



Hydrogeological Assessment: Codd's Road, Blocks 1,2 and 3, Ottawa, Ontario.

Client:

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C/O New Commons Development
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Project Name:

Hydrogeological Assessment: Codd's Road, Blocks 1,2 and 3, Ottawa, Ontario

Project Number:

OTT-25007988-A0

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*New Commons Housing Trust -C/o New Commons Development
Hydrogeological Assessment
Blocks 1 to 3, Codd's Road, Ottawa, ON
OTT-25007988-A0
September 17, 2025*

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1 Introduction

1.1 Project Description

EXP Services Inc. (EXP) was retained by New Commons Housing Trust (NCHT) to complete a hydrogeological assessment of the vacant property consisting of Blocks 1 to 3, Codd's Road, Ottawa, Ontario hereinafter referred to as the 'site' (Figure 1). The purpose of this assessment has been to determine the order of magnitude of anticipated groundwater volumes that may be encountered during excavation for the proposed development and provide recommendations related to dewatering planning/staging as well as discharge options.

It is our understanding that seven (7) buildings ranging from four (4) to six (6) storeys will be constructed on top of a podium-style one-level underground parking garage. Details regarding the lowest floor slab of the underground parking garage and site grade raise were not available at the time of this hydrogeological investigation. The site approximate property limits are shown on Figure 1.

EXP conducted a Geotechnical Investigation and Soil Characterization Report for the Site under the same EXP project number. These reports have been issued to the client in final report format under separate covers. The pertinent information gathered from those investigations is utilized throughout this report.

1.2 Project Objectives

The main objectives of this Hydrological Assessment are as follows:

- Establish the local hydrogeological settings within the site;
- Assess preliminary construction dewatering flow rates and potential impacts;
- Assess long term foundation sub-drain discharge volumes;
- Assess groundwater quality; and,
- Prepare a summary report compiling the relevant findings and recommendations.

1.3 Scope of Work

To achieve the investigation objectives, EXP has completed the following scope of work:

- Reviewed available geological and hydrogeological information for the site;
- Developed and conducted Single Well Response Tests (SWRT) on suitable/representative monitoring wells to evaluate hydraulic properties of the saturated stratigraphic units at the Site.
- Collected one (1) groundwater sample for laboratory testing for comparison with City of Ottawa Storm sewer by-law parameters;
- Completed three (3) rounds of groundwater level measurements once monitoring wells have stabilized to establish ambient groundwater conditions;
- Evaluated the information collected during the field investigation program, including borehole geological information, SWRT results, Water Well Records, groundwater level measurements and groundwater water quality;
- Estimated construction dewatering flow rates;
- Provided estimates of sub-drain discharge volumes (post construction);

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- Assessed potential impacts from construction dewatering operations; and,
- Provided recommendations and support dewatering permit requirements.

This hydrogeological assessment report is preliminary and is in draft format. It was prepared to assess dewatering requirements based on the assumption that the proposed towers will have one (1) level or P1 underground parking structures. A site excavation design was not available at the time of preparation of this report. This study should be reassessed when the foundation design and proposed excavation depth(s) are finalized.

2 Hydrogeological Setting

2.1 Site Setting

2.1.1 Physiography

The physiography of the area is generally flat, with apparent topographic relief towards the north-northeast in the general direction of the Ottawa River. Locally, the site topography is considered relatively flat with an overall general localized slope from north to south with a general elevation range of 88.04 masl to 90.52 masl (based on surveyed elevation of the borehole locations), higher near the north corner of the site.

Beyond the site, to the north, the land slopes down significantly creating an escarpment-like transition from the upper lands to the south and the Sir-George Etienne Cartier Parkway running along the lower table land plateau of the Ottawa River.

2.1.2 Surficial Geology

Available surficial mapping (OGS Earth) indicates that the site is underlain by offshore marine deposits of Clay, silty clay and silt, commonly calcareous and fossiliferous, locally overlain by thin sands. Upper parts are generally mottled or laminated reddish brown and bluish grey and may contain lenses and pockets of sand, but at depth the clay is uniform. Figure 3 shows the surficial geology of the area.

The results of the EXP geotechnical investigation revealed that much of the Site is covered with fill material ranging in thickness from 0.4 m to 1.9 m. This fill material was characterized as either in-situ disturbed soil or imported fill material and overlies an equally thin layer of silty sand to sandy silt. (i.e. 0.2 m to 1.9 m). Residual moisture contents in both the fill and native soil strata were noted to be low to moderate with the fill layer ranging from 6% to 36% and the native soil layer ranging from 11 % to 16%.

2.1.3 Paleozoic Geology

Based on the findings of the EXP geotechnical investigation, limestone bedrock was encountered below the overburden soil strata at depths ranging from 0.3 m to 4.3 m below ground surface. Overall, average overburden soil thickness was noted to be of the order of 1.3 mbgs. Several of the test pits put down as part of the geotechnical field work program reported horizontal variability in bedrock depth across individual test pits suggesting the rock exists in a stepped pattern across much of the Site.

Based on a review of the bedrock geology map (Map P.2716, *Paleozoic Geology of the Ottawa Area, Southern Ontario*, 1984), the site is situated within the Gull River Formation of the Simcoe Group Middle Ordovician Era. The Gull River Formation is a calcareous rich limestone and, as such, has potential for significant chemical weathering, known as karstification. Upper layers of bedrock, especially areas where overburden thickness are minimal, are most susceptible to karstification resulting in karst topography. No such karst topography was directly observed at the site by EXP during the execution of the geotechnical fieldwork program. At the locations of Test Pits TP-25-6, TP-25-8, TP-25-17, TP-25-19, TP-25-26, and TP-25-28, additional subsurface investigations were conducted through borehole drilling to facilitate the installation of monitoring wells. Each of the monitoring wells were screened within the same targeted aquifer zone, allowing for consistent comparison of potential bedrock aquifer presence across the site. Boreholes were advanced beyond the depth of refusal using rock coring techniques, reaching termination depths between 6.1 meters below ground surface (mbgs) and 7.2 mbgs. These depths correspond to elevations ranging from 83.3 meters above sea level (masl) to 81.0 masl capturing the hydrogeologically significant limestone bedrock interval. A detailed description of the geological material and the bed rock quality encountered is provided in the geotechnical report prepared by EXP (August 8, 2025). Detailed borehole and rock quality designation have been included in Appendix A, test pits/ borehole gINT logs.

Figure 4 shows the bedrock (Paleozoic) geology of the site and adjacent areas.

2.1.4 Local Surface Water Features

The Site is located within the Ottawa River West sub watershed. No surface water features exist on the site. The nearest is Ottawa river, located approximately one (1) km north of the site. Based on the Rideau Valley Conservation Authority Website, the site is not within the flood plain or within a regulated area.

2.1.5 Groundwater Regime

The subsurface geology at the site comprises compacted native/imported fill overlying a thin layer of native silty material. Together, these units form a semi-permeable overburden that limits vertical infiltration, resulting in reduced permeability and rates if stormwater infiltration to the underlying bedrock.

The absence of nearby surface water features, such as streams or wetlands, suggests that the site is not influenced by gaining or losing water bodies that could directly affect local groundwater dynamics.

2.1.5.1 Groundwater Measurements

As noted in the previous section, a total of six (6) boreholes were advanced into the underlying limestone bedrock and were equipped with groundwater monitoring wells, each consisting of a 3 m long PVC screened interval extending from the bottom of the monitoring well, upwards. Above the screened interval, the casing was grouted in place to prevent short circuiting of surface water/overburden groundwater directly into the well bore. The wells have an internal diameter of 38 mm and were constructed to facilitate hydraulic conductivity testing and groundwater monitoring.

Water levels were recorded immediately following the completion of drilling and well installation, and subsequently after stabilization. A summary of groundwater level measurements is provided in Table 2-1.

Table 2-1 Summary of Groundwater Level Measurements					
BH ID	Ground Surface Elevation (masl)	Screened Soil Type	Groundwater Elevation (masl) on August 8, 2025	Groundwater Elevation (masl) on August 12, 2025	Groundwater Elevation (masl) on September 3rd, 2025
BH25-6	90.42	LIMESTONE BEDROCK WITH SHALE PARTINGS	84.52	84.39	84.48
BH25-8	89.39	LIMESTONE BEDROCK WITH SHALE PARTINGS	83.56	83.56	83.56
BH25-17	88.93	LIMESTONE BEDROCK WITH SHALE PARTINGS	83.01	82.87	82.86
BH25-19	88.55	LIMESTONE BEDROCK WITH SHALE PARTINGS	82.88	83.43	83.31
BH25-26	89.1	LIMESTONE BEDROCK WITH SHALE PARTINGS	83.23	83.24	83.25
BH25-28	88.18	LIMESTONE BEDROCK WITH SHALE PARTINGS	83.08	83.03	83.05

2.1.5.2 Findings of Hydraulic Conductivity Testing on the Bedrock

Due to insufficient groundwater yield in most wells, Single Well Response Tests (SWRT) could only be conducted at BH25-19/MW and BH25-28/MW, to assess the hydraulic properties of the screened intervals within the bedrock. Falling head tests were performed by inserting a solid slug of known volume and monitoring the water level decline over time. Once stabilized, rising head tests were conducted by removing the slug and recording the recovery manually and with electronic data loggers. Test results are summarized in Table 4-1, with analytical plots provided in Appendix B.

Table 4-1 Summary of Hydraulic Conductivity Test Analysis					
Well ID	Screened Material	K value (m/sec) using Bouwer and Rice solution	K value (m/day)	Recovery (%)	Time (sec)
BH 25-19	Limestone bedrock with shale partings, poor to excellent quality bedrock	0.3403	29,408.0	100	92
BH 25-28	Limestone bedrock with shale partings, good quality bedrock	0.6081	52,578.24	100	537
The result of SWRT is presumed to be correct as the K value and recovery data does match the observed trend at this well location.					

The results of the SWRT data analysis will be used in the dewatering pumping rate assessments. The results indicate a range of K value of 0.3403 m/sec [at BH/MW25-19] to 0.6081 m/sec [at BH/MW25-28]), these values could be higher up to 1 m/sec based on RQD and rock matrix.

Considering the number of SWRT tests performed, it is a reasonable approach to use the highest estimated K value (0.6081 m/sec at BH/MW-25-28 which is estimated for highly weathered limestone bedrock in the dewatering rate calculations.

3 Derivation of Site Hydrogeologic Model

Based on the findings of the EXP geotechnical investigation, combined with the groundwater monitoring program conducted as part of the hydrogeological assessment, EXP has derived a site-specific hydrogeologic model to assist in the prediction of groundwater impacts during foundation excavation and post-construction activities.

Given the lower permeability of the overburden soil strata, combined with the gently sloping terrain both to the north of the site and through the site, southward, surface water infiltration is expected to be greatly reduced. Moisture contents within the fill and native soil are indicative of field saturation levels, at most, and there is no apparent overburden groundwater table present overlying the bedrock. As such, infiltrating stormwater is expected to infiltrate slowly downwards to the surface of the bedrock.

The surface of the bedrock is irregular in elevation, as well as exhibiting a heavily fractured upper zone present at the surface of the bedrock to a depth of the order of 1.7 m into the bedrock. Based on the lower rock quality designation values (RQD's) from the six (6) boreholes, intervals of fractured bedrock exist throughout the site that create the potential for the rapid movement of groundwater. Low RQD values, typically below 50%, typically denote preferential pathways for fluid flow within the bedrock. Given the low static water levels within the monitoring wells, especially along the north and east quadrants of the site, and considering the rapid responses noted in the single well response testing in the wells with sufficient water to complete the tests, surface water infiltrating through the overburden will be readily transmitted along the upper 1.2 to 1.7 m of bedrock following the topography from northeast to southwest. However, the deeper fractured zones below 1.7 m (i.e. 3.2 m to 6.3 m) are expected to drain northward towards the steep slope where surface water infiltration is transmitted rapidly, where the fractured intervals of the bedrock interconnect and discharge along the wooded ridgeline abutting the Parkway.

4 Preliminary Construction Dewatering Assessment

Based on the conceptual site plan provided to EXP, as depicted on the overlay contained on Figure 2-Test Hole Location Plan, and based on EXP's present understanding of the nature of the development, it is understood that a total of seven (7) buildings of varying storeys will be constructed on top of a podium-style one-level underground parking garage. There were no further details regarding the lowest flow slab elevation of the underground parking garage and site grade raise requirements from a civil engineering perspective.

Considering EXP's present understanding of the proposed development and using some logical assumptions regarding construction staging and best practice, it can be assumed that for a "worst case" dewatering planning purposes, the entire site area within the limits of the parking garage structure and forming may likely be excavated to facilitate the construction of the underground parking structure in a single stage. Should this be the case, the excavation is expected to encounter significant volumes of water to be present in the upper several metres of the fractured limestone bedrock during initial excavation with reduced pumping requirements on an ongoing basis throughout construction. As such, there will be a need for the dewatering activities to be registered with the Ontario Ministry of the Environment, Conservation and Parks (MECP) on the Environmental Activity Sector Registry (EASR) along with the creation of dewatering plan and discharge plan by a qualified hydrogeologist. These observations are articulated in the relevant sections below:

4.1 Estimated Dewatering Volumes

The rate of groundwater inflow into the construction excavation(s) can be estimated based on some key parameters such as groundwater levels, hydraulic conductivity value, size and depth of the excavations. It is expected that the initial dewatering rate will be higher to remove groundwater from within the formation. The dewatering rates are expected to decrease once the target water level is achieved in the excavation footprint area as groundwater will have been removed, primarily from storage, resulting in lower seepage rates into the excavation and the pumping volume reaches an equilibrium state. In order to complete a preliminary dewatering volume assessment careful review of water level information, the highest inferred water level is used in calculations. The required hydraulic conductivity (K) values used in the calculations are estimated from the results of SWRT data analysis. Based on the assumption that the bedrock fractures present within the upper quadrant of the limestone bedrock, and assuming the bedrock fractures behave like an unconfined aquifer following Darcy-like water flow through the fractures, it is estimated that the specific yield of the fractured zone is of the order of 2 m³/m² of site surface area.

Assuming a mass excavation scenario, based on the anticipated specific yield of the bedrock, it is opined that significant volumes of water will need to be pumped for many days in order to effectively dewater a mass excavation it is likely that initial pumping volumes will need to be established at upwards of a minimum of 300,000 L/day (300 m³/day) within the base and along the downgradient quadrant of the excavation (at proposed founding level for underside of footing) and pumping should be expected to continue at that order of magnitude for several weeks in order to effectively dewater the area suitably.

4.2 Regulatory Considerations for Dewatering Activities

Ontario Ministry of the Environment, Conservation and Parks

Any volume of water pumped for construction dewatering purposes above 50,000 L/day requires permission from the Ontario Ministry of the Environment, Conservation and Parks (MECP). Given the anticipated high volume of water to be removed, albeit initially, from the bedrock, it is advised to consider registering the site in the Environment Activity Sector Registry (EASR). Recent changes to the EASR program have granted no limit to the discharge volumes and there is no cost to make application. However, the other requirements of the EASR program remain. These requirements include:

- Preparation of a water taking report (Dewatering, Discharge and Contingency Plan) by a Qualified Person;
- Preparation a Discharge Report by a Qualified Person;
- Monitoring of water taking volumes and EASR reporting; and,

- Maximum duration of taking is not more than 365 days without obtaining municipal and/or Conservation Authority approval

City of Ottawa- Sewer Use Program

Where pumped water discharge cannot be managed on surface at a site without intercepting a storm or sanitary manhole, the City of Ottawa will require a discharge permit to be obtained. The preferred location for sewer discharge is to the storm sewer network for the City of Ottawa due to the fact that although the discharge water quality requirements are higher than sanitary sewer, costs are fixed at sampling and not proportional to strength of the discharged water nor the volumes being discharged. Allowable discharge volumes are also higher when discharging pumped water into a Storm Sewer. Each sewer use agreement holds specific requirements for frequent testing and continuous monitoring with monthly physical reporting and immediate reporting of exceedances/non-conforming discharges.

With respect to timing, allowances should be made upwards of 60 calendar days to ensure a permit is obtained and put in place prior to commencement of dewatering operations.

4.3 Groundwater Quality

As the quantity of water expected to be encountered during excavation is high, and the available area for impoundment and infiltration is low, it is expected that the dewatering discharge water will be directed to the City of Ottawa Sewer system. As part of this hydrogeological assessment, EXP has collected a raw water sample from the monitoring wells that we believe to be indicative of future water quality during excavation and pumping. A single raw groundwater sample was recovered from BH/MW25-19 and BH/MW25-28. These wells are screened at comparable depths within the same aquifer, ensuring consistency in the hydrogeological conditions represented by the samples. Both wells were purged prior to the collection of the raw water.

The collected samples were submitted to Caduecon Labs, a laboratory accredited by the Canadian Association for Laboratory Accreditation (CALA), for comprehensive analysis. The groundwater samples were tested for a range of parameters including general inorganics, metals, petroleum hydrocarbons (PHCs), polyaromatic hydrocarbons (PAHs), and volatile organic compounds (VOCs). The analytical results were compared against the discharge criteria outlined in the City of Ottawa Sanitary and Combined Sewers Discharge Use By-Law (2025-239), Table 1, and the Storm Sewer Use By-Law (2025-239), Table 5. Storm sewer criteria was selected for comparative analysis as described in Section 4.2 above.

A detailed summary of the water quality results is provided in Appendix C, Laboratory Certificates of Analysis, while Table 4-1 presents the parameters that exceeded the applicable discharge guidelines.

<i>Table 4-1 Summary of Water Quality Parameters Exceedances</i>			
Sample ID = Codd's Rd	City of Ottawa Sewer Use By-Law (2025-239) Discharge Criteria		
Parameter	Table 1 (Sanitary and Combined Sewers Discharge) Criteria	Table 5 (Storm Sewer Discharges) Criteria	Sample Concentrations
Total Suspended Solids (TSS) (mg/L)	350	15	460
Total Manganese (mg/L)	5	0.05	0.225
Bold — exceeded the Table 5 (Storm Sewer Use By-Law) Criteria of the City of Ottawa Sewer Discharge use By-Law standards			

A review of the above table reveals that the groundwater will likely not be suitable for discharge into the City of Ottawa Storm Sewer network due, primarily, to the manganese concentration. While the TSS is readily treatable with pre-discharge filtration, manganese is more difficult to remove and quite costly to do so.

It is EXP's opinion that the manganese concentration may be tied to the total suspended solids given that the available methods to purge small diameter monitoring wells often leaves significant residual suspended solids in the fractured bedrock matrix. As such, it would be prudent to complete a more rigorous purge of the monitoring wells using pumps and resample the groundwater

to compare TSS and manganese concentrations after sufficient well development. This could be done as part of the discharge plan that will be needed for an EASR.

Should the manganese concentration remain elevated above the Storm Sewer Discharge limit value, then the discharge water will need to be directed to the sanitary sewer. During the sanitary sewer discharge permit process, the City of Ottawa may set maximum pumping rate limits on the pumped water. These rates may be such that dewatering activities need to be extended many days and/or weeks ahead, in order to effectively dewater the work area sufficiently to facilitate foundation construction activities.

4.4 Long Term Foundation Drainage Considerations

Because underground structures will extend into the local groundwater table, the groundwater will exert hydrostatic buoyancy pressure on the foundation structure in the long-term. To reduce this pressure, the groundwater will need to be removed using a foundation drainage collection (FDC) subdrain system under the foundations. The groundwater will be collected in a sump pit and then pumped out to the city sewers if allowed. If the city does not approve long-term discharge (due to under-capacity of the services or any other reasons) into the city services, then an alternative foundation design (watertight bathtub) may have to be considered.

Based on the preliminary information on the expected foundation depths (i.e. not exceeding 4 m below ground surface) the volumes of water being encountered and conveyed through a subdrain system are expected to be less than the regulatory threshold of 370,000 L/day for exception from an EASR. The foundation drainage design and outlet should be reviewed with EXP prior to finalization and site modifications/amendments may need to be made to the bedrock to lower groundwater infiltration to the foundation drainage collection network.

4.5 Potential Impacts to Surrounding Area as Result of Anticipated Dewatering

Any dewatering pumping operation will generate a zone within which the groundwater is lowered with the maximum drawdown at the pumping location even during short-term operation. The farther the distance away from the pumping location, the drawdown is less and eventually at a certain distance from the pumping location the zone of influence (ZOI) diminishes because of reaching equilibrium condition.

The lowering of groundwater has the potential to impact sensitive features such as utilities, environmental habitats, water wells and engineered structures that are located within the predicted ZOI and are founded on compressible soils. Most of the construction dewatering operations occur only for short-term (i.e. less than 365 days) and the impacts are very temporary.

The proposed construction and related dewatering activities will be occurring in a highly urbanized area and there is negligible potential to impact water wells since municipal services are available and there are no active or private water wells in use in the area.

Our assessment indicates that there are no sensitive environmental features within 500 m distance of the site. As there is no apparent overburden aquifer present on the site, offsite consolidation potential from onsite dewatering is negligible. Furthermore, the bedrock layer being dewatered is that of the Gull River Formation and not the Billings Formation. As such, expansive shale impacts resulting from oxidation of the Billings shale are not relevant in this instance.

5 Conclusions

The followings conclusions can be drawn from the completed assessment:

1. There is no apparent overburden aquifer present beneath the Site. There is, however, a water bearing zone within the upper 4 m of the underlying bedrock that is contained within the fractured bedrock matrix.
2. Hydraulic conductivity values for the fractured bedrock matrix are considered to be high at between approximately 0.34 m/s and 0.61 m/s. Flow within the bedrock matrix is expected to follow a Darcian movement and aquifer response is expected to be consistent with an unconfined aquifer.
3. Specific yield of the unconfined aquifer contained within the fractured bedrock matrix is expected to be of the order of 2 m³/m² of site area. Lateral extents of the unconfined aquifer are unknown and may be extremely limited.
4. Duration of pumping is expected to be less than 365 days and while short term takings are expected to be high, new regulatory changes to the EASR process place no limits on short term construction dewatering with no associated cost to place the project on the registry.
5. As part of the EASR process, a water taking report and discharge report will be required to be completed by an Qualified Person prior to registering the project on the EASR.
6. Raw water quality of the shallow bedrock aquifer is elevated in total suspended solids (TSS) and manganese (Mn) and are present above Table 5 Storm Sewer Discharge Criteria. These concentrations may reduce with additional well development and aquifer dewatering, however.
7. At the present concentration for each of the TSS and Mn concentrations, the raw water does not meet Table 1 or 5 requirements. With minor treatment for TSS, the raw water can meet Table 1- Sanitary and Combined Sewer Criteria.
8. The method(s) of treatment for TSS will need to be articulated in the Discharge plan prepared by a Qualified Person and a Sewer Use Agreement will be required to be obtained for the site before any offsite movement of pumped water can occur.
9. Long term dewatering of the underground parking structure and associated drainage system are expected to remain below the regulatory requirements to register the site on the Environmental Activity Sector Registry (EASR).

6 Recommendations and Next Steps

Based on the findings of this hydrogeological assessment, EXP presents the following recommendations for consideration:

1. Resampling of the groundwater is recommended following extended well development of existing monitoring wells prior to finalizing the Discharge Report. Should manganese concentrations be found to be proportional to the total suspended solids then removal of the TSS through passive or active treatment may allow the pumped water to meet Storm Sewer Discharge criteria and significantly reduce discharge fees.
2. It is prudent to note that the conclusions presented in this report based on the preliminary information regarding excavation depth, levels of underground parking, etc. EXP should review the findings of this report against the finalized excavation depths, should they increase, prior to finalization of the drainage network design, and update the conclusions, as necessary, and provide suitable recommendations to guide long term drainage for the site.

7 Limitations

This report is based on information provided to EXP about the study area. The conclusions and recommendations presented within this report reflect Site conditions existing at the time of the assessment. EXP must be contacted immediately if any unforeseen Site conditions are experienced during construction activities. This will allow EXP to review the new findings and provide appropriate recommendations to allow the construction to proceed in a timely and cost-effective manner.

Our undertaking at EXP, therefore, is to perform our work within limits prescribed by our clients, with the usual thoroughness and competence of the geoscience/engineering profession. No other warranty or representation, either expressed or implied, is included or intended in this report.

This preliminary report was prepared for the exclusive use of New Commons Housing Trust c/o New Commons Development. This report may not be reproduced in whole or in part, without the prior written consent of EXP, or used or relied upon in whole or in part by other parties for any purposes whatsoever. Any use which a third party makes of this report, or any part thereof, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. EXP Services Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We trust that this information is satisfactory for your purposes. Should you have any questions or comments, please do not hesitate to contact this office.

Sincerely,

EXP Services Inc.

Prepared by:

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Shahynaz Abdelmohsen
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Figures

Figure 1 – Site Location Plan

Figure 2 – Test Hole Location Plan

Figure 3 – Surficial Geology

Figure 4 – Paleozoic Geology

EXP Services Inc.

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Appendix A – Borehole Logs

Shear Strength by
Frictional Resistance ▲[illegible]

LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA.GDT 8/8/25

Log of Test Pit TP-25-02



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks 1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 4

Page. 1 of 1

Date Drilled: July 7, 2025

Drill Type: Volvo EC 300 Excavator

Datum: Geodetic Elevation

Logged by: AN Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☐

Shear Strength by
Vane Test ☐

Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at
% Strain at Failure ☐

Shear Strength by
Penetrometer Test ☐

G W L	S Y M B O L	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			S A M P L E S	Natural Unit Wt. kN/m³																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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		FILL ~600 mm thick Silty sand to sandy silt mixed with topsoil containing roots and rootlets, some gravel, cobbles and boulders, brown, moist, no odours, no stains	90.33	0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

- NOTES:
1. Borehole/Test Pit data requires Interpretation by exp. before use by others
 2. Test pit backfilled with excavated material and nominally packed in place using excavator bucket.
 3. Field work supervised by an EXP representative.
 4. See Notes on Sample Descriptions
 5. This Figure is to read with exp. Services Inc. report OTT-25007988-A0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
'On completion'	Dry	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA GDT 8/8/25

Shear Strength by LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA.GDT 8/8/25

Run No.	Depth (m)	% Rec.	RQD %

Shear Strength by LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA.GDT 8/8/25

Run No.	Depth (m)	% Rec.	RQD %

Log of Test Pit TP-25-05



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks 1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 7

Page. 1 of 1

Date Drilled: July 7, 2025

Drill Type: Volvo EC 300 Excavator

Datum: Geodetic Elevation

Logged by: AN Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☐

Shear Strength by
Vane Test ☐

Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at
% Strain at Failure ☐

Shear Strength by
Penetrometer Test ☐

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			SAMPLES	Natural Unit Wt. kN/m³
					20	40	60	80	250	500	750		
					Shear Strength				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
					50	100	150	200	20	40	60		
		FILL Mixture of silty sand and silty clay, some gravel, brown to dark brown, moist, no odours, no stains	90.46	0									
		FILL Silty sand and crushed limestone, grey, moist, no odours, no stains	90.1										
		underline by geotextile fabric at 1.2 m depth.											
			89.3	1									
		SANDY SILT Some gravel, trace clay, cobbles and boulders, brown and grey, moist, no odours, no stains	89.1										
		Bucket Refusal on Bedrock at 1.4 m Depth											

NOTES:

- Borehole/Test Pit data requires Interpretation by exp. before use by others
- Test pit backfilled with excavated material and nominally packed in place using excavator bucket.
- Field work supervised by an EXP representative.
- See Notes on Sample Descriptions
- This Figure is to read with exp. Services Inc. report OTT-25007988-A0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
'On completion'	Dry	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA GDT 8/8/25

Shear Strength by LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA.GDT 8/8/25

Run No.	Depth (m)	% Rec.	RQD %

Log of Borehole BH25-06



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 8A

Page. 1 of 1

Date Drilled: July 23, 2025

Drill Type: CME 55 Track-Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: SA Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☐

Shear Strength by
Vane Test ☐

Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at
% Strain at Failure ☐

Shear Strength by
Penetrometer Test ☐

G W L	S Y M B O L	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			S A M P L E S	Natural Unit Wt. kN/m³
									250	500	750		
					Shear Strength				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
					20	40	60	80	20	40	60		
		Power Augered from ground surface to 1.7m depth.	90.42	0									
		Refer to Test Pit No. TP25-06, Figure 8, for subsurface soil conditions from ground surface to 1.7 m depth.		1									
			88.7	2									
		LIMESTONE BEDROCK With dark grey to black shale partings, grey		3									
		With limestone rubble zone from 1.7m to 2.0m depths.		4									
				5									
			84.52	6									
			83.9										
		Borehole Terminated at 6.5 m Depth											

NOTES:

- Borehole data requires interpretation by EXP before use by others
- A 38 mm diameter monitoring well installed as shown.
- Field work supervised by an EXP representative.
- See Notes on Sample Descriptions
- Log to be read with EXP Report OTT-25007988-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
'August 8, 2025	5.9	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %
1	1.7 - 3.2	76	46
2	3.2 - 4.7	65	69
3	4.7 - 5.9	82	13
4	5.9 - 6.5	42	33

LOG OF BOREHOLE Codd's RD BHS.GPJ TROW OTTAWA.GDT 8/8/25

$$\frac{+}{s}$$
LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA.GDT 8/8/25

Run No.	Depth (m)	% Rec.	RQD %

Shear Strength by LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA.GDT 8/8/25

Run No.	Depth (m)	% Rec.	RQD %

Log of Borehole BH25-08



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 10A

Page. 1 of 1

Date Drilled: July 24, 2025

Drill Type: CME 55 Track-Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: SA Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☐

Shear Strength by
Vane Test ☐

Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at
% Strain at Failure ☐

Shear Strength by
Penetrometer Test ☐

G W L	S Y M B O L	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			S A M P L E	Natural Unit Wt. kN/m³
									250	500	750		
					Shear Strength				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
					kPa								
			89.39	0	20	40	60	80	20	40	60		
		Power Augered from ground surface to 1.3m depth.											
		Refer to Test Pit No. TP25-08, Figure 10, for subsurface soil conditions from ground surface to 1.3 m depth.											
			88.1	1									
		COBBLES AND BOULDERS/ WEATHERED LIMESTONE BEDROCK	87.7	2									RUN1
		LIMESTONE BEDROCK With dark grey to black shale partings, grey											
		12mm and 25mm thick brown soil filled seams from 2.5m to 2.7m depths.											RUN2
				3									
				4									RUN3
				5									
			83.56	6									RUN4
		Borehole Terminated at 6.1 m Depth	83.3										

NOTES:

- Borehole data requires interpretation by EXP before use by others
- A 38 mm diameter monitoring well installed as shown.
- Field work supervised by an EXP representative.
- See Notes on Sample Descriptions
- Log to be read with EXP Report OTT-25007988-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
'August 8, 2025	5.8	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %
1	1.3 - 1.7		
2	1.7 - 3.2	87	20
3	3.2 - 4.7	98	53
4	4.7 - 6.1	100	47

LOG OF BOREHOLE Codd's Rd BHS.GPJ TROW OTTAWA.GDT 8/8/25

Shear Strength by Penetrometer Test [illegible]

Run No.	Depth (m)	% Rec.	RQD %

LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA.GDT 8/8/25

Log of Test Pit TP-25-10



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks 1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 12

Page. 1 of 1

Date Drilled: July 7, 2025

Drill Type: Volvo EC 300 Excavator

Datum: Geodetic Elevation

Logged by: AN Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☐

Shear Strength by ☐

Vane Test ☐

Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at ☐

% Strain at Failure ☐

Shear Strength by ☐

Penetrometer Test ☐

G W L	S Y M B O L	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			S A M P L E S	Natural Unit Wt. kN/m³
					20	40	60	80	250	500	750		
					Shear Strength				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
					50	100	150	200	20	40	60		
		FILL Silty sand and crushed gravel, grey, moist, no odours, no stains	90.23	0									
				1									
			88.8										
		Bucket Refusal on Bedrock at 1.4 m Depth											
		Note 1) One (1) sample submitted for environmental laboratory analyses.											

- NOTES:
1. Borehole/Test Pit data requires Interpretation by exp. before use by others
 2. Test pit backfilled with excavated material and nominally packed in place using excavator bucket.
 3. Field work supervised by an EXP representative.
 4. See Notes on Sample Descriptions
 5. This Figure is to read with exp. Services Inc. report OTT-25007988-A0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
'On completion'	Dry	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA GDT 8/8/25

Log of Test Pit TP-25-11



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks 1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 13

Page. 1 of 1

Date Drilled: July 7, 2025

Drill Type: Volvo EC 300 Excavator

Datum: Geodetic Elevation

Logged by: AN Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☐

Shear Strength by
Vane Test ☐

Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at
% Strain at Failure ☐

Shear Strength by
Penetrometer Test ☐

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			SAMPLES	Natural Unit Wt. kN/m³	
					20	40	60	80	250	500	750			
					Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)					
					50	100	150	200	20	40	60			
		FILL ~400 mm thick Mixture of silty sand and silty clay, some gravel, blast shattered type cobbles and boulders, roots and rootlets, brown, moist no odours, no stains	90.01	0										GS1
		SANDY SILT Some gravel, trace clay, cobbles and boulders, brown, moist, no odours, no stains	89.6											
				1										
		Bucket Refusal on Bedrock at 1.3 m Depth	88.7											
		Note 1) One (1) sample and a duplicate (Dup.2) sample submitted for environmental laboratory analyses.												

- NOTES:
1. Borehole/Test Pit data requires Interpretation by exp. before use by others
 2. Test pit backfilled with excavated material and nominally packed in place using excavator bucket.
 3. Field work supervised by an EXP representative.
 4. See Notes on Sample Descriptions
 5. This Figure is to read with exp. Services Inc. report OTT-25007988-A0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
'On completion'	Dry	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA GDT 8/8/25

Shear Strength by LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA.GDT 8/8/25

5. This Figure is to read with exp. Services Inc. report
OTT-25007988-A0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)
'On completion'	Dry	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %

Log of Test Pit TP-25-13



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks 1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 15

Page. 1 of 1

Date Drilled: July 7, 2025

Drill Type: Volvo EC 300 Excavator

Datum: Geodetic Elevation

Logged by: AN Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☐

Shear Strength by
Vane Test ☐

Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at
% Strain at Failure ☐

Shear Strength by
Penetrometer Test ☐

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			SAMPLES	Natural Unit Wt. kN/m³
					20	40	60	80	250	500	750		
					Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
					50	100	150	200	20	40	60		
		FILL ~500 mm thick Mixture of silty sand and gravel and silty clay, roots and rootlets, asphalt and wood pieces, brown, moist, no odours, no stains	88.87	0									GS1
		FILL Silty sand, some gravel and cobbles, brown, moist, no odours, no stains	88.4										
		Bucket Refusal on Bedrock at 0.3 m and at 0.7m Depths	88.2										GS2
		Note 1) Bucket refusal met on bedrock at north side of the test pit at 0.7 m depth. 2) Bucket refusal met on bedrock at south side of the test pit at 0.3 m depth. 3) Two (2) samples submitted for environmental laboratory analyses.											

- NOTES:
- Borehole/Test Pit data requires Interpretation by exp. before use by others
 - Test pit backfilled with excavated material and nominally packed in place using excavator bucket.
 - Field work supervised by an EXP representative.
 - See Notes on Sample Descriptions
 - This Figure is to read with exp. Services Inc. report OTT-25007988-A0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
'On completion'	Dry	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA GDT 8/8/25

Log of Test Pit TP-25-14



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks 1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 16

Page. 1 of 1

Date Drilled: July 7, 2025

Drill Type: Volvo EC 300 Excavator

Datum: Geodetic Elevation

Logged by: AN Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☐

Shear Strength by Vane Test ☐

Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at % Strain at Failure ☐

Shear Strength by Penetrometer Test ☐

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			SAMPLES	Natural Unit Wt. kN/m³
					20	40	60	80	250	500	750		
					Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
					50	100	150	200	20	40	60		
		FILL ~300 mm thick Silty sand, some gravel, grey clay clumps, brown, moist no odours, no stains	89.36	0									GS1
		FILL Silty sand to clayey sandy silt, brown to grey, moist, organic type odours, no stains	89.1										
			88.3	1									
		Bucket Refusal on Bedrock at 1.1m Depth											
		Note 1) Two (2) samples submitted for environmental laboratory analyses.											

- NOTES:
1. Borehole/Test Pit data requires Interpretation by exp. before use by others
 2. Test pit backfilled with excavated material and nominally packed in place using excavator bucket.
 3. Field work supervised by an EXP representative.
 4. See Notes on Sample Descriptions
 5. This Figure is to read with exp. Services Inc. report OTT-25007988-A0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
'On completion'	Dry	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA GDT 8/8/25

Log of Test Pit TP-25-15



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks 1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 17

Page. 1 of 1

Date Drilled: July 7, 2025

Drill Type: Volvo EC 300 Excavator

Datum: Geodetic Elevation

Logged by: AN Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☐

Shear Strength by
Vane Test ☐

Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at
% Strain at Failure ☐

Shear Strength by
Penetrometer Test ☐

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			SAMPLES	Natural Unit Wt. kN/m³
					20	40	60	80	250	500	750		
					Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
					50	100	150	200	20	40	60		
		FILL ~500 mm thick Silty sand and gravel, brown, moist no odours, no stains	89.27	0									
		SANDY SILT Some gravel, trace clay, cobbles and boulders, brown, moist, no odours, no stains	88.8										
		Bucket Refusal on Bedrock at 1.1m Depth	88.2	1									

NOTES:

1. Borehole/Test Pit data requires Interpretation by exp. before use by others
2. Test pit backfilled with excavated material and nominally packed in place using excavator bucket.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-25007988-A0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
'On completion'	Dry	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA GDT 8/8/25

Log of Test Pit TP-25-16



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks 1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 18

Page. 1 of 1

Date Drilled: July 7, 2025

Drill Type: Volvo EC 300 Excavator

Datum: Geodetic Elevation

Logged by: AN Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☐

Shear Strength by
Vane Test ☐

Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at
% Strain at Failure ☐

Shear Strength by
Penetrometer Test ☐

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			SAMPLES	Natural Unit Wt. kN/m³		
					20	40	60	80	250	500	750				
					Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)						
					50	100	150	200	20	40	60				
		FILL Silty sand and gravel, some clay, cobbles, boulders, rootlets, asphalt pieces, brown, moist no odours, no stains	89.26	0										 GS1	
		Bucket Refusal on Bedrock at 1.4 m Depth	87.9												

NOTES:

1. Borehole/Test Pit data requires Interpretation by exp. before use by others
2. Test pit backfilled with excavated material and nominally packed in place using excavator bucket.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-25007988-A0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
'On completion'	Dry	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA GDT 8/8/25

Log of Test Pit TP-25-17



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks 1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 19

Page. 1 of 1

Date Drilled: July 7, 2025

Drill Type: Volvo EC 300 Excavator

Datum: Geodetic Elevation

Logged by: AN Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☒

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☒

Shear Strength by
Vane Test ☐

Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at
% Strain at Failure ☐

Shear Strength by
Penetrometer Test ☒

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			SAMPLES	Natural Unit Wt. kN/m³																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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		FILL ~500mm thick Silty sand, trace gravel, grey clay clumps with roots, brown, moist, no odours, no stains	88.93	0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											

NOTES:

1. Borehole/Test Pit data requires Interpretation by exp. before use by others
2. Test pit backfilled with excavated material and nominally packed in place using excavator bucket.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-25007988-A0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
'On completion'	Dry	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA GDT 8/8/25

Log of Borehole BH25-17



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 19A

Page. 1 of 1

Date Drilled: July 24, 2025

Drill Type: CME 55 Track-Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: SA Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☒

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☒

Shear Strength by Vane Test ☐

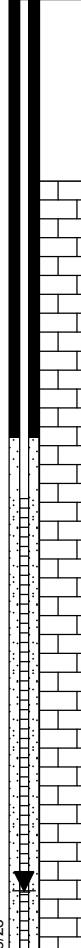
Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at % Strain at Failure ☐

Shear Strength by Penetrometer Test ☒

G W L	S Y M B O L	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			S A M P L E S	Natural Unit Wt. kN/m³
					20	40	60	80	250	500	750		
					Shear Strength				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
					50	100	150	200	20	40	60		
		Power Augered from ground surface to 1.2m depth.	88.93	0									
		Refer to Test Pit No. TP25-17, Figure 19, for subsurface soil conditions from ground surface to 1.2 m depth.											
		<u>LIMESTONE BEDROCK</u>	87.7	1									
		With dark grey to black shale partings, grey											
		With vertical fracture from 4.9m to 5.1m depths.		2									
		With limestone rubble zone from 2.6 m to 2.7 m depths.		3									
					4								
					5								
				83.01	6								
			82.6										
		Borehole Terminated at 6.3 m Depth											

NOTES:

- Borehole data requires interpretation by EXP before use by others
- A 38 mm diameter monitoring well installed as shown.
- Field work supervised by an EXP representative.
- See Notes on Sample Descriptions
- Log to be read with EXP Report OTT-25007988-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
'August 8, 2025	5.9	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %
1	1.2 - 1.7	72	46
2	1.7 - 3.3	100	70
3	3.3 - 4.9	81	75
4	4.9 - 6.3	100	65

LOG OF BOREHOLE Codd's Rd BHS.GPJ TROW OTTAWA.GDT 8/8/25

Log of Test Pit TP-25-18



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks 1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 20

Page. 1 of 1

Date Drilled: July 7, 2025

Drill Type: Volvo EC 300 Excavator

Datum: Geodetic Elevation

Logged by: AN Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☐

Shear Strength by
Vane Test ☐

Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at
% Strain at Failure ☐

Shear Strength by
Penetrometer Test ☐

G W L	S Y M B O L	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h 0	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			S A M P L E S	Natural Unit Wt. kN/m³	
					20	40	60	80	250	500	750			
					Shear Strength				Natural Moisture Content %					
					kPa				Atterberg Limits (% Dry Weight)					
			88.64		50	100	150	200		20	40	60		
		FILL ~500mm thick Silty sand and crushed gravel, trace rootlets, brown to grey, moist, no odours, no stains												
		Bucket Refusal on Bedrock at 0.5 m Depth	88.1											

NOTES:

1. Borehole/Test Pit data requires Interpretation by exp. before use by others
2. Test pit backfilled with excavated material and nominally packed in place using excavator bucket.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-25007988-A0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
'On completion'	Dry	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA GDT 8/8/25

Shear Strength by LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA.GDT 8/8/25

Run No.	Depth (m)	% Rec.	RQD %

Log of Borehole BH25-19



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 21A

Page. 1 of 1

Date Drilled: July 19, 2025

Drill Type: CME 55 Track-Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: SA Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☐

Shear Strength by
Vane Test ☐

Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at
% Strain at Failure ☐

Shear Strength by
Penetrometer Test ☐

G W L	S Y M B O L	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			S A M P L E	Natural Unit Wt. kN/m³
									250	500	750		
					Shear Strength				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
					20	40	60	80	20	40	60		
		Power Augered from ground surface to 1.6m depth.	88.55	0									
		Refer to Test Pit No. TP25-19, Figure 21, for subsurface soil conditions from ground surface to 1.6 m depth.		1									
				2									
		LIMESTONE BEDROCK With dark grey to black shale partings, grey	87.0	3									
		With 12mm and 25mm thick brown and grey soil filled seams and vertical fractures from 2.9 m to 3.1m depths.		4									
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NOTES:

- Borehole data requires interpretation by EXP before use by others
- A 38 mm diameter monitoring well installed as shown.
- Field work supervised by an EXP representative.
- See Notes on Sample Descriptions
- Log to be read with EXP Report OTT-25007988-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
August 8, 2025	5.7	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %
1	1.6 - 2.7	93	78
2	2.7 - 4.2	91	35
3	4.2 - 5.7	100	68
4	5.7 - 7.2	98	95

LOG OF BOREHOLE CODD'S RD BHS.GPJ TROW OTTAWA.GDT 8/8/25

Shear Strength by
Frictional Force ▲LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA.GDT 8/8/25

Run No.	Depth (m)	% Rec.	RQD %

Log of Test Pit TP-25-21



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks 1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 23

Page. 1 of 1

Date Drilled: July 7, 2025

Drill Type: Volvo EC 300 Excavator

Datum: Geodetic Elevation

Logged by: AN Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☐

Shear Strength by
Vane Test ☐

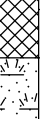
Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at
% Strain at Failure ☐

Shear Strength by
Penetrometer Test ☐

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			SAMPLES	Natural Unit Wt. kN/m³
					20	40	60	80	250	500	750		
					Shear Strength				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
					50	100	150	200	20	40	60		
		FILL ~600 mm thick Silty sand, some gravel, rootlets, dark grey to black, moist, no odours, no stains	89.48	0									
		FILL ~600 mm thick Mixture of silty sand and silty clay, some gravel, no odours, no stains	88.9										
		TOPSOIL ~400mm thick	88.3	1									
		SILTY SAND Some gravel and clay, some cobbles and boulders, brown, moist, no odours, no stains	87.9							X			GS1
				2						X			GS2
		Bucket Refusal on Bedrock at 2.4 m Depth	87.1										

NOTES:

1. Borehole/Test Pit data requires Interpretation by exp. before use by others
2. Test pit backfilled with excavated material and nominally packed in place using excavator bucket.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-25007988-A0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
'On completion'	Dry	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA GDT 8/8/25

Shear Strength by Penetrometer Test [illegible]

Run No.	Depth (m)	% Rec.	RQD %

LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA.GDT 8/8/25

Log of Test Pit TP-25-23



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks 1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 25

Page. 1 of 1

Date Drilled: July 7, 2025

Drill Type: Volvo EC 300 Excavator

Datum: Geodetic Elevation

Logged by: AN Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☐

Shear Strength by
Vane Test ☐

Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at
% Strain at Failure ☐

Shear Strength by
Penetrometer Test ☐

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			SAMPLES	Natural Unit Wt. kN/m³
					20	40	60	80	250	500	750		
					Shear Strength				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
					50	100	150	200	20	40	60		
		ASPHALT ~75mm thick	88.27	0									
		GRANULAR FILL (BASE) ~125mm thick	88.2										
		Silty sand and crushed gravel, grey, damp, no odours, no stains	88.1										
		FILL											
		Silty sand and gravel, some blast shattered type cobbles and boulders, brown, moist, no odours, no stains	87.4										
		SANDY SILT		1									
		Some gravel, trace clay, cobbles and boulders, brown, no odours, no stains	86.8										
		Bucket Refusal on Bedrock at 1.5 m Depth											

NOTES:

- Borehole/Test Pit data requires Interpretation by exp. before use by others
- Test pit backfilled with excavated material and nominally packed in place using excavator bucket.
- Field work supervised by an EXP representative.
- See Notes on Sample Descriptions
- This Figure is to read with exp. Services Inc. report OTT-25007988-A0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
'On completion'	Dry	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA GDT 8/8/25

Log of Test Pit TP-25-24



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks 1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 26

Page. 1 of 1

Date Drilled: July 7, 2025

Drill Type: Volvo EC 300 Excavator

Datum: Geodetic Elevation

Logged by: AN Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☐

Shear Strength by
Vane Test ☐

Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at
% Strain at Failure ☐

Shear Strength by
Penetrometer Test ☐

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			SAMPLES	Natural Unit Wt. kN/m³	
					20	40	60	80	250	500	750			
					Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)					
					50	100	150	200	20	40	60			
		FILL ~500 mm thick Silty sand, some crushed gravel, cobbles, plastic bag type pieces, brown, moist, no odours, no stains	88.22	0										GS1
		TOPSOIL ~200mm thick	87.7											
		FILL Mixture of silty sand and silty clay, trace roots and rootlets, brown, moist, no odours, no stains	87.5											
		Bucket Refusal on Bedrock at 0.9 m Depth	87.3											GS2
		Note 1) Two (2) samples submitted for environmental laboratory analyses.												

- NOTES:
1. Borehole/Test Pit data requires Interpretation by exp. before use by others
 2. Test pit backfilled with excavated material and nominally packed in place using excavator bucket.
 3. Field work supervised by an EXP representative.
 4. See Notes on Sample Descriptions
 5. This Figure is to read with exp. Services Inc. report OTT-25007988-A0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
'On completion'	Dry	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA GDT 8/8/25

Log of Test Pit TP-25-25



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks 1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 27

Page. 1 of 1

Date Drilled: July 7, 2025

Drill Type: Volvo EC 300 Excavator

Datum: Geodetic Elevation

Logged by: AN Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☐

Shear Strength by
Vane Test ☐

Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at
% Strain at Failure ☐

Shear Strength by
Penetrometer Test ☐

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			SAMPLES	Natural Unit Wt. kN/m³
					20	40	60	80	250	500	750		
					Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
					50	100	150	200	20	40	60		
		FILL Silty sand and gravel, blast shattered type cobbles and boulders, asphalt and brick pieces, brown, moist, no odours, no stains	88.94	0									
				1									
		ORGANIC FILL ~700mm thick Silty sand and gravel, roots, rootlets, brick pieces, dark brown to black, organic type odours, no stains	87.7										
		SANDY SILT Some gravel, trace clay, brown,moist, no odours, no stains	87.0 86.9	2									
		Bucket Refusal on Bedrock at 2.0 m Depth											

NOTES:

- Borehole/Test Pit data requires Interpretation by exp. before use by others
- Test pit backfilled with excavated material and nominally packed in place using excavator bucket.
- Field work supervised by an EXP representative.
- See Notes on Sample Descriptions
- This Figure is to read with exp. Services Inc. report OTT-25007988-A0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
'On completion'	Dry	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA GDT 8/8/25

▲

LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA.GDT 8/8/25

Run No.	Depth (m)	% Rec.	RQD %

Log of Borehole BH25-26



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 28A

Page. 1 of 1

Date Drilled: July 23, 2025

Drill Type: CME 55 Track-Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: SA Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☐

Shear Strength by Vane Test ☐

Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at % Strain at Failure ☐

Shear Strength by Penetrometer Test ☐

G W L	S Y M B O L	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			S A M P L E S	Natural Unit Wt. kN/m³			
					20	40	60	80	250	500	750					
					Shear Strength				Natural Moisture Content %					Atterberg Limits (% Dry Weight)		
					kPa											
		Power Augered from ground surface to 2.3m depth.	89.1	0												
		Refer to Test Pit No. TP25-26, Figure 28, for subsurface soil conditions from ground surface to 2.3 m depth.		1												
				2												
			86.8	3												
		LIMESTONE BEDROCK		4												
		With dark grey to black shale partings, grey		5												
		With 12mm thick- brown soil filled seams and vertical fractures from 3.5m to 3.7 m depths		6												
			83.23													
			82.8													
		Borehole Terminated at 6.3 m Depth														

NOTES:

- Borehole data requires interpretation by EXP before use by others
- A 38 mm diameter monitoring well installed as shown.
- Field work supervised by an EXP representative.
- See Notes on Sample Descriptions
- Log to be read with EXP Report OTT-25007988-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
August 8, 2025	5.9	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %
1	2.3 - 3.3	99	61
2	3.3 - 4.7	83	24
3	4.7 - 6.3	100	71

LOG OF BOREHOLE Codd's RD BHS.GPJ TROW OTTAWA.GDT 8/8/25

Log of Test Pit TP-25-27



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks 1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 29

Page. 1 of 1

Date Drilled: July 7, 2025

Drill Type: Volvo EC 300 Excavator

Datum: Geodetic Elevation

Logged by: AN Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☐

Shear Strength by
Vane Test ☐

Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at
% Strain at Failure ☐

Shear Strength by
Penetrometer Test ☐

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			SAMPLES	Natural Unit Wt. kN/m³
					20	40	60	80	250	500	750		
					Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
					50	100	150	200	20	40	60		
		ORGANIC FILL Silty sand, some blast shattered cobbles and boulders, tree parts, roots and rootlets, plastic bag type pieces, dark brown, organic type odour, no stains	88.04	0									
			87.6										
		FILL Silty sand and crushed gravel, some clay, trace roots, brown and grey, no odours, no stains											
			86.7	1									
		Bucket Refusal on Bedrock at 1.3 m and 1.4 m Depths											
		Note 1) An abandoned approximate 400mm wide service trench located in the middle of the test pit with bottom of trench below 1.4 m depth. 2) Bucket refusal met on bedrock at 1.3m at west side of test pit. 3) Bucket refusal met on bedrock at 1.4m at east side of test pit.											

- NOTES:
1. Borehole/Test Pit data requires Interpretation by exp. before use by others
 2. Test pit backfilled with excavated material and nominally packed in place using excavator bucket.
 3. Field work supervised by an EXP representative.
 4. See Notes on Sample Descriptions
 5. This Figure is to read with exp. Services Inc. report OTT-25007988-A0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
'On completion'	Dry	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD GPJ TROW OTTAWA GDT 8/8/25

Shear Strength by LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA.GDT 8/8/25

5. This Figure is to read with exp. Services Inc. report
OTT-25007988-A0

[illegible]

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %

Log of Borehole BH25-28



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 30A

Page. 1 of 1

Date Drilled: July 19, 2025

Drill Type: CME 55 Track-Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: SA Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☐

Shear Strength by Vane Test ☐

Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at % Strain at Failure ☐

Shear Strength by Penetrometer Test ☐

G W L	S Y M B O L	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			S A M P L E	Natural Unit Wt. kN/m³
									250	500	750		
					Shear Strength				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
					kPa								
		Power Augered from ground surface to 1.4m depth.	88.18	0	20	40	60	80	20	500	750		
		Refer to Test Pit No. TP25-28, Figure 30, for subsurface soil conditions from ground surface to 1.4 m depth.		1									
			86.8	2									
		LIMESTONE BEDROCK With dark grey to black shale partings, grey		3									
				4									
				5									
			83.08	6									
				7									
		Borehole Terminated at 7.2 m Depth	81.0										

NOTES:

- Borehole data requires interpretation by EXP before use by others
- A 38 mm diameter monitoring well installed as shown.
- Field work supervised by an EXP representative.
- See Notes on Sample Descriptions
- Log to be read with EXP Report OTT-25007988-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
August 8, 2025	5.1	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %
1	1.4 - 2.6	86	89
2	2.6 - 4.2	96	78
3	4.2 - 5.6	100	76
4	5.6 - 7.2	84	84

LOG OF BOREHOLE CODD'S RD BHS.GPJ TROW OTTAWA.GDT 8/8/25

Log of Test Pit TP-25-29



Project No: OTT-25007988-A0

Project: Proposed Residential Development

Location: Blocks 1 to 3, Codd's Road, Ottawa, Ontario

Figure No. 31

Page. 1 of 1

Date Drilled: July 7, 2025

Drill Type: Volvo EC 300 Excavator

Datum: Geodetic Elevation

Logged by: AN Checked by: SMP

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☐

Shear Strength by
Vane Test ☐

Combustible Vapour Reading ☐

Natural Moisture Content ☒

Atterberg Limits ☐

Undrained Triaxial at
% Strain at Failure ☐

Shear Strength by
Penetrometer Test ☐

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			SAMPLES	Natural Unit Wt. kN/m³	
									250	500	750			
					Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)					
					20	40	60	80	20	40	60			
		FILL Silty sand and crushed gravel, trace blast shattered cobbles and boulders, roots and rootlets, dark brown, moist, no odours, no stains	88.78	0									✖	GS1
		FILL Silty sand and crushed gravel, grey, damp, no odours, no stains	88.3											
		ASPHALT ~75mm thick	88.0											
		FILL Silty sand and crushed gravel, grey, damp, no odours, no stains	87.9											
		FILL Silty sand and crushed gravel, grey, damp, no odours, no stains	87.8	1										
		FILL Silty sand and gravel, brown, moist, no odours, no stains	87.5											
		SANDY SILT Some gravel, trace clay, cobbles and boulders, brown, no odours, no stains											✖	GS2
				2										
			86.5											
		Bucket Refusal on Bedrock at 2.3 m Depth												

NOTES:

1. Borehole/Test Pit data requires Interpretation by exp. before use by others
2. Test pit backfilled with excavated material and nominally packed in place using excavator bucket.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-25007988-A0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
'On completion'	Dry	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA.GDT 8/8/25

Shear Strength by LOG OF TEST PIT TP LOGS 1-30 CODDS ROAD.GPJ TROW OTTAWA.GDT 8/8/25

5. This Figure is to read with exp. Services Inc. report
OTT-25007988-A0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)
'On completion'	Dry	

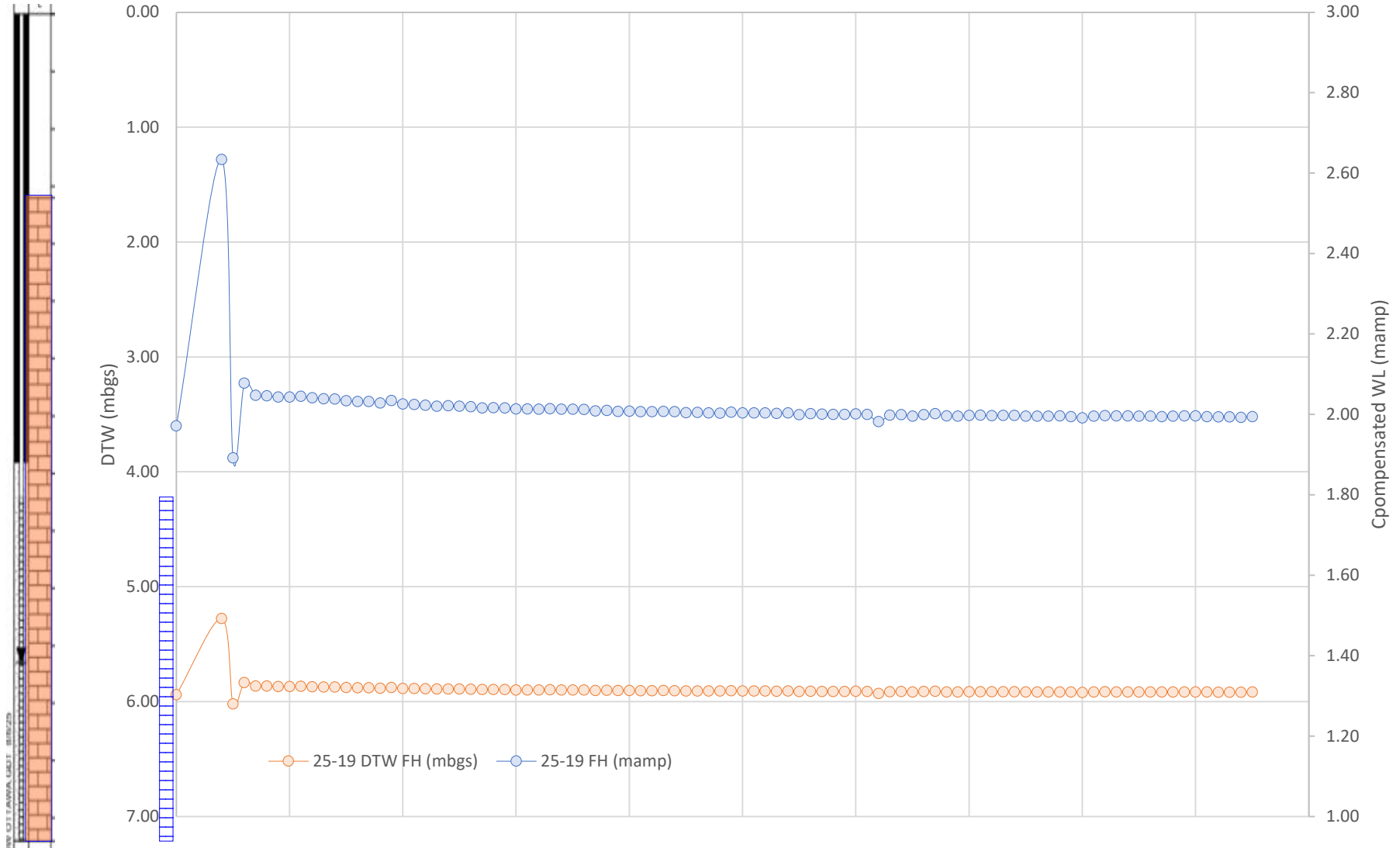
CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %

EXP Services Inc.

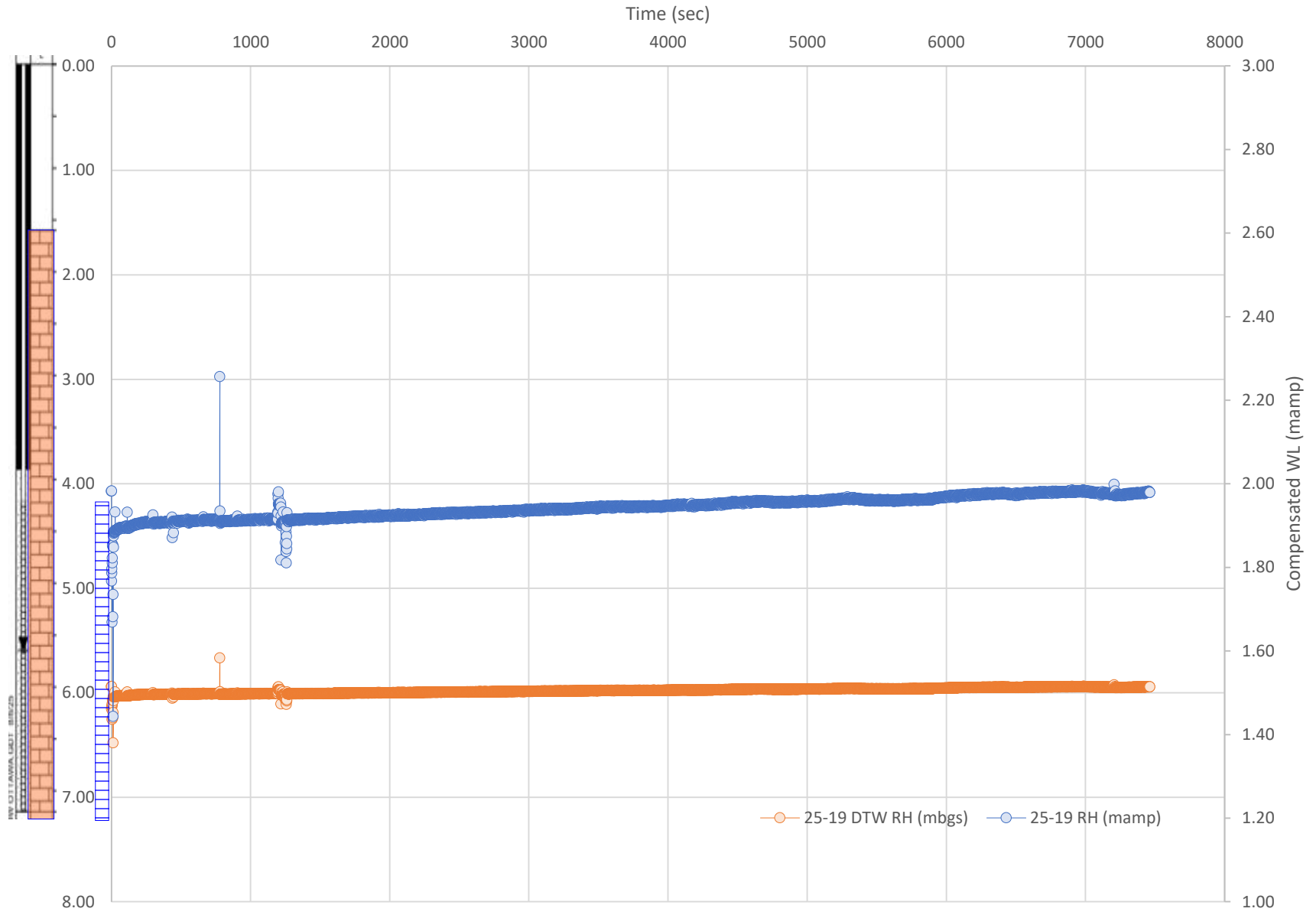
*New Commons Housing Trust -C/o New Commons Development
Hydrogeological Assessment
Blocks 1 to 3, Codd's Road, Ottawa, ON
OTT-25007988-A0
September 17, 2025*

Appendix B – Analytical Plots

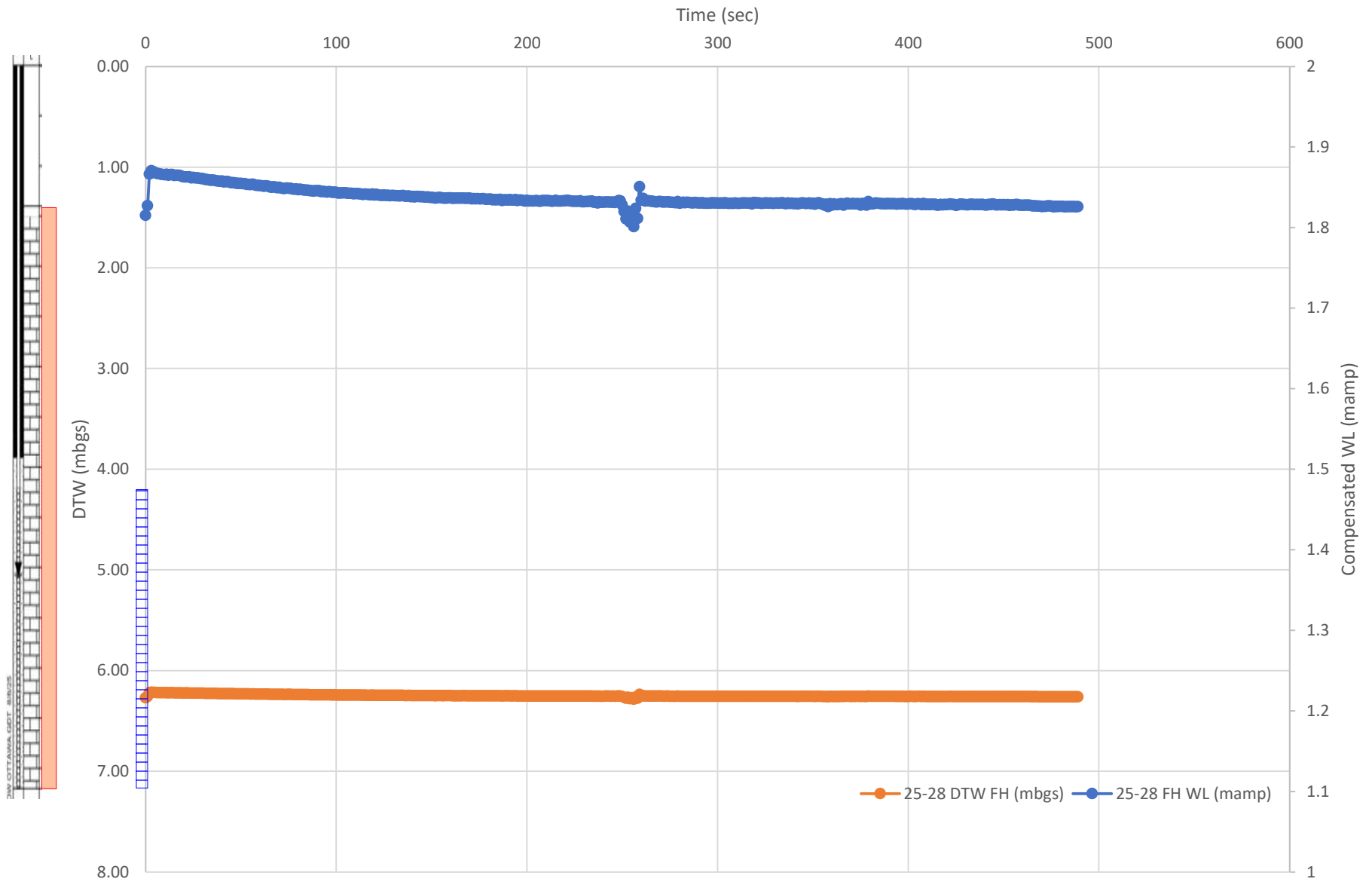
25-19 FH



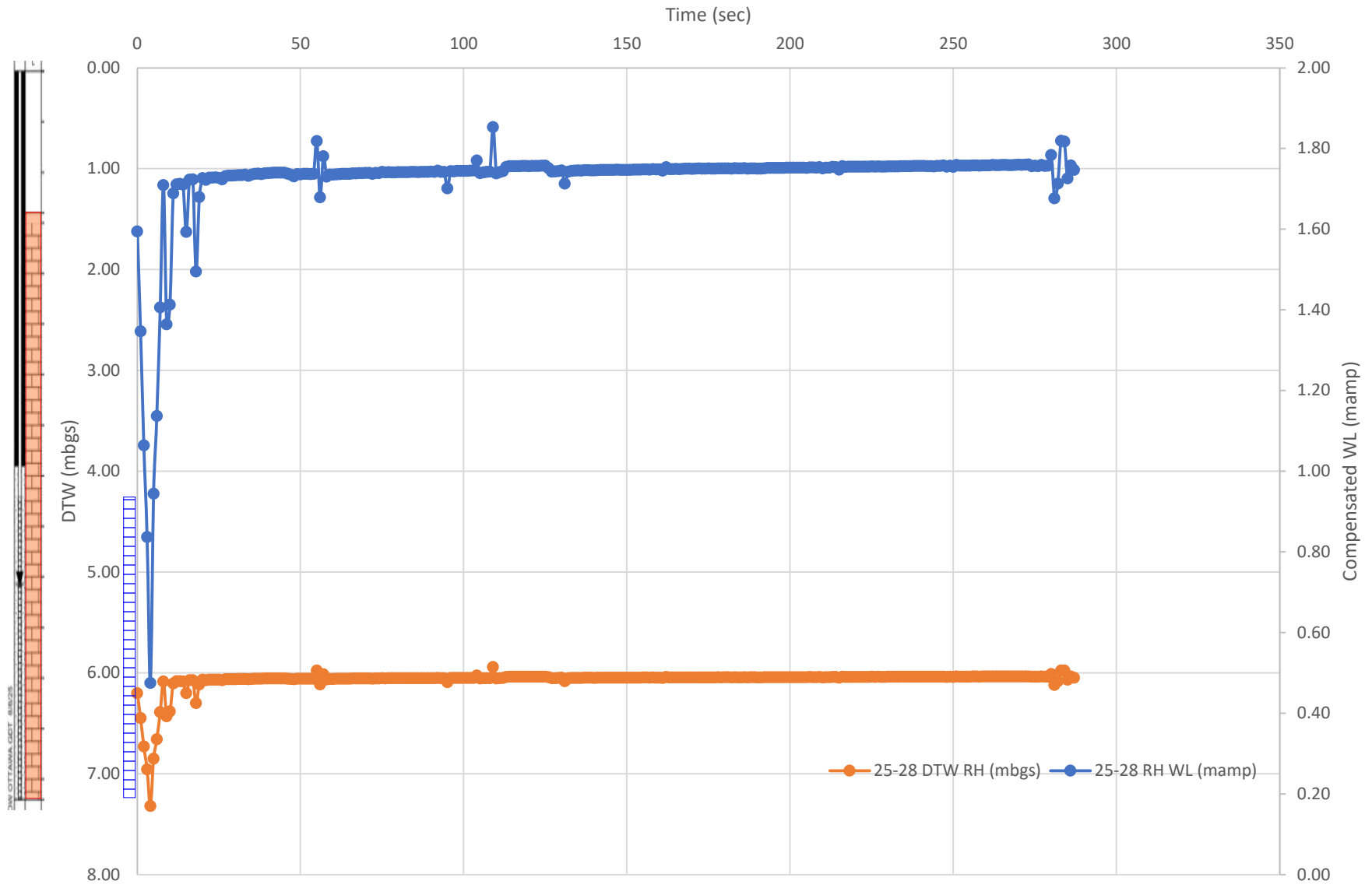
25-19 RH



25-28 FH



25-28 RH



EXP Services Inc.

New Commons Housing Trust -C/o New Commons Development

Hydrogeological Assessment

Blocks 1 to 3, Codd's Road, Ottawa, ON

OTT-25007988-A0

September 17, 2025

Appendix C – Laboratory's Certificates of Analysis

C.O.C.: G 136781

REPORT No: 25-025511 - Rev. 0

Report To:

EXP Services Inc - Ottawa
 2650 Queensview Drive
 Suite 100
 Ottawa, ON K2B 8H6

CADUCEON Environmental Laboratories

2378 Holly Lane
 Ottawa, ON K1V 7P1

Attention: Robert Passmore

DATE RECEIVED: 2025-Aug-22
 DATE REPORTED: 2025-Sep-16
 SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Block 1,2&3 Codd's Rd
 P.O. NUMBER: OTT-25007988-A

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
BOD5 (Liquid)	1	KINGSTON	JWOLFE2	2025-Aug-22	BOD-001	SM 5210B
Cond/pH/Alk Auto (Liquid)	1	OTTAWA	SBOUDREAU	2025-Aug-22	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
Cyanide Total (Liquid)	1	KINGSTON	EHINCH	2025-Aug-26	CN-001	SM 4500-CN-E
Dioxins/Furans (Subcontracted)	1	ALS_GLOBAL	SISLAM	2025-Sep-08		Subcontracted
E.Coli m-TECH Media (Liquid)	1	OTTAWA	AHIRSI	2025-Aug-22	EC-001	MECP E3371
ICP/MS Total (Liquid)	1	OTTAWA	GFENTON	2025-Aug-25	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	1	OTTAWA	SGORMAN	2025-Aug-25	D-ICP-01	SM 3120B
Mercury (Liquid)	1	OTTAWA	AANTONY	2025-Aug-25	D-HG-02	SM 3112B
Nonylphenols (Subcontracted)	1	SGS_LAKEFIELD	SISLAM	2025-Sep-03		Subcontracted
PCB's (Liquid)	1	KINGSTON	CSUMMERHAYS	2025-Aug-27	PCB-001	EPA 8081
Phenols (Liquid)	1	KINGSTON	EHINCH	2025-Aug-27	PHEN-01	MECP E3179
TP & TKN (Liquid)	1	KINGSTON	YLIEN	2025-Aug-28	TPTKN-001	MECP E3516.2
TSS (Liquid)	1	KINGSTON	MCLOSS	2025-Aug-25	TSS-001	SM 2540D
VOC-Volatiles Full (Water)	1	RICHMOND_HILL	FLENA	2025-Aug-26	C-VOC-02	EPA 8260

R.L. = Reporting Limit

NC = Not Calculated

Test methods may be modified from specified reference method unless indicated by an *



Michelle Dubien
Data Specialist

CADUCEON Environmental Laboratories Certificate of Analysis

Final Report
REPORT No: 25-025511 - Rev. 0

					Client I.D.
					Blocks 1, 2 & 3 Codd's Rd
					Sample I.D.
					25-025511-1
					Date Collected
					2025-Aug-22
Parameter	Units	R.L.	Limits		-
E coli	CFU/100mL	1	100	STORM	<2
pH @25°C	pH units	-	9.0	STORM	7.66
BOD5	mg/L	3	25.0	STORM	<3
Total Suspended Solids	mg/L	3	15.0	STORM	460
Phosphorus (Total)	mg/L	0.01	0.4	STORM	0.36
Cyanide (Total)	mg/L	0.005	0.02	STORM	<0.005
Phenolics	mg/L	0.001	0.008	STORM	<0.001
Manganese (Total)	mg/L	0.001	0.05	STORM	0.225
Zinc (Total)	mg/L	0.005	0.04	STORM	0.032
Arsenic (Total)	mg/L	0.0001	0.02	STORM	0.0013
Cadmium (Total)	mg/L	0.000015	0.008	STORM	0.000052
Chromium (Total)	mg/L	0.001	0.07	STORM	0.012
Copper (Total)	mg/L	0.0001	0.04	STORM	0.0129
Lead (Total)	mg/L	0.00002	0.12	STORM	0.00561
Nickel (Total)	mg/L	0.0002	0.08	STORM	0.0136
Selenium (Total)	mg/L	0.001	0.02	STORM	<0.001
Silver (Total)	mg/L	0.0001	0.12	STORM	0.0024
Mercury	mg/L	0.00002	0.0004	STORM	0.00015



Michelle Dubien
Data Specialist

The analytical results reported herein refer to the samples as received and relate only to the items tested. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

CADUCEON Environmental Laboratories Certificate of Analysis

Final Report
REPORT No: 25-025511 - Rev. 0

					Client I.D.
					Blocks 1, 2 & 3 Codd's Rd
					Sample I.D.
					25-025511-1
					Date Collected
					2025-Aug-22
Parameter	Units	R.L.	Limits		-
Benzene	mg/L	0.0005	0.002	STORM	<0.0005
Chloroform	mg/L	0.001	0.002	STORM	<0.001
Dichlorobenzene,1,2-	mg/L	0.0005	0.0056	STORM	<0.0005
Dichlorobenzene,1,4-	mg/L	0.0005	0.0068	STORM	<0.0005
Dichloroethylene,1,2-cis-	mg/L	0.0005	0.0056	STORM	<0.0005
Dichloropropene,1,3-trans-	mg/L	0.0005	0.0056	STORM	<0.0005
Ethylbenzene	mg/L	0.0005	0.002	STORM	<0.0005
Dichloromethane (Methylene Chloride)	mg/L	0.005	0.0052	STORM	<0.005
Tetrachloroethane,1,1,2,2-	mg/L	0.0005	0.0044	STORM	<0.0005
Tetrachloroethylene	mg/L	0.0005	0.0044	STORM	<0.0005
Toluene	mg/L	0.0005	0.002	STORM	<0.0005
Trichloroethylene	mg/L	0.0005	0.0076	STORM	<0.0005
Xylene, m,p-	µg/L	1			<1
Xylene, m,p,o- (Calculated)	mg/L	0.0011	0.0044	STORM	<0.0011
Xylene, o-	µg/L	0.5			<0.5
					Client I.D.
					Blocks 1, 2 & 3 Codd's Rd
					Sample I.D.
					25-025511-1
					Date Collected
					2025-Aug-22
Parameter	Units	R.L.	Limits		-
Poly-Chlorinated Biphenyls (PCB's) (Calculated)	mg/L	0.00005	0.001	STORM	<0.00005
Identification Comment	-	-			-



Michelle Dubien
Data Specialist

The analytical results reported herein refer to the samples as received and relate only to the items tested. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

Subcontracted Analyses

					Client I.D.
					Blocks 1, 2 & 3 Codd's Rd
					Sample I.D.
					25-025511-1
					Date Collected
					2025-Aug-22
Parameter	Units	R.L.	Limits		
PCDD/F TEQ - WHO 2005 (ND=0*EDL)	pg/L	-			0.022
PCDD/F TEQ - WHO 2005 (ND=0.5*EDL)	pg/L	-			0.653
PCDD/F TEQ - WHO 2005 (ND=1*EDL)	pg/L	-			1.28
Nonylphenol Monoethoxylate	mg/L	-			<0.01
Nonylphenol Diethoxylate	mg/L	-			<0.01
Nonylphenols	mg/L	-	0.0025	STORM	<0.001
Nonylphenol Ethoxylates	mg/L	-	0.025	STORM	<0.01

: City of Ottawa

STORM: Storm Sewer By Law

Summary of Exceedances**Storm Sewer By Law**

Blocks 1, 2 & 3 Codd's Rd	Found Value	Limit
Total Suspended Solids	460	15.0
Manganese (Total)	0.225	0.05



Michelle Dubien
Data Specialist