



November 20, 2014

Via: Email

Ms. Kim Wingrove
CAO
Township of Guelph/Eramosa
P.O. Box 700
Rockwood ON N0B 2K0

Dear Ms. Wingrove:

**Re: Region of Halton Technical Comments (Hydrogeology)
Hidden Quarry – July 28, 2014
Project No.: 300032475.0000**

Halton Region (Halton) provided comments to Guelph/Eramosa Township (GET) regarding “key hydrogeological related matters” associated with the zoning by-law amendment ZBA009112 (James Dick Construction Limited-Hidden Quarry). In addition to reviewing letters/reports prepared by the proponent’s hydrogeologist (Harden Environmental), the proponents planning consultant (Stovel & Associates), the GRCA and the MOE; Halton Region (Halton) has referenced peer review comments prepared by Burnside. We note that James Dick Construction Limited (JDCL) provided a response to the Halton comments in a matrix dated August 1, 2014.

The Burnside responses below use the same headings as the Halton letter.

Surface Water Features

- Halton is concerned that there is no fish habitat/ecological or flow monitoring for Brydson Creek or Brydson Spring.

Burnside concurs with Halton that a permanent monitoring station should be established at the re-emergence point of Brydson Spring south of Highway 7 to monitor for flow, temperature, water quality and any groundwater use/groundwater dependent habitats.

Groundwater Levels

- Halton recommends that domestic wells south of Highway 7 be included in the monitoring program.

In correspondence to James Dick Construction Limited (JDCL) Burnside has recommended that all domestic wells within 500 m of the quarry be evaluated. This would include wells south of Highway 7.

Domestic Wells

- Halton recommends a well survey and assessment be conducted on wells within 500 m (at a minimum) of the quarry.

Burnside agrees that a survey and well assessment should be conducted on all wells in Halton Region potentially under the influence of the flow from the quarry site, including wells that might be located somewhat outside the 500 m zone. JDCL has previously visited most of the wells within 500 m of the site and has agreed to provide a table summarizing the information that was obtained during previous visits. A detailed domestic well survey will be completed if the quarry is approved. JDCL has agreed to complete a pre-approval water quality survey for on-site wells and the closest up-gradient and down-gradient domestic wells.

- Halton recommends that should access “be limited” to private wells within the Region for the purpose of long-term monitoring and testing, then additional (multi-level) monitoring installations should be established along the southern boundary of the subject lands for monitoring and “early warning” purposes.

It is Burnside’s preference that existing domestic wells be set up as monitoring wells. The heterogeneous nature of the bedrock makes it possible that monitoring wells completed at the same depth as the domestic wells but in different locations may not encounter the same fractures, and as a result, water quality, water levels and responses in the monitoring wells/domestic wells to different events could be different. Collection of pre-extraction water level/water quality data is needed so that the results from monitoring wells and domestic wells can be compared. Once the degree of connection between the on-site wells and domestic wells is known, water level changes on-site can be used to predict the changes in domestic wells so that appropriate mitigation can occur. It is our opinion that a rigorous domestic well monitoring program combined with a well-specific contingency program will provide an appropriate level of protection for domestic wells.

Well Complaint Protocol

It is Burnside’s understanding that the well complaint protocol will include all domestic wells within 500 m, not just those located in GET.

Water Quality

- Halton recommends an additional multi-level monitoring well along the southern boundary to better understand nitrate concentrations leaving the site.

It is Burnside’s understanding that JDCL has agreed to install two new multi-level wells in the southern portion of the site (approximately mid-way between M7 and SW3 and west of M4).

- Halton requests additional information on the impact of water fowl on surface water in the quarry.

JDCL provided comments from a biologist on water fowl impacts in their June 10, 2014 letter to Burnside.

- Halton concurs with Burnside that Harden should provide additional detail on how the existing monitoring well network would provide sufficient early warning so that a treatment system could be installed in down-gradient domestic wells before unacceptable impacts to drinking water occur. Harden would need to qualify if any existing wells could be deepened or whether the installation of water treatment equipment would be preferred option. Halton supports a proactive approach.

Burnside has recommended that a detailed well assessment be completed in support of the application process so that an individual detailed contingency plan can be prepared for each well.

Review of Monitoring Adjacent to Halton Region Lands

Groundwater Monitoring Program

- Since there are no wells that extend to the proposed extraction depth, Halton recommends additional wells along the southern property boundary to provide information on the changing groundwater regime and serve as “early warning” for down-gradient private wells in Halton Region.

Burnside concurs that additional wells will assist in the understanding of groundwater conditions at the site, although, as indicated above they may not be necessarily be completed in the same fracture system as down-gradient domestic wells. Since no dewatering is to occur, new monitoring wells along the southern property boundary combined with a rigorous domestic well monitoring program should provide sufficient time to mitigate impacts before they adversely affect domestic wells.

Surface Water Monitoring Program

- Halton indicates that there does not appear to be any surface water monitoring proposed for Brydson Creek south of Highway 7 or at the re-emergence of Tributary B about 400 m south of the site in Halton Region. More comments are to be provided by Halton in their technical comments on the Natural Environment Technical Report.

Burnside has recommended that Brydson Spring be added to the monitoring program.

Private Well Monitoring

- Halton expresses concerns about how the proposed private well monitoring program will protect wells in Halton and Region staff are not clear if all private wells in close proximity to the site have been evaluated or are included in the monitoring program. Halton requests that both the Region of Halton and Town of Milton be notified in the event a well complaint is received, and they request clarity on how the complaints will be handled.

Burnside concurs with Halton’s comment. It has always been our intent that the monitoring program include all wells with 500 m, not just those in GET.

- Halton requests further discussion on the lack of trigger levels for the south end of the extraction area.

Burnside agrees that this should be clarified, although since water levels are predicted to rise there may be no need for trigger levels. However, there is a need to monitor water levels to confirm that the water level increases are as predicted.

- Halton indicates that the benefits of the on-site pond should be confirmed with modelling based on future results and, they express concern that no off-site down-gradient monitoring is proposed.

Burnside has recommended that off-site monitoring of domestic wells and the Brydson Spring be included in the monitoring program.

- Halton indicates that the effects of blasting on private wells in Halton Region are not known and should be addressed.

It is our understanding that the blasting report prepared on behalf of JDCL has been peer reviewed.

- Halton is concerned that the Site Plans (Stovel & Associates, June 6, 2014) do not refer to any private well/private property monitoring and ask that the following issues be clarified:
 - Page 2 of 5 (i) the “extraction footprint” on the plan is not the same as in the hydrogeology report and (ii) – Halton requests details on the “main processing area” and suggests (iii) that the “spill protocol” should include immediate notification to down-gradient properties utilizing domestic wells as their primary drinking supply.

It is anticipated that the list of down-gradient wells to be involved in the monitoring program won't be finalized until residents are visited and provide permission for their wells to be included. Burnside agrees that more information needs to be provided on the main processing area. Of particular interest is the volume and source of water that will be used to “wash” the aggregate. The need to notify residents in the event of a spill should be based on an established protocol which takes into account the volume of the spill and the material spilled. The MOE Spill Action Centre is required to be notified in the event of a spill.

- Page 3 of 5 – Halton is concerned about the “silt pond” and how it will be monitored. They also ask about the “blasting line” on the south side of the west extraction area and what monitoring is proposed to ensure private wells and structures in Halton are not affected by the blasting.

Burnside agrees that detail needs to be provided on the silt pond; in particular, the need for a liner should be discussed. Our expectation is that the peer review of the blasting report will include recommendations for monitoring to ensure that private wells and other structures to the south are not affected by blasting.

- Halton recommends that an Adaptive Management Plan (AMP) be prepared as they felt it would be an effective tool for use in formalizing resolutions and commitments to monitor and mitigate water resource issues which would include Halton Region Lands.

Burnside recommends that the domestic well survey be completed prior to finalizing the details of the monitoring program. This would be a condition of approval and would be undertaken prior to any extraction activities on-site. Once this has been completed there should be sufficient data available to create a rigorous and detailed monitoring plan for the wetland, on-site wells, on-site ponds and nearby domestic wells which includes trigger levels and contingency plans.

Should you have any questions regarding the above, please contact the undersigned.

Yours truly,

R.J. Burnside & Associates Limited



Dave Hopkins, P. Geo.
Senior Hydrogeologist
DH:sd

cc: Elizabeth Howson, Macaulay Shiomi Howson Ltd. (Via: Email)
Kelsey Lang, Guelph/Eramosa Township (Via: Email)