Development Services

From Concept to Construction

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APPEAL SUMMARY

Status: Hold for Additional Information - Held over from ID 18864 (1/16/19) for additional information

Appeal ID: 18954	**Project Address:** 7119 SE Knight St
Hearing Date: 2/6/19	**Appellant Name:** Bayard Mentrum
Case No.: P-002	**Appellant Phone:** 9712709663
Appeal Type: Plumbing	**Plans Examiner/Inspector:** Joe Blanco, McKenzie James
Project Type: commercial	**Stories:** 3 **Occupancy:** R-2 **Construction Type:** V-B
Building/Business Name: Knight Street Apartments	**Fire Sprinklers:** Yes - 13R in building
Appeal Involves: Erection of a new structure,Reconsideration of appeal	**LUR or Permit Application No.:** 19-105117-CO
Plan Submitted Option: pdf [File 1]	**Proposed use:** Multi family

APPEAL INFORMATION SHEET

Appeal item 1

Code Section	Stormtech setbacks
Requires	The plumbing code requires a 5 foot setback from a property line and 10 feet to a building foundation to the edges of the stormtech SC310 piping which means a required 18 foot wide yard.
Proposed Design	The soil in the area is well drained and we have a required 10 foot wide buffer on the west side of the property so we propose a 5 foot setback to the centerline of the stormtech pipe both from the property line and 5 feet to the proposed building that has a crawl space. Attached is the requested total soils report showing the soil is good for infiltration
Reason for alternative	Attached is the required geo tech report stating the storm tech system setbacks will work for this site for the reduction of the setbacks from 10 feet to 5 feet from the center of the storm tech pipe to the building foundation and the property lines

APPEAL DECISION

Reduction in storm drain pipe setback location: Hold for additional information.
Appellant may contact McKenzie James (503-823-7317) for additional information.

Geotechnical Investigation

7119 SE Knight St.
Portland, Oregon

Prepared for:
Anamic Construction
31 January 2019

Rapid Soil Solutions INC
3915 SW Plum Street
Portland, OR 97219
503-816-3689

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SUPPORTING DATA

1.0 PROJECT AND SITE DESCRIPTIONS

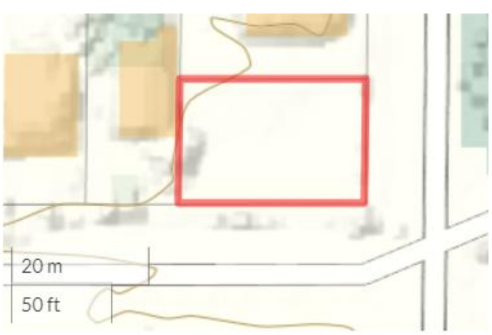
Rapid Soil Solutions (RSS) has prepared this geotechnical report, as requested, for the proposed new apartment building to be constructed on the tax lot currently assigned the street address of 7119 SE Knight Street in Portland, Oregon (97206). RSS understands that the current parking lot will be removed and replaced with a new apartment building. The subject site is bounded to the east by SE 72nd Avenue and to the south by SE Knight Street. The site is accessed via a driveway about 75 feet west of SE Knight Streets intersection with SE 72nd Avenue. The site is situated next to residential properties with the street addresses of 5823 SE 72nd Ave. (north) and 7123 SE Knight St. (west). The subject site is 0.05 miles north of SE Woodstock Blvd., 0.93 miles east of SE 52nd Ave., 0.43 miles south of SE Foster Rd., 1.13 miles west of Interstate-205 and 3.8 miles south of Interstate-84. The site can be found in the southwest quarter of Section 17, Township 1-South and Range 2-East W.M. in Multnomah County. The tax lot identification number is 15600 (State ID: 1S2E17CA-15600) and the alternate/R number is R447200320. The latitude and longitude of the site are 45.480386 and -122.589552 (45°28'49.3"N, 122°35'22.3"W). See Appendix A, Figure 1 for site location. Subsequent figures include additional site location information.

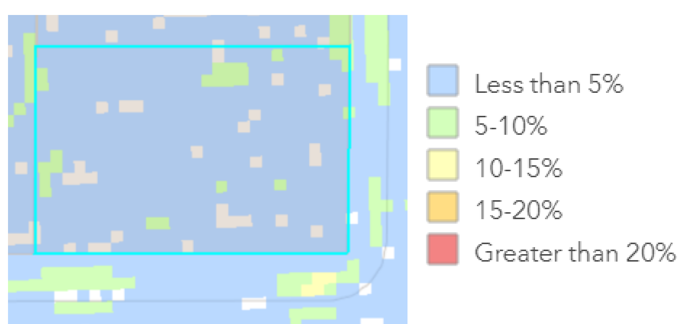
2.0 SITE CONDITIONS

2.1 Surface Conditions

This 0.10-acre (4,240 sq. ft.) subject site is situated in the Mt. Scott-Arleta neighborhood of southeast Portland in urban incorporated Multnomah County. The site and surrounding tax lots north, southeast of the site are zoned CM2, commercial mixed use 2. The site directly west of the subject site contains a single-family residence and is zoned R2.5, residential 2,500. The tax lot directly north of the site is developed with a single-family residence as well. Currently the subject site contains a paved parking lot. There is about 2ft to 4ft of vegetation surrounding the edges of the parking lot. The vegetation contains grass and mulch.

The slopes on site are relatively smooth. The site is situated within the generally low-relief Portland Basin. The elevation of the entire site is about 242 feet above sea level. The slope model derived from the 5-ft DEM of Portland indicates that the majority of the parcel contains slopes of less than 5% (blue) with a few small patches mapped as containing slopes of 5-10% (green). Metromap classifies the entire subject site as containing slopes less than 10% (orange). The slopes observed by RSS during the field exploration were consistent with the near zero percent mapped slopes.





2.2 Regional Geology

Current geologic literature[1,2,3] classifies the slopes underlying the subject site as Pleistocene aged Missoula Flood Deposits. These deposits were transported into the Portland Basin by dozens of gigantic floods that intermittently inundated the basin at the end of the last ice age. These floods deposits form a thick blanket of unconsolidated materials that covers much of the lowlands in the Portland Basin, and obscures most of the older sedimentary deposits left behind by ancient rivers that meandered across the basin as it formed.

Geologic History

The subject site is situated generally in a central area within the Portland Basin, along the course of the Columbia River. The Portland Basin is part of the series of topographic and structural depressions that constitute the Puget-Willamette forearc trough of the Cascadia subduction system. It is a relatively low-relief valley, characterized by broad, flat, lowlands surrounded by prominent uplands controlled primarily by structural features (faulting and folding) in the underlying bedrock. The tectonic compressional stress that is associated with the subduction zone, and associated mountain building to both the east and west of the foearc trough, both initiated basin development and produced a prolonged enlargement of the structural feature. This basin contains a thick accumulation of material that preserves a complex record of deposition and erosion (aggradation and incision) produced by the lakes and rivers that that flowed through the basin concurrent with its development.

Between about 21,000 to 12,000 years ago, dozens of gigantic floods periodically burst through the ice damn that retained Glacial Lake Missoula, bringing sediment-laden floodwaters into the Portland Basin. These floodwaters emerged from the Gorge at Crown Point Gap at velocities up to 60 miles per hour and plunged down into the broad lowlands. During each flooding event, the wall of water 400-500 feet high descended on the basin, souring many areas down to bedrock and burying others beneath a thick layer of gravels, sand and silt. Dramatic scour features and giant bars can be seen within the Portland Basin, and demonstrate the great influence the floodwaters had on shaping the Quaternary geomorphology of the region. As the floodwaters hit the hydraulically restrictive Kalama Gap along the Columbia North of Portland, only two thirds of the floodwaters escaped the basin, the rest of the waters ponded in the Portland basin as well as the Tualatin and Willamette basins. The ponded waters dropped a large amount of fine-grained sediments across all of these basins.

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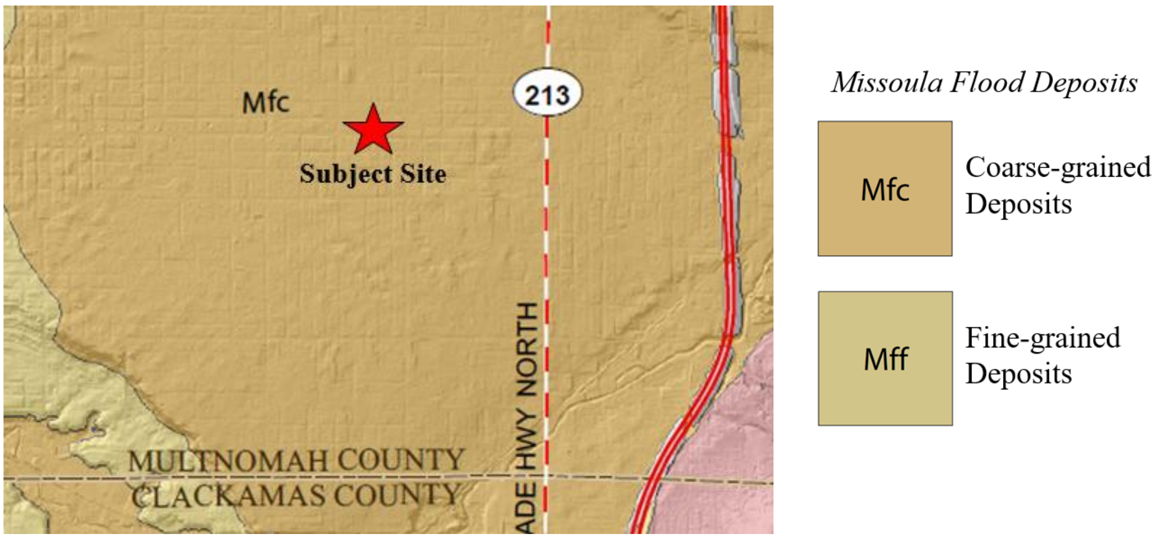
1 Ma, L., Madin, I.P., Duplantis, S., and Williams, K.J., 2012, *Lidar-based surficial geologic map and database of the greater Portland, Oregon, area, Clackamas, Columbia, Marion, Multnomah, Washington, and Yamhill Counties, Oregon, and Clark County, Washington*: Oregon Department of Geology and Mineral Industries, Open-File Report 0-2012-02, scale 1:8,000.
2 Beeson, M.H., Tolan, T.L., and Madin, I.P., 1991, *Geologic map of the Portland quadrangle, Multnomah and Washington counties, Oregon, and Clark County, Washington*: Oregon Department of Geology and Mineral Industries, Geological Map Series 75, scale 1:24,000.
3 Trimble, D.E., 1957, *Geology of the Portland quadrangle, Oregon-Washington*: U.S. Geological Survey, Geologic Quadrangle Map GQ-104, scale 1:62,500.

Site Geology

Mapping conducted in the local region has divided the unconsolidated Missoula Flood Deposits into categories based on grain size. The subject site is underlain by course-grained deposits. This unit, also referred to as the gravel facies of the Missoula Floods, is comprised of unconsolidated, gray, stratified, boulder to cobbly gravel and sand deposits. They are often found on upland areas flanking the Columbia River and generally are organized into large bar and channel complexes. The deposits are texturally and compositionally variable, though the majority of clasts are derived from the Columbia River Basalt Group. Clasts comprised of Troutdale formation and Pliocene to Quaternary aged volcanic rocks can also be found locally within the unit.



2.3 Field Exploration and Subsurface Conditions

2.3.1 Field Explorations

Three (3) hand auger borings were excavated. The location of the borings are shown on Figure 2 in Appendix A. An engineer in training (EIT) observed the excavation of the borings and logged the subsurface materials. Logs detailing materials encountered are in the appendix and were reviewed by a professional engineer. The logs were created using the Unified Soil Classification and Visual Manual Procedure (ASTM-D 2488). Samples were transported to the laboratory for further classification in sealed bags. Please see the appendix for further laboratory results.

The USDA National Resource Conservation Service Web Soil Survey[4] classifies the soils on site as Urban land-Multnomah complex (0-3% slopes). This forms on terraces from gravelly or cobbly alluvium. It is classified as well drained and generally has a water table depth of greater than 80 inches. The typical profile of Urban land-Multnomah complex is silt loam (H1: 0”-8”, H2: 8”-39”) and very

4 http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

gravelly sand (H3: 39”-60”).

2.3.2 Subsurface Conditions
The soil conditions were stiff SILT with sand, gravel and cobble up to 5 feet and dense SAND with gravel and cobble to a depth of 6 feet. Moisture content ranged from 10.7 to 20.0%

2.3.3 Groundwater
Groundwater was not encountered.

3.0 GEOTECHNICAL DESIGN RECOMMENDATIONS

3.1 Foundation Design

The building foundations may be installed on either engineered fill or firm native sub-grade that is found at a depth of about 10 to 12 inches. This depth may be locally variable and should be confirmed by a geotechnical engineer or their representative at the time of construction. ***Please allow 24hours notice to call for foundation inspections.***

Continuous wall and isolated spread footings should be at least 16 and 24 inches wide, respectively. The bottom of exterior footings should be at least 16 inches below the lowest adjacent exterior grade. The bottom of interior footings should be at least 12 inches below the base of the floor slab.

Footings placed on engineered fill or firm native sub-grade should be designed for an allowable bearing capacity of *2,000 pounds per square foot* (**psf**). The recommended allowable bearing pressure can be doubled for short-term loads such as those resulting from wind or seismic forces.

Based on our analysis the total post-construction settlement is calculated to be less than 1 inch, with differential settlement of less than 0.5 inch over a 50-foot span for maximum column, perimeter footing loads of less than 100 kips and 6.0 kips per linear foot.

Lateral loads on footings can be resisted by passive earth pressure on the sides of the structures and by friction at the base of the footings. An allowable lateral bearing pressure of 150 *pounds per cubic foot* (**psf/f**) below grade may be used. Adjacent floor slabs, pavements or the upper 12-inch depth of adjacent, unpaved areas should not be considered when calculating passive resistance.

If construction is undertaken during wet weather, we recommend a thin layer of compacted, crushed rock be placed over the footing sub-grades to help protect them from disturbance due to the elements and foot traffic.

If construction is undertaken during periods of rain, then I recommend a 2-inch (or greater) layer of compacted, crushed rock be placed over the native soil. The clayey soil is moisture sensitive. Meaning when dry it is firm and non-yielding but exposed to season rains it will lose its strength and need to be excavated and replaced with rock. See section 4.1.2 for wet weather conditions.

3.2 Retaining Walls and Embedded Walls

Default lateral soil load for the design of basement and retaining walls supporting level backfill shall be 35 psf/ft for laterally unrestrained retaining walls and 60 psf/ft for laterally restrained retaining walls.

For embedded building walls, a superimposed seismic lateral force should be calculated based on a dynamic force of $5H^2$ pounds per lineal foot of wall, where H is the height of the wall in feet and applied at 1/3 H from the base of the wall. The wall footings should be designed in accordance with the guidelines provided in the "Foundation Design" section of this report. These design parameters have been provided assuming that back-of-wall drains will be installed to prevent buildup of hydrostatic pressures behind all walls.

The backfill material placed behind the walls and extending a horizontal distance equal to at least half of the height of the retaining wall should consist of granular retaining wall backfill as specified in the "Structural Fill" section of this report. The wall backfill should be compacted to a minimum of 95 percent of the maximum dry density, as determined by ASTM D698. However, backfill located within a horizontal distance of 3 feet from the retaining walls should only be compacted to approximately 92 percent of the maximum dry density, as determined by ASTM D698. Backfill placed within 3 feet of the wall should be compacted in lifts less than 6 inches thick using hand-operated tamping equipment (e.g., jumping jack or vibratory plate compactors). If flat work (e.g., sidewalks or pavements) will be placed atop the wall backfill, we recommend that the upper 2 feet of material be compacted to 95 percent of the maximum dry density, as determined by ASTM D698.

A minimum 12-inch-wide zone of drain rock, extending from the base of the wall to within 6 inches of finished grade, should be placed against the back of all retaining walls. Perforated collector pipes should be embedded at the base of the drain rock. The drain rock should meet the requirements provided in the "Structural Fill" section of this report. The perforated collector pipes should discharge at an appropriate location away from the base of the wall. The discharge pipe(s) should not be tied directly into storm water drain systems, unless measures are taken to prevent backflow into the wall's drainage system. Settlements of up to 1 percent of the wall height commonly occur immediately adjacent to the wall as the wall rotates and develops active lateral earth pressures.

Engineering values summary

Bearing capacity soil	2,000psf
Bearing capacity rock	2,500psf
Coefficient of friction soil	0.30
Coefficient of friction rock	0.45
Active pressure	40pcf
Passive pressure	300pcf

A safety factor of 1.5 is included in the above values.

3.3 Seismic Design Criteria

We understand that the seismic design criteria for this project is based on the 2012/15 IBC, Section 1615 and the USGS web site using a Lat of 45.480386 and a Long of -122.589552, soil site class D.

	Short Period	**1 Second**
Maximum Credible Earthquake Spectral Acceleration	Ss = 0.981 g	S1 = 0.413 g
Adjusted Spectral Acceleration	Sms = 1.086 g	Sm1 = 0.656 g
Design Spectral Response Acceleration Perimeters	Sds = 0.724 g	Sd1= 0.437 g

3.4 Geohazard Review

The Oregon HazVu: Statewide Geohazard Viewer[5] and Metromap[6] were reviewed on 31 January 2019 to investigate mapped geological hazards. This review indicates that the subject site is situated outside the 100-year floodplain, as mapped by FEMA. The expected earthquake-shaking hazard is classified as ‘very strong’. The site does not contain a mapped liquefaction hazard classification. The nearest mapped fault classified as active by DOGAMI is the SW-NE oriented Powell Butte Fault passing roughly 1.7-miles east of the subject site. There are no landslides mapped on or adjacent to the subject site. The nearest mapped landslide is located about 1.54 miles southeast of the subject site along the descending slopes of SE Knapp Street. The landslide hazard at the subject site is classified as ‘low’ landslide susceptibility.

4.0 CONSTRUCTION RECOMMENDATIONS

4.1 Site Preparation

On this site only disturb the area in which can be covered with rock during the day. The moisture sensitive clayey-silt soil when exposed to wet weather becomes soft and yielding. See wet weather conditions below.

4.1.1 Proof Rolling

Following stripping and prior to placing aggregate base course, pavement the exposed sub-grade should be evaluated by proof rolling. The sub-grade should be proof rolled to identify soft, loose, or unsuitable areas. Please give 24 hour notice to observe the proof rolling. Soft or loose zones identified during the field evaluation should be compacted to an unyielding condition or be excavated and replaced with structural fill, as discussed in the *Structural Fill* section of this report.

5 http://www.oregongeology.org/hazvu/
6 http://gis.oregonmetro.gov/metromap/

4.1.2 Wet Weather Conditions

The near-surface soils will be difficult during or after extended wet periods or when the moisture content of the surface soil is more than a few percentage points above optimum. Soils that have been disturbed during site preparation activities, or soft or loose zones identified during probing or proof rolling, should be removed and replaced with compacted structural fill. Track-mounted excavating equipment will be required during wet weather. The imported granular material should be placed in one lift over the prepared, undisturbed sub-grade and compacted using a smooth drum, non-vibratory roller. Additionally, a geo-textile fabric should be placed as a barrier between the sub-grade and imported granular material in areas of repeated traffic.

4.2 Excavation

Subsurface conditions of accessible cleared areas of the project site show predominately clayey-SILT with sand, gravel and cobble to the depth explored (6.0 feet). Excavations in the upper soils may be readily accomplished with conventional earthwork equipment with smooth faced bucket.

4.3 Structural Fills

Fills should be placed over sub-grade prepared in compliance with Section 4.1 of this report. Material used, as structural fill should be free of organic matter or other unsuitable materials and should meet specifications provided in OSSC, depending upon the application. A discussion of these materials is in the following sections.

4.3.1 Native Soils

Laboratory testing indicates that the moisture content of the near-surface is greater than the optimum moisture content of the soil required for satisfactory compaction. This is depending on the weather conditions at the time of excavation. See section 4.3.2 for imported granular fill.

4.3.2 Imported Granular Fill

The imported granular material must be reasonably well graded to between coarse and fine material and have less than 5% by weight passing the US Standard No.200 Sieve. Imported granular material should be placed in lifts 8 to12 inches and be compacted to at least 95% of the maximum dry density, as determined by ASTM D 698. Where imported granular material is placed over wet or soft soil sub-grades, we recommend that a geo-textile serve as a barrier between the sub-grade and imported granular material.

4.4 Drainage Considerations

The Contractor shall be made responsible for temporary drainage of surface water and groundwater as necessary to prevent standing water and/or erosion at the working surface. We recommend removing only the foliage necessary for construction to help minimize erosion. Slope the ground surface around the structures to create a minimum gradient of

2% away from the building foundations for a distance of at least 5 feet. Surface water should be directed away from all buildings into drainage swales or into a storm drainage system. Foundation drains are required.

5.0 CONSTRUCTION OBSERVATIONS

Satisfactory pavement and earthwork performance depends on the quality of construction. Sufficient monitoring of the activities of the contractor is a key part of determining that the work is completed in accordance with the construction drawings and specifications. I recommend that a geotechnical engineer observe general excavation, stripping, fill placement, and sub-grades in addition to base. Subsurface conditions observed during construction should be compared with those encountered during the subsurface explorations. Recognition of changed conditions requires experience. Therefore, qualified personnel should visit the site with sufficient frequency to detect whether subsurface conditions change significantly from those anticipated.

6.0 LIMITATIONS

This report has been prepared for the exclusive use of the addressee, and their architects and engineers for aiding in the design and construction of the proposed development. It is the addressee's responsibility to provide this report to the appropriate design professionals, building officials, and contractors to ensure correct implementation of the recommendations.
The opinions, comments and conclusions presented in this report were based upon information derived from our literature review, field investigation, and laboratory testing. Conditions between, or beyond, our exploratory borings may vary from those encountered. Unanticipated soil conditions and seasonal soil moisture variations are commonly encountered and cannot be fully determined by merely taking soil samples or soil borings. Such variations may result in changes to our recommendations and may require that additional expenditures be made to attain a properly constructed project. Therefore, some contingency fund is recommended to accommodate such potential extra costs.

If there is a substantial lapse of time between the submission of this report and the start of work at the site; if conditions have changed due to natural causes or construction operations at, or adjacent to, the site; or, if the basic project scheme is significantly modified from that assumed, it is recommended this report be reviewed to determine the applicability of the conclusions and recommendations.

The work has been conducted in general conformance with the standard of care in the field of geotechnical engineering currently in practice in the Pacific Northwest for projects of this nature and magnitude. No warranty, express or implied, exists on the information presented in this report. By utilizing the design recommendations within this report, the addressee acknowledges and accepts the risks and limitations of development at the site, as outlined within the report.

APPENDIX

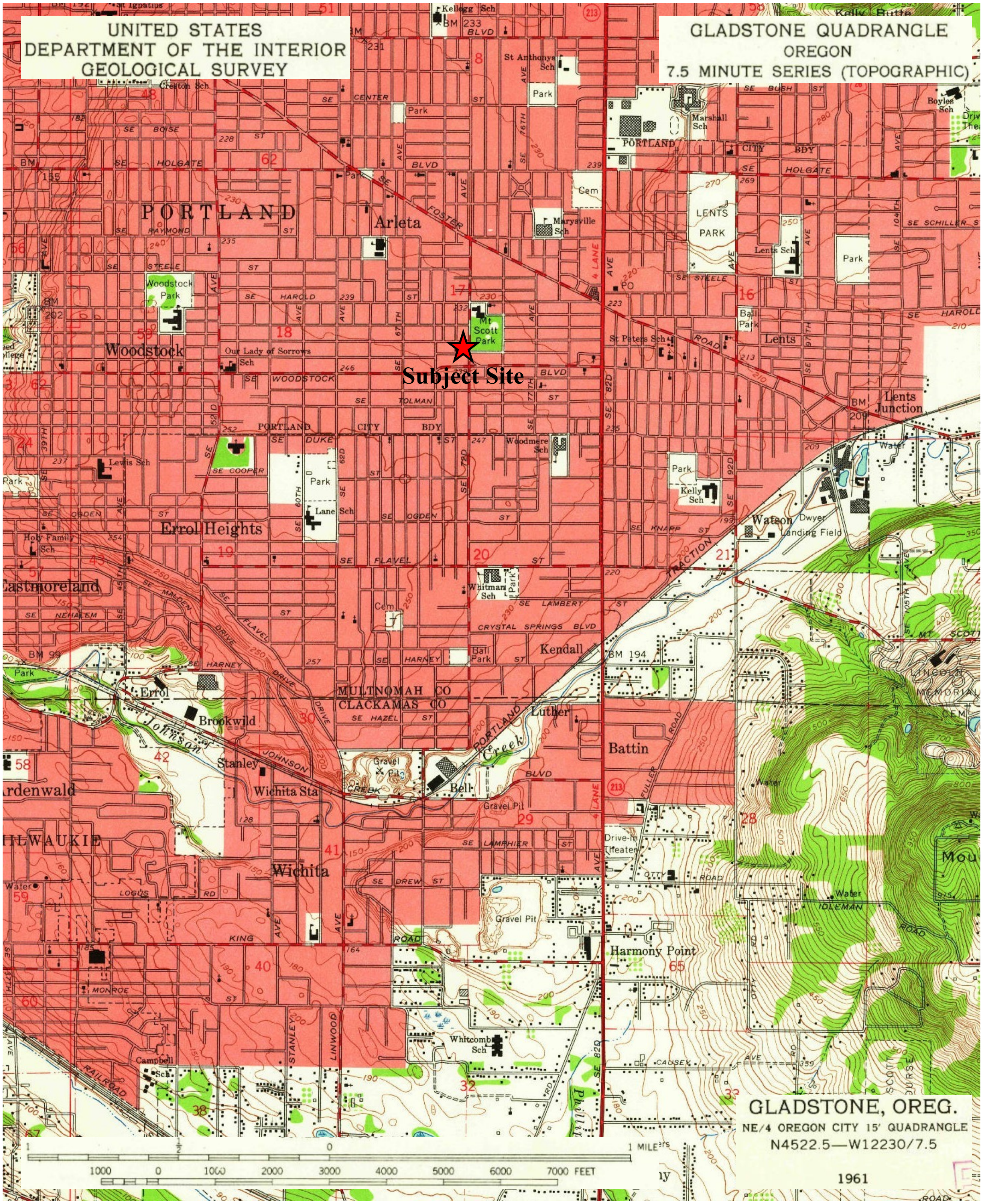


Figure 1: Subject site location on the northwest quarter of the Gladstone Quadrangle

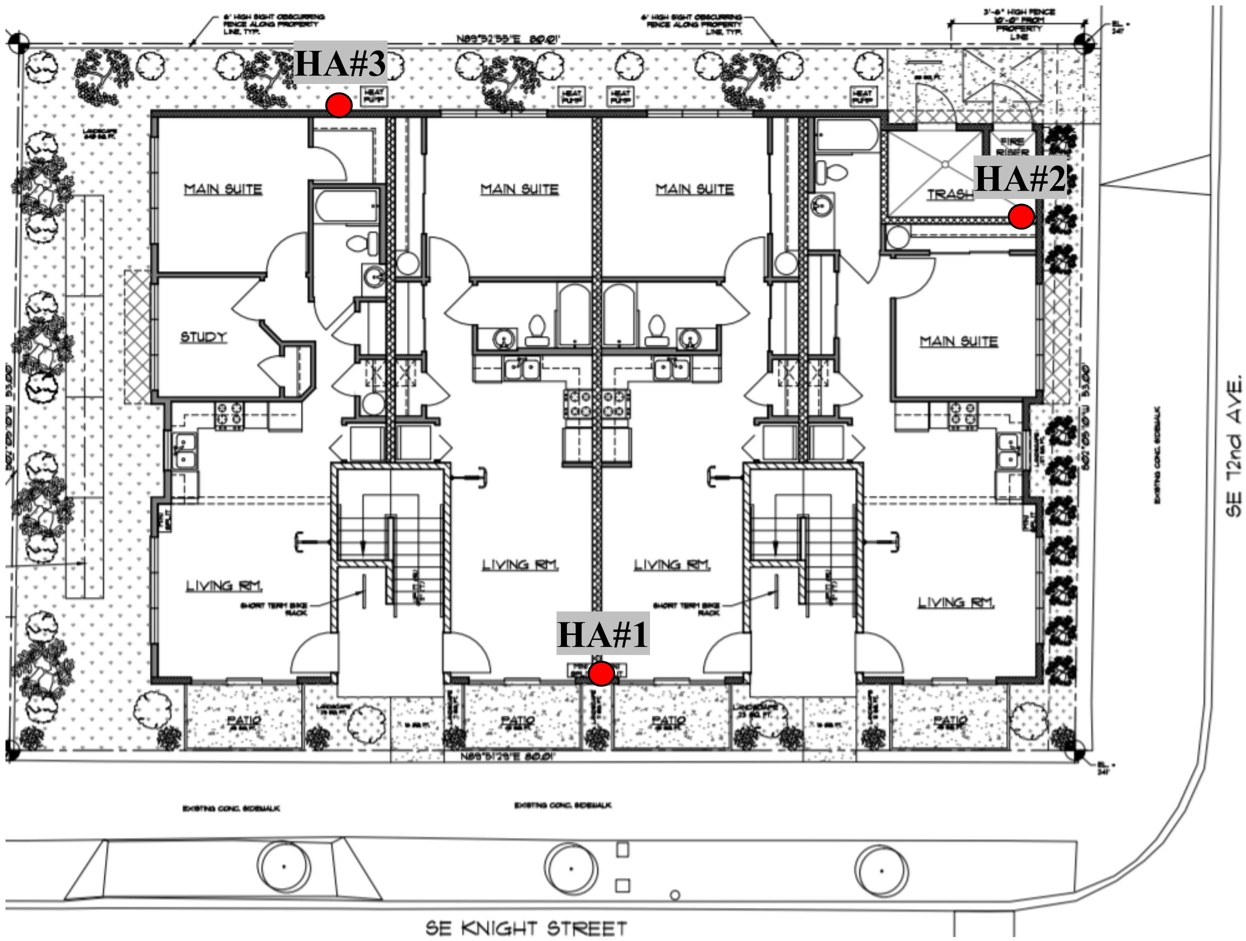


Figure 2: Testing Locations

Lab Results

Project Name: 7119 SE Knight St., Portland, OR   Sample Date   1/24/2019

Moisture

	Sample number	HA#1	HA#2	HA#3		
1	Date and time in oven	1/24/19 10:00 AM	1/24/19 10:00 AM	1/24/19 10:00 AM		
2	Date and time out of over	1/25/19 6:10 AM	1/25/19 6:10 AM	1/25/19 6:10 AM		
3	Depth (ft)	2	4	6		
4	Tare No.	8	9	10		
5	Tare Mass	232	231	230		
6	Tare plus sample moist	937	994	1278		
7	Tare plus sample dry	825	867	1177		
8	Mass of water (g)	112	127	101		
9	Mass of soil (g)	593	636	947		
10	Water Content (%)	18.9	20.0	10.7		

Rapid Soil Solutions INC

HA#1

Surface Elevation: 242
Boring Date: 1/24/19
Boring Location: Portland, OR
Drilling Method: Hand Auger

Depth	Remarks	Moisture (%)	Dry Density	Blow Counts	Sample Type	Water Table	Soil	Description
0						GWT not encountered	TP	Topsoil with mulch and gravel
1							ML	Damp, dark to medium brown, fine grained, stiff, SILT w/ gravel and sand
							GM	Damp, medium brown, fine to coarse grained, very dense, sandy-silt w/ GRAVEL and trace cobble
2		18.9						Boring completed at depth of 2ft
3								
4								
5								
6								
7								

LOG OF BORING

Rapid Soil Solutions	7119 SE Knight St. Anamic Construction	Plate 1

HA#2

Surface Elevation: 242
Boring Date: 1/24/19
Boring Location: Portland, OR
Drilling Method: Hand Auger

Depth	Remarks	Moisture (%)	Dry Density	Blow Counts	Sample Type	Water Table		
0						GWT not encountered	TP	Topsoil with grass roots
							ML	Damp, dark to medium brown, fine grained, stiff, SILT w/ gravel and sand
							GM	Damp, medium brown, fine to coarse grained, very dense, sandy-silt w/ GRAVEL and trace cobble
4		20.0						Boring completed at depth of 4ft

LOG OF BORING

Rapid Soil Solutions	**7119 SE Knight St.** **Anamic Construction**	**Plate 1**

HA#3

Surface Elevation: 242
Boring Date: 1/24/19
Boring Location: Portland, OR
Drilling Method: Hand Auger

Depth	Remarks	Moisture (%)	Dry Density	Blow Counts	Sample Type	Water Table	Soil	Description
0						GWT not encountered	TP	Topsoil with grass roots
							ML	Damp, dark to medium brown, fine grained, stiff, SILT w/ gravel and sand
2							GM	Damp, medium brown, fine to coarse grained, very dense, sandy-silt w/ GRAVEL and trace cobble
4							SM	Dry, medium brown w/ tan-grey, fine to coarse grained, dense, silty-SAND w/ gravel and trace cobble
5							SP	Dry, brown-tan-grey-black, fine to coarse grained, dense, SAND w/ gravel and trace cobble
6		10.7						Boring completed at depth of 6ft, Refusal
7								

LOG OF BORING

Rapid Soil Solutions	**7119 SE Knight St.** **Anamic Construction**	**Plate 1**