Stantec Consulting Ltd.
100-300 Hagey Boulevard, Waterloo ON N2L 0A4

December 4, 2017
File: 160950451/31

Attention: Mr. Per Lundberg, B.E.S., M.PL., Planner
County of Peterborough
470 Water Street
Peterborough, ON K9H 3M3

Dear Mr. Lundberg,

Reference: Hydrogeology Comments
Hydrogeological Assessment – Rockridge Quarry (proposed)
Part Lot 21, Concession 8,
Township of Harvey, Municipality of Trent Lakes,
County of Peterborough

The County of Peterborough received a request by a member municipality to utilize Stantec to conduct a peer review of the above noted Hydrogeological Assessment. The hydrogeological assessment is in support of a proposed Category 4 – Class A Quarry. Quarry extraction is to remain a minimum of two (2) metres above the established high water table. WSP Canada Inc. (WSP) conducted a hydrogeological assessment of the proposed Rockridge Quarry, dated March 16, 2017. The objective of the hydrogeological assessment was to establish the high groundwater table within the proposed Rockridge Quarry Site and demonstrate that quarry extraction activity will remain at least two (2) metres above the high groundwater table.

The Site is characterized as comprised of open and wooded areas, with localized ephemeral drainage and a steep easterly sloping ridge along the edge of the Mississauga River corridor. The material extracted will be used for dimension stone and select construction aggregates.

The Site, located near Flynn's Corners, is adjacent to several other quarries where monitoring is currently conducted, the Stonescape Quarry and the Milkhouse Quarry. Water level data from these sites were used in the general groundwater flow system evaluation. Three (3) boreholes were drilled on the proposed Rockridge Quarry property to assess the geologic properties of the Site and obtain groundwater levels. Limited groundwater monitoring was conducted on the Site. Water level data was used from all three quarry sites to establish groundwater flow direction and typical water table fluctuations in the fractured bedrock. One of the monitoring locations (RR MW2) on the eastern portion of the Site showed a higher water level than other monitoring locations near the eastern ridge and was interpreted to be a "perched" water level. Water level data indicated no connection between the surface water system and the groundwater system.

The water level data were used to recommend a maximum quarry floor design for the development of the quarry. Revised Site Plans, issued June 2017 and printed on September 8, 2017 show a maximum depth of quarry ranging from 294.2 metres above mean sea level (mamsl) in the northeast portion of the quarry to 287 mamsl in the eastern portion of the quarry. It is noted that

Reference: Hydrogeology Comments
Hydrogeological Assessment – Rockridge Quarry (proposed)
Part Lot 21, Concession 8,
Township of Harvey, Municipality of Trent Lakes,
County of Peterborough

the maximum depth base elevation proposed in the eastern portion of the Site is only 1.2 m higher that the water level data indicate; however, this is the monitoring location where it is interpreted that the water level represents a perched water condition. It is likely that the water table along the eastern portion of the Site is much lower than indicated, assuming the perched water conditions are present.

Site Plan Notes indicate that the proposed base level of the quarry is based on the current water level information and a monitoring program is proposed to ensure the proposed base elevation of the quarry floor is conservative. Final extraction depths can be modified, if necessary based on monitoring results. A ground water monitoring program is proposed, as presented in the Site Plan Notes. A groundwater monitoring program is proposed to complete a baseline survey of adjacent domestic wells and monitor onsite and offsite (other two quarries) monitoring wells at least four (4) times a year (i.e. quarterly).

An annual report will be prepared and submitted by a qualified person, to MNRF for review, and will document all findings and changes to the groundwater and surface water. If conditions warrant an adjustment to the depth of extraction to ensure a minimum of two (2) metre separation for the base of the quarry and the water table, a qualified hydrogeologist will prepare a report to document the rational for the design adjustments. It is noted that there is also a water well complaint program in place to respond to, and address any potential well interference complaints.

Based on the information presented, the proposed quarry plan and the proposed monitoring program, Stantec is satisfied that the proposed quarry will have minimal impact on the groundwater conditions in the vicinity of the Site. It is recommended that the annual monitoring report be submitted to either the Township or County, as well as MNRF.

Reference: Hydrogeology Comments
Hydrogeological Assessment – Rockridge Quarry (proposed)
Part Lot 21, Concession 8,
Township of Harvey, Municipality of Trent Lakes,
County of Peterborough

We trust these comments are sufficient for your purposes; however, if you have any questions or require clarification, please do not hesitate to contact the undersigned.

Regards,

STANTEC CONSULTING LTD.

Roger Freymond, P.Eng.
Senior Hydrogeologist
Phone: (519) 585-7381
Fax: (519) 579-6733
roger.freymond@stantec.com

Ray Blackport, P.Geo.
Hydrogeologist
Phone: (519) 884-5549
Fax: (519) 579-6733
ray.blackport@stantec.com

tc \\cd1215-f01\work_group\01609\active\160950451\peer reviews\rockridge quarry\let_rockridge quarry 20171204.docx