

Mr. Roman Tsap
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Date: January 24, 2022

Our Ref: 30047394

Subject: Opinion of Inferred Hydrogeological Conditions, 30 Queen Street East, Mississauga, Ontario

Dear Mr. Tsap

The enclosed is further to a request received from Edenshaw Queen Development Limited (Edenshaw) regarding the request for an opinion on the inferred hydrogeological conditions at 30 Queen Street East (the site). Arcadis Canada Inc. (Arcadis) understands that Edenshaw requires this information to support the filing of a Site Plan Application (SPA) to the City of Mississauga concerning the site. Furthermore, in the absence of Edenshaw being able to access the site to carry out any near-term subsurface investigation of the site, Edenshaw has requested Arcadis to provide an opinion on the anticipated hydrogeological conditions at the site based on an evaluation of historical subsurface environmental and hydrogeological information collected by Arcadis at an adjacent property to the site to support of the submission of the SPA.

In this regard, Arcadis has completed environmental and hydrogeological investigation work for Edenshaw's nearby development located at 78 Park Street East and 22 to 28 Ann Street in Mississauga, Ontario (Park-Ann Street Property). This development is situated immediately north of Park Street East and west of Ann Street, approximately 20 m across Ann Street from the site. Arcadis reviewed the following reports completed for the Park-Ann Street Property:

- Arcadis Canada Inc., 2018. Phase I Environmental Site Assessment, 78 Park Street East, 22, 24, 26 and 28 Ann Street, Mississauga, Ontario. September 18, 2018;
- Arcadis Canada Inc., 2019. Phase Two Environmental Site Assessment, Proposed Residential Development, 78 Park Street East, 22, 24, 26 and 28 Ann Street, Mississauga, Ontario. July 27, 2019;
- Arcadis Canada Inc., 2020. Hydrogeological Report and Groundwater Management Assessment, 78 Park Street East, 22, 24, 26 and 28 Ann Street, Mississauga, Ontario. July 16, 2020;

2018 Phase I Environmental Site Assessment (ESA)

The 2018 Phase I ESA identified several potentially contaminating activities (PCAs) at and in the vicinity of the Park-Ann Street property including the following:

- On-Site:
 - PCA 1: Former heating oil above ground storage tanks (ASTs) in the basements of 78 Park Street East and in 24 to 28 Anne Street;
 - PCA 2: Importation of fill material of unknown quality and quantity;

- Off-Site:
 - PCA 3: Petroleum and coal fuel storage and use for possible steam and power production and/or vehicular refueling at the former lumber mill that was situated on the GO Station surface parking lot on the north side of Ann Street;
 - PCA 4: Coal storage and rail activities at the former CN yard at the Port Credit railway station on the west side of Queen Street East; and
 - PCA 5: possible dry-cleaning establishment at 27 Helene Street, which likely comprised a depot rather than a cleaning plant.

The associated areas of potential environmental concerns (APECs) were:

- APEC 1: Fuel contamination comprising benzene, toluene, ethylbenzene, xylenes (BTEX), the F1 to F4 fractions of petroleum hydrocarbons (F1 to F4 PHC) and polycyclic aromatic hydrocarbons (PAHs) in soil and groundwater in the general vicinity of former ASTs in residence basements due to possible heating oil losses;
- APEC 2: Groundwater contamination from dry cleaning fluids and their breakdown products [volatile organic chemicals (VOCs)] that may have migrated in groundwater onto the property from a former dry-cleaning operation;
- APEC 3: Soil and, potentially, groundwater contamination on the property that may have migrated as dust (heavy metals and PAHs) or in groundwater from coal and/or petroleum fuel losses from fuel storage facilities (BTEX and F1 to F4 PHC) on the former lumber mill on the north side of Ann Street;
- APEC 4: Soil contamination of PAHs due to fallout from windblown coal from coaling stockpiles at the former CN Rail yard at Port Credit Station and to possible spills or upsets during delivery; and
- APEC 5: Contamination of inorganics, heavy metals, PAHs and F3 to F4 PHC in unknown quality imported fill material.

2019 Phase Two Environmental Site Assessment (ESA)

The 2019 Phase Two ESA completed at the Park-Ann Street Property indicated the following:

- Site stratigraphy consisted of fill to a maximum depth of approximately 1.5 m below grade underlain by sandy silt or silty clay or silt till to a maximum depth of approximately 8.9 m below grade. The top of bedrock (shale) was encountered at a depth of approximately 8.1 m below grade;
- Groundwater level was encountered at depths ranging from approximately 5.2 to 6.7 m below grade in the overburden monitoring wells and from approximately 4.6 to 11.1 m below grade in the bedrock monitoring wells. Groundwater flow was interpreted towards the southwest, influenced by the Credit River to the west and Lake Ontario to the south;
- Hydraulic conductivity ranged from approximately 3.7×10^{-5} to 4.2×10^{-5} cm/sec in the overburden (silt till), from approximately 1.4×10^{-5} to 2.8×10^{-5} cm/sec in the weathered shale bedrock and from approximately 5.6×10^{-8} to 1.0×10^{-6} cm/sec in the sound shale bedrock;
- Site condition standards (SCSs) were established for use at the site in accordance with Ontario Regulation 153/04 (O. Reg. 153/04, as amended) and correspond to the full depth generic site condition standards for medium and fine textured soils and residential/parkland/institutional property use in a non-potable ground water condition [i.e. the Ministry of the Environment, Conservation and Parks (MECP) Table 3 SCSs];
- Reported concentrations of electrical conductivity (EC), sodium adsorption ratio (SAR) and cyanide in soil exceeded the MECP Table 3 SCSs; and

- Reported concentrations (except chloride) in groundwater were below the MECP Table 3 SCSs. Chloride was determined to be naturally elevated in groundwater in this area and thus not indicative of contamination.

2020 Hydrogeological Report and Groundwater Management Assessment

The 2020 hydrogeological assessment completed at the Park-Ann Street Property indicated the following:

- Proposed to develop a 23-storey condominium apartment building with up to six levels of underground parking garage;
- The overall development dimension would be approximately 34 m by 83 m with an assembled area of approximately 2,825 m²;
- Existing ground surface elevation ranged from approximately 82 to 84 m above mean sea level (m amsl) and the floor slab for the P6 level of parking would be at a depth of approximately 21.7 m below proposed building grade at approximate elevation 61.8 m amsl;
- Construction dewatering (short-term) rate was estimated to be approximately 120,400 L/day (with a 100% contingency) with an estimated radius of influence of approximately 39 m from the edge of the excavation;
- Long-term dewatering rate during building occupancy was estimated to be approximately 106,000 L/day (with a 100% contingency);
- An Environmental Activity and Sector Registry (EASR) registration would be required during construction activities;
- In the event the building could not be maintained in a water-tight manner, a Permit to Take Water (PTTW) would be needed during building occupancy;
- The analytical results indicated that total suspended solids (TSS), total Kjeldahl nitrogen (TKN), aluminum, copper, manganese, phosphorus and zinc were present at concentrations that exceeded the storm sewer standard in analysed unfiltered groundwater samples while TSS and manganese were present at concentrations above the sanitary sewer bylaw criteria; and
- Based on the data obtained to date, groundwater may be discharged to the Sanitary Sewer without treatment.

We anticipate that the stratigraphic and hydrogeological conditions at the 30 Queen Street site will be similar to those encountered at the Park-Ann Street Property given that the two sites are in close proximity to one another and in similar settings. Of course, this opinion is subject to confirmation during future subsurface investigations and studies that will be carried out at the site as part of the site design and development process.

Edenshaw Queen Development Limited
January 24, 2022

We trust that the enclosed is suitable for your current purposes. Should you have any questions, or should you require additional or more detailed information, please do not hesitate to call the writer at any time.

Sincerely,
Arcadis Canada Inc.

Kim A. Tan, Ph.D., P.Eng.
Senior Environmental Engineer

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