All structural fill underlying building areas, and within a depth of 2 feet below pavement and sidewalk subgrade, should be compacted to at least 95 percent of its maximum dry density. Maximum dry density, in this report, refers to that density as determined by the ASTM D1557 compaction test procedure. Fill more than 2 feet beneath sidewalks and pavement subgrades should be compacted to at least 90 percent of the maximum dry density. The moisture content of the soil to be compacted should be within about 2 percent of optimum so that a readily compactable condition exists. It may be necessary to overexcavate and remove wet surficial soils in cases

where drying to a compactable condition is not feasible. All compaction should be accomplished by equipment of a type and size sufficient to attain the desired degree of compaction.

Foundations

Conventional shallow spread foundations should be founded on undisturbed, medium dense or firmer soil. If the soil at the planned bottom of footing elevation is not suitable, it should be overexcavated to expose suitable bearing soil. Footings should extend at least 18 inches below the lowest adjacent finished ground surface for frost protection. Minimum foundation widths should be at least 16 inches and should conform to IBC requirements. Standing water should not be allowed to accumulate in footing trenches. All loose or disturbed soil should be removed from the foundation excavation prior to placing concrete. The footings should be embedded to satisfy the 15 foot horizontal distance from the slope face as shown in Figure 6.

For foundations constructed as outlined above, we recommend an allowable design bearing pressure of 2,000 pounds per square foot (psf) be used for the footing design. IBC guidelines should be followed when considering short-term transitory wind or seismic loads. Potential foundation settlement using the recommended allowable bearing pressure is estimated to be less than 1 inch total and 1/2-inch differential across the distance of the building.

Lateral Pressures

The lateral earth pressure acting on retaining walls is dependent on the nature and density of the soil behind the wall, the amount of lateral wall movement, which can occur as backfill is placed, and the inclination of the backfill. Walls that are free to yield at least one-thousandth of the height of the wall are in an "active" condition. Walls restrained from movement by stiffness or bracing are in an "at-rest" condition. Active earth pressure and at-rest earth pressure can be calculated based on equivalent fluid density. Equivalent fluid densities for active and at-rest earth pressure of 35 pounds per cubic foot (pcf) and 55 pcf, respectively, may be used for design for a level backslope. These values assume that the on-site soils or imported granular fill are used for backfill, and that the wall backfill is drained. The preceding values do not include the effects of surcharges, such as due to foundation loads or other surface loads. Surcharge effects should be considered where appropriate.

Seismic lateral loads are a function of the site location, soil strength parameters and the peak horizontal ground acceleration (PGA) for a given return period. We used the US Geological Survey program "2009 PSH Deaggregation on NEHRP" to compute the PGA for the site. The 3-D histogram is included in Appendix C. The above drained active and at-rest values should be increased by a uniform pressure of 6.1H and 20.3H psf, respectively, when considering seismic conditions. H represents the wall height.

Lateral pressures may be resisted by friction at the base of the wall and passive resistance against the foundation. A coefficient of friction of 0.45 may be used to determine the base friction in the native glacial soils if a continuous foundation is used. An equivalent fluid density of 250 pcf may be used for passive resistance design. To achieve this value of passive pressure, the foundations should be poured "neat" against the native dense soils, or compacted fill should be used as backfill against the front of the footing, and the soil in front of

the wall should extend a horizontal distance at least equal to three times the foundation depth. A factor of safety of 2.0 has been applied to the passive pressure to account for required movements to generate these pressures. The friction coefficient does not include a factor of safety.

Drainage

We recommend that runoff from impervious surfaces, such as roofs, driveway and access roadways, be collected and routed to an appropriate storm water discharge system. The finished ground surface should be sloped at a gradient of 5 percent minimum for a distance of at least 10 feet away from the buildings, or to an approved method of diverting water from the foundation, per IBC 2009 Section 1803.3. Surface water should be collected by permanent catch basins and drain lines, and be routed into a storm discharge system.

We recommend that footing drains be used around all of the structures as shown in Figure 5. The footing drains should consist of 4-inch-diameter, perforated PVC pipe that is surrounded by free-draining material, such as pea gravel and placed at the footing elevation. A drainage composite or 1 foot blanket of sand should extend up from the footing drain to within 1 foot of the ground surface. Footing drains could discharge onto the slope because we expect an insignificant amount of water.

Erosion Control

We recommend that cut slopes and any disturbed soils be protected from erosion. We expect that erosion control BMP's such as silt fencing and ground cover such as straw or visqueen will be limited to the construction areas of the project.

USE OF THIS REPORT

We have prepared this report for Lake Forest Park Water District and its agents, for use in planning and design of this project. The data and report should be provided to prospective contractors for their bidding and estimating purposes, but our report, conclusions and interpretations should not be construed as a warranty of subsurface conditions.

The scope of our services does not include services related to construction safety precautions, and our recommendations are not intended to direct the contractors' methods, techniques, sequences or procedures, except as specifically described in our report, for consideration in design. There are possible variations in subsurface conditions. We recommend that project planning include contingencies in budget and schedule, should areas be found with conditions that vary from those described in this report.

Within the limitations of scope, schedule and budget for our services, we have strived to take care that our services have been completed in accordance with generally accepted practices followed in this area at the time this report was prepared. No other conditions, expressed or implied, should be understood.

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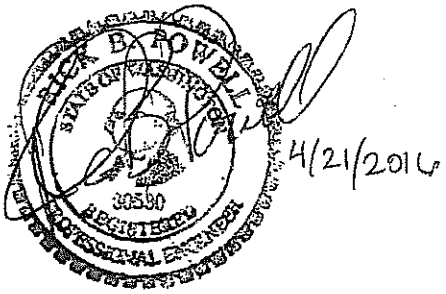
EXHIBIT # 9.11

We appreciate the opportunity to be of service to you. If there are any questions concerning this report or if we can provide additional services, please call.

Sincerely,
Robinson Noble, Inc.



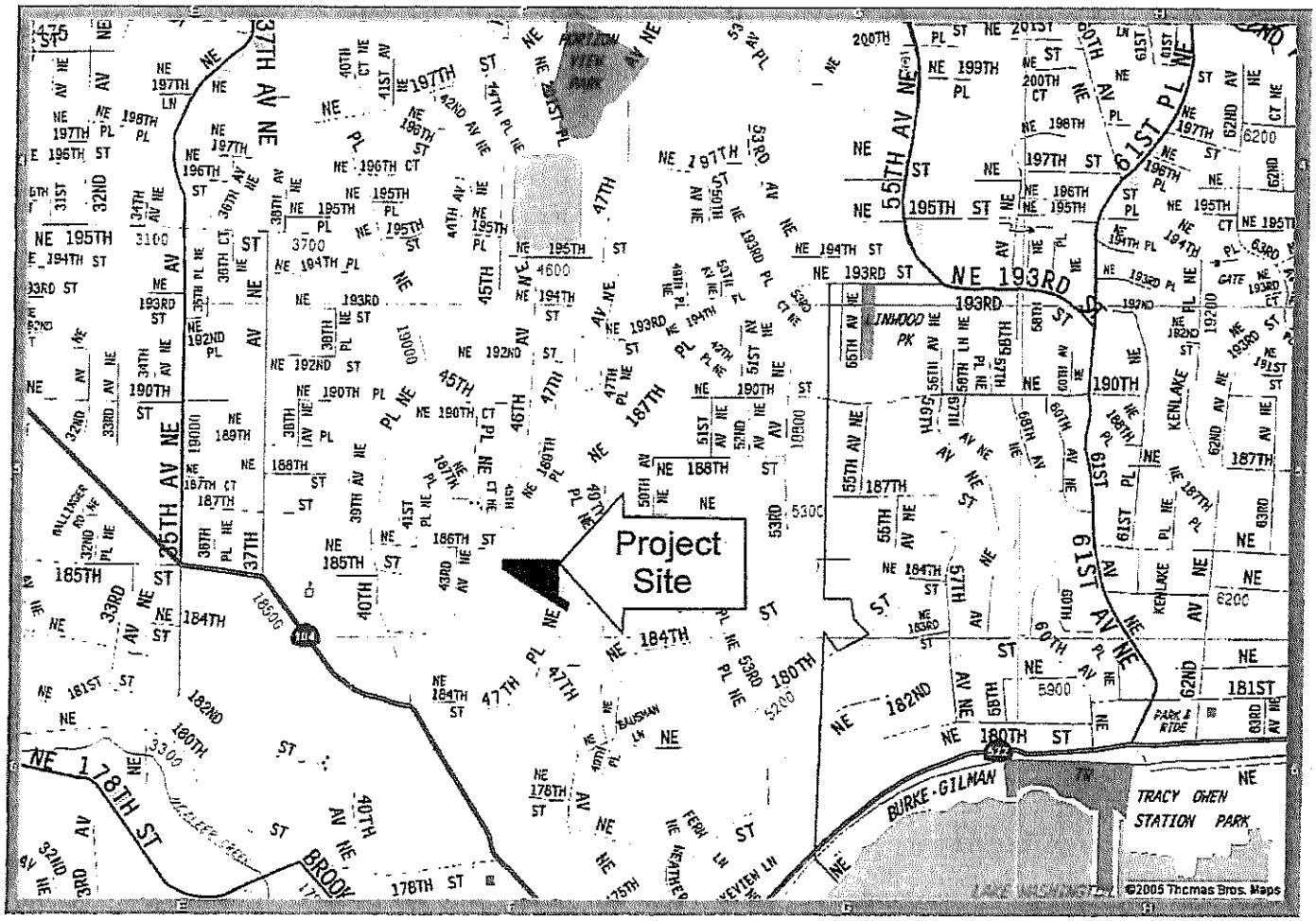
4/21/2016

Rick B. Powell, PE
Principal Engineer

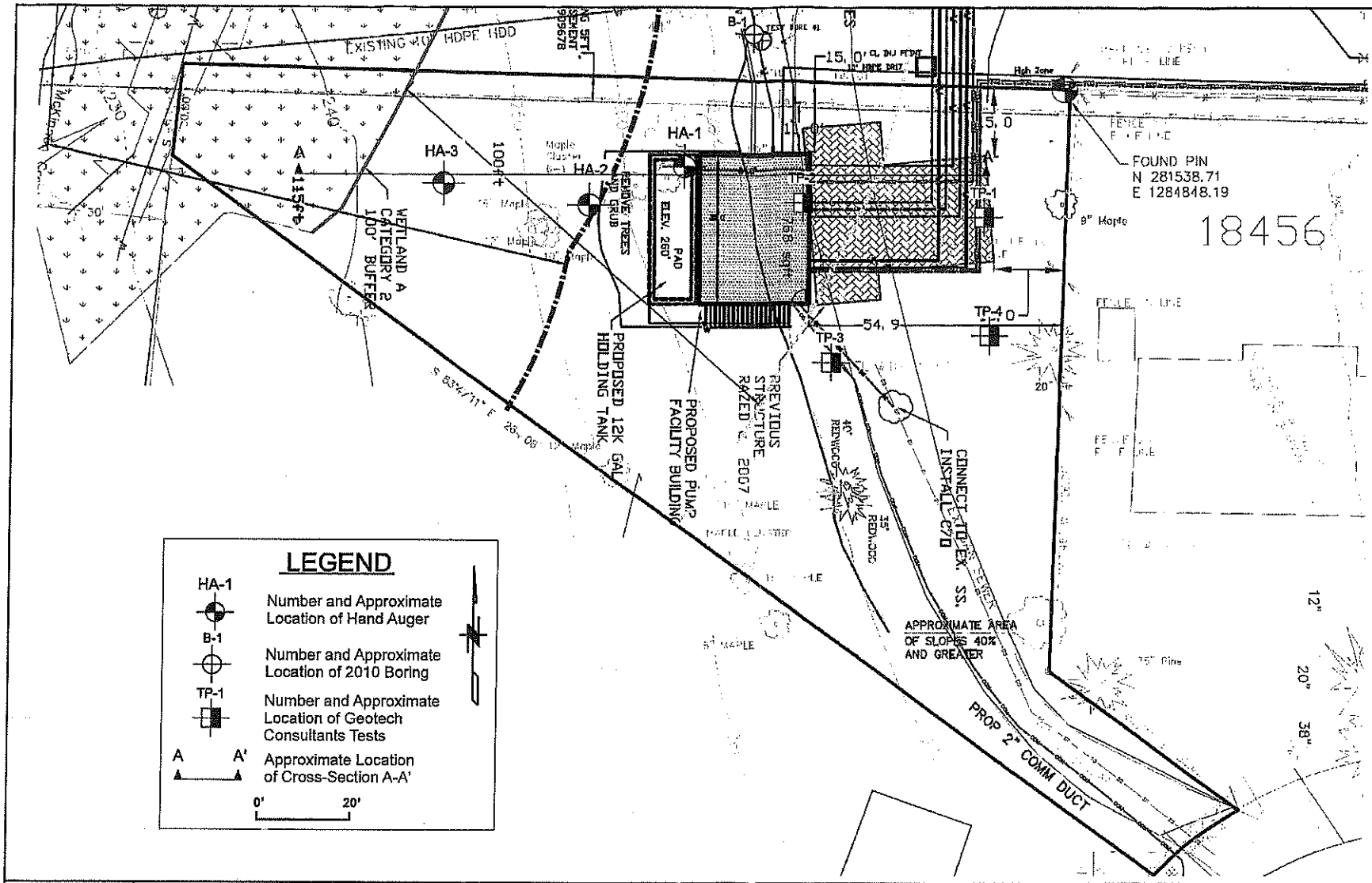
RBP:am

Six Figures
Appendix A – Boring 1 from RN geotechnical letter, dated July 16, 2010
Appendix B – Test Pit 1-4 from Geotechnical Consultant, dated September 17, 2008
Appendix C – Design Maps Summary Report and 3D Histogram

EXHIBIT # 9.12



ROBINSON NOBLE		PM: RBP March 2014 2093-006A	Figure 1 Vicinity Map Lake Forest Park Water District: McKinnon Creek Pumphouse



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Note: Basemap taken from "Lake Forest Park Water District PWTF 2013 McKinnon Creek Pump Facility Building and Utilities" prepared by Mundall Engineering & Consulting dated 11/18/2015.

PM: RBP
November 2015
2093-006A

Figure 2
Site Plan
Lake Forest Park Water District: Northeast 185th Street Utilities Building

EXHIBIT # 9, 13

EXHIBIT # 9.14

Unified Soil Classification System

MAJOR DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE - GRAINED SOILS MORE THAN 50% RETAINED ON number 200 SIEVE	GRAVEL MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVEL	GW	WELL-GRADED GRAVEL, FINE TO COARSE GRAVEL
			GP	POORLY-GRADED GRAVEL
		GRAVEL WITH FINES	GM	SILTY GRAVEL
			GC	CLAYEY GRAVEL
	SAND MORE THAN 50% OF COARSE FRACTION PASSES NO. 4 SIEVE	CLEAN SAND	SW	WELL-GRADED SAND, FINE TO COARSE SAND
			SP	POORLY-GRADED SAND
		SAND WITH FINES	SM	SILTY SAND
			SC	CLAYEY SAND
FINE - GRAINED SOILS MORE THAN 50% PASSES NO. 200 SIEVE	SILT AND CLAY LIQUID LIMIT LESS THAN 50%	INORGANIC	ML	SILT
			CL	CLAY
		ORGANIC	OL	ORGANIC SILT, ORGANIC CLAY
	SILT AND CLAY LIQUID LIMIT 50% OR MORE	INORGANIC	MH	SILT OF HIGH PLASTICITY, ELASTIC SILT
			CH	CLAY OF HIGH PLASTICITY, FAT CLAY
		ORGANIC	OH	ORGANIC CLAY, ORGANIC SILT
HIGHLY ORGANIC SOILS			PT	PEAT

NOTES:

1) Field classification is based on visual examination of soil in general accordance with ASTM D 2488-83.
2) Soil classification using laboratory tests is based on ASTM D 2487-83.
3) Descriptions of soil density or consistency are based on interpretation of blowcount data, visual appearance of soils, and/or test data.

SOIL MOISTURE MODIFIERS

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

Moist- Damp, but no visible water

Wet- Visible free water or saturated, usually soil is obtained from below water table

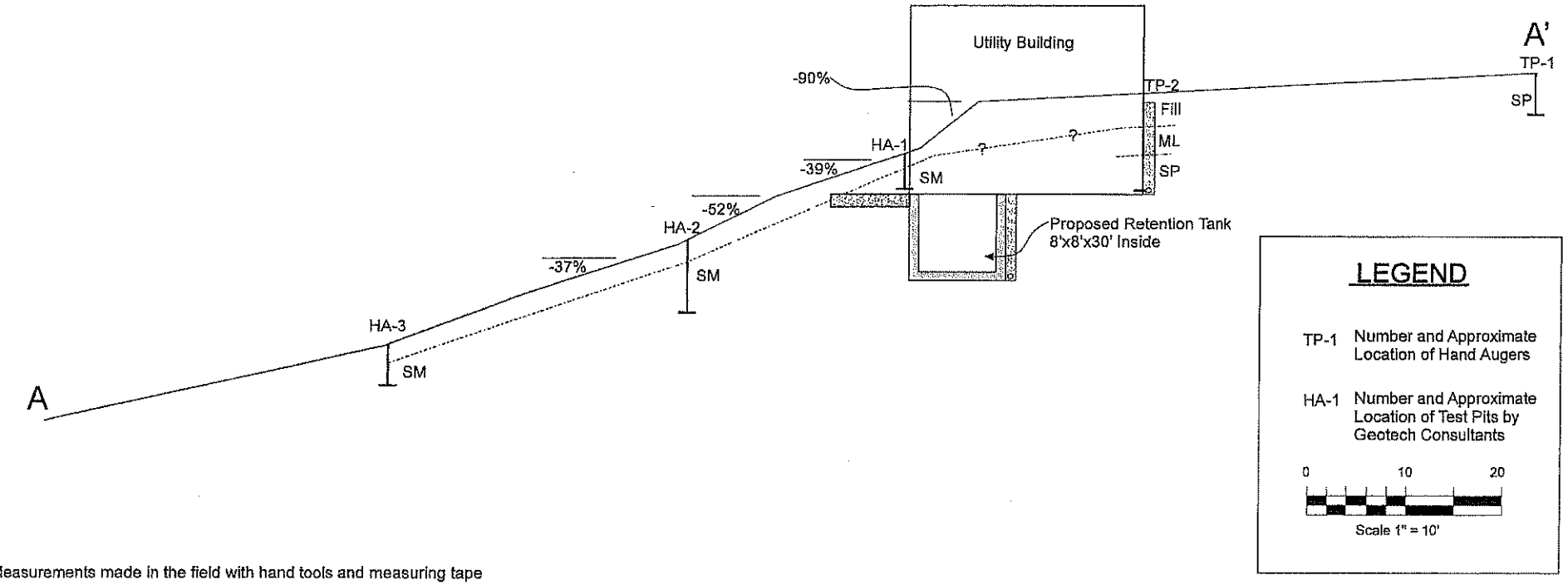
ROBINSON NOBLE	PM: RBP March 2014 2093-006A	King County	Figure 3 Unified Soil Classification System Lake Forest Park Water District: McKinnon Creek Pumphouse

EXHIBIT # 9.15

LOG OF EXPLORATION

DEPTH	USC	SOIL DESCRIPTION
HAND AUGER ONE		
0.0 – 2.2	SM	Brown-dark brown silty fine sand with roots and trace gravel (loose, moist)**(Topsoil)**
2.2 – 3.5	SM	Light brown to brown silty fine to medium sand with trace roots and gravel (Medium dense, moist) – refusal on rock at 3.5 feet **(Esperance Sand)**
		Samples were collected at 1.3 and 2.3 feet Groundwater seepage was not encountered Hand Auger caving was not encountered Hand Auger was completed at 3.5 feet on 4/2/2012
HAND AUGER TWO		
0.0 – 1.5	SM	Brown silty fine to medium sand with roots and gravel (loose, moist) **(Topsoil)**
1.5 – 7.5	SM	Gray-light brown silty fine to medium sand with trace roots and gravel and mottling (medium dense, moist) **(Esperance Sand)**
		Samples were collected at 1.0, 1.7, 2.7, 5.4 and 7.3 feet Groundwater seepage was not encountered Hand Auger caving was not encountered Hand Auger was completed at 7.5 feet on 4/2/2012
HAND AUGER THREE		
0.0 – 1.9	SM	Dark brown-black silty fine sand with roots and gravel (loose, wet) **(Topsoil)**
1.9 – 3.0	SM	Brown-gray silty fine to medium sand with trace roots and gravel (dense, wet) – refusal on rock at 3.0 feet **(Esperance Sand)**
		Samples were collected at 1.7 and 2.4 feet Groundwater seepage was not encountered Hand Auger caving was not encountered Hand Auger was completed at 3.0 feet on 4/2/2012

Cross Section A-A'



LEGEND

TP-1 Number and Approximate Location of Hand Augers

HA-1 Number and Approximate Location of Test Pits by Geotech Consultants

0 10 20

Scale 1" = 10'

*Measurements made in the field with hand tools and measuring tape

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PM: RBP
April 2016
2093-006A

Figure 5

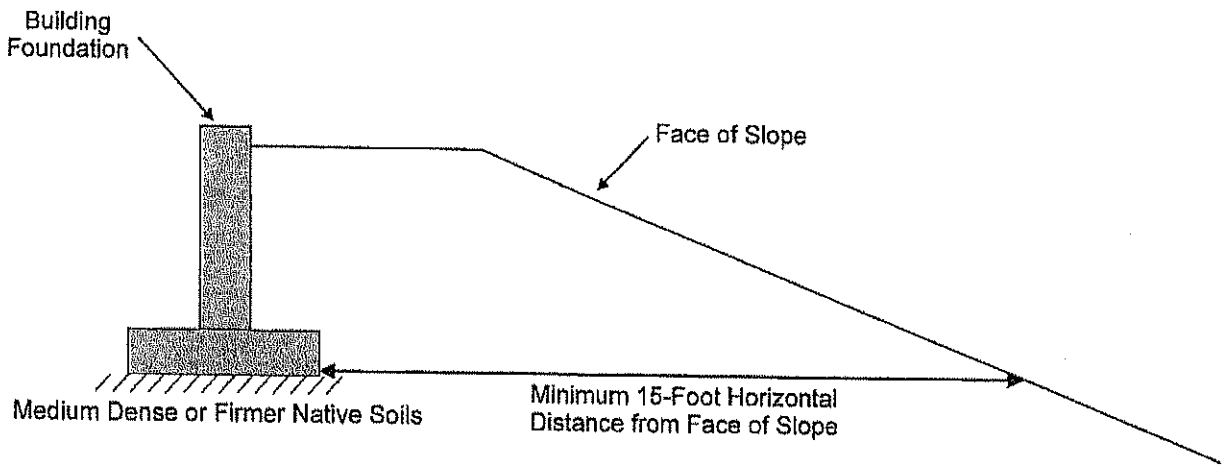
Cross Section

Lake Forest Park Water District: McKinnon Creek Pumphouse

EXHIBIT # 9, 16

Typical Foundation Embedment Detail with Effective Setback from Slope Face

(Not to Scale)



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PM: RBP
March 2014
2096-006A

Figure 6
Footing Setback
Lake Forest Park Water District: McKinnon Creek Pumphouse

EXHIBIT # 9.1.7

EXHIBIT # 9.18

APPENDIX A

EXHIBIT # 9.19

B-1				
Page 1 of 2	Date	6/17/2010	Hole diameter	4
	Logged by	Jeff Wale	Hole depth	41.5
	Driller	Env. Drilling	Well diameter	N/A
	Elevation	~273	Well depth	N/A

LITHOLOGY / DESCRIPTION

LITHOLOGY / DESCRIPTION	U.S.C.	Sample Recovery	Sample Interval	Static Water Level
Brown fine to medium sand (very loose, moist)	SP			
Brown fine sand trace gravel and roots (very loose, moist)	SP			
Gray fine sand (medium dense, wet)	SP			
Gray fine sand (medium dense, moist)	SP			
Gray fine sand (medium dense, moist)	SP			

Depth (feet): 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

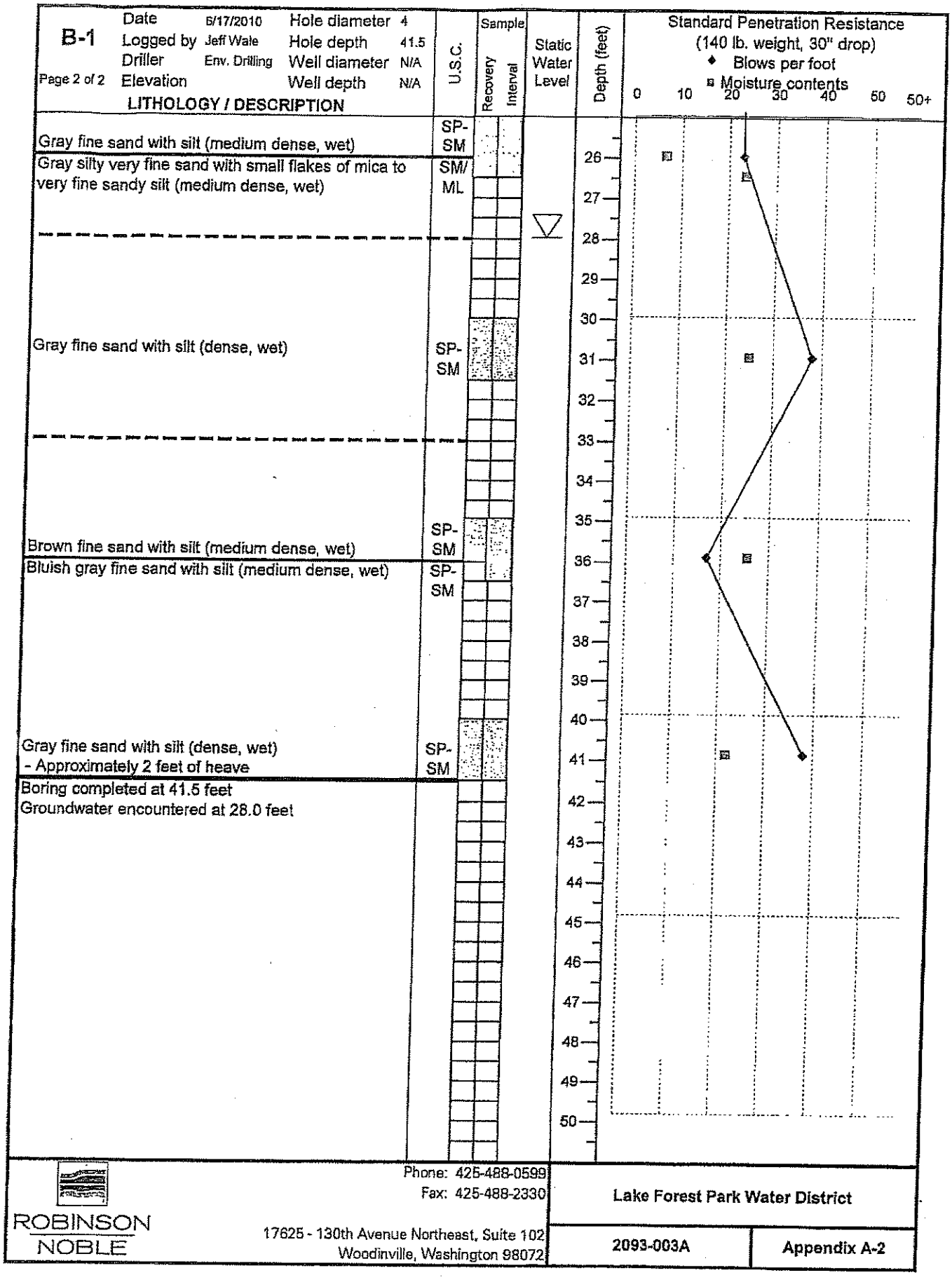
Standard Penetration Resistance
(140 lb. weight, 30" drop)
◆ Blows per foot
▣ Moisture contents
0 10 20 30 40 50 50+

ROBINSON NOBLE
17625 - 130th Avenue Northeast, Suite 102
Woodinville, Washington 98072
Phone: 425-488-0599
Fax: 425-488-2330

Lake Forest Park Water District

2093-003A | Appendix A-1

EXHIBIT # 9.20



ROBINSON NOBLE

Phone: 425-488-0599
Fax: 425-488-2330

17625 - 130th Avenue Northeast, Suite 102
Woodinville, Washington 98072

Lake Forest Park Water District

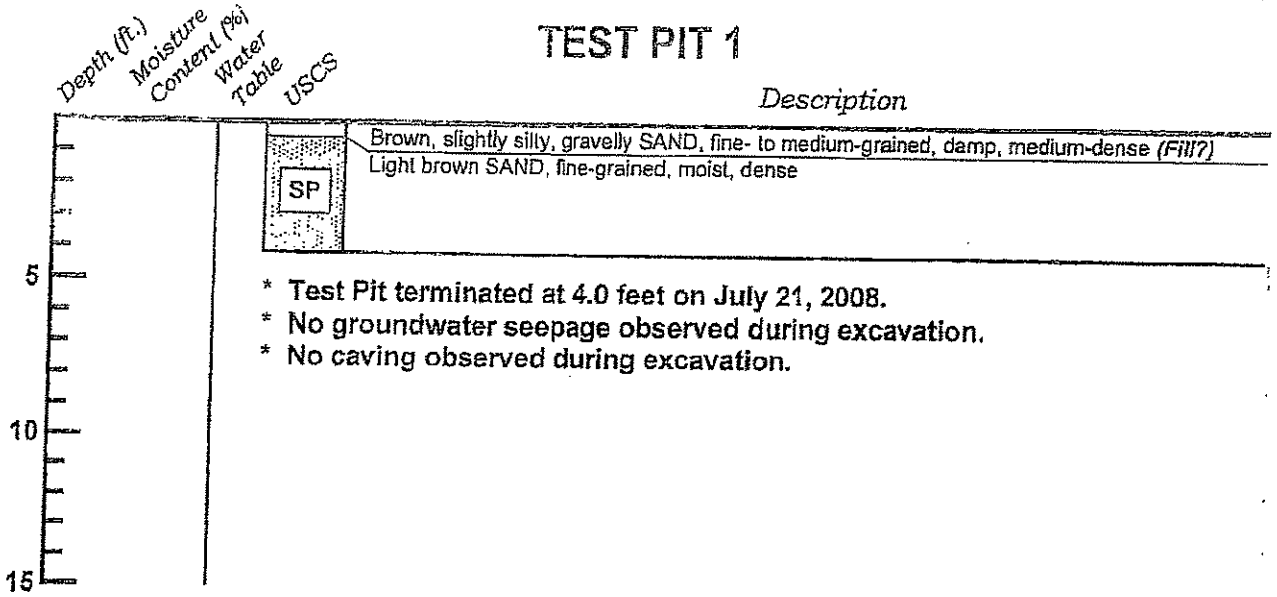
2093-003A | Appendix A-2

EXHIBIT # 9.21

APPENDIX B

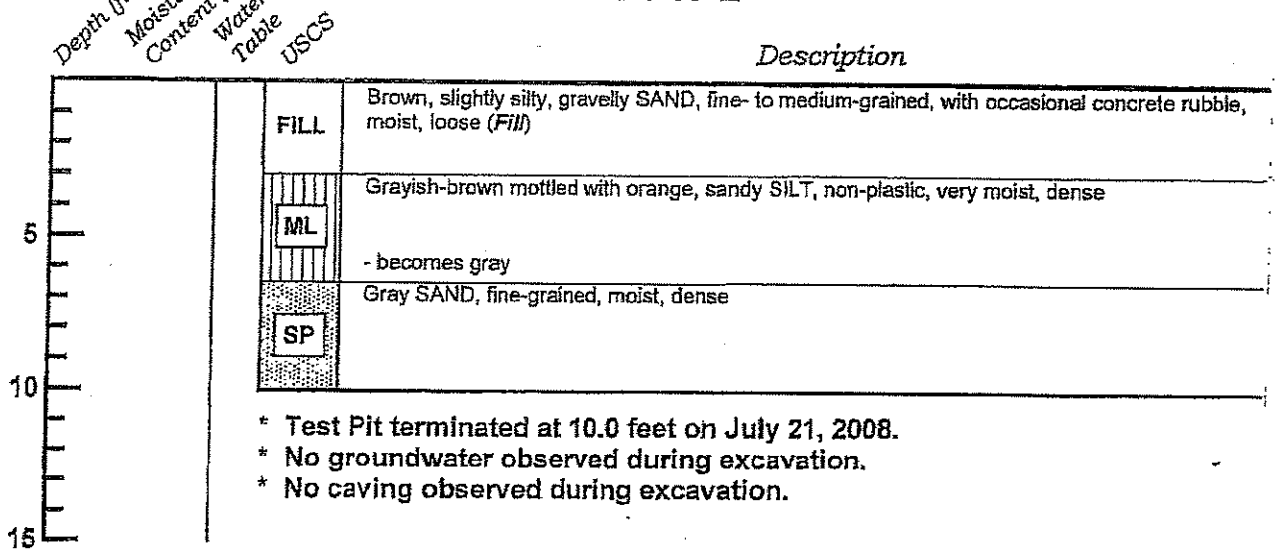
EXHIBIT # 9.22

TEST PIT 1



* Test Pit terminated at 4.0 feet on July 21, 2008.
* No groundwater seepage observed during excavation.
* No caving observed during excavation.

TEST PIT 2



* Test Pit terminated at 10.0 feet on July 21, 2008.
* No groundwater observed during excavation.
* No caving observed during excavation.

GEOTECH CONSULTANTS, INC.

TEST PIT LOG

18460 - 47th Place Northeast
Lake Forest Park, Washington

Job	Date:	Logged by:	Plate:
08235	Sept. 2008	MRM	3

EXHIBIT # 9.23

TEST PIT 3

Depth (ft.)	Moisture Content (%)	Water Table	USCS	Description
5			FILL	Brown, slightly silty, gravelly SAND, fine- to medium-grained, with organics, damp, loose (*Fill*)
10			SP-SM	Brown, slightly silty SAND, fine-grained, moist, dense - becomes wet
15				

* Test Pit terminated at 12.0 feet on July 21, 2008.
* No groundwater observed during excavation.
* No caving observed during excavation.

TEST PIT 4

Depth (ft.)	Moisture Content (%)	Water Table	USCS	Description
5			FILL	Brown, slightly silty, gravelly SAND, fine-grained, with occasional chunks of concrete, moist, loose (*Fill*)
10			SP-SM	Brown, slightly silty SAND, fine-grained, moist, medium-dense to dense
15				

* Test Pit terminated at 10.0 feet on July 21, 2008.
* No groundwater observed during excavation.
* No caving observed during excavation.

GEOTECH CONSULTANTS, INC.

TEST PIT LOG

18460 - 47th Place Northeast
Lake Forest Park, Washington

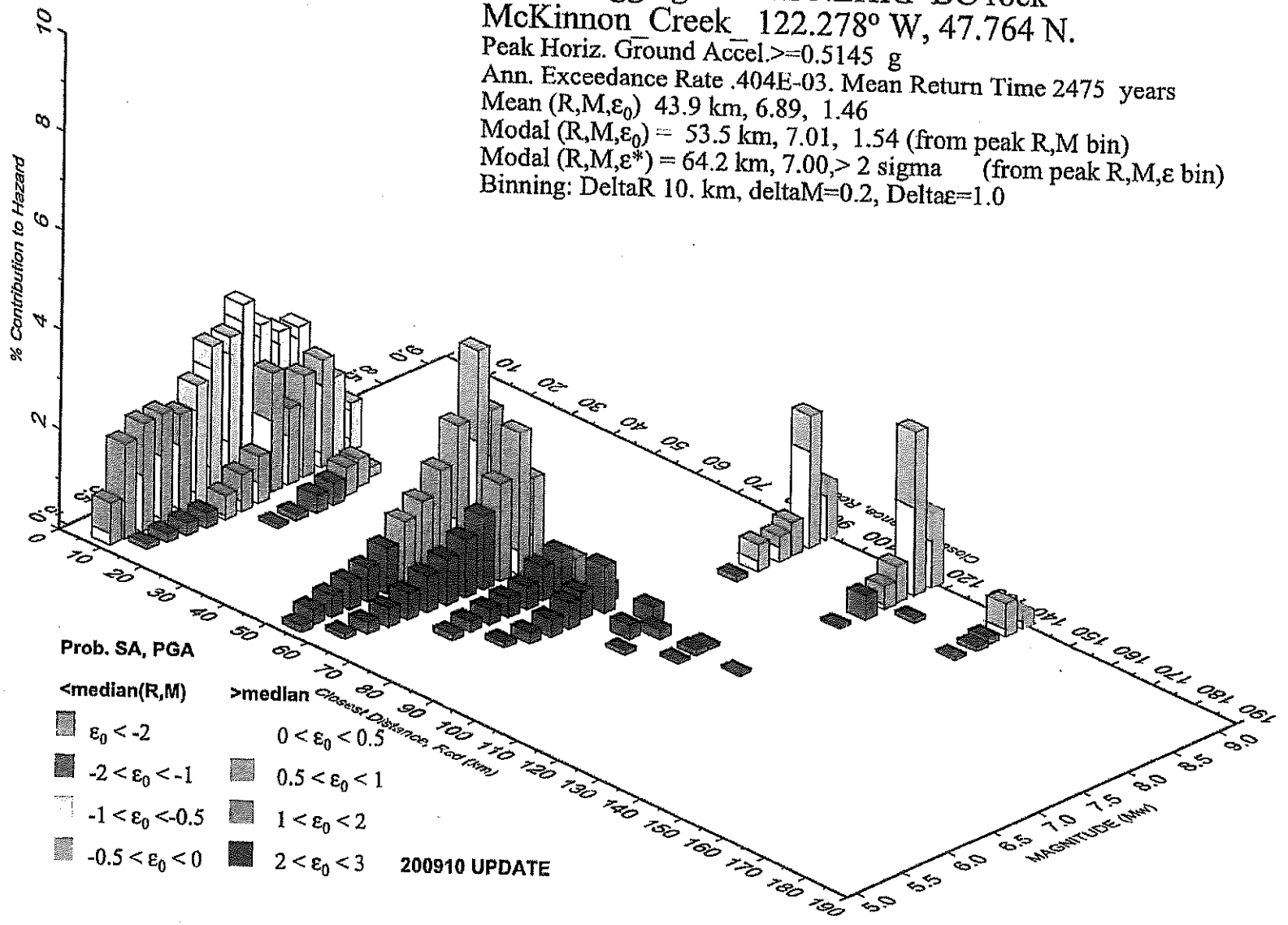
Job	Date:	Logged by:	Plate:
08235	Sept. 2008	MRM	4

EXHIBIT # 9.24

APPENDIX C

PSH Deaggregation on NEHRP BC rock
McKinnon_Creek_ 122.278° W, 47.764 N.

Peak Horiz. Ground Accel.>=0.5145 g
Ann. Exceedance Rate .404E-03. Mean Return Time 2475 years
Mean (R,M,ε_0) 43.9 km, 6.89, 1.46
Modal (R,M,ε_0) = 53.5 km, 7.01, 1.54 (from peak R,M bin)
Modal (R,M,ε^*) = 64.2 km, 7.00,> 2 sigma (from peak R,M,ε bin)
Binning: DeltaR 10. km, deltaM=0.2, Deltaε=1.0



GMT 2015 Nov 20 18:42:01 Distance (R), magnitude (M), epsilon (E0,E) deaggregation for a site on rock with average vs= 760. m/s top 30 m. USGS CGHT PSHA2008 UPDATE Bins with lt 0.05% contrib. omitted

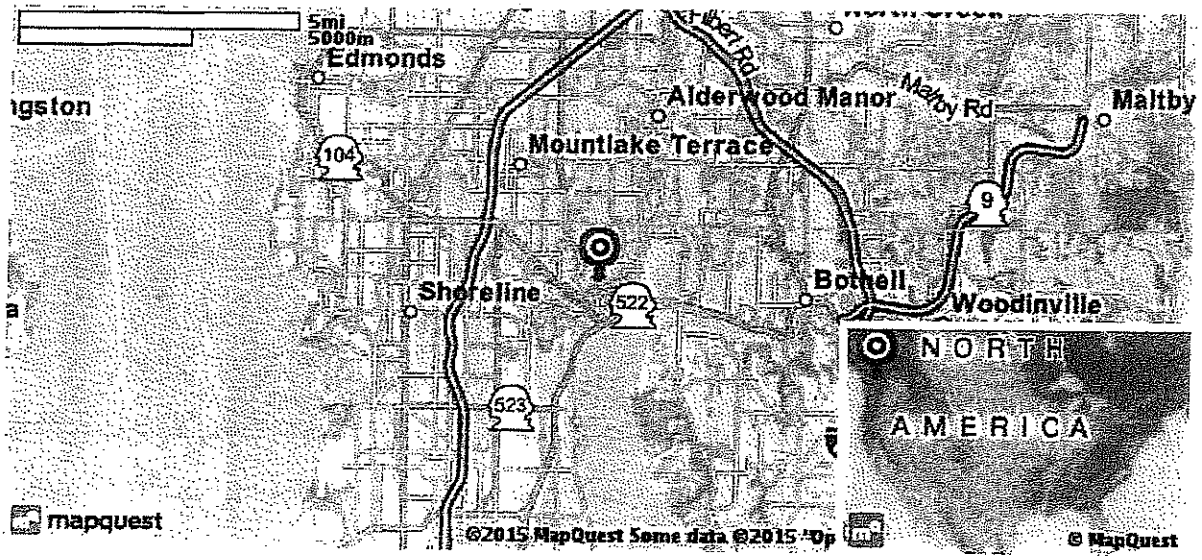
EXHIBIT #125

EXHIBIT # 9.26

USGS Design Maps Summary Report

User-Specified Input

Report Title	McKinnon Creek Pumphouse Fri November 20, 2015 00:40:21 UTC
Building Code Reference Document	2012 International Building Code (which utilizes USGS hazard data available in 2008)
Site Coordinates	47.76364°N, 122.27786°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III



USGS-Provided Output

S_S =	1.258 g	S_{MS} =	1.258 g	S_{DS} =	0.839 g
S_1 =	0.489 g	S_{M1} =	0.739 g	S_{D1} =	0.492 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.