



**A Major Research Paper**

**Exploring Recent Trends In Ontario Land Use  
Planning Appeals: Understanding The Perceived  
Impacts Of Aggregate Extraction On Agricultural  
Production**

**Presented to: The Faculty of Graduate Studies of the University of Guelph**

**By: Emily Hehl**

**In partial fulfillment of  
requirements for the degree of  
Master of Science in Rural  
Planning and Development  
August, 2021**

**EXPLORING RECENT TRENDS IN ONTARIO LAND USE PLANNING APPEALS:  
UNDERSTANDING THE PERCEIVED IMPACTS OF AGGREGATE EXTRACTION  
ON AGRICULTURAL PRODUCTION**

A Major Research Paper presented to:  
The Faculty of Graduate Studies of the University of Guelph

By:  
Emily Hehl

In Partial fulfillment of requirements for the degree of  
Master of Science in Rural Planning and Development  
August, 2021

© Emily Hehl, 2021

**Abstract**

Ontario's aggregate extractive and agricultural industries are invaluable to the daily lives of all Ontarians. Despite a recognized need for the sustainability of both industries, direct competition is created wherein these resources overlap often creating tension and public opposition to extractive activity. There is a growing need to ensure the coexistence of extractive and agricultural activities as Ontario's growing population places increasing pressure on both industries. To ensure that both industries can operate in close adjacency for the long term, it is imperative to understand the underlying concerns of stakeholders and to develop strategies to improve neighbourly relations. This research project examines aggregate extraction license application appeals heard before Ontario's Local Planning Appeals Tribunal (LPAT) from 2015 to present day to identify the perceived impacts on agricultural production. Best practices are further identified to assist in alleviating tensions between the two industries and to improve the planning process.

### **Acknowledgements**

It is difficult to properly describe in words the appreciation I have for the guidance my advisor Dr. Wayne Caldwell has provided. I left every meeting and interaction filled with passion and with reignited motivation to continue expanding my horizons. It was a result of his belief in my ability that I experienced the opportunities I have over the past two years. I am forever grateful. The impact this experience has had on my life is eternally positive.

I would also like to express many thanks to my colleague, Sarah Parish, for cheering me on and encouraging me to keep going when it was hard to see the finish line. For all of the laughs and reassurance she provided, I am thankful. I also extend a loving thanks to my Mom for being an absolute champion behind the scenes and for always supporting me (even for the smallest of accomplishments).

Without all of these individuals, this would not be possible.

**TABLE OF CONTENTS**

<b>1.0 Introduction and Background</b>	<b>6</b>
Goals for the research	9
Objectives and Deliverables	10
Scope	10
<b>2.0 Literature Review</b>	<b>12</b>
Aggregate Policy in Ontario – Development and Present Day	12
Aggregate Licensing in Ontario	14
License Categories	15
Sources of Conflict: Social Impacts and Political Imbalance	16
Sources of Conflict: Local Nuisance and ‘Not in My Backyard’ (NIMBY)	18
Sources of Conflict: Environmental Impacts	20
Rehabilitation & Loss of Agricultural Land	20
Water	22
Dust	24
Noise	25
Sources of Conflict: Economic Impacts	27
Limitations of Literature Review	28
Research Justification	29
<b>3.0 Methodology</b>	<b>30</b>
Data Sources	30
Local Planning Appeals Tribunal (LPAT)	30
Canadian Legal Information Institute (CanLII)	31
Methods	31
<b>4.0 Results and Analysis</b>	<b>33</b>
CanLII Database Search Results	33
Key Issues and Trends	33
Water	35
Haul Routes	37
Air Quality / Dust	39

# PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

History of Compliance	40
Agricultural Uses (Rehabilitation and Loss)	42
Quality of Life and Cumulative Impacts	44
Site Plans/Development Agreements/Hours of Operation	45
<b>5.0 Improving Neighbourly Relations and the Licensing Process – Best Practices</b>	<b>47</b>
1. Signage Strategies	47
2. Communication and Complaint Procedures	48
3. Community Liaisons	49
4. Education and Training	50
5. Community Involvement and Image	51
<b>6.0 Limitations of Research</b>	<b>52</b>
<b>7.0 Opportunities for Future Research</b>	<b>53</b>
<b>8.0 Conclusion</b>	<b>54</b>
<b>References</b>	<b>55</b>

## **Appendix A - Overlap of Aggregate and Agricultural Activity across Southern Ontario**

## **Appendix B - Selected LPAT Cases and Documents for Inclusion in Analysis**

### **List of Figures:**

<b>Figure 1.</b> Hierarchy of Ontario Planning Documents (prepared by author)	19
<b>Figure 2.</b> LPAT Record Word Cloud (50 count)	35
<b>Figure 3.</b> Condensed LPAT Record Word Cloud (10 Count)	35
<b>Figure 4.</b> Communication Pathways	50

### **List of Tables:**

<b>Table 1.</b> Ontario Aggregate License Categories (developed from Ministry of Natural Resources, 2006)	15
---	----

**1.0 Introduction and Background:**

---

Aggregate resources are fundamental to the lives of all Ontarians. Aggregate materials are utilized to construct and maintain almost all of the infrastructure that many rely on day to day, including highways, bridges, and sewers (Binstock & Carter-Whitney, 2011; The Ontario Aggregate Resources Corporation [TOARC], 2019). The necessity of aggregate resources to life in Ontario cannot be understated. In Ontario, the aggregate industry is estimated to contribute \$1.6 billion of Gross Domestic Product (GDP) to the provincial economy (MHBC Planning, 2015). Locally extracted aggregate products support Ontario's \$37 billion construction industry and employs more than 292,000 people. Additionally, the aggregate extraction industry itself employs approximately 41,000 people in Ontario.

Aggregate production has a direct relationship to the health of Ontario's economy. MHBC Planning (2015) indicate that in favourable economic conditions, extraction volumes tend to be relatively high and in periods of economic decline production drops accordingly. Ontario residents consume approximately 14 tonnes of aggregate per capita, annually (MHBC Planning, 2015). The consumption of aggregate product in Ontario alone occurs at higher rates than most developed countries (Atlas Group Economic Consulting, 2009). This is reflective of the province's rapidly growing population and the resultant need for development, among other factors. With a predicted population of 15-20 million by 2036, Ontario's built environment must be accordingly developed, thereby necessitating the need for increased extraction of aggregate resources (Binstock & Carter-Whitney, 2011). The Government of Ontario has expressed a strong interest in utilizing a supply of aggregate materials that is close-to-market (MHBC Planning, 2015). As the greatest expansion is anticipated to occur within southern Ontario's

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

Greater Toronto Area (GTA), it is necessary that a supply of aggregate material be readily available in the surrounding areas. until alternatives become more common practice or feasible.

The GTA utilizes approximately one third of all aggregate produced in Ontario annually (Atlas Group Economic Consulting, 2009). Most communities in Ontario consume aggregate resources that have been locally extracted from within their geographic boundary. However, the GTA receives almost half of its aggregate resources from neighbouring communities, creating an intersection between rural and urban land use planning issues (Atlas Group Economic Consulting, 2009). Rural Ontario often serves as a protective boundary between development and environmental space, however rural areas are also often utilized as places where the demand for resources can be satisfied (Van Wagner, 2016). Land use conflict concerning aggregate resources is most intense in the GTA rural fringe where high volumes of accessible aggregate resources exist in close proximity to a large and growing population, thereby intensifying the clustering effect of extraction sites near some of Ontario's most sensitive environmental and agricultural features (Binstock & Carter-Whitney, 2011; Chambers & Anders Sandberg, 2007a; MHBC Planning, 2015). Over half of the land in areas surrounding the GTA is considered to be farmland, and 42% of the land in the GTA (excluding Toronto) is also farmed (Walton, 2003).

The Province of Ontario accounts for over one quarter of Canada's farms, with much of this land being of the country's highest quality (Statistics Canada, 2017; Walton, 2003). Prime farmland (i.e. Classes 1, 2, 3) and specialty croplands, are an increasingly limited resource across Canada. Of all farmland in Canada only 5% is considered to be prime, with farmland in central and southern Ontario contributing a significant proportion to this statistic (Walton, 2003). Across southern Ontario, it is estimated that 93% of high quality aggregate resources that are available

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

for extraction exist within prime agricultural or sensitive environmental areas (Binstock & Carter-Whitney, 2011; MHBC Planning, 2015). Under the Provincial Policy Statement, aggregate resources are protected to ensure availability. As a result, a direct conflict between aggregate materials and prime agricultural land exists when the two resources overlap (Walton, 2003). As the population in Ontario continues to grow, it is anticipated that the competition between land uses will be exacerbated (M. S. Winfield & Taylor, 2005). There is a growing need to understand the relationship between the two uses as they are both essential to life in Ontario.

Planning for the long-term sustainability of the aggregate industry in Ontario has progressed from a once municipally lead process to one that is almost entirely controlled by the Province (Baker, Slanz, & Summerville 2001). In Ontario, local governments often face conflicting policy direction and a struggle to balance local values or concerns with the need for resources (Baker et al., 2001). As municipal governments have been progressively moved to the periphery of planning for aggregate resources, they still remain responsible for many of the externalities resulting from such operations. The Association of Municipalities of Ontario (AMO), indicated in 2020 that provincial legislation places high priority on the siting of aggregate extraction sites, making it very difficult for planners and local governments to oppose these developments. This phenomenon often leads to unfavourable decisions or council indecision. As a result, an increasing number of cases pertaining to the approval of aggregate extraction sites have been appealed and heard before the Ontario Municipal Board (OMB), now recognized as the Local Planning Appeal Tribunal, or the LPAT (Association of Municipalities of Ontario, 2020; Baker et al., 2001).

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

In 2001 Baker et. al conducted a content analysis exploring aggregate mining cases heard over the period of 25 years by the OMB. Results from the study indicate that conflicts related to environmental and agricultural impact and regulatory challenges are consistently represented in Ontario Municipal Board hearings (Baker et al., 2001). Sentiments expressing the need for a change in Ontario's political framework managing these resources have been present in available research since 1979 and are still relevant today (Yundt & Messerschmidt, 1979). This research project intends to expand on the Baker et al. (2001) research paper and analyze OMB/LPAT decisions from 2014 to present day. It is anticipated that results from this project will assist in identifying best practices for local governments and to determine current trends relating to the contention between planning for the extraction of aggregate materials and agricultural production across Ontario.

### *Goals for the research*

As the relationship between aggregates and agriculture continue to intensify, there is a need to understand best practices that can be taken to mitigate and cushion potential impacts and improve neighbourly relations. With this in mind, it would be remiss to ignore the external impacts on Municipal Governments and growing unrest in rural municipalities. As the GTA continues to increase and place greater demand on its rural neighbours, it is expected that tensions between operators and surrounding land uses will reach an all-time high. Recognizing that many Aggregate Licensing applications result in an LPAT hearing, it is the goal of this research to use past OMB or LPAT decisions to extract applicable lessons that can be applied in the field. More specifically, this research project intends to examine decisions from OMB/LPAT hearings to identify trends and best practices (later defined) to improve neighbourly relationships

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

between aggregate extraction site and productive farmlands across Ontario. Further, the results of this research project will seek to improve decision making processes at the municipal level, focusing on the need to balance aggregate extraction and agricultural protection. This is intended to ensure the long-term sustainability of both industries, appreciating their integral roles in maintaining the economic, social, and environmental health of Ontario.

### *Objectives and Deliverables*

To achieve the overarching goal of this research project, a number of specific objectives were identified:

- Identify trends in issues or points of contention during the OMB/LPAT appeals related to aggregate production applications in Ontario
- Identify ~5 best practices to improve relations between aggregate extraction and agricultural production industries/sites
- Provide insight for municipal decision makers and how the application process can be improved and balanced utilizing the best practices identified/discussed

Through the collection and analysis of data a final Major Research Paper has been produced. As a component of this document, a summarized list of key takeaways or recommendations has been prepared. It is intended that this list can be used to inform planning decisions at the municipal level or by planning consultants regarding the relationship between aggregate and agricultural industries across Ontario. Further, this data will be utilized in support of Dr. Wayne Caldwell's ongoing research project of the School of Environmental Design and Rural Development at the University of Guelph in partnership with the Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA) exploring a similar topic. This major research project was funded by the OMAFRA Highly Qualified Personnel (HQP) Scholarship program.

Recognizing that similar research has been conducted previously by Baker et al. (2001), the outcomes and deliverables of this project can be utilized to update findings and to reflect the influence of present-day policy and processes on planning for these industries.

*Scope*

This research project is intended to focus namely on the relationship between the aggregate industry and agricultural production in Ontario, Canada. Although there are specific municipalities across Ontario that experience greater overlap between aggregate resources and prime agricultural land (Appendix A), this project did not sort OMB/LPAT cases to exclude those outside of these key areas. However, it is anticipated that the results of this research project may be equally applicable across all instances of overlap between aggregate and agricultural resources as the best practices identified are not geographically unique or specific.

**2.0 Literature Review**

---

*Aggregate Policy in Ontario – Development and Present Day*

The management of aggregate resources in Ontario has been an evolving process through time, with most formal policy development and regulation occurring in the 1980s. Originating as a municipally led system, regulations pertaining to the management of pits and quarries has become a formal process with a top-down hierarchical approach to policy (Baker et al., 2001; Binstock & Carter-Whitney, 2011). Aggregate policy began to develop in Ontario during the 1950s, prior to this time limited regulation was placed on extraction activities, this continues to have an effect on aggregate extraction through legacy extraction sites that operate to date.

Increased economic growth and suburban development into the rural-urban fringe necessitated the development of more formal regulation as local governments and populations began to express concern about the potential impacts of aggregate extraction (Baker et al., 2001). As more product began to be exported from within rural municipal boundaries to serve adjacent urbanizing communities, Baker et al. (2001) and Yundt & Messerschmidt (1979) indicate that it became challenging to justify nuisances felt locally and competition with other land uses, including agriculture, that were intensifying. Responding to public concern, municipalities across Ontario began to enact by-laws restricting the development and expansion of aggregate operations. However, worries about a potential aggregate shortage started to circulate (Yundt & Messerschmidt, 1979).

Rising dissatisfaction and unrest between interest groups ultimately lead to the implementation of the Pits and Quarries Control Act (1971), with the intention to enhance rehabilitation efforts, limit environmental impact, and ensure long-term availability of aggregate (Yundt & Messerschmidt, 1979). The Act provided centralized provincial planning control over

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

pits and quarries and the licensing process to the Ministry of Natural Resources (Baker et al., 2001). The entirety of Ontario was not covered by the Act, but major production areas such as southern Ontario, Sudbury, and Sault Ste. Marie are included in its regulation (Baker et al., 2001). Although the Act was an initial attempt to manage the environmental impacts of the industry, inadequacies and oversights in policy became apparent after implementation. Estrin & Swaigen, as cited in Baker et al. (2001), indicate that a combination of weak regulations made under the Act, poorly detailed site plans, and insufficient enforcement of policy meant that the Act did not achieve its intended outcomes.

Throughout the 1980s, policy regulating aggregate resources continued to develop into a more formalized process (Baker et al., 2001; Binstock & Carter-Whitney, 2011). Implemented by the MNR, the Aggregate Working Party was established to examine the industry and concerns of municipal governments and to provide suggestions on how local opinions could be addressed while still meeting provincial objectives (Baker et al., 2001). Conclusions made by the Party were utilized to form the basis of the Mineral Aggregate Resources Policy Statement (MARPS), issued under the Planning Act (1983). Provincial policy establishing aggregate resources as a provincial interest first indicated in the MARPS (Baker et al., 2001; Binstock & Carter-Whitney, 2011; Bull & Estrela, 2012). The objective was to ensure that the aggregate resources remain locally available, to protect existing licenses from incompatible land uses, and that reserves would be available for future extraction. The MARPS was criticized for seemingly promoting the interest of the province without regard for municipal level concern (Baker et al., 2001). General planning principles initially established by MARPS persist through the most recent *Provincial*

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

*Policy Statement* (PPS) updates in 2014 and 2020 (Binstock & Carter-Whitney, 2011; Government of Ontario, 2021).

Rapid increases in production rates throughout the 1980s raised awareness of the overall impacts of the industry and weaknesses in the existing policy framework. The Aggregate Resources Act (ARA) was implemented in 1990 to replace the Pits and Quarries Control Act (1971). The ARA is the regulatory document managing the extraction of aggregate resources in Ontario (Baker et al., 2001; Binstock & Carter-Whitney, 2011). The ARA and its amendments added more stringent and detailed requirements and expanded the geographic coverage of aggregate policy (Binstock & Carter-Whitney, 2011). The ARA regulates enhanced interaction between the aggregate industry and the public during the licensing process. The ARA and its amendments establish industry standards that place more accountability on operators, reducing the role of government. Additional regulation and planning for aggregates are included in Ontario's provincial plans and policy statements.

### *Aggregate Licensing in Ontario*

The process of licensing an aggregate extraction site across Ontario in recent years is a long and expensive process that is very different from the first regulatory efforts across the Province, previously discussed (EcoVue Consulting, 2013). On a very surface level, there are three steps or separate applications required for licensing an aggregate extraction site in Ontario- for both pits and quarries. Depending on the location of the proposed site, an Official Plan Amendment, Zoning By-law Amendment, and Aggregate License Application are usually required. Along with these applications, additional technical memos or studies are required to explore potential externalities and management practices to occur on site dependant on the

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

location and license type requested (EcoVue Consulting, 2013). Typical supplemental studies include: Hydrogeological Reports, Environmental Impact Statements, Agricultural Impact Statements, Archeological Assessments, Noise/Vibration Studies, and Traffic Impact Studies. Additionally, extractive sites are subject to Site Plan Control and a formal site plan must be submitted with the application. These documents are regulated through the Aggregate Resources of Ontario Provincial Standards with intention to support the goals of the ARA. The *Planning Act* applications occur at a municipal or regional level while the Aggregate Licensing Process is regulated by the MNRF. The MNRF will not issue an Aggregate License unless the Zoning at a municipal level is appropriate for the activity. These processes all involve various levels of public participation and consultation and are appealable to the OMB/LPAT (Government of Ontario, 2020). The entirety of the licensing process, from application to approval, takes several years to complete.

### **License Categories**

Through the ARA there are eight categories and classes of applications and subsequent licences that regulate sites in designated areas across Ontario (Ministry of Natural Resources, 2006). License types are determined by the annual volume of material to be extracted and if activity is occurring above or below the natural water table. A “Class A” license applies to extraction sites that are permitted to extract more than 20,000 tonnes annually. Alternatively, a “Class B” license refers to a site that is permitted to extract less than 20,000 tonnes annually. This is determined at the application stage. Table 1, below, details the eight categories of licenses in Ontario.

**Table 1.** *Ontario Aggregate License Categories (developed from Ministry of Natural Resources, 2006)*

Category	Description
Category 1	Class “A” Pit Below Water
Category 2	Class “A” Quarry Below Water
Category 3	Class “A” Pit Above Water
Category 4	Class “A” Quarry Above Water
Category 5	Class “B” Pit Below Water
Category 6	Class “B” Quarry Below Water
Category 7	Class “B” Pit Above Water
Category 8	Class “B” Quarry Above Water

***Sources of Conflict: Social Impacts and Political Imbalance***

Increased growth and suburban development in the rural-urban fringe seen between 1950 and 1980 across southern Ontario necessitated the need for an improved regulatory system to manage aggregate resource extraction. As residential and extractive uses began to exist in close adjacency, local governments and civic populations began to express concern of potential impacts of the aggregate industry on their daily lives and the environment (Baker et al., 2001; Binstock & Carter-Whitney, 2011). This was further compounded by the ideology that the resource was to be extracted and exported from rural municipalities to nearby urbanizing communities and not for local use. As unrest between stakeholder groups continued to grow and export rates increased to accommodate urban development, it became difficult to justify local

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

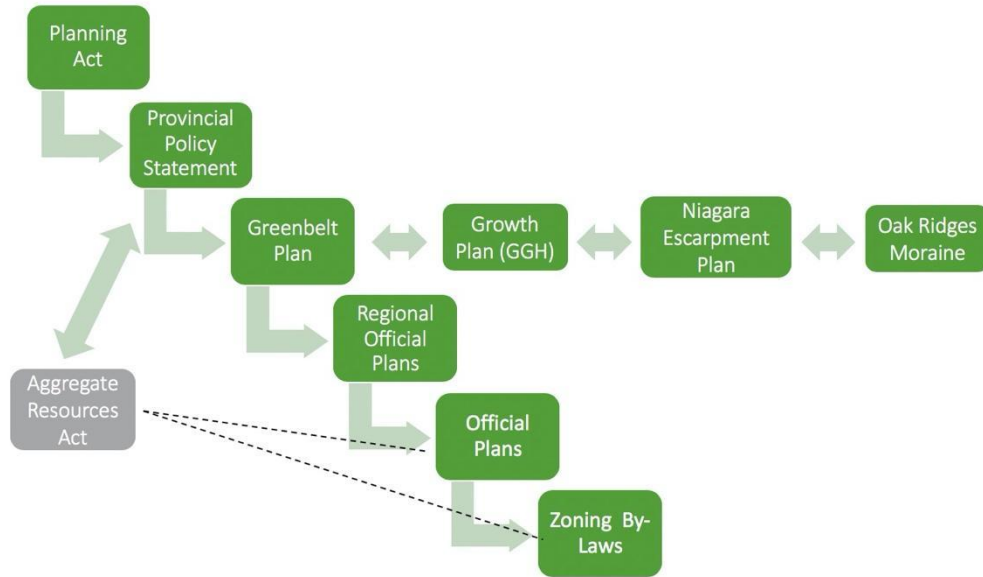
nuisances and impacts without any conceivable or recognizable benefit (Baker et al., 2001; Yundt & Messerschmidt, 1979).

As highlighted previously, the development of aggregate policy and regulation in Ontario appears to be accelerated by criticism and rising conflict between competing land uses. Although there were notable attempts to rectify these issues (i.e. *Pits and Quarries Control Act*, MARPS, ARA), regulation is criticized for continuing to fall short and for a lack of meaningful change between political regimes (Baker et al., 2001; Binstock & Carter-Whitney, 2011; Yundt & Messerschmidt, 1979). Particularly, weak regulations, insufficient licensing requirements, and minimal enforcement are the key issues highlighted in criticism towards the hierarchical political system, described by Estrin & Swaigen, as cited in Baker et al. (2001).

Despite these oversights in development, Provincial policy has established and maintained aggregate resources as a provincial interest since 1983 (Baker et al., 2001; Binstock & Carter-Whitney, 2011; Bull & Estrela, 2012; Government of Ontario, 2021). The objective ultimately being to ensure that aggregate resources remain locally available, to protect existing licenses from incompatible land uses, and that reserves would be available for future extraction. This is often achieved by requiring other uses to be located elsewhere so a future extraction site can be established, creating a perceived imbalance in favour of the aggregate industry. In the past, the MARPS was criticized for seemingly promoting the interest of the province without regard for municipal level concern and context (Baker et al., 2001). Therefore, it is important to recognize that general planning principles initially established by MARPS

persist through recent Provincial Policy Statement (PPS) updates (Binstock & Carter-Whitney, 2011).

In the past, rapid changes to production rates has raised awareness of the overall impacts of the industry and weaknesses in the regulatory framework. Although developed seemingly through trial and error, the ARA implemented in 1990 to replace older policy seems to add more stringent and detailed requirements for licensing. Additionally, the ARA works to expand the reach of aggregate regulation through increased geographic coverage (Binstock & Carter-Whitney, 2011). Most recent amendments establish stricter industry operating standards that place more accountability on operators, reducing the role of government. Additional regulation and planning for aggregates are included in Ontario's provincial plans and policy statements (Binstock & Carter-Whitney, 2011; Government of Ontario, 2021). The current hierarchy of Ontario's Planning documents involved in the regulation of aggregate materials is pictured below (Figure 1, prepared by author). However, similar criticisms are echoed in available academic and grey literature (Baker et al., 2001; Binstock & Carter-Whitney, 2011; Bull & Estrela, 2012; Patano & Sandberg, 2005).



*Figure 1. Hierarchy of Ontario Planning Documents (prepared by author)*

***Sources of Conflict: Local Nuisance and ‘Not in My Backyard’ (NIMBY)***

The ‘Not in My Backyard’ (NIMBY) effect is commonly utilized to describe public opposition to the siting and development of locally unwanted land uses (Pelekasi et al., 2012). The NIMBY effect can often be identified in situations wherein certain land uses are perceived to be associated with harmful effects to the environment, public health, quality of life, or other impacts that create a ‘stigma’ in the subject community. It can be argued that NIMBY conflicts often arise as a result of the external costs experienced in the community adjacent to the opposed land use, while the benefits are distributed elsewhere (Pelekasi et al., 2012). This phenomenon described by Pelekasi et al. (2012) appears to be prevalent in Ontario aggregate land use planning processes (Port, 2013; Van Wagner, 2016). Aggregate extraction is one of the most controversial land uses in Ontario (Binstock & Carter-Whitney, 2011).

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

In general, aggregate extraction in Ontario is not overtly accepted by members of the public and residents in accommodating communities (Port, 2013). Public opposition or ‘coalition’ groups commonly form throughout the province in attempts to prevent the siting of aggregate extraction operations in rural communities (Patano & Sandberg, 2005b). This poses a challenge for local municipal governments who often face the brunt of this outcry. Municipal Planners are often left with very limited tools and defence, in a system that promotes a rural consumptionist landscape (Baker et al., 2001; Patano & Sandberg, 2005b). Armed with the understanding that proponents are able to appeal decisions to the OMB/LPAT, it is not uncommon for municipal Councils to deny approvals in attempts to appease angry residents (EcoVue Consulting, 2013).

The above discussion is not intended to discount the transition of rural Ontario from a productive landscape to one that is largely utilized as a ‘resource sink’ for larger urban communities (Patano & Sandberg, 2005b; Van Wagner, 2016). However, the overall negative opinion of the extractive industry has created a sensitive issue in which the differences between perception and reality are blurred (EcoVue Consulting, 2013). It appears that the combination of legacy or historic issues, visual impact, and inconvenience factors can often contribute to a distorted interpretation of the industry in present day (Binstock & Carter-Whitney, 2011; Pelekasi et al., 2012; Port, 2013).

### *Sources of Conflict: Environmental Impacts*

Environmental issues arise from perceived and actual effects of pit and quarry impacts on local communities (Baker et al., 2001). As aforementioned, policy in Ontario related to the production of aggregate materials, appears to be imbalanced, often leading to irreparable

environmental damages (Binstock & Carter-Whitney, 2011; Winfield & Taylor, 2005). Many of these impacts are unavoidable due to the nature of aggregate material and the extractive processes required to access them. The themes discussed below appear to be consistently identified as perceived concerns in relevant literature. Although evidence is provided, it is important to note that many of the impacts are difficult to quantify and the real effects may be very different than predicted or anticipated impacts (Binstock & Carter-Whitney, 2011). Baker et al. (2001) indicate that the themes discussed below are consistently represented in OMB (now the LPAT) appeal submissions. Further, Pelekasi et al. (2012) describe a similar trend in overall perceptions of extractive industries and associated environmental externalities.

#### **Rehabilitation & Loss of Agricultural Land**

As discussed above, the contested management of aggregate resources is becoming a challenge across southern Ontario and within conserved areas of prime agricultural land (Binstock & Carter-Whitney, 2011; Port, 2013). The PPS considers aggregate extraction to be an intermittent or temporary use due to the ARA requiring all aggregate extraction sites to be rehabilitated before the license can be completed/closed (Binstock & Carter-Whitney, 2011). However, relevant literature has suggested that the poor regulatory framework managing the relationship between aggregate extraction and natural heritage protection may be resulting in the permanent loss of significant environmental and agricultural features (see: Binstock & Carter-Whitney, 2011; Miller, 2007; Port, 2013; Van Wagner, 2016).

In 1972 rehabilitation requirements were first included within applicable legislation (Port, 2013; Skelton Brumwell & Associates Inc. & Savanta Inc., 2010). However, it is estimated that over 2,400 aggregate extraction sites pre-dating this requirement have been recently abandoned

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

without any attempt at reclamation. Although rehabilitation is more strictly regulated by legislation today, across Ontario there is a general consensus that current rates of rehabilitation are insufficient to replace the amount of land disturbed by aggregate extraction (Binstock & Carter-Whitney, 2011; Port, 2013). In 2009, a review was conducted by Peel Region concluding that within that jurisdiction alone 700 ha of land had been disturbed by extraction with only 300 ha ever being rehabilitated on record (Binstock & Carter-Whitney, 2011). The 2009 SAROS indicated that it is difficult to quantify the total amount of rehabilitation within the province as the information is not readily available, and the accuracy of numbers is questionable (Skelton Brumwell & Associates Inc. & Savanta Inc., 2010). However, of the information that is available it is estimated that there is a 1.7% annual net *growth* of disturbed land (Port, 2013). Even in situations where rehabilitation is attempted, it is very challenging for producers to restore the land to the quality that existed before disturbance (Skelton Brumwell & Associates Inc. & Savanta Inc., 2010). Additional concerns arise from the fact that although rehabilitation plans are required to be submitted upon application, they are not obligated to be updated throughout the lifespan of the operations. This is a cause for concern as some operations may be active for greater than 20 years, and the Site Plan submitted with the application may not be relevant when the time for closure approaches (Port, 2013).

Binstock & Carter-Whitney (2011) have identified that a substantial threat to agricultural conservation exists as a result of the poor management of rehabilitation in Ontario. The 2009 SAROS indicated that out of 31 newly licensed areas, almost all of them were located within regions classed as agricultural or woodland, with 48% being located in prime agricultural areas (Binstock & Carter-Whitney, 2011). Given that the rates of rehabilitation appear to be generally

poor, this circumstance may result in significant losses of prime farmland. Future rehabilitation plans for these sites indicate that only 62% of the locations are intended to be returned to agricultural use. The agricultural class and land quality upon rehabilitation will be unknown until finalization upon surrender (Binstock & Carter-Whitney, 2011). Although aggregate extraction is considered to be a temporary or interim use, it is often the case that a permanent loss of farmland results, having a long-term negative impact on agricultural production. It is indicated that farmland loss is one of the only quantifiable negative impacts associated with aggregate extraction (Port, 2013).

### Water

Pits and quarries have the potential to have significant negative impacts on water quantity, on-site and on adjacent properties (Binstock & Carter-Whitney, 2011). The process of aggregate extraction in Ontario displaces high volumes of water due to quarry dewatering and washing of extracted materials (Binstock & Carter-Whitney, 2011). Aggregate extraction operations working below the water table can result in the drainage of local wetlands fed and replenished by groundwater discharge (Binstock & Carter-Whitney, 2011). Additionally, there is growing evidence to suggest that quarry activity has resulted in the drawdown of nearby wells. However, the environmental impacts of quarrying on nearby wells ultimately depends on the proximity to the site and local geography (Binstock & Carter-Whitney, 2011). Additionally, the initial removal of vegetation at the start of extraction activity has been noted to result in changes to natural water flow patterns (Binstock & Carter-Whitney, 2011).

During their analysis of multiple quarry sites in the United States, West & Cho (2006) determined that aggregate extraction, in some instances, resulted in a lowering of the water table

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

and a 'drawdown' effect on groundwater. West & Cho (2006) identified several cases wherein aggregate extraction was determined to be the cause of abnormal contaminants entering aquifer systems. Through their research West & Cho (2006) argue that aggregate extraction can significantly impact neighbouring communities and ongoing activities. Onsen et al. (1999) indicate similar experiences materializing in Wisconsin, United States, with almost 100 wells near active extraction sites being extinguished of water resources- it should be noted that the drainage event was an uncommon result due to an accident occurring on-site. The researchers further explain that although the incident ultimately lead to updated practices and improved communications between the aggregate operators and the local community, it was still a cause for concern (Onsen et al., 1999). With similar experiences occurring globally, loss of natural water reservoirs that are usually contained by gravel deposits has initiated the development of policies limiting the use of the material for construction purposes in Sweden (Winfield & Taylor, 2005). In attempts to limit these occurrences in Ontario, comprehensive water contingency plans are suggested by governing bodies and agricultural stakeholders in relevant literature and policy documents (Ontario Ministry of Agriculture Food and Rural Affairs, 2018).

Research conducted by the Ontario Ministry of Natural Resources and Forestry (MNRF) in 2006 had previously indicated that the Province has documented very few quantifiable impacts to Ontario's water supply and quality linked to the extractive industry. Although there are global examples that attract concern, more research in an Ontarian context would need to be conducted to confirm and verify water related impacts (Binstock & Carter-Whitney, 2011).

## Dust

Dust is considered one of the main externalities associated with aggregate extraction activities. The nature of the methods required to access aggregate materials and the large vehicles active onsite or in the transportation process both contribute to the dispersion of dust particles in the air (Campbell, 2014) . Concern regarding the potential impacts of dust is frequently discussed and identified in various types of literature and in the media (Binstock & Carter-Whitney, 2011; Campbell, 2014; Gravel Watch Ontario, n.d.). Dust generated on site from quarry and pit activities that blows or travels off site is often referred to as nuisance/fugitive dust (Gravel Watch Ontario, n.d.). Aggregate operators are required to suppress or mitigate dust to the extent that is feasible, under the ARA (1990). This can be achieved through a variety of methods; however, water spraying is commonly employed. Operators are not required to eliminate dust from blowing onto nearby properties (Gravel Watch Ontario, n.d.). This not only imposes potential health risks to nearby residents, but there is growing concern for the impacts to agricultural productivity and the environment. Recognizing that agricultural stakeholders are the focus of this research project, attention to dust impacts on farm activity is discussed below.

Farmer (1991) and Sett (2017) indicate that quarry operations significantly increased the amount of dust particles in the air. Dust particles have been found to adhere to plant and crop leaves thus reducing a plant's ability to photosynthesize (Sett, 2017). McCrea (1984) calculated that a 1mm thick layer of volcanic ash on a plants leaf reduces its ability to absorb sunlight and perform photosynthesis by 90%, further extrapolating that similar impacts could result from increased dust particles in the air. Reduced photosynthesis can cause plants to become more susceptible to pests and diseases and other secondary stressors, thus resulting in smaller crop

yields. Particles can also hinder effective pollination of small seeded fruits by insects. Dust contamination also is shown to reduce the overall attractiveness of a product, potentially reducing sales and the aesthetic value of the crop (McCrea,1984).

McCrea (1984) further explains that dust particles can cause health related issues to animals, such as pneumonia and pink eye. Dust build-up in the eyes prevents animals from effectively removing harmful bacteria, which leads to greater instances of pink eye (McCrea, 1984). However, it is important to note that in practice, many of these impacts are difficult to distinguish causation from correlation. McCrea (1984) notes that it is possible that dust from nearby roads or other farming activities can also contribute to an increased instance of dust on crop fields. There is an additional element of cumulative impact identified in Binstock & Carter-Whitney's (2011) research paper. Aggregate activity in southern Ontario often appears to occur in a clustering effect due to the nature of urban development and the availability of resources. Therefore, it is important to recognize that the impacts of dust in areas where there are high volumes of extraction may be greater than in other areas of the province (Binstock & Carter-Whitney, 2011).

### Noise

Activities occurring on or nearby extraction sites related to the production of aggregate materials are often associated with significant increases in noise pollution (Winfield & Taylor, 2005). It has been noted that noise pollution is one of the main concerns expressed by public opponents regarding the siting of aggregate operations (Campbell, 2014). In addition to social nuisances associated with increased noise volumes during active production and working hours, there is the potential for considerable environmental impacts to result. Gravel operations

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

typically produce varying levels of noise depending on the extractive, crushing, screening, and transportation methods occurring on site day-to-day (Campbell, 2014). Consideration for the impacts of noise associated with aggregate extraction is made and emphasized within Ontario's Agricultural Impact Assessment guidelines (OMAFRA, 2018).

Noise studies are required to be submitted with a completed aggregate licensing operation (Ministry of Natural Resources, 2006; OMAFRA 2018). OMAFRA (2018) indicates that particular attention should be given to the potential impacts of livestock or nearby agri-tourism businesses caused by noise pollution. These are particularly sensitive farm operations in regard to noise level impacts (OMAFRA 2018). Southern Ontario is home to the largest cluster of equine farms and number of horses in the province (Sauren, 2014; Wright, 2008). However, this also appears to overlap with the highest concentration of aggregate extraction sites. Responses of horses to frightening stimuli can have dangerous consequences for both human/ rider and equine safety (Christensen, Keeling, & Nielsen, 2005). Horses tend to react with a rapid flight response when alarmed. Developed as an evolutionary response to newly perceived dangers (even in their known environments), a majority of accidents to riders and trainers are often resultant from equine responses elicited by fear (Christensen et al., 2005; CRK Training LLC, 2015). A study conducted by Christensen et al. (2005), indicates that when introduced to auditory stimuli, horses experience an increased heart rate as the animal prepares to initiate a flight response. Additionally, in auditory tests, horses are found to back away in fear from noises as an innate response to unknown sounds (Christensen et al., 2005). However, with time and proper care, horses have been shown to be able to become accustomed to auditory disturbances through habituation and progressive desensitization (Miller, 1996). Similar results have been found for

cattle in respect to sudden and unexpected noise (Broucek, 2014). Flight responses evoked during milking or handling could result in adverse behaviours such as kicking, stomping, and retreat- potentially posing a danger to individuals in close proximity during these activities (Broucek, 2014). OMAFRA (2018) stresses the importance of keeping a regular blasting schedule or modifying hours to accommodate nearby agricultural activities. Further, risk can also be reduced by notifying nearby farms if blasting must occur during an irregular time (OMAFRA 2018).

*Sources of Conflict: Economic Impacts*

There is no denying the economic importance of aggregate resources to the long-term sustainability and health of Ontario's economy. The upstream and downstream economic benefits of aggregate materials are essential to numerous industries and for various end-uses. At this point in time, there is no clear substitute for aggregate materials, particularly in construction based industries (AECOM Canada Ltd., 2009). Aggregate materials are a relatively low overall cost contributor to most major development projects. Aggregate resources are able to be accessed in high volumes at low costs, which then exponentially increase in value through their utilization in infrastructure projects (AECOM Canada Ltd., 2009). Through the *SAROS Paper 3: The Value of Aggregates*, the Ontario Government explains in detail the economic importance of aggregate materials to the Provincial economy. However, there is no proper analysis or attention given to potential economic impacts (AECOM Canada Ltd., 2009; Binstock & Carter-Whitney, 2011). It is important to note that there is very limited research on the economic impacts of aggregate extraction overall.

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

Although the essential role of aggregate extraction is generally recognized, as well as the importance of material accessibility, it has been suggested that the low cost of the resource is a barrier to improving the performance of the industry (Binstock & Carter-Whitney, 2011). There is additional concern that the royalties/fees associated with extraction rates are insufficient to cover the true costs of the negative externalities generated. Examples identified include impacts to roads or municipal infrastructure and other local impacts. There is hesitancy surrounding the idea of increasing extraction fees as many purchasers of aggregate materials are public bodies and doing so would result in the higher price being passed inadvertently onto tax-payers (Binstock & Carter-Whitney, 2011).

Levies per tonne applied through the licensing process are collected and distributed to various levels of government and government organizations. The fees are distributed to the Aggregate Resources Trust, the local municipal government where the site is located, the upper-tier government where the site is located, and the Crown (Government of Ontario, 2021). Binstock & Carter-Whitney (2011) indicate that the royalties received by local governments are almost entirely used to cover the costs of road and infrastructure maintenance. Further, the value of ecosystem services lost as a result of environmental or agricultural disturbance from extraction could have other indirect economic impacts (Binstock & Carter-Whitney, 2011). There is also evidence to suggest that the fee pricing is not enough to sustain or support the government capacity required for consistent site inspection and reporting which can enable environmental destruction (Binstock & Carter-Whitney, 2011; Miller, 2007; Winfield & Taylor, 2005).

### *Limitations of Literature Review*

In the preparation of this research paper, it became apparent that literature exploring the relationship between aggregate and agricultural production is limited. However, this is indicative

of an opportunity to explore the complexities of the relationship, and further emphasizes the importance of this research paper. There is a growing need to explore the dynamics between aggregate extraction and agricultural production as the perceived or actual effects on local environments have been a consistent issue in the licensing and operating process for decades (Baker, Slam, & Summerville, 2001). Recognizing that there is a limitation in the availability of academic research examining this relationship in detail, the detailed records of the OMB/LPAT adjudicative process provides insight into the real-life experiences and concerns of stakeholders or other members of the public.

### *Research Justification*

As aforementioned, the availability of academic research exploring the tensions between aggregate extraction and agricultural production is sparse. It is clear that policy regulating natural resources in Ontario, such as aggregates and farmland, continue to be an evolving and dynamic process (Baker et al., 2001; Binstock & Carter-Whitney, 2011). For example, Provincial Policy and planning documents examined have had major updates or consolidations as recently as the year 2020, with earlier reviews occurring from 2014-2016 (i.e. the Provincial Policy Statement, Growth Plan for the Greater Golden Horseshoe). Not only is there a general absence of academic literature exploring the connections between these industries, there is a lack of *contemporary* research examining these issues in the current policy regime. The OMB/LPAT adjudicative process in Ontario provides an opportunity to understand the very basis of the growing contention between these resources. Often, the potential impacts of a pit or quarry are assessed in greater detail by experts during the OMB/LPAT process. Therefore, the examination of OMB/LPAT minutes and decision records are expected to comprehensively examine the

current state of the relationship between the competing industries across Ontario (Binstock & Carter-Whitney, 2011).

### **3.0 Methodology**

---

#### *Data Sources*

#### **Local Planning Appeals Tribunal (LPAT)**

The Local Planning Appeal Tribunal (LPAT) is an adjudicative tribunal that recognizes cases related to a variety of municipal planning and land matters. The LPAT hears cases regarding issues that include, but are not limited to, official plans, zoning by-laws, plans of subdivision, minor variances, aggregate resources, and other issues as assigned by Ontario statutes/policy. Members of the LPAT are responsible for the adjudication of disputes or appeals between two parties that appear before the tribunal regarding planning matters in Ontario.

The LPAT was previously known and recognized as the Ontario Municipal Board (OMB), prior to 2018. On April 3<sup>rd</sup>, 2018, Ontario legislated Bill 139, the *Building Better Communities and Conserving Watersheds Act* which was intended to change the land use planning process in Ontario. As a result, the OMB transitioned to and continued as the LPAT. For the purposes of this research, OMB and LPAT cases are recognized and considered to be the same/equal as the general intent of the planning appeals adjudication process did not change with the transition.

Through the completion of the above Literature Review, it was recognized that many Aggregate License applications result in a hearing or conference held before the LPAT. To best understand the sources of contention and areas of dispute between aggregate proponents and agricultural stakeholders, the decisions of the Tribunal were anticipated to contain records of key

issues or topics of discussion as it relates to the goal of this research project. The Canadian Legal Information Institute (CanLII) is an online database that contains the records and decisions as issued by the LPAT and therefore was a valuable asset in the completion of this paper.

### **Canadian Legal Information Institute (CanLII)**

As aforementioned, The Canadian Legal Information Institute (CanLII), is an online database that provides access to court judgements from almost all Canadian Courts and tribunals. CanLII is funded by the societies that compose the Federation of Law Societies of Canada. The database is updated monthly to provide access to the most recent decisions adjudicated by Courts and Tribunals across the country. The database contains decisions from the LPAT and provides users with the ability to filter cases with an advanced search function. Information can be sorted by date or with specific key words. Through this option, users are able to explore cases with document text including specific key words or topics. CanLII maintains continuous records of LPAT decisions from 2015 to present day, with partial coverage prior to this time.

### ***Methods***

The CanLII database was utilized to search OMB/LPAT decisions from 2015 to present day. Filters were applied to ensure that resultant records and decisions specifically involved dispute or conflict between aggregate extractive activities and potential implications for nearby agricultural production. To explore cases and appeals heard before the LPAT that related to the topic of this research project, the following key words were searched:

- 1. Aggregates AND agriculture*
- 2. Aggregates AND farm\**

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

These keywords were specifically applied to identify cases and appeals that contained discussion between the two industries. Recognizing that there may be some variability in language utilized by proponents/appellants and Tribunal members, it was critical to allow the search engine to filter documents using other common terms. The inclusion of the asterisk (\*) at the end of “farm” allowed the database to recognize this variability and to highlight other relevant cases. Although the database only contains continuous records post-2015, this does not limit the relevance of the research and data collected as major policy changes regarding aggregate and agricultural practices in Ontario were legislated in 2014 and again more recently in 2020 through the PPS and Growth Plan comprehensive review and update.

After the search was completed, the records were further sorted to ensure relevance to the research project. The records that were presented by CanLII resulting from the filtered search were analyzed and separated to only those that included a minimum of five (5) mentions or references to the key terms identified above. Case subjects or summaries included at the top of each document was analyzed to solidify the topics of discussion within each LPAT record. The final list of relevant decisions and Tribunal records were then summarized. Through the content analysis and summary of cases retrieved, key issues and main focuses of each appeal were identified.

Input provided by expert witnesses describing specific steps or operational changes that aggregate and agricultural producers could undertake to improve relations or resolve conflict were also recorded. Specific note was taken wherein the advice provided resulted in a satisfied conclusion or compromise between parties. These suggestions were then developed into “best practices”. For the purposes of this research project, “best practices” was defined as being

actions or operational changes that assist in resolving or alleviating tensions between the aggregate operator or license applicant and neighbouring or nearby agricultural stakeholders thus creating an environment in which both industries can coexist.

#### **4.0 Results and Analysis**

---

##### *CanLII Database Search Results*

An initial search of the CanLII database utilizing the key terms “aggregate AND agriculture” identified 169 cases or records heard by the OMB/LPAT between the years of 2015-2021 (as recent as May 2021). Upon searching “aggregate AND farm\*” in the same time period, the database retrieved an additional total of 99 cases; these were reduced to contribute an additional two (2) cases to the research project as many of those identified overlapped with the initial key term search. After the search results were analyzed utilizing the inclusion criteria, a total of 28 (n = 28) cases and records were included in the research project. The full list of records analyzed are included as **Appendix B** to this report.

##### *Key Issues and Trends*

Through the content analysis completed, a variety of consistent key issues and sources of conflict were presented. Many of the issues discussed during the OMB/LPAT processes included those similar to topics discussed throughout the above literature review. However, the generated word cloud indicates key trends and most relevant topics of discussion or focus of debate regarding recent ARA licenses. The word cloud is depicted in **Figure 2:**



## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

The ten most relevant themes and topics of discussion are as follows:

- Water resources
- Haul routes
- Air quality
- Site plans
- Quality of life
- History of compliance
- Agricultural uses
- Development agreements
- Hours of Operation

### Water

Water was a key concern and trending issue discussed in almost every record included in the research analysis, being mentioned and discussed in 22 out of 28 (78%) selected proceedings before the LPAT. Section 12(1) of the ARA requires that any possible effects on ground or surface water resources be examined. As it is a legislative requirement to address these issues, it was anticipated that water resources would be a topic of discussion. However, through the analysis conducted it was noted that many of the reasonings for appeal or opposition stemmed from water resource concerns of public individuals, outside of the typical legislative examination of evidence and was a heavy focus of debate in comparison to other legislated analyses (see Figure 2 and Figure 3). Issues discussed throughout the LPAT hearings included changes to both nearby surface water and ground water resources. Concern for the indirect impacts resulting from

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

changes to water levels and quality were also a large focus of discussion and direction of supporting evidence. It is important to note that issues regarding water contamination or level changes were not limited to licenses for activities below the water table but were also presented as a key concern for those proposing above water table extraction.

Although the geography of Ontario is dynamic and every individual license and proposed site is subject to different geological conditions, there are consistent concerns presented in those cases that neighbour agricultural production facilities and active farms. Namely, the concern for potential impacts to water resources was highly debated due to the conceivable damages to agricultural production that could materialize as a result. In connection to this matter, apprehensions related to potential impacts on livestock and equine wellbeing were main areas of discussion. The *Bates v. Ontario (2020)* and *James Dick Construction Limited v. Wellington (2020)* hearings both included testimony from nearby farmers describing concerns for their livestock and horses. Additionally, correspondence between parties throughout various trials included in the analysis indicated that many farmers feel as though changes to well levels and water quality would pose significant threat to the success of neighbouring agricultural activities. Discussion was not limited to the long-term impacts but also highlighted the repercussions to agricultural production should a sudden drop in water levels occur.

The following is a quote from *Bates v. Ontario (2020)* describing a farmer's lived experience adjacent to a quarry and their comments provided on a proposed expansion:

### Haul Routes

Haul Routes servicing proposed extraction sites and/or expansions to existing sites faced similar criticism and opposition as discussions regarding water resources. The weight and relevancy of this topic in comparison to other factors analyzed is represented in Figure 1 and 2 above. In depth discussion or recognition of concern for Haul Routes was described in 19 out of the 28 (68%) documents analyzed and included in this research project. While correspondence and testimony concerning water resources was relatively focused, potential externalities resulting from the implementation of Haul Routes had a greater range and variety of concern stemming from increased presence of large vehicles. Topics of discussion included: pedestrian safety, vehicle emissions, noise, vehicular accidents, increased traffic, and infrastructural degradation.

“He spoke about his great concern of heavy truck traffic traveling through the hamlet. He provided photographs to show how close to the road some of the homes are. He said there is very little buffer between the homes and the traffic. He believes that other options for a haul route should have been investigated... He is concerned that trucks may back up at the intersection which will lead to a dangerous condition because of the hill at the south of the intersection. He anticipates that there may not be enough stopping distance once a vehicle crests over the hill and is required to stop at a queue at the intersection. He also noted that this haul route will require considerable improvements and questioned whether it would have been more worthwhile to consider a different haul route. He pointed out that the County Official Plan does not support a haul route through a village. He also noted that much of the traffic that goes through the hamlet travels at a speed greater than the posted speed limit.” (Bumstead v. Grey, 2020, para 53).

Many of the concerns regarding Haul Routes surrounded the impacts to nearby residential uses and communities, likely contributing to its relevancy in the generated word cloud. However, there was significant conversation and opinion evidence submitted regarding the additional influence on agricultural production and activity. While the increased large vehicle traffic associated with Haul Route expansion or establishment could conceivably pose as impact on

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

pedestrian or residential safety (a concern identified through the analysis), there are unique considerations that were contributed by farmers or agricultural stakeholders noted throughout the included hearings and records. Specifically, the resulting traffic impacts on the safety of the road for equine travel was noted during the completion of a technical report for the Bumstead Licence discussed in the *Bumstead v. Grey (2020)* hearing (below).

The location of the *Bumstead v. Grey (2020)* site and Haul Route requires equine riders and large trucks servicing the aggregate site to utilize the same road, along with other community activity. In this particular case, the resultant concern for the safety of horse-back riders and their animals lead to the condition of education and training for the truck drivers that would be using the Haul Route. Training would inform the drivers how to carefully approach and overtake individuals and groups of horses and riders.

The examination of data related to Haul Routes highlighted the unique considerations that apply to situations wherein agricultural and extractive activity attempt to coexist. While concerns regarding increased truck traffic along Haul Routes were similar between residential and agricultural stakeholders, the example of *Bumstead v. Grey (2020)* highlighted a unique dynamic between the two industries. While impacts of increased truck traffic on pedestrians/residents should not be ignored, it is important to note the different ways in which the agricultural industry could be impacted by the same factor. Addressing concerns through generalized condition may not be applicable to the potential agricultural impact and may require specialized attention, such as additional education and training, as reflected through the above excerpt from *Bumstead v. Grey (2020)*.

Air Quality / Dust

Potential impacts to air quality was also highlighted as a relevant topic of discussion through the examined LPAT/OMB documents. Direct mention of the term “air quality” was mentioned within 11 of the 28 selected documents. However, general or indirect discussion regarding impacts to air quality was highlighted as a key theme or relevant topic as identified in the above Word Clouds (Figures 2 and 3). Recognizing that there are many incidents of indirect correspondence related to this particular topic, it is difficult to quantify a specific statistic. However, as mentioned, it was a relevant and lengthy focus of many LPAT/OMB documents.

Along with concern for air quality, this theme also included a focus on nuisance and fugitive dust. For the purpose of this research project, nuisance dust is referred to as the dust particulate matter that is disturbed through extractive activities that then becomes airborne and can travel over/onto nearby land uses, exceeding normal baseline levels. Other concerns for impacts to air quality included discussion around increasing emissions from heavy machinery and trucks servicing the aggregate operation. In concert with this concern, trucks idling outside of the extraction site was also included under this theme.

Specific concerns discussed by agricultural stakeholders included potential impacts to soil quality and changes to soil pH levels thereby impacting crop growth. Comment on the perceived change in the yield of crops grown in specific areas of farm fields that are immediately adjacent to extractive sites was included in various LPAT hearings. There is discourse to suggest that nuisance dust blowing over nearby farm fields over an extended period of time contributed to the change in soil quality and lead to economic losses. A specific example of this occurring was presented in the *Bates v. Ontario* (2020) hearing regarding the expansion of an existing

quarry. During the hearing, correspondence was submitted by neighbouring cash crop farmers related to the impacts that limestone dust from extractive activity was perceived to be imposing on nearby fields. The farmer noted that over the 40 years that the existing quarry had been operating, there was a notable change in the pH of adjacent fields resulting in reduced yields and crop quality from nuisance dust, contributing to an economic loss. Other farmers that manage and own fields nearby also swore similar affidavits describing their experience with the same impacts. Ultimately the Tribunal dismissed the affidavits submitted by the objectors as anecdotal, however it is important to identify this discussion as it relates to this research project due to the concern if potential impacts to agricultural production related to extractive activity.

### **History of Compliance**

As a component of the licensing process, identifying and evaluating the compliance of the applicant's past practice and extractive activity to the *Aggregate Resources Act* and other established rules and regulations is required. Through the cases analyzed for inclusion in this research project, a large focus on the past non-compliance of aggregate companies and applicants was evident. A sense of mistrust and hesitancy towards the expansion of existing sites and the establishment of new licenses stemming from a history of non-compliance of aggregate operators exists in much of the correspondence provided by objectors. The idea that the establishment of contingency protocols and Site Plans or Development Agreements with specified operating rules seemed to provide no assurance to objectors as there was a shared feeling that there is little enforcement to ensure proper compliance. Criticism of the regulation of the aggregate industry as being "reactive" rather than "proactive" in response to the non-compliance of operators was also

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

highlighted. Specifically, activities occurring on various sites that do not comply with licenses and associated Site Plans and infringement of the policies included in the ARA were identified as sources of non-compliance. There appears to be two sources of hesitation regarding compliance with applicable policy – those being: mistrust of the operator and mistrust of the regulatory system.

As an example, the *Bates v. Ontario* (2020) hearing before the LPAT examined the past compliance history of the license applicants to the regulations of the ARA and existing Site Plan conditions as a main focus of objection. Objectors brought this evidence before the Tribunal for consideration as it is part of the licensing review criteria prescribed by the ARA. This was a particular focus of discussion as the license for consideration before the Tribunal was to expand the existing operation. Included below is an excerpt from the hearing describing the oppositions hesitations as a result of these issues.

The above quote illustrates an articulated example of hesitancy and mistrust towards the aggregate operator/industry. It is important to note that the *Bates v. Ontario* (2021) case is particularly unique as the objectors have past experience in dealing with the operator proposing the site expansion; there is a reputation that the company has established in the nearby community. This may not apply in situations where a new pit or quarry is being proposed or a new operator is requesting a license. However, there were other concerns that related to the overall regulatory and political system of the aggregate industry mentioned throughout the cases included for analysis. These concerns do not stem from the actions of a specific operator or company.

**Agricultural Uses (Rehabilitation and Loss)**

As extraction sites are eventually to be rehabilitated to a natural or agricultural use after activity has ceased, Provincial direction considers aggregate extraction to be an interim or temporary use (Binstock & Carter-Whitney, 2011). Concern related to the effectiveness of this approach and the impacts to agricultural protection was highlighted throughout the literature review conducted for this research project. Results from the cases analyzed echo similar apprehensions. Three perceived causes of agricultural loss discussed in various hearings included soil contamination and impacts to quality, and a decrease in total area of land being farmed.

Discussion regarding on-site activities occurring through the duration of aggregate extraction and potential long-term impacts on soil quality was included in objections submitted to the Tribunal. Concern was expressed that certain activities would result in the contamination of soil thereby reducing quality and capacity to return to agricultural production. Particular activities proposed on various Site Plans that garnered such concern included construction material recycling (concrete, asphalt, bricks, etc.), material storage, operation of large machinery (fuel, oil, and other chemical spillage), and the import of off-site materials to be used during rehabilitation or for resale. There was concern that the materials being brought onto extraction sites in various forms or through different methods could result in the leaching of toxic chemicals into the soil overtime and cause severe contamination. Although specific Site Plan Control measures were often put into place as a preventative measure, there was still some uncertainty from the objection. Site Plan measures implemented included restrictions of the imported materials and their storage in proximity to the water table (distance and depth) and the removal

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

of scrap/waste piles from sites on a regular basis. Worries related to soil contamination were also interconnected with hesitations related to water quality impacts.

These concerns further identified perceived impacts to agricultural productivity and the meaningful restoration of extraction sites. Objectors maintained that the irreversible contamination of soil would restrict the capability of rehabilitation to a safe condition and would prevent the growth of food grade crops. It was highlighted that although extraction sites are to be rehabilitated, there is no guarantee that it will restore the property to an agricultural capacity or to the quality it was in its original state. This was shown to be particularly contentious in situations wherein existing agricultural fields or pieces of land were to be converted for extraction.

Despite the concern of objectors regarding the success of proposed rehabilitation, almost all licenses examined through this research project did include some form of agricultural or natural future use. Some sites were to remain actively farmed during extraction and others were to be rehabilitated to a farming use where the topography of the property would allow. It was noted throughout that extraction sites where blasting and removal was to occur below the water table are restricted in their ability to be rehabilitated to a farming use.

### **Quality of Life and Cumulative Impacts**

Changes or impacts to quality of life was frequently mentioned as a concern for most appellants. Included in this theme was also changes to the quality of atmosphere and the resultant perceived impacts that could affect nearby land uses. Much of the discussion related to quality of life was comparable to the topics highlighted previously in the above literature review. This included concern with potential changes to housing prices, aesthetic impacts, traffic, etc.

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

Evidence presented resembled other concerns discovered during the literature review prepared for this research project (above) that could be considered “NIMBY-ism”. However, this is important to highlight as much of the discussion focused on the cumulative impacts of the above identified themes/issues having a negative impact on nearby communities and agricultural or diversified uses. The unique combination and compounding of all issues identified seems to create a sense of hesitancy to the license approval as a whole.

The potential impacts to the aesthetic or character of the area were perceived as a potential threat to the success of certain agricultural diversified uses. It was identified that tourists and guests of the area have a particular perception of what the “rural countryside” means and the establishment of an aggregate extraction site nearby could negatively affect this vision thereby impacting businesses. The externalities associated with extractive activities, such as noise, dust, traffic, and visual impacts were anticipated to deter visitors from nearby communities or businesses. One particular example regarding a Bed and Breakfast establishment owned by an appellant was presented in the *Bumstead v. Grey* (2019) hearing. Debate was had regarding the value of the agri-tourism industry versus aggregate extraction to rural communities. An excerpt from the hearing is included below in which the appellant describes the perceived impacts to the character of the neighbourhood and the potential outcomes for their business.

### **Site Plans/Development Agreements/Hours of Operation**

Throughout the cases analyzed, Site Plans and Development Agreements were continuously referenced as a Planning tool to be utilized by regulatory bodies (Provincial and local) to control activities occurring on extraction sites. Included as a part of such agreements

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

was also reference to other aspects of extraction activity, including conditions for specific hours of operation or noise mitigating landscaping. Through the ARA, licensees are required to submit a Site Plan to for comment and approval to be registered. Much of the focus in response to the above mentioned concerns or perceived impacts referenced the utilization of a Site Plan to adjust the approval accordingly and to ensure that further review of on-site activities are investigated and controlled. Topics of discussion related to Site Plans or Development Agreements were namely to appease the concerns of objectors. Certain mitigative measures were also noted to be established through the Site Plan approvals process (i.e. landscaping, setbacks, elevations, etc.). The utilization of Site Plan Control and Development Agreements seems to allow the integration of mitigative measures to reduce opposition and apprehension. There was general consensus between practicing Planners that Site Plan Control can be utilized as a tool to further examine and restrict on-site activity.

## **5.0 Improving Neighbourly Relations and the Licensing Process – Best Practices**

---

The following section of this research project is intended to highlight the techniques or actions taken by operators and neighbouring landowners/residents in response to concerns identified before the Tribunal. The best practices identified are suggested as a way to recognize these perceived impacts and to contribute to improving the Planning process for aggregate operators, agricultural producers, and local residents. These best practices aim to appreciate the key role that both the agricultural and aggregate industries play in rural communities and Ontario's overall economy by assisting to promote their coexistence. Best practices listed and described below are not included in any particular order and may not apply to every circumstance.

### ***1. Signage Strategies***

The development of a detailed signage strategy is suggested in response to the identified overarching concerns associated with truck traffic and queuing nearby pit and quarry sites. Although this involves a level of trust between the public and drivers, the installation of additional directional and speed signage along haul routes is suggested throughout the cases analyzed in expert opinion evidence and traffic studies. Not only is this information valuable to truck and equipment drivers, it also identifies these routes for members of the public thereby increasing awareness/alertness in these areas. Installation of signage as an indicator in particularly congested areas along haul routes can assist in reducing traffic accidents and improve road safety (Thangavel et al., 2019). Other signage strategies identified throughout

cases analyzed included: clear signage for truck queuing, hours of operation/blasting, and contact information. However, it is important to note that this strategy requires some level of enforcement to ensure that infractions are appropriately managed and discouraged. The development of a signage strategy is suggested as a low-cost way to assist in improving not only traffic safety, but relieving apprehensions to haul routing (Thangavel et al., 2019).

## *2. Communication and Complaint Procedures*

The implementation of a detailed communication and complaint procedure is recommended to increase transparency and alleviate concerns related to the compliance of aggregate operators. This would work to establish a mode and method of two-way communication between operators and the public. A detailed communication strategy would allow operators to ensure that the public and nearby property owners are updated on changes to activity, promoting transparency and creating an opportunity to develop trust with neighbours. This strategy should include a preferred mode and platform for communication that is accessible for all parties. A clear complaint procedure and associated action or contingency plans should be established prior to the extraction activity commencing. This comes highly recommended as a result of the perceived non-reactionary character of the aggregate industry, highlighted above. An efficient communication and complaint procedure would allow nearby residents to report sudden changes or impacts as soon as possible to prevent extreme damages from being incurred (i.e. changes to water level, noise levels, etc.). This strategy was highlighted in multiple cases analyzed as a response to concern from the public that complaints or communication would fall on deaf ears. A successful communication strategy can assist to ensure that operators are being more proactive than

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

reactive and aware of public experiences. There is opportunity for operators and members of the public, particularly agricultural stakeholders, to better understand what is occurring and when and be given opportunity to adjust accordingly. For example: blasting needing to occur outside of regular hours with notice to farmers provided in advance ensuring that they can adjust livestock handling appropriately. This practice was highlighted in multiple cases analyzed as a response to concern from the public that complaints or communication would fall on deaf ears resulting in exacerbated impacts. Further, increased transparency to changes in Site Plan amendments or operational activities could provide opportunity to increase trust and improve relationships between operators and nearby communities.

### *3. Community Liaisons*

A suggested appointment of a Community Liaison builds on the idea of improving communication between operators and nearby property owners/farmers. Appointing a specific member or group to be a direct point of contact between parties can expedite communication and improve clarity. These individuals would be able to represent and develop an understanding of the values of associated parties. It is recommended that this individual be identified prior to operation and as soon as possible during the application process. This role would have the opportunity to strengthen the link between groups and promote civic involvement in the planning process. This individual or group should be a member(s) of the public and not associated with the local government to ensure that a perceived bias is prevented. It is noted that costs associated to establish this position could be a potential limiting factor, unless it was voluntarily assigned.

#### *4. Education and Training*

Much of the contention and apprehensions to aggregate licensing seems to result from a misunderstanding of the aggregate industry overall and concern that operators do not understand the character of rural communities and the unique challenges that agricultural operators face. As a result, increased education and training for both aggregate operators (on site and the parent company) and nearby residents/farmers would be of great value.

Creating opportunities for members of the public learn more about the importance of aggregate materials to Ontario's social and economic wellbeing could allow residents to better understand need for extractive activities in general. Further, providing information about the company or licensee is also suggested along with information about the types of extraction or activities occurring on-site. There is a lot of apprehension due to the idea that there are only negative impacts and no benefit to extraction so creating a better understanding of the process and how it directly connects to local residents is anticipated to reduce these concerns. There is opportunity to also provide more information on the policy regulating pit and quarry operation, expected to assure members of the public that the licensing process is not haphazard.

Alternatively, it is highly recommended that licensees and operators be educated on the unique farming and rural activities occurring on nearby active sites. It is important to be aware of the differences between residential and agricultural neighbours and additional cautions that need to be identified in advance of beginning extraction. An example could include further education on how to drive haul trucks near livestock and equine and how to safely overtake them on the road, as highlighted in the *Bumstead v. Grey* (2020) hearing. It is also encouraged that on-site employees receive additional training in emergency management and contingency planning, so

as to prevent unnecessary impact and appease worries of nearby residents. The assurance to the public and farmers that the operator is aware of their needs and how to manage unexpected changes in operation is expected to increase trust with the operator. Additional research by the operator on innovative and new technologies or mitigative landscaping to reduce impacts is also encouraged. There are many different forms that additional education and training could take, but it is anticipated to have an overall positive effect on the strained relationship between the public and aggregate producers.

#### *5. Community Involvement and Image*

Aggregate operators are encouraged to proactively become involved in the communities that they operate within. Allowing residents to see active involvement and know that employees are members of the community is anticipated to create a level of trust. It promotes opportunities for operators to become a part of local residents' lives. This could also involve outreach and rectifying potential damages incurred to adjacent properties as a result of extraction. Community involvement is a two-fold approach that would allow operators to better understand local needs and mitigate impacts, but also to establish a more positive relationship in the area.

Also identified as a key concern was the aesthetic damages that are associated with extractive activities. Maintaining exterior berms and landscaping is encouraged so as to mitigate this as much as possible. Planting native species of vegetation to suite the area would allow sites to better blend into the landscape (as much as is possible given the nature of production). The site would not be as obvious to passersby and neighbours. Maintaining a clean and 'rural' image could alleviate tensions in the long-term.

### **6.0 Limitations of Research**

---

The following section aims to identify limitations of the research project and to increase transparency between the author and readers. As noted throughout the literature review, there was a clear absence of academic literature that explores the relationship between aggregate extraction and adjacent agricultural production. As a result, much of the literature explored was grey or from other reputable sources. Although not anticipated to have a great impact on the quality of the research produced, it is important to note. It is possible that as a result of a lack of literature available, there could have been key ideas or themes not present or considered.

Additionally, the research project completed was a desktop exercise and did not directly involve individuals or operators that participated in the appeals process. However, the minutes analyzed and provided from the CanLII database were very detailed and part of the public record. Included in the analyzed documents were affidavits and sworn testimony from expert witnesses, therefore it is anticipated that the contents were true to the best of the authors knowledge. As records analyzed only dated back to 2015 due to availability and technology constraints, it is possible that other key topics or themes were inadvertently excluded.

### **7.0 Opportunities for Future Research**

---

Although the lack of peer reviewed and academic literature was included above as a limitation, it also highlights an opportunity for future research. Although this particular research

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

project utilized qualitative methods, there is also opportunity to use the same data and employ a more quantitative approach (i.e. number of appeals, number of approvals, etc.). Building on this, the utilization of OMB/LPAT records to explore other topics and focuses of debate could also assist in providing an accessible method of collecting significant data for analysis. There is opportunity to better use these resources to their full potential.

As concerns from homeowners and farm operators and respective perceived impacts varied so greatly, focusing further in on these issues at a deeper level could benefit both industries overall. Continuing to develop mitigative strategies for on-site activity and the socio-economic considerations of aggregate extraction is anticipated to assist in reducing conflict and creating a better perception of the industry. Further, more research on the experience of farmers with the aggregate industry could better inform policy at all levels to ensure that political decisions are more balanced.

### **8.0 Conclusion**

---

The main focuses of concern and conflict resulting in OMB/LPAT appeals of aggregate licensing related to water resources, haul routing, air quality, and how these issues compound to create an overall negative outlook. Additionally, mistrust of the aggregate industry from past experiences or a general misunderstanding of the industry appears to play an integral role in the perception that the opposition holds. However, the main realization of this research project was the unique ways in which agricultural producers and stakeholders are impacted by the same sources/externalities of aggregate extraction in comparison to other members of the public. There is a need to understand how different stakeholders are impacted in unique ways. Particularly,

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

how different types of agricultural production could be affected by neighbouring aggregate operations. Some examples being livestock, cash crop, diversified uses, etc. These highlighted concerns, although in some cases anecdotal, should not be dismissed. Potential impacts to agricultural production resulting from extractive activity extend beyond a general discomfort and could conceivably result in serious harm to the livelihood of farmers across Ontario. The results of this research project can assist in identifying ways in which policy can be improved and better balanced. This is not to dismiss the importance of the aggregate industry to Ontario's socioeconomic health and the integral role that these resources play in the day to day lives of all citizens. Further education and research on the relationship between the two industries and how they are interconnected is highly encouraged. As these resources exist in direct competition, there is a need to better balance the relationship for the future of Ontario.

**References**

- AECOM Canada Ltd. (2009). *State of the Aggregate Resource in Ontario Study Paper 3-The Value of Aggregates*.  
[http://files.ontario.ca/environment-and-energy/aggregates/aggregate-resource-in-ontario-study/stdprod\\_067730.pdf](http://files.ontario.ca/environment-and-energy/aggregates/aggregate-resource-in-ontario-study/stdprod_067730.pdf)
- Association of Municipalities of Ontario. (2020). *Aggregates Update | AMO*.  
<https://www.amo.on.ca/advocacy/environment/aggregates-update>
- Baker, D., Slam, C., & Summerville, T. (2001). An evolving policy network in action: The case of construction aggregate policy in Ontario. *Canadian Public Administration/Administration Publique Du Canada*, 44(4), 463–483.  
<https://doi.org/10.1111/j.1754-7121.2001.tb00901.x>
- Binstock, M., & Carter-Whitney, M. (2011). *Aggregate extraction in Ontario: A strategy for the future*. <http://cielap.org/pdf/AggregatesStrategyOntario.pdf>
- Bull, M., & Estrela, C. (2012). *Recent trends and issues in aggregate approvals*.  
[http://www.woodbull.ca/docs/default-source/publications/recent-trends-and-issues-in-aggregate-applications-\(oba-institute\)](http://www.woodbull.ca/docs/default-source/publications/recent-trends-and-issues-in-aggregate-applications-(oba-institute))
- Campbell, B. A. (2014). *Aggregate Resource Extraction: Examining Environmental Impacts on Optimal Extraction and Reclamation Strategies*. University of Alberta.
- EcoVue Consulting. (2013). *Obtaining A License For A Pit Or Quarry In Ontario*.  
<https://ecovueconsulting.com/getting-a-quarry-or-pit-approved-in-ontario/>
- Government of Ontario. (2020). *Application standards for proposed pits and quarries*.  
<https://www.ontario.ca/page/application-standards-proposed-pits-and-quarries>
- Government of Ontario. (2021). *Aggregate resources*.

## PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

<https://www.ontario.ca/page/aggregate-resources>

Gravel Watch Ontario. (n.d.). *Dust / Air Quality* . Retrieved April 5, 2021, from

<http://gravelwatch.org/air-quality-health/>

Miller, G. (2007). *Doing Less with Less: How shortfalls in budget, staffing and in-house expertise are hampering the effectiveness of MOE and MNR*.

<http://docs.assets.eco.on.ca/reports/special-reports/2007/2007-Less-with-Less.pdf>

Ministry of Natural Resources. (2006). *Licenses: General*.

<https://files.ontario.ca/environment-and-energy/aggregates/269049.pdf>

Onsen, J. J., Fassbender, W. P., Jurcek, P., Barreto, L. L., & Boyer, L. F. (1999). A Rapid Drawdown Event Related to Quarry Operations in a Dolomite Aquifer. *Groundwater Monitoring & Remediation*, 19(1), 110–114.

<https://doi.org/10.1111/j.1745-6592.1999.tb00193.x>

Ontario Ministry of Agriculture Food and Rural Affairs. (2018). *Draft Agricultural Impact Assessment (AIA) Guidance Document*.

<http://www.omafra.gov.on.ca/english/landuse/aiagd.pdf>

Patano, S., & Sandberg, L. A. (2005a). Winning back more than words? Power, discourse and quarrying on the Niagara Escarpment. *The Canadian Geographer/Le G?Ographe Canadien*, 49(1), 25–41. <https://doi.org/10.1111/j.0008-3658.2005.00078.x>

Patano, S., & Sandberg, L. A. (2005b). Winning back more than words? Power, discourse and quarrying on the Niagara Escarpment. *Canadian Geographer; Toronto*, 49(1), 25–41.

<http://search.proquest.com/docview/228356117/abstract/6B0A9B05A47445D2PQ/1>

Pelekasi, T., Menegaki, M., & Damigos, D. (2012). Externalities, NIMBY syndrome and marble

PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

quarrying activity. *Journal of Environmental Planning and Management*, 55(9), 1192–1205.

<https://doi.org/10.1080/09640568.2011.638047>

Port, C. M. (2013). *The Opportunities and Challenges of Aggregate Site Rehabilitation in Southern Ontario: An Evaluation of the Rehabilitation Process from [University of Waterloo]*.

[https://uwspace.uwaterloo.ca/bitstream/handle/10012/7966/Port\\_Caitlin.pdf?sequence=1](https://uwspace.uwaterloo.ca/bitstream/handle/10012/7966/Port_Caitlin.pdf?sequence=1)

Sauren, T. (2014). *HELG ECONOMIC IMPACT REPORT A BASELINE REPORT ON THE ECONOMIC IMPACT OF THE EQUINE SECTOR IN THE HEADWATERS REGION*.

Sett, R. (2017). Responses in Plants Exposed to Dust Pollution. *Horticulture International Journal*, 1(2). <https://doi.org/10.15406/hij.2017.01.00010>

Thangavel, R. K., Athithan, S., Sarumathi, S., Aruna, M., & Nithila, B. (2019, July 1). Blackspot Alert and Accident Prevention System. *2019 10th International Conference on Computing, Communication and Networking Technologies*.

<https://doi.org/10.1109/ICCCNT45670.2019.8944412>

Van Wagner, E. (2016). Law's rurality: Land use law and the shaping of people-place relations in rural Ontario. *Journal of Rural Studies*, 47, 311–325.

<https://doi.org/10.1016/j.jrurstud.2016.01.006>

Winfield, M. S., & Taylor, A. (2005). *Rebalancing the Load: The need for an aggregates conservation strategy for Ontario*. [www.peakgallery.com](http://www.peakgallery.com).

Wright, B. (2008). *Economic Impact of the Ontario Horse Industry*.

Yundt, S. E., & Messerschmidt, B. P. (1979). Legislation and policy mineral aggregate resource management in Ontario, Canada. *Minerals and the Environment*, 1(3), 101–111.

PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

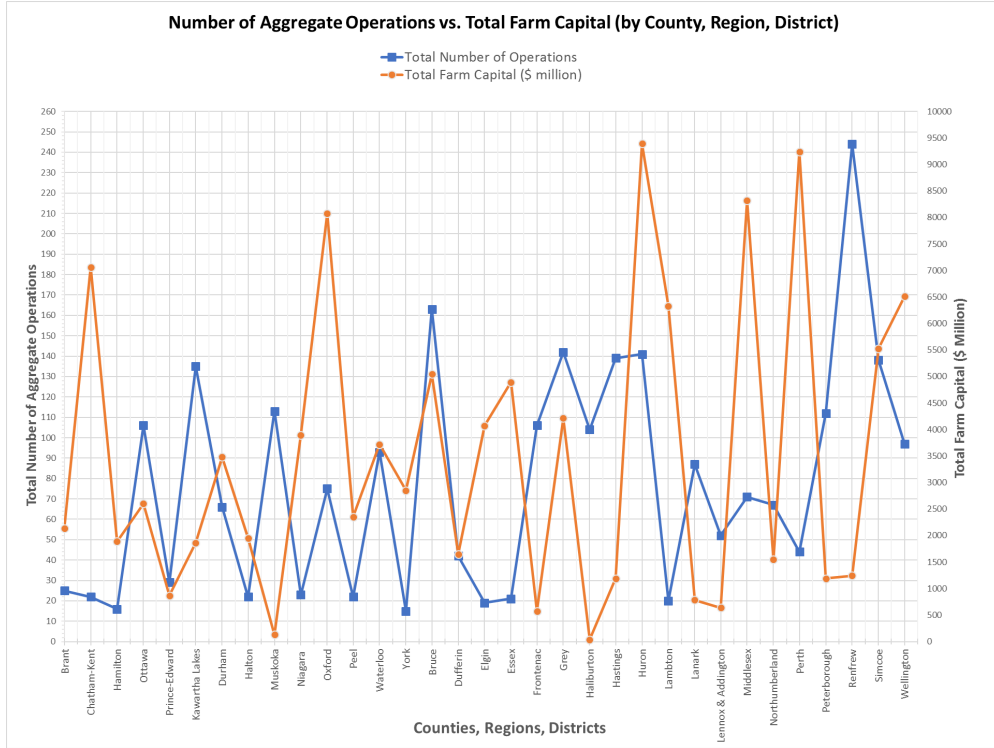
<https://doi.org/10.1007/BF02001234>

Yundt, S. E., & Messerschmidt, B. P. (1979). Legislation and policy mineral aggregate resource management in Ontario, Canada. *Minerals and the Environment*, 1(3), 101–111.

PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

Appendix A

Overlap of Aggregate and Agricultural Activity across Southern Ontario (Prepared by Author)



PERCEPTIONS OF EXTRACTION AND IMPACTS TO AGRICULTURAL PRODUCTION

**Appendix B**  
Selected LPAT Cases and Documents for Inclusion in Analysis

<b>Case Name</b>	<b>Hearing Date</b>
1194233 Ontario Ltd. v Springwater (Township)	2019-08-13
1194233 Ontario Ltd. v Springwater (Township)	2019-01-02
1194233 Ontario Ltd. v Springwater (Township)	2018-04-09
Arbour Farms Limited v. Mulmur	2018-04-26
Bumstead v Grey (County)	2020-04-22
Bumstead v Grey (County)	2019-07-18
CBM St. Mary's Cement Inc. v. Wellington (County)	2020-06-25
CBM St. Mary's Cement Inc. v. Wellington (County)	2020-06-24
Chisholm v Southgate (Township)	2020-11-13
Concerned Citizens In Adjala/Tosorontio Inc. v Adjala-Tosorontio (Township)	2018-01-26
Dziadura v Perth (County)	2020-12-01
Greenwood Construction Company Limited v East Garafraxa (Township)	2020-01-02
Greenwood Construction Company Limited v East Garafraxa (Township)	2019-02-08
Greenwood Construction Company Limited v East Garafraxa (Township)	2017-08-24
Greenwood Construction Company Limited v East Garafraxa (Township)	2017-07-18
Greenwood Construction Company Limited v East Garafraxa (Township)	2016-09-23
Greenwood Construction Company Limited v East Garafraxa (Township)	2016-05-09
James Dick Construction Limited v Guelph/Eramosa	2016-10-13
James Dick Construction Limited v Wellington (County)	2020-02-11
Johnstone v. Ontario (MNRF)	2019-10-31
Lechowicz v. Ontario	2016-01-15
McDonnell v. Ashfield-Colborne-Wawanosh	2019-08-09
Morrison v Durham	2017-11-10
Nisbet v. Thames Centre (Municipality)	2017-10-13
Preston v Woolwich	2020-04-09
Wilson v. Wellington North	2016-09-26