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July 30, 2020 200143

Mr. Aaron Wolf
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Stittsville, Ontario
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RE: LIMITED SUBSURFACE INVESTIGATION
FOR PROPOSED ROADWAY EXTENSION
FROM FRONTAGE OF 340 LOWE ROAD
FOR 100 METRES NORTHWEST
LOT 3, CONCESSION 11, WEST CARLETON (HUNTLEY)
CITY OF OTTAWA, ONTARIO

Dear Sirs:

This letter reports the results of a limited subsurface investigation carried out for the proposed extension of Lowe Road (Key Plan, Figure 1). It is understood that the extension is required in order to provide legal frontage and access to the property known as 340 Lowe Road. The purpose of the investigation was to identify the shallow subsurface conditions within the area of the proposed roadway based on observations made within test pits put down by hand by a member of Kollaard Associates geotechnical staff. The proposed road extension will have a length of about 100 meters. The proposed road has been assigned stationing beginning at 0+000 which is set at the end of the existing opened road.

1.0 BACKGROUND INFORMATION AND SITE GEOLOGY

The existing opened portion of the road is gravel surfaced and extends to about 7 metres past the access driveway to the property known as 308 Lowe Road. The existing opened roadway is gravel surfaced and has a lane width of about 6.5 metres. There are gravel shoulders on either side of the lane that vary in width from about 0 to 0.7 metres. The unopened roadway is currently occupied by a trail in the center with a width of about 3 metres covered in gravel, topsoil and mulch for a distance of about 85 metres. Trees had been cleared from the right of way prior to the time of inspection. The roadway appears only slightly elevated above the adjacent existing ground surface. The roadside ditches where present are shallow and intermittent.

It is understood that the recent clearing of the roadway was completed along the unopened road allowance by the client in order to gain access to the property known as 340 Lowe Road.

During the field investigation, hand test pits were put down along both sides of the trail to observe the existing soils conditions for the purposes of designing and constructing the roadway extension.

Based on a review of a surficial geology map for the site area, it is expected that the site is underlain by organic deposits and/or a thin layer of stone-poor, sandy silt to silty sand-textured glacial till followed by Paleozoic Bedrock. It is expected that the site is underlain by relatively shallow or possibly exposed bedrock.

The field work for this investigation was carried out on May 28, 2020 at which time observations were made within 10 test pits put down along the temporary road. The test pits were placed in pairs with one on either side of the existing trail along the unopened road allowance. The test pits were placed at intervals of about 25 metres beginning at about 3 m beyond the end of the existing roadway.

The location of the test pits are shown on the attached drawing Site Plan Figure 2. The test pits were advanced to bedrock at depths of about 0.15 to 1.2 metres below the existing ground surface using a hand shovel and probe operated by a member of Kollaard Associates professional staff. The soil conditions observed in the test pits were classified based on visual and tactile examination of the materials on the walls and bottom of the test pits. The water conditions were observed in the open test pits at the time of the field work.

2.0 SUBSURFACE SOIL CONDITIONS

The soil and groundwater conditions encountered at the test pit locations, for the purpose of this investigation, are given on the Record of Test Pit sheets following the text of this letter. The test pit logs indicate the subsurface conditions at the specific test locations only. Boundaries between zones on the logs are often not distinct, but rather are transitional and have been interpreted. Subsurface conditions at other than the test pit locations may vary from the conditions encountered in the test pit. In addition to soil variability, fill of variable physical and chemical composition may be present over portions of the site.

The soil descriptions in this letter are based on commonly accepted methods of classification and identification employed in geotechnical practice. Classification and identification of soil involves judgement and Kollaard Associates Inc. does not guarantee descriptions as exact, but infers accuracy to the extent that is common in current geotechnical practice.

The groundwater conditions described in this letter refer only to those observed at the location and date of observations noted in the letter. Groundwater conditions may vary seasonally, or may be affected by construction activities on or in the vicinity of the site.

The results of the test pits indicate that the native subsurface conditions vary along the road allowance from topsoil overlying bedrock or weathered bedrock to topsoil followed by a thin layer of fine to medium sand overlying bedrock.

In general, the thickness of topsoil varies between about 100 to 360 millimetres. The topsoil material was classified as topsoil based on the colour and presence of organic materials. The identification of the topsoil layer is for geotechnical purposes only and does not constitute a statement as to the suitability of this layer for cultivation and sustainable plant growth.

Beneath the topsoil, a layer of yellow brown to grey fine to medium sand measuring between about 50 to 860 millimetres, with an average thickness of about 320 millimetres was encountered overlying shallow bedrock.

Refusal was encountered on the surface of bedrock ranging from about 0.15 to 1.2 metres, with an average of about 0.6 metres below the existing ground surface.

3.0 GROUNDWATER

Test pits TP1 and TP2 at Station 0+003 were dry at the time of excavation. Some water seepage was encountered at all of the test pits from Station 0+028 to the end of the roadway extension at a depth of about 0.4 metres below the existing ground surface. The water seepage was observed within the test pits at about the transition in the sand colouration from yellow brown to grey.

4.0 ROADWAY STRUCTURE

The proposed roadway structure is based in part on the apparent structure of the existing opened portion of the road. The proposed road extension is intended to function in a similar manner to the existing road from a stormwater management perspective. The existing roadway and proposed roadway extension are located along a ridge that essentially acts as a flow divide between two watershed areas. Since the roadway has been constructed along the ridge, the existing ditches, where present, are shallow and intermediate. The granular in the existing roadway does not daylight in most places as there is no significant ditching.

5.0 ROADWAY CONSTRUCTION

Due to the presence of the topsoil layer within most of the proposed roadway, Kollaard Associates considers the roadway extension will comprise of removing the topsoil layer and adding new granular materials. It is suggested that the roadway construction be completed as follows in the presence of full time supervision by qualified geotechnical personnel:

- In preparation for the proposed roadway extension, the topsoil and any soft wet or deleterious materials should be removed from the footprint of the proposed roadway.
- Begin at the furthest point of the temporary road from the construction access point.
- The length of the section is governed by the reach of the excavation equipment used and should be limited to avoid truck or construction traffic on the exposed subgrade.
- Excavate to the required depth indicated for the required granulars.
- The underlying subgrade should consist of sand or bedrock.
- The total proposed roadway granular structure will consist of a minimum of 500 mm of granular materials comprised as outlined below.
- Should refusal to excavate be encountered on the surface of bedrock at a depth exceeding 300 mm below the proposed finished elevation of the roadway, no further excavation is required.
- The sub-grade should be shaped and crowned to promote drainage of the roadway granular.
- The subgrade should be inspected and approved by geotechnical personnel.
- In areas where the new granulars will abut existing granulars, the depths of the granular materials should taper up or down at 5 horizontal to 1 vertical, or flatter, to match the depths of the granular material(s) exposed in the existing roadway structure.

Following approval of the preparation of the subgrade, the roadway granulars may be placed.

- Upon approval by the geotechnical person, place the granular materials onto the approved subgrade.
- Proceeding section by section in the above manner will result in an approved subgrade with a layer of approved granular backfill placed over the subgrade.
- Beginning at the start of the proposed roadway extension, import approved engineered fill for the granular structure. Where trucks will be driving on the proposed roadway to distribute the granulars, the approved engineered fill should be placed using a "cowpath" to ensure a minimum of thickness of 450 mm over the subgrade prior to vehicle access.

The 500 mm granular structure for the proposed roadway extension should consist of the following:

150 millimetres of OPSS Granular A base, over
350 millimetres of OPSS Granular B Type II sub-base
(50 or 100 millimetre minus crushed stone), over
Approved subgrade.

The exception to the above proposed roadway structure consists of those locations where the roadway subgrade consists of bedrock and the bedrock is encountered at less than 500 mm below the proposed finished surface elevation of the roadway. In these locations, the roadway structure may be reduced as required to avoid breaking rock to a minimum thickness of 300 millimetres.

The granular base and sub-base materials should be compacted to 100 percent SPMDD.

The above pavement structure will be adequate on an acceptable sub-grade, that is, one where any roadway fill has been adequately compacted. If the roadway sub-grade is disturbed or wetted due to construction operations or precipitation, the granular thicknesses given above may not be adequate and it may be necessary to increase the thickness of the Granular B Type II sub-base and/or incorporate a non-woven geotextile separator between the roadway sub-grade surface and the granular sub-base material. The adequacy of the design of the pavement thickness should be assessed by the geotechnical personnel at the time of construction.

6.0 CONSTRUCTION CONSIDERATIONS

The engagement of the services of the geotechnical consultant during construction is recommended to confirm that the subsurface conditions throughout the proposed development do not materially differ from those given in the report and that the construction activities do not adversely affect the intent of the design.

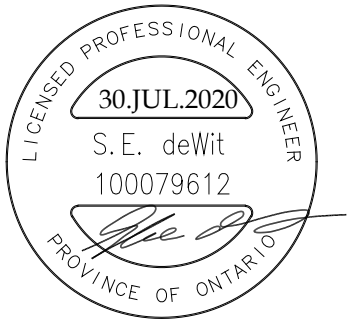
Full time inspection services by qualified geotechnical personnel should be considered during roadway constructions to ensure the subgrade is adequately exposed and prepared. Full time inspection should allow the construction process to proceed without delays to obtain approval to proceed.

The native soils at this site will be sensitive to disturbance from construction operations, from rainwater or snow melt, and frost. In order to minimize disturbance, construction traffic operating directly on the subgrade should be kept to an absolute minimum and the subgrade should be protected from below freezing temperatures.

We trust that this report provides sufficient information for your present purposes. If you have any questions concerning this information or if we can be of further assistance to you, please do not hesitate to contact our office.

Yours truly,

Kollaard Associates Inc.



Dean Tataryn, B.E.S., EP.

Steve deWit, P.Eng.

Attachment: Table I, Record of Test Pits
Key Plan, Figure 1
Site Plan, Figure 2

TABLE I

RECORD OF TEST PITS
PROPOSED ROADWAY EXTENSION
340 LOWE ROAD
CITY OF OTTAWA, ONTARIO

TEST PIT NUMBER	DEPTH (METRES)	DESCRIPTION
STATION 0 + 003 TP1 LEFT SHOULDER (ELEV.139.51)		
	0.00 – 0.10	TOPSOIL
	0.10 – 0.15	Yellow brown fine to medium SAND
	0.15	Refusal on BEDROCK
Test pit dry, May 28, 2020.		
STATION 0 + 003 TP2 RIGHT SHOULDER (ELEV.139.36)		
	0.00 – 0.10	TOPSOIL
	0.10 – 0.25	Yellow brown fine to medium SAND
	0.25	Refusal on BEDROCK
Test pit dry, May 28, 2020.		
STATION 0 + 028 TP3 LEFT SHOULDER (ELEV.138.84)		
	0.00 – 0.20	TOPSOIL
	0.20 – 0.53	Yellow brown to grey fine to medium SAND
	0.53	Refusal on BEDROCK
Some water at about 0.3 metres below existing ground surface, May 28, 2020.		

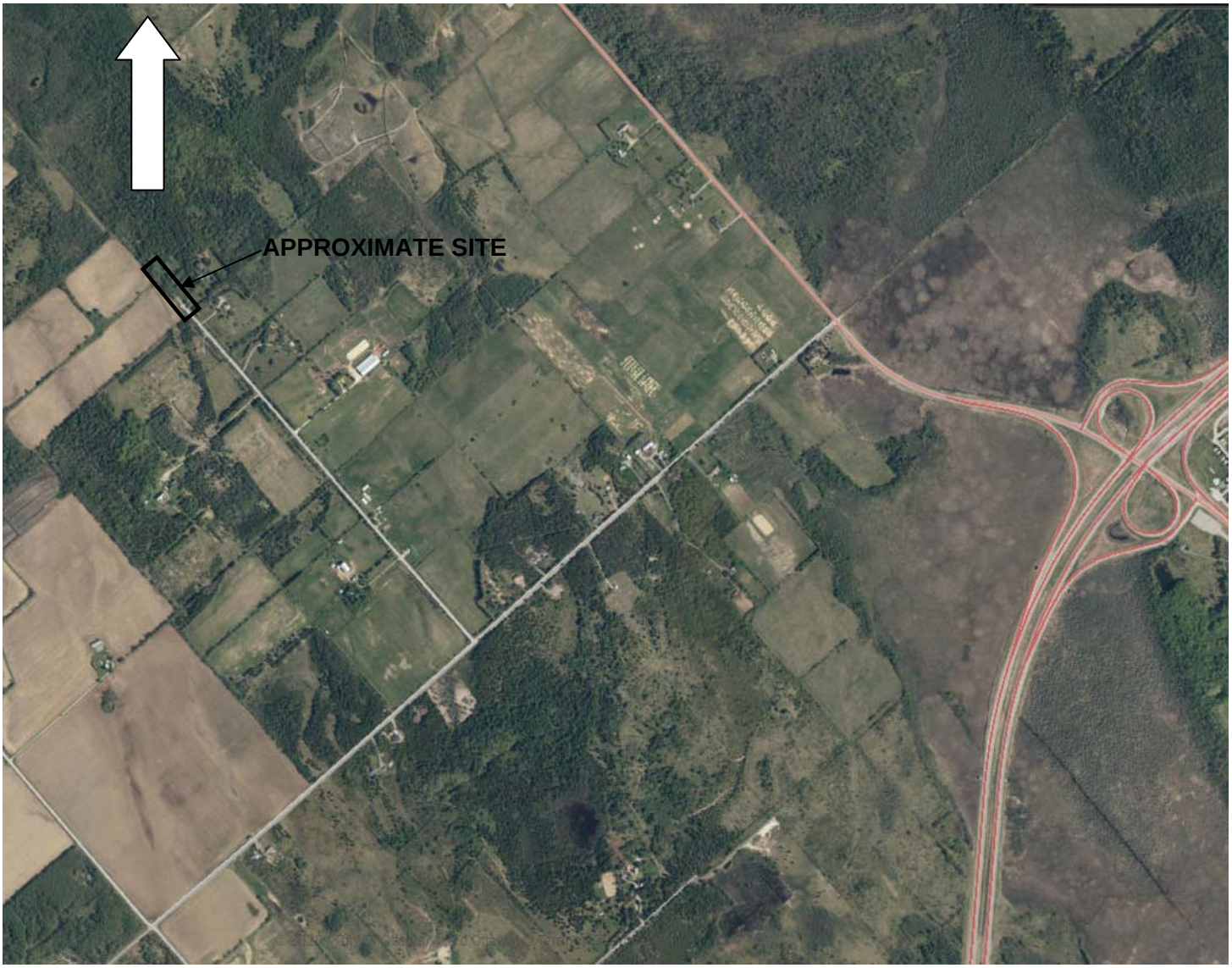
TABLE I (continued)

TEST PIT NUMBER	DEPTH (METRES)	DESCRIPTION
STATION 0 + 028 TP4 RIGHT SHOULDER (ELEV.138.93)		
	0.00 – 0.20	TOPSOIL
	0.20 – 0.33	Yellow brown to grey fine to medium SAND
	0.33	Refusal on BEDROCK
Test pit dry, May 28, 2020.		
STATION 0 + 053 TP5 LEFT SHOULDER (ELEV.138.48)		
	0.00 – 0.36	TOPSOIL
	0.36 – 0.60	Yellow brown to grey fine to medium SAND
	0.60	Refusal on BEDROCK
Trace of water at about 0.4 metres below existing ground surface, May 28, 2020.		
STATION 0 + 053 TP6 RIGHT SHOULDER (ELEV.138.78)		
	0.00 – 0.36	TOPSOIL
	0.36 – 0.74	Yellow brown to grey fine to medium SAND
	0.74	Refusal on BEDROCK
Trace of water at about 0.4 metres below existing ground surface, May 28, 2020.		

TABLE I (continued)

TEST PIT NUMBER	DEPTH (METRES)	DESCRIPTION
STATION 0 + 078 TP7 LEFT SHOULDER (ELEV.138.41)		
	0.00 – 0.36	TOPSOIL
	0.36 – 0.71	Yellow brown to grey fine to medium SAND
	0.71	Refusal on BEDROCK
Trace of water at about 0.4 metres below existing ground surface, May 28, 2020.		
STATION 0 + 078 TP8 RIGHT SHOULDER (ELEV.138.64)		
	0.00 – 0.36	TOPSOIL
	0.36 – 0.74	Yellow brown to grey fine to medium SAND
	0.74	Refusal on BEDROCK
Trace of water at about 0.4 metres below existing ground surface, May 28, 2020.		
STATION 0 + 100 TP9 LEFT SHOULDER (ELEV.138.24)		
	0.00 – 0.30	TOPSOIL
	0.30 – 0.60	Yellow brown to grey fine to medium SAND
	0.60	Refusal on BEDROCK
Trace of water at about 0.4 metres below existing ground surface, May 28, 2020.		
STATION 0 + 100 TP10 RIGHT SHOULDER (ELEV.138.31)		
	0.00 – 0.36	TOPSOIL
	0.36 – 1.22	Yellow brown to grey fine to medium SAND
	1.22	Refusal on BEDROCK
Trace of water at about 0.4 metres below existing ground surface, May 28, 2020.		

KEY PLAN	FIGURE 1

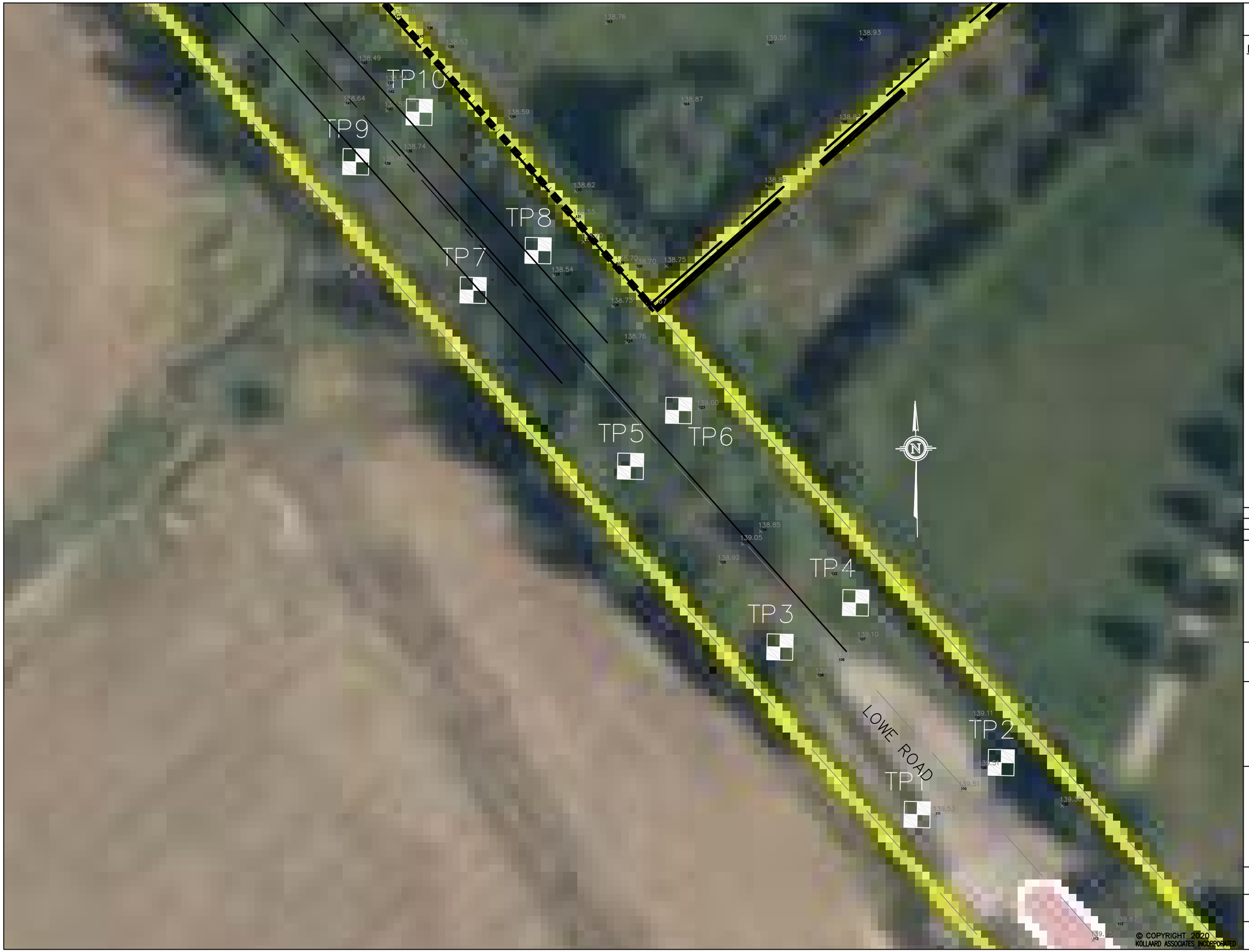


NOT TO SCALE

Kollaard Associates
Engineers

Project No. 200143

Date July 2020



DRAWING NUMBER:
SITE PLAN, FIGURE 2

LEGEND:

TP1 APPROXIMATE TEST PIT LOCATION

REFERENCE: PLAN SUPPLIED BY CITY OF OTTAWA EMAPS.

SPECIAL NOTE: THIS DRAWING TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING REPORT.

REV.	NAME	DATE	DESCRIPTION

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CLIENT:
MR. AARON WOLF

PROJECT:
GEOTECHNICAL INVESTIGATION FOR PROPOSED ROADWAY EXTENSION

LOCATION:
LOWE ROAD
CITY OF OTTAWA, ONTARIO

DESIGNED BY:	*DATE:*
--	JUNE 12, 2020
DRAWN BY:	*SCALE:*
DT	N.T.S

KOLLAARD FILE NUMBER:
200143