

January 30, 2018

sisul-18-1-gi

Sisul Engineering
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GEOTECHNICAL ENGINEERING SERVICES Infiltration Evaluation 16362 Hiram Lane – Oregon City

As authorized, herein we present our report of geotechnical engineering services for infiltration for the proposed storm pond at the proposed development located on two tax lots at 16362 Hiram Lane in Oregon City, Oregon. Our review of aerial photos indicates an existing residence and a relatively level, accessible grass covered parcel that is cross fenced. The purpose of our work was to evaluate relevant shallow subsurface conditions and determine an infiltration rate for possible shallow storm water infiltration in the pond area. Specifically, our scope of work included the following:

- Provide principal level project management including management of field services, report writing, analyses, and invoicing.
- Review geologic maps and vicinity geotechnical information as indicators of subsurface conditions.
- Complete a site reconnaissance to observe surface features relevant to geotechnical issues, such as topography, vegetation, presence and condition of springs, exposed soils, evidence of previous grading, and an evaluation of slope stability.
- Explore subsurface conditions by completing explorations with a hand auger in two accessible locations to depths of up to 8 feet or refusal.
- Classify and sample the materials encountered and maintain a detailed log of the explorations.
- Determine the moisture content of selected samples obtained from the explorations, and conduct soil classification testing as necessary.
- Complete infiltration testing in each exploration with cased falling head methods.
- Provide a written report summarizing the results of our geotechnical evaluation.

SITE OBSERVATIONS AND CONDITIONS

Surface Conditions

The site is relatively flat and slopes slightly down to the southwest. The site is bordered by existing residential properties. Hiram Lane abuts the parcel, and a residence is present in the southern portion, along with outbuildings near the property center. A shallow swale is present along the northern boundary. The storm pond is planned for the northwest portion of the site near Hiram, and is currently vegetated with grass with an oak tree present near Hiram.

Subsurface Conditions

The site was explored on January 26, 2018 by boring two hand augers to depths of up to 8 feet. Approximate exploration locations are shown on the attached **Site Plan**.

In general, subsurface conditions at the site consist of silt with trace clay. A topsoil zone of 5 to 8 inches was present at the surface. The silt was generally medium stiff. This is consistent with the mapped Willamette Silt unit. Fine grained Troutdale Formation is mapped at depth under the silt.

Groundwater – The Geologic Hazard Map of the Canby and Oregon City Quadrangles (Bulletin 99, DOGAMI) indicates that the site is in an area of high ground seasonal ground water where the ground water is as shallow as 1.5 feet in the wet season. We encountered groundwater seepage in the southern hand auger at a depth of roughly 3 feet, and in the northern hand auger at a depth of roughly 6 feet. Moisture contents of site soils were 29-33% in five samples tested.

CONCLUSIONS AND RECOMMENDATIONS

We completed cased hole, double ring configuration, falling head infiltration testing at a depth of 2.5 feet in each boring. Each boring and casing were filled and allowed to saturate. After pre-wetting, no measurable infiltration was noted, for a rate less than $0.05 \text{ in}^3/\text{hr}/\text{in}^2$ (the tolerance of the measurements). Due to this low rate and shallow seasonal groundwater, we do not recommend use of infiltration at this site.

LIMITATIONS AND OBSERVATION DURING CONSTRUCTION

We have prepared this report for use by Sisul Engineering and their design and construction teams for this project only. The information herein could be used for bidding or estimating purposes but should not be construed as a warranty of subsurface conditions. We have made observations only at the aforementioned locations and only to the stated depths. These observations do not reflect soil types, strata thicknesses, water levels or seepage that may exist between observations. We should be consulted to observe all foundation bearing surfaces, installation of structural fill, and subsurface drainage. We should be consulted to review final design and specifications in order to see that our recommendations are suitably followed. If any changes are made to the anticipated locations, loads, configurations, or construction timing, our recommendations may not be applicable, and we should be consulted. The preceding recommendations should be considered preliminary, as actual soil conditions may vary. In order for our recommendations to be final, we must be retained to observe actual subsurface conditions encountered. Our observations will allow us to interpret actual conditions and adapt our recommendations if needed.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with the generally accepted practices in this area at the time this report was prepared. No warranty, expressed or implied, is given.

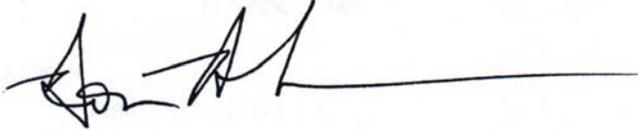
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We appreciate the opportunity to work with you on this project and look forward to our continued involvement. If you have any questions, please contact us.

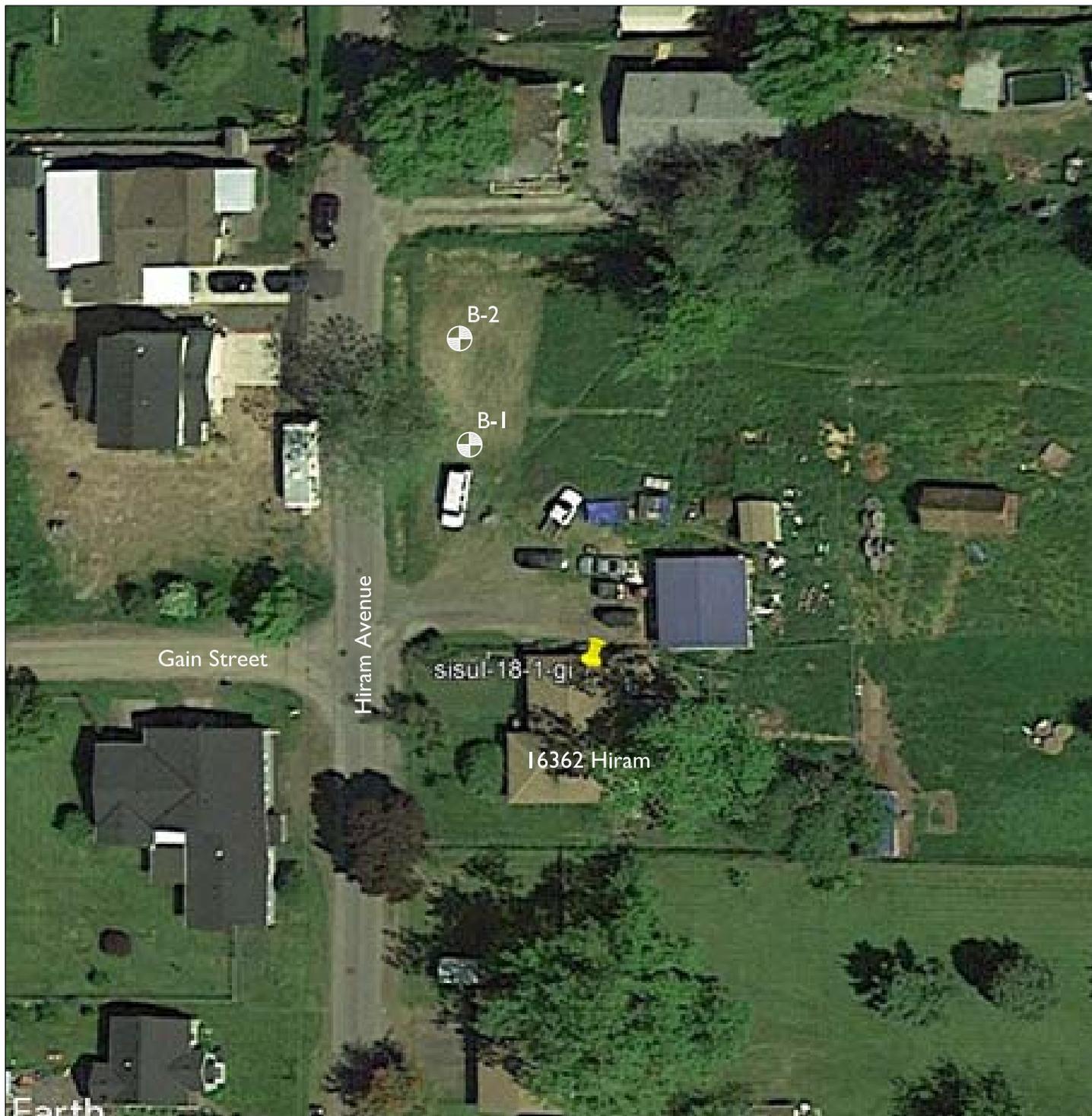
Sincerely,



Don Rondema, MS, PE, GE
Principal



Attachments – Site Plan, Soil Classification, Logs, Moisture Contents.



NOT TO SCALE

BASE PHOTO FROM GOOGLE EARTH 2017 AERIAL

Geotech
Solutions Inc.

SITE PLAN
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Test Pit # Depth (ft) Soil Description

Explorations completed on January 26, 2018 with a hand auger

B-1

Location: South pond area

Surface conditions: Medium grass

0 – 0.5 Soft, brown SILT, with trace to some roots; moist. (topsoil)

0.5 – 4 Medium stiff brown silt with trace clay; moist.

4 feet becomes wet with slow seepage.

Infiltration test at 2.5 feet.

B-2

Location: North pond area

Surface conditions: Medium grass

0 – 0.7 Soft, brown SILT, with trace to some roots; moist. (topsoil)

0.7 – 8 Medium stiff brown silt with trace clay; moist.

6 feet becomes wet with slow seepage.

Infiltration test at 2.5 feet.

Exploration	Depth, ft	Moisture Content
B-1	2.0	33%
B-1	4.0	29%
B-2	2.0	30%
B-2	4.0	30%
B-2	6.0	33%