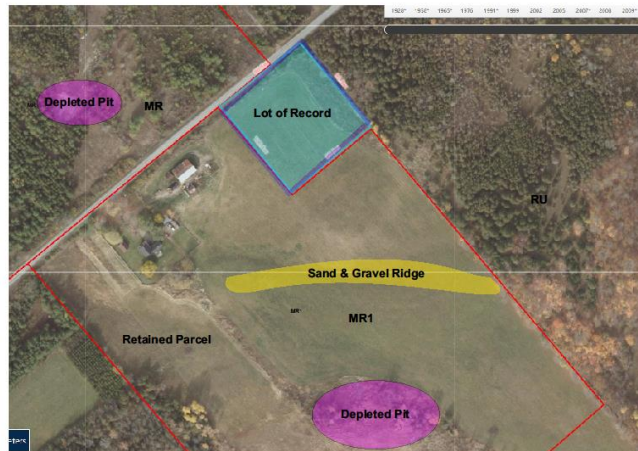


MINERAL RESOURCE IMPACT ASSESSMENT

7700 Copeland Road, Geo. Twp. of Goulbourn,

City of Ottawa

Prepared for: the Corporation of the City of Ottawa, in support of a zoning report for council to evaluate a proposed residential dwelling on a lot of record that is closer than 150 metres from a Mineral Aggregate Reserve Zone.



Location of site: 7700 Copeland Road,
Pt. Lot 11 Conc. 4,
Geographic township of Goulbourn
City of Ottawa

Prepared By: Gary McLaren

August 29, 2022



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Introduction:

The undersigned was retained by the Corporation of the City of Ottawa, to review and provide a Mineral Resource Impact Assessment (MRIA) to inform staff on the preparation of a zoning report. The zoning report will assist city council in understanding perceived impacts of a residential dwelling for an existing lot of record adjacent to a ME zone for a future pit operation. The lot of record was created in 1991. The current zoning by-law contains a 150 metre separation distance between a proposed residential home and lands intended for future sand and gravel extraction.

The purpose of the MRIA is to evaluate the potential impacts of two perceived conflicting land uses and to further assess whether there is sufficient resource available to justify an investment in an application for a pit licence from the province at some future date. The applicant is proposing to build a residential dwelling on an existing lot of record. In the opinion of the author, a 150 metre setback for a dry operation is an appropriate separation distance for an above water table extraction operation. The burden is on the applicant to ensure avoidance or mitigation measures are considered so that a future operating pit is not negatively impacted and there is no hindrance on extraction and processing of adjacent resource areas. Should the gravel resource be determined viable or feasible to licence, some of the social impacts to be addressed in the MRIA would include the following:

- i) Dust;
- ii) Noise;
- iii) Vibration;
- iv) Traffic; and
- v) Groundwater (well interference);

In order to evaluate the feasibility of the aggregate development and potential social and environmental impacts, a desktop exercise begins with the review of surficial and limestone bedrock resource mapping. A further evaluation is carried out to locate any operating pits and quarries in the vicinity of the subject site, as well as abandoned pits and those sites previously depleted of the sand and gravel resource where licences were subsequently surrendered and are no longer viable for extraction. The next step includes the review of the Official plan and zoning by-law policies to determine to what extent the city has protected these geological deposits (licenses and resource areas) for future use. The final consideration is to evaluate the extent to which current land uses, such as residential development sterilizes the surrounding resource, is comparable with the setback for the proposed residence and whether the proposed land use would hinder establishment of future or current operations or make them uneconomical to consider.

1.0 Study Scope

The scope of this study was;

- 1) To identify any resource on the subject lands and lands directly adjacent and provide an opinion regarding the potential for extraction/removal of these resources in the future; and
- 2) To provide a professional opinion about whether the proposed building envelope for a residential lot on an existing “lot of record” would hinder or otherwise preclude the use of the resources on the retained parcel (MR zone) and adjacent lands from a future licenced pit;

Figure 1 shows the location of the subject lot of record and the retained parcel and previously operated and depleted pit areas on the retained lands (MR1) and lands directly to the north (MR).

Figure 1 – Key Map



1.1 Qualifications.

The author of this report has extensive knowledge and experience with this particular area of Goulbourn ward, in the city of Ottawa. From 1988 to 2007, I was employed in the capacities of Mineral Resource Administrator, Pits and Quarries Inspector and acting District Planner with the Ministry of Natural Resources, responsible for administration of the Aggregate Resources Act, implementation of the Aggregate Resources Policies from the Provincial Policy Statement into local Official Plans. During this specific time frame, I was a member of the Regional Municipality of Ottawa Carleton steering committee providing advice for consideration of sand and gravel and bedrock resource designations in the rural land use schedule of the regional OP. I also assisted the Township of Goulbourn at the time, with sand and gravel and bedrock designations in their local Official Plan. Prior to retirement from the Ontario Public Service, I held the positions of Southern Regional Aggregate Resources Coordinator and Senior Policy Adviser for the Aggregate Resources Program at MNRF from 2008 to 2014. During employment with MNRF, I also worked as a forest technician, Superintendent of the G. Howard Ferguson Forestry Station, a fish and wildlife technician and certified as a Forest Fire Safety Officer.

During 2014, I established a consulting company specializing in the protection and development of aggregate resource areas under the Planning Act and associated approvals for the establishment and operation of pits and quarries in eastern Ontario under the Aggregate Resources Act and related regulations, standards and guidelines. As president of Milestone Aggregate Consulting Services Inc., I have acted as project consultant and aggregate resource specialist for several pit applications, site plan amendments and mineral resource impact assessments for developments near pit and quarry operations, particularly in the old geographic townships of Osgoode, West Carleton, Goulbourn and Nepean, as well as applications in Lanark, Renfrew, Leeds-Grenville and Grey counties. I have assisted several aggregate producers carrying out business within the City of Ottawa, with review of the aggregate resource policies for the current 2020 Official Plan review. I conduct annual Compliance Assessment Reports for pit and quarry operators for submission to the Ministry of Northern Development, Mines, Natural Resources and Forestry and applicable municipalities, including the city of Ottawa.

2.0 Relevant Policies and Regulations

The City of Ottawa Official Plan and Zoning By-law, the 2020 Provincial Policy Statement (PPS), the Ottawa Aggregate Inventory Paper, the Aggregate Resources Act (ARA) and regulations and the policies related to implementation of the ARA, regulations, and standards were used in preparation of this report. *(a complete list of references is included at the end of the report in section 10).*

2.1 Provincial Policy Statement (PPS).

The PPS provides the framework for land use planning and development policies in the local Official Plan. In the case of the city of Ottawa, there is no upper tier Official Plan but rather one tier to the O.P.

Section 2.5 of the 2020 Provincial Policy Statement discusses how Minerals Aggregate Resources should be protected for long-term use. The policy statements relevant to this report are;

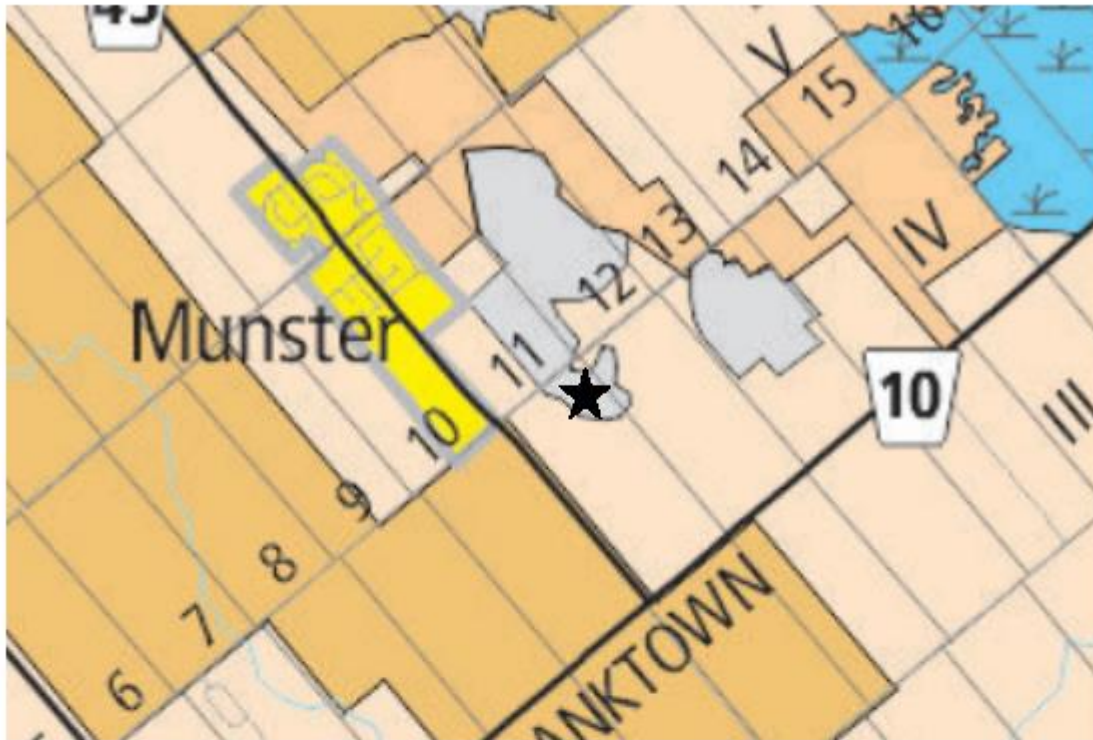
1. As much of the mineral aggregate resources as realistically possible should be preserved as close to market as possible (2.5.2.1);
2. Mineral aggregate operations shall be protected from development and activities that would preclude or hinder their expansion or continued use or which would be incompatible for reasons of public health, public safety or environmental impact (2.5.2.4);
3. In known deposits of mineral aggregate resources and on adjacent lands, development and activities which would preclude or hinder the establishment of new operations or access to the resources shall only be permitted if:
 - a) Resource use would not be feasible; or
 - b) The proposed land use or development serves a greater long-term public interest; and
 - c) Issues of public health, public safety and environmental impact are addressed (2.5.2.5).

These policies are reflected in the current city of Ottawa Official Plan by a sand and gravel resource area policies and designation on the Land use Schedule Map “ Schedule “A” (see **Figure 2**) which protects mineral aggregates from encroachment of incompatible development.

2.2 City of Ottawa Official Plan

The city of Ottawa is currently in the process of updating its official Plan (O.P.). The proposed new O.P. has yet to be adopted by the Province, therefore the current O.P. and applicable aggregate resource policies is the one referenced in this report. The site under consideration is an existing “lot of record” created in 1991. The proposed building lot is designated sand and gravel resource area with the majority of the retained lands being General Rural Area. (See **Figure 2**).

Figure 2 - Schedule A – Rural Policy Plan of the City of Ottawa’s Official Plan



Urban Area (see Schedule B)		Zone urbaine (voir annexe B)
Urban Expansion Study Area		Zone d'expansion urbaine à l'étude
Greenbelt (see Schedule B)		Ceinture de verdure (voir annexe B)
Village		Village
Agricultural Resource Area		Zone de ressources agricoles
General Rural Area		Zone rurale générale
Rural Natural Features Area		Zone rurale caractéristiques naturelles
Bedrock Resource Area		Zone de ressources en substrat rocheux
Sand and Gravel Resource Area		Zone de ressources de sable et de gravier
Natural Environment Area		Zone écologique naturelle
Major Open Space		Grand espace vert
Significant Wetlands		Terres humides d'importance
Carp Airport		Aéroport de Carp
Rural Employment Area		Zone rurale d'emploi
Carp River Restoration Policy Area		Zone de restauration de la rivière Carp
Silica Sand Deposit		Dépôt de sable siliceux
Solid Waste Disposal Site		Site d'enfouissement des déchets solides
Urban Area Boundary		Limite de la zone urbaine
Lands leased by the Ottawa International Airport Authority		Terrains Loués par l'administration de l'aéroport international d'Ottawa
City Boundary		Limite de la Ville d'Ottawa

Section 3.7.4(10) of the Official Plan states that *“new development will not be approved within 500 metres of a Bedrock Resource Area or within 300 metres of a Sand and Gravel Resource Area, unless it can be demonstrated that such development will not conflict with future mineral aggregate extraction. Examples of conflicting land uses are new sensitive land uses that conflict with mineral aggregate extraction.”*

The lot of record is within the Sand and Gravel Resource Area on Schedule A: Rural Policy Plan. Section 3.7.4(11) of the Plan indicates that new sensitive land uses can only be located within 300 metres of a Sand and Gravel Resource Area *“if it can be demonstrated that the existing mineral aggregate operation, and potential future expansion of the operation in depth or extent, will not be affected by the development”*.

The boundary of sand and gravel resource designation appears to be well defined and covers an area in the North-east corner of Lot 11, concession 4 underlying and immediately surrounding the existing lot of record. The deposit then runs north onto Concession 5 to cover most of the south east corner of Lot 11 where a previously licenced pit was depleted and the licence surrendered. This was locally known as the “Steenbakker Pit”. There is also a small Class B pit licence located, further east on the south side of Copeland Road, on lot 13, concession 4.

There are already 5 homes along the north side of Copeland Road in lots 11 and 12 and the farm home on the retained portion of the subject site which are either within the sand and gravel zone or directly adjacent (within the 300 metres Influence area of the of the O.P. and within 150 metres of the MR zone setback). **(see Figure 3)**. There are also 15 residential dwellings along the north and south side of Copeland road between Munster Road on the west to beyond the influence area of the licenced pit entrance to the east, many of which are within 300 metres of either the MR and ME zones.

Given the amount of infilling in the form of a single detached dwellings along this part of Copeland Road, it can be argued the small sand and gravel resource area south of the lot of record is already sterilized by development and the remaining resource is not viable as a pit operation in the future.

The author of this report was a steering committee member with the regional municipality of Ottawa Carleton planning department, during the 1995 Official Plan review of the aggregate resource policies and resource mapping for the rural Land Use Schedule. During that review, the abandoned pit on the north west half of Lot 11, Concession 5 was removed from the mapping schedule as it was depleted of resource. The Steenbakker pit on the south west half of lot 11 was still licenced at that time, but has since been depleted, rehabilitated and licence surrendered. Photo No. 2 at the end of this report clearly shows extraction of a 3 metre deep shale pit to bedrock contact and standing water, from the elevation at the edge of the Munster Road right of way. Photos 6 and 7 in Lot 11, Concession 4 off Copeland road similarly shows a shallow, previous extracted shale deposit which has been rehabilitated to residential lot with a home and out buildings.

Note: It is recommended that the sand and gravel designation in this area, especially on Lot 11 in Concessions 4 and 5 be reviewed if possible, during the current O.P. review process with the benefit of this MRIA and consider the removal of parts of the designation due to past utilization of resource in the Steenbakker Pit Lot 11, and further east due to the existing residential development already granted along the north side of Copeland Road in the vicinity of the subject site.

2.4 City of Ottawa Zoning By-Law 2008-250

The following are excerpts from the Zoning By-law which pertain to the subject property and the MR1 zone.

MR – Mineral Aggregate Reserve Zone (Sections 215 MR and Section 216 – MR1)

Purpose of the Zone

The purpose of the MR – Mineral Aggregate Reserve Zone is to:

- 1. identify those areas that are designated as **Sand and Gravel Resource Area** or **Limestone Resource Area** in the Official Plan for which at present there is no licensed mineral extraction operations, and are not along a rural truck route;*
- 2. identify those lands where as yet unexploited mineral aggregate resources exist, until a request is made for a rezoning to the Mineral Extraction – ME zone to permit a mineral extraction operation;*
- 3. allow for an interim period a limited range of permitted uses of a nature that would not sterilize the potential of future mineral extraction operation on the lands or neighbouring lands; and,*
- 4. impose regulations reflective of the ME zone as lands in the MR zone may potentially be rezoned to ME to permit mineral extraction operations.*

The subject site is zoned MR1 on the City of Ottawa Geoportal (Teranet Enterprises Inc. 2020). The MR1 zone underlies the retained parcel and the subject lot of record (See **Figure 4**). The lands in lot 11, concession 5 directly north of the lot, are zoned MR. The applicant must also have regard for the possibility of rezoning of these lands to Mineral Extraction in the future and are therefore bound by policies in the ME zone as well as the MR zone.

Section 67 of the By-law adopts a setback restriction of 150 metres between a residential dwelling and a mineral aggregate zone. This setback aligns with the social impacts and requirement for a

noise study in the new regulations under the ARA (150 metres between a pit and a sensitive receptor) and the NPC – 300 Noise by-law (O.P., section 10.2.1 Environmental Noise Control 1).

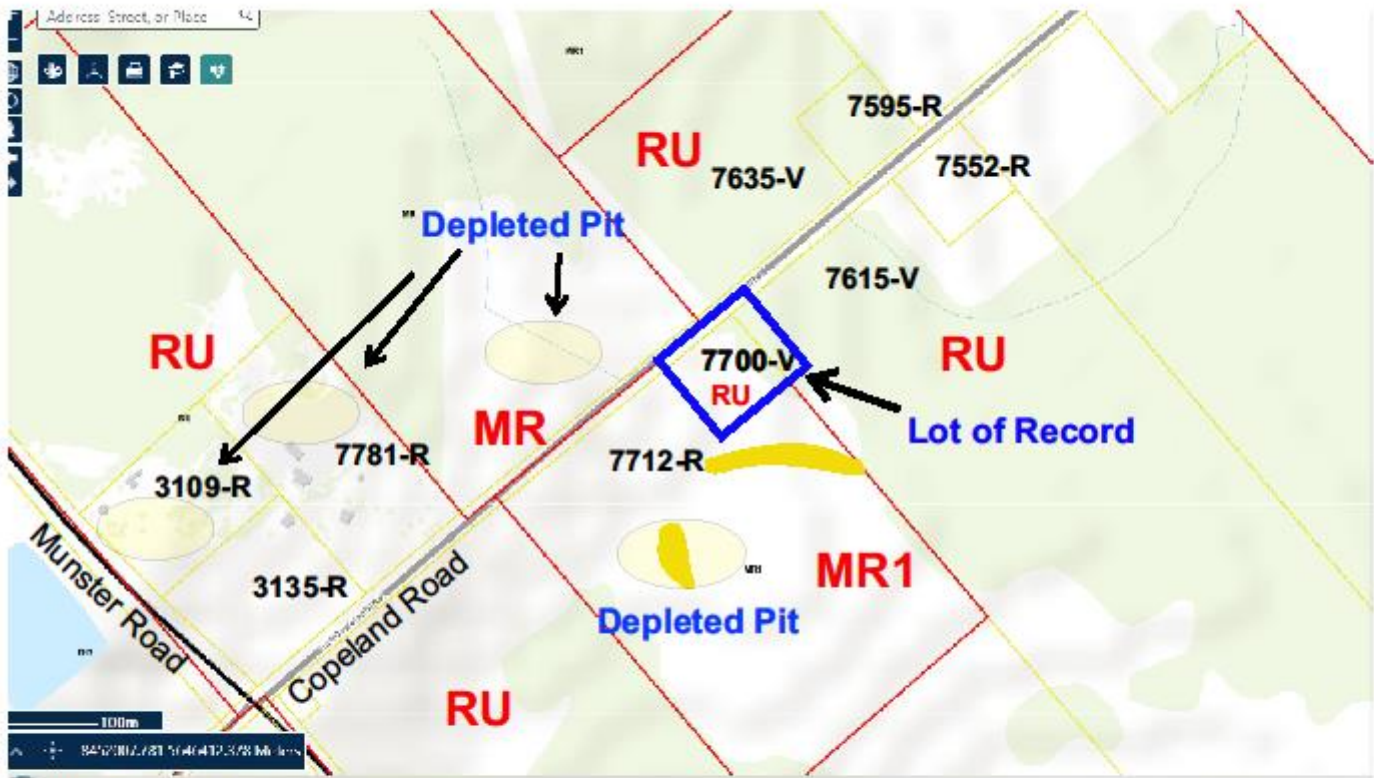
Section 67 of the By-law, Residential Use Building Setback from Mineral Aggregate Zones

*Despite any other provisions to the contrary, in the AG, EP3, and RU zones no new building consisting of a dwelling, dwelling units or **rooming units** may be constructed any closer than:*



- 1. 150 metres to an ME2 or ME3 - Mineral Extraction Pit Only subzones, or an MR - Mineral Aggregate Reserve zone boundary, or*
 - 2. 210 metres to an ME zone.*
- 2. The purpose of these setbacks is to help ensure that new dwelling units are not located in close proximity to an existing or future noise or vibration-generating use such as a mineral extraction operation.*

In relation to the subject lot of record, the geo Ottawa 2019 web site indicates at least 5 residents on or within 150 metres of the MR and MR1 zones along the west end of Copeland Road. The strip development includes residences at 3135 Munster road then heading east, at 7781 Copeland Road, 7712 Copeland Road (the retained parcel), 7552 Copeland Road, and 7595 Copeland Road, (See Figure 3 below). By comparison, there are also 2 dwellings within 150 metres of the MR1 and ME zone in the proximity of the “McCarthy pit” at 4292 Copeland Road.

Figure 3 – Lot of Record, surrounding land use, and zoning boundaries



Legend

- R** Residential Dwelling
- V** Vacant Land
-  Depleted Pit
-  Sand and Gravel Deposit

3.0 Mineral Aggregate Resource Mapping

Provincial aggregate resource mapping, is a tool prepared by the Province to assist Municipalities in applying the Provincial policies for the protection of aggregate resources for construction needs. The current mapping, the **Aggregate Resource Inventory Paper 191 (Lee, V. F. 2013)** indicates tertiary deposits of granular fill in the vicinity of these consent applications (**See Figure 4**). Tertiary deposits supply a very local market primarily for home construction and initial subdivision development. The McCarthy pit would be considered a tertiary type operation similar to the Dale Argue site on the same deposit just to the north, along the south side of Bleeks Road.

Note: An explanation of primary, secondary and tertiary surficial deposits is explained in **section 3** of this report.

ARIP 191 (Lee V.F. 2013) is a further refinement of the Gorrell Resource Investigations (GRI) mapping of 1993 done in preparation of the 1995 aggregate resource policy O.P. review for the City of Ottawa, previously the Regional Municipality of Ottawa-Carleton.

3.1 Geology

Surficial Sand and Gravels

The surficial geology within the municipal boundary of the city of Ottawa has been studied by Fletcher/Klugman (1979), Richard (1982), GRI (1993, 1995) and Lee (2013). The **Ontario Geological Survey, Open File Report, Ottawa 191** (ARIP 191) (Lee 2013) [Ontario Geological Survey, Open File Report, Ottawa 191](#) is a refinement of the earlier studies.

ARIP 191 classifies sand and gravel in three distinct classifications as primary, secondary and tertiary significance in the following manner:

‘Selected Sand and Gravel Resource Areas of primary significance are not permanent, single land use units. They represent areas in which a major resource is known to exist, and may be reserved wholly or partially for extractive development and/or resource protection’.

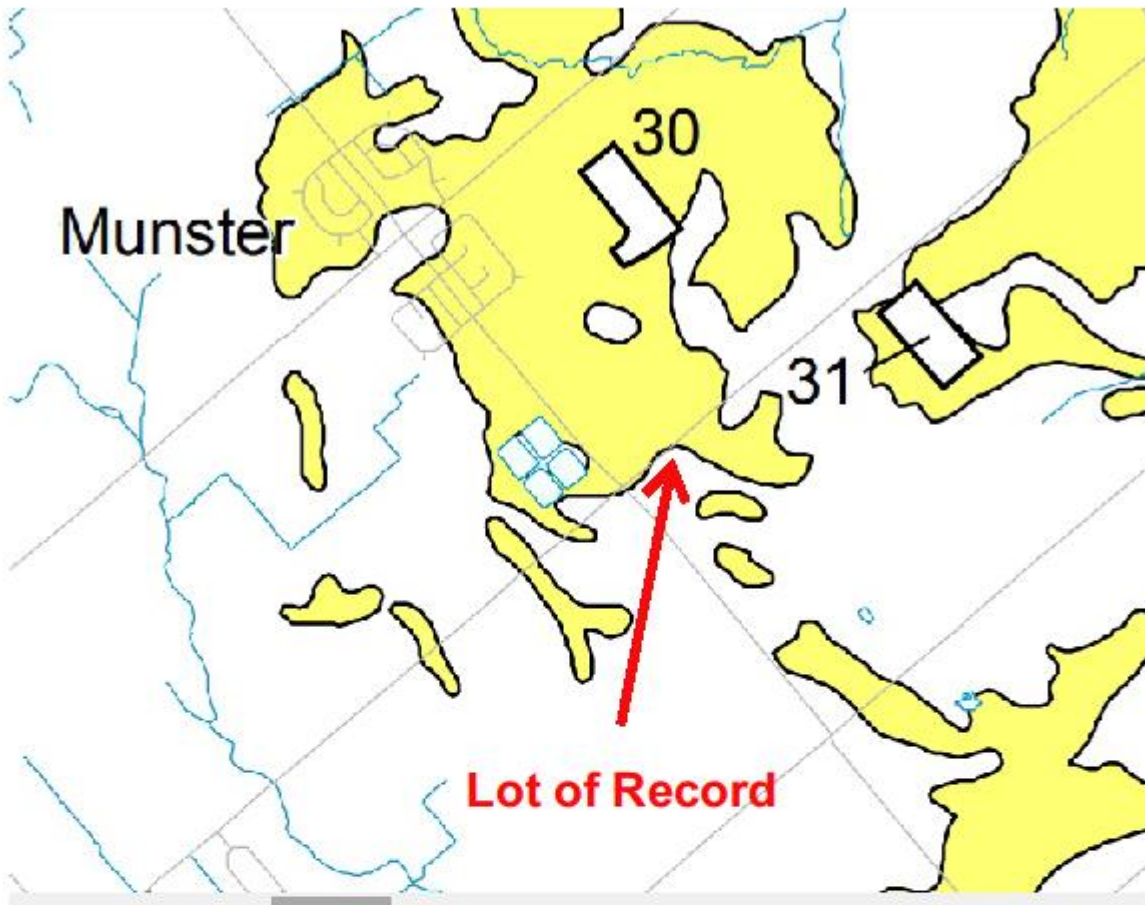
The report describes tertiary deposits in this way:

‘[Tertiary deposits] are not considered to be important resource areas because of their low available resources or because of possible difficulties in extraction. Such areas may be useful for local needs or extraction under a wayside permit, but are unlikely to support large-scale development. ... The resource quantity estimate for these deposits were not calculated because the lateral and vertical extent of the usable portion of these deposits is so variable’

The tertiary sand and gravel mapping from ARIP 191 has been further defined and updated on the O.P. over lay mapping to reflect depleted pits and surrendered pit licenses. The author can verify that the present aggregate assessment mapping and O.P. designation on the land use schedule is an accurate depiction of the sand and gravel reserves in proximity to the subject severances.





The tertiary deposits of sand and gravel being excavated in the McCarthy and Argue pits further east, in the general vicinity (depicted as licence pits number 30 and 31 on the surficial geology map **Figure 4**), can supply local markets with granular fill which help sustain and preserve primary and secondary aggregates for specialized end uses such as asphalt paving, concrete for buildings, structures, manufacturing, quality sand for tile beds and water filtration.

Figure 4 – Surficial Geology



Legend

SAND AND GRAVEL RESOURCES

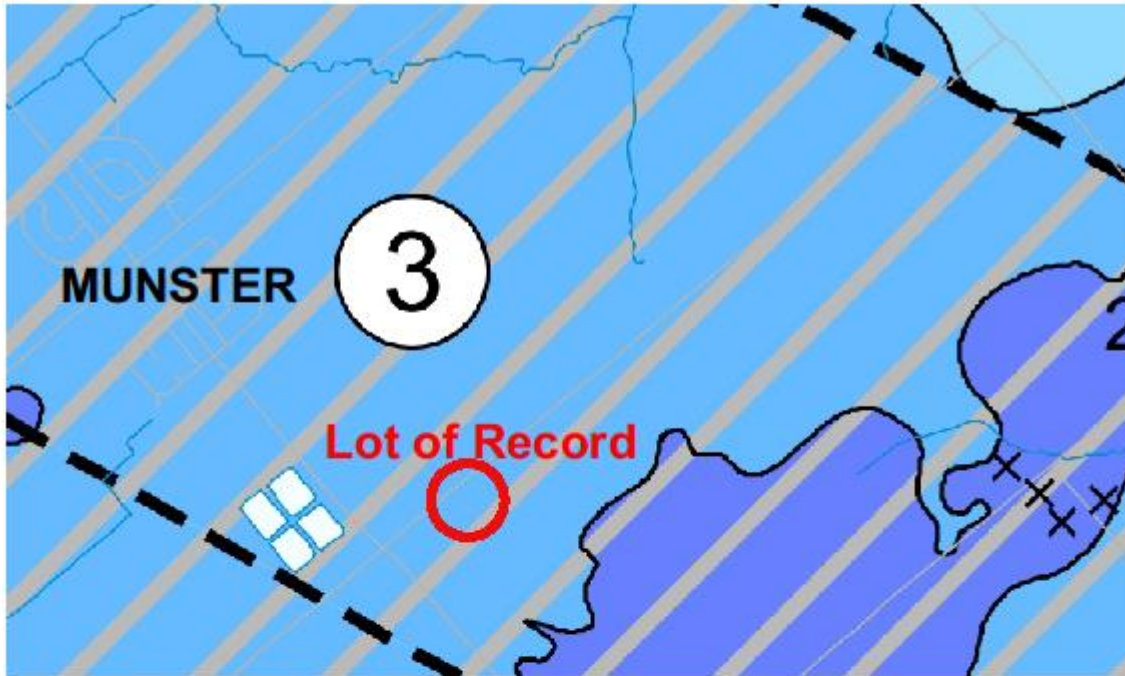
-  Selected Sand and Gravel Resource Area, primary significance; deposit number (see Table 3)
-  Sand and gravel deposits that have been substantially extracted in the past, but where limited resources may still be available
-  Selected sand and gravel resource area, secondary significance
-  Sand and gravel deposit, tertiary significance
-  Other surficial deposits or exposed bedrock

Bedrock Resource

ARIP 191 for the city of Ottawa shows the underlying bedrock geology on and adjacent to the subject site Oxford Formation limestone. (See Figure 5). Bedrock was not the reason for the MR1 designation in the Official Plan.

A mineral aggregate quarry designation in this general area was dismissed as a viable consideration during the 1995 RMOC steering committee screening exercise, primarily due to the social impacts anticipated to residences in the proximity of the hamlet of Munster and residents along Copeland Road.

Figure 5 – Limestone Bedrock Geology



LEGEND-BEDROCK UNITS

PHANEROZOIC

PALEOZOIC

ORDOVICIAN

UPPER ORDOVICIAN

Ottawa Group

Lindsay Formation: Limestone and shale

Vesuvius Formation: Limestone and shale

Beauregard Formation: Limestone

Qull River Formation: Limestone, dolomite and dolomitic limestone

Shadow Lake Formation: Sandy dolomite and sandstone

MIDDLE ORDOVICIAN

Rockcliffe Formation: Shaly limestone, sandstone and conglomerate

LOWER ORDOVICIAN

Beekmantown Group

Oxford Formation: Gneiss with shaly interbeds

March Formation: Sandstone, dolomite, sandstone and dolomite

CAMBRIAN

Percepsis Group

Napan Formation: Sandstone

Covey Hill Formation: Felsitic conglomerate and sandstone

PRECAMBRIAN

DRIFT THICKNESS

	Paleozoic bedrock outcrop (see Table 4); areas of exposed bedrock partially covered by a thin veneer of drift. Drift thickness is generally less than 1 m (3 feet).
	Paleozoic bedrock covered by drift (see Table 4); drift thickness is generally 1 to 5 m (3 to 25 feet). Bedrock outcrops may occur.
	Paleozoic bedrock covered by drift (see Table 4); drift thickness is generally 8 to 15 m (25 to 50 feet). Isolated bedrock outcrops may occur.
	Paleozoic bedrock covered by drift; drift thickness is generally greater than 15 m (50 feet).

Aggregate Resources Inventory Paper 191

MAP 2

Bedrock Resources for the City of Ottawa

SYMBOLS

	Selected Bedrock Resource Area; deposit number (see Table 6)
	Licensed quarry boundary; property number (see Table 5)
	Unlicensed quarry (i.e., abandoned quarry or wayside quarry operating on demand under authority of a permit); property number (see Table 5)
	Drill hole location; identification number (see Table 7)
	Sample site; identification number (see Table 9)
	Geological formation boundary
	Fault coincident with geological formation boundary
	Fault
	Drift thickness contour
	Isolated bedrock outcrop

4.0 History and Site Investigation

The author of this report reviewed a number of background and technical reports (these are listed in **section 10, References**) including geo Ottawa satellite images, Aggregate Assessment Mapping (sand and gravel and bedrock) for the city of Ottawa, Pits and Quarries on line a provincial government mapping tool showing licenced pits and quarries as part of a desktop exercise prior to a site visit in August 9, 2022. During the site visit, I was accompanied by the landowner and applicant for the ‘lot of record’ focusing on the extent of the small mapped sand and gravel ridge to the immediate south of the lot.

The author has extensive experience as a previous Pits and Quarries Inspector, Aggregate Resources Coordinator and Senior Policy Adviser for the aggregates program during 35 years of employment by the NDMNRF who is the agency lead for policy development, approvals and regulator of pit and quarry operations under the Aggregate Resources Act, in the province of Ontario. The author of this report was consequently the local aggregate resources technical specialist responsible for inspection of Steenbakker pit on Pt. S1/2 of Lot 11, Conc. 5 and the ‘‘McCarthy Pit on Pt. Lot 13, Conc. 4 to assess compliance with the ARA responsible for processing of the 1995 pit licence application for the Dale Argue Equipment in Lot 13 Conc. 4 off of Bleeks Road. (A copy of the reviewer’s qualifications are contained in section 1.1. above).

The McCarthy pit was a ‘‘grandfathered’’ operation when it came under licencing requirements following designation of Goulboun Township under the Pits and Quarries Control Act (predecessor to the Aggregate Resources Act) in May, 1975. The Dale Argue Equipment pit, licenced as a new pit in 1995 was not subject to the same scrutiny or application requirements and expense as applications that followed the introduction of the Aggregate Resources Act, Provincial Standards in 1997 and the more recent revisions to the ARA regulations and licence requirements in April 2021.

The author of this report can verify that the sand material was the primary aggregate the licensees were interested in exploiting in the past and the unconsolidated shale bedrock material was of secondary use to these operators. At the time of writing of this report, the low economic value of shale when pursuing a pit licence now is still considered a valid constraint when pursuing an application. In all instances regarding the Steenbakker, McCarthy and Dale Argue pit operations, the sand material has been exhausted and only unconsolidated shale bedrock material remains for which there is very little market demand. *(Shale could be used as a local demand to build up new residential driveways and farm lane road beds for example, where primary aggregates are not necessarily required but this is seldom put into practice).* From the look of vegetation on the McCarty site and haul route, this operation has not been active in approximately 15 years. The Dale Argue site has also had very limited use in recent years.

The Steenbakker pit was previously depleted, rehabilitated and pit licence surrendered. The author of this report observed the existence of approximately 3 metres of tertiary sand (now depleted) and shale gravel on the McCarthy and Dale Argue Equipment Pit sites as indicated by the tertiary deposit outline on the ARIP 191. From the Geo Ottawa satellite imagery and from past investigations and site visits associated with licenced and abandoned pits in this vicinity of the

geographic Township of Goulbourn, the author can also confirm an abandoned pit on the property west of McCarthy pit on Lot 13, and some shallow abandoned excavations on Lot 12 and 13 on the north side of Copland Road, including a pond immediately west of the cemetery. These excavations indicate a very shallow deposit of 1-2 metres as indicated in the photos at the end of this report. It was also confirmed that the ARIP mapping which shows a small isolated deposit south of the farm house and barns directly south of the 300 x 300 lot of record, is mapped accurately with silty clay soils existing between the north side of the tertiary deposit and the road immediately below the potential building site.

During interviews with the applicant and a local pit owner, it was confirmed that the majority if not all sand resources had been removed from the existing and former licence pits in proximity to the subject site, with only the shale material remaining. The owner of the lot of record confirmed the only sand he was aware of, existed on the cemetery site on Lot 12, Conc. 5, on the north side of Copland Road.

Adjacent Sand and Gravel Reserves

The 2019 Geo Ottawa zoning and parcel fabric indicated the presence of several residences in the proximity of the subject lot of record. (See **Figure 3**). Approximately 15 homes exist between Munster Road and easterly along Copland Road, just beyond the influence area of the McCarthy licenced pit.

The adjacent Steenbakker pit is depleted and licence surrendered. As indicated above, there were a number of small scale sand and shale pit operations that were substantively excavated and homes built on the old pit floor or immediately adjacent to these operations. (See photos at the end of the report). Most of the operations were not of a large enough scale to warrant a pit licence or were substantively depleted before licencing requirements came into effect in this area of Ottawa (geo. Twp. Of Goubourn designated under the Pits and Quarries Control Act, (predecessor to the Aggregate Resources Act – ARA) in May, 1975.

The small tertiary shale deposit immediately south of the lot of record covers an area of about 4 acres. The main gravel ridge is approximately 50 metres wide, 250 long and 3 metres deep which equates to approximately 22,500 metres of material. It has been my experience that an operator needs to have a 25 – 50 acre parcel of quality sand and gravel to warrant the costs associated with a licence application. A typical pit application for a similar site as this property, including site plan preparation, technical reports and public and agency notification and consultation would be estimated at approximately \$150, 000 to \$250,000 to meet the initial application requirements. Depending on comments and objections which warrant additional costs, there is still no guarantee of success. Based on the size of this deposit and the fact that this is tertiary material, this site would not meet the minimum size criteria for such an investment and therefore would not be considered a viable venture.

As indicated, the surrounding lands have been substantively depleted of resources or do not meet the minimum size criteria for establishment of a pit operation. Due to the parcel fabric which

indicates a large number of landowners and existing dwellings, and the value of lands containing those homes, it would be difficult for an operator to acquire and consolidate enough resource land to make an application viable especially since the resource area is considered tertiary aggregates. There were provisions made in the 2021 ARA regulation changes, for exemptions for farm improvement to utilize aggregate materials which may be a way to utilize this resource on a small operation scale with minimal impact to the environment and social values.

A number of photos were taken to document the building permit site (lot of record) showing the small isolated tertiary deposit to the south. Materials from the deposit could be used in the infrastructure, backfill, and landscaping of the building lot. There is no viable sand and gravel resource within 150 metres of the subject site that have not either been depleted of resource or built upon.

Perceived Social impacts of a future Pit Operation:

The following is a general description of social impacts expected for a pit operation, but since it was determined the MR zones in the vicinity of the lot of record are either depleted, too small to be feasible to operate or sterilized by existing residential development, these impacts would not pertain to the subject application.

Generally the regulations under the ARA and the site plan issued under the licence, are the primary mechanisms to control environmental and social impacts from extraction, processing and hauling activities at a pit or quarry operation. O. Reg. 466/20, s.2 (1), section 0.12 deals with conditions for licenses and permits issued after April 1, 2021. Prior to April of 2021, similar prescribed conditions were placed on licenses issued since 1997. The McCarthy and Argue licence precedes these dates, so complaints may default to investigations by delegated staff under the Environmental Protection Act (EPA). The NDMNRF Inspector, as the lead provincial agency responsible for compliance with ARA licence, usually has the ability to address such concerns. The NDMNRF can also investigate complaints jointly with the Ministry of Environment, Conservation and Parks (MECP) if additional expertise is required or there is a matter that is more appropriately dealt with under the EPA or the Water Resources Act rather than the ARA. The sections below in *italics* refer to sections of the ARA regulations that would pertain to pit operations.

I) Dust: Dust control from a sand pit operation must be mitigated on the pit site at the source (excavation area, processing equipment or haul route). If visible dust is generated, the licensee shall take action to control the dust which is in violation of O.Reg. 466/20, s.2.1 subsection 0.12 under the ARA or general regulations under Environmental Protection Act.

Pertaining to Dust emissions, O.Reg.466/20s.21, under the ARA indicates under, subsection 0.12) A licence, aggregate permit or wayside permit is subject to the following conditions:

Subsection (2)

- 1. The licensee or permittee shall apply water or another provincially approved dust suppressant to internal haul roads and processing areas, as necessary to mitigate dust, if the pit or quarry is located within 1,000 metres of a sensitive receptor.*
- 2. The licensee or permittee shall equip any processing equipment that creates dust with dust suppressing or collection devices if it is located within 300 metres of a sensitive receptor.*
- 3. The licensee or permittee shall obtain an environmental compliance approval under the Environmental Protection Act where required to carry out operations at the pit or quarry.*
- 4. The licensee or permittee shall obtain a permit to take water under the Ontario Water Resources Act where required to carry out operations at the pit or quarry.* (6) A licence is subject to the following condition:

Sub section (6)

- 1. The licensee shall mitigate the amount of dust generated at the site of the pit or quarry to minimize any off-site impact.***

The main cause for dust on a pit site is generated on internal haul routes and access points which shall be watered or treated with a provincially approved dust suppressant. Internal truck routes would be watered if there is visible air bourn dust.

Dust can also occur from processing equipment such as stackers and screening equipment which shall contain water spray bars to control dust and are subject to environmental compliance approvals issued by the Province (MECP). Since the earlier adjacent operations to the north of Copeland road have been depleted of resource and graded and vegetated (rehabilitated), and the small tertiary deposit is south of the subject lands, dust is not an issue in this area of the subject site.

The prevailing winds are predominantly from the west which carry any air bourn dust in an easterly direction away from the existing residents and away from the lot of record.

It is a licensee's responsibility to control dust at the source should there ever be movement toward a licence in the future. As indicated, NDMNRF as the lead regulator would investigate any complaints from adjacent resident's and involve MECP staff if additional expertise is required or issues more appropriately relate to considerations under the EPA. This would be a very hypothetical situation, since the subject site does not meet the size criteria for a future pit operation.

II) Noise: The operation of a pit would include the use of excavators, dump trucks, and portable screening equipment which do generate noise. This would be a dry operation where extraction is limited to above water table because of the close contact to bedrock, so pumping or discharge of surface water is prohibited, eliminating the need for generators or electrical facilities to run pumping equipment.

The prevailing wind direction affects the distance that noise will be transmitted, as does vegetation height and density, the depth of the excavation, the direction of operation, and the distance between pit activities and sensitive receptors. The prevailing winds are in a westerly direction which would carry noise away from the proposed residence, but again is not applicable as this site would not be feasible to licence.

Pertaining to Noise emissions, O.Reg.466/20s.21, under the ARA indicates under, section 0.12)

Subsection (4)

A Class B licence, wayside permit or aggregate permit is subject to the condition that the licensee or permittee must mitigate the amount of noise emitted at the source with appropriate noise attenuation devices and site design if there is a sensitive receptor situated,

- (a) within 500 metres of the boundary of the site in the case of a Class B licence or an aggregate permit; or***
- (b) within 150 metres of the boundary of the site in the case of a wayside permit.***

The author of this report has extensive experience with the review of acoustical reports and development of site plans to incorporate recommendations into enforceable site plan conditions. As a Pits and Quarries inspector, I attended joint investigations with MECP Environmental Officers responding to complaints relating to noise from extraction and processing equipment and drilling and blasting operations. These complaints are evaluated in consideration of the MECP noise guidelines, NPC-233, *Information to be Submitted for Approval of Stationary Sources of Sound*, October 1995. Noise from the facility is assessed according to MECP Documents: NPC-300, *Stationary and Transportation Sources – Approval and Planning*, August 2013. Noise levels of operating equipment are measured in decibels (dBL) using hand held equipment to ensure compliance with environmental approvals on equipment and provincial guidelines for noise. There are also noise guidelines for blasting and vibration from drilling and blasting operations, but are not applicable in this case since we are discussing negative impacts to a pit operation, not a quarry. Please refer to section on vibration below for further explanation.

The noise restrictions for the pit site are enforced by the province pursuant to the site plans and regulations under the Aggregate Resources Act and regulations under the Environmental Protection Act. As indicated, pit operators are required to control noise limits at the source, and

since there are several homes already existing closer than the subject severances, there should be no reason for concern that provincial guidelines cannot be met.

III) Vibration Pertaining to Blasting ground vibration and air overpressure impacts, O.Reg.466/20s.21, under the ARA indicates under, section 0.12 Sub-section (5)

A licence, aggregate permit or wayside permit that authorizes blasting at the site is subject to the following conditions:

- 1. No blasting shall occur on a holiday, or between 6 p.m. and 8 a.m., unless the permittee holds an aggregate permit and there is no sensitive receptor located within 2,000 metres of the area in which the blasting takes place.*
- 2. The licensee or permittee shall monitor all blasts for ground vibration and blast overpressure and prepare blast monitoring reports in accordance with provincial guidelines on limits on blast overpressure and ground vibration for blasting operations, unless the permittee holds an aggregate permit and there is no sensitive receptor located within 500 metres of the area in which the blasting takes place.*
- 3. The licensee or permittee shall retain the blast monitoring reports prepared under paragraph 2 for a period of seven years after each blast.*

In addition to the ARA Regulations, the NPC-300 also contain parameters for ground vibration limits of 12.5 mm/second and air overpressure or concussion from a blast is limited to 128dB. These limits are measured using seismograph equipment, providing print outs of the measured results. This is a surficial sand and gravel deposit we are discussing, not a bedrock quarry operation.

Blasting and crushing of bedrock is not permitted under a pit licence and therefore provincial guidelines NPC-300 regarding vibration and noise are not applicable in this case. There is also no provision in the O.P. for quarry operations as a land use in this vicinity.

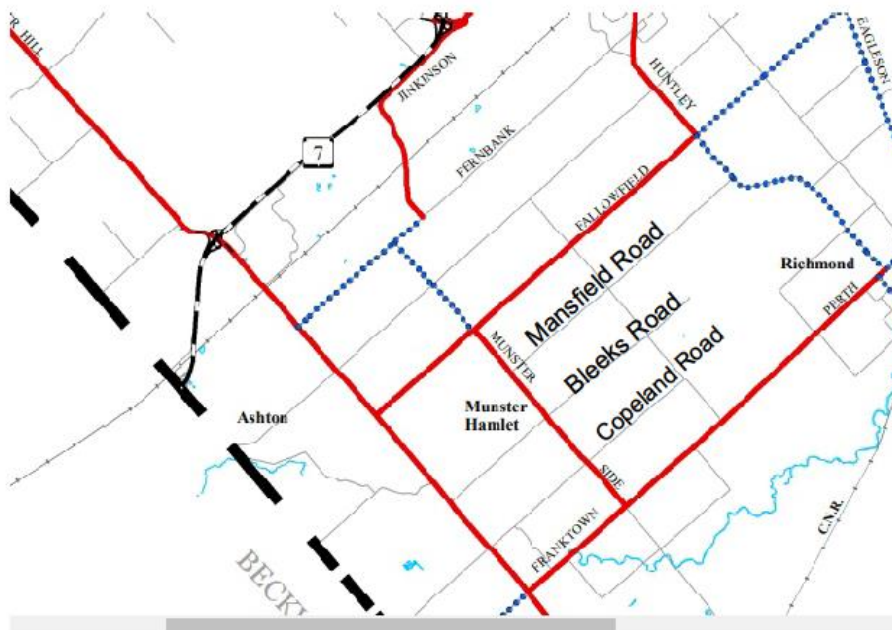
IV) Truck Traffic Impacts:

Any operation in this general vicinity, would mainly be used, but not restricted to, local demand. It would be operated intermittently, similar to the McCarthy and Argue pits to backfill and supply infrastructure materials for rural residential development, local road maintenance and winter road sanding.

The Rural Truck Schedule for the city of Ottawa designates heavy truck traffic including gravel trucks to weight restrictions. Munster Road is a designated truck route allowing fully loaded trucks to travel round. Copeland Road is not a designated haul route and is limited to half load restrictions when roads are vulnerable to heaving from frost and weight of vehicles. Half load weight restrictions are generally in effect until May 1st when vulnerability is highest.

Copeland road has been constructed to a standard that would support the low truck traffic generated by the pit site. Due to low volumes from restricted production and half load restrictions, a further traffic analysis is not deemed to be warranted at this time.

Figure 6 Rural Truck Routes Ottawa March 2020



Legend / Légende

- Full Loads / Charges maximales
- Restricted Loads / Charges limitées
- Provincial Highways / Routes provinciales
- City Limits / Limites de ville

V) Ground Water (Water Wells)

Bedrock extraction is not the reason for the MR zone at the subject site. Due to the shallow layer of shale over bedrock, the author is confident that water wells in this vicinity are drilled wells. Since quarrying is not to be considered and because any future pit operation, which is not likely, would be above water table due to the close contact with bedrock, an evaluation of surrounding wells was considered unnecessary for this particular assessment. If an application for a pit licence were to proceed, there would be a requirement to assess well impacts as part of that application.

and the pit operation would be restricted by no pumping, diverting or discharge of water. This provision to the pit licence would protect residential water wells from negative impacts.

Subsection 2 of the regulations under the ARA state:

4. The licensee or permittee shall obtain a permit to take water under the Ontario Water Resources Act where required to carry out operations at the pit or quarry.

Any pit licence associated with the nearby deposits would contain condition prohibiting the pumping, discharge or diverting of surface or ground water.

Subsection 3 of the regulations under the ARA state:

A licence or aggregate permit is subject to the following conditions:

1. The licensee or permittee shall ensure that fuel storage tanks are installed and maintained in accordance with the *Technical Standards and Safety Act, 2000*.
2. The licensee or permittee shall ensure that a spill contingency plan is developed prior to any operation of the pit or quarry, and followed during the operations.

The site plans for a pit licence is the main prescriptive regulatory tool controlling the pit operation and the regulations act as further safe guard for protecting water wells.

All sand and gravel has been removed along the north side of Copeland Road adjacent to the lot of record and rehabilitated. The residential properties that now exist on the north side of Copeland Road have been covered with overburden, seeded and is now adequately vegetated for residential use.

5.0 Potential Impacts on Sand, Gravel and Bedrock Resource areas

The significance of a granular deposit for use as construction aggregate is vitally important to the development and economic prosperity of Ottawa. There is a significant need for high quality sand for specialty applications such as asphalt for road construction, concrete for buildings and manufacturing, septic beds, etc. At the other end of the spectrum, there is an equal need to protect low quality tertiary granular fill, especially licence sources, for backfilling and grading of homes, industrial and commercial developments, construction of storm water management ponds, golf courses, etc. These examples help sustain the use of the higher quality aggregates for specialized purposes. However, tertiary deposits are mainly utilized on sites that were licenced for their primary aggregate deposit but have tertiary materials available along the edges of the primary deposit.

In my opinion, based on my review of technical reports, site visit of August 9, acknowledgement of past pit operation and depletion of resources, the noted residential development along Copeland Road, limited amount of sand and gravel in the granular deposit areas along the south and north sides of Copeland road in the vicinity of the subject lands, there is not enough quantity and quality of sand and gravel to warrant a pit licence application in the future.

6.0 Potential Impact of the Building Lot on the Pit and Quarry Operation;

In addition to the Provincial Policy Statement, the Aggregate Resources Act (ARA) regulates the operation and rehabilitation of pits and quarries in Ontario and is administered by the Ministry of Northern Development and Mines, Natural Resources and Forestry (NDMNR). Pit and quarry applications are subject to appropriate zoning, operational standards that were designed to minimize impacts of pits and quarries on nearby sensitive receptors and the environment. Mitigation measures are developed based on technical report recommendations which are transferred to enforceable conditions on the site plan which regulate the operation and rehabilitation of the site. Conversely, NDMNR developed guidelines for municipalities to use for assessing development impacts on potential sand gravel and stone reserves and within influence zones of currently licensed pits and quarries. This guideline is referred to as the ***Mineral Aggregate Resource Reference Manual dated 2001***. The city of Ottawa has adequately adopted the spirit of these guidelines in current O.P. which acts as the basis for assessing compatibility for new developments and existing lots of record on sand and gravel and bedrock resource areas.

The lot of record is located some 750 metres west of the existing licenced McCarthy pit and well outside the range of social impact indicated by the 300 metre influence in the city's O.P. and the 210 metre setback for the ME2 zone. There would be no impact on the adjacent pit operation.

7.0 Land Use Compatibility Analysis

The concept of an influence area is recognized as a means of protecting mineral aggregate resources and/or operations from the encroachment of incompatible land uses. The influence area to be considered for the lands designated Sand and Gravel Resource Area in the O.P. is 300 metres. The influence area is not a strict buffer or setback area in which development is prohibited, but rather, it is an area where impacts may be assessed and mitigation measures and monitoring considered.

In the context of the existing lot of record and subsequent building permit application, the 300-metre influence area and 150 metre setback from the MR zone is used to evaluate possible impacts of the proposed residence on a future pit operation defined by the tertiary deposit identified in the aggregate assessment mapping. The deposit is too small to be considered for licencing but could be utilized for infrastructure purposes for development of the lot of record while improving agricultural capabilities on the retained parcel.

It should be recognized that pit operations are considered an interim land use. The previous extraction identified in this report and the subsequent residential development and rural land uses and outbuildings observed during the site visit demonstrate a good example of sequential land use. This report has concluded that the shale deposit on the retained lands is not viable for resource extraction and residential development is an appropriate sequential land use at this time.

8.0 Summary:

In summary, the small sand and gravel deposit consisting of tertiary quality granular fill material in close proximity to the south edge of the lot of record is not large enough nor does it have the quality of material to warrant consideration of a pit operation in the future. There are no property parcels within the immediate vicinity of the subject site available for future extraction. Sand and gravel reserves north of Copeland Road in proximity to the lot of record have been extracted and most of these lands are being used for residential purposes.

There are no existing licenced pits or quarries within 300 metres of the subject site and no ability to purchase and consolidate enough lands to warrant a viable pit operation in the future.

Section 2.5.3 of the Provincial Policy Statement (PPS) has been met by concluding that the development of a future pit on this site or on the adjacent lands is not feasible. There are two tests in this part of the PPS that need to be considered. The first test deals with the feasibility of a new mineral aggregate resource operation being established. It has been adequately demonstrated in this assessment that the first test that future resource development is not feasible for the reasons specified. The second test poses the question whether or not the proposed land use serves a “greater long term public interest” and assesses public health, public safety and environmental impact. These two tests are exclusive of each other meaning only one of tests must be met. Since the feasibility of resource development has been addressed, test 2 does not have to be visited.

At least 5 other residences exist in proximity of this application and the MR zone with many others along this stretch of Copeland Road where MR and ME zones are prevalent. A new residential building on the existing lot of record would not preclude or hinder resource development on the subject lands or those adjacent to the site as the resource is essentially non-existent in this case.

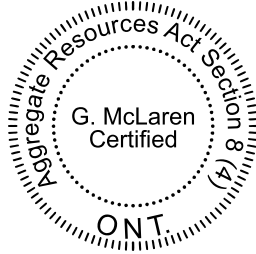
9.0 Recommendations:

Based on the location of the building site (existing lot of record), my personal knowledge of pit licence applications, my familiarity with operational aspects and complaint investigations, the distance from the closest existing pit operation, the lack of resource in the immediate vicinity of

the subject lands, I conclude that a residential dwelling at the location denoted by the existing “lot of record” would be approved.

I would therefore support the approval of a building permit.

Yours sincerely,



Gary McLaren

President

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Email: gmlaren@milestoneaggregate.com



10.0 References

City of Ottawa Official Plan; Overlay policies for protection of mineral aggregates resources and operations from incompatible land uses.

[3.7.4 Mineral Resource Policies](#)

[City of Ottawa Official Plan Rural Land Use Schedule Map](#)

Fletcher, T.W. and M.A. Klugman. 1979. Aggregate Assessment of the Regional Municipality of Ottawa Carleton, Ontario Canada. Regional Municipality of Ottawa/Carleton and Ontario Ministry of Natural Resources. 44 pp. 4 maps 1:100,000.

Lee, V .L. 2013. Aggregate Resources Inventory for the City of Ottawa, Southern Ontario; Ontario Geological Survey, Aggregate Resources Inventory Paper 191.

[ARIP191 Ottawa](#)

Aggregate Resources Act Ontario Regulation 244/97

[ARA Ontario Regulation 244/97](#)

[ARA of Ontario Technical Reports and Information Standards](#)

[ARA of Ontario Site Plan Standards](#)

Ministry of Natural Resources Mineral Aggregate Resources Reference Manual 2001

[Aggregate Resources Policies and Procedures](#)

Geo Ottawa Satellite Map and City of Ottawa Geoportal (Teranet Enterprises Inc. 2020).

[GeoOttawa Satellite Map](#)

Pits and Quarries on line provincial mapping tool (MNRF)

[Pits and Quarries Online](#)

Ministry of Environment, Conservation & Parks Noise Guidelines – NPC/300

[NPC/300 Provincial Noise Guidelines](#)

Note of particular interest is the following;

C7.1 Noise control Measures;

C7 .6 Stationary Source Control Measures

C7.7 Combination of Transportation and Stationary Sources of noise.

11.0 Site Photographs



Shale from surrendered Steenbakker Pit, Munster Road, just north of Copeland Road
Photo taken – G. McLaren, August 9, 2022



Depleted pit to the elevation of bedrock, Munster Road, just north of Copeland Road
Photo taken – G. McLaren, August 9, 2022



Looking south at the “Lot of Record” and gravel ridge beyond
Photo taken – G. McLaren, August 9, 2022



Looking south at the stake marking the south-west corner of the building lot (“Lot of Record”) and the gravel ridge beyond

Photo taken – G. McLaren, August 9, 2022



Looking south at narrow gravel ridge, 200 metres from Copeland Road, just south of the Lot
Photo Taken – G. McLaren, August 9, 2022



Rehabilitated pit, now residential lot looking north from Copeland Road
Photo Taken – G. McLaren August 8, 2022



Rehabilitated Pit, now residential Lot, looking north-east from Copeland Road
Photo Taken – G. McLaren, August 9, 2022



Looking north from the edge of Copeland Road at shallow damp property on Lot 12, Conc. 5
Photo taken – G. McLaren, August 9, 2022