



**CRC Review of HQ Agricultural
Impact Assessment Report
Stovel and Associates.
Oct 3, 2015
Dr. Stephanie De Grandis PhD MBA**

**North Dumfries:
Aggregate dust**

1.0 EXECUTIVE SUMMARY

Productive farmland, is a rapidly vanishing, non-renewable resource in Canada; only 5 percent of the country's landmass is suitable for farming. Protection of farmland in Ontario enables the province (and all of Canada) to be self-sufficient in food production. Aggregate extraction is often completed in prime agricultural land and rehabilitation to agricultural production is not an option for below the water table extraction. The loss of key hydrological activities of the overburden and bedrock as well as the destruction of soil structure has led to the cheaper rehabilitation option for spent under the water table quarries: small lakes.

Municipalities such as the Guelph Eramosa Township are burdened with the decision to rezone farmland from agricultural use to Extractive Industrial use "paving" the way for the loss of farmland and crop production decreases in adjacent properties. In many cases, townships or community groups such as the CRC request that the aggregate producer fund an "agricultural impact assessment" to determine if there will be any negative environmental or economic impacts to agricultural production for the township and the community.

Typically the assessments are carried out according to the policies outlined in Official Plans of the county or region. Most applicant consultants follow the same approach; (1) identify land uses, (2) determine soil capacity, (3) analyse impacts on agricultural production and (4) take direction from agricultural policy. The conclusions of a large number of these assessments are that there will be no impact to agricultural production due to: (1) the percentage loss of agricultural land is minimal, (2) the presence of poor quality soil, (3) no infrastructure on property, (4) no recent economic investment in buildings or soil, (5) no aggregate operational impacts due to dust, water loss, noise or visual impact and (6) no speciality crops are grown. Many of these agricultural assessments have been used by applicants to assure municipalities that aggregate extraction in agricultural land is an interim use and there will be no economic benefit to the community if they do not "retire" the land to aggregate extraction.

The present report presents a critical review of the Hidden Quarry Agricultural Impact Assessment written by Stovel and Associates and reviewed by the township's planning consultants MSH. Stovel and Associates follow the same format as outlined above to review the current status of the agricultural potential of the Hidden Quarry site and the conclusion is basically the same as many of the agricultural impact assessments: minimal



The Agricultural Impact Assessment essentially concludes that if the recommendations included within the blasting, hydrogeology, dust and noise reports are followed, impacts on agriculture within the Study Area would be minimal and concerns will be addressed through the monitoring program and complaint protocol. To ensure that this conclusion is implemented as a condition of development, the monitoring program and complaint protocol should specifically identify the need to address any potential for impacts on agricultural operations – MSH Planning Report

impact to the farm community and the township if the land is used for the extraction of aggregate. Unfortunately, the assessment has serious deficiencies with respect to (1) the geographic area studied, (2) the importance of the land to the farm community with respect to potential loss of water recharge, (3) economic investment in agriculture in the adjacent properties, (4) dust and noise impacts to crops, animals and farmers and (5) reliance on flawed hydrogeology, blasting and air quality applicant reports. The report is also missing a complete discussion of alternative locations for quarry development. The MSH planning report essentially leaves the community relying on a monitoring and complaint protocol to deal with the impacts of the quarry operation on the community's agricultural businesses.

In good faith, the CRC requested an agricultural impact study that would truly reflect the agricultural community versus a standard assessment carried out for decades that has resulted in the unrelenting loss of valuable farmland in Ontario. The peer review follows the same format with the same result: minimal impact to agriculture. Recently, the Ministry of Agriculture Food and Rural Affairs has recognized the significant loss of agricultural land due to aggregate extraction and is currently developing a "gold" standard of agricultural impact analysis. An OMAFRA survey that will aid in the development of the gold standards is being circulated to agricultural stakeholders for feedback. The CRC requests that the Stovel Assessment and the MSH peer review be disregarded by the township until the OMAFRA gold standards in agricultural impact analysis are developed.

The remainder of the present review will focus on briefly describing the deficiencies of both the Stovel Agricultural Impact Assessment (SA) and the MSH Peer Review.

2.0 STUDY AREA

The study area as stated in the SA was defined by the applicant in conjunction with staff from the Township of Guelph Eramosa (Email correspondence from G. Sweetnam, to L. Howson, September 03, 12th and 15th 2014). The study area was approximately 600 ha in size and included lands in both the GET and the Town of Milton. It was estimated that approximately 300 ha or 50 % of the study area consisted of agricultural land uses. There were no specialty crops within the study area identified area.

Comments: The farmers of GET and the Town of Milton were not approached to determine the appropriate size of the land to be studied, provided the opportunity to review the terms of reference and/or the choice of the initial assessor or the peer reviewer. The applicant had significantly more input than the agricultural stakeholders of the community in the determination of the size of the area to be studied. Other agricultural impact studies have used 1000 ha (ref) for evaluation.

The proposed extraction area is located in an area of agricultural production as indicated by SA. The level of agricultural investment and intensity of farming taking place within the Study Area is high, generally consisting of cash crops, horse farms, the

mushroom farm and medium-sized livestock facilities as well as forage and pasture lands. Row-crop production is common within the area of study.

The area of study as determined by JDCL and GET also comprises the blue spring wetland complex. This area would never be considered for agricultural use (see SA Map 3). Clearly, the area of study should have been extended further North, East and West to include more agricultural land versus an established wetland complex. The statement that only 300 ha consisted of agricultural land should have alerted the peer reviewer MSH to increase the area of study. If the area under study had been increased significant agricultural operations would have been included: (1) Storey cash crop farm, (2) McNabb cash crop farm, (3) Bird dairy farm and cash crop farm and the Donnell cash crop farm. These farms bring in significant revenues as almost all of the acreage is under cultivation (approximately 600 acres).

The comment by MSH stating that “*The study approach follows the standard approach established in the County of Wellington Official Plan; The type of study determines the type of survey in this case a reconnaissance level survey was adequate to gather information regarding general agricultural land uses*” is typical of all of the agricultural impact assessments reviewed by S De Grandis. The level of analysis is questionable and the use of the reconnaissance method is sub-standard as the ability of SA to review all of the businesses of the farm is totally inadequate.

A more detailed review of the area of study reveals that one of the farms has been essentially divided in half due to the CN Railway boundary (De Grandis property). The acreage that was excluded is prime agricultural land (Class 2) and is cashed cropped by Anthony Acres (multi-million dollar farm operation). No analysis of the entire business scope for all of the farms except the mushroom farm and the horse farm has been completed.

3.0 SOIL USAGE

The SA states that OMAFRA in 1997 classified the property as 50% Class 3 and 50% Class 5 lands with some Class 2 lands. SA used detailed topographic mapping to reclassify the area and decreased the amount of Class 3 land to 39%. The SA then stated “*the property is not considered prime agricultural land*”. In addition, a comment was made to the effect that only 7.9 ha of Class 3 would be actually removed from the site.

Comments: Revised classification of the site has not been substantiated with actual analysis of soil samples. The land should still be considered 50% prime agricultural land and the entire site should be considered a prime agricultural area. In addition, the Ontario Federation of Agriculture is lobbying the province to make Class 1 through 4 prime agricultural land and this change in classification would make the site 77% prime

agricultural land. The comment by SA that only 7.9 ha of Class 3 would be removed is ridiculous as no farming operation could use the remaining 32 ha within the site!

4.0 IDENTIFICATION OF LAND USES

The SA describes the farms that are within the area of study as cash crop, horse farms or the mushroom farm. There is also a statement made concerning the rezoning of the Fellows Racing establishment to industrial uses. SA describes the site as having no tile drainage and the agricultural water supply to the farms is well-based.

Comments: Several farms have more agricultural businesses than cash crop or livestock. For example, there are at least 3 managed woodlots in the extended study area. Many farms have poultry and sell eggs or meat using road-side stands or direct sales. The generalization that some of these properties are stand-alone operations is incorrect. Many of the cash crop farms have agreements with multi-million dollar farm operations such as Anthony Acres or Bob Storey. Both farm operations have invested heavily in state of the art equipment to farm these lands. Extending the study even 500 m would have included the Bird dairy farm that is investing many \$100 K dollars in building a state- of the-art automated milking facility.

The SA only establishes that the site is not tiled but the real question is the drainage capacity of the adjacent lands as these lands will be used for farming. How will these lands be altered with respect to soil capacity if the recharge areas (Paris moraine) are impacted by the removal of overburden?

5.0 MINERAL AGGREGATE RESOURCES ON PROPERTY

The SA states that the subject property is unique in that it contains significant mineral aggregate reserves of consolidated bedrock deposit overlain by sand and gravel deposits. The proposed extraction contains approximately 12 million tonnes of the highest quality aggregate in Southern Ontario

Comments: The statement that the site is unique in its aggregate deposit is misleading and incorrect. There is approximately 350 million tonnes of the same Amabel dolostone in other regions of GET as well as in the Town of Halton. For example, Dufferin Aggregates is mining in a section the Amabel formation.

6.0 ASSESSMENTS OF IMPACT ON AGRICULTURE

6.1 Direct Impacts

SA states that the subject land is not comprised primarily of prime agricultural land and that the aggregate operation will have no impacts directly.

Comments: The statement is incorrect and the land is at least 50% prime agricultural land.

6.2 Offsite Impacts

Offsite impacts have been described with respect to the resultant applicant reports concerning hydrogeology, transportation, blasting, noise and dust. SA states that the impacts will be more noticeable to the farms that are closest to the site. There is specific focus in the assessment on the mushroom farm and the horse farms located to the east and northeast of the property. In addition, SA states that with respect to cash crops, cropping patterns will not be affected by the quarry operations.

MSH in an overriding comment concerning offsite impacts indicates that *“The reports that are referenced have been peer reviewed by a number of agencies and professionals and their conclusions signed off on by various agencies”*.

Comments: The impacts of the quarry operations will be noticed by more than the farms closest to the site. Water recharge areas to the North will be impacted by drawdowns of the water table by bedrock extraction and overburden removal. Noise and dust travel great distances and trees do not buffer all of the noise and dust that can travel up to 1 km away from the site (Airzone 1 report). Cash cropping operations will be impacted by the dust on the crops and this phenomenon has been well documented (ref). Crop patterns may change due to the intolerance of some crops such as hay to withstand significant amounts of dust or because of lower price points for the farmer (Bob Storey and hay contaminated with quarry dust and reduced sales; personal communication).

The comment from MSH concerning the applicant reports is extremely naïve as the planning report itself lists conditions necessary for site approval. There is no recognition of all the criticisms of the applicant reports from both the CRC and Burnside.

6.3 Blasting

The SA report reviews the reports from Explotech, Novus and Golder and reviews the monitoring parameters that will be place as quarry operations begin. If blasting encroaches within 250 meters of some offsite receptors then a formal review of the blasting protocol will be completed. To ensure that impacts on the adjacent horse farms are minimized, monitoring along the easterly licence limit should be implemented during Phase 2 of the mineral aggregate operation.

Comments: The CRC has completed several reports concerning the deficiencies in the blasting reports (see Bill Hill’s reports). The blasting impacts related to horse training were clearly defined by Henrietta Kingshott at the September 10, 2015 meeting. No horse-training will take place on a track that is vibrating with significant explosive sounds in the air without serious injury to the trainer. Horses cannot be even stalled well during blasting due to noise and vibration. The Kingshott racing barn would be essentially put out of business The century old farm homes and barns on these farms will not withstand the blasting (ground vibration and overpressure propagation). The statement that blast impact monitoring should take place in Phase 2 indicates that the

applicant is well aware of the potential negative impacts of blasting for all of these farms.

6.4 Dust

The SA states that dust will be controlled by the regular application of water. The review also describes the operational and mitigation procedures that will be undertaken to control dust traveling to the adjacent farms (mushroom and horse). Standard procedures are used to control dust generated from trucks (speed limits and truck emission tests). The processing plant will be located in a suitable area (to control dust).

The MSH peer review states that *“The air quality assessment has been completed using the relevant MOECC standards and guidelines. These criteria are established using an effects-based process....The effects-based process is based on MOECC’s understanding and interpretation of both health and environmental effects.....The MOECC bases the criteria on the most limiting of these effects, as well as potential health concerns, ensuring the criteria is broadly protective of both the environment and human health. As a result, the use of the MOECC criteria in the assessment is considered valid and appropriate. Furthermore, agricultural operations and aggregate sites coexist in many locations around the world. These will be no impact on the agricultural operations surrounding the site”*.

The peer review also states that “background PM2.5 levels modeled were based on a 5-year average of the annual 90th percentile hourly concentration measured in the MOECC monitoring station in Guelph (14.8 ug/m3). The Guelph monitoring station is located less than 15 km upwind of the site, and is located in a more urban setting; it is expected to provide a more conservative estimate of background concentrations. The mushroom farm and the horse farm are the two closest operations to the site. The MOECC has authority to deal with dust related complaints and has broad powers to order immediate remedies”.

Comments: Studies suggest that approximately one third of the dust emitted can escape from an open pit (Reed R W. 2005. Significant dust dispersion models for mining operations, DHSS (NIOSH) Information Circular IC 9478, Publication No. 2005-138). Persistent dust produced from truck traffic, extraction and aggregate processing operations cannot be controlled completely by wetting the storage piles or by berms or trees. Nuisance dust (sometimes referred to as deposited or fugitive dust; See figures below)



gives rise to the greatest number of complaints to quarries from local residents, and fears are commonly expressed in relation to the alleged health effects. Without appropriate mitigation, residents can potentially be affected by dust up to 1 km from the source

(http://www.sustainableaggregates.com/sourcesofaggregates/landbased/dust/dust_introduction.htm).

There are few detailed studies of the effects of dust deposition on ecology and agriculture. Dust may have physical effects on plants such as blockage and damage to stomata, shading, abrasion of leaf surface or cuticle, and cumulative effects e.g. drought stress on already stressed species. (http://www.sustainableaggregates.com/sourcesofaggregates/landbased/dust/dust_introduction.htm)

The chemical effects of dust, either directly on the plant surface or on the soil, are likely to be more important than any physical effects. Dust deposited on the ground may produce changes in soil chemistry, which may in the longer-term result in changes in plant chemistry, species competition and community structure. This is a known fact and was one of the concerns of the potato farmers in the Megaquarry/Highland application.

The air quality report by RWDI has been reviewed and criticized by Airzone One and the reader should review the Airzone One letter (see Attached). For example, in Ontario the general PM_{2.5} requirement is for the 99.9th percentile concentration to meet the limit. RWDI admits in their report that they will not meet the 99.9th percentile criteria on off-highway traffic.

The following recommendations were proposed by Airzone One with respect to revisions/omissions to the report:

- Major reworking of the AQA corrections and explanations based on the issues raised in the Airzone review (numerous issues).
- Use of (corrected) preliminary modeling to help identify locations to conduct background monitoring.
- Conduct background air monitoring; meanwhile conduct site-specific

sampling (for aggregate composition for example).

- Re-do modeling with site specific input and site specific background data.
- Assess need for mitigation and predict effectiveness of mitigation (dust water controls) on a quantitative basis.

Airzone One also concluded that “*RWDI's conclusion that the resultant air quality levels are accurate are not supported by their analysis because of the many components of the analysis were missing and many analyzes were conducted on a non-conservative basis*”.

The MSH planning report has many naïve and scientifically flawed statements such as “*agricultural operations and aggregate sites coexist in many locations around the world. These will be no impact on the agricultural operations surrounding the site*”. No one can be absolutely certain without actual baseline air quality values that there be “no impacts to agriculture”. The use of the Guelph Monitoring Station that is 15 km away to model the dust impact is incorrect. The recent air quality reported by Conestoga Rovers concerning another pit application in GET actually obtains baseline measurements from sensitive receptors.

6.4 TRANSPORTATION

The SA report briefly reviews the Cole Engineering report and basically states that there will be no problem at all as the 6th line will essentially be transformed into a paved road and gravel trucks will not park on the township road.

Comment: At the time of the completion of this assessment there were numerous documents from the CRC, the Town of Halton Hills and Halton Region that indicated that the traffic impact to the community was unresolved. SA chose to ignore these concerns. The statement by MSH that the quarry “will reduce overall trucking “is again naïve and not supported with any facts.

6.5 WATER RELATED IMPACTS

The SA report relies completely on the Harden Environmental Report to determine if there will be any hydrogeological interference to agricultural businesses. There is much emphasis on the monitoring plan and the complaint protocol. Bottled water will be supplied for drinking and cooking and water will arrive **within the study area within 12 hours and for livestock 24hrs.**

The MSH planning report states the following

- There is no impact on the issue of raising the floor seasonally due to local high water tables.
- The predicted water level rise beneath the kettle depression...is approximately one metre. Therefore, root zone flooding is not predicted.....In addition, the static groundwater levels in bedrock wells located along the south side of Highway 7 are all in excess of eight metres depth and therefore well below the root zone.

- There is not expected to be any significant impact of water drawdown on any agricultural property.... The drawdown predicted by Harden Environmental occurs in the bedrock aquifer and not in the rooting zone.
- There will be no change to soil drainage on lands butting the quarry..... The soil conditions were confirmed with hand auger sampling (off site) and test pits (onsite).
- Measurements obtained by Burnside and Associates confirm that there was no impact of municipal water taking observed at wells on the Hidden Quarry site.
- Any well interference, residential or agricultural, would be remedied immediately according to the well complaint protocol.
- Extensive peer reviewed hydrogeology does not predict any impact on water availability to homes and farms. A robust monitoring program followed up by a well complaint response protocol will ensure that any unexpected impacts are mitigated immediately.

Comments: It is clear that monitoring and complaint protocols will not guarantee to the GET community that there will be no impacts to the agricultural businesses in the area. The extraction of fractured bedrock in an area that is highly susceptible to groundwater contamination has to be completely understood. The reader is reminded that the E.coli O15H7 outbreak in Walkerton that resulted in significant human mortality was caused by farm waste seeping into fractured bedrock and traveling in an unpredicted way to the municipal well system.

The complaint protocol does not reflect the true need of a livestock farm. Livestock cannot wait 24 hours for water and the volume of water to be supplied would be excessive for even one farming operation. The reliance on a scientifically flawed and significantly challenged hydrogeology report is totally inappropriate for determining the 15-20 year impact to our farmers in the area.

The MSH statements above clearly reveals that the consultant has not read the Hunter report and does not understand that the drawdowns could be 2X this value as Harden Environmental has not challenged the Hunter statement concerning drawdown values and the modelling of the predicted drawdowns. Both the drawdown values and the modelling are incorrect or flawed because of the lack of data.

Comments concerning the static groundwater levels and the distance from the root system has not been analysed correctly as Harden has repeatedly stated that the quarry ponds will increase the static groundwater levels in the south as operations begin. There has been no discussion of this statement. MSH has also incorrectly stated that there will be no effect on municipal 4. There will be an effect on the recharge areas that feed the municipal well and in a recent letter Mr. Hunter has also challenged Burnside's opinion relating to "no effect" to well 4.

Land erosion is also not discussed and can lead to high turbidity in streams and increased runoff volume and a flashier response to precipitation. Bottomline: Disruption of the hydrological regime of the area could be catastrophic.

7.0 AGRICULTURAL POLICY

The statements of SA are completely swayed to the conclusion that the site is not “*comprised mainly of prime agricultural land*” and there are “*no specialty crops grown in the land adjacent to the site*”. This is typical of other agricultural assessment reports and in the fact it appears that only land **class** and the presence of **speciality crops** will allow the community to avoid extraction in a prime agricultural area..

8.0 CONCLUSION

The Stovel and Associates agricultural impact assessment is significantly flawed and the MSH planning report should have reflected the poor quality of the Stovel Assessment. The reader is directed to the OMAFRA website to learn more about the upcoming gold standard in evaluating the loss of valuable farmland to aggregate companies.

The Ministry of Agriculture, Food and Rural Affairs (OMAFRA) has initiated a project to update guidance materials related to aggregate extraction on agricultural lands. MHBC Planning is part of a project team that has been retained by OMAFRA to assist with this project. As part of this project, a questionnaire has been prepared to provide the opportunity for knowledgeable practitioners, stakeholders, aggregate producers, farmers, academics, and municipal and provincial staff to provide input to OMAFRA and the project team.

This questionnaire will help provide information on best practices related to assessing impacts on agriculture (e.g. Agricultural Impact Assessments) and rehabilitation. The results will not be used to draw any conclusions about rehabilitation practices or the actions of any specific group of respondents.

The questionnaire is not limited to one response from a single firm or organization. Please feel free to circulate this questionnaire within your firm or organization, where appropriate. To complete the questionnaire, please click the following link: <https://www.surveymonkey.com/r/OMAFRA2015> Please complete the questionnaire by Friday, October 2. If you have any questions regarding the questionnaire or if you would like to provide additional information, please reply to this email (aiainfo@mhbcplan.com) and a response will be provided.

The OMAFRA representative for this project is Michele Doncaster (michele.doncaster@ontario.ca).