FINAL

Hydrogeology Assessment – Proposed Mixed-Use Development

Loretta & Gladstone Avenue, Ottawa, Ontario

Prepared for:

TIP Gladstone GP Inc. c/o CLV Group Developments Inc.
501-209 Oak Park Boulevard
Oakville, ON L6H 0M2

August 13, 2024

Pinchin File: 285722.005

Issued to:	**TIP Gladstone GP Inc. c/o CLV Group Developments Inc.**
Issued on:	**August 13, 2024**
Pinchin File:	**285722.005**
Issuing Office:	**Kanata, ON**

Author: Megan Keon, EIT.
Project Manager, Geotechnical Services
613.592.3387
mkeon@pinchin.com

Reviewer: Tim McBride, B.Sc., P.Geo., QP_{ESA}
Practice Specialist - Hydrogeology
705.521.0560
tmcbride@pinchin.com

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION AND BACKGROUND

Pinchin Ltd. (Pinchin) was retained by TIP Gladstone GP Inc. c/o CLV Group Developments Inc.(Client) to complete a hydrogeological assessment of the property located off Loretta Avenue North in Ottawa, Ontario (the Site) with regards to a proposed Mixed-Use Residential and Commercial Development.

The Site is located on the east side of Loretta Avenue North, and approximately 270 m north of Highway 417 in Ottawa, Ontario. The Site is currently developed with a multi-storey, commercial/light industrial building, a temporary structure to provide shelter for excess tools and equipment that belong to the current tenant. The remainder of the Site is complete with an asphalt surfaced parking lot. The lands adjacent to the Site are predominantly developed with a combination of residential, commercial/light industrial buildings. The new expansion of the light rail transit system borders the eastern side of the Site and is separated from the Site by a multi-use pathway. The Site location is presented in Figure 1.

It is Pinchin's understanding that the Client is looking to redevelop the property from commercial to mixed-use residential. The proposed development is to have three levels of underground parking garage (UPG) and will require dewatering during construction and operation. As a result, in order to meet the City of Ottawa's requirements, the Client has requested Pinchin perform a hydrogeological assessment at the Site to provide hydrogeological design recommendations for a proposed residential development.

The Client provided Pinchin with the following conceptual Site Plan and drawing package for the purpose of developing a suitable scope of work:

- *"Gladstone and Loretta Residential Tower"*, drawings number A000 to A512, prepared by Linebox Studio, dated February 15, 2024 (Site Plan).

The Site Plan shows the proposed development consisting of one (1) thirty-one story residential apartment building with three levels of underground parking and new Site services. The underground parking garage will occupy the majority of the Site footprint (refer to drawings in Appendix I). Based on the Site Plan, the proposed underside of the footings for the proposed parking garage will be located at a depth of between approximately 11.5 to 11.8 meters below existing ground surface (mbgs). For the dewatering calculations in the report, Pinchin has assumed a total depth of 11.8 mbgs for the entirety of the development and resulting excavation. The proposed redevelopment will reportedly also include new Site services.

It is noted that if the UPG footprint size or depth changes as the development plan becomes finalized, additional hydrogeological investigation work may be required to supplement the recommendations provided in this report and to meet City of Ottawa requirements.

1.1 Purpose

The purpose of this hydrogeological assessment was to characterize the soil and groundwater conditions of the Site, evaluate the dewatering requirements for the proposed construction and operations phases of the development, assess the groundwater quality of potential discharge water, identify any potential impacts on the surrounding environment due to the proposed development, and provide recommendations concerning mitigative measures, if required.

1.2 Proposed Development Parameters

It is Pinchin's understanding that the conceptual proposed development will consist of one (1) thirty-one storey mixed-use residential apartment building. It will reportedly also include three levels of UPG, which will presumedly occupy the majority of the Site footprint and new Site services.

The tentative proposed Site redevelopment plans were provided by the Client at the time this report was drafted so the design parameters below are approximate numbers. The proposed redevelopment plan is presented in Appendix I.

The following design parameter is pertinent to the Site:

- Approximate Area of Residential Tower: 1,115 m^2; and
- Approximate Underground Parking Area Residential Tower 3: 2,134 m^2.

1.3 Previous Investigations

There have been multiple investigations conducted at the Site to date. DST Consulting Group conducted a Phase Two Environmental Site Assessment and Geotechnical Investigation in 2017, Paterson conducted a Supplemental Phase II Environmental Site Assessment in 2020 and since then Pinchin has conducted multiple Phase Two ESAs, a Phase One ESA and has aided in the submission of a Record of Site Condition (RSC) and Brownfield Application. Due to the number of drilling investigations previously completed at the Site and the amount of existing monitoring wells that were present and operable on-Site, Pinchin was able to complete the field-testing portion of this investigation utilizing existing wells. The following reports were referenced during the preparation of the hydrogeological assessment:

- "*Geotechnical Investigation, 951 Gladstone Avenue & 145 Loretta Avenue North, Ottawa, Ontario*" prepared by DST Consulting Engineers Inc. (DST) and dated July 2017 (DST 2017 Geotechnical Report);
- "*Phase Two Environmental Site Assessment, 951 Gladstone Avenue & 145 Loretta Avenue North, Ottawa, Ontario*" prepared by DST and dated August 2017 (DST 2017 Phase Two ESA Report);

- *"Draft Supplemental Phase II Environmental Site Assessment, 951 Gladstone Avenue and 145 Loretta Avenue North, Ottawa, Ontario*" prepared by Paterson Group Inc. (Paterson) and dated October 2020 (Paterson 2020 Draft Supplemental Phase II ESA Report); and
- *"Phase Two Environmental Site Assessment, 951 Gladstone Avenue and 145 Loretta Avenue North, Ottawa, Ontario*" prepared by Pinchin Ltd., Pinchin project number 285722.003, and dated October 19, 2022 (Pinchin 2022 Phase Two ESA Report).

1.1 Methodology

As part of the hydrogeological assessment conducted at the Site, Pinchin utilized four (4) existing wells that were advanced as part of previous investigations. To select the monitoring wells that would be used, Pinchin had assumed that every level of underground parking is approximately 3.5 m and with three levels of underground parking, the underside of the parking garage would be approximately 10.5 mbgs. With the most recent Site Plan provided by the Client, the underside of the parking garage will be approximately 11.8 mbgs. The four wells that were selected were Monitoring Well BH2017-10 (DST 2017 Geotechnical Report), BH3-20 and BH5-20 (Paterson 2020 Phase II ESA Report) and MW119 (Pinchin 2021 Phase II ESA Report). These monitoring wells range in depth between 11.9 to 14.0 mbgs. The monitoring well locations for the hydrogeological assessment are presented in Figure 2 and the well construction details are presented in Table 1. The borehole logs can be found in Appendix II.

As mentioned in Section 1.3, boreholes were advanced at the Site during previous investigations. All the monitoring well and borehole locations from previous investigations are presented on Figure 3.

The borehole locations and ground surface elevations were located at the Site by a professional surveying company and the ground surface elevation at each borehole location has been tied into a geodetic benchmark.

The scope of work for the dewatering estimates and groundwater quality evaluation included the following tasks:

- A review and preparation of a summary of the regional geology and hydrogeology, and its linkage to the site-specific geology and hydrogeology;
- Groundwater level monitoring in all the existing monitoring wells;
- Rising and falling head hydraulic conductivity tests and groundwater sampling of select monitoring wells;
- A review of the conceptual design and assessment of the need for dewatering during construction and operational phases of the redevelopment;

- A potential impact assessment with mitigative measures, if required; and
- Preparation of a hydrogeological assessment report summarizing the findings of the investigation.

2.0 SITE DESCRIPTION AND GEOLOGICAL SETTING

2.1 Surface Water and Drainage

The Site is located in the Ottawa River watershed and the Rideau sub-watershed under the jurisdiction of the Rideau Valley Conservation Authority (RVCA). The Ottawa River Watershed is the largest tributary of the St. Lawrence River Watershed. There is no surface watercourse or other open water body present at the Site. The Ottawa River is located approximately 1.0 km to the northwest of the Site and Dow's Lake, a portion of the Rideau Canal is located approximately 1.1 km to the southeast of the Site.

2.2 Geology

Data obtained from the Ontario Geological Survey Maps, as published by the Ontario Ministry of Natural Resources, indicates that the Site is located on Paleozoic bedrock and is positioned between two bedrock escarpments (Ontario Geological Survey 2010. Surficial geology of Southern Ontario; Ontario Geological Survey, Miscellaneous Release--Data 128-REV). The underlying bedrock at this Site is of the Shadow Lake Formation consisting of limestone, dolostone, shale, arkose and sandstone (Ontario Geological Survey 2011. 1:250 000 scale bedrock geology of Ontario; Ontario Geological Survey, Miscellaneous Release---Data 126-Revision 1).

3.0 SUBSURFACE CONDITIONS

3.1 Soil Stratigraphy

During the DST 2017 Geotechnical Report, DST advanced five boreholes within the proposed Residential Tower 3 footprint to the underlying bedrock layer (including Monitoring Well BH2017-10), so Pinchin has included the four associated borehole logs in this section to present a more complete understanding of the soil stratigraphy. The four additional boreholes that will be referenced in this section aside from the four selected for the hydrogeological assessment include Boreholes BH2017-07, BH2017-11, BH2017-12 and BH2017-13. These borehole logs can be found in Appendix III. The locations of the boreholes can be referenced on Figure 6. It should be noted that the drilling methodology (i.e., air rotary) utilized for the advancement of Monitoring Well MW119 does not facilitate the collection of representative, undisturbed soil samples, so the soil stratification at this location is not known; however, based on the spatial coverage, results and consistency of the soil conditions documented in the surrounding boreholes, the soil stratification is inferred to be approximately the same.

In general, the soil stratigraphy at the Site comprises surficial asphalt overlying fill, clay, sand and gravel and bedrock to the maximum sampled depth of approximately 16.6 mbgs. The appended borehole logs for the hydrogeological assessment provide detailed descriptions and stratigraphy, as well as details of the monitoring well installations and the groundwater elevation measurements. The borehole logs for the Monitoring Wells are also included in Appendix II for reference.

Surficial asphalt was encountered in Monitoring Wells BH2017-10, BH3-20, BH5-20 and is noted to be at the surface of Monitoring Well MW119. It was measured to be approximately 75 to 100 mm thick.

Fill was encountered underlying the surficial asphalt within all the boreholes and extended to depths between approximately 1.4 to 4.3 mbgs. The granular fill typically consisted of sand and gravel containing trace to some silt and transitioned to gravelly sand and sand and clay. A clay fill layer was also encountered in Monitoring Well BH2017-10 at approximately 3.0 mbgs.

Clay and silty clay were encountered underlying the fill in all the Boreholes and Monitoring Wells to depths ranging between 1.8 to 8.3 mbgs.

Underlying the clay in all the Boreholes and Monitoring Wells except for Borehole BH2017-13 was a till layer which consisted primarily of sand and gravel with silt.

Bedrock was encountered and cored in Monitoring Wells BH3-20, BH5-20 and BH2017-10 and auger refusal was encountered at depths of 6.9 to 9.0 mbgs in every Borehole and Monitoring Well except for Borehole BH2017-13 where auger refusal was encountered at 1.8 mbgs. Monitoring Well MW119 was advanced through an air rotary drilling process and all overburden and bedrock materials are disturbed via this technique.

The following table summarizes the soil stratigraphy layers in the approximate area where Residential Tower 3 will be located.

Borehole #	Thickness of Asphalt (mm)	Depth of Fill (m)	Depth of Clay/Silty Clay (m)	Depth of Sand and Gravel/Probable Till (m)	Depth of Bedrock/Auger Refusal (m)
MW119 (Pinchin 2022 Phase Two ESA Report)	Unsampled				8.2 – 14.2 m
BH3-20 (Paterson 2020 Phase II ESA Report)	80 mm	0.08 – 3.5m	3.5 – 6.1 m	6.1 – 7.7 m	7.7 – 12.2 m

Borehole #	Thickness of Asphalt (mm)	Depth of Fill (m)	Depth of Clay/Silty Clay (m)	Depth of Sand and Gravel/Probable Till (m)	Depth of Bedrock/Auger Refusal (m)
BH5-20 (Paterson 2020 Phase II ESA Report)	100 mm	0.1 – 3.8m	3.8 – 4.6m	4.6 – 6.9 m	6.9 – 11.9 m
BH2017-07 (DST 2017 Geotechnical Report)	75 mm	0.075 – 4.3m	4.3 – 7.3m	7.3 – 8.0 m	Auger Refusal
BH2017-10 (DST 2017 Geotechnical Report)	100 mm	0.1 – 4.3m	4.3 – 8.3m	8.3 – 9.0 m	9.0 – 16.6 m
BH2017-11 (DST 2017 Geotechnical Report)	75 mm	0.075 – 3.4m	3.4 – 7.3m	7.3 – 8.4 m	Auger Refusal
BH2017-12 (DST 2017 Geotechnical Report)	75 mm	0.075 – 3.0m	3.0 – 7.9m	7.9 – 8.5 m	Auger Refusal
BH2017-13 (DST 2017 Geotechnical Report)	75 mm	0.075 – 1.4m	1.4 – 1.8m	Auger Refusal	Auger Refusal

3.2 Water Level Elevations

As mentioned in Section 2.0, a total of four monitoring wells that were installed at the Site, were selected from previous investigations for the hydrogeological assessment. The monitoring well construction details are presented in Table 1.

During the previous investigations (DST Geotech, Paterson Phase II ESA, Pinchin Phase Two ESA), groundwater levels were recorded on July 20, 2017, September 30, 2020, April 21 and 22 and June 9-15 in 2021. For the hydrogeological assessment, additional and more recent groundwater levels were recorded on May 23, June 23 and July 15, 2024. As presented in Table 2, the groundwater levels measured in the installed monitoring wells ranged from 3.92 mbgs in Monitoring Well BH3-20 on April 21/22, 2021, to 7.84 mbgs in Monitoring Well MW119 between June 9 to 15 in 2021.

Based on the data obtained on the most recent groundwater levels recorded on July 15, 2024 (and consistent with historic data), a groundwater elevation contour map was prepared as presented on Figure 4, and the shallow groundwater flow direction was inferred to generally be towards the northeast.

3.3 Hydraulic Conductivity and Infiltration Rate

The hydraulic conductivity (K-value) of the instrumented bedrock was estimated based on results obtained from in-situ rising and falling head hydraulic conductivity tests completed at all four monitoring well locations.

Each monitoring well was developed prior to the completion of the associated K-value testing. Well purging was implemented to remove silt and sand introduced into the well during construction, and to remove fine particles from the coarse sand pack placed around the outside of the well screen during construction.

The rising head test procedure employs the hydrostatic time-lag method for groundwater recovery following the removal or addition of a volume of water from/to a monitoring well, and makes use of the theory of Hvorslev (1951), as described in Freeze and Cherry (1979). Hvorslev's method is expressed by the following equation:

$$K = \frac{r2\ln\left(\frac{L}{R}\right)}{2LT_0}$$

Where:

K	=	hydraulic conductivity of the tested material (m/sec)
r	=	inner radius of the well riser pipe (m)
R	=	outer radius of the well bore (m)
L	=	length of screen and sand pack (m)
T_o	=	time lag (sec), where (H-h)/(H-Ho) = 0.37
h	=	water level at each time of measurement (m)
Ho	=	initial water level (m, start of test)
H	=	stabilized water level prior to the test (m)

The time lag, T_0, is defined as the time required for the water level to recover to 63% of the stabilized level, if the initial flow rate into the well is maintained. This time lag is determined graphically as the time for which (H-h) divided by (H-Ho) is equal to 0.37.

Rising Head hydraulic conductivity (K) tests were undertaken in three of the installed monitoring wells (Monitoring Wells MW119, BH5-20 and 2017-10). When the field work was being completed, the response within Monitoring Well BH3-20 during the rising head test was instantaneous, as a result the

hydraulic properties of this instrumentation was completed using a falling head test via a traditional slug test. The rising and falling head K-test curves are presented in Appendix IV.

The well screen intervals and estimated hydraulic conductivities (K-value) at the four on-Site monitoring wells are summarized below:

MWs	Screen Interval (mbgs)	Screened Unit	K-Estimate (cm/sec)	Test Procedure
BH2017-10	10.0 – 13.1	Bedrock	1.9×10^{-3}	Rising Head
BH3-20	9.2 – 12.2	Bedrock	7.3×10^{-5}	Falling Head
BH5-20	10.4 – 11.9	Bedrock	1.1×10^{-3}	Rising Head
MW119	12.5 – 14.0	Bedrock	2.2×10^{-7}	Rising Head

The estimated K-values ranged from 2.2×10^{-7} cm/sec to 1.9×10^{-3} cm/sec for the wells that were screened through the limestone bedrock, with a geometric mean of 7.7×10^{-4} cm/sec.

3.4 Groundwater Quality

3.4.1 Groundwater Sampling in 2021

Due to the nature of the investigation and Pinchin utilizing existing monitoring wells that were installed as part of previous investigations, groundwater samples have been collected during two different intervals. Between April to June 2021, one groundwater sample was submitted from each of the four monitoring wells (Monitoring well BH3-20, BH5-20, BH2017-10 and MW119) and were compared against MECP Table 3 Site Condition Standards (SCS). It should be noted that the MECP Table 3 SCS are not as stringent as Table 1 and 2 of the City of Ottawa's Sanitary and Sewer Use By-Law, so the exceedance values/detection limits would not have been as conservative and may result in the exceed of additional contaminants versus those City of Ottawa's Sanitary and Sewer Use By-Law Table 1 and 2 criteria. It should be noted that the samples tested were not compared against General Organics & Hydrocarbons, metals, some volatiles and semi-volatiles, dioxins & furans, formaldehyde, pesticides and PCBs. The groundwater samples were submitted to Bureau Veritas to complete the analytical laboratory testing and the results are outlined in Appendix V. The following contains a table of exceedances that were noted.

Contaminant	Table Exceedance	Value of Allowable Contaminant During Discharge (mg/L)	Borehole Number	Value of Exceedance (mg/L)
1,2 Dichloroethane	Table 1	0.21	MW119	1.9
Xylene	Both Tables	Table 1 – 0.32 mg/L Table 2 – 0.0044 mg/L	BH3-20, MW119	BH3-20 – 0.47 mg/L MW119 – 0.78 mg/L

Contaminant	Table Exceedance	Value of Allowable Contaminant During Discharge (mg/L)	Borehole Number	Value of Exceedance (mg/L)
Xylene	Table 2	0.0044	BH5-20, BH2017-10	BH5-20 - <0.2 mg/L BH2017-10 - <0.2 mg/L
Napthalene	Table 2	0.0064	All Monitoring Wells	<0.05 mg/L

3.4.2 Groundwater Sampling in 2024

Groundwater samples were collected on July 5, 2024, from Monitoring Well BH3-20 to evaluate the water quality with reference to the City of Ottawa's Sanitary Sewer Use By-Law parameter criteria for storm sewer and sanitary discharge (By-law No. 2003-514). The results of the analytical laboratory testing are provided in Appendix VI.

The groundwater samples were submitted to Paracel Laboratories Ltd. Paracel has been accredited by Canadian Association for Laboratory Accreditation Inc. (CALA). The samples collected were subcontracted out to Pacific Rim Laboratories Inc. to test for Dioxins and Furans and to ALS Environment (ALS) to test for NDMA, formaldehyde and the presence of nonylphenols and ethoxylates.

The analytical results were compared with the City of Ottawa's Table 1 (Limits for Sanitary and Combined Sewers Discharge) and Table 2 (Limits for Storm Sewer Discharge). There was one exceedance noted when comparing the lab results against Table 2 parameters. Quantified concentrations of Manganese exceeded the maximum allowable discharge amount in storm sewers. The quantity of Zinc detected in the sample also approached a Table 2 exceed with a value of 0.4 mg/L when compared against the allowable discharge limit of 0.4 mg/L. The table below summarizes the quantified concentrations that exceeded or equalled the Table 1 and Table 2 Limits. The full comparison of all the lab results against the Table 1 and Table 2 discharge limits can be found in Appendix VI.

Chemical Component	Table 1 (mg/L)	Table 2 (mg/L)	BH3-20 (mg/L)
Manganese	5	0.05	0.8
Zinc	3	0.04	0.04

Based on the quantified groundwater conditions confirmed via analytical testing, groundwater remediation and/or treatment would be required to facilitate the approved use of the City of Ottawa Sewers (specifically storm sewers) for construction and long-term operational dewatering discharges. Pinchin notes that elevated levels of manganese could be a result of the groundwater interacting with bedrock for longer periods of time especially in deeper wells that are screened in bedrock.

3.5 Radius of Influence

The high water level throughout the Site is cause for the additional testing completed at site to determine the size of the Radius of Influence when the site requires dewatering and whether dewatering the Site will have a direct impact on the groundwater levels of the surrounding properties and nearby properties of water. A continuous pumping test was completed on Monitoring Well BH3-20 to determine the size of the Radius of Influence when the Site requires dewatering. Water was pumped at a continuous rate of 0.8 L/min from Monitoring Well BH3-20 and levels were measured in Monitoring Wells BH5-20, BH2017-10 and MW119. Based on the results, none of the water levels recorded in the monitoring wells are inferred to quantify a pumping induced effect.

As a result, the anticipated radius of influence from continuous dewatering of an excavation within an unconfined aquifer system can be categorized by the equation:

$$R = b \times (\text{sqrt}\ (k/(2*N)))$$

Where:

R	=	Radius of influence (m)
b	=	depth of the excavation (m)
k	=	hydraulic conductivity of the formation (m/s)
N	=	recharge rate of the formation (m/s)

Assuming the depth of excavation will be upwards of approximately 6 m below the normal groundwater levels, and applying a conservative rate of recharge of approximately 1.0 m/year (6×10^{-8} m/s), the anticipated theoretical radius of influence beyond the face of the excavation can be expected to extend approximately 48 m and may significantly affect the levels of the surrounding properties following a parabolic relationship between distance and drawdown (i.e., dewatering drawdown effects will be measurable close the extraction points but dissipate rapidly with increased distance). It is not expected to affect any of the bodies of water in close proximity to the Site.

3.6 MECP Water Wells

Water well records from within a 250 m radius of the Site were accessed from the Ontario Ministry of the Environment, Conservation and Parks (MECP) Water Well Information System (WWIS).

Based on a review of the water well database, a total of fourteen (14) water well records were found within a radius of 250 m from the Site, all of which are monitoring wells. The MECP water well locations are presented on Figure 5.

4.0 DEWATERING ASSESSMENT

The stabilized groundwater elevations measured on July 15, 2024, in the monitoring wells ranged from 3.9 to 5.2 mbgs. The footprint for the UPG area of the residential tower is approximately 2,134 m^2. The dewatering target is 1 m below the underside of underground parking slab.

The field investigation consisted of monitoring the water levels in the wells and completing rising and falling head tests on the wells to determine the rate of recharge and rate of influence. By completing these tests, Pinchin was able to determine the following characteristics that were required to provide an accurate dewatering assessment for the Site:

- Column of water required to reach the dewatering target during construction and operations; and
- Geodetic elevation of the bottom of the excavation (an average taken across all of the boreholes).

The rising head test procedures employ the hydrostatic time-lag method for groundwater recovery following the removal or an addition of a volume of water from a monitoring well and makes use of the theory of Hvorslev (1951), as described in Freeze and Cherry (1979). Hvorslev's method is expressed by the following equation:

$$Q = \frac{\pi K (H^2 - h^2)}{\ln (\frac{R_o}{R_s})}$$

Where:

K	=	hydraulic conductivity of the tested material (m/day)
H	=	Distance from Static water level to bottom of Aquifer (m)
h	=	lowest water level needed from static (m)
Ro	=	Radius of conical depression (m)
Rs	=	equivalent radius (m)
L	=	length of excavation (m)
w	=	width of excavation

The values of Ro and Rs in Hvorslev's method above can be calculated by using the following equations:

$$Ro = Rs + 3000 \times (H - h) \times \sqrt{\frac{K}{86400}}$$

$$Rs = \sqrt{\frac{w \times l}{\pi}}$$

The results of the dewatering estimates from a theoretical groundwater inflow, including a 100% contingency amount to take into account variability in K-values throughout the Site, are as follows. As such, the mean K-value for the dewatering calculations is 7.7 x 10^{-4} cm/sec.

4.1 Dewatering Results of Residential Tower

A conservative theoretical groundwater dewatering scenario for both construction and operations was developed for the above conceptual development scenario that employed the following parameters and assumptions:

- Excavation Area – Underground structure to require dewatering 2,134 m^2;
- Approximate Bottom of Excavation Elevation 52.74 m;
- Average Dewatering Column Height 7.86 m; and
- Geometric mean K-value 7.7 x 10^{-4} cm/sec.

Area/Structure to be Dewatered	K-Estimate (cm/sec)	Area to be Dewatered (m2)	Dewatering Estimate (m3/day)	Dewatering Estimate with 100% Contingency (m3/day)
Entire Site/UPG	7.7 x 10^{-4}	2,134	155	310

The dewatering estimate is indicative of high to medium permeability formations which will be releasing a significant amount of water either during the construction or operational phases. These estimates are further supported by the observed duration of time required for the groundwater table to stabilize in the monitoring wells (both following drilling and following the small-scale aquifer testing). The estimated dewatering volumes for the Residential Tower are large enough to trigger the requirement for either an Environmental Activity Sector Registration (EASR) or a Permit to Take Water (PTTW) for construction dewatering of 50,000 L/day (50 m^3/day). During the application of the Sewer Use approvals, consideration should be given to providing an allowance for direct precipitation into the construction excavation.

Dewatering of soils has the potential to result in consolidation of clays and other fine-grained matrices. However, given that the proposed development will be constructed directly on bedrock and the clay and finer grained materials will be removed during construction, the risk of settlement effects is insignificant. However, given the probable extent of the cone of influence associated with the anticipated dewatering efforts, dewatering design and operations should be conducted to minimize the potential effects on neighbouring properties and infrastructure that may not be founded on bedrock.

It should be noted that water level monitoring should be conducted monthly throughout the year to capture seasonal variation in the water table elevations. Depending on the magnitude of seasonal variation in the water table at the Site, a re-evaluation of the potential for dewatering may be required.

5.0 CONCLUSIONS

Pinchin provides the following conclusions arising out of the Hydrogeological Assessment activities to date:

- The Site is located in the Ottawa River Watershed and Rideau sub-watershed. This sub-watershed falls under the jurisdiction of the Rideau Valley Conservation Authority (RVCA). There is no surface watercourse or other open water body present at the Site. The Ottawa River is located approximately 1.0 km to the northwest of the Site and Dow's Lake (part of the Rideau Canal) is located approximately 1.1 km to the southeast of the Site.
- Data obtained from the Ontario Geological Survey Maps, as published by the Ontario Ministry of Natural Resources, indicates that the Site is located on Paleozoic bedrock and is positioned between two bedrock escarpments (Ontario Geological Survey 2010. Surficial geology of Southern Ontario; Ontario Geological Survey, Miscellaneous Release--Data 128-REV). The underlying bedrock at this Site is of the Shadow Lake Formation consisting of limestone, dolostone, shale, arkose and sandstone (Ontario Geological Survey 2011. 1:250 000 scale bedrock geology of Ontario; Ontario Geological Survey, Miscellaneous Release---Data 126-Revision 1).
- In general, the soil stratigraphy at the Site comprises either surficial asphalt overlying a combination of fill (granular, gravelly sand and sand and clay), clay and silty clay, till and bedrock to the maximum sampled borehole depth of approximately 16.6 mbgs.
- During the previous investigations (DST Geotech, Paterson Phase II ESA, Pinchin Phase Two ESA), groundwater levels were recorded on July 20, 2017, September 30, 2020, April 21 and 22 and June 9-15 in 2021. For the hydrogeological assessment, additional and more recent groundwater levels were recorded on May 23, June 23 and July 15, 2024. As presented in Table 2, the groundwater levels measured in the installed monitoring wells ranged from 3.92 mbgs in Monitoring Well BH3-20 on April 21/22, 2021, to 7.84 mbgs in Monitoring Well MW119 between June 9 to 15 in 2021. This results in an average water column dewatering depth of 7.86 m.
- The estimated hydraulic conductivity values ranged from 2.2×10^{-7} cm/sec to 1.9×10^{-3} cm/sec for the wells that were screened through the limestone bedrock, with a geometric mean of 7.7×10^{-4} cm/sec.
- The dewatering estimate was calculated to result in 155 m^3/day and 310 m^3/day with 100% contingency for the excavations of the UPG area at the Site.

- It is expected that an EASR registration or PTTW will be required at the construction or operations stage of the proposed development. It should be noted that water level monitoring should continue to be conducted throughout the year to capture seasonal variation in the water table elevations.
- A groundwater quality assessment completed as per the City of Ottawa's Sanitary Sewer Use By-Law indicated that the water generated at the Site generally met the City's Table 1 and Table 2 sewer discharge standards, with the exception of a storm sewer exceedance for manganese.

6.0 RECOMMENDATIONS

Based on the results of Hydrogeological Assessment discussed above, the following recommendations would be made:

1. Should the groundwater monitoring indicate that seasonal variation in the water table at the Site is significant, a re-evaluation of the potential for dewatering will be required.
2. Based on the quantified groundwater conditions confirmed via analytical testing, groundwater remediation and/or treatment would be required to facilitate the approved use of the City of Ottawa Sewers for construction and long-term operational dewatering discharges.
3. Dewatering system design and operations should be completed by an experienced dewatering sub-contractor in order to minimize the potential dewatering effects and interference to adjacent properties.

7.0 TERMS AND LIMITATIONS

This Hydrogeology Assessment was performed for the exclusive use of TIP Gladstone GP Inc. c/o CLV Group Developments Inc. (Client), the City of Ottawa (City) in order to evaluate the subsurface conditions at Loretta & Gladstone Avenue, Ottawa, Ontario. Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practises in the field of hydrogeology for the Site. Classification and identification of soil and geologic units have been based upon commonly accepted methods employed in professional geotechnical and geological engineering practice. No warranty or other conditions, expressed or implied, should be understood. Conclusions derived are specific to the immediate area of study and cannot be extrapolated extensively away from sample locations.

Performance of this Hydrogeological Assessment to the standards established by Pinchin is intended to reduce, but not eliminate, uncertainty regarding the subgrade soil and groundwater conditions at the Site and recognizes reasonable limits on time and cost.

Regardless of how exhaustive a geological/hydrogeological investigation is performed; the investigation cannot identify all of the subsurface conditions. In addition, this report is intended to be supplemented and updated with future, more extensive, investigations at the detailed design stage(s) of the Project. Therefore, no warranty is expressed or implied that the entire Site is representative of the subsurface information obtained at the specific locations of our investigation and previous investigations done by others. If, during construction, subsurface conditions differ from then what was encountered within our test locations and the additional subsurface information provided to us, Pinchin should be contacted to review our recommendations. This report does not alleviate the contractor, owner, or any other parties of their respective responsibilities.

This report has been prepared for the exclusive use of the Client, the City, and Client's authorized agents. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of the third parties. If additional parties require reliance on this report, written authorization from Pinchin will be required. Pinchin disclaims responsibility of consequential financial effects on transactions or property values, or requirements for follow-up actions and costs. No other warranties are implied or expressed. Furthermore, this report should not be construed as legal advice.

The liability of Pinchin or our officers, directors, shareholders or staff will be limited to the lesser of the fees paid or actual damages incurred by the Client. Pinchin will not be responsible for any consequential or indirect damages. Pinchin will only be liable for damages resulting from the negligence of Pinchin.

Pinchin will not be liable for any losses or damage if the Client has failed, within a period of two years following the date upon which the claim is discovered (Claim Period), to commence legal proceedings against Pinchin to recover such losses or damage unless the laws of the jurisdiction which governs the Claim Period which is applicable to such claim provides that the applicable Claim Period is greater than two years and cannot be abridged by the contract between the Client and Pinchin, in which case the Claim Period shall be deemed to be extended by the shortest additional period which results in this provision being legally enforceable.

Pinchin makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and these interpretations may change over time.

Specific limitations related to the legal and financial and limitations to the scope of the current work are outlined in our proposal and any subsequent Change Order documentation, the attached Methodology and the Authorization to Proceed, Limitation of Liability and Terms of Engagement which accompanied the proposal.

Information provided by Pinchin is intended for Client, the City, and Client's authorized agents' use only. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law. Any use by a third party of reports or documents authored by Pinchin or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.

\\pinchin.com\Ott\Job\285000s\0285722.000 CLV,951Gladstone&145Loretta,EDR,PRRV\0285722.005 CLV,145LorettaAveN,Ottawa,GEO,HYDRO\Deliverables\285722.005 HG Assmt Loretta & Gladstone Ottawa ON CLV Group.docx
Template: Master Geotechnical Investigation Report – Ontario, GEO, April 18, 2019

TABLES

TABLE 1

MONITORING WELL CONSTRUCTION DETAILS

CLV GROUP DEVELOPMENTS INC.

Loretta & Gladstone

				Well Construction Details				
Monitoring Well	Ground Surface Elevation (m)	Borehole Depth (mbgs)	Monitoring Well Depth (mbgs)	Well Diameter (cm)	Screen Slot Size	Monitoring Well Screen Interval (mbgs)	Screen Length (m)	Screened Soil
BH2017-10	64.53	16.60	13.10	5.0	10	10.0 - 13.1	3.0	Bedrock
BH3-20	64.21	12.20	12.20	3.8	10	9.2 - 12.2	3.0	Bedrock
BH5-20	64.92	11.91	11.91	3.8	10	10.4 - 11.9	3.0	Bedrock
MW119	64.49	14.02	14.02	5.0	10	12.5 - 14.0	3.0	Bedrock

Notes:

mbgs = meters below ground surface

Table 2A

GROUNDWATER ELEVATION DATA - PREVIOUS INVESTIGATIONS

CLV GROUP DEVELOPMENTS INC.

LORETTA & GLADSTONE

				July 20, 2017		September 30, 2020	
Monitoring Well	Ground Surface Elevation (m)	Monitoring Well Screen Interval (mbgs)	Height of Casing (m)	Groundwater Level Below Ground Surface (mbgs)	Calculated Groundwater Elevation (m)	Groundwater Level Below Ground Surface (mbgs)	Calculated Groundwater Elevation (m)
BH2017-10	64.53	10.0 - 13.1	-0.07	4.1	60.43	NM	NM
BH3-20	64.21	9.2 - 12.2	-0.07	NM	NM	4.18	60.03
BH5-20	64.92	10.4 - 11.9	-0.06	NM	NM	4.82	60.10
MW119	64.49	12.5 - 14.0	-0.09	NM	NM	NM	NM

				April 21-22, 2021		June 9-15, 2021	
Monitoring Well	Ground Surface Elevation (m)	Monitoring Well Screen Interval (mbgs)	Height of Casing (m)	Groundwater Level Below Ground Surface (mbgs)	Calculated Groundwater Elevation (m)	Groundwater Level Below Ground Surface (mbgs)	Calculated Groundwater Elevation (m)
BH2017-10	64.53	10.0 - 13.1	-0.07	4.27	60.26	NM	NM
BH3-20	64.21	9.2 - 12.2	-0.07	3.92	60.29	NM	NM
BH5-20	64.92	10.4 - 11.9	-0.06	4.73	60.19	NM	NM
MW119	64.49	12.5 - 14.0	-0.09	NM	NM	7.84	56.65

Notes: mbgs = meters below ground surface

NM = Not measured

Table 2b

GROUNDWATER ELEVATION DATA - 2024 HYDROGEOLOGICAL INVESTIGATION

CLV GROUP DEVELOPMENTS INC.

LORETTA & GLADSTONE

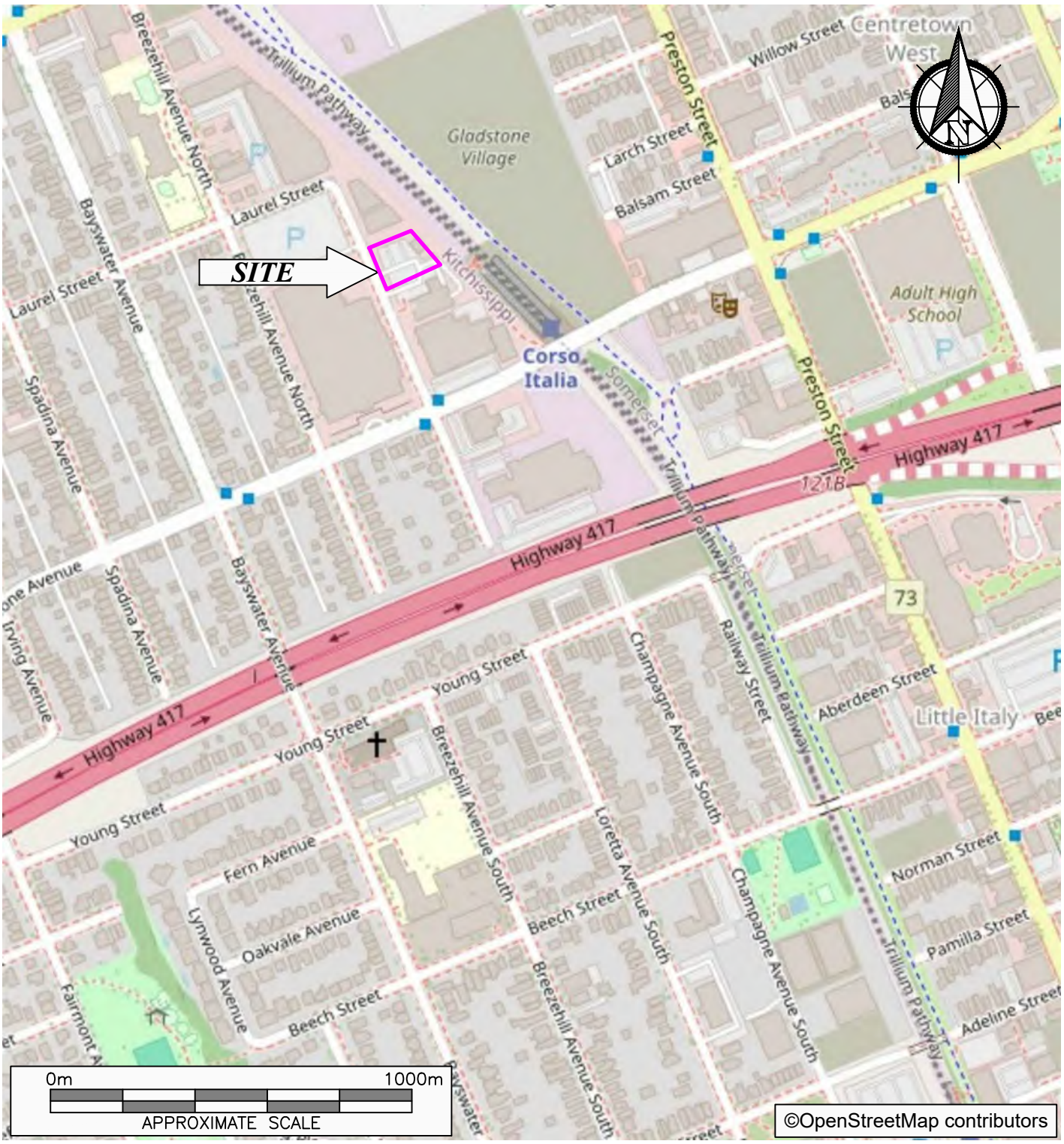
				May 23, 2024		June 23, 2024	
Monitoring Well	Ground Surface Elevation (m)	Monitoring Well Screen Interval (mbgs)	Height of Casing (m)	Groundwater Level Below Ground Surface (mbgs)	Calculated Groundwater Elevation (m)	Groundwater Level Below Ground Surface (mbgs)	Calculated Groundwater Elevation (m)
BH2017-10	64.53	10.0 - 13.1	-0.07	4.44	60.09	4.47	60.06
BH3-20	64.21	9.2 - 12.2	-0.07	4.23	59.98	4.07	60.14
BH5-20	64.92	10.4 - 11.9	-0.06	4.84	60.08	4.94	59.98
MW119	64.49	12.5 - 14.0	-0.09	5.29	59.20	5.33	59.16

				July 15, 2024	
Monitoring Well	Ground Surface Elevation (m)	Monitoring Well Screen Interval (mbgs)	Height of Casing (m)	Groundwater Level Below Ground Surface (mbgs)	Calculated Groundwater Elevation (m)
BH2017-10	64.53	10.0 - 13.1	-0.07	4.22	60.31
BH3-20	64.21	9.2 - 12.2	-0.07	3.94	60.27
BH5-20	64.92	10.4 - 11.9	-0.06	4.49	60.43
MW119	64.49	12.5 - 14.0	-0.09	5.20	59.29

Notes: mbgs = meters below ground surface

NM = Not measured

FIGURES



PINCHIN

PROJECT NAME: HYDROGEOLOGICAL ASSESSMENT		
CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP C/O CLV GROUP DEVELOPMENTS INC.		
PROJECT LOCATION: LORETTA AVENUE AND GLADSTONE AVENUE, OTTAWA, ONTARIO		
FIGURE NAME: KEY MAP		FIGURE NO.: 1
APPROXIMATE SCALE: AS SHOWN	PROJECT NO.: 285722.005	DATE: AUGUST 2024

LEGEND

- BOREHOLE / MONITORING WELL LOCATION
- [XX.XX] APPROXIMATE LOCAL GROUND ELEVATION (m)
- [XX.XX] APPROXIMATE LOCAL TERMINATION ELEVATION (m)

PINCHIN

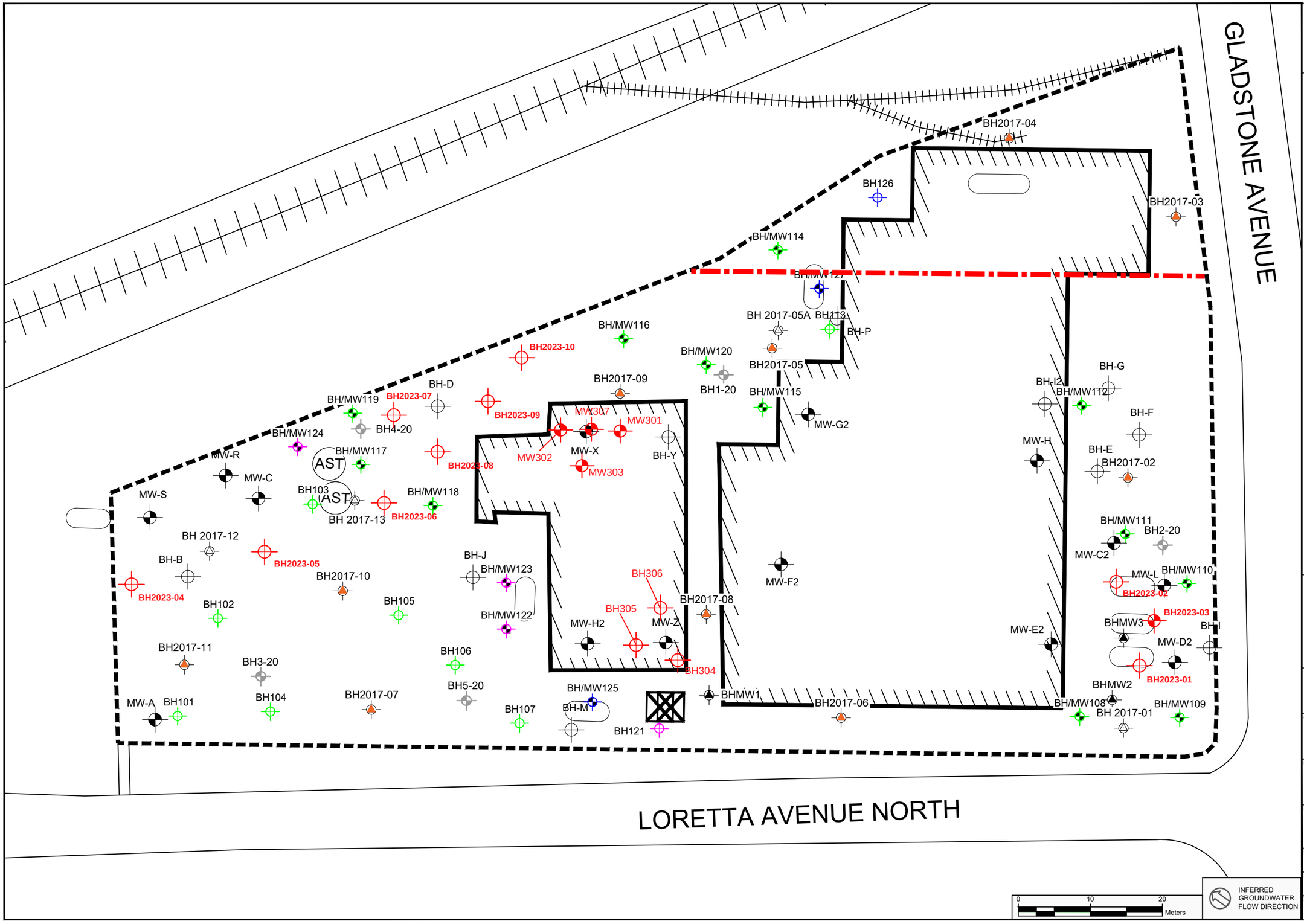
PROJECT NAME
HYDROGEOLOGICAL INVESTIGATION

CLIENT NAME
TIP GLADSTONE LIMITED PARTNERSHIP C/O CLV DEVELOPMENTS INC.

PROJECT LOCATION
LORETTA AVENUE & GLADSTONE AVENUE, OTTAWA, ONTARIO

FIGURE NAME
BOREHOLE/MONITORING WELL LOCATION PLAN

APPROXIMATE SCALE	PROJECT NO.
AS SHOWN	285722.005
DATE	FIGURE NO.
AUGUST 2024	2



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- MONITORING WELL (DST 2009)
- MONITORING WELL (DST 2017)
- BOREHOLE (DST 2017)
- BOREHOLE, MONITORING WELL (Patersongroup 2020)
- BOREHOLE (Pinchin Original Phase Two ESA Scope 2021)
- MONITORING WELL (Pinchin Original Phase Two ESA Scope 2021)
- BOREHOLE (Pinchin - Change Order No. 1 - May 2021)
- MONITORING WELL (Pinchin - Change Order No. 1, May 2021)
- BOREHOLE (Pinchin - Change Order No. 2 - October 2021)
- MONITORING WELL (Pinchin - Change Order No. 2 - October 2021)
- BOREHOLE (Pinchin 2023)
- MONITORING WELL (Pinchin 2023)
- PINCHIN BOREHOLE (MAY 2023)
- PINCHIN MONITORING WELL (MAY 2023)
- PROPOSED BOREHOLE (SEPT. 2023)
- PROPOSED MONITORING WELL (SEPT. 2023)

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

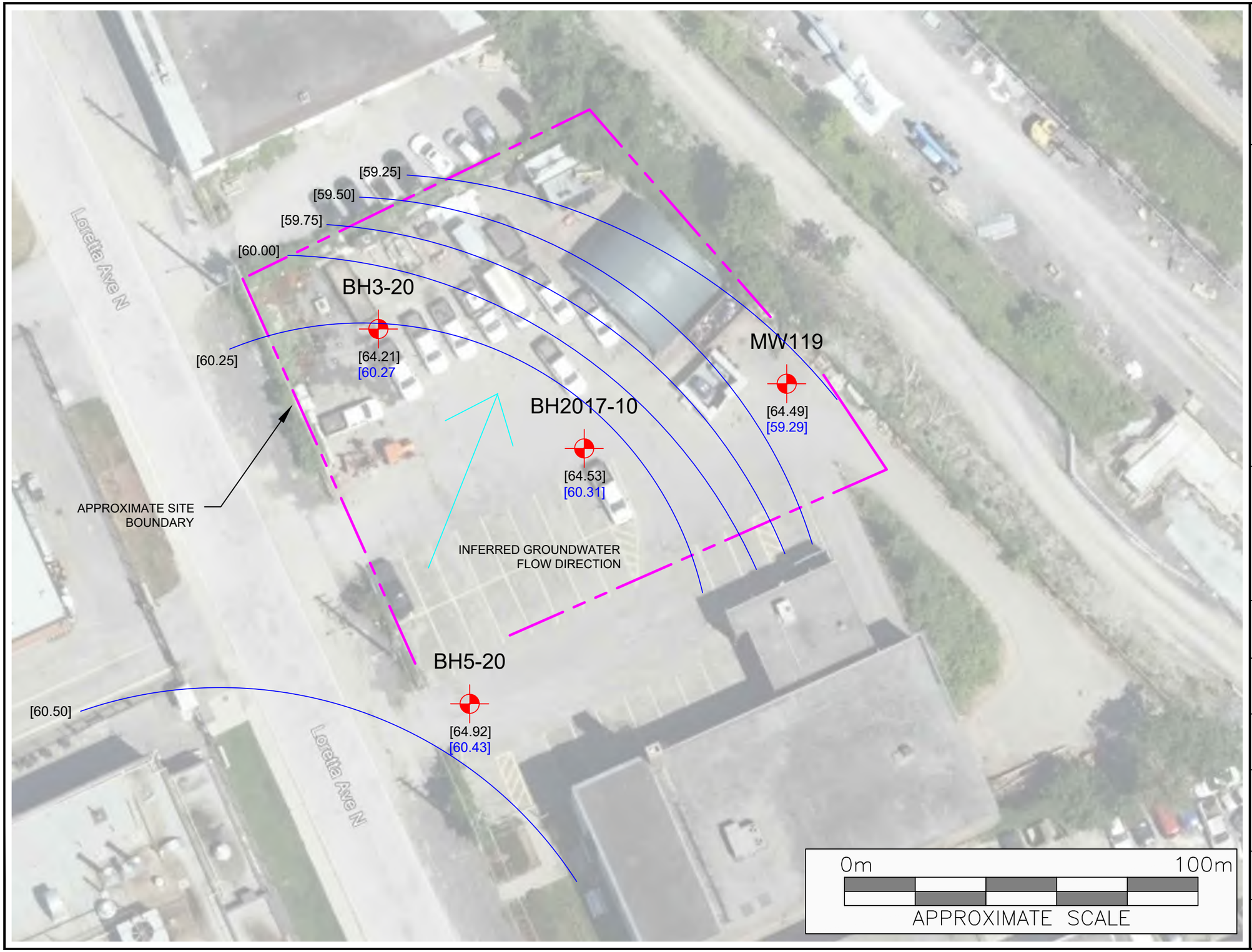
PROJECT NAME:
HYDROGEOLOGICAL ASSESSMENT

CLIENT NAME:
TIP GLADSTONE LIMITED PARTNERSHIP c/o CLV DEVELOPMENTS INC.

PROJECT LOCATION:
951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME:
PREVIOUS INVESTIGATIONS BOREHOLE AND MONITORING WELL LOCATION PLAN

PROJECT NUMBER:	SCALE:
285722.005	AS SHOWN
DRAWN BY:	REVIEWED BY:
MK	TM
DATE:	FIGURE NUMBER:
AUGUST 2024	3



LEGEND

- BOREHOLE / MONITORING WELL LOCATION
- [XX.XX] APPROXIMATE GEODETIC GROUND ELEVATION (m)
- [XX.XX] APPROXIMATE GEODETIC GROUNDWATER ELEVATION (m)

PINCHIN

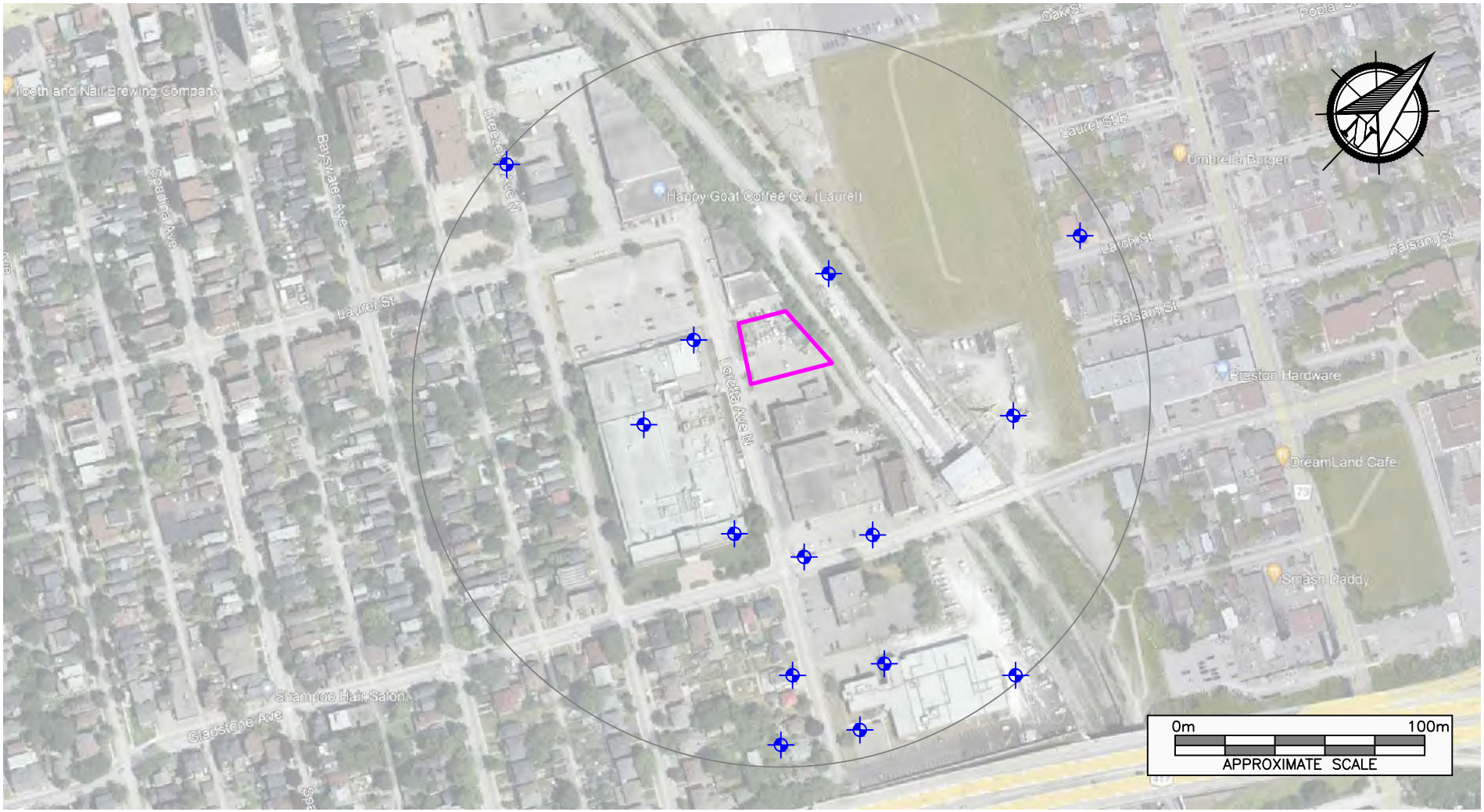
PROJECT NAME
HYDROGEOLOGICAL INVESTIGATION

CLIENT NAME
TIP GLADSTONE LIMITED PARTNERSHIP C/O CLV DEVELOPMENTS INC.

PROJECT LOCATION
LORETTA AVENUE & GLADSTONE AVENUE, OTTAWA, ONTARIO

FIGURE NAME
INFERRED GROUNDWATER CONTOURS (JULY 15, 2024)

APPROXIMATE SCALE	PROJECT NO.
AS SHOWN	285722.005
DATE	FIGURE NO.
AUGUST 2024	4



PINCHIN

LEGEND

- MONITORING WELL (FROM RECORDS)
- SITE BOUNDARY
- 250 M RADIUS

PROJECT NAME
HYDROGEOLOGICAL ASSESSMENT

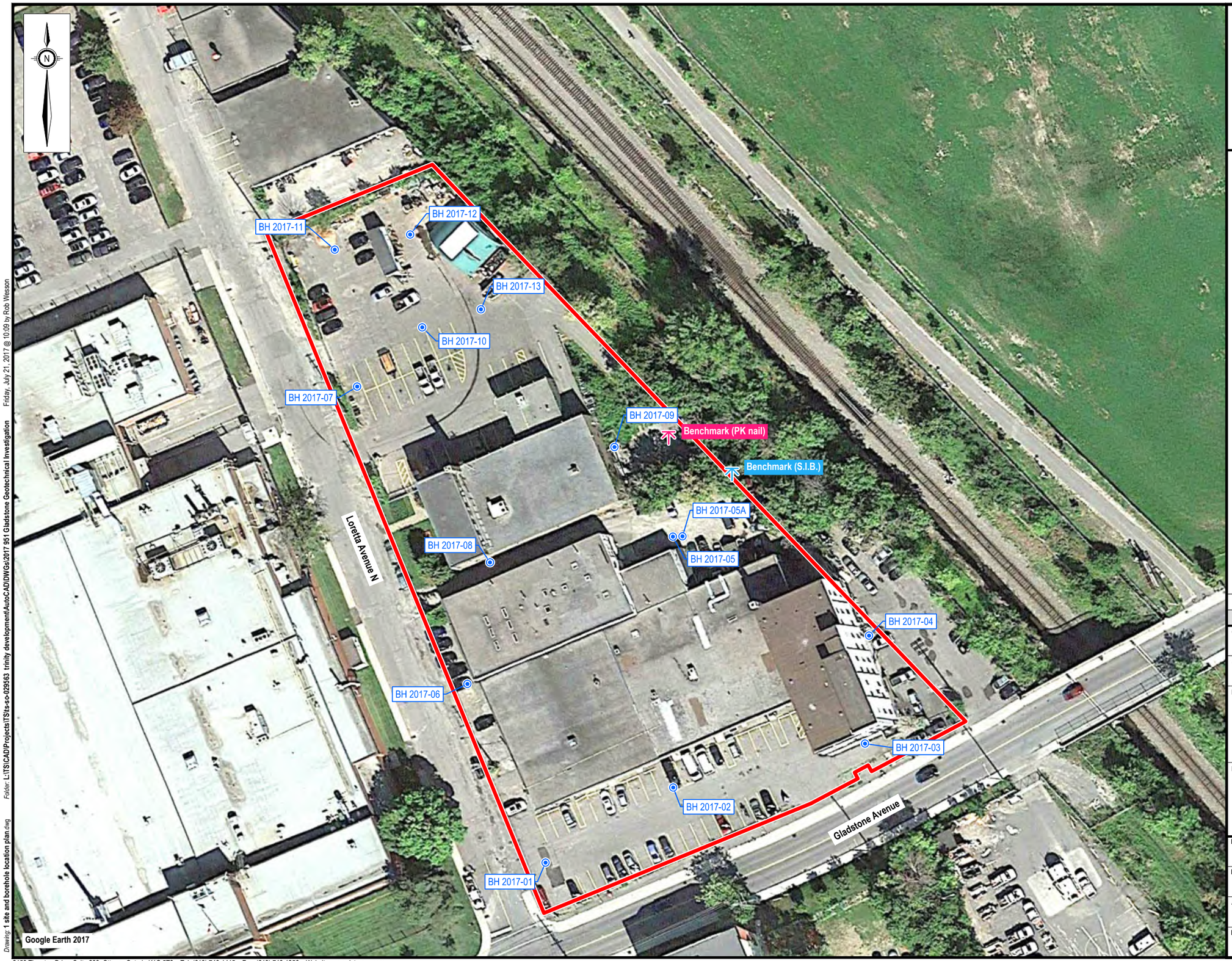
CLIENT NAME
TIP GLADSTONE LIMITED PARTNERSHIP C/O CLV GROUP DEVELOPMENTS INC.

PROJECT LOCATION
LORETTA AVENUE & GLADSTONE AVENUE, OTTAWA, ONTARIO

FIGURE NAME
MECP MONITORING WELL LOCATIONS (250 M RADIUS)

FIGURE NO.
5

APPROXIMATE SCALE	PROJECT NO.	DATE
AS SHOWN	284722.005	AUGUST 2024



DST consulting engineers

Notes

1. This drawing shall be read in conjunction with the associated technical report.
2. Do not scale drawing.

Legend

- Property boundary
- Borehole location
- Benchmark

0 5 10 20 30 m

Scale 1:750

Revision	Date	Issue	Approval
A	17.07.17	Preliminary	S.V.

Client: Trinity

Site: 951 Gladstone Avenue, Ottawa, Ontario

Report Title: Geotechnical Investigation
Gladstone Avenue and Loretta Avenue North, Ottawa

Drawing Title: Site and Borehole Location Plan

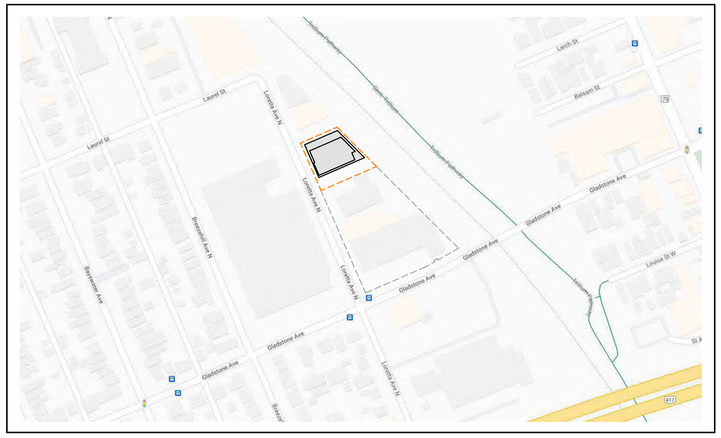
Designed By: S.V.	Scale: As shown
Drawn By: R.W.	Date: July 2017
Approved By: S.V.	Project No.: TS-SO-029563
Figure No.: 6	DRAFT

Drawing: 1 site and borehole location plan.dwg Folder: L:\TS\CAD\Projects\TS\ts-so-029563 trinity development\AutoCAD\DWGs\2017 951 Gladstone Geotechnical Investigation Friday, July 21, 2017 @ 10:09 by Rob Wesson

2150 Thurston Drive, Suite 203, Ottawa, Ontario K1G 5T9 Tel: (613) 748-1415 Fax: (613) 748-1356 Website: www.dstgroup.com

APPENDIX I

Proposed Redevelopment Plan



GLADSTONE AND LORETTA

145 LORETTA AVE. N | OTTAWA | ON

ARCHITECT

linebox STUDIO

ARCHITECTURAL DRAWING LIST

DWG NO.	DRAWING TITLE
A0 GENERAL	
A000	COVER SHEET
A001	GENERAL NOTES, ABBREVIATIONS AND PROJECT STATISTICS
A010	ASSEMBLY SCHEDULES
A020	DOOR TYPES
A050	SITE PLAN
A2 FLOOR PLANS	
A198	FLOOR PLAN - P3 (FOUNDATION PLAN)
A199	FLOOR PLAN - P2
A200	FLOOR PLAN - P1
A201	FLOOR PLAN - GROUND LEVEL
A202	FLOOR PLAN - LEVEL 02 - 03 (TYPICAL PODIUM)
A204	FLOOR PLAN - LEVEL 04 (PODIUM)
A205	FLOOR PLAN - LEVEL 05 (PODIUM ROOF AMENITY)
A206	FLOOR PLAN - LEVEL 06 (AMENITY)
A207	FLOOR PLAN - LEVEL 07 - 26 (TYPICAL TOWER)
A227	FLOOR PLAN - LEVEL 27 - 29 (TYPICAL)
A230	FLOOR PLAN - LEVEL 30 (RESIDENTIAL AND AMENITY PENTHOUSE)
A231	FLOOR PLAN - LEVEL 31 (MECHANICAL PENTHOUSE)
A232	ROOF PLAN
A3 REFLECTED CEILING PLANS	
A307	REFLECTED CEILING PLAN - LEVELS 07 - 26 (TYPICAL TOWER)
A4 ELEVATIONS	
A400	BUILDING ELEVATIONS - WEST AND SOUTH
A401	BUILDING ELEVATIONS - EAST AND NORTH
A410	ENLARGED ELEVATIONS
A5 SECTIONS	
A500	BUILDING SECTIONS
A510	ENLARGED SECTIONS - BASEMENT PARKING
A511	ENLARGED SECTIONS - PODIUM
A512	ENLARGED SECTIONS - PENTHOUSE LEVELS

2 / A000 SITE MAP
1 : 2000

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox STUDIO

All dimensions are shown in metric.
Contractor shall check and verify all dimensions and report all error and omissions to the Architect.
Do not scale the drawings.
Not for construction until signed by the Architect.

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

drawing title | titre du dessin

COVER SHEET

project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | verifié	**JA / AR**
scale | échelle	**1 : 2000**
date | date	**02/15/24**

drawing number | numéro du dessin

A000

Autodesk Docs://Gladstone and Loretta - Tower A/2402_145 Loretta CLV_LB_Tower A.rvt
2024-05-24 1:46:55 PM

BUILDING AREA SCHEDULE

LEVEL	GROSS CONSTRUCTION AREA (GCA)	BALCONY/ TERRACE AREA	TOTAL GROSS BUILDING AREA (GBA)	TOTAL GROSS FLOOR AREA (GFA) (ABOVE GRADE)	RESIDENTIAL TARION SALEABLE FLOOR AREA (SFA)	FLOOR EFFICIENCY (CALCULATION)	RETAIL AREA	COMMON RESIDENTIAL AMENITY (INDOOR)	COMMON RESIDENTIAL AMENITY (OUTDOOR)	LIMITED COMMON ELEMENTS (BALCONY)	COMMON BUILDING AREA
P3	22,974	0	22,974	0	0	0.00%	0	0	0	0	0
P2	22,974	0	22,974	0	0	0.00%	0	0	0	0	0
P1	22,974	0	22,974	0	0	0.00%	0	0	0	0	0
GROUND LEVEL	12,004	0	12,004	10,613	0	0.00%	0	5,407	0	0	4,504
INTERMEDIATE LANDING	335	0	335	335	0	0.00%	0	0	0	0	0
LEVEL 02	13,830	0	13,830	13,830	11,332	81.94%	0	0	0	0	1,758
LEVEL 03	13,830	0	13,830	13,830	11,332	81.94%	0	0	0	0	1,758
LEVEL 04	13,830	0	13,830	13,830	10,539	76.20%	0	0	0	0	2,551
LEVEL 05 (AMENITY)	13,179	5,338	7,841	7,841	0	0.00%	0	7,002	5,338	0	91
LEVEL 06 (AMENITY)	8,666	0	8,666	8,666	0	0.00%	0	7,826	0	0	91
LEVEL 07	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 08	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 09	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 10	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 11	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 12	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 13	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 14	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 15	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 16	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 17	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 18	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 19	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 20	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 21	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 22	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 23	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 24	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 25	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 26	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 27	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 28	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 29	9,212	0	9,212	9,212	7,643	82.97%	0	0	0	0	820
LEVEL 30 (PENTHOUSE)	8,937	0	8,937	8,937	3,661	40.96%	0	3,781	0	0	755
LEVEL 31 (MECH. PENTHOUSE)	2,356	0	2,356	2,356	0	0.00%	0	0	0	0	2,356
TOTAL	**367,758**	**5,338**	**362,420**	**298,247**	**212,660**		**0**	**24,015**	**5,338**	**0**	**30,506**

TOTAL SUITE COUNT	336

ZONING REQUIRED AMENITY AREA	SLAYTE REQUIRED AMENITY AREA	LAURIER REQUIRED AMENITY AREA	PROVIDED AMENITY AREA	
SUITE COUNT x 6m² [OR 64.58ft²]	SUITE COUNT x 8.34m² [OR 89.77ft²]	SUITE COUNT x 6.88m² [OR 74.05ft²]	SHARED AMENITY AREA	29,353 ft²
336 x 64.58ft²	336 x 89.77ft²	336 x 74.05ft²	PRIVATE AMENITY AREA	0 ft²
21,700 ft²	**30,163 ft²**	**24,883 ft²**	**TOTAL PROVIDED**	**29,353 ft²**

SUITE AREAS

SUITE AREA SCHEDULE

SUITE	AREA
LEVEL 02	
SUITE x01	948 ft²
SUITE x02	695 ft²
SUITE x03	1,241 ft²
SUITE x04	789 ft²
SUITE x05	630 ft²
SUITE x06	615 ft²
SUITE x07	576 ft²
SUITE x08	936 ft²
SUITE x09	845 ft²
SUITE x10	767 ft²
SUITE x11	1,173 ft²
SUITE x12	660 ft²
SUITE x13	732 ft²
SUITE x14	726 ft²
14	**11,332 ft²**
LEVEL 03	
SUITE x01	948 ft²
SUITE x02	695 ft²
SUITE x03	1,241 ft²
SUITE x04	789 ft²
SUITE x05	630 ft²
SUITE x06	615 ft²
SUITE x07	576 ft²
SUITE x08	936 ft²
SUITE x09	845 ft²
SUITE x10	767 ft²
SUITE x11	1,173 ft²
SUITE x12	660 ft²
SUITE x13	732 ft²
SUITE x14	726 ft²
14	**11,332 ft²**
LEVEL 04	
GUEST SUITE 01	595 ft²
GUEST SUITE 02	513 ft²
GUEST SUITE 03	370 ft²
GUEST SUITE 04	339 ft²
SUITE x01	948 ft²
SUITE x02	695 ft²
SUITE x03	1,241 ft²
SUITE x08	936 ft²
SUITE x09	845 ft²
SUITE x10	767 ft²
SUITE x11	1,173 ft²
SUITE x12	660 ft²
SUITE x13	732 ft²
SUITE x14	726 ft²
14	**10,539 ft²**
LEVEL 07	
SUITE x01	447 ft²
SUITE x02	564 ft²
SUITE x03	526 ft²
SUITE x04	609 ft²
SUITE x05	794 ft²
SUITE x06	469 ft²
SUITE x07	448 ft²
SUITE x08	393 ft²
SUITE x09	704 ft²
SUITE x10	667 ft²
SUITE x11	569 ft²
SUITE x12	672 ft²
SUITE x13	782 ft²
13	**7,643 ft²**

SUITE AREA SCHEDULE

SUITE	AREA
LEVEL 08	
SUITE x01	447 ft²
SUITE x02	564 ft²
SUITE x03	526 ft²
SUITE x04	609 ft²
SUITE x05	794 ft²
SUITE x06	469 ft²
SUITE x07	448 ft²
SUITE x08	393 ft²
SUITE x09	704 ft²
SUITE x10	667 ft²
SUITE x11	569 ft²
SUITE x12	672 ft²
SUITE x13	782 ft²
13	**7,643 ft²**
LEVEL 09	
SUITE x01	447 ft²
SUITE x02	564 ft²
SUITE x03	526 ft²
SUITE x04	609 ft²
SUITE x05	794 ft²
SUITE x06	469 ft²
SUITE x07	448 ft²
SUITE x08	393 ft²
SUITE x09	704 ft²
SUITE x10	667 ft²
SUITE x11	569 ft²
SUITE x12	672 ft²
SUITE x13	782 ft²
13	**7,643 ft²**
LEVEL 10	
SUITE x01	447 ft²
SUITE x02	564 ft²
SUITE x03	526 ft²
SUITE x04	609 ft²
SUITE x05	794 ft²
SUITE x06	469 ft²
SUITE x07	448 ft²
SUITE x08	393 ft²
SUITE x09	704 ft²
SUITE x10	667 ft²
SUITE x11	569 ft²
SUITE x12	672 ft²
SUITE x13	782 ft²
13	**7,643 ft²**
LEVEL 11	
SUITE x01	447 ft²
SUITE x02	564 ft²
SUITE x03	526 ft²
SUITE x04	609 ft²
SUITE x05	794 ft²
SUITE x06	469 ft²
SUITE x07	448 ft²
SUITE x08	393 ft²
SUITE x09	704 ft²
SUITE x10	667 ft²
SUITE x11	569 ft²
SUITE x12	672 ft²
SUITE x13	782 ft²
13	**7,643 ft²**

SUITE AREA SCHEDULE

SUITE	AREA
LEVEL 12	
SUITE x01	447 ft²
SUITE x02	564 ft²
SUITE x03	526 ft²
SUITE x04	609 ft²
SUITE x05	794 ft²
SUITE x06	469 ft²
SUITE x07	448 ft²
SUITE x08	393 ft²
SUITE x09	704 ft²
SUITE x10	667 ft²
SUITE x11	569 ft²
SUITE x12	672 ft²
SUITE x13	782 ft²
13	**7,643 ft²**
LEVEL 13	
SUITE x01	447 ft²
SUITE x02	564 ft²
SUITE x03	526 ft²
SUITE x04	609 ft²
SUITE x05	794 ft²
SUITE x06	469 ft²
SUITE x07	448 ft²
SUITE x08	393 ft²
SUITE x09	704 ft²
SUITE x10	667 ft²
SUITE x11	569 ft²
SUITE x12	672 ft²
SUITE x13	782 ft²
13	**7,643 ft²**
LEVEL 14	
SUITE x01	447 ft²
SUITE x02	564 ft²
SUITE x03	526 ft²
SUITE x04	609 ft²
SUITE x05	794 ft²
SUITE x06	469 ft²
SUITE x07	448 ft²
SUITE x08	393 ft²
SUITE x09	704 ft²
SUITE x10	667 ft²
SUITE x11	569 ft²
SUITE x12	672 ft²
SUITE x13	782 ft²
13	**7,643 ft²**
LEVEL 15	
SUITE x01	447 ft²
SUITE x02	564 ft²
SUITE x03	526 ft²
SUITE x04	609 ft²
SUITE x05	794 ft²
SUITE x06	469 ft²
SUITE x07	448 ft²
SUITE x08	393 ft²
SUITE x09	704 ft²
SUITE x10	667 ft²
SUITE x11	569 ft²
SUITE x12	672 ft²
SUITE x13	782 ft²
13	**7,643 ft²**

SUITE AREA SCHEDULE

SUITE	AREA
LEVEL 16	
SUITE x01	447 ft²
SUITE x02	564 ft²
SUITE x03	526 ft²
SUITE x04	609 ft²
SUITE x05	794 ft²
SUITE x06	469 ft²
SUITE x07	448 ft²
SUITE x08	393 ft²
SUITE x09	704 ft²
SUITE x10	667 ft²
SUITE x11	569 ft²
SUITE x12	672 ft²
SUITE x13	782 ft²
13	**7,643 ft²**
LEVEL 17	
SUITE x01	447 ft²
SUITE x02	564 ft²
SUITE x03	526 ft²
SUITE x04	609 ft²
SUITE x05	794 ft²
SUITE x06	469 ft²
SUITE x07	448 ft²
SUITE x08	393 ft²
SUITE x09	704 ft²
SUITE x10	667 ft²
SUITE x11	569 ft²
SUITE x12	672 ft²
SUITE x13	782 ft²
13	**7,643 ft²**
LEVEL 18	
SUITE x01	447 ft²
SUITE x02	564 ft²
SUITE x03	526 ft²
SUITE x04	609 ft²
SUITE x05	794 ft²
SUITE x06	469 ft²
SUITE x07	448 ft²
SUITE x08	393 ft²
SUITE x09	704 ft²
SUITE x10	667 ft²
SUITE x11	569 ft²
SUITE x12	672 ft²
SUITE x13	782 ft²
13	**7,643 ft²**
LEVEL 19	
SUITE x01	447 ft²
SUITE x02	564 ft²
SUITE x03	526 ft²
SUITE x04	609 ft²
SUITE x05	794 ft²
SUITE x06	469 ft²
SUITE x07	448 ft²
SUITE x08	393 ft²
SUITE x09	704 ft²
SUITE x10	667 ft²
SUITE x11	569 ft²
SUITE x12	672 ft²
SUITE x13	782 ft²
13	**7,643 ft²**

SUITE AREA SCHEDULE

SUITE	AREA
LEVEL 20	
SUITE x01	447 ft²
SUITE x02	564 ft²
SUITE x03	526 ft²
SUITE x04	609 ft²
SUITE x05	794 ft²
SUITE x06	469 ft²
SUITE x07	448 ft²
SUITE x08	393 ft²
SUITE x09	704 ft²
SUITE x10	667 ft²
SUITE x11	569 ft²
SUITE x12	672 ft²
SUITE x13	782 ft²
13	**7,643 ft²**
LEVEL 21	
SUITE x01	447 ft²
SUITE x02	564 ft²
SUITE x03	526 ft²
SUITE x04	609 ft²
SUITE x05	794 ft²
SUITE x06	469 ft²
SUITE x07	448 ft²
SUITE x08	393 ft²
SUITE x09	704 ft²
SUITE x10	667 ft²
SUITE x11	569 ft²
SUITE x12	672 ft²
SUITE x13	782 ft²
13	**7,643 ft²**
LEVEL 22	
SUITE x01	447 ft²
SUITE x02	564 ft²
SUITE x03	526 ft²
SUITE x04	609 ft²
SUITE x05	794 ft²
SUITE x06	469 ft²
SUITE x07	448 ft²
SUITE x08	393 ft²
SUITE x09	704 ft²
SUITE x10	667 ft²
SUITE x11	569 ft²
SUITE x12	672 ft²
SUITE x13	782 ft²
13	**7,643 ft²**
LEVEL 23	
SUITE x01	447 ft²
SUITE x02	564 ft²
SUITE x03	526 ft²
SUITE x04	609 ft²
SUITE x05	794 ft²
SUITE x06	469 ft²
SUITE x07	448 ft²
SUITE x08	393 ft²
SUITE x09	704 ft²
SUITE x10	667 ft²
SUITE x11	569 ft²
SUITE x12	672 ft²
SUITE x13	782 ft²
13	**7,643 ft²**

SUITE AREA SCHEDULE

SUITE	AREA
LEVEL 24	
SUITE x01	447 ft²
SUITE x02	564 ft²
SUITE x03	526 ft²
SUITE x04	609 ft²
SUITE x05	794 ft²
SUITE x06	469 ft²
SUITE x07	448 ft²
SUITE x08	393 ft²
SUITE x09	704 ft²
SUITE x10	667 ft²
SUITE x11	569 ft²
SUITE x12	672 ft²
SUITE x13	782 ft²
13	**7,643 ft²**
LEVEL 25	
SUITE x01	447 ft²
SUITE x02	564 ft²
SUITE x03	526 ft²
SUITE x04	609 ft²
SUITE x05	794 ft²
SUITE x06	469 ft²
SUITE x07	448 ft²
SUITE x08	393 ft²
SUITE x09	704 ft²
SUITE x10	667 ft²
SUITE x11	569 ft²
SUITE x12	672 ft²
SUITE x13	782 ft²
13	**7,643 ft²**
LEVEL 26	
SUITE x01	447 ft²
SUITE x02	564 ft²
SUITE x03	526 ft²
SUITE x04	609 ft²
SUITE x05	794 ft²
SUITE x06	469 ft²
SUITE x07	448 ft²
SUITE x08	393 ft²
SUITE x09	704 ft²
SUITE x10	667 ft²
SUITE x11	569 ft²
SUITE x12	672 ft²
SUITE x13	782 ft²
13	**7,643 ft²**
LEVEL 27	
SUITE x01	1,228 ft²
SUITE x02	1,090 ft²
SUITE x03	609 ft²
SUITE x04	794 ft²
SUITE x05	469 ft²
SUITE x06	448 ft²
SUITE x07	1,098 ft²
SUITE x08	667 ft²
SUITE x09	569 ft²
SUITE x10	672 ft²
10	**7,643 ft²**

SUITE AREA SCHEDULE

SUITE	AREA
LEVEL 28	
SUITE x01	1,228 ft²
SUITE x02	1,090 ft²
SUITE x03	609 ft²
SUITE x04	794 ft²
SUITE x05	469 ft²
SUITE x06	448 ft²
SUITE x07	1,098 ft²
SUITE x08	667 ft²
SUITE x09	569 ft²
SUITE x10	672 ft²
10	**7,643 ft²**
LEVEL 29	
SUITE x01	1,228 ft²
SUITE x02	1,090 ft²
SUITE x03	609 ft²
SUITE x04	794 ft²
SUITE x05	469 ft²
SUITE x06	448 ft²
SUITE x07	1,098 ft²
SUITE x08	667 ft²
SUITE x09	569 ft²
SUITE x10	672 ft²
10	**7,643 ft²**
LEVEL 30 (PENTHOUSE)	
SUITE x01	831 ft²
SUITE x02	865 ft²
SUITE x03	1,080 ft²
SUITE x04	886 ft²
4	**3,661 ft²**
TOTAL: 336	**212,660 ft²**

Autodesk Docs://Gladstone and Loretta - Tower A/2402_145 Loretta CLV_LB_Tower A.rvt
2024-05-24 1:46:56 PM

BICYCLE PARKING PROVIDED (PROVIDED)

TYPE	COUNT
P3	
HORIZONTAL STACKED	28
	28
P2	
HORIZONTAL STACKED	46
	46
P1	
HORIZONTAL STACKED	30
	30
GROUND LEVEL	
HORIZONTAL STACKED (PAV.)	20
VERTICAL	28
	48
LEVEL 02	
HORIZONTAL INT. LOCKER	8
	8
LEVEL 03	
HORIZONTAL INT. LOCKER	8
	8
LEVEL 04	
HORIZONTAL INT. LOCKER	8
	8
GRAND TOTAL	**176**

PROVIDED: **0.52 PER UNIT**

RESIDENTIAL:
MINIMUM: **0.5 PER UNIT = 168 SPACES MIN.**

VEHICLE PARKING PROVIDED (BY FLOOR)...

PARKING STALL TYPE	COUNT
P3	
COMPACT (2400x4600)	29
MOTORCYCLE (1300x3000)	2
PARALLEL (2600x6700)	1
STANDARD (2600x5200)	28
	60
P2	
COMPACT (2400x4600)	29
MOTORCYCLE (1300x3000)	2
PARALLEL (2600x6700)	1
STANDARD (2600x5200)	27
	59
P1	
ACCESSIBLE (3660x5200)	2
COMPACT (2400x4600)	21
MOTORCYCLE (1300x3000)	2
PARALLEL (2600x6700)	1
STANDARD (2600x5200)	16
	42
GRAND TOTAL	**161**

PROVIDED: **0.48 PER UNIT**

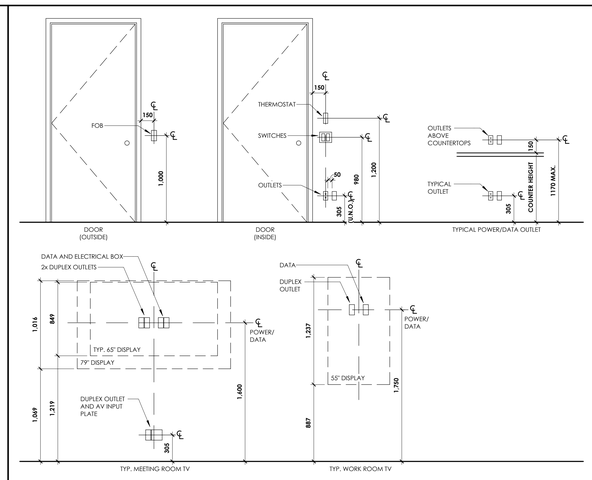
ZONING REQUIREMENT:
MAXIMUM: **0.5 PER UNIT = 168 SPACES MAX.**

RESIDENTIAL STORAGE LOCKERS

LOCKER SIZE AND TYPE	COUNT
P3	
STACKED - 4'W x 5'D x 4'H	28
TYPICAL - 3'W x 4'D x 8'H	17
	45
P2	
STACKED - 4'W x 5'D x 4'H	32
TYPICAL - 3'W x 4'D x 8'H	19
	51
P1	
STACKED - 4'W x 5'D x 4'H	50
TYPICAL - 3'W x 4'D x 8'H	19
	69
LEVEL 02	
PRIVATE - 5'W x 8'D x 8'H	1
PRIVATE - 6'W x 8'D x 8'H	7
	8
LEVEL 03	
PRIVATE - 5'W x 8'D x 8'H	1
PRIVATE - 6'W x 8'D x 8'H	7
	8
LEVEL 04	
PRIVATE - 5'W x 8'D x 8'H	1
PRIVATE - 6'W x 8'D x 8'H	7
	8
GRAND TOTAL	**189**

PROVIDED: **0.56 PER UNIT**

CLIENT REQUIREMENT: **1:1 PER UNIT**



6
A001
TYPICAL MOUNTING HEIGHTS
1 : 25

ACT	ACOUSTIC CEILING TILE
AL	ALUMINUM
AFL	ACCESS FLOOR
AVB	AIR / VAPOUR BARRIER
CIP	CAST IN PLACE
CLG	CEILING
CLR	CLEAR
CONT	CONTINUOUS
COORD	COORDINATE
CORR	CORRIDOR
CP	CARPET
CPT	CARPET TILE
CRK	CORK
CT	CERAMIC TILE
DEMO	DEMOLITION
DET	DETAIL
DIFF	DIFFUSER
DIM	DIMENSION
DR	DOOR
DWG	DRAWING
EA	EACH
ELEC	ELECTRIC
EL	ELEVATION
ELEV	ELEVATOR
EOS	EDGE OF SLAB
EQ	EQUAL
EXIST	EXISTING
EXT	EXTERIOR
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FINISH FACE
FFL	FINISH FLOOR LEVEL
FHC	FIRE HOSE CABINET
FIN	FINISH
FIXT	FIXTURE
FLR	FLOOR
FLR FIN	FLOOR FINISH
FOF	FACE OF FINISH
FOG	FACE OF GLASS
FOS	FACE OF STUD
FOW	FACE OF WALL
FP	FIRE PROOFING
FRR	FIRE RESISTANCE RATER
FR	FRAME
FT	FEET
FURN	FURNITURE
GALV	GALVANIZED
GE	GENERAL EXHAUST
GL	GLASS
GLZ	GLAZING
GRL	GRILLE
GYP	GYPSUM BOARD
HDWD	HARDWOOD
HM	HOLLOW METAL
HMAI	HOLLOW METAL ACOUSTICALLY INSULATED
HMD	HOLLOW METAL DOOR
HMF	HOLLOW METAL FRAME
HORIZ	HORIZONTAL
HP	HEIGH POINT
HT	HEIGHT
INSUL	INSULATION
INTER	INTERMEDIATE
JAN	JANITOR
JB	JAMBOARD
JT	MATERIAL JOINT
KIT	KITCHEN
KTT	KTICHENETTE
LIN	LINEAR
LP	LOW POINT
MAX	MAXIMUM
MECH	MECHANICAL
MEMB	MEMBRANE
MIN	MINIMUM
MIRR	MIRROR
MTL	METAL
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OPG	OPENING
PCC	PRECAST CONCRETE
PE	PASSENGER ELEVATOR
PERF	PERFORATED
PLAM	PLASTIC LAMINATE
PLAS	PLASTIC
PLYWD	PLYWOOD
POL	POLISHED
PREFAB	PREFABRICATED
PREFIN	PREFINISHE
PT	PAINT
RA	RETURN AIR
RB	RUBBER BASE
RBF	RUBBER FLOORING
RC	REINFORCED CONCRETE
RCP	REFLECTED CEILING PLAN
REINF	REINFORCE
REQD	REQUIRED
RF	RESINOUS FLOORING
RM	ROOM
RO	ROUGH OPENING
RSO	ROUGH STEEL OPEINING
RVL	REVEAL
SA	SUPPLY AIR
SE	SERVICE ELEVATOR
SF	SQUARE FOOT (FEET)
SIM	SIMILAR
SPKR	SPEAKER
SPKLR	SPRINKLER
SQ	SQUARE
SS	SOLID SURFACE
SSL	STRUCTURAL SLAB LEVEL
SST	STAINLESS STEEL
ST	STONE
STC	SOUND TRANSMISSION CLASS
STL	STEEL
STRUCT	STRUCTURAL
SUSP	SUSPENDED
TA	TOILET ACCESSORY
TER	TERRAZZO
TG	TEMPERED GLASS
T&G	TONGUE AND GROOVE
THRES	THRESHOLD
TL	TILE
TMPD	TEMPERED
TOL	TOP OF LANDING
TOS	TOP OF SLAB
TOW	TOP OF WALL
TP	TRANSITION POINT
TYP	TYPICAL
U/S	UNDERSIDE OF
UNO	UNLESS NOTED OTHERWISE
VB	VINYL BASE
VCT	VINYL COMPOSITE TILE
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VR	VAPOR RETARDER
VYL	VINYL
WC	WALL COVERING
WCST	WAINSCOT
WD	WOOD
WDF	HARDWOOD WOOD FLOORING
WDV	WOOD VENEER
WP	WORKING POINT
WPM	WATERPROOF MEMBRANE

5
A001
ABBREVIATIONS
1 : 1

▬ ▬ ▬ ▬ ▬	00 min (0HR)
▬ • ▬ • ▬	60 min (1.0HR)
▬ • ▬ • ▬	90 min (1.5HR)
▬ • • ▬ • • ▬	120 min (2.0HR)
▬ • • • ▬ • • • ▬	180 min (3.0HR)
●- - - - - →	TRAVEL DISTANCE
●- - - - - →	SEPARATION DISTANCE BETWEEN EXITS
●······→	DEAD END TRAVEL DISTANCE
●——<	FIRE HOSE LENGTH

4
A001
FIRE STRATEGY LEGEND
1 : 25

▨	ALUMINUM
▨	BATT / FIBRE INSULATION
▨	BRICK
▨	CONCRETE
▨	CONCRETE BLOCK
▨	EARTH
▨	GLASS
▨	GRAVEL
▨	GYPSUM BOARD
☐	MDF
▨	PLASTER / MORTAR / GROUT
▨	PLYWOOD
▨	PRECAST (CONCRETE)
▨	RIGID INSULATION
▨	SEMI-RIGID INSULATION
▨	STEEL
▨	STONE
▨	TILE
▨	WOOD

3
A001
MATERIAL HATCHES
1 : 1

DRAWING TITLE	1 / A101 View Name, View Scale, A202 — DRAWING NUMBER, SCALE, SOURCE DRAWING, DRAWING NUMBER
CALLOUT	1 / A101 — REFERENCE DRAWING, DRAWING NUMBER
SECTION MARKER	1 / A101 — SECTION / VIEW NUMBER, SECTION REFERENCING SHEET
EXTERIOR ELEVATION MARKER	1 / A101 — ELEVATION / VIEW NUMBER, ELEVATION REFERENCING SHEET
INTERIOR ELEVATION MARKER	1, 2, 3, 4, A101 — ELEVATION / VIEW NUMBER, INTERIOR ELEVATION REFERENCING SHEET
GRID BUBBLE	0
ELEVATION DATUM	DATUM NAME 146.070m
ROOM TAG	**ROOM NAME** **101**
MATERIAL/FIXTURE TAG	XX-##
DOOR TAG	XXXX
GYPSUM WALL TAG	X# ## L A
FLOOR/ROOF TAG	XX
WINDOW TAG	1t
SHEET NOTE	X.#
SPOT ELEVATION MARKER	◐
FLOOR TRANSITION	TX
WALL FINISH INDICATOR	WALL FINISH BASE FINISH (BASE TYPE)

2
A001
SYMBOL LEGEND
1 : 25

1. CONTRACTOR TO VERIFY ALL DIMENSIONS ON SITE, REPORT TO THE OWNER AND ARCHITECT ON ANY DISCREPANCIES BETWEEN THE EXISTING SITE CONDITIONS AND THE FINAL DRAWINGS PRIOR TO CONTINUING CONSTRUCTION.
2. CONTRACTOR TO BE RESPONSIBLE FOR CONFORMANCE OF WORKMANSHIP, MATERIAL AND METHODS.
3. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE 2012 ONTARIO BUILDING CODE AND LOCAL AUTHORITIES HAVING JURISDICTION.
4. CONTRACTOR TO CHECK AVAILABILITY OF ALL MATERIALS AND REPORT ANY DISCONTINUATIONS OR DELAYS TO THE OWNER AND ARCHITECT.
5. CONTRACTOR TO CLEAN ALL WINDOWS, FLOORS, ETC. AT THE COMPLETION OF CONSTRUCTION.
6. CONTRACTOR TO OBTAIN AND BE FAMILIAR WITH ALL REQUIRED TESTING AND REPORTS DURING THE PROGRESS OF THE WORK.
7. FINISH MATERIALS TO MEET 2012 ONTARIO BUILDING CODE REQUIREMENTS FOR FLAME SPREAD RATINGS AND SMOKE DEVELOPED RATINGS.
8. ALL INTERIOR FURNISHINGS ARE BY THE TENANT UNLESS OTHERWISE NOTED.
9. SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO FABRICATIONS OF ALL ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND ELECTRICAL ITEMS.
10. SEE ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS FOR BASE BUILDING RELEVANT NOTES AND DETAILS.
11. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR HEATING, VENTILATION, AIR CONDITIONING, LIGHTS, AND SPRINKLERS.
12. ALL CONSTRUCTIONS TO CONFORM TO 2012 ONTARIO BUILDING CODE SECTION 3.8 BARRIER-FREE DESIGN.
13. CAULK AND SEAL ALL AROUND OPENINGS AT PENETRATIONS.
14. CONTRACTOR'S ENGINEER TO PROVIDE ENGINEERED DETAILS FOR ALL ARCHITECTURAL WALLS AND CEILINGS.
15. GROUP D 3.2.2.49., SINGLE OCCUPANCY.
16. 45M MAXIMUM TRAVEL DISTANCE FROM FURTHEST CORNER TO EXIT DOOR.
17. INTERIOR FINISHES (AS PER OBC 3.1.13.7):

    RATINGS DETERMINED BY TESTS CONDUCTED IN CONFORMANCE WITH CAN/ULC-S102

    ALL SURFACES FOR EXIT STAIRS, LOBBIES (ELEVATOR), SERVICE ROOMS:
    - FLAME SPREAD RATING: 25
    - SMOKE DEVELOPED RATING: 50

    10% MAX. OF A SURFACE WITHIN AN EXIT OR LOBBY:
    - FLAME SPREAD RATING: 150
    - SMOKE DEVELOPED RATING: 300

    ALL OTHER WALLS:
    - FLAME SPREAD RATING: 150
    - SMOKE DEVELOPED RATING: 300

    COMBUSTIBLE CEILING FINISHES:
    - FLAME SPREAD RATING: 25

1
A001
GENERAL NOTES
1 : 1

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur mécanique

food services | cuisinie

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox
STUDIO

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

drawing title | titre du dessin

GENERAL NOTES, ABBREVIATIONS AND PROJECT STATISTICS

project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | verifié	**JA / AR**
scale | échelle	**As indicated**
date | date	**02/15/24**

drawing number | numéro du dessin

A001

WALL SCHEDULE

WALL TYPE	DESCRIPTION	DETAIL
W1	**PREFINISHED ALUMINUM PANEL ASSEMBLY** -- PREFINISHED ALUMINUM PLANEL CLADDING SYSTEM 25mm AIR SPACE CAVITY 102mm MINERAL WOOL INSULATION -- VAPOUR PERMEABLE SELF-ADHERED AIR & WEATHER BARRIER 13mm EXTERIOR GLASS MAT SHEATHING - GP DENSGLASS OR APPROV. EQ. 152mm STEEL STUD (NON LOAD BEARING) AS PER STEEL STUD SPECIALIST c/w 152mm MINERAL WOOL BATT TYPE INSULATION (R-21) -- POLY VAPOUR BARRIER 13mm GYPSUM WALL BOARD	
W2	**BRICK VENEER WALL ASSEMBLY** -- PREFINISHED ALUMINUM PLANEL CLADDING SYSTEM 25mm AIR SPACE CAVITY 102mm MINERAL WOOL INSULATION -- VAPOUR PERMEABLE SELF-ADHERED AIR & WEATHER BARRIER 13mm EXTERIOR GLASS MAT SHEATHING - GP DENSGLASS OR APPROV. EQ. 152mm STEEL STUD (NON LOAD BEARING) AS PER STEEL STUD SPECIALIST c/w 152mm MINERAL WOOL BATT TYPE INSULATION (R-21) -- POLY VAPOUR BARRIER 13mm GYPSUM WALL BOARD	
W3	**PRECAST CONCRETE PANEL WALL ASSEMBLY** ±150mm CUSTOM PRECAST CONCRETE FACAE PANELS (MAX 20' LONG) 64mm MEDUM DENSITY (2 LB) CLOSED CELL SPRAY APPLIED FOAM INSULATION 102mm STEEL STUD (NON LOAD BEARING) AS PER STEEL STUD SPECIALIST c/w 102mm MINERAL WOOL BATT TYPE INSULATION -- POLY VAPOUR BARRIER 13mm GYPSUM WALL BOARD	
W4	**CONCRETE PARGING WALL ASSEMBLY** 13mm CONCRETE PARGING 19mm CEMENT BOARD 102mm RIGID INSULATION -- VAPOUR PERMEABLE SELF-ADHERED AIR & WEATHER BARRIER 13mm EXTERIOR GLASS MAT SHEATHING - GP DENSGLASS OR APPROV. EQ. 152mm STEEL STUD (NON LOAD BEARING) AS PER STEEL STUD SPECIALIST c/w 152mm MINERAL WOOL BATT TYPE INSULATION (R-21) -- POLY VAPOUR BARRIER 13mm GYPSUM WALL BOARD	
FW1	**POURED CONCRETE FOUNDATION WALL ASSEMBLY AT SHORING** -- SHORING SYSTEM OR BACKFILL 50mm RIGID INSULATION 12mm DRAINAGE BOARD -- BLINDSIDE WATERPROOFING MEMBRANE AT SHORING LOCATIONS 300mm STRUCTURAL CONCRETE WALL	
FW2	**POURED CONCRETE FOUNDATION WALL ASSEMBLY** -- SHORING SYSTEM OR BACKFILL 50mm RIGID INSULATION 12mm DRAINAGE BOARD -- WATERPROOFING MEMBRANE 300mm STRUCTURAL CONCRETE WALL	

FLOOR SCHEDULE

FLOOR TYPE	DESCRIPTION	DETAIL
F1	**TYPICAL INTERIOR FLOOR** VARIES FLOOR FINISH, SEE FLOOR FINISH PLAN VARIES CONCRETE STRUCTURAL SLAB	VARIES
F2	**TYPICAL SLAB ON GRADE** -- CONCRETE SEALER INCLUDE UPTURN 150mm AT ALL VERTICAL SURFACES 125mm CONCRETE STRUCTURAL SLAB -- VAPOUR BARRIER -- COMPACTED GRANULAR FILL -- UNDER SLAB DRAINAGE PIPING AND PERIMETER DRAINAGE WITHIN CRUSHED STONE. REFER TO GEO-TECHNICAL REPORT	125
F3	**TYPICAL PARKING GARAGE FLOOR** -- TRAFFIC TOPPING VARIES CONCRETE STRUCTURAL SLAB	VARIES
F4	**PARKING ENTRANCE RAMP** -- WATER REPELLENT SEALER 150mm CONCRETE WEAR SLAB AND GLYCOL TUBING WITH HERRINGBONE DRAINAGE GROOVES (EPOXY REINFORCING IN CONC SLAB. REFER TO STRUCTURAL) 10mm HYDRODRAIN 25mm RIGID INSULATION 10mm DRAINAGE BOARD 2mm WATERPROOFING PROTECTION BOARD -- WATERPROOFING MEMBRANE VARIES CONCRETE STRUCTURAL SLAB	
F5	**MECHANICAL ROOM FLOATING SLAB** -- WATER REPELLENT SEALER 100mm FLOATING CONCRETE SLAB C/W WWM REINFORCEMENT -- 6mil POLY SHORRT VAPOUR BARRIER 19mm P.T. PLYWOOD SHEATHING -- SOUND ISOLATION BEARING PADS W/ ACOUSTIC BATT INSULATION TO FILL VOID -- CONCRETE STRUCTURA SLAB PROVIDE 25mm PERIMETER SEPARATION SEMI-RIGID INSULATION BOARD AND PERIMETER CAULKING TO TOP OF CONCRETE CURB	
F6	**TYPICAL AMENITY FLOOR** VARIES FLOOR FINISH, SEE FLOOR FINISH PLAN 10mm SOUND ISOLATION MAT VARIES CONCRETE STRUCTURAL SLAB	VARIES

ROOF SCHEDULE

ROOF TYPE	DESCRIPTION	DETAIL
R1	**TYPICAL FINISHED TERRACE ROOF** 19mm STONE TILE VARIES ADJUSTABLE PEDESTAL FEET. PROVIDE FELT PADS FOR PEDESTALS TO PROTECT ROOF MEMBRANE (TYP.) +/- 20mm 2 PLY SBS MODIFIED BITUMEN MEMBRANE (ADHERED) 13mm GYPSUM ROOF BOARD (ADHERED) VARIES TAPERED INSULATION PACKAGE (1.5% MIN.) 100mm POLYISOCYANURATE INSULATION BOARDS (ADHERED) -- VAPOUR BARRIER MEMBRANE (ADHERED) -- CONCRETE STRUCTURAL SLAB ROOF DECK	
R2	**TYPICAL UNFINISHED ROOF** +/- 20mm 2 PLY SBS MODIFIED BITUMEN MEMBRANE (ADHERED) 6mm ASPHALTIC PROTECTION BOARD (ADHERED) VARIES TAPERED INSULATION PACKAGE (1.5% MIN.) 100mm POLYISOCYANURATE INSULATION BOARDS (ADHERED) -- VAPOUR BARRIER MEMBRANE (ADHERED) -- CONCRETE STRUCTURAL SLAB ROOF DECK	
R3	**GROUND FLOOR ROOF OVER PARKING GARAGE** -- UNIT PAVERS ON COMPACTED GRANDULAR FILL OR SOFT LANDSCAPING, SEE LANDSCAPE DETAILS -- FILTER FABRIC 150mm RIGID INSULATION, 2 LAYERS OF 75mm -- DRAINAGE PROTECTION BOARD -- SEPARATION SHEET -- 2 PLY SBS MODIFIED BITUMEN ROOFING MEMBRANE -- ROOF MEMBRANE PRIMER -- SLOPED CONCRETE TOPPING -- CONCRETE STRUCTURAL SLAB	

PARTITION NOTES

PARTITION SYMBOL:

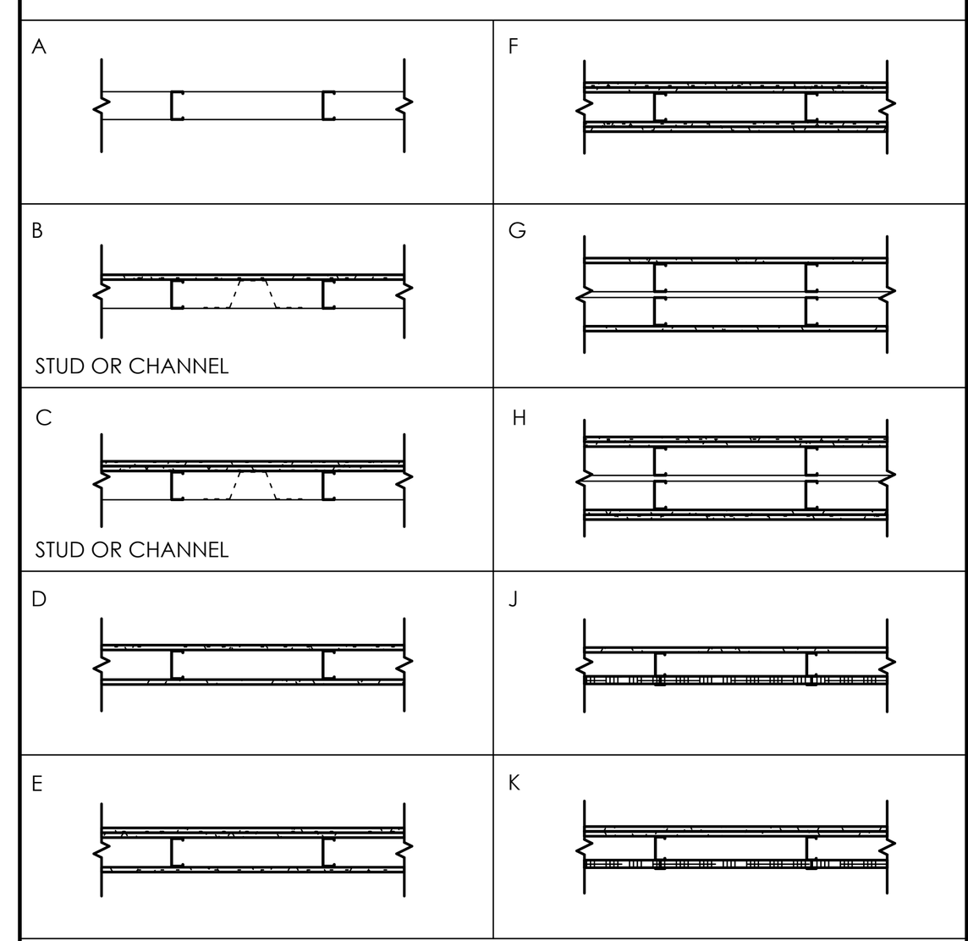
- PARTITION DESIGNATION, SEE PARTITION SCHEDULE AND NUMBERING STRATEGY (GENERAL ASSEMBLY TYPE, FRAMING SIZE, ADDITIONAL NOTE)
- L — WHERE SHOWN, PARTITION IS LOW HEIGHT, SEE SECTION FOR EXTENT
- X — CONDITION BELOW PARTITION (SEE GENERAL NOTE 2 BELOW)
- FIRE RATING (IN MINUTES)
  - \- NON-RATED
  - 0 SMOKE SEAL
  - 30 30 MINS
  - 45 45 MINS
  - 60 60 MINS
  - 90 90 MINS
  - 120 120 MINS

GENERAL NOTES:

1. UNO, ALL FIRE RATED GYPSUM WALL BOARD SHALL BE 16mm THICK TYPE 'X'. ALL NON-FIRE RATED GYPSUM WALL BOARD SHALL BE 13mm
2. UNO, ALL GYPSUM PARTITIONS SHALL SPAN FROM SLAB TO SLAB
3. CONDITION BELOW PARTITION:
   A. RESERVED
   B. RESERVED
   C. CURB
   D. RESERVED
4. NO RESIDENTIAL LOW-DENSITY GRADE GYPSUM SHALL BE PERMITTED
5. ALL GYPSUM BOARD SHALL BE MOLD RESISTANT
6. 20 GA STEEL STUD AT EACH OPENING GREATER THAN 450mm
7. DO NOT USE GAS OR POWDER ACTUATED TOOLS ON COLUMNS OR COLUMN DROP PANELS
8. TEAR-AWAY GYPSUM BEAD AGAINST COLUMNS
9. 20 GA STEEL STUD AT LOCATIONS OF BRICK WALL CLADDING WITH GREENBOARD BACKING IN LIEU OF GYPSUM, SEE PLAN
10. WALL FURRING TO EXTEND 150mm MINIMUM ABOVE CEILING FINISH, EXCEPT IN ROOMS WITHOUT CEILING, EXTEND TO SLAB, U.N.O.
11. CONTRACTOR TO VERIFY ADEQUACY OF STUD DEPTH FOR LIMITING HEIGHTS BASED ON THE SELECTED STUD MANUFACTURER
12. ALL PLAN DIMENSIONS ARE TO FACE OF OUTER MOST LAYER OF GYPSUM BOARD, U.N.O.
13. REPLACE FACE LAYER OF GYPSUM BOARD WITH MOISTURE RESISTANT GYPSUM IN KITCHENS, BATHROOMS, LAUNDRY ROOMS, LOCKERS, JANITOR CLOSETS, AND MECHANICAL ROOMS
14. REPLACE FACE LAYER OF GYPSUM BOARD WITH CEMENT BOARD AND USE 20GA STUDS AT ALL SHOWERS AND BATHTUB WALLS
15. PATCH AND REPAIR ALL EXISTING GYPSUM PARTITIONS THAT ARE TO REMAIN
16. FOR PARTITIONS WITH ACOUSTIC FIBERGLASS INSULATION, PROVIDE ACOUSTIC CAULKING AT BOTTOM OF FINAL LAYER OF GYPSUM AND ALL PENETRATIONS THROUGH WALLS AND CEILINGS

PARTITION NUMBERING STRATEGY

GENERAL ASSEMBLY TYPE



FRAMING SIZE

0	7/8" / 22mm	HAT CHANNEL 25 GA
1	1-5/8" / 41mm	METAL STUD 25 GA
2	2-1/2" / 64mm	METAL STUD / CH-STUD 25 GA @ 400mm OC
3	3-5/8" / 92mm	METAL STUD 25 GA@ 400mm OC
4	4" / 102mm	METAL STUD / CH-STUD 25 GA @ 400mm OC
5	5" / 127mm	METAL STUD / CH-STUD 25 GA @ 400mm OC
6	6" / 152mm	METAL STUD / CH-STUD 25 GA @ 400mmOC
7	-	NOT USED
8	8" / 203mm	METAL STUD 25 GA @ 400mmOC
X	LAMINATED	NO FRAMING

ADDITIONAL NOTES

a. NONE
b. INSULATION TO FILL STUD CAVITY, SEE PARTITION SCHEDULE FOR INSULATION TYPE
c. TYPE X GYPSUM BOARD
d. TYPE X GYPSUM BOARD WITH INSULATION TO FILL STUD CAVITY, SEE PARTITION SCHEDULE FOR INSULATION TYPE

PARTITION SCHEDULE

PARTITION TYPE		DESCRIPTION	DETAIL	FIRE RATING (MINUTES)	STC (OBC REF.)	FIRE TEST NUMBER	REMARKS
B	B2a / B3a / B6a	- 1 LAYER 13mm GYPSUM BOARD OR CEMENT BOARD WHEN NOTED, SEE GENERAL NOTES - STEEL STUD @ 400mm OC	80 (B2a) / 108 (B3a) / 168 (B6a)	-	-	-	TYPICAL FURRING/CHASE
C	C3b	- 2 LAYERS 13mm GYPSUM BOARD - STEEL STUD @ 400mm OC C/W ECOTOUCH QUIETZONE PINK FIBREGLASS ACOUSTIC INSULATION TO FILL ENTIRE STUD CAVITY	124	-	-	-	TYPICAL ACOUTIC CHASE
D	D2a / D3a	- 1 LAYER 13mm GYPSUM BOARD - STEEL STUD @ 400mm OC - 1 LAYER 13mm GYPSUM BOARD	124	-	-	-	TYPICAL INTERIOR PARTITION
	D3b	- 1 LAYER 13mm GYPSUM BOARD - STEEL STUD @ 400mm OC C/W ECOTOUCH QUIETZONE PINK FIBREGLASS ACOUSTIC INSULATION TO FILL ENTIRE STUD CAVITY - 1 LAYER 13mm GYPSUM BOARD	124	-	47 (S4b)	-	TYPICAL ACOUSTIC PARTITION
	D3d	- 1 LAYER 16mm GYPSUM BOARD TYPE 'X' - STEEL STUD @ 400mm OC C/W ECOTOUCH QUIETZONE PINK FIBREGLASS ACOUSTIC INSULATION TO FILL ENTIRE STUD CAVITY - 1 LAYER 16mm GYPSUM BOARD TYPE 'X'	124	60	47 (S4b)	W453	TYPICAL 60 MIN RATED PARTITION
E	E3d	- 2 LAYERS 16mm GYPSUM BOARD TYPE 'X' - STEEL STUD @ 400mm OC C/W ECOTOUCH QUIETZONE PINK FIBREGLASS ACOUSTIC INSULATION TO FILL ENTIRE STUD CAVITY - 1 LAYER 16mm GYPSUM BOARD TYPE 'X'	140	-	52 (S5b)	-	TYPICAL SUITE DEMISING WALL (SUITE TO CORRIDOR)
F	F3b	- 2 LAYERS 13mm GYPSUM BOARD - STEEL STUD @ 400mm OC C/W ECOTOUCH QUIETZONE PINK FIBREGLASS ACOUSTIC INSULATION TO FILL ENTIRE STUD CAVITY - 2 LAYERS 13mm GYPSUM BOARD	156	-	55 (S6b)	-	TYPICAL ACOUSTIC PARTITION
	F3d 120	- 2 LAYERS 16mm GYPSUM BOARD TYPE 'X' - 92mm STEEL STUD @ 400mm OC C/W 92mm ECOTOUCH QUIETZONE PINK FIBREGLASS ACOUSTIC INSULATION - 2 LAYERS 16mm GYPSUM BOARD TYPE 'X'	156	120	55 (S6b)	W453	TYPICAL SUITE DEMISING WALL (SUITE TO SUITE)
G	G2a	- 1 LAYER 13mm GYPSUM BOARD - 64mm STEEL STUD @ 400mm OC - 70mm POCKET DOOR SPACE - 64mm STEEL STUD @ 400mm OC - 1 LAYER 13mm GYPSUM BOARD	230	-	-	-	TYPICAL POCKET DOOR PARTITION
H	H6b	- 2 LAYERS 13mm GYPSUM BOARD - 152mm STEEL STUD @ 400mm OC C/W 150mm ECOTOUCH QUIETZONE PINK FIBREGLASS ACOUSTIC INSULATION - 25mm AIR SPACE - 152mm STEEL STUD @ 400mm OC C/W 150mm ECOTOUCH QUIETZONE PINK FIBREGLASS ACOUSTIC INSULATION - 2 LAYERS 13mm GYPSUM BOARD	393	-	-	-	TYPICAL SOUND-PROOF PARTITION
K	K4c 120	- 2 LAYERS 16mm GYPSUM BOARD TYPE 'X' - 102mm STEEL CH STUD @ 610mm OC - 25.4mm GYPSUM LINER PANEL	134	120	-	W452 SYSTEM B	TYPICAL 120MIN SHAFT WALL
	K4d 120	- 2 LAYERS 16mm GYPSUM BOARD TYPE 'X' - 102mm STEEL CH STUD @ 610mm OC C/W 76mm ECOTOUCH QUIETZONE PINK FIBREGLASS ACOUSTIC INSULATION - 25.4mm GYPSUM LINER PANEL	134	120	-	W452 SYSTEM B	TYPICAL 120MIN SHAFT WALL (ACOUSTIC)

CEILING SCHEDULE

CEILING DESIGNATION	DESCRIPTION	DETAIL	FIRE RATING (MINUTES)	STC	FIRE TEST NUMBER	REMARKS
GB1 -	TYPICAL SUSPENDED CEILING - HANGING WIRE - 41mm C CHANNEL - 22mm HAT CHANNEL - 1 LAYER 13mm GYPSUM BOARD *USE MOISTURE RESISTANT BOARD FOR WET ROOMS		-	-		
GB2 -	TYPICAL ACOUSTIC SUSPENDED CEILING - THREADED HANGING ROD - COMPACT SPRING CEILING HANGER W/ PRECOMPRESSED SPRINGS OR GENIE CLIP - 100mm ACOUSTIC BATT INSULATION - 2 LAYERS 13mm GYPSUM BOARD	OR	-	-		CEILINGS BELOW MECHANICAL AND AMENITY FLOORS. PROVIDE 13mm GAP WHERE CEILING MEETS ACOUSTIC PARTITION, FILL ENTIRE DEPTH OF STUD WITH GLASS FIBER INSULATION, SEALED WITH BACKER ROD AND ACOUSTIC CAULK, SEE DETAIL
GB3 -	TYPICAL BULKHEAD - 64mm FURRING CHANNEL - 25mm GALVANIZED ANGLE @ EDGE OF BULKHEAD - 1 LAYER 13mm GYPSUM BOARD *USE MOISTURE RESISTANT BOARD FOR WET ROOMS		-	-		
GB4 -	TYPICAL STUD FRAMED CEILING - 92mm STEEL STUD @ 400mm OC - 1 LAYER 13mm GYPSUM BOARD		-	-		
GB5 120	TYPICAL FIRE RATED HORIZONTAL MEMBRANE - 25mm GYPSUM LINER PANEL - 64mm STEEL CH STUD @ 610mm OC - 3 LAYERS 16mm GYPSUM BOARD TYPE 'X'		120	-		
GB6 -	TYPICAL LOW PROFILE CEILING - 41mm C CHANNEL - 22mm HAT CHANNEL - 1 LAYER 13mm GYPSUM BOARD *USE MOISTURE RESISTANT BOARD FOR WET ROOMS	79	-	-		

MASONRY PARTITION SCHEDULE (NON-LOADBEARING CMU)

WALL TYPE	THICKNESS (T)	FIRE RESISTANCE (MINUTES)	TYPE OF UNIT			STC RATING	REMARKS
			HOLLOW UNIT	75% SOLID	SOLID UNIT		
SINGLE WYTHE 140							
140 / 120	140	120		●		45	
SINGLE WYTHE 190							
190 / -	190	-	●			52	
190 / 0	190	0	●			52	
190 / 60	190	60	●			52	
190 / 90	190	90	●			52	
190 / 120	190	120	●			52	
190 / 180	190	180		●			

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet / project north — nord reel / true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox STUDIO

All dimensions are shown in metric.
Contractor shall check and verify all dimensions and report all error and omissions to the Architect.
Do not scale the drawings.
Not for construction until signed by the Architect.

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

drawing title | titre du dessin

ASSEMBLY SCHEDULES

project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | verifié	**JA / AR**
scale | échelle	**1 : 25**
date | date	**02/15/24**

drawing number | numéro du dessin

A010

EXTERIOR DOOR HARDWARE SCHEDULE

EXTERIOR DOOR HARDWARE SET	DESCRIPTION	FINISH DOOR HARDWARE: HANDLE / LOCKSET	FINISH DOOR HARDWARE: HINGE	SECURITY LOCK FUNCTION	CLOSER	POWER OPERATED	SECURITY READER (CARD/FOB) ONLINE	SECURITY READER (CARD/FOB) OFFLINE	ELECTRIC STRIKE (FAIL-SECURE)	MAG LOCK (FAIL-SAFE)	PANIC DEVICE	WEATHER STRIP / GAS SEAL	DOOR SWEEP	ASTRAGAL	KICK PLATE	ALUMINUM THRESHOLD	NOTES
EHS-01	GROUND FLOOR MAIN ENTRANCE	PANIC DEVICE ON INTERIOR, ROCKWOOD PDU8500-3-US32D, STRAIGHT PULL ON EXTERIOR, ROCKWOOD PDU8500-3-US32D	(3) BUTT HINGE	PAS	●	●					●	●	●		●	●	HARDWARE TO BE STAINLESS STEEL WITH BLACK INFILL LETTERS
EHS-02	TYPICAL GROUND FLOOR EXTERIOR DOOR	PANIC DEVICE ON INTERIOR, ROCKWOOD PDU8500-BSP, STRAIGHT PULL ON EXTERIOR, ROCKWOOD PDU8500-3-US32D	(3) BUTT HINGE	STR	●		●		●		●	●	●		●	●	HARDWARE TO BE STAINLESS STEEL WITH BLACK INFILL LETTERS
EHS-03	EXTERIOR DOOR (TENANT ACCESS)	SCHLAGE JUPITER 626 (AL80PD STOREROOM)	(3) BUTT HINGE	STR	●		●		●			●	●		●	●	HARDWARE TO BE STAINLESS STEEL ACCESS CONTROLLED TO OUTSIDE FROM INSIDE
EHS-04	EXTERIOR DOOR (BOH)	SCHLAGE JUPITER 626 (AL80PD STOREROOM)	(3) BUTT HINGE	STR	●							●	●		●	●	HARDWARE TO BE STAINLESS STEEL
EHS-05	GROUND FLOOR MOVE-IN VESTIBULE EXTERIOR DOOR	SCHLAGE JUPITER 626 (AL80PD STOREROOM)	(3) BUTT HINGE	STR	●		●		●		●	●	●		●	●	HARDWARE TO BE STAINLESS STEEL PROVIDE MANUAL HOLD-OPEN DEVICE
EHS-06	MECHANICAL PENTHOUSE SCREEN DOOR	SCHLAGE JUPITER 626 (AL80PD STOREROOM)	(3) BUTT HINGE	STR													HARDWARE TO MATCH SIDING
EHS-07	GROUND FLOOR EXIT STAIR DOOR	PULL TRIM W/ CYLINDER ON EXTERIOR, PANIC DEVICE ON INTERIOR	(3) BUTT HINGE	STR	●						●	●	●		●	●	HARDWARE TO BE STAINLESS STEEL PROVIDE DOOR CONTACT AND REQUEST TO EXIT

GENERAL NOTES:

1. PROVIDE POSITIVE LATCHING SYSTEM FOR ALL FIRE RATED DOORS, SEE DOOR SCHEDULE
2. SECURITY LOCK FUNCTIONS:
   - PAS PASSAGE
   - PRV PRIVACY
   - STR STOREROOM
   - ENT ENTRY
3. PROVIDE DOOR CONTACT AND REQUEST TO EXIT FOR ALL ELECTRONIC ACCESS CONTROLLED DOORS (ELECTRIC STRIKE, MAG-LOCK) OR AS INDICATED IN DOOR SCHEDULE
4. FOR DOUBLE DOORS, PROVIDE FLUSH BOLT FOR INACTIVE DOOR LEAF, EXCEPT FOR MAIN ENTRANCE

RESIDENTIAL SUITE INTERIOR DOOR HARDWARE SCHEDULE

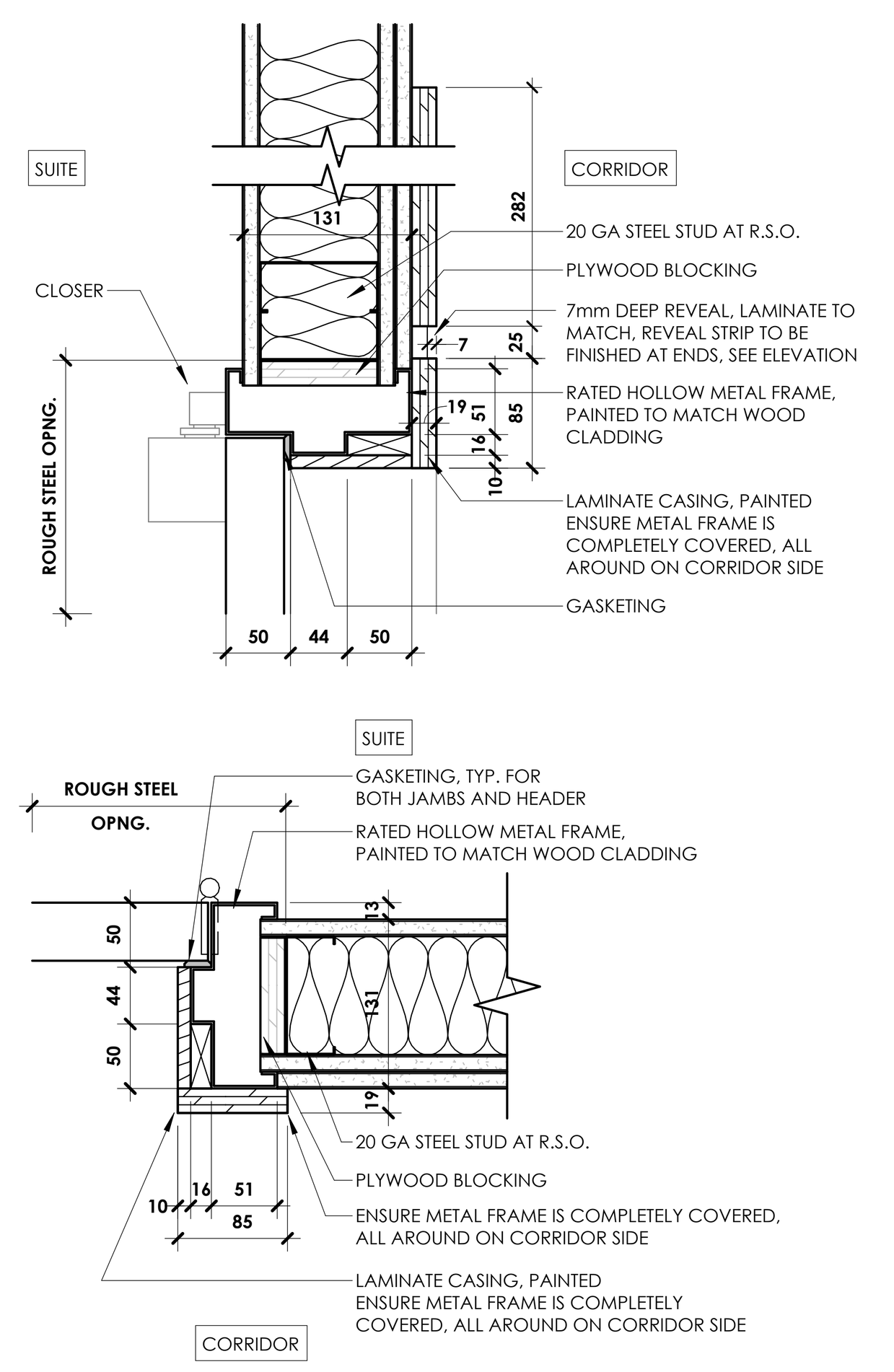
RESIDENTIAL INTERIOR DOOR HARDWARE SET	DESCRIPTION	HANDLE	HINGE	DOOR STOP	MISC.	NOTES
RHS-01	SWING PASSAGE DOOR (BEDROOM)	PASSAGE SET HALIFAX SQUARE ROSE PASSAGE LEVER - MATTE BLACK 9GLA1010-065	3" BUTT HINGE RICHELIEU 820FBV	3" FLEXIBLE DOOR STOP RICHELIEU 217FBVB	COSMAROMA - 544 SINGLE SHAKER SOLID CORE DOORS	ALL HADRWARE TO BE MATTE BLACK
RHS-02	WASHROOM DOOR	PRIVACY SET HALIFAX SQUARE ROSE PRIVACY LEVER - MATTE BLACK 9GLA3310-064	3" BUTT HINGE RICHELIEU 820FBV	3" FLEXIBLE DOOR STOP RICHELIEU 217FBVB	COSMAROMA - 544 SINGLE SHAKER SOLID CORE DOORS	ALL HARDWARE TO BE MATTE BLACK
RHS-03	BEDROOM BARN DOOR	MODERN RECTANGULAR FLUSH PULL FOR DOOR PULL - 221710 - BY EMTEK, MATTE BLACK ON LIVING AREA SIDE BRISBANE PULL 861710 - BY EMTEK, MATT BLACK - ON BEDROOM SIDE			COSMAROMA - 544 SINGLE SHAKER SOLID CORE DOORS	2460590MATBC BY RICHELIEU OR OTHERS, PROVIDE SEPERATE PRICES FOR ALTERNATES. ALL HARDWARE TO BE MATTE BLACK
RHS-04	SHOWER GLASS DOOR				GLASS SLIDING DOOR KIT MAAX HALO PRO SLIDING DOOR W/ TOWEL BAR (56.5"-59" X 78 3/4") 138956-900-340-000	OR APPROVED SIMILAR ALL SHOWER GLASS HARDWARE TO BE MATTE BLACK
RHS-04a	SHOWER GLASS DOOR				GLASS SLIDING DOOR KIT MAAX HALO PRO SLIDING DOOR W/ TOWEL BAR (44.5-47" X 78 3/4") 138954-900-340-000	OR APPROVED SIMILAR. ALL SHOWER GLASS HARDWARE TO BE MATTE BLACK
RHS-05	SLIDING CLOSET DOOR	MODERN RECTANGULAR FLUSH PULL FOR DOOR PULL - 221710 - BY EMTEK, MATTE BLACK			COSMAROMA - 544 SINGLE SHAKER HOLLOW CORE DOORS	BYPASS DOOR HARDWARE KIT - WITH TRACK, MODEL NO. 14672BC BY ONWARD HARDWARE OR OTHERS, PROVIDE SEPERATE PRICES FOR ALTERNATES. ALL HADRWARE TO BE MATTE BLACK SEE RESIDENTIAL INTERIOR DOOR SCHEDULE FOR SIZES
RHS-06	SWING CLOSET DOOR (SINGLE, DOUBLE, W/D CLOSET)	DUMMY SET HALIFAX SQUARE ROSE HALF DUMMY LEVER - MATTE BLACK 9GLA120-054	3" BUTT HINGE RICHELIEU 820FBV		COSMAROMA - 544 SINGLE SHAKER SOLID CORE DOORS ADJUSTABLE BALL CATCH RICHELIEU 5035FBV	ALL HADRWARE TO BE MATTE BLACK AT VENTLESS DRYER LOCATIONS PROVIDE 19mm UNDERCUT
RHS-07	GLASS BEDROOM DOOR	PASSAGE SET HALIFAX SQUARE ROSE PASSAGE LEVER - MATTE BLACK 9GLA1010-065	3" BUTT HINGE		PC350 - OR APPROVED ALTERNATE.	ALL HADRWARE TO BE MATTE BLACK

DOOR HARDWARE SCHEDULE

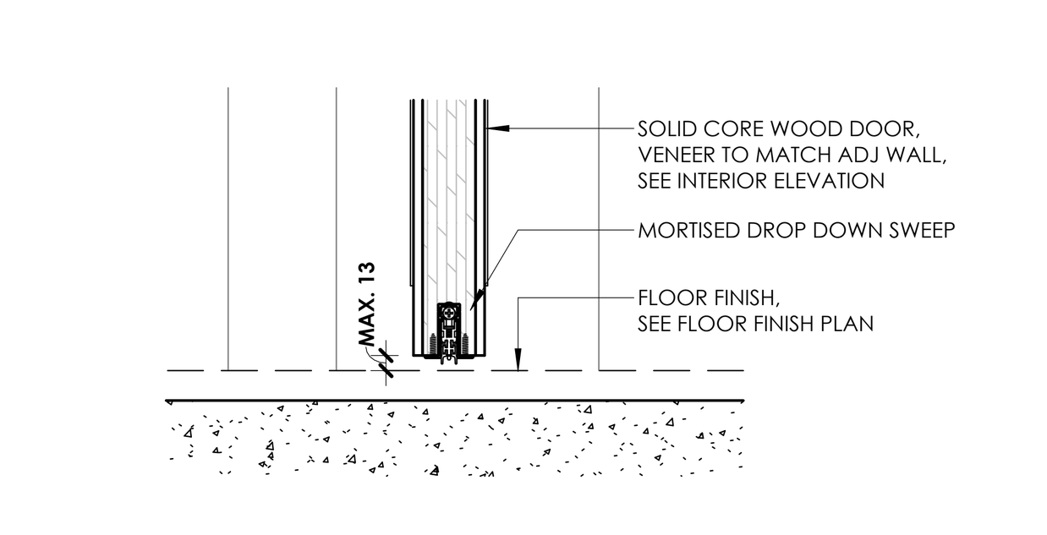
DOOR HARDWARE SET	DESCRIPTION	FINISH DOOR HARDWARE: HANDLE / LOCKSET	FINISH DOOR HARDWARE: HINGE	FINISH DOOR HARDWARE: DOOR STOP	SECURITY LOCK FUNCTION	CLOSER	CLOSER - HOLD-OPEN	POWER OPERATED	SECURITY READER (CARD/FOB) ONLINE	SECURITY READER (CARD/FOB) OFFLINE	ELECTRIC STRIKE (FAIL-SECURE)	ELECTRIC STRIKE (FAIL-SAFE)	PANIC DEVICE	WEATHER STRIP / GAS SEAL	DOOR SWEEP	ASTRAGAL	KICK PLATE	NOTES
HS-01	EXIT STAIR DOOR	SCHLAGE JUPITER 622 (AL25D EXIT), PANIC DEVICE ON CORRIDOR	(3) BUTT HINGE	FLOOR DOOR STOP GSH 240 C19	EXIT	●							●	●	●		●	PROVIDE FIRE EXIT DEVICE TRIM ALL HARDWARE TO BE STAINLESS STEEL
HS-01a	EXIT STAIR DOOR (GROUND FLOOR)	SCHLAGE JUPITER 622 (AL80PD STOREROOM), PANIC DEVICE IN STAIRWELL	(3) BUTT HINGE	FLOOR DOOR STOP GSH 240 C19	STR	●			●		●		●	●	●		●	PROVIDE FIRE EXIT DEVICE TRIM ALL HARDWARE TO BE STAINLESS STEEL USE TYPICAL FLOOR STOP AT STAIR-A GROUND FLOOR ONLY
HS-01b	EXIT STAIR DOOR (POWER DOOR OPERATOR)	SCHLAGE JUPITER 622 (AL25D EXIT), PANIC DEVICE ON CORRIDOR	(3) BUTT HINGE	FLOOR DOOR STOP GSH 240 C19	EXIT	●		●					●	●	●		●	PROVIDE FIRE EXIT DEVICE TRIM ALL HARDWARE TO BE STAINLESS STEEL
HS-02	SUITE ENTRANCE DOOR	HALIFAX SQUARE ROSE PASSAGE LEVER - MATTE BLACK 9GLA1010-065	3" BUTT HINGE RICHELIEU 820FBV	3" FLEXIBLE DOOR STOP RICHELIEU 217FBVB	PAS	●				●				●	●			PROVIDE PEEP HOLE, ELECTRONIC LOCK ALL HARDWARE TO BE STAINLESS STEEL
HS-03	GARBAGE INTAKE ROOM DOOR	SCHLAGE JUPITER 622 (AL10S PASSAGE)	(3) BUTT HINGE	FLOOR DOOR STOP GSH 240 C19	PAS	●								●	●		●	ALL HARDWARE TO BE STAINLESS STEEL
HS-04	TENANT ACCESS DOOR	SCHLAGE JUPITER 622 (AL80PD STOREROOM)	(3) BUTT HINGE	FLOOR DOOR STOP IVES SR64 GRY (AMENITIES) WALL DOOR STOP GSH 240 C19 (STORAGE)	STR	●			●		●						●	ALL HARDWARE TO BE STAINLESS STEEL
HS-04a	TENANT ACCESS DOOR	SCHLAGE JUPITER 622 (AL80PD STOREROOM)	(3) BUTT HINGE	FLOOR DOOR STOP IVES SR64 GRY (AMENITIES) WALL DOOR STOP GSH 240 C19 (STORAGE)	STR		●		●		●						●	ALL HARDWARE TO BE STAINLESS STEEL
HS-04b	TENANT ACCESS DOOR (ENTRANCE VESTIBULE)	PANIC DEVICE ON INTERIOR, ROCKWOOD PDU8500-BSP, STRAIGHT PULL ON EXTERIOR, ROCKWOOD PDU8500-3-BSP	(3) BUTT HINGE	FLOOR DOOR STOP IVES SR64 GRY	STR	●		●	●		●		●					ALL HARDWARE TO BE STAINLESS STEEL
HS-04c	TENANT ACCESS DOOR (AMENITY LOUNGE)	OFFSET LADDER DOOR PULL 30" (BY GLAZING MANUFACTURER) EXTERIOR, SCHLAGE JUPITER 622 (AL10S PASSAGE) INTERIOR	(3) BUTT HINGE	FLOOR DOOR STOP IVES SR64 GRY (AMENITIES)	STR	●			●		●						●	ALL HARDWARE TO BE STAINLESS STEEL
HS-05	BUILDING SERVICE / STORAGE ROOM DOOR	SCHLAGE JUPITER 622 (AL80PD STOREROOM)	(3) BUTT HINGE	FLOOR DOOR STOP GSH 240 C19	STR	●											●	ALL HARDWARE TO BE STAINLESS STEEL
HS-05a	BUILDING SERVICE / STORAGE ROOM DOOR	SCHLAGE JUPITER 622 (AL80PD STOREROOM)	(3) BUTT HINGE	FLOOR DOOR STOP GSH 240 C19	STR		●										●	ALL HARDWARE TO BE STAINLESS STEEL
HS-06	PUBLIC WASHROOM DOOR	SCHLAGE JUPITER 622 (AL40S PRIVACY)	(3) BUTT HINGE	FLOOR DOOR STOP IVES SR64 GRY	PRV													ALL HARDWARE TO BE STAINLESS STEEL
HS-06a	PUBLIC WASHROOM DOOR (UNIVERSAL BARRIER-FREE)	SCHLAGE JUPITER 622 (AL80PD STOREROOM)	(3) BUTT HINGE	FLOOR DOOR STOP IVES SR64 GRY	STR	●		●			●						●	PROVIDE HANDICAP OPERATOR, EMERGENCY RELEASE ALL HARDWARE TO BE STAINLESS STEEL
HS-07	HYDRO VAULT DOOR				STR	●								●	●		●	AS PER HYDRO OTTAWA REQUIREMENTS PROVIDE HYDRO OTTAWA APPROVED LOCKING HASP
HS-08	BASEMENT GARBAGE ROOM DOOR	SCHLAGE JUPITER 622 (AL80PD STOREROOM)	(3) BUTT HINGE	WALL DOOR STOP GSH 240 C19 (STORAGE)	STR	●								●	●	●	●	ALL HARDWARE TO BE STAINLESS STEEL
HS-08a	BASEMENT GARBAGE ROOM DOOR POWER DOOR OPERATOR)	SCHLAGE JUPITER 622 (AL80PD STOREROOM)	(3) BUTT HINGE	WALL DOOR STOP GSH 240 C19 (STORAGE)	STR	●		●						●	●	●	●	ALL HARDWARE TO BE STAINLESS STEEL
HS-08b	BASEMENT GARBAGE ROOM DOOR	SCHLAGE JUPITER 622 (AL80PD STOREROOM)	(3) BUTT HINGE	WALL DOOR STOP GSH 240 C19 (STORAGE)	STR		●							●	●	●	●	ALL HARDWARE TO BE STAINLESS STEEL
HS-09	JANITOR'S CLOSET DOOR	SCHLAGE JUPITER 622 (AL10S PASSAGE)	(3) BUTT HINGE	FLOOR DOOR STOP GSH 240 C19	PAS		●							●	●		●	ALL HARDWARE TO BE STAINLESS STEEL
HS-10	CORRIDOR DOOR	SCHLAGE JUPITER 622 (AL10S PASSAGE)	(3) BUTT HINGE	FLOOR DOOR STOP GSH 240 C19	PAS	●								●	●		●	ALL HARDWARE TO BE STAINLESS STEEL
HS-10a	CORRIDOR DOOR (POWER OPERATOR)	SCHLAGE JUPITER 622 (AL10S PASSAGE)	(3) BUTT HINGE	FLOOR DOOR STOP GSH 240 C19	PAS	●		●						●	●		●	ALL HARDWARE TO BE STAINLESS STEEL
HS-11	TYPICAL PASSAGE	SCHLAGE JUPITER 622 (AL10S PASSAGE)	(3) BUTT HINGE	FLOOR DOOR STOP GSH 240 C19	PAS	●											●	ALL HARDWARE TO BE STAINLESS STEEL
HS-12	GLASS SLIDING DOOR	TBD	TBD		SLID													HARDWARE AS PER DOOR MANUFACTURER ALL HARDWARE TO BE STAINLESS STEEL

GENERAL NOTES:

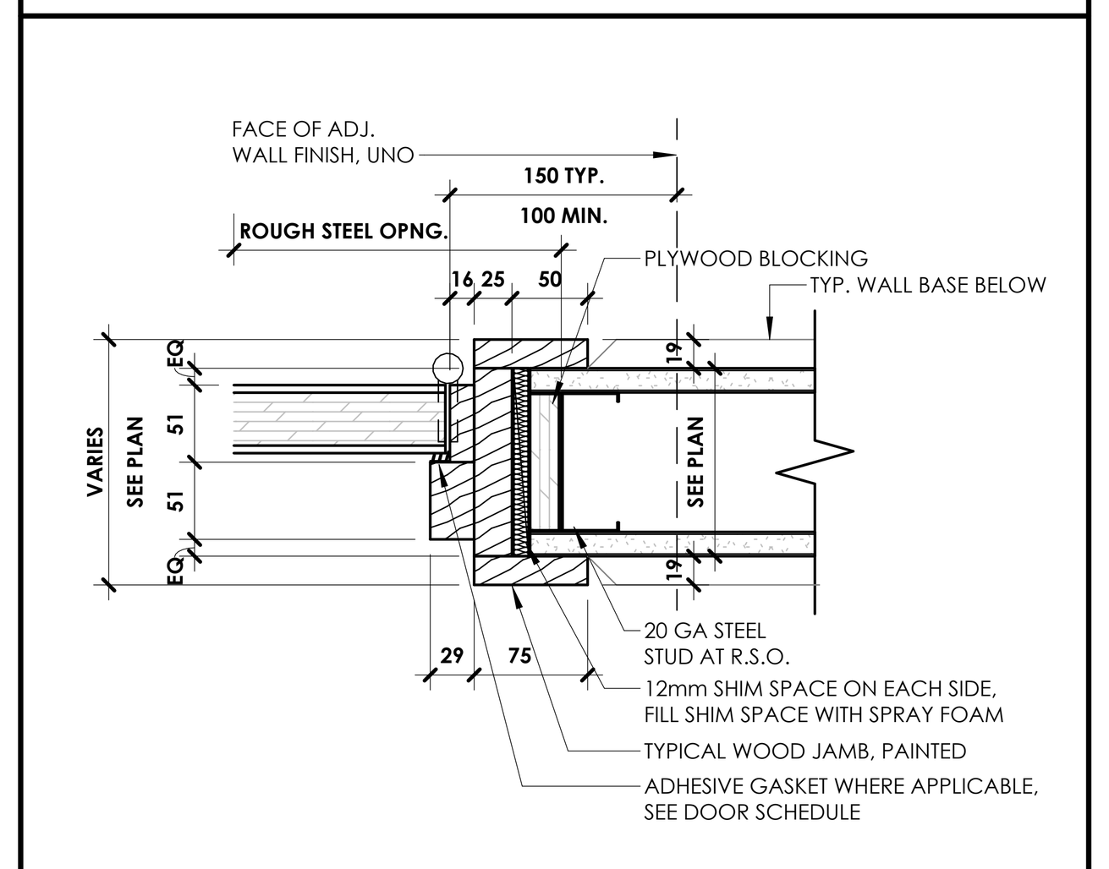
1. PROVIDE POSITIVE LATCHING SYSTEM FOR ALL FIRE RATED DOORS, SEE DOOR SCHEDULE
2. SECURITY LOCK FUNCTIONS:
   - PAS PASSAGE
   - PRV PRIVACY
   - STR STOREROOM
   - ENT ENTRY
3. PROVIDE DOOR STOPS WHERE DOOR OPENS ON TO ADJACENT WALL
4. PROVIDE DOOR CONTACT AND REQUEST TO EXIT FOR ALL ELECTRONIC ACCESS CONTROLLED DOORS (ELECTRIC STRIKE, MAG-LOCK) OR AS INDICATED IN DOOR SCHEDULE
5. FOR DOUBLE DOORS, PROVIDE FLUSH BOLT FOR INACTIVE DOOR LEAF



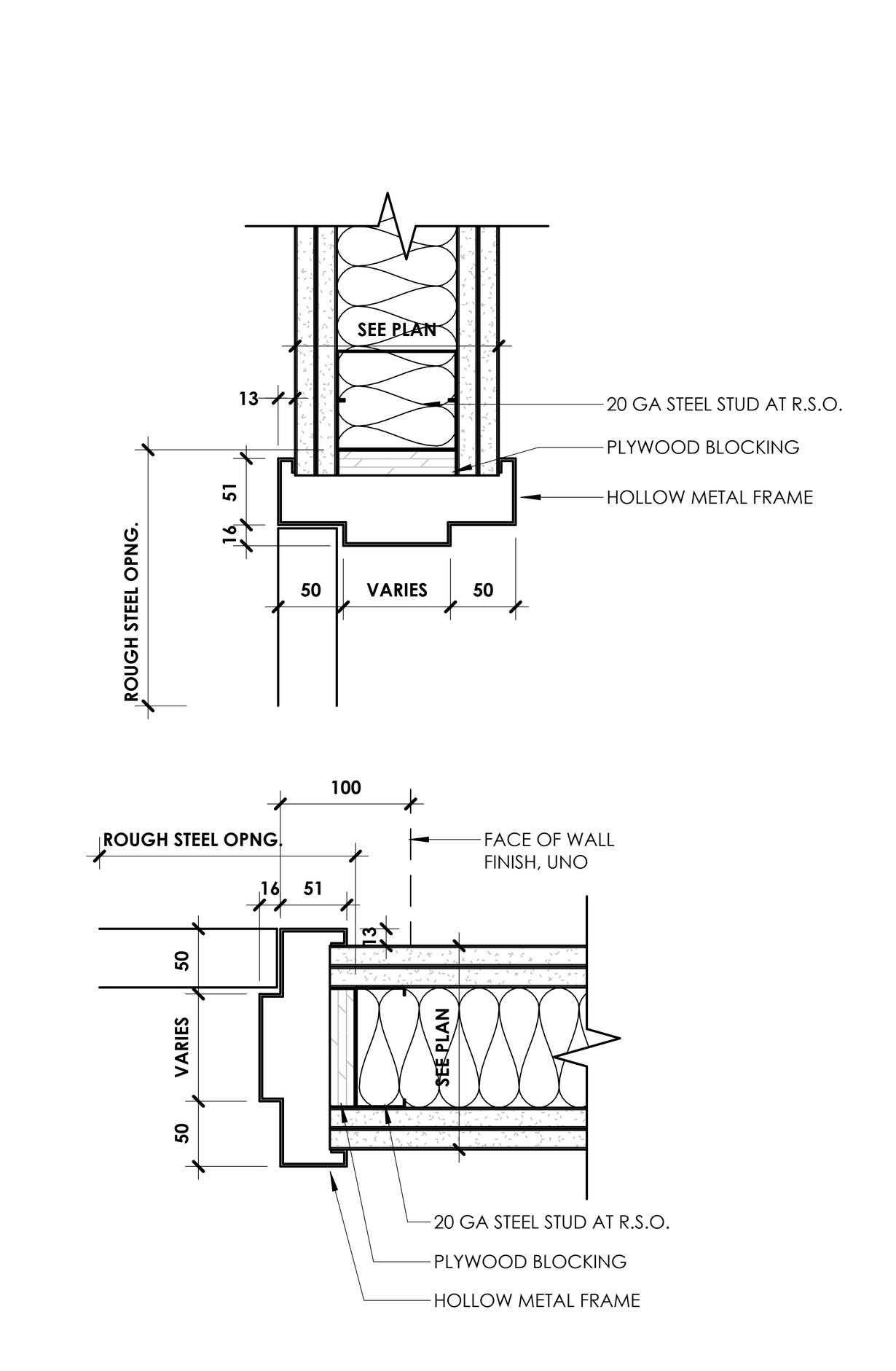
9 A020 DOOR FRAME - SUITE ENTRANCE
1 : 5
A020



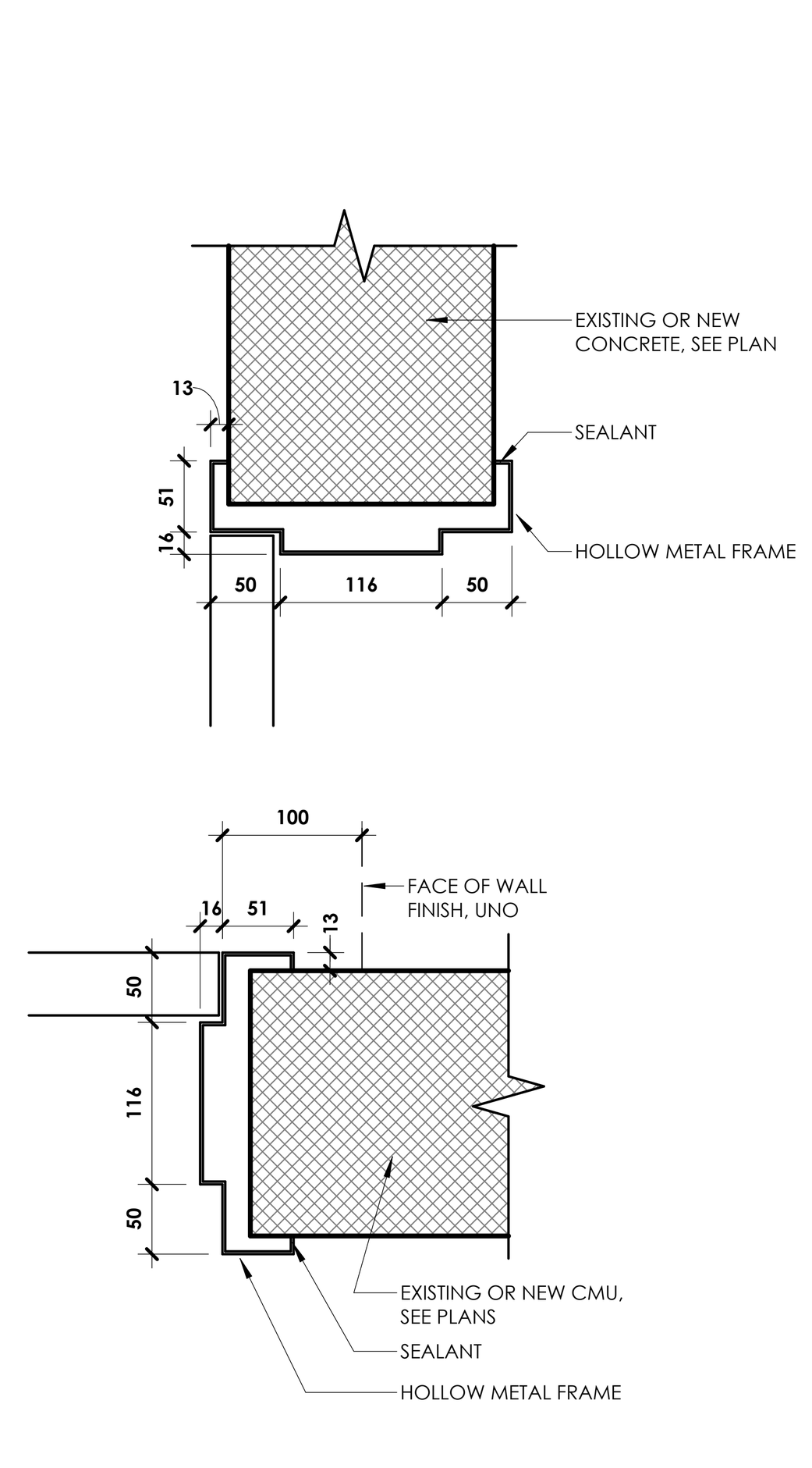
8 A020 SECTION DETAIL - TYPICAL DROP SILL
1 : 5



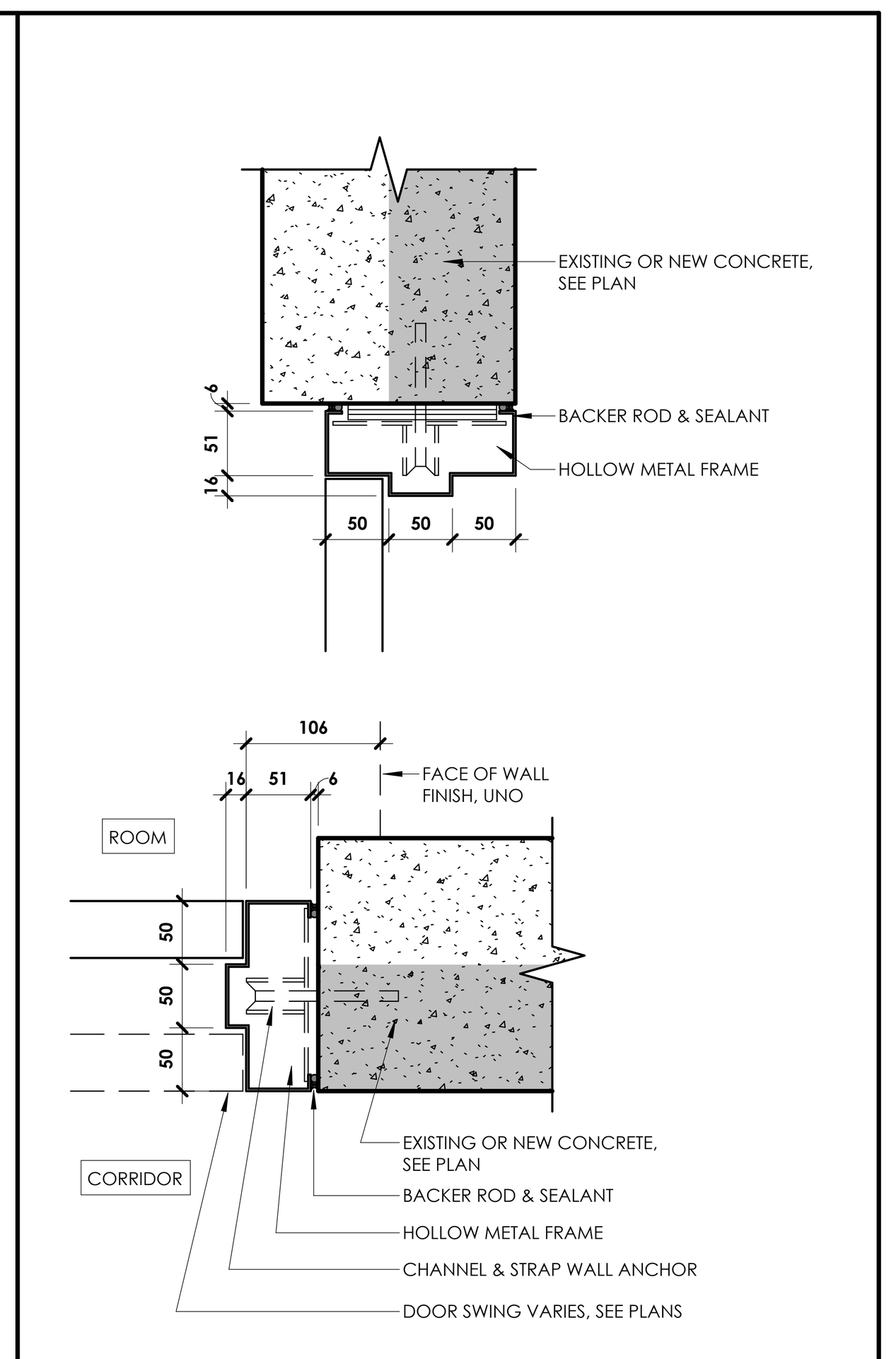
7 A020 DOOR FRAME - TYP. WOOD DOOR FRAME
1 : 5



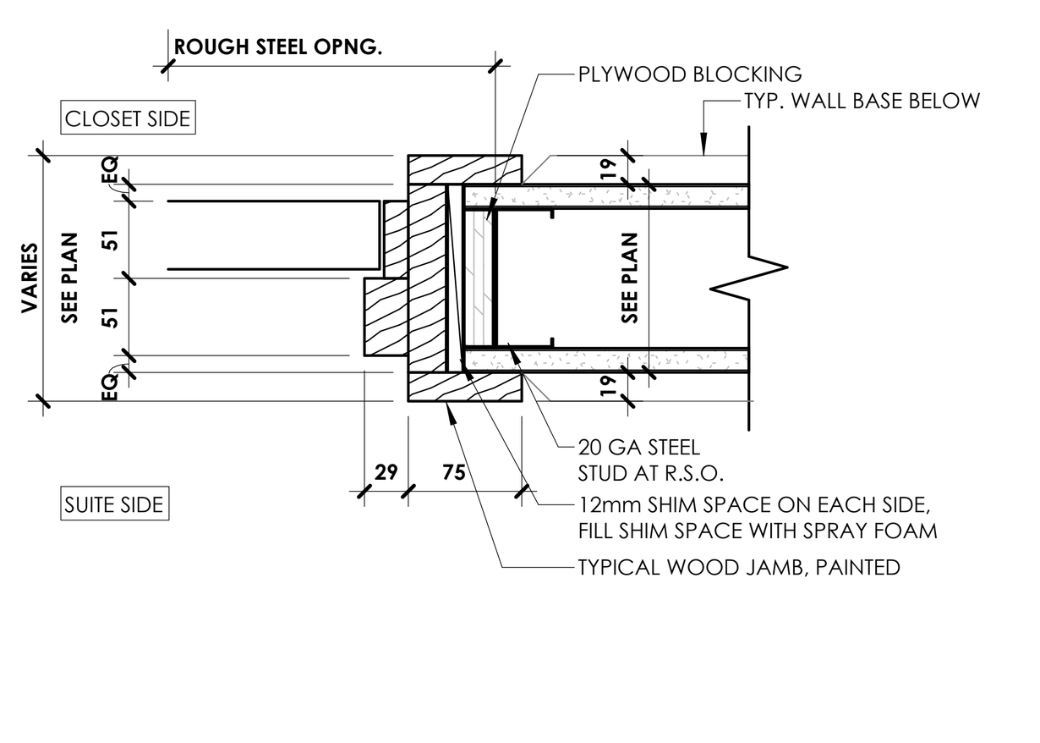
6 A020 DOOR FRAME - HM @ GYPSUM PARTITION
1 : 5
A020



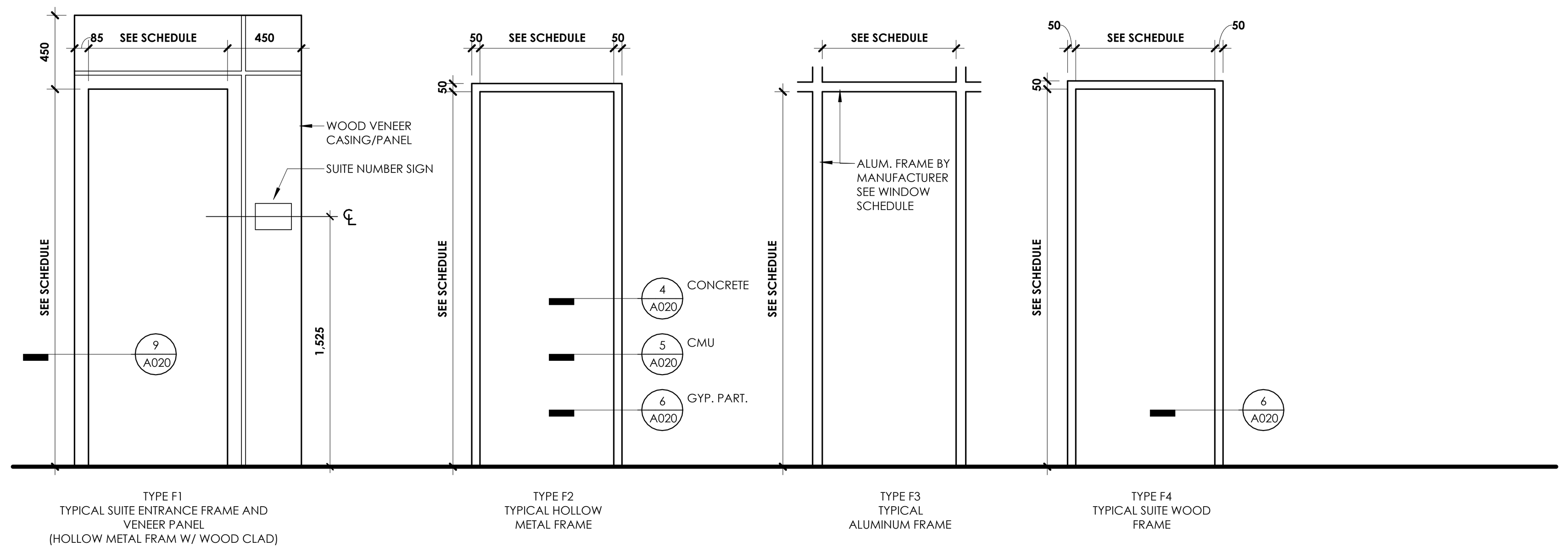
5 A020 DOOR FRAME - HM @ CMU WALL
1 : 5
A020



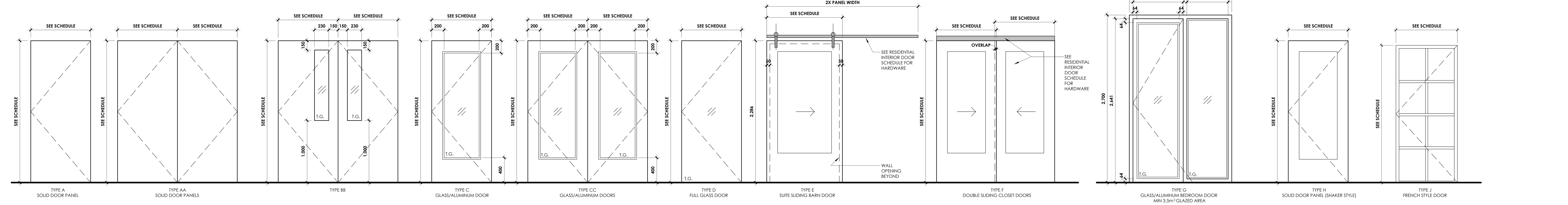
4 A020 DOOR FRAME - HM @ CONCRETE WALL
1 : 5
A020



3 A020 DOOR FRAME - SLIDING CLOSET DOORS
1 : 5



2 A020 DOOR FRAME TYPES
1 : 25



1 A020 DOOR PANEL TYPES
1 : 25

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur mécanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox STUDIO

All dimensions are shown in metric.
Contractor shall check and verify all dimensions and report all error and omissions to the Architect.
Do not scale the drawings.
Not for construction until signed by the Architect.

project title | titre du projet

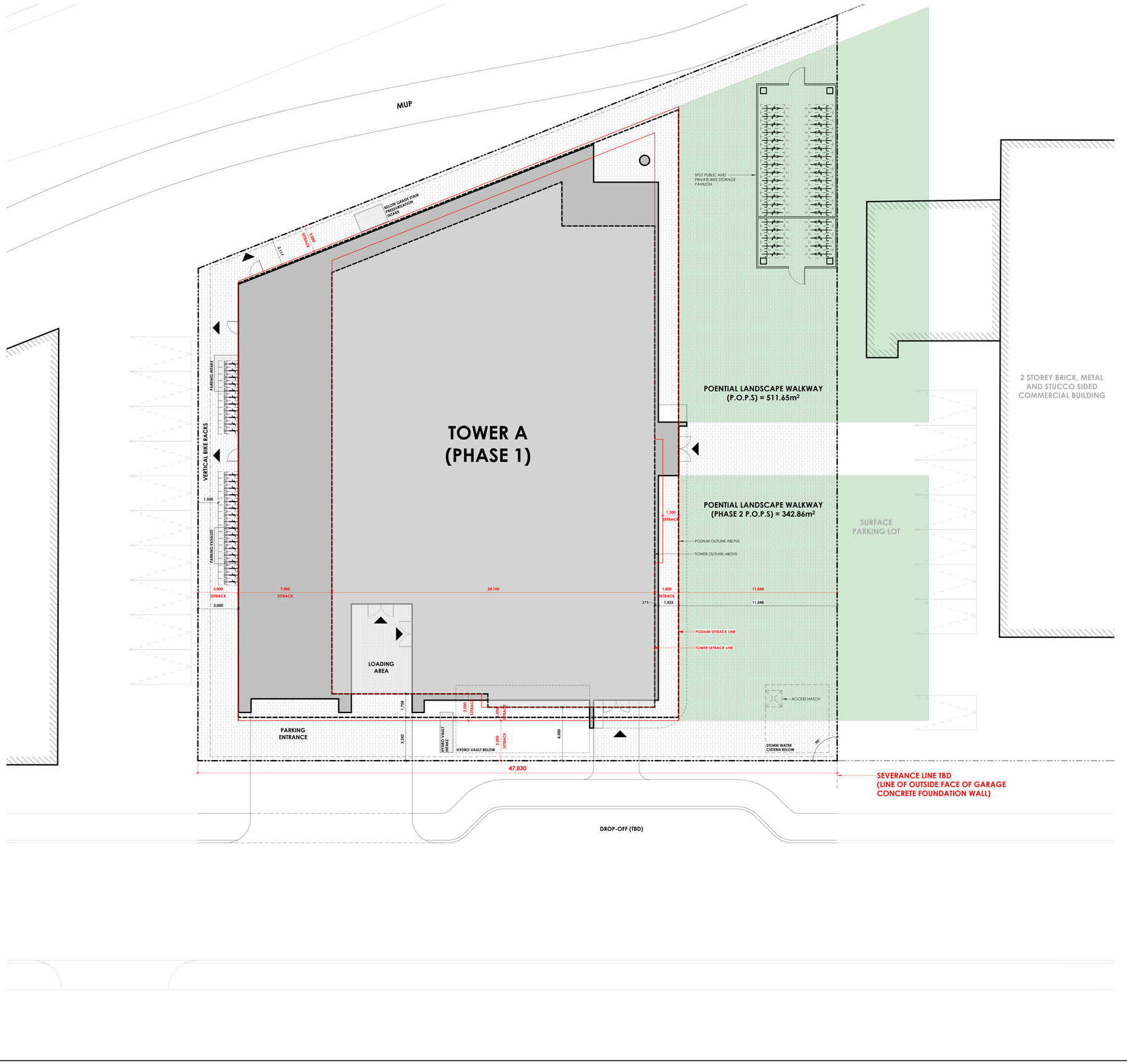
GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

drawing title | titre du dessin

DOOR TYPES

project number | numero du projet	2402
drawn | dessiné	CK
checked | verifié	JA / AR
scale | échelle	As indicated
date | date	02/15/24
drawing number | numéro du dessin	A020



ZONING MATRIX

ITEM	FIELD	DATA		
1	LEGAL DESCRIPTION	SEE LEGAL DESCRIPTION ON SITE PLAN.		
2	CURRENT ZONING PERMITTED USES:			
3	LOT AREA			
4	LOT FRONTAGE	47.817 m		
5	BUILDING AREA	1,284.86 m²		
6	BUILDING SETBACKS	FRONT YARD (REQUIRED):	3m	
		REAR YARD (REQUIRED):	2m	
		INTERIOR SIDE YARD (REQUIRED):	3m	
		TOWER SETBACKS:	SEE PLAN	
7	AMENITY SPACE	REQUIRED:	PROVIDED:	
		SUITE COUNT x 6m² 336 x 6m² **2,016.00 m²**	SHARED INTERIOR AMENITY AREA SHARED EXTERIOR AMENITY AREA PRIVATE EXTERIOR AMENITY AREA **TOTAL AMENITY AREA PROVIDED**	2,231.09 m² 495.89 m² 0.00 m² **2,726.99 m²**
8	BUILDING HEIGHT	**14.73 m** PODIUM ROOF **101.85 m** TOP OF MECHANICAL PENTHOUSE		
9	LOADING ZONE			
10	PARKING	REQUIRED:	PROVIDED:	
		RESIDENTIAL: MAXIMUM: 0.5 PER UNIT = **168 SPACES MAX.**	ACCESSIBLE (3660x5200) COMPACT (2400x4600) MOTORCYCLE (1300x3000) PARALLEL (2600x6700) STANDARD (2600x5200) **TOTAL PROVIDED**	2 79 6 3 71 **161**
11	BICYCLE PARKING	REQUIRED:	PROVIDED:	
		RESIDENTIAL: MINIMUM: 0.5 PER UNIT = **168 SPACES MIN.**	HORIZONTAL INT. LOCKER HORIZONTAL STACKED HORIZONTAL STACKED (P.A.V.) VERTICAL **TOTAL PROVIDED**	24 104 20 28 **176**
12	LANDSCAPED AREAS			
13	DRIVE AISLES	REQUIRED:	PROVIDED:	
		6m WIDE	6m WIDE	

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox STUDIO

All dimensions are shown in metric.
Contractor shall check and verify all dimensions and report all error and omissions to the Architect.
Do not scale the drawings.
Not for construction until signed by the Architect.

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

drawing title | titre du dessin

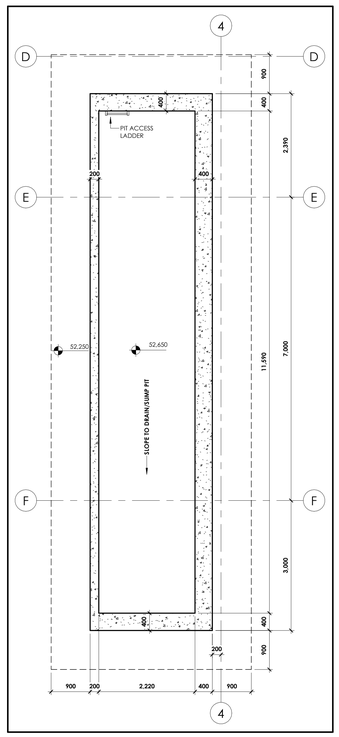
SITE PLAN

project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | vertifié	**JA / AR**
scale | échelle	**As indicated**
date | date	**02/15/24**

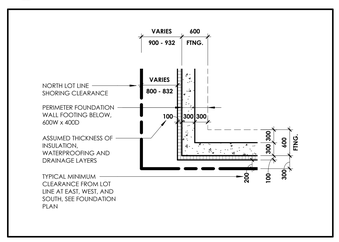
drawing number | numéro du dessin

A050

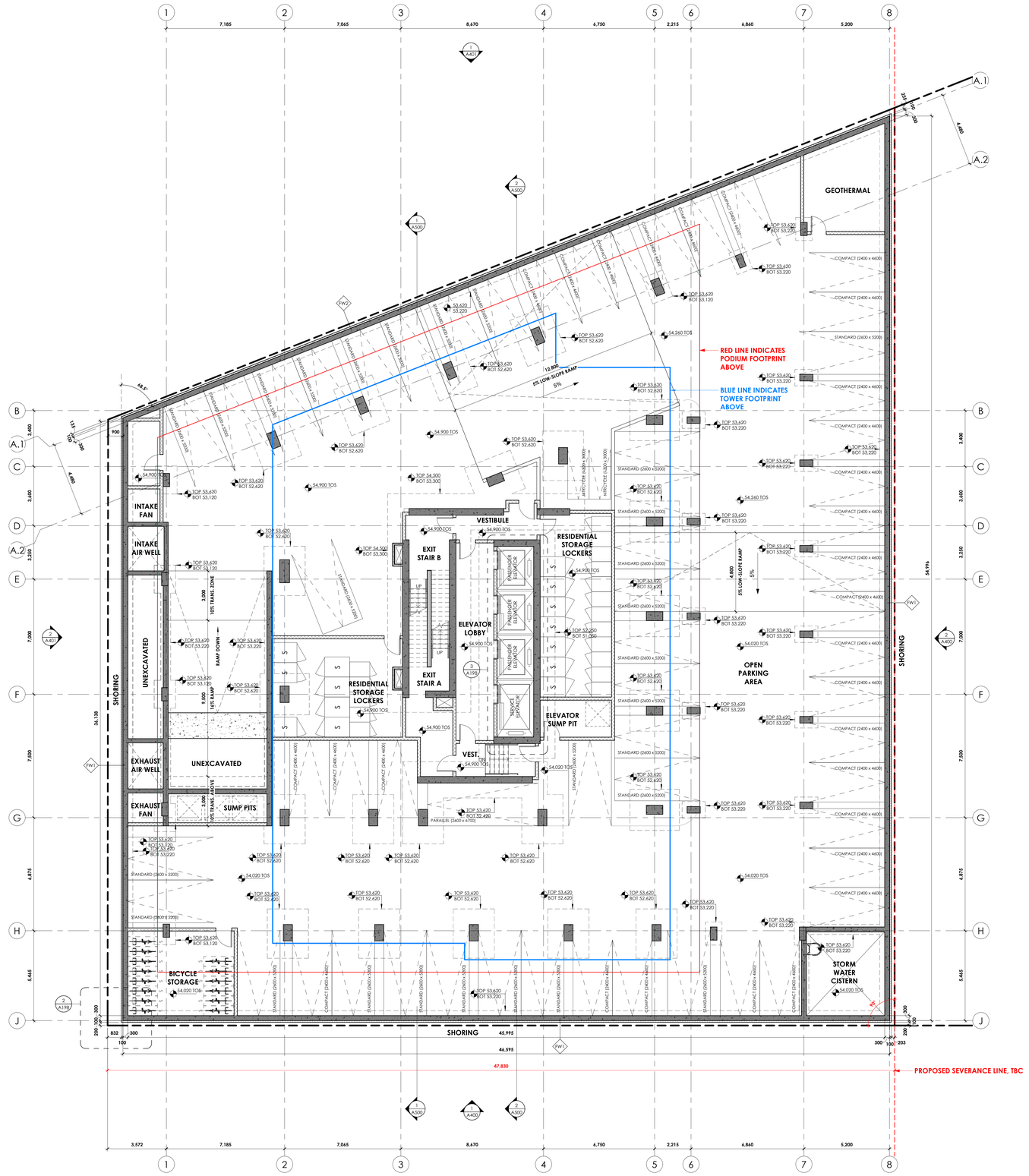
Autodesk Docs://Gladstone and Loretta - Tower A_2402_145 Loretta CLV LIB_Tower A.rvt
2024-05-24 1:47:19 PM



3 / A198 ENLARGED PLAN - ELEVATOR PIT
1 : 50
A198



2 / A198 PLAN DETAIL - TYPICAL FOUNDATION CLEARANCE
1 : 50
A198



1 / A198 FLOOR PLAN - LEVEL P3
1 : 100
A400

GENERAL NOTES:

1. REFER TO **A010** FOR TYPICAL ASSEMBLY TYPES
2. REFER TO **A020** FOR TYPICAL DOOR TYPES
3. RESIDENTIAL SUITES AND ELEVATOR LOBBIES ON LEVELS 27-30 TO RECEIVE HIGH-END FINISHES

LEGEND:

- CAST IN PLAN CONCRETE, EXPOSED WHERE SHOWN IN PLAN
- CMU PARTITIONS
- GYPSUM PARTITION, FIRE RATED
- GYPSUM PARTITION, NON-RATED

STRUCTURAL NOTES (HIGH-LEVEL ESTIMATE):

TYPICAL SLAB = 125 THK SLAB ON GRADE (UNREINF)
CISTERN SLAB = 200 THK SLAB ON GRADE (W MESH)

SHEAR WALLS = 400 THK
TYPICAL FOUNDATION WALL = 300 THK
INTERIOR CISTERN WALL = 300 THK
RAMP WALLS = 300 THK
MISC WALLS = 250 THK

TYPICAL TOWER COLUMN = 550x1000
TYPICAL PODIUM/PARK COLUMN = 400x800

EXAMPLE FOOTINGS ASSUMING 2000 kPa BEARING:
TYPICAL TOWER = 2500x3000x1000 DP
TYPICAL PODIUM = 1300x1700x500 DP
TYPICAL PARKING ONLY = 1000x1400x400 DP
SHEAR WALL FOOTINGS = 900 EXTENSION ALL AROUND X 1200 DP
FOUNDATION/RAMP WALL FOOTING = 600x400 DP

CONCRETE STRENGTHS:
SLAB ON GRADE = 25 MPa (TYPE C-4)
TOWER COLUMNS & SHEAR WALLS = 45 MPa (TYPE C-1)
PODIUM COLUMNS = 35 MPa (TYPE C-1)
FOUNDATION WALL AND FOOTINGS = 35 MPa (TYPE C-1)

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox
STUDIO

All dimensions are shown in metric.
Contractor shall check and verify all dimensions and report all error and omissions to the Architect.
Do not scale the drawings.
Not for construction until signed by the Architect.

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

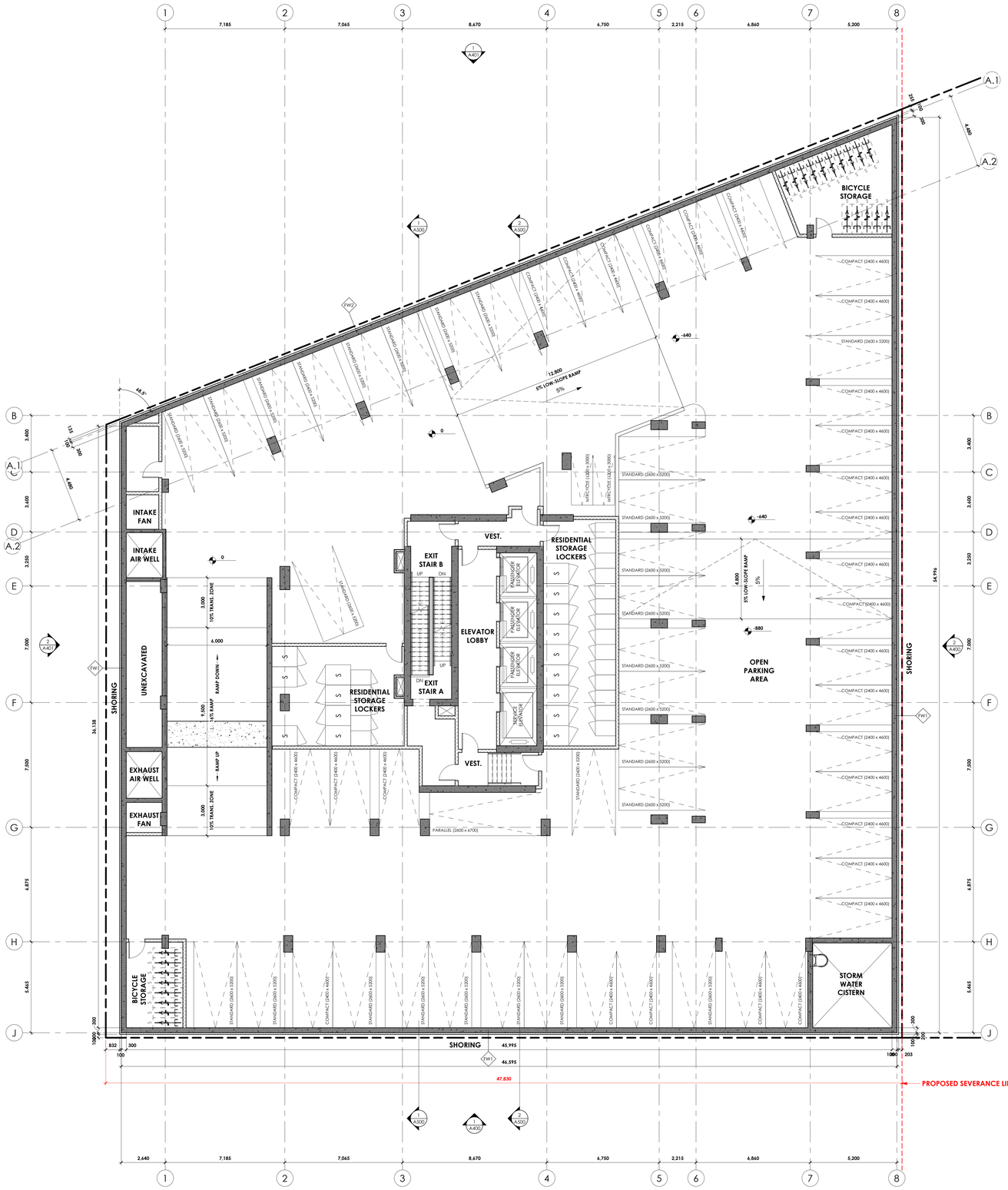
145 LORETTA AVE. N | OTTAWA | ON

drawing title | titre du dessin

FLOOR PLAN - P3 (FOUNDATION PLAN)

project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | verifié	**JA / AR**
scale | échelle	**As indicated**
date | date	**02/15/24**
drawing number | numéro du dessin	**A198**

Autodesk Docs://Gladstone and Loretta - Tower A/2402_145 Loretta CLV_LB_Tower A.rvt
2024-05-24 1:47:22 PM



GENERAL NOTES:

1. REFER TO **A010** FOR TYPICAL ASSEMBLY TYPES
2. REFER TO **A020** FOR TYPICAL DOOR TYPES
3. RESIDENTIAL SUITES AND ELEVATOR LOBBIES ON LEVELS 27-30 TO RECEIVE HIGH-END FINISHES

LEGEND:

- CAST IN PLAN CONCRETE, EXPOSED WHERE SHOWN IN PLAN
- CMU PARTITIONS
- GYPSUM PARTITION, FIRE RATED
- GYPSUM PARTITION, NON-RATED

STRUCTURAL NOTES (HIGH-LEVEL ESTIMATE):

SLAB = 250 MIN THK + SLOPED TOPPING

SHEAR WALLS = 400 THK
TYPICAL FOUNDATION WALL = 300 THK
INTERIOR CISTERN WALL = 300 THK
RAMP WALLS = 300 THK
MISC. WALLS = 250 THK

TYPICAL TOWER COLUMN = 550x1000
TYPICAL PODIUM/PARK COLUMN = 400x800

CONCRETE STRENGTHS:
SLAB = 35 MPa (TYPE C-1) + CORROSION INHIBITOR
TOWER COLUMNS & SHEAR WALLS = 45 MPa (TYPE C-1)
PODIUM COLUMNS = 35 MPa (TYPE C-1)
FOUNDATION WALL = 35 MPa (TYPE C-1)

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox
STUDIO

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

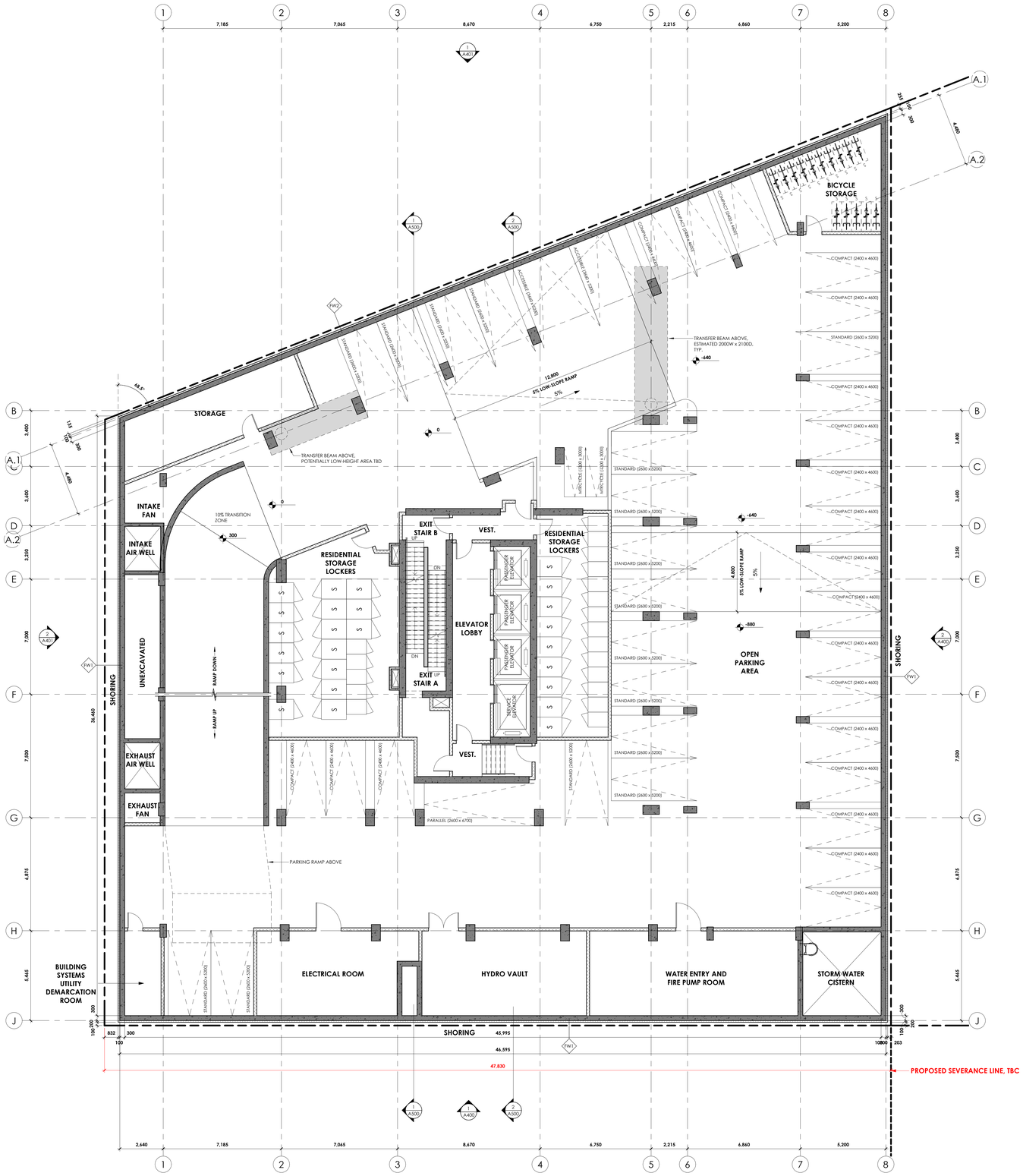
drawing title | titre du dessin

FLOOR PLAN - P2

project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | verifié	**JA / AR**
scale | échelle	**1 : 100**
date | date	**02/15/24**

drawing number | numéro du dessin

A199



GENERAL NOTES:

1. REFER TO **A010** FOR TYPICAL ASSEMBLY TYPES
2. REFER TO **A020** FOR TYPICAL DOOR TYPES
3. RESIDENTIAL SUITES AND ELEVATOR LOBBIES ON LEVELS 27-30 TO RECEIVE HIGH-END FINISHES

LEGEND:

- CAST IN PLAN CONCRETE, EXPOSED WHERE SHOWN IN PLAN
- CMU PARTITIONS
- GYPSUM PARTITION, FIRE RATED
- GYPSUM PARTITION, NON-RATED

STRUCTURAL NOTES (HIGH-LEVEL ESTIMATE):

SLAB = 250 MIN THK + SLOPED TOPPING

SHEAR WALLS = 400 THK
TYPICAL FOUNDATION WALL = 300 THK
INTERIOR CISTERN WALL = 300 THK
RAMP WALLS = 300 THK
MISC WALLS = 250 THK

TYPICAL TOWER COLUMN = 550x1000
TYPICAL PODIUM/PARK COLUMN = 400x800

CONCRETE STRENGTHS:
SLAB = 35 MPa (TYPE C-1) + CORROSION INHIBITOR
TOWER COLUMNS & SHEAR WALLS = 45 MPa (TYPE C-1)
PODIUM COLUMNS = 35 MPa (TYPE C-1)
FOUNDATION WALL = 35 MPa (TYPE C-1)

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox
STUDIO

All dimensions are shown in metric.
Contractor shall check and verify all dimensions and report all error and omissions to the Architect.
Do not scale the drawings.
Not for construction until signed by the Architect.

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

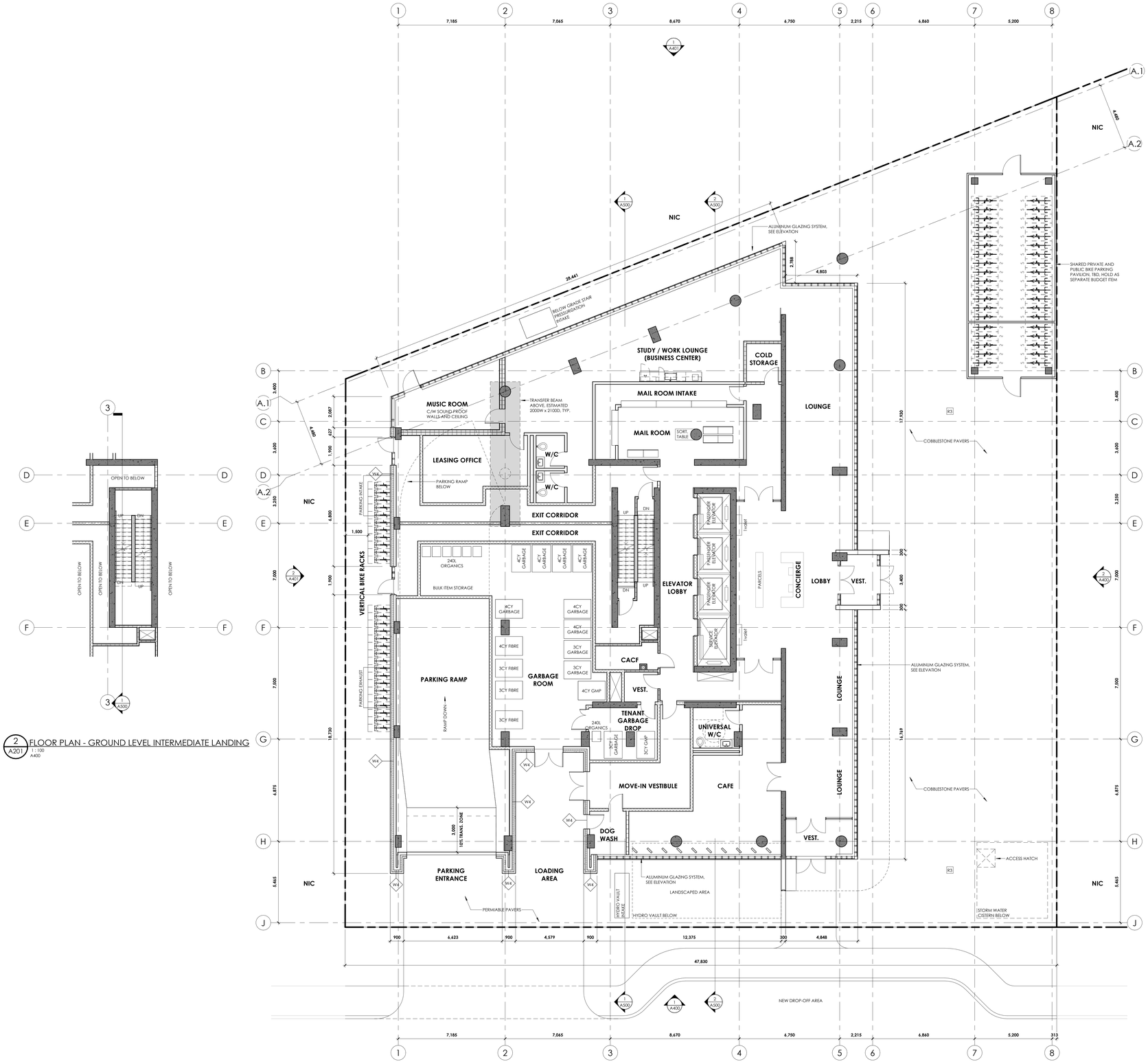
drawing title | titre du dessin

FLOOR PLAN - P1

project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | verifié	**JA / AR**
scale | échelle	**1 : 100**
date | date	**02/15/24**

drawing number | numéro du dessin

A200



2 A201 FLOOR PLAN - GROUND LEVEL INTERMEDIATE LANDING
1 : 100
A400

GENERAL NOTES:

1. REFER TO **A010** FOR TYPICAL ASSEMBLY TYPES
2. REFER TO **A020** FOR TYPICAL DOOR TYPES
3. RESIDENTIAL SUITES AND ELEVATOR LOBBIES ON LEVELS 27-30 TO RECEIVE HIGH-END FINISHES

LEGEND:

- CAST IN PLAN CONCRETE, EXPOSED WHERE SHOWN IN PLAN
- CMU PARTITIONS
- GYPSUM PARTITION, FIRE RATED
- GYPSUM PARTITION, NON-RATED

STRUCTURAL NOTES (HIGH-LEVEL ESTIMATE):

INTERIOR SLAB = 250 THK
PODIUM SLAB (GROUND FLOOR EXTERIOR ABOVE PARKING = 300 THK + SLOPED TOPPING + COLUM CAPITALS
RAMP SLAB = 250 THK

TRANSFER BEAMS ABOVE = 2000 X 2100 DP

SHEAR WALLS = 400 THK

TYPICAL TOWER COLUMN = 550x900
TYPICAL PODIUM COLUMN = 400x800 OR 600 DIAM

CONCRETE STRENGTHS:
SLABS = 35 MPa (TYPE N)
RAMP = 35 MPa (TYPE C-1) + CORROSION INHIBITOR
TOWER COLUMNS & SHEAR WALLS = 45 MPa (TYPE N)
PODIUM COLUMNS = 35 MPa (TYPE N)

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox STUDIO

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

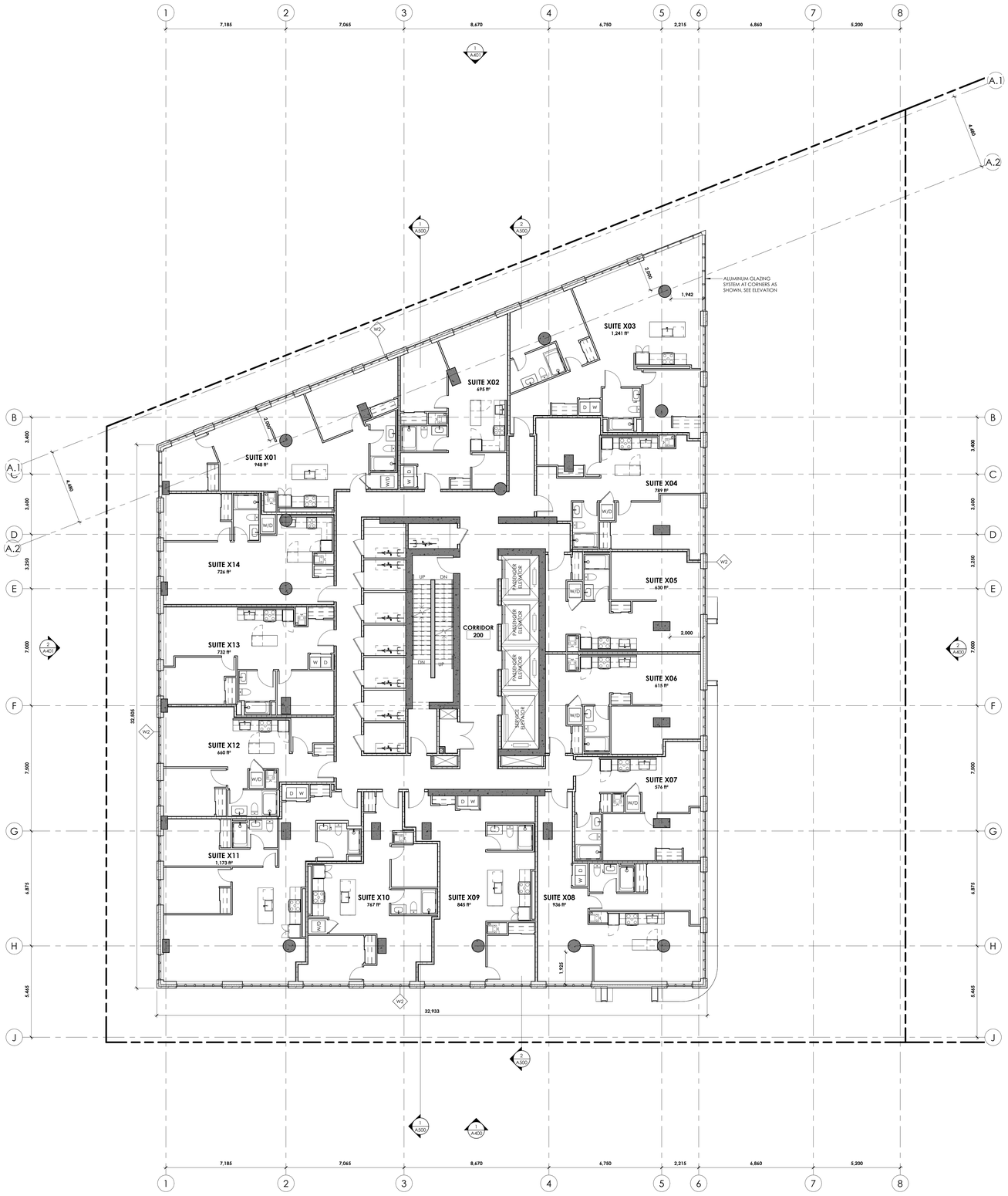
drawing title | titre du dessin

FLOOR PLAN - GROUND LEVEL

project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | verifié	**JA / AR**
scale | échelle	**1 : 100**
date | date	**02/15/24**

drawing number | numéro du dessin

A201



GENERAL NOTES:

1. REFER TO **A010** FOR TYPICAL ASSEMBLY TYPES
2. REFER TO **A020** FOR TYPICAL DOOR TYPES
3. RESIDENTIAL SUITES AND ELEVATOR LOBBIES ON LEVELS 27-30 TO RECEIVE HIGH-END FINISHES

LEGEND:

- CAST IN PLAN CONCRETE, EXPOSED WHERE SHOWN IN PLAN
- CMU PARTITIONS
- GYPSUM PARTITION, FIRE RATED
- GYPSUM PARTITION, NON-RATED

STRUCTURAL NOTES (HIGH-LEVEL ESTIMATE):

SLAB = 250 THK

SHEAR WALLS = 400 THK

TYPICAL TOWER COLUMN = 500x900
TYPICAL PODIUM COLUMN = 400x800 OR 600 DIAM

CONCRETE STRENGTHS:
SLABS = 35 MPa (TYPE N)
COLUMNS & SHEAR WALLS = 45 MPa (TYPE N)
PODIUM COLUMNS = 35 MPa (TYPE N)

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox
STUDIO

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

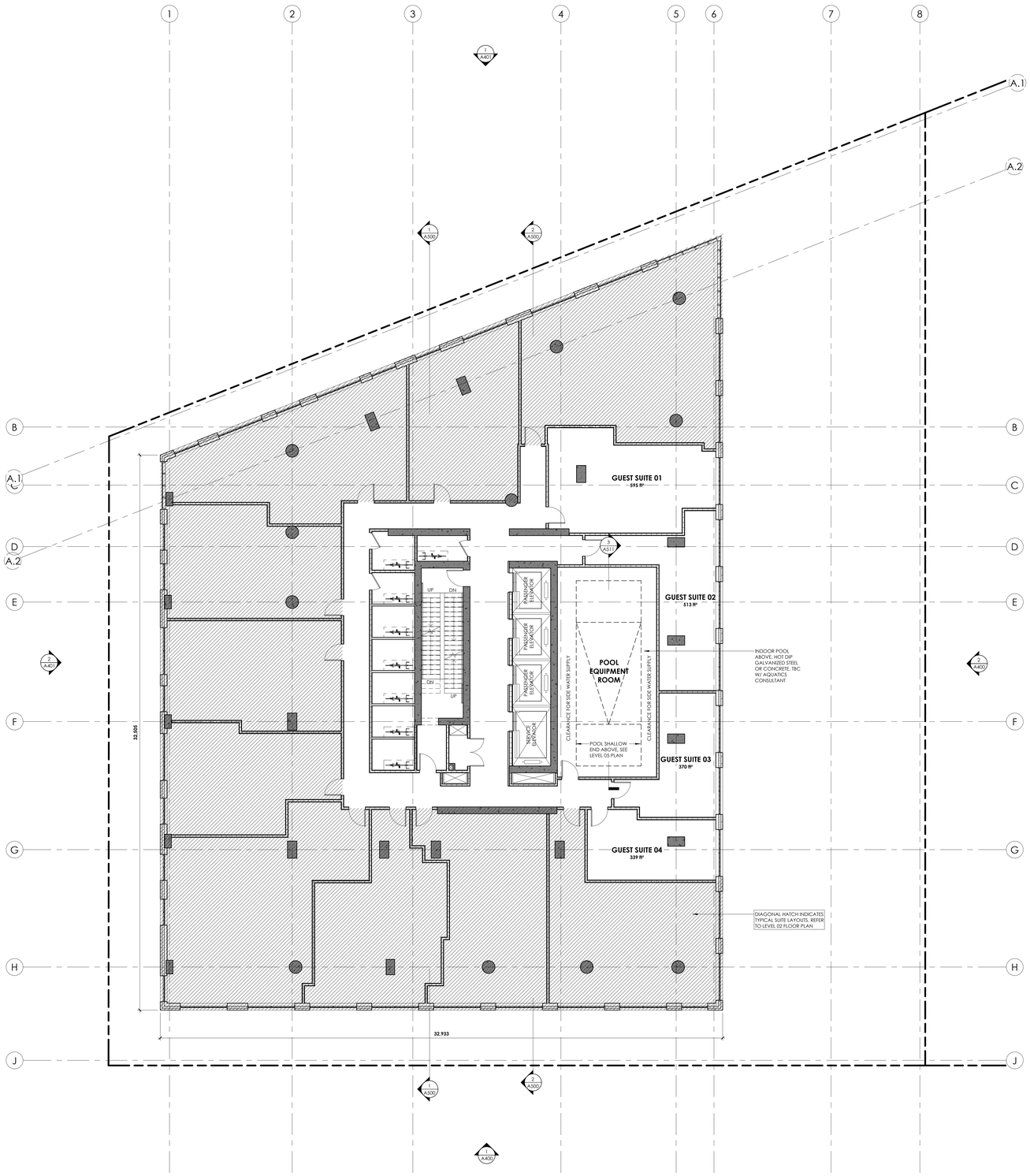
drawing title | titre du dessin

FLOOR PLAN - LEVEL 02 - 03 (TYPICAL PODIUM)

project number | numero du projet	2402
drawn | dessiné	CK
checked | verifié	JA / AR
scale | échelle	1 : 100
date | date	02/15/24

drawing number | numéro du dessin

A202



GENERAL NOTES:

1. REFER TO **A010** FOR TYPICAL ASSEMBLY TYPES
2. REFER TO **A020** FOR TYPICAL DOOR TYPES
3. RESIDENTIAL SUITES AND ELEVATOR LOBBIES ON LEVELS 27-30 TO RECEIVE HIGH-END FINISHES

LEGEND:

- CAST IN PLAN CONCRETE, EXPOSED WHERE SHOWN IN PLAN
- CMU PARTITIONS
- GYPSUM PARTITION, FIRE RATED
- GYPSUM PARTITION, NON-RATED

STRUCTURAL NOTES (HIGH-LEVEL ESTIMATE):

SLAB = 250 THK

SHEAR WALLS = 400 THK

TYPICAL TOWER COLUMN = 500x900
TYPICAL PODIUM COLUMN = 400x800 OR 600 DIAM

CONCRETE STRENGTHS:
SLABS = 35 MPa (TYPE N)
COLUMNS & SHEAR WALLS = 45 MPa (TYPE N)
PODIUM COLUMNS = 35 MPa (TYPE N)

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox
STUDIO

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

drawing title | titre du dessin

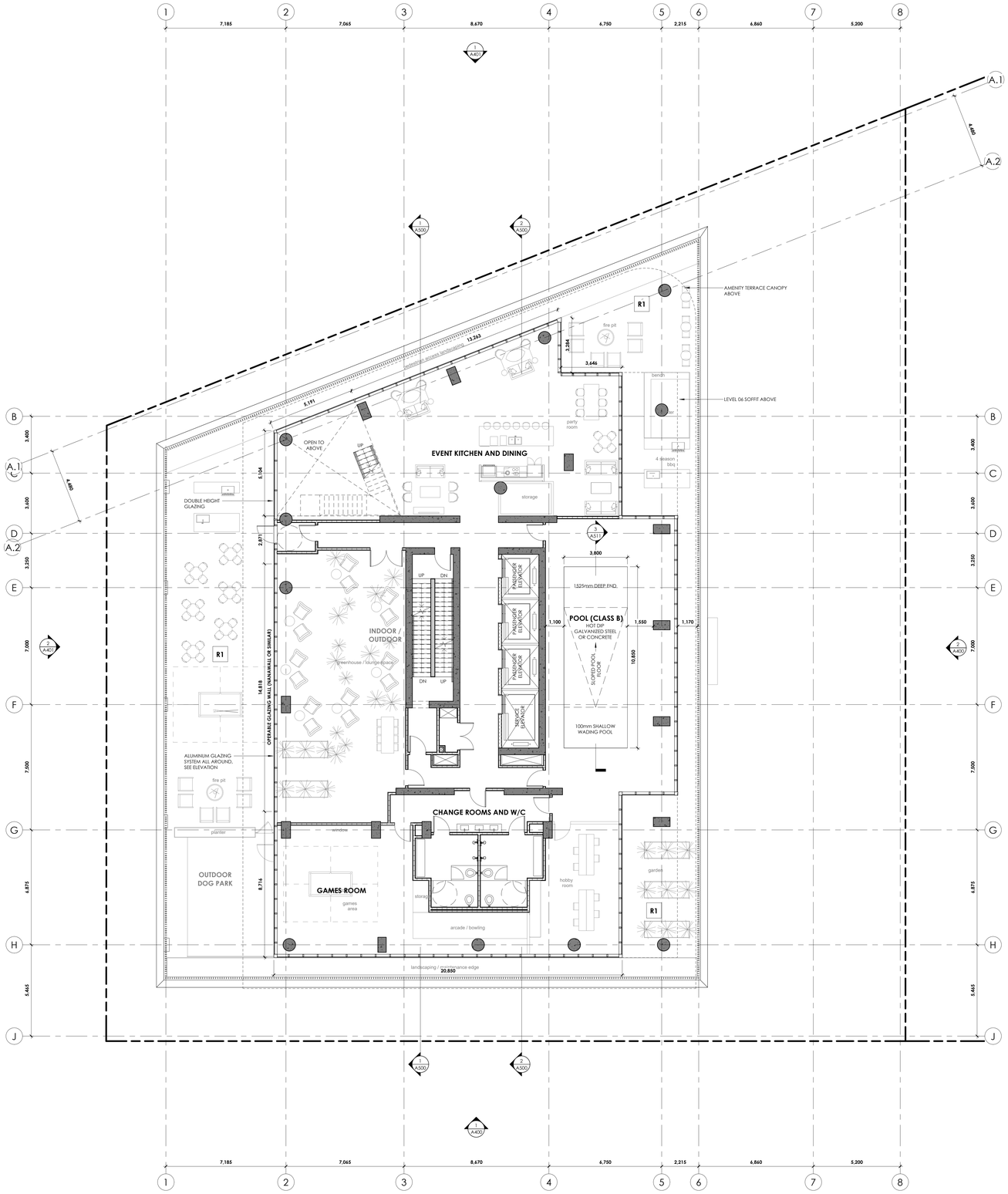
FLOOR PLAN - LEVEL 04 (PODIUM)

project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | vertifié	**JA / AR**
scale | échelle	**1 : 100**
date | date	**02/15/24**

drawing number | numéro du dessin

A204

Autodesk Docs://Gladstone and Loretta - Tower A_2402_145 Loretta CLV LR_Tower A.rvt
2024-05-24 1:48:00 PM



GENERAL NOTES:

1. REFER TO **A010** FOR TYPICAL ASSEMBLY TYPES
2. REFER TO **A020** FOR TYPICAL DOOR TYPES
3. RESIDENTIAL SUITES AND ELEVATOR LOBBIES ON LEVELS 27-30 TO RECEIVE HIGH-END FINISHES

LEGEND:

- CAST IN PLAN CONCRETE, EXPOSED WHERE SHOWN IN PLAN
- CMU PARTITIONS
- GYPSUM PARTITION, FIRE RATED
- GYPSUM PARTITION, NON-RATED

STRUCTURAL NOTES (HIGH-LEVEL ESTIMATE):

LS PODIUM SLAB = 300 THK + SLOPED TOPPING

SHEAR WALLS = 400 THK

TYPICAL TOWER COLUMN = 500x900 or 750 DIAM

CONCRETE STRENGTHS:
LS SLABS = 35 MPa (TYPE N)
INTERIOR SLABS = 30 MPa (TYPE N)
COLUMNS & SHEAR WALLS = 40 MPa (TYPE N) L5-10
COLUMNS & SHEAR WALLS = 35 MPa (TYPE N) L11-16
COLUMNS & SHEAR WALLS = 30 MPa (TYPE N) L17-27

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox
STUDIO

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

drawing title | titre du dessin

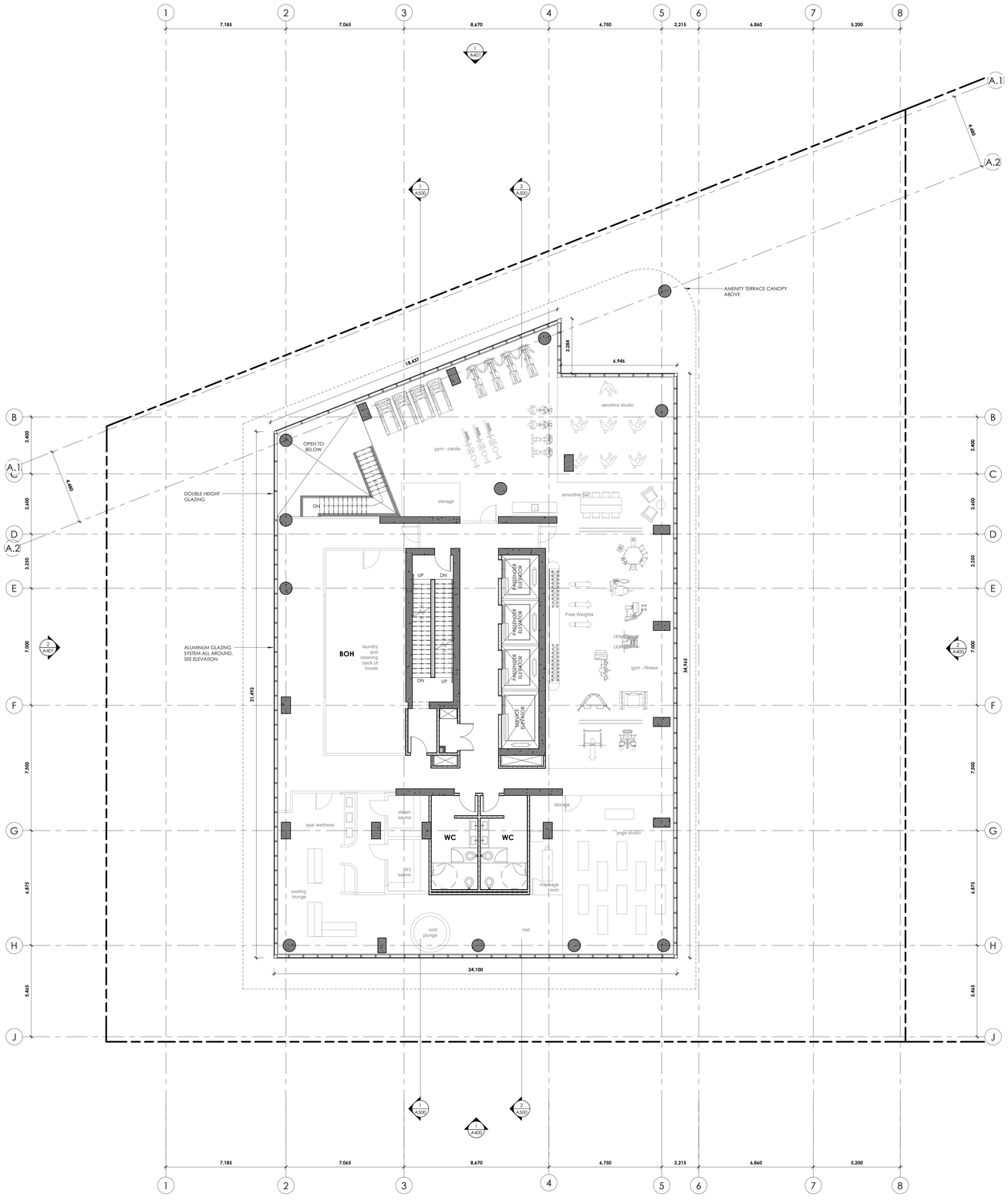
FLOOR PLAN - LEVEL 05 (PODIUM ROOF AMENITY)

project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | vertifié	**JA / AR**
scale | échelle	**1 : 100**
date | date	**02/15/24**

drawing number | numéro du dessin

A205

Autodesk Docs://Gladstone and Loretta - Tower A_2402_145 Loretta CLV LR_Tower A.rvt
2024-05-24 1:48:02 PM



GENERAL NOTES:

1. REFER TO **A010** FOR TYPICAL ASSEMBLY TYPES
2. REFER TO **A020** FOR TYPICAL DOOR TYPES
3. RESIDENTIAL SUITES AND ELEVATOR LOBBIES ON LEVELS 27-30 TO RECEIVE HIGH-END FINISHES

LEGEND:

- CAST IN PLAN CONCRETE, EXPOSED WHERE SHOWN IN PLAN
- CMU PARTITIONS
- GYPSUM PARTITION, FIRE RATED
- GYPSUM PARTITION, NON-RATED

STRUCTURAL NOTES (HIGH-LEVEL ESTIMATE):

TYPICAL SLAB = 225 THK

SHEAR WALLS = 400 THK

TYPICAL TOWER COLUMN = 500x900 or 750 DIAM

CONCRETE STRENGTHS:
INTERIOR SLABS = 30 MPa (TYPE N)
BACLONY SLABS = 35 MPa (TYPE C-1)
COLUMNS & SHEAR WALLS = 40 MPa (TYPE N) L5-10
COLUMNS & SHEAR WALLS = 35 MPa (TYPE N) L11-16
COLUMNS & SHEAR WALLS = 30 MPa (TYPE N) L17-27

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox
STUDIO

All dimensions are shown in metric.
Contractor shall check and verify all dimensions and report all error and omissions to the Architect.
Do not scale the drawings.
Not for construction until signed by the Architect.

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

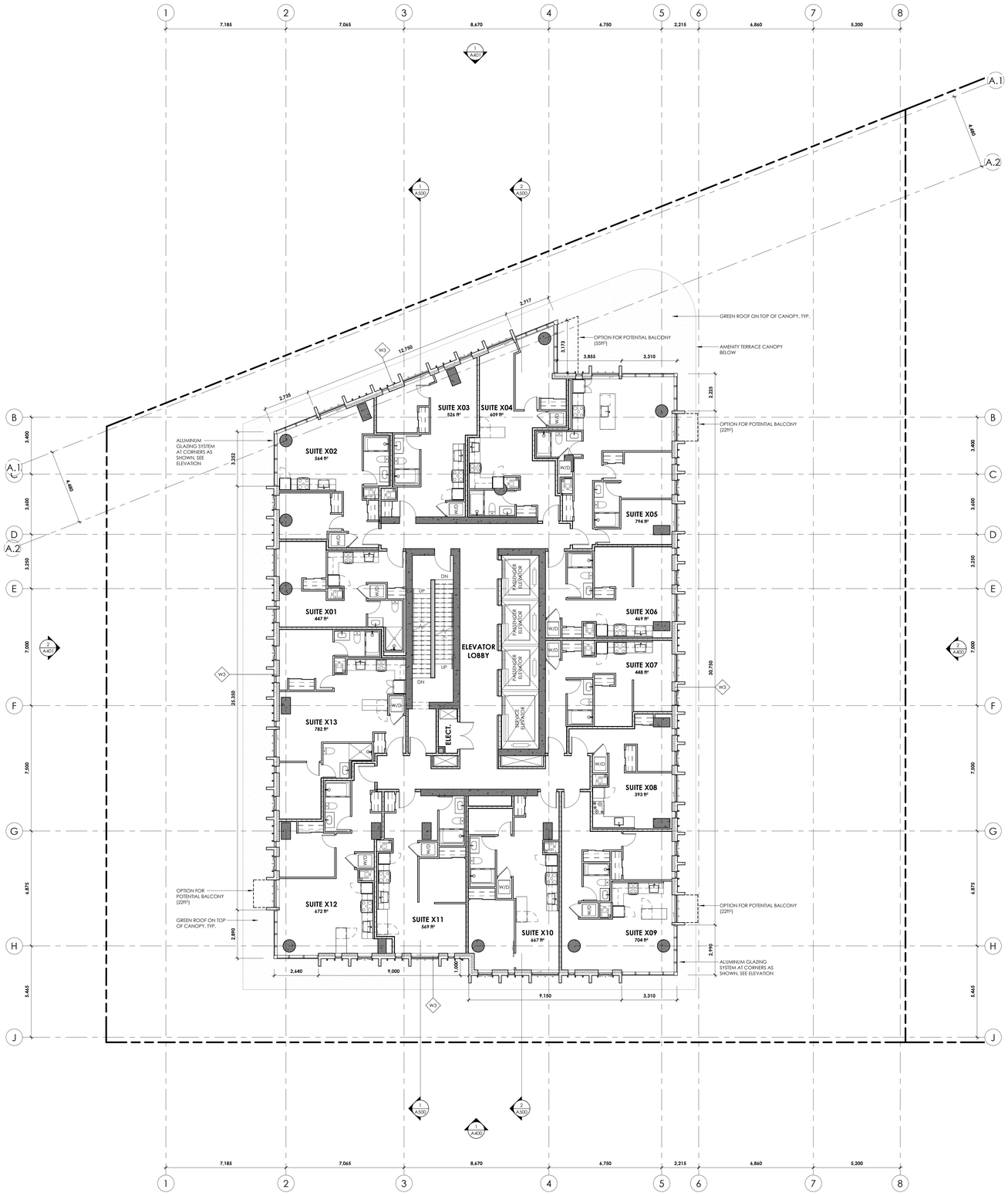
drawing title | titre du dessin

FLOOR PLAN - LEVEL 06 (AMENITY)

project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | verifié	**JA / AR**
scale | échelle	**1 : 100**
date | date	**02/15/24**

drawing number | numéro du dessin

A206



GENERAL NOTES:

1. REFER TO **A010** FOR TYPICAL ASSEMBLY TYPES
2. REFER TO **A020** FOR TYPICAL DOOR TYPES
3. RESIDENTIAL SUITES AND ELEVATOR LOBBIES ON LEVELS 27-30 TO RECEIVE HIGH-END FINISHES

LEGEND:

- CAST IN PLAN CONCRETE, EXPOSED WHERE SHOWN IN PLAN
- CMU PARTITIONS
- GYPSUM PARTITION, FIRE RATED
- GYPSUM PARTITION, NON-RATED

STRUCTURAL NOTES (HIGH-LEVEL ESTIMATE):

TYPICAL SLAB = 225 THK

SHEAR WALLS = 400 THK

TYPICAL TOWER COLUMN = 500x900 or 750 DIAM

CONCRETE STRENGTHS:
INTERIOR SLABS = 30 MPa (TYPE N)
BACLONY SLABS = 35 MPa (TYPE C-1)
COLUMNS & SHEAR WALLS = 40 MPa (TYPE N) L5-10
COLUMNS & SHEAR WALLS = 35 MPa (TYPE N) L11-16
COLUMNS & SHEAR WALLS = 30 MPa (TYPE N) L17-27

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox STUDIO

All dimensions are shown in metric.
Contractor shall check and verify all dimensions and report all error and omissions to the Architect.
Do not scale the drawings.
Not for construction until signed by the Architect.

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

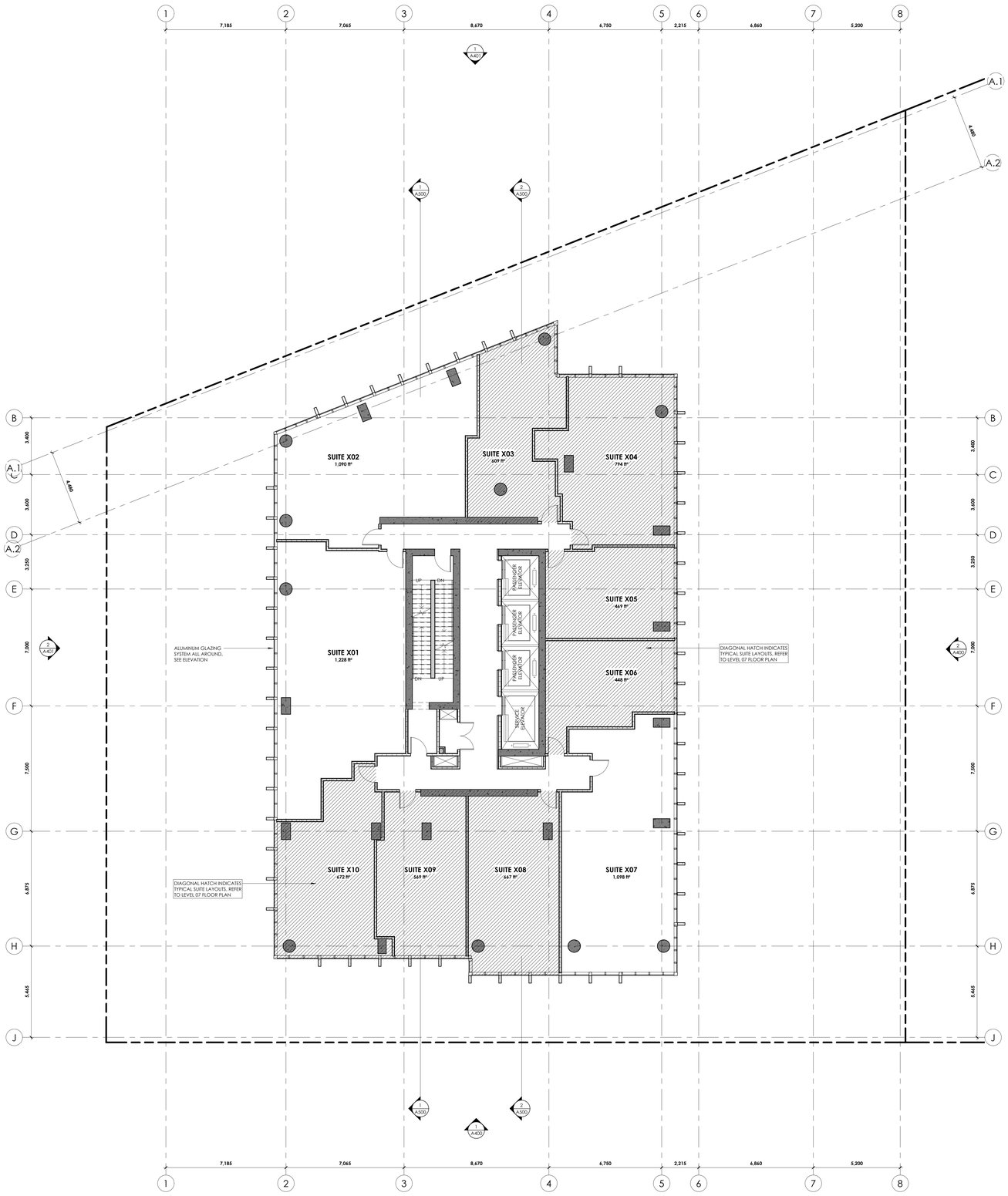
drawing title | titre du dessin

FLOOR PLAN - LEVEL 07 - 26 (TYPICAL TOWER)

project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | verifié	**JA / AR**
scale | échelle	**1 : 100**
date | date	**02/15/24**

drawing number | numéro du dessin

A207



GENERAL NOTES:

1. REFER TO **A010** FOR TYPICAL ASSEMBLY TYPES
2. REFER TO **A020** FOR TYPICAL DOOR TYPES
3. RESIDENTIAL SUITES AND ELEVATOR LOBBIES ON LEVELS 27-30 TO RECEIVE HIGH-END FINISHES

LEGEND:

- CAST IN PLAN CONCRETE, EXPOSED WHERE SHOWN IN PLAN
- CMU PARTITIONS
- GYPSUM PARTITION, FIRE RATED
- GYPSUM PARTITION, NON-RATED

STRUCTURAL NOTES (HIGH-LEVEL ESTIMATE):

SLAB = 225 THK

SHEAR WALLS = 400 THK

TYPICAL TOWER COLUMN = 400x800 OR 600 DIAM.

CONCRETE STRENGTHS:
INTERIOR SLABS = 30 MPa (TYPE N)
BACLONY SLABS = 35 MPa (TYPE C-1)
COLUMNS & SHEAR WALLS = 30 MPa (TYPE N)

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox
STUDIO

All dimensions are shown in metric.
Contractor shall check and verify all dimensions and report all error and omissions to the Architect.
Do not scale the drawings.
Not for construction until signed by the Architect.

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

drawing title | titre du dessin

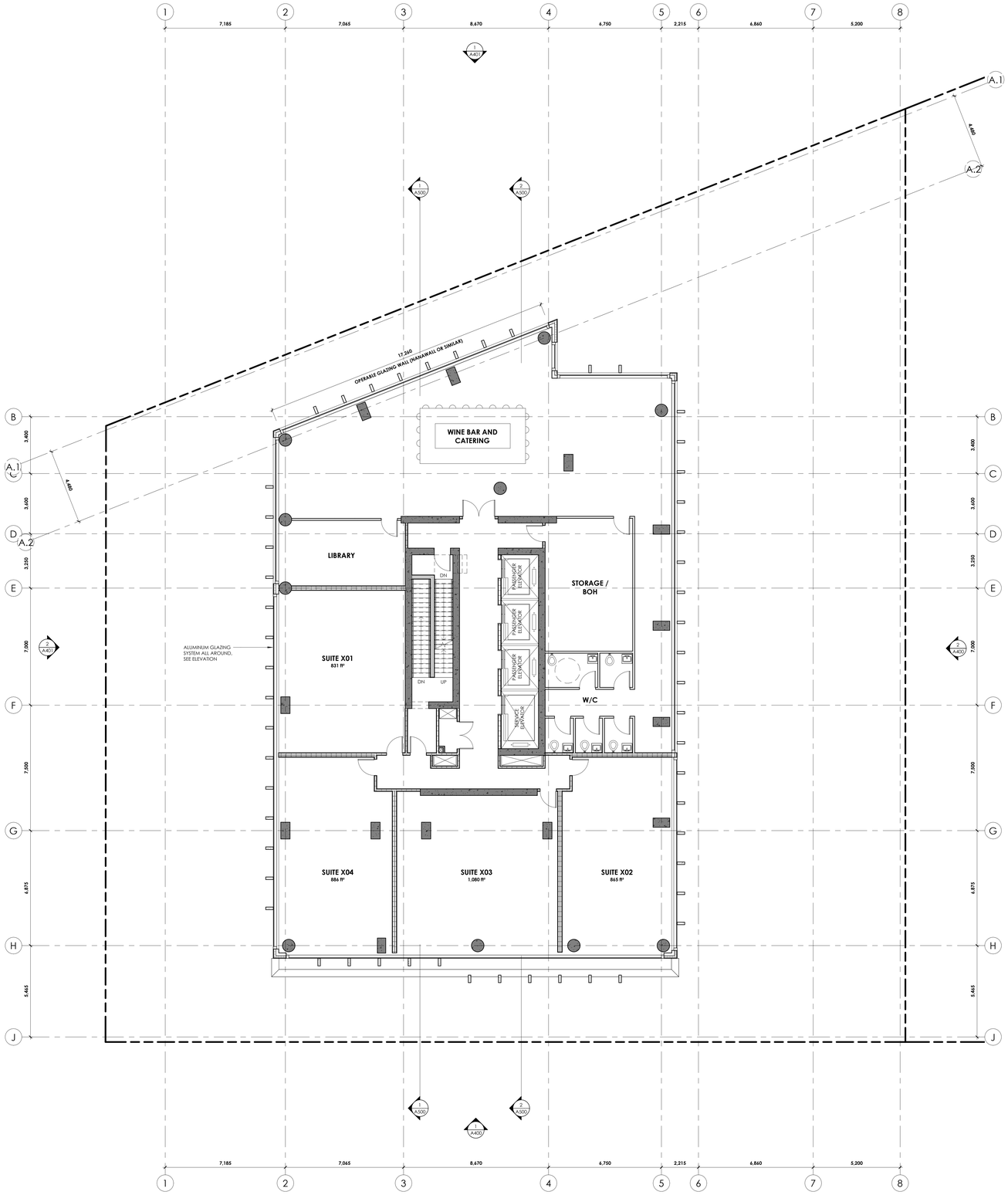
FLOOR PLAN - LEVEL 27 - 29 (TYPICAL)

project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | verifié	**JA / AR**
scale | échelle	**1 : 100**
date | date	**02/15/24**

drawing number | numéro du dessin

A227

Autodesk Docs://Gladstone and Loretta - Tower A 2402_145 Loretta CLV JA_Tower A.rvt
2024-05-24 1:46:09 PM



GENERAL NOTES:

1. REFER TO **A010** FOR TYPICAL ASSEMBLY TYPES
2. REFER TO **A020** FOR TYPICAL DOOR TYPES
3. RESIDENTIAL SUITES AND ELEVATOR LOBBIES ON LEVELS 27-30 TO RECEIVE HIGH-END FINISHES

LEGEND:

- CAST IN PLAN CONCRETE, EXPOSED WHERE SHOWN IN PLAN
- CMU PARTITIONS
- GYPSUM PARTITION, FIRE RATED
- GYPSUM PARTITION, NON-RATED

STRUCTURAL NOTES (HIGH-LEVEL ESTIMATE):

SLAB = 225 THK

SHEAR WALLS = 400 THK

TYPICAL TOWER COLUMN = 400x800 OR 600 DIAM.

CONCRETE STRENGTHS:
INTERIOR SLABS = 30 MPa (TYPE N)
BACLONY SLABS = 35 MPa (TYPE C-1)
COLUMNS & SHEAR WALLS = 30 MPa (TYPE N)

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox
STUDIO

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

drawing title | titre du dessin

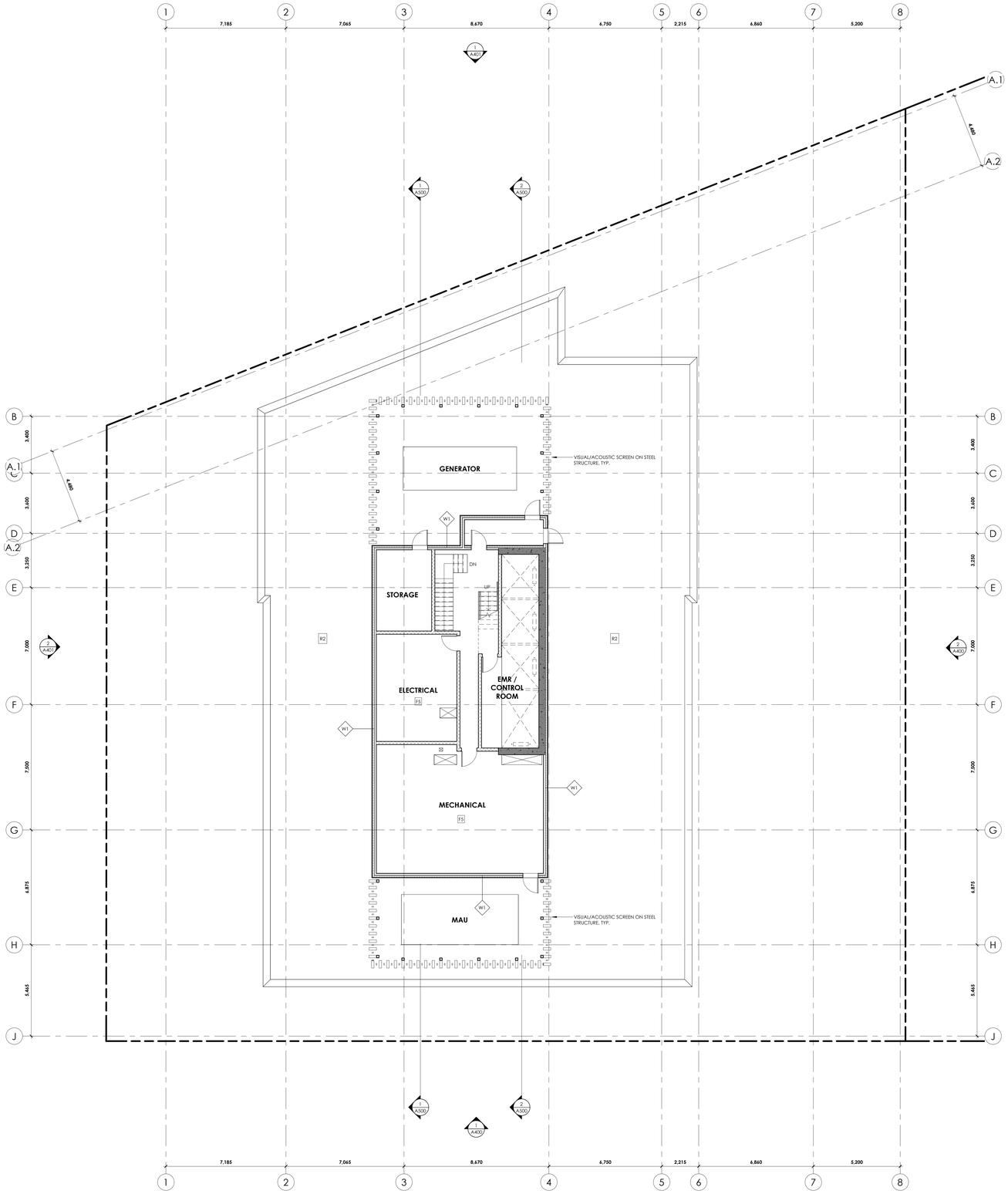
FLOOR PLAN - LEVEL 30 (RESIDENTIAL AND AMENITY PENTHOUSE)

project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | verifié	**JA / AR**
scale | échelle	**1 : 100**
date | date	**02/15/24**

drawing number | numéro du dessin

A230

Autodesk Docs://Gladstone and Loretta - Tower A+C/MOD_145 Loretta CLV_LB_Tower A.rvt
2024-05-24 1:48:10 PM



GENERAL NOTES:

1. REFER TO **A010** FOR TYPICAL ASSEMBLY TYPES
2. REFER TO **A020** FOR TYPICAL DOOR TYPES
3. RESIDENTIAL SUITES AND ELEVATOR LOBBIES ON LEVELS 27-30 TO RECEIVE HIGH-END FINISHES

LEGEND:

- CAST IN PLAN CONCRETE, EXPOSED WHERE SHOWN IN PLAN
- CMU PARTITIONS
- GYPSUM PARTITION, FIRE RATED
- GYPSUM PARTITION, NON-RATED

STRUCTURAL NOTES (HIGH-LEVEL ESTIMATE):

ROOF/TERRACE SLAB = 300 THK + SLOPED TOPPING
INT MECHANICAL/SERVICE AREAS = 300 THK
MECHANICAL FLOATING SLAB (FS) = 300 THK + 100 THK SLAB

SHEAR WALLS = 400 THK

COLUMNS = 400x800

CONCRETE STRENGTHS:
SLABS = 35 MPa (TYPE N)
COLUMNS & SHEAR WALLS = 30 MPa (TYPE N)

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox STUDIO

All dimensions are shown in metric.
Contractor shall check and verify all dimensions and report all error and omissions to the Architect.
Do not scale the drawings.
Not for construction until signed by the Architect.

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

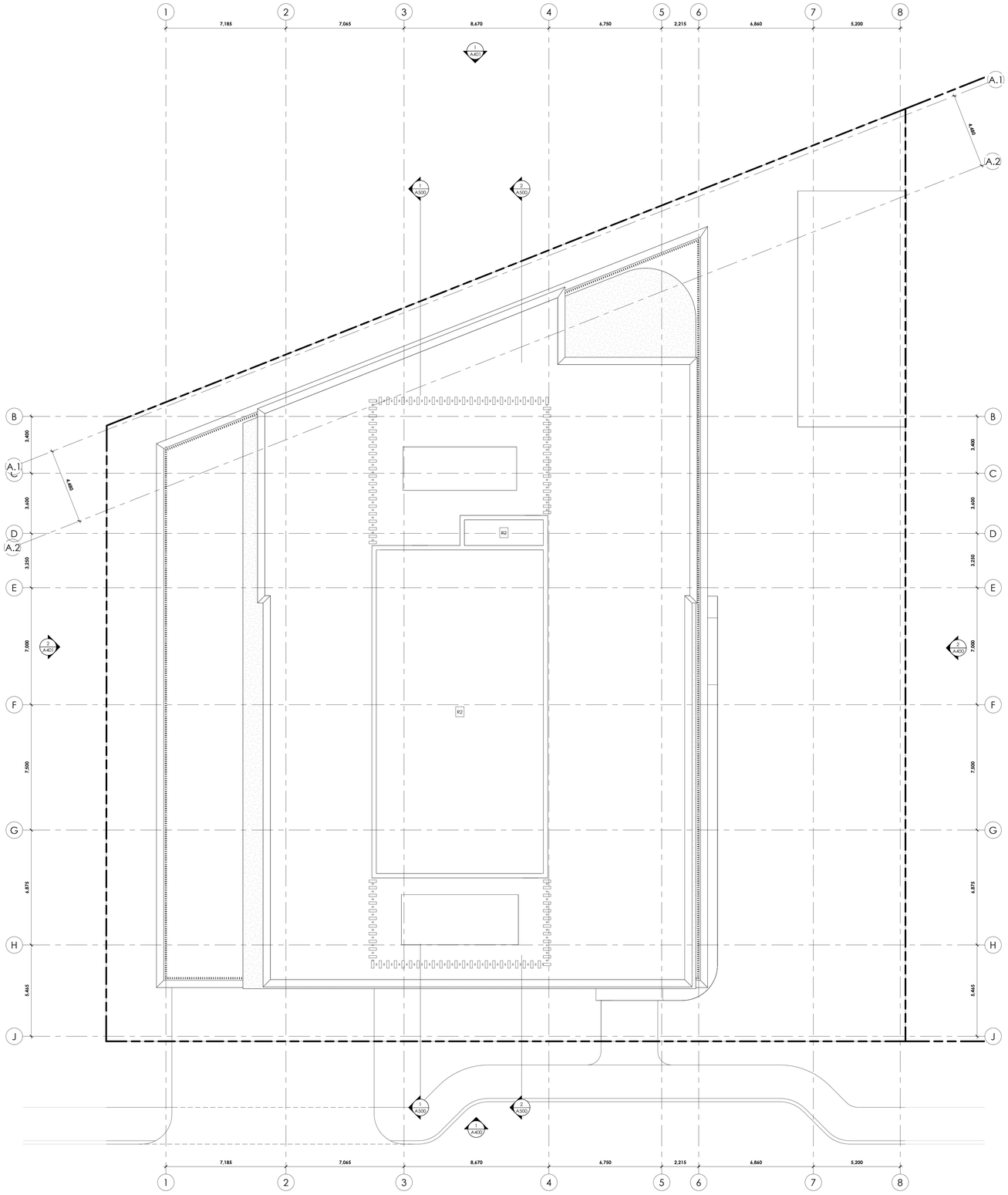
drawing title | titre du dessin

FLOOR PLAN - LEVEL 31 (MECHANICAL PENTHOUSE)

project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | verifié	**JA / AR**
scale | échelle	**1 : 100**
date | date	**02/15/24**

drawing number | numéro du dessin

A231



Autodesk Docs://Gladstone and Loretta - Tower A 2402_145 Loretta CLV_LB_Tower A.rvt
2024-05-24 1:46:19 PM

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox
STUDIO

All dimensions are shown in metric.
Contractor shall check and verify all dimensions and report all error and omissions to the Architect.
Do not scale the drawings.
Not for construction until signed by the Architect.

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

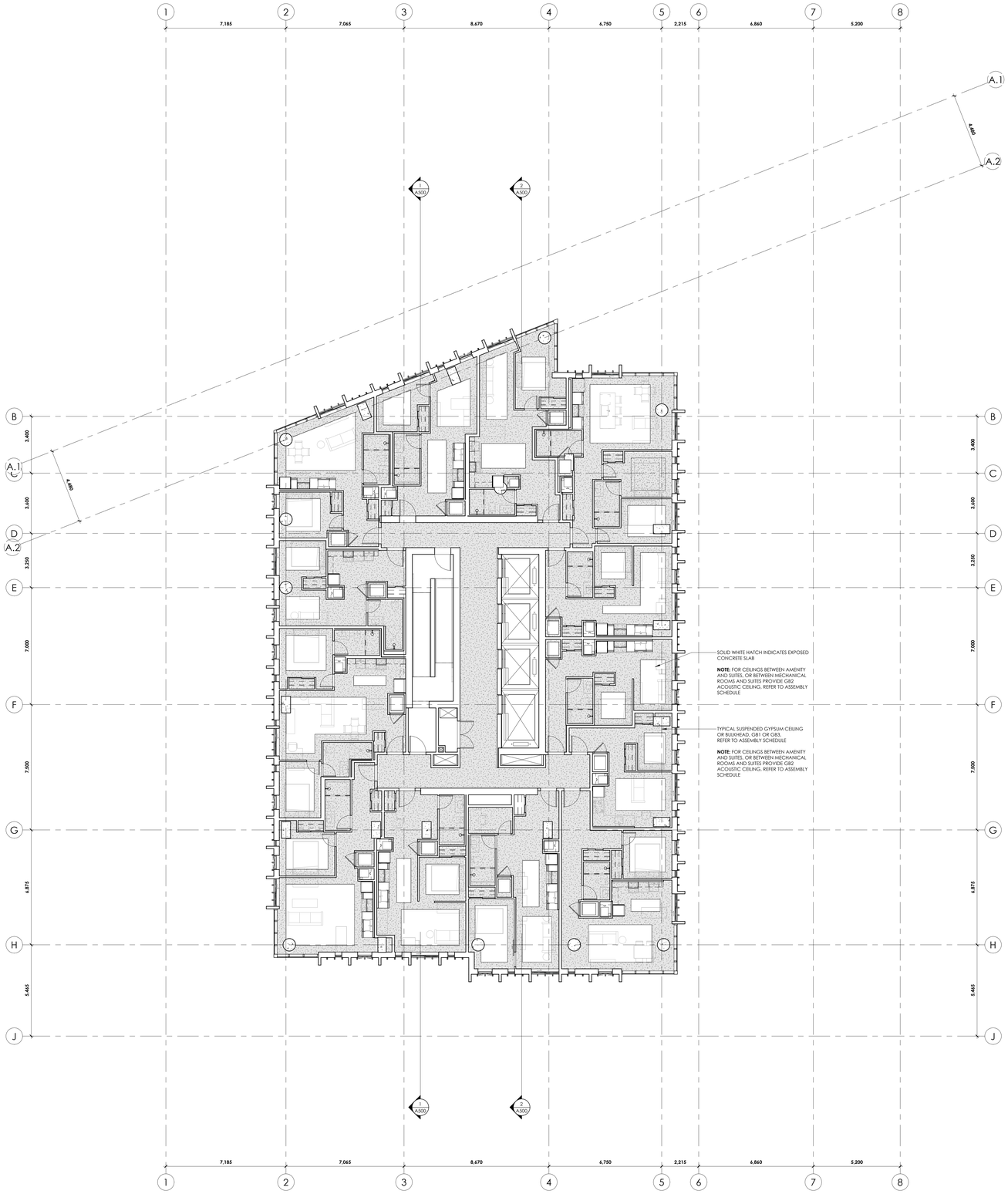
drawing title | titre du dessin

ROOF PLAN

project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | verifié	**JA / AR**
scale | échelle	**1 : 100**
date | date	**02/15/24**

drawing number | numéro du dessin

A232



client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024
no revisions	date

stamp | timbre

architect | architecte

linebox
STUDIO

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

drawing title | titre du dessin

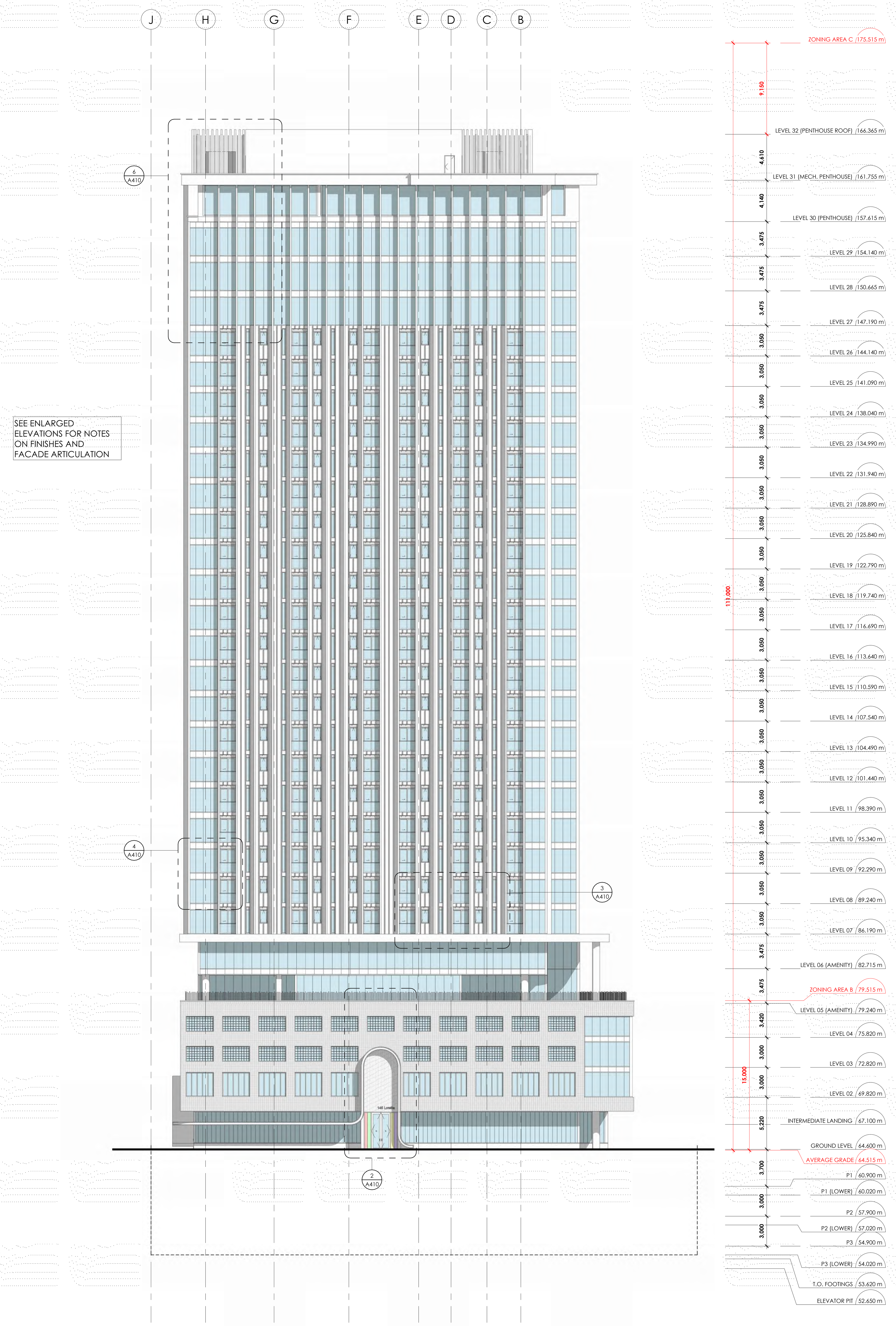
REFLECTED CEILING PLAN - LEVELS 07 - 26 (TYPICAL TOWER)

project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | verifié	**JA / AR**
scale | échelle	**1 : 100**
date | date	**02/15/24**

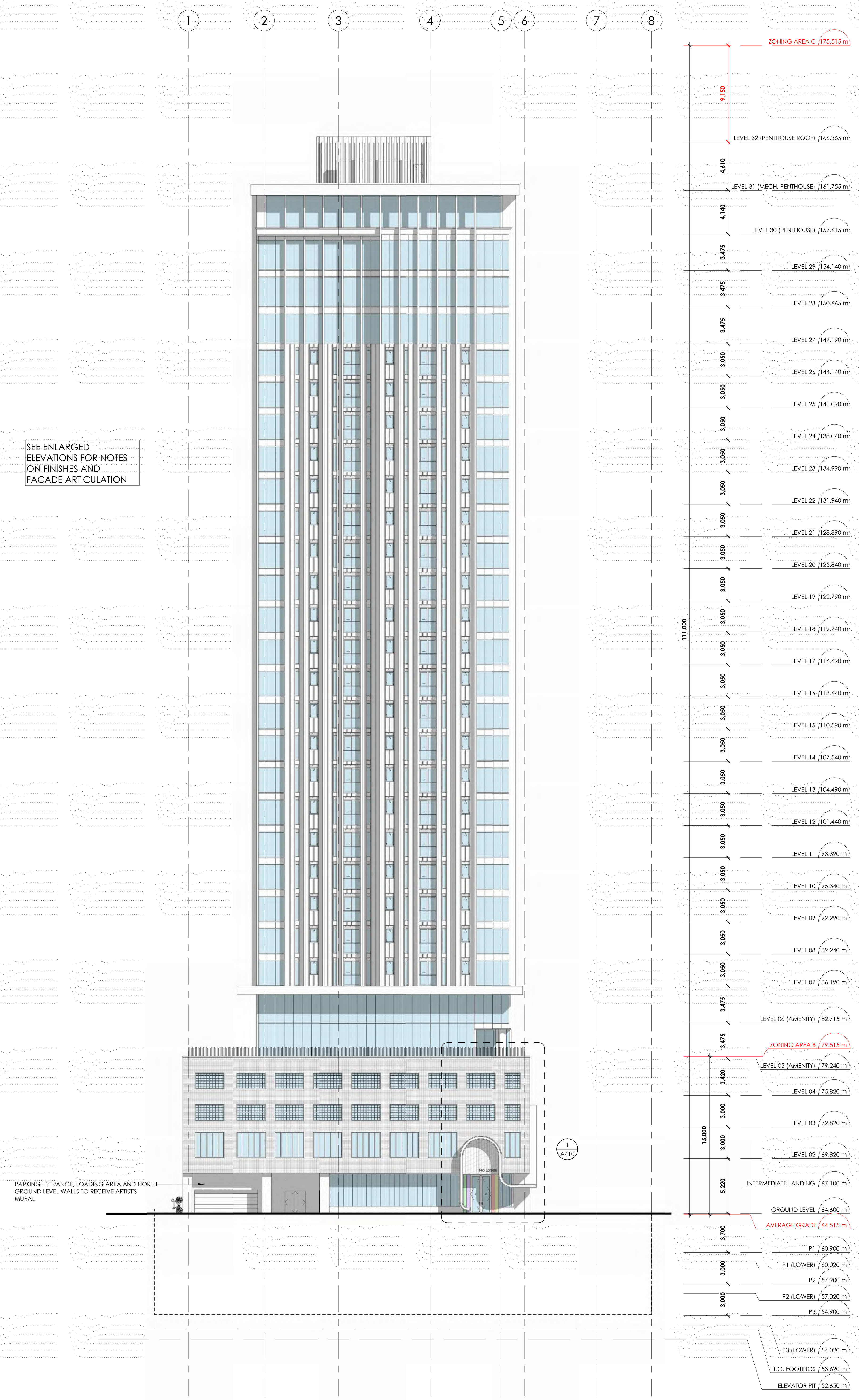
drawing number | numéro du dessin

A307

Autodesk Docs://Gladstone and Loretta - Tower A/2402_145 Loretta CLV_LB_Tower A.rvt
2024-05-24 1:48:21 PM



2 A400 BUILDING ELEVATION - SOUTH
1 : 200



1 A400 BUILDING ELEVATION - WEST (LORETTA AVE N)
1 : 200

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet / project north

nord reel / true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox STUDIO

All dimensions are shown in metric.
Contractor shall check and verify all dimensions and report all error and omissions to the Architect.
Do not scale the drawings.
Not for construction until signed by the Architect.

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

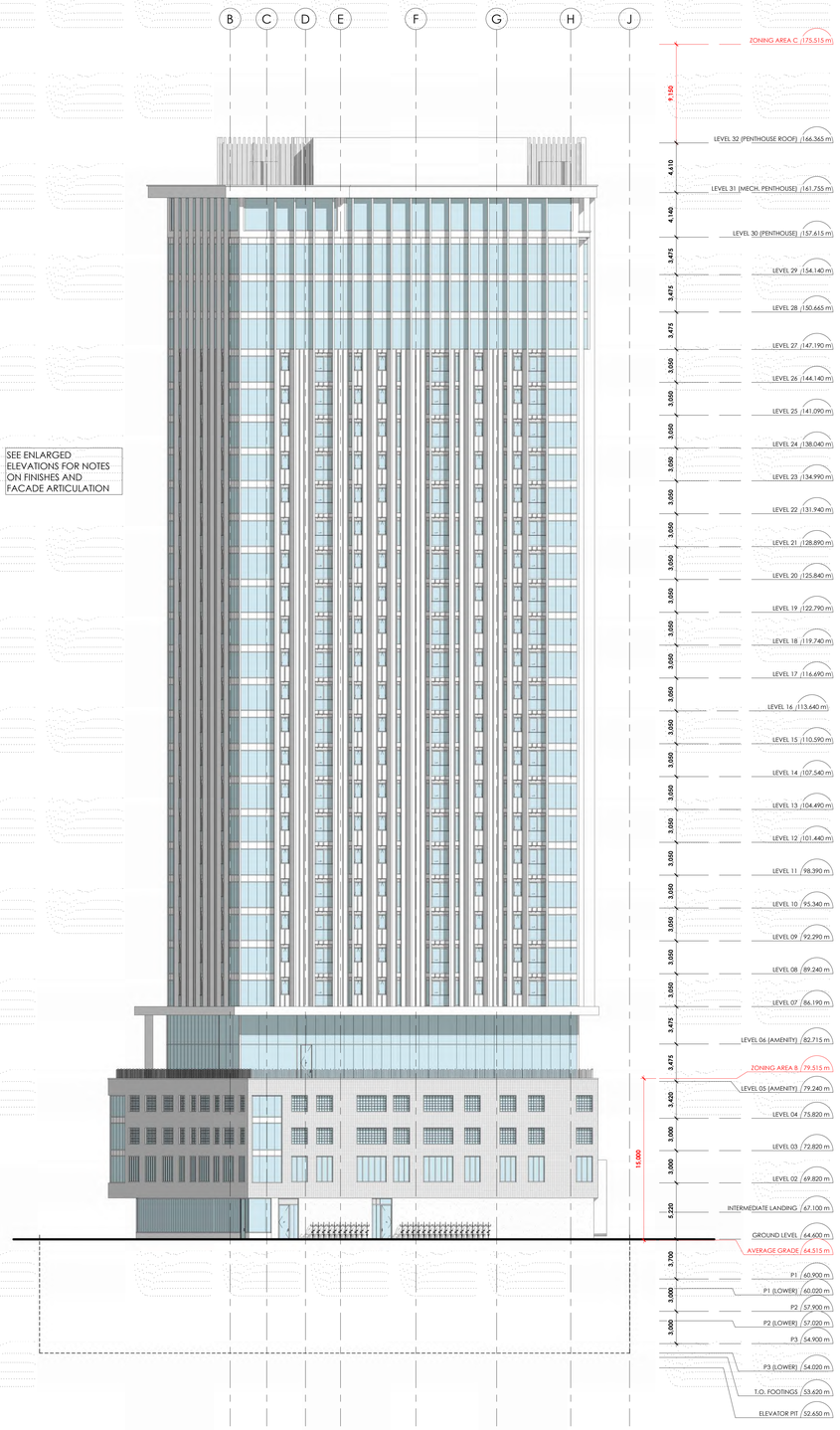
drawing title | titre du dessin

BUILDING ELEVATIONS - WEST AND SOUTH

project number | numero du projet	2402
drawn | dessiné	CK
checked | verifié	JA / AR
scale | échelle	1 : 200
date | date	02/15/24

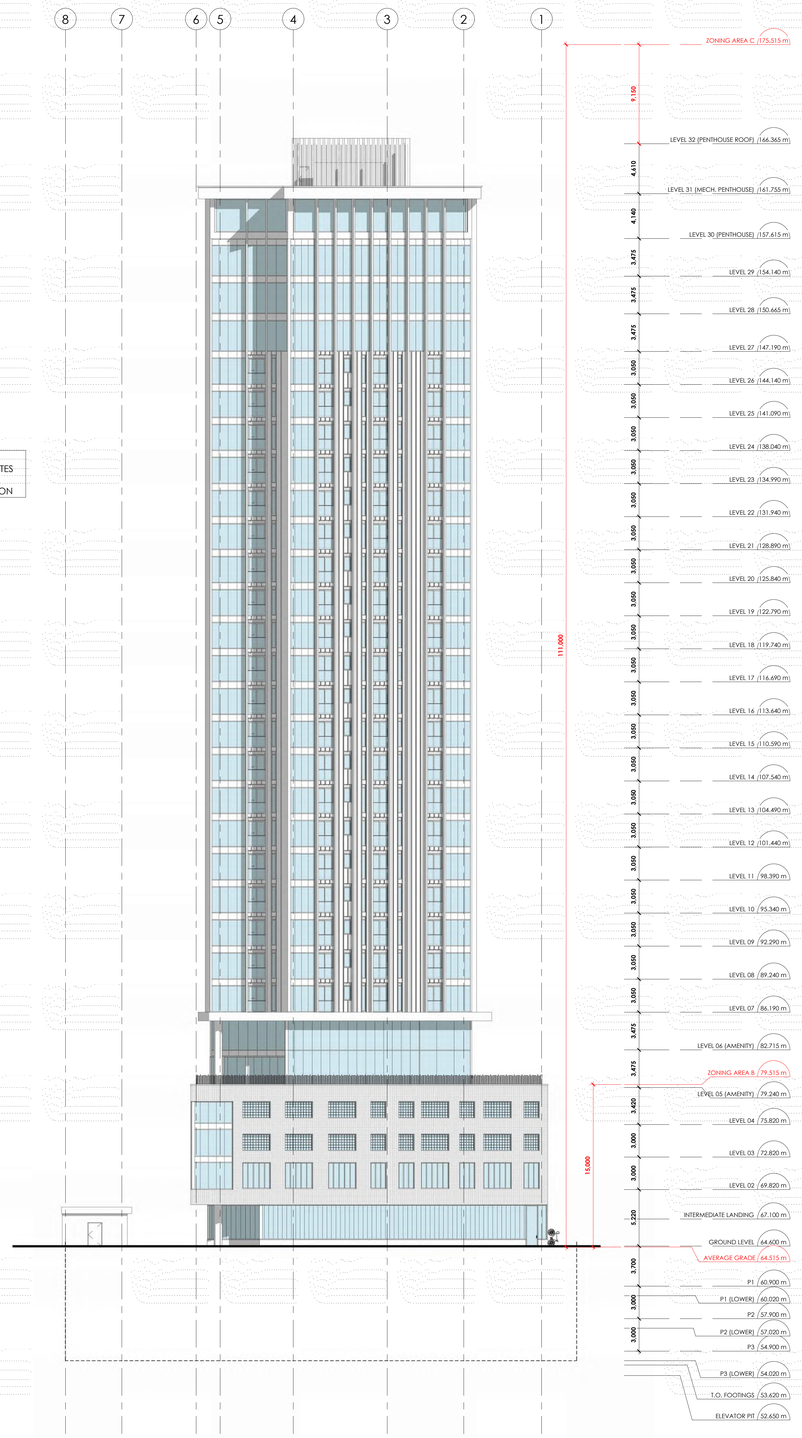
drawing number | numéro du dessin

A400



SEE ENLARGED ELEVATIONS FOR NOTES ON FINISHES AND FACADE ARTICULATION

2 A401 BUILDING ELEVATION - NORTH
1 : 200
A198



SEE ENLARGED ELEVATIONS FOR NOTES ON FINISHES AND FACADE ARTICULATION

1 A401 BUILDING ELEVATION - EAST
1 : 200
A198

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox
STUDIO

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

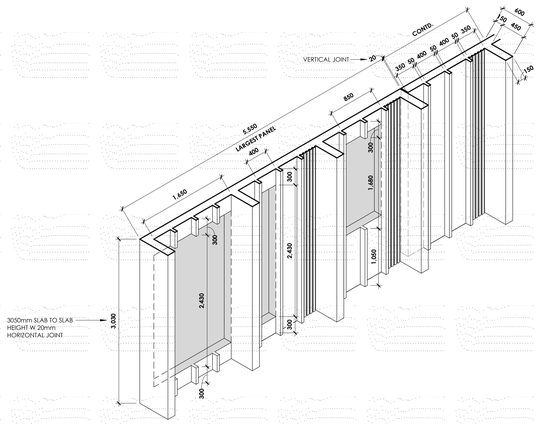
drawing title | titre du dessin

BUILDING ELEVATIONS - EAST AND NORTH

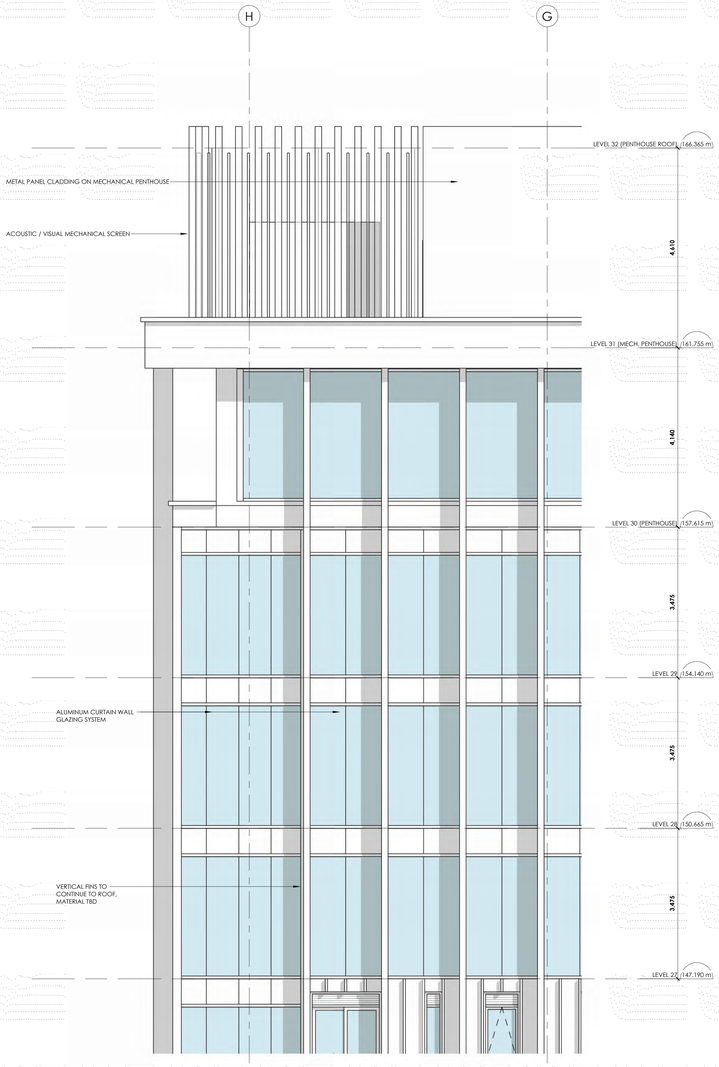
project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | verifié	**JA / AR**
scale | échelle	**1 : 200**
date | date	**02/15/24**

drawing number | numéro du dessin

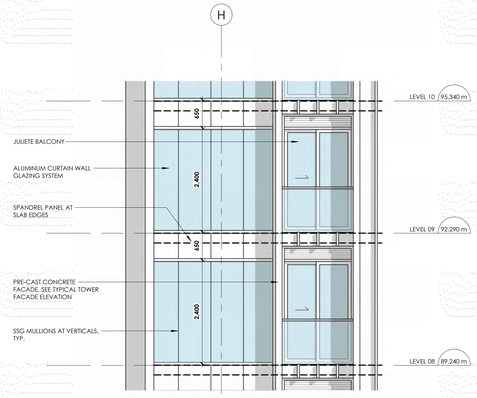
A401



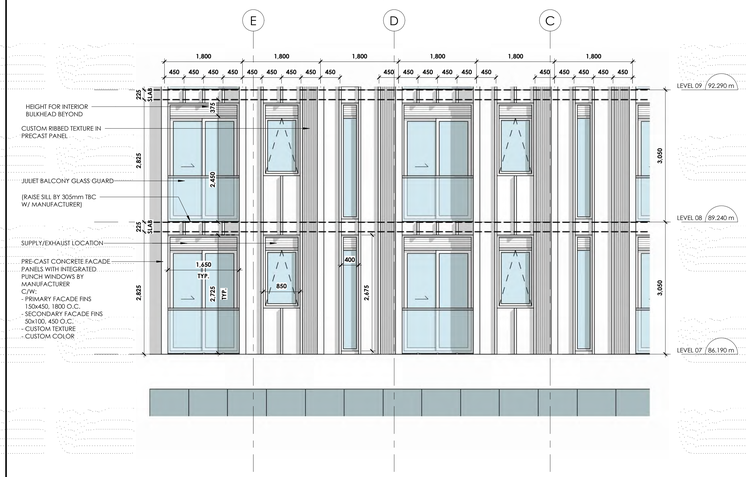
7 A410 AXONOMETRIC DETAIL - PRE-CAST PANELS
1 : 40



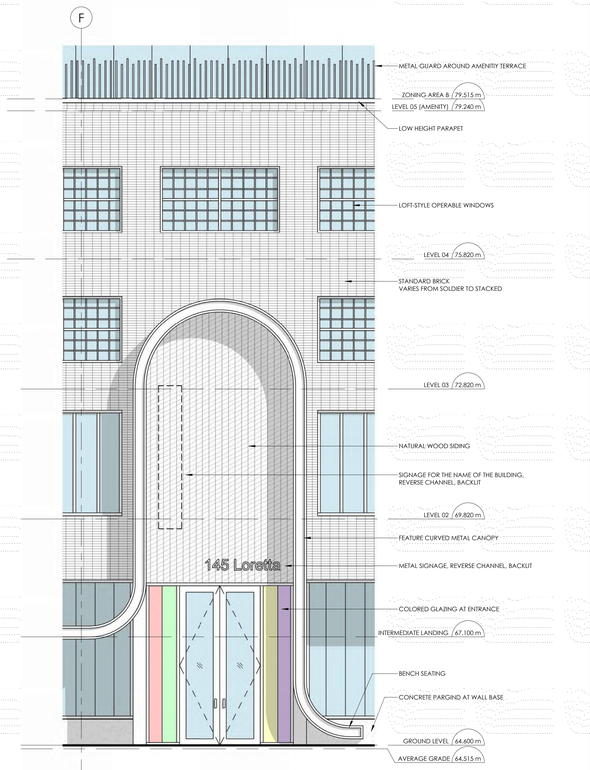
6 A410 ENLARGED ELEVATION - PENTHOUSE LEVELS GLAZED FACADE
1 : 50
A400



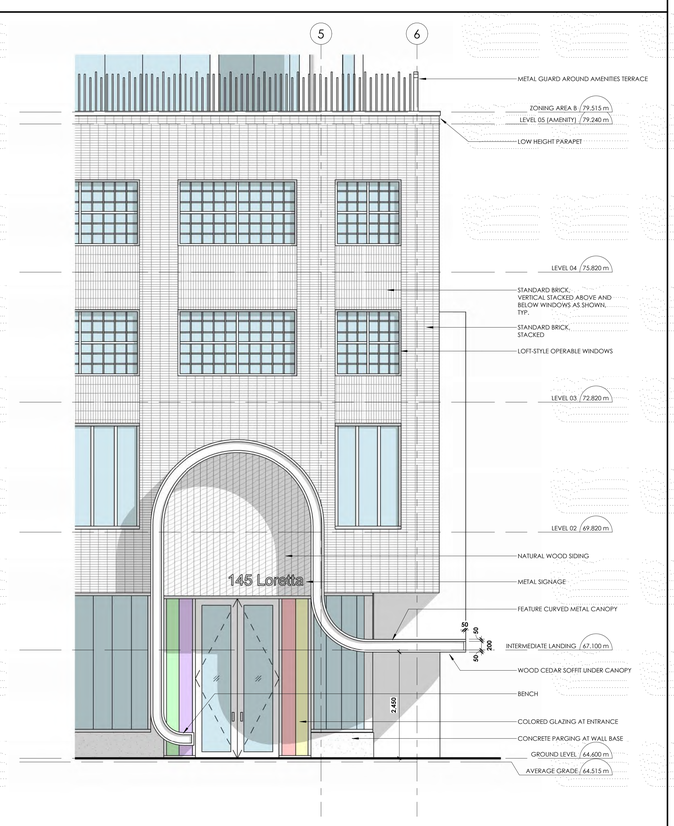
4 A410 ENLARGED ELEVATION - TYPICAL TOWER CURTAIN WALL
1 : 50
A400



3 A410 ENLARGED ELEVATION - TYPICAL TOWER FACADE
1 : 50
A400



2 A410 ENLARGED ELEVATION - SOUTH ENTRANCE
1 : 50
A400



1 A410 ENLARGED ELEVATION - WEST ENTRANCE (LORETTA)
1 : 50
A400

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox
STUDIO

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

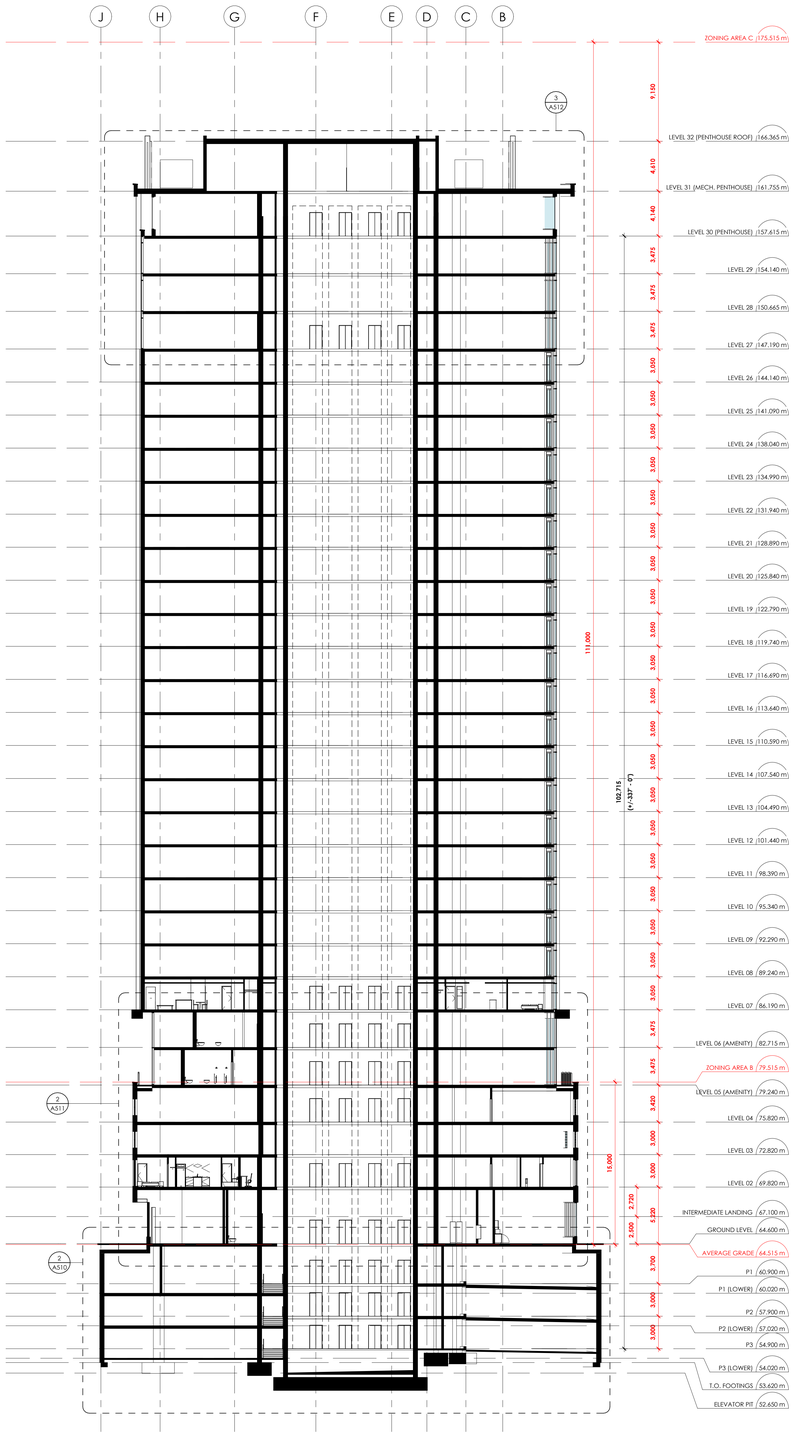
drawing title | titre du dessin

ENLARGED ELEVATIONS

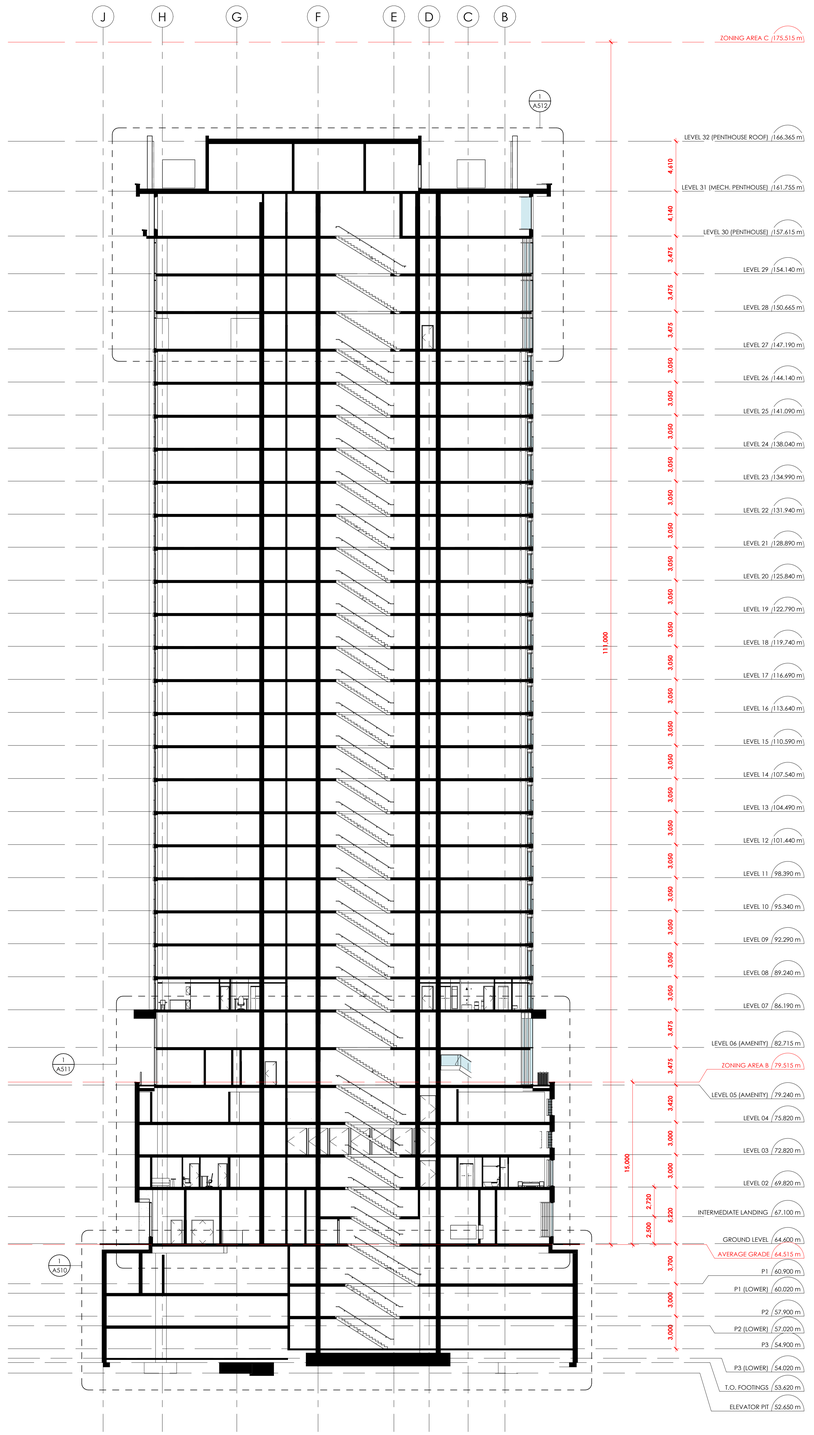
project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | verifié	**JA / AR**
scale | échelle	**As indicated**
date | date	**02/15/24**

drawing number | numéro du dessin

A410



2 A500 BUILDING SECTION @ ELEVATORS
1 : 200
A198



1 A500 BUILDING SECTION @ STAIRS
1 : 200
A198

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox
STUDIO

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

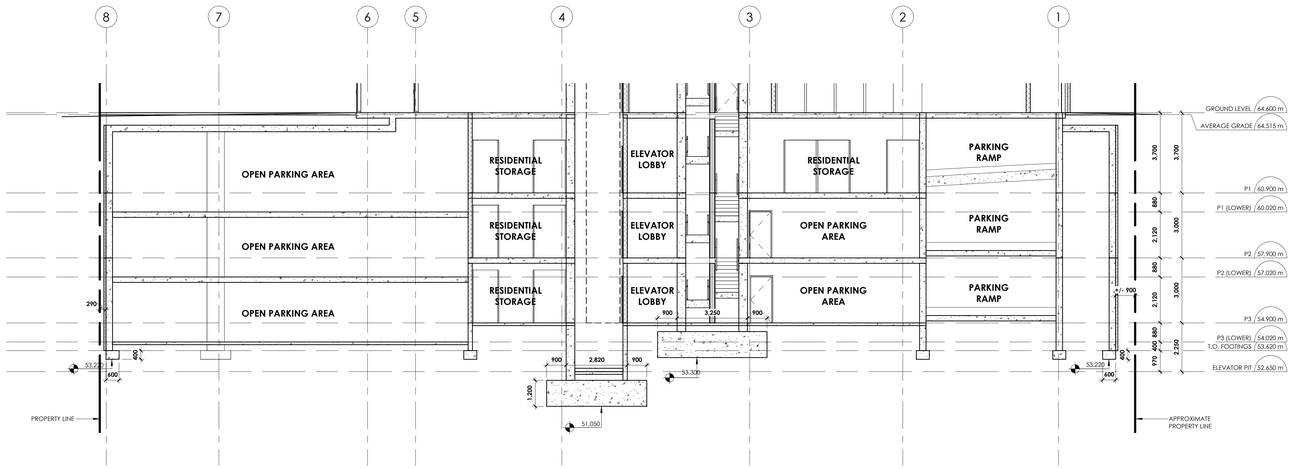
drawing title | titre du dessin

BUILDING SECTIONS

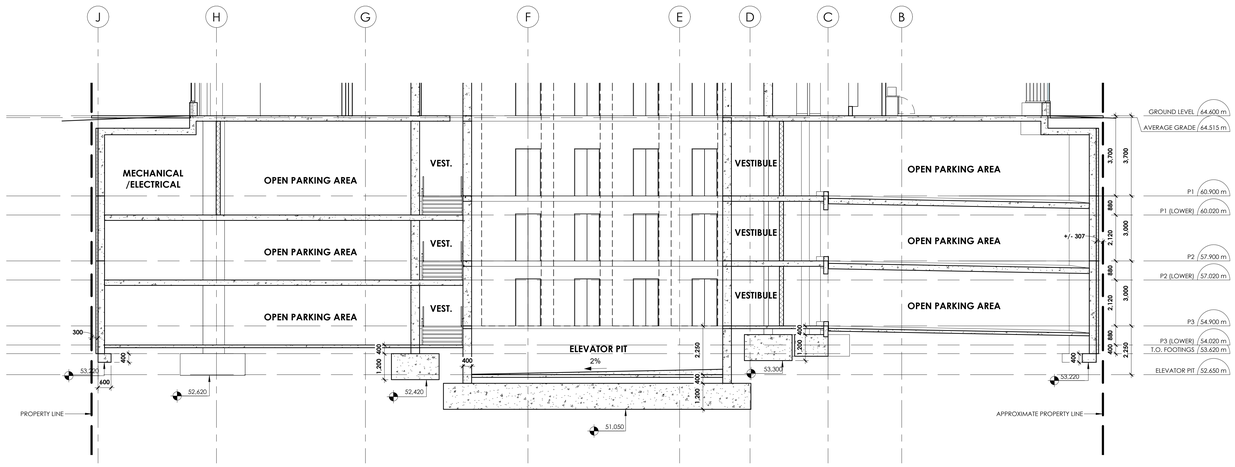
project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | verifié	**JA / AR**
scale | échelle	**1 : 200**
date | date	**02/15/24**

drawing number | numéro du dessin

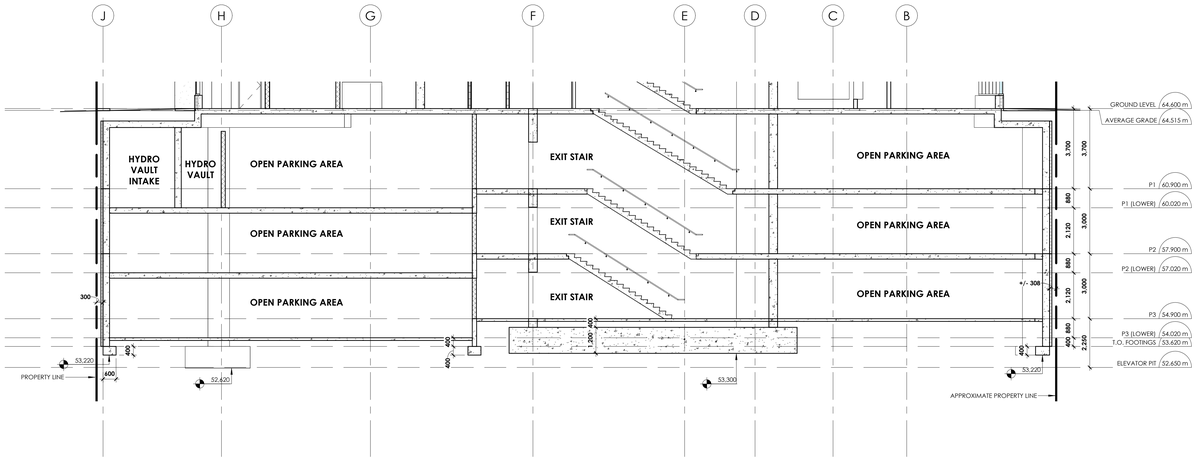
A500



3 A510 BASEMENT PARTIAL SECTION - ELEVATORS 2
1 : 100
DA213



2 A510 BASEMENT PARTIAL SECTION - ELEVATOR
1 : 100
A500



1 A510 BASEMENT PARTIAL SECTION - EXIT STAIRS
1 : 100
A500

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox
STUDIO

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

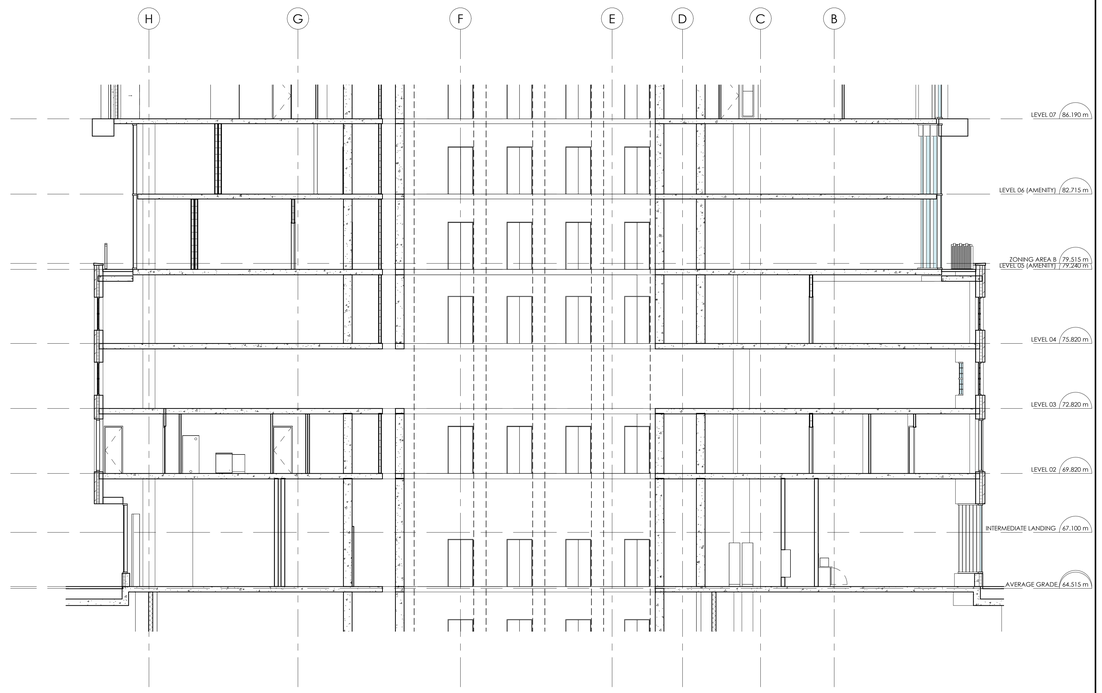
drawing title | titre du dessin

ENLARGED SECTIONS - BASEMENT PARKING

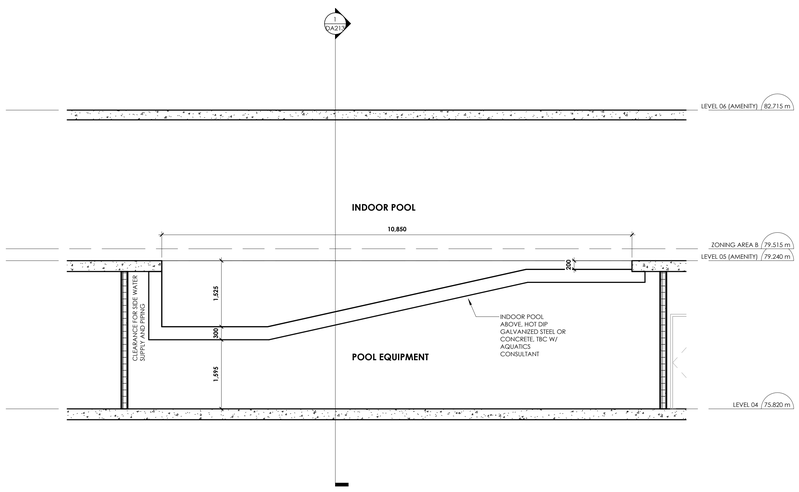
project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | verifié	**JA / AR**
scale | échelle	**1 : 100**
date | date	**02/15/24**

drawing number | numéro du dessin

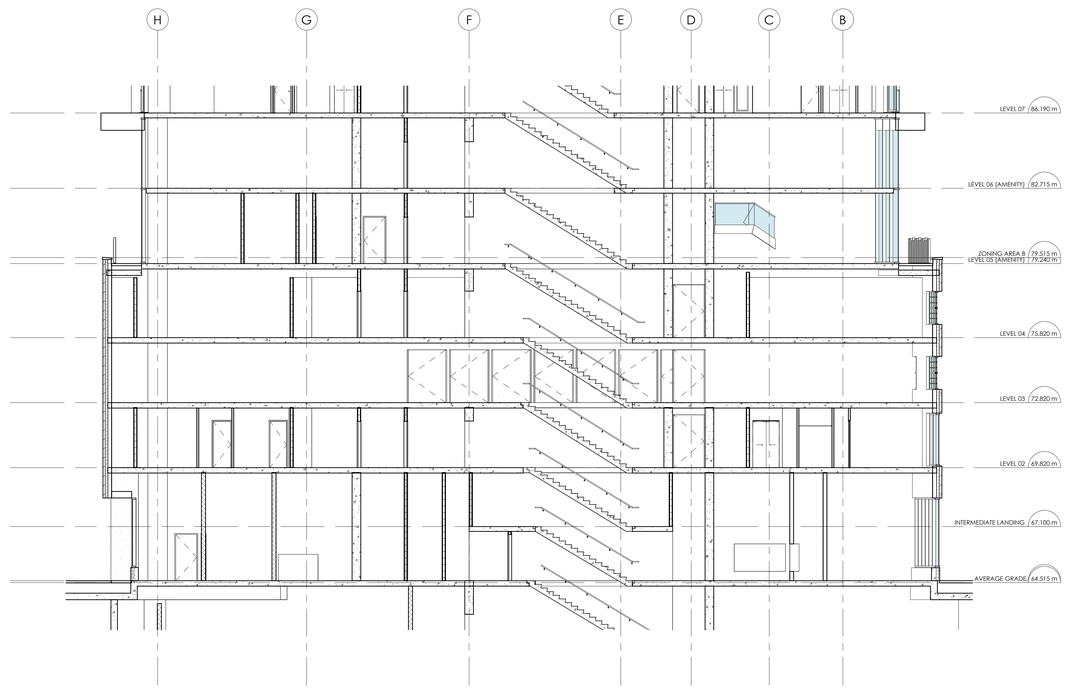
A510



2 A511 ENLARGED SECTION - PODIUM @ ELEVATOR
1 : 100
A500



3 A511 ENLARGED SECTION - INDOOR POOL
1 : 50
A204



1 A511 ENLARGED SECTION - PODIUM @ STAIRS
1 : 100
A500

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

RE-ISSUED FOR CLASS 'D' ESTIMATE MAY 24, 2024
ISSUED FOR CLASS 'D' ESTIMATE MAY 17, 2024
no revisions date

stamp | timbre

architect | architecte

linebox
STUDIO

All dimensions are shown in metric.
Contractor shall check and verify all dimensions and report all error and omissions to the Architect.
Do not scale the drawings.
Not for construction until signed by the Architect.

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

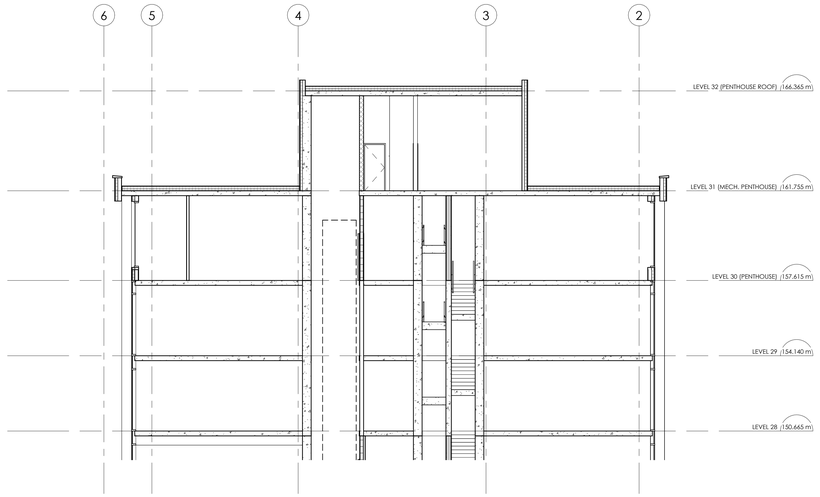
drawing title | titre du dessin

ENLARGED SECTIONS - PODIUM

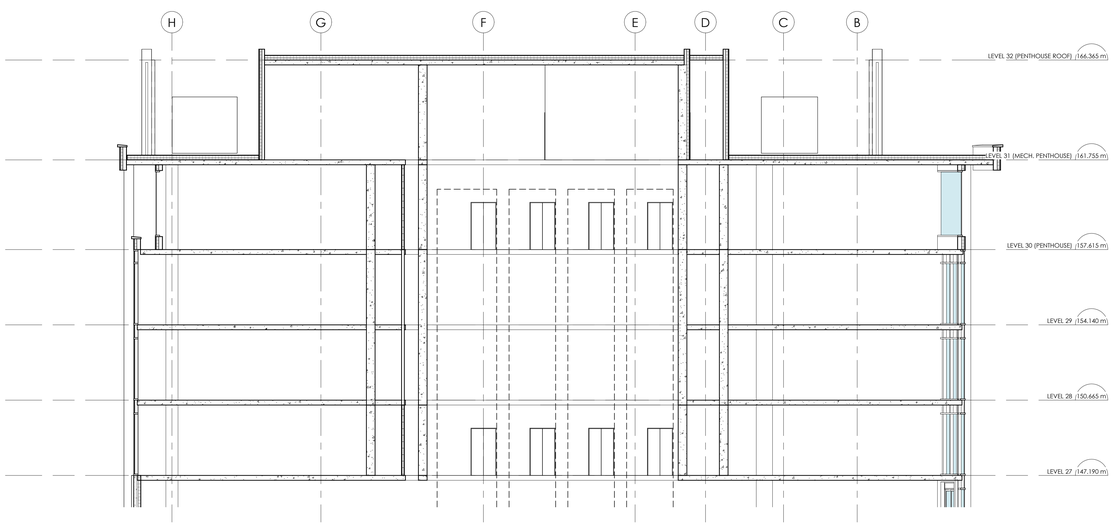
project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | verifié	**JA / AR**
scale | échelle	**As indicated**
date | date	**02/15/24**

drawing number | numéro du dessin

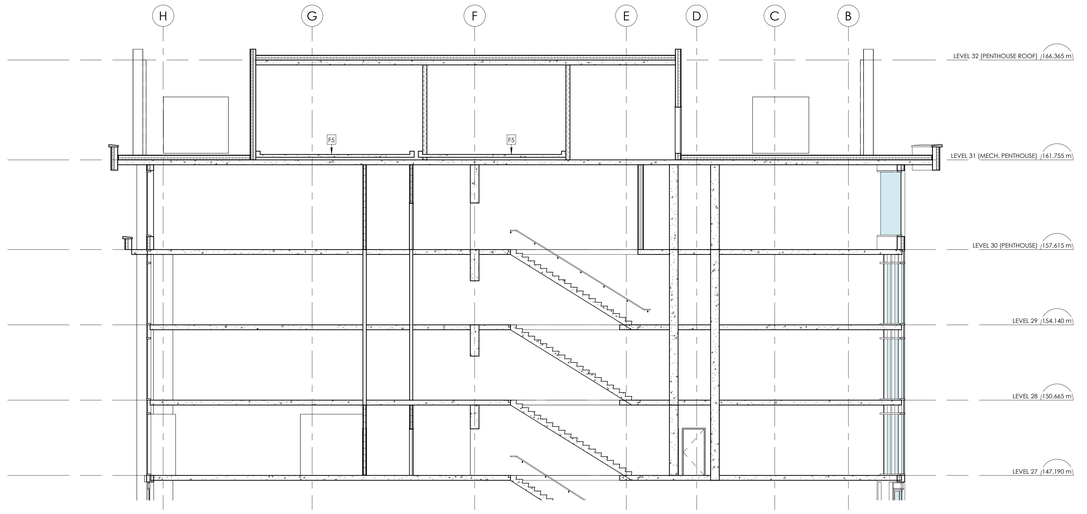
A511



2 A512 PENTHOUSE PARTIAL SECTION - N/S
1 : 100
DA213



3 A512 PENTHOUSE PARTIAL SECTION - ELEVATORS
1 : 100
A500



1 A512 PENTHOUSE PARTIAL SECTION - STAIRS
1 : 100
A500

client

architect | architecte

electrical engineers | ingénieur electrique

lighting consultant | conseiller en éclairage

mechanical engineer | ingénieur méchanique

food services | cuisiniste

nord du projet
project north

nord reel
true north

no	revisions	date
	RE-ISSUED FOR CLASS 'D' ESTIMATE	MAY 24, 2024
	ISSUED FOR CLASS 'D' ESTIMATE	MAY 17, 2024

stamp | timbre

architect | architecte

linebox
STUDIO

project title | titre du projet

GLADSTONE AND LORETTA RESIDENTIAL TOWER

145 LORETTA AVE. N | OTTAWA | ON

drawing title | titre du dessin

ENLARGED SECTIONS - PENTHOUSE LEVELS

project number | numero du projet	**2402**
drawn | dessiné	**CK**
checked | verifié	**JA / AR**
scale | échelle	**1 : 100**
date | date	**02/15/24**

drawing number | numéro du dessin

A512

APPENDIX II

Monitoring Well Logs For Hydrogeological Assessment

patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
951 Gladstone Avenue and 145 Loretta Avenue North
Ottawa, Ontario

DATUM Geodetic

FILE NO. PE4613

REMARKS

HOLE NO. BH 3-20

BORINGS BY CME-55 Low Clearance Drill **DATE** September 22, 2020

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE									
Asphaltic concrete 0.08		AU	1			0	64.24		
FILL: Brown silty sand with crushed stone		SS	2	58	11	1	63.24		
		SS	3	29	14	2	62.24		
2.29 **FILL:** Brown silty clay, trace sand and gravel		SS	4	12	11				
3.05 **FILL:** Brown silty sand with clay, trace gravel 3.50		SS	5	71	10	3	61.24		
		SS	6	79	13	4	60.24		
Very stiff to stiff, brown **SILTY CLAY**		SS	7	100	6	5	59.24		
- grey by 5.3m depth		SS	8	100	3				
6.10 **GLACIAL TILL:** Grey silty clay with sand, gravel, cobbles and boulders		SS	9	25	3	6	58.24		
		SS	10	33	13	7	57.24		
7.72		SS	11	100	50+				
		RC	1	82	75	8	56.24		
BEDROCK: Good quality, grey limestone with interbedded shale						9	55.24		
		RC	2	100	55	10	54.24		
						11	53.24		
		RC	3	100	85				
12.24						12	52.24		
End of Borehole									
(GWL @ 4.18m - Sept. 30, 2020)									

Photo Ionization Detector: ● Volatile Organic Rdg. (ppm); ○ Lower Explosive Limit %; 20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
951 Gladstone Avenue and 145 Loretta Avenue North
Ottawa, Ontario

DATUM Geodetic

FILE NO. PE4613

REMARKS

HOLE NO. BH 5-20

BORINGS BY CME-55 Low Clearance Drill **DATE** September 23, 2020

SOIL DESCRIPTION		STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE							0	64.92
Asphaltic concrete	0.10		AU	1				
FILL: Brown silty sand with crushed stone	0.56							
FILL: Brown silty sand with crushed stone and gravel, trace clay	1.37		SS	2	21	9	1	63.92
			SS	3	29	27	2	62.92
FILL: Brown silty sand and gravel, trace cobbles			SS	4	46	27		
			SS	5	58	47	3	61.92
	3.81							
Stiff, brown **SILTY CLAY**			SS	6	100	4	4	60.92
	4.57							
GLACIAL TILL: Grey silty clay, some sand, gravel, cobbles and boulders			SS	7	92	5	5	59.92
			SS	8	71	3		
	6.10						6	58.92
GLACIAL TILL: Dense, grey sandy silt with gravel, cobbles and boulders			SS	9	62	38		
	6.93		SS	10	100	50+	7	57.92
			RC	1	100	33		
			RC	2	93	40	8	56.92
BEDROCK: Poor to excellent quality, grey limestone with interbedded shale			RC	3	100	92	9	55.92
							10	54.92
			RC	4	100	100	11	53.92
	11.91							
End of Borehole								
(GWL @ 4.82m - Sept. 30, 2020)								

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ Lower Explosive Limit %
20 40 60 80

Monitoring Well Construction

100 200 300 400 500
RKI Eagle Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

LOG OF BOREHOLE BH2017-10

REF. No.: TS-SO-29563	**DST CONSULTING ENGINEERS INC.**
CLIENT: Trinity Development Group Inc.	
PROJECT: Geotechnical Drilling for the Proposed Development	
LOCATION: 951 Gladstone Avenue, Ottawa, ON	METHOD: Hollow Stem Auger
SURFACE ELEVATION: 102.32 metres (Assumed Benchmark)	DATE:

CVC * (■ IBL 20 40 60 80; ○ HEX 80 160 240 320)	CVC Conc. IBL/ HEX	SAMPLES No.	Type	SPT N-Value	SUBSURFACE PROFILE SYMBL	MATERIAL DESCRIPTION	DPTH m	ELEV m	WATER DATA	REMARKS
						SURFACE				
						ASPHALT (75 mm)				
		SS1		36		FILL - SAND and GRAVEL, Brown, Very Loose to Dense		102		
		SS2		35			1			
		SS3		17				101		
		SS4		13			2			
		SS5		3				100		
		SS6		5		FILL - CLAY	3			
		SS7		11				99		
		SS8		8		CLAY, Brown to Grey, Soft to Stiff	4			Water level at 4.08 m bgs (July 20, 2017)
		SS9		7				98		
		SS10		3			5			
		SS11		1		SANDY, trace Gravel		97		
		SS12		9			6			
		SS13		8		Rock Fragment		96		
		SS14		29			7			
		SS15		100+		SAND and GRAVEL, Grey		95		
							8			
								94		

Auger Sample
Split Spoon

* - Combustible Vapour Concentration
NR - No Sample Recovery
ND - Not Detectable

Bentonite & Riser
Sand Pack & Screen

ENCLOSURE 14

GASTECBH TS-SO-29563.GPJ DATA TEMPLATE.GDT 2-8-17

LOG OF BOREHOLE BH2017-10

REF. No.: TS-SO-29563	**DST CONSULTING ENGINEERS INC.**
CLIENT: Trinity Development Group Inc.	
PROJECT: Geotechnical Drilling for the Proposed Development	
LOCATION: 951 Gladstone Avenue, Ottawa, ON	METHOD: Hollow Stem Auger
SURFACE ELEVATION: 102.32 metres (Assumed Benchmark)	DATE:

CVC * (■ IBL 20 40 60 80 ○ HEX 80 160 240 320)	CVC Conc. IBL/ HEX	SAMPLES No.	Type	SPT N-Value	SUBSURFACE PROFILE SYMBL	MATERIAL DESCRIPTION	DPTH m	ELEV m	WATER DATA	REMARKS
						SURFACE				
		RC1				BEDROCK Limestone, Grey	10	93		TCR = 98% SCR = 92% RQD = 85%
		RC2					11	92		TCR = 100% SCR = 100% RQD = 100%
		RC3					12	91		
							13	90		TCR = 98% SCR = 98% RQD = 98%
		RC4					14	89		
							15	88		TCR = 100% SCR = 100% RQD = 100%
		RC5					16	87		
							17	86		TCR = 100% SCR = 100% RQD = 100%
						End of Borehole at 16.6 m.		85		

DST consulting engineers

Auger Sample
Split Spoon

* - Combustible Vapour Concentration
NR - No Sample Recovery
ND - Not Detectable

Bentonite & Riser
Sand Pack & Screen

ENCLOSURE 15

GASTECBH TS-SO-29563.GPJ DATA TEMPLATE.GDT 2-8-17

Log of Borehole: BHMW119

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: April 30, 2021

SUBSURFACE PROFILE					SAMPLE			
Depth (ft / m)	Symbol	Description	Measured Depth (m)	Monitoring Well Details	Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
0 / 0		Ground Surface	0.00					
		No Sample	0.00	Riser; Bentonite		NO SAMPLES		
8 / 2.5			-8.23					
		Bedrock Limestone, shale	8.23	Silica Sand; Screen				
46 / 14			-14.02					
		End of Borehole	14.02	Groundwater Level = 4.22 mbgs. on June 23, 2021				

Contractor: Strata Drilling Group Inc.

Drilling Method: Air Rotary

Well Casing Size: 5.1 cm

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a combustible gas indicator (CGI) and a photoionization detector (PID).

Grade Elevation: 64.49 mamsl

Top of Casing Elevation: 64.4 mamsl

Sheet: 1 of 1

APPENDIX III

DST 2017 Geotechnical Report Borehole Logs for Soil Stratigraphy

LOG OF BOREHOLE BH2017-07

DST REF. No.: **TS-SO-29563**
CLIENT: **Trinity Development Group Inc.**
PROJECT: **Geotechnical Drilling for the Proposed Development**
LOCATION: **951 Gladstone Avenue, Ottawa, ON**
SURFACE ELEV.: **102.4 metres**

Drilling Data
METHOD: **Hollow Stem Auger**
START DATE: **6/27/2017**
COMPLETION DATE: **6/27/2017**
COORDINATES: **5028127** m N, **443952** m E

DEPTH (m)	ELEV. (m)	Water Data	% MOISTURE (W_p W W_l) 20 40 60 80	Symbol	MATERIAL DESCRIPTION	SAMPLE #	SAMPLE TYPE	'N' VALUE	VANE (kPa) × 40 80 120 160; SPT (N) □ Blows/0.3m; DCPT ◆ 20 40 60 80	REMARKS & GRAINSIZE DISTRIBUTION (%) GR SA SI CL
0.0	102				ASPHALT (75 mm)					
					FILL - SAND and GRAVEL, trace Silt, Brown, Compact to Very Dense	SS1		11		
1.0	101					SS2		13		
						SS3		35		
2.0	100					SS4		11		
						SS5		53		
3.0	99					SS6		32		
						SS7		13		
4.0	98				SILTY CLAY, Brown to Grey, Soft to Very Stiff	SS8		5		
5.0						SS9		6	×	
	97				SANDY, trace Gravel	SS10		2	×3	
6.0	96					SS11		12		
7.0						SS12		18		
	95	▼			SAND and GRAVEL, Dark Grey, Compact	SS13		24		
8.0						SS14		100+		
	94				End of Borehole at 8.0 m due to Auger Refusal.					

BOREHOLE (OTTAWA) TS-SO-29563.GPJ DATA TEMPLATE.GDT 28/7/17

DST consulting engineers

DST CONSULTING ENGINEERS INC.
2150 THURSTON DRIVE, SUITE 203
OTTAWA, ON, K1G 5T9
PH: 1-613-748-1415
FX: 1-613-748-1356
Email: ottawa@dstgroup.com
Web: www.dstgroup.com

SAMPLE TYPE LEGEND

- Auger Sample
- Split Spoon Sample
- Bulk Sample
- Rock Core
- Hiller Peat Sampler
- Shelby Tube
- Bentonite
- Sand
- ×3 Numbers refers to Sensitivity

ENCLOSURE 10

LOG OF BOREHOLE BH2017-11

DST REF. No.: **TS-SO-29563**
CLIENT: **Trinity Development Group Inc.**
PROJECT: **Geotechnical Drilling for the Proposed Development**
LOCATION: **951 Gladstone Avenue, Ottawa, ON**
SURFACE ELEV.: **102.1 metres**

Drilling Data
METHOD: **Hollow Stem Auger**
START DATE: **7/4/2017**
COMPLETION DATE: **7/4/2017**
COORDINATES: **5028155** m N, **443948** m E

DEPTH (m)	ELEV. (m)	Water Data	% MOISTURE W_p W W_l (20 40 60 80)	Symbol	MATERIAL DESCRIPTION	SAMPLE #	SAMPLE TYPE	'N' VALUE	VANE (kPa) × 40 80 120 160; SPT (N) □ Blows/0.3m; DCPT ◆ 20 40 60 80	REMARKS & GRAINSIZE DISTRIBUTION (%) GR SA SI CL
0.0	102				ASPHALT					
					FILL - SAND and GRAVEL, Brown, Loose to Compact	SS1		10		
1.0	101					SS2		8		
						SS3		11		
2.0	100					SS4		16		
						SS5		14		
3.0	99				CLAYEY	SS6		9		7 50 (43)
		▼			CLAY, Brown to Grey, Soft to Very Stiff	SS7		19		
4.0	98					SS8		8		
5.0	97					SS9		9		
						SS10		3	×3	
6.0	96					SS11		2		
7.0	95					SS12		13		
					SAND and GRAVEL, Grey, Compact to Very Dense	SS13		17		
8.0	94					SS14		100+		
					End of Borehole at 8.4 m due to Auger Refusal.					

DST consulting engineers

DST CONSULTING ENGINEERS INC.
2150 THURSTON DRIVE, SUITE 203
OTTAWA, ON, K1G 5T9
PH: 1-613-748-1415
FX: 1-613-748-1356
Email: ottawa@dstgroup.com
Web: www.dstgroup.com

SAMPLE TYPE LEGEND

- Auger Sample
- Split Spoon Sample
- Bulk Sample
- Rock Core
- Hiller Peat Sampler
- Shelby Tube
- Bentonite
- Sand
- ×3 Numbers refers to Sensitivity

ENCLOSURE 16

BOREHOLE (OTTAWA) TS-SO-29563.GPJ DATA TEMPLATE.GDT 28/7/17

LOG OF BOREHOLE BH2017-12

DST REF. No.: **TS-SO-29563**
CLIENT: **Trinity Development Group Inc.**
PROJECT: **Geotechnical Drilling for the Proposed Development**
LOCATION: **951 Gladstone Avenue, Ottawa, ON**
SURFACE ELEV.: **102.1 metres**

Drilling Data
METHOD: **Hollow Stem Auger**
START DATE: **7/4/2017**
COMPLETION DATE: **7/4/2017**
COORDINATES: **5028159** m N, **443963** m E

DEPTH (m)	ELEV. (m)	Water Data	% MOISTURE W_p W W_l (20 40 60 80)	Symbol	MATERIAL DESCRIPTION	SAMPLE #	SAMPLE TYPE	'N' VALUE	VANE (kPa) × (40 80 120 160) SPT (N) □ Blows/0.3m DCPT ◆ (20 40 60 80)	REMARKS & GRAINSIZE DISTRIBUTION (%) GR SA SI CL
0.0	102				ASPHALT (75 mm)					
					FILL - SAND and GRAVEL, Black, Loose to Dense	SS1		11		
1.0	101					SS2		6		
						SS3		45		
2.0	100					SS4		11		
						SS5		4		
3.0	99				CLAY, Brown to Grey, Soft to Very Stiff	SS6		9		
						SS7		22		
4.0	98					SS8		6		
5.0	97					SS9		5	×	
						SS10		1	×	
6.0	96					SS11		2	×2	
						SS12		3		
7.0	95					SS13		5	×2	
8.0	94				SANDY CLAY, some Gravel, Grey, Loose	SS14		100+		
					End of Borehole at 8.5 m due to Auger Refusal.					

BOREHOLE (OTTAWA) TS-SO-29563.GPJ DATA TEMPLATE.GDT 28/7/17

DST consulting engineers

DST CONSULTING ENGINEERS INC.
2150 THURSTON DRIVE, SUITE 203
OTTAWA, ON, K1G 5T9
PH: 1-613-748-1415
FX: 1-613-748-1356
Email: ottawa@dstgroup.com
Web: www.dstgroup.com

SAMPLE TYPE LEGEND

- Auger Sample
- Split Spoon Sample
- Bulk Sample
- Rock Core
- Hiller Peat Sampler
- Shelby Tube
- Bentonite
- Sand
- ×3 Numbers refers to Sensitivity

ENCLOSURE 17

LOG OF BOREHOLE BH2017-13

DST REF. No.: **TS-SO-29563**
CLIENT: **Trinity Development Group Inc.**
PROJECT: **Geotechnical Drilling for the Proposed Development**
LOCATION: **951 Gladstone Avenue, Ottawa, ON**
SURFACE ELEV.: **102.2 metres**

Drilling Data
METHOD: **Hollow Stem Auger**
START DATE: **6/28/2017**
COMPLETION DATE: **6/28/2017**
COORDINATES: **5028143** m N, **443978** m E

DEPTH (m)	ELEV. (m)	Water Data	% MOISTURE W_p W W_l (20 40 60 80)	Symbol	MATERIAL DESCRIPTION	SAMPLE #	SAMPLE TYPE	'N' VALUE	VANE (kPa) × (40 80 120 160) SPT (N) □ Blows/0.3m DCPT ◆ (20 40 60 80)	REMARKS & GRAINSIZE DISTRIBUTION (%) GR SA SI CL
0.0	102				ASPHALT (75 mm)					
					FILL - SAND and GRAVEL, Brown	SS1		15		
						SS2		14		
1.0	101									
					CLAY, trace Gravel, Brown, Stiff	SS3		9		
2.0	100				End of Borehole at 1.8 m due to Auger Refusal.					
3.0	99									
4.0	98									
5.0	97									
6.0	96									
7.0	95									
8.0	94									

BOREHOLE (OTTAWA) TS-SO-29563.GPJ DATA TEMPLATE.GDT 28/7/17

DST consulting engineers
DST CONSULTING ENGINEERS INC.
2150 THURSTON DRIVE, SUITE 203
OTTAWA, ON, K1G 5T9
PH: 1-613-748-1415
FX: 1-613-748-1356
Email: ottawa@dstgroup.com
Web: www.dstgroup.com

SAMPLE TYPE LEGEND

- Auger Sample
- Split Spoon Sample
- Bulk Sample
- Rock Core
- Hiller Peat Sampler
- Shelby Tube
- Bentonite
- Sand
- ×3 Numbers refers to Sensitivity

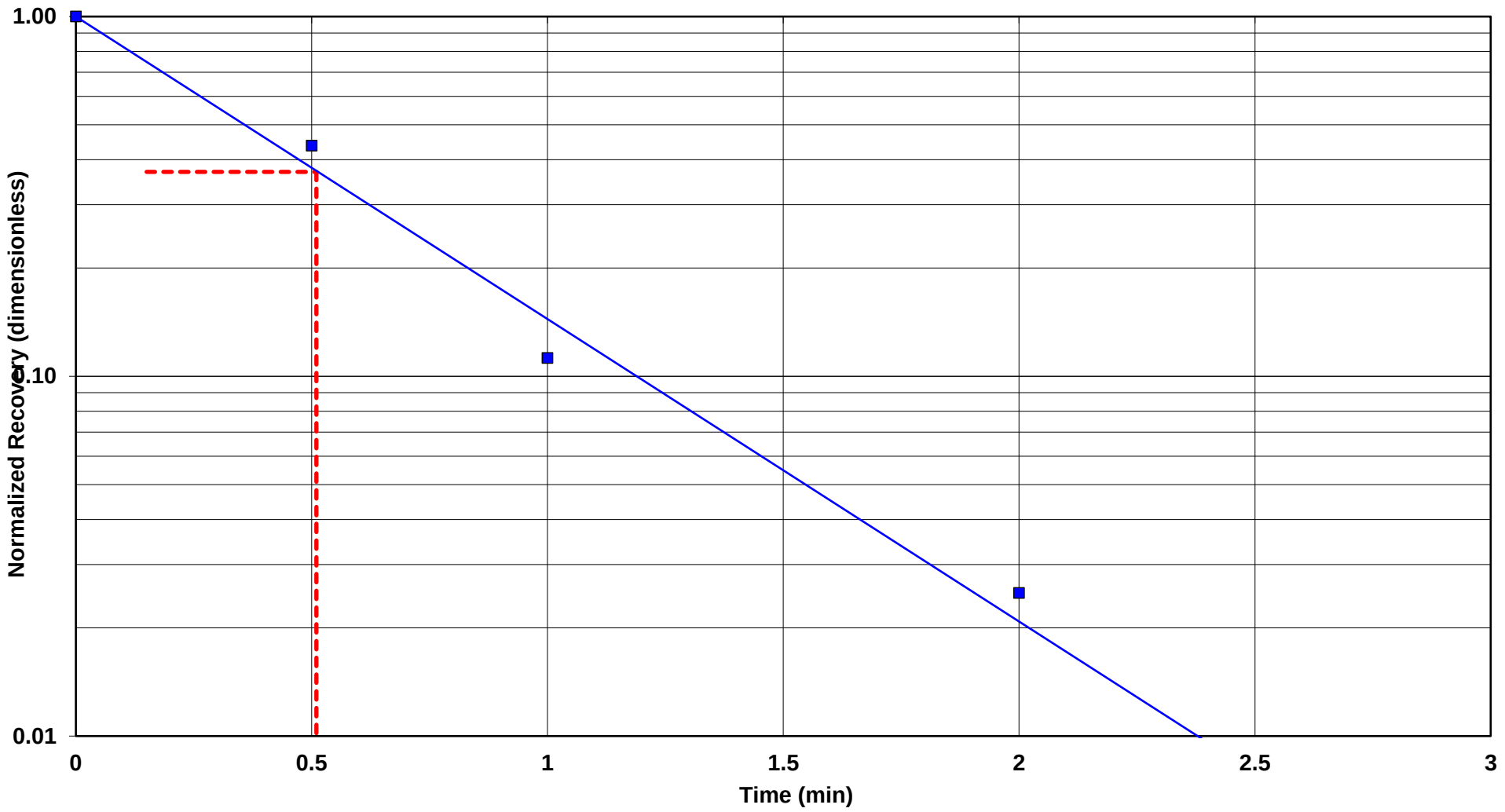
ENCLOSURE 18

APPENDIX IV
Hydraulic Conductivity Test Results

Hydraulic Conductivity Test Report

BH2017-10

FIGURE BH2017-10

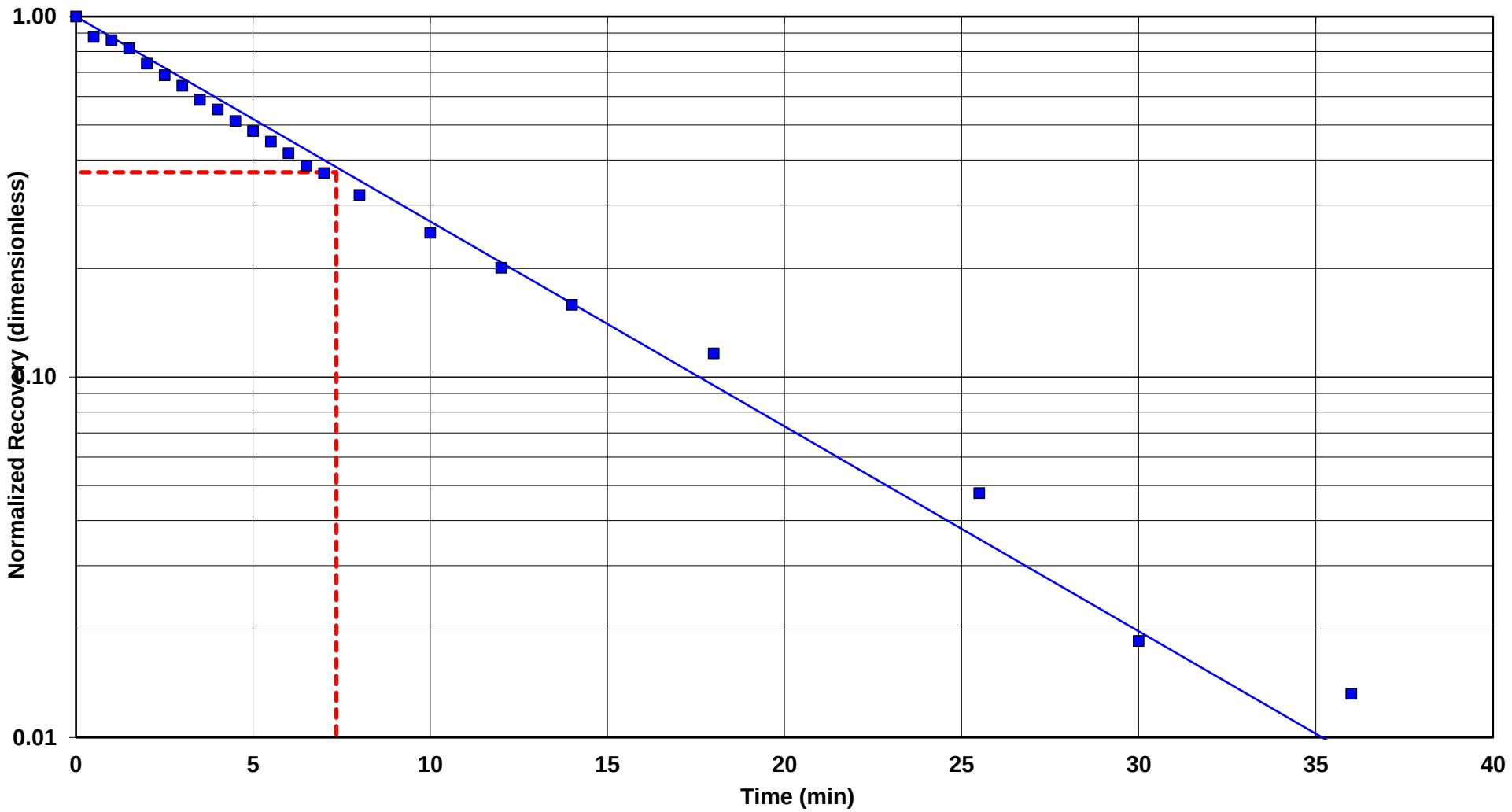


Time Lag (T_0) =	0.5 min	Hvorslev Analysis		
Length of Intake (L) =	3.00 m	$K = \frac{(r^2)\ln(L/R)}{2T_0L}$ =	1.9E-03 cm/s	Prepared by: **MK**
Radius of Piezometer Casing (r) =	0.0254 m			CHK: **TM**
Radius of Well Screen (R) =	0.1016 m	Screen:	Bedrock	

Hydraulic Conductivity Test Report

BH3-20

FIGURE BH3-20

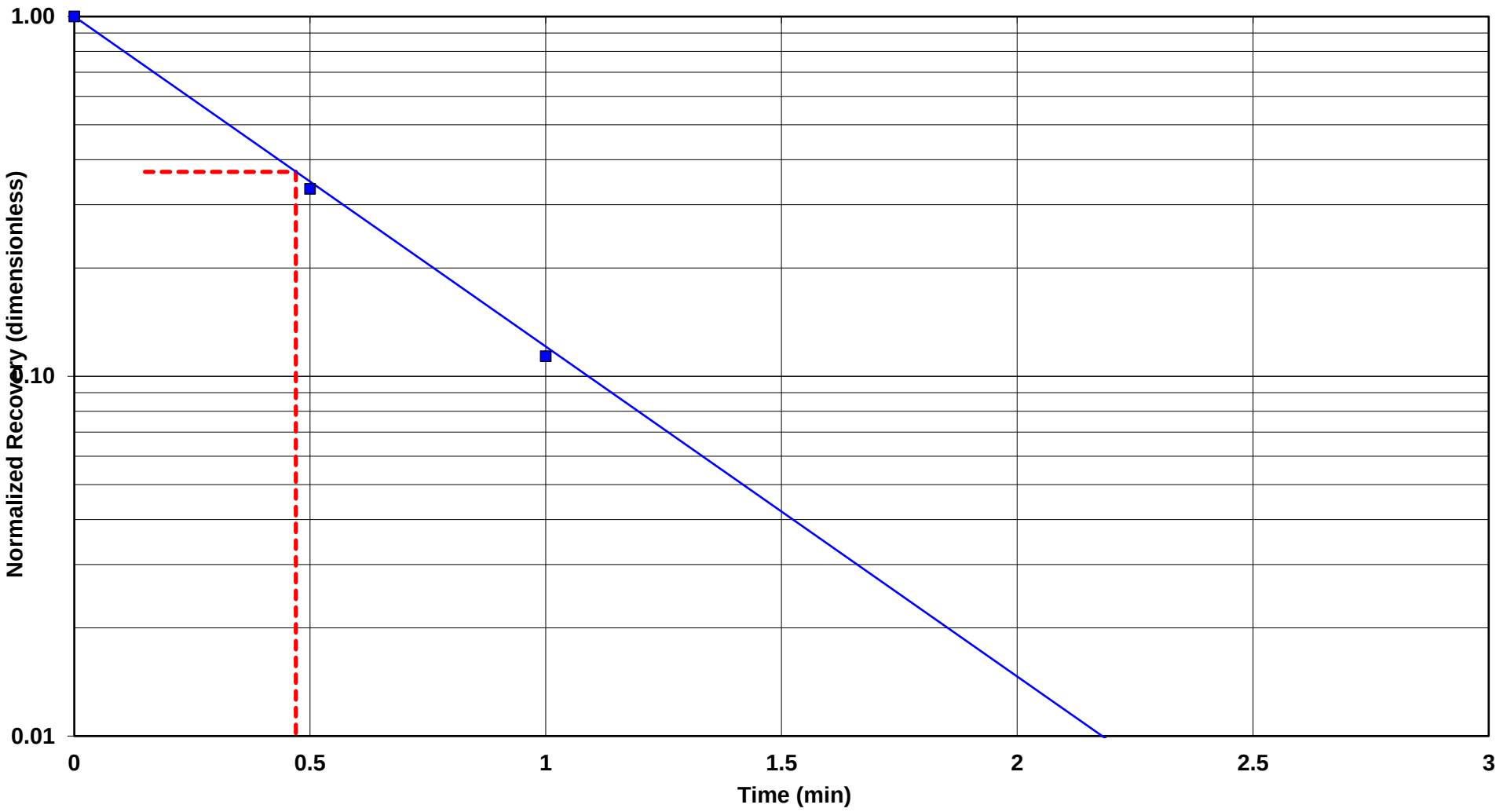


Time Lag (T_0) =	36.0 min	Hvorslev Analysis		
Length of Intake (L) =	3.00 m	$K = \frac{(r^2)\ln(L/R)}{2T_0L}$ =	7.3E-05 cm/s	Prepared by: **MK**
Radius of Piezometer Casing (r) =	0.019 m			CHK: **TM**
Radius of Well Screen (R) =	0.1016 m	Screen:	Bedrock	

Hydraulic Conductivity Test Report

BH5-20

FIGURE BH5-20

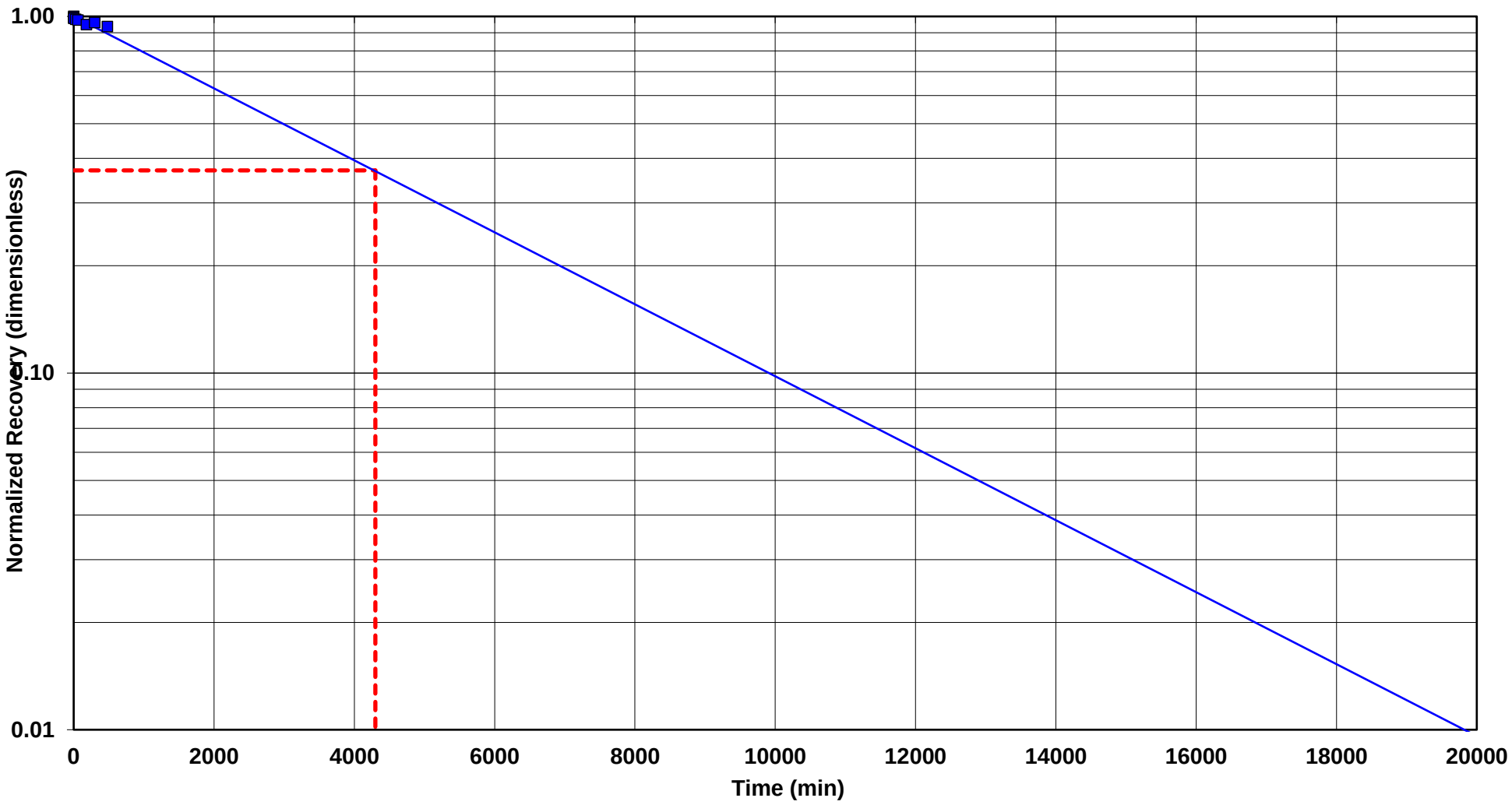


Time Lag (T_0) =	0.5 min	Hvorslev Analysis		
Length of Intake (L) =	3.00 m	$K = \frac{(r^2)\ln(L/R)}{2T_0L}$ =	1.1E-03 cm/s	Prepared by: **MK**
Radius of Piezometer Casing (r) =	0.019 m			CHK: **TM**
Radius of Well Screen (R) =	0.1016 m	Screen:	Bedrock	

Hydraulic Conductivity Test Report

MW119

FIGURE MW119



Time Lag (T_0) =	4,300.0 min	Hvorslev Analysis		
Length of Intake (L) =	3.00 m	$K = \frac{(r^2)\ln(L/R)}{2T_0L}$ =	2.2E-07 cm/s	Prepared by: **MK**
Radius of Piezometer Casing (r) =	0.0264 m			CHK: **TM**
Radius of Well Screen (R) =	0.1016 m	Screen:	Bedrock	

APPENDIX V

2021 Laboratory Certificate of Analysis Results

Reg 2003-514: City of Ottawa Table 1 and Table 2 Limits for Discharge
2021 Groundwater Lab Data

Project Address: Loretta and Gladstone, Ottawa, ON
Project Number: 285722.005
Date: June 19, 2024

Table 1. Limits for Sanitary and Combined Sewers Discha	EXCEEDS	Table 1 &2	EXCEEDS
Table 2. Limits for Storm Sewer Discharge	EXCEEDS	Not Measured	NM
Potential Exceedance/Waiting on Results		Good Result	

				Apr-21	Apr-21	Apr-21	Jun-21
Chemical Component	**Table 1 (mg/L)**	**Table 2 (mg/L)**	**MECP Table 3 SCS**	**BH3-20 (mg/L)**	**BH5-20 (mg/L)**	**BH2017-10 (mg/l)**	**MW119 (mg/L)**
GENERAL ORGANICS & HYDROCARBONS							
BOD	300	25	NM	NM	NM	NM	NM
Cyanide	2	0.02	NM	NM	NM	NM	NM
Fluoride	10		NM	NM	NM	NM	NM
TKN	100		NM	NM	NM	NM	NM
Oil & Grease - Animal a	150		NM	NM	NM	NM	NM
Oil & Grease - Mineral	15		NM	NM	NM	NM	NM
Phenolics	1	0.008	NM	NM	NM	NM	NM
Phosphorus (total)	10	0.4	NM	NM	NM	NM	NM
Sulphates	1500		NM	NM	NM	NM	NM
Sulphides	2		NM	NM	NM	NM	NM
Suspended Solids (total	350	15	NM	NM	NM	NM	NM
pH	5.5-11	6-9	NM	NM	NM	NM	NM
METALS							
Aluminum	50		NM	NM	NM	NM	NM
Antimony	5		NM	NM	NM	NM	NM
Arsenic	1	0.02	NM	NM	NM	NM	NM
Bismuth	5		NM	NM	NM	NM	NM
Boron	25		NM	NM	NM	NM	NM
Cadmium	0.02	0.08	NM	NM	NM	NM	NM
Chromium	5		NM	NM	NM	NM	NM
Cobalt	5		NM	NM	NM	NM	NM
Copper	3	0.04	NM	NM	NM	NM	NM
Lead	5	0.12	NM	NM	NM	NM	NM
Manganese	5	0.05	NM	NM	NM	NM	NM
Mercury	0.001	0.0004	NM	NM	NM	NM	NM
Molybedenum	5		NM	NM	NM	NM	NM
Nickel	3	0.08	NM	NM	NM	NM	NM
Selenium	5	0.02	NM	NM	NM	NM	NM
Silver	5	0.12	NM	NM	NM	NM	NM
Tin	5		NM	NM	NM	NM	NM
Titanium	5		NM	NM	NM	NM	NM
Vanadium	5		NM	NM	NM	NM	NM
Zinc	3	0.04	NM	NM	NM	NM	NM

Chemical Component	Table 1 (mg/L)	Table 2 (mg/L)	MECP Table 3 SCS	BH3-20 (mg/L)	BH5-20 (mg/L)	BH2017-10 (mg/l)	MW119 (mg/L)
VOLATILES & SEMIVOLATILES							
Benzene	0.01	0.002	44	<0.20	<0.20	<0.20	<0.20
Bromodichloromethane	0.35		85000	<0.50	<0.50	<0.50	<0.50
Bromoform	0.63		380	<1.0	<1.0	<1.0	<1.1
Bromomethane	0.11		5.6	<0.50	<0.50	<0.50	<0.50
Carbon Tetrachloride	0.057		0.79	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	0.057		630	<0.20	<0.20	<0.20	<0.20
Chloroethane	0.27		NM	NM	NM	NM	NM
Chloroform	0.08		2.4	<0.20	<0.20	<0.20	<0.2
Chloromethane	0.19		NM	NM	NM	NM	NM
Dibromochloromethane	0.057		82000	<0.5	<0.5	<0.5	<0.5
1,2 Dibromoethane	0.028		NM	NM	NM	NM	NM
1,2 Dichlorobenzene	0.088	0.0056	4600	<0.5	<0.5	<0.5	<0.5
1,3 Dichlorobenzene	0.036		9600	<0.5	<0.5	<0.5	<0.5
1,4 Dichlorobenzene	0.017	0.0068	8	<0.5	<0.5	<0.5	<0.5
1,1 Dichloroethane	0.2		320	<0.2	<0.2	<0.2	<0.2
1,2 Dichloroethane	0.21		1.6	<0.5	<0.5	<0.5	1.9
1,1 Dichloroethylene	0.04		1.6	<0.2	<0.2	<0.2	<0.2
cis - 1,2, dichloroethyle	0.2	0.0056	1.6	<0.5	<0.5	<0.5	<0.5
trans - 1,2, dichloroethy	0.2		1.6	<0.5	<0.5	<0.5	<0.5
1,2, dichloropropane	0.85		16	<0.2	<0.2	<0.2	<0.2
cis - 1,3 dichloropropyle	0.07			<0.3	<0.3	<0.3	<0.3
trans - 1,3 dichloroprop	0.07	0.0056	5.2 (total)	<0.4	<0.4	<0.4	<0.4
Ethylbenzene	0.057	0.002	2300	<0.20	<0.2	<0.2	<0.2
Methylene Chloride	0.211	0.0052	610	<2.0	<2.0	<2.0	<2.0
Styrene	0.04		1300	<0.50	<0.50	<0.50	<0.50
1,1,2,2 Tetrachloroethar	0.04	0.017	3.2	<0.5	<0.50	<0.50	<0.50
Tetrachloroethylene	0.05	0.0044	1.6	<0.2	<0.2	<0.2	<0.2
Toluene	0.08	0.002	18000	<0.2	<0.2	<0.2	<0.2
1,1,1 - Trichloroethane	0.054		640	<0.2	<0.2	<0.2	<0.2
1,1,2 - Trichloroethane	0.8		4.7	<0.5	<0.5	<0.5	<0.5
Trichloroethylene	0.054	0.0076	1.6	<0.2	<0.2	<0.2	<0.2
Trichlorofluoromethane	0.02		2500	<0.5	<0.5	<0.5	<0.5
1,3,5 Trimethylbenzene	0.003		NM	NM	NM	NM	NM
Vinyl chloride	0.4		0.5	<0.2	<0.2	<0.2	<0.2
Xylene	0.32	0.0044	4200	0.47	<0.2	<0.2	0.78
Bis -methane	0.036		NM	NM	NM	NM	NM
Bis - phthalate	0.28		NM	NM	NM	NM	NM
Benzylbutylphthalate	0.017		NM	NM	NM	NM	NM
Diethylphthalate	0.2		NM	NM	NM	NM	NM
Di-n-butylphthalate	0.057		NM	NM	NM	NM	NM
Di-n-octylphthalate	0.03		NM	NM	NM	NM	NM
Fluorene	0.059		400	<0.05	<0.05	<0.05	<0.05
Indole	0.05		NM	NM	NM	NM	NM

Chemical Component	Table 1 (mg/L)	Table 2 (mg/L)	MECP Table 3 SCS	BH3-20 (mg/L)	BH5-20 (mg/L)	BH2017-10 (mg/l)	MW119 (mg/L)
1-Methylnaphthalene	0.032		NM	NM	NM	NM	NM
2-Methylnaphthalene	0.022		NM	NM	NM	NM	NM
Napthalene	0.059	0.0064	1400	<0.05	<0.05	<0.05	<0.05
Total PAHs	0.015	0.006	NM	NM	NM	NM	NM
2,4, Dichlorophenol	0.044		NM	NM	NM	NM	NM
DIOXINS & FURANS, FORMALDEHYDE, PESTICIDES AND PCBs							
Dioxins and Furans	0.00072		NM	NM	NM	NM	NM
Formaldehyde	0.3		NM	NM	NM	NM	NM
Hexachlorobenzene	0.0001	0.00004	NM	NM	NM	NM	NM
N-Nitrosodimethylamin	0.1		NM	NM	NM	NM	NM
Nonylphenols	0.0025	0.001	NM	NM	NM	NM	NM
Nonylphenol ethoxylate	0.025	0.01	NM	NM	NM	NM	NM
PCBs		0.0004	NM	NM	NM	NM	NM

Your Project #: 285722.003
Your C.O.C. #: 796018-25-01

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
Kanata, ON
CANADA K2K 3C7

Report Date: 2021/04/26
Report #: R6610415
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1A7975
Received: 2021/04/22, 12:00

Sample Matrix: Water
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Methylnaphthalene Sum (1)	8	N/A	2021/04/26	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	8	N/A	2021/04/23		EPA 8260C m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	8	2021/04/23	2021/04/23	CAM SOP-00316	CCME PHC-CWS m
F4G (CCME Hydrocarbons Gravimetric) (1)	1	2021/04/24	2021/04/24	CAM SOP-00326	CCME PHC-CWS m
PAH Compounds in Water by GC/MS (SIM) (1)	8	2021/04/23	2021/04/23	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds and F1 PHCs (1)	9	N/A	2021/04/23	CAM SOP-00230	EPA 8260C m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Laboratories Mississauga
(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following “Alberta Environment’s Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003”. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1

Your Project #: 285722.003
Your C.O.C. #: 796018-25-01

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
Kanata, ON
CANADA K2K 3C7

Report Date: 2021/04/26
Report #: R6610415
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1A7975
Received: 2021/04/22, 12:00
Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: Antonella.Brasil@bureauveritas.com
Phone# (905)817-5817
==========
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		PJV382		
Sampling Date		2021/04/22		
COC Number		796018-25-01		
	UNITS	TRIP BLANK	RDL	QC Batch
Volatile Organics				
Acetone (2-Propanone)	ug/L	<10	10	7312454
Benzene	ug/L	<0.20	0.20	7312454
Bromodichloromethane	ug/L	<0.50	0.50	7312454
Bromoform	ug/L	<1.0	1.0	7312454
Bromomethane	ug/L	<0.50	0.50	7312454
Carbon Tetrachloride	ug/L	<0.20	0.20	7312454
Chlorobenzene	ug/L	<0.20	0.20	7312454
Chloroform	ug/L	<0.20	0.20	7312454
Dibromochloromethane	ug/L	<0.50	0.50	7312454
1,2-Dichlorobenzene	ug/L	<0.50	0.50	7312454
1,3-Dichlorobenzene	ug/L	<0.50	0.50	7312454
1,4-Dichlorobenzene	ug/L	<0.50	0.50	7312454
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	7312454
1,1-Dichloroethane	ug/L	<0.20	0.20	7312454
1,2-Dichloroethane	ug/L	<0.50	0.50	7312454
1,1-Dichloroethylene	ug/L	<0.20	0.20	7312454
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	7312454
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	7312454
1,2-Dichloropropane	ug/L	<0.20	0.20	7312454
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	7312454
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	7312454
Ethylbenzene	ug/L	<0.20	0.20	7312454
Ethylene Dibromide	ug/L	<0.20	0.20	7312454
Hexane	ug/L	<1.0	1.0	7312454
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	7312454
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	7312454
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	7312454
Methyl t-butyl ether (MTBE)	ug/L	<0.50	0.50	7312454
Styrene	ug/L	<0.50	0.50	7312454
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	7312454
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	7312454
Tetrachloroethylene	ug/L	<0.20	0.20	7312454
Toluene	ug/L	<0.20	0.20	7312454
1,1,1-Trichloroethane	ug/L	<0.20	0.20	7312454
1,1,2-Trichloroethane	ug/L	<0.50	0.50	7312454
Trichloroethylene	ug/L	<0.20	0.20	7312454

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		PJV382		
Sampling Date		2021/04/22		
COC Number		796018-25-01		
	UNITS	TRIP BLANK	RDL	QC Batch
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	7312454
Vinyl Chloride	ug/L	<0.20	0.20	7312454
p+m-Xylene	ug/L	<0.20	0.20	7312454
o-Xylene	ug/L	<0.20	0.20	7312454
Total Xylenes	ug/L	<0.20	0.20	7312454
F1 (C6-C10)	ug/L	<25	25	7312454
F1 (C6-C10) - BTEX	ug/L	<25	25	7312454
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	91		7312454
D4-1,2-Dichloroethane	%	104		7312454
D8-Toluene	%	98		7312454

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

PETROLEUM HYDROCARBONS (CCME)

BV Labs ID		PJV376		
Sampling Date		2021/04/22		
COC Number		796018-25-01		
	UNITS	DUP-1	RDL	QC Batch
F2-F4 Hydrocarbons				
F4G-sg (Grav. Heavy Hydrocarbons)	ug/L	4900	500	7317128

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

O.REG 153 PAHS (WATER)

BV Labs ID		PJV374	PJV375			PJV375		
Sampling Date		2021/04/22	2021/04/22			2021/04/22		
COC Number		796018-25-01	796018-25-01			796018-25-01		
	UNITS	BH2-20	BHMW3	RDL	QC Batch	BHMW3 Lab-Dup	RDL	QC Batch
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/L	0.13	0.19	0.071	7314910			
Polyaromatic Hydrocarbons								
Acenaphthene	ug/L	<0.050	<0.050	0.050	7315015	<0.050	0.050	7315015
Acenaphthylene	ug/L	<0.050	<0.050	0.050	7315015	<0.050	0.050	7315015
Anthracene	ug/L	<0.050	<0.050	0.050	7315015	<0.050	0.050	7315015
Benzo(a)anthracene	ug/L	<0.050	<0.050	0.050	7315015	<0.050	0.050	7315015
Benzo(a)pyrene	ug/L	<0.0090	0.043	0.0090	7315015	0.036	0.0090	7315015
Benzo(b/j)fluoranthene	ug/L	<0.050	0.064	0.050	7315015	0.050	0.050	7315015
Benzo(g,h,i)perylene	ug/L	<0.050	0.052	0.050	7315015	<0.050	0.050	7315015
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	0.050	7315015	<0.050	0.050	7315015
Chrysene	ug/L	<0.050	<0.050	0.050	7315015	<0.050	0.050	7315015
Dibenzo(a,h)anthracene	ug/L	<0.050	<0.050	0.050	7315015	<0.050	0.050	7315015
Fluoranthene	ug/L	<0.050	0.11	0.050	7315015	0.089	0.050	7315015
Fluorene	ug/L	<0.050	<0.050	0.050	7315015	<0.050	0.050	7315015
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	0.050	7315015	<0.050	0.050	7315015
1-Methylnaphthalene	ug/L	0.13	0.082	0.050	7315015	0.065	0.050	7315015
2-Methylnaphthalene	ug/L	<0.050	0.10	0.050	7315015	0.083	0.050	7315015
Naphthalene	ug/L	0.095	0.14	0.050	7315015	0.13	0.050	7315015
Phenanthrene	ug/L	<0.030	0.099	0.030	7315015	0.077	0.030	7315015
Pyrene	ug/L	<0.050	0.12	0.050	7315015	0.094	0.050	7315015
Surrogate Recovery (%)								
D10-Anthracene	%	104	82		7315015	88		7315015
D14-Terphenyl (FS)	%	91	50		7315015	50		7315015
D8-Acenaphthylene	%	100	97		7315015	95		7315015

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

BV Labs Job #: C1A7975
Report Date: 2021/04/26

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: M.K

O.REG 153 PAHS (WATER)

BV Labs ID		PJV376	PJV377	PJV378	PJV379	PJV380	PJV381		
Sampling Date		2021/04/22	2021/04/21	2021/04/21	2021/04/21	2021/04/21	2021/04/22		
COC Number		796018-25-01	796018-25-01	796018-25-01	796018-25-01	796018-25-01	796018-25-01		
	UNITS	DUP-1	BH1-20	BH3-20	BH4-20	BH5-20	BH2017-10	RDL	QC Batch
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/L	0.18	<0.071	<0.071	<0.071	<0.071	<0.071	0.071	7314910
Polyaromatic Hydrocarbons									
Acenaphthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Acenaphthylene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Benzo(a)anthracene	ug/L	<0.050	0.054	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Benzo(a)pyrene	ug/L	0.058	0.055	<0.0090	<0.0090	0.014	<0.0090	0.0090	7315015
Benzo(b/j)fluoranthene	ug/L	0.088	0.076	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Benzo(g,h,i)perylene	ug/L	0.075	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Chrysene	ug/L	0.057	0.055	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Dibenzo(a,h)anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Fluoranthene	ug/L	0.14	0.11	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Fluorene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
1-Methylnaphthalene	ug/L	0.077	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
2-Methylnaphthalene	ug/L	0.11	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Naphthalene	ug/L	0.14	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Phenanthrene	ug/L	0.12	0.055	<0.030	<0.030	<0.030	<0.030	0.030	7315015
Pyrene	ug/L	0.15	0.096	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Surrogate Recovery (%)									
D10-Anthracene	%	73	97	106	106	101	103		7315015
D14-Terphenyl (FS)	%	48 (1)	82	95	94	89	61		7315015
D8-Acenaphthylene	%	96	92	101	102	96	99		7315015

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Surrogate recovery was below the lower control limit due to matrix interference. This may represent a low bias in some results.

O.REG 153 VOCS BY HS & F1-F4 (WATER)

BV Labs ID		PJV374			PJV374			PJV375		
Sampling Date		2021/04/22			2021/04/22			2021/04/22		
COC Number		796018-25-01			796018-25-01			796018-25-01		
	UNITS	BH2-20	RDL	QC Batch	BH2-20 Lab-Dup	RDL	QC Batch	BHMW3	RDL	QC Batch
Calculated Parameters										
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	7314912				<0.50	0.50	7314912
Volatile Organics										
Acetone (2-Propanone)	ug/L	<10	10	7312454	<10	10	7312454	<10	10	7312454
Benzene	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	1.1	0.20	7312454
Bromodichloromethane	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
Bromoform	ug/L	<1.0	1.0	7312454	<1.0	1.0	7312454	<1.0	1.0	7312454
Bromomethane	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
Carbon Tetrachloride	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
Chlorobenzene	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
Chloroform	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
Dibromochloromethane	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
1,2-Dichlorobenzene	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
1,3-Dichlorobenzene	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
1,4-Dichlorobenzene	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	7312454	<1.0	1.0	7312454	<1.0	1.0	7312454
1,1-Dichloroethane	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
1,2-Dichloroethane	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
1,1-Dichloroethylene	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
1,2-Dichloropropane	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	7312454	<0.30	0.30	7312454	<0.30	0.30	7312454
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	7312454	<0.40	0.40	7312454	<0.40	0.40	7312454
Ethylbenzene	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	0.34	0.20	7312454
Ethylene Dibromide	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
Hexane	ug/L	<1.0	1.0	7312454	<1.0	1.0	7312454	1.1	1.0	7312454
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	7312454	<2.0	2.0	7312454	<2.0	2.0	7312454
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	7312454	<10	10	7312454	<10	10	7312454
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	7312454	<5.0	5.0	7312454	<5.0	5.0	7312454
Methyl t-butyl ether (MTBE)	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
Styrene	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
Tetrachloroethylene	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
Toluene	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

O.REG 153 VOCS BY HS & F1-F4 (WATER)

BV Labs ID		PJV374			PJV374			PJV375		
Sampling Date		2021/04/22			2021/04/22			2021/04/22		
COC Number		796018-25-01			796018-25-01			796018-25-01		
	UNITS	BH2-20	RDL	QC Batch	BH2-20 Lab-Dup	RDL	QC Batch	BHMW3	RDL	QC Batch
1,1,1-Trichloroethane	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
1,1,2-Trichloroethane	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
Trichloroethylene	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
Vinyl Chloride	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
p+m-Xylene	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	0.41	0.20	7312454
o-Xylene	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
Total Xylenes	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	0.41	0.20	7312454
F1 (C6-C10)	ug/L	<25	25	7312454	<25	25	7312454	33	25	7312454
F1 (C6-C10) - BTEX	ug/L	<25	25	7312454	<25	25	7312454	31	25	7312454
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	7315019				<100	100	7315019
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	7315019				390	200	7315019
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	7315019				460	200	7315019
Reached Baseline at C50	ug/L	Yes		7315019				Yes		7315019
Surrogate Recovery (%)										
o-Terphenyl	%	96		7315019				98		7315019
4-Bromofluorobenzene	%	93		7312454	94		7312454	88		7312454
D4-1,2-Dichloroethane	%	99		7312454	100		7312454	105		7312454
D8-Toluene	%	98		7312454	97		7312454	91		7312454

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

O.REG 153 VOCS BY HS & F1-F4 (WATER)

BV Labs ID		PJV375			PJV376	PJV377	PJV378		
Sampling Date		2021/04/22			2021/04/22	2021/04/21	2021/04/21		
COC Number		796018-25-01			796018-25-01	796018-25-01	796018-25-01		
	UNITS	BHMW3 Lab-Dup	RDL	QC Batch	DUP-1	BH1-20	BH3-20	RDL	QC Batch
Calculated Parameters									
1,3-Dichloropropene (cis+trans)	ug/L				<0.50	<0.50	<0.50	0.50	7314912
Volatile Organics									
Acetone (2-Propanone)	ug/L				<10	<10	<10	10	7312454
Benzene	ug/L				1.1	<0.20	<0.20	0.20	7312454
Bromodichloromethane	ug/L				<0.50	<0.50	<0.50	0.50	7312454
Bromoform	ug/L				<1.0	<1.0	<1.0	1.0	7312454
Bromomethane	ug/L				<0.50	<0.50	<0.50	0.50	7312454
Carbon Tetrachloride	ug/L				<0.20	<0.20	<0.20	0.20	7312454
Chlorobenzene	ug/L				<0.20	<0.20	<0.20	0.20	7312454
Chloroform	ug/L				<0.20	<0.20	<0.20	0.20	7312454
Dibromochloromethane	ug/L				<0.50	<0.50	<0.50	0.50	7312454
1,2-Dichlorobenzene	ug/L				<0.50	<0.50	<0.50	0.50	7312454
1,3-Dichlorobenzene	ug/L				<0.50	<0.50	<0.50	0.50	7312454
1,4-Dichlorobenzene	ug/L				<0.50	<0.50	<0.50	0.50	7312454
Dichlorodifluoromethane (FREON 12)	ug/L				<1.0	<1.0	<1.0	1.0	7312454
1,1-Dichloroethane	ug/L				<0.20	<0.20	<0.20	0.20	7312454
1,2-Dichloroethane	ug/L				<0.50	3.8	<0.50	0.50	7312454
1,1-Dichloroethylene	ug/L				<0.20	<0.20	<0.20	0.20	7312454
cis-1,2-Dichloroethylene	ug/L				<0.50	<0.50	<0.50	0.50	7312454
trans-1,2-Dichloroethylene	ug/L				<0.50	<0.50	<0.50	0.50	7312454
1,2-Dichloropropane	ug/L				<0.20	<0.20	<0.20	0.20	7312454
cis-1,3-Dichloropropene	ug/L				<0.30	<0.30	<0.30	0.30	7312454
trans-1,3-Dichloropropene	ug/L				<0.40	<0.40	<0.40	0.40	7312454
Ethylbenzene	ug/L				0.36	<0.20	<0.20	0.20	7312454
Ethylene Dibromide	ug/L				<0.20	<0.20	<0.20	0.20	7312454
Hexane	ug/L				1.1	<1.0	<1.0	1.0	7312454
Methylene Chloride(Dichloromethane)	ug/L				<2.0	<2.0	<2.0	2.0	7312454
Methyl Ethyl Ketone (2-Butanone)	ug/L				<10	<10	<10	10	7312454
Methyl Isobutyl Ketone	ug/L				<5.0	<5.0	<5.0	5.0	7312454
Methyl t-butyl ether (MTBE)	ug/L				<0.50	44	3.1	0.50	7312454
Styrene	ug/L				<0.50	<0.50	<0.50	0.50	7312454
1,1,1,2-Tetrachloroethane	ug/L				<0.50	<0.50	<0.50	0.50	7312454
1,1,2,2-Tetrachloroethane	ug/L				<0.50	<0.50	<0.50	0.50	7312454
Tetrachloroethylene	ug/L				<0.20	<0.20	<0.20	0.20	7312454
Toluene	ug/L				<0.20	<0.20	<0.20	0.20	7312454

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

O.REG 153 VOCS BY HS & F1-F4 (WATER)

BV Labs ID		PJV375			PJV376	PJV377	PJV378		
Sampling Date		2021/04/22			2021/04/22	2021/04/21	2021/04/21		
COC Number		796018-25-01			796018-25-01	796018-25-01	796018-25-01		
	UNITS	BHMW3 Lab-Dup	RDL	QC Batch	DUP-1	BH1-20	BH3-20	RDL	QC Batch
1,1,1-Trichloroethane	ug/L				<0.20	<0.20	<0.20	0.20	7312454
1,1,2-Trichloroethane	ug/L				<0.50	<0.50	<0.50	0.50	7312454
Trichloroethylene	ug/L				<0.20	<0.20	<0.20	0.20	7312454
Trichlorofluoromethane (FREON 11)	ug/L				<0.50	<0.50	<0.50	0.50	7312454
Vinyl Chloride	ug/L				<0.20	<0.20	<0.20	0.20	7312454
p+m-Xylene	ug/L				0.44	<0.20	0.22	0.20	7312454
o-Xylene	ug/L				<0.20	<0.20	0.24	0.20	7312454
Total Xylenes	ug/L				0.44	<0.20	0.47	0.20	7312454
F1 (C6-C10)	ug/L				29	<25	<25	25	7312454
F1 (C6-C10) - BTEX	ug/L				27	<25	<25	25	7312454
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	7315019	<100	<100	<100	100	7315019
F3 (C16-C34 Hydrocarbons)	ug/L	310	200	7315019	550	<200	<200	200	7315019
F4 (C34-C50 Hydrocarbons)	ug/L	300	200	7315019	740	<200	<200	200	7315019
Reached Baseline at C50	ug/L	Yes		7315019	No	Yes	Yes		7315019
Surrogate Recovery (%)									
o-Terphenyl	%	99		7315019	98	96	95		7315019
4-Bromofluorobenzene	%				99	93	94		7312454
D4-1,2-Dichloroethane	%				107	106	103		7312454
D8-Toluene	%				95	99	97		7312454

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

O.REG 153 VOCS BY HS & F1-F4 (WATER)

BV Labs ID		PJV379	PJV380	PJV381		
Sampling Date		2021/04/21	2021/04/21	2021/04/22		
COC Number		796018-25-01	796018-25-01	796018-25-01		
	UNITS	BH4-20	BH5-20	BH2017-10	RDL	QC Batch
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	<0.50	0.50	7314912
Volatile Organics						
Acetone (2-Propanone)	ug/L	<10	<10	<10	10	7312454
Benzene	ug/L	<0.20	<0.20	<0.20	0.20	7312454
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	0.50	7312454
Bromoform	ug/L	<1.0	<1.0	<1.0	1.0	7312454
Bromomethane	ug/L	<0.50	<0.50	<0.50	0.50	7312454
Carbon Tetrachloride	ug/L	<0.20	<0.20	<0.20	0.20	7312454
Chlorobenzene	ug/L	<0.20	<0.20	<0.20	0.20	7312454
Chloroform	ug/L	<0.20	<0.20	<0.20	0.20	7312454
Dibromochloromethane	ug/L	<0.50	<0.50	<0.50	0.50	7312454
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	7312454
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	7312454
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	7312454
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	<1.0	1.0	7312454
1,1-Dichloroethane	ug/L	<0.20	<0.20	<0.20	0.20	7312454
1,2-Dichloroethane	ug/L	2.3	<0.50	<0.50	0.50	7312454
1,1-Dichloroethylene	ug/L	<0.20	<0.20	<0.20	0.20	7312454
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	0.50	7312454
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	0.50	7312454
1,2-Dichloropropane	ug/L	<0.20	<0.20	<0.20	0.20	7312454
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	<0.30	0.30	7312454
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	<0.40	0.40	7312454
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	0.20	7312454
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	0.20	7312454
Hexane	ug/L	<1.0	<1.0	<1.0	1.0	7312454
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	<2.0	2.0	7312454
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	<10	10	7312454
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	<5.0	5.0	7312454
Methyl t-butyl ether (MTBE)	ug/L	19	<0.50	3.7	0.50	7312454
Styrene	ug/L	<0.50	<0.50	<0.50	0.50	7312454
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	0.50	7312454
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	0.50	7312454
Tetrachloroethylene	ug/L	<0.20	<0.20	<0.20	0.20	7312454
Toluene	ug/L	<0.20	<0.20	<0.20	0.20	7312454
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	<0.20	0.20	7312454

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (WATER)

BV Labs ID		PJV379	PJV380	PJV381		
Sampling Date		2021/04/21	2021/04/21	2021/04/22		
COC Number		796018-25-01	796018-25-01	796018-25-01		
	UNITS	BH4-20	BH5-20	BH2017-10	RDL	QC Batch
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	<0.50	0.50	7312454
Trichloroethylene	ug/L	<0.20	<0.20	<0.20	0.20	7312454
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	<0.50	0.50	7312454
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	0.20	7312454
p+m-Xylene	ug/L	<0.20	<0.20	<0.20	0.20	7312454
o-Xylene	ug/L	<0.20	<0.20	<0.20	0.20	7312454
Total Xylenes	ug/L	<0.20	<0.20	<0.20	0.20	7312454
F1 (C6-C10)	ug/L	<25	<25	<25	25	7312454
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	25	7312454
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	100	7315019
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	<200	200	7315019
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	<200	200	7315019
Reached Baseline at C50	ug/L	Yes	Yes	Yes		7315019
Surrogate Recovery (%)						
o-Terphenyl	%	96	96	97		7315019
4-Bromofluorobenzene	%	86	90	89		7312454
D4-1,2-Dichloroethane	%	102	105	98		7312454
D8-Toluene	%	98	93	93		7312454

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

TEST SUMMARY

BV Labs ID: PJV374
Sample ID: BH2-20
Matrix: Water

Collected: 2021/04/22
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7314910	N/A	2021/04/26	Automated Statchk
1,3-Dichloropropene Sum	CALC	7314912	N/A	2021/04/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7315019	2021/04/23	2021/04/23	Ksenia Trofimova
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7315015	2021/04/23	2021/04/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7312454	N/A	2021/04/23	Anna Gabrielyan

BV Labs ID: PJV374 Dup
Sample ID: BH2-20
Matrix: Water

Collected: 2021/04/22
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7312454	N/A	2021/04/23	Anna Gabrielyan

BV Labs ID: PJV375
Sample ID: BHMW3
Matrix: Water

Collected: 2021/04/22
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7314910	N/A	2021/04/26	Automated Statchk
1,3-Dichloropropene Sum	CALC	7314912	N/A	2021/04/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7315019	2021/04/23	2021/04/23	Ksenia Trofimova
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7315015	2021/04/23	2021/04/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7312454	N/A	2021/04/23	Anna Gabrielyan

BV Labs ID: PJV375 Dup
Sample ID: BHMW3
Matrix: Water

Collected: 2021/04/22
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7315019	2021/04/23	2021/04/23	Ksenia Trofimova
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7315015	2021/04/23	2021/04/23	Mitesh Raj

BV Labs ID: PJV376
Sample ID: DUP-1
Matrix: Water

Collected: 2021/04/22
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7314910	N/A	2021/04/26	Automated Statchk
1,3-Dichloropropene Sum	CALC	7314912	N/A	2021/04/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7315019	2021/04/23	2021/04/23	Ksenia Trofimova
F4G (CCME Hydrocarbons Gravimetric)	BAL	7317128	2021/04/24	2021/04/24	Saumya Modh
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7315015	2021/04/23	2021/04/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7312454	N/A	2021/04/23	Anna Gabrielyan

TEST SUMMARY

BV Labs ID: PJV377
Sample ID: BH1-20
Matrix: Water

Collected: 2021/04/21
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7314910	N/A	2021/04/26	Automated Statchk
1,3-Dichloropropene Sum	CALC	7314912	N/A	2021/04/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7315019	2021/04/23	2021/04/23	Ksenia Trofimova
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7315015	2021/04/23	2021/04/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7312454	N/A	2021/04/23	Anna Gabrielyan

BV Labs ID: PJV378
Sample ID: BH3-20
Matrix: Water

Collected: 2021/04/21
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7314910	N/A	2021/04/26	Automated Statchk
1,3-Dichloropropene Sum	CALC	7314912	N/A	2021/04/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7315019	2021/04/23	2021/04/23	Ksenia Trofimova
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7315015	2021/04/23	2021/04/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7312454	N/A	2021/04/23	Anna Gabrielyan

BV Labs ID: PJV379
Sample ID: BH4-20
Matrix: Water

Collected: 2021/04/21
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7314910	N/A	2021/04/26	Automated Statchk
1,3-Dichloropropene Sum	CALC	7314912	N/A	2021/04/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7315019	2021/04/23	2021/04/23	Ksenia Trofimova
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7315015	2021/04/23	2021/04/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7312454	N/A	2021/04/23	Anna Gabrielyan

BV Labs ID: PJV380
Sample ID: BH5-20
Matrix: Water

Collected: 2021/04/21
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7314910	N/A	2021/04/26	Automated Statchk
1,3-Dichloropropene Sum	CALC	7314912	N/A	2021/04/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7315019	2021/04/23	2021/04/23	Ksenia Trofimova
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7315015	2021/04/23	2021/04/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7312454	N/A	2021/04/23	Anna Gabrielyan

BV Labs ID: PJV381
Sample ID: BH2017-10
Matrix: Water

Collected: 2021/04/22
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7314910	N/A	2021/04/26	Automated Statchk
1,3-Dichloropropene Sum	CALC	7314912	N/A	2021/04/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7315019	2021/04/23	2021/04/23	Ksenia Trofimova

TEST SUMMARY

BV Labs ID: PJV381
Sample ID: BH2017-10
Matrix: Water

Collected: 2021/04/22
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7315015	2021/04/23	2021/04/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7312454	N/A	2021/04/23	Anna Gabrielyan

BV Labs ID: PJV382
Sample ID: TRIP BLANK
Matrix: Water

Collected: 2021/04/22
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7312454	N/A	2021/04/23	Anna Gabrielyan

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	9.7°C

All 40 ml vials for F1BTEX and VOC analyses contained visible sediment, except for the Trip Blank.
All 100 ml amber glass bottles for F2-F4 and PAH analyses contained visible sediment, which was included in the extraction .

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7312454	AYA	Matrix Spike [PJV374-03]	4-Bromofluorobenzene	2021/04/23		106	%	70 - 130
			D4-1,2-Dichloroethane	2021/04/23		100	%	70 - 130
			D8-Toluene	2021/04/23		101	%	70 - 130
			Acetone (2-Propanone)	2021/04/23		97	%	60 - 140
			Benzene	2021/04/23		92	%	70 - 130
			Bromodichloromethane	2021/04/23		98	%	70 - 130
			Bromoform	2021/04/23		101	%	70 - 130
			Bromomethane	2021/04/23		88	%	60 - 140
			Carbon Tetrachloride	2021/04/23		94	%	70 - 130
			Chlorobenzene	2021/04/23		97	%	70 - 130
			Chloroform	2021/04/23		94	%	70 - 130
			Dibromochloromethane	2021/04/23		97	%	70 - 130
			1,2-Dichlorobenzene	2021/04/23		100	%	70 - 130
			1,3-Dichlorobenzene	2021/04/23		104	%	70 - 130
			1,4-Dichlorobenzene	2021/04/23		104	%	70 - 130
			Dichlorodifluoromethane (FREON 12)	2021/04/23		79	%	60 - 140
			1,1-Dichloroethane	2021/04/23		90	%	70 - 130
			1,2-Dichloroethane	2021/04/23		92	%	70 - 130
			1,1-Dichloroethylene	2021/04/23		94	%	70 - 130
			cis-1,2-Dichloroethylene	2021/04/23		99	%	70 - 130
			trans-1,2-Dichloroethylene	2021/04/23		96	%	70 - 130
			1,2-Dichloropropane	2021/04/23		96	%	70 - 130
			cis-1,3-Dichloropropene	2021/04/23		101	%	70 - 130
			trans-1,3-Dichloropropene	2021/04/23		106	%	70 - 130
			Ethylbenzene	2021/04/23		95	%	70 - 130
			Ethylene Dibromide	2021/04/23		96	%	70 - 130
			Hexane	2021/04/23		94	%	70 - 130
			Methylene Chloride(Dichloromethane)	2021/04/23		108	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/04/23		109	%	60 - 140
			Methyl Isobutyl Ketone	2021/04/23		107	%	70 - 130
			Methyl t-butyl ether (MTBE)	2021/04/23		92	%	70 - 130
			Styrene	2021/04/23		111	%	70 - 130
			1,1,1,2-Tetrachloroethane	2021/04/23		98	%	70 - 130
			1,1,2,2-Tetrachloroethane	2021/04/23		99	%	70 - 130
			Tetrachloroethylene	2021/04/23		89	%	70 - 130
			Toluene	2021/04/23		90	%	70 - 130
			1,1,1-Trichloroethane	2021/04/23		99	%	70 - 130
			1,1,2-Trichloroethane	2021/04/23		99	%	70 - 130
			Trichloroethylene	2021/04/23		102	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2021/04/23		92	%	70 - 130
			Vinyl Chloride	2021/04/23		91	%	70 - 130
			p+m-Xylene	2021/04/23		102	%	70 - 130
			o-Xylene	2021/04/23		96	%	70 - 130
			F1 (C6-C10)	2021/04/23		104	%	60 - 140
7312454	AYA	Spiked Blank	4-Bromofluorobenzene	2021/04/23		105	%	70 - 130
			D4-1,2-Dichloroethane	2021/04/23		95	%	70 - 130
			D8-Toluene	2021/04/23		102	%	70 - 130
			Acetone (2-Propanone)	2021/04/23		89	%	60 - 140
			Benzene	2021/04/23		87	%	70 - 130
			Bromodichloromethane	2021/04/23		91	%	70 - 130
			Bromoform	2021/04/23		93	%	70 - 130
			Bromomethane	2021/04/23		88	%	60 - 140
			Carbon Tetrachloride	2021/04/23		91	%	70 - 130
			Chlorobenzene	2021/04/23		92	%	70 - 130

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chloroform	2021/04/23		89	%	70 - 130
			Dibromochloromethane	2021/04/23		90	%	70 - 130
			1,2-Dichlorobenzene	2021/04/23		93	%	70 - 130
			1,3-Dichlorobenzene	2021/04/23		98	%	70 - 130
			1,4-Dichlorobenzene	2021/04/23		98	%	70 - 130
			Dichlorodifluoromethane (FREON 12)	2021/04/23		82	%	60 - 140
			1,1-Dichloroethane	2021/04/23		87	%	70 - 130
			1,2-Dichloroethane	2021/04/23		86	%	70 - 130
			1,1-Dichloroethylene	2021/04/23		91	%	70 - 130
			cis-1,2-Dichloroethylene	2021/04/23		93	%	70 - 130
			trans-1,2-Dichloroethylene	2021/04/23		91	%	70 - 130
			1,2-Dichloropropane	2021/04/23		90	%	70 - 130
			cis-1,3-Dichloropropene	2021/04/23		90	%	70 - 130
			trans-1,3-Dichloropropene	2021/04/23		96	%	70 - 130
			Ethylbenzene	2021/04/23		91	%	70 - 130
			Ethylene Dibromide	2021/04/23		89	%	70 - 130
			Hexane	2021/04/23		93	%	70 - 130
			Methylene Chloride(Dichloromethane)	2021/04/23		102	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/04/23		98	%	60 - 140
			Methyl Isobutyl Ketone	2021/04/23		96	%	70 - 130
			Methyl t-butyl ether (MTBE)	2021/04/23		88	%	70 - 130
			Styrene	2021/04/23		105	%	70 - 130
			1,1,1,2-Tetrachloroethane	2021/04/23		92	%	70 - 130
			1,1,2,2-Tetrachloroethane	2021/04/23		89	%	70 - 130
			Tetrachloroethylene	2021/04/23		86	%	70 - 130
			Toluene	2021/04/23		88	%	70 - 130
			1,1,1-Trichloroethane	2021/04/23		96	%	70 - 130
			1,1,2-Trichloroethane	2021/04/23		94	%	70 - 130
			Trichloroethylene	2021/04/23		97	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2021/04/23		90	%	70 - 130
			Vinyl Chloride	2021/04/23		90	%	70 - 130
			p+m-Xylene	2021/04/23		98	%	70 - 130
			o-Xylene	2021/04/23		93	%	70 - 130
			F1 (C6-C10)	2021/04/23		100	%	60 - 140
7312454	AYA	Method Blank	4-Bromofluorobenzene	2021/04/23		94	%	70 - 130
			D4-1,2-Dichloroethane	2021/04/23		99	%	70 - 130
			D8-Toluene	2021/04/23		99	%	70 - 130
			Acetone (2-Propanone)	2021/04/23	<10		ug/L	
			Benzene	2021/04/23	<0.20		ug/L	
			Bromodichloromethane	2021/04/23	<0.50		ug/L	
			Bromoform	2021/04/23	<1.0		ug/L	
			Bromomethane	2021/04/23	<0.50		ug/L	
			Carbon Tetrachloride	2021/04/23	<0.20		ug/L	
			Chlorobenzene	2021/04/23	<0.20		ug/L	
			Chloroform	2021/04/23	<0.20		ug/L	
			Dibromochloromethane	2021/04/23	<0.50		ug/L	
			1,2-Dichlorobenzene	2021/04/23	<0.50		ug/L	
			1,3-Dichlorobenzene	2021/04/23	<0.50		ug/L	
			1,4-Dichlorobenzene	2021/04/23	<0.50		ug/L	
			Dichlorodifluoromethane (FREON 12)	2021/04/23	<1.0		ug/L	
			1,1-Dichloroethane	2021/04/23	<0.20		ug/L	
			1,2-Dichloroethane	2021/04/23	<0.50		ug/L	
			1,1-Dichloroethylene	2021/04/23	<0.20		ug/L	
			cis-1,2-Dichloroethylene	2021/04/23	<0.50		ug/L	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			trans-1,2-Dichloroethylene	2021/04/23	<0.50		ug/L	
			1,2-Dichloropropane	2021/04/23	<0.20		ug/L	
			cis-1,3-Dichloropropene	2021/04/23	<0.30		ug/L	
			trans-1,3-Dichloropropene	2021/04/23	<0.40		ug/L	
			Ethylbenzene	2021/04/23	<0.20		ug/L	
			Ethylene Dibromide	2021/04/23	<0.20		ug/L	
			Hexane	2021/04/23	<1.0		ug/L	
			Methylene Chloride(Dichloromethane)	2021/04/23	<2.0		ug/L	
			Methyl Ethyl Ketone (2-Butanone)	2021/04/23	<10		ug/L	
			Methyl Isobutyl Ketone	2021/04/23	<5.0		ug/L	
			Methyl t-butyl ether (MTBE)	2021/04/23	<0.50		ug/L	
			Styrene	2021/04/23	<0.50		ug/L	
			1,1,1,2-Tetrachloroethane	2021/04/23	<0.50		ug/L	
			1,1,2,2-Tetrachloroethane	2021/04/23	<0.50		ug/L	
			Tetrachloroethylene	2021/04/23	<0.20		ug/L	
			Toluene	2021/04/23	<0.20		ug/L	
			1,1,1-Trichloroethane	2021/04/23	<0.20		ug/L	
			1,1,2-Trichloroethane	2021/04/23	<0.50		ug/L	
			Trichloroethylene	2021/04/23	<0.20		ug/L	
			Trichlorofluoromethane (FREON 11)	2021/04/23	<0.50		ug/L	
			Vinyl Chloride	2021/04/23	<0.20		ug/L	
			p+m-Xylene	2021/04/23	<0.20		ug/L	
			o-Xylene	2021/04/23	<0.20		ug/L	
			Total Xylenes	2021/04/23	<0.20		ug/L	
			F1 (C6-C10)	2021/04/23	<25		ug/L	
			F1 (C6-C10) - BTEX	2021/04/23	<25		ug/L	
7312454	AYA	RPD [PJV374-03]	Acetone (2-Propanone)	2021/04/23	NC		%	30
			Benzene	2021/04/23	NC		%	30
			Bromodichloromethane	2021/04/23	NC		%	30
			Bromoform	2021/04/23	NC		%	30
			Bromomethane	2021/04/23	NC		%	30
			Carbon Tetrachloride	2021/04/23	NC		%	30
			Chlorobenzene	2021/04/23	NC		%	30
			Chloroform	2021/04/23	NC		%	30
			Dibromochloromethane	2021/04/23	NC		%	30
			1,2-Dichlorobenzene	2021/04/23	NC		%	30
			1,3-Dichlorobenzene	2021/04/23	NC		%	30
			1,4-Dichlorobenzene	2021/04/23	NC		%	30
			Dichlorodifluoromethane (FREON 12)	2021/04/23	NC		%	30
			1,1-Dichloroethane	2021/04/23	NC		%	30
			1,2-Dichloroethane	2021/04/23	NC		%	30
			1,1-Dichloroethylene	2021/04/23	NC		%	30
			cis-1,2-Dichloroethylene	2021/04/23	NC		%	30
			trans-1,2-Dichloroethylene	2021/04/23	NC		%	30
			1,2-Dichloropropane	2021/04/23	NC		%	30
			cis-1,3-Dichloropropene	2021/04/23	NC		%	30
			trans-1,3-Dichloropropene	2021/04/23	NC		%	30
			Ethylbenzene	2021/04/23	NC		%	30
			Ethylene Dibromide	2021/04/23	NC		%	30
			Hexane	2021/04/23	NC		%	30
			Methylene Chloride(Dichloromethane)	2021/04/23	NC		%	30
			Methyl Ethyl Ketone (2-Butanone)	2021/04/23	NC		%	30
			Methyl Isobutyl Ketone	2021/04/23	NC		%	30
			Methyl t-butyl ether (MTBE)	2021/04/23	NC		%	30

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Styrene	2021/04/23	NC		%	30
			1,1,1,2-Tetrachloroethane	2021/04/23	NC		%	30
			1,1,2,2-Tetrachloroethane	2021/04/23	NC		%	30
			Tetrachloroethylene	2021/04/23	NC		%	30
			Toluene	2021/04/23	NC		%	30
			1,1,1-Trichloroethane	2021/04/23	NC		%	30
			1,1,2-Trichloroethane	2021/04/23	NC		%	30
			Trichloroethylene	2021/04/23	NC		%	30
			Trichlorofluoromethane (FREON 11)	2021/04/23	NC		%	30
			Vinyl Chloride	2021/04/23	NC		%	30
			p+m-Xylene	2021/04/23	NC		%	30
			o-Xylene	2021/04/23	NC		%	30
			Total Xylenes	2021/04/23	NC		%	30
			F1 (C6-C10)	2021/04/23	NC		%	30
			F1 (C6-C10) - BTEX	2021/04/23	NC		%	30
7315015	RAJ	Matrix Spike [PJV374-02]	D10-Anthracene	2021/04/23		103	%	50 - 130
			D14-Terphenyl (FS)	2021/04/23		89	%	50 - 130
			D8-Acenaphthylene	2021/04/23		102	%	50 - 130
			Acenaphthene	2021/04/23		108	%	50 - 130
			Acenaphthylene	2021/04/23		103	%	50 - 130
			Anthracene	2021/04/23		105	%	50 - 130
			Benzo(a)anthracene	2021/04/23		110	%	50 - 130
			Benzo(a)pyrene	2021/04/23		97	%	50 - 130
			Benzo(b/j)fluoranthene	2021/04/23		111	%	50 - 130
			Benzo(g,h,i)perylene	2021/04/23		113	%	50 - 130
			Benzo(k)fluoranthene	2021/04/23		104	%	50 - 130
			Chrysene	2021/04/23		114	%	50 - 130
			Dibenzo(a,h)anthracene	2021/04/23		106	%	50 - 130
			Fluoranthene	2021/04/23		113	%	50 - 130
			Fluorene	2021/04/23		106	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/04/23		115	%	50 - 130
			1-Methylnaphthalene	2021/04/23		109	%	50 - 130
			2-Methylnaphthalene	2021/04/23		107	%	50 - 130
			Naphthalene	2021/04/23		103	%	50 - 130
			Phenanthrene	2021/04/23		115	%	50 - 130
			Pyrene	2021/04/23		113	%	50 - 130
7315015	RAJ	Spiked Blank	D10-Anthracene	2021/04/23		103	%	50 - 130
			D14-Terphenyl (FS)	2021/04/23		96	%	50 - 130
			D8-Acenaphthylene	2021/04/23		98	%	50 - 130
			Acenaphthene	2021/04/23		109	%	50 - 130
			Acenaphthylene	2021/04/23		101	%	50 - 130
			Anthracene	2021/04/23		106	%	50 - 130
			Benzo(a)anthracene	2021/04/23		108	%	50 - 130
			Benzo(a)pyrene	2021/04/23		99	%	50 - 130
			Benzo(b/j)fluoranthene	2021/04/23		116	%	50 - 130
			Benzo(g,h,i)perylene	2021/04/23		112	%	50 - 130
			Benzo(k)fluoranthene	2021/04/23		109	%	50 - 130
			Chrysene	2021/04/23		118	%	50 - 130
			Dibenzo(a,h)anthracene	2021/04/23		104	%	50 - 130
			Fluoranthene	2021/04/23		116	%	50 - 130
			Fluorene	2021/04/23		107	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/04/23		115	%	50 - 130
			1-Methylnaphthalene	2021/04/23		105	%	50 - 130
			2-Methylnaphthalene	2021/04/23		103	%	50 - 130

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Naphthalene	2021/04/23		101	%	50 - 130
			Phenanthrene	2021/04/23		116	%	50 - 130
			Pyrene	2021/04/23		116	%	50 - 130
7315015	RAJ	Method Blank	D10-Anthracene	2021/04/23		96	%	50 - 130
			D14-Terphenyl (FS)	2021/04/23		89	%	50 - 130
			D8-Acenaphthylene	2021/04/23		90	%	50 - 130
			Acenaphthene	2021/04/23	<0.050		ug/L	
			Acenaphthylene	2021/04/23	<0.050		ug/L	
			Anthracene	2021/04/23	<0.050		ug/L	
			Benzo(a)anthracene	2021/04/23	<0.050		ug/L	
			Benzo(a)pyrene	2021/04/23	<0.0090		ug/L	
			Benzo(b/j)fluoranthene	2021/04/23	<0.050		ug/L	
			Benzo(g,h,i)perylene	2021/04/23	<0.050		ug/L	
			Benzo(k)fluoranthene	2021/04/23	<0.050		ug/L	
			Chrysene	2021/04/23	<0.050		ug/L	
			Dibenzo(a,h)anthracene	2021/04/23	<0.050		ug/L	
			Fluoranthene	2021/04/23	<0.050		ug/L	
			Fluorene	2021/04/23	<0.050		ug/L	
			Indeno(1,2,3-cd)pyrene	2021/04/23	<0.050		ug/L	
			1-Methylnaphthalene	2021/04/23	<0.050		ug/L	
			2-Methylnaphthalene	2021/04/23	<0.050		ug/L	
			Naphthalene	2021/04/23	<0.050		ug/L	
			Phenanthrene	2021/04/23	<0.030		ug/L	
			Pyrene	2021/04/23	<0.050		ug/L	
7315015	RAJ	RPD [PJV375-02]	Acenaphthene	2021/04/23	NC		%	30
			Acenaphthylene	2021/04/23	NC		%	30
			Anthracene	2021/04/23	NC		%	30
			Benzo(a)anthracene	2021/04/23	NC		%	30
			Benzo(a)pyrene	2021/04/23	19		%	30
			Benzo(b/j)fluoranthene	2021/04/23	25		%	30
			Benzo(g,h,i)perylene	2021/04/23	4.3		%	30
			Benzo(k)fluoranthene	2021/04/23	NC		%	30
			Chrysene	2021/04/23	NC		%	30
			Dibenzo(a,h)anthracene	2021/04/23	NC		%	30
			Fluoranthene	2021/04/23	19		%	30
			Fluorene	2021/04/23	NC		%	30
			Indeno(1,2,3-cd)pyrene	2021/04/23	NC		%	30
			1-Methylnaphthalene	2021/04/23	23		%	30
			2-Methylnaphthalene	2021/04/23	23		%	30
			Naphthalene	2021/04/23	14		%	30
			Phenanthrene	2021/04/23	25		%	30
			Pyrene	2021/04/23	23		%	30
7315019	KTR	Matrix Spike [PJV376-02]	o-Terphenyl	2021/04/23		100	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/04/23		87	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2021/04/23		NC	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2021/04/23		NC	%	60 - 130
7315019	KTR	Spiked Blank	o-Terphenyl	2021/04/23		101	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/04/23		111	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2021/04/23		116	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2021/04/23		116	%	60 - 130
7315019	KTR	Method Blank	o-Terphenyl	2021/04/23		95	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/04/23	<100		ug/L	
			F3 (C16-C34 Hydrocarbons)	2021/04/23	<200		ug/L	
			F4 (C34-C50 Hydrocarbons)	2021/04/23	<200		ug/L	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7315019	KTR	RPD [PJV375-02]	F2 (C10-C16 Hydrocarbons)	2021/04/23	NC		%	30
			F3 (C16-C34 Hydrocarbons)	2021/04/23	24		%	30
			F4 (C34-C50 Hydrocarbons)	2021/04/23	NC		%	30
7317128	SA5	Spiked Blank	F4G-sg (Grav. Heavy Hydrocarbons)	2021/04/24		93	%	65 - 135
7317128	SA5	RPD	F4G-sg (Grav. Heavy Hydrocarbons)	2021/04/24	0		%	20
7317128	SA5	Method Blank	F4G-sg (Grav. Heavy Hydrocarbons)	2021/04/24	<500		ug/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

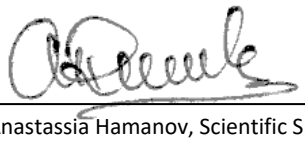
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Anastassia Hamanov, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

22-Apr-21 12:00
Antonella Brasil
C1A7975

J_L ENV-1324

Presence of Visible Particulate/Sediment

Maxxam Analytics
CAM FCD-01013/5

When there is >1cm of visible particulate/sediment, the amount will be recorded in the field below

			Bottle Types																												
			Inorganics					Organics											Hydrocarbons							Volatiles				Other
	Sample ID	All	CrVI	CN	General	Hg	Metals (Diss.)	Organic 1 of 2	Organic 2 of 2	PCB 1 of 2	PCB 2 of 2	Pest/ Herb 1 of 2	Pest/ Herb 2 of 2	SVOC/ ABN 1 of 2	SVOC/ ABN 2 of 2	PAH 1 of 2	PAH 2 of 2	Dioxin /Furan	F1 Vial 1	F1 Vial 2	F1 Vial 3	F1 Vial 4	F2-F4 1 of 2	F2-F4 2 of 2	F4G	VOC Vial 1	VOC Vial 2	VOC Vial 3	VOC Vial 4	
1	BH2-20	TS																													
2	BHMW3	|																												
3	Dup-1	|																												
4	BH1-20	|																												
5	BH3-20	|																												
6	BH4-20	|																												
7	BH5-20	|																												
8	BH2017-10	V																													
9																															
10																															

Comments:

Legend:	
P	Suspended Particulate
TS	Trace Settled Sediment (just covers bottom of container or less)
S	Sediment greater than (>) Trace, but less than (<) 1 cm

Recorded By: (signature/print)

RUSH!

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel (905) 817-5700 Toll-free 800-563-6266 Fax (905) 817-5777 www.bvlabs.com

22-Apr-21 12:00
Antonella Brasil
C1A7975
J L ENV-1324

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#982 Pinchin Ltd	Company Name:		Quotation #:	A70927
Attention:	Accounts Payable	Attention:	Matt, Ryan, Mike	P.O. #:	
Address:	1 Hines Road Suite 200 Kanata ON K2K 3C7	Address:		Project:	
				Project Name:	285722.003
Tel:	(613) 592-3387 Fax: (613) 592-5897	Tel:	Fax:	Site #:	
Email:	ap@pinchin.com	Email:	mkosiw@Pinchin.com, rlaronde@pinchin.com; mryan@	Sampled By:	M. Kosiw

Bottle Order #: 796018
COC #: C#796018-25-01
Project Manager: Antonella Brasil

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☒ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☒ Coarse ☒ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Reg 406 Table ___ ☐ Other ___

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)?

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI; O.Reg 153 ICPMS Metals (GW); O.Reg 153 PHCs, BTEX/F1-F4 (GW); O.Reg 153 VOCs by HS (GW); O.Reg 153 PAHs (GW); pH CaCl2 EXTRACT; Sieve, 75um

Turnaround Time (TAT) Required: Please provide advance notice for rush projects

Regular (Standard) TAT: (will be applied if Rush TAT is not specified) Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission): Date Required: ASAP (Apr 23) Time Required: Rush Confirmation Number: #BR042120 (call lab for #)

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	ICPMS Metals	PHCs, BTEX/F1-F4	VOCs by HS	PAHs	pH CaCl2	Sieve	# of Bottles	Comments
1		BH2-20	April 22, 2021	AM	GW			X	X	X			5	
2		BHMW3	↓	↓	↓			X	X	X			5	
3		Dup-1	↓	↓	↓			X	X	X			5	
4		BH1-20	April 21, 2021	PM	↓			X	X	X			5	
5		BH3-20	↓	↓	↓			X	X	X			5	
6		BH4-20	↓	↓	↓			X	X	X			5	ON Ice pack
7		BH5-20	↓	↓	↓			X	X	X			5	
8		BH2017-10	April 22 2021	AM	↓			X	X	X			5	
9		Trip Blank	↓	↓	↓			X	X				2	VOCs + F1
10														

RECEIVED IN OTTAWA

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Mike Kosiw	April 22 2021	11:30 Am	[signature]	2021/04/22	12:00	
			[signature] CYLUSHON	2021/04/23	08:00	

Laboratory Use Only: Time Sensitive; Temperature (°C) on Recei: 10, 10, 9; 4, 3, 4 ON Ice; Custody Seal Present: Yes; Intact: Yes

White: BV Labs Yellow: Client

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

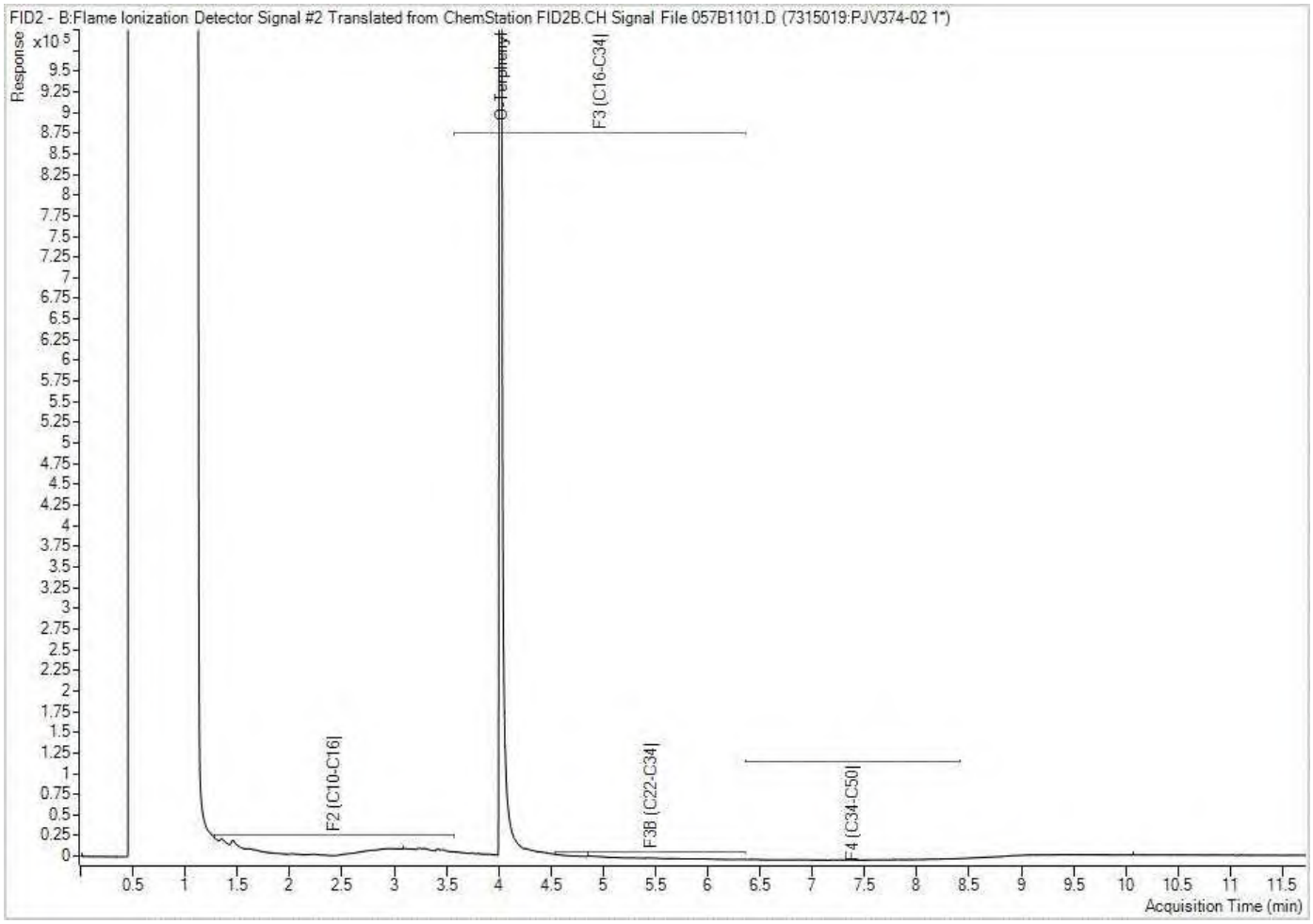
** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

BV Labs Job #: C1A7975
Report Date: 2021/04/26
BV Labs Sample: PJV374

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH2-20

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

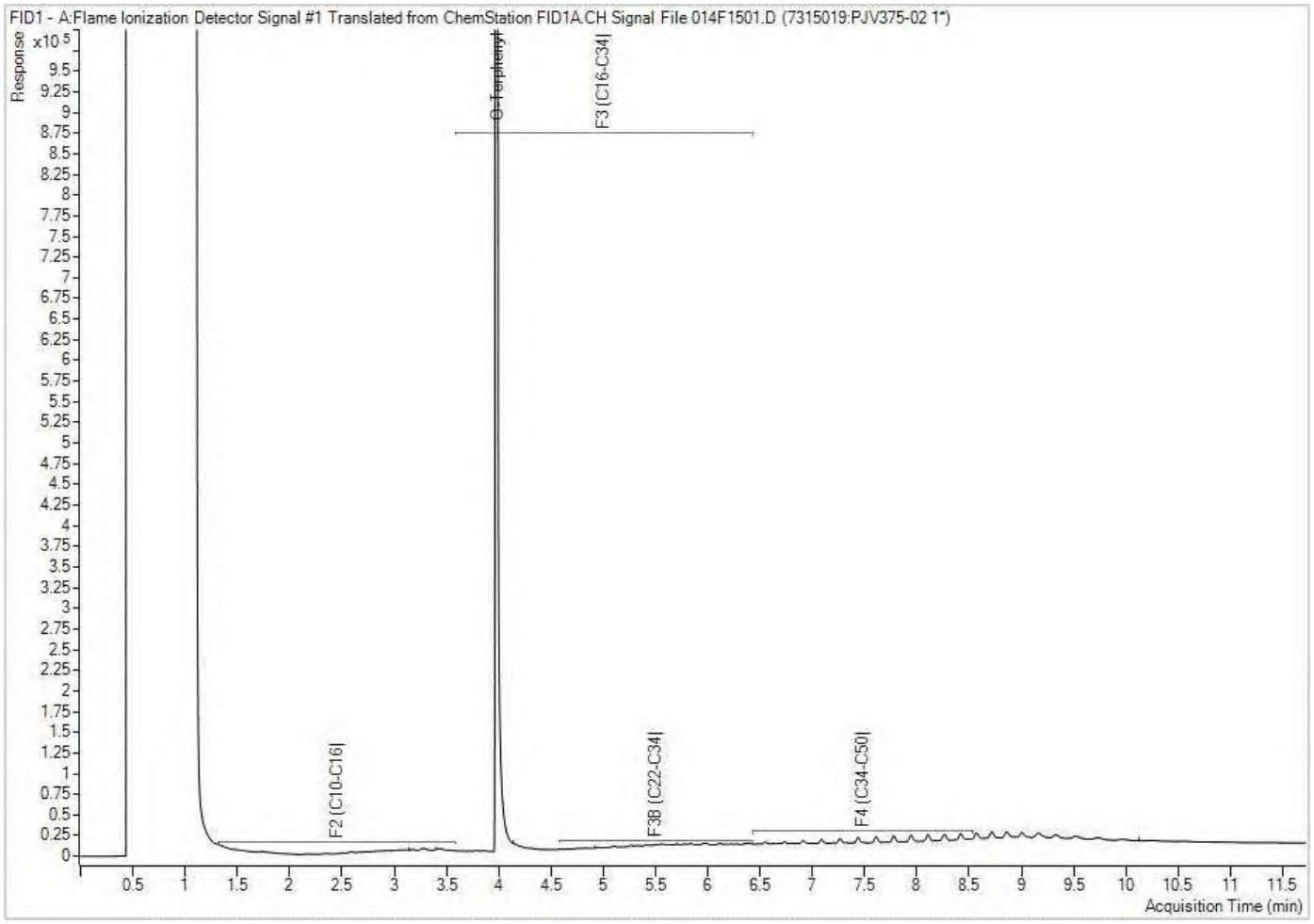


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1A7975
Report Date: 2021/04/26
BV Labs Sample: PJV375

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW3

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

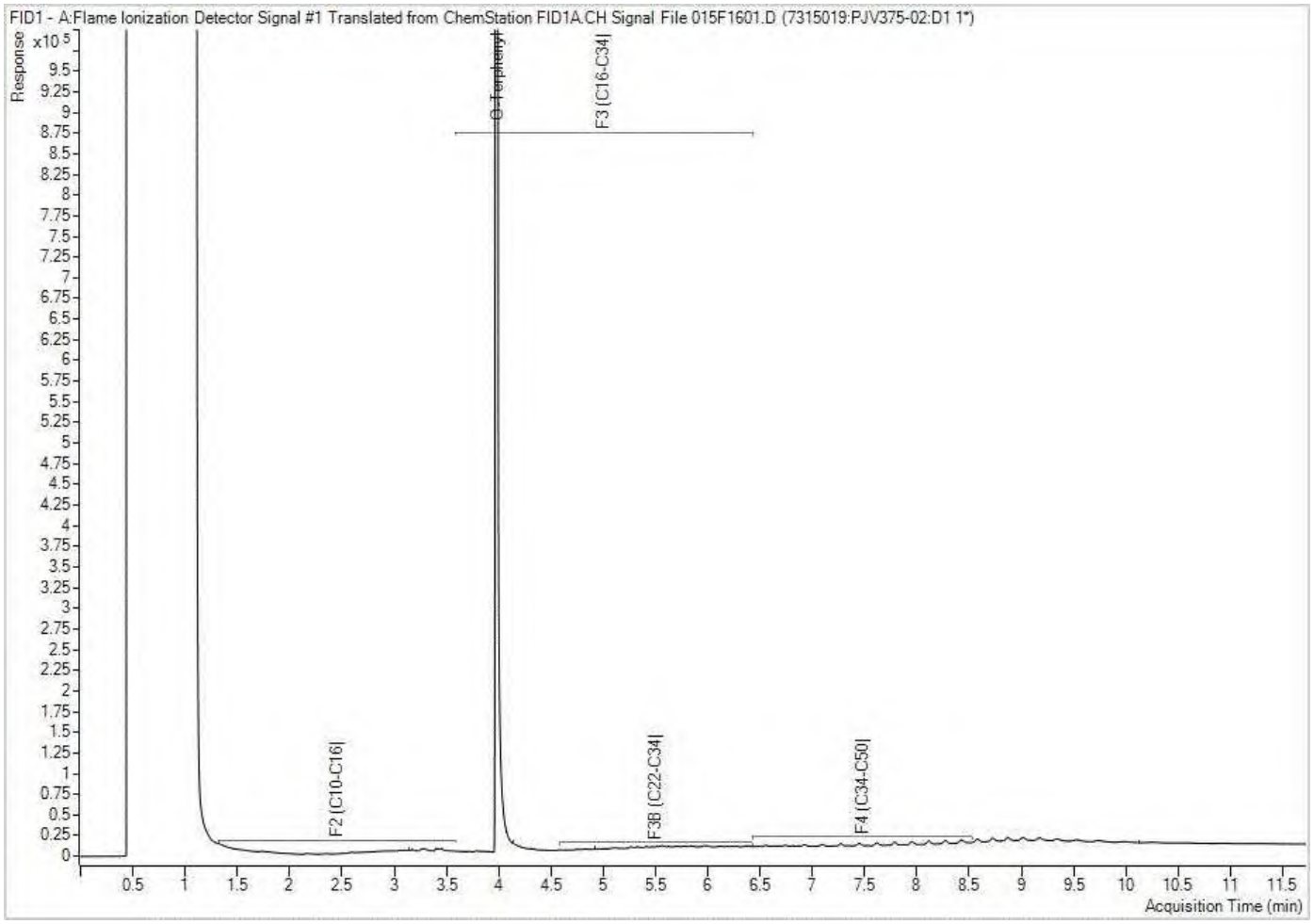


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1A7975
Report Date: 2021/04/26
BV Labs Sample: PJV375 Lab-Dup

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW3

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

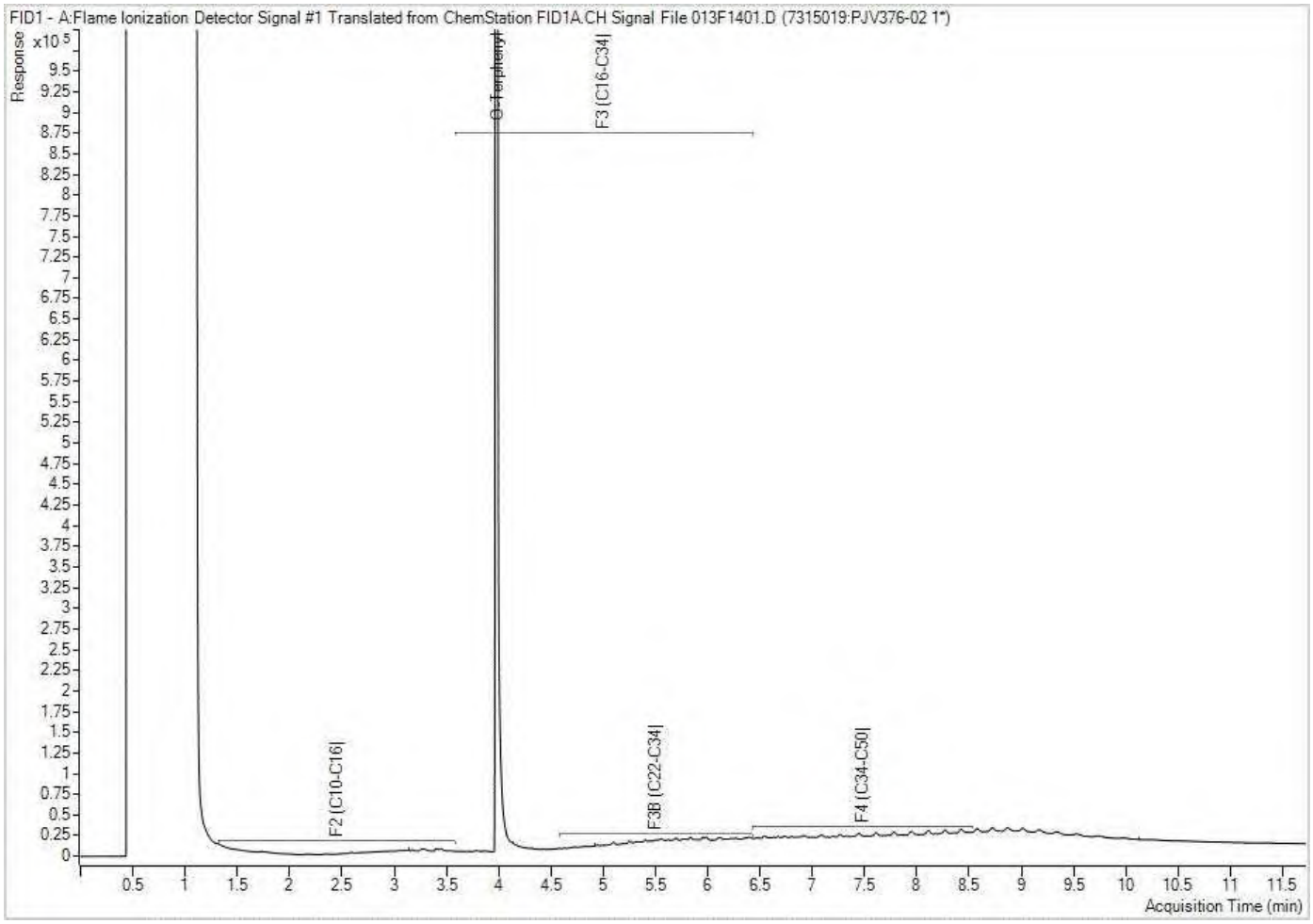


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1A7975
Report Date: 2021/04/26
BV Labs Sample: PJV376

Pinchin Ltd
Client Project #: 285722.003
Client ID: DUP-1

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

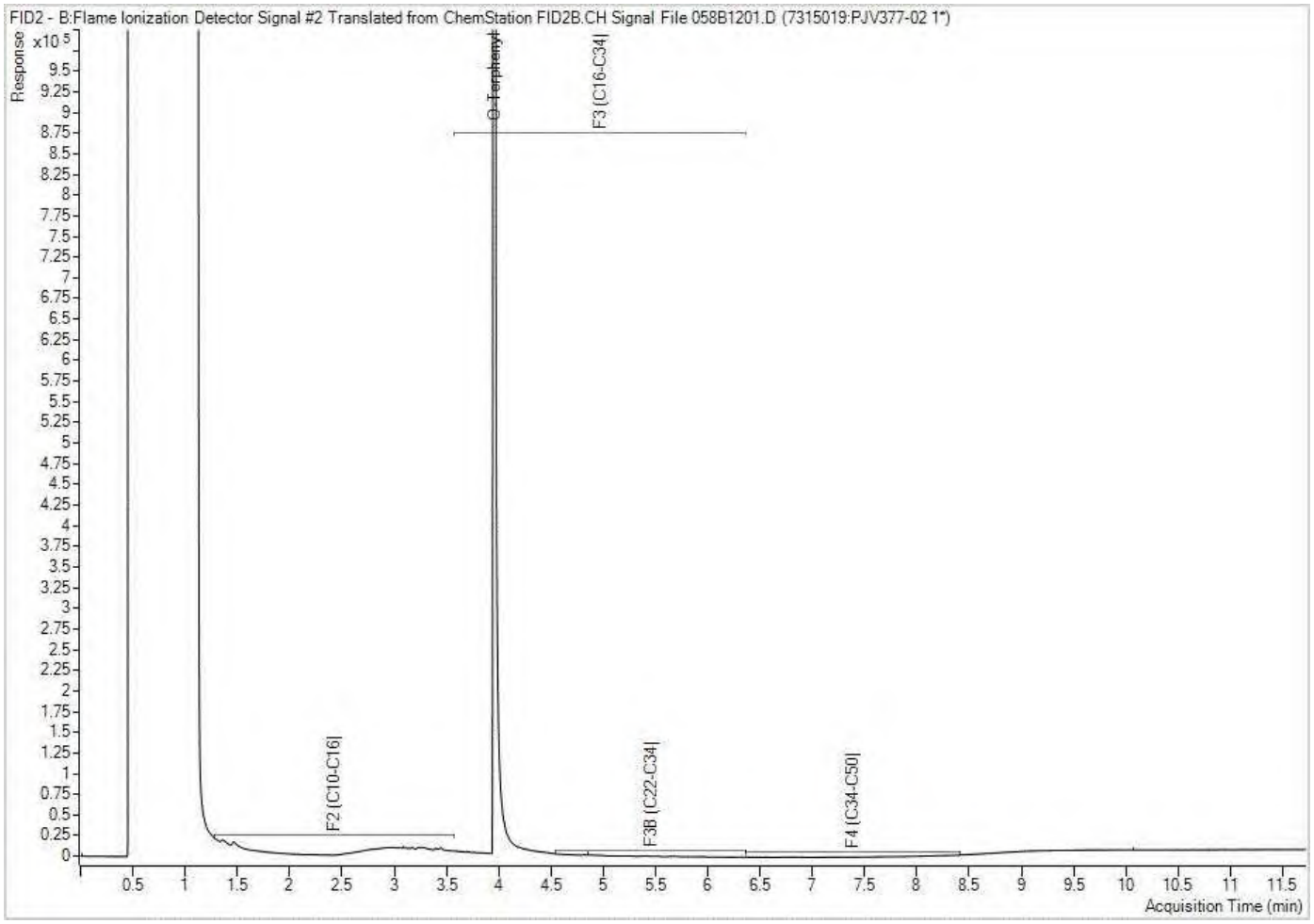


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1A7975
Report Date: 2021/04/26
BV Labs Sample: PJV377

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH1-20

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

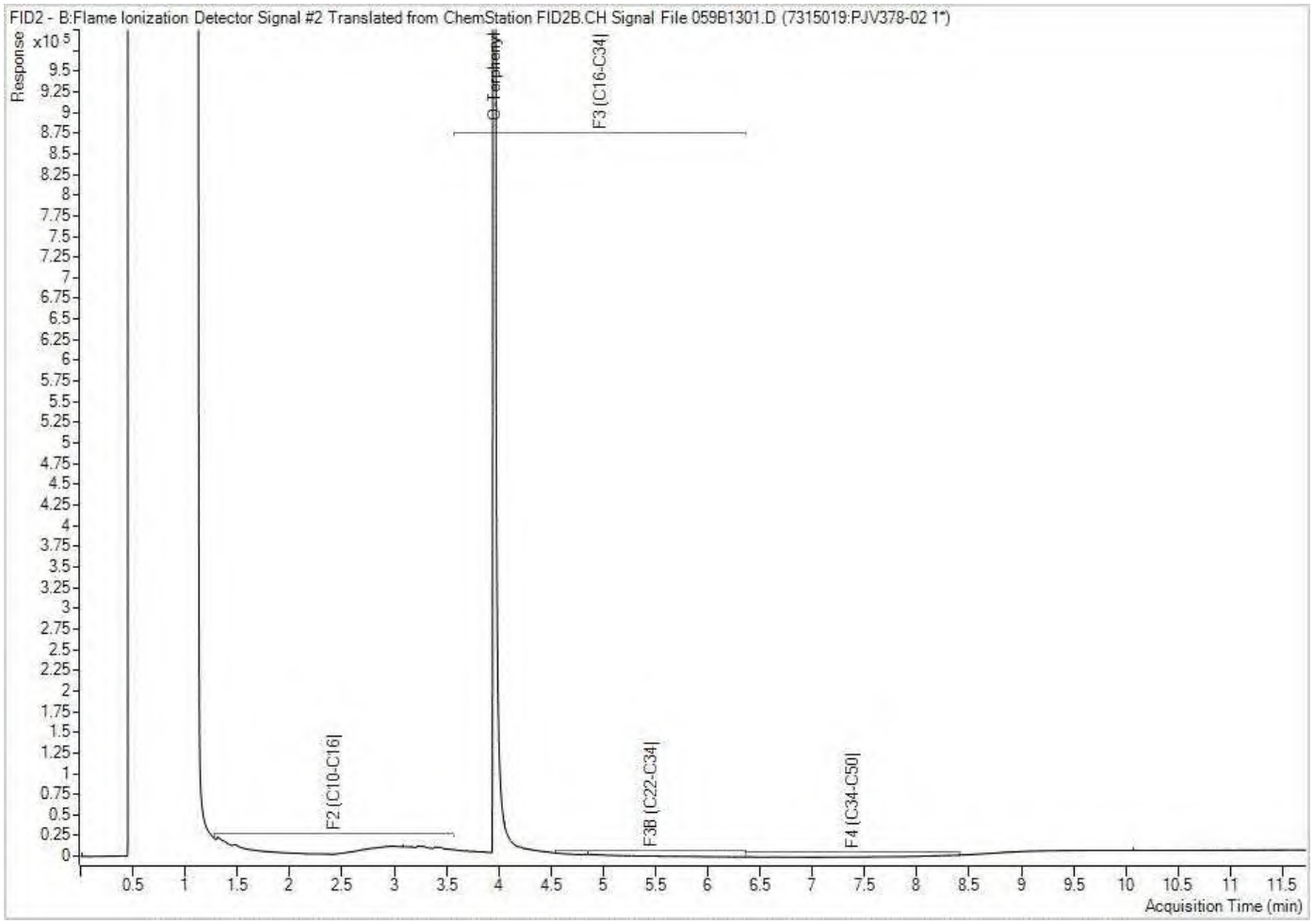


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1A7975
Report Date: 2021/04/26
BV Labs Sample: PJV378

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH3-20

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

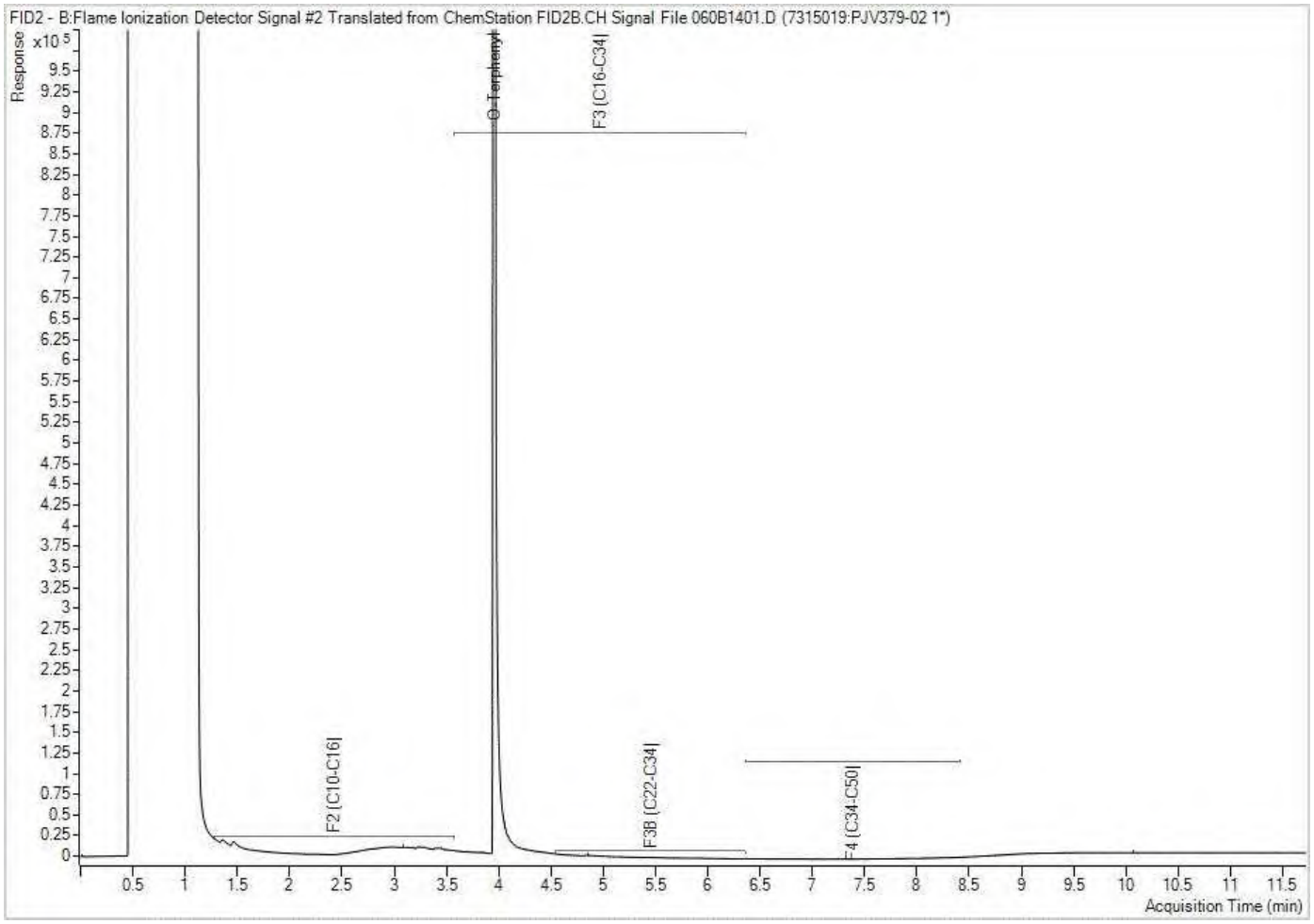


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1A7975
Report Date: 2021/04/26
BV Labs Sample: PJV379

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH4-20

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

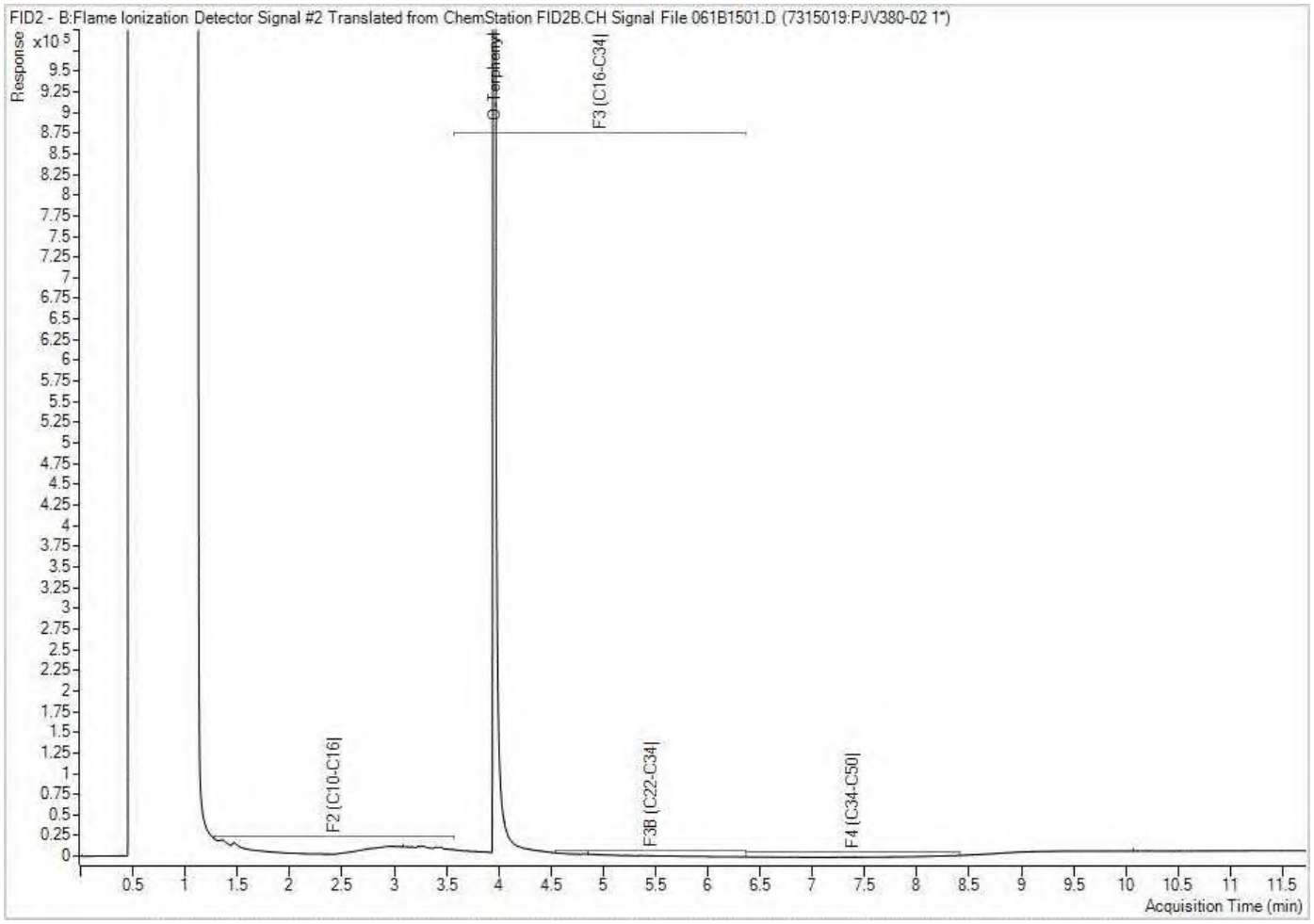


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1A7975
Report Date: 2021/04/26
BV Labs Sample: PJV380

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH5-20

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

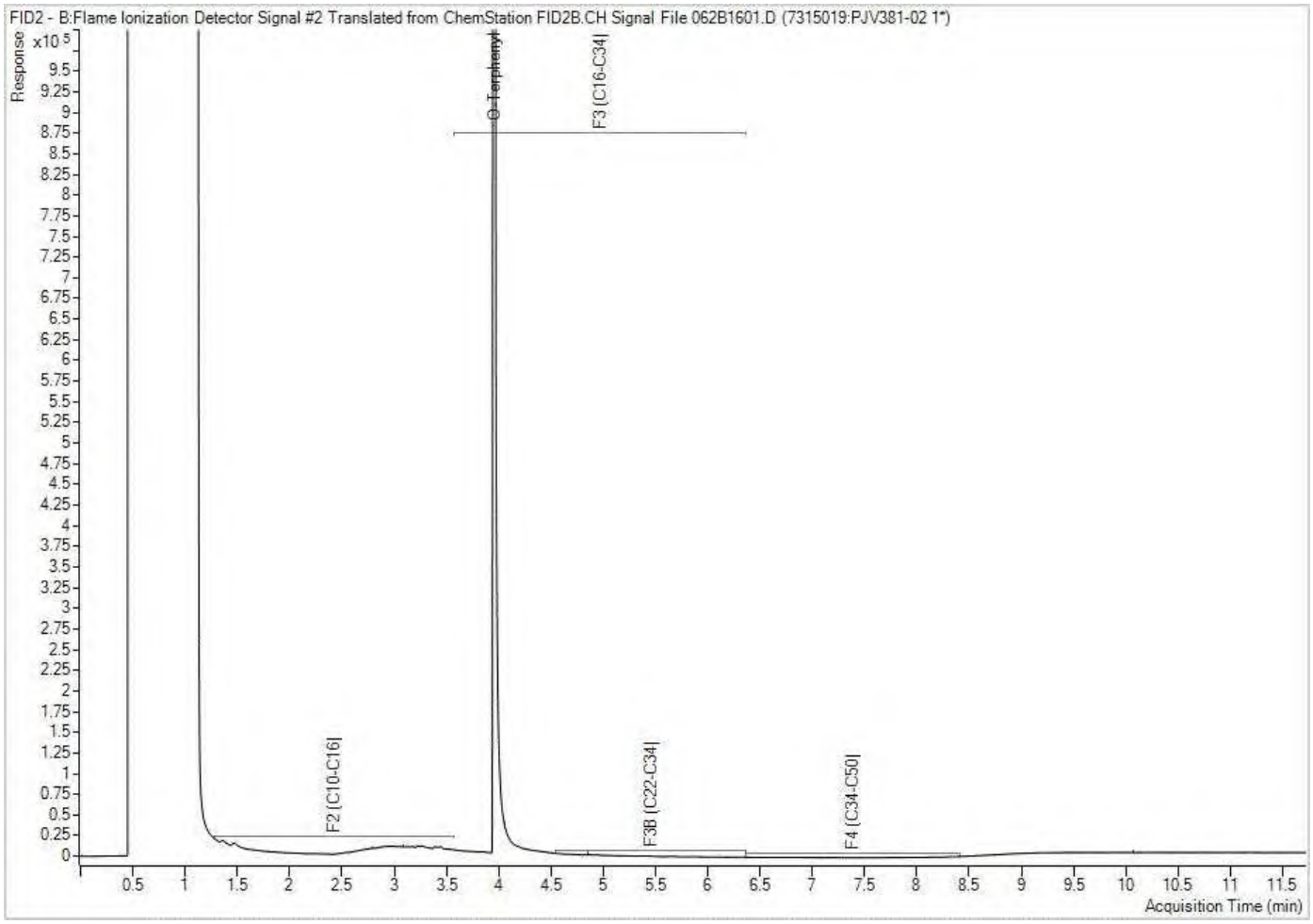


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1A7975
Report Date: 2021/04/26
BV Labs Sample: PJV381

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH2017-10

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: 285722.003
Your C.O.C. #: 832329-10-01

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
Kanata, ON
CANADA K2K 3C7

Report Date: 2022/01/11
Report #: R6957984
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1Y3876
Received: 2021/12/08, 14:28

Sample Matrix: Ground Water
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
1,3-Dichloropropene Sum (1)	8	N/A	2021/12/16		EPA 8260C m
Chloride by Automated Colourimetry (1)	1	N/A	2021/12/14	CAM SOP-00463	SM 23 4500-Cl E m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	9	2021/12/13	2021/12/14	CAM SOP-00316	CCME PHC-CWS m
Dissolved Metals Analysis by ICP (1)	1	2021/12/16	2022/01/11	CAM SOP-00408	EPA 6010D m
Volatile Organic Compounds and F1 PHCs (1)	7	N/A	2021/12/15	CAM SOP-00230	EPA 8260C m
Volatile Organic Compounds and F1 PHCs (1)	1	N/A	2021/12/16	CAM SOP-00230	EPA 8260C m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8
(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following “Alberta Environment’s Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003”. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1

Your Project #: 285722.003
Your C.O.C. #: 832329-10-01

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
Kanata, ON
CANADA K2K 3C7

Report Date: 2022/01/11
Report #: R6957984
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1Y3876
Received: 2021/12/08, 14:28
Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: Antonella.Brasil@bureauveritas.com
Phone# (905)817-5817
==========
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		RHL821			
Sampling Date		2021/11/30			
COC Number		832329-10-01			
	UNITS	BHMW124	RDL	MDL	QC Batch
Inorganics					
Dissolved Chloride (Cl-)	mg/L	3100	50	15	7723363

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (GROUND WATER)

Bureau Veritas ID		RHL821			
Sampling Date		2021/11/30			
COC Number		832329-10-01			
	UNITS	**BHMW124**	**RDL**	**MDL**	**QC Batch**
Metals					
Dissolved Sodium (Na)	ug/L	1600000	5000	N/A	7733717

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

VOLATILE ORGANICS BY GC/MS (GROUND WATER)

Bureau Veritas ID		RHL818	RHL819	RHL820	RHL820	RHL822			
Sampling Date		2021/12/02	2021/11/30	2021/11/30	2021/11/30	2021/11/30			
COC Number		832329-10-01	832329-10-01	832329-10-01	832329-10-01	832329-10-01			
	UNITS	BHMW120	BHMW116	DUP301	DUP301 Lab-Dup	BHMW110	RDL	MDL	QC Batch
Volatile Organics									
Acetone (2-Propanone)	ug/L	<10	<10	<10	<10	17	10	1.0	7724026
Benzene	ug/L	<0.17	0.35	<0.17	<0.17	<0.17	0.17	0.020	7724026
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	0.10	7724026
Bromomethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.10	7724026
Carbon Tetrachloride	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
Chlorobenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.010	7724026
Chloroform	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
Dibromochloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	0.050	7724026
1,1-Dichloroethane	ug/L	<0.20	0.62	<0.20	<0.20	<0.20	0.20	0.050	7724026
1,2-Dichloroethane	ug/L	3.6	22	<0.50	<0.50	<0.50	0.50	0.020	7724026
1,1-Dichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,2-Dichloropropane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	0.050	7724026
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	0.050	7724026
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.010	7724026
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
Hexane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	0.10	7724026
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	0.10	7724026
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	<10	<10	12	10	0.50	7724026
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	0.10	7724026
Methyl t-butyl ether (MTBE)	ug/L	38	130	<0.50	<0.50	<0.50	0.50	0.050	7724026
Styrene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
Tetrachloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
Toluene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.010	7724026
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

VOLATILE ORGANICS BY GC/MS (GROUND WATER)

Bureau Veritas ID		RHL818	RHL819	RHL820	RHL820	RHL822			
Sampling Date		2021/12/02	2021/11/30	2021/11/30	2021/11/30	2021/11/30			
COC Number		832329-10-01	832329-10-01	832329-10-01	832329-10-01	832329-10-01			
	UNITS	BHMW120	BHMW116	DUP301	DUP301 Lab-Dup	BHMW110	RDL	MDL	QC Batch
Trichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.10	7724026
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
p+m-Xylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.010	7724026
o-Xylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.010	7724026
Total Xylenes	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.010	7724026
F1 (C6-C10)	ug/L	<25	<25	<25	<25	28	25	20	7724026
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	<25	28	25	20	7724026
Surrogate Recovery (%)									
4-Bromofluorobenzene	%	77	73	77	74	84			7724026
D4-1,2-Dichloroethane	%	103	106	106	109	106			7724026
D8-Toluene	%	100	103	101	100	99			7724026

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

VOLATILE ORGANICS BY GC/MS (GROUND WATER)

Bureau Veritas ID		RHL823	RHL824	RHL825	RHL826			
Sampling Date		2021/11/30	2021/11/30	2021/11/30	2021/11/30			
COC Number		832329-10-01	832329-10-01	832329-10-01	832329-10-01			
	UNITS	BHMW119	BHMW122	BHMW108	BHMW115	RDL	MDL	QC Batch
Volatile Organics								
Acetone (2-Propanone)	ug/L	<10	<10	15	<10	10	1.0	7724026
Benzene	ug/L	0.27	<0.17	74	14	0.17	0.020	7724026
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	0.10	7724026
Bromomethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.10	7724026
Carbon Tetrachloride	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
Chlorobenzene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	0.010	7724026
Chloroform	ug/L	0.53	<0.20	<0.20	<0.20	0.20	0.050	7724026
Dibromochloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	0.050	7724026
1,1-Dichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
1,2-Dichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.020	7724026
1,1-Dichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,2-Dichloropropane	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	<0.30	<0.30	0.30	0.050	7724026
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	<0.40	<0.40	0.40	0.050	7724026
Ethylbenzene	ug/L	0.36	<0.20	39	1.2	0.20	0.010	7724026
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
Hexane	ug/L	<1.0	<1.0	3.3	<1.0	1.0	0.10	7724026
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	<2.0	<2.0	2.0	0.10	7724026
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	<10	<10	10	0.50	7724026
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	89	<5.0	5.0	0.10	7724026
Methyl t-butyl ether (MTBE)	ug/L	7.1	<0.50	<0.50	10	0.50	0.050	7724026
Styrene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
Tetrachloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
Toluene	ug/L	0.27	<0.20	19	0.98	0.20	0.010	7724026
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
Trichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

VOLATILE ORGANICS BY GC/MS (GROUND WATER)

Bureau Veritas ID		RHL823	RHL824	RHL825	RHL826			
Sampling Date		2021/11/30	2021/11/30	2021/11/30	2021/11/30			
COC Number		832329-10-01	832329-10-01	832329-10-01	832329-10-01			
	UNITS	BHMW119	BHMW122	BHMW108	BHMW115	RDL	MDL	QC Batch
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.10	7724026
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
p+m-Xylene	ug/L	0.78	<0.20	100	0.74	0.20	0.010	7724026
o-Xylene	ug/L	0.21	<0.20	21	<0.20	0.20	0.010	7724026
Total Xylenes	ug/L	0.99	<0.20	120	0.74	0.20	0.010	7724026
F1 (C6-C10)	ug/L	<25	<25	730	54	25	20	7724026
F1 (C6-C10) - BTEX	ug/L	<25	<25	480	37	25	20	7724026
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	77	76	104	80			7724026
D4-1,2-Dichloroethane	%	105	108	101	102			7724026
D8-Toluene	%	101	101	112	102			7724026

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (GROUND WATER)

Bureau Veritas ID		RHL818	RHL819				RHL819			
Sampling Date		2021/12/02	2021/11/30				2021/11/30			
COC Number		832329-10-01	832329-10-01				832329-10-01			
	UNITS	BHMW120	BHMW116	RDL	MDL	QC Batch	BHMW116 Lab-Dup	RDL	MDL	QC Batch
Calculated Parameters										
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	0.50	0.50	7716316				
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	100	50	7722846	<100	100	50	7722846
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	200	70	7722846	<200	200	70	7722846
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	200	50	7722846	<200	200	50	7722846
Reached Baseline at C50	ug/L	Yes	Yes			7722846	Yes			7722846
Surrogate Recovery (%)										
o-Terphenyl	%	108	107			7722846	109			7722846

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas ID		RHL820	RHL822	RHL823	RHL824	RHL825			
Sampling Date		2021/11/30	2021/11/30	2021/11/30	2021/11/30	2021/11/30			
COC Number		832329-10-01	832329-10-01	832329-10-01	832329-10-01	832329-10-01			
	UNITS	DUP301	BHMW110	BHMW119	BHMW122	BHMW108	RDL	MDL	QC Batch
Calculated Parameters									
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.50	7716316
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	<100	110	100	50	7722846
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	<200	<200	<200	200	70	7722846
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	<200	<200	<200	200	50	7722846
Reached Baseline at C50	ug/L	Yes	Yes	Yes	Yes	Yes			7722846
Surrogate Recovery (%)									
o-Terphenyl	%	106	107	109	108	106			7722846

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (GROUND WATER)

Bureau Veritas ID		RHL826				RHL827			
Sampling Date		2021/11/30				2021/11/30			
COC Number		832329-10-01				832329-10-01			
	UNITS	BHMW115	RDL	MDL	QC Batch	TRIP BLANK	RDL	MDL	QC Batch
Calculated Parameters									
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	0.50	7716316				
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/L	330	100	50	7722846	<100	100	50	7722846
F3 (C16-C34 Hydrocarbons)	ug/L	28000	200	70	7722846	<200	200	70	7722846
F4 (C34-C50 Hydrocarbons)	ug/L	3600	200	50	7722846	<200	200	50	7722846
Reached Baseline at C50	ug/L	Yes			7722846	Yes			7722846
Surrogate Recovery (%)									
o-Terphenyl	%	107			7722846	106			7722846

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

TEST SUMMARY

Bureau Veritas ID: RHL818 **Collected:** 2021/12/02
Sample ID: BHMW120 **Shipped:**
Matrix: Ground Water **Received:** 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7716316	N/A	2021/12/16	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7722846	2021/12/13	2021/12/14	Anna Stuglik-Rolland
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7724026	N/A	2021/12/16	Xueming Jiang

Bureau Veritas ID: RHL819 **Collected:** 2021/11/30
Sample ID: BHMW116 **Shipped:**
Matrix: Ground Water **Received:** 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7716316	N/A	2021/12/16	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7722846	2021/12/13	2021/12/14	Anna Stuglik-Rolland
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7724026	N/A	2021/12/15	Xueming Jiang

Bureau Veritas ID: RHL819 Dup **Collected:** 2021/11/30
Sample ID: BHMW116 **Shipped:**
Matrix: Ground Water **Received:** 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7722846	2021/12/13	2021/12/14	Anna Stuglik-Rolland

Bureau Veritas ID: RHL820 **Collected:** 2021/11/30
Sample ID: DUP301 **Shipped:**
Matrix: Ground Water **Received:** 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7716316	N/A	2021/12/16	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7722846	2021/12/13	2021/12/14	Anna Stuglik-Rolland
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7724026	N/A	2021/12/15	Xueming Jiang

Bureau Veritas ID: RHL820 Dup **Collected:** 2021/11/30
Sample ID: DUP301 **Shipped:**
Matrix: Ground Water **Received:** 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7724026	N/A	2021/12/15	Xueming Jiang

Bureau Veritas ID: RHL821 **Collected:** 2021/11/30
Sample ID: BHMW124 **Shipped:**
Matrix: Ground Water **Received:** 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	7723363	N/A	2021/12/14	Alina Dobreanu
Dissolved Metals Analysis by ICP	ICP	7733717	2021/12/16	2022/01/11	Suban Kanapathippllai

TEST SUMMARY

Bureau Veritas ID: RHL822 **Collected:** 2021/11/30
Sample ID: BHMW110 **Shipped:**
Matrix: Ground Water **Received:** 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7716316	N/A	2021/12/16	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7722846	2021/12/13	2021/12/14	Anna Stuglik-Rolland
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7724026	N/A	2021/12/15	Xueming Jiang

Bureau Veritas ID: RHL823 **Collected:** 2021/11/30
Sample ID: BHMW119 **Shipped:**
Matrix: Ground Water **Received:** 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7716316	N/A	2021/12/16	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7722846	2021/12/13	2021/12/14	Anna Stuglik-Rolland
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7724026	N/A	2021/12/15	Xueming Jiang

Bureau Veritas ID: RHL824 **Collected:** 2021/11/30
Sample ID: BHMW122 **Shipped:**
Matrix: Ground Water **Received:** 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7716316	N/A	2021/12/16	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7722846	2021/12/13	2021/12/14	Anna Stuglik-Rolland
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7724026	N/A	2021/12/15	Xueming Jiang

Bureau Veritas ID: RHL825 **Collected:** 2021/11/30
Sample ID: BHMW108 **Shipped:**
Matrix: Ground Water **Received:** 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7716316	N/A	2021/12/16	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7722846	2021/12/13	2021/12/14	Anna Stuglik-Rolland
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7724026	N/A	2021/12/15	Xueming Jiang

Bureau Veritas ID: RHL826 **Collected:** 2021/11/30
Sample ID: BHMW115 **Shipped:**
Matrix: Ground Water **Received:** 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7716316	N/A	2021/12/16	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7722846	2021/12/13	2021/12/14	Anna Stuglik-Rolland
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7724026	N/A	2021/12/15	Xueming Jiang

Bureau Veritas ID: RHL827 **Collected:** 2021/11/30
Sample ID: TRIP BLANK **Shipped:**
Matrix: Ground Water **Received:** 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7722846	2021/12/13	2021/12/14	Anna Stuglik-Rolland

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.7°C

Results relate only to the items tested.

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7722846	AS2	Matrix Spike [RHL818-01]	o-Terphenyl	2021/12/14		109	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/12/14		102	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2021/12/14		104	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2021/12/14		108	%	60 - 130
7722846	AS2	Spiked Blank	o-Terphenyl	2021/12/14		109	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/12/14		101	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2021/12/14		104	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2021/12/14		108	%	60 - 130
7722846	AS2	Method Blank	o-Terphenyl	2021/12/14		106	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/12/14	<100		ug/L	
			F3 (C16-C34 Hydrocarbons)	2021/12/14	<200		ug/L	
			F4 (C34-C50 Hydrocarbons)	2021/12/14	<200		ug/L	
7722846	AS2	RPD [RHL819-01]	F2 (C10-C16 Hydrocarbons)	2021/12/14	NC		%	30
			F3 (C16-C34 Hydrocarbons)	2021/12/14	NC		%	30
			F4 (C34-C50 Hydrocarbons)	2021/12/14	NC		%	30
7723363	ADB	Matrix Spike	Dissolved Chloride (Cl-)	2021/12/14		NC	%	80 - 120
7723363	ADB	Spiked Blank	Dissolved Chloride (Cl-)	2021/12/14		103	%	80 - 120
7723363	ADB	Method Blank	Dissolved Chloride (Cl-)	2021/12/14	<1.0		mg/L	
7723363	ADB	RPD	Dissolved Chloride (Cl-)	2021/12/14	2.3		%	20
7724026	XJI	Matrix Spike [RHL819-02]	4-Bromofluorobenzene	2021/12/15		108	%	70 - 130
			D4-1,2-Dichloroethane	2021/12/15		106	%	70 - 130
			D8-Toluene	2021/12/15		99	%	70 - 130
			Acetone (2-Propanone)	2021/12/15		99	%	60 - 140
			Benzene	2021/12/15		81	%	70 - 130
			Bromodichloromethane	2021/12/15		94	%	70 - 130
			Bromoform	2021/12/15		91	%	70 - 130
			Bromomethane	2021/12/15		91	%	60 - 140
			Carbon Tetrachloride	2021/12/15		88	%	70 - 130
			Chlorobenzene	2021/12/15		90	%	70 - 130
			Chloroform	2021/12/15		90	%	70 - 130
			Dibromochloromethane	2021/12/15		88	%	70 - 130
			1,2-Dichlorobenzene	2021/12/15		90	%	70 - 130
			1,3-Dichlorobenzene	2021/12/15		91	%	70 - 130
			1,4-Dichlorobenzene	2021/12/15		80	%	70 - 130
			Dichlorodifluoromethane (FREON 12)	2021/12/15		82	%	60 - 140
			1,1-Dichloroethane	2021/12/15		88	%	70 - 130
			1,2-Dichloroethane	2021/12/15		92	%	70 - 130
			1,1-Dichloroethylene	2021/12/15		90	%	70 - 130
			cis-1,2-Dichloroethylene	2021/12/15		95	%	70 - 130
			trans-1,2-Dichloroethylene	2021/12/15		92	%	70 - 130
			1,2-Dichloropropane	2021/12/15		90	%	70 - 130
			cis-1,3-Dichloropropene	2021/12/15		94	%	70 - 130
			trans-1,3-Dichloropropene	2021/12/15		102	%	70 - 130
			Ethylbenzene	2021/12/15		81	%	70 - 130
			Ethylene Dibromide	2021/12/15		89	%	70 - 130
			Hexane	2021/12/15		98	%	70 - 130
			Methylene Chloride(Dichloromethane)	2021/12/15		95	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/12/15		107	%	60 - 140
			Methyl Isobutyl Ketone	2021/12/15		103	%	70 - 130
			Methyl t-butyl ether (MTBE)	2021/12/15		NC	%	70 - 130
			Styrene	2021/12/15		75	%	70 - 130
			1,1,1,2-Tetrachloroethane	2021/12/15		88	%	70 - 130
			1,1,2,2-Tetrachloroethane	2021/12/15		92	%	70 - 130
			Tetrachloroethylene	2021/12/15		80	%	70 - 130
			Toluene	2021/12/15		88	%	70 - 130

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,1,1-Trichloroethane	2021/12/15		91	%	70 - 130
			1,1,2-Trichloroethane	2021/12/15		93	%	70 - 130
			Trichloroethylene	2021/12/15		92	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2021/12/15		89	%	70 - 130
			Vinyl Chloride	2021/12/15		90	%	70 - 130
			p+m-Xylene	2021/12/15		87	%	70 - 130
			o-Xylene	2021/12/15		83	%	70 - 130
			F1 (C6-C10)	2021/12/15		72	%	60 - 140
7724026	XJI	Spiked Blank	4-Bromofluorobenzene	2021/12/15		111	%	70 - 130
			D4-1,2-Dichloroethane	2021/12/15		101	%	70 - 130
			D8-Toluene	2021/12/15		101	%	70 - 130
			Acetone (2-Propanone)	2021/12/15		94	%	60 - 140
			Benzene	2021/12/15		85	%	70 - 130
			Bromodichloromethane	2021/12/15		97	%	70 - 130
			Bromoform	2021/12/15		94	%	70 - 130
			Bromomethane	2021/12/15		92	%	60 - 140
			Carbon Tetrachloride	2021/12/15		96	%	70 - 130
			Chlorobenzene	2021/12/15		96	%	70 - 130
			Chloroform	2021/12/15		95	%	70 - 130
			Dibromochloromethane	2021/12/15		91	%	70 - 130
			1,2-Dichlorobenzene	2021/12/15		97	%	70 - 130
			1,3-Dichlorobenzene	2021/12/15		100	%	70 - 130
			1,4-Dichlorobenzene	2021/12/15		90	%	70 - 130
			Dichlorodifluoromethane (FREON 12)	2021/12/15		88	%	60 - 140
			1,1-Dichloroethane	2021/12/15		92	%	70 - 130
			1,2-Dichloroethane	2021/12/15		93	%	70 - 130
			1,1-Dichloroethylene	2021/12/15		96	%	70 - 130
			cis-1,2-Dichloroethylene	2021/12/15		99	%	70 - 130
			trans-1,2-Dichloroethylene	2021/12/15		96	%	70 - 130
			1,2-Dichloropropane	2021/12/15		94	%	70 - 130
			cis-1,3-Dichloropropene	2021/12/15		92	%	70 - 130
			trans-1,3-Dichloropropene	2021/12/15		94	%	70 - 130
			Ethylbenzene	2021/12/15		90	%	70 - 130
			Ethylene Dibromide	2021/12/15		90	%	70 - 130
			Hexane	2021/12/15		103	%	70 - 130
			Methylene Chloride(Dichloromethane)	2021/12/15		97	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/12/15		104	%	60 - 140
			Methyl Isobutyl Ketone	2021/12/15		104	%	70 - 130
			Methyl t-butyl ether (MTBE)	2021/12/15		92	%	70 - 130
			Styrene	2021/12/15		84	%	70 - 130
			1,1,1,2-Tetrachloroethane	2021/12/15		94	%	70 - 130
			1,1,2,2-Tetrachloroethane	2021/12/15		94	%	70 - 130
			Tetrachloroethylene	2021/12/15		88	%	70 - 130
			Toluene	2021/12/15		96	%	70 - 130
			1,1,1-Trichloroethane	2021/12/15		99	%	70 - 130
			1,1,2-Trichloroethane	2021/12/15		95	%	70 - 130
			Trichloroethylene	2021/12/15		100	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2021/12/15		95	%	70 - 130
			Vinyl Chloride	2021/12/15		94	%	70 - 130
			p+m-Xylene	2021/12/15		98	%	70 - 130
			o-Xylene	2021/12/15		94	%	70 - 130
			F1 (C6-C10)	2021/12/15		95	%	60 - 140
7724026	XJI	Method Blank	4-Bromofluorobenzene	2021/12/15		78	%	70 - 130
			D4-1,2-Dichloroethane	2021/12/15		103	%	70 - 130
			D8-Toluene	2021/12/15		102	%	70 - 130

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acetone (2-Propanone)	2021/12/15	<10		ug/L	
			Benzene	2021/12/15	<0.17		ug/L	
			Bromodichloromethane	2021/12/15	<0.50		ug/L	
			Bromoform	2021/12/15	<1.0		ug/L	
			Bromomethane	2021/12/15	<0.50		ug/L	
			Carbon Tetrachloride	2021/12/15	<0.20		ug/L	
			Chlorobenzene	2021/12/15	<0.20		ug/L	
			Chloroform	2021/12/15	<0.20		ug/L	
			Dibromochloromethane	2021/12/15	<0.50		ug/L	
			1,2-Dichlorobenzene	2021/12/15	<0.50		ug/L	
			1,3-Dichlorobenzene	2021/12/15	<0.50		ug/L	
			1,4-Dichlorobenzene	2021/12/15	<0.50		ug/L	
			Dichlorodifluoromethane (FREON 12)	2021/12/15	<1.0		ug/L	
			1,1-Dichloroethane	2021/12/15	<0.20		ug/L	
			1,2-Dichloroethane	2021/12/15	<0.50		ug/L	
			1,1-Dichloroethylene	2021/12/15	<0.20		ug/L	
			cis-1,2-Dichloroethylene	2021/12/15	<0.50		ug/L	
			trans-1,2-Dichloroethylene	2021/12/15	<0.50		ug/L	
			1,2-Dichloropropane	2021/12/15	<0.20		ug/L	
			cis-1,3-Dichloropropene	2021/12/15	<0.30		ug/L	
			trans-1,3-Dichloropropene	2021/12/15	<0.40		ug/L	
			Ethylbenzene	2021/12/15	<0.20		ug/L	
			Ethylene Dibromide	2021/12/15	<0.20		ug/L	
			Hexane	2021/12/15	<1.0		ug/L	
			Methylene Chloride(Dichloromethane)	2021/12/15	<2.0		ug/L	
			Methyl Ethyl Ketone (2-Butanone)	2021/12/15	<10		ug/L	
			Methyl Isobutyl Ketone	2021/12/15	<5.0		ug/L	
			Methyl t-butyl ether (MTBE)	2021/12/15	<0.50		ug/L	
			Styrene	2021/12/15	<0.50		ug/L	
			1,1,1,2-Tetrachloroethane	2021/12/15	<0.50		ug/L	
			1,1,2,2-Tetrachloroethane	2021/12/15	<0.50		ug/L	
			Tetrachloroethylene	2021/12/15	<0.20		ug/L	
			Toluene	2021/12/15	<0.20		ug/L	
			1,1,1-Trichloroethane	2021/12/15	<0.20		ug/L	
			1,1,2-Trichloroethane	2021/12/15	<0.50		ug/L	
			Trichloroethylene	2021/12/15	<0.20		ug/L	
			Trichlorofluoromethane (FREON 11)	2021/12/15	<0.50		ug/L	
			Vinyl Chloride	2021/12/15	<0.20		ug/L	
			p+m-Xylene	2021/12/15	<0.20		ug/L	
			o-Xylene	2021/12/15	<0.20		ug/L	
			Total Xylenes	2021/12/15	<0.20		ug/L	
			F1 (C6-C10)	2021/12/15	<25		ug/L	
			F1 (C6-C10) - BTEX	2021/12/15	<25		ug/L	
7724026	XJI	RPD [RHL820-02]	Acetone (2-Propanone)	2021/12/15	NC		%	30
			Benzene	2021/12/15	NC		%	30
			Bromodichloromethane	2021/12/15	NC		%	30
			Bromoform	2021/12/15	NC		%	30
			Bromomethane	2021/12/15	NC		%	30
			Carbon Tetrachloride	2021/12/15	NC		%	30
			Chlorobenzene	2021/12/15	NC		%	30
			Chloroform	2021/12/15	NC		%	30
			Dibromochloromethane	2021/12/15	NC		%	30
			1,2-Dichlorobenzene	2021/12/15	NC		%	30
			1,3-Dichlorobenzene	2021/12/15	NC		%	30
			1,4-Dichlorobenzene	2021/12/15	NC		%	30

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dichlorodifluoromethane (FREON 12)	2021/12/15	NC		%	30
			1,1-Dichloroethane	2021/12/15	NC		%	30
			1,2-Dichloroethane	2021/12/15	NC		%	30
			1,1-Dichloroethylene	2021/12/15	NC		%	30
			cis-1,2-Dichloroethylene	2021/12/15	NC		%	30
			trans-1,2-Dichloroethylene	2021/12/15	NC		%	30
			1,2-Dichloropropane	2021/12/15	NC		%	30
			cis-1,3-Dichloropropene	2021/12/15	NC		%	30
			trans-1,3-Dichloropropene	2021/12/15	NC		%	30
			Ethylbenzene	2021/12/15	NC		%	30
			Ethylene Dibromide	2021/12/15	NC		%	30
			Hexane	2021/12/15	NC		%	30
			Methylene Chloride(Dichloromethane)	2021/12/15	NC		%	30
			Methyl Ethyl Ketone (2-Butanone)	2021/12/15	NC		%	30
			Methyl Isobutyl Ketone	2021/12/15	NC		%	30
			Methyl t-butyl ether (MTBE)	2021/12/15	NC		%	30
			Styrene	2021/12/15	NC		%	30
			1,1,1,2-Tetrachloroethane	2021/12/15	NC		%	30
			1,1,2,2-Tetrachloroethane	2021/12/15	NC		%	30
			Tetrachloroethylene	2021/12/15	NC		%	30
			Toluene	2021/12/15	NC		%	30
			1,1,1-Trichloroethane	2021/12/15	NC		%	30
			1,1,2-Trichloroethane	2021/12/15	NC		%	30
			Trichloroethylene	2021/12/15	NC		%	30
			Trichlorofluoromethane (FREON 11)	2021/12/15	NC		%	30
			Vinyl Chloride	2021/12/15	NC		%	30
			p+m-Xylene	2021/12/15	NC		%	30
			o-Xylene	2021/12/15	NC		%	30
			Total Xylenes	2021/12/15	NC		%	30
			F1 (C6-C10)	2021/12/15	NC		%	30
			F1 (C6-C10) - BTEX	2021/12/15	NC		%	30
7733717	SUK	Spiked Blank	Dissolved Sodium (Na)	2022/01/11		99	%	80 - 120
7733717	SUK	Method Blank	Dissolved Sodium (Na)	2022/01/11	<500		ug/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Brad Newman, B.Sc., C.Chem., Scientific Service Specialist

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

08-Dec-21 14:28
Antonella Brasil
C1Y3876

KTN ENV-819

Presence of Visible Particulate/Sediment

Maxxam Analytics
CAM FCD-01013/5

When there is >1cm of visible particulate/sediment, the amount will be recorded in the field below

		Bottle Types																													
		Inorganics						Organics											Hydrocarbons							Volatiles				Other	
	Sample ID	All	CrVI	CN	General	Hg	Metals (Diss.)	Organic 1 of 2	Organic 2 of 2	PCB 1 of 2	PCB 2 of 2	Pest/ Herb 1 of 2	Pest/ Herb 2 of 2	SVOC/ ABN 1 of 2	SVOC/ ABN 2 of 2	PAH 1 of 2	PAH 2 of 2	Dioxin /Furan	F1 Vial 1	F1 Vial 2	F1 Vial 3	F1 Vial 4	F2-F4 1 of 2	F2-F4 2 of 2	F4G	VOC Vial 1	VOC Vial 2	VOC Vial 3	VOC Vial 4		
1	BHMW120	TS																													
2	BHMW116	TS																													
3	DUP 301	TS																													
4	MW110	P																													
5	MW119	TS																													
6	MW102	TS																													
7	MW108	TS																													
8	MW115	TS																													
9																															
10																															

Comments:

Legend:	
P	Suspended Particulate
TS	Trace Settled Sediment (just covers bottom of container or less)
S	Sediment greater than (>) Trace, but less than (<) 1 cm

Recorded By: (signature/print) Z VITRINA

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.bvlabs.com

RECEIVED IN OTTAWA

CHAIN

08-Dec-21 14:28
Antonella Brasil
C1Y3876
KTN ENV-819
C#832329-10-01
Antonella Brasil

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#982 Pinchin Ltd	Company Name:		Quotation #:	A70927
Attention:	Accounts Payable	Attention:	Matt, Ryan, Mike	P.O. #:	
Address:	1 Hines Road Suite 200	Address:		Project:	~~[illegible]~~ 285722.003
	Kanata ON K2K 3C7			Project Name:	
Tel:	(613) 592-3387 Fax: (613) 592-5897	Tel:	Fax:	Site #:	
Email:	ap@pinchin.com	Email:	mkosiw@Pinchin.com, rlaronde@pinchin.com; mryan@	Sampled By:	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☒ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☒ Coarse ☒ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Reg 406 Table ___ ☐ Other ___

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required: Please provide advance notice for rush projects

Regular (Standard) TAT: ☐
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O Reg 153 Metals & Inorganics Pkg (Soil)	O Reg 153 VOCs by HS & F1-F4 (Soil)	O Reg 153 PCBs (Soil)	O Reg 153 PAHs (Soil)	O Reg 153 Semivolatiles Package (Soil)	Acid Extractables by GC/MS	O Reg 153 OC Pesticides (Soil)	Sodium	Chloride		# of Bottles	Comments
1		BHMW120	Dec 2 2021	Am	GW			X									4	PHCs F1-F4 +
2		BHMW116	Nov 30 2021	Am				X									4	VOCs
3		Dup 301						X									4	
4		BHMW124												X	X		2	Sodium Chloride
5		BHMW110						X									4	PHCs VOCs
6		BHMW119		Pm				X									4	
7		BHMW122						X									4	
8		BHMW108						X									4	
9		BHMW115						X									4	
10		Trip Blank						X									4	VOCs/F1 for Trip Blank

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature] Mike Kosiw	Dec 8/2021	AM	A. Santiago BVA	21/12/08	14:28	
			[signature]	21/12/08	08:00	

Time Sensitive

Laboratory Use Only

Temperature (°C) on Recei	Custody Seal	Yes	No
6, 4, 4 ice	Present	✓	
	Intact	✓	

5/5/5

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

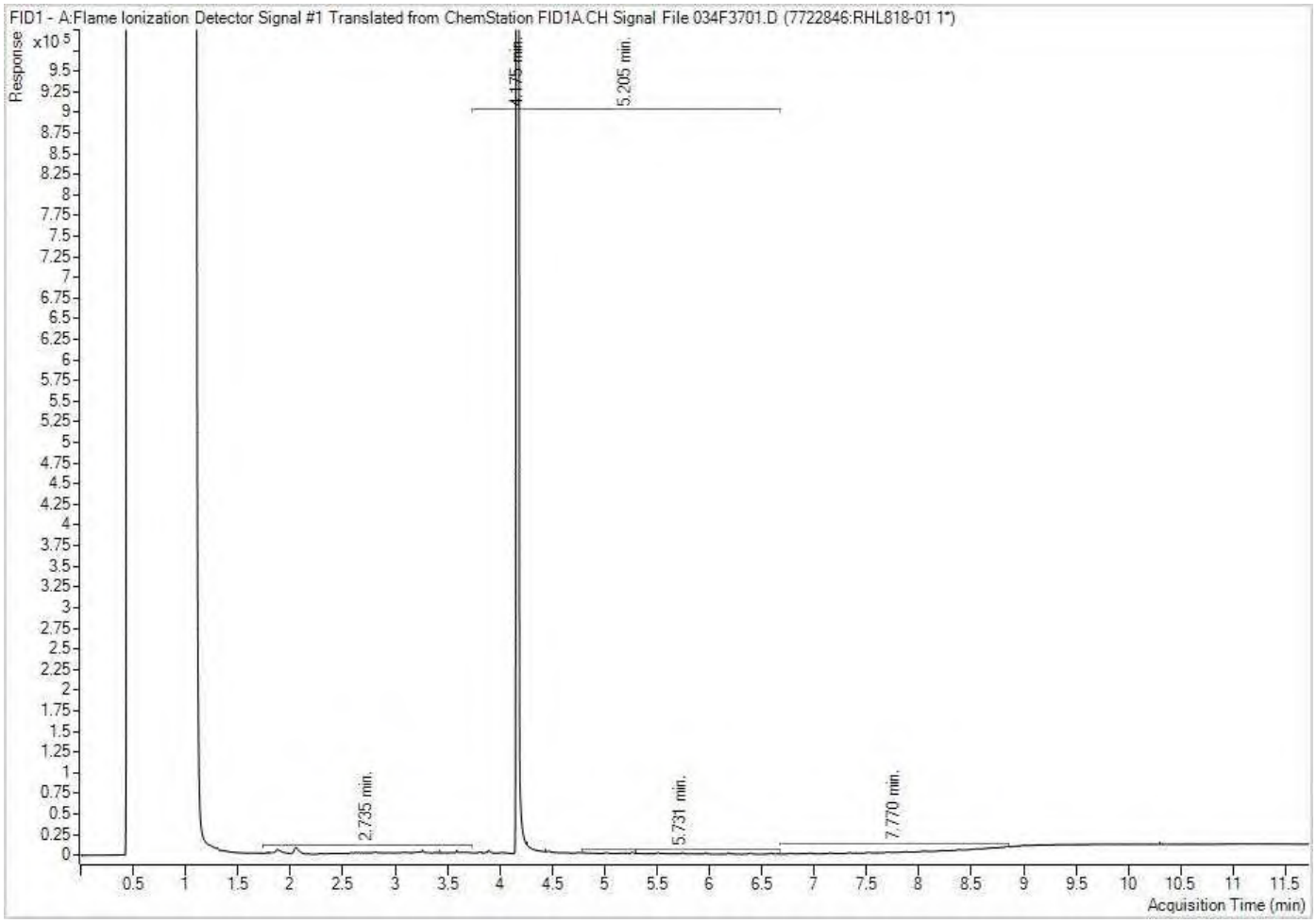
SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

Bureau Veritas Job #: C1Y3876
Report Date: 2022/01/11
Bureau Veritas Sample: RHL818

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW120

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

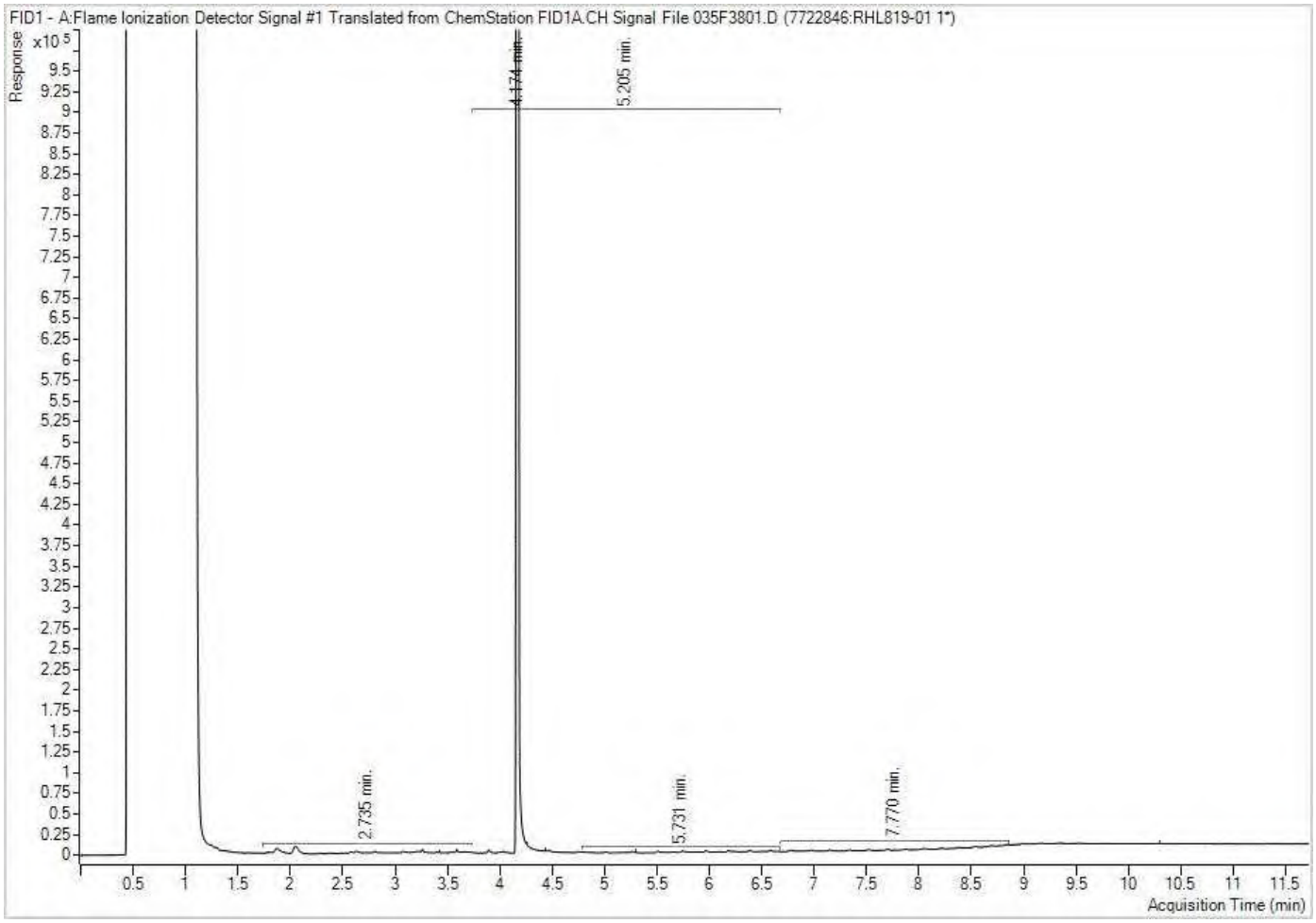


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C1Y3876
Report Date: 2022/01/11
Bureau Veritas Sample: RHL819

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW116

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

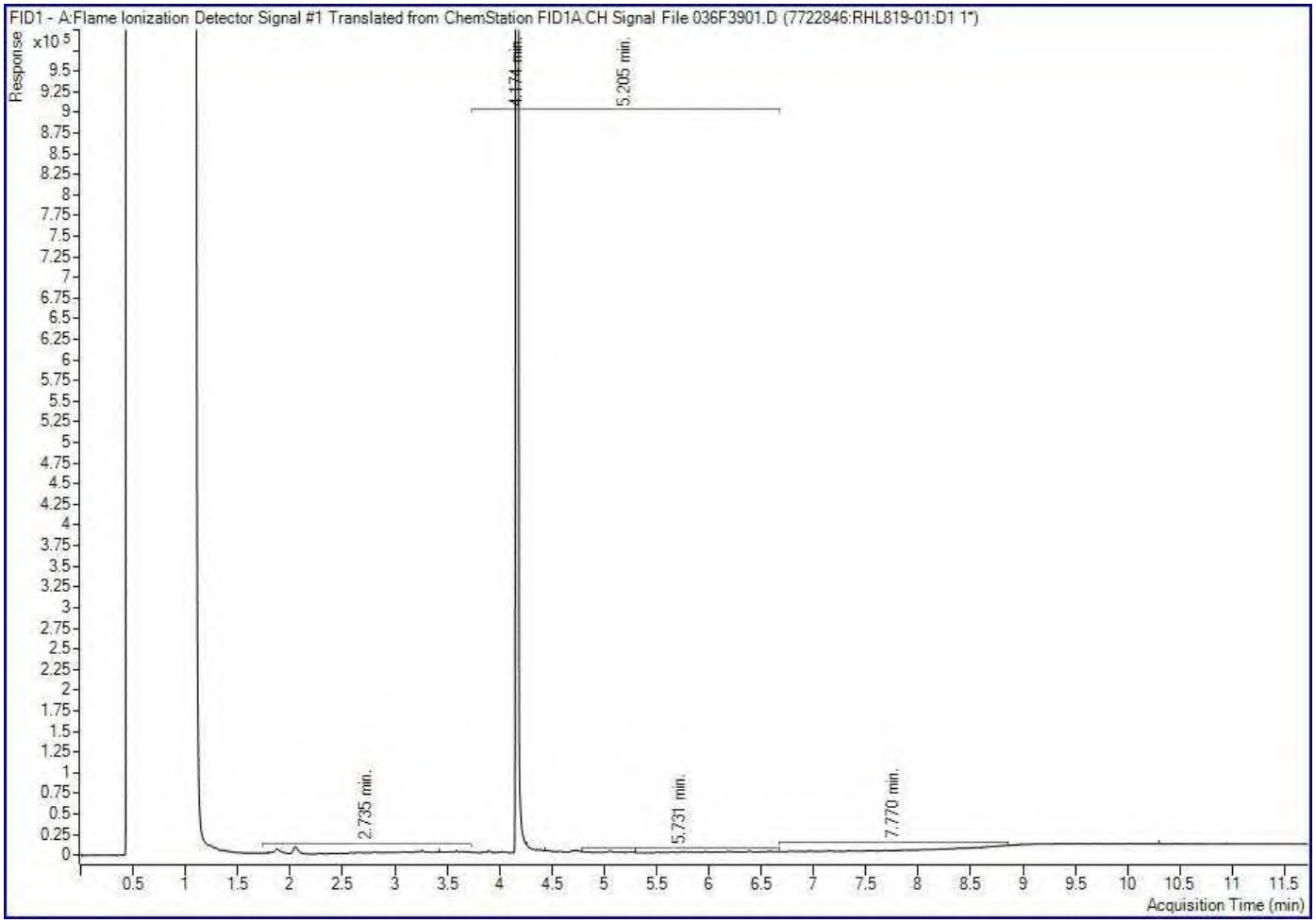


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C1Y3876
Report Date: 2022/01/11
Bureau Veritas Sample: RHL819 Lab-Dup

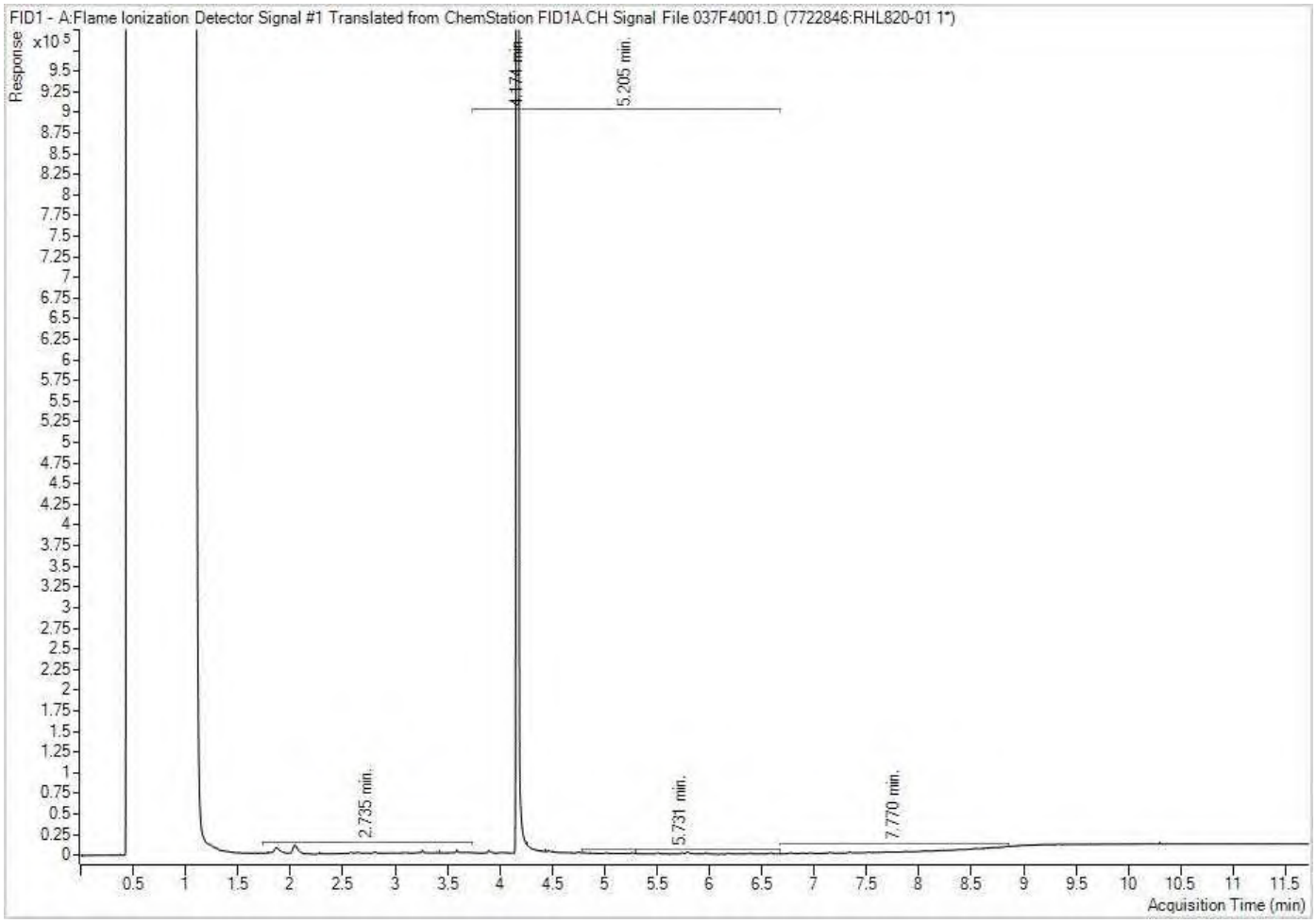
Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW116

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



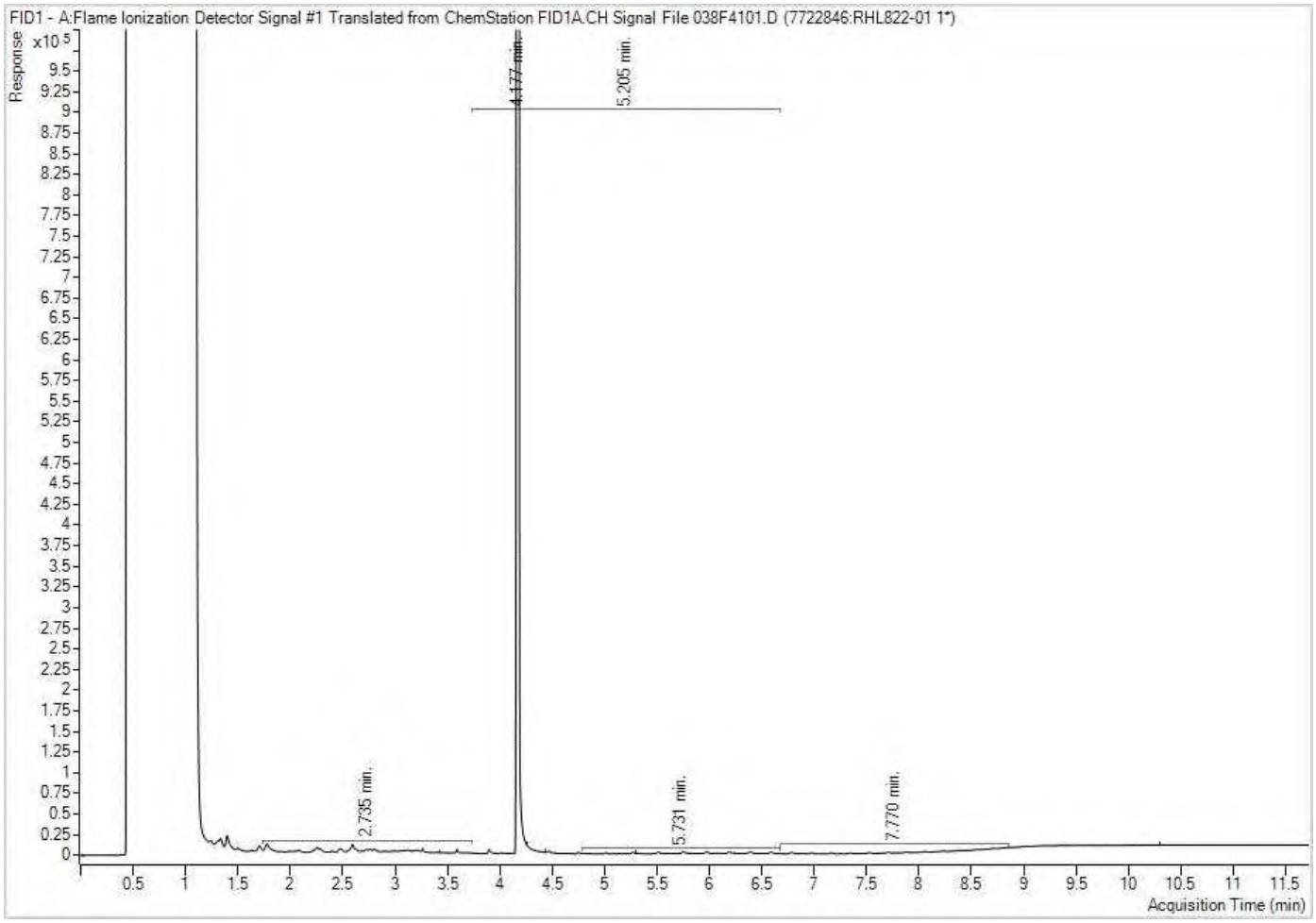
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



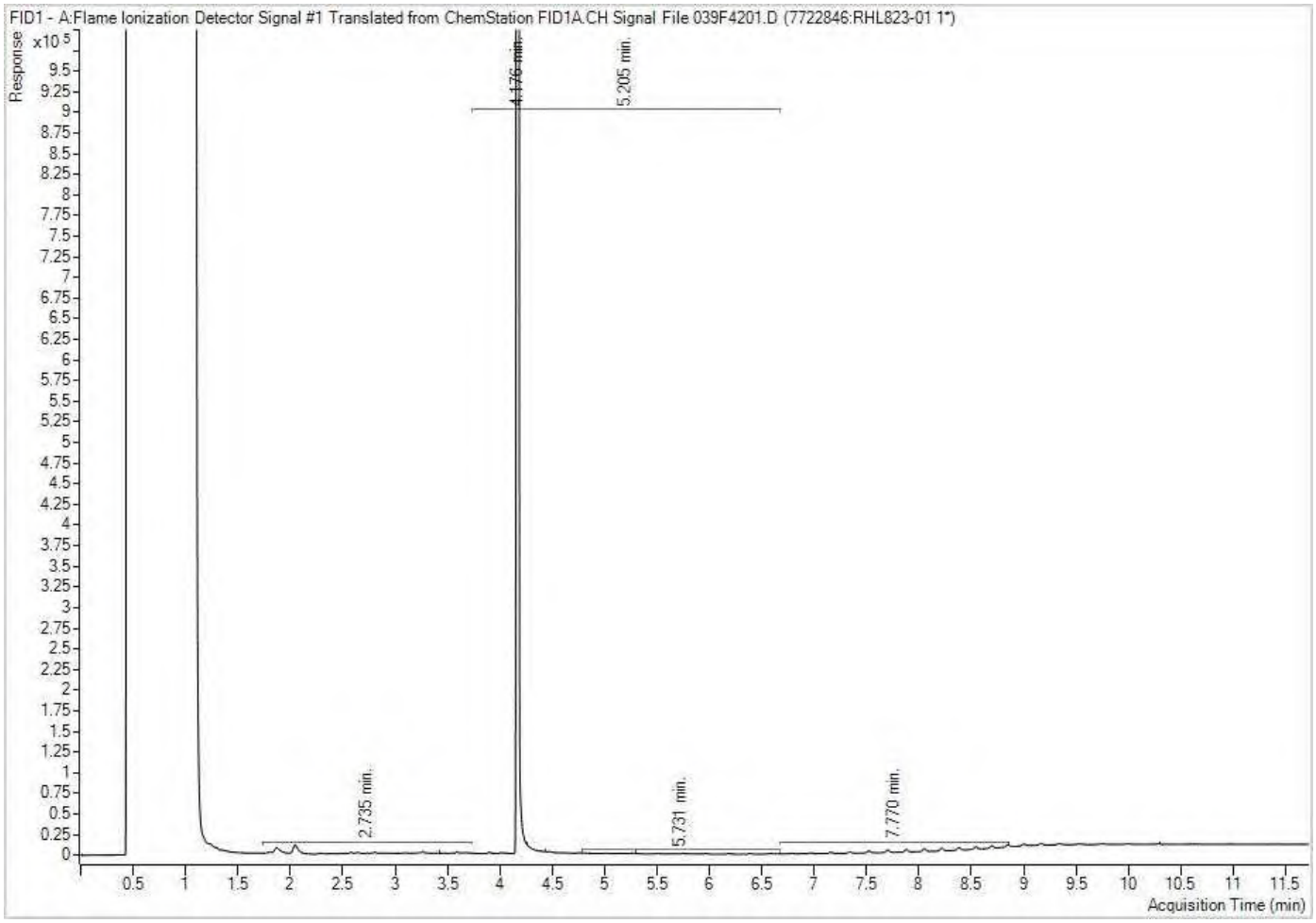
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



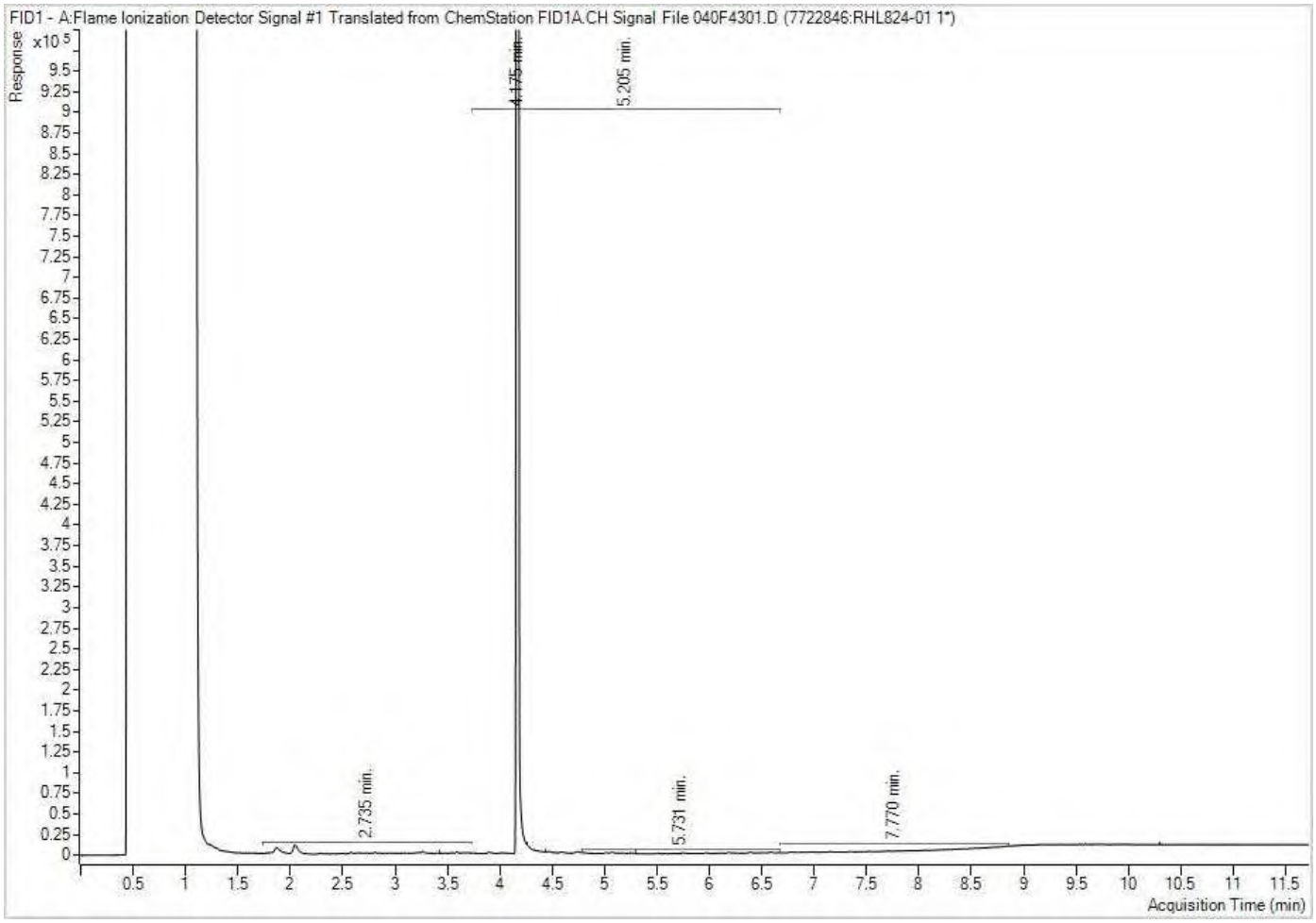
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

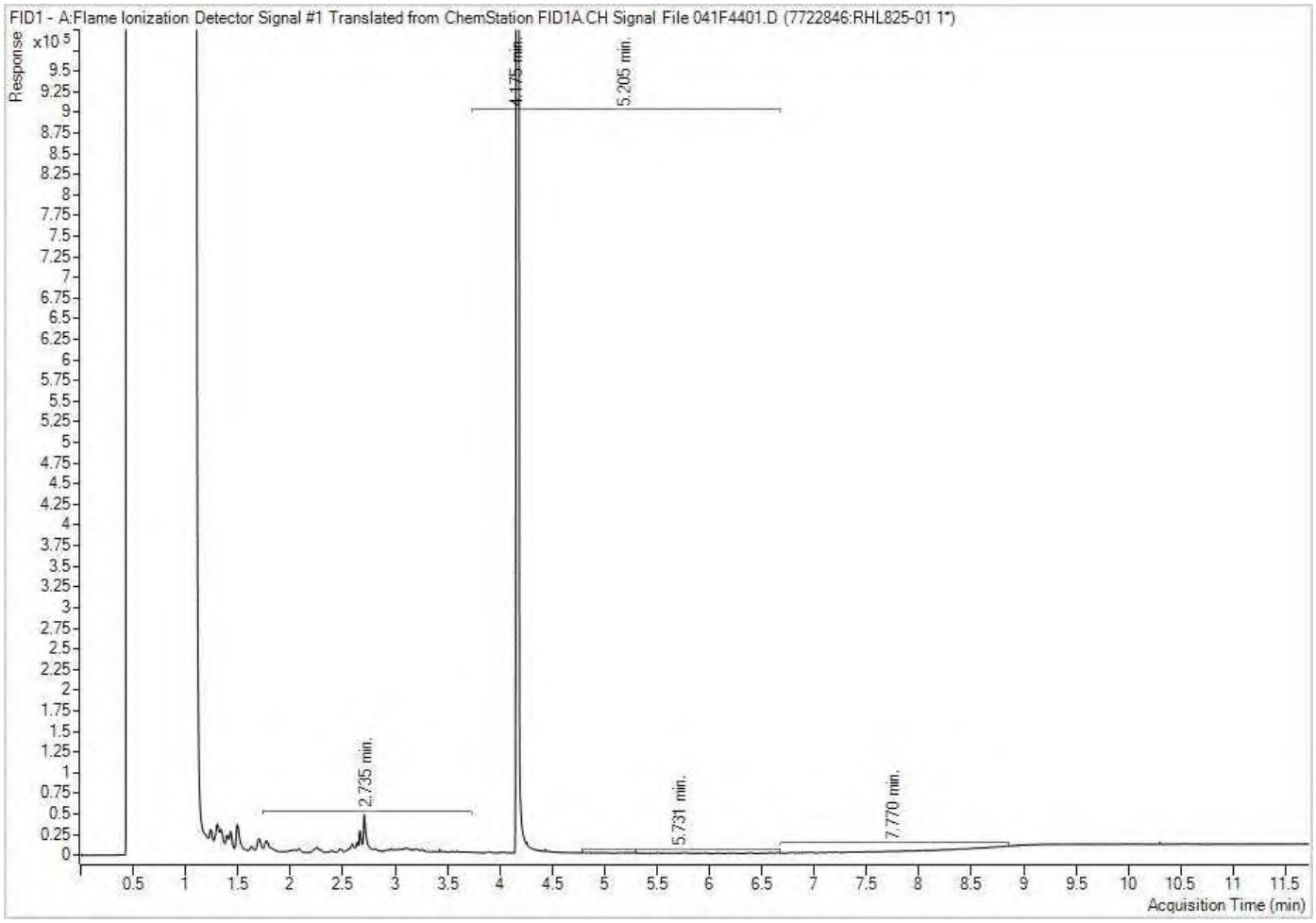


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C1Y3876
Report Date: 2022/01/11
Bureau Veritas Sample: RHL825

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW108

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

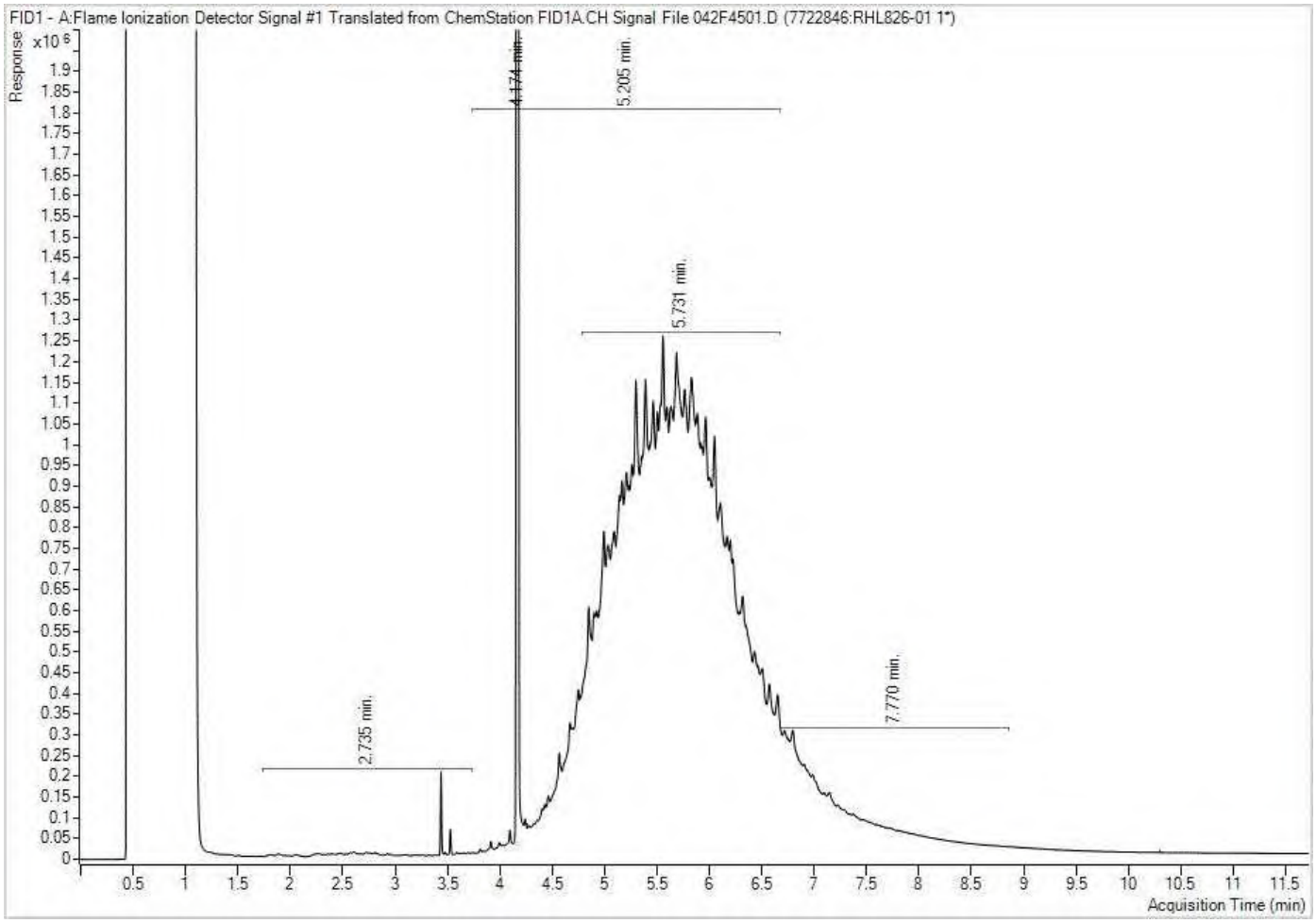


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C1Y3876
Report Date: 2022/01/11
Bureau Veritas Sample: RHL826

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW115

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

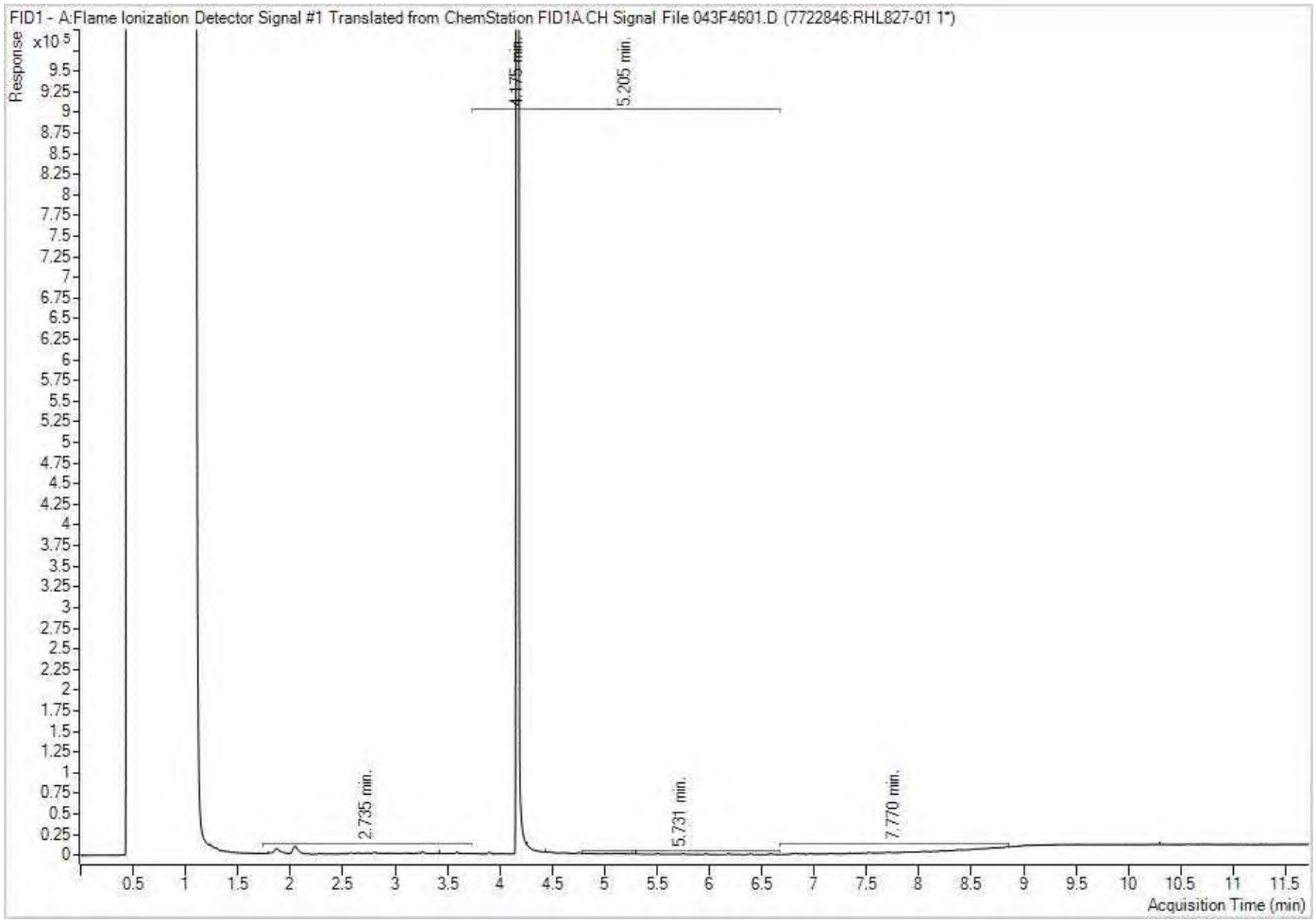


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C1Y3876
Report Date: 2022/01/11
Bureau Veritas Sample: RHL827

Pinchin Ltd
Client Project #: 285722.003
Client ID: TRIP BLANK

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: 285722.003
Your C.O.C. #: 832329-02-01

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
Kanata, ON
CANADA K2K 3C7

Report Date: 2021/06/24
Report #: R6690670
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1G6182
Received: 2021/06/16, 14:25

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Methylnaphthalene Sum (1)	2	N/A	2021/06/23	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	2	N/A	2021/06/23		EPA 8260C m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	2	2021/06/21	2021/06/22	CAM SOP-00316	CCME PHC-CWS m
PAH Compounds in Water by GC/MS (SIM) (1)	2	2021/06/21	2021/06/22	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds and F1 PHCs (1)	2	N/A	2021/06/22	CAM SOP-00230	EPA 8260C m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga
(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following “Alberta Environment’s Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003”. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Your Project #: 285722.003
Your C.O.C. #: 832329-02-01

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
Kanata, ON
CANADA K2K 3C7

Report Date: 2021/06/24
Report #: R6690670
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1G6182
Received: 2021/06/16, 14:25

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: Antonella.Brasil@bureauveritas.com
Phone# (905)817-5817
==========
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

O.REG 153 PAHS (WATER)

BV Labs ID		PVY848	PVY849		
Sampling Date		2021/06/15	2021/06/15		
COC Number		832329-02-01	832329-02-01		
	UNITS	BHMW111	BHMW119	RDL	QC Batch
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/L	<0.071	<0.071	0.071	7413210
Polyaromatic Hydrocarbons					
Acenaphthene	ug/L	<0.050	<0.050	0.050	7420170
Acenaphthylene	ug/L	<0.050	<0.050	0.050	7420170
Anthracene	ug/L	<0.050	<0.050	0.050	7420170
Benzo(a)anthracene	ug/L	<0.050	<0.050	0.050	7420170
Benzo(a)pyrene	ug/L	<0.0090	<0.0090	0.0090	7420170
Benzo(b/j)fluoranthene	ug/L	<0.050	<0.050	0.050	7420170
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	0.050	7420170
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	0.050	7420170
Chrysene	ug/L	<0.050	<0.050	0.050	7420170
Dibenzo(a,h)anthracene	ug/L	<0.050	<0.050	0.050	7420170
Fluoranthene	ug/L	<0.050	<0.050	0.050	7420170
Fluorene	ug/L	<0.050	<0.050	0.050	7420170
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	0.050	7420170
1-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	7420170
2-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	7420170
Naphthalene	ug/L	<0.050	<0.050	0.050	7420170
Phenanthrene	ug/L	<0.030	<0.030	0.030	7420170
Pyrene	ug/L	<0.050	<0.050	0.050	7420170
Surrogate Recovery (%)					
D10-Anthracene	%	128	111		7420170
D14-Terphenyl (FS)	%	121	119		7420170
D8-Acenaphthylene	%	102	101		7420170

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (WATER)

BV Labs ID		PVY848		PVY849		
Sampling Date		2021/06/15		2021/06/15		
COC Number		832329-02-01		832329-02-01		
	UNITS	BHMW111	RDL	BHMW119	RDL	QC Batch
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	<0.50	0.50	7413211
Volatile Organics						
Acetone (2-Propanone)	ug/L	<10	10	<15 (1)	15	7414719
Benzene	ug/L	<0.20	0.20	<0.20	0.20	7414719
Bromodichloromethane	ug/L	<0.50	0.50	<0.50	0.50	7414719
Bromoform	ug/L	<1.0	1.0	<1.0	1.0	7414719
Bromomethane	ug/L	<0.50	0.50	<0.50	0.50	7414719
Carbon Tetrachloride	ug/L	<0.20	0.20	<0.20	0.20	7414719
Chlorobenzene	ug/L	<0.20	0.20	<0.20	0.20	7414719
Chloroform	ug/L	<0.20	0.20	0.78	0.20	7414719
Dibromochloromethane	ug/L	<0.50	0.50	<0.50	0.50	7414719
1,2-Dichlorobenzene	ug/L	<0.50	0.50	<0.50	0.50	7414719
1,3-Dichlorobenzene	ug/L	<0.50	0.50	<0.50	0.50	7414719
1,4-Dichlorobenzene	ug/L	<0.50	0.50	<0.50	0.50	7414719
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	<1.0	1.0	7414719
1,1-Dichloroethane	ug/L	<0.20	0.20	<0.20	0.20	7414719
1,2-Dichloroethane	ug/L	<0.50	0.50	1.9	0.50	7414719
1,1-Dichloroethylene	ug/L	<0.20	0.20	<0.20	0.20	7414719
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	<0.50	0.50	7414719
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	<0.50	0.50	7414719
1,2-Dichloropropane	ug/L	<0.20	0.20	<0.20	0.20	7414719
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	<0.30	0.30	7414719
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	<0.40	0.40	7414719
Ethylbenzene	ug/L	<0.20	0.20	<0.20	0.20	7414719
Ethylene Dibromide	ug/L	<0.20	0.20	<0.20	0.20	7414719
Hexane	ug/L	<1.0	1.0	<1.0	1.0	7414719
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	<2.0	2.0	7414719
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	<10	10	7414719
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	<5.0	5.0	7414719
Methyl t-butyl ether (MTBE)	ug/L	0.64	0.50	15	0.50	7414719
Styrene	ug/L	<0.50	0.50	<0.50	0.50	7414719
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	<0.50	0.50	7414719
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	<0.50	0.50	7414719
Tetrachloroethylene	ug/L	<0.20	0.20	<0.20	0.20	7414719
Toluene	ug/L	0.29	0.20	<0.20	0.20	7414719

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) The detection limit was raised due to matrix interference.

O.REG 153 VOCS BY HS & F1-F4 (WATER)

BV Labs ID		PVY848		PVY849		
Sampling Date		2021/06/15		2021/06/15		
COC Number		832329-02-01		832329-02-01		
	UNITS	BHMW111	RDL	BHMW119	RDL	QC Batch
1,1,1-Trichloroethane	ug/L	<0.20	0.20	<0.20	0.20	7414719
1,1,2-Trichloroethane	ug/L	<0.50	0.50	<0.50	0.50	7414719
Trichloroethylene	ug/L	<0.20	0.20	<0.20	0.20	7414719
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	<0.50	0.50	7414719
Vinyl Chloride	ug/L	<0.20	0.20	<0.20	0.20	7414719
p+m-Xylene	ug/L	0.38	0.20	0.35	0.20	7414719
o-Xylene	ug/L	0.22	0.20	0.42	0.20	7414719
Total Xylenes	ug/L	0.60	0.20	0.78	0.20	7414719
F1 (C6-C10)	ug/L	<25	25	<25	25	7414719
F1 (C6-C10) - BTEX	ug/L	<25	25	<25	25	7414719
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	<100	100	7420177
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	<200	200	7420177
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	<200	200	7420177
Reached Baseline at C50	ug/L	Yes		Yes		7420177
Surrogate Recovery (%)						
o-Terphenyl	%	102		98		7420177
4-Bromofluorobenzene	%	93		94		7414719
D4-1,2-Dichloroethane	%	110		108		7414719
D8-Toluene	%	87		88		7414719

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: C1G6182
Report Date: 2021/06/24

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MR

TEST SUMMARY

BV Labs ID: PVY848
Sample ID: BHMW111
Matrix: Water

Collected: 2021/06/15
Shipped:
Received: 2021/06/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7413210	N/A	2021/06/23	Automated Statchk
1,3-Dichloropropene Sum	CALC	7413211	N/A	2021/06/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7420177	2021/06/21	2021/06/22	Dennis Ngondu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7420170	2021/06/21	2021/06/22	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7414719	N/A	2021/06/22	Yang (Philip) Yu

BV Labs ID: PVY849
Sample ID: BHMW119
Matrix: Water

Collected: 2021/06/15
Shipped:
Received: 2021/06/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7413210	N/A	2021/06/23	Automated Statchk
1,3-Dichloropropene Sum	CALC	7413211	N/A	2021/06/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7420177	2021/06/21	2021/06/22	Dennis Ngondu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7420170	2021/06/21	2021/06/22	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7414719	N/A	2021/06/22	Yang (Philip) Yu

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	9.0°C

Cooler custody seal was present and intact.

All 40 ml vials for F1BTEX and VOC analyses contained visible sediment.
All 100 ml amber glass bottles for F2-F4 and PAH analyses contained visible sediment, which was included in the extraction.

Results relate only to the items tested.

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7414719	YY	Matrix Spike	4-Bromofluorobenzene	2021/06/22		112	%	70 - 130
			D4-1,2-Dichloroethane	2021/06/22		98	%	70 - 130
			D8-Toluene	2021/06/22		105	%	70 - 130
			Acetone (2-Propanone)	2021/06/22		98	%	60 - 140
			Benzene	2021/06/22		89	%	70 - 130
			Bromodichloromethane	2021/06/22		100	%	70 - 130
			Bromoform	2021/06/22		107	%	70 - 130
			Bromomethane	2021/06/22		100	%	60 - 140
			Carbon Tetrachloride	2021/06/22		98	%	70 - 130
			Chlorobenzene	2021/06/22		99	%	70 - 130
			Chloroform	2021/06/22		95	%	70 - 130
			Dibromochloromethane	2021/06/22		100	%	70 - 130
			1,2-Dichlorobenzene	2021/06/22		100	%	70 - 130
			1,3-Dichlorobenzene	2021/06/22		98	%	70 - 130
			1,4-Dichlorobenzene	2021/06/22		102	%	70 - 130
			Dichlorodifluoromethane (FREON 12)	2021/06/22		106	%	60 - 140
			1,1-Dichloroethane	2021/06/22		88	%	70 - 130
			1,2-Dichloroethane	2021/06/22		94	%	70 - 130
			1,1-Dichloroethylene	2021/06/22		93	%	70 - 130
			cis-1,2-Dichloroethylene	2021/06/22		90	%	70 - 130
			trans-1,2-Dichloroethylene	2021/06/22		96	%	70 - 130
			1,2-Dichloropropane	2021/06/22		92	%	70 - 130
			cis-1,3-Dichloropropene	2021/06/22		95	%	70 - 130
			trans-1,3-Dichloropropene	2021/06/22		100	%	70 - 130
			Ethylbenzene	2021/06/22		89	%	70 - 130
			Ethylene Dibromide	2021/06/22		98	%	70 - 130
			Hexane	2021/06/22		91	%	70 - 130
			Methylene Chloride(Dichloromethane)	2021/06/22		111	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/06/22		106	%	60 - 140
			Methyl Isobutyl Ketone	2021/06/22		106	%	70 - 130
			Methyl t-butyl ether (MTBE)	2021/06/22		92	%	70 - 130
			Styrene	2021/06/22		87	%	70 - 130
			1,1,1,2-Tetrachloroethane	2021/06/22		100	%	70 - 130
			1,1,2,2-Tetrachloroethane	2021/06/22		97	%	70 - 130
			Tetrachloroethylene	2021/06/22		94	%	70 - 130
			Toluene	2021/06/22		93	%	70 - 130
			1,1,1-Trichloroethane	2021/06/22		99	%	70 - 130
			1,1,2-Trichloroethane	2021/06/22		99	%	70 - 130
			Trichloroethylene	2021/06/22		104	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2021/06/22		98	%	70 - 130
			Vinyl Chloride	2021/06/22		100	%	70 - 130
			p+m-Xylene	2021/06/22		74	%	70 - 130
			o-Xylene	2021/06/22		92	%	70 - 130
			F1 (C6-C10)	2021/06/22		103	%	60 - 140
7414719	YY	Spiked Blank	4-Bromofluorobenzene	2021/06/22		113	%	70 - 130
			D4-1,2-Dichloroethane	2021/06/22		99	%	70 - 130
			D8-Toluene	2021/06/22		104	%	70 - 130
			Acetone (2-Propanone)	2021/06/22		110	%	60 - 140
			Benzene	2021/06/22		88	%	70 - 130
			Bromodichloromethane	2021/06/22		98	%	70 - 130
			Bromoform	2021/06/22		102	%	70 - 130
			Bromomethane	2021/06/22		100	%	60 - 140
			Carbon Tetrachloride	2021/06/22		98	%	70 - 130
			Chlorobenzene	2021/06/22		97	%	70 - 130

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chloroform	2021/06/22		94	%	70 - 130
			Dibromochloromethane	2021/06/22		95	%	70 - 130
			1,2-Dichlorobenzene	2021/06/22		95	%	70 - 130
			1,3-Dichlorobenzene	2021/06/22		95	%	70 - 130
			1,4-Dichlorobenzene	2021/06/22		98	%	70 - 130
			Dichlorodifluoromethane (FREON 12)	2021/06/22		112	%	60 - 140
			1,1-Dichloroethane	2021/06/22		88	%	70 - 130
			1,2-Dichloroethane	2021/06/22		92	%	70 - 130
			1,1-Dichloroethylene	2021/06/22		95	%	70 - 130
			cis-1,2-Dichloroethylene	2021/06/22		101	%	70 - 130
			trans-1,2-Dichloroethylene	2021/06/22		96	%	70 - 130
			1,2-Dichloropropane	2021/06/22		92	%	70 - 130
			cis-1,3-Dichloropropene	2021/06/22		90	%	70 - 130
			trans-1,3-Dichloropropene	2021/06/22		92	%	70 - 130
			Ethylbenzene	2021/06/22		88	%	70 - 130
			Ethylene Dibromide	2021/06/22		95	%	70 - 130
			Hexane	2021/06/22		95	%	70 - 130
			Methylene Chloride(Dichloromethane)	2021/06/22		111	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/06/22		115	%	60 - 140
			Methyl Isobutyl Ketone	2021/06/22		110	%	70 - 130
			Methyl t-butyl ether (MTBE)	2021/06/22		91	%	70 - 130
			Styrene	2021/06/22		86	%	70 - 130
			1,1,1,2-Tetrachloroethane	2021/06/22		96	%	70 - 130
			1,1,2,2-Tetrachloroethane	2021/06/22		94	%	70 - 130
			Tetrachloroethylene	2021/06/22		93	%	70 - 130
			Toluene	2021/06/22		92	%	70 - 130
			1,1,1-Trichloroethane	2021/06/22		99	%	70 - 130
			1,1,2-Trichloroethane	2021/06/22		96	%	70 - 130
			Trichloroethylene	2021/06/22		105	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2021/06/22		100	%	70 - 130
			Vinyl Chloride	2021/06/22		101	%	70 - 130
			p+m-Xylene	2021/06/22		74	%	70 - 130
			o-Xylene	2021/06/22		91	%	70 - 130
			F1 (C6-C10)	2021/06/22		91	%	60 - 140
7414719	YY	Method Blank	4-Bromofluorobenzene	2021/06/22		94	%	70 - 130
			D4-1,2-Dichloroethane	2021/06/22		105	%	70 - 130
			D8-Toluene	2021/06/22		89	%	70 - 130
			Acetone (2-Propanone)	2021/06/22	<10		ug/L	
			Benzene	2021/06/22	<0.20		ug/L	
			Bromodichloromethane	2021/06/22	<0.50		ug/L	
			Bromoform	2021/06/22	<1.0		ug/L	
			Bromomethane	2021/06/22	<0.50		ug/L	
			Carbon Tetrachloride	2021/06/22	<0.20		ug/L	
			Chlorobenzene	2021/06/22	<0.20		ug/L	
			Chloroform	2021/06/22	<0.20		ug/L	
			Dibromochloromethane	2021/06/22	<0.50		ug/L	
			1,2-Dichlorobenzene	2021/06/22	<0.50		ug/L	
			1,3-Dichlorobenzene	2021/06/22	<0.50		ug/L	
			1,4-Dichlorobenzene	2021/06/22	<0.50		ug/L	
			Dichlorodifluoromethane (FREON 12)	2021/06/22	<1.0		ug/L	
			1,1-Dichloroethane	2021/06/22	<0.20		ug/L	
			1,2-Dichloroethane	2021/06/22	<0.50		ug/L	
			1,1-Dichloroethylene	2021/06/22	<0.20		ug/L	
			cis-1,2-Dichloroethylene	2021/06/22	<0.50		ug/L	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			trans-1,2-Dichloroethylene	2021/06/22	<0.50		ug/L	
			1,2-Dichloropropane	2021/06/22	<0.20		ug/L	
			cis-1,3-Dichloropropene	2021/06/22	<0.30		ug/L	
			trans-1,3-Dichloropropene	2021/06/22	<0.40		ug/L	
			Ethylbenzene	2021/06/22	<0.20		ug/L	
			Ethylene Dibromide	2021/06/22	<0.20		ug/L	
			Hexane	2021/06/22	<1.0		ug/L	
			Methylene Chloride(Dichloromethane)	2021/06/22	<2.0		ug/L	
			Methyl Ethyl Ketone (2-Butanone)	2021/06/22	<10		ug/L	
			Methyl Isobutyl Ketone	2021/06/22	<5.0		ug/L	
			Methyl t-butyl ether (MTBE)	2021/06/22	<0.50		ug/L	
			Styrene	2021/06/22	<0.50		ug/L	
			1,1,1,2-Tetrachloroethane	2021/06/22	<0.50		ug/L	
			1,1,2,2-Tetrachloroethane	2021/06/22	<0.50		ug/L	
			Tetrachloroethylene	2021/06/22	<0.20		ug/L	
			Toluene	2021/06/22	<0.20		ug/L	
			1,1,1-Trichloroethane	2021/06/22	<0.20		ug/L	
			1,1,2-Trichloroethane	2021/06/22	<0.50		ug/L	
			Trichloroethylene	2021/06/22	<0.20		ug/L	
			Trichlorofluoromethane (FREON 11)	2021/06/22	<0.50		ug/L	
			Vinyl Chloride	2021/06/22	<0.20		ug/L	
			p+m-Xylene	2021/06/22	<0.20		ug/L	
			o-Xylene	2021/06/22	<0.20		ug/L	
			Total Xylenes	2021/06/22	<0.20		ug/L	
			F1 (C6-C10)	2021/06/22	<25		ug/L	
			F1 (C6-C10) - BTEX	2021/06/22	<25		ug/L	
7414719	YY	RPD	1,1-Dichloroethylene	2021/06/22	NC		%	30
			cis-1,2-Dichloroethylene	2021/06/22	9.6		%	30
			Tetrachloroethylene	2021/06/22	9.1		%	30
			Trichloroethylene	2021/06/22	7.4		%	30
			Vinyl Chloride	2021/06/22	NC		%	30
			F1 (C6-C10)	2021/06/22	NC		%	30
7420170	RAJ	Matrix Spike	D10-Anthracene	2021/06/22		85	%	50 - 130
			D14-Terphenyl (FS)	2021/06/22		116	%	50 - 130
			D8-Acenaphthylene	2021/06/22		100	%	50 - 130
			Acenaphthene	2021/06/22		87	%	50 - 130
			Acenaphthylene	2021/06/22		97	%	50 - 130
			Anthracene	2021/06/22		80	%	50 - 130
			Benzo(a)anthracene	2021/06/22		99	%	50 - 130
			Benzo(a)pyrene	2021/06/22		81	%	50 - 130
			Benzo(b/j)fluoranthene	2021/06/22		98	%	50 - 130
			Benzo(g,h,i)perylene	2021/06/22		96	%	50 - 130
			Benzo(k)fluoranthene	2021/06/22		92	%	50 - 130
			Chrysene	2021/06/22		103	%	50 - 130
			Dibenzo(a,h)anthracene	2021/06/22		100	%	50 - 130
			Fluoranthene	2021/06/22		121	%	50 - 130
			Fluorene	2021/06/22		99	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/06/22		109	%	50 - 130
			1-Methylnaphthalene	2021/06/22		88	%	50 - 130
			2-Methylnaphthalene	2021/06/22		84	%	50 - 130
			Naphthalene	2021/06/22		92	%	50 - 130
			Phenanthrene	2021/06/22		102	%	50 - 130
			Pyrene	2021/06/22		112	%	50 - 130
7420170	RAJ	Spiked Blank	D10-Anthracene	2021/06/22		122	%	50 - 130

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			D14-Terphenyl (FS)	2021/06/22		113	%	50 - 130
			D8-Acenaphthylene	2021/06/22		102	%	50 - 130
			Acenaphthene	2021/06/22		102	%	50 - 130
			Acenaphthylene	2021/06/22		99	%	50 - 130
			Anthracene	2021/06/22		108	%	50 - 130
			Benzo(a)anthracene	2021/06/22		102	%	50 - 130
			Benzo(a)pyrene	2021/06/22		85	%	50 - 130
			Benzo(b/j)fluoranthene	2021/06/22		101	%	50 - 130
			Benzo(g,h,i)perylene	2021/06/22		98	%	50 - 130
			Benzo(k)fluoranthene	2021/06/22		87	%	50 - 130
			Chrysene	2021/06/22		104	%	50 - 130
			Dibenzo(a,h)anthracene	2021/06/22		82	%	50 - 130
			Fluoranthene	2021/06/22		124	%	50 - 130
			Fluorene	2021/06/22		102	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/06/22		111	%	50 - 130
			1-Methylnaphthalene	2021/06/22		89	%	50 - 130
			2-Methylnaphthalene	2021/06/22		85	%	50 - 130
			Naphthalene	2021/06/22		94	%	50 - 130
			Phenanthrene	2021/06/22		106	%	50 - 130
			Pyrene	2021/06/22		122	%	50 - 130
7420170	RAJ	Method Blank	D10-Anthracene	2021/06/22		111	%	50 - 130
			D14-Terphenyl (FS)	2021/06/22		116	%	50 - 130
			D8-Acenaphthylene	2021/06/22		99	%	50 - 130
			Acenaphthene	2021/06/22	<0.050		ug/L	
			Acenaphthylene	2021/06/22	<0.050		ug/L	
			Anthracene	2021/06/22	<0.050		ug/L	
			Benzo(a)anthracene	2021/06/22	<0.050		ug/L	
			Benzo(a)pyrene	2021/06/22	<0.0090		ug/L	
			Benzo(b/j)fluoranthene	2021/06/22	<0.050		ug/L	
			Benzo(g,h,i)perylene	2021/06/22	<0.050		ug/L	
			Benzo(k)fluoranthene	2021/06/22	<0.050		ug/L	
			Chrysene	2021/06/22	<0.050		ug/L	
			Dibenzo(a,h)anthracene	2021/06/22	<0.050		ug/L	
			Fluoranthene	2021/06/22	<0.050		ug/L	
			Fluorene	2021/06/22	<0.050		ug/L	
			Indeno(1,2,3-cd)pyrene	2021/06/22	<0.050		ug/L	
			1-Methylnaphthalene	2021/06/22	<0.050		ug/L	
			2-Methylnaphthalene	2021/06/22	<0.050		ug/L	
			Naphthalene	2021/06/22	<0.050		ug/L	
			Phenanthrene	2021/06/22	<0.030		ug/L	
			Pyrene	2021/06/22	<0.050		ug/L	
7420170	RAJ	RPD	Naphthalene	2021/06/22	NC		%	30
7420177	DN0	Matrix Spike	o-Terphenyl	2021/06/22		100	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/06/22		NC	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2021/06/22		NC	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2021/06/22		90	%	60 - 130
7420177	DN0	Spiked Blank	o-Terphenyl	2021/06/22		101	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/06/22		96	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2021/06/22		98	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2021/06/22		102	%	60 - 130
7420177	DN0	Method Blank	o-Terphenyl	2021/06/22		99	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/06/22	<100		ug/L	
			F3 (C16-C34 Hydrocarbons)	2021/06/22	<200		ug/L	
			F4 (C34-C50 Hydrocarbons)	2021/06/22	<200		ug/L	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7420177	DN0	RPD	F2 (C10-C16 Hydrocarbons)	2021/06/22	20		%	30
			F3 (C16-C34 Hydrocarbons)	2021/06/22	NC		%	30
			F4 (C34-C50 Hydrocarbons)	2021/06/22	NC		%	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

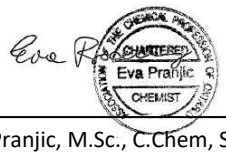
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

16-Jun-21-14:25

Antonella Brasil

C1G6182

J_L ENV-960

Presence of Visible Particulate/Sediment

Maxxam Analytics
CAM FCD-01013/5
Page 1 of 1

When there is >1cm of visible particulate/sediment, the amount will be recorded in the field below

		Bottle Types																														
		Inorganics						Organics											Hydrocarbons							Volatiles				Other			
	Sample ID	All	CrVI	CN	General	Hg	Metals (Diss.)	Organic 1 of 2	Organic 2 of 2	PCB 1 of 2	PCB 2 of 2	Pest/ Herb 1 of 2	Pest/ Herb 2 of 2	SVOC/ ABN 1 of 2	SVOC/ ABN 2 of 2	PAH 1 of 2	PAH 2 of 2	Dioxin /Furan	F1 Vial 1	F1 Vial 2	F1 Vial 3	F1 Vial 4	F2-F4 1 of 2	F2-F4 2 of 2	F4G	VOC Vial 1	VOC Vial 2	VOC Vial 3	VOC Vial 4				
1	BH/MW111	TS																														
2																																
3																																
4																																
5																																
6																																
7																																
8																																
9																																
10																																

Comments:

Legend:	
P	Suspended Particulate
TS	Trace Settled Sediment (just covers bottom of container or less)
S	Sediment greater than (>) Trace, but less than (<) 1 cm

Recorded By: (signature/print)

16-Jun-21 14:25
Antonella Brasil
C1G6182
J L ENV-960

Page 1 of 1

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free 800-563-6266 Fax (905) 817-5777 www.bvlabs.com

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#982 Pinchin Ltd	Company Name:		Quotation #:	A70927
Attention:	Accounts Payable	Attention:	Matt, Ryan, Mike	P.O. #:	
Address:	1 Hines Road Suite 200	Address:		Project:	285722.003
	Kanata ON K2K 3C7			Project Name:	
Tel:	(613) 592-3387 Fax: (613) 592-5897	Tel:	Fax:	Site #:	
Email:	ap@pinchin.com	Email:	mkosiw@Pinchin.com, rlaronde@pinchin.com; mryan@	Sampled By:	M. Kosiw

Bottle Order #: 832329
COC #: C#832329-02-01
Project Manager: Antonella Brasil

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): [ ] Table 1 [x] Res/Park [x] Medium/Fine; [ ] Table 2 [ ] Ind/Comm [ ] Coarse; [x] Table 3 [ ] Agri/Other [x] For RSC; [ ] Table ___

Other Regulations: [ ] CCME [ ] Sanitary Sewer Bylaw; [ ] Reg 558 [ ] Storm Sewer Bylaw; [ ] MISA Municipality ___; [ ] PWQO [ ] Reg 406 Table ___; [ ] Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)?

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O Reg 153 Metals & Inorganics Pkg (Soil)	O Reg 153 VOCs by HS & F1-F4 (Soil)	O Reg 153 PCBs (Soil)	O Reg 153 PAHs (Soil)	O Reg 153 Semivolatiles Package (Soil)	Acid Extractables by GC/MS	O Reg 153 OC Pesticides (Soil)				# of Bottles	Comments
1		BHMW111	June 15 2021	PM	GW			X		X							5	
2		BHMW119	↓	↓	↓			X		X							5	
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		ON Ice

RECEIVED IN OTTAWA

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: [x]
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ (call lab for #)

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Mike Kosiw	June 16 2021	11:30 AM	[signature]	2021/06/16	14-25	
			[signature]	2021/06/17	08:30	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	9, 8, 10	Present		
		Intact	✓	

3/3/3 C

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

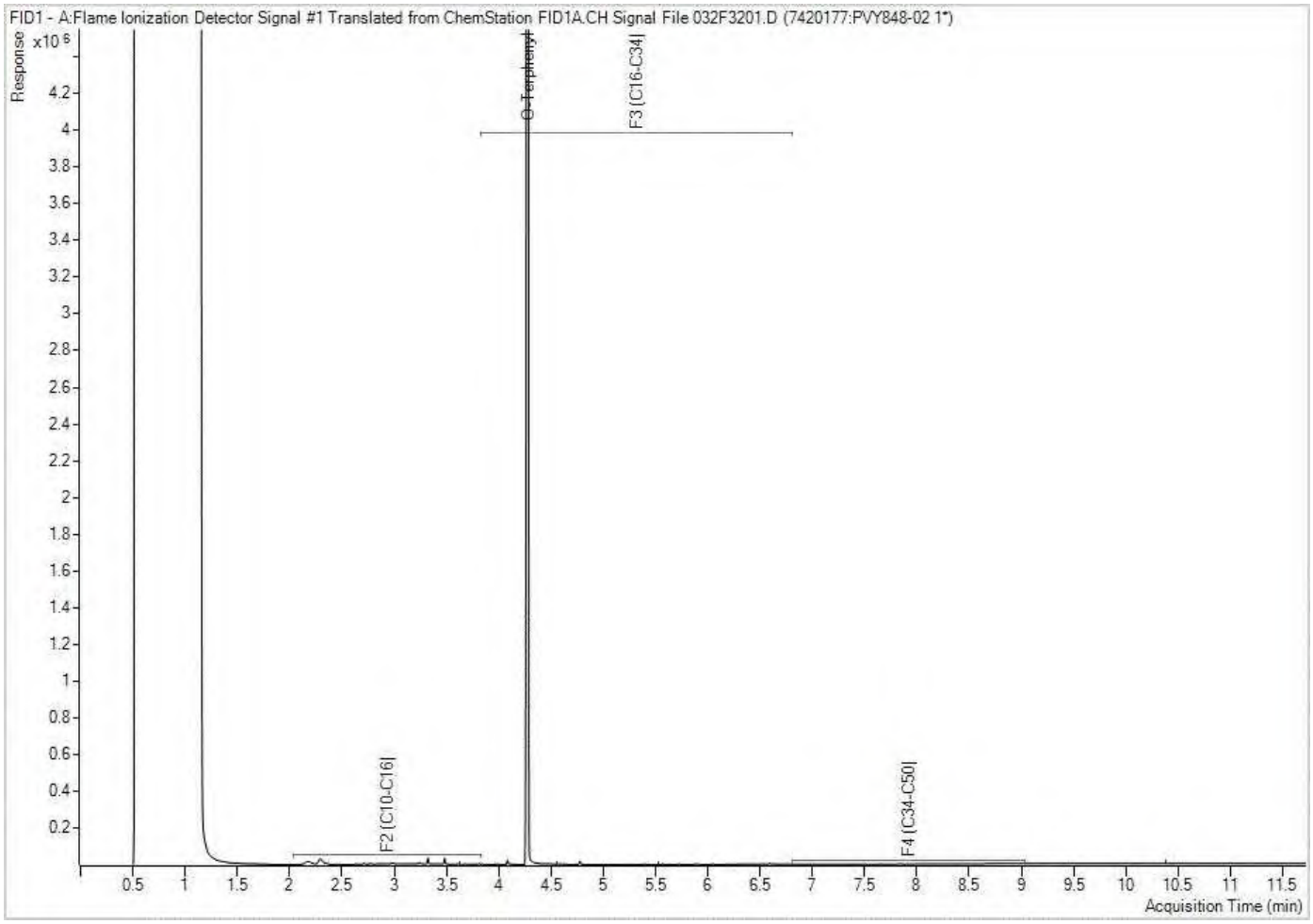
SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

BV Labs Job #: C1G6182
Report Date: 2021/06/24
BV Labs Sample: PVY848

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW111

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

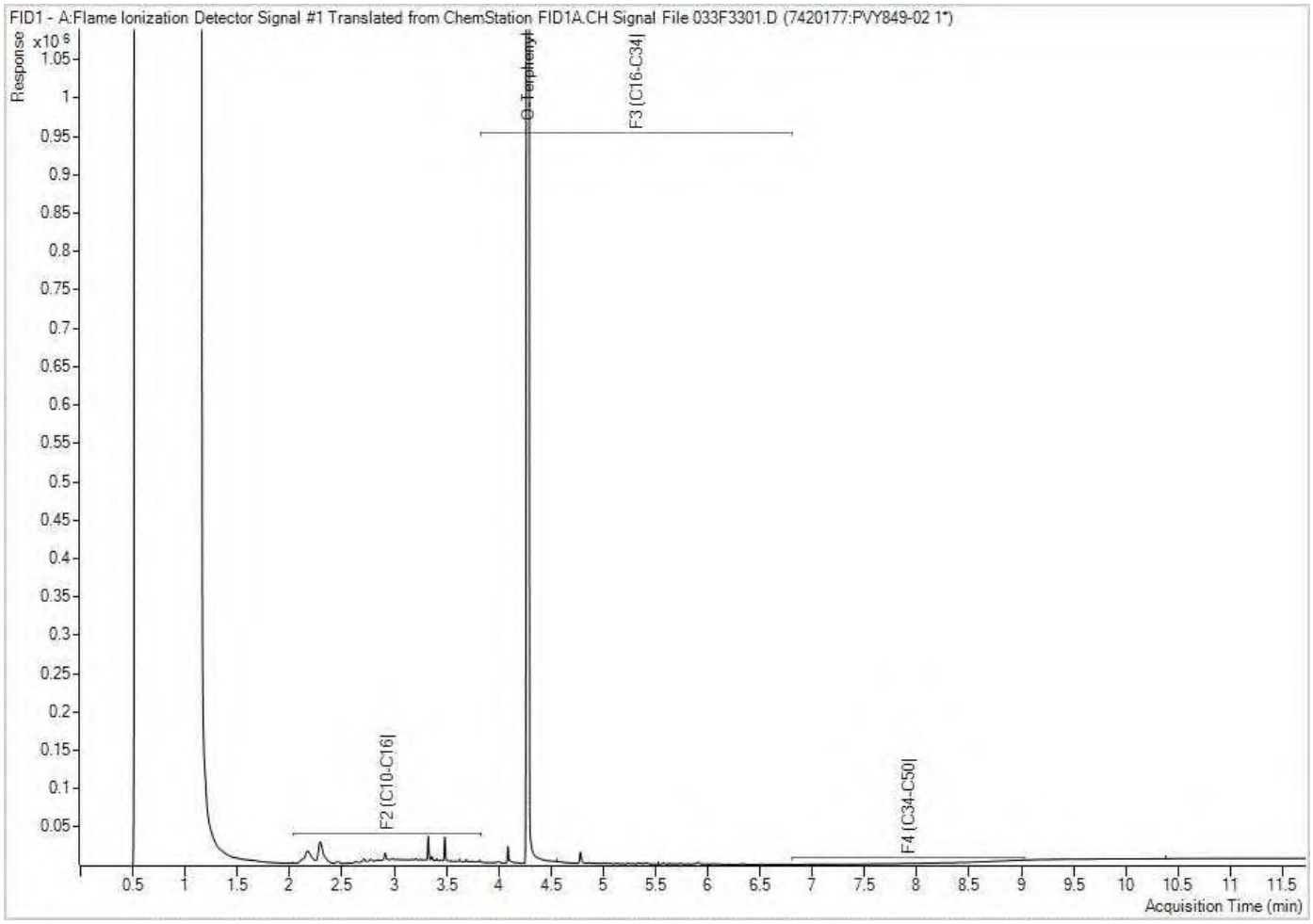


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1G6182
Report Date: 2021/06/24
BV Labs Sample: PVY849

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW119

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

APPENDIX VI

2024 Laboratory Certificate of Analysis Results

Reg 2003-514: City of Ottawa Table 1 and Table 2 Limits for Discharge
2024 Lab Results

Project Address: Loretta and Gladstone, Ottawa, ON
Project Number: 285722.005
Date: July 5, 2024

Table 1. Limits for Sanitary and Combined Sewers Discharge	Exceeds
Table 2. Limits for Storm Sewer Discharge	Exceeds
Table 1. and 2.	Exceeds

Chemical Component	Table 1 (mg/L)	Table 2 (mg/L)	BH3-20 (mg/L)
GENERAL ORGANICS & HYDROCARBONS			
BOD	300	25	<2
Cyanide	2	0.02	<0.01
Fluoride	10		<0.1
TKN	100		1
Oil & Grease - Animal and Vegetable	150		<0.6
Oil & Grease - Mineral and Synthetic	15		<0.6
Phenolics	1	0.008	<0.001
Phosphorus (total)	10	0.4	0.22
Sulphates	1500		441
Sulphides	2		<0.02
Suspended Solids (total)	350	15	0.22
pH	5.5-11	6-9	7.5
METALS			
Aluminum	50		2.72
Antimony	5		<0.001
Arsenic	1	0.02	<0.01
Bismuth	5		<0.005
Boron	25		0.16
Cadmium	0.02	0.08	<0.001
Chromium	5		<0.05
Cobalt	5		0.003
Copper	3	0.04	0.013
Lead	5	0.12	0.019
Manganese	5	0.05	0.8
Mercury	0.001	0.0004	<0.0001
Molybedenum	5		0.005
Nickel	3	0.08	0.01
Selenium	5	0.02	<0.005
Silver	5	0.12	<0.001
Tin	5		<0.01
Titanium	5		0.21
Vanadium	5		0.008
Zinc	3	0.04	0.04

Chemical Component	Table 1 (mg/L)	Table 2 (mg/L)	BH3-20 (mg/L)
VOLATILES & SEMIVOLATILES			
Benzene	0.01	0.002	<0.0005
Bromodichloromethane	0.35		<0.0005
Bromoform	0.63		<0.0005
Bromomethane	0.11		<0.0005
Carbon Tetrachloride	0.057		<0.0002
Chlorobenzene	0.057		<0.0005
Chloroethane	0.27		<0.001
Chloroform	0.08		<0.0005
Chloromethane	0.19		<0.0030
Dibromochloromethane	0.057		<0.0005
1,2 Dibromoethane	0.028		<0.0002
1,2 Dichlorobenzene	0.088	0.0056	<0.0005
1,3 Dichlorobenzene	0.036		<0.0005
1,4 Dichlorobenzene	0.017	0.0068	<0.0005
1,1 Dichloroethane	0.2		<0.0005
1,2 Dichloroethane	0.21		<0.0005
1,1 Dichloroethylene	0.04		<0.0005
cis - 1,2, dichloroethylene	0.2	0.0056	<0.0005
trans - 1,2, dichloroethylene	0.2		<0.0005
1,2, dichloropropane	0.85		<0.0005
cis - 1,3 dichloropropylene	0.07		<0.0005
trans - 1,3 dichloropropylene	0.07	0.0056	<0.0005
Ethylbenzene	0.057	0.002	<0.0005
Methylene Chloride	0.211	0.0052	<0.005
Styrene	0.04		<0.0005
1,1,2,2 Tetrachloroethane	0.04	0.017	<0.0005
Tetrachloroethylene	0.05	0.0044	<0.0005
Toluene	0.08	0.002	<0.0005
1,1,1 - Trichloroethane	0.054		<0.0005
1,1,2 - Trichloroethane	0.8		<0.0005
Trichloroethylene	0.054	0.0076	<0.0005
Trichlorofluoromethane	0.02		<0.001
1,3,5 Trimethylbenzene	0.003		<0.0005
Vinyl chloride	0.4		<0.0005
Xylene	0.32	0.0044	<0.0005
Bis -methane	0.036		<0.001
Bis - phthalate	0.28		0.00205
Benzylbutylphthalate	0.017		<0.0005
Diethylphthalate	0.2		<0.001
Di-n-butylphthalate	0.057		<0.001
Di-n-octylphthalate	0.03		<0.001
Fluorene	0.059		<0.00005
Indole	0.05		<0.001

Chemical Component	Table 1 (mg/L)	Table 2 (mg/L)	BH3-20 (mg/L)
1-Methylnaphthalene	0.032		<0.00005
2-Methylnaphthalene	0.022		<0.00005
Napthalene	0.059	0.0064	<0.00005
Total PAHs	0.015	0.006	<0.0025
2,4, Dichlorophenol	0.044		<0.001
DIOXINS & FURANS, FORMALDEHYDE, PESTICIDES AND PCBs			
Dioxins and Furans	0.00072		<0.00072
Formaldehyde	0.3		<0.002
Hexachlorobenzene	0.0001	0.00004	<0.00001
N-Nitrosodimethylamine	0.1		<0.0004
Nonylphenols	0.0025	0.001	<0.001
Nonylphenol ethoxylates	0.025	0.01	<0.050
PCBs		0.0004	<0.00005

PARACEL LABORATORIES LTD.
TRUSTED. RESPONSIVE. RELIABLE.

300 - 2319 St. Laurent Blvd
Ottawa, ON, K1G 4J8
1-800-749-1947
www.paracellabs.com

Certificate of Analysis

Pinchin Ltd. (Ottawa)
1 Hines Road, Suite 200
Kanata, ON K2K 3C7
Attn: Megan Keon

Client PO:
Project: 285722.005
Custody: 73659

Report Date: 4-Jul-2024
Order Date: 24-Jun-2024

Order #: 2426137

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2426137-01	BH3-20

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Anions	EPA 300.1 - IC	25-Jun-24	27-Jun-24
CBOD	SM 5210B - DO Probe	27-Jun-24	27-Jun-24
Cyanide, total	MOE E3015 - Auto Colour	25-Jun-24	25-Jun-24
E. coli	MOE E3407	25-Jun-24	25-Jun-24
Hexachlorobenzene	EPA 8081B - GC-ECD	3-Jul-24	3-Jul-24
Mercury by CVAA	EPA 245.2 - Cold Vapour AA	26-Jun-24	26-Jun-24
Metals, ICP-MS	EPA 200.8 - ICP-MS	26-Jun-24	26-Jun-24
Oil & Grease, mineral/synthetic	SM5520F - Gravimetric	28-Jun-24	2-Jul-24
Oil & Grease, total	SM5520B - Gravimetric, hexane soluble	28-Jun-24	2-Jul-24
Oil & Grease, Animal/Vegetable	SM5520 - Gravimetric	28-Jun-24	2-Jul-24
Ottawa - San/Comb: SVOCs with PAHs	EPA 625 - GC-MS, extraction	2-Jul-24	2-Jul-24
PCBs, total	EPA 608 - GC-ECD	3-Jul-24	3-Jul-24
pH	EPA 150.1 - pH probe @25 °C	26-Jun-24	26-Jun-24
Phenolics	EPA 420.2 - Auto Colour, 4AAP	26-Jun-24	26-Jun-24
Phosphorus, total, water	EPA 365.4 - Auto Colour, digestion	27-Jun-24	28-Jun-24
Sulphide	SM 4500SE - Colourimetric	28-Jun-24	28-Jun-24
Total Kjeldahl Nitrogen	EPA 351.2 - Auto Colour, digestion	27-Jun-24	28-Jun-24
Total Suspended Solids	SM 2540D - Gravimetric	26-Jun-24	27-Jun-24
VOCs, Sewer Use	EPA 624 - P&T GC-MS	25-Jun-24	25-Jun-24

	Client ID:	BH3-20	-	-	-	-	-
	Sample Date:	24-Jun-24 09:00	-	-	-		
	Sample ID:	2426137-01	-	-	-		
	Matrix:	Ground Water	-	-	-		
	MDL/Units						
Microbiological Parameters							
E. coli	1 CFU/100mL	600 [1]	-	-	-	-	-
General Inorganics							
CBOD	2 mg/L	<2	-	-	-	-	-
Cyanide, total	0.01 mg/L	<0.01	-	-	-	-	-
pH	0.1 pH Units	7.5	-	-	-	-	-
Phenolics	0.001 mg/L	<0.001	-	-	-	-	-
Phosphorus, total	0.01 mg/L	0.22	-	-	-	-	-
Total Suspended Solids	2 mg/L	226	-	-	-	-	-
Sulphide	0.02 mg/L	<0.02	-	-	-	-	-
Total Kjeldahl Nitrogen	0.1 mg/L	1.0	-	-	-	-	-
Anions							
Fluoride	0.1 mg/L	<0.1	-	-	-	-	-
Sulphate	1 mg/L	441	-	-	-	-	-
Metals - Total							
Aluminum	0.01 mg/L	2.72	-	-	-	-	-
Antimony	0.001 mg/L	<0.001	-	-	-	-	-
Arsenic	0.01 mg/L	<0.01	-	-	-	-	-
Bismuth	0.005 mg/L	<0.005	-	-	-	-	-
Boron	0.05 mg/L	0.16	-	-	-	-	-
Cadmium	0.001 mg/L	<0.001	-	-	-	-	-
Chromium	0.05 mg/L	<0.05	-	-	-	-	-
Cobalt	0.001 mg/L	0.003	-	-	-	-	-
Copper	0.005 mg/L	0.013	-	-	-	-	-
Lead	0.001 mg/L	0.019	-	-	-	-	-
Manganese	0.05 mg/L	0.80	-	-	-	-	-

	Client ID:	BH3-20	-	-	-	-	-
	Sample Date:	24-Jun-24 09:00	-	-	-		
	Sample ID:	2426137-01	-	-	-		
	Matrix:	Ground Water	-	-	-		
	MDL/Units						
Metals - Total							
Mercury	0.0001 mg/L	<0.0001	-	-	-	-	-
Molybdenum	0.005 mg/L	0.005	-	-	-	-	-
Nickel	0.005 mg/L	0.010	-	-	-	-	-
Selenium	0.005 mg/L	<0.005	-	-	-	-	-
Silver	0.001 mg/L	<0.001	-	-	-	-	-
Tin	0.01 mg/L	<0.01	-	-	-	-	-
Titanium	0.01 mg/L	0.21	-	-	-	-	-
Vanadium	0.001 mg/L	0.008	-	-	-	-	-
Zinc	0.02 mg/L	0.04	-	-	-	-	-
Volatiles							
Benzene	0.0005 mg/L	<0.0005	-	-	-	-	-
Bromodichloromethane	0.0005 mg/L	<0.0005	-	-	-	-	-
Bromoform	0.0005 mg/L	<0.0005	-	-	-	-	-
Bromomethane	0.0005 mg/L	<0.0005	-	-	-	-	-
Carbon Tetrachloride	0.0002 mg/L	<0.0002	-	-	-	-	-
Chlorobenzene	0.0005 mg/L	<0.0005	-	-	-	-	-
Chloroethane	0.0010 mg/L	<0.0010	-	-	-	-	-
Chloroform	0.0005 mg/L	<0.0005	-	-	-	-	-
Chloromethane	0.0030 mg/L	<0.0030	-	-	-	-	-
Dibromochloromethane	0.0005 mg/L	<0.0005	-	-	-	-	-
1,2-Dibromoethane	0.0002 mg/L	<0.0002	-	-	-	-	-
1,2-Dichlorobenzene	0.0005 mg/L	<0.0005	-	-	-	-	-
1,3-Dichlorobenzene	0.0005 mg/L	<0.0005	-	-	-	-	-
1,4-Dichlorobenzene	0.0005 mg/L	<0.0005	-	-	-	-	-
1,1-Dichloroethane	0.0005 mg/L	<0.0005	-	-	-	-	-

	Client ID:	BH3-20	-	-	-		
	Sample Date:	24-Jun-24 09:00	-	-	-	-	-
	Sample ID:	2426137-01	-	-	-		
	Matrix:	Ground Water	-	-	-		
	MDL/Units						
Volatiles							
1,2-Dichloroethane	0.0005 mg/L	<0.0005	-	-	-	-	-
1,1-Dichloroethylene	0.0005 mg/L	<0.0005	-	-	-	-	-
cis-1,2-Dichloroethylene	0.0005 mg/L	<0.0005	-	-	-	-	-
trans-1,2-Dichloroethylene	0.0005 mg/L	<0.0005	-	-	-	-	-
1,2-Dichloropropane	0.0005 mg/L	<0.0005	-	-	-	-	-
cis-1,3-Dichloropropylene	0.0005 mg/L	<0.0005	-	-	-	-	-
trans-1,3-Dichloropropylene	0.0005 mg/L	<0.0005	-	-	-	-	-
Ethylbenzene	0.0005 mg/L	<0.0005	-	-	-	-	-
Methylene Chloride	0.0050 mg/L	<0.0050	-	-	-	-	-
Styrene	0.0005 mg/L	<0.0005	-	-	-	-	-
1,1,2,2-Tetrachloroethane	0.0005 mg/L	<0.0005	-	-	-	-	-
Tetrachloroethylene	0.0005 mg/L	<0.0005	-	-	-	-	-
Toluene	0.0005 mg/L	<0.0005	-	-	-	-	-
1,1,1-Trichloroethane	0.0005 mg/L	<0.0005	-	-	-	-	-
1,1,2-Trichloroethane	0.0005 mg/L	<0.0005	-	-	-	-	-
Trichloroethylene	0.0005 mg/L	<0.0005	-	-	-	-	-
Trichlorofluoromethane	0.0010 mg/L	<0.0010	-	-	-	-	-
1,3,5-Trimethylbenzene	0.0005 mg/L	<0.0005	-	-	-	-	-
Vinyl chloride	0.0005 mg/L	<0.0005	-	-	-	-	-
Xylenes, total	0.0005 mg/L	<0.0005	-	-	-	-	-
4-Bromofluorobenzene	Surrogate	116%	-	-	-	-	-
Dibromofluoromethane	Surrogate	99.6%	-	-	-	-	-
Toluene-d8	Surrogate	116%	-	-	-	-	-
Hydrocarbons							
Oil & Grease, Animal/Vegetable	0.5 mg/L	<0.6	-	-	-	-	-

	Client ID:	BH3-20	-	-	-	-	-
	Sample Date:	24-Jun-24 09:00	-	-	-		
	Sample ID:	2426137-01	-	-	-		
	Matrix:	Ground Water	-	-	-		
	MDL/Units						
Hydrocarbons							
Oil & Grease, mineral/synthetic	0.5 mg/L	<0.6 [2]	-	-	-	-	-
Oil & Grease, total	0.5 mg/L	<0.6 [2]	-	-	-	-	-
Semi-Volatiles							
1-Methylnaphthalene	0.00005 mg/L	<0.00005	-	-	-	-	-
2-Methylnaphthalene	0.00005 mg/L	<0.00005	-	-	-	-	-
7H-Dibenzo[c,g]carbazole	0.00050 mg/L	<0.00050	-	-	-	-	-
Anthracene	0.00001 mg/L	<0.00001	-	-	-	-	-
Benzo [a] anthracene	0.00001 mg/L	0.00013	-	-	-	-	-
Benzo [a] pyrene	0.00001 mg/L	0.00015	-	-	-	-	-
Benzo [e] pyrene	0.00005 mg/L	<0.00005	-	-	-	-	-
Benzo [b&j] fluoranthene	0.00005 mg/L	<0.00005	-	-	-	-	-
Benzo [g,h,i] perylene	0.00005 mg/L	0.00013	-	-	-	-	-
Benzo [k] fluoranthene	0.00005 mg/L	0.00008	-	-	-	-	-
Benzylbutylphthalate	0.00050 mg/L	<0.00050	-	-	-	-	-
Biphenyl	0.00005 mg/L	<0.00005	-	-	-	-	-
Bis(2-chloroethoxy)methane	0.00100 mg/L	<0.00100	-	-	-	-	-
Bis(2-ethylhexyl)phthalate	0.00100 mg/L	0.00205	-	-	-	-	-
Chrysene	0.00005 mg/L	0.00015	-	-	-	-	-
Dibenzo [a,h] anthracene	0.00005 mg/L	<0.00005	-	-	-	-	-
Dibenzo [a,i] pyrene	0.00050 mg/L	<0.00050	-	-	-	-	-
Dibenzo [a,j] acridine	0.00050 mg/L	<0.00050	-	-	-	-	-
Diethylphthalate	0.00100 mg/L	<0.00100	-	-	-	-	-
Di-n-butylphthalate	0.00100 mg/L	<0.00100	-	-	-	-	-
Di-n-octylphthalate	0.00100 mg/L	<0.00100	-	-	-	-	-
Fluoranthene	0.00001 mg/L	0.00027	-	-	-	-	-

	Client ID:	BH3-20	-	-	-	-	-
	Sample Date:	24-Jun-24 09:00	-	-	-		
	Sample ID:	2426137-01	-	-	-		
	Matrix:	Ground Water	-	-	-		
	MDL/Units						
Semi-Volatiles							
Fluorene	0.00005 mg/L	<0.00005	-	-	-	-	-
Indeno [1,2,3-cd] pyrene	0.00005 mg/L	<0.00005	-	-	-	-	-
Indole	0.00100 mg/L	<0.00100	-	-	-	-	-
Naphthalene	0.00005 mg/L	<0.00005	-	-	-	-	-
Phenanthrene	0.00005 mg/L	0.00013	-	-	-	-	-
Perylene	0.00050 mg/L	<0.00050	-	-	-	-	-
Pyrene	0.00001 mg/L	0.00024	-	-	-	-	-
2,4-Dichlorophenol	0.00100 mg/L	<0.00100	-	-	-	-	-
PAHs, Total	0.0025 mg/L	<0.0025	-	-	-	-	-
2-Fluorobiphenyl	Surrogate	71.0%	-	-	-	-	-
Nitrobenzene-d5	Surrogate	54.8%	-	-	-	-	-
Terphenyl-d14	Surrogate	80.7%	-	-	-	-	-
2,4,6-Tribromophenol	Surrogate	110%	-	-	-	-	-
2-Fluorophenol	Surrogate	27.3% [4]	-	-	-	-	-
Phenol-d6	Surrogate	15.0% [4]	-	-	-	-	-
Pesticides, OC							
Hexachlorobenzene	0.00001 mg/L	<0.00001	-	-	-	-	-
Decachlorobiphenyl	Surrogate	65.1%	-	-	-	-	-
PCBs							
PCBs, total	0.05 ug/L	<0.05	-	-	-	-	-
Decachlorobiphenyl	Surrogate	75.4%	-	-	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions								
Fluoride	ND	0.1	mg/L					
Sulphate	ND	1	mg/L					
General Inorganics								
CBOD	ND	2	mg/L					
Cyanide, total	ND	0.01	mg/L					
Phenolics	ND	0.001	mg/L					
Phosphorus, total	ND	0.01	mg/L					
Total Suspended Solids	ND	2	mg/L					
Sulphide	ND	0.02	mg/L					
Total Kjeldahl Nitrogen	ND	0.1	mg/L					
Hydrocarbons								
Oil & Grease, mineral/synthetic	ND	0.5	mg/L					
Oil & Grease, total	ND	0.5	mg/L					
Metals - Total								
Aluminum	ND	0.01	mg/L					
Antimony	ND	0.001	mg/L					
Arsenic	ND	0.01	mg/L					
Bismuth	ND	0.005	mg/L					
Boron	ND	0.05	mg/L					
Cadmium	ND	0.001	mg/L					
Chromium	ND	0.05	mg/L					
Cobalt	ND	0.001	mg/L					
Copper	ND	0.005	mg/L					
Lead	ND	0.001	mg/L					
Mercury	ND	0.0001	mg/L					
Manganese	ND	0.05	mg/L					
Molybdenum	ND	0.005	mg/L					
Nickel	ND	0.005	mg/L					
Selenium	ND	0.005	mg/L					
Silver	ND	0.001	mg/L					
Tin	ND	0.01	mg/L					
Titanium	ND	0.01	mg/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Vanadium	ND	0.001	mg/L					
Zinc	ND	0.02	mg/L					
Microbiological Parameters								
E. coli	ND	1	CFU/100mL					
PCBs								
PCBs, total	ND	0.05	ug/L					
Surrogate: Decachlorobiphenyl	*0.355*		*%*	*71.1*	*60-140*			
Pesticides, OC								
Hexachlorobenzene	ND	0.00001	mg/L					
Surrogate: Decachlorobiphenyl	*.00033*		*%*	*66.2*	*50-140*			
Semi-Volatiles								
1-Methylnaphthalene	ND	0.00005	mg/L					
2-Methylnaphthalene	ND	0.00005	mg/L					
7H-Dibenzo[c,g]carbazole	ND	0.00050	mg/L					
Anthracene	ND	0.00001	mg/L					
Benzo [a] anthracene	ND	0.00001	mg/L					
Benzo [a] pyrene	ND	0.00001	mg/L					
Benzo [b&j] fluoranthene	ND	0.00005	mg/L					
Benzo [e] pyrene	ND	0.00005	mg/L					
Benzo [g,h,i] perylene	ND	0.00005	mg/L					
Benzo [k] fluoranthene	ND	0.00005	mg/L					
Benzylbutylphthalate	ND	0.00050	mg/L					
Biphenyl	ND	0.00005	mg/L					
Bis(2-chloroethoxy)methane	ND	0.00100	mg/L					
Bis(2-ethylhexyl)phthalate	ND	0.00100	mg/L					
Chrysene	ND	0.00005	mg/L					
Dibenzo [a,h] anthracene	ND	0.00005	mg/L					
Dibenzo [a,i] pyrene	ND	0.00050	mg/L					
Dibenzo [a,j] acridine	ND	0.00050	mg/L					
Diethylphthalate	ND	0.00100	mg/L					
Di-n-butylphthalate	ND	0.00100	mg/L					
Di-n-octylphthalate	ND	0.00100	mg/L					
Fluoranthene	ND	0.00001	mg/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Fluorene	ND	0.00005	mg/L					
Indeno [1,2,3-cd] pyrene	ND	0.00005	mg/L					
Indole	ND	0.00100	mg/L					
Naphthalene	ND	0.00005	mg/L					
Phenanthrene	ND	0.00005	mg/L					
Perylene	ND	0.00050	mg/L					
Pyrene	ND	0.00001	mg/L					
2,4-Dichlorophenol	ND	0.00100	mg/L					
Surrogate: 2-Fluorobiphenyl	*0.0146*		*%*	*73.0*	*50-140*			
Surrogate: Nitrobenzene-d5	*0.0103*		*%*	*51.5*	*50-140*			
Surrogate: Terphenyl-d14	*0.0181*		*%*	*90.6*	*50-140*			
Surrogate: 2,4,6-Tribromophenol	*0.0432*		*%*	*108*	*50-140*			
Surrogate: 2-Fluorophenol	*0.0100*		*%*	*25.1*	*50-140*			S-GC
Surrogate: Phenol-d6	*0.00597*		*%*	*14.9*	*50-140*			S-GC
Volatiles								
Benzene	ND	0.0005	mg/L					
Bromodichloromethane	ND	0.0005	mg/L					
Bromoform	ND	0.0005	mg/L					
Bromomethane	ND	0.0005	mg/L					
Carbon Tetrachloride	ND	0.0002	mg/L					
Chlorobenzene	ND	0.0005	mg/L					
Chloroethane	ND	0.0010	mg/L					
Chloroform	ND	0.0005	mg/L					
Chloromethane	ND	0.0030	mg/L					
Dibromochloromethane	ND	0.0005	mg/L					
1,2-Dibromoethane	ND	0.0002	mg/L					
1,2-Dichlorobenzene	ND	0.0005	mg/L					
1,3-Dichlorobenzene	ND	0.0005	mg/L					
1,4-Dichlorobenzene	ND	0.0005	mg/L					
1,1-Dichloroethane	ND	0.0005	mg/L					
1,2-Dichloroethane	ND	0.0005	mg/L					
1,1-Dichloroethylene	ND	0.0005	mg/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
cis-1,2-Dichloroethylene	ND	0.0005	mg/L					
trans-1,2-Dichloroethylene	ND	0.0005	mg/L					
1,2-Dichloropropane	ND	0.0005	mg/L					
cis-1,3-Dichloropropylene	ND	0.0005	mg/L					
trans-1,3-Dichloropropylene	ND	0.0005	mg/L					
Ethylbenzene	ND	0.0005	mg/L					
Methylene Chloride	ND	0.0050	mg/L					
Styrene	ND	0.0005	mg/L					
1,1,2,2-Tetrachloroethane	ND	0.0005	mg/L					
Tetrachloroethylene	ND	0.0005	mg/L					
Toluene	ND	0.0005	mg/L					
1,1,1-Trichloroethane	ND	0.0005	mg/L					
1,1,2-Trichloroethane	ND	0.0005	mg/L					
Trichloroethylene	ND	0.0005	mg/L					
Trichlorofluoromethane	ND	0.0010	mg/L					
1,3,5-Trimethylbenzene	ND	0.0005	mg/L					
Vinyl chloride	ND	0.0005	mg/L					
Xylenes, total	ND	0.0005	mg/L					
Surrogate: 4-Bromofluorobenzene	*0.0960*		*%*	*120*	*50-140*			
Surrogate: Dibromofluoromethane	*0.0778*		*%*	*97.2*	*50-140*			
Surrogate: Toluene-d8	*0.0939*		*%*	*117*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Fluoride	0.17	0.1	mg/L	0.17			2.3	20	
Sulphate	123	1	mg/L	125			1.8	10	
General Inorganics									
CBOD	306	2	mg/L	312			2.2	20	
Cyanide, total	0.042	0.01	mg/L	0.042			1.3	20	
pH	8.2	0.1	pH Units	8.2			0.4	3.3	
Phenolics	ND	0.001	mg/L	ND			NC	10	
Phosphorus, total	0.022	0.01	mg/L	ND			NC	15	
Total Suspended Solids	ND	2	mg/L	ND			NC	10	
Sulphide	ND	0.02	mg/L	ND			NC	10	
Total Kjeldahl Nitrogen	ND	0.1	mg/L	ND			NC	16	
Metals - Total									
Aluminum	7.18	0.01	mg/L	7.26			1.1	20	
Antimony	ND	0.001	mg/L	ND			NC	20	
Arsenic	ND	0.01	mg/L	ND			NC	20	
Bismuth	ND	0.005	mg/L	ND			NC	20	
Boron	0.05	0.05	mg/L	0.06			4.5	20	
Cadmium	ND	0.001	mg/L	ND			NC	20	
Chromium	ND	0.05	mg/L	ND			NC	20	
Cobalt	ND	0.001	mg/L	ND			NC	20	
Copper	0.020	0.005	mg/L	0.021			2.6	20	
Lead	ND	0.001	mg/L	ND			NC	20	
Mercury	ND	0.0001	mg/L	ND			NC	20	
Manganese	ND	0.05	mg/L	ND			NC	20	
Molybdenum	ND	0.005	mg/L	ND			NC	20	
Nickel	0.006	0.005	mg/L	0.006			6.4	20	
Selenium	ND	0.005	mg/L	ND			NC	20	
Silver	ND	0.001	mg/L	ND			NC	20	
Tin	ND	0.01	mg/L	ND			NC	20	
Titanium	ND	0.01	mg/L	ND			NC	20	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Vanadium	0.002	0.001	mg/L	0.002			1.7	20	
Zinc	ND	0.02	mg/L	ND			NC	20	
Microbiological Parameters									
E. coli	740	10	CFU/100mL	600			20.9	30	BAC12
Volatiles									
Benzene	ND	0.0005	mg/L	ND			NC	30	
Bromodichloromethane	ND	0.0005	mg/L	ND			NC	30	
Bromoform	ND	0.0005	mg/L	ND			NC	30	
Bromomethane	ND	0.0005	mg/L	ND			NC	30	
Carbon Tetrachloride	ND	0.0002	mg/L	ND			NC	30	
Chlorobenzene	ND	0.0005	mg/L	ND			NC	30	
Chloroethane	ND	0.0010	mg/L	ND			NC	30	
Chloroform	ND	0.0005	mg/L	ND			NC	30	
Chloromethane	ND	0.0030	mg/L	ND			NC	30	
Dibromochloromethane	ND	0.0005	mg/L	ND			NC	30	
1,2-Dibromoethane	ND	0.0002	mg/L	ND			NC	30	
1,2-Dichlorobenzene	ND	0.0005	mg/L	ND			NC	30	
1,3-Dichlorobenzene	ND	0.0005	mg/L	ND			NC	30	
1,4-Dichlorobenzene	ND	0.0005	mg/L	ND			NC	30	
1,1-Dichloroethane	ND	0.0005	mg/L	ND			NC	30	
1,2-Dichloroethane	ND	0.0005	mg/L	ND			NC	30	
1,1-Dichloroethylene	ND	0.0005	mg/L	ND			NC	30	
cis-1,2-Dichloroethylene	ND	0.0005	mg/L	ND			NC	30	
trans-1,2-Dichloroethylene	ND	0.0005	mg/L	ND			NC	30	
1,2-Dichloropropane	ND	0.0005	mg/L	ND			NC	30	
cis-1,3-Dichloropropylene	ND	0.0005	mg/L	ND			NC	30	
trans-1,3-Dichloropropylene	ND	0.0005	mg/L	ND			NC	30	
Ethylbenzene	ND	0.0005	mg/L	ND			NC	30	
Methylene Chloride	ND	0.0050	mg/L	ND			NC	30	
Styrene	ND	0.0005	mg/L	ND			NC	30	
1,1,2,2-Tetrachloroethane	ND	0.0005	mg/L	ND			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Tetrachloroethylene	ND	0.0005	mg/L	ND			NC	30	
Toluene	ND	0.0005	mg/L	ND			NC	30	
1,1,1-Trichloroethane	ND	0.0005	mg/L	ND			NC	30	
1,1,2-Trichloroethane	ND	0.0005	mg/L	ND			NC	30	
Trichloroethylene	ND	0.0005	mg/L	ND			NC	30	
Trichlorofluoromethane	ND	0.0010	mg/L	ND			NC	30	
1,3,5-Trimethylbenzene	ND	0.0005	mg/L	ND			NC	30	
Vinyl chloride	ND	0.0005	mg/L	ND			NC	30	
m,p-Xylenes	ND	0.0005	mg/L	ND			NC	30	
o-Xylene	ND	0.0005	mg/L	ND			NC	30	
Surrogate: 4-Bromofluorobenzene	*0.0946*		*%*		*118*	*50-140*			
Surrogate: Dibromofluoromethane	*0.0799*		*%*		*99.8*	*50-140*			
Surrogate: Toluene-d8	*0.0923*		*%*		*115*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Fluoride	0.95	0.1	mg/L	0.17	78.0	70-130			
Sulphate	132	1	mg/L	125	76.7	74-126			
General Inorganics									
CBOD	232	2	mg/L	ND	116	62-129			
Cyanide, total	0.094	0.01	mg/L	0.042	105	64-136			
Phenolics	0.026	0.001	mg/L	ND	105	67-133			
Phosphorus, total	0.978	0.01	mg/L	ND	97.8	80-120			
Total Suspended Solids	23.0	2	mg/L	ND	107	75-125			
Sulphide	0.51	0.02	mg/L	ND	103	79-115			
Total Kjeldahl Nitrogen	1.04	0.1	mg/L	ND	104	81-126			
Hydrocarbons									
Oil & Grease, mineral/synthetic	7.80	0.5	mg/L	ND	78.0	65-110			
Oil & Grease, total	20.4	0.5	mg/L	ND	102	85-110			
Metals - Total									
Aluminum	759	0.01	mg/L	726	65.6	80-120			QM-07
Arsenic	47.6	0.01	mg/L	0.040	95.2	80-120			
Bismuth	55.5	0.005	mg/L	0.133	111	80-120			
Boron	54.9	0.05	mg/L	5.63	98.6	80-120			
Cadmium	44.3	0.001	mg/L	ND	88.7	80-120			
Chromium	51.4	0.05	mg/L	0.090	103	80-120			
Cobalt	48.8	0.001	mg/L	0.021	97.6	80-120			
Copper	48.0	0.005	mg/L	2.06	91.9	80-120			
Lead	47.0	0.001	mg/L	0.083	93.8	80-120			
Mercury	0.0027	0.0001	mg/L	ND	91.5	70-130			
Manganese	53.2	0.05	mg/L	0.584	105	80-120			
Molybdenum	48.7	0.005	mg/L	0.081	97.2	80-120			
Nickel	48.4	0.005	mg/L	0.589	95.6	80-120			
Selenium	44.4	0.005	mg/L	0.014	88.7	80-120			
Silver	44.2	0.001	mg/L	ND	88.4	80-120			
Tin	47.9	0.01	mg/L	0.149	95.6	80-120			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Titanium	55.4	0.01	mg/L	0.113	111	80-120			
Vanadium	52.4	0.001	mg/L	0.211	104	80-120			
Zinc	44.3	0.02	mg/L	1.36	85.8	80-120			
PCBs									
PCBs, total	0.953	0.05	ug/L	ND	95.3	65-135			
Surrogate: Decachlorobiphenyl	*0.356*		*%*		*71.1*	*60-140*			
Pesticides, OC									
Hexachlorobenzene	0.00060	0.00001	mg/L	ND	119	50-140			
Surrogate: Decachlorobiphenyl	*0.000340*		*%*		*67.9*	*50-140*			
Semi-Volatiles									
1-Methylnaphthalene	0.00927	0.00005	mg/L	ND	92.7	50-140			
2-Methylnaphthalene	0.00857	0.00005	mg/L	ND	85.7	50-140			
7H-Dibenzo[c,g]carbazole	0.00965	0.00050	mg/L	ND	96.5	50-140			
Anthracene	0.00677	0.00001	mg/L	ND	67.7	50-140			
Benzo [a] anthracene	0.00764	0.00001	mg/L	ND	76.4	50-140			
Benzo [a] pyrene	0.00697	0.00001	mg/L	ND	69.7	50-140			
Benzo [b&j] fluoranthene	0.0120	0.00005	mg/L	ND	120	50-140			
Benzo [e] pyrene	0.00751	0.00005	mg/L	ND	75.1	50-140			
Benzo [g,h,i] perylene	0.00820	0.00005	mg/L	ND	82.0	50-140			
Benzo [k] fluoranthene	0.00766	0.00005	mg/L	ND	76.6	50-140			
Benzylbutylphthalate	0.0102	0.00050	mg/L	ND	102	50-140			
Biphenyl	0.00618	0.00005	mg/L	ND	61.8	50-140			
Bis(2-chloroethoxy)methane	0.00522	0.00100	mg/L	ND	52.2	50-140			
Bis(2-ethylhexyl)phthalate	0.0109	0.00100	mg/L	ND	109	50-140			
Chrysene	0.00729	0.00005	mg/L	ND	72.9	50-140			
Dibenzo [a,h] anthracene	0.00847	0.00005	mg/L	ND	84.7	50-140			
Dibenzo [a,i] pyrene	0.0111	0.00050	mg/L	ND	111	50-140			
Dibenzo [a,j] acridine	0.00923	0.00050	mg/L	ND	92.3	50-140			
Diethylphthalate	0.00783	0.00100	mg/L	ND	78.3	50-140			
Di-n-butylphthalate	0.00880	0.00100	mg/L	ND	88.0	50-140			
Di-n-octylphthalate	0.0110	0.00100	mg/L	ND	110	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Fluoranthene	0.00838	0.00001	mg/L	ND	83.8	50-140			
Fluorene	0.00724	0.00005	mg/L	ND	72.4	50-140			
Indeno [1,2,3-cd] pyrene	0.00888	0.00005	mg/L	ND	88.8	50-140			
Indole	0.00547	0.00100	mg/L	ND	54.7	50-140			
Naphthalene	0.00742	0.00005	mg/L	ND	74.2	50-140			
Phenanthrene	0.00824	0.00005	mg/L	ND	82.4	50-140			
Perylene	0.00767	0.00050	mg/L	ND	76.7	50-140			
Pyrene	0.00995	0.00001	mg/L	ND	99.5	50-140			
2,4-Dichlorophenol	0.00765	0.00100	mg/L	ND	76.5	50-140			
Surrogate: 2-Fluorobiphenyl	*0.0146*		*%*		*73.1*	*50-140*			
Surrogate: Nitrobenzene-d5	*0.0100*		*%*		*50.0*	*50-140*			
Surrogate: Terphenyl-d14	*0.0171*		*%*		*85.6*	*50-140*			
Surrogate: 2,4,6-Tribromophenol	*0.0430*		*%*		*108*	*50-140*			
Surrogate: 2-Fluorophenol	*0.00674*		*%*		*16.8*	*50-140*			*S-GC*
Surrogate: Phenol-d6	*0.00514*		*%*		*12.9*	*50-140*			*S-GC*
Volatiles									
Benzene	0.0331	0.0005	mg/L	ND	82.8	60-130			
Bromodichloromethane	0.0337	0.0005	mg/L	ND	84.3	60-130			
Bromoform	0.0360	0.0005	mg/L	ND	90.0	60-130			
Bromomethane	0.0399	0.0005	mg/L	ND	99.8	50-140			
Carbon Tetrachloride	0.0337	0.0002	mg/L	ND	84.4	60-130			
Chlorobenzene	0.0379	0.0005	mg/L	ND	94.7	60-130			
Chloroethane	0.0376	0.0010	mg/L	ND	93.9	50-140			
Chloroform	0.0344	0.0005	mg/L	ND	86.0	60-130			
Chloromethane	0.0358	0.0030	mg/L	ND	89.4	50-140			
Dibromochloromethane	0.0368	0.0005	mg/L	ND	92.1	60-130			
1,2-Dibromoethane	0.0356	0.0002	mg/L	ND	88.9	60-130			
1,2-Dichlorobenzene	0.0349	0.0005	mg/L	ND	87.2	60-130			
1,3-Dichlorobenzene	0.0348	0.0005	mg/L	ND	86.9	60-130			
1,4-Dichlorobenzene	0.0364	0.0005	mg/L	ND	91.0	60-130			
1,1-Dichloroethane	0.0350	0.0005	mg/L	ND	87.6	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
1,2-Dichloroethane	0.0326	0.0005	mg/L	ND	81.5	60-130			
1,1-Dichloroethylene	0.0448	0.0005	mg/L	ND	112	60-130			
cis-1,2-Dichloroethylene	0.0327	0.0005	mg/L	ND	81.7	60-130			
trans-1,2-Dichloroethylene	0.0374	0.0005	mg/L	ND	93.6	60-130			
1,2-Dichloropropane	0.0318	0.0005	mg/L	ND	79.5	60-130			
cis-1,3-Dichloropropylene	0.0323	0.0005	mg/L	ND	80.7	60-130			
trans-1,3-Dichloropropylene	0.0291	0.0005	mg/L	ND	72.8	60-130			
Ethylbenzene	0.0353	0.0005	mg/L	ND	88.2	60-130			
Methylene Chloride	0.0440	0.0050	mg/L	ND	110	60-130			
Styrene	0.0318	0.0005	mg/L	ND	79.4	60-130			
1,1,2,2-Tetrachloroethane	0.0339	0.0005	mg/L	ND	84.7	60-130			
Tetrachloroethylene	0.0395	0.0005	mg/L	ND	98.8	60-130			
Toluene	0.0372	0.0005	mg/L	ND	93.1	60-130			
1,1,1-Trichloroethane	0.0336	0.0005	mg/L	ND	84.0	60-130			
1,1,2-Trichloroethane	0.0317	0.0005	mg/L	ND	79.2	60-130			
Trichloroethylene	0.0320	0.0005	mg/L	ND	80.1	60-130			
Trichlorofluoromethane	0.0440	0.0010	mg/L	ND	110	60-130			
1,3,5-Trimethylbenzene	0.0345	0.0005	mg/L	ND	86.3	60-130			
Vinyl chloride	0.0357	0.0005	mg/L	ND	89.2	50-140			
m,p-Xylenes	0.0694	0.0005	mg/L	ND	86.8	60-130			
o-Xylene	0.0350	0.0005	mg/L	ND	87.5	60-130			
Surrogate: 4-Bromofluorobenzene	*0.0811*		*%*		*101*	*50-140*			
Surrogate: Dibromofluoromethane	*0.0819*		*%*		*102*	*50-140*			
Surrogate: Toluene-d8	*0.0819*		*%*		*102*	*50-140*			

Qualifier Notes:

Sample Qualifiers :

1: Confluent background/interfering flora: May interfere with target colony growth and the analysts' ability to count discreet colonies. The target colonies may be under-represented.
Applies to Samples: BH3-20

2: Elevated Reporting Limits due to limited sample volume.

4: Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.

QC Qualifiers:

BAC12	Confluent background/interfering flora: May interfere with target colony growth and the analysts' ability to count discreet colonies. The target colonies may be under-represented.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable QC.
S-GC	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.

Sample Data Revisions:

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

PARACEL LABORATORIES LTD.

Paracel ID: 2426137

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2426 137	№ 73659

Client Name: Pinchin Ltd.
Project Ref: 285722.005
Page 1 of 1

Contact Name: Megan Keon
Quote #:

Address: 1 Hines Rd. Kanata, ON
PO #:

E-mail: MKeon@pinchin.com

Telephone: 613-608-5350

Turnaround Time
☐ 1 day ☐ 3 day
☐ 2 day ☑ Regular
Date Required:

☐ REG 153/04 ☐ REG 406/19

Other Regulation

☑ Table 1 ☐ Res/Park ☐ Med/Fine
☑ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table ___
For RSC: ☐ Yes ☐ No

☐ REG 558 ☐ PWQO
☐ CCME ☐ MISA
☑ SU - Sani ☑ SU - Storm
Mun: Ottawa
☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	Required Analysis: Metals	pH	ABNs	Dioxins & Furans	Table 1 & 2
1	BH3-20	GW		21	June 24/24	AM	✓	✓	✓	✓	✓
2											
3											
4											
5											
6											
7											
8											
9											
10											

Comments: complete analysis for Table 1 & 2 - storm & sanitary use for discharge

Method of Delivery: Walk

Relinquished By (Sign): Megan Keon	Received at Lab:	Received at Lab:	Verified By: SS
Relinquished By (Print): Megan Keon	Date/Time: June 24 24 3:30	Date/Time: 25/6/24 10:05m	Date/Time: 25 Jun 24 1100
Date/Time:	Temperature: 24.2 °C	Temperature: 4.4 °C	pH Verified: ✓ By: SS

PARACEL LABORATORIES LTD.
TRUSTED. RESPONSIVE. RELIABLE.

300 - 2319 St. Laurent Blvd
Ottawa, ON, K1G 4J8
1-800-749-1947
www.paracellabs.com

Subcontracted Analysis

Pinchin Ltd. (Ottawa)
1 Hines Road, Suite 200
Kanata, ON K2K 3C7
Attn: Megan Keon

Paracel Report No.	**2426137**
Client Project(s):	**285722.005**
Client PO:	
Reference:	**2024 Standing Offer - ENV**
CoC Number:	**73659**

Order Date:	24-Jun-24
Report Date:	8-Jul-24

Sample(s) from this project were subcontracted for the listed parameters. A copy of the subcontractor's report is attached

Paracel ID	Client ID	Analysis
2426137-01	BH3-20	Formaldehyde Dioxins and Furans Sewer Use: NDMA Ottawa - San/Comb: Nonylphenols + Ethoxolates

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

02-July-2024

Paracel Laboratories
Attn : Dale Robertson

300-2319 St.Laurent Blvd.
Ottawa, ON
K1G 4K6, Canada

Phone: 613-731-9577
Fax:613-731-9064

Date Rec. : 26 June 2024
LR Report: **CA13982-JUN24**
Reference: Project#: 2426137

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Sample ID	Sample Date & Time	Temperature Upon Receipt °C	N-Nitrosodimethylamine mg/L
1: Analysis Start Date		---	28-Jun-24
2: Analysis Start Time		---	13:17
3: Analysis Completed Date		---	02-Jul-24
4: Analysis Completed Time		---	10:37
5: RL		---	0.0004
6: BH3-20	24-Jun-24 09:00	11.0	< 0.0004

RL - SGS Reporting Limit

Kimberley Didsbury
Project Specialist,
Environment, Health & Safety

OnLine LIMS

0003765954

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

LR Report : **CA13982-JUN24**

Quality Control Report

Organic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
							%		Low	High		Low	High
NDMA - QCBatchID: GCM0438-JUN24													
N-Nitrosodimethylamine	0.0004	mg/L	< 0.0004			NSS	30	35	20	130	NSS	20	130

OnLine LIMS

0003765954

ALS Canada Ltd.

right solutions.
right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **WT2417444**	Page	: 1 of 3
Client	: **Paracel Laboratories Ltd**	Laboratory	: ALS Environmental - Waterloo
Contact	: Mark Foto	Account Manager	: Costas Farassoglou
Address	: 2319 St. Laurent Blvd. Unit 300 Ottawa ON Canada K1G 4J8	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: 613 731 9577	Telephone	: 613 225 8279
Project	: 2426137	Date Samples Received	: 25-Jun-2024 13:25
PO	: ----	Date Analysis Commenced	: 27-Jun-2024
C-O-C number	: ----	Issue Date	: 28-Jun-2024 22:04
Sampler	: CLIENT		
Site	: ----		
Quote number	: Standing Offer 2024		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Sanja Risticevic	Department Manager - LCMS	LCMS, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Air Quality, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.
Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
µg/L	micrograms per litre

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
DLI	*Detection Limit Raised: Dilution required to address Internal Standard response problems caused by matrix interference.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID: BH3-20	----	----	----	----
					Client sampling date / time: 24-Jun-2024 09:00	----	----	----	----
					WT2417444-001	--------	--------	--------	--------
					Result	----	----	----	----
Aldehydes									
Formaldehyde	50-00-0	E693A/WT	2.0	µg/L	<2.0	----	----	----	----
Nonylphenols									
Bisphenol A	80-05-7	E749A/WT	0.20	µg/L	<0.20	----	----	----	----
Nonylphenol [NP]	84852-15-3	E749A/WT	1.0	µg/L	<1.0	----	----	----	----
Nonylphenol diethoxylates [NP2EO]	n/a	E749B/WT	0.10	µg/L	<0.10	----	----	----	----
Nonylphenol ethoxylates, mono+di	n/a	E749B/WT	2.0	µg/L	<50.0	----	----	----	----
Nonylphenol monoethoxylates [NP1EO]	n/a	E749B/WT	2.0	µg/L	<50.0 DLI	----	----	----	----
Octylphenol diethoxylates [OP2EO]	n/a	E749B/WT	0.10	µg/L	<2.50 DLI	----	----	----	----
Octylphenol ethoxylates, mono+di	n/a	E749B/WT	2.0	µg/L	<50.1	----	----	----	----
Octylphenol monoethoxylates [OP1EO]	n/a	E749B/WT	2.0	µg/L	<50.0 DLI	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

right solutions. right partner.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2417444**	Page	: 1 of 5
Client	: **Paracel Laboratories Ltd**	Laboratory	: ALS Environmental - Waterloo
Contact	: Mark Foto	Account Manager	: Costas Farassoglou
Address	: 2319 St. Laurent Blvd. Unit 300 Ottawa ON Canada K1G 4J8	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 613 731 9577	Telephone	: 613 225 8279
Project	: 2426137	Date Samples Received	: 25-Jun-2024 13:25
PO	: ----	Issue Date	: 28-Jun-2024 22:04
C-O-C number	: ----		
Sampler	: CLIENT		
Site	: ----		
Quote number	: Standing Offer 2024		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times* Rec	*Holding Times* Actual	*Eval*	*Analysis Date*	*Holding Times* Rec	*Holding Times* Actual	*Eval*
Aldehydes : Aldehydes by GC-ECD										
Glass vial (ammonium chloride+copper sulfate) BH3-20	E693A	24-Jun-2024	----	----	----		27-Jun-2024	7 days	3 days	✓
Nonylphenols : Nonylphenol Ethoxylates in Water by LC-MS-MS Positive Mode										
Amber glass/Teflon lined cap - LCMS BH3-20	E749B	24-Jun-2024	27-Jun-2024	7 days	3 days	✓	27-Jun-2024	7 days	0 days	✓
Nonylphenols : Nonylphenol, Octylphenol and BPA in Water by LC-MS-MS Negative Mode										
Amber glass/Teflon lined cap - LCMS BH3-20	E749A	24-Jun-2024	27-Jun-2024	7 days	3 days	✓	27-Jun-2024	7 days	0 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Aldehydes by GC-ECD	E693A	1516706	1	2	50.0	5.0	✓
Nonylphenol Ethoxylates in Water by LC-MS-MS Positive Mode	E749B	1516900	1	16	6.2	5.0	✓
Nonylphenol, Octylphenol and BPA in Water by LC-MS-MS Negative Mode	E749A	1516899	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
Aldehydes by GC-ECD	E693A	1516706	1	2	50.0	5.0	✓
Nonylphenol Ethoxylates in Water by LC-MS-MS Positive Mode	E749B	1516900	1	16	6.2	5.0	✓
Nonylphenol, Octylphenol and BPA in Water by LC-MS-MS Negative Mode	E749A	1516899	1	16	6.2	5.0	✓
Method Blanks (MB)							
Aldehydes by GC-ECD	E693A	1516706	1	2	50.0	5.0	✓
Nonylphenol Ethoxylates in Water by LC-MS-MS Positive Mode	E749B	1516900	1	16	6.2	5.0	✓
Nonylphenol, Octylphenol and BPA in Water by LC-MS-MS Negative Mode	E749A	1516899	1	16	6.2	5.0	✓
Matrix Spikes (MS)							
Aldehydes by GC-ECD	E693A	1516706	1	2	50.0	5.0	✓
Nonylphenol Ethoxylates in Water by LC-MS-MS Positive Mode	E749B	1516900	1	16	6.2	5.0	✓
Nonylphenol, Octylphenol and BPA in Water by LC-MS-MS Negative Mode	E749A	1516899	1	16	6.2	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Aldehydes by GC-ECD	E693A ALS Environmental - Waterloo	Water	EPA METHOD 556.1	This is a gas chromatography method optimized for the determination of aldehydes in water and solid samples. Aldehydes are derivatized with o-(2,3,4,5,6-pentafluorobenzyl) hydroxylamine (PFBHA) to obtain their corresponding pentafluorobenzyl oximes. The oxime derivatives are then extracted from the water with hexane containing pentachloronitrobenzene as internal standard. The hexane extracts are analyzed by gas chromatography with electron capture detection (GC-ECD).
Nonylphenol, Octylphenol and BPA in Water by LC-MS-MS Negative Mode	E749A ALS Environmental - Waterloo	Water	J. Chrom A849 (1999) p.467-482	An aliquot of 5.0 ± 0.10 mL of filtered sample is spiked with Nonylphenol-D4, Nonylphenol Diethoxylate 13C6, and Bisphenol A 13C12 internal standards and analyzed by LC-MS/MS.
Nonylphenol Ethoxylates in Water by LC-MS-MS Positive Mode	E749B ALS Environmental - Waterloo	Water	J. Chrom A849 (1999) p.467-482	Water samples are filtered and analyzed on LCMS/MS by direct injection.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation of Nonylphenol and Nonylphenol Ethoxylates	EP749 ALS Environmental - Waterloo	Water	J. Chrom A849 (1999) p.467-482	An aliquot of 5.0 ± 0.10 mL of filtered sample is spiked with Nonylphenol-D4, Nonylphenol Diethoxylate 13C6, and Bisphenol A 13C12 internal standards and analyzed by LC-MS/MS.

QUALITY CONTROL REPORT

Work Order	: **WT2417444**	Page	: 1 of 4
Client	: Paracel Laboratories Ltd	Laboratory	: ALS Environmental - Waterloo
Contact	: Mark Foto	Account Manager	: Costas Farassoglou
Address	: 2319 St. Laurent Blvd. Unit 300 Ottawa ON Canada K1G 4J8	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 613 731 9577	Telephone	: 613 225 8279
Project	: 2426137	Date Samples Received	: 25-Jun-2024 13:25
PO	: ----	Date Analysis Commenced	: 27-Jun-2024
C-O-C number	: ----	Issue Date	: 28-Jun-2024 22:04
Sampler	: CLIENT		
Site	: ----		
Quote number	: Standing Offer 2024		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Sanja Risticevic	Department Manager - LCMS	Waterloo LCMS, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Waterloo Air Quality, Waterloo, Ontario

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Aldehydes (QC Lot: 1516706)											
WT2417284-001	Anonymous	Formaldehyde	50-00-0	E693A	20.0	µg/L	250	244	2.21%	30%	----
Nonylphenols (QC Lot: 1516899)											
WT2417204-001	Anonymous	Bisphenol A	80-05-7	E749A	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Nonylphenol [NP]	84852-15-3	E749A	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
Nonylphenols (QC Lot: 1516900)											
WT2417204-001	Anonymous	Nonylphenol diethoxylates [NP2EO]	n/a	E749B	0.10	µg/L	<0.10	<0.10	0	Diff <2x LOR	----
		Nonylphenol monoethoxylates [NP1EO]	n/a	E749B	10.0	µg/L	<10.0	<10.0	0	Diff <2x LOR	----
		Octylphenol diethoxylates [OP2EO]	n/a	E749B	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Octylphenol monoethoxylates [OP1EO]	n/a	E749B	10.0	µg/L	<10.0	<10.0	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Aldehydes (QCLot: 1516706)						
Formaldehyde	50-00-0	E693A	2	µg/L	<2.0	----
Nonylphenols (QCLot: 1516899)						
Bisphenol A	80-05-7	E749A	0.2	µg/L	<0.20	----
Nonylphenol [NP]	84852-15-3	E749A	1	µg/L	<1.0	----
Nonylphenols (QCLot: 1516900)						
Nonylphenol diethoxylates [NP2EO]	n/a	E749B	0.1	µg/L	<0.10	----
Nonylphenol monoethoxylates [NP1EO]	n/a	E749B	2	µg/L	<2.0	----
Octylphenol diethoxylates [OP2EO]	n/a	E749B	0.1	µg/L	<0.10	----
Octylphenol monoethoxylates [OP1EO]	n/a	E749B	2	µg/L	<2.0	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Aldehydes (QCLot: 1516706)									
Formaldehyde	50-00-0	E693A	2	µg/L	25.8 µg/L	85.8	70.0	130	----
Nonylphenols (QCLot: 1516899)									
Bisphenol A	80-05-7	E749A	0.2	µg/L	2 µg/L	101	75.0	125	----
Nonylphenol [NP]	84852-15-3	E749A	1	µg/L	10 µg/L	98.2	75.0	125	----
Nonylphenols (QCLot: 1516900)									
Nonylphenol diethoxylates [NP2EO]	n/a	E749B	0.1	µg/L	1 µg/L	103	75.0	125	----
Nonylphenol monoethoxylates [NP1EO]	n/a	E749B	2	µg/L	20 µg/L	98.3	75.0	125	----
Octylphenol diethoxylates [OP2EO]	n/a	E749B	0.1	µg/L	1 µg/L	94.0	75.0	125	----
Octylphenol monoethoxylates [OP1EO]	n/a	E749B	2	µg/L	20 µg/L	110	75.0	125	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Aldehydes (QCLot: 1516706)										
WT2417284-001	Anonymous	Formaldehyde	50-00-0	E693A	ND µg/L	----	ND	50.0	150	----
Nonylphenols (QCLot: 1516899)										
WT2417204-001	Anonymous	Bisphenol A	80-05-7	E749A	1.88 µg/L	2 µg/L	93.9	60.0	140	----
		Nonylphenol [NP]	84852-15-3	E749A	9.3 µg/L	10 µg/L	93.2	60.0	140	----
Nonylphenols (QCLot: 1516900)										
WT2417204-001	Anonymous	Nonylphenol diethoxylates [NP2EO]	n/a	E749B	0.99 µg/L	1 µg/L	99.4	60.0	140	----
		Nonylphenol monoethoxylates [NP1EO]	n/a	E749B	22.2 µg/L	20 µg/L	111	60.0	140	----
		Octylphenol diethoxylates [OP2EO]	n/a	E749B	0.95 µg/L	1 µg/L	95.0	60.0	140	----
		Octylphenol monoethoxylates [OP1EO]	n/a	E749B	24.3 µg/L	20 µg/L	122	60.0	140	----

PARACEL LABORATORIES LTD.

TRUSTED.
RESPONSIVE.
RELIABLE.

300 - 2319 St. Laurent Blvd
Ottawa, ON, K1G 4J8
1-800-749-1947
www.paracellabs.com

WT2417444
A

Subcontract Order

SENDING LABORATORY:

Paracel Laboratories Ltd.
300-2319 St. Laurent Blvd.
Ottawa, ON K1G 4J8
Phone: 613-731-9577
Fax: 613-731-9064

RECEIVING LABORATORY:

ALS Laboratory Group (Ottawa)
7-190 Colonnade Rd
Ottawa, ON K2E7J5
Phone: (613) 225-8279
Fax: (613) 225-2801

INVOICE TO:

Paracel Laboratories Ltd.
300-2319 St. Laurent Blvd.
Ottawa, ON K1G 4J8
Phone: 613-731-9577
Fax: 613-731-9064

Date Requested: **25-Jun-24**
Project Number: **2426137**
Submitted By: **Sarah Scullion**

Required Regulation	SU-SAN/COMB (Ottawa)
Turnaround Time	Standard

Sample ID	Matrix	Analyses Requested:	Sampled	Comments
BH3-20	Water	Ottawa - San/Comb: Nonylphenols + Ethoxolates Formaldehyde	24-Jun-24 09:00	

0.9 BB
06/26/24
8:55

Environmental Division
Waterloo
Work Order Reference
WT2417444

AB
L-487
Specchem

Telephone : +1 519 886 6910

Please email all results to mfoto@paracellabs.com, dbloom@[illegible]@paracellabs.com

Sandra Demanins — June 25, 2024 11:35am
Released By — Date / Time

Eric Dobbins. — 25/06/24.
Received By — Date
15.6°C — 1:25pm.

Temperature prior to Shipping: 9.9

SAMPLE RECEIPT FORM / CHEMICAL ANALYSIS FORM

FILE #: PR241800

CLIENT: Paracel Laboratories
300-2319 St. Laurent Blvd.
Ottawa, ON
K1G 4J8

Phone: (613) 731-9577
Fax: (613) 731-9064
Email: dbloom@paracellabs.com
Email: drobertson@paracellabs.com
Email: mfoto@paracellabs.com

RECEIVED BY: C. Jones
CONDITION: Okay, 19.0°C

DATE/TIME: June 27, 2024 (10:00 a.m.)

# of Containers	Sample Type	Sample (Client Codes)	Lab Codes	Test Requested
		Project: 2426137		
1	Water	BH3-20	PR241800	PCDD/F

STORAGE: Stored at 4 °C.

ANALYTES: HRGC/HRMS analysis for polychlorinated dibenzo(p)dioxins and dibenzofurans (PCDD/F).

SPECIAL INSTRUCTIONS: None.

METHODOLOGY

Reference Method: PCDD/F: SOP LAB01; EPA Method 1613B

Data summarized in Data Report attached.

Report sent to: Donna Bloom Date: July 8, 2024

Comments: Results relate only to samples as received.

_____
David Hope, P.Chem., CEO

DATA REPORT

Client:	Paracel Laboratories	**Contact:**	Donna Bloom
Client ID:	BH3-20	**Date Analysed:**	28-Jun-24
PRL ID:	PR241800	**Date Analysed:**	4-Jul-24

DIOXINS			Surrogate	I-TEQs		WHO-TEQs (2005)	
	Conc.	DL	Recoveries	(ND=0)	(ND=DL)	(ND=0)	(ND=DL)
Congeners	**pg/L**	**pg/L**	**%**	**pg/L**	**pg/L**	**pg/L**	**pg/L**
2,3,7,8-TCDD	ND	1	50	ND	1	ND	1
Total TCDD	ND	1					
1,2,3,7,8-PeCDD	ND	2	64	ND	1	ND	2
Total PeCDD	ND	2					
1,2,3,4,7,8-HxCDD	ND	2	60	ND	0.2	ND	0.2
1,2,3,6,7,8-HxCDD	ND	2	68	ND	0.2	ND	0.2
1,2,3,7,8,9-HxCDD	ND	2	-	ND	0.2	ND	0.2
Total HxCDD	ND	2					
1,2,3,4,6,7,8-HpCDD	ND	3	68	ND	0.03	ND	0.03
Total HpCDD	ND	3					
OCDD	ND	4	48	ND	0.004	ND	0.0012
		Total Dioxin TEQ		**0.00**	**2.63**	**0.00**	**3.63**

FURANS			Surrogate	I-TEQs		WHO-TEQs (2005)	
		DL	Recoveries	(ND=0)	(ND=DL)	(ND=0)	(ND=DL)
Congeners	**pg/L**	**pg/L**	**%**	**pg/L**	**pg/L**	**pg/L**	**pg/L**
2,3,7,8-TCDF	ND	1	42	ND	0.1	ND	0.1
Total TCDF	ND	1					
1,2,3,7,8-PeCDF	ND	2	52	ND	0.1	ND	0.06
2,3,4,7,8-PeCDF	ND	2	54	ND	1	ND	0.6
Total PeCDF	ND	2					
1,2,3,4,7,8-HxCDF	ND	2	60	ND	0.2	ND	0.2
1,2,3,6,7,8-HxCDF	ND	2	62	ND	0.2	ND	0.2
1,2,3,7,8,9-HxCDF	ND	2	64	ND	0.2	ND	0.2
2,3,4,6,7,8-HxCDF	ND	2	62	ND	0.2	ND	0.2
Total HxCDF	ND	2					
1,2,3,4,6,7,8-HpCDF	ND	3	54	ND	0.03	ND	0.03
1,2,3,4,7,8,9-HpCDF	ND	3	52	ND	0.03	ND	0.03
Total HpCDF	ND	3					
OCDF	ND	4	-	ND	0.004	ND	0.0012
		Total Furan TEQ		**0.00**	**2.06**	**0.00**	**1.62**

Total PCDD/PCDF Toxic Equivalent	**0.00**	**4.70**	**0.00**	**5.25**

ND - none detected

QC REPORT - BLANK

Client:	Paracel Laboratories	**Contact:**	Donna Bloom
Client ID:	BLANK	**Date Extracted:**	28-Jun-24
PRL ID:	DF240404B	**Date Analysed:**	4-Jul-24

DIOXINS			Surrogate	I-TEQs		WHO-TEQs (2005)	
	Conc.	DL	Recoveries	(ND=0)	(ND=DL)	(ND=0)	(ND=DL)
Congeners	**pg/L**	**pg/L**	**%**	**pg/L**	**pg/L**	**pg/L**	**pg/L**
2,3,7,8-TCDD	ND	1	70	ND	1	ND	1
Total TCDD	ND	1					
1,2,3,7,8-PeCDD	ND	2	72	ND	1	ND	2
Total PeCDD	ND	2					
1,2,3,4,7,8-HxCDD	ND	2	94	ND	0.2	ND	0.2
1,2,3,6,7,8-HxCDD	ND	2	78	ND	0.2	ND	0.2
1,2,3,7,8,9-HxCDD	ND	2	-	ND	0.2	ND	0.2
Total HxCDD	ND	2					
1,2,3,4,6,7,8-HpCDD	ND	3	108	ND	0.03	ND	0.03
Total HpCDD	ND	3					
OCDD	ND	4	72	ND	0.004	ND	0.0012
		Total Dioxin TEQ		**0.00**	**2.63**	**0.00**	**3.63**

FURANS			Surrogate	I-TEQs		WHO-TEQs (2005)	
		DL	Recoveries	(ND=0)	(ND=DL)	(ND=0)	(ND=DL)
Congeners	**pg/L**	**pg/L**	**%**	**pg/L**	**pg/L**	**pg/L**	**pg/L**
2,3,7,8-TCDF	ND	1	60	ND	0.1	ND	0.1
Total TCDF	ND	1					
1,2,3,7,8-PeCDF	ND	2	80	ND	0.1	ND	0.06
2,3,4,7,8-PeCDF	ND	2	68	ND	1	ND	0.6
Total PeCDF	ND	2					
1,2,3,4,7,8-HxCDF	ND	2	78	ND	0.2	ND	0.2
1,2,3,6,7,8-HxCDF	ND	2	68	ND	0.2	ND	0.2
1,2,3,7,8,9-HxCDF	ND	2	92	ND	0.2	ND	0.2
2,3,4,6,7,8-HxCDF	ND	2	86	ND	0.2	ND	0.2
Total HxCDF	ND	2					
1,2,3,4,6,7,8-HpCDF	ND	3	86	ND	0.03	ND	0.03
1,2,3,4,7,8,9-HpCDF	ND	3	78	ND	0.03	ND	0.03
Total HpCDF	ND	3					
OCDF	ND	4	-	ND	0.004	ND	0.0012
		Total Furan TEQ		**0.00**	**2.06**	**0.00**	**1.62**

Total PCDD/PCDF Toxic Equivalent	**0.00**	**4.70**	**0.00**	**5.25**

ND - none detected

Acronyms used in reporting dioxins and furans:

TCDD = Tetrachlorodibenzo-*p*-dioxin
PeCDD = Pentachlorodibenzo-*p*-dioxin
HxCDD = Hexachlorodibenzo-*p*-dioxin
HpCDD = Heptachlorodibenzo-*p*-dioxin
OCDD = Octachlorodibenzo-*p*-dioxin

TCDF = Tetrachlorodibenzofuran
PeCDF = Pentachlorodibenzofuran
HxCDF = Hexachlorodibenzofuran
HpCDF = Heptachlorodibenzofuran
OCDF = Octachlorodibenzofuran

Acceptable recoveries for surrogates	**EPA 1613**	
	Min (%)	**Max (%)**
$^{13}C_{12}$ -2,3,7,8-TCDD	25	164
$^{13}C_{12}$ -1,2,3,7,8-PeCDD	25	181
$^{13}C_{12}$ -1,2,3,4,7,8-HxCDD	32	141
$^{13}C_{12}$ -1,2,3,6,7,8-HxCDD	28	130
$^{13}C_{12}$ -1,2,3,4,6,7,8-HpCDD	23	140
$^{13}C_{12}$ -OCDD	17	157
$^{13}C_{12}$ -2,3,7,8-TCDF	24	169
$^{13}C_{12}$ -1,2,3,7,8-PeCDF	24	185
$^{13}C_{12}$ -2,3,4,7,8-PeCDF	21	178
$^{13}C_{12}$ -1,2,3,4,7,8-HxCDF	26	152
$^{13}C_{12}$ -1,2,3,6,7,8-HxCDF	26	123
$^{13}C_{12}$ -1,2,3,7,8,9-HxCDF	29	147
$^{13}C_{12}$ -2,3,4,6,7,8-HxCDF	28	136
$^{13}C_{12}$ -1,2,3,4,6,7,8-HpCDF	28	143
$^{13}C_{12}$ -1,2,3,4,7,8,9-HpCDF	26	138

CHAIN OF CUSTODY RECORD / ANALYSIS REQUEST

Pacific Rim Laboratories Inc. #103, 19575 - 55A Avenue, Surrey, BC V3S 8P8 Canada Tel: 604-532-8711 Fax: 604-532-8712

PACIFIC RIM LABORATORIES INC

COMPANY:	Paracel Laboratories Ltd. - Ottawa	PHONE:	613-731-9577
ADDRESS:	*300-2319 St. Laruent Blvd.*	EMAIL:	See Comments/Attached
DATE:		PO #:	###
CONTACT:	See Attched (Mark, Dale & Donna)	PROJECT:	

SAMPLE ID	PRL ID	DATE SAMPLED	SAMPLE MATRIX	NUMBER OF CONTAINERS	DIOXIN/FURAN	PCB - dioxin-like & homolog	PCB - 209 congener	PAH	PBDE	TBT	Nonylphenol	PFAAs by LC-MS/MS	Date Requested	COMMENTS
BH3-20	PRZ41800	6/24/2024	Water	1	x									

Sampler's Signature	Relinquished by: Sarah Scullion	Company	Date 25 Jun 24	Time 1510	Received by: CJ
Comments:	Method of Shipment	Waybill No.:	Rec'd for PRL:	Date 27JUN24	Time 10:00am
	Shipment Condition	Temp.: 19.0°C	Cooler Opened By: CJ		

Tel: (604) 532-8711 | Fax: (604) 532-8712 | info@pacificrimlabs.com | www.pacificrimlabs.com
Pacific Rim Laboratories Inc. #103, 19575 - 55A Ave, Surrey, BC V3S 8P8 Canada

PARACEL LABORATORIES LTD.

Paracel ID: 2426137

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2426137	№ 73659

Client Name: Pinchin Ltd.
Project Ref: 285722.005
Page 1 of 1

Contact Name: Megan Keon
Quote #:

Address: 1 Hines Rd. Kanata, ON
PO #:

E-mail: MKeon@pinchin.com

Telephone: 613-608-5350

Turnaround Time
☐ 1 day ☐ 3 day
☐ 2 day ☑ Regular
Date Required:

☐ REG 153/04 ☐ REG 406/19

☑ Table 1 ☐ Res/Park ☐ Med/Fine
☑ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table
For RSC: ☐ Yes ☐ No

Other Regulation
☐ REG 558 ☐ PWQO
☐ CCME ☐ MISA
☑ SU - Sani ☑ SU - Storm
Mun: Ottawa
☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	Metals	pH	VOCs	Dioxins & Furans	Table 1 & 2
1	BH3-20	GW		21	June 24/24	AM	✓	✓	✓	✓	✓
2											
3											
4											
5											
6											
7											
8											
9											
10											

Comments: complete analysis for Table 1 & 2 - Storm & Sanitary Use for discharge

Method of Delivery: Walk

Relinquished By (Sign):	Received at Lab:	Received at Lab:	Verified By:
Megan Keon	3:26	W	SS
Relinquished By (Print): Megan Keon	Date/Time: June 24/24	Date/Time: 25/6/24 10:05m	Date/Time: 25 Jun 24 1100
Date/Time:	Temperature: 24.2 °C	Temperature: 4.4 °C	pH Verified: ✓ By: SS

APPENDIX VII

Abbreviations, Terminology and Principle Symbols used in Report

ABBREVIATIONS, TERMINOLOGY & PRINCIPAL SYMBOLS USED

Sampling Method

AS	Auger Sample	**w**	Washed Sample
SS	Split Spoon Sample	**HQ**	Rock Core (63.5 mm diam.)
ST	Thin Walled Shelby Tube	**NQ**	Rock Core (47.5 mm diam.)
BS	Block Sample	**BQ**	Rock Core (36.5 mm diam.)

In-Situ Soil Testing

Standard Penetration Test (SPT), "N" value is the number of blows required to drive a 51 mm outside diameter spilt barrel sampler into the soil a distance of 300 mm with a 63.5 kg weight free falling a distance of 760 mm after an initial penetration of 150 mm has been achieved. The SPT, "N" value is a qualitative term used to interpret the compactness condition of cohesionless soils and is used only as a very approximation to estimate the consistency and undrained shear strength of cohesive soils.

Dynamic Cone Penetration Test (DCPT) is the number of blows required to drive a cone with a 60 degree apex attached to "A" size drill rods continuously into the soil for each 300 mm penetration with a 63.5 kg weight free falling a distance of 760 mm.

Cone Penetration Test (CPT) is an electronic cone point with a 10 cm2 base area with a 60 degree apex pushed through the soil at a penetration rate of 2 cm/s.

Field Vane Test (FVT) consists of a vane blade, a set of rods and torque measuring apparatus used to determine the undrained shear strength of cohesive soils.

Soil Descriptions

The soil descriptions and classifications are based on an expanded Unified Soil Classification System (USCS). The USCS classifies soils on the basis of engineering properties. The system divides soils into three major categories; coarse grained, fine grained and highly organic soils. The soil is then subdivided based on either gradation or plasticity characteristics. The classification excludes particles larger than 75 mm. To aid in quantifying material amounts by weight within the respective grain size fractions the following terms have been included to expand the USCS:

Soil Classification		Terminology	Proportion
Clay	< 0.002 mm		
Silt	0.002 to 0.06 mm	“trace”, trace sand, etc.	1 to 10%
Sand	0.075 to 4.75 mm	“some”, some sand, etc.	10 to 20%
Gravel	4.75 to 75 mm	Adjective, sandy, gravelly, etc.	20 to 35%
Cobbles	75 to 200 mm	And, and gravel, and silt, etc.	>35%
Boulders	>200 mm	Noun, Sand, Gravel, Silt, etc.	>35% and main fraction

Notes:

- Soil properties, such as strength, gradation, plasticity, structure, etcetera, dictate the soils engineering behaviour over grain size fractions; and
- With the exception of soil samples tested for grain size distribution or plasticity, all soil samples have been classified based on visual and tactile observations. The accuracy of visual and tactile observation is not sufficient to differentiate between changes in soil classification or precise grain size and is therefore an approximate description.

The following table outlines the qualitative terms used to describe the compactness condition of cohesionless soil:

Cohesionless Soil	
Compactness Condition	**SPT N-Index (blows per 300 mm)**
Very Loose	0 to 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very Dense	> 50

The following table outlines the qualitative terms used to describe the consistency of cohesive soils related to undrained shear strength and SPT, N-Index:

Cohesive Soil		
Consistency	**Undrained Shear Strength (kPa)**	**SPT N-Index (blows per 300 mm)**
Very Soft	<12	<2
Soft	12 to 25	2 to 4
Firm	25 to 50	4 to 8
Stiff	50 to 100	8 to 15
Very Stiff	100 to 200	15 to 30
Hard	>200	>30

Note: Utilizing the SPT, N-Index value to correlate the consistency and undrained shear strength of cohesive soils is only very approximate and needs to be used with caution.

Soil & Rock Physical Properties

General

W Natural water content or moisture content within soil sample

γ Unit weight

γ' Effective unit weight

γ_d Dry unit weight

γ_{sat} Saturated unit weight

ρ Density

ρ_s Density of solid particles

ρ_w Density of Water

ρ_d Dry density

ρ_{sat} Saturated density e Void ratio

n Porosity

S_r Degree of saturation

E_{50} Strain at 50% maximum stress (cohesive soil)

Consistency

W_L	Liquid limit
W_P	Plastic Limit
I_P	Plasticity Index
W_S	Shrinkage Limit
I_L	Liquidity Index
I_C	Consistency Index
e_{max}	Void ratio in loosest state
e_{min}	Void ratio in densest state
I_D	Density Index (formerly relative density)

Shear Strength

C_u, S_u	Undrained shear strength parameter (total stress)
C'_d	Drained shear strength parameter (effective stress)
r	Remolded shear strength
τ_p	Peak residual shear strength
τ_r	Residual shear strength
ø’	Angle of interface friction, coefficient of friction = tan ø’

Consolidation (One Dimensional)

C_C	Compression index (normally consolidated range)
C_r	Recompression index (over consolidated range)
C_S	Swelling index
m_V	Coefficient of volume change
c_V	Coefficient of consolidation
T_V	Time factor (vertical direction)
U	Degree of consolidation
σ'_O	Overburden pressure
σ'_p	Preconsolidation pressure (most probable)
OCR	Overconsolidation ratio

Permeability

The following table outlines the terms used to describe the degree of permeability of soil and common soil types associated with the permeability rates**:**

Permeability (k cm/s)	Degree of Permeability	Common Associated Soil Type
$> 10^{-1}$	Very High	Clean gravel
10^{-1} to 10^{-3}	High	Clean sand, Clean sand and gravel
10^{-3} to 10^{-5}	Medium	Fine sand to silty sand
10^{-5} to 10^{-7}	Low	Silt and clayey silt (low plasticity)
$>10^{-7}$	Practically Impermeable	Silty clay (medium to high plasticity)

Rock Coring

Rock Quality Designation (RQD) is an indirect measure of the number of fractures within a rock mass, Deere et al. (1967). It is the sum of sound pieces of rock core equal to or greater than 100 mm recovered from the core run, divided by the total length of the core run, expressed as a percentage. If the core section is broken due to mechanical or handling, the pieces are fitted together and if 100 mm or greater included in the total sum**.**

RQD is calculated as follows:

$$\text{RQD (\%)} = \frac{\Sigma \text{ Length of core pieces} > 100 \text{ mm} \times 100}{\text{Total length of core run}}$$

The following is the Classification of Rock with Respect to RQD Value:

RQD Classification	RQD Value (%)
Very poor quality	**<25**
Poor quality	25 to 50
Fair quality	50 to 75
Good quality	75 to 90
Excellent quality	90 to 100