

June 8, 2023

One Urban Developments
28 Rivalda Road,
North York, ON
M9M 2M3

Attn: Nick Stillo
Email: nstillo@oneurban.ca

Re: Impact of Construction dewatering on Municipal Aquifer, 440 Essa Road, Ontario

Dear Mr. Stillo,

A review of the available data for drinking water aquifer for the City of Barrie, attached to this report, shows the nearest municipal aquifer as described below:

- Depth to first aquifer 12m bgs.
- Depth to uppermost significant aquifer 58m.
- Depth to confined Municipal aquifer 139m.
- Aquifer material - sand and gravel

The nearest municipal supply well is located approximately 2km from the site and is installed in the deeper Municipal aquifer.

Construction groundwater dewatering rate of 122.46 m³/day was estimated for the excavation of footings/P2 slab in the dense silty sand till at or below 307.0m asl. The zone of influence for construction dewatering extends to approximate distance of 24.93m from the dewatering point. Permanent drainage will not be required as the subsurface portion of the building will be constructed as a watertight structure.

A raft foundation is proposed, extending generally to 305.29m asl (bottom of mud slab) which is into the silty sand till. Excavation for the elevator sump pit, including mud slab, is expected to extend to maximum depth of 302.390m asl which is into the greyish brown, dry to moist fine sand. Groundwater levels were observed in the deeper monitoring wells screened in the upper aquifer (bottom of screens at 297.56m, 302.41m and 300.99m asl) at depths of 199.1m, 302.28m and 301.83m asl during May 2021. This means that the maximum excavation, for the relatively small area containing the elevator sump pit, will be just above the highest groundwater levels observed in the deep monitoring wells.

It is understood that a private contractor will carry out temporary groundwater dewatering using standard industry methods including pumping from sump pits and the use of an exterior vacuum wellpoint system. The maximum construction dewatering depth is expected to be approximately 7.7m

bgs (305.41m asl) for the raft slab. A relatively short dewatering duration to approximately 301.39m asl is expected for the elevator sump pit.

It should be noted that the upper water bearing soils, or soils containing perched water, within the expected excavation depths are separated from the deeper aquifers, from which municipal supplies are drawn, by a thick layer of till to clayey/silty soils forming an effective aquitard. The nearest aquifer A1, based on the attached, at 12m bgs, is more than 4m below the lowest proposed dewatering point for the main portion of the development and is separated from the bottom of the excavation by clayey soils extending to 304m asl. Dewatering for the elevator sump pit, if required, is expected to be into the top layers of the dry, upper section of the A1 aquifer.

Contaminant Management

Environmental assessment, and possibly remediation work, is expected to take place prior to construction. More detail and extent of any contaminant will be available on completion of the environmental assessment. Following the completion of the environmental assessment, a contaminant management, monitoring and mitigation plan will be developed to address any concerns regarding dewatering of the excavation area for the elevator sum pit. It is not expected however that any significant amount of dewatering will be required for the elevator sum pit.

Conclusion

Based on the preceding it is not expected that construction dewatering at the proposed depths will impact the quality or quantity of water in the aquifer. Provisions will be made, on completion of the environmental assessment, to mitigate against any contamination due to construction dewatering.

We trust that the information in the preceding satisfies your requirements at this time. Should you have any further questions, require clarification or additional information, please do not hesitate to contact our office.

Fisher Engineering Limited



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Address of Development

440 ESSA RD

The results below are being provided for informational purposes only and represent an estimate of the anticipated hydrogeological conditions on site based on best available data to date. Site specific conditions should be confirmed by the applicant.

Depth to Water Table	58	m
Depth to Perched Water	58	m
Depth to Aquifer A1	12	m
Depth to Aquitard C1	78	m
Depth to Aquifer A2	109	m
Depth to Aquitard C2	125	m
Depth to Confined Municipal Aquifer	139	m
Depth to Uppermost Significant Aquifer	58	m
Cumulative Transmissivity to Base of A1	High	483 m ² /day
Cumulative Transmissivity to Base of A2	High	485 m ² /day
Cumulative Transmissivity to Base of A3	High	564 m ² /day

The City of Barrie, its employees or agents, will not be held liable for any loss, damage, or expenses incurred resulting from the use, interpretation or reliance of the information as presented.