MTE Consultants
520 Bingemans Centre Drive, Kitchener, Ontario N2B 3X9

May 29, 2024

MTE File No.: C55367-100

Vanessa Archer
TD Consulting INC.
155 St David Street
Lindsay, ON K9V 4Z6

Dear Vanessa:

RE: Aggregate Assessment – Desktop Review
135 Tate's Bay Road, Trent Lakes
Lot 19 Concession 14, Harvey Township, Ontario

1.0 INTRODUCTION

MTE Consultants Inc. (MTE) was retained by TD Consulting Inc. to conduct a desktop aggregate assessment for the property located at 135 Tate's Bay Road, Trent Lakes, Lot 19 Concession 14, Harvey Township, Ontario (hereby referred to as the 'Site'). **Insert 1** below shows the Site location approximately seven kilometres northeast of Bobcaygeon, ON. The Official Plan for the Municipality of Trent Lakes shows that the southwest corner of the Site is designated as Aggregate Resource Extraction (see Schedule A1 of the Official Plan) hereby referred to as the "designated area" (see **Insert 2**).

MTE understands that a Lot severance application has been submitted to the Township of Trent Lakes for a small portion (1.06 Ha) of the Site located in the southwest corner (see severance sketch attached). This desk-top study will assess the potential impact of the Lot severance on the designated area and discuss the feasibility of obtaining an aggregate License under the Aggregate Resources Act (ARA) for this portion of the Site.

Insert 1: Site Location

Insert 2: Existing Features

Scale: Note to scale
Source: Map data ©2024 First Base Solutions Inc. | ©Mapbox | ©OpenStreetMap | ©Teranet | ©Maxar | Open in Google Maps

2.0 BACKGROUND REVIEW

Background information pertaining to the Site was compiled by reviewing the following:

- Regional Quaternary Geology Maps on file with the Ontario Geological Survey (OGS).
- Aggregate Resource Maps and Aggregate Resource Inventories on file with the Ministry of Natural Resources and Forestry (MNRF).
- Water Well Records on file with the Ministry of the Environment and Climate Change (MECP).
- Nearby Active Pits listed on the online interactive map by the MNRF.
- Operational Standards as per the Aggregate Resources Act.
- Aerial imaging.
- Relevant Land Use Planning Policies:
    - The Growth Pan for the Greater Golden Horseshoe and accompanying Natural Heritage System Mapping); and
    - Municipality of Trent Official Plan.

2.1 Site Layout

The Site consists of sensitive environmental features such as wetlands and woodlands (see **Insert 3**). If the designated area were to be licensed as a pit or quarry, then these features must be evaluated as per the ARA. If through the evaluation, they are deemed significant, then setbacks would be required that would reduce the extraction area and reduce the economical feasibility of the aggregate license application.

MTE understands that historical pit activity may have occurred in the designated area but is now an abandoned unlicensed pit (see blue circle in **Insert 3**). Arial imagery suggests that this portion of the Site is currently being used for light duty equipment storage. This portion of the Site may have been designated as Aggregate Resource Extraction in the Official Plan due to

the presence of historical pit activities. It is unknown how much of the available aggregate resource remains after the historical pit activity.

Insert 3: Environmental Sensitive Features

Scale: Note to scale
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2.2 Regional Quaternary Geology

Quaternary Geology mapping shows that the Site is underlain by diamicton or undifferentiated till, predominately sand matrix, extremely stony, boulders, and high in total matrix carbonates, often associated with stratified sediments (See **Insert 4**). The presence of till deposits introduces fine material such as silt and fine sand to the aggregate deposit that may require washing before it can be sold as an aggregate product. Aggregate washing increases the value of the aggregate product but requires additional Permitting (i.e. a Permit to Take Water) from the Ministry of the Environment, Conservation and Parks (MECP) which may affect the economic feasibility of extracting the aggregate.

Insert 4: Quaternary Geology

Scale: Note to scale
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3.0 POTENTIAL AGGREGATE RESOURCE

The following resources were used to estimate the presence and thicknesses of potential aggregate resource on the Site:

- Aggregate Resources Inventory Paper 105 (ARIP 105) for the County of Peterborough (Ontario Geological Survey, 2019). This paper considers data sourced from Quaternary geology maps, as well as existing pits and quarries in Peterborough County, and ultimately provides maps that classify potential deposits as Primary, Secondary, or Tertiary significance. It also includes a description of the classified deposits, including their approximate thickness.
- MECP Water Well records within the Study Area. MTE reviewed well records within 500 m of the Site and utilized the reported lithology to estimate the thickness of overburden and potential aggregate.

3.1 Aggregate Resources Inventory Paper 105

A review of ARIP 105 for Peterborough County (Ontario Geological Survey, 2019) indicates that much of the area around the Site is unevaluated (See **Insert 5**). There is a narrow band of resource of Tertiary significance along Tates Bay Road near Site but the rest of the Site is unevaluated. From the mapping, there is a gap in the band of Tertiary significance where it crosses the Site, likley because it has already been extracted by historical pit activity. Test pits may be requried to confirm presence or absence of the remaining reserve. ARIP 105 suggests that this aggregate deposit is classified as either sand deposits, generally less than three meters thick, or mixed sand and gravel deposits less than 1.5m thick.

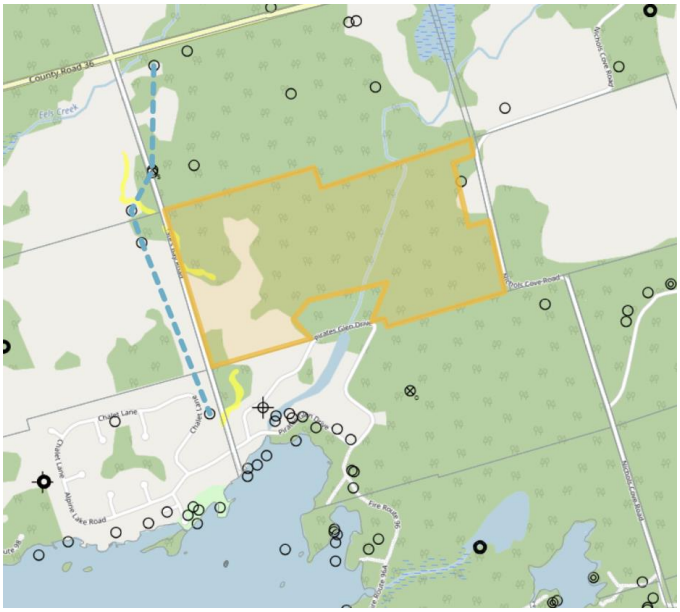
Insert 5: Aggregate Resource Inventory

Scale: Note to scale
Source: Map data ©2024 First Base Solutions Inc. | ©Mapbox | ©OpenStreetMap | ©Teranet | ©Maxar | Open in Google Maps

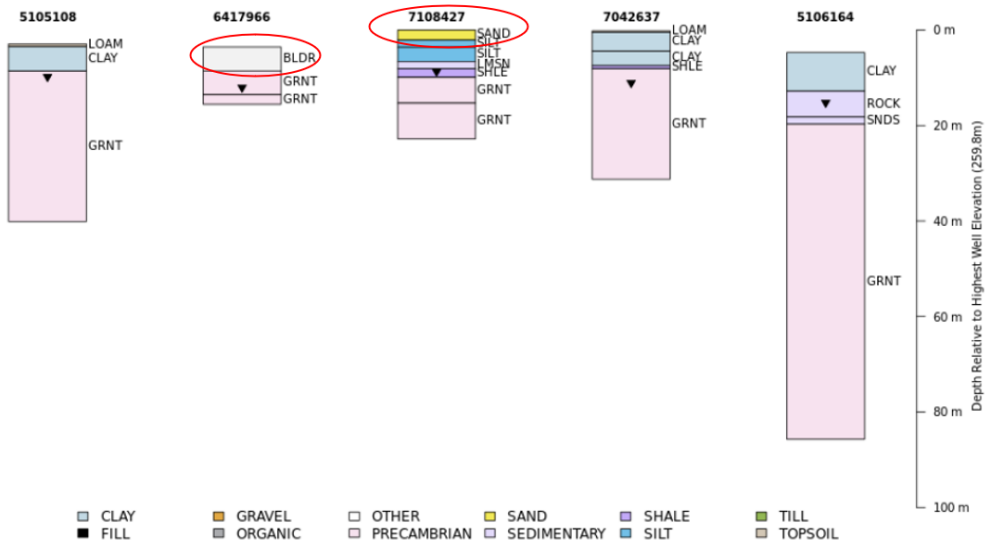
3.2 MECP Well Records

A review of MECP well records within 500 meters (see **Insert 6**) showed that the surficial soils range between clay and gravel. The thicknesses of potential aggregate (boulders and sand) ranges between three meters to five meters (see red circles on **Insert 7**). Underlying bedrock composition is Granite.

Insert 6: Water Well Records within 500m



Insert 7: Water Well Record – Fence Diagram



Scale: Note to scale
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3.3 Nearby Pits

A review of pits and quarries mapped by the MNRF revealed that there are currently two active licensed pits within five kilometers of the Site. The closest active aggregate operations are:

- The Johnston Farm Quarry: Class B License, ALPS ID 20375, located approximately 1.2 km north of the Site; and

- The Dewdney Mountain Farms Ltd Quarry: Class A License, ALSP ID 625337, located approximately five kilometers north of the Site.

The above-mentioned operations are extracting bedrock aggregate from the Bobcaygeon and Gull River Formations. Given that the two closest active aggregate licenses are both quarries extracting bedrock, there may be insufficient volume of sand and gravel resource available for a viable pit in this area. If the designated area on the Site is to be developed as a quarry, then sufficient space would be required on the quarry floor to accommodate processing equipment (i.e. crushing and screening equipment). However, this portion of the Site is too narrow to accommodate bedrock extraction due to the required setbacks and sloping (minimum 3:1) to expose the bedrock. Insufficient area would remain to accommodate processing equipment if the designated area were developed as a quarry.

3.4 ARA Standards & Setbacks

In accordance with the Operational Standards in the Aggregate Resources Act (O. Reg. 244/97) a minimum 15 m setback is required from the boundary of the Site and a minimum 30m setback from the boundary of the Site that abuts:

- A highway;
- Land in use for residential purposes at the time the license was issued;
- Land restricted to residential use by a zoning by-law when the license was issued; and
- Any body of water (including significant wetlands) that is not the result of excavation below the water table.

According to the Aggregate Resources Act, a 30m setback is required along Tates Bay Road, as wells as from the pond located in the middle of the designated area, and any additional setbacks that might be applied after the wetlands and wooded areas are evaluated. These setback requirements will reduce the feasibility of the designated area.

4.0 AGGREGATE VOLUME CALCULATION

The designated area is approximately five hectares. ARIP 105 suggests that the aggregate deposit is approximately 1.5 meters to 3.0 meters thick. MECP well records suggest there may be up to five meters of sand and gravel atop the till unit.

Using an average deposit thickness of three meters, the resource area may have a granular resource up to 265,500 million tonnes (see **Table 1**). However, this volume does not conisder setbacks nor sloping, which will reduce the available resource. Further, historical extraction may have already reduced this resource to a smaller number. As such, this volume is a conservative estimate. Given the current costs of licensing new pits in the Province of Ontario, this volume may be insufficient to make it economically viable as a licensed pit or quarry.

The proposed Lot severance overlaps a portion of the designated area. Considering this overlap, the Lot severance may sterilize approximately 13,275 tonnes (5%) of aggregate resource (see **Table 1**).

Table 1: Tonnage Estimate

Location	Estimated Extraction Area (ha)	Average Thickness (m)	Volume (m^3)	Density (tonnes/m^3)	Tonnage
Aggregate Resource Area	5.0	3.0	150,000	1.77	**265,500**
Overlap with Lot Severance	0.25	3.0	7,500	1.77	**13,275**

5.0 LAND USE PLANNING POLICIES

According to the Growth Pan for the Greater Golden Horseshoe, the Site is mapped as Natural Heritage System (see **Insert 8**), which means a new aggregate license can only be permitted if the application was for an expansion of an existing license. Since the Site is not currenlty licensed, it cannot be permitted under this policy, regardles of the designation in the Official Plan.

Additional land use planning policies restricting the licensing of the Site as a pit or quarry are found in Section 5.10.5 (d) of the Official Plan, which states that:

> *As a general policy, a mineral aggregate operation for a pit should not be established within 150 metres of a sensitive land use for a pit above the water table, or within 300 metres of a sensitive land use for a pit below the water table. A mineral aggregate operation for a quarry should not be established within 500 metres of a sensitive land use.*

According to the Official Plan, the houses along Pirates Glen Drive meet the definition of a sensitive land uses and are found within 150m of the designated area. As such, portions of the aggregate reserve have already been sterilized. Given this policy in the Official Plan, as well as the general prohibition of new licenses in areas mapped as Natural Heritage System, the resource may no longer be feasible for extraction.

Insert 8: Natural Heritage System Mapping

Scale: Note to scale
Source: Map data ©2024 First Base Solutions Inc. | ©Mapbox | ©OpenStreetMap | ©Teranet | ©Maxar | Open in Google Maps

6.0 SUMMARY

Based on a preliminary review of available information MTE offers the following:

- As a conservative estimate, there may be as much as 265,500 tonnes of aggregate resource available in the area designated as Aggregate Resource Extraction.
- The proposed Lot severance may to sterilize up to 13,275 tonnes (5%) of aggregate resource in the designated area.
- Historical pit activity on the Site may have reduced the volume of available aggregate resource. Setbacks and sloping requirements listed under the Aggregate Resource Act will further reduce the available volume.
- Environmentally sensitive areas such as wetlands and woodlands will require 30m setbacks under the Aggregate Resources Act if they are deemed significant. These setbacks will reduce the extraction area and the economic feasibility of licensing the designated area as a pit or quarry.
- The presence of till deposits introduces fine material such as clay, silt, and fine sand to the aggregate deposit, which may require washing and additional permits from the MECP. This additional permitting will reduce the economic feasibility of licensing the designated area as a pit or quarry.
- Residential houses along Pirates Glen Drive are within 150m of the designated area. There is a general policy in the Official Plan (see Section 5.10.5 (d)) that reduces the options for licensing the designated area as a pit or quarry, which reduces the economic feasibility.
- Existing land use such as the Growth Plan for the Greater Golden prohibits new aggregate licenses in areas mapped as Natural Heritage System. Given this prohibition, it is not feasible to license any portion of the designated area.
- In summary, based on the information contained herein, the Lot severance is anticipated to sterilize less than 5% of the aggregate resource in the designated area. However, it is no longer feasible to license this area due to existing land use polices found in the Official Plan and the Growth Plan for the Greater Golden Horseshoe. Further, the economic feasibility of licensing the designated area as a pit or quarry is affected by the limited resource available and the required setbacks and sloping defined under the Aggregate Resources Act.

The numbers presented herein are based upon preliminary information gathered from regionally mapped resources, MECP well records and Aggregate Resource Inventory Papers. For a more thorough analysis, MTE recommends that on-Site boreholes, monitoring wells, test pitting, and aggregate quality testing be completed to confirm aggregate quantity and quality.

Vanessa Archer
TD Consulting INC.
May 29, 2024

6.1 Signatures

Yours truly,

MTE Consultants Inc.

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JBF: smk
Attach.
M:\55367\100\4 - Deliverables\Aggregate Assessment\55367_100_2024-05-29_ltr rpt_135_Tates_Bay_Road_Aggregate Assessment.docx

7.0 REFERENCES

Ontario Geological Survey. (2019). Aggregate resources inventory of the County of Peterborough, southern . *Aggregate Resources Inventory Paper 105, 139p.* Ontario Geological Survey.

P.J. Barnett, W.R. Cowan and A.P. Henry (1991). Quaternary geology of Ontario, southern sheet. Ontario Geological Survey.

Chapman, L. J., & Putnam, D. F. (1984). *The Physiography of Southern Ontario.* Ontario Geological Survey.

TD Consulting INC (2024). Severance Sketch 2 Roll #154201000261901.

ALL DIMENSIONS
ARE APPROXIMATE

RU-35

RU-29

RU

RU

RU-11

RR

RU

RU

RU

RR

TATE'S BAY ROAD

NICHOL'S COVE ROAD

461m ±

24m ±

497m ±

192m ±

101m ±

26m ±

207m ±

602m ±

98m ±

362m ±

399m ±

92m ±

153m ±

84m ±

29m ±

484m ±

324m ±

WETLAND BOUNDARY

LIMIT OF BUFFER ZONE

WETLAND BOUNDARY

AREA FOR AGGREGATE
RESOURCE EXTRACTION

POND BOUNDARY

LIMIT OF BUFFER ZONE

EXISTING ENTRANCE

PROPOSED SEVERED LOT
AREA: 10600m²±/2.5 ACRES

134m±

79m±

79m±

134±

PROPOSED ENTRANCE
AND DRIVEWAY

PROPOSED DRILLED WELL

APPROXIMATE LOCATION
OF PROPOSED SEPTIC
(15.24m X 18.28m)

RETAINED LOT
AREA: 629000m²±

200 NICHOL'S
COVE ROAD

0 50 100

KEY PLAN N.T.S

HWY 35

TATE'S BAY ROAD

SITE

SITE STATISTICS - SEVERANCE

CURRENT ZONING	RURAL (RU)		
MIN. LOT AREA	10000 sqm		
MIN. FRONTAGE	60m		
		PROPOSED AREA	PROPOSED FRONTAGE
RETAINED LOT		629000 m²±	523m±
SEVERED LOT		10600 m²±	79m±

OP- LIMIT OF AREA FOR AGGREGATE EXTRACTION

Nº:	DATE	DESCRIPTION	BY

REVISIONS

PROJECT TITLE:
135 TATE'S BAY ROAD
ROLL #154201000261901

DRAWING TITLE:
SEVERANCE SKETCH 2

TD Consulting INC.
155 St David St
Lindsay, Ontario
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Phone : (647)-535-9461
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DRAWN BY: DT	PROJECT Nº: 023-936
DESIGNED BY: TD	
APPROVED BY: TD	DRAWING Nº: SK-2
DATE: JAN 2024	SCALE: AS SHOWN

LAST REVISED JAN 26-2024