

Our ref: 11210029-LTR-6

07 September 2022

Ms. Lynne Banks
Township of Puslinch
7404 Wellington Road 34
Guelph, Ontario
N0B 2J0

2374868 Ontario Inc.
Application for Zoning By-law Amendment Application
Response to Harden Environmental Services Ltd Groundwater Comments

Dear Lynne

GHD Limited (GHD) has prepared this comment response letter, on behalf of 2374868 Ontario Inc. regarding the above-referenced application which was submitted to the Township of Puslinch in December 2021. This letter addresses the comments provided in a May 18, 2022; Harden Environmental Services Ltd. (Harden) letter received on July 19, 2022.

For convenience, the comments are listed below in italics and responses follow each comment.

Harden Comment #1

The presence of organic, anthropogenically derived contaminants in the shallow groundwater monitoring wells confirms that the shallow groundwater system is already being impacted by contaminants originating from the hydrovac truck soil/water slurry. The deliberate act of discharging potentially contaminated soil and water into unlined basins on the glacial moraine deposits is not appropriate in this hydrogeological setting.

GHD Response #1

The Applicant and GHD disagree that there is deliberate discharge of contaminated soil and water to the stormwater pond. The sample results for monitoring wells MW1-20, MW2-20 and MW3-20 were all reported as non-detect for all volatile organic compounds (VOCs), petroleum hydrocarbon fractions (F1 to F4), and semi-volatile organic compounds (SVOCs). There were some polycyclic aromatic hydrocarbons (PAHs) detected at concentrations below Ontario Regulation 153 Table 2 Standards in samples collected from all 3 monitoring wells, including MW3-20, which is located upgradient of Site operations. The PAH parameters and concentrations reported were similar at each location.

The data files containing summaries of the ongoing monitoring program have been submitted to the Township previously (e.g., Design & Operations, HIA and SWM reports). Hydrovac procedures are in place to avoid bringing back impacted soil to the Site. There are no specific measures required to collected stockpile runoff while awaiting analytical results.

Soil data is compared to Table 1 (Background) Standards which are required to be met to allow soil to be used for former aggregate pit rehabilitation in accordance with the MNRF approved Rehabilitation Plan. Low level exceedances of a few metals (e.g., zinc) have been observed above Table 1 Standards. All soil with observed

exceedances above Table 1 (Background) Standards are removed from Site and sent to a permitted off-site treatment and/or disposal facility.

The soils received at the Site by vacuum trucks are largely aggregate in nature and there are low levels of soil fines generated by the soils management operations. Permanent erosion and sediment controls (silt fence and silt sock) are proposed around the perimeter of the operational areas, as needed to minimize sediment release. The stormwater and hydrovac water runoff from the operational Site area also is conveyed by a heavily vegetated swale to the SWM pond. Rock flow check dams are proposed in the swale as required to provide further water quality treatment and reduce sediment migration. GHD believes these proposed measures are sufficient to protect the SWM pond from accessing sediment loading from the operational Site area.

Best Management Practices guidelines also are provided in the Erosion and Sediment Control Plan (included with the SWM report) to maintain the proposed controls and minimize migration of sediment beyond the limits of work.

Some runoff water is lost through evapotranspiration and the remaining water infiltrates to soil/groundwater from the pond. Weekly pond water sampling has been conducted for the past 9 years. Since the pond water infiltrates to soil/groundwater and groundwater in the area of the Site is used for potable purposes, the data are compared to Table 2 (Potable) Standards. There have been no exceedances of Table 2 Standards for any of the pond water sampling completed since 2013.

Groundwater in the on-site water supply well and the agricultural well have been sampled occasionally. The three Groundwater monitoring wells installed as part of the HIA have been sampled twice. There have been no exceedances of Table 2 (Potable) Standards in any of the groundwater samples collected to date. The MECP approved HIA provides for ongoing groundwater monitoring to provide ongoing confirmation of no unacceptable impacts to groundwater quality from hydrovac operations.

Harden Comment #2

There are several dedicated groundwater monitors for Capital Pit No. 5 located in close proximity to the proposed sediment basins as shown on Figure 1. The groundwater flow from BH214 and BH213 is northward, not southward. It is thus, not clear which direction groundwater is flowing and it cannot be stated that water supply wells are upgradient or downgradient of the recharge basins.

GHD Response #2

Static groundwater levels measured in the three on-site monitoring wells on three occasions all show the horizontal hydraulic gradient going to the south and southeast in the vicinity of Site operations. This flow direction may be contrary to the larger regional pattern; however, the gradient clearly shows that the local scale horizontal direction is to the south and southeast.

The groundwater flow direction will continue to be monitored through the proposed MECP approved groundwater monitoring program with verification of long-term and seasonal trends made as part of routine data analysis and reporting. Any variations in local groundwater flow direction will be taken into consideration in evaluations of the potential impacts of Site activities on the local groundwater regime.

Harden Comment #3

Although the geometric average of the hydraulic conductivity is 5.8×10^{-4} cm/s, the highest value hydraulic conductivity is 9.1×10^{-3} cm/s. Using a similar analysis of 30% porosity and 0.02 horizontal gradient, the travel time can be as high as 191 m/year.

GHD Response #3

Noted. The potential for preferential pathways where groundwater flow velocity is higher than the stated mean further corroborates the observation that the over 9 years of Site activities have not resulted in observable impacts to the shallow aquifer.

Harden Comment #4

The land disposal of water and soil mixtures without chemical testing into unlined storage basins with the intention that the water infiltrate and replenish the underlying unconfined aquifer is contrary to the following OP policies.

Section 4.9.3 Groundwater

Specifically, it is the County's intent that the development of public and private uses will not:

- negatively impact groundwater recharge or discharge***
- impair groundwater or surface water quality***
- negatively impact municipal groundwater supply.***

4.9.4 Policy Direction

Wellington County commits to pursuing the following directions relating to water resources:

- a) ensure that land use planning contributes to the protection, maintenance and enhancement of water and related resources and aquatic systems on an integrated watershed management basis;***
- b) protect surface and groundwater quality and quantity through the use of regulatory and voluntary means of prohibiting, restricting or influencing land uses and activities within vulnerable areas, communal well policy areas, and underlying vulnerable aquifers.***

GHD Response #4

See Response to Comment #1

The results of groundwater and stormwater pond monitoring have consistently verified that water quality is unaffected by Site operations. This is as expected as the Site's operations are not intended to involve excavation, transportation and/or processing contaminated soils. Approximately ½ of the material returned to the site is aggregate soil as it is derived from roadwork and utility construction projects. The hydrovac operations are conducted in accordance with accepted practices, current MECP Environmental Compliance Approval requirements, and Excess Soil Regulation requirements that have been reviewed and approved by the MECP. These practices are documented in the Design and Operations Report and the application for an ECA submitted to the MECP in December 2020. The practices include active avoidance of conducting hydrovac operations at sites that may have impacted soil and many years of surface water, soil and groundwater testing demonstrate that there are no unacceptable impacts to all the environment.

Much of the water used for filling the hydrovac trucks is from the on-site water supply well and as supplemented by municipal potable water. Thus, the water returned to the Site is from clean sources and provides additional recharge to the aquifer with clean water.

Based on these facts, GHD does not consider Site operations to pose an unacceptable risk to underlying aquifers or nearby private or municipal groundwater supplies.

Notwithstanding, the HIA recommended a groundwater monitoring program be implemented to routinely verify that groundwater quality is not being affected by Site operations. The recommended groundwater monitoring program was updated in response to MECP comments in a letter dated January 25, 2021. It is GHD's recommendation that the monitoring program be further enhanced to include a trigger level and contingency response program. This addition to the monitoring program should be designed to provide early identification of potential Site-related groundwater quality impacts so that the appropriate contingency remedial response can be implemented. This trigger level and contingency response plan should include contingency actions for soil, groundwater and surface water impacts identified above conservative trigger levels.

Should you have any questions on the above, please do not hesitate to contact us.

Regards



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Copy to: Ben Kempel, GHD