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Frank Ertl
2374868 Ontario Inc.
6678 Wellington Road 34
Cambridge, Ontario
N3C 2V4

Response to Review of Temporary Use By-Law Amendment Application
Hydrogeology Comments– 6678 Wellington Road 34, Puslinch, Ontario

Dear Frank,

1. Introduction

On July 2, 2025 GSP Group Incorporated (GSP) submitted a Zoning By-law Application (ZBA) to the Township of Puslinch (the Township) to permit the temporary use of a liquid soil management operation (the Proposed Use) on a portion of the property for a period of up to three years that would include the following:

- A 1 storey 650 square foot office and maintenance building
- 25 hydro-vacuuming (hydro-vac) truck parking spaces
- 35 employee/visitor parking spaces
- Private servicing including:
  - Water supply wells
  - A firefighting water cistern
  - A holding tank and leach field
- Area for soil offloading and management
- Area of soil processing and stockpiling (unloading and drainage area)
- Temporary pond and drainage swale leading to an existing stormwater management pond
- An area for soil screening

Harden Environmental Services Limited (Harden) provided comments on the application to the Township on November 3, 2025 (Harden, 2025)[1] and these were issued to 2374868 Ontario Incorporated (the Proponent). On behalf of the Proponent, GHD Limited (GHD) has prepared this letter to provide responses to comments provided in Harden (2025). In the following section GHD restates the Harden comments in bold and italicized

[1] Harden, 2025. Hydro-Vac Truck Disposal Area: 6678 County Road 34, Puslinch Township. November 3.

text, for convenience. GHD's responses to each of these comments then follows in plain text. These are then followed by a closing section.

2. Comments and Responses

Hydrogeology Comment No. 1

The ongoing and proposed activity does not fall within the permitted activities for the existing zoning…

This is a comment related to planning and does not have a technical basis founded in hydrogeology.

GHD notes that excess soil, including liquid soil was allowed to be imported to the existing Aggregate Resources Act (ARA) licensed area up until 2022, of which a portion is the area proposed to be used under the temporary authorization. The Proponent previously applied for permanent zoning for the same area before the ARA prohibition policy came into effect. Liquid soil management operations have since been paused until such time as a zoning bylaw amendment can be obtained.

Hydrogeology Comment No. 2

…the requested activities come with risk to the underlying groundwater resources.

The reviewer provides no technical basis or justification for this opinion. GHD recognizes that, as specified in the Professional Engineers Ontario (PEO) guidance document *Professional Engineers Reviewing Work Prepared by Another Professional Engineer* (PEO, 2011)[2], as a normal part of the review process, reviewing engineers will have to distinguish between the positive and negative aspects of the engineering work and point out things that are incorrect, unclear, unsubstantiated or problematic in the original document. Professional Geoscientists Ontario (PGO, 2024)[3] provides similar guidance (PGO, 2024) in which they state that 'technical reviews should only identify problems and concerns regarding errors, omissions, failure to meet client expectations or noncompliance with standards and regulations.' It is not clear how the reviewer's comment relates to any of these acceptable, best practices, despite having been provided with the *Hydrogeological Impact Assessment Revision No 1* (GHD, 2024a)[4] (the HIA) for review and consideration.

The HIA considered potential impacts to the underlying aquifer. That report notes that the Proponent has implemented a variety of measures and ongoing assessments to ensure that no negative impacts occur to the aquifer and receptors in the area. Monitoring programs have been ongoing and expanding at the Site since 2017 encompassing hydraulic monitoring, groundwater and surface water quality monitoring, weekly sediment dredging and stockpiling consistent with other imported liquid soil operations that includes drying and sampling in accordance with accepted Ministry of Environment, Conservation and Parks (MECP) Environmental Compliance Approval (ECA) practices. In addition, no hydro-vac operations are conducted at sites with known soil or groundwater contaminants and trucks that have inadvertently come into contact with suspected soils, for example, based on information that can include new site information, visual inspection, and/or identification of odours indicative of potential contamination; are directly sent to an MECP-approved treatment or disposal facility and empty trucks only return to the Site after all potentially contaminated liquid soils have been removed.

As described in the HIA (GHD, 2024a) the results of the water monitoring program that has been undertaken at the Site demonstrates that there is no evidence of impact to groundwater or surface water quality resulting from Site operations. The observation is particularly important given that the Site was previously in legally compliant operation for more than 10 years. The lack of adverse effect on water quality in the immediate vicinity of Site

[2] PEO, 2011. Professional Engineers Reviewing Work Prepared by Another Professional Engineer. October.
[3] PGO, 2024. Professional Geoscientists Reviewing Work Prepared by Another Professional Geoscientist. March.
[4] GHD, 2024a. *Hydrogeological Impact Assessment Revision No. 1, 2374868 Ontario Inc.*, July 5.

operations after ten years of operation demonstrates that the practices currently being undertaken at the Site to ensure no negative impacts on surrounding water resources have been effective over the long term.

On the basis of the HIA (GHD, 2024), GHD has concluded that the Site hydrogeological setting is suitable for the current operations, provided that practices related to soil and liquid soil importation and handling meet or exceed those practices undertaken in the past and as incorporated into the Waste and Air & Noise ECAs issued for the Site.

Hydrogeology Comment No. 3

No documentation confirming that mitigation measures to prevent contamination of the water resources have been constructed.

The ECA A-500-4277838045 (the Waste ECA) prescribes the measures to mitigate contamination of the water resources. This includes, but is not limited to:

Conditions related to elimination of the hazard

– Condition 21, which states that no waste other than **non-hazardous** excess soil that is liquid shall be accepted at the Site
– Condition 23.3, which states that the owner **shall** refuse any load if the receipt of that load could reasonably be expected to cause non-compliance with the ECA

Conditions related to engineering controls

– Condition 22.2, which states that process water be temporarily stored in lined swales and ponds until tested before it can be discharged
– Condition 28.1, which requires the construction of a liner under all soil storage areas and under all process water collection and storage and conveyance pathways

In addition to these conditions, the MECP required the Groundwater Monitoring Program proposed in Section 5 of the HIA be implemented, including ongoing groundwater quality monitoring by regular sampling to confirm the efficacy of these mitigation measures to prevent contamination of water resources resulting from Site operations.

Regarding Condition 28.1, liquid soil management operations have been paused until such time as a zoning bylaw amendment can be obtained. Once the amendment is approved, the Proponent is required to and will construct the liner system before operations commence.

Hydrogeology Comment No. 4

The Township and County adopted the Paris and Galt Moraine Policies to protect the groundwater resources lying thereunder.

The Paris and Galt Moraine Policy 4.9.7.1 stated objective is to protect moraine processes and features in order to maintain and where possible restore and enhance groundwater and surface water resources.

Section 4.9.7 of this policy defines these processes and features as:

– Groundwater recharge
– Groundwater storage
– Surface water detention
– Groundwater potential
– Baseflow to streams
– Springs; and
– Watershed divides for groundwater and surface water

No aspect of the proposed operations is anticipated to cause changes to any of these processes and features.

The Paris and Galt Moraine Policy 4.9.7.2 describes the direction by which these processes and features shall be protected. These include:

– Large scale development proposals including intensive recreation, mineral aggregate operations, new rural employment area designations, and urban boundary expansions will be required to demonstrate that ground and surface water functions will be maintained, and where possible, restored and enhanced
– Small scale developments that do not rely on significant site alterations will not normally be required to demonstrate protection of the moraines. Where planning approvals for small scale developments are needed, best practices for alteration will be required to reduce or eliminate cut and fill activities that would fill in land surface depressions
– Agriculture is a major activity on the moraines and is an accepted and supported use of land. The County will encourage best practices for agriculture by developing and supporting stewardship programs

Whether the proposed operations are deemed to be large scale or small-scale developments, they don't adversely alter the defined processes and features of the moraine. For example, groundwater used for hydrovac operations is returned to the Site as well as supplemented by potable municipal water obtained at off-site locations; thus limiting impacts to groundwater resources. The only two surface water features located on the property have been constructed in accordance with and are maintained as required by the approved ARA license Rehabilitation Plan.

Hydrogeology Comment No. 5

The proposed development comes with a risk of contaminating groundwater resources as evidenced by the detailed groundwater monitoring requirements of the proposed activity.

It is not clear what the reviewer's comment is requesting. Detailed groundwater monitoring programs are evidence of thoughtful consideration and intended to verify that no adverse effects occur from operations and also are good hydrogeological practice.

Hydrogeology Comment No. 6

The underlying geological formations are permeable, the only available water supply are the groundwater aquifers and despite all historical monitoring and required future monitoring, the requested activity involves the offloading of untested sediment/water slurries. It remains our opinion that the hydrogeological setting is inappropriate for this activity.

As described in Section 3.3.1 of the HIA (GHD, 2024a) the regional geology is dominated by extensive ice-contact stratified deposits, surrounded by silty to sandy till, organic and gravel deposits. Regionally, the overburden deposits are reported to be approximately 40 m in thickness.

The stratified deposits consist of a mixture of sand, gravel, silt, sandy silt, and some clay/silt layers/seams. Regionally, beneath the stratified deposits there are fine-grained deposits. Stratigraphic logs for downgradient domestic supply wells show that there is a 1 metre (m) to 17.5 m thick clay or silt layer between 5.5 to 32 m below ground surface (m bgs).. This layer is situated between the operations at land surface and the immediately downgradient domestic supply well intakes.

GHD's opinion, is that contamination of shallow water resources is highly unlikely given the measures prescribed in the ECA and the location of the thick clay or silt layer between water supply well intakes and the operation also provides an additional level of protection.

Hydrogeology Comment No. 7

The increase in chloride concentration in MW1-20 is a good indicator that contaminants easily transport from the soil deposition area to the water table. The natural sandy (and gravelly) soils do not provide any significant attenuation for contaminants and also provide for relatively rapid movement to off-site…

Between January 2023 and January 2024 there was an increasing chloride trend at MW01-20. The maximum chloride concentration during this time was 90 milligrams per litre (mg/L), well below the 790 mg/L Table 2 Standard[5].

MW01-20 is situated immediately adjacent to winter salt applications that were used at that time for winter traction. The increasing chloride trend was identified and the Proponent subsequently stopped using salt for management of winter conditions and switched to sand applications. Since that switch, chloride concentrations at this location have decreased 60% and continue to remain relatively low; well below Table 2 Standards.

No increasing chloride trends have been observed at monitoring wells MW04-23 and MW05-23, located 245 m downgradient and 241 m cross-gradient, respectively from MW01-20.

The hydraulic gradient between MW01-20 and MW04-23 is 0.02 metres of head loss per metre of travel (m/m). The geometric mean hydraulic conductivity in the area is 5.8×10^{-4} centimetres per second (cm/s) (0.5 m/day). Advective groundwater velocity can be calculated as follows:

$$V_{GW} = \frac{Ki}{n_e} \qquad \text{Equation 1}$$

Where:

V_{GW} Is the groundwater velocity in units of m/day

K Is the geometric mean hydraulic conductivity in units of m/day

i Is the hydraulic gradient between MW01-20 and MW04-23 and is 0.02 m/m

n_e Is the effective porosity and can be estimated as 0.3 cubic metres of drainable aquifer per cubic metre of bulk aquifer volume (m^3/m^3 or unitless), which is consistent with sandy deposits (Johnson, 1967)[6].

Based on Equation 1 and the Site-specific hydrogeological parameters, groundwater near the Site flows at an average rate of 0.033 m/day (12 m/year) towards the southwest. That means that the increasing chloride trend is not expected to reach MW04-25 and will be at concentrations well below the Table 2 Standard for 20 years. At that time, concentrations will be expected to be much lower than was observed at MW01-20, due to the transport mechanism of dispersion.

Dispersion is a transport mechanism by which solutes or compounds spread along the groundwater flow path. Dispersion results from two basic processes: molecular diffusion and mechanical mixing. Dispersion/spreading of solutes during groundwater flow results in dilution of solute pulses and attenuation of concentration peaks.

Hydrogeology Comment No. 8

The natural sandy (and gravelly) soils do not provide any significant attenuation for contaminants and also provide for relatively rapid movement to off-site given the significant hydraulic gradient observed at the site (more than nine metres of hydraulic potential change from MW3-20 to MW4-23).

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[5] Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition for Coarse Textured Soils, as provided in the MECP document entitled *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, dated April 15, 2011.

[6] Johnson, A.I., 1967. Specific Yield Compilation of Specific Yields for Various Materials. Hydrologic Properties of Earth Materials. Geological Survey Water Supply Paper 1662 D.

Hydraulic gradient is not a measure of head differences, but of the rate of change of head differences per distance along the groundwater flow path. MW03-20 is approximately 468 m upgradient of MW04-23. The hydraulic gradient is calculated as follows:

$$i = \frac{\Delta h}{\Delta L}$$ Equation 2

Where:

Δh Is the head difference between two locations along the groundwater flow path (e.g., MW03-20 and MW04-23)

ΔL Is the distance along the groundwater flow path between two locations

As described in the response to the reviewer's Comment No. 7, the hydraulic gradient can be calculated as 0.02 m/m. A similar hydraulic gradient is obtained between MW01-20 and MW04-23 demonstrating the consistence of this gradient along the groundwater flow path. This results in a groundwater velocity of 12 m/year. Therefore, groundwater is expected to take 39 years to travel from MW03-20 to MW04-23 which is not "rapid movement".

Hydrogeology Comment No. 9

Furthermore, the soil is destined for final storage in the adjacent pit where sand and gravel has been removed to within 1.5 metres of the water table (and is exposed in several small pit ponds).

As required by the approved ARA Rehabilitation Plan, the adjacent pit shall be rehabilitated following completion of extraction activities. Note 6 of the Site Plan indicates that topsoil or overburden (inert material) may be imported to improve rehabilitation by augmenting topsoil thickness or by making side slopes gentler. Additionally, ARA Policy defines inert material as soil that meets MECP Table 1 Site Condition Standards. These are the strictest soils quality standards provided within the MECP Standards and represent Province-wide background (non-contaminated) conditions.

Excess soils suitable for use for rehabilitation purposes at the adjacent pit (e.g., when the depth to ground water is unknown, is less than 3 m below ground surface or the capillary fringe is less than 0.8 m from the base of the gravel crush of any existing/future building foundation) includes soils that meet Table 6.1: Full Depth Excess Soil Quality Standards for Shallow Soils in a Potable Groundwater Condition. These standards, although protective of drinking water quality, are less stringent than the Table 1 Standards applied by the proponent.

Hydrogeology Comment No. 10

The Ministry of Environment, Conservation and Parks has issued Environmental Compliance Approval Number A-500-42778388045 to allow for the offloading of up to 125 tonnes of waste per day and allows for the storage of 440 cubic metres of liquid waste contained in lined swales and ponds and 525 tonnes of other waste including dried soil and process derivatives.

The ECA includes the following conditions:

- ***Infiltration of process water only after testing as per the monitoring plan***
- ***On-site storage of soils only on impervious surfaces***
- ***Any additional sampling and analysis specific to the receiving site shall be carried out as required by the local municipality, local conservation authority and any applicable federal/provincial legislation***

- ***Construction of liners under all storage areas and under all water process areas within 90 days of ECA issuance***
- ***Sampling of the groundwater wells MW01-20, MW02-20, MW03-20, MW4-23, MW5-23, BH213, BH214, BH219 and the two on-site water supply wells AGW1, APW1 on a quarterly basis with samples to be analyzed for metals, VOCs, PHCF1-F4, SVOCs, and PAHs;***
- ***Sampling of the stormwater management pond on a weekly basis with samples to be analyzed for metals, VOCs, PHCF1-F4, SVOCs, and PAHs;***
- ***Measurement of the static groundwater levels at the eight groundwater monitoring wells (excluding supply wells) quarterly during the groundwater sampling events***
- ***An annual report is required***

Acknowledged. The Proponent has voluntarily, proactively and protectively been doing soil, surface water and groundwater monitoring for over 8 years before the ECA was issued and required these monitoring activities.

Hydrogeology Comment No. 11

The 25 June 2024 Trigger Response Plan as referenced in the ECA only requires the notification of the MECP of exceedance of a Table 2 Standard. There is no recommendation for immediate clean-up.

As described in Section 3 of the Proposed Trigger Response Plan (GHD, 2024b)[7], a groundwater response assessment, inclusive of a risk screening evaluation if the exceedance is determined to be the result of Site operations, will be conducted for the parameter(s) of concern to determine potential response actions to be completed. The results of the risk screening evaluation and potential response actions, which can include sampling of groundwater and surface water samples, treatment/remediation options, for example, will be reported to the MECP District Office for review and input prior to finalizing and implementing appropriate actions. The reasoning is that the proponent will work collaboratively with regulatory agencies to provide the most suitable action, up to and including, as necessary, treatment or remediation (i.e., clean-up). Requiring immediate cleanup for a minor exceedance of a Table 2 Standard before it is confirmed to actually be representative of aquifer conditions and before evaluation of appropriate actions, which may not include actual cleanup, is not consistent with applicable regulations and policies and is not accepted or good practice in the environmental remediation industry. This is particularly true with the Site-specific conditions which prevent significant migration of contaminants to the underlying Site aquifer and private wells in the area of the Site.

Hydrogeology Comment No. 12

The ECA adopted the Trigger Response Plan and added that a Groundwater Trigger Mechanism and Contingency Plan that is protective of drinking water be prepared after 2 years of groundwater sampling and shall be prepared in accordance with the following:

1. ***The document shall include a proposal for site-specific groundwater trigger threshold values for parameters of concern in accordance with the Ministry's Guideline B-7 document noted above***
2. ***The document shall include proposed trigger mechanisms and contingency measures for the Site. Once approved by the District Manager, trigger threshold values, trigger mechanisms and contingency measures shall be incorporated into the groundwater monitoring plan for the Site***
3. ***No modifications shall be made to the Groundwater Trigger Mechanism and Contingency Plan unless permitted through an amendment to this Approval***

The Design and Operations report does (not)? include details of groundwater or surface water monitoring, nor does it refer to a monitoring plan or contingency plan.

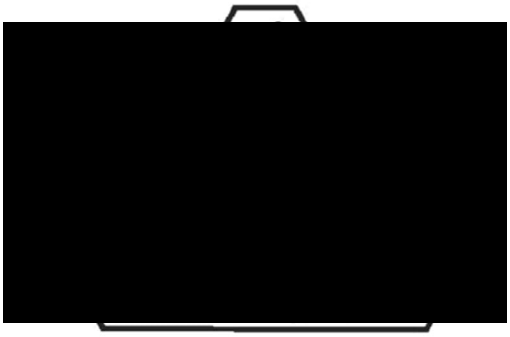
[7] GHD, 2024b. Proposed Trigger Response Plan – Conestoga Badger Inc. June 25.

The Waste ECA specifies the groundwater and surface water monitoring requirements. These provisions were developed from the proposed monitoring programs provided in the HIA and are not typically also included in Design and Operation Reports to avoid inconsistencies. The Proposed Trigger Response Plan (GHD, 2024b) describes steps taken in the event of a confirmed Table 2 groundwater exceedance.

3. Closing

The remainder of the reviewer's letter comprised a summary of recommendations to the Township based on the comments that have been responded to above. Should you have any questions, please contact the undersigned.

Regards,
GHD Limited



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